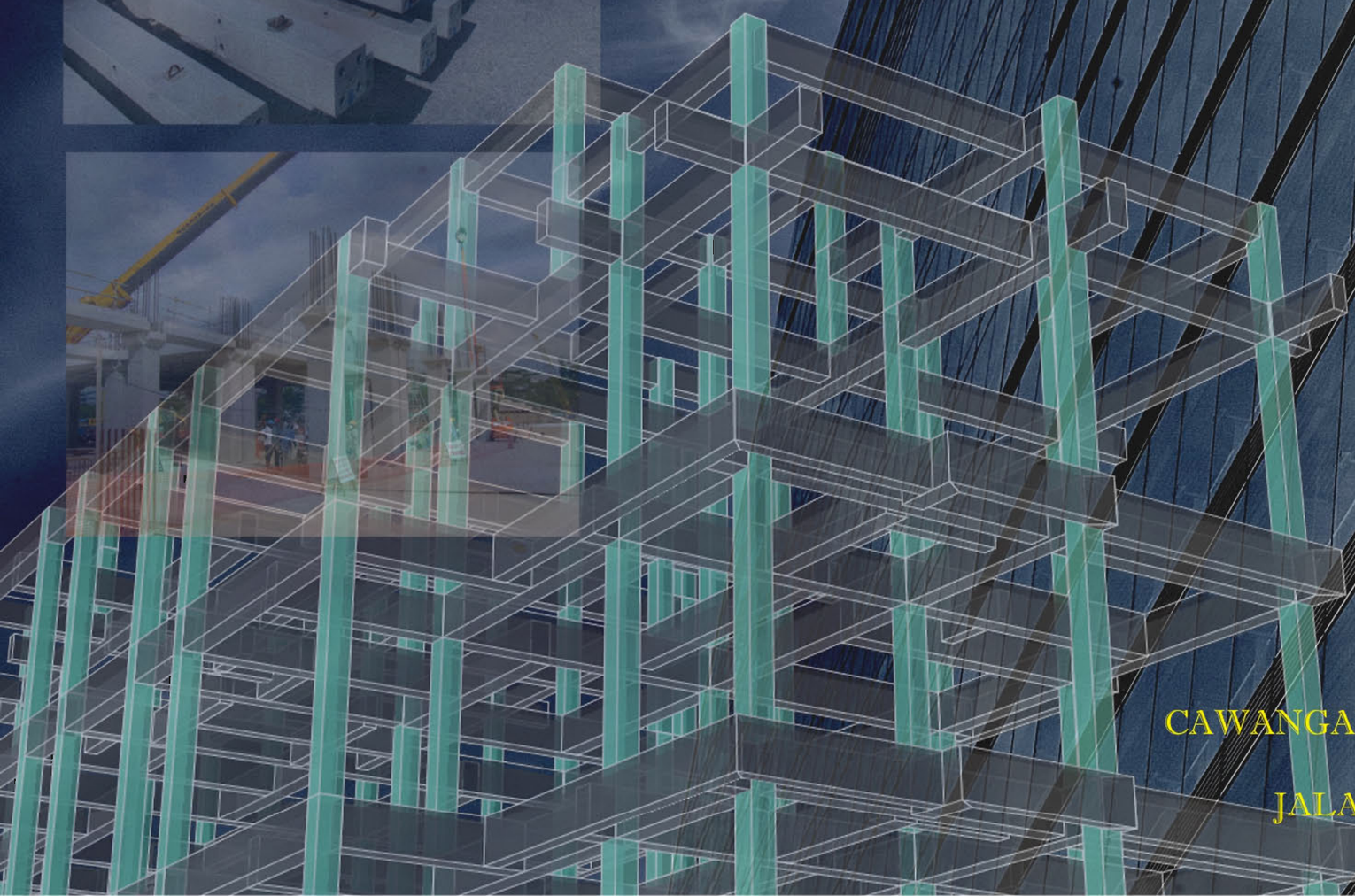
JKR IBS CATALOGUE VERSION 2: 2016

KATALOG IBS JKR VERSI 2: 2016



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

FOREWORD

From DREAM .....Everything starts with an idea or concept in mind

To DRAWING .... The dream is given form by putting it on paper

To REALITY ... The contruction process begins

JKR must seek continous improvement in her construction process in order to survive in the progressive construction sector of the future. In addition, aligning with the national Construction Industry Transformation Programme (CITP), the publication of JKR IBS Catalogue Version 2 is a timely effort to enhance further the utilization of IBS in our building projects.

This catalogue states the popular types of beams , columns, half-slabs, staircases and conection joints for precast concrete components that are commonly used in JKR building projects. The catalogue contains basic informations such as loadings, moment capacity, shear forces, reinforcement and notes on installation. The informations provided are useful and applicable to assist JKR structural designers in performing their tasks efficiently.

This technical guide will be able to assist structural engineers in designing and constructing efficient and cost effective IBS buildings. It is our intention that all engineers in the department have access to the catalogue in order to maximise their performance and productivities. It is hoped that it will be useful for design engineers to expediate their work process and drawing production.

I would also like to sincerely thanked all the engineers and others in CKAS who had with great effort contribute their knowledge and time in producing this catalogue.

Kamaluddin Bin Abdul Rashid
Senior Director
Civil and Structural Engineering Branch
JKR Malaysia

ACKNOWLEDGEMENT

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

ADVISOR

En. Kamaluddin bin Abdul Rashid (Pengarah Kanan, CKAS)
Ir. Muhammad Azman bin Jamrus (Pengarah Khidmat Rekabentuk, CKAS)
Ir. Hjh. Norma binti Norman (Pengarah Khidmat Pakar & Pengurusan, CKAS)

COMITTEE MEMBERS

Bahagian Struktur (Bangunan Am 1)

Ir. Nor Azman bin Ismail
Ir. Noreha binti Nordin
Pn. Nurmawaddah binti Mohd Idris

Bahagian Struktur (Bangunan Am 2)

Ir. Ihsan @ Hasni bin Atan
Tn. Hj. Abd Latif bin Sirin
Pn. Munirah binti Mohmad
Pn. Siti Aisah Binti Mat Yaacob

Bahagian Struktur (Keselamatan)

Ir. Mohd Azhari bin Mohd Salleh
Ir. Prem Kumar A/L Kaliappan
En. Gan Chiew Leng

Bahagian Pembangunan dan Penyelidikan

Ir. Kanagarajah Rasiah / Ir. Dr. Lim Char Ching
En. Mohd Fairuz bin Mamat @ Muhamad
Ir. Che Mimi Suriyani binti Ismail
Pn. Tg. Normardziah binti Tuan Mahmood
En. Bernard Toides

Bahagian Rehabilitasi

Ir. Hj. Mohd Noor Azudin Mansor
Pn. Hafizah binti Zakaria

Bahagian Struktur (Pendidikan)

En. Ahmad Rosli bin Abdul Rahman
Ir. Nadia binti Jailan

SECRETARIAT

Bahagian Struktur (Kesihatan)

Tn. Hj. Mohd Subki bin Ahmad Said
Ir. Zamilah binti Said
En. Khairul Nizam bin Mat Denin
Cik Kamaliah binti Mohd Saha
En. Mohd Idzwan bin Ibrahim

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

LIST OF DRAWING

NO.	TITLE.	DRAWING NO.
1.	NOTES	
1.1	GENERAL NOTES	JKR/CKAS/P-IBS/PEL 15/NA 01
1.2	GENERAL NOTES	JKR/CKAS/P-IBS/PEL 15/NA 02
1.3	TYPICAL DRAWINGS	JKR/CKAS/P-IBS/PEL 15/TC 01
2.	PRECAST BEAM	
2.1	RASUK PRATUANG JENIS SEGIEMPAT	JKR/CKAS/P-IBS/PEL 15/BR-3050/BR 01
2.2	RASUK PRATUANG JENIS SEGIEMPAT (LEKUK 200mm)	JKR/CKAS/P-IBS/PEL 15/BR-3060/BR 02
2.3	RASUK PRATUANG JENIS SEGIEMPAT (LEKUK 200mm)	JKR/CKAS/P-IBS/PEL 15/BR-3070/BR 03
2.4	RASUK PRATUANG JENIS SEGIEMPAT (LEKUK 200mm)	JKR/CKAS/P-IBS/PEL 15/BR-3570/BR 04
2.5	RASUK PRATUANG JENIS SEGIEMPAT (LEKUK 200mm)	JKR/CKAS/P-IBS/PEL 15/BR-3580/BR 05
2.6	RASUK PRATUANG JENIS SEGIEMPAT	JKR/CKAS/P-IBS/PEL 15/BR-2050/BR 06
2.7	RASUK PRATUANG JENIS SEGIEMPAT	JKR/CKAS/P-IBS/PEL 15/BR-2060/BR 07
2.8	RASUK PRATUANG JENIS SEGIEMPAT	JKR/CKAS/P-IBS/PEL 15/BR-2070/BR 08
2.9	RASUK PRATUANG JENIS SEGIEMPAT	JKR/CKAS/P-IBS/PEL 15/BR-2560/BR 09
2.10	RASUK PRATUANG JENIS SEGIEMPAT	JKR/CKAS/P-IBS/PEL 15/BR-2570/BR 10
2.11	RASUK PRATUANG JENIS SEGIEMPAT	JKR/CKAS/P-IBS/PEL 15/BR-2580/BR 11
2.12	RASUK PRATUANG JENIS SEGIEMPAT (LEKUK 100mm)	JKR/CKAS/P-IBS/PEL 15/BR-3060A/BR 12
2.13	RASUK PRATUANG JENIS SEGIEMPAT (LEKUK 100mm)	JKR/CKAS/P-IBS/PEL 15/BR-3070A/BR 13
2.14	RASUK PRATUANG JENIS SEGIEMPAT (LEKUK 100mm)	JKR/CKAS/P-IBS/PEL 15/BR-3570A/BR 14
2.15	RASUK PRATUANG JENIS SEGIEMPAT (LEKUK 100mm)	JKR/CKAS/P-IBS/PEL 15/BR-3580A/BR 15
2.16	RASUK PRATUANG JENIS INVERTED T	JKR/CKAS/P-IBS/PEL 15/BT-4050/BT 01
2.17	RASUK PRATUANG JENIS INVERTED T	JKR/CKAS/P-IBS/PEL 15/BT-4060/BT 02
2.18	RASUK PRATUANG JENIS INVERTED T	JKR/CKAS/P-IBS/PEL 15/BT-4070/BT 03
2.19	RASUK PRATUANG JENIS INVERTED T	JKR/CKAS/P-IBS/PEL 15/BT-4080/BT 04
2.20	RASUK PRATUANG JENIS INVERTED T	JKR/CKAS/P-IBS/PEL 15/BT-5050/BT 05
2.21	RASUK PRATUANG JENIS INVERTED T	JKR/CKAS/P-IBS/PEL 15/BT-5060/BT 06
2.22	RASUK PRATUANG JENIS INVERTED T	JKR/CKAS/P-IBS/PEL 15/BT-5065/BT 07
2.23	RASUK PRATUANG JENIS INVERTED T	JKR/CKAS/P-IBS/PEL 15/BT-5070/BT 08
2.24	RASUK PRATUANG JENIS INVERTED T	JKR/CKAS/P-IBS/PEL 15/BT-5080/BT 09
2.25	RASUK PRATUANG JENIS INVERTED T	JKR/CKAS/P-IBS/PEL 15/BT-6060/BT 10
2.26	RASUK PRATUANG JENIS INVERTED T	JKR/CKAS/P-IBS/PEL 15/BT-6070/BT 11
2.27	RASUK PRATUANG JENIS INVERTED T	JKR/CKAS/P-IBS/PEL 15/BT-6080/BT 12

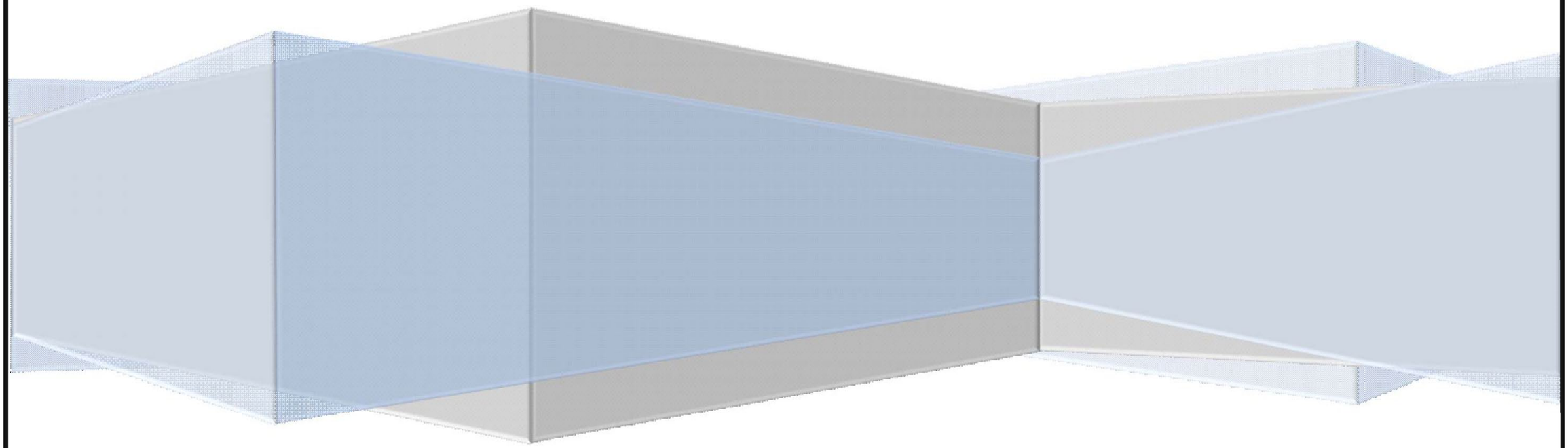
LIST OF DRAWING

NO.	TITLE.	DRAWING NO.
2.28	RASUK PRATUANG JENIS L	JKR/CKAS/P-IBS/PEL 15/BL-3050/BL 01
2.29	RASUK PRATUANG JENIS L	JKR/CKAS/P-IBS/PEL 15/BL-3060/BL 02
2.30	RASUK PRATUANG JENIS L	JKR/CKAS/P-IBS/PEL 15/BL-3070/BL 03
2.31	RASUK PRATUANG JENIS L	JKR/CKAS/P-IBS/PEL 15/BL-3080/BL 04
2.32	RASUK PRATUANG JENIS L	JKR/CKAS/P-IBS/PEL 15/BL-4050/BL 05
2.33	RASUK PRATUANG JENIS L	JKR/CKAS/P-IBS/PEL 15/BL-4060/BL 06
2.34	RASUK PRATUANG JENIS L	JKR/CKAS/P-IBS/PEL 15/BL-4070/BL 07
2.35	RASUK PRATUANG JENIS L	JKR/CKAS/P-IBS/PEL 15/BL-4080/BL 08
3.	PRECAST COLUMN	
3.1	PRECAST SQUARE COLUMN	JKR/CKAS/P-IBS/PEL 15/CS/CS 01
3.2	TABLE 1 - PRECAST SQUARE COLUMN	JKR/CKAS/P-IBS/PEL 15/CS/CS 02
3.3	PRECAST RECTANGULAR COLUMN	JKR/CKAS/P-IBS/PEL 15/CR/CR 03
3.4	TABLE 2 - PRECAST RECTANGULAR COLUMN	JKR/CKAS/P-IBS/PEL 15/CR/CR 04
4.	PRECAST HALF SLAB	
4.1	PAPAK PRATUANG JENIS SEPARA	JKR/CKAS/P-IBS/PEL 15/HS-1215/H 01
4.2	PAPAK PRATUANG JENIS SEPARA	JKR/CKAS/P-IBS/PEL 15/HS-1220/H 02
4.3	PAPAK PRATUANG JENIS SEPARA	JKR/CKAS/P-IBS/PEL 15/HS-1225/H 03
5.	PRECAST STAIRCASE	
5.1	BUTIRAN TANGGA PRATUANG JENIS 1	JKR.CKAS/P-IBS/PEL 15/ST/ST 01-1
5.2	BUTIRAN TANGGA PRATUANG JENIS 1	JKR.CKAS/P-IBS/PEL 15/ST/ST 01-2
5.3	BUTIRAN TANGGA PRATUANG JENIS 2	JKR.CKAS/P-IBS/PEL 15/ST/ST 02
5.4	BUTIRAN TANGGA PRATUANG JENIS 3	JKR.CKAS/P-IBS/PEL 15/ST/ST 03-1
5.5	BUTIRAN TANGGA PRATUANG JENIS 3	JKR.CKAS/P-IBS/PEL 15/ST/ST 03-2
5.6	BUTIRAN TANGGA PRATUANG JENIS 4	JKR.CKAS/P-IBS/PEL 15/ST/ST 04

LIST OF DRAWING

NO.	TITLE.	DRAWING NO.
6.	PRECAST CONNECTION	
6.1	PRECAST BEAM WITH HALF JOINT	JKR.CKAS/P-IBS/PEL 15/CN/HJ 01
6.2	TABLE 1 - BEAM HALF JOINT DETAILS	JKR.CKAS/P-IBS/PEL 15/CN/HJ 02
6.3	TABLE 2 - BEAM HALF JOINT DETAILS	JKR.CKAS/P-IBS/PEL 15/CN/HJ 03
6.4	TABLE 3 - BEAM HALF JOINT DETAILS	JKR.CKAS/P-IBS/PEL 15/CN/HJ 04
6.5	TABLE 4 - BEAM HALF JOINT DETAILS	JKR.CKAS/P-IBS/PEL 15/CN/HJ 05
6.6	TYPICAL DETAIL OF NIB CONNECTION	JKR.CKAS/P-IBS/PEL 15/CN/NIB 01
6.7	NIB CONNECTION TABLE	JKR.CKAS/P-IBS/PEL 15/CN/NIB 02
6.8	CORBEL CONNECTION	JKR.CKAS/P-IBS/PEL 15/CN/CR 01
6.9	CORBEL CONNECTION TABLE	JKR.CKAS/P-IBS/PEL 15/CN/CR 02

NOTES



GENERAL NOTES :

1. CONCRETE

1.1 Maximum aggregate size shall be 20mm.

1.2 Unless otherwise stated, all cast in–situ concrete shall be minimum compressive strength 35 N/mm2 at 28 days.

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

Beams	: 25mm
Slabs	: 25mm
Columns	: 40mm

1.4 All placing and compacting shall be carried out as referred to Section D in Standard Specification For Building Works 2014 : JKR 20800–0183–14 unless otherwise specified.

2. REINFORCEMENT

2.1 Unless otherwise stated, all steel reinforcement bars and welded steel fabric reinforcement (BRC mesh: minimum BRC A8 252mm2/m) shall comply with the requirements of MS 144, MS 145 & MS 146 respectively. Steel reinforcement bars shall be cut and bend to BS 4449.

2.2 'R' denotes mild steel of yield strength = 250 N/mm2 BS4449
'T' denotes high yield steel of yield strength = 460 N/mm2 BS4449
Hard Drawn wire (BRC mesh) mesh = 485 N/mm2 BS4483 (Fabric)

2.3 Lap length of compression and tension (high yield) bars should be refer to BS 8110 Table 3.27.

3. PRECAST BEAM

3.1 MATERIALS

a. Concrete grade of precast prestressed beams shall be minimum compressive strength 50 N/mm2 at 28 days.

b. Concrete grade of precast reinforced beams shall be minimum compressive strength 35 N/mm2 at 28 days.

c. Concrete grade of infill concrete on Precast Beam top shall be minimum compressive strength 35 N/mm2 at 28 days.

d. Reinforcement – to comply to item 2.

3.2 INSTALLATION OF PRECAST BEAMS

Precast beams shall be hoisted with 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 (minimum compressive strength 35 N/mm2 at 28 days).

4. PRECAST COLUMN

4.1 MATERIALS

a. Concrete grade of precast column shall be minimum compressive strength 35 N/mm2 at 28 days.

b. Concrete filling at the junction between beams and columns shall be minimum compressive strength 35 N/mm2 at 28 days.

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 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 insitu portion of column at beam junction.

5. PRECAST HALF SLAB

5.1 MATERIALS

a. Concrete grade of precast column shall be minimum compressive strength 35 N/mm2 at 28 days.

b. Concrete filling at the junction between beams, columns and slab shall be minimum compressive strength 35 N/mm2 at 28 days.

c. Reinforcement – to comply to item 2.

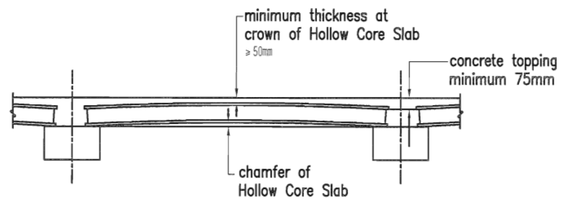
5.2 INSTALLATION OF PRECAST HALF SLAB

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 (minimum compressive strength 35 N/mm2 at 28 days).

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 BRC mesh: minimum BRC A8 252 mm2/m . The top of the topping shall be the final finish level.



6.2 MATERIALS

a. Concrete grade of precast prestressed hollow core slabs shall not be less than minimum compressive strength 50 N/mm2 at 28 days.

b. Concrete grade of concrete topping on precast slabs shall not be less than minimum compressive strength 35 N/mm2 at 28 days.

c. Prestressing steel shall be low relaxation strands conforming to relevant BS 5896, 1980 relaxation class 2.

d. For durability, the concrete cover to prestressed strands shall be at least 40mm with minimum cement content 360 kg/m3 and water cement ratio < 0.5.

6.3 DESIGN

a. All precast slabs shall be designed as Class 2 member of BS 8110: 1997.

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 precast slabs shall be designed to meet fire–resistance requirement hours with 40mm cover.

d. The initial camber and final deflection of precast units shall not exceed the allowable limits specified in BS 8110 : 1997.

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 compressive strength 35 N/mm2 at 28 days. 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 Grade 15.

8. RECOMMENDED MINIMUM CONCRETE STRENGTH FOR LIFTING AND HANDLING

Application	Minimum concrete strength, fc
None specific, fine controlled crane, non–pre–stressed	10 N/mm2*
Lifting which involves significant impact or high acceleration	15 N/mm2*
All units where concrete strength for lifting is specified in contract document	As specified
Concentrically pre–stressed elements (piles, wall panel or thin floor slab)	20 N/mm2
Eccentrically pre–stressed elements (tees, deep flooring units)	25 N/mm2
Bridge beams and similar highly stressed Pre–stressed elements	30 N/mm2 or as specified
* Dependent on anchor length or otherwise specified.	
Note : Special care should be taken with pre–stressed elements to ensure lifting devices are anchored in conmpression zones, unless covered by specfic design	

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:
KAMALUDDIN BIN ABDUL RASHID
PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS
PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN
PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING
KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD
DIREKABENTUK :
BERNARD TOIDES / NOR AZIZAH BINTI MOHAMMED RUM
DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PLATAN
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

GENERAL NOTES

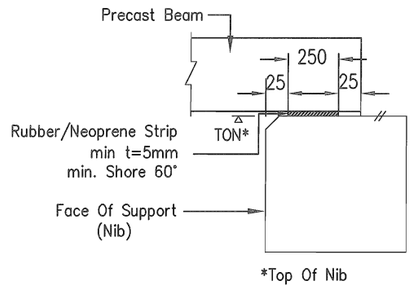
DILUKIS : NOR AZIZAH BINTI MOHAMMED RUM

TARIKH : SEPTEMBER 2015 | SKALA : N.T.S

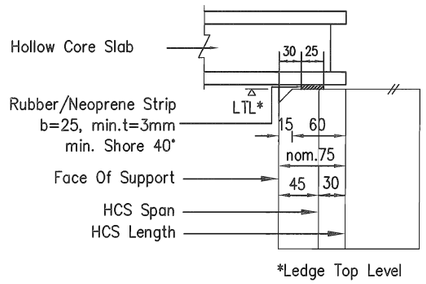
NO. LUKISAN :
JKR/CKUS/P–IBS/PE 15/m 97

9. BEARING PAD

9.1 TYPICAL BEARING PAD SEATING FOR BEAM



9.2 TYPICAL BEARING PAD SEATING FOR HOLLOW CORE SLAB



10. TIES

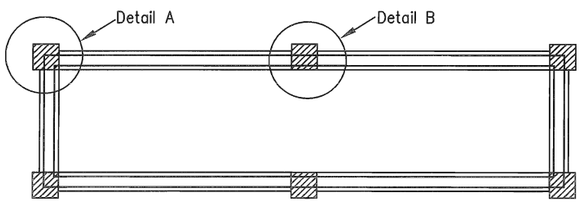
The necessary interaction between elements is obtained by tying the structure together using the following types of ties in BS 8110-1:1997.

a. Peripheral ties
b. Internal ties
c. Horizontal ties to columns and walls
d. Vertical ties

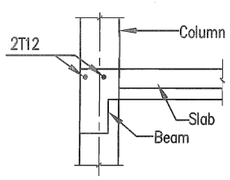
Each section should have an appropriate tying system when a building are divided by expansion joints into structurally independent sections.

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.

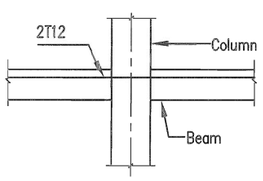
Unless otherwise stated, minimum 12 mm diameter must be used for ties.



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 properties of the grout should be of high fluidity and cohesion when plastic, have low shrinkage when hardening and have adequate strength when hard.

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 not exceed 0.44. 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 and mortar shall be carried out according to MS 26.

11.5 The compressive strength shall be determined with reference to BS8110 by crushing test on 100mm cubes.

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

11.7 The appropriate strength requirement shall be considered to be satisfied if the average strength is greater than the specified characteristic strength of precast concrete.

11.8 The fluidity of the grout can be assesed using the procedures set out in BS EN 445. Two (2) test method described in the standard are the immersion method and cone method.

12. INCORPORATION OF M&E REQUIREMENTS IN STRUCTURE

12.1 The contractor shall incorprate 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 construction. 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 b e laid within the screed thickness.

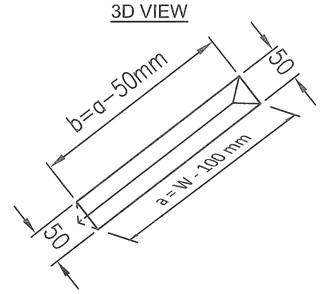
12.4 For the purpose, if requested by the contractor, the S.O's may permit slab panel to allow thicker screed.

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.

