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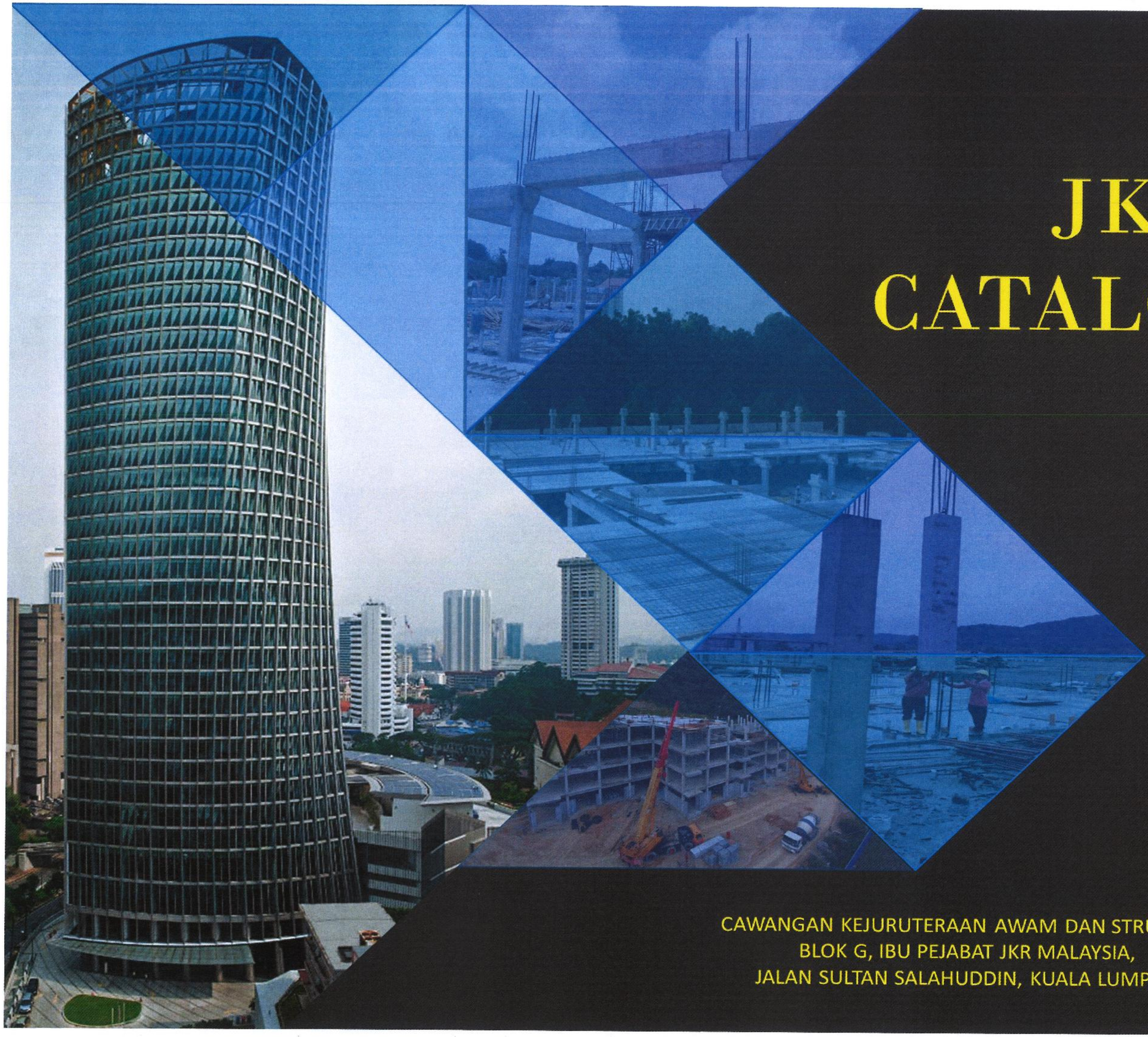
JKR IBS CATALOGUE 2020



CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR,
BLOK G, IBU PEJABAT JKR MALAYSIA,
JALAN SULTAN SALAHUDDIN, KUALA LUMPUR

JKR

JKR IBS CATALOGUE 2020

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FOREWORD

In the effort of becoming a world-class service provider that excels in project delivery, JKR must embrace changes and challenges in the construction industry. Therefore, it is our mission to standardize procedures and systems to deliver efficient and economical project outcome.

JKR IBS Catalogue 2020 is developed as a reference for structural engineers to maximize their performance and reduce the time in producing drawing by practicing simplification and repetition. First introduced in 2010 and was later revised in 2016, JKR IBS Catalogue mainly focused on assisting structural engineers in designing and constructing efficient and cost-effective IBS buildings. This latest revision, JKR IBS Catalogue 2020 superseded JKR IBS Catalogue Version 2: 2016.

The content of this catalogue adopted Eurocodes in line with the transition of current structural design demand. This catalogue contains 9 chapters which include General Notes, Rectangular Beams, Inverted T-Beams, L-Beams, Columns, Half-slabs, Planks, Staircases and Connection Joints. The design of precast component in this catalogue shall comply to concrete **grade C30/37** and meet the durability requirement of **2-hour fire-resistance**. Information on loadings, moment capacity, shear forces, reinforcement and notes on installation are provided to assist JKR Structural Designers in designing IBS buildings with a minimum of time. It is hoped that this catalogue will be of good practical use for all involved.

Congratulations to the Technical Committee of JKR IBS Catalogue and other engineers in CKAS whose time and knowledge has greatly contributed to the completion of this JKR IBS Catalogue 2020.

#TogetherWeDeliver

Dato' Ir. Hj. Mohamad Zulkefly Bin Sulaiman
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ACKNOWLEDGEMENT

This catalogue has been prepared through the cooperative and collaborative efforts between the various design structural engineering sections in the department. The design engineers involved were from the various divisions i.e :

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It is with great appreciation and thanks to the engineers and drafts person who have contributed directly and indirectly to complete this catalogue.

DISCLAIMER

CKAS produces this catalogue as a technical expediate design output. They are based on published references, standards and industrial practices.
The ultimate design output must be agreed and approved by the relevant designer himself/herself.

CKAS accepts no responsibility or liability for the content of this Catalogue or the consequences of any actions taken on the basis of the information provided.
These engineering data are in no way a replacement for a through engineering review or design.

Users of this catalogue are responsible for their correct application.

LIST OF DRAWING

NO	TITLE	DRAWING NO.			
1	NOTES				
1.1	GENERAL NOTES (PRECAST CONCRETE)	JKR / CKAS / P-IBS / PEL 19 /	NA	/	01
1.2	GENERAL NOTES (PRECAST CONCRETE)	JKR / CKAS / P-IBS / PEL19 /	NA	/	02
1.3	TYPICAL DRAWINGS (PRECAST CONCRETE)	JKR / CKAS / P-IBS / PEL 19 /	TC	/	01
2	PRECAST BEAM				
2.1	PRECAST RECTANGULAR BEAM DETAILS	JKR / CKAS / P-IBS / PEL 19 /	BRR	/	1(5)
2.2	PRECAST RECTANGULAR BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL19 /	BRR	/	2(5)
2.3	PRECAST RECTANGULAR BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	BRR	/	3(5)
2.4	PRECAST RECTANGULAR BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	BRR	/	4(5)
2.5	PRECAST RECTANGULAR BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	BRR	/	5(5)
2.6	PRECAST BEAM - INVERTED T DETAILS	JKR / CKAS / P-IBS / PEL 19 /	BRT	/	1(1)
2.7	PRECAST BEAM - INVERTED T BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRT	/	1(15)
2.8	PRECAST BEAM - INVERTED T BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRT	/	2(15)
2.9	PRECAST BEAM - INVERTED T BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRT	/	3(15)
2.10	PRECAST BEAM - INVERTED T BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRT	/	4(15)
2.11	PRECAST BEAM - INVERTED T BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRT	/	5(15)
2.12	PRECAST BEAM - INVERTED T BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRT	/	6(15)
2.13	PRECAST BEAM - INVERTED T BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRT	/	7(15)
2.14	PRECAST BEAM - INVERTED T BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRT	/	8(15)
2.15	PRECAST BEAM - INVERTED T BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRT	/	9(15)
2.16	PRECAST BEAM - INVERTED T BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRT	/	10(15)
2.17	PRECAST BEAM - INVERTED T BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRT	/	11(15)
2.18	PRECAST BEAM - INVERTED T BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRT	/	12(15)
2.19	PRECAST BEAM - INVERTED T BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRT	/	13(15)
2.20	PRECAST BEAM - INVERTED T BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRT	/	14(15)
2.21	PRECAST BEAM - INVERTED T BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRT	/	15(15)
2.22	PRECAST BEAM - L SHAPED BEAM DETAILS	JKR / CKAS / P-IBS / PEL 19 /	BRL	/	1(1)
2.23	PRECAST BEAM - L SHAPED BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRL	/	1(8)
2.24	PRECAST BEAM - L SHAPED BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRL	/	2(8)
2.25	PRECAST BEAM - L SHAPED BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRL	/	3(8)
2.26	PRECAST BEAM - L SHAPED BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRL	/	4(8)
2.27	PRECAST BEAM - L SHAPED BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRL	/	5(8)
2.28	PRECAST BEAM - L SHAPED BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRL	/	6(8)
2.29	PRECAST BEAM - L SHAPED BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRL	/	7(8)
2.30	PRECAST BEAM - L SHAPED BEAM SCHEDULE	JKR / CKAS / P-IBS / PEL 19 /	JRL	/	8(8)

LIST OF DRAWING

NO	TITLE	DRAWING NO.
3	PRECAST COLUMN	
3.1	PRECAST SQUARE COLUMN	JKR / CKAS / P-IBS / PEL 19 / CS / 1(5)
3.2	TABLE 1- PRECAST SQUARE COLUMN	JKR / CKAS / P-IBS / PEL19 / CS / 2(5)
3.3	TABLE 1- PRECAST SQUARE COLUMN	JKR / CKAS / P-IBS / PEL 19 / CS / 3(5)
3.4	PRECAST RECTANGULAR COLUMN	JKR / CKAS / P-IBS / PEL 19 / CR / 4(5)
3.5	TABLE 2- PRECAST RECTANGULAR COLUMN	JKR / CKAS / P-IBS / PEL 19 / CR / 5(5)
4	PRECAST HALF SLAB	
4.1	PRECAST HALF SLAB (2 HOUR FIRE RESISTANCE) (SHEET 1/2)	JKR / CKAS / P-IBS / PEL 19 / PHS / 1(2)
4.2	PRECAST HALF SLAB (2 HOUR FIRE RESISTANCE) (SHEET 2/2)	JKR / CKAS / P-IBS / PEL 19 / PHS / 2(2)
5	PRECAST STAIRCASE	
5.1	PRECAST STAIRCASE TYPE 1 (1/2) (2 HOUR FIRE RATED)	JKR / CKAS / P-IBS / PEL 19 / ST2HR / 1-01 (6)
5.2	PRECAST STAIRCASE TYPE 1 (2/2) (2 HOUR FIRE RATED)	JKR / CKAS / P-IBS / PEL 19 / ST2HR / 1-02 (6)
5.3	PRECAST STAIRCASE TYPE 2 (2 HOUR FIRE RATED)	JKR / CKAS / P-IBS / PEL 19 / ST2HR / 2-03 (6)
5.4	PRECAST STAIRCASE TYPE 3 (1/2) (2 HOUR FIRE RATED)	JKR / CKAS / P-IBS / PEL 19 / ST2HR / 3-04 (6)
5.5	PRECAST STAIRCASE TYPE 3 (2/2) (2 HOUR FIRE RATED)	JKR / CKAS / P-IBS / PEL 19 / ST2HR / 3-05 (6)
5.6	PRECAST STAIRCASE TYPE 4 (2 HOUR FIRE RATED)	JKR / CKAS / P-IBS / PEL 19 / ST2HR / 4-06 (6)

LIST OF DRAWING

NO	TITLE	DRAWING NO.
6	PRECAST CONNECTION	
6.1	PRECAST CORBEL CONNECTION (2 HOUR)	JKR / CKAS / P-IBS / PEL 19 / CN / CR 1 (14)
6.2	PRECAST CORBEL CONNECTION TABLE (2 HOUR)	JKR / CKAS / P-IBS / PEL 19 / CN / CR 2 (14)
6.3	PRECAST BEAM ON COLUMN CONNECTION (DIRECT SEATING - BCDS)	JKR / CKAS / P-IBS / PEL 19 / CN / BCDS 1 (14)
6.4	PRECAST BEAM WITH HALF-JOINT	JKR / CKAS / P-IBS / PEL 19 / CN / HJ 1 (14)
6.5	PRECAST BEAM WITH HALF - JOINT TABLE 1 (1/2) (2 HOUR FIRE RATED)	JKR / CKAS / P-IBS / PEL 19 / CN / HJ 2 (14)
6.6	PRECAST BEAM WITH HALF - JOINT TABLE 1 (2/2) (2 HOUR FIRE RATED)	JKR / CKAS / P-IBS / PEL 19 / CN / HJ 3 (14)
6.7	PRECAST BEAM WITH HALF - JOINT TABLE 2 (1/2) (2 HOUR FIRE RATED)	JKR / CKAS / P-IBS / PEL 19 / CN / HJ 4 (14)
6.8	PRECAST BEAM WITH HALF - JOINT TABLE 2 (2/2) (2 HOUR FIRE RATED)	JKR / CKAS / P-IBS / PEL 19 / CN / HJ 5 (14)
6.9	PRECAST BEAM WITH HALF - JOINT TABLE 3 (1/2) (2 HOUR FIRE RATED)	JKR / CKAS / P-IBS / PEL 19 / CN / HJ 6 (14)
6.10	PRECAST BEAM WITH HALF - JOINT TABLE 3 (2/2) (2 HOUR FIRE RATED)	JKR / CKAS / P-IBS / PEL 19 / CN / HJ 7 (14)
6.11	PRECAST BEAM WITH HALF - JOINT TABLE 4 (1/2) (2 HOUR FIRE RATED)	JKR / CKAS / P-IBS / PEL 19 / CN / HJ 8 (14)
6.12	PRECAST BEAM WITH HALF - JOINT TABLE 4 (2/2) (2 HOUR FIRE RATED)	JKR / CKAS / P-IBS / PEL 19 / CN / HJ 9 (14)
6.13	TYPICAL DETAIL OF NIB CONNECTION	JKR / CKAS / P-IBS / PEL 19 / CN / NIB 1 (14)
6.14	NIB CONNECTION TABLE (2 HOUR FIRE RATED)	JKR / CKAS / P-IBS / PEL 19 / CN / NIB 2 (14)
7	PRECAST PRE-STRESSED PLANK	
7.1	PRECAST PRE-STRESSED PLANK	JKR / CKAS / P-IBS / PEL 19 / (PPP) / (1/1)

NOTES

PRECAST CONCRETE GENERAL NOTES

1. CONCRETE

1.1 Maximun aggregate size shall be 20mm.

1.2 Unless otherwise stated, all concrete strength shall be minimum class C30/37.

1.3 Unless otherwise specified, nominal concrete cover with 2 hours fire resistance of precast concrete members to the nearest reinforcement shall be as follows:

Beams	: 55mm
Slabs	: 45mm
Columns	: 55mm
Staircase	: 45mm

1.4 All placing and compacting shall be carried out as referred to Section D in latest revision of Standard Specification For Building Works and Specification for Precast Concrete Works unless otherwise specified.

2. REINFORCEMENT

2.1 Unless otherwise stated, all steel reinforcement bars and welded steel fabric reinforcement with minimum steel fabric reinforcement mesh A252 ($252mm^2/m$) shall comply with the requirements of MS 145 & MS 146 respectively.

2.2 'H' denotes high yield steel of yield strength = $500\ N/mm^2$
Steel fabric reinforcement mesh – 'A' mesh = $500\ N/mm^2$

2.3 Lap length of compression and tension (high yield) bars should be refer to MS EN 1992-1-1 Clause 8.7.

3. PRECAST BEAM

3.1 MATERIALS

a. Concrete strength of precast prestressed beams shall be minimum class C40/50

b. Concrete strength of precast reinforced beams shall be minimum class C30/37

c. Concrete strength of infill concrete on Precast Beam top shall be minimum class C30/37

d. Reinforcement – to comply to item 2.

3.2 INSTALLATION OF PRECAST BEAMS

Precast beams shall be hoisted with the chain of sufficient capacity to minimise handling damages. Precast beams shall be supported on column's corbel or connector and are unpropped (unless otherwise stated) during installation of precast slab.

Concreting of topping and other imposed construction loads can only be applied after infill concrete have gained sufficient strength (concrete strength shall be minimum C30/37).

3.3 ANTI CRACKING BAR FOR BEAM EXCEEDING 1000mm OVERALL DEPTH

To control cracking, additional skin reinforcement should be provided at a spacing not exceeding 200mm on the side faces of the beam.
This reinforcement should be evenly distributed between the level of tension steel and located within the links.

4. PRECAST COLUMN

4.1 MATERIALS

a. Concrete strength of precast column shall be minimum class C30/37.

b. Concrete filling at the junction between beams and columns shall be minimum class C30/37

c. Reinforcement – to comply to item 2.

4.2 DESIGN

All jointing between precast column and foundation shall be grouted sleeve connections, that is, by the method of grouting the bars projecting from the lower column or foundation into corrugated sleeves cast in the precast column.

4.3 INSTALLATION OF PRECAST COLUMNS

Pitching of precast column is by hoisting at the lifting hook provided at the top of column. Precast column shall be guided carefully by slotting the sleeves into the protruding bars from the foundation or lower columns.

Column shall be held vertically during construction by push-pull props rigidly secured to the precast column and to a sufficiently strong stable kentledge e.g. concrete blocks, beams or slabs.

After the precast columns have been surveyed and aligned the corrugated sleeve shall be grouted. Before the grout gain sufficient strength, the props shall not be disturbed or removed. For column to column connections, the column/beam junction shall have to be fixed with column's stirrups prior to concreting the in-situ portion of column at beam junction.

5. PRECAST HALF SLAB

5.1 MATERIALS

a. Concrete strength of precast halfslab shall be minimum class C30/37.

b. Concrete filling at the junction between beams, columns and slab shall be minimum class C30/37

c. Reinforcement – to comply to item 2.

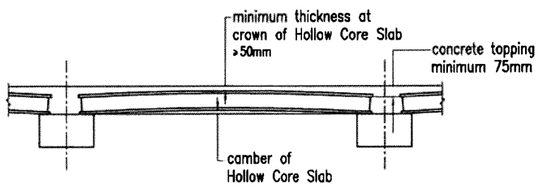
5.2 INSTALLATION OF PRECAST HALF SLAB

Precast half slab shall be hoisted with a lifting beam or wire rope with sufficient capacity to minimise handling damages. Precast half slab shall be propped (unless otherwise stated) during installation.

Concreting of topping and other imposed construction loads can only be applied after infill concrete have gained sufficient strength (concrete strength shall be minimum class C30/37)

6. PRECAST PRESTRESSED HOLLOW CORE SLABS

6.1 Structural concrete topping minimum 75mm average shall be cast on top of precast slabs and supporting beam with one layer of steel fabric reinforcement mesh, minimum A252 ($252\ mm^2/m$). The top of the topping shall be the final finish level.



6.2 MATERIALS

a. Concrete strength of precast prestressed hollow core slabs shall not be less than minimum class C40/50.

b. Concrete strength of concrete topping on precast slabs shall not be less than minimum class C30/37.

c. Prestressing steel shall be relaxation strands conforming to relevant BS 5896: 2012 and MS EN 1992-1-1 Clause 3.3 with relaxation class 2.

6.3 DESIGN

a. All precast stresssed slabs shall be designed as XC3 exposure class of MS EN 1992-1-1.

b. The design of precast hollow core slabs shall allow for the provision of openings for electrical,mechanical and other services ducts and drain pipes.

c. The initial camber and final deflection of precast units shall not exceed the allowable limits specified in MS EN 1992-1-1.

6.4 INSTALLATION OF HOLLOW CORE SLABS

Hollow Core Slabs shall be hoisted with a lifting beam top-lift clamps and accessory safety chains or belts of sufficient capacity to minimise handling damages. Hollow Core Slabs shall be checked during installation.

6.5 JOINTING

Hollow Core slabs shall be jointed with grout or equivalent grout and joints provided with reinforcement bars if shown in the drawing. Joint grooves shall be dampened before filling the joint grooves with concrete which shall be compacted by 25mm immersion type vibrator. Compaction of joint concrete shall be accomplished by dragging vibrator along joint groove. The underside of joint groove shall be brushed clean within an hour after jointing operation to form a neat drip-free V-groove.

6.6 DRAINAGE HOLES

A series of 10mm dia. drainage holes are to be drilled at both ends of floor slab soffit to drain off any water which may have collected in slabs and to be kept open by the Contractor during the construction period. Where painting, plastering or application of special finishes is required, the drainage holes shall be filled with cementitious fillers or equivalent. The filling operation shall be done by the Contractor. However, drainage holes are not required for hollow core slabs at ground floor areas.

6.7 OPENINGS

Openings exceeding 200mm in dia.(or square) in hollow-core slabs for joint connections or M&E installation should be performed in green concrete at the factory provided that advance notice is given before production. Openings not made in factory shall be made by the contractor at site by hacking or by diamond-tipped coring drill under the S.O's supervision. After fixing installation (or reinforcement) all openings and recesses shall be filled concrete with minimum class C30/37. Circular voids affected by the openings shall be sealed with tight fit synthetic caps. Works for large openings shall be undertaken by Contractor in strict compliance with contractor instruction and the construction detail shall be approved by the S.O's. All works related to the making good at the openings shall be carried out by the Contractor.

6.8 FINISHES

Oil, dirt, loose mortar and etc., shall be removed prior to application of topping and surface shall be dampened (no standing water) 1-2 hours before laying topping concrete. No ponding of water is allowed. Laying of topping shall be done orderly in strip formation to achieve correct level and avoid cold joints. Poker vibrator shall be used to vibrate the topping. The vibrator shall be dragged along the surface of fresh concrete at intervals not exceeding 200mm. Retarding and super plasticising admixture is to be added into the mix. Topping concrete shall be cured for at least 3 days to avoid plastic crack and to reduce shrinkage crack.

7. LEAN CONCRETE

Unless otherwise stated, a 50 mm thick lean concrete layer shall be provided on all soil surfaces forming the underside of any reinforced concrete beams, slabs, rafts, pilecaps or drains. Lean concrete shall be class C8/10.

8. RECOMMENDED MINIMUM CONCRETE STRENGTH FOR LIFTING AND HANDLING

Application	Minimum concrete strength, fc, cube
Lifting which involves significant impact or high acceleration	$15\ N/mm^2$*
All units where concrete strength for lifting is specified in contract document	2/3 of required design concrete strength
Eccentrically pre-stressed elements (tees, deep flooring units)	$25\ N/mm^2$

* Dependent on anchor length or as recommended by insert manufacturer or otherwise specified.

Note : Special care should be taken with pre-stressed elements to ensure lifting devices are anchored in compression zones, unless covered by specific design.

fc, cube = Minimum concrete strength for lifting and handling.

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HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

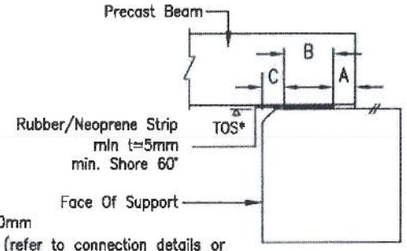
TAJUK LUKISAN :

GENERAL NOTES
(PRECAST CONCRETE)

DILUKIS : MOHAMAD NAZRI BIN ABDULLAH
TARIKH : NOVEMBER 2019 | SKALA : N.T.S
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/NA 01

9. BEARING PAD

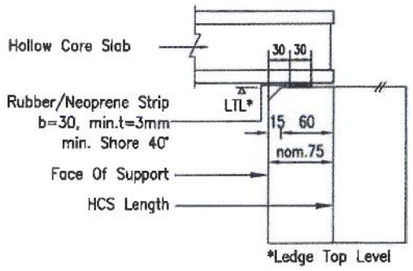
9.1 TYPICAL BEARING PAD SEATING FOR BEAM



A = min 60mm
B = varies (refer to connection details or manufacturer recommendation)
C = min 25 mm

*Top Of Support

9.2 TYPICAL BEARING PAD SEATING FOR HOLLOW CORE SLAB



*Ledge Top Level

10. TIES

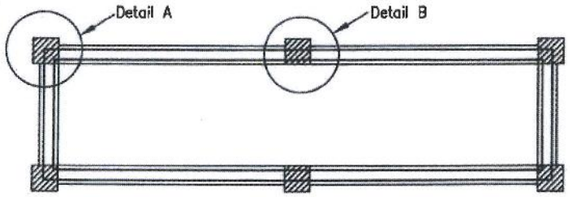
The necessary interaction between elements is obtained by tying the structure together using the following types of ties in MS EN 1992-1-1.

a. Peripheral ties
b. Internal ties
c. Horizontal ties to column and walls
d. Where required, vertical ties, particularly in panel buildings.

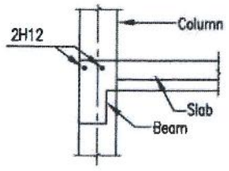
Each section should have an appropriate tying system when a building are divided by expansion joints into structurally independent sections.

Ties may be provided wholly within in-situ concrete toppings or connections partially within in-situ concrete and partially within precast members or wholly within precast members but they should be effectively continuous.

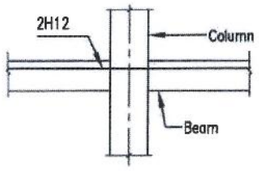
Unless otherwise stated, minimum 12mm diameter must be used for ties.



PLAN VIEW



Detail A



Detail B

11. GROUTING

11.1 The contractor shall submit all the method statement for mixing, placing and testing the grout for the approval of the S.O.

11.2 Designed mixes shall be submitted to the S.O for approval. The grout shall be of high fluidity and cohesive at plastic and non shrinkage during hardening.

11.3 The grout shall be mixed in grout mixer and have a composition of ordinary Portland cement, water, sand and filler with approved grout additive. The water/cement ratio shall be between 0.4 to 0.6 or such other proportion as shall be directed by the S.O./P.D. Grout shall be pumped into each duct until grout pours out of the outlet and pumping shall be continued until a pressure of minimum 0.1MPa (15psi) is attained. The high pressure cork shall remain closed and in position for a period of one hour after grouting.

11.4 The method of sampling and testing of grout shall be carried out in accordance to Clause 8.1 of latest revision of Specification For Precast Concrete Works.

11.5 The compressive strength shall be determined with reference to BS EN 445 by crushing test on prismatic specimen 40 x 40 mm in cross section and 160 mm in length.

11.6 For each casting day and for each grade of batches, three (3) samples shall be taken. Two (2) specimens shall be cast from each sample for testing at seven (7) and 28 days.

11.7 Otherwise specified, the acceptance strength shall be deemed to be satisfied when the grouting strength is greater than the specified characteristic strength of precast concrete.

11.8 The fluidity of the grout can be assessed through grout spread method in accordance to BS EN 445.

12. INCORPORATION OF M&E REQUIREMENTS IN STRUCTURE

12.1 The contractor shall incorporate all mechanical, sanitary and electrical work, to be embedded in the concrete, or openings for pipes or duct work, as shown in the services drawings included in the contract. The contractor shall check with the drawings and confirm with the Engineer in this regard, and sort out discrepancies, if any, before concreting.

12.2 The contractor is to submit coordinated shop drawings based on the latest Architectural and M&E construction drawings for S.O's approval before fabrication. A set of coordinated penetration shall be submitted for approval.

12.3 For toilets and kitchen areas, the contractor is to coordinate the pipes & conduits to be laid within the screed thickness.

12.4 For the purpose, if requested by the contractor, the S.O's may permit slab panel to allow thicker screed.

12.5 The contractor shall provide plinths, hangers and other such M&E services supports as may be required. Where so directed by the S.O's, the contractor shall design these supports and submit them to the S.O's for approval, together with the contractor's PE endorsemenet where necessary.

13. CORRUGATED SLEEVE

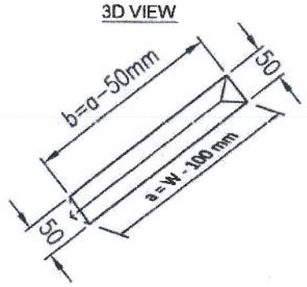
13.1 The diameter of corrugated sleeve and the appropriate dowel bar size shall be refer to Clause 8.2 latest revision of Specification for Precast Concrete Works unless otherwise specified.

Corrugated Sleeve Diameter (mm)	Dowel Bar Size (mm)
45	10, 12
55	16, 20, 25
65	25, 32
75	32

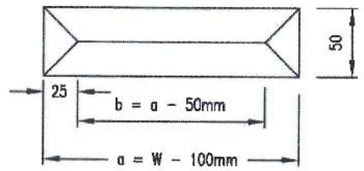
14. SHEAR KEY

Shear key for beam component are place at the both end as below : -

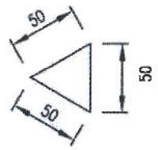
3D VIEW

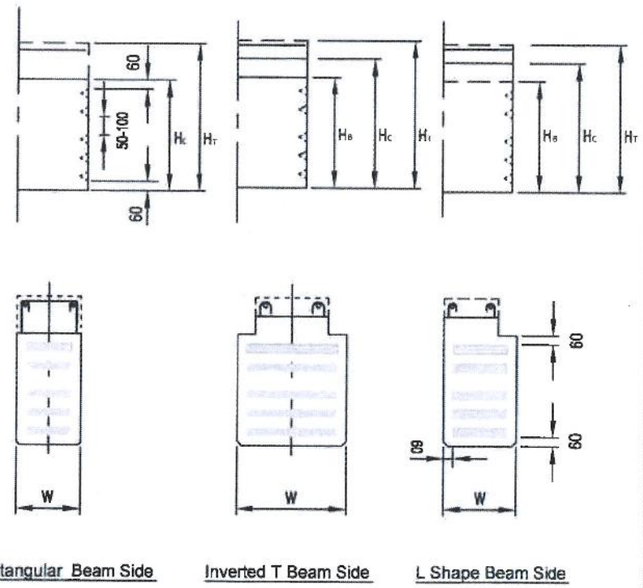


PLAN VIEW



SIDE VIEW





Rectangular Beam Side | Inverted T Beam Side | L Shape Beam Side

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DISEMAK :
CHONG AI LING

DIREKABENTUK :
MOHAMAD NAZRI BIN ABDULLAH

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

GENERAL NOTES
(PRECAST CONCRETE)

DILUKIS : MOHAMAD NAZRI BIN ABDULLAH

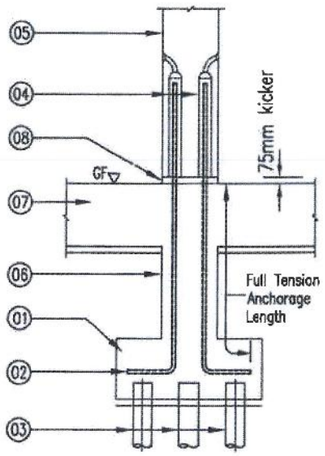
TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/NA 02

TYPICAL DRAWINGS :

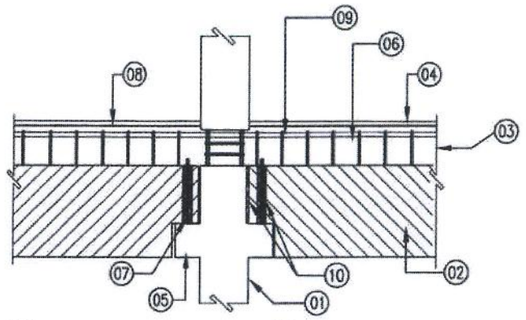
1. TYPICAL CONNECTION

1.1 PRECAST COLUMN CONNECTION AT GROUND LEVEL



(01) – R.C. Pile cap
(02) – Column Starter Bar. Use MS template or equivalent for positioning of starter bars. To be removed after casting of pilecaps
(03) – Pile
(04) – Corrugated sleeve (grouted with high non-shrink grout)
(05) – Precast Column
(06) – Stump
(07) – Cast in-situ Beam
(08) – Grouting

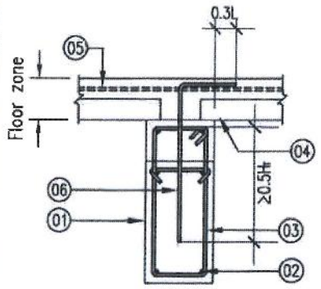
1.2 CONNECTION BETWEEN PRECAST COLUMN & PRECAST BEAM



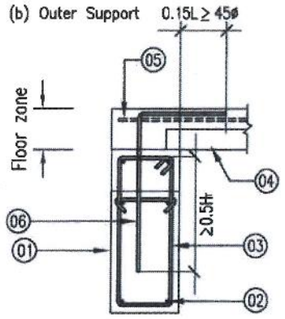
(01) –Precast Column
(02) –Precast Beam
(03) –Precast Slab
(04) –Structural topping
(05) –Column nib
(06) –Concrete infill to precast beam top
(07) –Dowel bar reinforcement
(08) –Steel fabric reinforcement mesh
(09) –Precast Beam Top Reinforcement
(10) –Grouting

1.3 CONNECTION BETWEEN RECTANGULAR BEAM AND PRECAST SLAB

(a) Interior Support

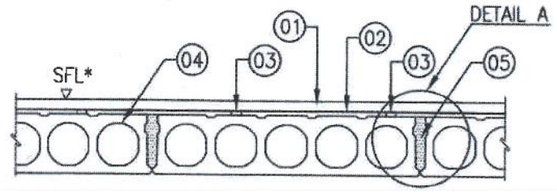


(b) Outer Support

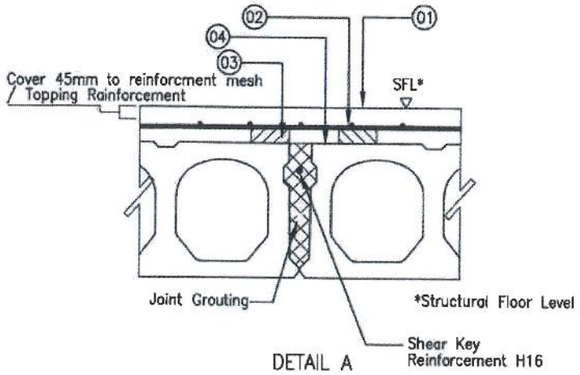


(01) – Precast rectangular beam
(02) – Rectangular beam reinforcement bar
(03) – Projected links from precast beam
(04) – Precast slab
(05) – Steel fabric reinforcement mesh
(06) – H12–200 projecting dowel :
*1.3(a) – The dowel shall be bent alternately to the right and left side of slab.

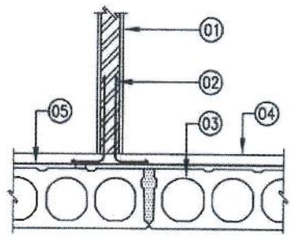
2. TYPICAL FLOOR STRUCTURE DETAIL



(01) –Structural topping (composite) concrete with minimum strength class C30/37
(02) –Steel fabric reinforcement mesh
(03) –30mm thk. Concrete Spacer
(04) –Prestressed Precast Hollow Core Slab
(05) –Shear key grout

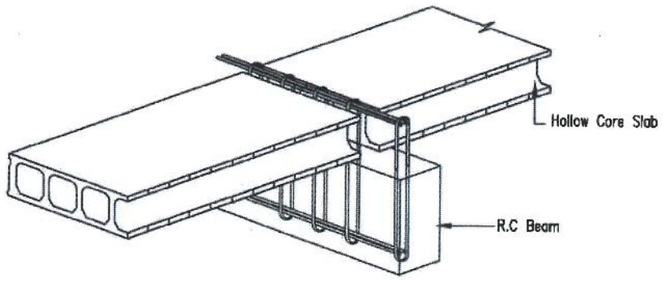


3. TYPICAL BRICKWALL STIFFENER ON HOLLOW CORE SLAB



(01) –Stiffener
(02) –Dowel starter reinforcement
(03) –Hollow Core Slab
(04) –Structural topping concrete minimum class C30/37
(05) –Steel fabric reinforcement mesh

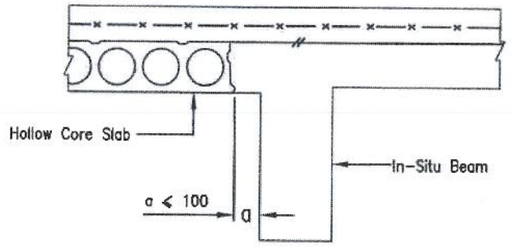
note:
Concrete topping to be completed before laying any brickwalls to ensure water tightness.