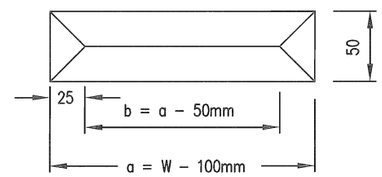
13. SHEAR KEY

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

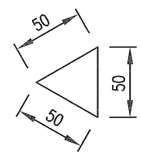
3D VIEW

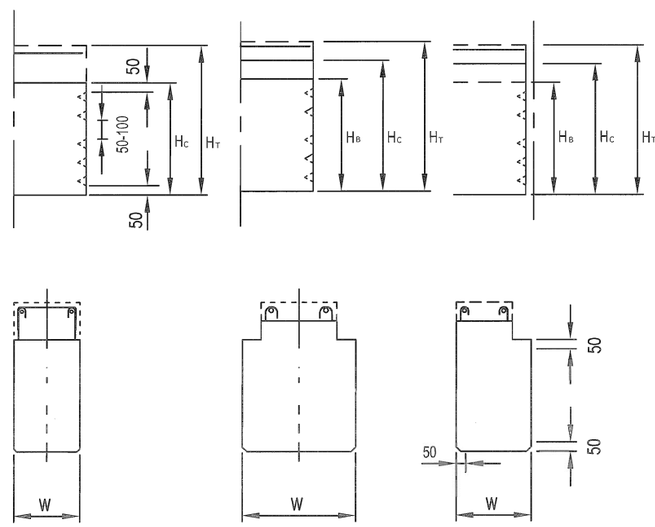


PLAN VIEW



SIDE VIEW





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

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:
KAMALUDDIIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
BERNARD TOIDES / NOR AZIZAH BINTI MOHAMMED RUM

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

GENERAL NOTES

DILUKIS : NOR AZIZAH BINTI MOHAMMED RUM

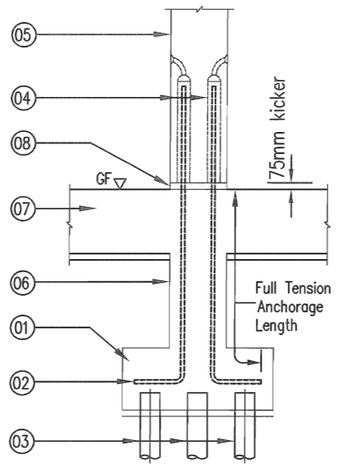
TARIKH : SEPTEMBER 2015 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 15/NA 02

TYPICAL DRAWINGS :

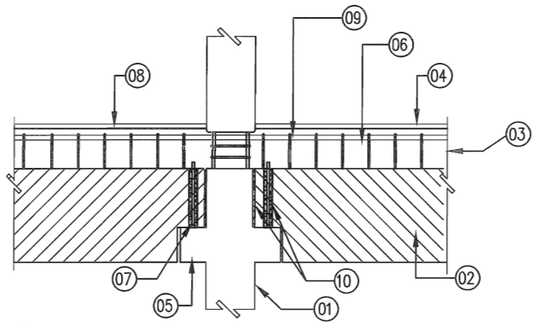
1. TYPICAL CONNECTION

1.1 PRECAST COLUMN CONNECTION AT GROUND LEVEL



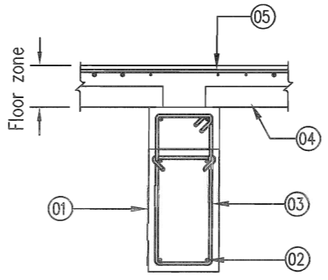
(01) – R.C. Pile cap
(02) – Column Starter Bar. Use MS template or equivalent for positioning of starter bars. To be removed after casting of pilecaps
(03) – Pile
(04) – Corrugated sleeve (grouted with high non-shrink grout)
(05) – Precast Column
(06) – Stump
(07) – Cast in-situ Beam
(08) – Grouting

1.2 CONNECTION BETWEEN PRECAST COLUMN & PRECAST BEAM



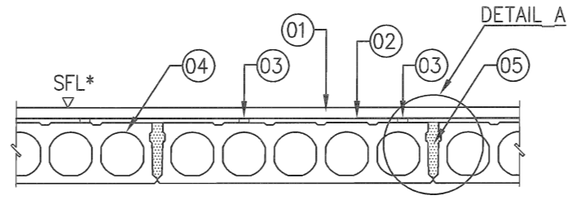
(01) –Precast Column
(02) –Precast Beam
(03) –Precast Slab
(04) –Structural topping
(05) –Column nib
(06) –Concrete infill to precast beam top
(07) –Dowel bar reinforcement
(08) –Wire mesh
(09) –Precast Beam Top Reinforcement
(10) –Grouting

1.3 CONNECTION BETWEEN RECTANGULAR BEAM AND PRECAST SLAB

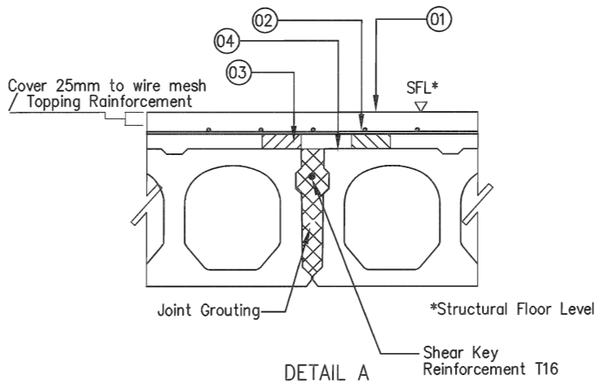


(01) – Precast rectangular beam
(02) – Rectangular beam reinforcement bar
(03) – Projected links from precast beam
(04) – Precast slab
(05) – Slab main reinforcement (top bar)

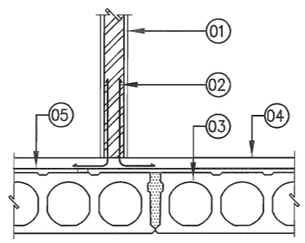
2. TYPICAL FLOOR STRUCTURE DETAIL



(01)–Structural topping (composite) concrete minimum compressive strength 35 N/mm2 at 28 days
(02)–Wire Mesh, BRC
(03)–30mm thk. Concrete Spacer
(04) –Prestressed Precast Hollow Core Slab
(05)–Shear key grout

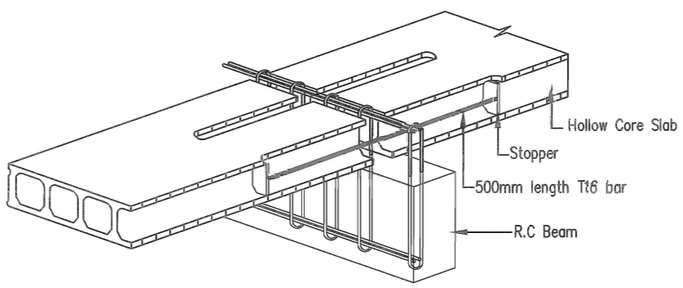


3. TYPICAL BRICKWALL STIFFENER ON HOLLOW CORE SLAB



(01) –Stiffener
(02) –Dowel starter reinforcement
(03) –Hollow Core Slab
(04) –Structural topping concrete minimum compressive strength 35 N/mm2 at 28 days
(05) –Wire mesh, BRC

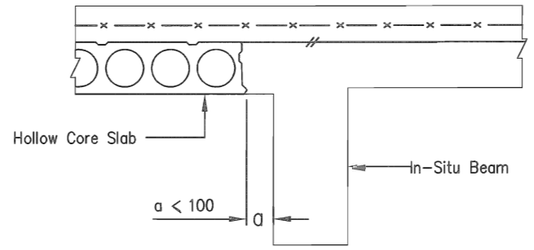
note:
Concrete topping to be completed before laying any brickwalls to ensure water tightness.



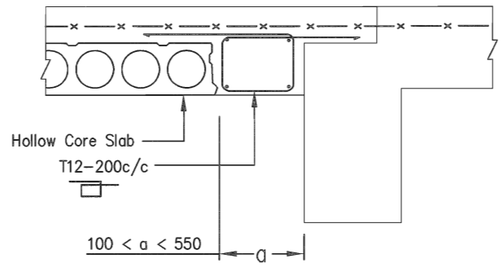
Continuity of ties: bar in precast member lapped with bar in-situ concrete

4. IN-SITU MAKE-UP STRIP DETAIL

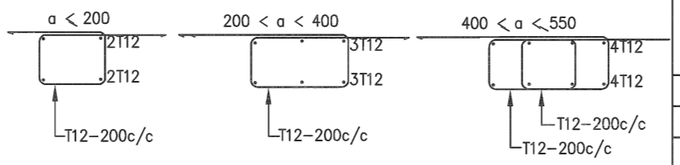
4.1 NO REINFORCEMENT REQUIRED



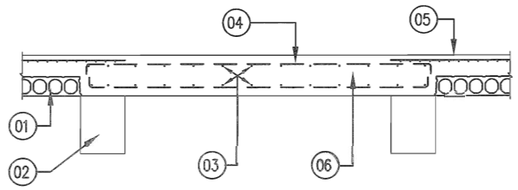
4.2 REINFORCEMENT REQUIRED



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)– T10–150
(05)– Concrete Topping C35
(06)– Cast in-situ slab

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:
KAMALUDDIIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
BERNARD TOIDES / NOR AZIZAH BINTI MOHAMMED RUM

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PIAWAI KOMPONEN STRUKTUR IBS BAGI BANGUNAN

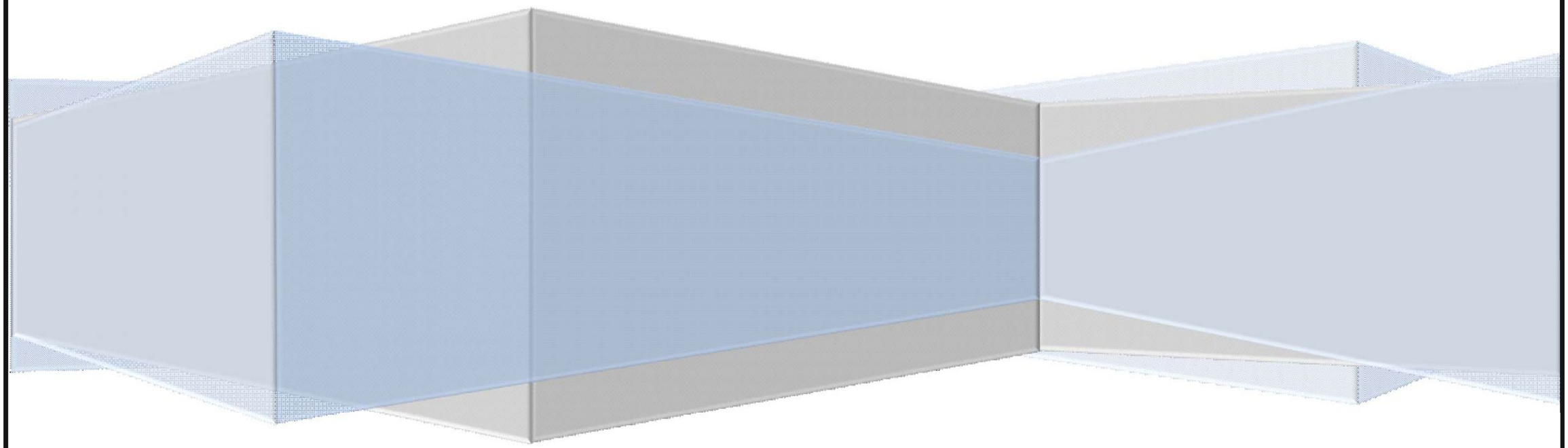
TAJUK LUKISAN :
TYPICAL DRAWINGS

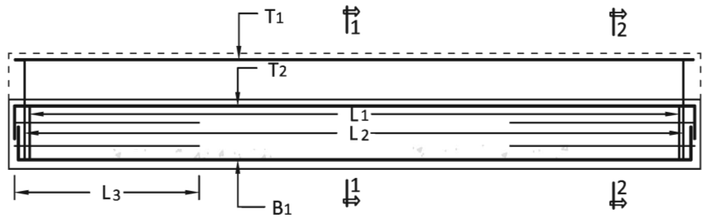
DILUKIS : NOR AZIZAH BINTI MOHAMMED RUM

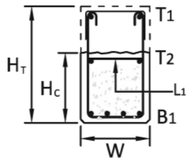
TARIKH : SEPTEMBER 2015 | SKALA : N.T.S

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/TC 01

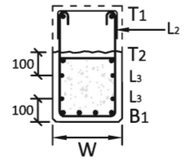
PRECAST BEAM







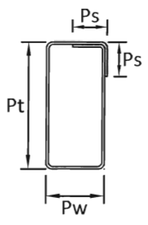
Section 1-1



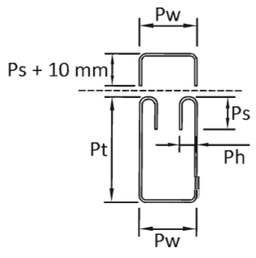
Section 2-2

Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}	Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	300	-	500	300	-	-	-	-		35	35	0.25L

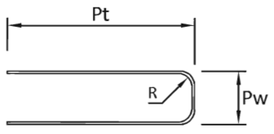
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	L_1	L_2	L_3
BR-3050-0575	50	75	2 T 16	2 T 16	-	4 T 16	-	-	T 10 - 200	T 10 - 200	2 T 10 @ 100 c/c
BR-3050-1015	100	150	2 T 16	2 T 16	-	4 T 16	-	-	T 10 - 200	T 10 - 200	2 T 10 @ 100 c/c
BR-3050-1520	150	200	2 T 16	2 T 16	-	4 T 20	-	-	T 10 - 200	T 10 - 200	2 T 10 @ 100 c/c



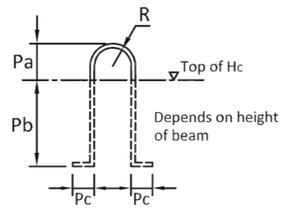
L1



L2



L3



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

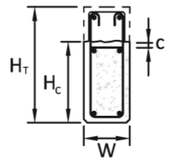
Link (L_1)					Link (L_2)					Shear Friction (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
250	250	150	-	2 Ø	450	250	140	60	2 Ø	800	230	-	-	6 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
100	330	80	60	T16

CODE OF COMPONENTS

BR-3050-0575

- Shear Capacity, Vu (75 kN)
- Moment Capacity, Mu (50 kNm)
- Total Height, H_T (500 mm)
- Width of Breadth W (300 mm)
- Types of Beam (Beam Rectangular)



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JANIRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMMAD

DIREKABENTUK :
MUHAMMAD ZULKEFLEE BIN YUSOF / JUDITH JULIUS

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN TERDAHULU		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

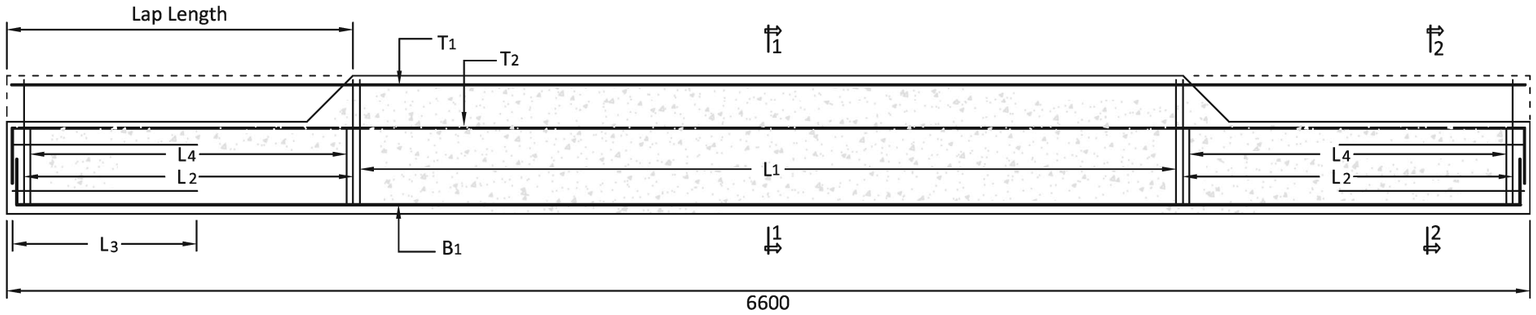
TAJUK LUKISAN :

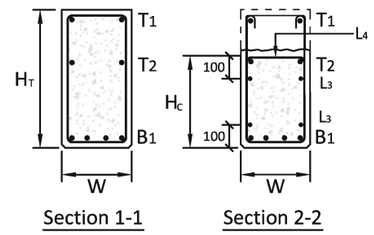
RASUK PRATUANG JENIS SEGIEMPAT

DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:20

NO. LUKISAN :
JKR/CKAS/9-IBS/PEL 15/BR-3050/BR 01

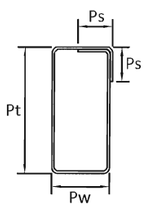




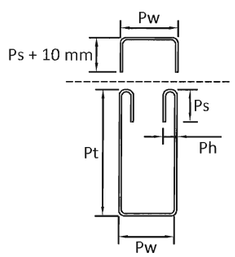
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	300	-	600	400	-	-	-	-

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

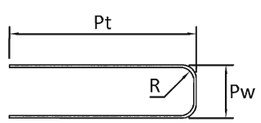
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	L_1	L_2 & L_4	L_3
BR-3060-1520	150	200	2 T 16	2 T 16	-	4 T 16	-	-	T 10 - 150	T 10 - 150	2 T 10 @ 200 c/c
BR-3060-2016	200	165	2 T 16	2 T 16	-	4 T 20	-	-	T 10 - 200	T 10 - 200	2 T 10 @ 200 c/c
BR-3060-2520	250	200	2 T 16	2 T 16	-	4 T 20	-	-	T 10 - 150	T 10 - 150	2 T 10 @ 200 c/c
BR-3060-3026	300	265	2 T 16	2 T 16	-	4 T 25	-	-	2 T 10 - 200	2 T 10 - 200	2 T 10 @ 200 c/c



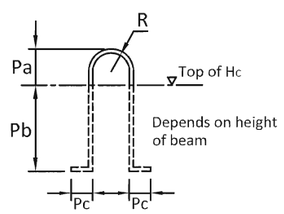
L1 & L4



L2



L3



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

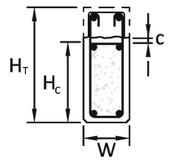
Link (L_1)					Link (L_2)					Shear Friction (L_3)					Link (L_4)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
550	250	150	-	2 Ø	550	250	140	60	2 Ø	800	230	-	-	6 Ø	350	250	100	-	2 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	400	100	60	T20

CODE OF COMPONENTS

BR-3060-1520

- Types of Beam (Beam Rectangular)
- Width of Breadth W 300 mm)
- Total Height, H_T 600 mm)
- Moment Capacity, Mu (150 kNm)
- Shear Capacity, Vu (200 kN)



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: 03–2818 9171 & NO. FAX: 03–2818 9155)

PENGARAH KANAN: KAMALUDDIN BIN ABDUL RASHID
PENGARAH KHIDMAT REKABENTUK : Ir. MUHAMMAD AZMAN BIN JAMRUS
PENGARAH KHIDMAT PAKAR DAN PENGURUSAN : Ir. HJH. NORMA BINTI NORMAN
PENGARAH KEJURUTERAAN (PAKAR FORENSIK) : Ir. Dr. LIM CHAR CHING
KETUA PENOLONG PENGARAH : MOHD FAIRUZ BIN MUHAMMAD
DIREKABENTUK : MUHAMMAD ZULKEFLEE BIN YUSOF/JUDITH JULIANUS
DISEMAK : TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN TERDAHULU		

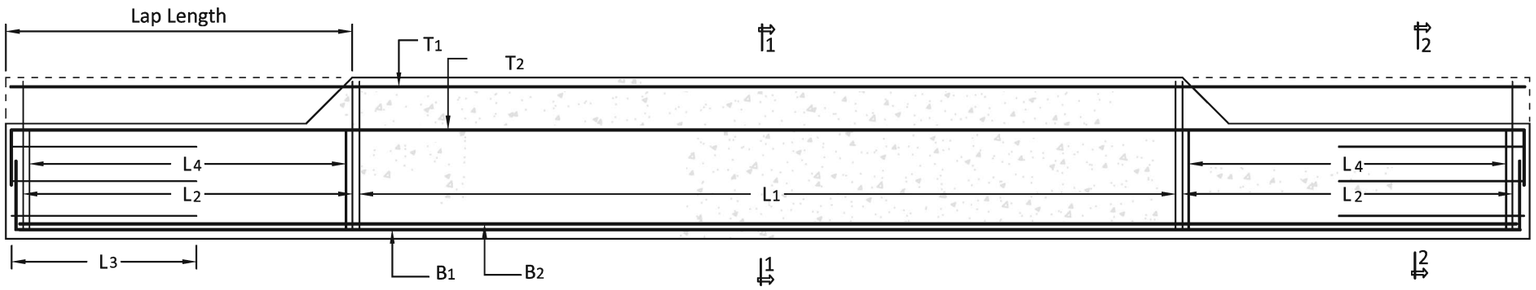
NAMA PROJEK :

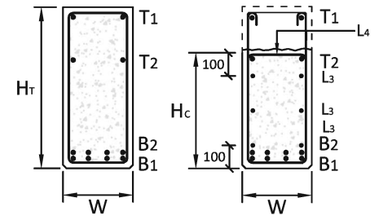
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

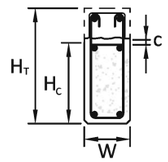
TAJUK LUKISAN :

RASUK PRATUANG JENIS SEGIEMPAT
(LEKUK 200mm)

DILUKIS : ADI AKMAL BIN ABDUL AZID
TARIKH : SEPTEMBER 2015 | SKALA : 1:25
NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BR–3060/BR 02



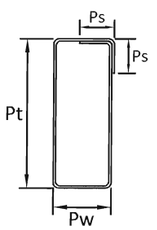




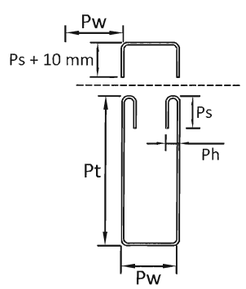
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	300	-	700	500	-	-	-	-

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

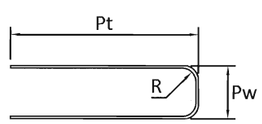
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	L_1	L_2 & L_4	L_3
BR-3070-2522	250	220	2 T 16	2 T 16	-	4 T 20	-	-	T 10 - 200	T 10 - 200	3 T 10 @ 150 c/c
BR-3070-3529	350	297	2 T 16	2 T 16	-	4 T 25	-	-	2 T 10 - 200	2 T 10 - 200	3 T 10 @ 150 c/c
BR-3070-4529	450	293	2 T 16	2 T 16	-	4 T 25	2 T 12	-	2 T 10 - 200	2 T 10 - 200	3 T 10 @ 150 c/c
BR-3070-5535	550	352	2 T 16	2 T 16	-	4 T 25	2 T 25	-	2 T 10 - 150	2 T 10 - 150	3 T 10 @ 150 c/c
BR-3070-6538	650	387	2 T 16	2 T 16	-	4 T 25	4 T 25	-	2 T 10 - 150	2 T 10 - 150	3 T 10 @ 150 c/c



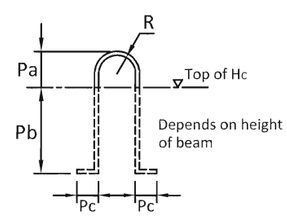
L1 & L4



L2



L3



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

Link (L_1)					Link (L_2)					Shear Friction (L_3)					Link (L_4)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
650	250	150	-	2 Ø	650	250	140	60	2 Ø	800	230	-	-	6 Ø	450	250	150	-	2 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	450	100	60	T20

CODE OF COMPONENTS

BR - 3070 - 2522

- BR: Types of Beam (Beam Rectangular)
- 3070: Width of Breadth W (300 mm); Total Height, H_T (700 mm)
- 2522: Moment Capacity, Mu (250 kNm); Shear Capacity, Vu (220 kN)

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: KAMALUDDIN BIN ABDUL RASHID
PENGARAH KHIDMAT REKABENTUK : Ir. MUHAMMAD AZMAN BIN JAMRUS
PENGARAH KHIDMAT PAKAR DAN PENGURUSAN : Ir. HJH. NORMA BINTI NORMAN
PENGARAH KEJURUTERAAN (PAKAR FORENSIK) : Ir. Dr. LIM CHAR CHING
KETUA PENOLONG PENGARAH : MOHD FAIRUZ BIN MUHAMMAD
DIREKABENTUK : MUHAMMAD ZULKEFLEE BIN YUSOF/JUDITH JULIANUS
DISEMAK : TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN TERDAHULU		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

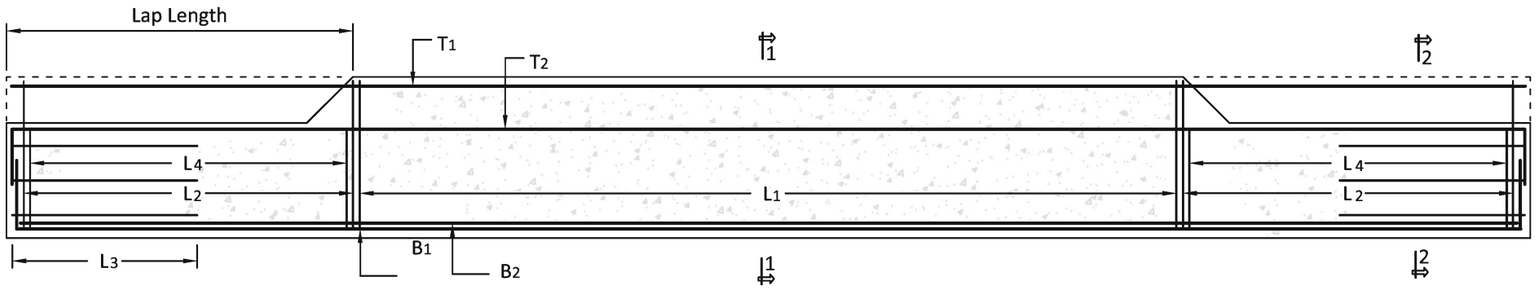
TAJUK LUKISAN :

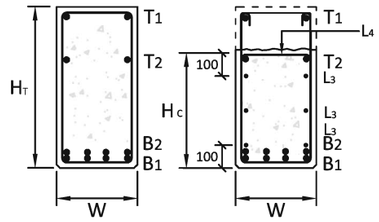
RASUK PRATUANG JENIS SEGIEMPAT
(LEKUK 200mm)

DILUKIS :

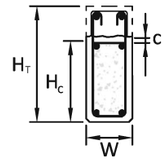
TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BR–3070/BR 03





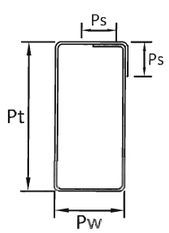
Section 1-1 Section 2-2



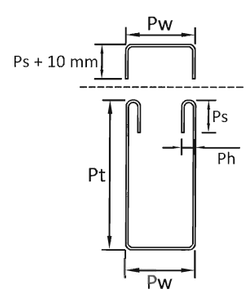
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	350	-	700	500	-	-	-	-

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

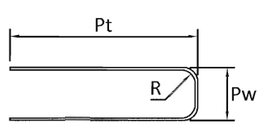
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	L_1	L_2 & L_4	L_3
BR-3570-3529	350	397	2 T 16	2 T 16	-	4 T 25	-	-	T 10 - 150	T 10 - 150	3 T 10 @ 150 c/c
BR-3570-4529	450	293	2 T 16	2 T 16	-	4 T 25	-	-	T 10 - 150	T 10 - 150	3 T 10 @ 150 c/c
BR-3570-5535	550	352	2 T 16	2 T 16	-	4 T 25	2 T 20	-	2 T 10 - 200	2 T 10 - 200	3 T 10 @ 150 c/c
BR-3570-6538	650	387	2 T 16	2 T 16	-	4 T 25	4 T 20	-	2 T 10 - 150	2 T 10 - 150	3 T 10 @ 150 c/c
BR-3570-7543	750	436	2 T 16	2 T 16	-	4 T 25	4 T 25	-	2 T 10 - 150	2 T 10 - 150	3 T 10 @ 150 c/c



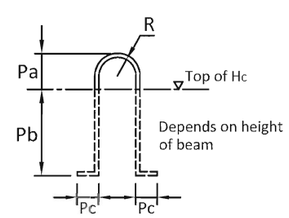
L1 & L4



L2



L3

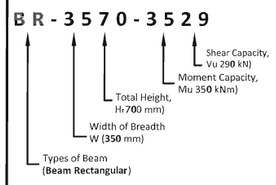


* Position of Lifting Hook at distance of 0.2 L from side of beam

Link (L_1)					Link (L_2)					Shear Friction (L_3)					Link (L_4)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
650	300	150	-	2 Ø	650	300	140	60	2 Ø	800	280	-	-	6 Ø	450	250	150	-	2 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	450	100	60	T20

CODE OF COMPONENTS



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMMAD

DIREKABENTUK :
MUHAMMAD ZULKEFLEE BIN YUSOF/JUDITH JULIANUS

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN TERDAHULU		

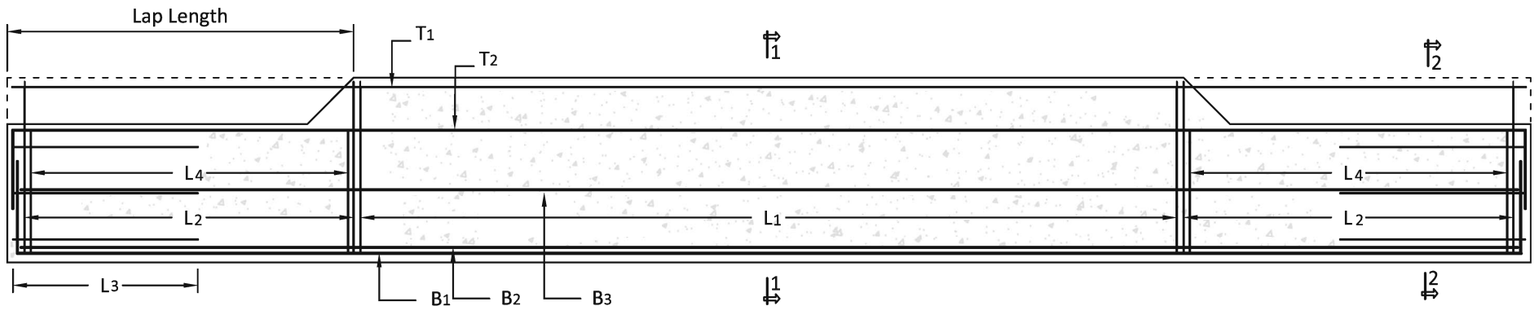
NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

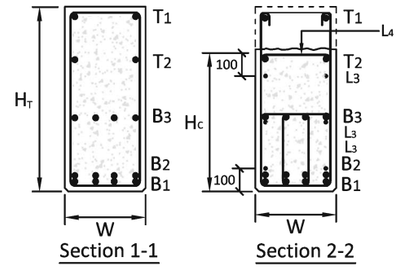
TAJUK LUKISAN :
RASUK PRATUANG JENIS SEGIEMPAT
(LEKUK 200mm)

DILUKIS :

TARIKH : SEPTEMBER 2015 SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 15/BR-3570/BR 04

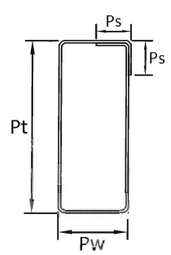




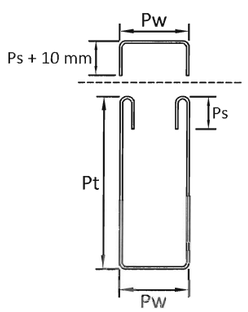
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	350	-	800	600	-	-	-	-

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

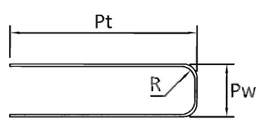
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	L_2 & L_a	L_2 , L_a & L_4	L_3
BR-3580-6039	600	396	2 T 16	2 T 16	-	4 T 25	2 T 12	-	2T 10 - 200	2T 10 - 200	3 T 10@200 c/c
BR-3580-7043	700	436	2 T 16	2 T 16	-	4 T 25	2 T 20	-	2 T 10 - 150	2 T 10 - 150	3 T 10@200 c/c
BR-3580-8042	800	423	2 T 16	2 T 16	-	4 T 25	4 T 20	-	2 T 10 - 200	2 T 10 - 200	3 T 10@200 c/c
BR-3580-9047	900	475	2 T 16	2 T 16	-	4 T 25	4 T 25	-	2 T 10 - 150	2 T 10 - 150	3 T 10@200 c/c
BR-3580-10047	1000	475	2 T 16	2 T 16	-	4 T 25	4 T 25	4 T 20	2 T 10 - 150	2 T 10 - 150	3 T 10@200 c/c
BR-3580-11047	1100	475	2 T 16	2 T 16	-	4 T 25	4 T 25	4 T 20	2 T 10 - 150	2 T 10 - 150	3 T 10@200 c/c
BR-3580-12053	1200	535	2 T 25	2 T 16	-	4 T 25	4 T 25	4 T 25	2 T 10 - 150	2 T 10 - 150	3 T 10@200 c/c



L1 , La & L4

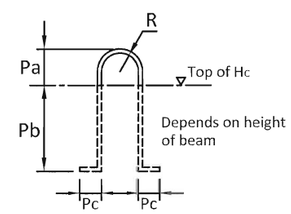


L2



L3

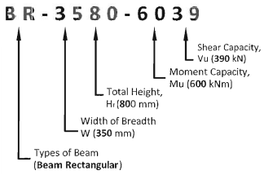
Link (L_1)					Link (L_2)					Shear Friction (L_3)					Link (L_a)					Link (L_4)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
750	300	150	-	2 Ø	750	300	140	60	2 Ø	800	280	-	-	6 Ø	260	200	150	-	2 Ø	550	250	150	-	2 Ø