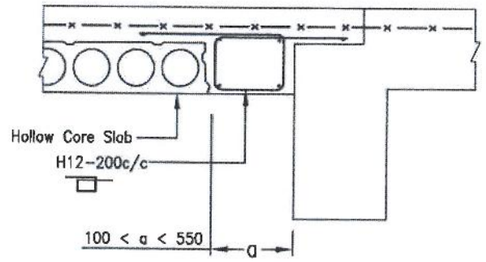
Continuity of ties: bar in precast member lapped with bar in-situ concrete

4. IN-SITU MAKE-UP STRIP DETAIL

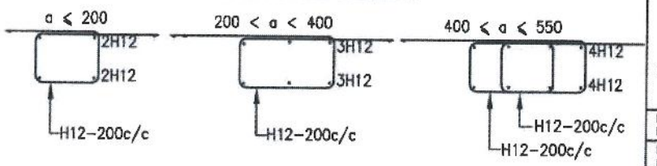
4.1 NO REINFORCEMENT REQUIRED



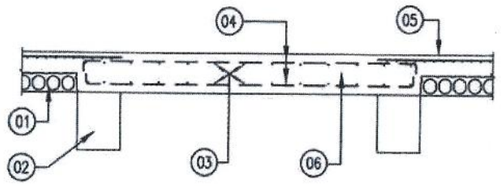
4.2 REINFORCEMENT REQUIRED



Reinforcement at HCS pockets



5. TYPICAL CROSS SECTION DETAILS FOR CAST IN-SITU SLAB ADJACENT / WITHIN PRECAST FLOOR AREA



(01) – Hollow Core Slab
(02) – Precast Beam/Cast in-situ slab
(03) – Cast in-situ Slab rebar detail
(04) – Cast in-situ Slab rebar detail
(05) – Concrete Topping C30/37
(06) – Cast in-situ slab

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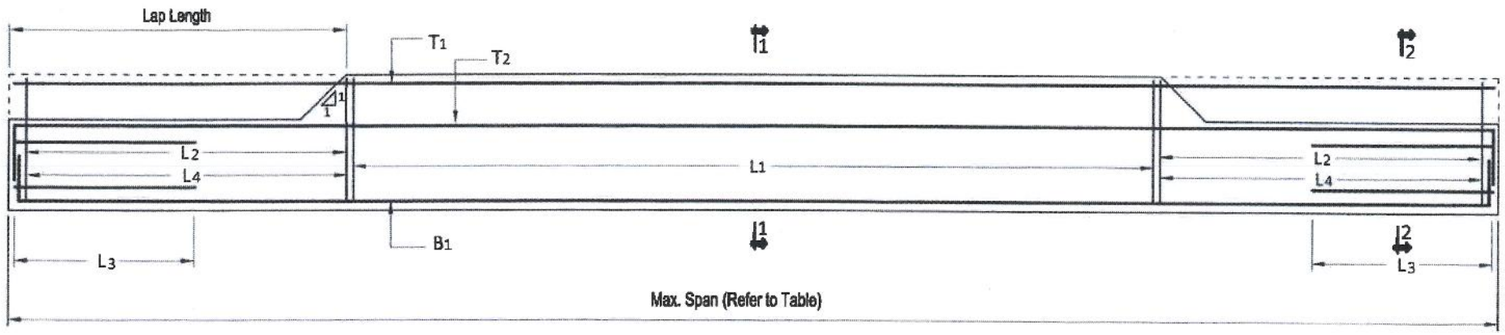
NAMA PROJEK :
LUKISAN PIAWAI KOMPONEN STRUKTUR IBS BAGI BANGUNAN

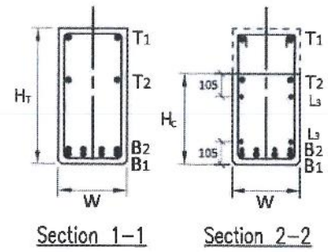
TAJUK LUKISAN :
TYPICAL DRAWINGS (PRECAST CONCRETE)

DILUKIS : MOHAMAD NAZRI BIN ABDULLAH
TARIKH : NOVEMBER 2019 | SKALA : N.T.S
NO. LUKISAN : JKR/CKAS/P–IBS/PEL 19/TC 01

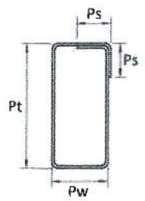
PRECAST

BEAM

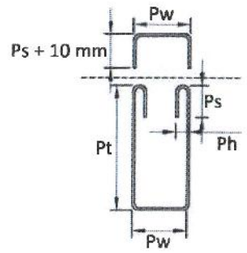




ELEVATION OF PRECAST BEAM



L_1 & L_4



L_2

CODE OF COMPONENTS

B R - 3 0 5 0 - 4 H 16

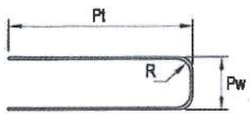
- Bottom Reinforcement of the component (4H16))
- Total Height, H_T (500 mm)
- Width of Breadth, W (300 mm)
- Types of Beam, (Beam Rectangular)

LINKS (L_1)				
Pt	Pw	Ps	Ph	R
H_T − 110	W− 110	10ø	−	2ø

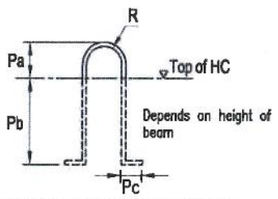
LINKS (L_2)				
Pt	Pw	Ps	Ph	R
H_T − 110	W− 110	80	−	2ø

CONCRETE GRADE (N/mm²)	PRECAST	IN-SITU	LAP LENGTH
	C30/37	C30/37	C30/37

LINKS (L_4)				
Pt	Pw	Ps	Ph	R
H_C − 110	W− 110	10ø	−	2ø



L_3



* Position of Lifting Hook at distance of 0.2 L from side of beam

Notation

W = Breadth of component
W_{ub} = Width of upstand
H_T = Total height of component
H_C = Height of the component during installation
H_B = Height of boot
M_i = Maximum moment capacity during installation
V_i = Maximum shear capacity during installation
M_f = Maximum moment capacity at mid span for final stage
V_f = Maximum shear capacity for final stage

SHEAR FRICTION STEEL (L_3)				
Pt	Pw	Ps	Ph	R
800	W− 130	−	−	6ø

LIFTING HOOK				
Pa	Pb	Pc	R	Ø bar
120	H_C − 100	45ø − Pb	60	H20

JKR

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JURUTERA AWAM KANAN :
Ir. SAMSAH BINTI SULAIMAN
DISEMAK :
CHONG AI LING
DIREKABENTUK :
MOHAMAD NAZRI BIN ABDULLAH

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST RECTANGULAR BEAM DETAILS

DILUKIS : MOHAMAD KHAIRANI BIN YUB

TARIKH : NOVEMBER 2019 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/BRR/1(5)

PRECAST BEAM - 300X500 RECTANGULAR BEAM

	BEAM SIZE					INSTALLATION STAGE		FINAL STAGE		TOP REINFORCEMENT			BOTTOM REINFORCEMENT		LINKS		
DESIGNATION	W (mm)	H_T (mm)	H_C (mm)	H_B (mm)	Max Span (mm)	M_i (KNm)	V_i (KN)	M_f (KNm)	V_f (KN)	T_1	T_2	T_3	B_1	B_2	L_1	L_2	L_3
BR-3050-4H16	300	500	300	-	4500	100	135	130	310	2H12	2H12	-	4H16	-	H10-200	H10-200	3H12 @150c/c
					6000	100		130									
					7000	100		130									
BR-3050-4H20	300	500	300	-	4500	150	135	190	310	2H12	2H12	-	4H20	-	H10-200	H10-200	3H12 @150c/c
					6000	150		190									
					7000	150		190									
BR-3050-4H20/16	300	500	300	-	4500	180	110	220	300	2H12	2H12	-	4H20	4H16	H10-175	H10-175	3H12 @150c/c
					6000	180		220									
					7000	170		210									

PRECAST BEAM - 300X600 RECTANGULAR BEAM

	BEAM SIZE					INSTALLATION STAGE		FINAL STAGE		TOP REINFORCEMENT			BOTTOM REINFORCEMENT		LINKS		
DESIGNATION	W (mm)	H_T (mm)	H_C (mm)	H_B (mm)	Max Span (mm)	M_i (KNm)	V_i (KN)	M_f (KNm)	V_f (KN)	T_1	T_2	T_3	B_1	B_2	L_1	L_2	L_3
BR-3060-4H16	300	600	400	-	6000	135	180	165	330	2H12	2H12	-	4H16	-	H10-200	H10-200	3H12 @150c/c
					7800	135		165									
					9000	135		165									
BR-3060-4H20	300	600	400	-	6000	150	180	190	330	2H12	2H12	-	4H20	-	H10-200	H10-200	3H12 @150c/c
					7800	150		190									
					9000	150		190									
BR-3060-4H20/16	300	600	400	-	6000	200	160	240	320	2H12	2H12	-	4H20	4H16	H10-175	H10-175	3H12 @150c/c
					7800	200		240									
					9000	200		240									

JKR

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JURUTERA AWAM KANAN :
Ir. SANISAH BINTI SULAIMAN

DISEMAK :
CHONG AI LING

DIREKABENTUK :
MOHAMAD NAZRI BIN ABDULLAH

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST RECTANGULAR BEAM
SCHEDULE

DILUKIS : MOHAMAD KHAIRANI BIN YUB

TARIKH : NOVEMBER 2019 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/BRR/2(5)

PRECAST BEAM - 300X700 RECTANGULAR BEAM

	BEAM SIZE					INSTALLATION STAGE		FINAL STAGE		TOP REINFORCEMENT			BOTTOM REINFORCEMENT		LINKS		
DESIGNATION	W (mm)	H_T (mm)	H_C (mm)	H_B (mm)	Max Span (mm)	M_i (KNm)	V_i (KN)	M_f (KNm)	V_f (KN)	T_1	T_2	T_3	B_1	B_2	L_1	L_2	L_3
BR-3070-4H16	300	700	500	-	7500	140	190	190	350	2H12	2H12	-	4H16	-	H10-200	H10-200	3H12 @150c/c
					8100	140		190									
					9600	140		190									
BR-3070-4H20	300	700	500	-	7500	230	190	270	350	2H12	2H12	-	4H20	-	H10-200	H10-200	3H12 @150c/c
					8100	230		270									
					9600	220		260									
BR-3070-4H20/16	300	700	500	-	7500	340	200	400	370	2H12	2H12	-	4H20	4H16	H10-175	H10-175	3H12 @150c/c
					8100	340		400									
					9600	280		340									

PRECAST BEAM - 300X800 RECTANGULAR BEAM

	BEAM SIZE					INSTALLATION STAGE		FINAL STAGE		TOP REINFORCEMENT			BOTTOM REINFORCEMENT		LINKS		
DESIGNATION	W (mm)	H_T (mm)	H_C (mm)	H_B (mm)	Max Span (mm)	M_i (KNm)	V_i (KN)	M_f (KNm)	V_f (KN)	T_1	T_2	T_3	B_1	B_2	L_1	L_2	L_3
BR-3080-4H16	300	800	600	-	7500	180	220	230	400	2H12	2H12	-	4H16	-	H10-200	H10-200	3H12 @150c/c
					8100	180		230									
					9600	170		210									
BR-3080-4H20	300	800	600	-	7500	290	220	340	400	2H12	2H12	-	4H20	-	H10-200	H10-200	3H12 @150c/c
					8100	290		340									
					9600	270		320									
BR-3080-4H20/16	300	800	600	-	7500	450	240	500	430	2H12	2H12	-	4H20	4H16	H10-175	H10-175	3H12 @150c/c
					8100	450		500									
					9600	420		470									

JKR

JABATAN KERJA RAYA MALAYSIA
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50480 KUALA LUMPUR
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Ir. ANITA BINTI MOHAMED SHAFIE

JURUTERA AWAM KANAN :
Ir. SAMSIAH BINTI SULAIMAN

DISEMAK :
CHONG AI LING

DIREKABENTUK :
MOHAMAD HAZRI BIN ABDULLAH

NURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST RECTANGULAR BEAM
SCHEDULE

DILUKIS : NURUL SYAFIKA BINTI NOR RIZAN

TARIKH : NOVEMBER 2019 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/BRR/3(5)

PRECAST BEAM - 350X700 RECTANGULAR BEAM

DESIGNATION	BEAM SIZE					INSTALLATION STAGE		FINAL STAGE		TOP REINFORCEMENT			BOTTOM REINFORCEMENT		LINKS		
	W (mm)	H_T (mm)	H_C (mm)	H_S (mm)	Max Span (mm)	M_i (KNm)	V_i (KN)	M_f (KNm)	V_f (KN)	T_1	T_2	T_3	B_1	B_2	L_1	L_2	L_3
BR-3570-4H16	350	700	500	-	7500	145	190	200	370	2H12	2H12	-	4H16	-	H10-200	H10-200	3H12 @150c/c
					8100	145		200									
					9600	145		200									
BR-3570-4H20	350	700	500	-	7500	240	190	285	370	2H12	2H12	-	4H20	-	H10-200	H10-200	3H12 @150c/c
					8100	240		285									
					9600	235		275									
BR-3570-4H25	350	700	500	-	7500	380	220	420	400	2H12	2H12	-	4H25	-	H10-175	H10-175	3H12 @150c/c
					8100	380		420									
					9600	330		370									

PRECAST BEAM - 350X800 RECTANGULAR BEAM

DESIGNATION	BEAM SIZE					INSTALLATION STAGE		FINAL STAGE		TOP REINFORCEMENT			BOTTOM REINFORCEMENT		LINKS		
	W (mm)	H_T (mm)	H_C (mm)	H_S (mm)	Max Span (mm)	M_i (KNm)	V_i (KN)	M_f (KNm)	V_f (KN)	T_1	T_2	T_3	B_1	B_2	L_1	L_2	L_3
BR-3580-4H16	350	800	600	-	7500	200	250	240	430	2H12	2H12	-	4H16	-	H10-200	H10-200	3H12 @150c/c
					8100	200		240									
					9600	190		230									
BR-3580-4H20	350	800	600	-	7500	320	280	360	460	2H12	2H12	-	4H20	-	H10-200	H10-200	3H12 @150c/c
					8100	320		360									
					9600	310		350									
BR-3580-4H25	350	800	600	-	6000	480	320	540	500	2H12	2H12	-	4H25	-	H10-175	H10-175	3H12 @150c/c
					7800	480		540									
					9000	460		520									
BR-3580-4H25/16	350	800	600	-	6000	590	350	650	530	2H12	2H12	-	4H25	4H16	H10-175	H10-175	3H12 @150c/c
					7800	590		650									
					9000	520		580									

JKR

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DISEMAK :
CHONG AI LING

DIREKABENTUK :
MOHAMAD NAZRI BIN ABDULLAH

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST RECTANGULAR BEAM
SCHEDULE

DILUKIS : NURUL SYAFIKA BINTI NOR RIZAN

TARIKH : NOVEMBER 2019 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/BRR/4(5)

PRECAST BEAM - 350X900 RECTANGULAR BEAM

	BEAM SIZE					INSTALLATION STAGE		FINAL STAGE		TOP REINFORCEMENT			BOTTOM REINFORCEMENT		LINKS		
DESIGNATION	W (mm)	H_T (mm)	H_C (mm)	H_S (mm)	Max Span (mm)	M_i (KNm)	V_i (KN)	M_f (KNm)	V_f (KN)	T_1	T_2	T_3	B_1	B_2	L_1	L_2	L_3
BR-3590-4H16	350	900	700	-	7500	240	320	270	460	2H12	2H12	-	4H16	-	H10-200	H10-200	3H12 @150c/c
					8100	240		270									
					9600	230		260									
BR-3590-4H20	350	900	700	-	7500	380	350	420	480	2H12	2H12	-	4H20	-	H10-200	H10-200	3H12 @150c/c
					8100	380		420									
					9600	370		410									
BR-3590-4H25	350	900	700	-	6000	580	450	620	630	2H12	2H12	-	4H25	-	H10-175	H10-175	3H12 @150c/c
					7800	580		620									
					9000	570		610									
BR-3590-4H32	350	900	700	-	6000	920	490	980	670	2H12	2H12	-	4H32	-	H10-175	H10-175	3H12 @150c/c
					7800	920		980									
					9000	900		960									

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CHONG AI LING

DIREKABENTUK :
MOHAMAD NAZRI BIN ABDULLAH

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

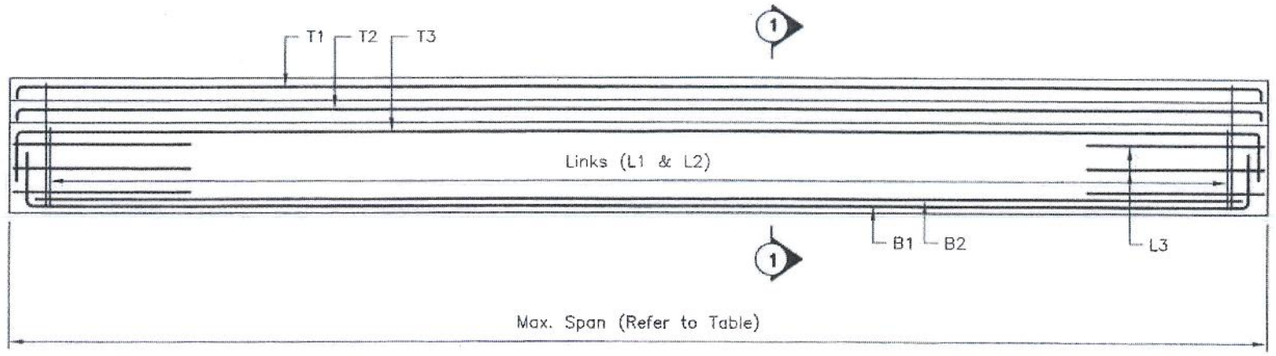
TAJUK LUKISAN :

PRECAST RECTANGULAR BEAM
SCHEDULE

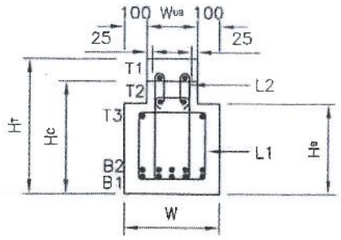
DILUKIS : NURUL SYAFIKA BINTI NOR RIZAN

TARIKH : NOVEMBER 2019 | SKALA : 1:25

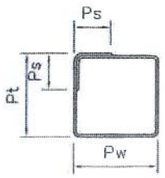
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/BRR/5(5)

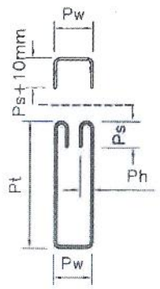


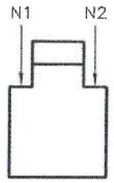
ELEVATION OF PRECAST BEAM



SECTION 1-1







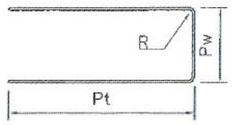
$N1 + N2 \leq Na$

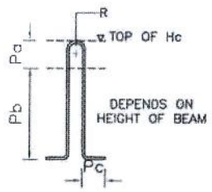
Max. Allowable Ultimate Axial Load, Na (kN per meter run of the boot)

LINK (L1)				
Pt	Pw	Ps	Ph	R
Hr−110	W−110	10ø	−	2ø

LINK (L2)				
Pt	Pw	Ps	Ph	R
Hr−110	Wua−50	80	40	2ø

CONCRETE GRADE (N/mm²)	PRECAST	In−situ	Lap Length
	C30/37	C30/37	0.25L





*POSITION OF LIFTING HOOK AT DISTANCE OF 0.2 L FROM SIDE OF BEAM.

SHEAR FRICTION STEEL (L3)				
Pt	Pw	Ps	Ph	R
800	W−130	−	−	6ø

LIFTING HOOK				
Pa	Pb	Pc	R	ø BAR
80	Hc−100	45ø−Pb	60	H20

NOTATION

- W = Breadth of component
- Wua = Width of upstand
- Hr = Total height of the component
- Hc = Height of the component during installation stage
- Hb = Height of the boot
- Mi = Maximum moment capacity at mid span during installation stage
- Vi = Maximum shear capacity during installation stage
- Mf = Maximum moment capacity at mid span for the final stage
- Vf = Maximum shear capacity for the final stage
- Na = Maximum allowable ultimate axial load for boot during final stage(kN/m)

CODE OF COMPONENTS

BT−4060−4H16−4

- Height of boot (H_b = 400mm)
- Bottom reinforcement of the component (4H16)
- Total height of the component (H_r = 600mm)
- Total breadth of the component (W = 400mm)
- Type of beam (Inverted T Beam)

SPECIFICATION

a) Minimum concrete grade (precast and cast in situ concrete) for installation stage and final stage is f_{ck} = 30N/mm² (f_{cu} =37N/mm²)

b) Minimum concrete compressive strength for first lifting is f_{ck} = 13N/mm² (f_{cu} = 15N/mm²)

c) The position of lifting hook at distance of 0.2L from end of beam and to be advised and checked by competent person.

d) The beam is designed as simply supported beam during installation stage (un prop) and during final stage.

e) Concrete infill (beam top and slab topping) are one stage casting

f) Each component will given 3 different of maximum span, where effect the value of Mi and Mf .

g) The design has been prepared in accordance with the BS EN 1992.

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HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM-INVERTED T
DETAILS

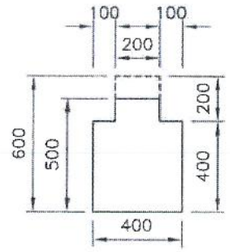
DILUKIS : SITI HAJAR BINTI MOHD NAFIAH

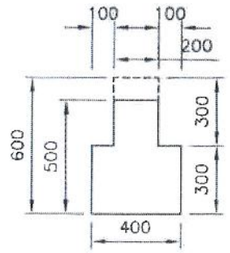
TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/BRT/1(1)

PRECAST BEAM – 400x600 INVERTED T

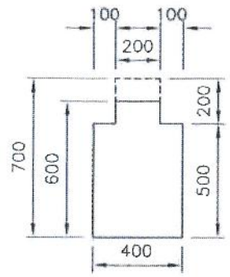
Designation	Beam Size W (mm)	Wus (mm)	Ht (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Installation Stage Mi (kNm)	Vi (kN)	Final Stage Mf (kNm)	Vf (kN)	Na (kN/m)	Top Reinforcement T1	T2	T3	Bottom Reinforcement B1	B2	Links L1(boot)	L2(main)	L3
BT–4060–4H16–4	400	200	600	500	400	6000	130	210	165	260	135	2H12	2H12	2H12	4H16	–	H10–250	H10–300	3H12 @ 100c/c
						7800	110		165										
						9000	90		140										
BT–4060–4H20–4	400	200	600	500	400	6000	180	210	240	260	135	2H12	2H12	2H12	4H20	–	H10–250	H10–300	3H12 @ 100c/c
						7800	145		225										
						9000	90		185										
BT–4060–4H16–3	400	200	600	500	300	6000	130	210	165	260	195	2H12	2H12	2H12	4H16	–	H10–175	H10–300	3H12 @ 50c/c
						7800	110		165										
						9000	90		140										

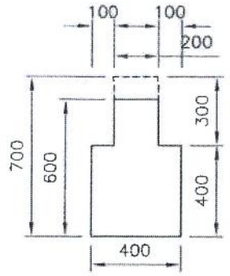




PRECAST BEAM – 400x700 INVERTED T

Designation	Beam Size W (mm)	Wus (mm)	Ht (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Installation Stage Mi (kNm)	Vi (kN)	Final Stage Mf (kNm)	Vf (kN)	Na (kN/m)	Top Reinforcement T1	T2	T3	Bottom Reinforcement B1	B2	Links L1(boot)	L2(main)	L3
BT–4070–4H16–5	400	200	700	600	500	7500	165	260	200	310	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H12 @ 150c/c
						8100	160		200										
						9600	125		180										
BT–4070–4H20–5	400	200	700	600	500	7500	235	260	295	310	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H12 @ 150c/c
						8100	210		295										
						9600	165		240										
BT–4070–4H16–4	400	200	700	600	400	7500	165	260	200	310	135	2H12	2H12	2H12	4H16	–	H10–250	H10–300	3H12 @ 100c/c
						8100	160		200										
						9600	125		180										
BT–4070–4H20–4	400	200	700	600	400	7500	235	260	295	310	135	2H12	2H12	2H12	4H20	–	H10–250	H10–300	3H12 @ 100c/c
						8100	210		295										
						9600	165		240										





JKR

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NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM–INVERTED T BEAM SCHEDULE

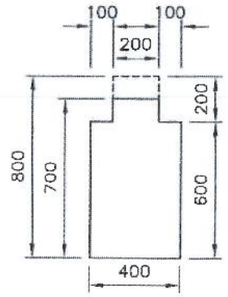
DILUKIS : SITI HAJAR BINTI MOHD NAJIAH

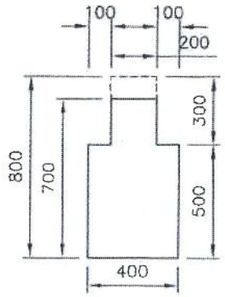
TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/JRT/1(15)

PRECAST BEAM – 400x800 INVERTED T

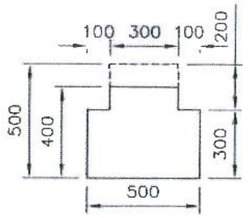
Designation	Beam Size W (mm)	Wus (mm)	Ht (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Installation Stage Mi (kNm)	Vi (kN)	Final Stage Mf (kNm)	Vf (kN)	Na (kN/m)	Top Reinforcement T1	T2	T3	Bottom Reinforcement B1	B2	Links L1(boot)	L2(main)	L3
BT–4080–4H16–6	400	200	800	700	600	8100	200	310	235	360	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 200c/c
						9000	195		235										
						9600	180		235										
BT–4080–4H20–6	400	200	800	700	600	8100	295	310	350	360	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 200c/c
						9000	260		350										
						9600	240		320										
BT–4080–4H25–6	400	200	800	700	600	8100	385	375	505	435	135	2H12	2H12	2H12	4H25	–	H10–250	H10–250	3H16 @ 200c/c
						9000	350		470										
						9600	320		430										
BT–4080–4H16–5	400	200	800	700	500	8100	200	310	235	360	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 150c/c
						9000	195		235										
						9600	180		235										
BT–4080–4H20–5	400	200	800	700	500	8100	295	310	350	360	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 150c/c
						9000	260		350										
						9600	240		320										





PRECAST BEAM – 500x500 INVERTED T

Designation	Beam Size W (mm)	Wus (mm)	Ht (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Installation Stage Mi (kNm)	Vi (kN)	Final Stage Mf (kNm)	Vf (kN)	Na (kN/m)	Top Reinforcement T1	T2	T3	Bottom Reinforcement B1	B2	Links L1(boot)	L2(main)	L3
BT–5050–4H16–3	500	300	500	400	300	4500	100	210	135	280	195	2H12	2H12	2H12	4H16	–	H10–175	H10–225	3H12 @ 50c/c
						6000	95		135										
						7200	80		135										
BT–5050–5H16–3	500	300	500	400	300	4500	120	210	160	280	195	2H12	2H12	2H12	5H16	–	H10–175	H10–225	3H12 @ 50c/c
						6000	110		160										
						7200	95		160										
BT–5050–4H20–3	500	300	500	400	300	4500	140	210	200	280	195	2H12	2H12	2H12	4H20	–	H10–175	H10–225	3H12 @ 50c/c
						6000	125		200										
						7200	110		180										



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DIREKABENTUK :
Ir. QOTRUNNADA BINTI ABD RAHMAN

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM–INVERTED T BEAM SCHEDULE

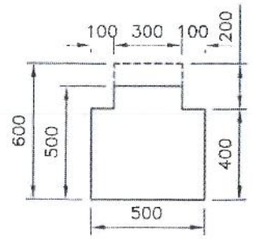
DILUKIS : SITI HAJAR BINTI MOHD MAFIAH

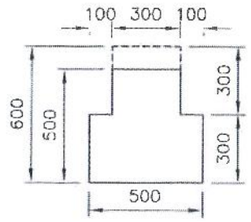
TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/JRT/2(15)

PRECAST BEAM – 500x600 INVERTED T

Designation	Beam Size W (mm)	Wus (mm)	Hr (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Installation Stage Mi (kNm)	Installation Stage Vi (kN)	Final Stage Mf (kNm)	Final Stage Vf (kN)	Na (kN/m)	Top Reinforcement T1	T2	T3	Bottom Reinforcement B1	B2	Links L1(boot)	L2(main)	L3
BT–5060–4H16–4	500	300	600	500	400	6000	135	210	170	260	135	2H12	2H12	2H12	4H16	–	H10–250	H10–300	3H12 @ 100c/c
						7800	125		170										
						9000	100		160										
BT–5060–5H16–4	500	300	600	500	400	6000	165	210	210	260	135	2H12	2H12	2H12	5H16	–	H10–250	H10–300	3H12 @ 100c/c
						7800	145		210										
						9000	120		180										
BT–5060–4H20–4	500	300	600	500	400	6000	200	210	255	260	135	2H12	2H12	2H12	4H20	–	H10–250	H10–300	3H16 @ 100c/c
						7800	165		255										
						9000	130		210										
BT–5060–5H20–4	500	300	600	500	400	6000	240	255	310	315	135	2H12	2H12	2H12	5H20	–	H10–250	H10–250	3H16 @ 100c/c
						7800	190		290										
						9000	130		240										
BT–5060–4H25–4	500	300	600	500	400	6000	265	315	370	390	170	2H12	2H12	2H12	4H25	–	H10–200	H10–200	3H16 @ 100c/c
						7800	220		330										
						9000	130		280										
BT–5060–4H16–3	500	300	600	500	300	6000	135	210	170	260	195	2H12	2H12	2H12	4H16	–	H10–175	H10–300	3H12 @ 50c/c
						7800	125		170										
						9000	100		160										
BT–5060–5H16–3	500	300	600	500	300	6000	165	210	210	260	195	2H12	2H12	2H12	5H16	–	H10–175	H10–300	3H12 @ 50c/c
						7800	145		210										
						9000	120		180										
BT–5060–4H20–3	500	300	600	500	300	6000	200	210	255	260	195	2H12	2H12	2H12	4H20	–	H10–175	H10–300	3H16 @ 50c/c
						7800	165		255										
						9000	130		210										





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NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM–INVERTED T BEAM SCHEDULE

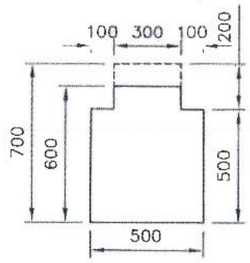
DILUKIS : SITI HAJAR BINTI MOHD NAFIAH

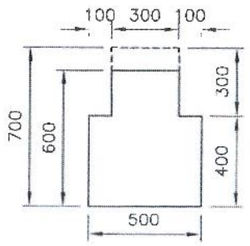
TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/JRT/3(15)

PRECAST BEAM – 500x700 INVERTED T

	Beam Size						Installation Stage		Final Stage			Top Reinforcement			Bottom Reinforcement		Links		
Designation	W (mm)	Wus (mm)	Hr (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Mi (kNm)	Vi (kN)	Mf (kNm)	Vf (kN)	Na (kN/m)	T1	T2	T3	B1	B2	L1(boot)	L2(main)	L3
BT–5070–4H16–5	500	300	700	600	500	7500	170	260	205	310	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 150c/c
						8100	170		205										
						9600	150		205										
BT–5070–5H16–5	500	300	700	600	500	7500	210	260	250	310	110	2H12	2H12	2H12	5H16	–	H10–300	H10–300	3H16 @ 150c/c
						8100	210		250										
						9600	170		240										
BT–5070–4H20–5	500	300	700	600	500	7500	250	260	310	310	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 150c/c
						8100	240		310										
						9600	190		270										
BT–5070–5H20–5	500	300	700	600	500	7500	310	310	380	370	135	2H12	2H12	2H12	5H20	–	H10–250	H10–250	3H16 @ 150c/c
						8100	280		380										
						9600	220		320										
BT–5070–4H25–5	500	300	700	600	500	7500	360	390	460	470	170	2H12	2H12	2H12	4H25	–	H10–200	H10–200	3H16 @ 150c/c
						8100	320		460										
						9600	240		370										
BT–5070–5H25–5	500	300	700	600	500	7500	400	390	550	470	170	2H12	2H12	2H12	5H25	–	H10–200	H10–200	3H16 @ 150c/c
						8100	370		530										
						9600	240		430										
BT–5070–4H16–4	500	300	700	600	400	7500	170	260	205	310	135	2H12	2H12	2H12	4H16	–	H10–250	H10–300	3H16 @ 100c/c
						8100	170		205										
						9600	150		205										
BT–5070–5H16–4	500	300	700	600	400	7500	210	260	250	310	135	2H12	2H12	2H12	5H16	–	H10–250	H10–300	3H16 @ 100c/c
						8100	210		250										
						9600	170		240										
BT–5070–4H20–4	500	300	700	600	400	7500	250	260	310	310	135	2H12	2H12	2H12	4H20	–	H10–250	H10–300	3H16 @ 100c/c
						8100	240		310										
						9600	190		270										
BT–5070–5H20–4	500	300	700	600	400	7500	310	310	380	370	135	2H12	2H12	2H12	5H20	–	H10–250	H10–250	3H16 @ 100c/c
						8100	280		380										
						9600	220		320										
BT–5070–4H25–4	500	300	700	600	400	7500	360	390	460	470	170	2H12	2H12	2H12	4H25	–	H10–200	H10–200	3H16 @ 100c/c
						8100	320		460										
						9600	240		370										





JABATAN KERJA RAYA MALAYSIA
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BLOK G, IBU PEJABAT JKR MALAYSIA
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HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM–INVERTED T BEAM SCHEDULE

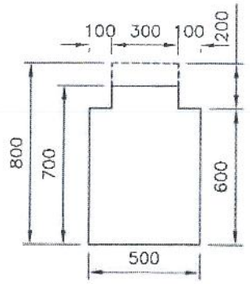
DILUKIS : SITI HAJAR BINTI MOHD NAFIAH

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/JRT/4(15)

PRECAST BEAM – 500x800 INVERTED T

	Beam Size						Installation Stage		Final Stage			Top Reinforcement			Bottom Reinforcement		Links		
Designation	W (mm)	Wus (mm)	Ht (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Mi (kNm)	Vi (kN)	Mf (kNm)	Vf (kN)	Na (kN/m)	T1	T2	T3	B1	B2	L1(boot)	L2(main)	L3
BT–5080–4H16–6	500	300	800	700	600	8100	205	310	240	360	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 200c/c
						9000	205		240										
						9600	205		240										
BT–5080–5H16–6	500	300	800	700	600	8100	255	310	295	360	110	2H12	2H12	2H12	5H16	–	H10–300	H10–300	3H16 @ 200c/c
						9000	255		295										
						9600	240		295										
BT–5080–4H20–6	500	300	800	700	600	8100	310	310	365	360	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 200c/c
						9000	300		365										
						9600	270		365										
BT–5080–5H20–6	500	300	800	700	600	8100	380	310	440	360	110	2H12	2H12	2H12	5H20	–	H10–300	H10–300	3H16 @ 200c/c
						9000	350		440										
						9600	320		430										
BT–5080–4H25–6	500	300	800	700	600	8100	460	370	545	430	135	2H12	2H12	2H12	4H25	–	H10–250	H10–250	3H16 @ 200c/c
						9000	400		540										
						9600	370		490										
BT–5080–5H25–6	500	300	800	700	600	8100	530	460	650	540	170	2H12	2H12	2H12	5H25	–	H10–200	H10–200	3H16 @ 200c/c
						9000	460		630										
						9600	430		570										
BT–5080–4H32–6	500	300	800	700	600	8100	570	460	770	540	170	2H12	2H12	2H12	4H32	–	H10–200	H10–200	3H16 @ 200c/c
						9000	550		740										
						9600	500		680										