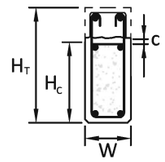


* Position of Lifting Hook at distance of 0.2 L from side of beam

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	500	100	60	T20

CODE OF COMPONENTS





JKR

JABATAN KERJA RAYA MALAYSIA
CAWANGAN 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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMMAD

DIREKABENTUK :
MUHAMMAD ZULKEFLEE BIN YUSOF

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN TERDAHULU		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

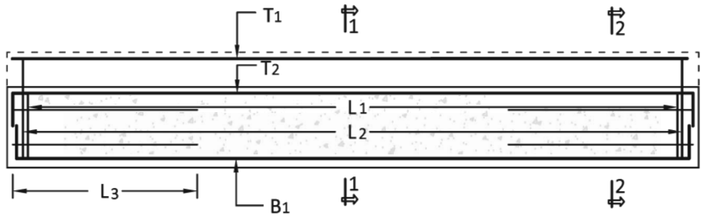
TAJUK LUKISAN :

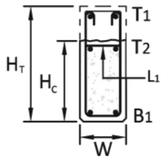
RASUK PRATUANG JENIS SEGIEMPAT
(LEKUK 200mm)

DILUKIS :

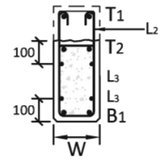
TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BR–3580/BR 05





Section 1-1

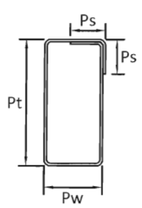


Section 2-2

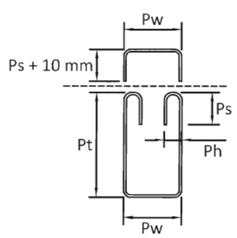
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	200	-	500	350	-	-	-	-

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

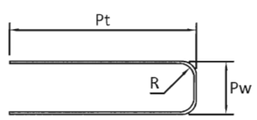
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	L_1	L_2	L_3
BR-2050-0506	50	65	2 T 16	2 T 16	-	2 T 20	-	-	T 10 - 250	T 10 - 250	2 T 10 @ 100 c/c
BR-2050-1015	100	150	2 T 16	2 T 16	-	2T 25	-	-	T 10 - 200	T 10 - 200	2 T 10 @ 100 c/c
BR-2050-1519	150	190	2 T 16	2 T 16	-	2T 20	2T 20	-	T 10 - 150	T 10 - 150	2 T 10 @ 100 c/c



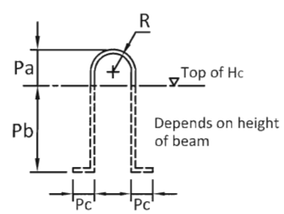
L1



L2



L3

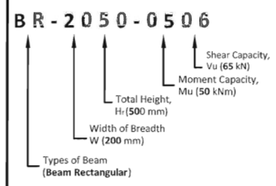


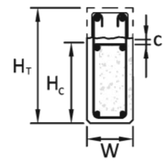
* Position of Lifting Hook at distance of 0.2 L from side of beam

Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
300	150	100	-	2 Ø	450	150	80	40	2 Ø	800	130	-	-	6 Ø

Lifting Hook				
Pa	Pb	Pc	R	ØBar
100	330	80	50	T16

CODE OF COMPONENTS





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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMMAD

DIREKABENTUK :
ADI AKMAL BIN ABDUL AZID / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

TAJUK PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

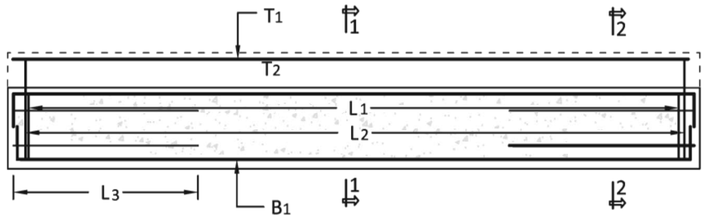
TAJUK LUKISAN :

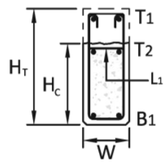
BASUK PRATUANG JENIS SEGIEMPAT

DILUKIS : ADI AKMAL BIN ABDUL AZID

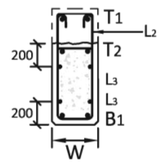
TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKUS/P–IBS/PEL 15/BR–2050/BR 06





Section 1-1

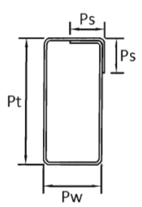


Section 2-2

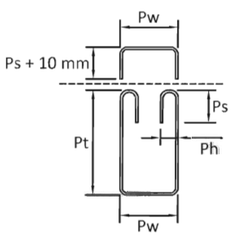
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	200	-	600	450	-	-	-	-

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

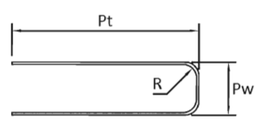
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	L_1	L_2	L_3
BR-2060-0709	70	90	2 T 16	2 T 16	-	2T20	-	-	T 10 - 250	T 10 - 250	2 T 10 @ 200 c/c
BR-2060-1217	120	170	2 T 16	2 T 16	-	2T25	-	-	T 10 - 250	T 10 - 250	2 T 10 @ 200 c/c
BR-2060-1519	150	190	2 T 16	2 T 16	-	2T25	-	-	T 10 - 200	T 10 - 200	2 T 10 @ 200 c/c
BR-2060-2219	220	194	2 T 16	2 T 16	-	2T25	2T20	-	T 10 - 150	T 10 - 150	2 T 10 @ 200 c/c



L1

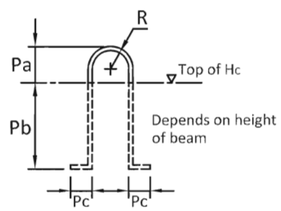


L2



L3

Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
400	150	100	-	2 Ø	550	150	80	40	2 Ø	800	130	-	-	6 Ø



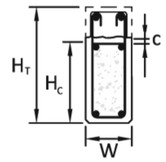
* Position of Lifting Hook at distance of 0.2 L from side of beam

Lifting Hook				
Pa	Pb	Pc	R	ø Bar
100	380	80	50	T16

CODE OF COMPONENTS

BR-2060-0709

- Types of Beam (Beam Rectangular)
- Width of Breadth W (200 mm)
- Total Height, H_T (600 mm)
- Moment Capacity, Mu (70 kNm)
- Shear Capacity, Vu (90 kN)



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMIRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMMAD

DIREKABENTUK :
ADI AKMAL BIN ABDUL AZID/BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

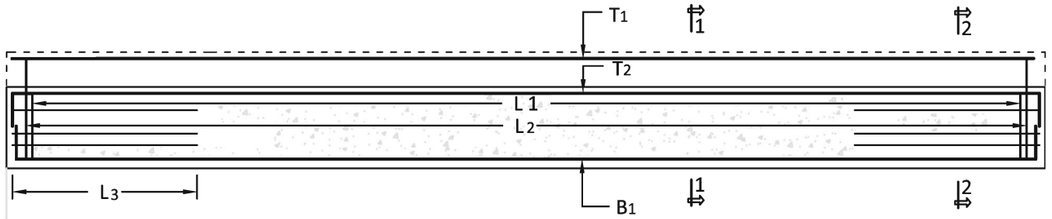
TAJUK LUKISAN :

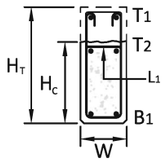
RASUK PRATUANG JENIS SEGIEMPAT

DILUKIS : ADI AKMAL BIN ABDUL AZID

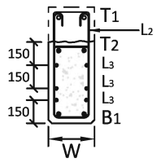
TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BR–2060/BR 07





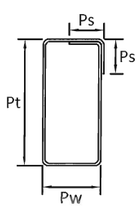
Section 1-1



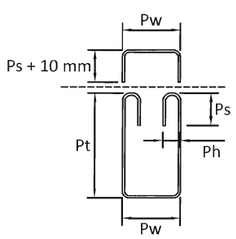
Section 2-2

Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}	Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	200	-	700	550	-	-	-	-		35	35	0.25L

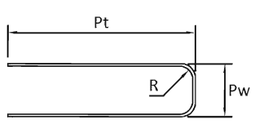
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	L_1	L_2	L_3
BR-2070-0709	70	90	2 T 16	2 T 16	-	2T20	-	-	T 10 - 300	T 10 - 300	3 T 10 @ 150 c/c
BR-2070-1417	140	170	2 T 16	2 T 16	-	2T25	-	-	T 10 - 300	T 10 - 300	3 T 10 @ 150 c/c
BR-2070-2119	210	190	2 T 16	2 T 16	-	2T20	2T20	-	T 10 - 250	T 10 - 250	3 T 10 @ 150 c/c
BR-2070-2824	280	240	2 T 16	2 T 16	-	2T25	2T20	-	T 10 - 200	T 10 - 200	3 T 10 @ 150 c/c
BR-2070-3530	350	300	2 T 16	2 T 16	-	2T25	2T25	-	T 10 - 200	T 10 - 200	3 T 10 @ 150 c/c



L1

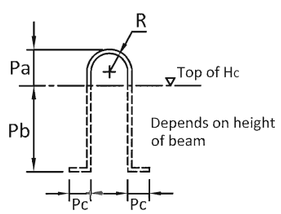


L2



L3

Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
500	150	100	-	2 Ø	450	150	80	40	2 Ø	800	130	-	-	6 Ø



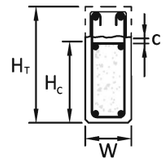
* Position of Lifting Hook at distance of 0.2 L from side of beam

Lifting Hook				
Pa	Pb	Pc	R	øBar
100	450	80	50	T16

CODE OF COMPONENTS

BR-2070-0709

- Shear Capacity, Vu (90 kN)
- Moment Capacity, Mu (70 kNm)
- Total Height, H_T (700 mm)
- Width of Breadth W (200 mm)
- Types of Beam (Beam Rectangular)



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMMAD

DIREKABENTUK :
ADI AKMAL BIN ABDUL AZID/BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

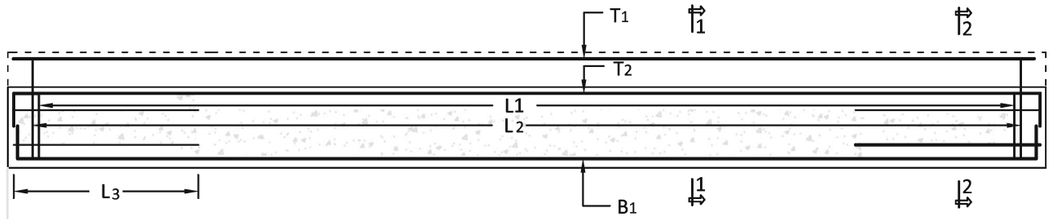
TAJUK LUKISAN :

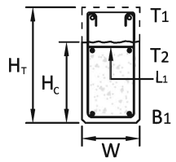
RASUK PRATUANG JENIS SEGIEMPAT

DILUKIS : ADI AKMAL BIN ABDUL AZID

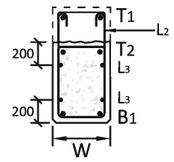
TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL. 15/BR-2070/BR 08





Section 1-1

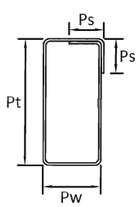


Section 2-2

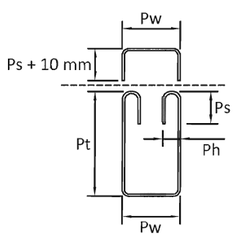
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	250	-	600	450	-	-	-	-

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

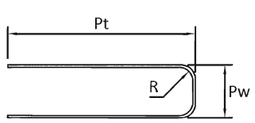
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	L_1	L_2	L_3
BR-2560-0809	80	90	2 T 16	2 T 16	-	2T20	-	-	T 10 - 300	T 10 - 300	2 T 10 @ 200 c/c
BR-2560-1316	130	160	2 T 16	2 T 16	-	2T25	-	-	T 10 - 300	T 10 - 300	2 T 10 @ 200 c/c
BR-2560-2319	230	190	2 T 16	2 T 16	-	2T20	2T20	-	T 10 - 250	T 10 - 250	2 T 10 @ 200 c/c
BR-2560-3327	330	270	2 T 16	2 T 16	-	2T25	2T25	-	T 10 - 150	T 10 - 150	2 T 10 @ 200 c/c



L1

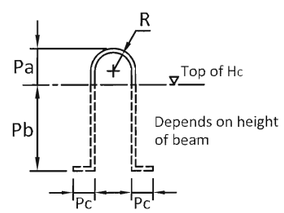


L2



L3

Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
400	200	100	-	2 Ø	550	200	80	40	2 Ø	800	180	-	-	6 Ø



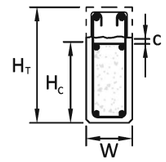
* Position of Lifting Hook at distance of 0.2 L from side of beam

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	450	100	60	T20

CODE OF COMPONENTS

BR-2560-0809

- Types of Beam (Beam Rectangular)
- Width of Breadth W (250 mm)
- Total Height, H_T (600 mm)
- Moment Capacity, Mu (80 kNm)
- Shear Capacity, Vu (90 kN)



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMMAD

DIREKABENTUK :
ADI AKMAL BIN ABDUL AZID/BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

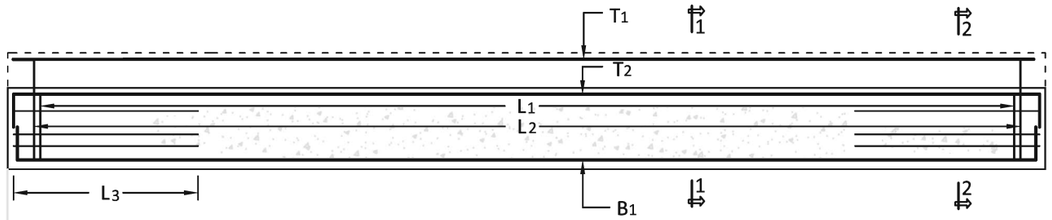
TAJUK LUKISAN :

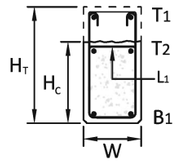
RASUK PRATUANG JENIS SEGIEMPAT

DILUKIS : ADI AKMAL BIN ABDUL AZID

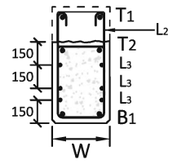
TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 15/BR-2560/BR 09





Section 1-1

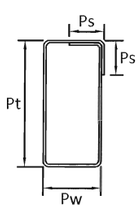


Section 2-2

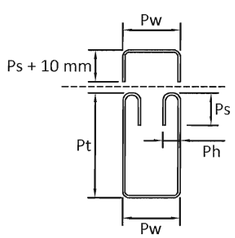
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	250	-	700	550	-	-	-	-

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

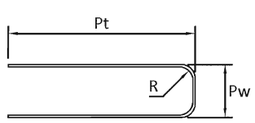
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	L_1	L_2	L_3
BR-2570-0809	80	90	2 T 16	2 T 16	-	2T20	-	-	T 10 - 300	T 10 - 300	3 T 10 @ 150 c/c
BR-2570-1316	130	160	2 T 16	2 T 16	-	2T25	-	-	T 10 - 300	T 10 - 300	3 T 10 @ 150 c/c
BR-2570-2319	230	190	2 T 16	2 T 16	-	2T20	2T20	-	T 10 - 300	T 10 - 300	3 T 10 @ 150 c/c
BR-2570-3327	330	270	2 T 16	2 T 16	-	2T25	2T20	-	T 10 - 200	T 10 - 200	3 T 10 @ 150 c/c
BR-2570-4333	430	330	2 T 16	2 T 16	-	2T25	2T25	-	T 10 - 150	T 10 - 150	3 T 10 @ 150 c/c
BR-2570-5533	550	330	2 T 16	2 T 16	-	2T32	2T32	-	T 10 - 150	T 10 - 150	3 T 10 @ 150 c/c



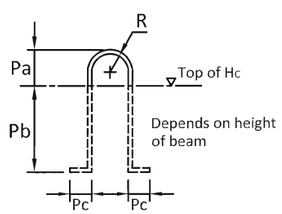
L1



L2



L3



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

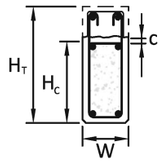
Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
500	200	100	-	-	650	200	80	40	2 Ø	800	180	-	-	6 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	450	100	60	T20

CODE OF COMPONENTS

BR-2570-0809

- Shear Capacity, Vu (90 kN)
- Moment Capacity, Mu (80 kNm)
- Total Height, H_T (700 mm)
- Width of Breadth W (250 mm)
- Types of Beam (Beam Rectangular)



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMMAD

DIREKABENTUK :
ADI AKMAL BIN ABDUL AZID / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

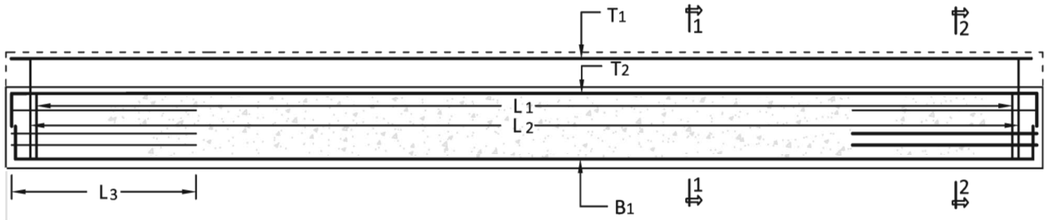
TAJUK LUKISAN :

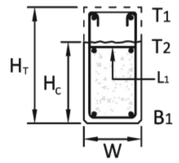
RASUK PRATUANG JENIS SEGIEMPAT

DILUKIS : ADI AKMAL BIN ABDUL AZID

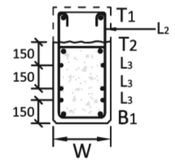
TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BR–2570/BR 10





Section 1-1

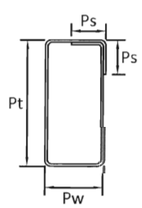


Section 2-2

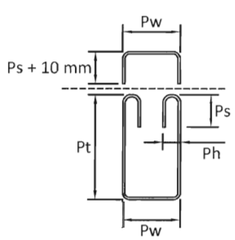
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UIL}
	250	-	800	650	-	-	-	-

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

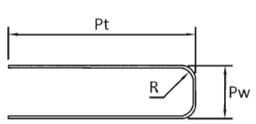
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	L_1	L_2	L_3
BR-2580-0809	80	90	2 T 16	2 T 16	-	2T20	-	-	T 10 - 300	T 10 - 300	3 T 10@200 c/c
BR-2580-1516	150	160	2 T 16	2 T 16	-	2T20	-	-	T 10 - 300	T 10 - 300	3 T 10@200 c/c
BR-2580-2519	250	190	2 T 16	2 T 16	-	2T20	2T20	-	T 10 - 300	T 10 - 300	3 T 10@200 c/c
BR-2580-3530	350	300	2 T 16	2 T 16	-	2T25	2T20	-	T 10 - 200	T 10 - 200	3 T 10@200 c/c
BR-2580-4533	450	330	2 T 16	2 T 16	-	2T25	2T25	-	T 10 - 200	T 10 - 200	3 T 10@200 c/c
BR-2580-5533	550	330	2 T 16	2 T 16	-	2T32	2T25	-	T 10 - 150	T 10 - 150	3 T 10@200 c/c
BR-2580-6540	650	400	2 T 16	2 T 16	-	2T32	2T32	-	2 T 10 - 100	2 T 10 - 100	3 T 10@200 c/c
BR-2580-7542	750	420	2 T 16	2 T 16	-	2T32	2T32	-	2 T 10 - 150	2 T 10 - 150	3 T 10@200 c/c



L1

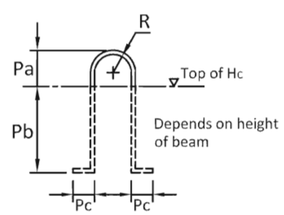


L2



L3

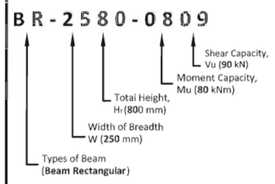
Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
600	200	100	-	2 Ø	750	200	80	40	2 Ø	800	180	-	-	6 Ø

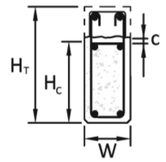


* Position of Lifting Hook at distance of 0.2 L from side of beam

Lifting Hook				
Pa	Pb	Pc	R	ØBar
120	500	100	60	T20

CODE OF COMPONENTS





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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMMAD

DIREKABENTUK :
ADI AKMAL BIN ABDUL AZID / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

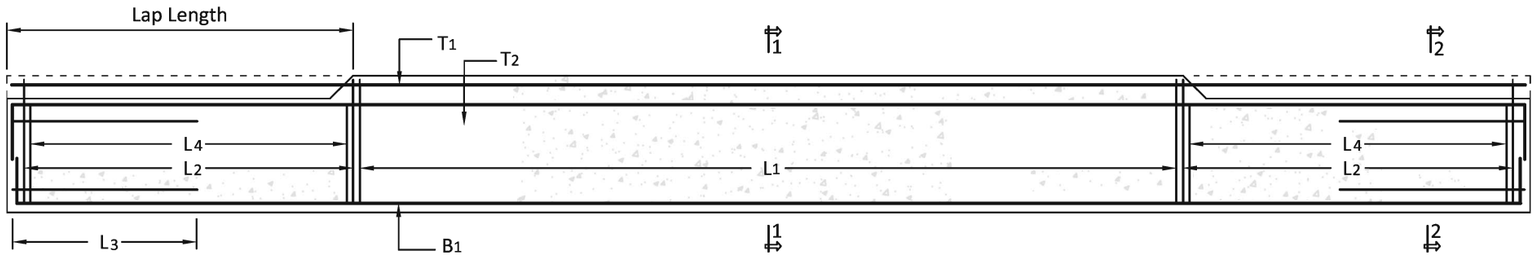
NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

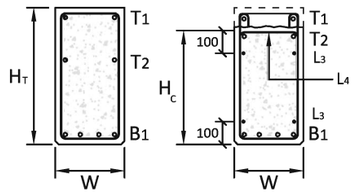
TAJUK LUKISAN :
RASUK PRATUANG JENIS SEGIEMPAT

DILUKIS : ADI AKMAL BIN ABDUL AZID

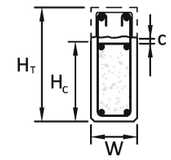
TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BR–2580/BR 11





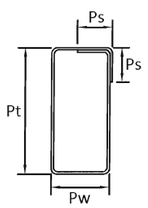
Section 1-1 Section 2-2



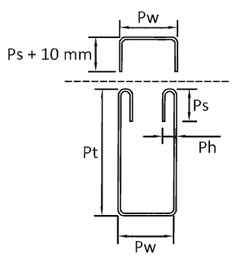
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	300	-	600	500	-	-	-	-

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

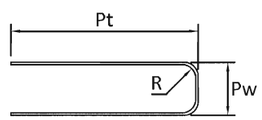
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	L_1	L_2 & L_4	L_3
BR-3060-1520	150	200	2 T 16	2 T 16	-	4 T 16	-	-	T 10 - 150	T 10 - 150	2 T 10 @ 200 c/c
BR-3060-2016	200	165	2 T 16	2 T 16	-	4 T 20	-	-	T 10 - 200	T 10 - 200	2 T 10 @ 200 c/c
BR-3060-2520	250	200	2 T 16	2 T 16	-	4 T 20	-	-	T 10 - 150	T 10 - 150	2 T 10 @ 200 c/c
BR-3060-3026	300	265	2 T 16	2 T 16	-	4 T 25	-	-	2 T 10 - 200	2 T 10 - 200	2 T 10 @ 200 c/c



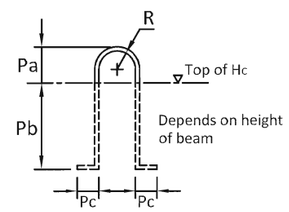
L1 & L4



L2



L3



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

Link (L_1)					Link (L_2)					Shear Friction (L_3)					Link (L_4)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
550	250	150	-	2 Ø	550	250	140	60	2 Ø	800	230	-	-	6 Ø	450	250	150	-	2 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	400	100	60	T20

CODE OF COMPONENTS

BR - 3060 - 1520

- Shear Capacity, Vu (200 kN)
- Moment Capacity, Mu (150 kNm)
- Total Height, H_T (600 mm)
- Width of Breadth W (300 mm)
- Types of Beam (Beam Rectangular)

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: 03–2818 9171 & NO. FAX: 03–2818 9155)

PENGARAH KANAN:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

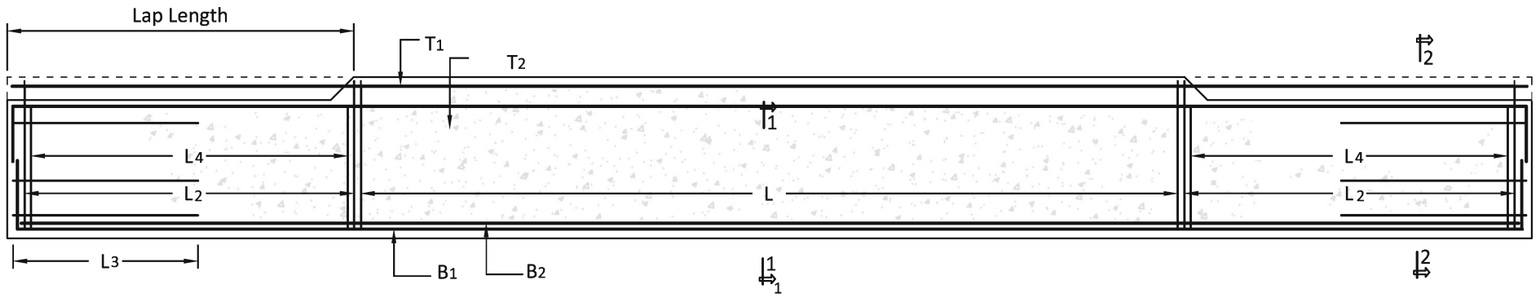
TAJUK LUKISAN :

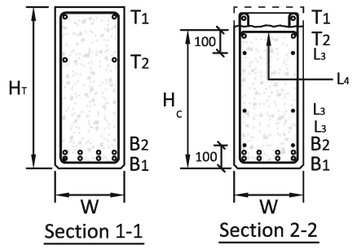
RASUK PRATUANG JENIS SEGIEMPAT
(LEKUK 100mm)

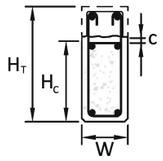
DILUKIS : BERNARD TOIDES

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 15/BR-3060A/BR 12



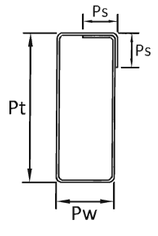




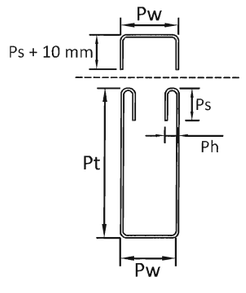
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	300	-	700	600	-	-	-	-

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

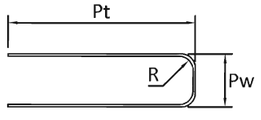
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	L_1	L_2 & L_4	L_3
BR-3070-2522	250	220	2 T 16	2 T 16	-	4 T 20	-	-	T 10 - 200	T 10 - 200	3 T 10 @ 150 c/c
BR-3070-3529	350	297	2 T 16	2 T 16	-	4 T 25	-	-	2 T 10 - 200	2 T 10 - 200	3 T 10 @ 150 c/c
BR-3070-4529	450	293	2 T 16	2 T 16	-	4 T 25	2 T 12	-	2 T 10 - 200	2 T 10 - 200	3 T 10 @ 150 c/c
BR-3070-5535	550	352	2 T 16	2 T 16	-	4 T 25	2 T 25	-	2 T 10 - 150	2 T 10 - 150	3 T 10 @ 150 c/c
BR-3070-6538	650	387	2 T 16	2 T 16	-	4 T 25	4 T 25	-	2 T 10 - 150	2 T 10 - 150	3 T 10 @ 150 c/c



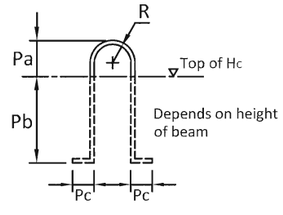
L1 & L4



L2



L3

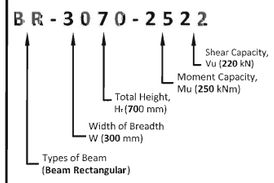


* Position of Lifting Hook at distance of 0.2 L from side of beam

Link (L_1)					Link (L_2)					Shear Friction (L_3)					Link (L_4)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
650	250	150	-	2 Ø	650	250	140	60	150	800	230	-	-	6 Ø	550	250	150	-	2 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	450	100	60	T20

CODE OF COMPONENTS



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

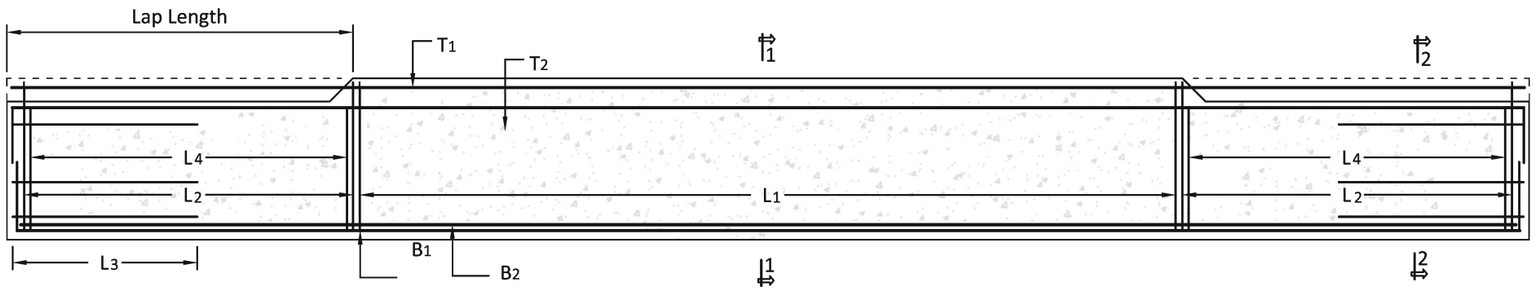
TAJUK LUKISAN :

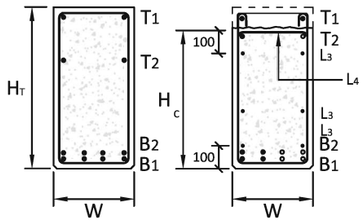
RASUK PRATUANG JENIS SEGIEMPAT
(LEKUK 100mm)

DILUKIS : BERNARD TOIDES

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BR–3070A/BR 13



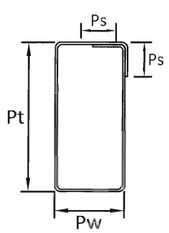


Section 1-1 Section 2-2

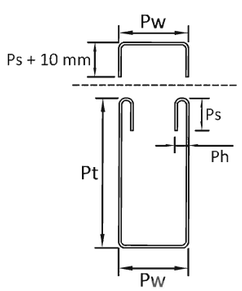
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	350	-	700	600	-	-	-	-

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

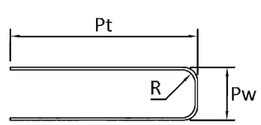
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	L_1	L_2 & L_4	L_3
BR-3570-3529	350	397	2 T 16	2 T 16	-	4 T 25	-	-	T 10 - 150	T 10 - 150	3 T 10 @ 150 c/c
BR-3570-4529	450	293	2 T 16	2 T 16	-	4 T 25	-	-	T 10 - 150	T 10 - 150	3 T 10 @ 150 c/c
BR-3570-5535	550	352	2 T 16	2 T 16	-	4 T 25	2 T 20	-	2 T 10 - 200	2 T 10 - 200	3 T 10 @ 150 c/c
BR-3570-6538	650	387	2 T 16	2 T 16	-	4 T 25	4 T 20	-	2 T 10 - 150	2 T 10 - 150	3 T 10 @ 150 c/c
BR-3570-7543	750	436	2 T 16	2 T 16	-	4 T 25	4 T 25	-	2 T 10 - 150	2 T 10 - 150	3 T 10 @ 150 c/c



L1 & L4

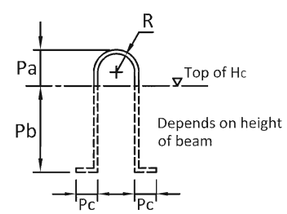


L2



L3

Link (L_1)					Link (L_2)					Shear Friction (L_3)					Link (L_4)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
650	300	150	-	2 Ø	650	300	140	60	150	800	280	-	-	6 Ø	550	300	150	-	2 Ø



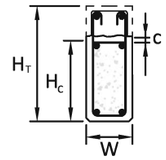
* Position of Lifting Hook at distance of 0.2 L from side of beam

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	450	100	60	T20

CODE OF COMPONENTS

BR-3570-3529

- Shear Capacity, Vu (290 kN)
- Moment Capacity, Mu (350 kNm)
- Total Height, H_T (700 mm)
- Width of Breadth W (350 mm)
- Types of Beam (Beam Rectangular)



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: KAMALUDDIN BIN ABDUL RASHID
PENGARAH KHIDMAT REKABENTUK : Ir. MUHAMMAD AZMAN BIN JAMRUS
PENGARAH KHIDMAT PAKAR DAN PENGURUSAN : Ir. HJH. NORMA BINTI NORMAN
PENGARAH KEJURUTERAAN (PAKAR FORENSIK) : Ir. Dr. LIM CHAR CHING
KETUA PENOLONG PENGARAH : MOHD FAIRUZ BIN MUHAMAD
DIREKABENTUK : BERNARD TOIDES
DISEMAK : TENGKU NORMARDZIAH TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI KOMPONEN STRUKTUR IBS BAGI BANGUNAN

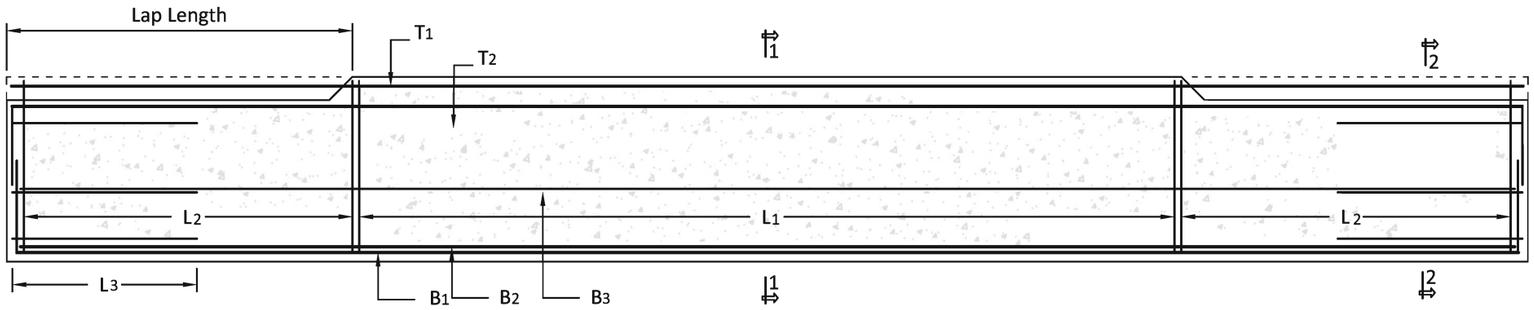
TAJUK LUKISAN :

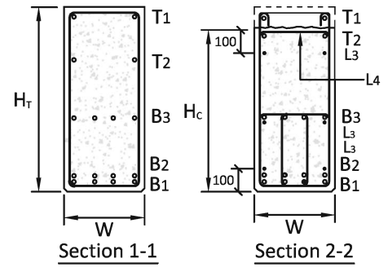
RASUK PRATUANG JENIS SEGIEMPAT (LEKUK 100mm)

DILUKIS : BERNARD TOIDES

TARIKH : SEPTEMBER 2015 SKALA : 1:25

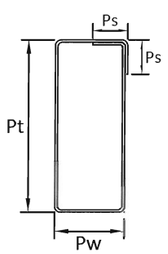
NO. LUKISAN : JKR/CKAS/P–IBS/PEL 15/BR–3570A/BR 14



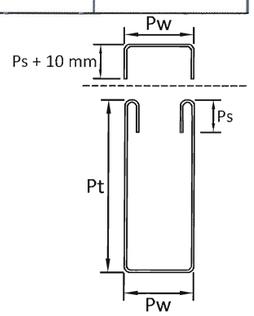


Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}	Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	350	-	800	700	-	-	-	-		35	35	0.25L

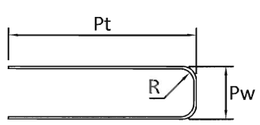
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	$L_1 + L_a$	$L_2 + L_3$ / L_4	L_3
BR-3580-6039	600	396	2 T 16	2 T 16	-	4 T 25	2 T 12	-	2T 10 - 200	2T 10 - 200	3 T 10@200 c/c
BR-3580-7043	700	436	2 T 16	2 T 16	-	4 T 25	2 T 20	-	2 T 10 - 150	2 T 10 - 150	3 T 10@200 c/c
BR-3580-8042	800	423	2 T 16	2 T 16	-	4 T 25	4 T 20	-	2 T 10 - 200	2 T 10 - 200	3 T 10@200 c/c
BR-3580-9047	900	475	2 T 16	2 T 16	-	4 T 25	4 T 25	-	2 T 10 - 150	2 T 10 - 150	3 T 10@200 c/c
BR-3580-10047	1000	475	2 T 16	2 T 16	-	4 T 25	4 T 25	4 T 20	2 T 10 - 150	2 T 10 - 150	3 T 10@200 c/c
BR-3580-11047	1100	475	2 T 16	2 T 16	-	4 T 25	4 T 25	4 T 20	2 T 10 - 150	2 T 10 - 150	3 T 10@200 c/c
BR-3580-12053	1200	535	2 T 25	2 T 16	-	4 T 25	4 T 25	4 T 25	2 T 10 - 150	2 T 10 - 150	3 T 10@200 c/c



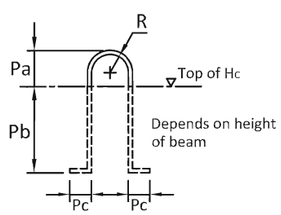
L1, La & L4



L2



L3



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

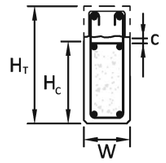
Link (L_1)					Link (L_2)					Shear Friction (L_3)					Link (L_a)					Link (L_4)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
750	300	150	-	2 Ø	750	300	140	60	150	800	280	-	-	6 Ø	260	200	150	-	2 Ø	550	300	150	-	2 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	500	100	60	T20

CODE OF COMPONENTS

BR-3580-6039

- Shear Capacity, Vu (390 kN)
- Moment Capacity, Mu (600 kNm)
- Total Height, H_T (800 mm)
- Width of Breadth W (350 mm)
- Types of Beam (Beam Rectangular)



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

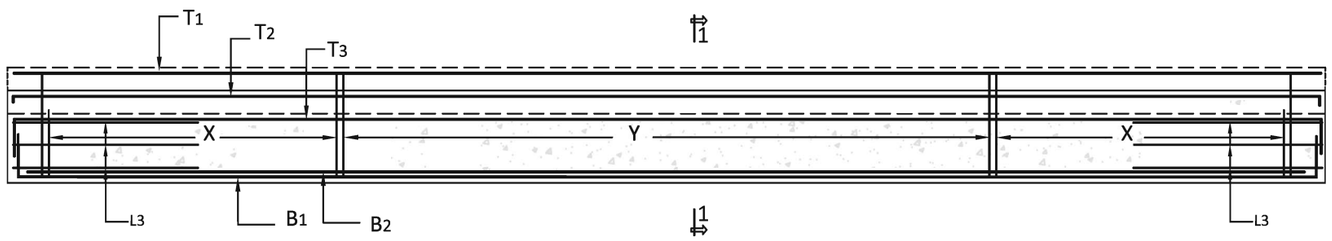
TAJUK LUKISAN :

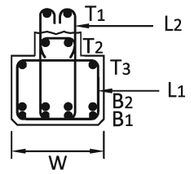
RASUK PRATUANG JENIS SEGIEMPAT
(LEKUK 100mm)

DILUKIS : BERNARD TOIDES

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BR–3580A/BR 15



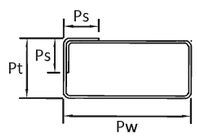


Section 1-1

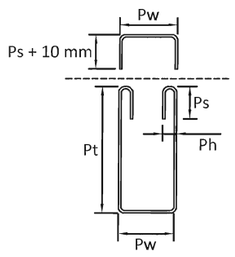
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	400	200	500	400	300	300	100	100

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

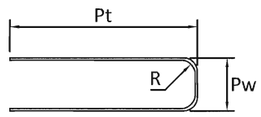
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BT-4050-1013	100	130	2 T 16	2 T 16	2 T 16	4 T 16	-	-	T 10 - 300	T 10 - 300	3 T 10 @ 50 c/c
BT-4050-2021	200	210	2 T 16	2 T 16	2 T 16	4 T 20	2 T 16	-	T 10 - 300	T 10 - 300	3 T 12 @ 50 c/c
BT-4050-3026	300	260	2 T 16	2 T 16	2 T 16	4 T 20	4 T 20	-	T 10 - 250	T 10 - 300	3 T 12 @ 50 c/c



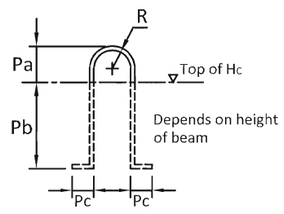
L1



L2



L3



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

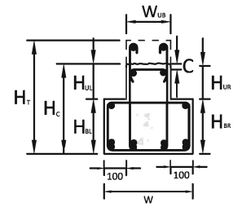
Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
250	350	150	-	2 Ø	450	150	80	40	2 Ø	800	330	-	-	6 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	350	100	60	T20

CODE OF COMPONENTS

BT-4050-1013

- Types of Beam (Beam Inverted T)
- Width of Breadth W (400 mm)
- Total Height, H_T (500 mm)
- Moment Capacity, Mu (100 kNm)
- Shear Capacity, Vu (130 kN)



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH:
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

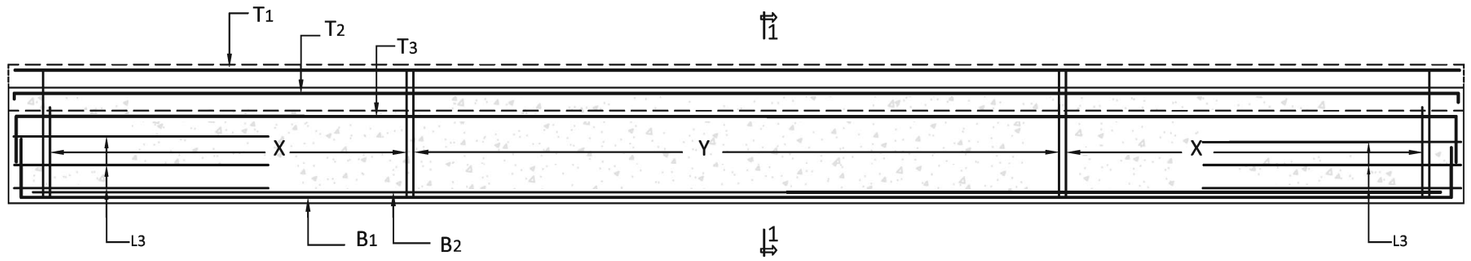
TAJUK LUKISAN :

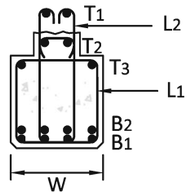
RASUK PRATUANG JENIS INVERTED T

DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BT–4050/BT 01



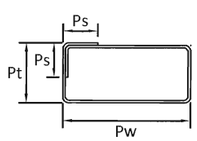


Section 1-1

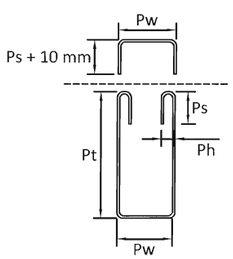
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	400	200	600	500	400	400	100	100

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

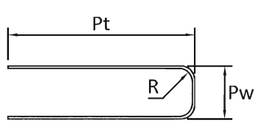
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BT-4060-1014	100	144	2 T 20	2 T 20	2 T 20	4 T 16			T 10 - 300	T 10 - 250	3T10 @ 100 c/c
BT-4060-2021	200	215	2 T 20	2 T 20	2 T 20	4 T 20			T 10 - 300	T 10 - 300	3T12 @ 100 c/c
BT-4060-3026	300	268	2 T 20	2 T 20	2 T 20	4 T 20	4 T 16		T 10 - 300	T 10 - 300	3T12 @ 100 c/c
BT-4060-4035	400	357	2 T 20	2 T 20	2 T 20	4 T 20	4 T 20		T 10 - 250	T 10 - 300	3T16 @ 100 c/c
BT-4060-5035	500	359	2 T 20	2 T 20	2 T 20	4 T 25	4 T 25		T 10 - 250	T 10 - 300	3T16 @ 100 c/c



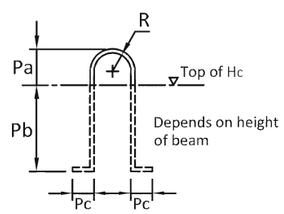
L1



L2



L3



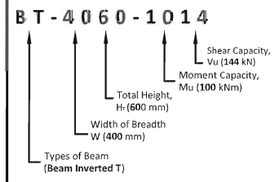
* Position of Lifting Hook at distance of 0.2 L from side of beam

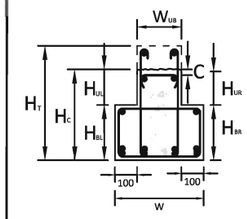
Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
350	350	150	-	2 Ø	550	150	80	40	2 Ø	800	330	-	-	6 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	400	100	60	T20

CODE OF COMPONENTS

BT-4060-1014





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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

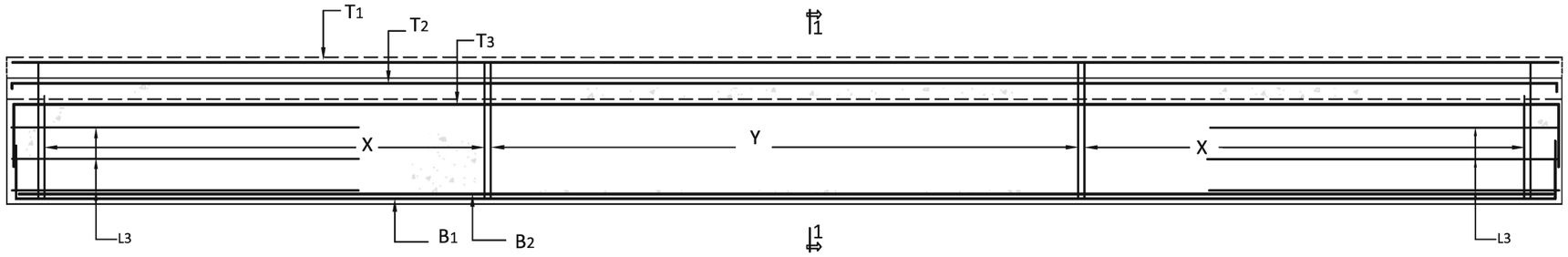
TAJUK LUKISAN :

RASUK PRATUANG JENIS INVERTED T

DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

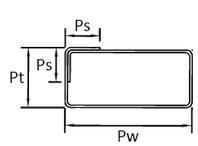
NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BT–4060/BT 02



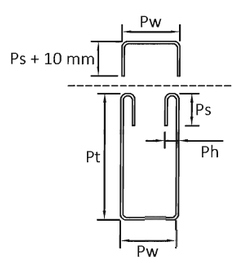
Section 1-1

Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}	Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	400	200	700	600	500	500	100	100		35	35	0.25L

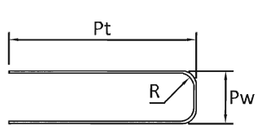
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BT-4070-3027	300	272	2 T 20	2 T 20	2 T 20	4 T 16	4 T 16	-	T 10 - 300	T 10 - 300	3T12 @ 150 c/c
BT-4070-4035	400	357	2 T 20	2 T 20	2 T 20	4 T 20	4 T 16	-	T 10 - 300	T 10 - 300	3T16 @ 150 c/c
BT-4070-5036	500	364	2 T 20	2 T 20	2 T 20	4 T 25	4 T 16	-	T 10 - 300	T 10 - 300	3T16 @ 150 c/c
BT-4070-6040	600	403	2 T 20	2 T 20	2 T 20	4 T 25	4 T 20	-	T 10 - 250	T 10 - 300	3T16 @ 150 c/c
BT-4070-7043	700	433	2 T 20	2 T 20	2 T 20	4 T 25	4 T 25	-	T 10 - 250	T 10 - 300	3T16 @ 150 c/c
BT-4070-8049	800	491	2 T 20	2 T 20	2 T 20	4 T 32	2 T 25	-	T 10 - 200	T 10 - 300	3T16 @ 150 c/c
BT-4070-9050	900	507	2 T 25	2 T 25	2 T 25	4 T 32	2 T 32	-	T 10 - 200	T 10 - 300	3T16 @ 150 c/c



L1

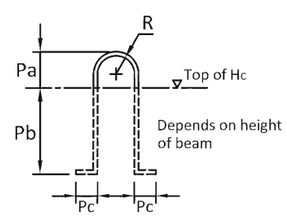


L2



L3

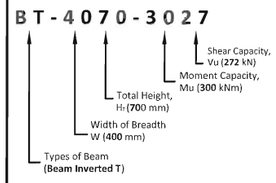
Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
450	350	150	-	2 Ø	650	150	80	40	2 Ø	800	330	-	-	6 Ø

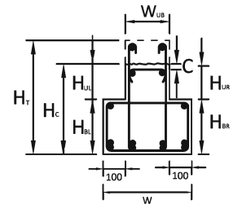


* Position of Lifting Hook at distance of 0.2 L from side of beam

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	450	100	60	T20

CODE OF COMPONENTS





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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PEMOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

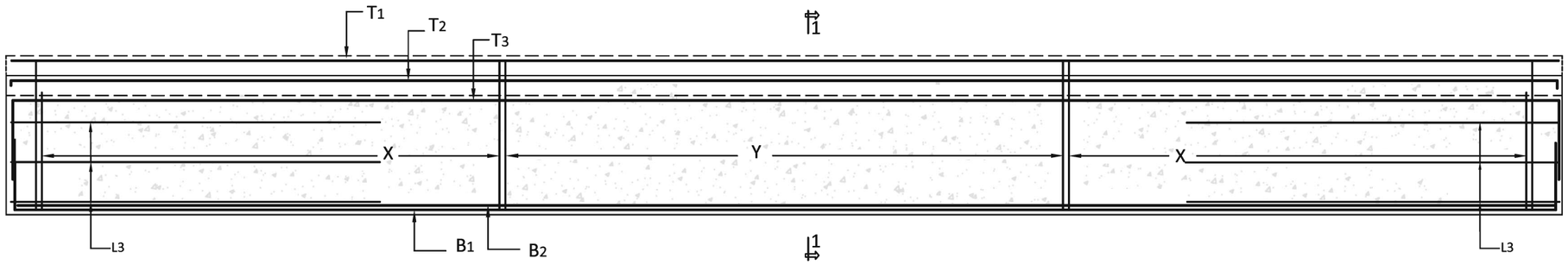
TAJUK LUKISAN :

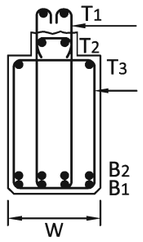
RASUK PRATUANG JENIS INVERTED T

DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 15/BT-4070/BT 03



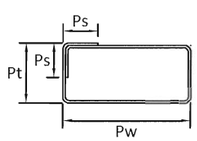


Section 1-1

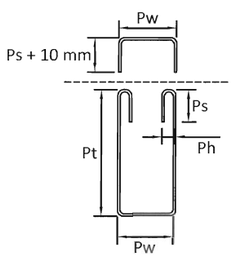
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	400	200	800	700	600	600	100	100

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

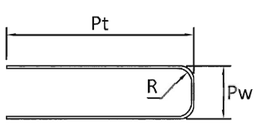
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BT-4080-5036	500	369	2 T 25	2 T 25	2 T 25	4 T 25	2 T 16	-	T10-300	T10-300	3T16 @ 200 c/c
BT-4080-6040	600	400	2 T 25	2 T 25	2 T 25	4 T 25	2 T 20	-	T10-300	T10-300	3T16 @ 200 c/c
BT-4080-7043	700	438	2 T 25	2 T 25	2 T 25	4 T 25	4 T 20	-	T10-300	T10-300	3T16 @ 200 c/c
BT-4080-8048	800	487	2 T 25	2 T 25	2 T 25	4 T 25	4 T 25	-	T10-250	T10-300	3T16 @ 200 c/c
BT-4080-9051	900	513	2 T 25	2 T 25	2 T 25	4 T 32	2 T 25	-	T10-200	T10-300	3T16 @ 200 c/c
BT-4080-1055	1000	558	2 T 25	2 T 25	2 T 25	4 T 32	2 T 32	-	T10-200	T10-300	4T16 @ 150 c/c



L1

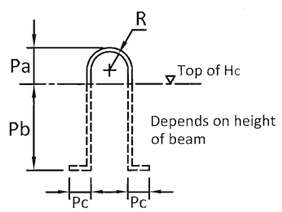


L2



L3

Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
550	350	150	-	2 Ø	750	150	80	40	2 Ø	800	330	-	-	6 Ø



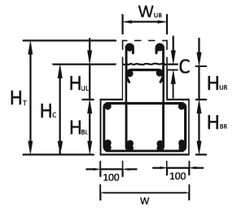
* Position of Lifting Hook at distance of 0.2 L from side of beam

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	500	100	60	T20

CODE OF COMPONENTS

BT-4080-5036

- Shear Capacity, Vu (369 kN)
- Moment Capacity, Mu (500 kNm)
- Total Height, H_T (800 mm)
- Width of Breadth W (400 mm)
- Types of Beam (Beam Inverted T)



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

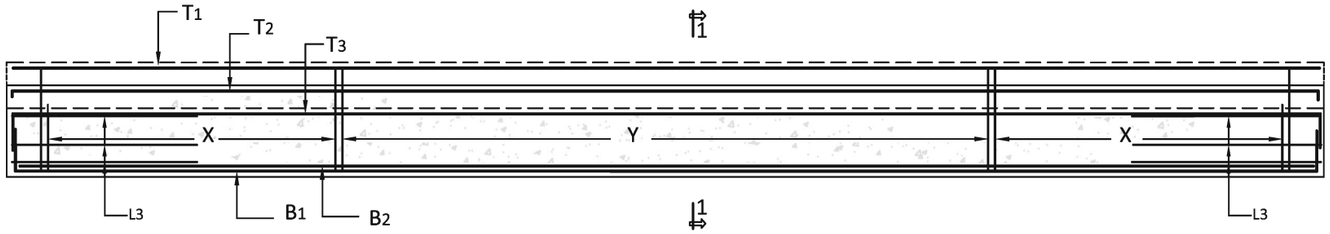
TAJUK LUKISAN :

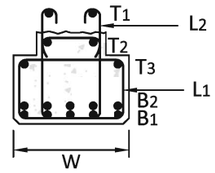
RASUK PRATUANG JENIS INVERTED T

DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BT–4080/BT 04



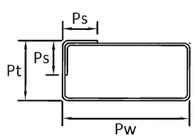


Section 1-1

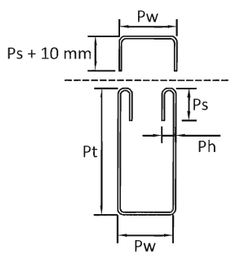
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	500	300	500	400	300	300	100	100

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

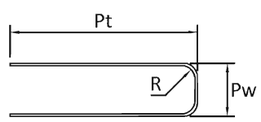
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BT-5050-1014	100	144	2 T 20	2 T 20	2 T 20	4 T 16	-	-	T 10 - 150	T 10 - 150	3T10 @ 50 c/c
BT-5050-2021	200	215	2 T 20	2 T 20	2 T 20	4 T 20	2 T 16	-	T 10 - 300	T 10 - 300	3T12 @ 50 c/c
BT-5050-3026	300	269	2 T 20	2 T 20	2 T 20	4 T 25	2 T 16	-	T 10 - 300	T 10 - 300	3T16 @ 50 c/c
BT-5050-4035	400	356	2 T 20	2 T 20	2 T 20	4 T 25	4 T 20	-	T 10 - 200	T 10 - 300	3T16 @ 50 c/c



L1

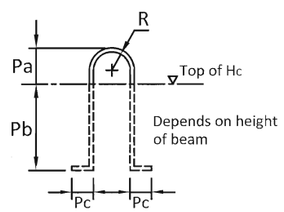


L2



L3

Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
250	450	150	-	2 Ø	450	250	80	40	2 Ø	800	430	-	-	6 Ø



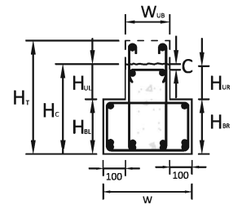
* Position of Lifting Hook at distance of 0.2 L from side of beam

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	350	100	60	T20

CODE OF COMPONENTS

BT - 5050 - 1014

- Shear Capacity, Vu (130 kN)
- Moment Capacity, Mu (100 kNm)
- Total Height, H_T (500 mm)
- Width of Breadth W (400 mm)
- Types of Beam (Beam Inverted T)



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PEMBOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

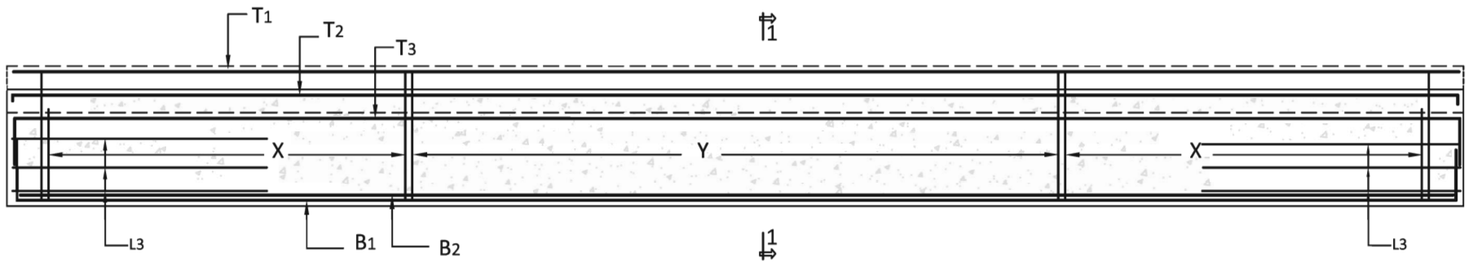
TAJUK LUKISAN :

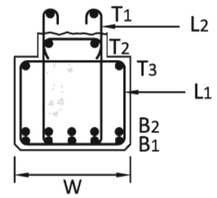
RASUK PRATUANG JENIS INVERTED T

DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 15/BT-5050/BT 05



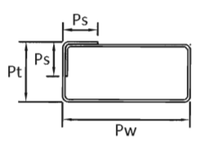


Section 1-1

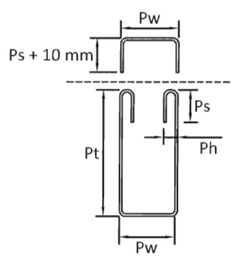
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	500	300	600	500	400	400	100	100

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

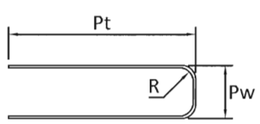
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BT-5060-2522	250	228	2 T 20	2 T 20	2 T 20	4 T 20	2 T 16	-	T 10 - 300	T 10 - 300	3T12 @100 c/c
BT-5060-3531	350	316	2 T 20	2 T 20	2 T 20	4 T 20	4 T 16	-	T 10 - 300	T 10 - 300	3T16 @100 c/c
BT-5060-4036	400	363	2 T 20	2 T 20	2 T 20	4 T 25	2 T 12	-	T 10 - 250	T 10 - 300	3T16 @100 c/c
BT-5060-5536	550	366	2 T 20	2 T 20	2 T 20	4 T 25	4 T 25	-	T 10 - 250	T 10 - 300	3T16 @100 c/c
BT-5060-6543	650	434	2 T 20	2 T 20	2 T 20	4 T 25	2 T 25	-	T 10 - 200	T 10 - 300	3T16 @100 c/c