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NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM–INVERTED T BEAM SCHEDULE

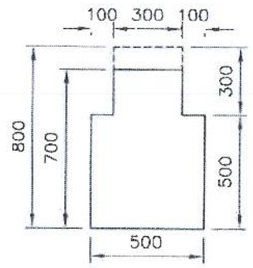
DILUKIS : SITI HAJAR BINTI MOHD NAFIAH

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/JRT/5(15)

PRECAST BEAM – 500x800 INVERTED T (continued)

Designation	Beam Size W (mm)	Wus (mm)	HT (mm)	Hc (mm)	HB (mm)	Max Span (mm)	Installation Stage Mi (kNm)	Vi (kN)	Final Stage Mf (kNm)	Vf (kN)	Na (kN/m)	Top Reinforcement T1	T2	T3	Bottom Reinforcement B1	B2	Links L1(boot)	L2(main)	L3
BT–5080–4H16–5	500	300	800	700	500	8100	205	310	240	360	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 150c/c
						9000	205		240										
						9600	205		240										
BT–5080–5H16–5	500	300	800	700	500	8100	255	310	295	360	110	2H12	2H12	2H12	5H16	–	H10–300	H10–300	3H16 @ 150c/c
						9000	255		295										
						9600	240		295										
BT–5080–4H20–5	500	300	800	700	500	8100	310	310	365	360	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 150c/c
						9000	300		365										
						9600	270		365										
BT–5080–5H20–5	500	300	800	700	500	8100	380	310	440	360	110	2H12	2H12	2H12	5H20	–	H10–300	H10–300	3H16 @ 150c/c
						9000	350		440										
						9600	320		430										
BT–5080–4H25–5	500	300	800	700	500	8100	460	370	545	430	135	2H12	2H12	2H12	4H25	–	H10–250	H10–250	3H16 @ 150c/c
						9000	400		540										
						9600	370		490										
BT–5080–5H25–5	500	300	800	700	500	8100	530	460	650	540	170	2H12	2H12	2H12	5H25	–	H10–200	H10–200	3H16 @ 150c/c
						9000	460		630										
						9600	430		570										



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NAMA PROJEK :

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KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM–INVERTED T BEAM SCHEDULE

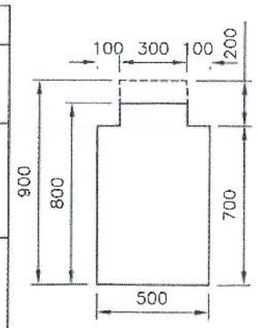
DILUKIS : SITI HAJAR BINTI MOHD NAFIAH

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/JRT/6(15)

PRECAST BEAM –500x900 INVERTED T

	Beam Size						Installation Stage		Final Stage			Top Reinforcement			Bottom Reinforcement		Links		
Designation	W (mm)	Wus (mm)	Ht (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Mi (kNm)	Vi (kN)	Mf (kNm)	Vf (kN)	Na (kN/m)	T1	T2	T3	B1	B2	L1(boot)	L2(main)	L3
BT–5090–4H16–7	500	300	900	800	700	8100	240	360	270	410	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 250c/c
						9000	240		270										
						9600	240		270										
BT–5090–5H16–7	500	300	900	800	700	8100	295	360	340	410	110	2H12	2H12	2H12	5H16	–	H10–300	H10–300	3H16 @ 250c/c
						9000	295		340										
						9600	295		340										
BT–5090–4H20–7	500	300	900	800	700	8100	365	360	420	410	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 250c/c
						9000	365		420										
						9600	365		420										
BT–5090–5H20–7	500	300	900	800	700	8100	440	360	510	410	110	2H12	2H12	2H12	5H20	–	H10–300	H10–300	3H16 @ 250c/c
						9000	440		510										
						9600	430		510										
BT–5090–4H25–7	500	300	900	800	700	8100	545	430	630	490	135	2H12	2H12	2H12	4H25	–	H10–250	H10–250	3H16 @ 250c/c
						9000	540		630										
						9600	490		630										
BT–5090–5H25–7	500	300	900	800	700	8100	650	510	760	580	170	2H12	2H12	2H12	5H25	–	H10–200	H10–200	3H16 @ 250c/c
						9000	630		760										
						9600	570		750										
BT–5090–7H25/20–7	500	300	900	800	700	8100	730	510	890	580	170	2H12	2H12	2H12	5H25	2H20	H10–200	H10–200	4H16 @ 175c/c
						9000	680		890										
						9600	630		820										
BT–5090–4H32–7	500	300	900	800	700	8100	770	680	950	780	205	2H12	2H12	2H12	4H32	–	H10–150	H10–150	4H16 @ 175c/c
						9000	740		950										
						9600	680		880										
BT–5090–5H32–7	500	300	900	800	700	8100	770	680	1000	780	205	2H12	2H12	2H12	5H32	–	H10–150	H10–150	4H16 @ 175c/c
						9000	770		1000										
						9600	770		1000										



JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4–10
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50480 KUALA LUMPUR
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DIREKABENTUK :
Ir. QOTRUNNADA BINTI ABD RAHMAN

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM–INVERTED T BEAM SCHEDULE

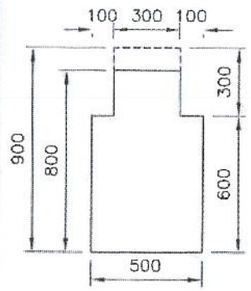
DILUKIS : SITI HAJAR BINTI MOHD NAFIAH

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/JRT/7(15)

PRECAST BEAM –500x900 INVERTED T (continued)

Designation	Beam Size W (mm)	Wus (mm)	HT (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Installation Stage Mi (kNm)	Vi (kN)	Final Stage Mf (kNm)	Vf (kN)	Na (kN/m)	Top Reinforcement T1	T2	T3	Bottom Reinforcement B1	B2	Links L1(boot)	L2(main)	L3
BT–5090–4H16–6	500	300	900	800	600	8100	240	360	270	410	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 200c/c
						9000	240		270										
						9600	240		270										
BT–5090–5H16–6	500	300	900	800	600	8100	295	360	340	410	110	2H12	2H12	2H12	5H16	–	H10–300	H10–300	3H16 @ 200c/c
						9000	295		340										
						9600	295		340										
BT–5090–4H20–6	500	300	900	800	600	8100	365	360	420	410	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 200c/c
						9000	365		420										
						9600	365		420										
BT–5090–5H20–6	500	300	900	800	600	8100	440	360	510	410	110	2H12	2H12	2H12	5H20	–	H10–300	H10–300	3H16 @ 200c/c
						9000	440		510										
						9600	430		510										
BT–5090–4H25–6	500	300	900	800	600	8100	545	430	630	490	135	2H12	2H12	2H12	4H25	–	H10–250	H10–250	3H16 @ 200c/c
						9000	540		630										
						9600	490		630										
BT–5090–5H25–6	500	300	900	800	600	8100	650	510	760	580	170	2H12	2H12	2H12	5H25	–	H10–200	H10–200	3H16 @ 200c/c
						9000	630		760										
						9600	570		750										
BT–5090–7H25/20–6	500	300	900	800	600	8100	730	510	890	580	170	2H12	2H12	2H12	5H25	2H20	H10–200	H10–200	4H16 @ 125c/c
						9000	680		890										
						9600	630		820										
BT–5090–4H32–6	500	300	900	800	600	8100	770	680	950	780	205	2H12	2H12	2H12	4H32	–	H10–150	H10–150	4H16 @ 125c/c
						9000	740		950										
						9600	680		880										



JKR

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4–10
BLOK G, IBU PEJABAT JKR MALAYSIA
NO.5, JALAN SULTAN SALAHUDDIN
50480 KUALA LUMPUR
(NO. TEL: 03-2618 9171 & NO. FAX: 03-2618 9155)

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HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM–INVERTED T BEAM SCHEDULE

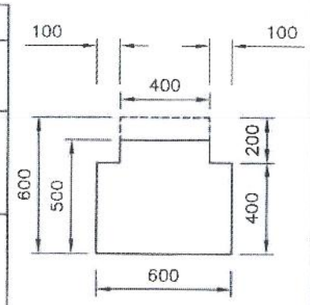
DILUKIS : SITI HAJAR BINTI MOHD NAJIAH

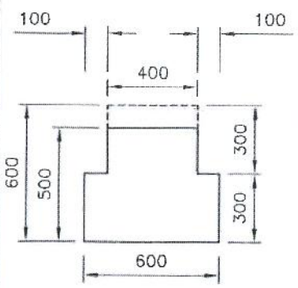
TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/JRT/8(15)

PRECAST BEAM – 600x600 INVERTED T

Designation	Beam Size W (mm)	Wus (mm)	Ht (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Installation Stage Mi (kNm)	Vi (kN)	Final Stage Mf (kNm)	Vf (kN)	Na (kN/m)	Top Reinforcement T1	T2	T3	Bottom Reinforcement B1	B2	Links L1(boot)	L2(main)	L3
BT–6060–4H16–4	600	400	600	500	400	6000	140	210	175	260	135	2H12	2H12	2H12	4H16	–	H10–250	H10–300	3H16 @ 100c/c
						7800	140		175										
						9000	125		175										
BT–6060–5H16–4	600	400	600	500	400	6000	170	210	215	260	135	2H12	2H12	2H12	5H16	–	H10–250	H10–300	3H16 @ 100c/c
						7800	160		215										
						9000	140		210										
BT–6060–4H20–4	600	400	600	500	400	6000	210	255	265	315	135	2H12	2H12	2H12	4H20	–	H10–250	H10–250	3H16 @ 100c/c
						7800	185		265										
						9000	155		235										
BT–6060–5H20–4	600	400	600	500	400	6000	255	320	320	390	170	2H12	2H12	2H12	5H20	–	H10–200	H10–200	3H16 @ 100c/c
						7800	215		320										
						9000	175		270										
BT–6060–4H25–4	600	400	600	500	400	6000	305	320	390	390	170	2H12	2H12	2H12	4H25	–	H10–200	H10–200	3H16 @ 100c/c
						7800	245		370										
						9000	175		310										
BT–6060–5H25–4	600	400	600	500	400	6000	355	420	470	520	205	2H12	2H12	2H12	5H25	–	H10–150	H10–150	3H16 @ 100c/c
						7800	285		435										
						9000	175		360										
BT–6060–4H16–3	600	400	600	500	300	6000	140	210	175	260	195	2H12	2H12	2H12	4H16	–	H10–175	H10–300	3H16 @ 100c/c
						7800	140		175										
						9000	125		175										
BT–6060–5H16–3	600	400	600	500	300	6000	170	210	215	260	195	2H12	2H12	2H12	5H16	–	H10–175	H10–300	3H16 @ 100c/c
						7800	160		215										
						9000	140		210										
BT–6060–4H20–3	600	400	600	500	300	6000	210	255	265	315	195	2H12	2H12	2H12	4H20	–	H10–175	H10–250	3H16 @ 100c/c
						7800	185		265										
						9000	155		235										
BT–6060–5H20–3	600	400	600	500	300	6000	255	320	320	390	195	2H12	2H12	2H12	5H20	–	H10–175	H10–200	3H16 @ 100c/c
						7800	215		320										
						9000	175		270										
BT–6060–4H25–3	600	400	600	500	300	6000	305	320	390	390	195	2H12	2H12	2H12	4H25	–	H10–175	H10–200	3H16 @ 100c/c
						7800	245		370										
						9000	175		310										





JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4 - 10
BLOK G, IBU PEJABAT JKR MALAYSIA
NO.6, JALAN SULTAN SALAHUDDIN
50480 KUALA LUMPUR
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DIREKABENTUK :
Ir. OOTRUNNADA BINTI ABD RAHMAN

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM – INVERTED T
BEAM SCHEDULE

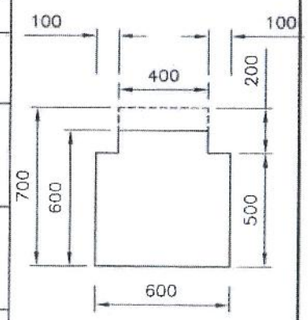
DILUKIS : NOORSAM BINTI SAMSUDDIN

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/JRT/9(15)

PRECAST BEAM – 600x700 INVERTED T

Designation	Beam Size						Installation Stage		Final Stage			Top Reinforcement			Bottom Reinforcement		Links		
	W (mm)	Wus (mm)	HT (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Mi (kNm)	Vi (kN)	Mf (kNm)	Vf (kN)	Na (kN/m)	T1	T2	T3	B1	B2	L1(boot)	L2(main)	L3
BT–6070–4H16–5	600	400	700	600	500	7500	175	260	205	310	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 100c/c
						8100	175		205										
						9600	175		205										
BT–6070–5H16–5	600	400	700	600	500	7500	215	260	260	310	110	2H12	2H12	2H12	5H16	–	H10–300	H10–300	3H16 @ 100c/c
						8100	215		260										
						9600	200.		260										
BT–6070–4H20–5	600	400	700	600	500	7500	265	260	315	310	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 100c/c
						8100	265		315										
						9600	220		310										
BT–6070–5H20–5	600	400	700	600	500	7500	320	310	390	370	135	2H12	2H12	2H12	5H20	–	H10–250	H10–250	3H16 @ 100c/c
						8100	310		390										
						9600	250		350										
BT–6070–4H25–5	600	400	700	600	500	7500	390	310	475	370	135	2H12	2H12	2H12	4H25	–	H10–250	H10–250	3H16 @ 100c/c
						8100	360		475										
						9600	250		400										
BT–6070–5H25–5	600	400	700	600	500	7500	460	390	580	465	170	2H12	2H12	2H12	5H25	–	H10–200	H10–200	3H16 @ 100c/c
						8100	410		580										
						9600	320		470										
BT–6070–6H25–5	600	400	700	600	500	7500	520	450	670	530	195	2H12	2H12	2H12	6H25	–	H10–175	H10–175	3H16 @ 100c/c
						8100	470		660										
						9600	320		530										
BT–6070–4H32–5	600	400	700	600	500	7500	535	520	720	620	205	2H12	2H12	2H12	4H32	–	H10–150	H10–150	3H16 @ 100c/c
						8100	490		700										
						9600	320		560										



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NAMA PROJEK :

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KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM – INVERTED T
BEAM SCHEDULE

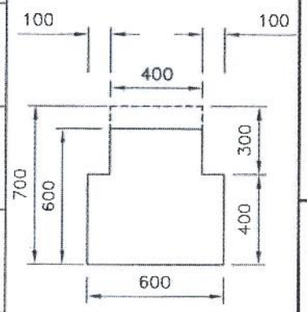
DILUKIS : NOORSAM BINTI SAMSUDDIN

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/JRT/10(15)

PRECAST BEAM – 600x700 INVERTED T (continued)

	Beam Size						Installation Stage		Final Stage			Top Reinforcement			Bottom Reinforcement		Links		
Designation	W (mm)	W_{UB} (mm)	H_T (mm)	H_C (mm)	H_B (mm)	Max Span (mm)	Mi (kNm)	Vi (kN)	Mf (kNm)	Vf (kN)	Na (kN/m)	T1	T2	T3	B1	B2	L1(boot)	L2(main)	L3
BT–6070–4H16–4	600	400	700	600	400	7500	175	260	205	310	135	2H12	2H12	2H12	4H16	–	H10–250	H10–300	3H16 @ 100c/c
						8100	175		205										
						9600	175		205										
BT–6070–5H16–4	600	400	700	600	400	7500	215	260	260	310	135	2H12	2H12	2H12	5H16	–	H10–250	H10–300	3H16 @ 100c/c
						8100	215		260										
						9600	200		260										
BT–6070–4H20–4	600	400	700	600	400	7500	265	260	315	310	135	2H12	2H12	2H12	4H20	–	H10–250	H10–300	3H16 @ 100c/c
						8100	265		315										
						9600	220		310										
BT–6070–5H20–4	600	400	700	600	400	7500	320	310	390	370	135	2H12	2H12	2H12	5H20	–	H10–250	H10–250	3H16 @ 100c/c
						8100	310		390										
						9600	250		350										
BT–6070–4H25–4	600	400	700	600	400	7500	390	310	475	370	135	2H12	2H12	2H12	4H25	–	H10–250	H10–250	3H16 @ 100c/c
						8100	360		475										
						9600	250		400										
BT–6070–5H25–4	600	400	700	600	400	7500	460	390	580	465	170	2H12	2H12	2H12	5H25	–	H10–200	H10–200	3H16 @ 100c/c
						8100	410		580										
						9600	320		470										



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BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM – INVERTED T
BEAM SCHEDULE

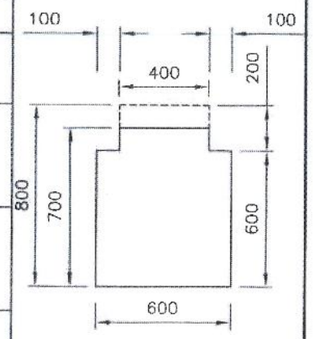
DILUKIS : NOORSAM BINTI SAMSUDDIN

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/JRT/11(15)

PRECAST BEAM – 600x800 INVERTED T

Designation	Beam Size W (mm)	Wus (mm)	Hr (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Installation Stage Mi (kNm)	Vi (kN)	Final Stage Mf (kNm)	Vf (kN)	Na (kN/m)	Top Reinforcement T1	T2	T3	Bottom Reinforcement B1	B2	Links L1(boot)	L2(main)	L3
BT–6080–4H16–6	600	400	800	700	600	8100	205	310	240	360	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 200c/c
						9000	205		240										
						9600	205		240										
BT–6080–5H16–6	600	400	800	700	600	8100	260	310	300	360	110	2H12	2H12	2H12	5H16	–	H10–300	H10–300	3H16 @ 200c/c
						9000	260		300										
						9600	260		300										
BT–6080–4H20–6	600	400	800	700	600	8100	310	310	370	360	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 200c/c
						9000	310		370										
						9600	310		370										
BT–6080–5H20–6	600	400	800	700	600	8100	390	310	460	360	110	2H12	2H12	2H12	5H20	–	H10–300	H10–300	3H16 @ 200c/c
						9000	380		460										
						9600	350		460										
BT–6080–4H25–6	600	400	800	700	600	8100	470	370	560	430	135	2H12	2H12	2H12	4H25	–	H10–250	H10–250	3H16 @ 200c/c
						9000	440		560										
						9600	400		550										
BT–6080–5H25–6	600	400	800	700	600	8100	580	450	680	520	170	2H12	2H12	2H12	5H25	–	H10–200	H10–200	3H16 @ 200c/c
						9000	510		680										
						9600	470		630										
BT–6080–6H25–6	600	400	800	700	600	8100	660	450	800	520	170	2H12	2H12	2H12	6H25	–	H10–200	H10–200	4H16 @ 125c/c
						9000	580		780										
						9600	530		720										
BT–6080–4H32–6	600	400	800	700	600	8100	700	510	860	600	195	2H12	2H12	2H12	4H32	–	H10–175	H10–175	4H16 @ 125c/c
						9000	610		820										
						9600	560		750										
BT–6080–8H25–6	600	400	800	700	600	8100	710	600	970	700	205	2H12	2H12	2H12	6H25	2H25	H10–150	H10–150	4H16 @ 125c/c
						9000	640		880										
						9600	590		810										
BT–6080–5H32–6	600	400	800	700	600	8100	760	600	1030	700	205	2H12	2H12	2H12	5H32	–	H10–150	H10–150	4H16 @ 125c/c
						9000	700		950										
						9600	640		870										



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PRECAST BEAM – INVERTED T
BEAM SCHEDULE

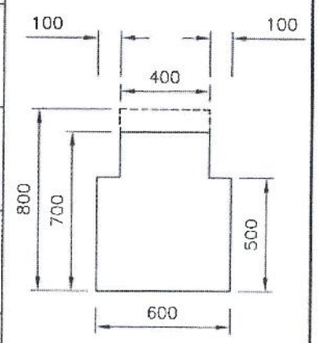
DILUKIS : NOORSAM BINTI SAMSUDDIN

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/JRT/12(15)

PRECAST BEAM – 600x800 INVERTED T (continued)

	Beam Size						Installation Stage		Final Stage			Top Reinforcement			Bottom Reinforcement		Links		
Designation	W (mm)	Wus (mm)	HT (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Mi (kNm)	Vi (kN)	Mf (kNm)	Vf (kN)	Na (kN/m)	T1	T2	T3	B1	B2	L1(boot)	L2(main)	L3
BT–6080–4H16–5	600	400	800	700	500	8100	205	310	240	360	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 150c/c
						9000	205		240										
						9600	205		240										
BT–6080–5H16–5	600	400	800	700	500	8100	260	310	300	360	110	2H12	2H12	2H12	5H16	–	H10–300	H10–300	3H16 @ 150c/c
						9000	260		300										
						9600	260		300										
BT–6080–4H20–5	600	400	800	700	500	8100	310	310	370	360	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 150c/c
						9000	310		370										
						9600	310		370										
BT–6080–5H20–5	600	400	800	700	500	8100	390	310	460	360	110	2H12	2H12	2H12	5H20	–	H10–300	H10–300	3H16 @ 150c/c
						9000	380		460										
						9600	350		460										
BT–6080–4H25–5	600	400	800	700	500	8100	470	370	560	430	135	2H12	2H12	2H12	4H25	–	H10–250	H10–250	3H16 @ 150c/c
						9000	440		560										
						9600	400		550										
BT–6080–5H25–5	600	400	800	700	500	8100	580	450	680	520	170	2H12	2H12	2H12	5H25	–	H10–200	H10–200	3H16 @ 150c/c
						9000	510		680										
						9600	470		630										
BT–6080–6H25–5	600	400	800	700	500	8100	660	450	800	520	170	2H12	2H12	2H12	6H25	–	H10–200	H10–200	4H16 @ 100c/c
						9000	580		780										
						9600	530		720										
BT–6080–4H32–5	600	400	800	700	500	8100	700	510	860	600	195	2H12	2H12	2H12	4H32	–	H10–175	H10–175	4H16 @ 100c/c
						9000	610		820										
						9600	560		750										



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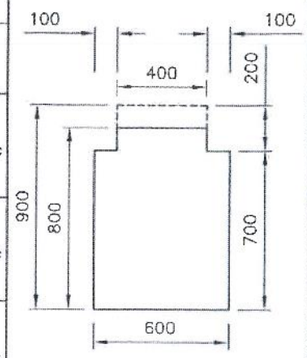
PRECAST BEAM –600x900 INVERTED T

	Beam Size						Installation Stage		Final Stage			Top Reinforcement			Bottom Reinforcement		Links		
Designation	W (mm)	Wus (mm)	HT (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Mi (kNm)	Vi (kN)	Mf (kNm)	Vf (kN)	Na (kN/m)	T1	T2	T3	B1	B2	L1(boot)	L2(main)	L3
BT–6090–4H16–7	600	400	900	800	700	8100	240	360	270	410	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 250c/c
						9000	240		270										
						9600	240		270										
BT–6090–5H16–7	600	400	900	800	700	8100	300	360	340	410	110	2H12	2H12	2H12	5H16	–	H10–300	H10–300	3H16 @ 250c/c
						9000	300		340										
						9600	300		340										
BT–6090–4H20–7	600	400	900	800	700	8100	370	360	420	410	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 250c/c
						9000	370		420										
						9600	370		420										
BT–6090–5H20–7	600	400	900	800	700	8100	460	360	520	410	110	2H12	2H12	2H12	5H20	–	H10–300	H10–300	3H16 @ 250c/c
						9000	460		520										
						9600	460		520										
BT–6090–4H25–7	600	400	900	800	700	8100	560	360	640	410	110	2H12	2H12	2H12	4H25	–	H10–300	H10–300	3H16 @ 250c/c
						9000	560		640										
						9600	550		640										
BT–6090–5H25–7	600	400	900	800	700	8100	680	430	790	490	135	2H12	2H12	2H12	5H25	–	H10–250	H10–250	3H16 @ 250c/c
						9000	680		790										
						9600	630		790										
BT–6090–6H25–7	600	400	900	800	700	8100	800	510	930	580	170	2H12	2H12	2H12	6H25	–	H10–200	H10–200	4H16 @ 175c/c
						9000	780		930										
						9600	720		930										
BT–6090–4H32–7	600	400	900	800	700	8100	860	580	1000	670	195	2H12	2H12	2H12	4H32	–	H10–175	H10–175	4H16 @ 175c/c
						9000	820		1000										
						9600	750		980										
BT–6090–8H25–7	600	400	900	800	700	8100	970	680	1120	780	205	2H12	2H12	2H12	6H25	2H25	H10–150	H10–150	4H16 @ 175c/c
						9000	880		1120										
						9600	810		1060										
BT–6090–5H32–7	600	400	900	800	700	8100	1030	680	1200	780	205	2H12	2H12	2H12	5H32	–	H10–150	H10–150	4H16 @ 175c/c
						9000	950		1200										
						9600	870		1130										
BT–6090–6H32–7	600	400	900	800	700	8100	1030	830	1340	950	205	2H12	2H12	2H12	6H32	–	H10–125	H10–125	4H16 @ 175c/c
						9000	1030		1340										
						9600	980		1280										



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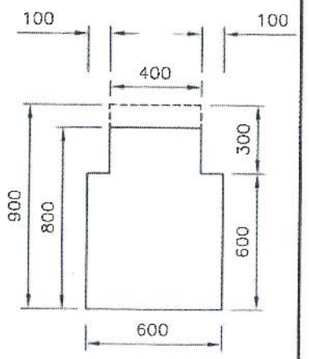
NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/JRT/14(15)

PRECAST BEAM –600x900 INVERTED T (continued)

Designation	Beam Size W (mm)	Wu (mm)	HT (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Installation Stage Mi (kNm)	Vi (kN)	Final Stage Mf (kNm)	Vf (kN)	Na (kN/m)	Top Reinforcement T1	T2	T3	Bottom Reinforcement B1	B2	Links L1(boot)	L2(main)	L3
BT–6090–4H16–6	600	400	900	800	600	8100	240	360	270	410	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 200c/c
						9000	240		270										
						9600	240		270										
BT–6090–5H16–6	600	400	900	800	600	8100	300	360	340	410	110	2H12	2H12	2H12	5H16	–	H10–300	H10–300	3H16 @ 200c/c
						9000	300		340										
						9600	300		340										
BT–6090–4H20–6	600	400	900	800	600	8100	370	360	420	410	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 200c/c
						9000	370		420										
						9600	370		420										
BT–6090–5H20–6	600	400	900	800	600	8100	460	360	520	410	110	2H12	2H12	2H12	5H20	–	H10–300	H10–300	3H16 @ 200c/c
						9000	460		520										
						9600	460		520										
BT–6090–4H25–6	600	400	900	800	600	8100	560	360	640	410	110	2H12	2H12	2H12	4H25	–	H10–300	H10–300	3H16 @ 200c/c
						9000	560		640										
						9600	550		640										
BT–6090–5H25–6	600	400	900	800	600	8100	680	430	790	490	135	2H12	2H12	2H12	5H25	–	H10–250	H10–250	3H16 @ 200c/c
						9000	680		790										
						9600	630		790										
BT–6090–6H25–6	600	400	900	800	600	8100	800	510	930	580	170	2H12	2H12	2H12	6H25	–	H10–200	H10–200	4H16 @ 125c/c
						9000	780		930										
						9600	720		930										
BT–6090–4H32–6	600	400	900	800	600	8100	860	580	1000	670	195	2H12	2H12	2H12	4H32	–	H10–175	H10–175	4H16 @ 125c/c
						9000	820		1000										
						9600	750		980										
BT–6090–8H25–6	600	400	900	800	600	8100	970	680	1120	780	205	2H12	2H12	2H12	6H25	2H25	H10–150	H10–150	4H16 @ 125c/c
						9000	880		1120										
						9600	810		1060										
BT–6090–5H32–6	600	400	900	800	600	8100	1030	680	1200	780	205	2H12	2H12	2H12	5H32	–	H10–150	H10–150	4H16 @ 125c/c
						9000	950		1200										
						9600	870		1130										



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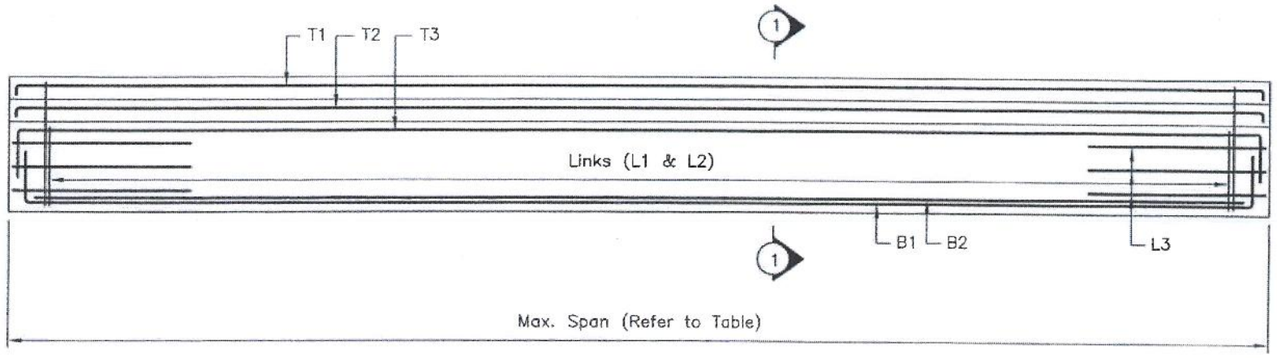
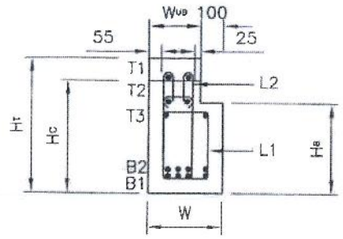
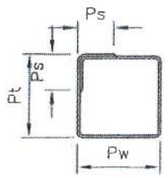
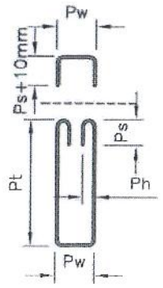


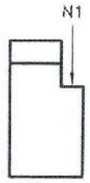
ELEVATION OF PRECAST BEAM



SECTION 1–1







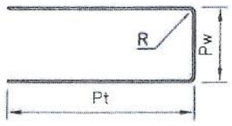
N1 ≤ Na

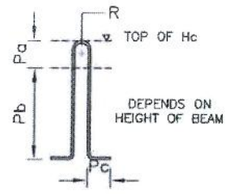
Max. Allowable Ultimate Axial Load, Na (kN per meter run of the boot)

LINK (L1)				
Pt	Pw	Ps	Ph	R
HB−110	W−110	10ø	–	2ø

LINK (L2)				
Pt	Pw	Ps	Ph	R
HT−110	WUB−50	80	40	2ø

CONCRETE GRADE (N/mm²)	PRECAST	In−situ	Lap Length
	C30/37	C30/37	0.25L





*POSITION OF LIFTING HOOK AT DISTANCE OF 0.2 L FROM SIDE OF BEAM.

SHEAR FRICTION STEEL (L3)				
Pt	Pw	Ps	Ph	R
800	W−130	–	–	6ø

LIFTING HOOK				
Pa	Pb	Pc	R	ø BAR
80	Hc−100	45ø−Pb	60	H20

NOTATION

W = Breadth of component

WUB = Width of upstand

HT = Total height of the component

Hc = Height of the component during installation stage

HB = Height of the boot

Mi = Maximum moment capacity at mid span during installation stage

Vi = Maximum shear capacity during installation stage

Mf = Maximum moment capacity at mid span for the final stage

Vf = Maximum shear capacity for the final stage

Na = Maximum allowable ultimate axial load for boot during final stage(kN/m)

CODE OF COMPONENTS

BL−5090−4H16−7

- Height of boot (HB = 700mm)
- Bottom reinforcement of the component (4H16)
- Total height of the component (HT = 900mm)
- Total breadth of the component (W = 500mm)
- Type of beam (L Shaped Beam)

SPECIFICATION

a) Minimum concrete grade (precast and cast in situ concrete) for installation stage and final stage is fck = 30N/mm² (fcu =37N/mm²)

b) Minimum concrete compressive strength for first lifting is fck = 13N/mm² (fcu = 15N/mm²)

c) The position of lifting hook at distance of 0.2L from end of beam and to be advised and checked by competent person.

d) The beam is designed as simply supported beam during installation stage (un prop) and during final stage.

e) Concrete infill (beam top and slab topping) are one stage casting

f) Each component will given 3 different of maximum span, where effect the value of Mi and Mf .

g) The design has been prepared in accordance with the BS EN 1992.