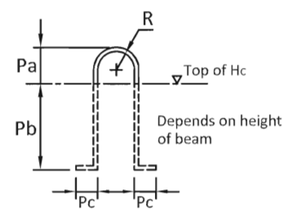
L1



L2



L3



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

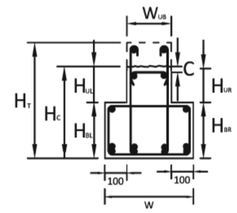
Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
350	450	150	-	2 Ø	550	250	80	40	2 Ø	800	430	-	-	6 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	400	100	60	T20

CODE OF COMPONENTS

BT-5060-2522

- Types of Beam (Beam Inverted T)
- Width of Breadth W (500 mm)
- Total Height, H_T (600 mm)
- Moment Capacity, Mu (250 kNm)
- Shear Capacity, Vu (228 kN)



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: KAMALUDDIN BIN ABDUL RASHID
PENGARAH KHIDMAT REKABENTUK : Ir. MUHAMMAD AZMAN BIN JAMRUS
PENGARAH KHIDMAT PAKAR DAN PENGURUSAN : Ir. HJH. NORMA BINTI NORMAN
PENGARAH KEJURUTERAAN (PAKAR FORENSIK) : Ir. Dr. LIM CHAR CHING
KETUA PENOLONG PENGARAH : MOHD FAIRUZ BIN MUHAMAD
DIREKABENTUK : KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES
DISEMAK SEMULA: TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :

LUKISAN PIAWAI KOMPONEN STRUKTUR IBS BAGI BANGUNAN

TAJUK LUKISAN :

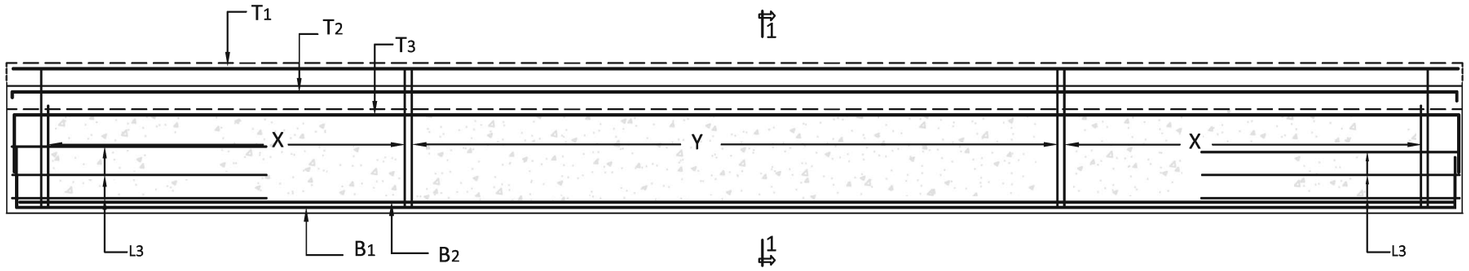
RASUK PRATUANG JENIS INVERTED T

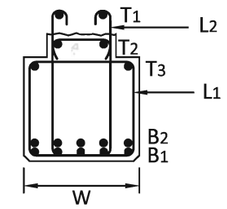
DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :

JKR/CKAS/P-IBS/PEL 15/BT-5060/BT 06



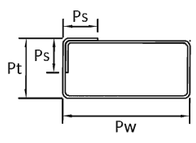


Section 1-1

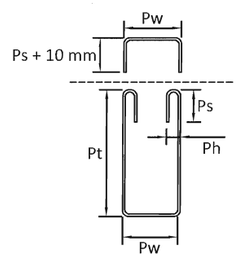
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	500	300	650	550	450	450	100	100

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

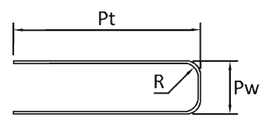
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BT-5065-5037	500	370	2 T 20	2 T 20	2 T 20	5T 25	3 T 12	-	T 10 - 300	T 10 - 300	3T12@100c/c
BT-5065-6040	600	400	2 T 20	2 T 20	2 T 20	5 T 25	3 T 16	-	T 10 - 300	T 10 - 300	3T16@100c/c
BT-5065-7043	700	430	2 T 20	2 T 20	2 T 20	5 T 25	5 T 20	-	T 10 - 300	T 10 - 300	3T12@100c/c
BT-5065-8048	800	480	2 T 20	2 T 20	2 T 20	5 T 32	2 T 12	-	T 10 - 300	T 10 - 300	3T16@100c/c



L1

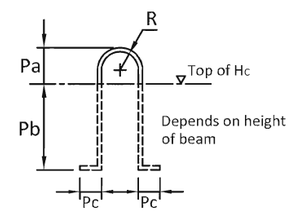


L2



L3

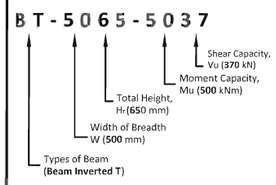
Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
400	450	150	-	2 Ø	600	250	80	40	2 Ø	800	430	-	-	6 Ø

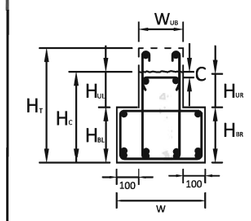


* Position of Lifting Hook at distance of 0.2 L from side of beam

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	430	100	60	T20

CODE OF COMPONENTS





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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMMAD

DIREKABENTUK :
KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

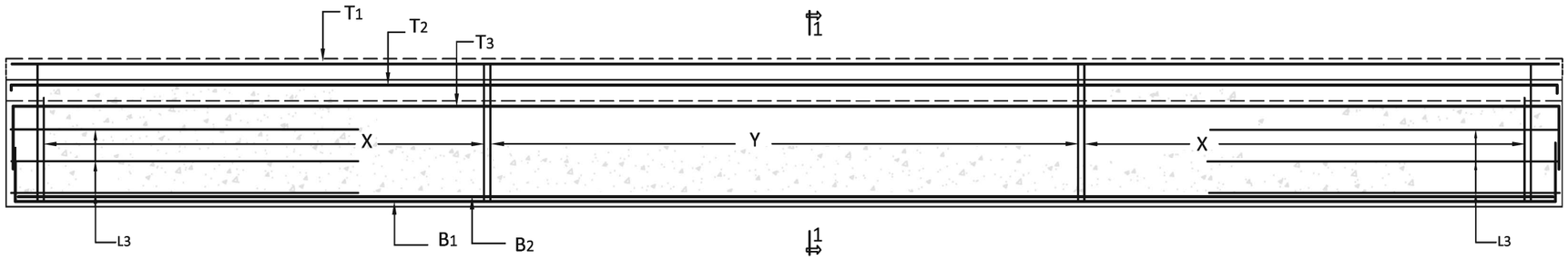
DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

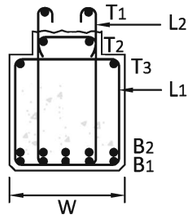
HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
RASUK PRATUANG JENIS INVERTED T

DILUKIS : ADI AKMAL BIN ABDUL AZID
TARIKH : SEPTEMBER 2015 SKALA : 1:25
NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BT–5065/BT 07



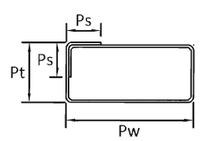


Section 1-1

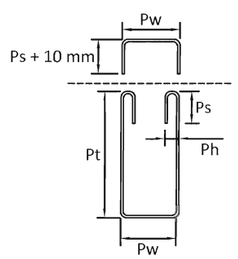
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	500	300	700	600	500	500	100	100

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

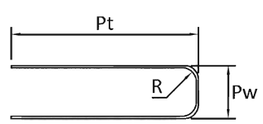
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BT-5070-3531	350	313	2 T 25	2 T 25	2 T 25	5T 16	5 T 12	-	T 10 - 300	T 10 - 300	3T16@150c/c
BT-5070-4540	450	402	2 T 25	2 T 25	2 T 25	5 T 16	5 T 16	-	T 10 - 250	T 10 - 300	3T16@150c/c
BT-5070-5537	550	373	2 T 25	2 T 25	2 T 25	5 T 20	5 T 16	-	T 10 - 250	T 10 - 300	3T16@150c/c
BT-5070-6543	650	435	2 T 25	2 T 25	2 T 25	5 T 20	5 T 20	-	T 10 - 250	T 10 - 300	3T16@150c/c
BT-5070-7545	750	455	2 T 25	2 T 25	2 T 25	5 T 25	3 T 25	-	T 10 - 250	T 10 - 300	3T16@150c/c
BT-5070-8551	850	518	2 T 25	2 T 25	2 T 25	5 T 32	3 T 12	-	T 10 - 200	T 10 - 300	3T16@150c/c
BT-5070-9553	950	533	2 T 25	2 T 25	2 T 25	5 T 32	5T 16	-	T 10 - 200	T 10 - 300	4T16@100c/c



L1

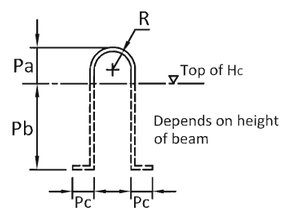


L2



L3

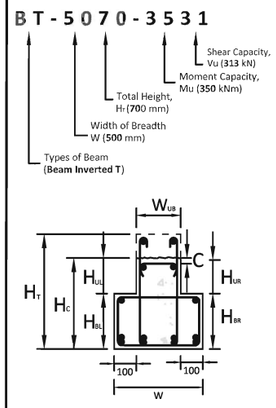
Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
450	450	150	-	2 Ø	650	250	80	40	2 Ø	800	430	-	-	6 Ø



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

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	450	100	60	T20

CODE OF COMPONENTS



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

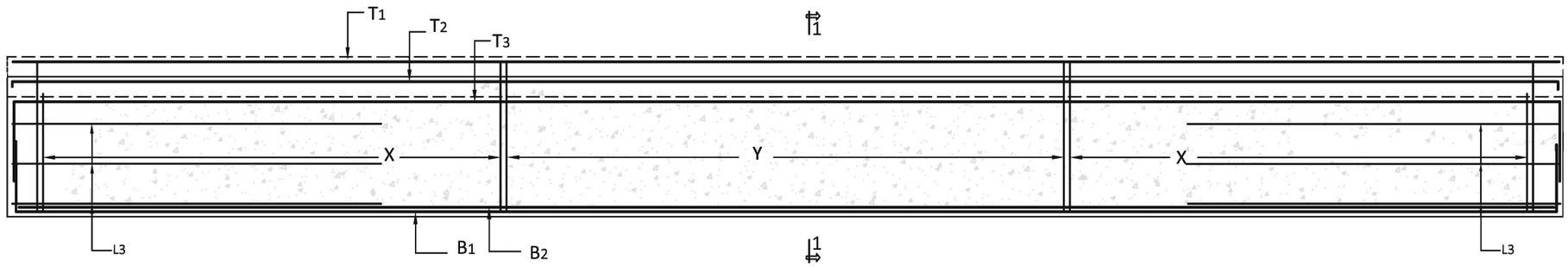
TAJUK LUKISAN :

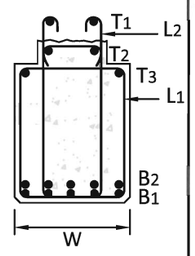
RASUK PRATUANG JENIS INVERTED T

DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 15/BT-5070/BT 08



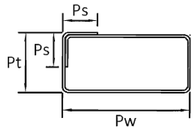


Section 1-1

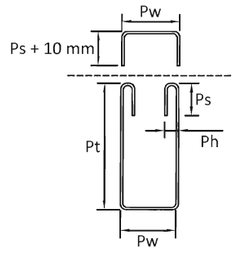
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	500	300	800	700	600	600	100	100

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

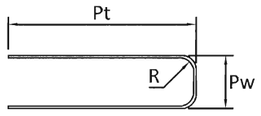
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BT-5080-5537	550	379	2 T 25	2 T 25	2 T 25	5T 20	3 T 16	-	T 10 - 300	T 10 - 300	3T16@200c/c
BT-5080-6543	650	436	2 T 25	2 T 25	2 T 25	5 T 20	5 T 16	-	T 10 - 300	T 10 - 300	3T16@200c/c
BT-5080-7545	750	459	2 T 25	2 T 25	2 T 25	5 T 25	3 T 16	-	T 10 - 300	T 10 - 300	3T16@200c/c
BT-5080-8551	850	519	2 T 25	2 T 25	2 T 25	5 T 25	5 T 16	-	T 10 - 250	T 10 - 300	3T16@200c/c
BT-5080-9552	950	529	2 T 25	2 T 25	2 T 25	5 T 25	5 T 20	-	T 10 - 250	T 10 - 300	4T16@150c/c
BT-5080-1164	1150	644	2 T 25	2 T 25	2 T 25	5 T 25	5 T 25	-	T 10 - 200	T 10 - 300	4T16@150c/c
BT-5080-1365	1310	650	2 T 25	2 T 25	2 T 25	5 T 32	3 T 32	-	T 10 - 200	T 10 - 250	4T16@150c/c



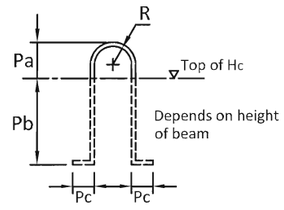
L1



L2



L3



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

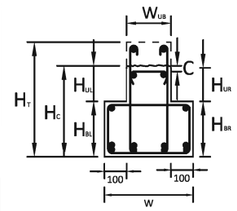
Lifting Hook				
Pa	Pb	Pc	R	øBar
120	500	100	60	T20

Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
550	450	150	-	2 Ø	750	250	80	40	2 Ø	800	430	-	-	6 Ø

CODE OF COMPONENTS

BT-5080-5537

- Shear Capacity, Vu (379 kN)
- Moment Capacity, Mu (550 kNm)
- Total Height, H_T (800 mm)
- Width of Breadth W (500 mm)
- Types of Beam (Beam Inverted T)



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

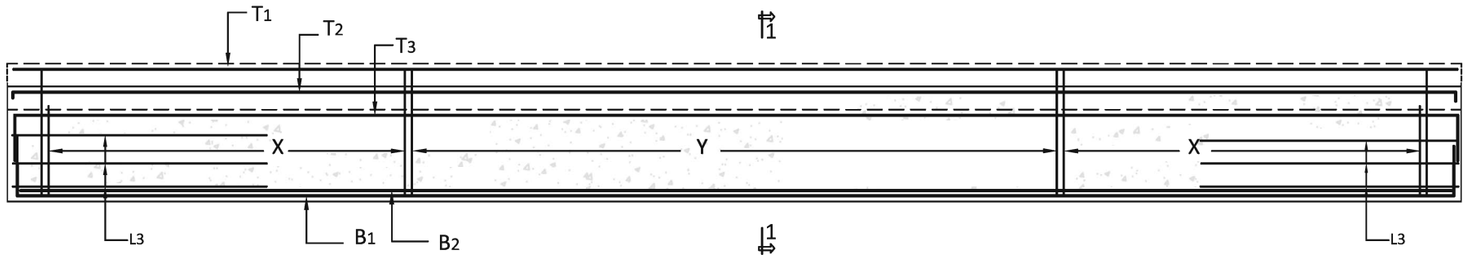
TAJUK LUKISAN :

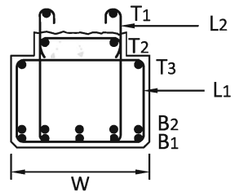
RASUK PRATUANG JENIS INVERTED T

DILUKIS : MOHD AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BT–5080/BT 09



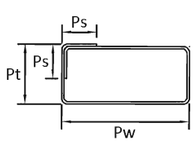


Section 1-1

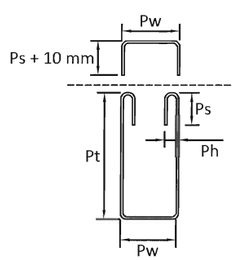
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	600	400	600	500	400	400	100	100

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

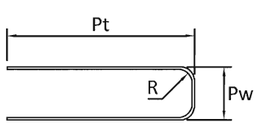
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BT-6060-2522	250	226	2T25	2T25	2T25	5T16	5T10	-	T10-300	T10-300	3T12@100c/c
BT-6060-3531	350	314	2T25	2T25	2T25	5T20	3T12	-	T10-300	T10-300	3T16@100c/c
BT-6060-4036	400	361	2T25	2T25	2T25	5T20	5T12	-	T10-300	T10-300	3T16@100c/c
BT-6060-5537	550	374	2T25	2T25	2T25	5T20	5T20	-	T10-250	T10-250	3T16@100c/c
BT-6060-6040	600	404	2T25	2T25	2T25	5T25	5T20	-	T10-250	T10-250	3T16@100c/c
BT-6060-7545	750	456	2T25	2T25	2T25	5T25	5T25	-	T10-200	T10-250	3T16@100c/c



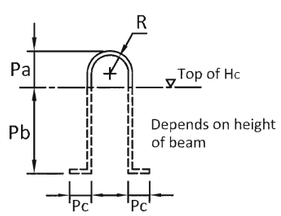
L1



L2



L3

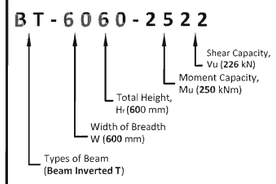


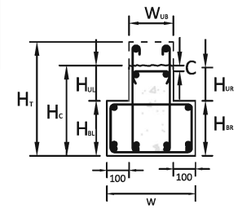
* Position of Lifting Hook at distance of 0.2 L from side of beam

Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
350	550	150	-	2 Ø	550	350	80	40	2 Ø	800	530	-	-	6 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	400	100	60	T20

CODE OF COMPONENTS





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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

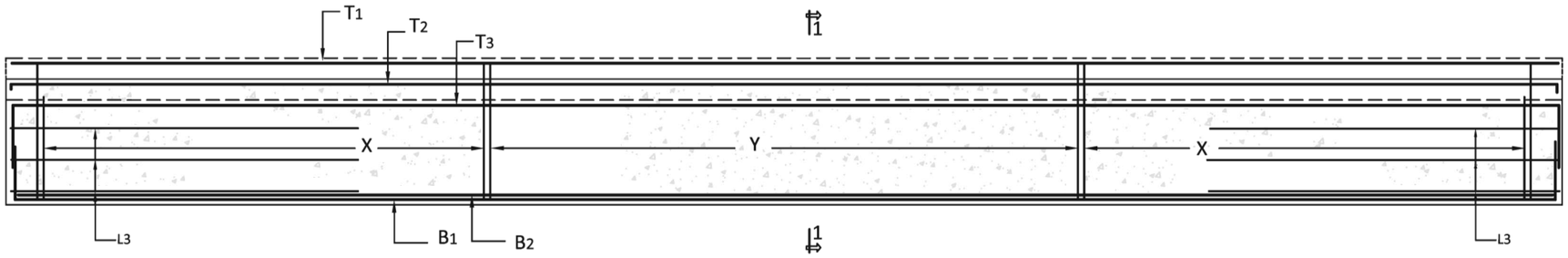
TAJUK LUKISAN :

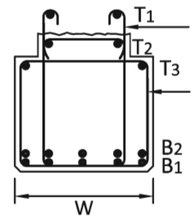
RASUK PRATUANG JENIS INVERTED T

DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 15/BT-6060/BT 10

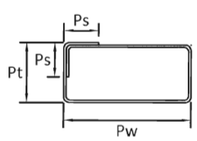




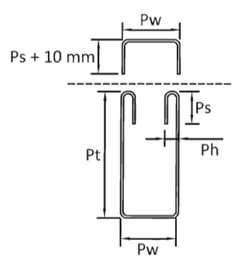
Section 1-1

Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}	Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	600	400	700	600	500	500	100	100		35	35	0.25L

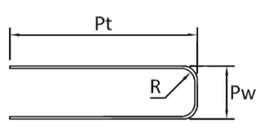
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BT-6070-9552	950	528	2 T 25	2 T 25	2 T 25	5 T 32	3 T 12	-	T 10 - 200	T 10 - 300	3T16@150c/c
BT-6070-10057	1020	570	2 T 25	2 T 25	2 T 25	5 T 32	3 T 20	-	T 10 - 200	T 10 - 300	3T16@150c/c
BT-6070-13065	1320	650	2 T 25	2 T 25	2 T 25	5 T 32	5 T 32	-	T 10 - 200	T 10 - 250	3T16@150c/c



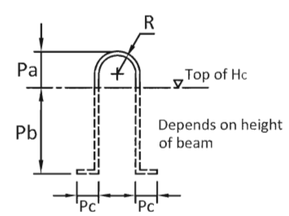
L1



L2



L3

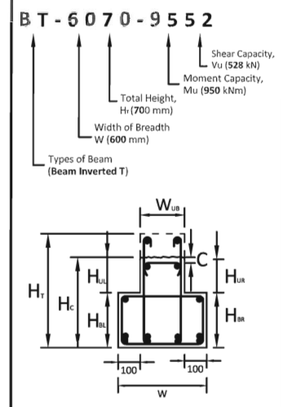


* Position of Lifting Hook at distance of 0.2 L from side of beam

Lifting Hook				
Pa	Pb	Pc	R	ØBar
120	450	100	60	T20

Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
450	550	150	-	2 Ø	650	350	80	40	2 Ø	800	530	-	-	6 Ø

CODE OF COMPONENTS



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)

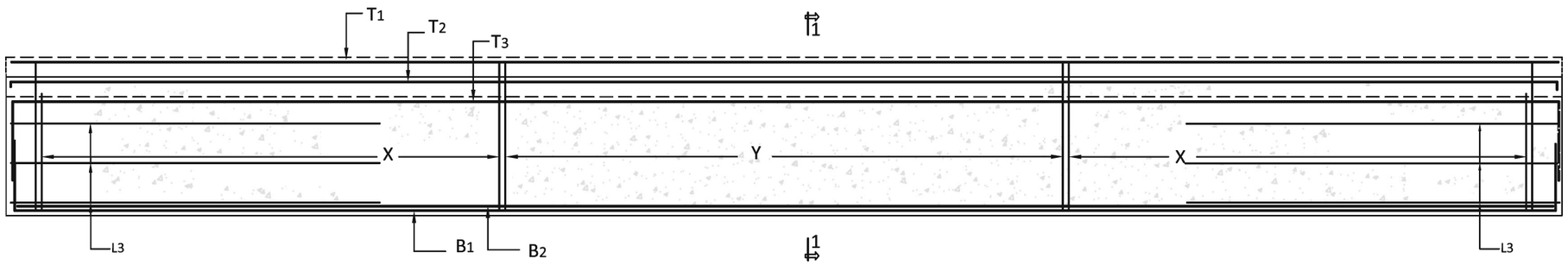
PENGARAH KANAN: KAMALUDDIN BIN ABDUL RASHID
PENGARAH KHIDMAT REKABENTUK : Ir. MUHAMMAD AZMAN BIN JAMRUS
PENGARAH KHIDMAT PAKAR DAN PENGURUSAN : Ir. HJH. NORMA BINTI NORMAN
PENGARAH KEJURUTERAAN (PAKAR FORENSIK) : Ir. Dr. LIM CHAR CHING
KETUA PENOLONG PENGARAH : MOHD FAIRUZ BIN MUHAMAD
DIREKABENTUK : KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES
DISEMAK : TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

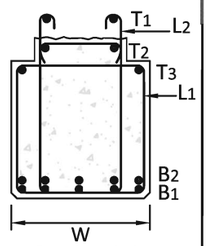
HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :
LUKISAN PIAWAI KOMPONEN STRUKTUR IBS BAGI BANGUNAN

TAJUK LUKISAN :
RASUK PRATUANG JENIS INVERTED T

DILUKIS : MOHD AMAMUL BIN ABDUL AZIZ
TARIKH : SEPTEMBER 2015 SKALA : 1:25
NO. LUKISAN : JKR/CKAS/P-IBS/PEL 15/BT-6070/BT 11



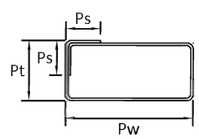


Section 1-1

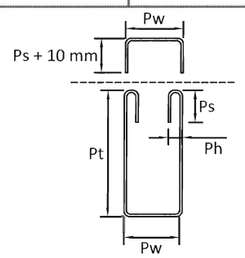
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	600	400	800	700	500	500	100	100

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

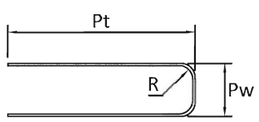
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_1	Y L_1 & L_2	L_3
BT-6080-3026	300	267	2T32	2T32	2T32	5T12	5T12	-	T10-300	T10-300	3T12@200c/c
BT-6080-3531	350	317	2T32	2T32	2T32	5T16	3T12	-	T10-300	T10-300	3T16@200c/c
BT-6080-6040	600	401	2T32	2T32	2T32	5T20	3T16	-	T10-250	T10-250	3T16@200c/c
BT-6080-6543	650	434	2T32	2T32	2T32	5T20	5T16	-	T10-250	T10-250	3T16@200c/c
BT-6080-7546	750	460	2T32	2T32	2T32	5T25	2T16	-	T10-250	T10-250	3T16@200c/c
BT-6080-8048	800	488	2T32	2T32	2T32	5T25	3T16	-	T10-250	T10-250	3T16@200c/c
BT-6080-10055	1000	557	2T32	2T32	2T32	5T25	5T20	-	T10-200	T10-200	4T16@150c/c
BT-6080-13566	1350	668	2T32	2T32	2T32	5T32	5T25	-	T10-200	T10-200	4T16@150c/c
BT-6080-16079	1600	794	2T32	2T32	2T32	5T32	5T32	-	T10-150	T10-200	5T16@100c/c



L1

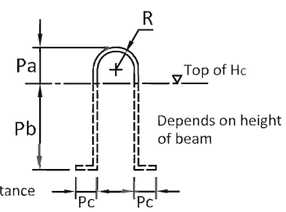


L2



L3

Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
550	550	150	-	2 Ø	750	350	80	40	2 Ø	800	530	-	-	6 Ø



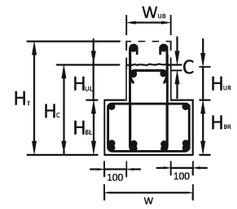
* Position of Lifting Hook at distance of 0.2 L from side of beam

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	500	100	60	T20

CODE OF COMPONENTS

BT-6080-3026

- BT — Types of Beam (Beam Inverted T)
- 6080 — Width of Breadth W (600 mm); Total Height, H_T (800 mm)
- 3026 — Moment Capacity, Mu (300 kNm); Shear Capacity, Vu (267 kN)



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)

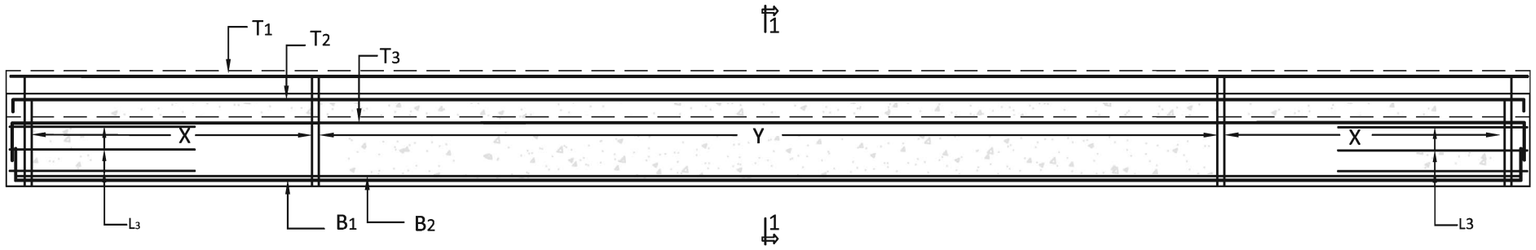
PENGARAH KANAN: KAMALUDDIN BIN ABDUL RASHID
PENGARAH KHIDMAT REKABENTUK : Ir. MUHAMMAD AZMAN BIN JAMRUS
PENGARAH KHIDMAT PAKAR DAN PENGURUSAN : Ir. HJH. NORMA BINTI NORMAN
PENGARAH KEJURUTERAAN (PAKAR FORENSIK) : Ir. Dr. LIM CHAR CHING
KETUA PENOLONG PENGARAH : MOHD FAIRUZ BIN MUHAMAD
DIREKABENTUK : KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES
DISEMAK : TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

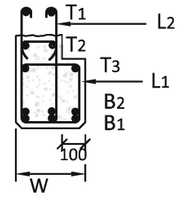
HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :
LUKISAN PIAWAI KOMPONEN STRUKTUR IBS BAGI BANGUNAN

TAJUK LUKISAN :
RASUK PRATUANG JENIS INVERTED T

DILUKIS : ADI AKMAL BIN ABDUL AZID
TARIKH : SEPTEMBER 2015 | SKALA : 1:25
NO. LUKISAN : JKR/CKAS/P–IBS/PEL 15/BT–6080/BT 12



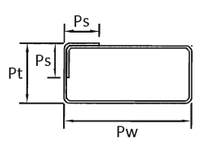


Section 1-1

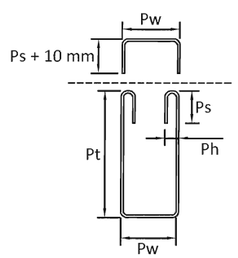
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_B	H_U
	300	200	500	400	300	100

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

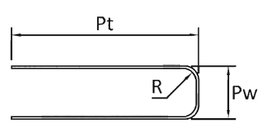
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BL-3050-1013	100	130	2 T 12	2 T 12	2 T 12	3 T 12	3 T 12	-	T 10 - 300	T 10 - 300	3T10@50c/c
BL-3050-2017	200	178	2 T 12	2 T 12	2 T 12	3 T 25	-	-	T 10 - 300	T 10 - 300	3T10@50c/c
BL-3050-3027	300	270	2 T 12	2 T 12	2 T 12	3 T 25	3 T 20	-	T 10 - 200	T 10 - 300	3T12@50c/c
BL-3050-4027	400	271	2 T 16	2 T 16	2 T 16	3 T 32	3 T 16	-	T 10 - 200	T 10 - 300	3T12@50c/c