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DIREKABENTUK :
KHAIRUL NIZAM BIN MAT DENIN

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM–L SHAPED BEAM DETAILS

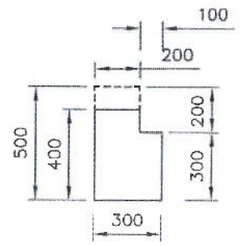
DILUKIS : SITI HAJAR BINTI MOHD NAFIAH

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/BRL/1(1)

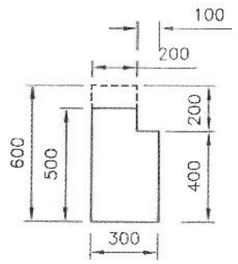
PRECAST BEAM – 300x500 L SHAPED

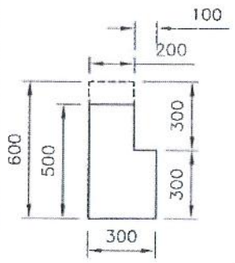
Designation	Beam Size W (mm)	Wus (mm)	HT (mm)	Hc (mm)	HB (mm)	Max Span (mm)	Installation Stage Mi (kNm)	Vi (kN)	Final Stage Mf (kNm)	Vf (kN)	Na (kN/m)	Top Reinforcement T1	T2	T3	Bottom Reinforcement B1	B2	Links L1(boot)	L2(main)	L3
BL–3050–3H16–3	300	200	500	400	300	4500	70	210	100	280	195	2H12	2H12	2H12	3H16	–	H10–175	H10–225	3H12 @ 50c/c
						6000	60		100										
						7200	50		100										
BL–3050–3H20–3	300	200	500	400	300	4500	100	210	140	280	195	2H12	2H12	2H12	3H20	–	H10–175	H10–225	3H12 @ 50c/c
						6000	90		140										
						7200	70		130										



PRECAST BEAM – 300x600 L SHAPED

Designation	Beam Size W (mm)	Wus (mm)	HT (mm)	Hc (mm)	HB (mm)	Max Span (mm)	Installation Stage Mi (kNm)	Vi (kN)	Final Stage Mf (kNm)	Vf (kN)	Na (kN/m)	Top Reinforcement T1	T2	T3	Bottom Reinforcement B1	B2	Links L1(boot)	L2(main)	L3
BL–3060–3H16–4	300	200	600	500	400	6000	100	210	120	260	135	2H12	2H12	2H12	3H16	–	H10–250	H10–300	3H12 @ 100c/c
						7800	90		120										
						9000	70		110										
BL–3060–3H20–4	300	200	600	500	400	6000	140	210	190	260	135	2H12	2H12	2H12	3H20	–	H10–250	H10–300	3H12 @ 100c/c
						7800	120		180										
						9000	90		150										
BL–3060–3H16–3	300	200	600	500	300	6000	100	210	120	260	195	2H12	2H12	2H12	3H16	–	H10–175	H10–300	3H12 @ 50c/c
						7800	90		120										
						9000	70		110										
BL–3060–3H20–3	300	200	600	500	300	6000	140	210	190	260	195	2H12	2H12	2H12	3H20	–	H10–175	H10–300	3H12 @ 50c/c
						7800	120		180										
						9000	90		150										





JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4–10
BLOK G, IBU PEJABAT JKR MALAYSIA
NO.6, JALAN SULTAN SALAHUDDIN
50480 KUALA LUMPUR
(NO. TEL: 03-2618 9171 & NO. FAX: 03-2618 9155)

PENGARAH KANAN:
Dato' Ir. Hj. MOHAMAD ZULKEFLY BIN SULAIMAN
PENGARAH KEJURUTERAAN (PAKAR STRUKTUR):
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JURUTERA AWAM KANAN :
Ir. AYU SAZRIMA BINTI SABARI
DISEMAK :
NOOR NASHAIRE BIN MOHD NASIR
DIREKABENTUK :
KHAIRUL NIZAM BIN MAT DE

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM – L SHAPE BEAM SCHEDULE

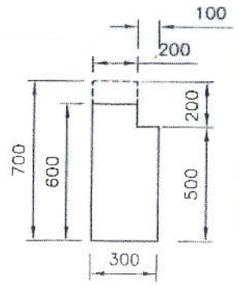
DILUKIS : NOORSAM BINTI SAMSUDDIN

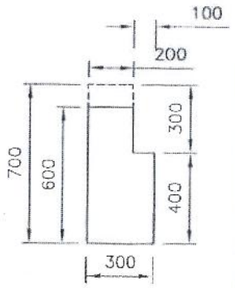
TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/JRL/1(8)

PRECAST BEAM – 300x700 L SHAPED

Designation	Beam Size						Installation Stage		Final Stage			Top Reinforcement			Bottom Reinforcement		Links		
	W (mm)	Wus (mm)	HT (mm)	Hc (mm)	He (mm)	Max Span (mm)	Mi (kNm)	Vi (kN)	Mf (kNm)	Vf (kN)	Na (kN/m)	T1	T2	T3	B1	B2	L1(boot)	L2(main)	L3
BL–3070–3H16–5	300	200	700	600	500	7500	120	260	150	310	110	2H12	2H12	2H12	3H16	–	H10–300	H10–300	3H12 @ 150c/c
						8100	120		150										
						9600	100		150										
BL–3070–3H20–5	300	200	700	600	500	7500	190	260	230	310	110	2H12	2H12	2H12	3H20	–	H10–300	H10–300	3H12 @ 150c/c
						8100	170		230										
						9600	140		200										
BL–3070–3H25–5	300	200	700	600	500	7500	260	260	320	310	110	2H12	2H12	2H12	3H25	–	H10–300	H10–300	3H12 @ 150c/c
						8100	230		320										
						9600	160		260										
BL–3070–3H16–4	300	200	700	600	400	7500	120	260	150	310	135	2H12	2H12	2H12	3H16	–	H10–250	H10–300	3H12 @ 100c/c
						8100	120		150										
						9600	100		150										
BL–3070–3H20–4	300	200	700	600	400	7500	190	260	230	310	135	2H12	2H12	2H12	3H20	–	H10–250	H10–300	3H12 @ 100c/c
						8100	170		230										
						9600	140		200										





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NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM – L SHAPE BEAM SCHEDULE

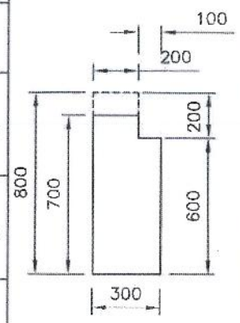
DILUKIS : NOORSAM BINTI SAMSUDDIN

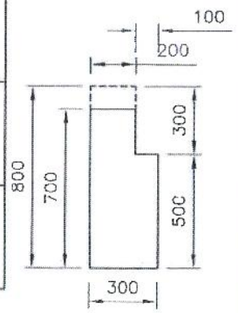
TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/JRL/2(B)

PRECAST BEAM – 300x800 L SHAPED

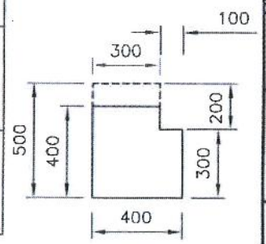
Designation	Beam Size						Installation Stage		Final Stage			Top Reinforcement			Bottom Reinforcement		Links		
	W (mm)	Wus (mm)	HT (mm)	Hc (mm)	HB (mm)	Max Span (mm)	MI (kNm)	VI (kN)	Mf (kNm)	Vf (kN)	Na (kN/m)	T1	T2	T3	B1	B2	L1(boot)	L2(main)	L3
BL–3080–3H16–6	300	200	800	700	600	8100	150	310	180	360	110	2H12	2H12	2H12	3H16	–	H10–300	H10–300	3H16 @ 200c/c
						9000	150		180										
						9600	150		180										
BL–3080–3H20–6	300	200	800	700	600	8100	230	310	270	360	110	2H12	2H12	2H12	3H20	–	H10–300	H10–300	3H16 @ 200c/c
						9000	210		270										
						9600	200		270										
BL–3080–3H25–6	300	200	800	700	600	8100	330	310	400	360	110	2H12	2H12	2H12	3H25	–	H10–300	H10–300	3H16 @ 200c/c
						9000	290		390										
						9600	260		360										
BL–3080–6H20–6	300	200	800	700	600	8100	360	365	470	425	135	2H12	2H12	2H12	3H20	3H20	H10–250	H10–250	3H16 @ 200c/c
						9000	320		430										
						9600	290		400										
BL–3080–3H16–5	300	200	800	700	500	8100	150	310	180	360	110	2H12	2H12	2H12	3H16	–	H10–300	H10–300	3H16 @ 150c/c
						9000	150		180										
						9600	150		180										
BL–3080–3H20–5	300	200	800	700	500	8100	230	310	270	360	110	2H12	2H12	2H12	3H20	–	H10–300	H10–300	3H16 @ 150c/c
						9000	210		270										
						9600	200		270										
BL–3080–3H25–5	300	200	800	700	500	8100	330	310	400	360	110	2H12	2H12	2H12	3H25	–	H10–300	H10–300	3H16 @ 150c/c
						9000	290		390										
						9600	260		360										





PRECAST BEAM – 400x500 L SHAPED

Designation	Beam Size						Installation Stage		Final Stage			Top Reinforcement			Bottom Reinforcement		Links		
	W (mm)	Wus (mm)	HT (mm)	Hc (mm)	HB (mm)	Max Span (mm)	MI (kNm)	VI (kN)	Mf (kNm)	Vf (kN)	Na (kN/m)	T1	T2	T3	B1	B2	L1(boot)	L2(main)	L3
BL–4050–4H16–3	400	300	500	400	300	4500	100	210	130	280	195	2H12	2H12	2H12	4H16	–	H10–175	H10–225	3H12 @ 50c/c
						6000	90		130										
						7200	80		130										
BL–4050–4H20–3	400	300	500	400	300	4500	140	210	200	280	195	2H12	2H12	2H12	4H20	–	H10–175	H10–225	3H12 @ 50c/c
						6000	120		200										
						7200	110		180										



JKR

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NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM – L SHAPE BEAM SCHEDULE

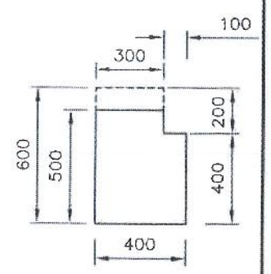
DILUKIS : NOORSAM BINTI SAMSUDDIN

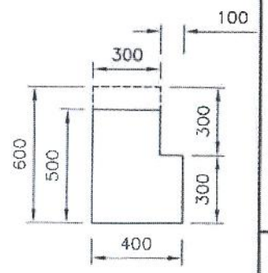
TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/JRL/3(8)

PRECAST BEAM – 400x600 L SHAPED

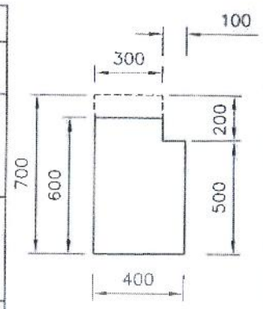
Designation	Beam Size W (mm)	Wus (mm)	HT (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Installation Stage Mi (kNm)	Vi (kN)	Final Stage Mf (kNm)	Vf (kN)	Na (kN/m)	Top Reinforcement T1	T2	T3	Bottom Reinforcement B1	B2	Links L1(boot)	L2(main)	L3
BL–4060–4H16–4	400	300	600	500	400	6000	130	210	170	260	135	2H12	2H12	2H12	4H16	–	H10–250	H10–300	3H12 @ 100c/c
						7800	120		170										
						9000	100		160										
BL–4060–4H20–4	400	300	600	500	400	6000	200	210	250	260	135	2H12	2H12	2H12	4H20	–	H10–250	H10–300	3H12 @ 100c/c
						7800	160		250										
						9000	130		210										
BL–4060–4H25–4	400	300	600	500	400	6000	260	315	370	390	170	2H12	2H12	2H12	4H25	–	H10–200	H10–200	3H16 @ 100c/c
						7800	220		340										
						9000	130		280										
BL–4060–4H16–3	400	300	600	500	300	6000	130	210	170	260	195	2H12	2H12	2H12	4H16	–	H10–175	H10–300	3H12 @ 50c/c
						7800	120		170										
						9000	100		160										
BL–4060–4H20–3	400	300	600	500	300	6000	200	210	250	260	195	2H12	2H12	2H12	4H20	–	H10–175	H10–300	3H12 @ 50c/c
						7800	160		250										
						9000	130		210										

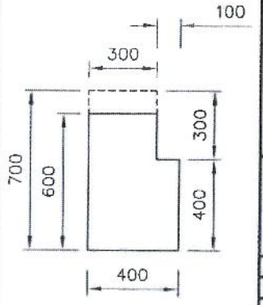




PRECAST BEAM – 400x700 L SHAPED

Designation	Beam Size W (mm)	Wus (mm)	HT (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Installation Stage Mi (kNm)	Vi (kN)	Final Stage Mf (kNm)	Vf (kN)	Na (kN/m)	Top Reinforcement T1	T2	T3	Bottom Reinforcement B1	B2	Links L1(boot)	L2(main)	L3
BL–4070–4H16–5	400	300	700	600	500	7500	170	260	200	310	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 150c/c
						8100	170		200										
						9600	150		200										
BL–4070–4H20–5	400	300	700	600	500	7500	250	260	310	310	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 150c/c
						8100	240		310										
						9600	190		270										
BL–4070–4H25–5	400	300	700	600	500	7500	360	310	460	370	135	2H12	2H12	2H12	4H25	–	H10–250	H10–250	3H16 @ 150c/c
						8100	320		460										
						9600	240		370										
BL–4070–4H16–4	400	300	700	600	400	7500	170	260	200	310	135	2H12	2H12	2H12	4H16	–	H10–250	H10–300	3H16 @ 100c/c
						8100	170		200										
						9600	150		200										
BL–4070–4H20–4	400	300	700	600	400	7500	250	260	310	310	135	2H12	2H12	2H12	4H20	–	H10–250	H10–300	3H16 @ 100c/c
						8100	240		310										
						9600	190		270										
BL–4070–4H25–4	400	300	700	600	400	7500	360	310	460	370	135	2H12	2H12	2H12	4H25	–	H10–250	H10–250	3H16 @ 100c/c
						8100	320		460										
						9600	240		370										





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TAJUK LUKISAN :
PRECAST BEAM – L SHAPE BEAM SCHEDULE

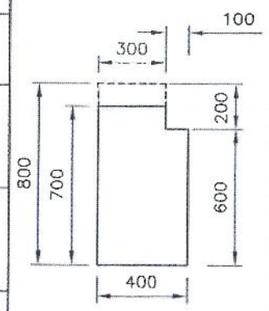
DILUKIS : NOORSAM BINTI SAMSUDDIN

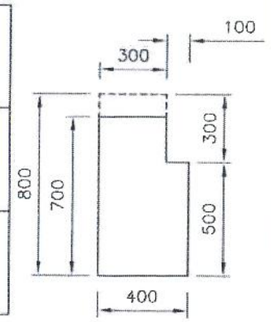
TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/JRL/4(8)

PRECAST BEAM – 400x800 L SHAPED

Designation	Beam Size						Installation Stage		Final Stage			Top Reinforcement			Bottom Reinforcement		Links		
	W (mm)	Wus (mm)	HT (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Mi (kNm)	Vi (kN)	Mf (kNm)	Vf (kN)	Na (kN/m)	T1	T2	T3	B1	B2	L1(boot)	L2(main)	L3
BL–4080–4H16–6	400	300	800	700	600	8100	200	310	240	360	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 200c/c
						9000	200		240										
						9600	200		240										
BL–4080–4H20–6	400	300	800	700	600	8100	310	310	360	360	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 200c/c
						9000	300		360										
						9600	270		360										
BL–4080–4H25–6	400	300	800	700	600	8100	460	370	540	430	135	2H12	2H12	2H12	4H25	–	H10–250	H10–250	3H16 @ 200c/c
						9000	400		540										
						9600	370		490										
BL–4080–6H25–6	400	300	800	700	600	8100	530	450	720	525	170	2H12	2H12	2H12	4H25	2H25	H10–200	H10–200	3H16 @ 200c/c
						9000	480		660										
						9600	440		600										
BL–4080–4H16–5	400	300	800	700	500	8100	200	310	240	360	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 150c/c
						9000	200		240										
						9600	200		240										
BL–4080–4H20–5	400	300	800	700	500	8100	310	310	360	360	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 150c/c
						9000	300		360										
						9600	270		360										
BL–4080–4H25–5	400	300	800	700	500	8100	460	370	540	430	135	2H12	2H12	2H12	4H25	–	H10–250	H10–250	3H16 @ 150c/c
						9000	400		540										
						9600	370		490										





JKR

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NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM – L SHAPE BEAM SCHEDULE

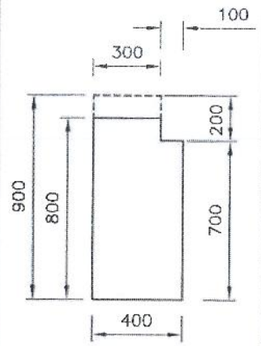
DILUKIS : NOORSAM BINTI SAMSUDDIN

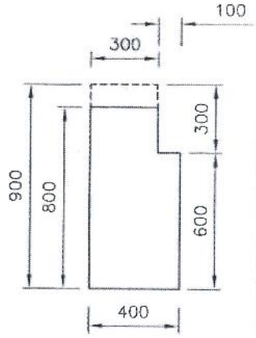
TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/JRL/5(8)

PRECAST BEAM – 400x900 L SHAPED

Designation	Beam Size						Installation Stage		Final Stage			Top Reinforcement			Bottom Reinforcement		Links		
	W (mm)	Wus (mm)	Ht (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Mi (kNm)	Vi (kN)	Mf (kNm)	Vf (kN)	Na (kN/m)	T1	T2	T3	B1	B2	L1(boot)	L2(main)	L3
BL-4090-4H16-7	400	300	900	800	700	8100	240	360	270	410	110	2H12	2H12	2H12	4H16	–	H10-300	H10-300	3H16 @ 250c/c
						9000	240		270										
						9600	240		270										
BL-4090-4H20-7	400	300	900	800	700	8100	360	360	420	410	110	2H12	2H12	2H12	4H20	–	H10-300	H10-300	3H16 @ 250c/c
						9000	360		420										
						9600	360		420										
BL-4090-4H25-7	400	300	900	800	700	8100	540	430	630	490	135	2H12	2H12	2H12	4H25	–	H10-250	H10-250	3H16 @ 250c/c
						9000	530		630										
						9600	490		630										
BL-4090-6H25-7	400	300	900	800	700	8100	730	510	860	580	170	2H12	2H12	2H12	4H25	2H25	H10-200	H10-200	4H16 @ 175c/c
						9000	660		860										
						9600	600		790										
BL-4090-4H32-7	400	300	900	800	700	8100	770	680	950	780	205	2H12	2H12	2H12	4H32	–	H10-150	H10-150	4H16 @ 175c/c
						9000	740		950										
						9600	680		880										
BL-4090-4H16-6	400	300	900	800	600	8100	240	360	270	410	110	2H12	2H12	2H12	4H16	–	H10-300	H10-300	3H16 @ 200c/c
						9000	240		270										
						9600	240		270										
BL-4090-4H20-6	400	300	900	800	600	8100	360	360	420	410	110	2H12	2H12	2H12	4H20	–	H10-300	H10-300	3H16 @ 200c/c
						9000	360		420										
						9600	360		420										
BL-4090-4H25-6	400	300	900	800	600	8100	540	430	630	490	135	2H12	2H12	2H12	4H25	–	H10-250	H10-250	3H16 @ 200c/c
						9000	530		630										
						9600	490		630										
BL-4090-6H25-6	400	300	900	800	600	8100	730	510	860	580	170	2H12	2H12	2H12	4H25	2H25	H10-200	H10-200	4H16 @ 125c/c
						9000	660		860										
						9600	600		790										
BL-4090-4H32-6	400	300	900	800	600	8100	770	680	950	780	205	2H12	2H12	2H12	4H32	–	H10-150	H10-150	4H16 @ 125c/c
						9000	740		950										
						9600	680		880										





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NAMA PROJEK :

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BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM – L SHAPE BEAM SCHEDULE

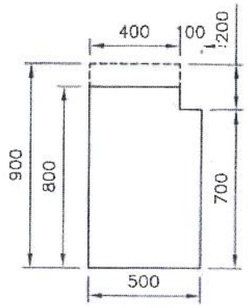
DILUKIS : NOORSAM BINTI SAMSUDDIN

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/JRL/6(B)

PRECAST BEAM – 500x900 L SHAPED

Designation	Beam Size						Installation Stage		Final Stage			Top Reinforcement			Bottom Reinforcement		Links		
	W (mm)	Wus (mm)	Hr (mm)	Hc (mm)	Hs (mm)	Max Span (mm)	Mi (kNm)	Vi (kN)	Mf (kNm)	Vf (kN)	Na (kN/m)	T1	T2	T3	B1	B2	L1(boot)	L2(main)	L3
BL–5090–4H16–7	500	400	900	800	700	8100	240	360	270	410	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 250c/c
						9000	240		270										
						9600	240		270										
BL–5090–5H16–7	500	400	900	800	700	8100	300	360	340	410	110	2H12	2H12	2H12	5H16	–	H10–300	H10–300	3H16 @ 250c/c
						9000	300		340										
						9600	300		340										
BL–5090–4H20–7	500	400	900	800	700	8100	370	360	420	410	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 250c/c
						9000	370		420										
						9600	370		420										
BL–5090–5H20–7	500	400	900	800	700	8100	460	360	520	410	110	2H12	2H12	2H12	5H20	–	H10–300	H10–300	3H16 @ 250c/c
						9000	460		520										
						9600	460		520										
BL–5090–4H25–7	500	400	900	800	700	8100	560	430	640	490	135	2H12	2H12	2H12	4H25	–	H10–250	H10–250	3H16 @ 250c/c
						9000	560		640										
						9600	550		640										
BL–5090–5H25–7	500	400	900	800	700	8100	680	520	790	600	170	2H12	2H12	2H12	5H25	–	H10–200	H10–200	3H16 @ 250c/c
						9000	680		790										
						9600	630		790										
BL–5090–7H25–7	500	400	900	800	700	8100	800	520	940	600	170	2H12	2H12	2H12	5H25	2H25	H10–200	H10–200	4H16 @ 175c/c
						9000	750		940										
						9600	690		910										
BL–5090–4H32–7	500	400	900	800	700	8100	860	700	1000	800	205	2H12	2H12	2H12	4H32	–	H10–150	H10–150	4H16 @ 175c/c
						9000	820		1000										
						9600	750		980										
BL–5090–5H32–7	500	400	900	800	700	8100	1020	700	1200	800	205	2H12	2H12	2H12	5H32	–	H10–150	H10–150	4H16 @ 175c/c
						9000	950		1200										
						9600	870		1130										



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NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM–L SHAPED BEAM SCHEDULE

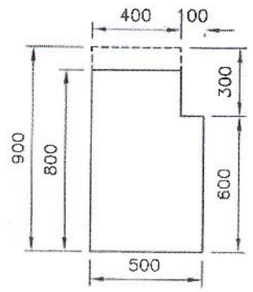
DILUKIS : SITI HAJAR BINTI MOHD NAFIAH

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/JRL/7(8)

PRECAST BEAM – 500x900 L SHAPED (continued)

Designation	Beam Size					Max Span (mm)	Installation Stage		Final Stage			Top Reinforcement			Bottom Reinforcement		Links		
	W (mm)	Wus (mm)	Ht (mm)	Hc (mm)	Hs (mm)		Mi (kNm)	Vi (kN)	Mf (kNm)	Vf (kN)	Na (kN/m)	T1	T2	T3	B1	B2	L1(boot)	L2(main)	L3
BL–5090–4H16–6	500	400	900	800	600	8100	240	360	270	410	110	2H12	2H12	2H12	4H16	–	H10–300	H10–300	3H16 @ 250c/c
						9000	240		270										
						9600	240		270										
BL–5090–5H16–6	500	400	900	800	600	8100	300	360	340	410	110	2H12	2H12	2H12	5H16	–	H10–300	H10–300	3H16 @ 250c/c
						9000	300		340										
						9600	300		340										
BL–5090–4H20–6	500	400	900	800	600	8100	370	360	420	410	110	2H12	2H12	2H12	4H20	–	H10–300	H10–300	3H16 @ 250c/c
						9000	370		420										
						9600	370		420										
BL–5090–5H20–6	500	400	900	800	600	8100	460	360	520	410	110	2H12	2H12	2H12	5H20	–	H10–300	H10–300	3H16 @ 250c/c
						9000	460		520										
						9600	460		520										
BL–5090–4H25–6	500	400	900	800	600	8100	560	430	640	490	135	2H12	2H12	2H12	4H25	–	H10–250	H10–250	3H16 @ 250c/c
						9000	560		640										
						9600	550		640										
BL–5090–5H25–6	500	400	900	800	600	8100	680	520	790	600	170	2H12	2H12	2H12	5H25	–	H10–200	H10–200	3H16 @ 250c/c
						9000	680		790										
						9600	630		790										
BL–5090–7H25–6	500	400	900	800	600	8100	800	520	940	600	170	2H12	2H12	2H12	5H25	2H25	H10–200	H10–200	4H16 @ 175c/c
						9000	750		940										
						9600	690		910										
BL–5090–4H32–6	500	400	900	800	600	8100	860	700	1000	800	205	2H12	2H12	2H12	4H32	–	H10–150	H10–150	4H16 @ 175c/c
						9000	820		1000										
						9600	750		980										
BL–5090–5H32–6	500	400	900	800	600	8100	1020	700	1200	800	205	2H12	2H12	2H12	5H32	–	H10–150	H10–150	4H16 @ 175c/c
						9000	950		1200										
						9600	870		1130										



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NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST BEAM–L SHAPED BEAM SCHEDULE

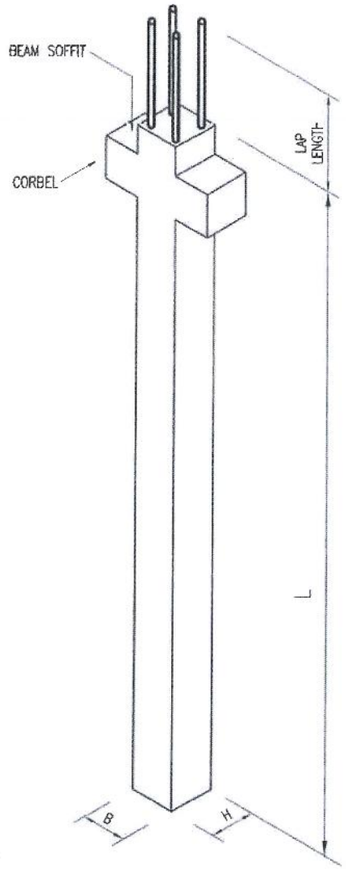
DILUKIS : SITI HAJAR BINTI MOHD NAFIAH

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

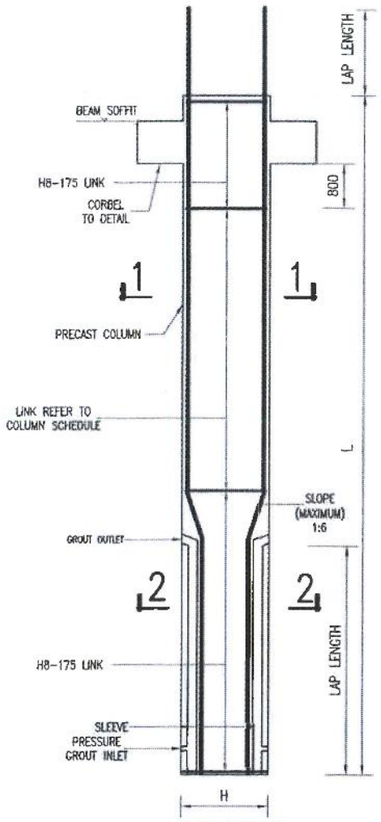
NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/JRL/8(8)

PRECAST

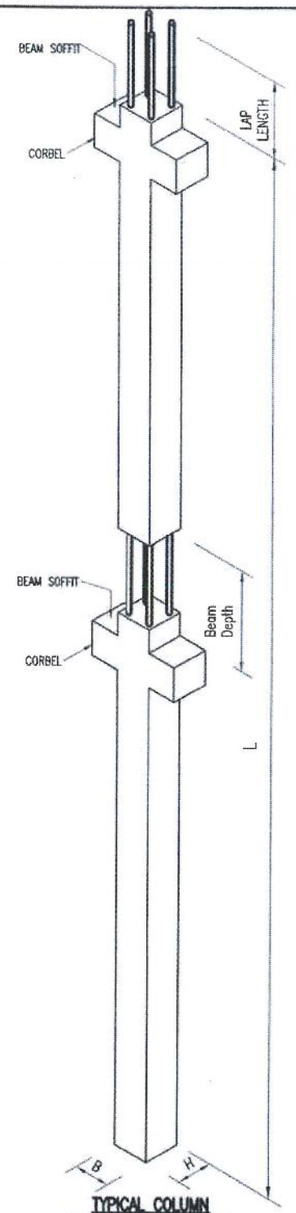
COLUMN



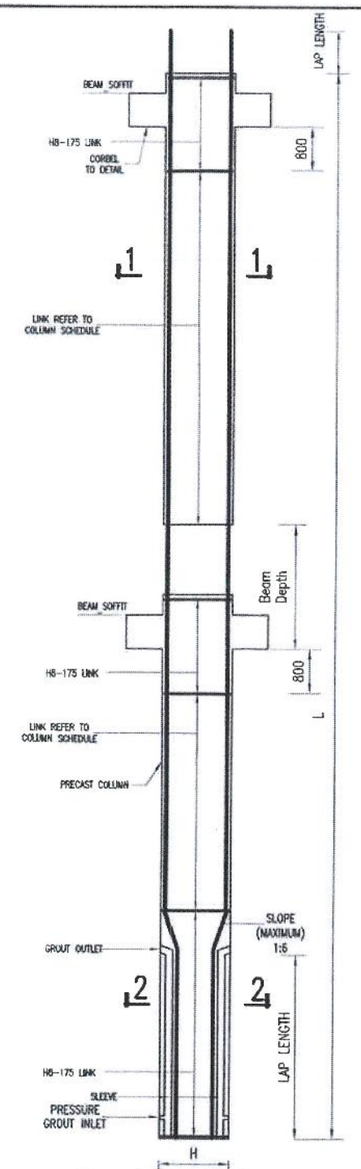
TYPICAL COLUMN
SINGLE TIER (3D VIEW)



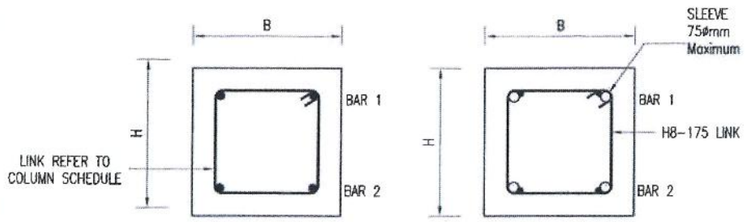
TYPICAL COLUMN
(ELEVATION-SINGLE TIER)



TYPICAL COLUMN
DOUBLE TIER (3D VIEW)

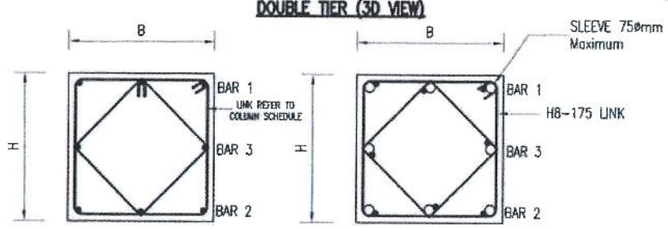


TYPICAL COLUMN
(ELEVATION-DOUBLE TIER)



SECTION 1-1 SECTION 2-2

TYPE A(MAIN REINFORCEMENT =4 NOS)



SECTION 1-1 SECTION 2-2

TYPE B(MAIN REINFORCEMENT =8 NOS)

REINFORCEMENT BAR SIZE (mm)	LAP LENGTH (mm)
12	650
16	850
20	1050
25	1300
32	1650

LAP SCHEDULE

TYPICAL SECTION OF BARS & LINKS ARRANGEMENT

CODE OF COMPONENTS

CS-3030-A16

- REBAR TYPE
- COLUMN WIDTH & DEPTH (300 x 300 MM)
- COLUMN TYPE (SQUARE)

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JURUTERA AWAM PENGUASA KANAN :
Ir. CHE MIMI SURIYANI BINTI ISMAIL

JURUTERA AWAM KANAN :
Ir. NG CHEE KEONG

DISEMAK :
NURUL NASUHA BINTI MD ZIN

DIREKABENTUK :
SHAH JAHAN BIN ABDULLAH

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST SQUARE
COLUMN

DILUKIS : MUHAMAD SYAHID BIN ISMAIL

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CS/1(5)

TABLE 1
PRECAST SQUARE COLUMN

CODE OF COMPONENT	APPOX SELFWEIGHT (PRECAST)	FINAL STAGE DESIGN		REINFORCEMENT DETAIL				TYPE
		MAX AXIAL LOAD	MAX MOMENT	BAR 1	BAR 2	BAR 3	LINKS	
	kN/m	Nf (kN)	(kNm)					
CS-3030-A16	2.25	630	75	2H16	2H16	-	H8-250	A
		1000	70					
		1400	45					
CS-3030-A20		630	90	2H20	2H20	-	H8-250	A
		1000	80					
		1500	55					
CS-3030-A25		630	105	2H25	2H25	-	H8-250	A
		1000	100					
		1500	75					
		1800	50					
CS-3535-A16	3.07	850	120	2H16	2H16	-	H8-250	A
		1000	115					
		1500	95					
		1800	75					
CS-3535-A20		850	140	2H20	2H20	-	H8-250	A
		1000	135					
		1500	115					
		1900	85					
CS-3535-A25		850	165	2H25	2H25	-	H8-250	A
		1000	160					
		1500	135					
		2100	90					
CS-4040-A16	4.00	1200	170	2H16	2H16	-	H8-250	A
		2000	135					
		2200	115					
CS-4040-A20		1200	195	2H20	2H20	-	H8-250	A
		2000	155					
		2400	120					
CS-4040-A25		1200	230	2H25	2H25	-	H8-250	A
		2000	185					
		2500	145					

CODE OF COMPONENT	APPOX SELFWEIGHT (PRECAST)	FINAL STAGE DESIGN		REINFORCEMENT DETAIL				TYPE
		MAX AXIAL LOAD	MAX MOMENT	BAR 1	BAR 2	BAR 3	LINKS	
	kN/m	Nf (kN)	(kNm)					
CS-4545-A20	5.07	1600	165	2H20	2H20	-	H8-250	A
		2500	215					
		3000	160					
CS-4545-A25		1600	300	2H25	2H25	-	H8-250	A
		2500	245					
		3000	195					
CS-4545-A32		1600	375	2H32	2H32	-	H8-250	A
		2500	310					
		3400	215					
CS-5050-A20	6.25	1900	350	2H20	2H20	-	H8-250	A
		2500	325					
		3000	285					
CS-5050-A25		1900	395	2H25	2H25	-	H8-250	A
		2500	365					
		3000	325					
		3500	270					
CS-5050-A32		1900	480	2H32	2H32	-	H8-250	A
		2500	435					
		3000	400					
		3500	340					
CS-5555-B20	7.57	2300	495	3H20	3H20	2H20	2H8-250	B
		3000	460					
		4000	355					
		4500	280					
CS-5555-B25		2300	585	3H25	3H25	2H25	2H8-250	B
		3000	530					
		4000	435					
		5000	265					
CS-5555-B32		2300	725	3H32	3H32	2H32	2H8-250	B
		3000	660					
		4000	545					
		5000	420					
		5500	315					

ADDITIONAL NOTES:-

1. i. Maximum moment capacity (in both X and Y direction) shall include the final design moment after taking into consideration the initial moments in the column (Mi), additional moments due to deflection (Madd), increased moment (Ma) due to eccentricity of the axial force, double curvature effect (M1 and M2), and larger additional moments due to the sway effect as in unbraced structure, all at final stage design.

   ii. Nf = Maximum Axial Load During Final Stage Design.

2. i. For single-tier column, maximum length, L for the column shall be limited to 3m and 4m.
   ii. For double-tier column, maximum length, L for the column shall be limited to 6m, 7m and 8m .

3. For double-tier column, manufacturer must check deflection during handling and lifting at manufacture, transportation and erection stage.

4. The column are design as braced column. (Lateral load must be resist by independent lateral stabilising element)

CODE OF COMPONENTS

CS-3030-A16

- REBAR TYPE
- COLUMN WIDTH & DEPTH (300 x 300 MM)
- COLUMN TYPE (SQUARE)

JKR

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NO.6, JALAN SULTAN SALAHUDDIN
50480 KUALA LUMPUR
(NO. TEL: 03-2618 9171 & NO. FAX: 03-2618 9155)

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JURUTERA AWAM KANAN :
Ir. NG CHEE KEONG

DISEMAK :
NURUL NASUHA BINTI MD ZIN

DIREKABENTUK :
SHAH JAHAN BIN ABDULLAH

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

TABLE 1 -
PRECAST SQUARE COLUMN

DILUKIS : MUHAMAD SYAHID BIN ISMAIL

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CS/2(5)

CODE OF COMPONENT	APPOX SELFWEIGHT (PRECAST)	FINAL STAGE DESIGN		REINFORCEMENT DETAIL				TYPE
		MAX AXIAL LOAD	MAX MOMENT	BAR 1	BAR 2	BAR 3	LINKS	
	kN/m	Nf (kN)	(kNm)					
CS-6060-B20	9.00	2800	620	3H20	3H20	2H20	2H8-250	B
		3500	575					
		4000	525					
		5000	405					
		5200	365					
CS-6060-B25		2800	710	3H25	3H25	2H25	2H8-250	B
		3500	655					
		4000	605					
		5000	485					
		5500	400					
CS-6060-B32		2800	870	3H32	3H32	2H32	2H8-250	B
		3500	805					
		4000	745					
		5000	625					
		6000	540					
CS-6565-B20	10.57	3200	750	3H20	3H20	2H20	2H8-250	B
		4000	710					
		5000	620					
		6000	465					
CS-6565-B25		3200	860	3H25	3H25	2H25	2H8-250	B
		4000	810					
		5000	705					
		6000	555					
		6500	455					
CS-6565-B32		3200	1050	3H32	3H32	2H32	2H8-250	B
		4000	970					
		5000	855					
		6000	715					
		7000	530					
CS-7070-B20	12.25	3900	925	3H20	3H20	2H20	2H8-250	B
		5000	850					
		6000	740					
		7000	555					
		8000	300					
CS-7070-B25		3900	1045	3H25	3H25	2H25	2H8-250	B
		5000	950					
		6000	840					
		7000	655					
		8000	440					
CS-7070-B32		3900	1245	3H32	3H32	2H32	2H8-250	B
		5000	1130					
		6000	990					
		7000	825					
		8000	630					

CODE OF COMPONENT	APPOX SELFWEIGHT (PRECAST)	FINAL STAGE DESIGN		REINFORCEMENT DETAIL				TYPE
		MAX AXIAL LOAD	MAX MOMENT	BAR 1	BAR 2	BAR 3	LINKS	
	kN/m	Nf (kN)	(kNm)					
CS-7575-B20	14.07	4500	1110	3H20	3H20	2H20	2H8-250	B
		5000	1085					
		6000	990					
		7000	865					
		8000	655					
CS-7575-B25		4500	1230	3H25	3H25	2H25	2H8-250	B
		5000	1185					
		6000	1090					
		7000	965					
		8000	775					
CS-7575-B32		4500	1430	3H32	3H32	2H32	2H8-250	B
		5000	1385					
		6000	1290					
		7000	1145					
		8000	975					
CS-8080-B20	16.00	5000	1315	3H20	3H20	2H20	2H8-250	B
		6000	1240					
		7000	1150					
		8000	985					
		9000	765					
CS-8080-B25		5000	1435	3H25	3H25	2H25	2H8-250	B
		6000	1370					
		7000	1270					
		8000	1115					
		9000	915					
CS-8080-B32		5000	1685	3H32	3H32	2H32	2H8-250	B
		6000	1590					
		7000	1470					
		8000	1305					
		9000	1115					

CODE OF COMPONENTS

CS-3030-A16

- REBAR TYPE
- COLUMN WIDTH & DEPTH (300 x 300 MM)
- COLUMN TYPE (SQUARE)

ADDITIONAL NOTES:-

1. i. Maximum moment capacity (in both X and Y direction) shall include the final design moment after taking into consideration the initial moments in the column (Mi), additional moments due to deflection (Madd), increased moment (Ma) due to eccentricity of the axial force, double curvature effect (M1 and M2), and larger additional moments due to the sway effect as in unbraced structure, all at final stage design.

   ii. Nf = Maximum Axial Load During Final Stage Design.

2. i. For single-tier column, maximum length, L for the column shall be limited to 3m and 4m.
   ii. For double-tier column, maximum length, L for the column shall be limited to 6m, 7m and 8m .

3. For double-tier column, manufacturer must check deflection during handling and lifting at manufacture, transportation and erection stage.

4. The column are design as braced column. (Lateral load must be resist by independent lateral stabilising element)

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Ir. NG CHEE KEONG

DISEMAK :
NURUL NASUHA BINTI MD ZIN

DIREKABENTUK :
SHAH JAHAN BIN ABDULLAH

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

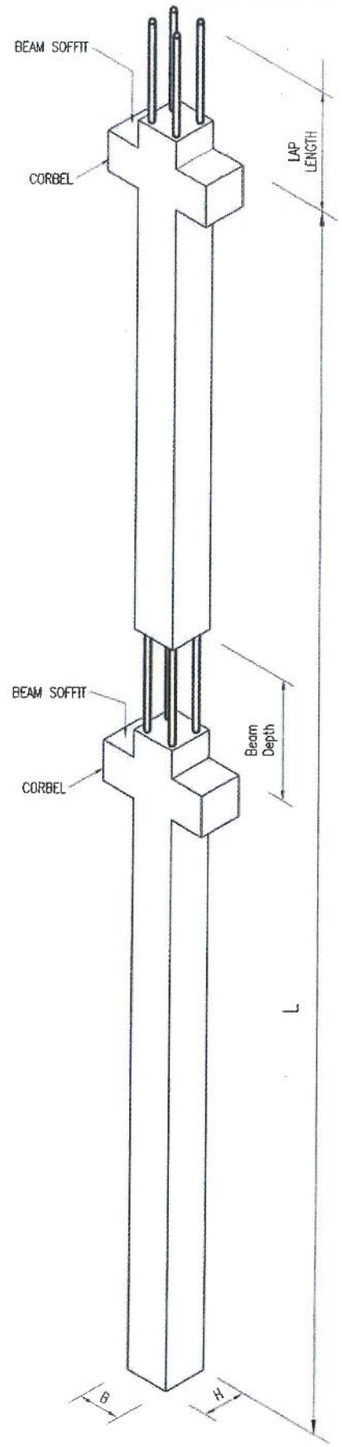
TAJUK LUKISAN :

TABLE 1 -
PRECAST SQUARE COLUMN

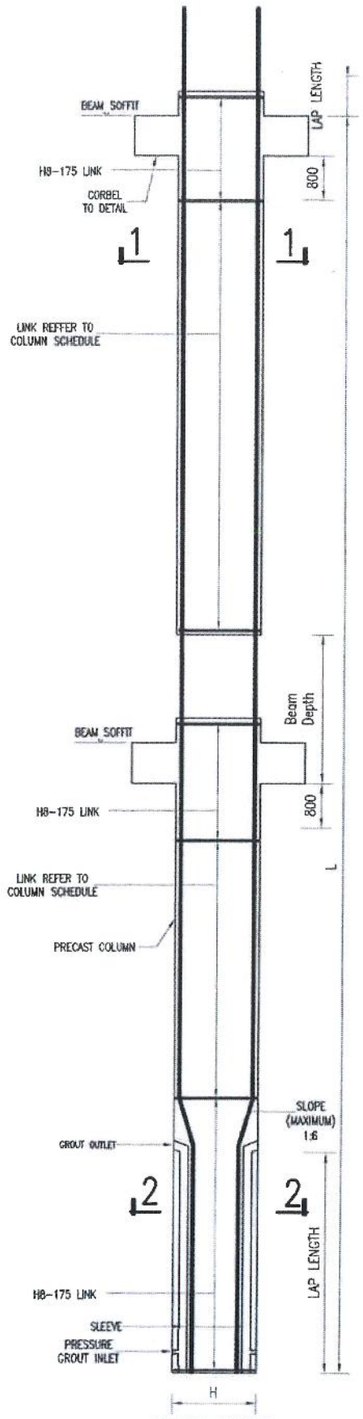
DILUKIS : MUHAMAD SYAHID BIN ISMAIL

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

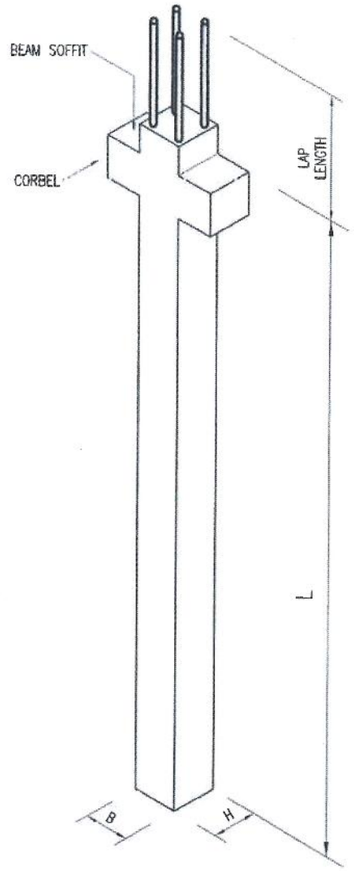
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CS/3(5)



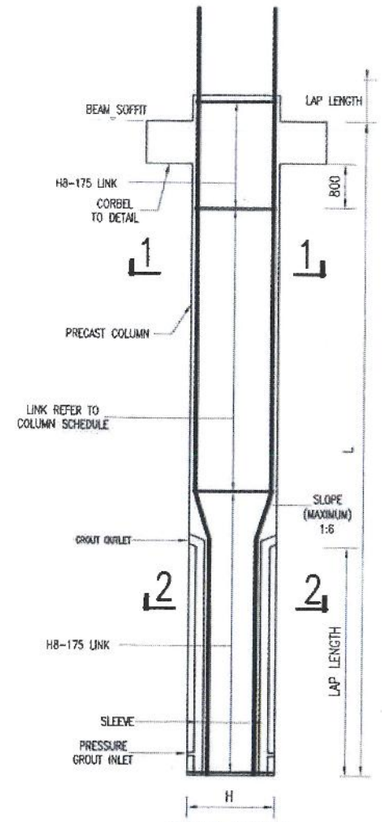
TYPICAL COLUMN
DOUBLE TIER (3D VIEW)



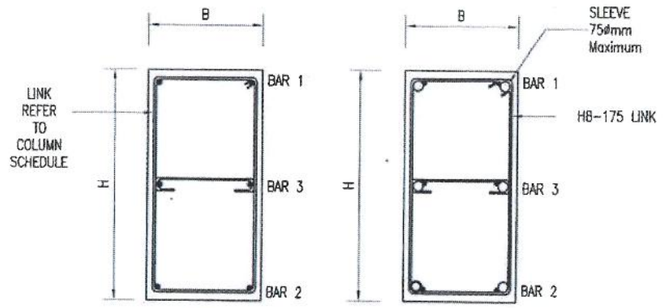
TYPICAL COLUMN
(ELEVATION-DOUBLE TIER)



TYPICAL COLUMN
SINGLE TIER (3D VIEW)



TYPICAL COLUMN
(ELEVATION-SINGLE TIER)



SECTION 1-1 SECTION 2-2

TYPE C(MAIN REINFORCEMENT =6 NOS)

REINFORCEMENT BAR SIZE (mm)	LAP LENGTH (mm)
12	650
16	850
20	1050
25	1300
32	1650

LAP SCHEDULE

TYPICAL SECTION OF BARS & LINKS ARRANGEMENT

CODE OF COMPONENTS

CR-3060-A16

- REBAR TYPE
- COLUMN WIDTH & DEPTH (300 x 600 MM)
- COLUMN TYPE (RECTANGULAR)

JKR

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4-10
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JURUTERA AWAM KANAN :
Ir. NG CHEE KEONG
DISEMAK :
NURUL HASUHA BINTI MD ZIN
DIREKABENTUK :
SHAH JAHAN BIN ABDULLAH

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST RECTANGULAR
COLUMN

DILUKIS : MUHAMAD SYAHID BIN ISMAIL

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CR/4(5)

TABLE 2

PRECAST RECTANGULAR COLUMN

CODE OF COMPONENT	SIZE	APPOX SELFWEIGHT (PRECAST)	FINAL STAGE DESIGN		REINFORCEMENT DETAIL			
			MAX AXIAL LOAD	MAX MOMENT	BAR 1	BAR 2	BAR 3	LINKS
	(mm)	kN/m	Nf (kN)	(kNm)				
CR-3060-C16	300 x 600	4.50	1400	285	2H16	2H16	2H16	2H8-250
			1800	270				
			2200	230				
			2600	175				
CR-3060-C20			1400	335	2H20	2H20	2H20	2H8-250
			1800	310				
			2200	270				
			2600	215				
CR-3060-C25			1400	405	2H25	2H25	2H25	2H8-250
			1800	370				
			2200	320				
			2600	265				
			3000	195				
CR-4060-C20	400 x 600	6.00	1800	420	2H20	2H20	2H20	2H8-250
			2500	375				
			3000	330				
			3500	235				
CR-4060-C25			1800	485	2H25	2H25	2H25	2H8-250
			2500	425				
			3000	370				
			3800	235				
CR-4060-C32			1800	590	2H32	2H32	2H32	2H8-250
			2500	525				
			3000	470				
			3900	330				
			4300	250				

CODE OF COMPONENT	SIZE	APPOX SELFWEIGHT (PRECAST)	FINAL STAGE DESIGN		REINFORCEMENT DETAIL			
			MAX AXIAL LOAD	MAX MOMENT	BAR 1	BAR 2	BAR 3	LINKS
	(mm)	kN/m	Nf (kN)	(kNm)				
CR-4070-C20	400 x 700	7.00	2200	550	2H20	2H20	2H20	2H8-250
			3000	490				
			4000	335				
			4500	220				
CR-4070-C25			2200	620	2H25	2H25	2H25	2H8-250
			3000	560				
			4000	405				
			4500	280				
CR-4070-C32			2200	750	2H32	2H32	2H32	2H8-250
			3000	660				
			4000	515				
			4500	420				
			5000	280				
CR-4080-C25	400 x 800	8.00	2500	795	2H25	2H25	2H25	2H8-250
			3000	740				
			4000	615				
			5200	335				
CR-4080-C32			2500	955	2H32	2H32	2H32	2H8-250
			3000	900				
			4000	755				
			5200	465				
CR-5070-C25	500 x 700	8.75	2700	735	2H25	2H25	2H25	2H8-250
			3500	665				
			4000	605				
			5000	445				
			5500	335				
CR-5070-C32			2700	865	2H32	2H32	2H32	2H8-250
			3500	795				
			4000	715				
			5000	575				
			5500	465				

ADDITIONAL NOTES:-

1. i. Maximum moment capacity (in both X and Y direction) shall include the final design moment after taking into consideration the initial moments in the column (Mi), additional moments due to deflection (Madd), increased moment (Ma) due to eccentricity of the axial force, double curvature effect (M1 and M2), and larger additional moments due to the sway effect as in unbraced structure, all at final stage design.

   ii. Nf = Maximum Axial Load During Final Stage Design.

2. i. For single-tier column, maximum length, L for the column shall be limited to 3m and 4m.
   ii. For double-tier column, maximum length, L for the column shall be limited to 6m, 7m and 8m .

3. For double-tier column, manufacturer must check deflection during handling and lifting at manufacture, transportation and erection stage.

4. The column are design as braced column. (Lateral load must be resist by independent lateral stabilising element)

CODE OF COMPONENTS

CR-3060-A16

- REBAR TYPE
- COLUMN WIDTH & DEPTH (300 x 600 MM)
- COLUMN TYPE (RECTANGULAR)

JKR

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SHAH JAHAN BIN ABDULLAH

NURUF RUJUKAN	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

TABLE 2 -
PRECAST RECTANGULAR
COLUMN

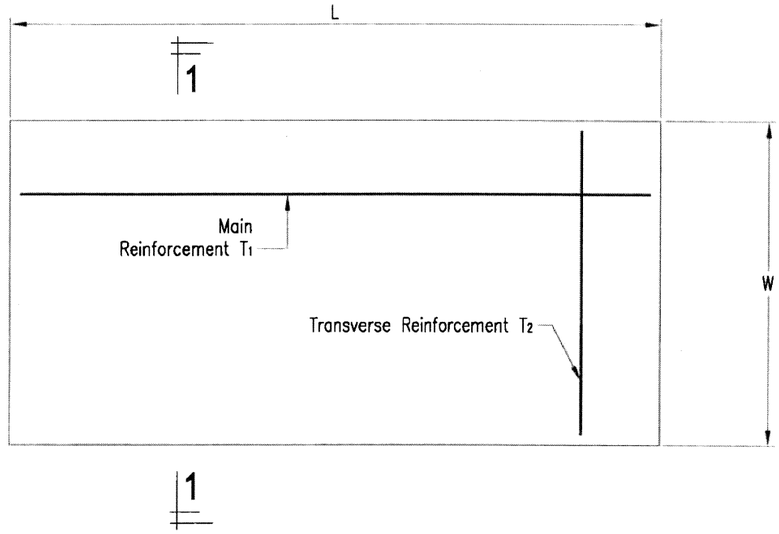
DILUKIS : MUHAMAD SYAHID BIN ISMAIL

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

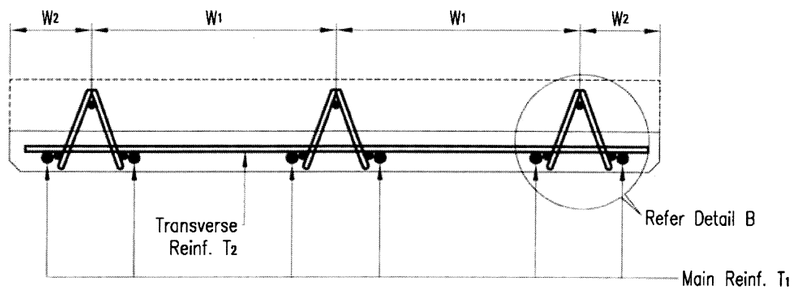
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CR/5(5)

PRECAST

HALF SLAB

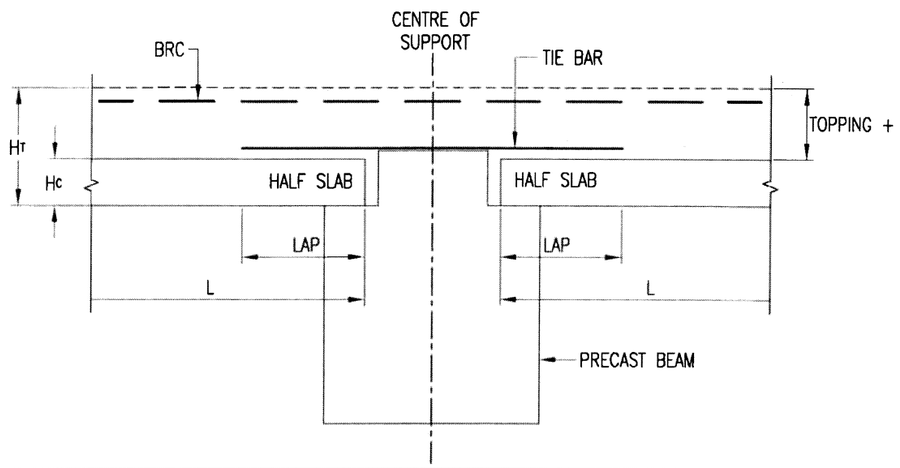


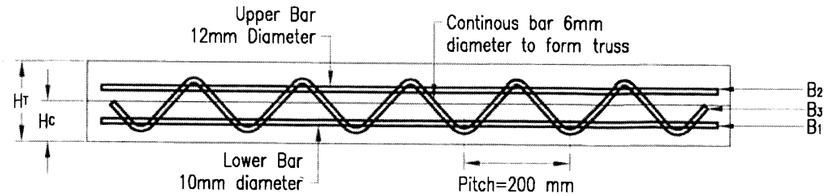
TYPICAL LAYOUT



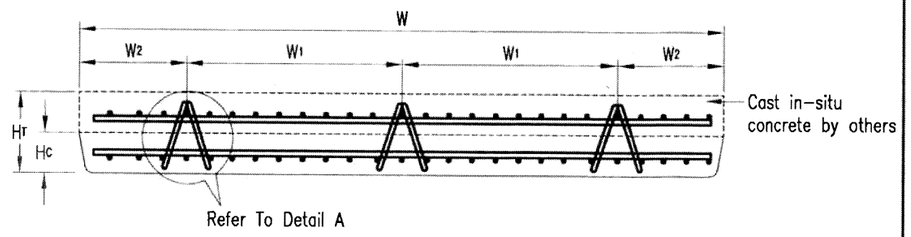
Section 1–1

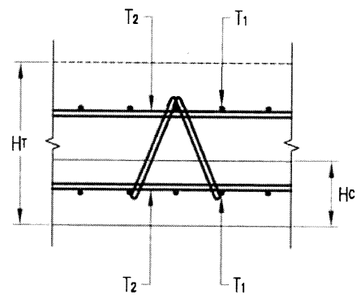
W (mm)	W1 (mm)	W2 (mm)	Lattice Girder provided
600	300	150	2
1200	450	150	3
2400	600	300	4



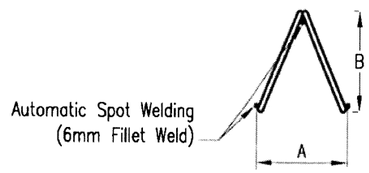


TYPICAL LATTICE GIRDER DETAILS





Detail A



Detail B

Overall Depth 'HT' (mm)	A (mm)	B (mm)
175	100	115
200	100	140

Lap Schedule

REINFORCEMENT TIE Bar	Lap Length (mm)
10	400
12	500

Code of Component

HT 85 – 175
- 175 → Overall thickness H_T (175 mm)
- 85 → Thickness of Half Slab T (85 mm)
- HT → Type of Slab (Half Slab)

SPECIFICATION

a. Concrete cover (Refer Table).
b. Fire Resistance (Refer Table).
c. Characteristic of steel reinforcement
High Tensile (H) fyk = 500 N/mm²
Mild Steel (R) fyv = 250 N/mm²
d. Load should be uniformly distributed.
e. The application of concentrated load area on precast element shall be referred to competent person.
f. The above analysis is based on one way spanning slab, continuous and intermediate span design.
g. The connection system between precast and cast in-situ structure shall be referred to competent person.
h. The design has been prepared in accordance with Eurocode 2.
i. All lifting hook should be placed at 0.1L from edge at (both side)
j. The lattice girder and chamfer detail shall be fabricated to manufacture's details.
k. This half slab is design as a one way slab.
l. Recommended minimum concrete strength for lifting and handling of precast half slab = 20 N/mm²
m. Precast half slab should be propped at site during installation.

JKR

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Ir. ROSNITA BINTI ABDUL RANI
JURUTERA AWAM PENGUASA :
Ir. Dr. ZURAIDA BINTI ZAINI RUAL
DISEMAK :
Ir. Dr. ZURAIDA BINTI ZAINI RUAL
DIREKABENTUK :
Ir. SHARIFAH MAZNAH BINTI SYED AHMAD ZAHRI

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST HALF SLAB
(2 HOUR FIRE RESISTANCE)
(SHEET 1/2)

DILUKIS : MOHAMAD SAZWAN BIN MOHAMAD ISHAK
TARIKH : NOVEMBER 2019 | SKALA : N.T.S
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/PHS/1(2)

LATTICE GIRDER

Schedule 1: Value for W1 dan W2

W (mm)	W1 (mm)	W2 (mm)	Lattice Girder provided
600	300	150	2
1200	450	150	3
2400	600	300	4

Schedule 2: Value for B

Overall Depth 'Ht' (mm)	B (mm)
175	115
200	140

PRECAST HALF SLAB

For Span **L= 4.0m** (the data shall applies for span length, L equal or less than 4.0m subjected to moment and shear capacity required with cover = **45mm**)

Code of Component	Dimension			Approx Seftweight (Precast) kN/m²	Uniformly Distributed Load kN/m²	Max Moment (M_c) Mid Span & Support kN/m Width	Max Shear (V_{Rd}) kN/m Width	Reinforcement		Lattice Girder		
	Width (W) mm	Thickness (H_c) mm	Overall Depth (H_t)					Bar (T1)	Bar (T2)	Bar (B_1)	Bar (B_2)	Bar (B_3)
HS-85-175	W	85	175	2.13	15.30	40.60	79.86	H10–100	H10–100	H10	H10	R6
HS-85-200	W	85	200	2.13	16.13	39.00	83.70	H10–125	H10–125	H10	H10	R6

For Span **L= 4.5m** (the data shall applies for span length, L equal or less than 4.5m subjected to moment and shear capacity required with cover = **45mm**)

Code of Component	Dimension			Approx Seftweight (Precast) kN/m²	Uniformly Distributed Load kN/m²	Max Moment (M_c) Mid Span & Support kN/m Width	Max Shear (V_{Rd}) kN/m width	Reinforcement		Lattice Girder		
	Width (W) mm	Thickness (H_c) mm	Overall Depth (H_t)					Bar (T1)	Bar (T2)	Bar (B_1)	Bar (B_2)	Bar (B_3)
HS-95-200	W	95	200	2.38	16.13	49.00	90.20	H10–100	H10–100	H10	H10	R6

Code of Component

HT 85 – 175

- Overall thickness H_t (175 mm)
- Thickness of Half Slab T (85 mm)
- Type of Slab (Half Slab)

SPECIFICATION

a. Concrete cover (Refer Table).
b. Fire Resistance (Refer Table).
c. Characteristic of steel reinforcement
High Tensile (H) fyk = 500 N/mm²
Mild Steel (R) fyv = 250 N/mm²
d. Load should be uniformly distributed.
e. The application of concentrated load area on precast element shall be referred to competent person.
f. The above analysis is based on one way spanning slab, continuous and intermediate span design.
g. The connection system between precast and cast in-situ structure shall be referred to competent person.
h. The design has been prepared in accordance with Eurocode 2.
i. All lifting hook should be placed at 0.1L from edge at (both side)
j. The lattice girder and chamfer detail shall be fabricated to manufacture's details.
k. This half slab is design as a one way slab.
l. Recommended minimum concrete strength for lifting and handling of precast half slab = 20 N/mm²
m. Precast half slab should be propped at site during installation.

JKR

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4–10 & 17
BLOK C, IBU PEJABAT JKR MALAYSIA
NO.6, JALAN SULTAN SALAHUDDIN
50480 KUALA LUMPUR
(NO. TEL: 03-2818 9171 & NO. FAX: 03-2818 9155)

PENGARAH KANAN:
DATO' Ir. Hj. MOHAMAD ZULKEFLY BIN SULAIMAN
PENGARAH KEJURUTERAAN (PAKAR STRUKTUR) :
Ir. Hj. MOHD NOOR AZUDIN BIN MAHSOR
JURUTERA AWAM PENGUASA KANAN :
Ir. ROSNITA BINTI ABDUL RAHI
JURUTERA AWAM PENGUASA:
Ir. Dr. ZURAIDA BINTI ZAINI RUJAL
DISEMAK :
Ir. Dr. ZURAIDA BINTI ZAINI RUJAL
DIREKABENTUK :
Ir. SHARIFAH MAZNAH BINTI SYED AHMAD ZAHRI

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

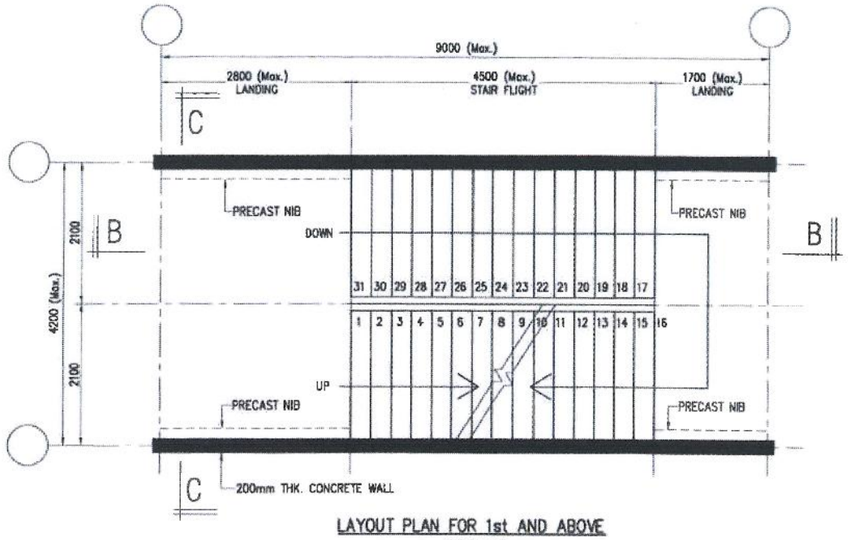
TAJUK LUKISAN :

PRECAST HALF SLAB
(2 HOUR FIRE RESISTANCE)
(SHEET 2/2)

DILUKIS : MOHAMAD SAZWAN BIN MOHAMAD ISHAK
TARIKH : NOVEMBER 2019 | SKALA : N.T.S
NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/PHS/2(2)

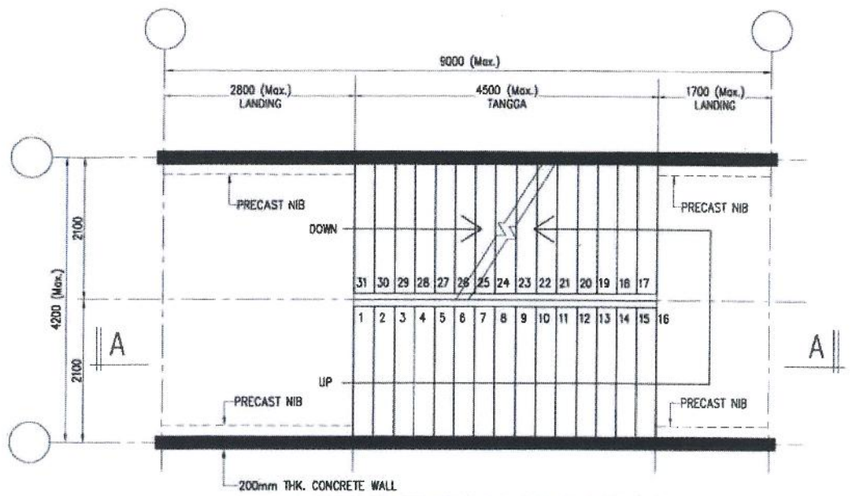
PRECAST

STAIRCASE



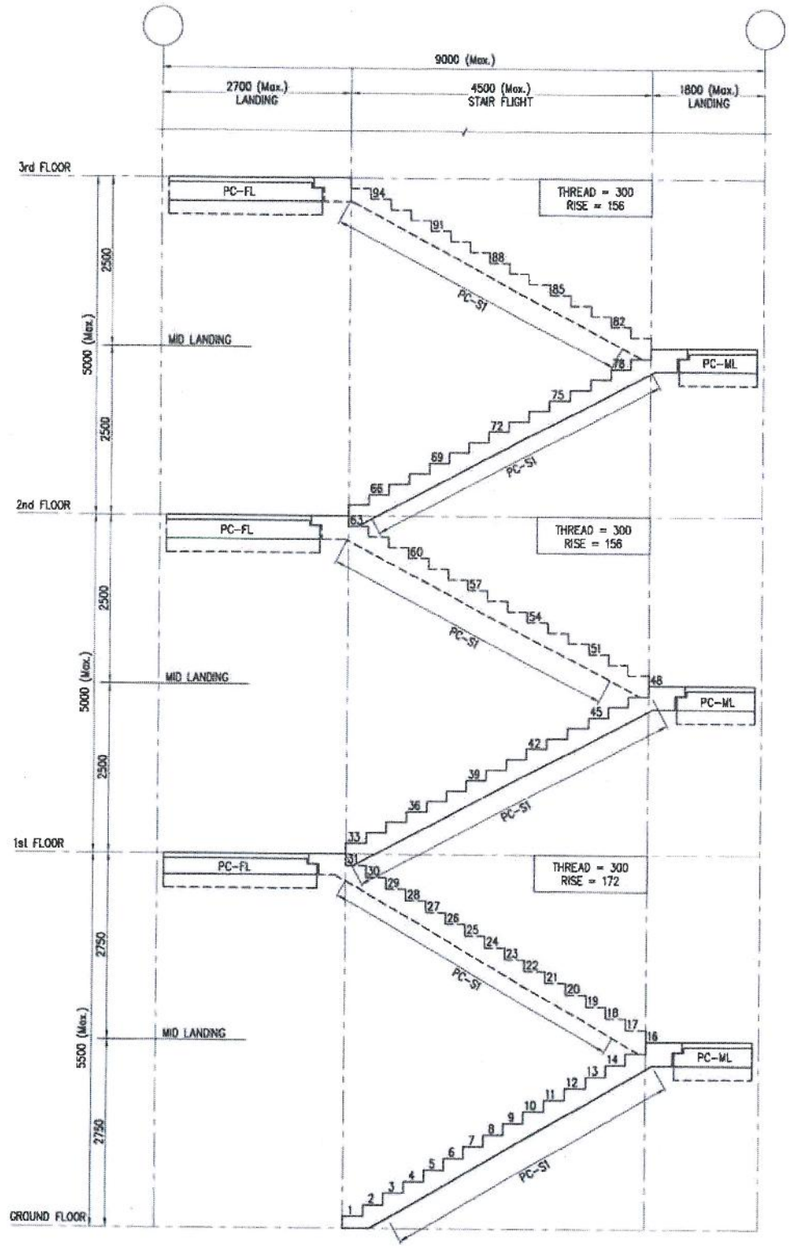
LAYOUT PLAN FOR 1st AND ABOVE

SCALE 1:40



LAYOUT PLAN FOR GROUND FLOOR TO 1st FLOOR

SCALE 1:40



TYPICAL SIDE VIEW

SCALE 1:40

LEGEND:

PC-FL : PRECAST FLOOR LANDING (WITH 75mm THK. MAXIMUM TOPPING)
PC-ML : PRECAST MID LANDING (WITH 75mm THK. MAXIMUM TOPPING)
PC-ST : PRECAST THREAD
PB : PRECAST BEAM
PC : PRECAST COLUMN

PRECAST STAIRCASE TYPE 1 (1/2)

JKR

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4-10
BLOK G, IBU PEJABAT JKR MALAYSIA
NO.6, JALAN SULTAN SALAHUDDIN
50480 KUALA LUMPUR
(NO. TEL: 03-2618 9171 & NO. FAX: 03-2618 9156)

PENGARAH KANAN:
DATO' Ir. Hj. MOHAMAD ZULKEFLY BIN SULAIMAN

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Ir. Hj. MOHD NOOR AZUDIN BIN MANSOR

JURUTERA AWAM PENGUASA KANAN :
Ir. HAFIZAH BINTI ZAKARIA

JURUTERA AWAM KANAN :
Ir. LEE CHOON SIANG

DISEMAK :
Ir. MOHD ASSYARUL BIN SAADUN

DIREKABENTUK :
Ir. EZUAN BIN JAMADON

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
1	DESIGN BASED ON EC2	DEC. 2019	

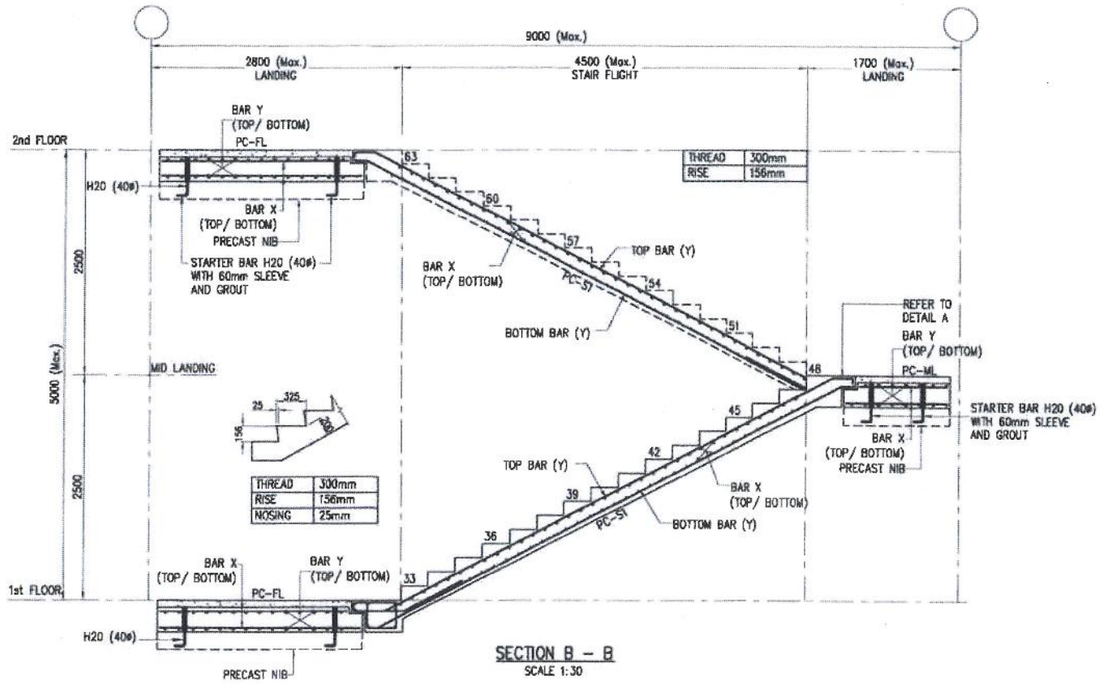
NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST STAIRCASE
TYPE 1 (1/2)
(2 HOUR FIRE RATED)