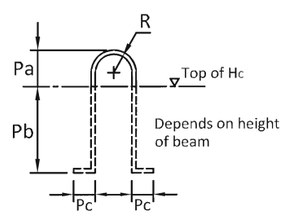
L1



L2



L3



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

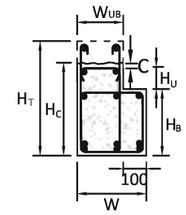
Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
350	250	150	-	2 Ø	450	150	80	40	2 Ø	800	230	-	-	6 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
100	330	80	50	T16

CODE OF COMPONENTS

B L - 3 0 5 0 - 1 0 1 3

- Types of Beam (Beam L Shape)
- Width of Breadth W (300 mm)
- Total Height, H_T (500 mm)
- Moment Capacity, Mu (100 kNm)
- Shear Capacity, Vu (130 kN)



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: 03–2818 9171 & NO. FAX: 03–2818 9155)

PENGARAH KANAN:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

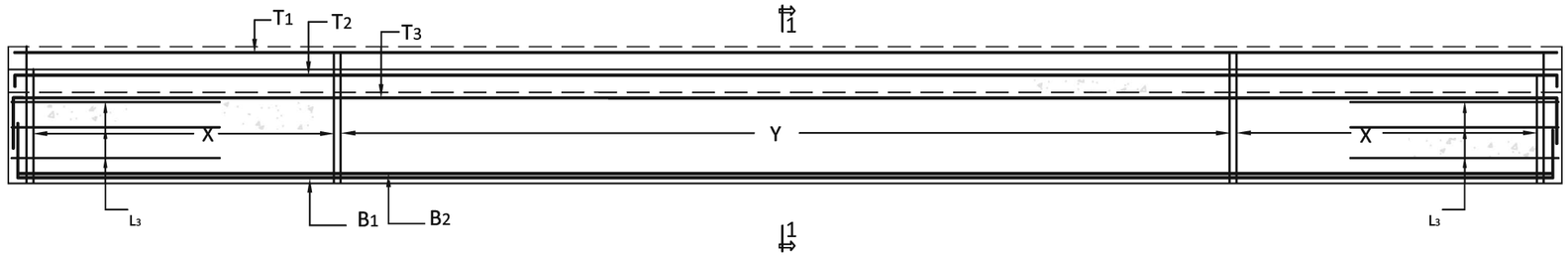
TAJUK LUKISAN :

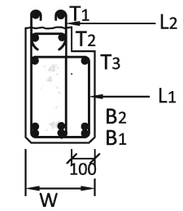
RASUK PRATUANG JENIS L

DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BL–3050/BL 01



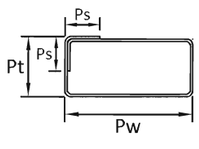


Section 1-1

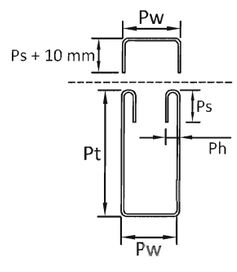
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_B	H_U
	300	200	600	500	400	100

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

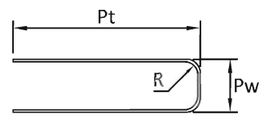
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BL-3060-1013	100	133	2 T 16	2 T 16	2 T 16	3 T 16	-		T10 - 300	T10-300	3T10@100c/c
BL-3060-2018	200	181	2 T 16	2 T 16	2 T 16	3 T 16	2 T 16		T10 - 300	T10-300	3T10@100c/c
BL-3060-3026	300	268	2 T 16	2 T 16	2 T 16	3 T 20	2 T 20		T10 - 250	T10-300	3T12@100c/c
BL-3060-4027	400	271	2 T 16	2 T 16	2 T 16	3 T 25	3 T 20		T10 - 250	T10-300	3T12@100c/c
BL-3060-5033	500	339	2 T 16	2 T 16	2 T 16	3 T 32	3 T 16		T10 - 200	T10-300	3T16@100c/c
BL-3060-6036	600	364	2 T 16	2 T 16	2 T 16	3 T 32	3 T 25		T10 - 150	T10-300	3T16@100c/c



L1

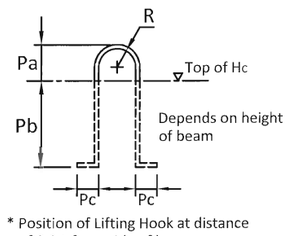


L2



L3

Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
350	250	150	-	2 Ø	550	150	80	40	2 Ø	800	230	-	-	6 Ø



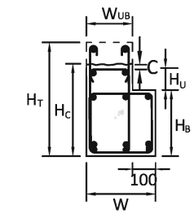
* Position of Lifting Hook at distance of 0.2 L from side of beam

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	400	100	60	T20

CODE OF COMPONENTS

BL-3060-1013

- Types of Beam (Beam L Shape)
- Width of Breadth W (300 mm)
- Total Height, H_T (600 mm)
- Moment Capacity, Mu (100 kNm)
- Shear Capacity, Vu (133 kN)



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

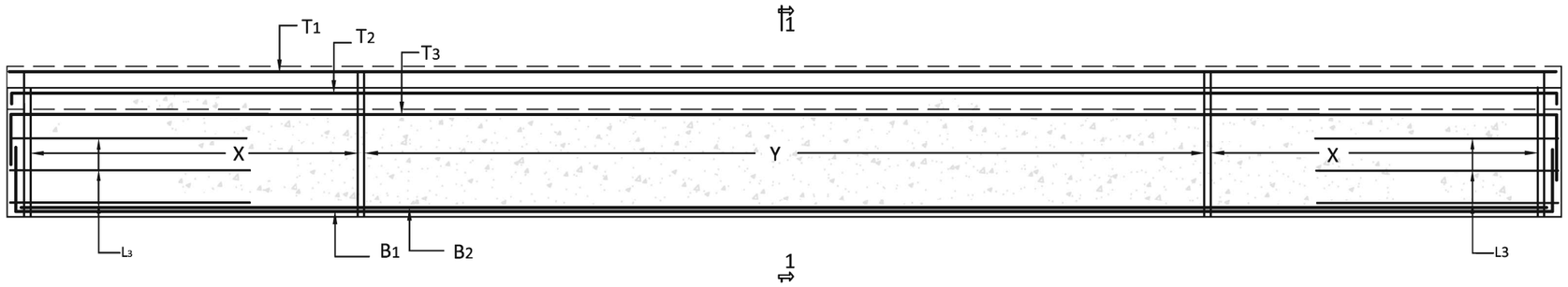
DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISAUN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
RASUK PRATUANG JENIS L

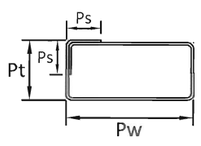
DILUKIS : ADI AKMAL BIN ABDUL AZID
TARIKH : SEPTEMBER 2015 SKALA : 1:25
NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BL–3060/BL 02



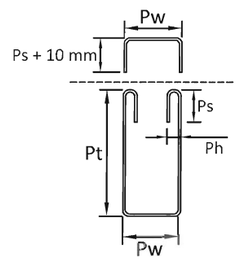
Section 1-1

Beam Size (mm)	W	W_{UB}	H_T	H_C	H_B	H_U	Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	300	200	700	600	500	100		35	35	0.25L

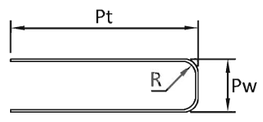
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BL-3070-3026	300	267	2 T 16	2 T 16	2 T 16	3 T 20	3 T 12		T10 - 300	T10 - 300	3T12@150c/c
BL-3070-4027	400	274	2 T 16	2 T 16	2 T 16	3 T 25	3 T 12		T10 - 300	T10 - 300	3T12@150c/c
BL-3070-5032	500	320	2 T 16	2 T 16	2 T 16	3 T 32	-		T10 - 250	T10 - 300	3T16@150c/c
BL-3070-6036	600	364	2 T 16	2 T 16	2 T 16	3 T 25	3 T 25		T10 - 200	T10 - 300	3T16@150c/c
BL-3070-7039	700	393	2 T 16	2 T 16	2 T 16	3 T 32	3 T 25		T10 - 200	T10 - 300	3T16@150c/c



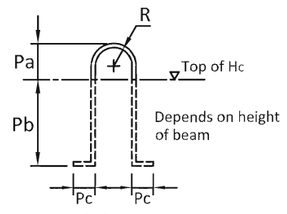
L1



L2



L3



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

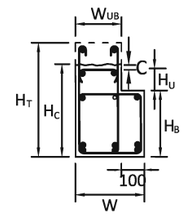
Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
450	250	150	-	2 Ø	650	150	80	40	2 Ø	800	230	-	-	6 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	450	100	60	T20

CODE OF COMPONENTS

BL-3070-3026

- Types of Beam (Beam L Shape)
- Width of Breadth W (300 mm)
- Total Height, H_T (700 mm)
- Moment Capacity, Mu (300 kNm)
- Shear Capacity, Vu (267 kN)



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. Hj. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

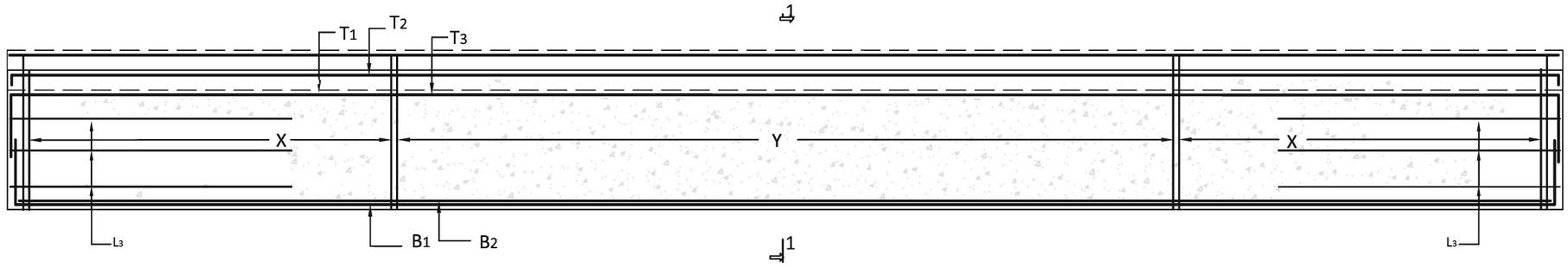
TAJUK LUKISAN :

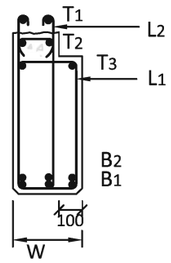
RASUK PRATUANG JENIS L

DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BL–3070/BL 03



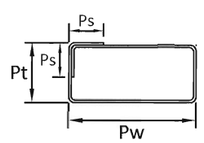


Section 1-1

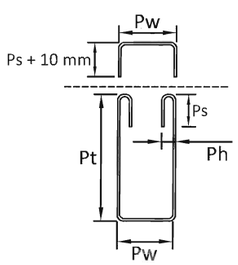
Beam Size (mm)	FD	W_{UB}	H_T	H_C	H_B	H_U
	300	200	800	700	600	100

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

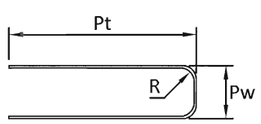
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BL-3080-4027	400	274	2T20	2T20	2T20	3T25	-	-	T10-300	T10-300	3T12@200 c/c
BL-3080-5033	500	338	2T20	2T20	2T20	3T25	2T16	-	T10-300	T10-300	3T16@200 c/c
BL-3080-6036	600	367	2T20	2T20	2T20	3T25	3T20	-	T10-250	T10-300	3T16@200 c/c
BL-3080-7039	700	390	2T20	2T20	2T20	3T25	3T25	-	T10-250	T10-300	3T16@200 c/c
BL-3080-8044	800	448	2T20	2T20	2T20	3T25	3T20	-	T10-200	T10-300	3T16@200 c/c
BL-3080-9046	950	466	2T20	2T20	2T20	3T32	3T32	-	T10-200	T10-300	3T16@200 c/c



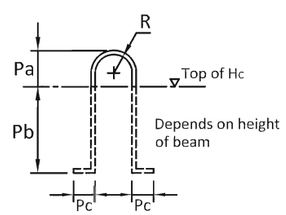
L1



L2



L3



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

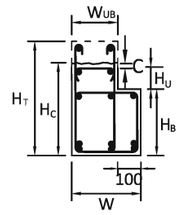
Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
550	250	150	-	2 Ø	750	150	80	40	2 Ø	800	230	-	-	6 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	500	100	60	T20

CODE OF COMPONENTS

BL-3080-4027

- Types of Beam (Beam L Shape)
- Width of Breadth W (300 mm)
- Total Height, H_T (800 mm)
- Moment Capacity, Mu 400 kNm)
- Shear Capacity, Vu (274 kN)



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)

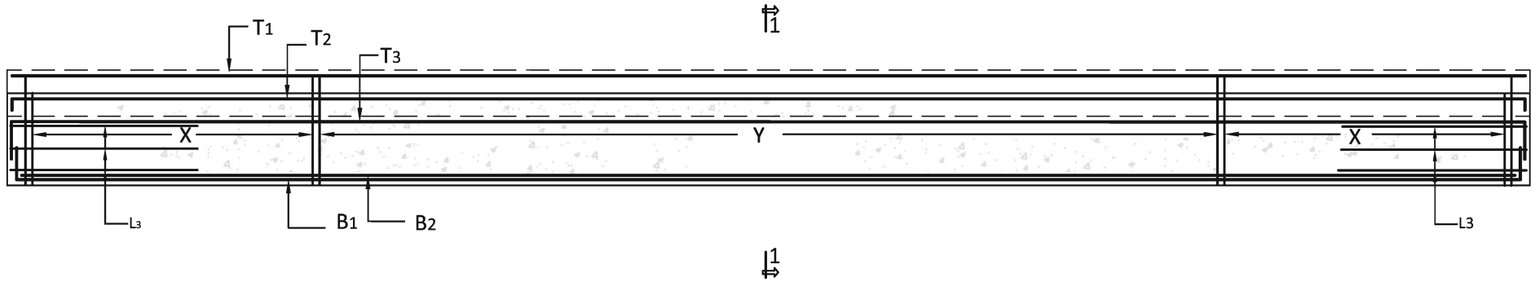
PENGARAH KANAN: KAMALUDDIN BIN ABDUL RASHID
PENGARAH KHIDMAT REKABENTUK : Ir. MUHAMMAD AZMAN BIN JAMRUS
PENGARAH KHIDMAT PAKAR DAN PENGURUSAN : Ir. HJH. NORMA BINTI NORMAN
PENGARAH KEJURUTERAAN (PAKAR FORENSIK) : Ir. Dr. LIM CHAR CHING
KETUA PENOLONG PENGARAH : MOHD FAIRUZ BIN MUHAMAD
DIREKABENTUK : KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES
DISEMAK : TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

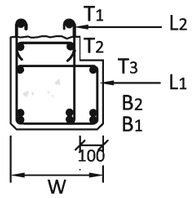
HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :
LUKISAN PIAWAI KOMPONEN STRUKTUR IBS BAGI BANGUNAN

TAJUK LUKISAN :
RASUK PRATUANG JENIS L

DILUKIS : ADI AKMAL BIN ABDUL AZIZ
TARIKH : SEPTEMBER 2015 | SKALA : 1:25
NO. LUKISAN : JKR/CKAS/P-IBS/PEL. 15/BL-3080/BL. 04



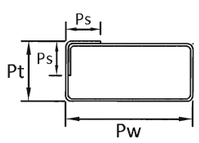


Section 1-1

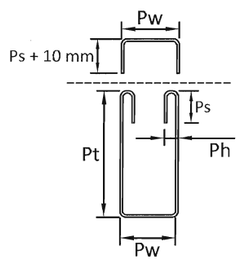
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	400	300	500	400	300		100	

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

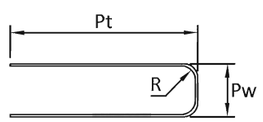
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BL-4050-0508	50	80	2 T 16	2 T 16	2 T 16	4 T 12	-	-	T10 - 300	T10 - 300	3T10@50c/c
BL-4050-1013	100	134	2 T 16	2 T 16	2 T 16	4 T 12	2 T 10	-	T10 - 300	T10 - 300	3T10@50c/c
BL-4050-2018	200	183	2 T 16	2 T 16	2 T 16	4 T 20	-	-	T10 - 300	T10 - 300	3T10@50c/c
BL-4050-3026	300	268	2 T 16	2 T 16	2 T 16	4 T 20	4 T 16	-	T10 - 200	T10 - 300	3T12@50c/c
BL-4050-4026	400	268	2 T 16	2 T 16	2 T 16	4 T 25	4 T 20	-	T10 - 200	T10 - 300	3T12@50c/c



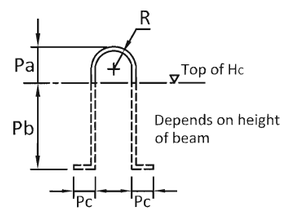
L1



L2



L3



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

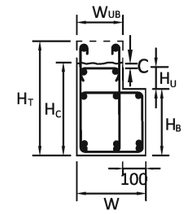
Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
250	350	150	-	2 Ø	450	250	80	40	2 Ø	800	330	-	-	6 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	350	100	60	T20

CODE OF COMPONENTS

BL-4050-0508

- Types of Beam (Beam L Shape)
- Width of Breadth W (400 mm)
- Total Height, H_T (500 mm)
- Moment Capacity, Mu (50 kNm)
- Shear Capacity, Vu (80 kN)



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

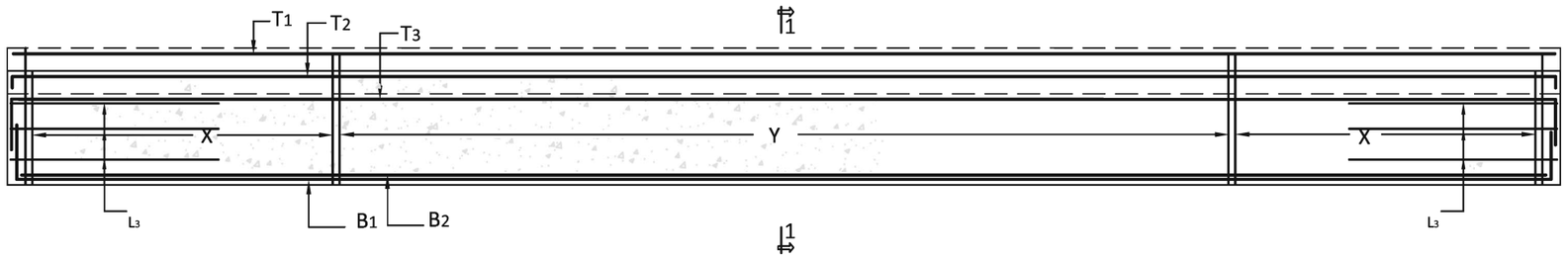
TAJUK LUKISAN :

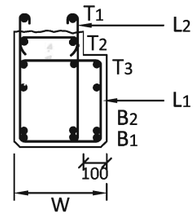
RASUK PRATUANG JENIS L

DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P-IBS/PEL 15/BL-4050/BL 05



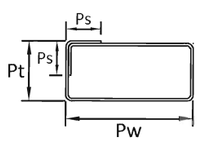


Section 1-1

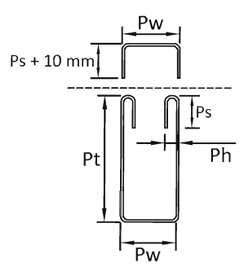
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	400	300	600	500	400		100	

Concrete Grade (N/mm^2)	Precast	In-situ	Lap length
	35	35	0.25L

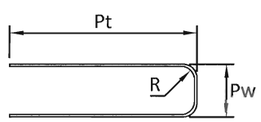
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BL-4060-2017	200	179	2 T 20	2 T 20	2 T 20	4 T 16	2 T 10	-	T10 - 300	T10 - 300	3T10@100c/c
BL-4060-3026	300	267	2 T 20	2 T 20	2 T 20	4 T 16	4 T 16	-	T10 - 300	T10 - 300	3T10@100c/c
BL-4060-4027	400	274	2 T 20	2 T 20	2 T 20	4 T 25	2 T 10	-	T10 - 300	T10 - 300	3T12@100c/c
BL-4060-5032	500	323	2 T 20	2 T 20	2 T 20	4 T 25	2 T 25	-	T10 - 250	T10 - 300	3T16@100c/c
BL-4060-6037	600	370	2 T 20	2 T 20	2 T 20	4 T 25	3 T 25	-	T10 - 200	T10 - 300	3T16@100c/c
BL-4060-7039	700	398	2 T 20	2 T 20	2 T 20	4 T 32	4 T 20	-	T10 - 150	T10 - 300	3T16@100c/c
BL-4060-8044	800	447	2 T 20	2 T 20	2 T 20	4 T 32	3 T 25	-	T10 - 150	T10 - 300	3T16@100c/c



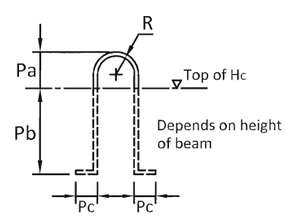
L1



L2



L3



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

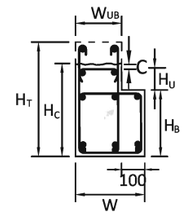
Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
350	350	150	-	2 Ø	550	250	80	40	2 Ø	800	330	-	-	6 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	400	100	60	T20

CODE OF COMPONENTS

BL-4060-2017

- Types of Beam (Beam L Shape)
- Width of Breadth W (400 mm)
- Total Height, H_T (600 mm)
- Moment Capacity, Mu (200 kNm)
- Shear Capacity, Vu (179 kN)



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

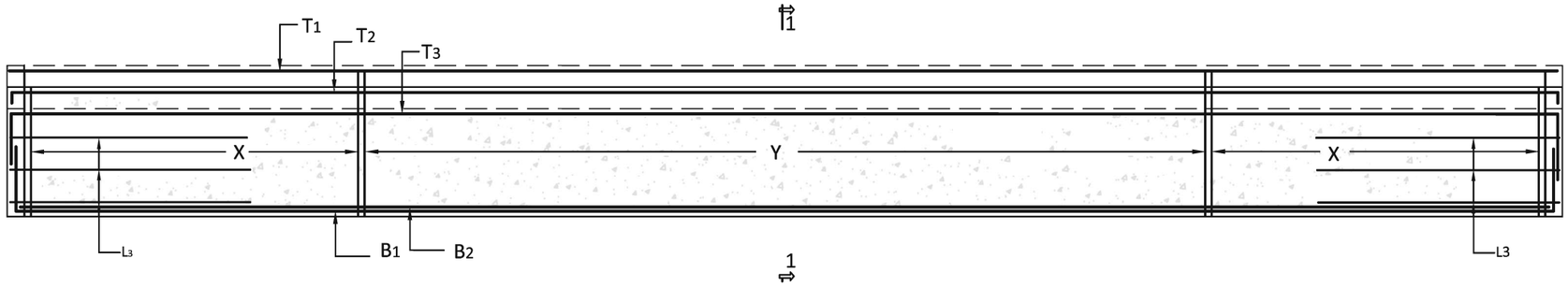
TAJUK LUKISAN :

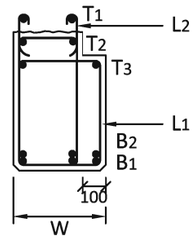
RASUK PRATUANG JENIS L

DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BL–4060/BL 06



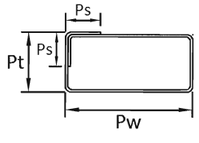


Section 1-1

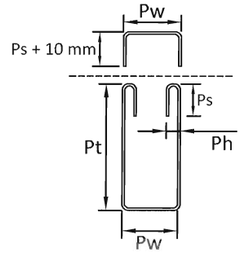
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	400	300	700	600	500		100	

Concrete Grade (N/mm^2)	Precast	In-situ	Lap Length
	35	35	0.25L

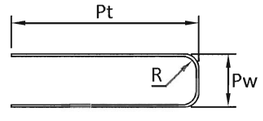
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BL-4070-4027	400	279	2 T 20	2 T 20	2 T 20	4 T 20	4 T 16	-	T10 - 300	T10 - 300	3T12@150c/c
BL-4070-5033	500	337	2 T 20	2 T 20	2 T 20	4 T 20	4 T 20	-	T10 - 250	T10 - 300	3T16@150c/c
BL-4070-6037	600	376	2 T 20	2 T 20	2 T 20	4 T 25	4 T 16	-	T10 - 250	T10 - 300	3T16@150c/c
BL-4070-7039	700	390	2 T 20	2 T 20	2 T 20	4 T 25	4 T 20	-	T10 - 200	T10 - 300	3T16@150c/c
BL-4070-8044	800	445	2 T 20	2 T 20	2 T 20	4 T 32	2 T 20	-	T10 - 200	T10 - 300	3T16@150c/c
BL-4070-9050	900	503	2 T 20	2 T 20	2 T 20	4 T 32	4 T 20	-	T10 - 150	T10 - 300	3T16@150c/c
BL-4070-1052	1050	525	2 T 20	2 T 20	2 T 20	4 T 32	3 T 32	-	T10 - 150	T10 - 250	3T16@150c/c
BL-4070-1260	1200	604	2 T 20	2 T 20	2 T 20	4 T 32	4 T 32	-	T10 - 100	T10 - 250	3T20@150c/c



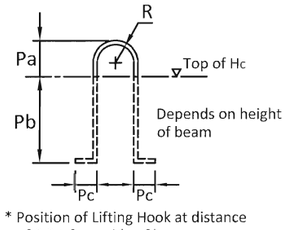
L1



L2



L3



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

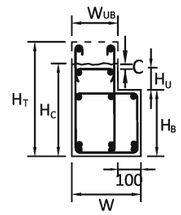
Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
450	350	150	-	2 Ø	650	250	80	40	2 Ø	800	330	-	-	6 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	450	100	60	T20

CODE OF COMPONENTS

B L - 4 0 7 0 - 4 0 2 7

- Types of Beam (Beam L Shape)
- Width of Breadth W (400 mm)
- Total Height, H_T (700 mm)
- Moment Capacity, Mu (400 kNm)
- Shear Capacity, Vu (279 kN)



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: KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK : Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN : Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) : Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH : MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK : KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

DISEMAK : TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :

LUKISAN PIAWAI KOMPONEN STRUKTUR IBS BAGI BANGUNAN

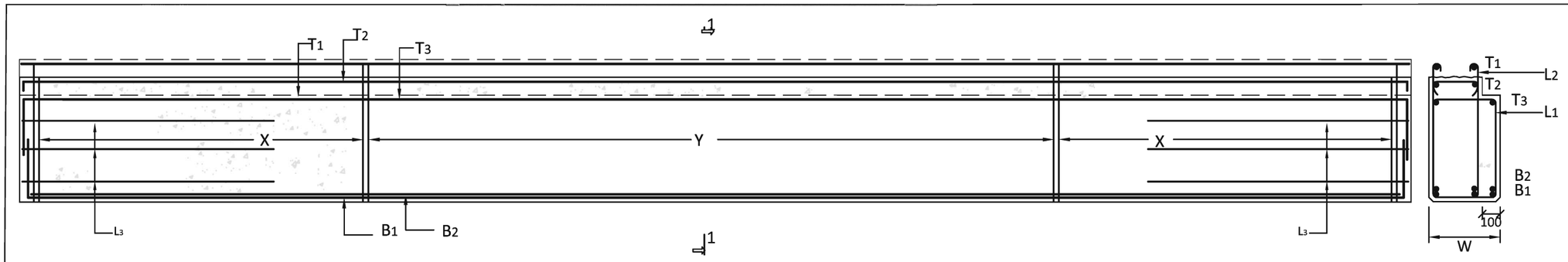
TAJUK LUKISAN :

RASUK PRATUANG JENIS L

DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

NO. LUKISAN : JKR/CKAS/P-IBS/PEL 15/BL-4070/BL 07

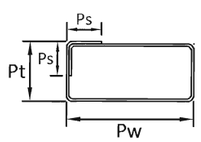


Section 1-1

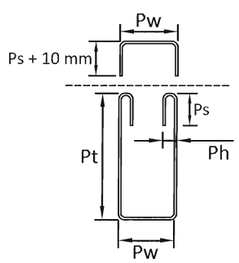
Beam Size (mm)	W	W_{UB}	H_T	H_C	H_{BR}	H_{BL}	H_{UR}	H_{UL}
	400	300	800	700	600		100	

Concrete Grade (N/mm^2)	Precast	In-situ	Lap length
	35	35	0.25L

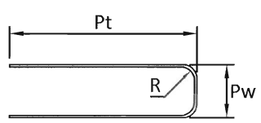
Designation	Mu (kNm)	Vu (kN)	Top Reinforcement			Bottom Reinforcement			Links		
			T_1	T_2	T_3	B_1	B_2	B_3	X L_1 & L_2	Y L_1 & L_2	L_3
BL-4080-5533	550	335	2T25	2T25	2T25	4T20	4T16	-	T10-300	T10-300	3T16@200c/c
BL-4080-6036	600	364	2T25	2T25	2T25	4T20	3T20	-	T10-300	T10-300	3T16@200c/c
BL-4080-7042	700	427	2T25	2T25	2T25	4T25	3T16	-	T10-250	T10-300	3T16@200c/c
BL-4080-8044	800	448	2T25	2T25	2T25	4T25	4T20	-	T10-200	T10-300	3T16@200c/c
BL-4080-9050	900	501	2T25	2T25	2T25	4T32	4T12	-	T10-200	T10-300	3T16@200c/c
BL-4080-10049	1000	495	2T25	2T25	2T25	4T32	4T16	-	T10-200	T10-250	3T16@200c/c
BL-4080-12361	1230	611	2T25	2T25	2T25	4T32	4T25	-	T10-150	T10-250	4T16@100c/c



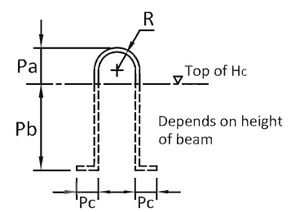
L1



L2



L3



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

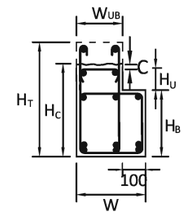
Link (L_1)					Link (L_2)					Shear Friction Steel (L_3)				
Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R	Pt	Pw	Ps	Ph	R
550	350	150	-	2 Ø	750	250	80	40	2 Ø	800	330	-	-	6 Ø

Lifting Hook				
Pa	Pb	Pc	R	øBar
120	450	100	60	T20

CODE OF COMPONENTS

BL-4080-5533

- Shear Capacity, Vu (335 kN)
- Moment Capacity, Mu (550 kNm)
- Total Height, H_T (800 mm)
- Width of Breadth W (400 mm)
- Types of Beam (Beam L Shape)



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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
KHADIJAH BINTI ABDUL RAZAK / BERNARD TOIDES

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN
A	LUKISAN INI DISALIN DAN DISEMAK DARI LUKISAN BERTARIKH JUN 2010		

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

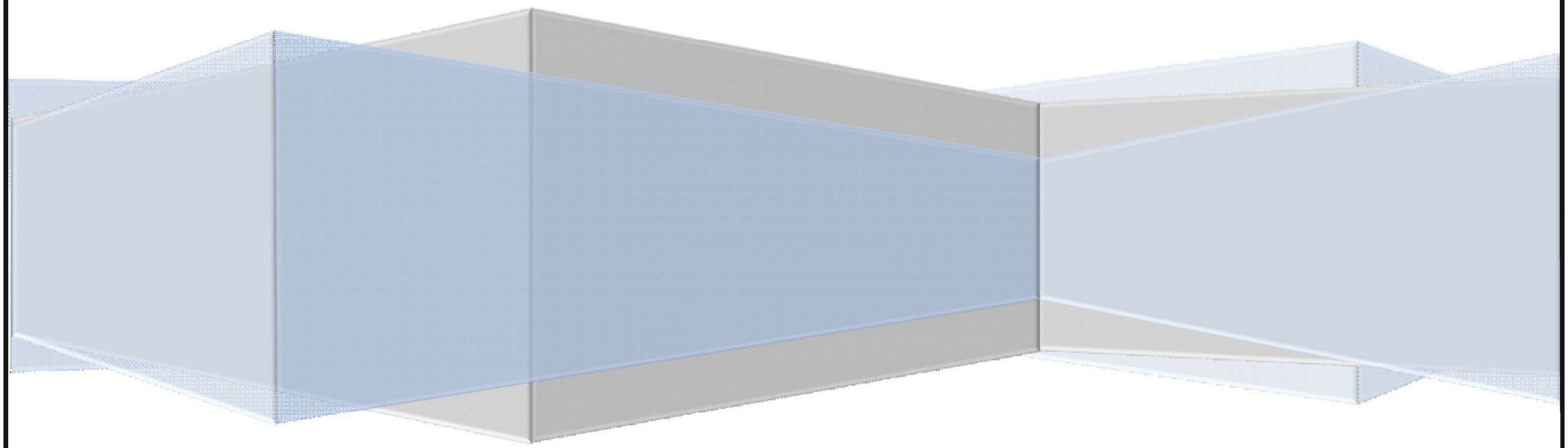
RASUK PRATUANG JENIS L

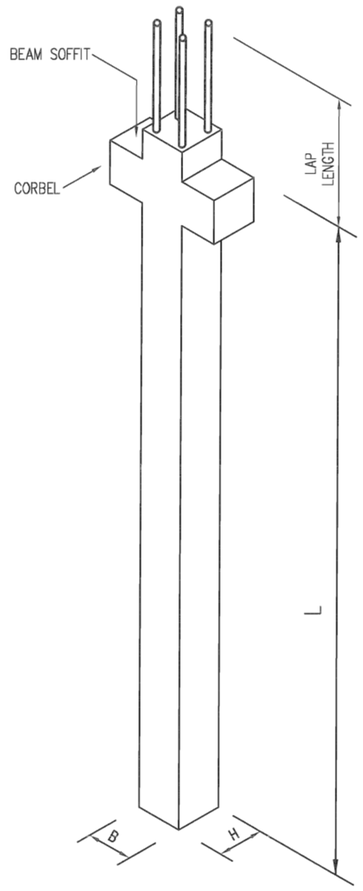
DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

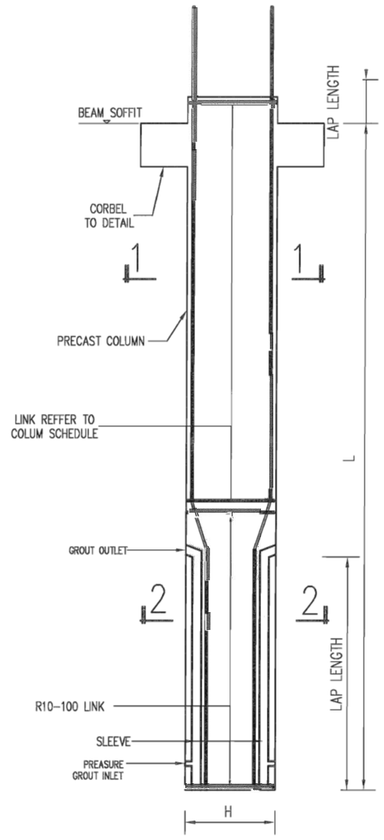
NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/BL–4080/BL 08

PRECAST COLUMN

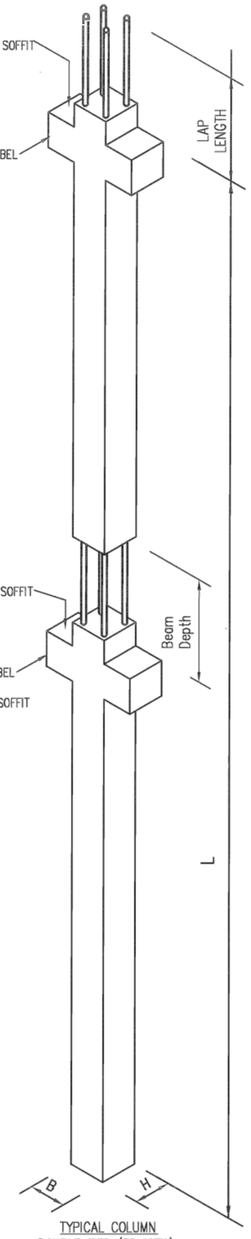




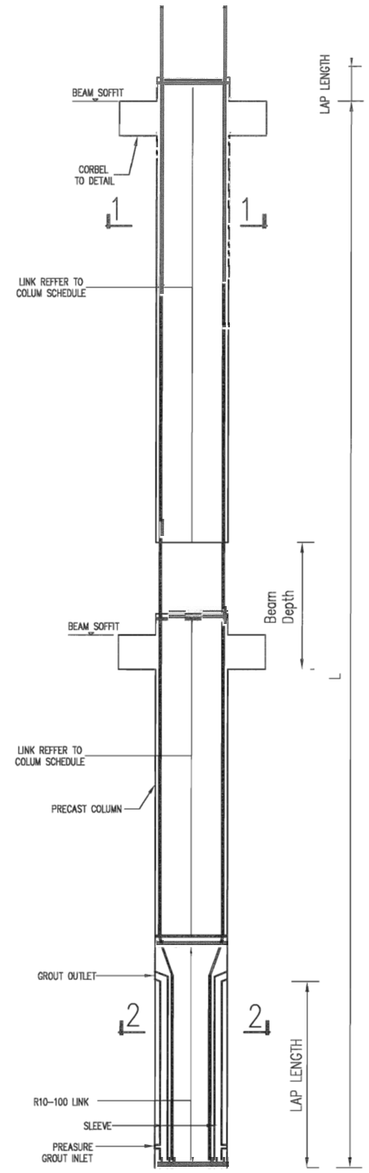
TYPICAL COLUMN
SINGLE TIER (3D VIEW)



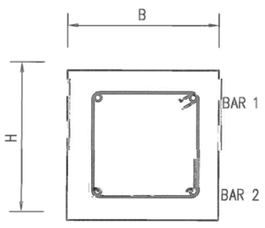
TYPICAL COLUMN
(ELEVATION-DOUBLE TIER)



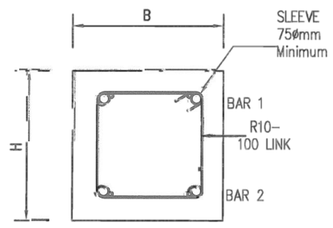
TYPICAL COLUMN
DOUBLE TIER (3D VIEW)



TYPICAL COLUMN
(ELEVATION-DOUBLE TIER)

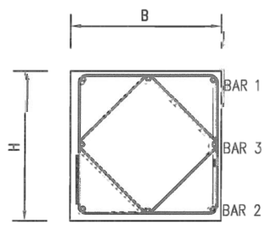


SECTION 1-1

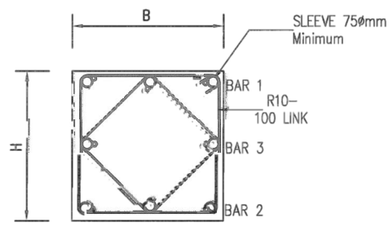


SECTION 2-2

TYPE A(MAIN REINFORCEMENT =4 NOS)



SECTION 1-1



SECTION 2-2

TYPE B(MAIN REINFORCEMENT =8 NOS)

TYPICAL SECTION OF BARS & LINKS ARRANGEMENT

LAP SCHEDULE

REINFORCEMENT BAR SIZE (mm)	LAP LENGTH (mm)
12	500
16	650
20	800
25	1000
32	1300

CODE OF COMPONENTS

CS-3030-A16

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

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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

KETUA PENOLONG PENGARAH KANAN :
IR. MOHD AZHARI BIN MOHD SALLEH

PENOLONG PENGARAH KANAN :
-

DIREKABENTUK :
GAN

DISEMAK :
GAN

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

PRECAST SQUARE COLUMN

DILUKIS : YAZID

TARIKH : APRIL 2016 | SKALA : N.T.S

NO. LUKISAN :
JKR/ CKAS/P- IBS/PRL 15/CS/CS 01

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)	Mxf OR Myf (kNm)					
CS-3030-A16	2.16	630	59	2T16	2T16	–	R10-175	A
		1000	55					
		1400	36					
CS-3030-A20		630	62	2T20	2T20	–	R10-225	A
		1000	59					
		1500	41					
CS-3030-A25		630	67	2T25	2T25	–	R10-250	A
		1000	65					
		1500	53					
		1800	38					
CS-3535-A16	2.94	850	97	2T16	2T16	–	R10-175	A
		1000	97					
		1500	83					
		1800	59					
CS-3535-A20		850	105	2T20	2T20	–	R10-225	A
		1000	104					
		1500	93					
		1900	67					
CS-3535-A25		850	117	2T25	2T25	–	R10-300	A
		1000	116					
		1500	106					
		2100	65					
CS-4040-A16	3.84	1100	148	2T16	2T16	–	R10-175	A
		2000	116					
		2200	85					
CS-4040-A20		1100	161	2T20	2T20	–	R10-225	A
		2000	133					
		2400	82					
CS-4040-A20		1100	181	2T25	2T25	–	R10-250	A
		2000	156					
		2500	116					
CS-4545-A20	4.86	1400	230	2T20	2T20	–	R10-225	A
		2000	217					
		2900	124					
CS-4545-A25		1400	259	2T25	2T25	–	R10-250	A
		2000	244					
		3000	163					
CS-4545-A32		1400	311	2T32	2T32	–	R10-250	A
		2000	292					
		3400	166					
CS-5050-A20	6.00	1750	313	2T20	2T20	–	R10-225	A
		2000	309					
		3000	248					
CS-5050-A25		1750	352	2T25	2T25	–	R10-250	A
		2000	346					
		3000	286					
		3400	229					
CS-5050-A32		1750	421	2T32	2T32	–	R10-250	A
		2000	412					
		3000	351					
		3500	235					

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)	Mxf OR Myf (kNm)					
CS-5555-A20	7.26	1750	400	3T20	3T20	–	3R10-225	A
		2000	452					
		3000	277					
CS-5555-B25		2100	560	3T25	3T25	2T25	3R10-250	B
		3000	500					
		4000	382					
		5000	190					
CS-5555-B32		2100	710	3T32	3T32	2T32	3R10-250	B
		3000	649					
		4000	515					
		5000	345					
		5500	243					
CS-6060-B20	8.64	2500	595	3T20	3T20	2T20	3R10-250	B
		3000	590					
		4000	490					
		5000	330					
		5200	290					
CS-6060-B25		2500	694	3T25	3T25	2T25	3R10-225	B
		3000	683					
		4000	570					
		5000	415					
		5500	310					
CS-6060-B32		2500	860	3T32	3T32	2T32	3R10-250	B
		3000	844					
		4000	720					
		5000	560					
		6000	366					
CS-6565-B20	10.14	3000	730	3T20	3T20	2T20	3R10-225	B
		4000	680					
		5000	550					
		6000	360					
CS-6565-B25		3000	830	3T25	3T25	2T25	3R10-250	B
		4000	780					
		5000	640					
		6000	460					
		6500	340					
CS-6565-B32		3000	1020	3T32	3T32	2T32	3R10-250	B
		4000	950					
		5000	800					
		6000	820					
		7000	400					
CS-7070-B20	11.76	3400	950	3T20	3T20	2T20	3R10-225	B
		4000	940					
		5000	850					
		6000	690					
		7000	480					
CS-7070-B25		3400	1100	3T25	3T25	2T25	3R10-225	B
		5000	980					
		6000	820					
		7000	620					
		8000	350					
CS-7070-B32		3400	1380	3T32	3T32	2T32	3R10-225	B
		6000	1060					
		7000	860					
		8000	620					
		9000	330					

NOTE: –

Mxf = MAXIMUM MOMENT CAPACITY DURING FINAL STAGE DESIGN IN X DIRECTION
Myf = MAXIMUM MOMENT CAPACITY DURING FINAL STAGE DESIGN IN Y DIRECTION
Nf = MAXIMUM AXIAL LOAD DURING FINAL STAGE DESIGN.

#FORCES GIVEN IN THE TABLE REFER TO THE FINAL MOMENT AND AXIAL LOAD

CODE OF COMPONENTS

CS-3030-A16

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

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:
KAMALUDDIIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

KETUA PENOLONG PENGARAH KANAN :
IR. MOHD AZHARI BIN MOHD SALLEH

PENOLONG PENGARAH KANAN :
–

DIREKABENTUK :
GAN

DISEMAK :
GAN

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

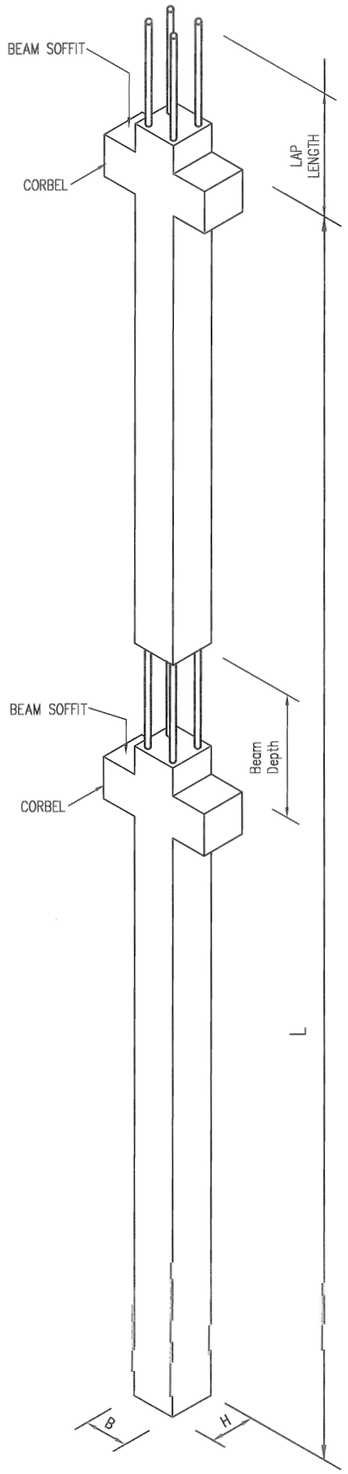
TAJUK LUKISAN :

TABLE 1 –
PRECAST SQUARE COLUMN

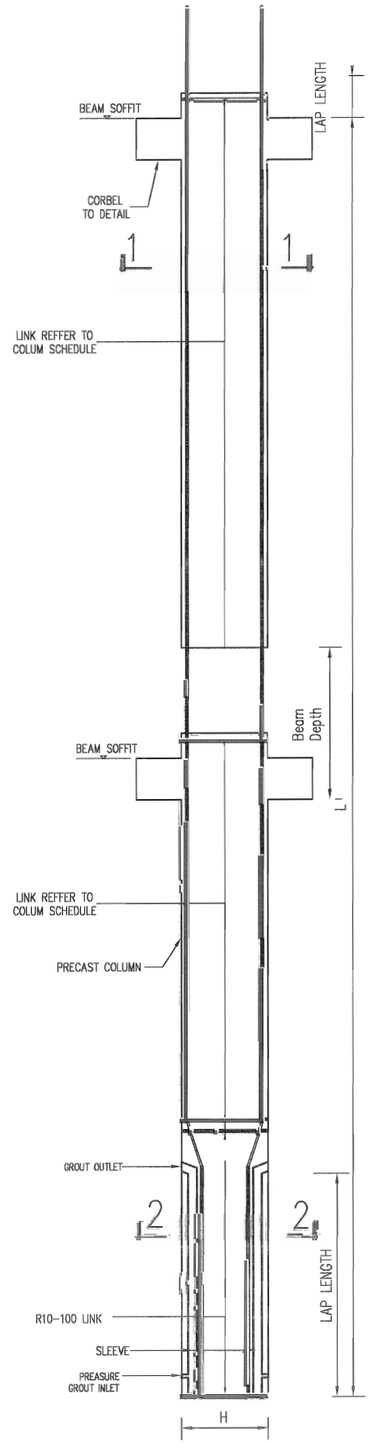
DILUKIS : YAZID

TARIKH : APRIL 2016 | SKALA : N.T.S

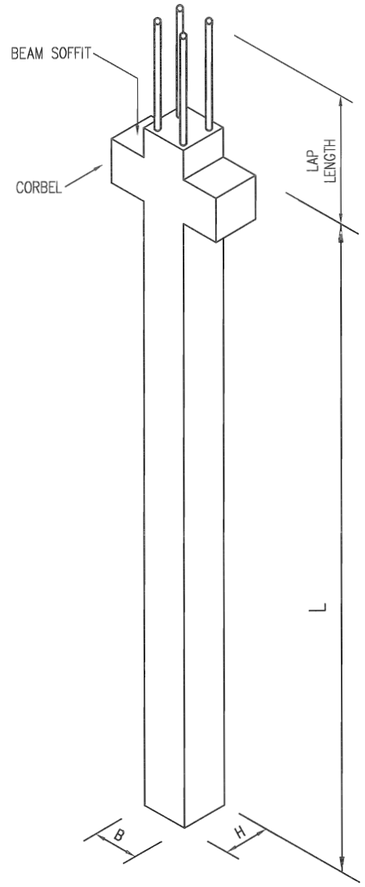
NO. LUKISAN :
JKR/ CKAS/P- IBS/PEL 15/CS/CS 02



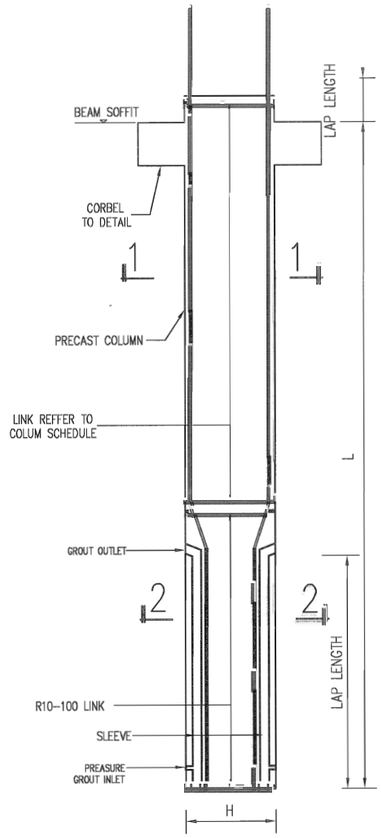
TYPICAL COLUMN
DOUBLE TIER (3D VIEW)



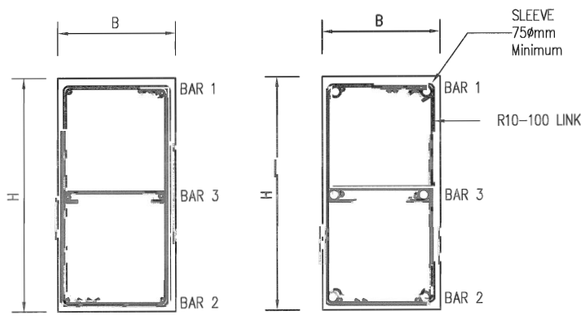
TYPICAL COLUMN
(ELEVATION-DOUBLE TIER)



TYPICAL COLUMN
SINGLE TIER (3D VIEW)



TYPICAL COLUMN
(ELEVATION-DOUBLE TIER)



SECTION 1-1 SECTION 2-2

TYPE C(MAIN REINFORCEMENT =6 NOS)

TYPICAL SECTION OF BARS & LINKS ARRANGEMENT

LAP SCHEDULE

REINFORCEMENT BAR SIZE (mm)	LAP LENGTH (mm)
12	500
16	650
20	800
25	1000
32	1300

CODE OF COMPONENTS

CR-3060-C16

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

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: KAMALUDDIN BIN ABDUL RASHID
PENGARAH KHIDMAT REKABENTUK : Ir. MUHAMMAD AZMAN BIN JAMRUS
PENGARAH KHIDMAT PAKAR DAN PENGURUSAN : Ir. HJH. NORMA BINTI NORMAN
KETUA PENOLONG PENGARAH KANAN : IR. MOHD AZHARI BIN MOHD SALLEH
PENOLONG PENGARAH KANAN : -
DIREKABENTUK : GAN
DISEMAK : GAN

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PIAWAI KOMPONEN STRUKTUR IBS BAGI BANGUNAN

TAJUK LUKISAN :
PRECAST RECTANGULAR COLUMN

DILUKIS : YAZID
TARIKH : APRIL 2016
SKALA : N.T.S

NO. LUKISAN :
KR/TKS/P- BS/FL 15/PR 01

TABLE 2
PRECAST RECTANGULAR COLUMN

CODE OF COMPONENT	SIZE	APPOX SELFWEIGHT (PRECAST)	FINAL STAGE DESIGN		REINFORCEMENT DETAIL				TYPE
			MAX AXIAL LOAD	MAX MOMENT	BAR 1	BAR 2	BAR 3	LINKS	C
	(mm)	kN/m	Nf (kN)	Mxf OR Myf (kNm)					
CR-3060-C16	300 x 600	4.32	1200	280	2T16	2T16	2T16	2R10-175	C
			1500	285					
			2000	230					
			2400	160					
CR-3060-C20			1300	330	2T20	2T20	2T20	2R10-225	C
			1500	320					
			2000	270					
			2800	120					
CR-3060-C25			1300	390	2T25	2T25	2T25	2R10-300	C
			1500	380					
			2000	320					
			2500	240					
			3000	140					
CR-4060-C20	400 x 600	5.76	1700	380	2T20	2T20	2T20	2R10-225	C
			2000	390					
			3000	280					
			3500	180					
CR-4060-C25			1700	460	2T25	2T25	2T25	2R10-300	C
			2000	450					
			3000	330					
			3800	170					
CR-4060-C32			1700	570	2T32	2T32	2T32	2R10-300	C
			2000	560					
			3000	430					
			3900	260					
			4300	170					
CR-4080-C25	400 x 800	7.68	2300	750	2T25	2T25	2T25	3R10-250	C
			3000	710					
			4000	540					
			5200	190					
CR-4080-C32			2300	920	2T32	2T32	2T32	3R10-250	C
			3000	860					
			4000	670					
			5000	420					

NOTE:-

Mxf = MAXIMUM MOMENT CAPACITY DURING FINAL STAGE DESIGN IN X DIRECTION
Myf = MAXIMUM MOMENT CAPACITY DURING FINAL STAGE DESIGN IN Y DIRECTION
Nf = MAXIMUM AXIAL LOAD DURING FINAL STAGE DESIGN.

#FORCES GIVEN IN THE TABLE REFER TO THE FINAL MOMENT AND AXIAL LOAD

CODE OF COMPONENTS

CR-3060-C16

- 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
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:
KAMALUDDIIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

KETUA PENOLONG PENGARAH KANAN :
IR. MOHD AZHARI BIN MOHD SALLEH

PENOLONG PENGARAH KANAN :
-

DIREKABENTUK :
GAN

DISEMAK :
GAN

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

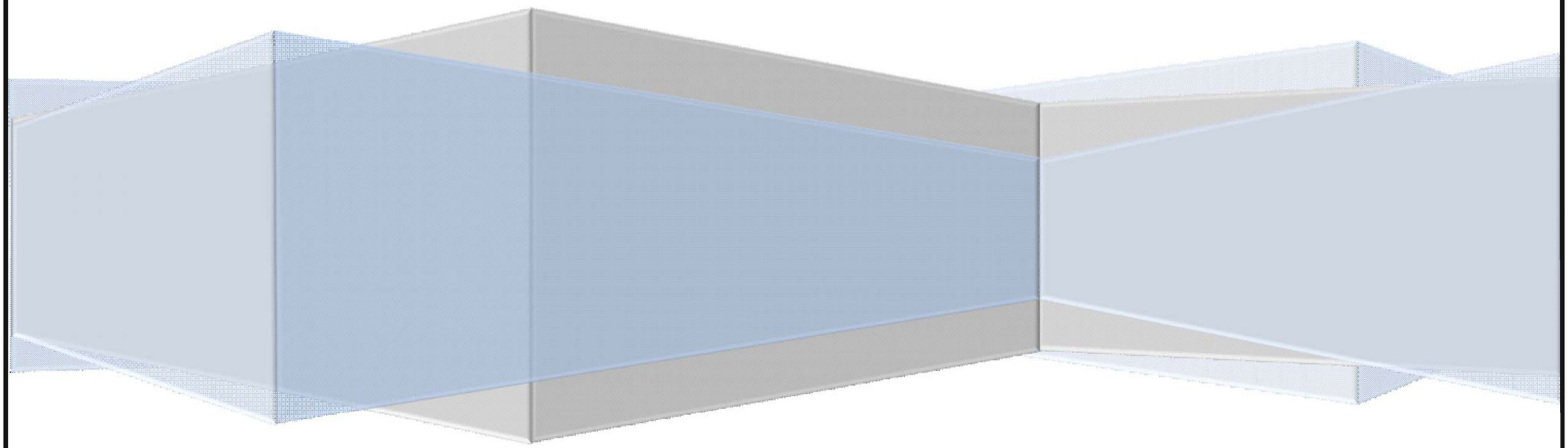
TABLE 2 -
PRECAST RECTANGULAR
COLUMN

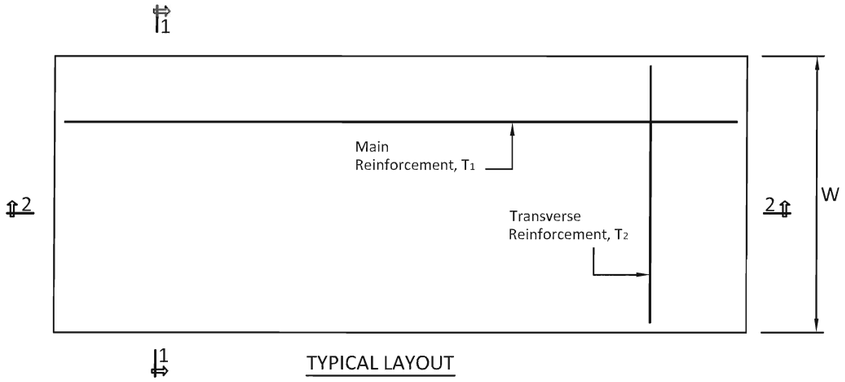
DILUKIS : YAZID

TARIKH : APRIL 2016 | SKALA : N.T.S

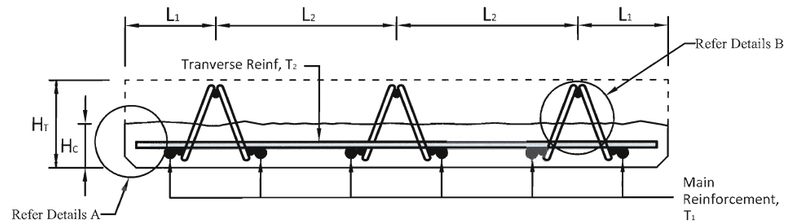
NO. LUKISAN :
JKR/ CKAS/P- IBS/PEL 16/CR/CR 04

PRECAST HALF SLAB

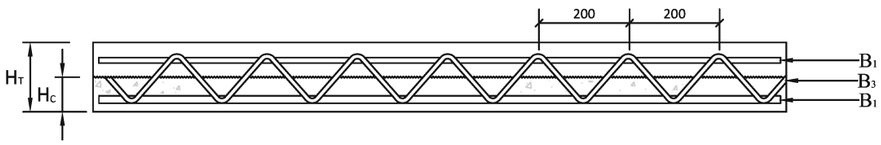




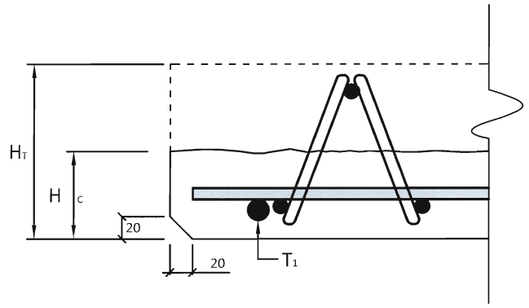
TYPICAL LAYOUT



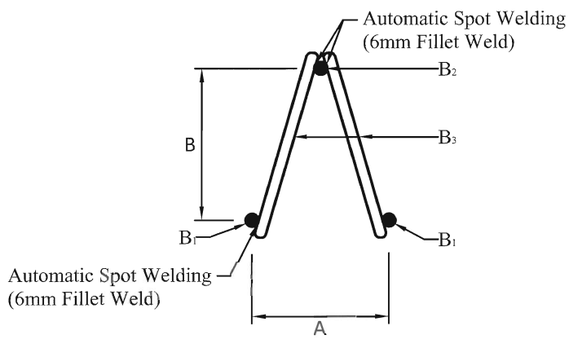
SECTION 1-1



SECTION 2-2



DETAILS A



DETAILS B

Slab Size (mm)	W	H_T	H_C	L_1	L_2	Cover	Concrete Grade (N/mm^2)	Precast	In-situ
	1200	150	75	200	400	25		35	35