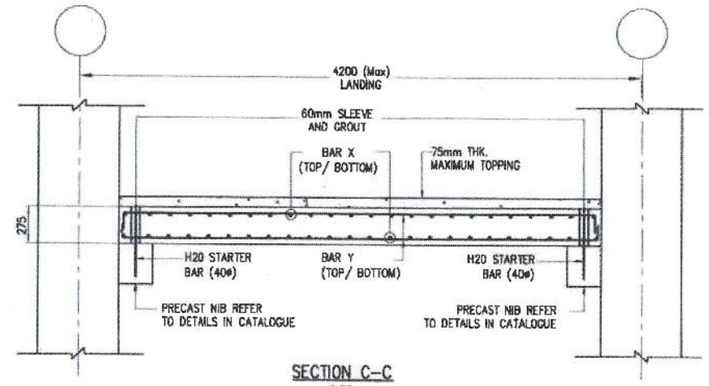
DILUKIS : PUTERI ZAHARAH BINTI ABDUL JALIL

TARIKH : NOVEMBER 2019 | SKALA : SPT. DINYATAKAN

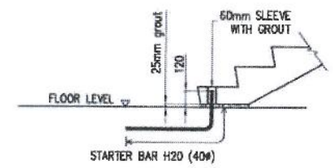
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/ST2HR/1-01 (6)



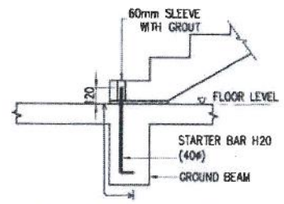
SECTION B – B
SCALE 1:30



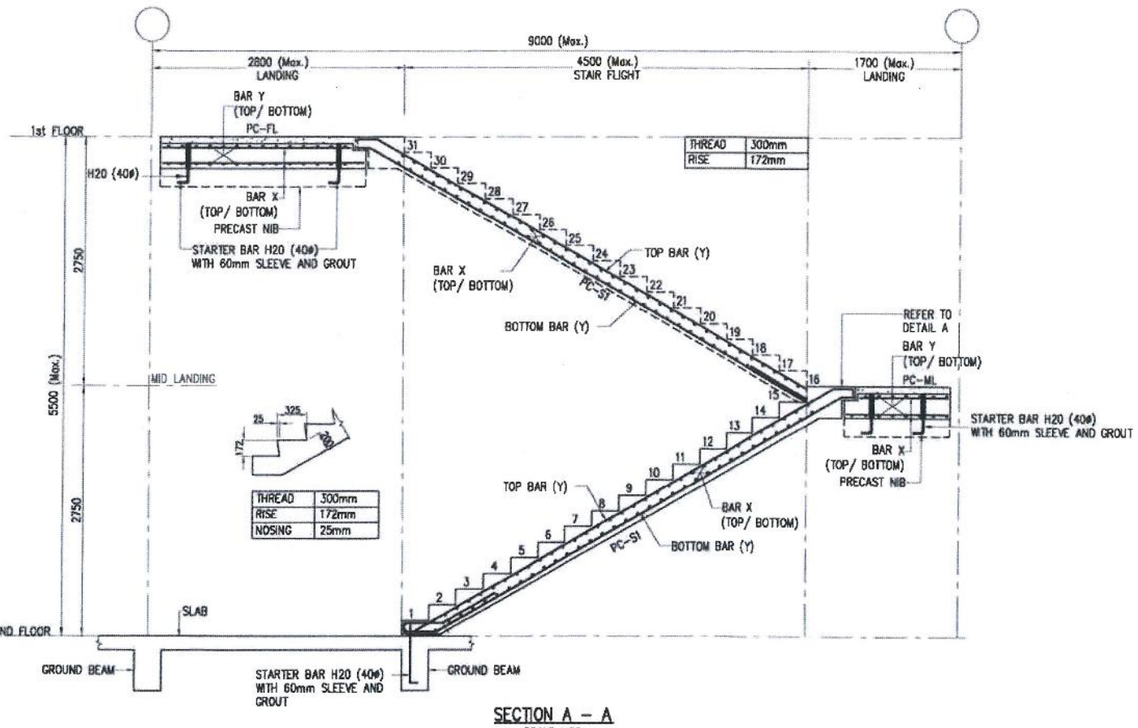
SECTION C–C
1:20



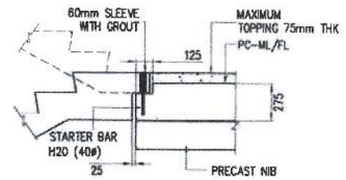
DETAIL CONNECTION OF PC STAIRCASE & SLAB
1:20



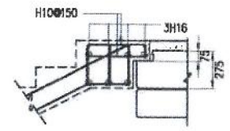
DETAIL CONNECTION OF PC STAIRCASE & BEAM
1:20



SECTION A – A
SCALE 1:30

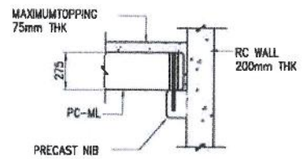


DETAIL CONNECTION OF PC STAIRCASE & LANDING
1:20



DETAIL A
1:20

STAIRCASE 1 SCHEDULE				
			WAIST	LANDING
FIRE RESISTANCE			2 HR	
CONCRETE COVER (mm)			45	
THICKNESS (mm)			200	275
BAR SIZE AND SPACING (mm)	BOTTOM	X	H16–200	H16–200
		Y	H16–175	H16–100
	TOP	X	H16–200	H16–200
		Y	H16–200	H16–200



DETAIL CONNECTION OF PC LANDING AND PC NIB
1:20

LEGEND:

PC-FL : PRECAST FLOOR LANDING (WITH 75mm THK. MAXIMUM TOPPING)
PC-ML : PRECAST MID LANDING (WITH 75mm THK. MAXIMUM TOPPING)
PC-S1 : PRECAST THREAD
PB : PRECAST BEAM
PC : PRECAST COLUMN

PRECAST STAIRCASE TYPE 1 (2/2)

JKR

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4–10
BLOK G, IBU PEJABAT JKR MALAYSIA
NO.6, JALAN SULTAN SALAHUDDIN
50480 KUALA LUMPUR
(NO. TEL: 03-2618 9171 & NO. FAX: 03-2618 9155)

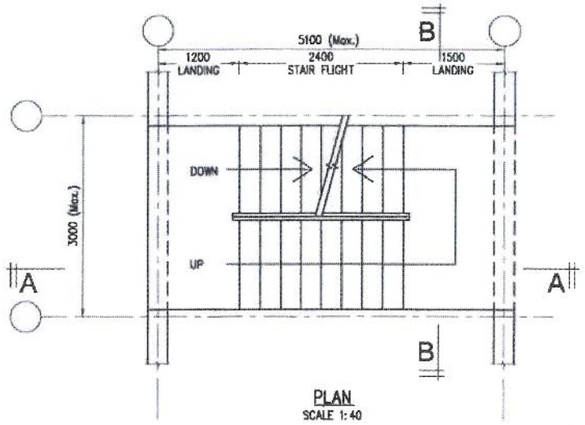
PENGARAH KANAN:
DATO' ir. Hj. MOHAMAD ZULKEFLY BIN SULAIMAN
PENGARAH KEJURUTERAAN (PAKAR STRUKTUR):
Ir. Hj. MOHD NOOR AZUDIN BIN MANSOR
JURUTERA AWAM PENGUASA KANAN :
Ir. HAFIZAH BINTI ZAKARIA
JURUTERA AWAM KANAN :
Ir. LEE CHOON SIANG
DISEMAK :
Ir. MOHD ASSYARUL BIN SAADUN
DIREKABENTUK :
Ir. EZUAN BIN JAMADON

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
1	DESIGN BASED ON EC2	DEC. 2019	

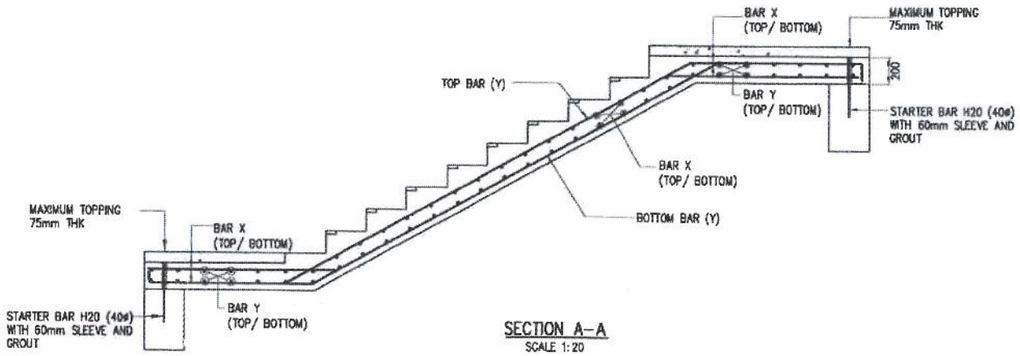
NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST STAIRCASE
TYPE 1 (2/2)
(2 HOUR FIRE RATED)

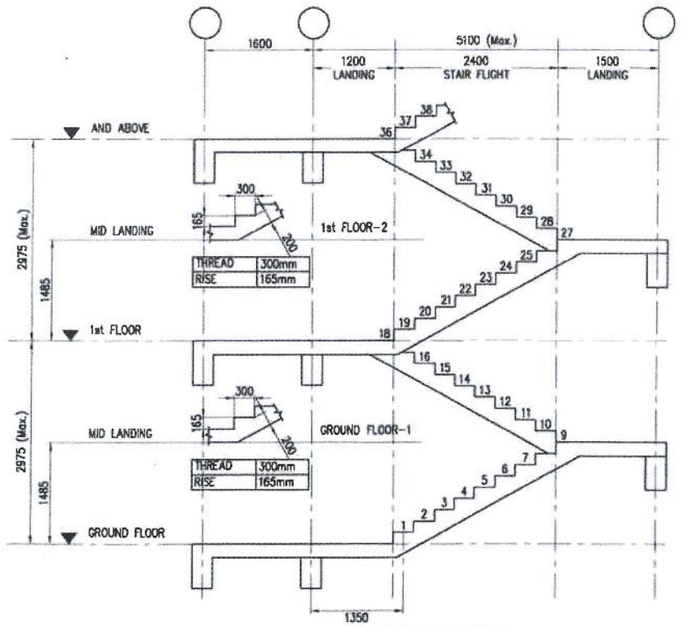
DILUKIS : PUTERI ZAHARAH BINTI ABDUL JABIL
TARIKH : NOVEMBER 2019
SKALA : SPT. DINYATAKAN
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/ST2HR/1-02 (6)



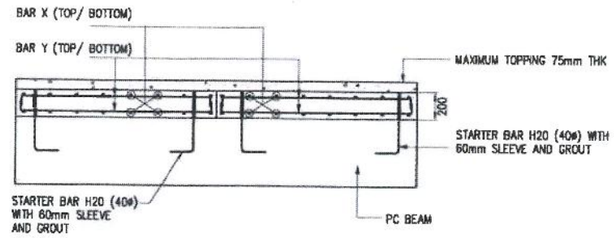
PLAN
SCALE 1:40



SECTION A–A
SCALE 1:20



TYPICAL SIDE VIEW
SCALE 1:40



SECTION B–B
SCALE 1:20

STAIRCASE 2 SCHEDULE				
			WAIST	LANDING
FIRE RESISTANCE			2 HR	
CONCRETE COVER (mm)			45	
THICKNESS (mm)			200	200
BAR SIZE AND SPACING (mm)	BOTTOM	X	H16–200	H16–200
		Y	H16–200	H16–200
	TOP	X	H16–200	H16–200
		Y	H16–200	H16–200

PRECAST STAIRCASE TYPE 2

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4–10
BLOK G, IBU PEJABAT JKR MALAYSIA
NO.5, JALAN SULTAN SALAHUDDIN
50480 KUALA LUMPUR
(NO. TEL: 03–2618 9171 & NO. FAX: 03–2618 9155)

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DATO' Ir. Hj. MOHAMAD ZULKEFLY BIN SULAIMAN

PENGARAH KEJURUTERAAN (PAKAR STRUKTUR):
Ir. Hj. MOHD NOOR AZUOIN BIN MANSOR

JURUTERA AWAM PENGUASA KANAN :
Ir. HAFIZAH BINTI ZAKARIA

JURUTERA AWAM KANAN :
Ir. LEE CHOON SIANG

DISEMAK :
Ir. MOHD ASSYARUL BIN SAADUN

DIREKABENTUK :
Ir. EZUAN BIN JAMADON

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
1	DESIGN BASED ON EC2	DEC. 2019	

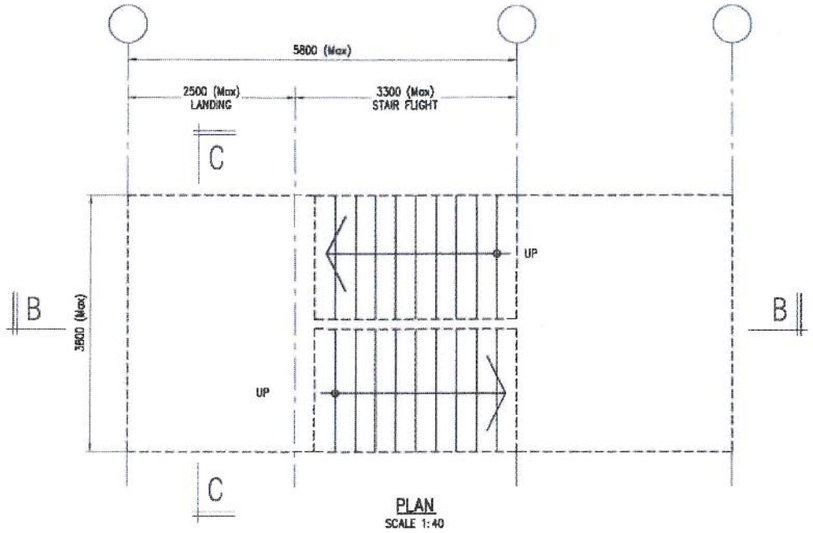
NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST STAIRCASE
TYPE 2
(2 HOUR FIRE RATED)

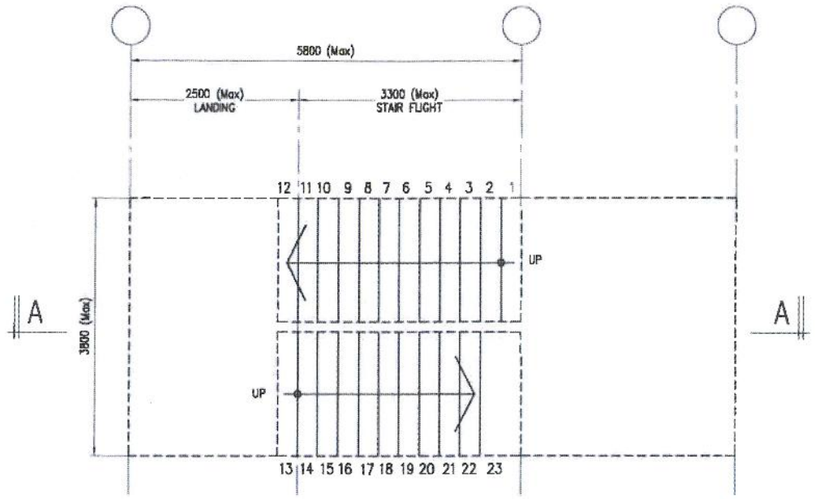
DILUKIS : PUTERI ZAHARAH BINTI ABDUL JALIL

TARIKH : NOVEMBER 2019 | SKALA : SPT. DINYATAKAN

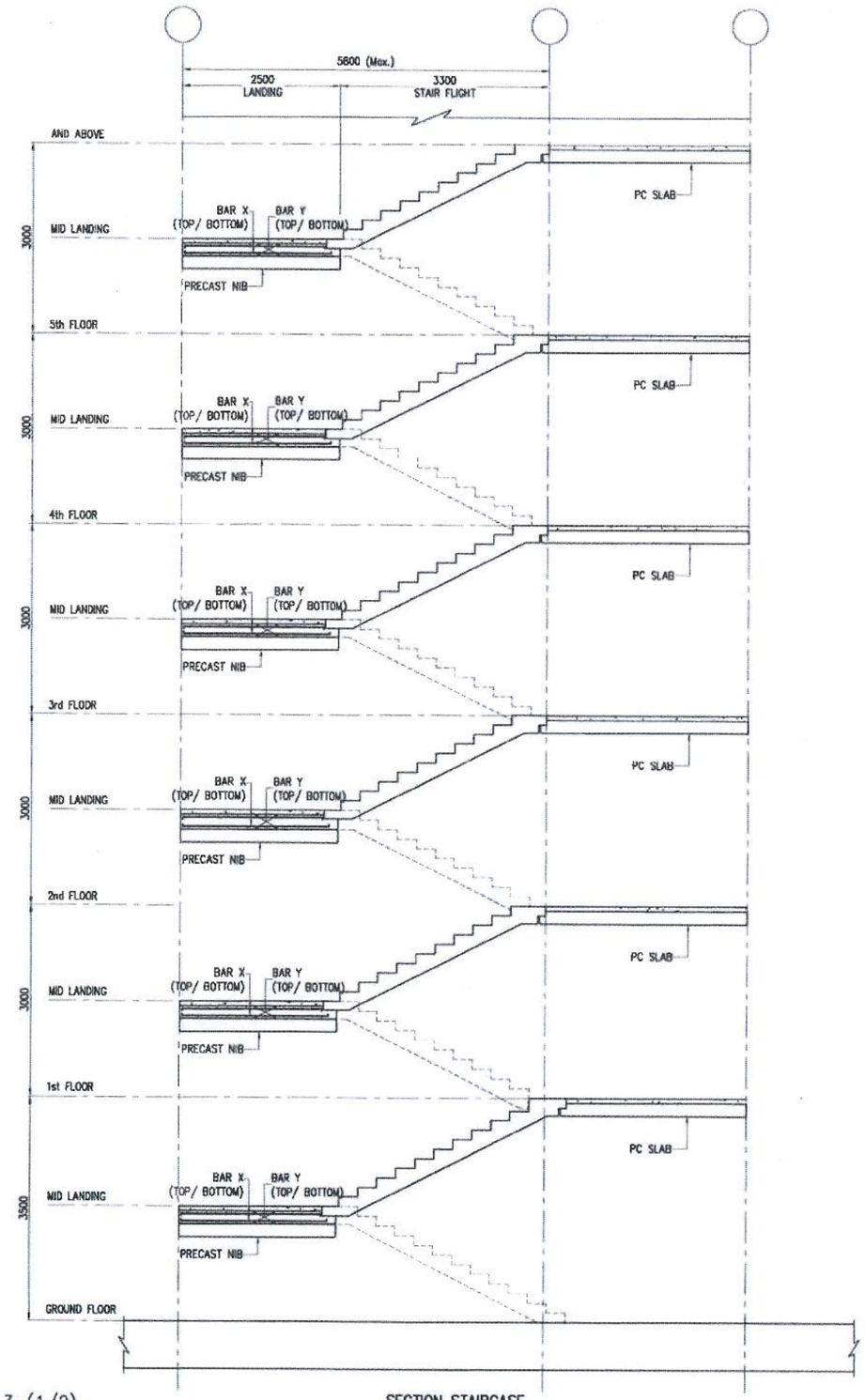
NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/ST2HR/2–03 (5)



PLAN
SCALE 1:40



PLAN (GROUND FLOOR TO 1st FLOOR)
SCALE 1:40



PRECAST STAIRCASE TYPE 3 (1/2)

SECTION STAIRCASE
SCALE 1:40

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4-10
BLOK G, IBU PEJABAT JKR MALAYSIA
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50480 KUALA LUMPUR
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PENGARAH KEJURUTERAAN (PAKAR STRUKTUR):
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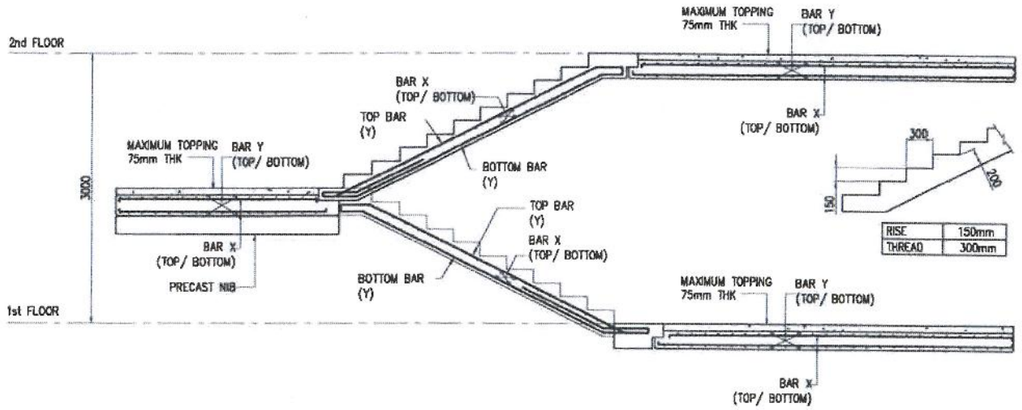
JURUTERA AWAM PENGUASA KANAN :
Ir. HAFIZAH BINTI ZAKARIA
JURUTERA AWAM KANAN :
Ir. LEE CHOON SIANG
DISEMAK :
Ir. MOHD ASSYARUL BIN SAADUN
DIREKADENTUK :
Ir. EZUAN BIN JAMADON

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
1	DESIGN BASED ON EC2	DEC. 2019	

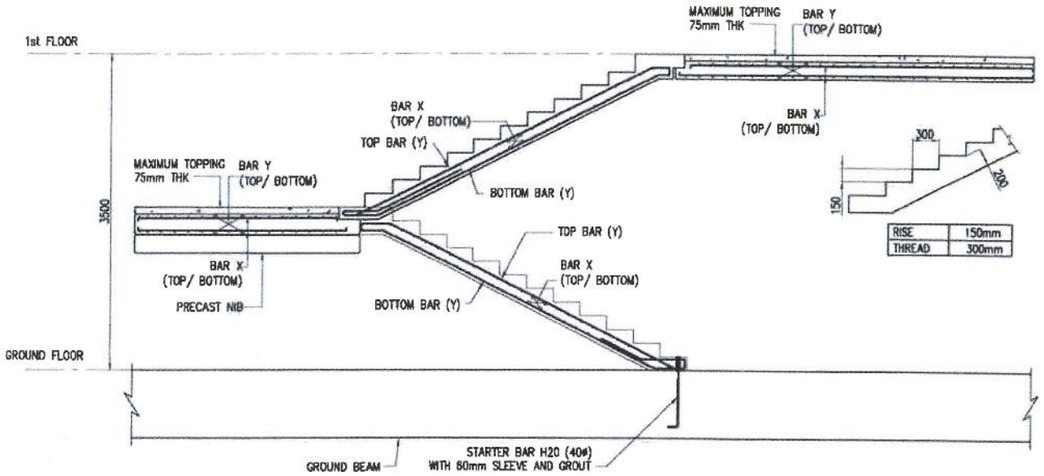
NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST STAIRCASE
TYPE 3 (1/2)
(2 HOUR FIRE RATED)

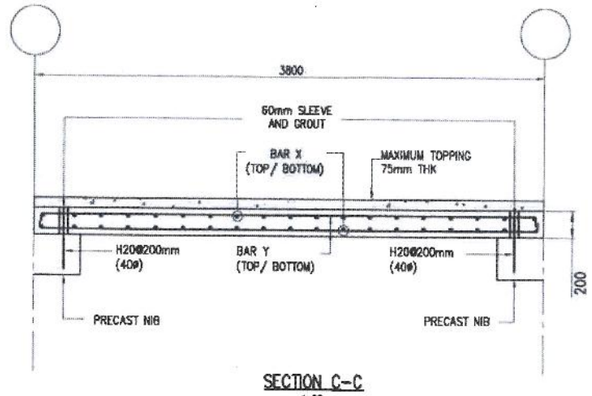
DILUKIS : PUTERI ZAHARAH BINTI ABDUL JALIL
TARIKH : NOVEMBER 2019
SKALA : SPT. DINYATAKAN
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/ST2HR/3-04 (6)



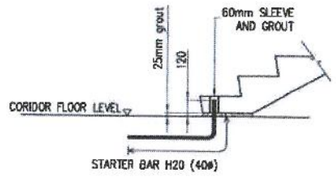
SECTION B – B
SCALE 1:30



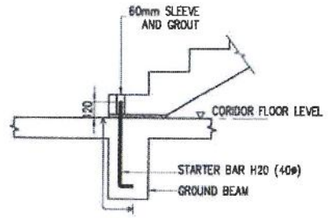
SECTION A – A
SCALE 1:30



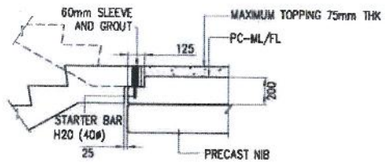
SECTION C–C
1:20



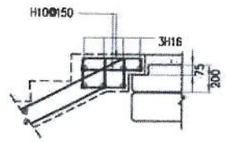
DETAIL CONNECTION OF PC STAIRCASE & SLAB
1:20



DETAIL CONNECTION OF PC STAIRCASE & BEAM
1:20



DETAIL CONNECTION OF PC STAIRCASE & LANDING
1:20



DETAIL A
1:20

STAIRCASE 3 SCHEDULE				
			WAIST	LANDING
FIRE RESISTANCE			2 HR	
CONCRETE COVER (mm)			45	
THICKNESS (mm)			200	200
BAR SIZE AND SPACING (mm)	BOTTOM	X	H16–200	H16–200
		Y	H16–200	H16–125
	TOP	X	H16–200	H16–200
		Y	H16–200	H16–200

PRECAST STAIRCASE TYPE 3 (2/2)

JKR

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4–10
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(NO. TEL: 03-2618 9171 & NO. FAX: 03-2618 9155)

PENGARAH KANAN:
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PENGARAH KEJURUTERAAN (PAKAR STRUKTUR):
Ir. Hj. MOHD NOOR AZUDIN BIN MANSOR

JURUTERA AWAM PENGUASA KANAN :
Ir. HAFIZAH BINTI ZAKARIA

JURUTERA AWAM KANAN :
Ir. LEE CHOON SIANG

DISEMAK :
Ir. MOHD ASSYARUL BIN SAADUN

DIREKABENTUK :
Ir. EZUAN BIN JAMADON

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
1	DESIGN BASED ON EC2	DEC. 2019	

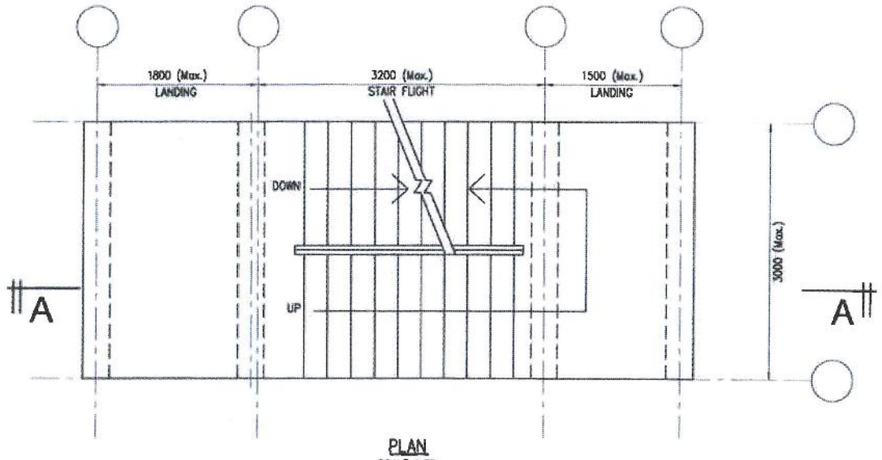
NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST STAIRCASE
TYPE 3 (2–2)
(2 HOUR FIRE RATED)

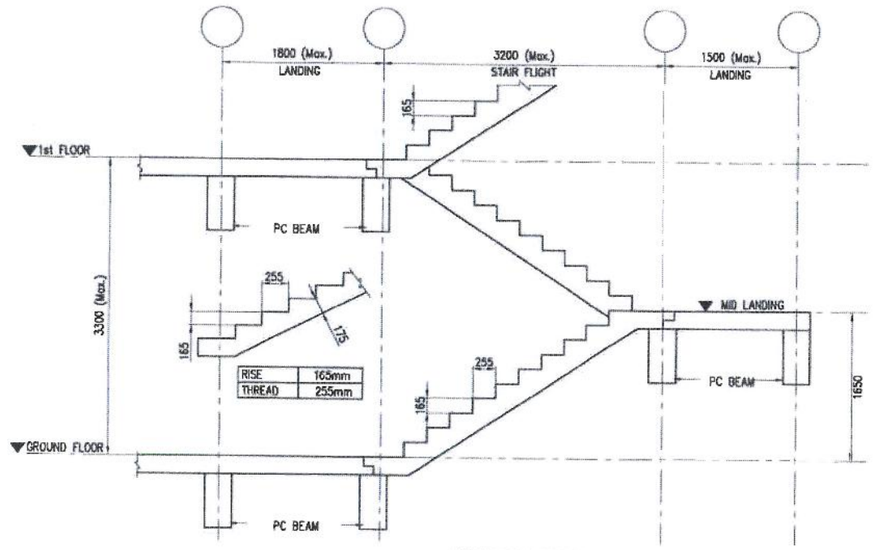
DILUKIS : PUTERI ZAHARAH BINTI ABDUL JALIL

TARIKH : NOVEMBER 2019 | SKALA : SPT. DIMATAKAN

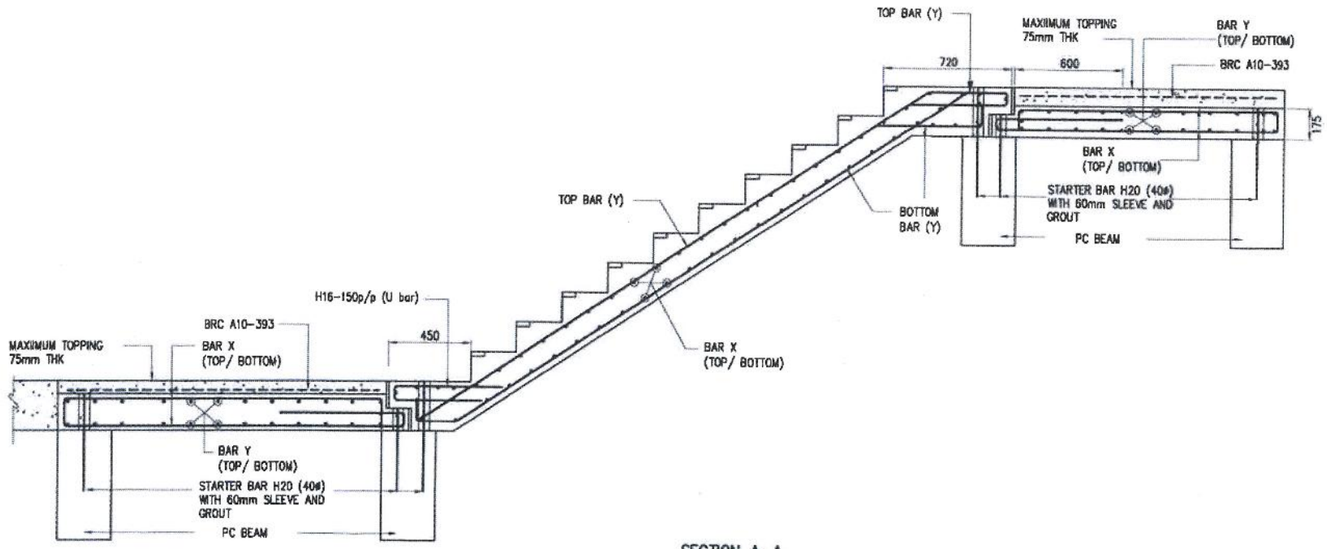
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 18/ST2HR/3-05 (6)



PLAN
SCALE 1:30



STAIRCASE DETAIL
SCALE 1:30



SECTION A-A
SCALE 1:15

STAIRCASE 4 SCHEDULE				
			WAIST	LANDING
FIRE RESISTANCE			2 HR	
CONCRETE COVER (mm)			45	
THICKNESS (mm)			175	175
BAR SIZE AND SPACING (mm)	BOTTOM	X	H16-200	H16-200
		Y	H16-200	H16-125
	TOP	X	H16-200	H16-200
		Y	H16-200	H16-200

PRECAST STAIRCASE TYPE 4

JKR
JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4-10
BLOK G, IBU PEJABAT JKR MALAYSIA
NO.6, JALAN SULTAN SALAHUDDIN
50480 KUALA LUMPUR
(NO. TEL: 03-2618 9171 & NO. FAX: 03-2618 9155)

PENGARAH KANAN:
DATO' Ir. Hj. MOHAMAD ZULKEFLY BIN SULAIMAN
PENGARAH KEJURUTERAAN (PAKAR STRUKTUR):
Ir. Hj. MOHD NOOR AZUDIN BIN MANSOR
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Ir. HAFIZAH BINTI ZAKARIA
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DISEMAK :
Ir. MOHD ASSYARUL BIN SAADUN
DIREKABENTUK :
Ir. EZLIAN BIN JAMADON

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
1	DESIGN BASED ON EC2	DEC. 2019	

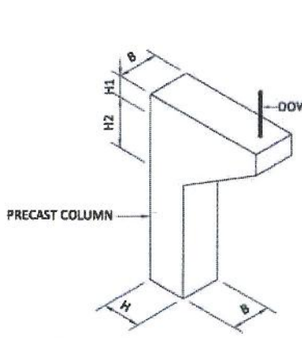
NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST STAIRCASE
TYPE 4
(2 HOUR FIRE RATED)

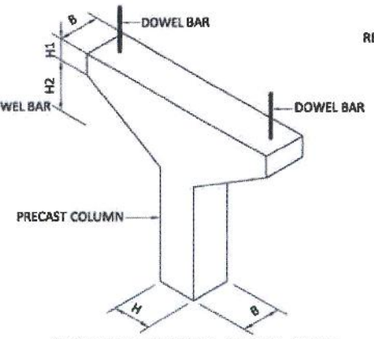
DILUKIS : PUTERI ZAHARAH BINTI ABDUL JABIL
TARIKH : NOVEMBER 2019 | SKALA : SPT. DINYATAKAN
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/ST2HR/4-06 (6)

PRECAST

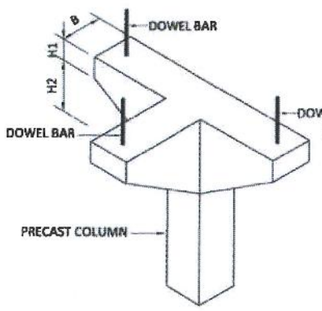
CONNECTION



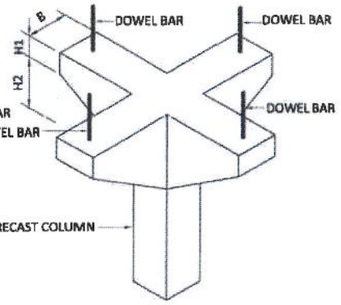
CORBEL TYPE1-ONE SIDE
(3D VIEW)



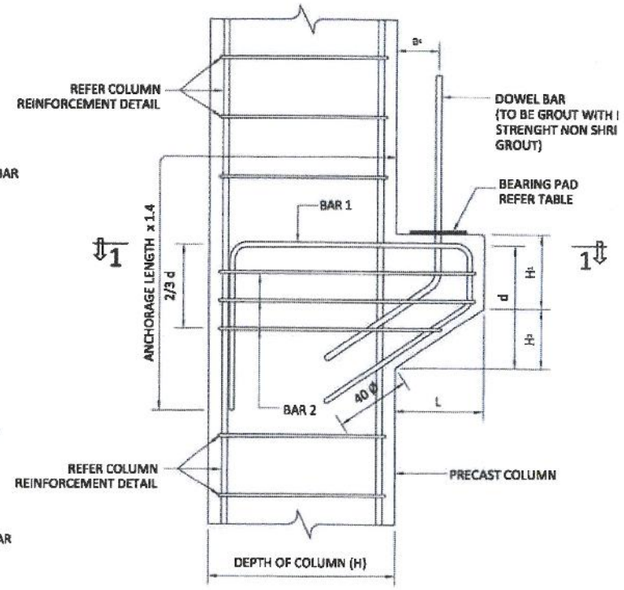
CORBEL TYPE2-TWO SIDE
(3D VIEW)



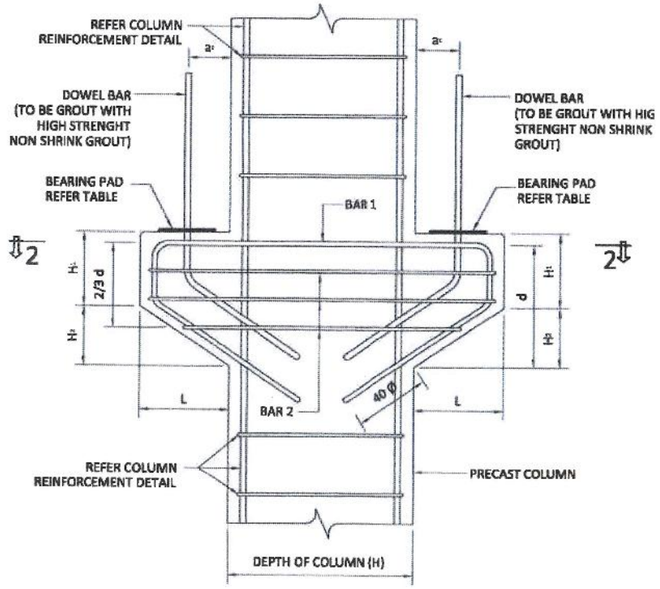
CORBEL TYPE3-THREE SIDE
(3D VIEW)



CORBEL TYPE4-FOUR SIDE
(3D VIEW)



ELEVATION



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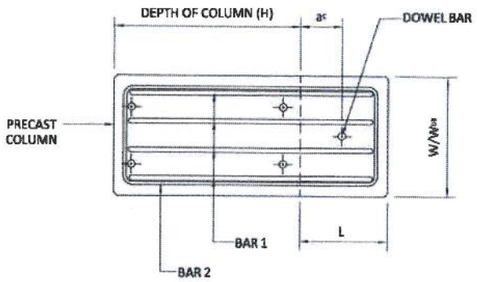
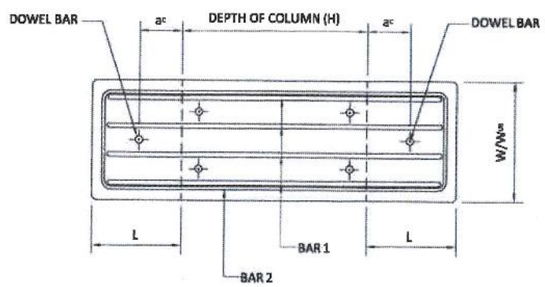


SECTION 1-1
CORBEL TYPE 1 (ONE SIDE)



SECTION 2-2
CORBEL TYPE 2 (TWO SIDE)

NOTES:

1. ALL DIMENSION ARE IN mm.
2. THIS STANDARD DRAWING SHALL BE READ IN CONJUNCTION WITH JKR SPECIFICATION FOR PRECAST CONCRETE WORKS (JKR 20601-0251-18).
3. ONLY CORBEL TYPE 1 AND TYPE 2 PROVIDED WITH DETAIL. FOR OTHER TYPE SHALL BE REFERRED TO SHOP DRAWINGS PROVIDED BY PRECASTER/IBS MANUFACTURER. CORBEL DETAIL FOR CORBEL TYPE 3 IS COMBINATION OF TYPE 1 & 2. FOR CORBEL TYPE 4 IS COMBINATION TYPE 2 IN BOTH DIRECTION.
4. UNLESS OTHERWISE STATED, ANCHORAGE LENGTH OF BAR SHALL BE MINIMUM OF 40Ø OR COLUMN WIDTH (H) + HEIGHT OF CORBEL WHICHEVER HIGHER FROM FACE OF COLUMN.
5. PRECAST COLUMN WITH CORBEL TO BE MANUFACTURED EITHER TO THE BEAM LEVEL OR CORBEL LEVEL. REFER TO PRECASTER'S SHOP DRAWINGS.
6. UNLESS SPECIFIED BY DESIGNER, TOP BAR (T_b) FOR INSITU BEAM TOPPING SHALL BE CONTINUED ACROSS COLUMN.
7. DOWEL BAR SHALL BE GROUT WITH HIGH STRENGTH NON-SHRINK GROUT (MIN. 50 MPA) AND GAINED IT'S STRENGTH BEFORE INSTALLATION OF OTHER PRECAST COMPONENT TO THE BEAM.
8. ALL CORBEL SIZE AND COVER ARE DESIGNED FOR FIRE RESISTANCE OF 2 HOURS PERIOD.

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CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
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50480 KUALA LUMPUR
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PENGARAH KANAN:
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Ir. NOR AZIZAH BINTI MUHAMMAD
JURUTERA AWAM KANAN :
Ir. SHAHRIZAL BIN ABD RASID
DISEMAK :
MOHD SHAHRULMIZI BIN ABD MANAF
DIREKABENTUK :
Ir. NORFAHAN BINTI MADDIMIN

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

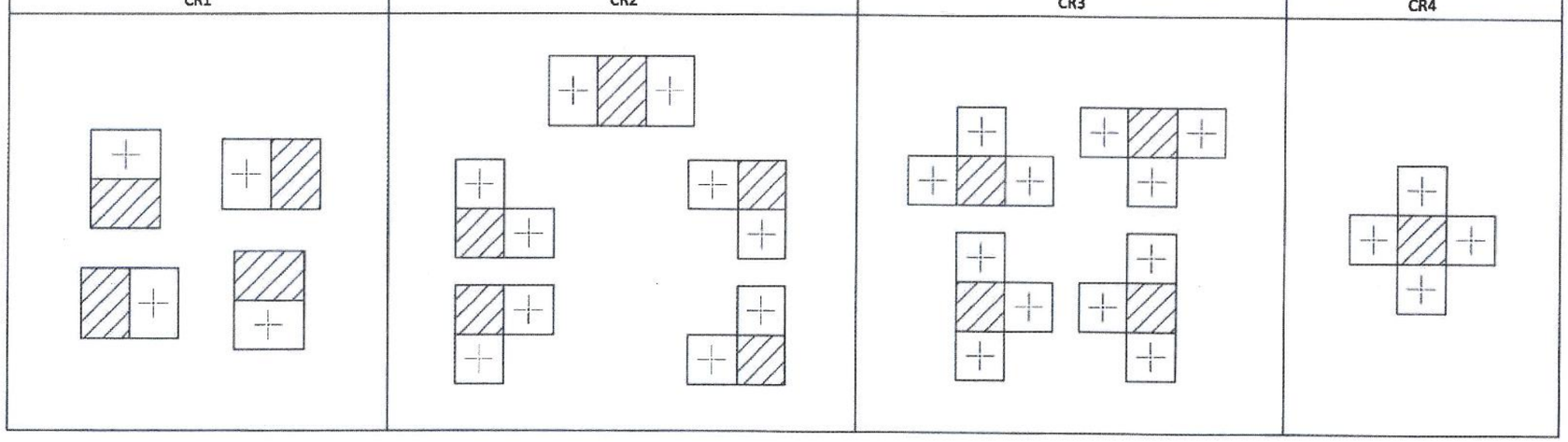
TAJUK LUKISAN :
PRECAST CORBEL CONNECTION
(2 HOUR)

DILUKIS : ZULHILMI BIN HASSAN
TARIKH : NOVEMBER 2019 | SKALA : N.T.S
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CN/CR 1 (14)

TYPE OF CORBEL (CR)	DESIGN ACTION/FORCE (kN)	0-100			101-200			201-300			301-400				401-500				501-600			601-700			701-800			801-900	
	SHEAR TYPE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
CR1	MIN. BREADTH, b (W/W_{ab} of beam)	200	300	400	200	300	400	300	400	500	300	400	500	600	300	400	500	600	400	500	600	400	500	600	400	500	600	500	600
	CORBEL OVERALL LENGHT, L	275	275	275	275	275	275	300	300	300	300	300	300	300	300	300	300	300	300	300	300	325	325	325	325	325	325	325	325
CR2	MIN. DEPTH OF CORBEL (H_1)	200	200	200	200	200	200	225	225	225	250	250	250	250	250	250	250	250	250	250	250	275	275	275	275	275	275	275	275
	MIN. DEPTH OF CORBEL (H_2)	150	150	150	150	150	150	175	175	175	175	175	175	175	175	175	175	175	200	200	200	200	200	200	200	200	200	200	200
CR3	BAR 1	3H12	3H12	3H12	3H16	4H12	4H12	4H16	4H16	4H16	4H20	5H16	5H16	5H16	3H25	4H20	4H20	4H20	5H20	5H20	5H20	4H25	4H25	4H25	4H25	4H25	4H25	5H25	5H25
	BAR 2	3H8	3H8	3H8	3H8	3H8	3H8	3H10	3H10	3H10	4H10	4H10	4H10	4H10	4H12	4H10	4H10	4H10	5H12	4H12	4H12	5H12	5H12	5H12	5H12	5H12	5H12	4H16	4H16
CR4	BEARING PAD SIZE (W/W_{ub} x a_1 x 5 THK.)	110	110	110	140	110	110	140	110	110	140	140	110	110	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140
	DISTANCE FROM COLUMN FACE TO DOWEL, a_c	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120

SELECTION OF CORBEL ORIENTATION

CR1	CR2	CR3	CR4



NOTES:
1. ALL DIMENSION ARE IN mm.
2. FOR DESIGN FORCE MORE THAN 700kN OR STRESS ON BEARING PAD MORE THAN 10 Mpa, MANUFACTURE'S DATA OF BEARING PAD SHALL BE PROVIDED.
3. ALL CORBEL SIZE AND COVER ARE DESIGNED FOR FIRE RESISTANCE OF 2 HOUR PERIOD.

JKR

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DIREKABENTUK :
Ir. NOREHAN BINTI MADDININ

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

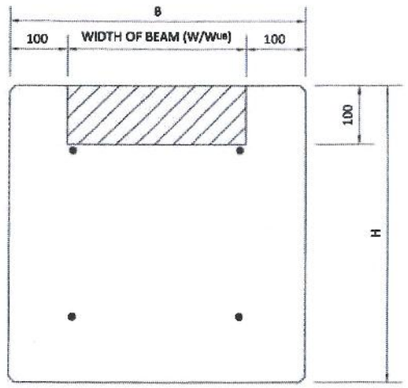
TAJUK LUKISAN :

PRECAST CORBEL CONNECTION TABLE
(2 HOUR)

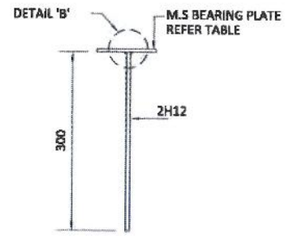
DILUKIS : ZULHILMI BIN HASSAN

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CN/CR 2 (14)

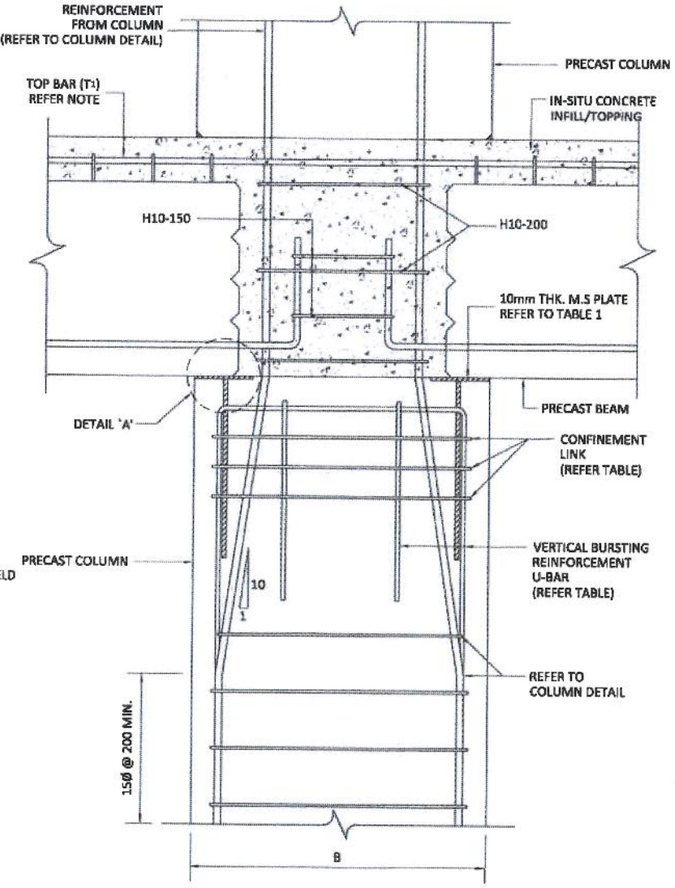


BEAM ON COLUMN CONNECTION (TYPE 1)
PLAN VIEW
(PRECAST BEAM NOT SHOWN FOR CLARITY)

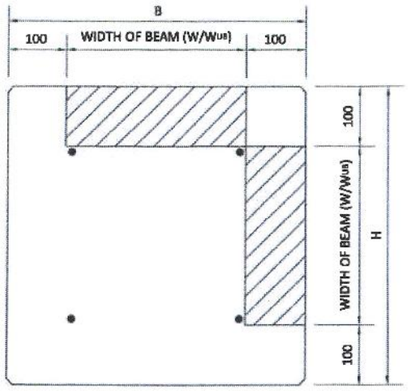


DETAIL `A'
TYPICAL BEARING PLATE
TO BE CAST IN PRECAST COLUMN

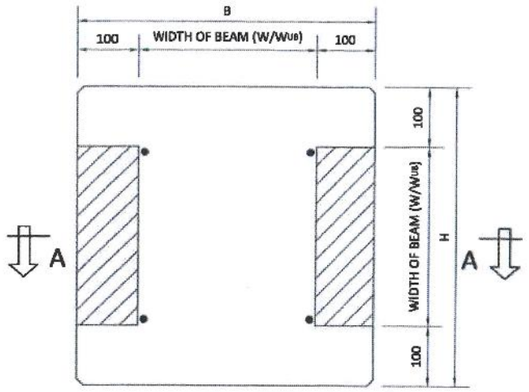
DETAIL `B'



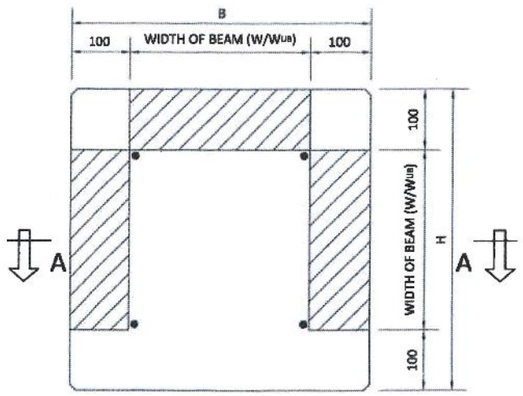
SECTION A-A



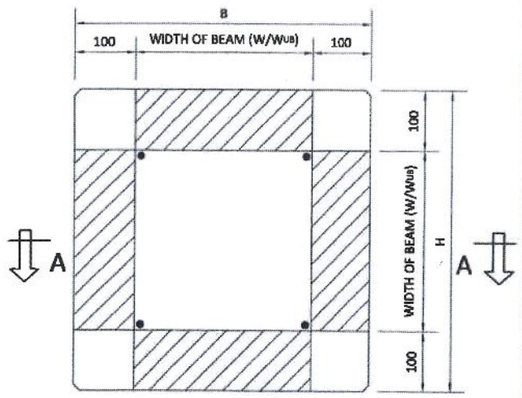
BEAM ON COLUMN CONNECTION (TYPE 2A)
PLAN VIEW
(PRECAST BEAM NOT SHOWN FOR CLARITY)



BEAM ON COLUMN CONNECTION (TYPE 2B)
PLAN VIEW
(PRECAST BEAM NOT SHOWN FOR CLARITY)



BEAM ON COLUMN CONNECTION (TYPE 3)
PLAN VIEW
(PRECAST BEAM NOT SHOWN FOR CLARITY)



BEAM ON COLUMN CONNECTION (TYPE 4)
PLAN VIEW
(PRECAST BEAM NOT SHOWN FOR CLARITY)

TABLE 1 - BEAM ON COLUMN CONNECTION (DIRECT SEATING) BCDS

TYPE OF CONNECTION	SHEAR TYPE	DESIGN SHEAR RANGE (kN)	BEARING STEEL PLATE (l x w/Wub x THICKNESS)	VERTICAL BURSTING U-BAR IN COLUMN HEAD (BOTH DIRECTION)	CONFINEMENT LINK IN COLUMN HEAD
BEAM ON COLUMN (DIRECT SEATING) BCDS	1	0-100	100 x w/Wub x 10	3H10 (H)/1H10 (B)	2H10
	2	101-200	100 x w/Wub x 10	3H10 (H)/1H10 (B)	3H10
	3	201-300	100 x w/Wub x 10	3H10 (H)/1H10 (B)	4H10
	4	301-400	100 x w/Wub x 10	3H12 (H)/2H12 (B)	4H12
	5	401-500	100 x w/Wub x 10	3H12 (H)/2H12 (B)	5H12
	6	501-600	100 x w/Wub x 10	3H16 (H)/1H16 (B)	3H16
	7	601-700	100 x w/Wub x 10	3H16 (H)/1H16 (B)	4H16
	8	701-800	100 x w/Wub x 10	3H16 (H)/1H16 (B)	4H16
	9	801-900	100 x w/Wub x 10	3H16 (H)/1H16 (B)	5H16
	10	901-1000	100 x w/Wub x 10	3H16 (H)/1H16 (B)	5H16

STEEL BEARING PLATE

NOTES:
1. ALL DIMENSION ARE IN mm.
2. FOR PRECAST BEAM ON COLUMN CONNECTION, DESIGNERS ARE ADVISED TO DETERMINE SUITABLE SIZE OF COLUMN.
3. ALL M.S PLATE SHALL BE FROM GRADE S275 TO MS EN100025.
4. POSITION OF FIRST CONFINEMENT LINK SHALL BE MORE THAN CONCRETE COVER FROM COLUMN HEAD.
5. UNLESS SPECIFIED BY DESIGNER, TOP BAR (T_1) FOR IN-SITU BEAM TOPPING SHALL BE CONTINUED ACROSS COLUMN.

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NAMA PROJEK :
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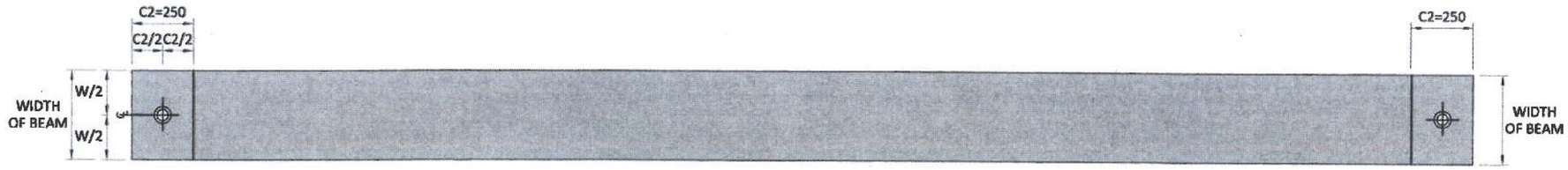
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST BEAM ON COLUMN CONNECTION
(DIRECT SEATING – BCDS)

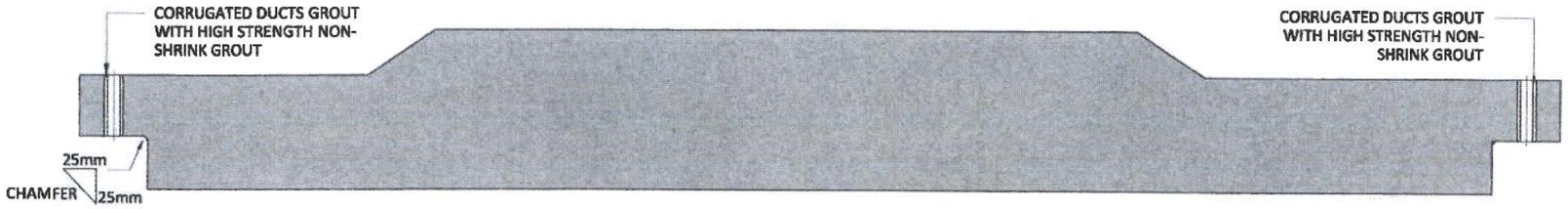
DILUKIS : ZULHILMI BIN HASSAN

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

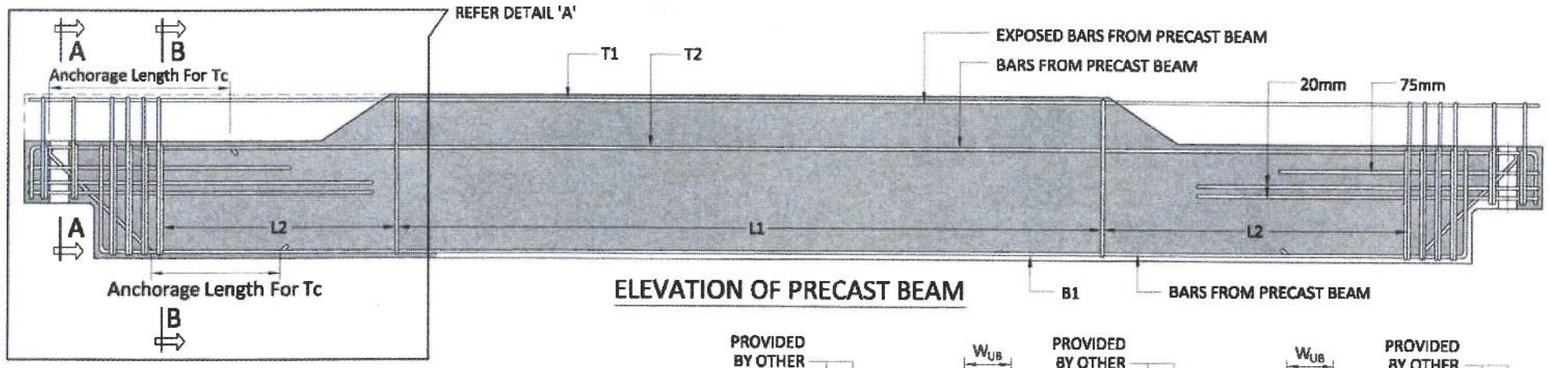
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CN/BCDS 1 (14)



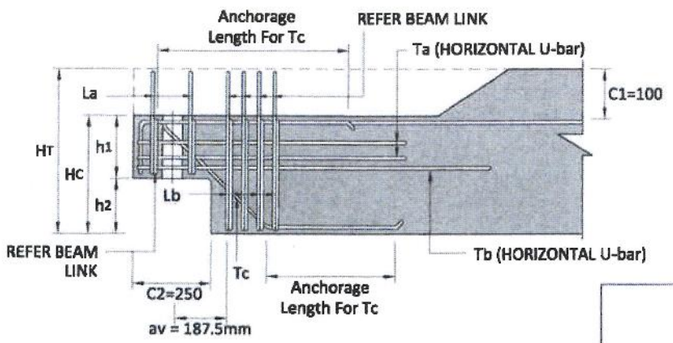
PLAN OF PRECAST BEAM



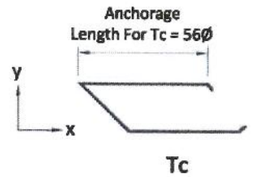
ELEVATION OF PRECAST BEAM

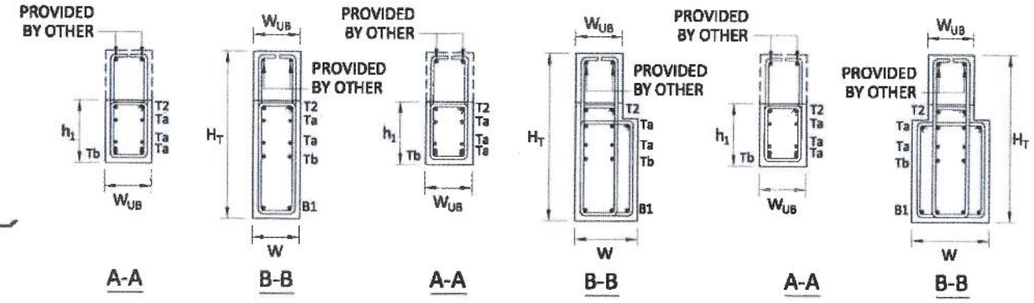


ELEVATION OF PRECAST BEAM



TYPICAL DETAIL 'A' OF HALF JOINT

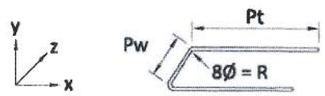




RECTANGULAR BEAM

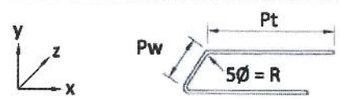
L BEAM

INVERTED T BEAM



Lap Length, Ta

FOR RECTANGULAR BEAM, W FOR L-BEAM OR INVERTED T BEAM, W_{UB}	Pw (mm)	Pt (mm)	R (mm)
300	226	40ø	5ø
350	276		
400	326		



Lap Length, Tb

FOR RECTANGULAR BEAM, W FOR L-BEAM OR INVERTED T BEAM, W_{UB}	Pw (mm)	Pt (mm)	R (mm)
300	226	40ø	5ø
350	276		
400	326		

NOTE : BAR FROM PRECAST BEAM IS HIDDEN FOR CLARITY

L_a, L_b, T_b, T_2 AND B_1 – REFER IBS STRUCTURE COMPONENT STANDARD DRAWING FOR BUILDING
W AND W_{UB}

JKR

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4–10
BLOK G, IBU PEJABAT JKR MALAYSIA
NO.6, JALAN SULTAN SALAHUDDIN
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(NO. TEL: 03-2618 9171 & NO. FAX: 03-2618 9155)

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PENGARAH KEJURUTERAAN (PAKAR STRUKTUR):
Ir. Hj. MOHD NOOR AZUDIN BIN MAT
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Ir. NOR AZIZAH BINTI MUHAMMAD
JURUTERA AWAM KANAN :
Ir. SHAHRIZAL BIN ABD RASID
DISEMAK :
MOHD SHAHRULMIZI BIN ABD MANAF
DIREKABENTUK :
NOREHAN BINTI MADDININ

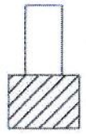
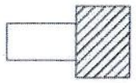
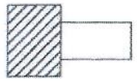
RUJUK PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PIAWAI KOMPONEN STRUKTUR IBS BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST BEAM WITH HALF–JOINT

DILUKIS : NURUL SABIRAH BINTI MOHAMAD SAZALI
TARIKH : NOVEMBER 2019 | SKALA : N.T.S
NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/CN/HJ 1 (14)

FIRE RATING : 2 Hours
COVER : 55 mm

PLAN VIEW	HALF JOINT NAME	DIMENSION TYPE	SHEAR TYPE	SHEAR RANGE (kN)	RECTANGULAR BEAM, (W) L & INVERTED T-BEAM, (W_{UB}) (mm)	H_T (mm)	H_C (mm)	h1 (mm)	h2 (mm)	U-BAR REINFORCEMENT (Ta)	U-BAR REINFORCEMENT (Tb)	REINFORCEMENT (Tc)	LINK (La)	LINK (Lb)
 (a)	HJ1	A1	1	0–100	300	600	500	200	300	1H12	2H16	2H12	2H10	2H8
			2	101–200		–	–	–	–	–	–	–	–	–
			3	201–300		–	–	–	–	–	–	–	–	–
		A2	3	201–300	300	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301–400		–	–	–	–	–	–	–	–	–
		A3	3	201–300	300	800	700	400	300	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		A4	4	301–400	300	800	700	350	350	1H12	3H20	3H20	3H10	3H10
 (b)		B1	3	201–300	350	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301–400			–	–	–	–	–	–	–	–
		B2	4	301–400	350	800	700	400	300	1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
 (c)		B3	4	301–400	350	800	700	350	350	1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		C1	1	0–100	400	600	500	300	200	1H12	4H20	2H16	2H10	2H10
			2	101–200						1H12	3H20	2H16	3H10	3H10
			3	201–300						1H12	3H20	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500		–	–	–	–	–	–	–	–	–
 (d)		C2	3	201–300	400	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500		–	–	–	–	–	–	–	–	–
		C3	3	201–300	400	800	700	400	300	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	2H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		C4	3	201–300	400	800	700	350	350	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		C5	3	201–300	400	900	800	400	400	1H12	3H20	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	3H25	3H20	3H12	3H12

LEGEND:
COLUMN BEAM

TABLE 1 (1/2)

JKR

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4–10
BLOK G, IBU PEJABAT JKR MALAYSIA
NO.6, JALAN SULTAN SALAHUDDIN
50480 KUALA LUMPUR
(NO. TEL: 03-2618 9171 & NO. FAX: 03-2618 9155)

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DATO' Ir. Hj. MOHAMAD ZULKEFLY BIN SULAIMAN
PENGARAH KEJURUTERAAN (PAKAR STRUKTUR):
Ir. Hj. MOHD NOOR AZUDIN BIN MANSOR
JURUTERA AWAM PENGUASA KANAN
Ir. NOR AZIZAH BINTI MUHAMMAD
JURUTERA AWAM KANAN :
Ir. SHAHRIZAL BIN ABD RASID
DISEMAK :
MOHD SHAHRULMIZI BIN ABD MANAF
DIREKABENTUK :
NOREHAN BINTI MADDIMIN

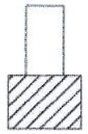
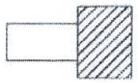
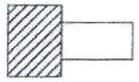
HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST BEAM WITH HALF-JOINT
TABLE 1 (1/2)
(2 HOUR FIRE RATED)

DILUKIS : NURUL SABIRAH BINTI MOHAMAD SAZALI
TARIKH : NOVEMBER 2019 | SKALA : N.T.S
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CN/HJ 2 (14)

FIRE RATING : 2 Hours
COVER : 55 mm

PLAN VIEW	HALF JOINT NAME	DIMENSION TYPE	SHEAR TYPE	SHEAR RANGE (kN)	RECTANGULAR BEAM, (W) L & INVERTED T-BEAM, (W_{UB}) (mm)	Hr (mm)	Hc (mm)	h1 (mm)	h2 (mm)	U-BAR REINFORCEMENT (Ta)	U-BAR REINFORCEMENT (Tb)	REINFORCEMENT (Tc)	LINK (La)	LINK (Lb)
 (a)	HJ1	D1	1	0–100	500	500	400	200	200	1H12	2H16	2H12	2H10	2H8
			2	101–200						1H12	4H16	2H16	3H10	3H8
			3	201–300						1H12	4H16	2H16	3H10	3H8
			4	301–400						1H12	5H20	2H20	3H10	3H10
		D2	3	201–300	500	600	500	250	250	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
 (b)		D3	3	201–300	500	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		D4	2	301–400	500	800	700	350	350	1H12	3H20	2H20	3H10	3H10
			3	201–300						1H12	4H20	3H20	3H10	3H10
			5	301–400						1H12	3H25	3H20	3H12	3H12
 (c)		D5	3	201–300	500	900	800	400	400	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	5H20	3H20	3H10	3H10
			5	401–500						1H12	5H20	3H20	3H12	3H12
		D6	5	401–500	500	1000	900	450	450	1H12	4H20	3H20	3H12	3H12
			6	501–600						1H12	3H25	3H25	3H16	3H16
			7	601–700						1H12	4H25	3H25	3H16	3H16
 (d)		E1	3	201–300	600	600	500	250	250	1H12	3H20	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	3H25	3H20	3H12	3H12
		E2	3	201–300	600	700	600	300	300	1H12	2H25	2H20	3H10	3H10
			4	301–400						1H12	3H25	3H20	3H10	3H10
			5	401–500						1H12	3H25	3H20	3H12	3H12
		E3	3	201–300	600	800	700	350	350	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	5H20	3H20	3H10	3H10
			5	401–500						1H12	5H20	3H20	3H12	3H12
		E4	3	201–300	600	900	800	400	400	1H12	4H16	3H16	3H10	3H10
			4	301–400						1H12	3H20	3H20	3H10	3H10
			5	401–500						1H12	3H25	3H20	3H12	3H12

LEGEND:
COLUMN BEAM

TABLE 1 (2/2)

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4–10
BLOK G, IBU PEJABAT JKR MALAYSIA
NO.6, JALAN SULTAN SALAHUDDIN
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Ir. Hj. MOHD NOOR AZUDIN BIN MANSOR
JURUTERA AWAM PENGUASA KANAN
Ir. NOR AZIZAH BINTI MUHAMMAD
JURUTERA AWAM KANAN :
Ir. SHAHRIZAL BIN ABD RASID
DISEMAK :
MOHD SHAHRULMIZI BIN ABD MANAF
DIREKABENTUK :
NOREHAN BINTI MADDIN

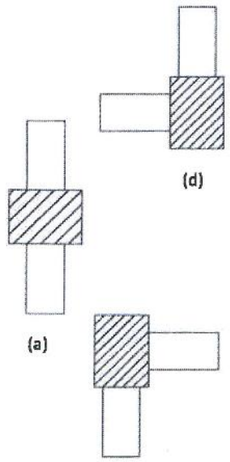
HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST BEAM WITH HALF–JOINT
TABLE 1 (2/2)
(2 HOUR FIRE RATED)

DILUKIS : NURUL SABIRAH BINTI MOHAMAD SAZALI
TARIKH : NOVEMBER 2019 | SKALA : N.T.S
NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 19/CN/HJ 3 (14)

FIRE RATING : 2 Hours
COVER : 55 mm

PLAN VIEW	HALF JOINT NAME	DIMENSION TYPE	SHEAR TYPE	SHEAR RANGE (kN)	RECTANGULAR BEAM, (W) L & INVERTED T-BEAM, (W_{UB}) (mm)	Hr (mm)	Hc (mm)	h1 (mm)	h2 (mm)	U-BAR REINFORCEMENT (Ta)	U-BAR REINFORCEMENT (Tb)	REINFORCEMENT (Tc)	LINK (La)	LINK (Lb)
	HJ2	A1	1	0–100	300	600	500	200	300	1H12	2H16	2H12	2H10	2H8
			2	101–200		–	–	–	–	–	–	–	–	–
			3	201–300		–	–	–	–	–	–	–	–	–
		A2	3	201–300	300	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301–400		–	–	–	–	–	–	–	–	–
		A3	3	201–300	300	800	700	400	300	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		A4	4	301–400	300	800	700	350	350	1H12	3H20	3H20	3H10	3H10
		B1	3	201–300	350	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301–400			–	–	–	–	–	–	–	–
		B2	4	301–400	350	800	700	400	300	1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		B3	4	301–400	350	800	700	350	350	1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		C1	1	0–100	400	600	500	300	200	1H12	4H20	2H16	2H10	2H10
			2	101–200						1H12	3H20	2H16	3H10	3H10
			3	201–300						1H12	3H20	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500		–	–	–	–	–	–	–	–	–
		C2	3	201–300	400	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500		–	–	–	–	–	–	–	–	–
		C3	3	201–300	400	800	700	400	300	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	2H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		C4	3	201–300	400	800	700	350	350	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		C5	3	201–300	400	900	800	400	400	1H12	3H20	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	3H25	3H20	3H12	3H12

(a) (b) (c) (d) (e) (f)

LEGEND:
COLUMN BEAM

TABLE 2 (1/2)

JKR

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4–10
BLOK C, IBU PEJABAT JKR MALAYSIA
NO.6, JALAN SULTAN SALAHUDDIN
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Ir. Hj. MOHD NODIR AZUDIN BIN MANSOR
JURUTERA AWAM PENGUASA KANAN :
Ir. NOR AZIZAH BINTI MUHAMMAD
JURUTERA AWAM KANAN :
Ir. SHAHRIZAL BIN ABD RASID
DISEMAK :
MOHD SHAHRULMIZI BIN ABD MANAF
DIREKABENTUK :
NOREHAN BINTI MADDININ

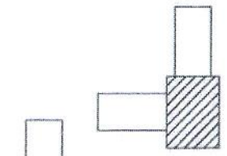
HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST BEAM WITH HALF-JOINT
TABLE 2 (1/2)
(2 HOUR FIRE RATED)

DILUKIS : NURUL SABRIAH BINTI MOHAMAD SAZALI
TARIKH : NOVEMBER 2019 SKALA : N.T.S
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CN/HJ 4 (14)

FIRE RATING : 2 Hours
COVER : 55 mm

PLAN VIEW	HALF JOINT NAME	DIMENSION TYPE	SHEAR TYPE	SHEAR RANGE (kN)	RECTANGULAR BEAM, (W) L & INVERTED T-BEAM, (W_{UB}) (mm)	H_T (mm)	Hc (mm)	h1 (mm)	h2 (mm)	U-BAR REINFORCEMENT (Ta)	U-BAR REINFORCEMENT (Tb)	REINFORCEMENT (Tc)	LINK (La)	LINK (Lb)
	HJ2	D1	1	0-100	500	500	400	200	200	1H12	2H16	2H12	2H10	2H8
			2	101-200						1H12	4H16	2H16	3H10	3H8
			3	201-300						1H12	4H16	2H16	3H10	3H8
			4	301-400						1H12	5H20	2H20	3H10	3H10
		D2	3	201-300	500	600	500	250	250	1H12	4H16	2H20	3H10	3H10
			4	301-400						1H12	4H20	3H20	3H10	3H10
			5	401-500						1H12	4H20	3H20	3H12	3H12
		D3	3	201-300	500	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301-400						1H12	4H20	3H20	3H10	3H10
			5	401-500						1H12	4H20	3H20	3H12	3H12
		D4	2	301-400	500	800	700	350	350	1H12	3H20	2H20	3H10	3H10
			3	201-300						1H12	4H20	3H20	3H10	3H10
			5	301-400						1H12	3H25	3H20	3H12	3H12
		D5	3	201-300	500	900	800	400	400	1H12	4H16	2H20	3H10	3H10
			4	301-400						1H12	5H20	3H20	3H10	3H10
			5	401-500						1H12	5H20	3H20	3H12	3H12
		D6	5	401-500	500	1000	900	450	450	1H12	4H20	3H20	3H12	3H12
			6	501-600						1H12	3H25	3H25	3H16	3H16
			7	601-700						1H12	4H25	3H25	3H16	3H16
		E1	3	201-300	600	600	500	250	250	1H12	3H20	2H20	3H10	3H10
			4	301-400						1H12	4H20	3H20	3H10	3H10
			5	401-500						1H12	3H25	3H20	3H12	3H12
		E2	3	201-300	600	700	600	300	300	1H12	2H25	2H20	3H10	3H10
			4	301-400						1H12	3H25	3H20	3H10	3H10
			5	401-500						1H12	3H25	3H20	3H12	3H12
		E3	3	201-300	600	800	700	350	350	1H12	4H16	2H20	3H10	3H10
			4	301-400						1H12	5H20	3H20	3H10	3H10
			5	401-500						1H12	5H20	3H20	3H12	3H12
		E4	3	201-300	600	900	800	400	400	1H12	4H16	3H16	3H10	3H10
			4	301-400						1H12	3H20	3H20	3H10	3H10
			5	401-500						1H12	3H25	3H20	3H12	3H12

(a) (b) (c) (d) (e) (f)

LEGEND:
COLUMN BEAM

TABLE 2 (2/2)

JKR

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4-10
BLOK G, IBU PEJABAT JKR MALAYSIA
NO.6, JALAN SULTAN SALAHUDDIN
50480 KUALA LUMPUR
(NO. TEL: 03-2618 9171 & NO. FAX: 03-2618 9155)

PENGARAH KANAN:
DATO' Ir. Hj. MOHAMAD ZULKEFLY BIN BULAIMAN
PENGARAH KEJURUTERAAN (PAKAR STRUKTUR):
Ir. Hj. MOHD NOOR AZUDIN BIN MANSOR
JURUTERA AWAM PENGUASA KANAN:
Ir. NOR AZIZAH BINTI MUHAMMAD
JURUTERA AWAM KANAN :
Ir. SHAHRIZAL BIN ABD RASID
DISEMAK :
MOHD SHAHRULMIZI BIN ABD MANAF
DIREKABENTUK :
NOREHAN BINTI MADDININ

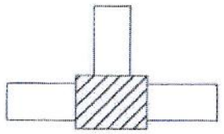
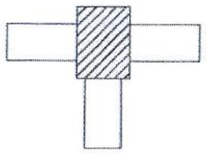
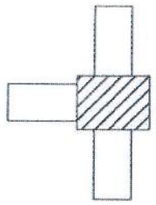
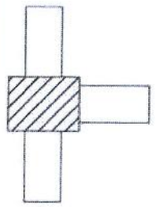
HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST BEAM WITH HALF-JOINT
TABLE 2 (2/2)
(2 HOUR FIRE RATED)

DILUKIS : NURUL SABIRAH BINTI MOHAMAD SAZALI
TARIKH : NOVEMBER 2019 | SKALA : N.T.S
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CN/HJ 5 (14)

FIRE RATING : 2 Hours
COVER : 55 mm

PLAN VIEW	HALF JOINT NAME	DIMENSION TYPE	SHEAR TYPE	SHEAR RANGE (kN)	RECTANGULAR BEAM, (W) L & INVERTED T-BEAM, (W_{UB}) (mm)	H_T (mm)	H_C (mm)	h1 (mm)	h2 (mm)	U-BAR REINFORCEMENT (Ta)	U-BAR REINFORCEMENT (Tb)	REINFORCEMENT (Tc)	LINK (La)	LINK (Lb)
 (a)	HJ3	A1	1	0–100	300	600	500	200	300	1H12	2H16	2H12	2H10	2H8
			2	101–200		–	–	–	–	–	–	–	–	–
			3	201–300		–	–	–	–	–	–	–	–	–
		A2	3	201–300	300	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301–400		–	–	–	–	–	–	–	–	–
		A3	3	201–300	300	800	700	400	300	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		A4	4	301–400	300	800	700	350	350	1H12	3H20	3H20	3H10	3H10
 (b)		B1	3	201–300	350	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301–400			–	–	–	–	–	–	–	–
		B2	4	301–400	350	800	700	400	300	1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		B3	4	301–400	350	800	700	350	350	1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
 (c)		C1	1	0–100	400	600	500	300	200	1H12	4H20	2H16	2H10	2H10
			2	101–200						1H12	3H20	2H16	3H10	3H10
			3	201–300						1H12	3H20	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500		–	–	–	–	–	–	–	–	–
 (d)		C2	3	201–300	400	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500		–	–	–	–	–	–	–	–	–
		C3	3	201–300	400	800	700	400	300	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	2H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		C4	3	201–300	400	800	700	350	350	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		C5	3	201–300	400	900	800	400	400	1H12	3H20	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	3H25	3H20	3H12	3H12

LEGEND:
COLUMN BEAM

TABLE 3 (1/2)

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4–10
BLOK G, IBU PEJABAT JKR MALAYSIA
NO.6, JALAN SULTAN SALAHUDDIN
50480 KUALA LUMPUR
(NO. TEL: 03-2618 9171 & NO. FAX: 03-2618 9155)

PENGARAH KANAN:
DATO' Ir. Hj. MOHAMAD ZULKEFLY BIN ZULAIMAN
PENGARAH KEJURUTERAAN (PAKAR STRUKTUR)
Ir. Hj. MOHD NOOR AZUDIN BIN MANSOR
JURUTERA AWAM PENGUASA KANAN
Ir. NOR AZIZAH BINTI MUHAMMAD
JURUTERA AWAM KANAN :
Ir. SHAHRIZAL BIN ABD RASID
DISEMAK :
MOHD SHAHRULMIZI BIN ABD MANAF
DIREKABENTUK :
NOREHAN BINTI MADDININ

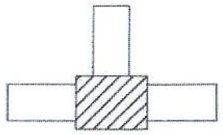
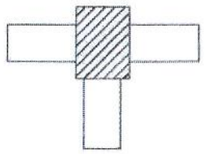
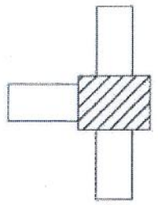
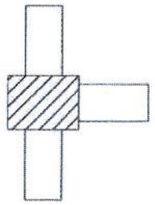
HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST BEAM WITH HALF-JOINT
TABLE 3 (1/2)
(2 HOUR FIRE RATED)

DILUKIS : NURUL SABIRAH BINTI MOHAMAD SAZALI
TARIKH : NOVEMBER 2019 | SKALA : N.T.S
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CN/HJ 6 (14)

FIRE RATING : 2 Hours
COVER : 55 mm

PLAN VIEW	HALF JOINT NAME	DIMENSION TYPE	SHEAR TYPE	SHEAR RANGE (kN)	RECTANGULAR BEAM, (W) L & INVERTED T-BEAM, (W_{UB}) (mm)	Hr (mm)	Hc (mm)	h1 (mm)	h2 (mm)	U-BAR REINFORCEMENT (Ta)	U-BAR REINFORCEMENT (Tb)	REINFORCEMENT (Tc)	LINK (La)	LINK (Lb)
 (a)	HJ3	D1	1	0–100	500	500	400	200	200	1H12	2H16	2H12	2H10	2H8
			2	101–200						1H12	4H16	2H16	3H10	3H8
			3	201–300						1H12	4H16	2H16	3H10	3H8
			4	301–400						1H12	5H20	2H20	3H10	3H10
		D2	3	201–300	500	600	500	250	250	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
 (b)		D3	3	201–300	500	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		D4	2	301–400	500	800	700	350	350	1H12	3H20	2H20	3H10	3H10
			3	201–300						1H12	4H20	3H20	3H10	3H10
			5	301–400						1H12	3H25	3H20	3H12	3H12
 (c)		D5	3	201–300	500	900	800	400	400	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	5H20	3H20	3H10	3H10
			5	401–500						1H12	5H20	3H20	3H12	3H12
		D6	5	401–500	500	1000	900	450	450	1H12	4H20	3H20	3H12	3H12
			6	501–600						1H12	3H25	3H25	3H16	3H16
			7	601–700						1H12	4H25	3H25	3H16	3H16
 (d)		E1	3	201–300	600	600	500	250	250	1H12	3H20	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	3H25	3H20	3H12	3H12
		E2	3	201–300	600	700	600	300	300	1H12	2H25	2H20	3H10	3H10
			4	301–400						1H12	3H25	3H20	3H10	3H10
			5	401–500						1H12	3H25	3H20	3H12	3H12
		E3	3	201–300	600	800	700	350	350	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	5H20	3H20	3H10	3H10
			5	401–500						1H12	5H20	3H20	3H12	3H12
		E4	3	201–300	600	900	800	400	400	1H12	4H16	3H16	3H10	3H10
			4	301–400						1H12	3H20	3H20	3H10	3H10
			5	401–500						1H12	3H25	3H20	3H12	3H12

LEGEND:
COLUMN BEAM

TABLE 3 (2/2)

JKR

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4–10
BLOK G, IBU PEJABAT JKR MALAYSIA
NO.6, JALAN SULTAN SALAHUDDIN
50480 KUALA LUMPUR
(NO. TEL: 03-2618 9171 & NO. FAX: 03-2618 9155)

PENGARAH KANAN:
DATO' Ir. Hj. MOHAMAD ZULKEFLY BIN SULAIMAN
PENGARAH KEJURUTERAAN (PAKAR STRUKTUR):
Ir. Hj. MOHD NOOR AZUDIN BIN MANSOR
JURUTERA AWAM PENGUASA KANAN :
Ir. NOR AZIZAH BINTI MUHAMMAD
JURUTERA AWAM KANAN :
Ir. SHAHRIZAL BIN ABD RASID
DISEMAK :
MOHD SHAHRULMIZI BIN ABD MANAF
DIREKABENTUK :
NORENAN BINTI MADDININ

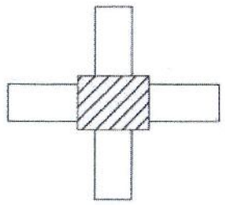
RUJUK PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST BEAM WITH HALF-JOINT
TABLE 3 (2/2)
(2 HOUR FIRE RATED)

DILUKIS : NURUL SABIRAH BINTI MOHAMAD SAZALI
TARIKH : NOVEMBER 2019 SKALA : N.T.S
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CN/HJ 7 (14)

FIRE RATING : 2 Hours
COVER : 55 mm

PLAN VIEW	HALF JOINT NAME	DIMENSION TYPE	SHEAR TYPE	SHEAR RANGE (kN)	RECTANGULAR BEAM, (W) L & INVERTED T-BEAM, (W_{UB}) (mm)	H_T (mm)	H_C (mm)	h1 (mm)	h2 (mm)	U-BAR REINFORCEMENT (Ta)	U-BAR REINFORCEMENT (Tb)	REINFORCEMENT (Tc)	LINK (La)	LINK (Lb)
 (a)	HJ4	A1	1	0–100	300	600	500	200	300	1H12	2H16	2H12	2H10	2H8
			2	101–200		–	–	–	–	–	–	–	–	–
			3	201–300		–	–	–	–	–	–	–	–	–
		A2	3	201–300	300	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301–400		–	–	–	–	–	–	–	–	–
		A3	3	201–300	300	800	700	400	300	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		A4	4	301–400	300	800	700	350	350	1H12	3H20	3H20	3H10	3H10
		B1	3	201–300	350	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301–400			–	–	–	–	–	–	–	–
		B2	4	301–400	350	800	700	400	300	1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		B3	4	301–400	350	800	700	350	350	1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		C1	1	0–100	400	600	500	300	200	1H12	4H20	2H16	2H10	2H10
			2	101–200						1H12	3H20	2H16	3H10	3H10
			3	201–300						1H12	3H20	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500		–	–	–	–	–	–	–	–	–
		C2	3	201–300	400	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500		–	–	–	–	–	–	–	–	–
		C3	3	201–300	400	800	700	400	300	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	2H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		C4	3	201–300	400	800	700	350	350	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		C5	3	201–300	400	900	800	400	400	1H12	3H20	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	3H25	3H20	3H12	3H12

LEGEND:
COLUMN BEAM

TABLE 4 (1/2)

JABATAN KERJA RAYA MALAYSIA
CABANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4–10
BLOK C, IBU PEJABAT JKR MALAYSIA
NO.6, JALAN SULTAN SALAHUDDIN
50480 KUALA LUMPUR
(NO. TEL: 03-2618 9171 & NO. FAX: 03-2618 9155)

PENGARAH KANAN:
DATO' Ir. Hj. MOHAMAD ZULKEFLY BIN SULAIMAN
PENGARAH KEJURUTERAAN (PAKAR STRUKTUR):
Ir. Hj. MOHD NOOR AZUDIN BIN MANSOR
JURUTERA AWAM PENGUASA KANAN :
Ir. NOR AZIZAH BINTI MUHAMMAD
JURUTERA AWAM KANAN :
Ir. SHAHRIZAL BIN ABD RASID
DISEMAK :
MOHD SHAHRULMIZI BIN ABD MANAF
DIREKABENTUK :
NOREHAN BINTI MADDININ

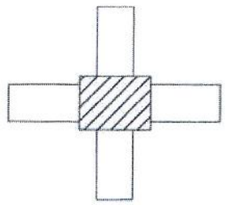
HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST BEAM WITH HALF-JOINT
TABLE 4 (1/2)
(2 HOUR FIRE RATED)

DILUKIS : NURUL SABIRAH BINTI MOHAMAD SAZALI
TARIKH : NOVEMBER 2019 | SKALA : N.T.S
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CN/HJ 8 (14)

FIRE RATING : 2 Hours
COVER : 55 mm

PLAN VIEW	HALF JOINT NAME	DIMENSION TYPE	SHEAR TYPE	SHEAR RANGE (kN)	RECTANGULAR BEAM, (W) L & INVERTED T-BEAM, (W_{UB}) (mm)	H_T (mm)	Hc (mm)	h1 (mm)	h2 (mm)	U-BAR REINFORCEMENT (Ta)	U-BAR REINFORCEMENT (Tb)	REINFORCEMENT (Tc)	LINK (La)	LINK (Lb)
 (a)	HJ4	D1	1	0–100	500	500	400	200	200	1H12	2H16	2H12	2H10	2H8
			2	101–200						1H12	4H16	2H16	3H10	3H8
			3	201–300						1H12	4H16	2H16	3H10	3H8
			4	301–400						1H12	5H20	2H20	3H10	3H10
		D2	3	201–300	500	600	500	250	250	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		D3	3	201–300	500	700	600	300	300	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	4H20	3H20	3H12	3H12
		D4	2	301–400	500	800	700	350	350	1H12	3H20	2H20	3H10	3H10
			3	201–300						1H12	4H20	3H20	3H10	3H10
			5	301–400						1H12	3H25	3H20	3H12	3H12
		D5	3	201–300	500	900	800	400	400	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	5H20	3H20	3H10	3H10
			5	401–500						1H12	5H20	3H20	3H12	3H12
		D6	5	401–500	500	1000	900	450	450	1H12	4H20	3H20	3H12	3H12
			6	501–600						1H12	3H25	3H25	3H16	3H16
			7	601–700						1H12	4H25	3H25	3H16	3H16
		E1	3	201–300	600	600	500	250	250	1H12	3H20	2H20	3H10	3H10
			4	301–400						1H12	4H20	3H20	3H10	3H10
			5	401–500						1H12	3H25	3H20	3H12	3H12
		E2	3	201–300	600	700	600	300	300	1H12	2H25	2H20	3H10	3H10
			4	301–400						1H12	3H25	3H20	3H10	3H10
			5	401–500						1H12	3H25	3H20	3H12	3H12
		E3	3	201–300	600	800	700	350	350	1H12	4H16	2H20	3H10	3H10
			4	301–400						1H12	5H20	3H20	3H10	3H10
			5	401–500						1H12	5H20	3H20	3H12	3H12
		E4	3	201–300	600	900	800	400	400	1H12	4H16	3H16	3H10	3H10
			4	301–400						1H12	3H20	3H20	3H10	3H10
			5	401–500						1H12	3H25	3H20	3H12	3H12

LEGEND:
COLUMN BEAM

TABLE 4 (2/2)

JKR

JABATAN KERJA RAYA MALAYSIA
CAWANGAN KEJURUTERAAN AWAM DAN STRUKTUR
TINGKAT 4–10
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50480 KUALA LUMPUR
(NO. TEL: 03-2618 9171 & NO. FAX: 03-2616 9155)

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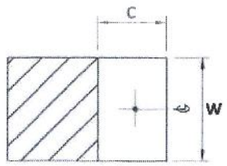
DIREKABENTUK :
NOREHAN BINTI MADDININ

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

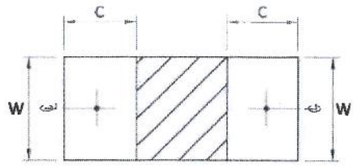
NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST BEAM WITH HALF-JOINT
TABLE 4 (2/2)
(2 HOUR FIRE RATED)

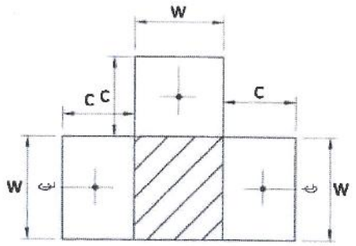
DILUKIS : NURUL SABIRAH BINTI MOHAMAD SAZALI
TARIKH : NOVEMBER 2019 | SKALA : N.T.S
NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CN/HJ 9 (14)



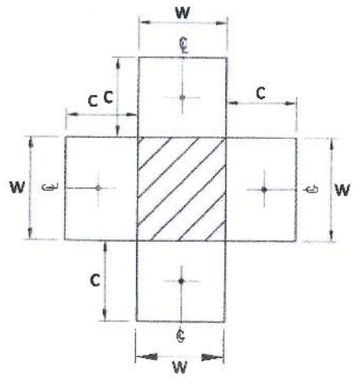
N1



N2

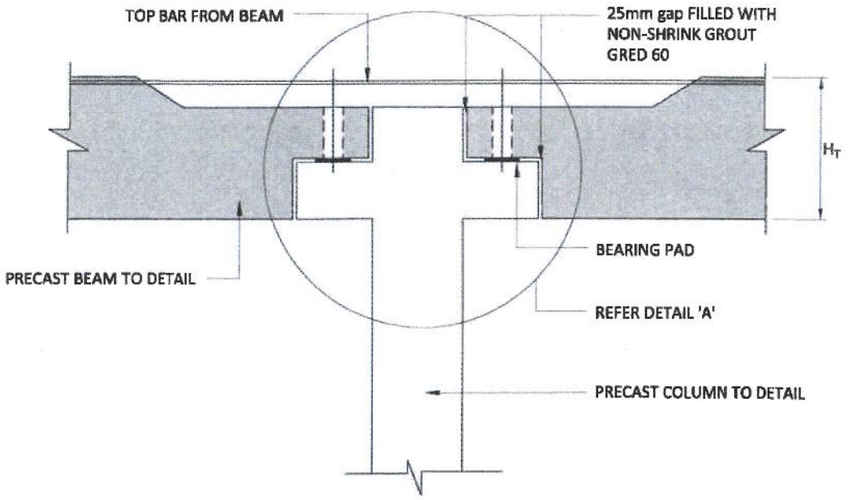


N3

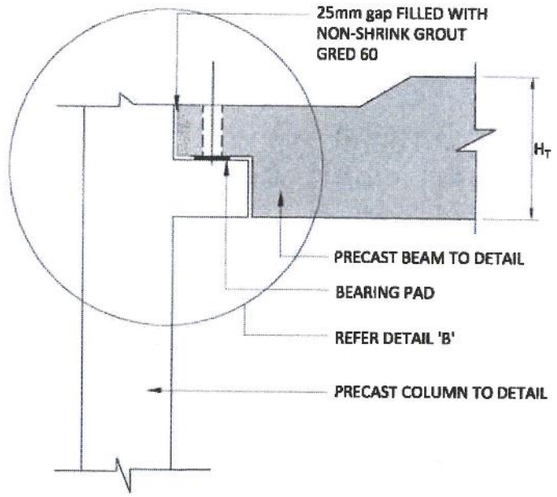


N4

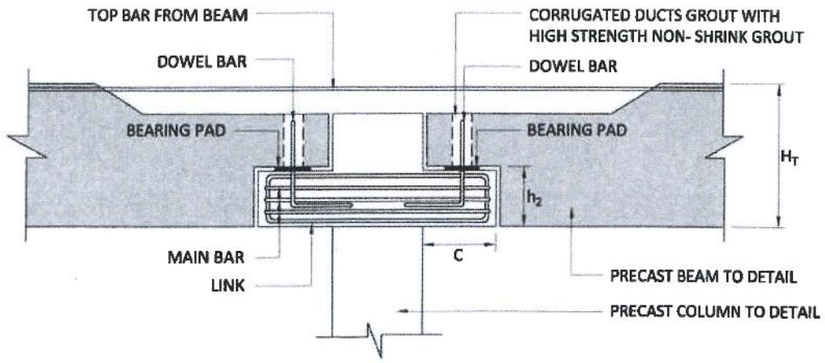
TYPE OF NIB (N)
(PLAN VIEW)



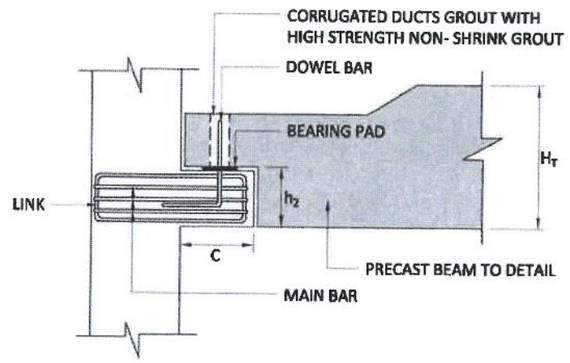
ELEVATION OF PRECAST COLUMN



ELEVATION OF EDGE PRECAST COLUMN



TYPICAL DETAIL 'A' OF COLUMN NIB



TYPICAL DETAIL 'B' OF COLUMN NIB

LEGEND:

COLUMN

NIB

NOTES:

1. DIMENSIONAL VALUE FOR W, C & H TO REFER TO PRECAST BEAM DETAILS & HALFJOINT DETAIL DRAWING.
2. MAXIMUM NIB WIDTH, W MUST BE EQUAL OR LESS THAN THE SIZE OF THE ADJACENT COLUMN.
3. USE BAR H25 FOR DOWEL BAR WITH MINIMUM LENGTH 40 TIMES DIAMETER OF BAR.
4. CORRUGATED DUCTS 75mmø

JKR

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NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

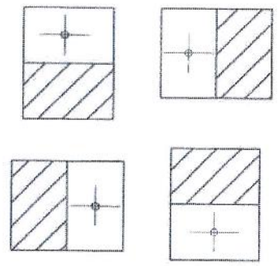
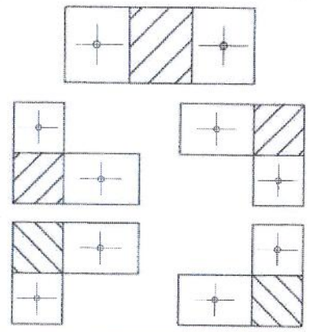
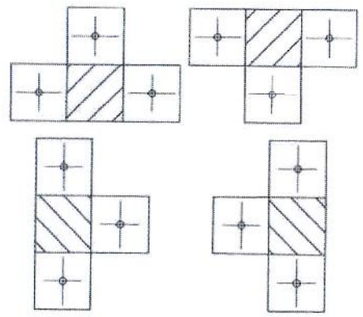
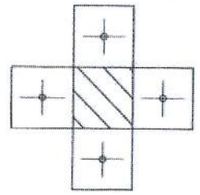
TAJUK LUKISAN :

TYPICAL DETAIL OF NIB CONNECTION

DILUKIS : NURUL SABIRAH BINTI MOHAMAD SAZALI

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CN/NIB 1 (14)

TYPE OF NIB (N)	SHEAR TYPE	DESIGN SHEAR RANGE (kN)	MINIMUM DEPTH OF NIB, (h_2)	MAIN BAR	LINK	BEARING PAD (width x length x thickness) mm	SELECTION OF NIB ORIENTATION
N1	1	0-100	300	3H12	3H8	W x (1/2)C x 5	
	2	101-200	300	3H16	3H10		
	3	201-300	300	3H20	3H10		
	4	301-400	300	3H20	3H12		
	5	401-500	350	3H20	3H12		
N2	1	0-100	300	3H12	3H8	W x (1/2)C x 5	
	2	101-200	300	3H16	3H10		
	3	201-300	300	3H20	3H10		
	4	301-400	300	3H20	3H12		
	5	401-500	350	3H20	3H12		
N3	1	0-100	300	3H12	3H8	W x (1/2)C x 5	
	2	101-200	300	3H16	3H10		
	3	201-300	300	3H20	3H10		
	4	301-400	300	3H20	3H12		
	5	401-500	350	3H20	3H12		
N4	1	0-100	300	3H12	3H8	W x (1/2)C x 5	
	2	101-200	300	3H16	3H10		
	3	201-300	300	3H20	3H10		
	4	301-400	300	3H20	3H12		
	5	401-500	350	3H20	3H12		

LEGEND:

COLUMN

NIB

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NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

NIB CONNECTION TABLE
(2 HOUR FIRE RATED)

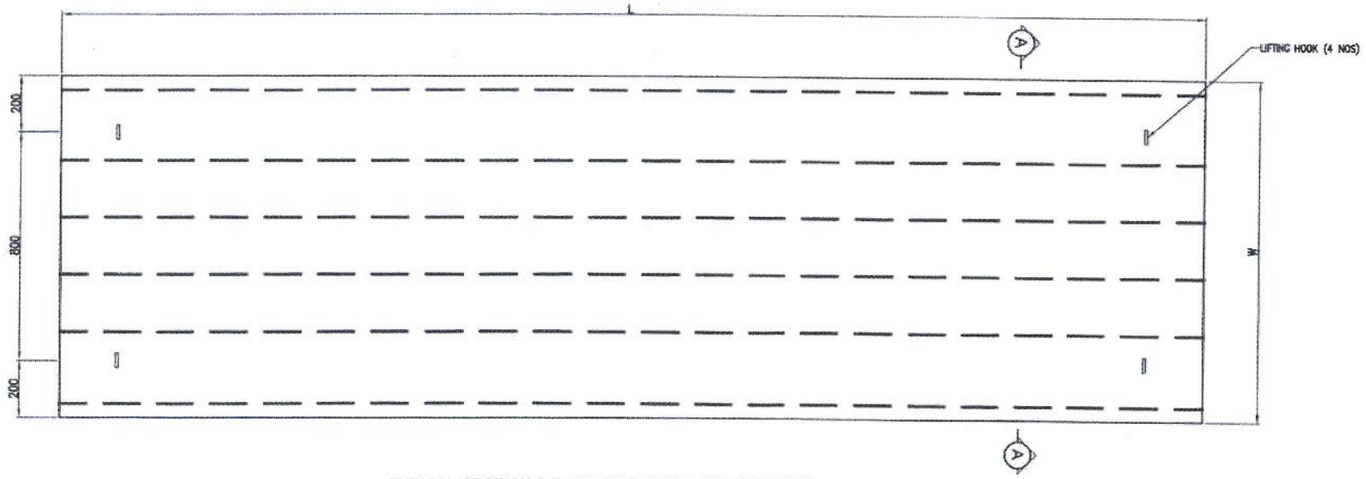
DILUKIS : NURUL SABIRAH BINTI MOHAMAD SAZALI

TARIKH : NOVEMBER 2019 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/CN/NIB 2 (14)

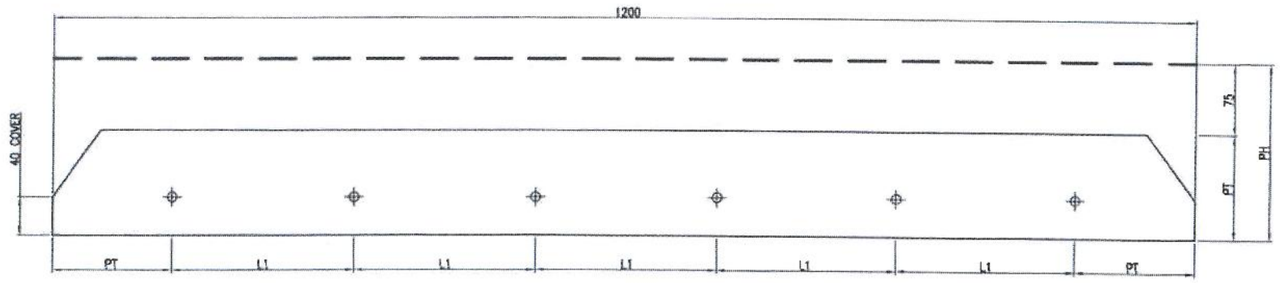
PRECAST

PRE-STRESSED PLANK



TYPICAL SECTION & REINFORCEMENT ARRANGEMENT

SCALE 1:10

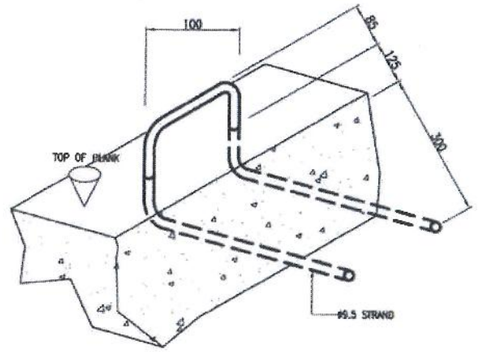


SECTION A-A

SCALE : 1:3

STRAND SIZE	
S	ø=9.6
M	ø=12.9

NOTE :
L1 = TO BE DIVIDED EQUALLY



LIFTING HOOK

SCALE 1:3

DESIGNATION	DIMENSION			LOADING DATA	Gk (kN/m2)	1.7	1.7	1.7	1.7	1.7	1.7
	PT	W	PH		Qk (kN/m2)	1.5	2.5	3	4	5	7.5
	(mm)	(mm)	(mm)	Length (mm)		STRAND (nos)					
PSP90-165-01	90	1200	165	3000		5S	5S	5S	5S	5S	5S
PSP90-165-02	90	1200	165	3500		5S	5S	5S	5M	5M	5M
PSP90-165-03	90	1200	165	4000		5M	5M	5M	5M	5M	5M
PSP90-165-04	90	1200	165	4500		6M	6M	6M	6M	6M	7M

DESIGNATION	DIMENSION			LOADING DATA	Gk (kN/m2)	1.7	1.7	1.7	1.7	1.7	1.7
	PT	W	PH		Qk (kN/m2)	1.5	2.5	3	4	5	7.5
	(mm)	(mm)	(mm)	Length (mm)		STRAND (nos)					
PSP110-185-01	110	1200	185	3000		5S	5S	5S	5S	5S	5S
PSP110-185-02	110	1200	185	3500		5S	5S	5S	5S	5S	5S
PSP110-185-03	110	1200	185	4000		5S	5S	5S	5S	5S	5M
PSP110-185-04	110	1200	185	4500		5M	5M	5M	5M	5M	5M
PSP110-185-05	110	1200	185	5000		5M	5M	5M	5M	5M	6M
PSP110-185-06	110	1200	185	5500		5M	6M	6M	6M	7M	–

CODE OF COMPONENTS

PSP90-165-01
- PRODUCT SERIES
- PLANK OVERALL THICKNESS, PH(mm)
- PLANK THICKNESS, PT(mm)
- TYPES OF SLAB (PRECAST PRESTRESSED PLANK)

SPECIFICATION

a) INPUT VALUE OF PERMANENT LOAD (GK) AND IMPOSED (QK).
b) SELFWEIGHT OF PRECAST PRESTRESSED SLAB, ARE ALREADY COMPUTED IN THE PROVIDED TABLE.
c) LOAD SHALL BE UNIFORMLY DISTRIBUTED.
d) THE APPLICATION OF CONCENTRATED LOAD AREA ON PRECAST ELEMENT SHALL BE REFERRED TO COMPETENT PERSON.
e) ALL DESIGN ARE COMPLIANCE WITH MS EN 1992-1-1:2010
f) MINIMUM CONCRETE GRADE C40/50 FOR PRECAST SLAB & GRADE C28/35 FOR CAST IN-SITU TOPPINGS.
g) FOR THE DESIGN OF ULTIMATE MOMENT CAPACITY, THE STRAND POSITION SHALL BE 40mm FROM THE SLAB SOFFIT.
h) MINIMUM CONCRETE CUBE COMPRESSIVE STRENGTH OF 40N/mm2 AT TRANSFER.
i) MINIMUM CONCRETE CUBE COMPRESSIVE STRENGTH OF 50N/mm2 (PRECAST) and 30N/mm2 (IN-SITU) AT 28 DAYS
j) FIRE RESISTANCE = 2 HOURS.
k) STRAND'S CHARACTERISTIC OF STRENGTH, FPU =1860N/mm2
l) INITIAL PRE-STRESSED, fpo = 70%fpu (fpu = STRENGTH OF TENDON)
m) THE CONNECTION SYSTEM BETWEEN PRECAST COMPONENT AND CAST IN-SITU STRUCTURE SHALL BE REFERRED TO COMPETENT PERSON.
n) PRECAST PRE STRESSED PLANK SHALL BE PROPPED (UNLESS OTHERWISE STATED) DURING INSTALLATION

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JURUTERA AWAM KANAN :
Ir. AZURA HANIM BINTI SULAIMAN
DISEMAK :
NUR SAFURAA BINTI MUHAMMAD KAMIL
DIREKABENTUK :
MOHD ILHAM BIN OMAR

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST PRE-STRESSED PLANK

DILUKIS : MOHD AJIB BIN AHAMAD

TARIKH : NOVEMBER 2019 | SKALA : AS SHOWN

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 19/(PPP)/(1/1)

JKR

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