Designation	M_{comp} (kNm)	$M_{non\text{-}comp}$ (kNm)	Bar Reinforcement		Lattice Girder				
			T1	T2	A (mm)	B (mm)	Bar, B_1	Bar, B_2	Bar, B_3
HS-1215	16.6	6.6	T10-200	T10-200	100	100	T10	T12	R6
	22.1	8.8	T10-150	T10-200					
	33.2	13.2	T10-100	T10-200					
	23.9	9.5	T12-200	T12-200					
	31.9	12.7	T12-150	T12-200					
	47.8	16.3	T12-100	T12-200					

CODE OF COMPONENTS

HS-1215

- Total Height (**150** mm)
- Width of Slab (**1200** mm)
- Types of Slab (**Half** Slab)

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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
ADI AKMAL BIN ABDUL AZID / JUDITH JULIANUS

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

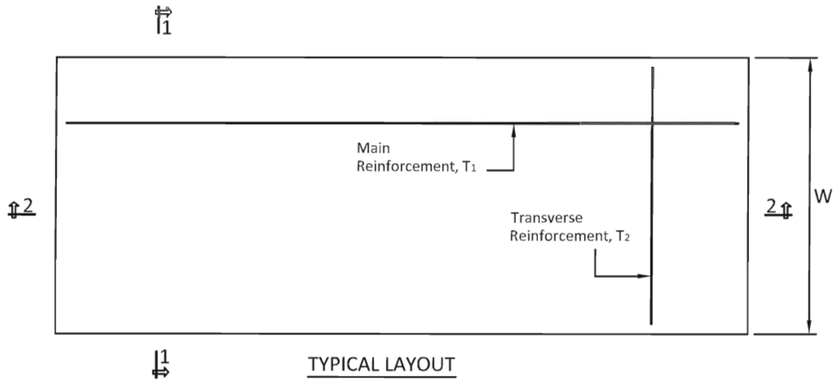
TAJUK LUKISAN :

PAPAK PRATUANG JENIS SEPARA

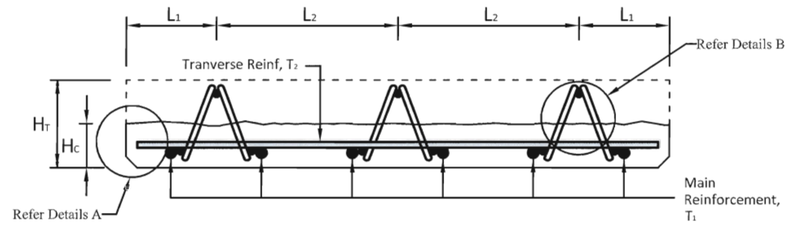
DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 | SKALA : 1:25

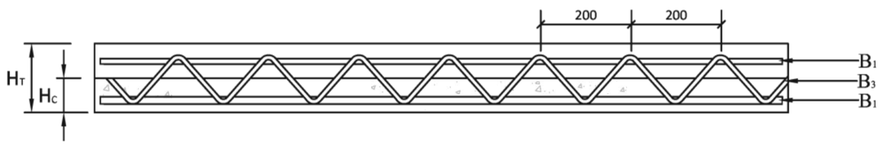
NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/HS–1215/H 01



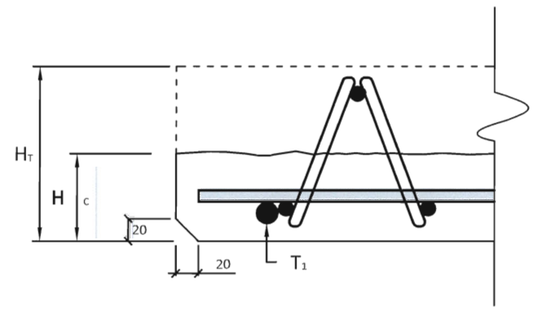
TYPICAL LAYOUT



SECTION 1-1



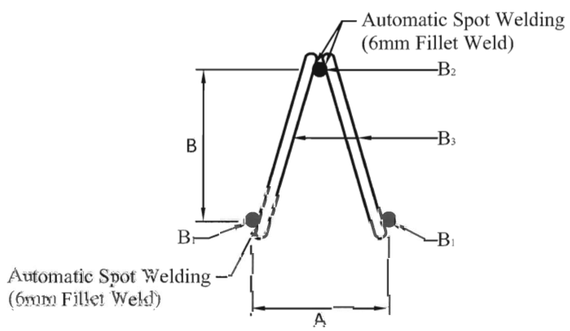
SECTION 2-2



DETAILS A

Slab Size (mm)	W	H_T	H_C	L_1	L_2	Cover	Concrete Grade (N/mm^2)	Precast	In-situ
	1200	200	100	200	400	25		35	35

Designation	M_{comp} (kNm)	$M_{non\text{-}comp}$ (kNm)	Bar Reinforcement		Lattice Girder				
			T1	T2	A (mm)	B (mm)	Bar, B_1	Bar, B_2	Bar, B_3
HS-1220	23.2	9.9	T10-200	T10-200	100	150	T10	T12	R8
	31	13.2	T10-150	T10-200					
	46.5	19.9	T10-100	T10-200					
	33.5	14.3	T12-200	T12-200					
	44.6	19.1	T12-150	T12-200					
	66.9	28.7	T12-100	T12-200					



DETAILS B

CODE OF COMPONENTS

HS-1220

- Types of Slab (**Half** Slab)
- Width of Slab (**1200** mm)
- Total Height (**200** mm)

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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FARUZ BIN MUHAMAD

DREKABENTUK :
ADI AKMAL BIN ABDUL AZID / JUDITH JULIANUS

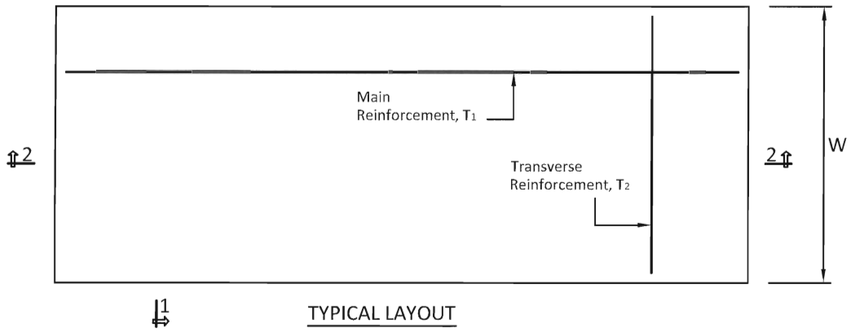
DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

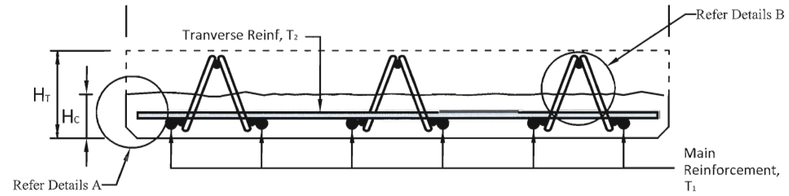
TAJUK PROJEK :
LUKISAN PLAN
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
PAPAK PRATUANG JENIS SEPARA

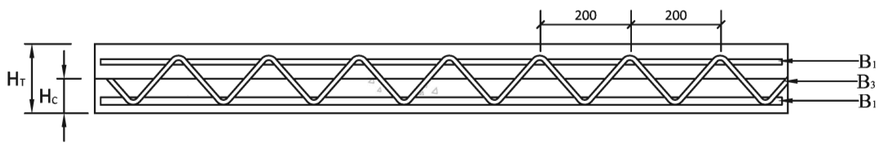
DILUKIS : ADI AKMAL BIN ABDUL AZID
TARIKH : SEPTEMBER 2015 SKALA : 1:25
NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/HS–1220/H 02



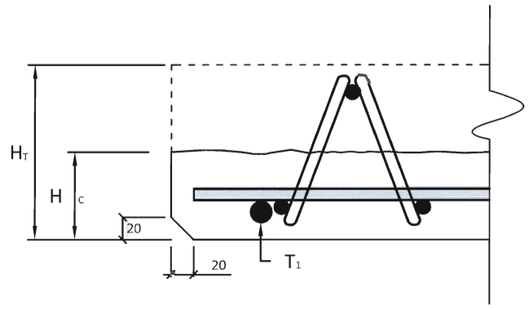
TYPICAL LAYOUT



SECTION 1-1



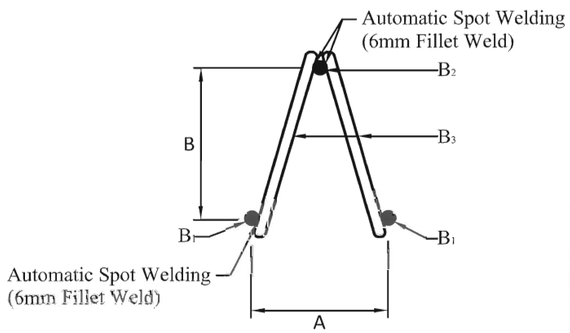
SECTION 2-2



DETAILS A

Slab Size (mm)	W	H_T	H_C	L_1	L_2	Cover	Concrete Grade (N/mm^2)	Precast	In-situ
	1200	250	125	200	400	25		35	35

Designation	M_{comp} (kNm)	$M_{non-comp}$ (kNm)	Bar Reinforcement		Lattice Girder				
			T1	T2	A (mm)	B (mm)	Bar, B_1	Bar, B_2	Bar, B_3
HS-1225	29.9	13.3	T10-200	T10-200	100	200	T10	T12	R8
	39.8	17.7	T10-150	T10-200					
	59.8	26.5	T10-100	T10-200					
	43.1	19.1	T12-200	T12-200					
	57.4	25.5	T12-150	T12-200					
	86.1	38.2	T12-100	T12-200					



DETAILS B

CODE OF COMPONENTS

HS-1225

- Total Height (**250** mm)
- Width of Slab (**1200** mm)
- Types of Slab (**Half** Slab)

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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN (PAKAR FORENSIK) :
Ir. Dr. LIM CHAR CHING

KETUA PENOLONG PENGARAH :
MOHD FAIRUZ BIN MUHAMAD

DIREKABENTUK :
ADI AKMAL BIN ABDUL AZID / JUDITH JULIANUS

DISEMAK :
TENGKU NORMARDZIAH BINTI TUAN MAHMOOD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PLAN
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

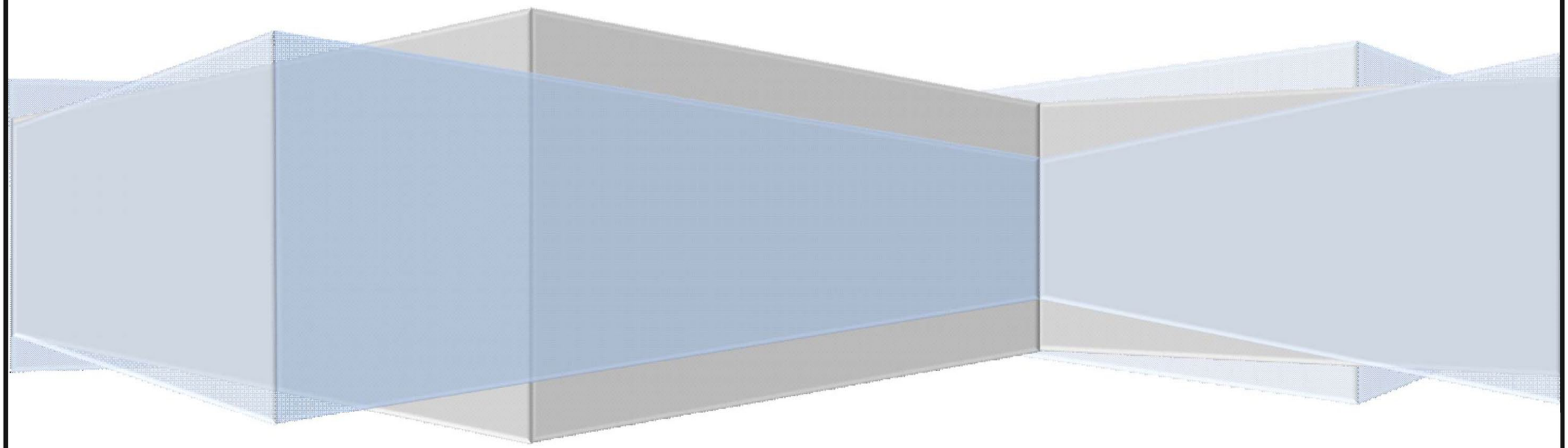
TAJUK LUKISAN :
PAPAK PRATUANG JENIS SEPARA

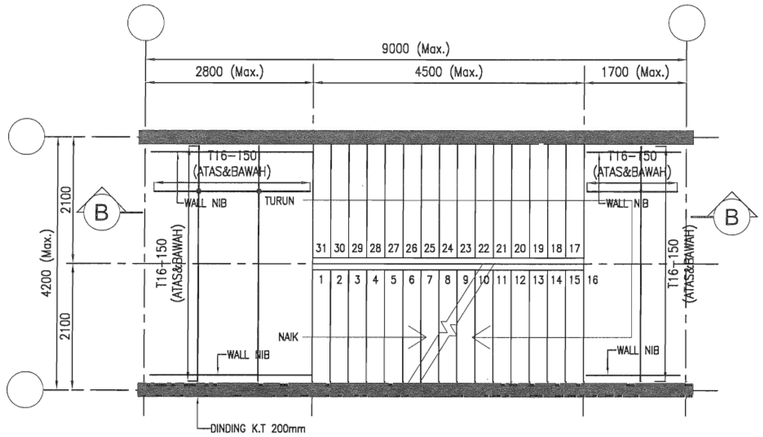
DILUKIS : ADI AKMAL BIN ABDUL AZID

TARIKH : SEPTEMBER 2015 SKALA : 1:25

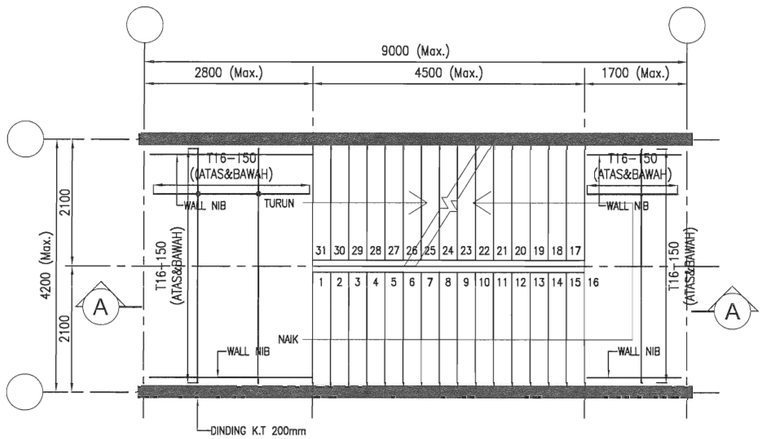
NO. LUKISAN :
JKR/CKAS/P–IBS/PEL 15/HS–1225/H 03

PRECAST STAIRCASE

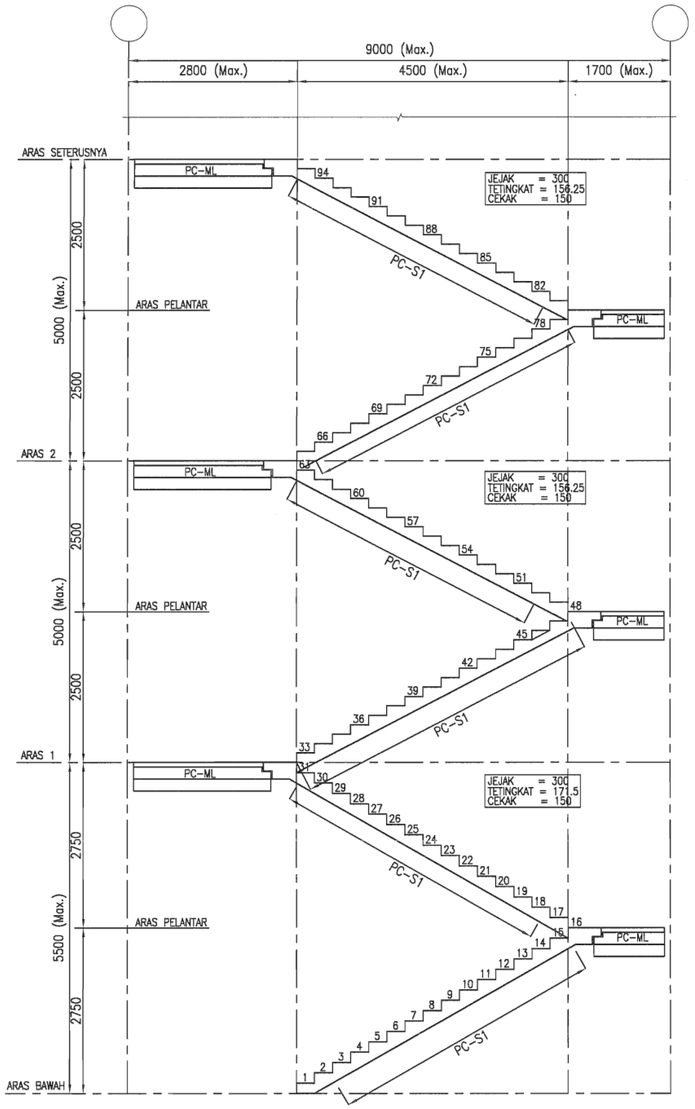




PELAN TANGGA ARAS 1 DAN SETERUSNYA



PELAN TANGGA ARAS BAWAH



KERATAN TANGGA

NOTA:

PC-FL : PAPAK PELANTAR LANTAI PRATUANG (200MM TEBAL DENGAN 75MM 'TOPPING')
PC-ML : PAPAK PELANTAR PRATUANG TENGAH (200MM TEBAL DENGAN 75MM 'TOPPING')
PC-S1 : JEJAK PRATUANG
PC : TIANG PRATUANG

NOTA:

TANGGA PRATUANG DISOKONG OLEH PELANTAR

TANGGA PRATUANG BERADA DI ANTARA DUA DINDING KONKRIT TETULANG.

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 :
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN PAKAR STRUKTUR :
Ir. MOHD NOOR AZUDIN BIN MANSOR

KETUA PENOLONG PENGARAH :
HAFIZAH BINTI ZAKARIA

DIREKABENTUK :
HAFIZAH BINTI ZAKARIA

DISEMAK :

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

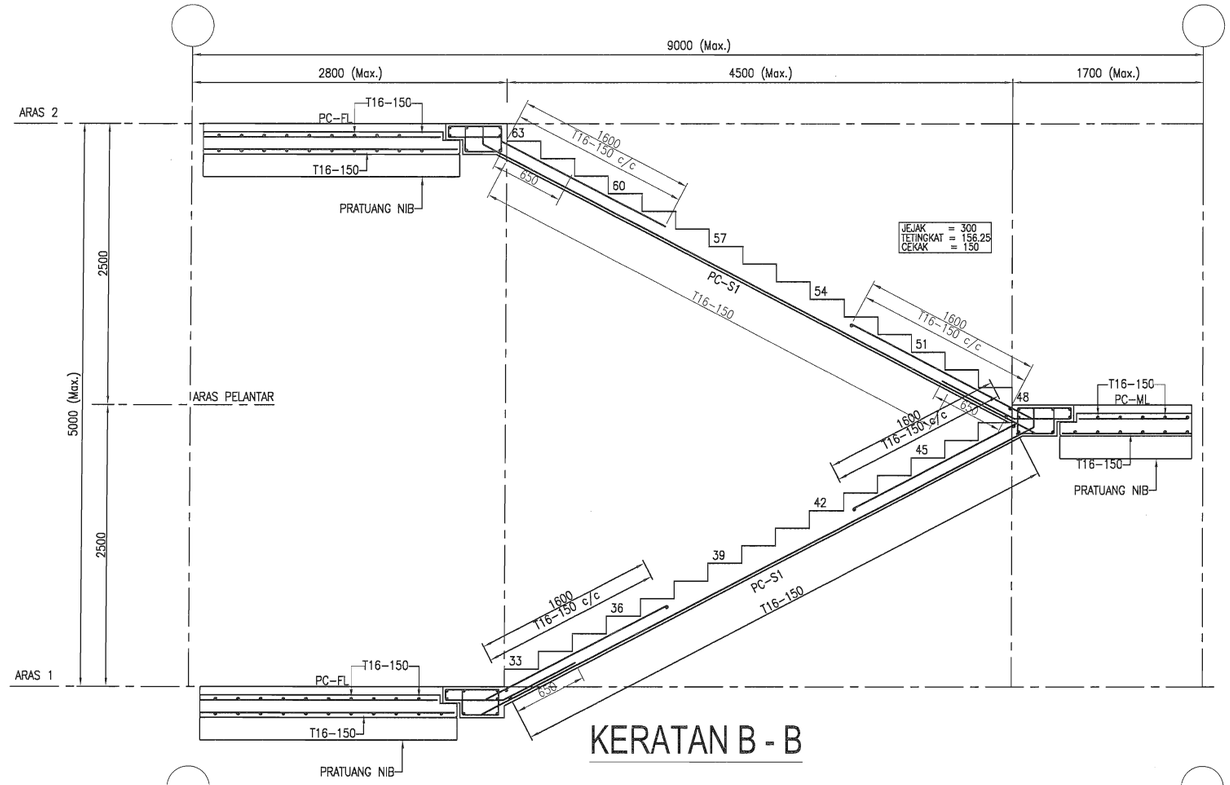
TAJUK LUKISAN :

BUTIRAN
TANGGA PRATUANG
JENIS 1

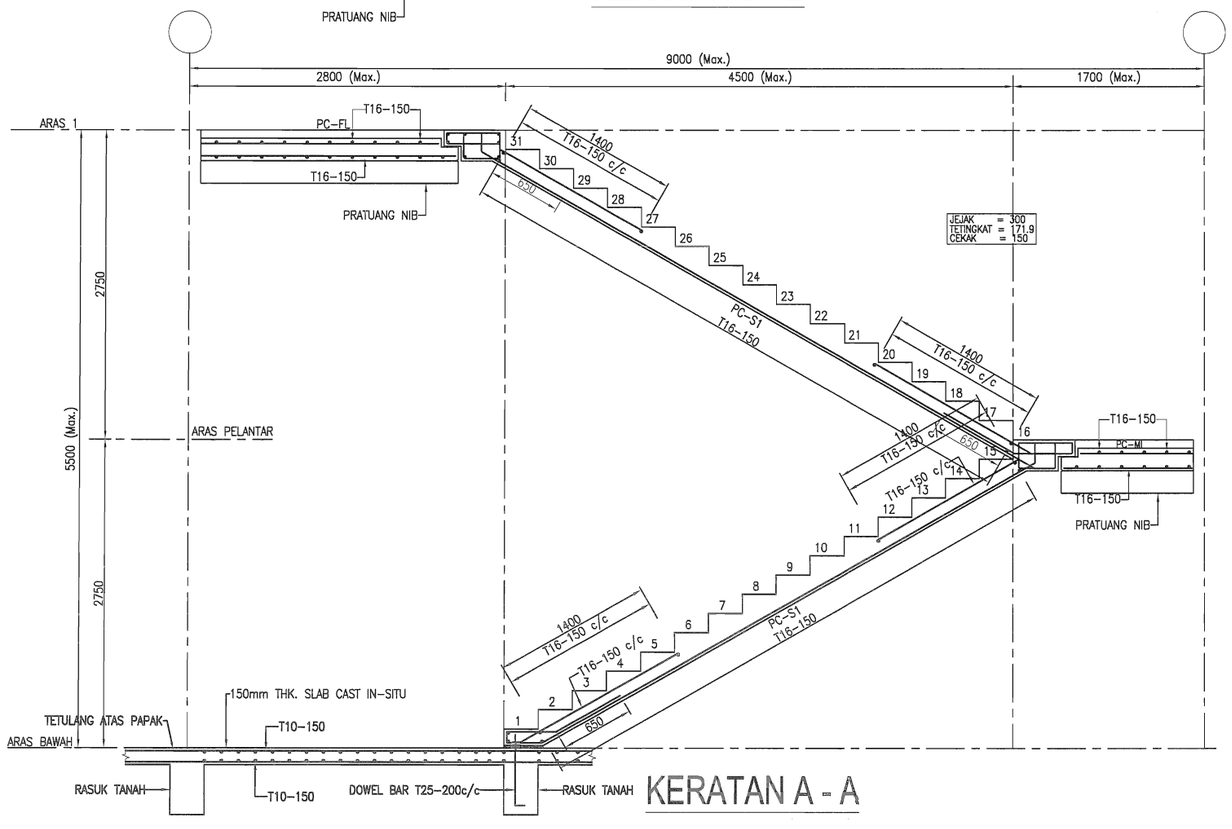
DILUKIS : NORHAFIZA BINTI ZULKIFFLI

TARIKH : APRIL 2016 | SKALA : N.T.S

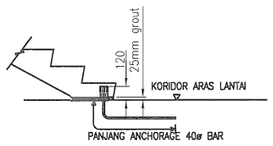
NO. LUKISAN :
JKR.LKAS/P-IBS/PR. 15/ST/ST 01-1



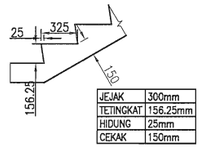
KERATAN B - B



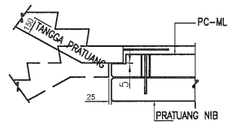
KERATAN A - A



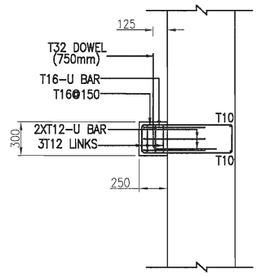
BUTIRAN SAMBUNGAN
TANGGA PRATUANG & RASUK / LANTAI



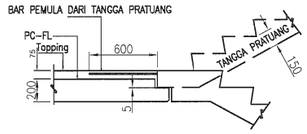
JEJAK	300mm
TETINGKAT	156.25mm
HIDUNG	25mm
CEKAK	150mm



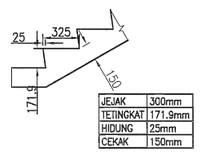
BUTIRAN SAMBUNGAN
TANGGA PRATUANG & PELANTAR



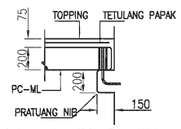
BUTIRAN PERINCIAN NIB



BUTIRAN SAMBUNGAN
TANGGA PRATUANG & LANTAI



JEJAK	300mm
TETINGKAT	171.9mm
HIDUNG	25mm
CEKAK	150mm



BUTIRAN TIPIKAL DINDING PRATUANG NIB
(PANDANGAN SISI)

NOTA:

PC-FL : PAPAK PELANTAR LANTAI PRATUANG (200MM TEBAL DENGAN 75MM 'TOPPING')
PC-ML : PAPAK PELANTAR PRATUANG TENGAH (200MM TEBAL DENGAN 75MM 'TOPPING')
PC-S1 : JEJAK PRATUANG
PB : PRECAST BEAM
PC : TIANG PRATUANG

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 :
KAMALUDDIIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN PAKAR STRUKTUR :
Ir. MOHD NOOR AZUDIN BIN MANSOR

KETUA PENOLONG PENGARAH :
HAFIZAH BINTI ZAKARIA

DIREKABENTUK :
HAFIZAH BINTI ZAKARIA

DISEMAK :

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI KOMPONEN STRUKTUR IBS BAGI BANGUNAN

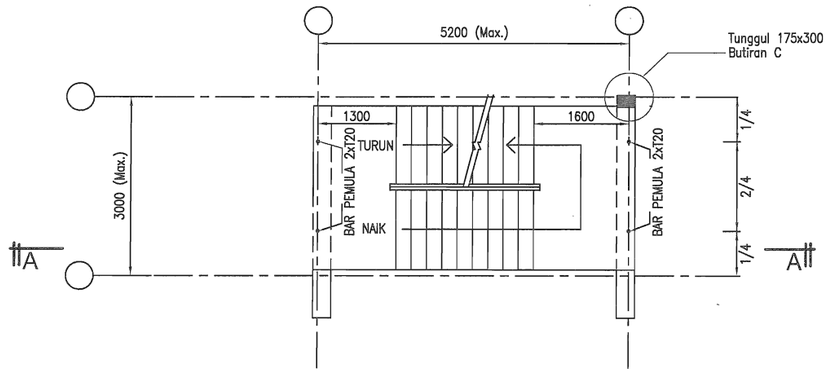
TAJUK LUKISAN :

BUTIRAN TANGGA PRATUANG JENIS 1

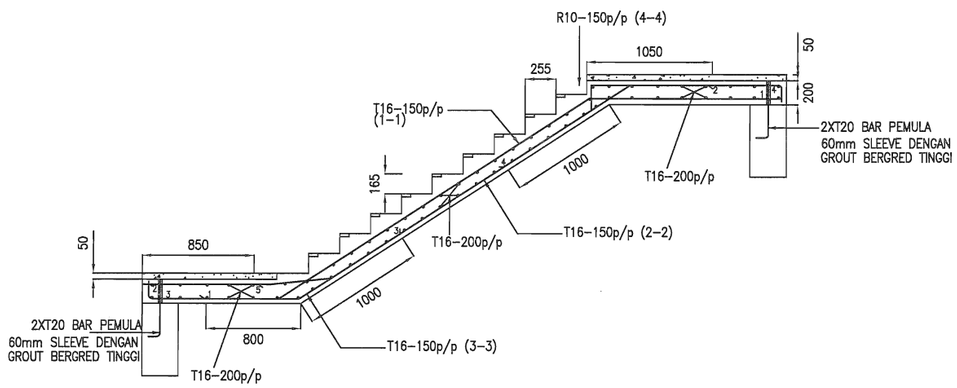
DILUKIS : NORHAFIZA BINTI ZULKIFFLI

TARIKH : APRIL 2016 | SKALA : N.T.S

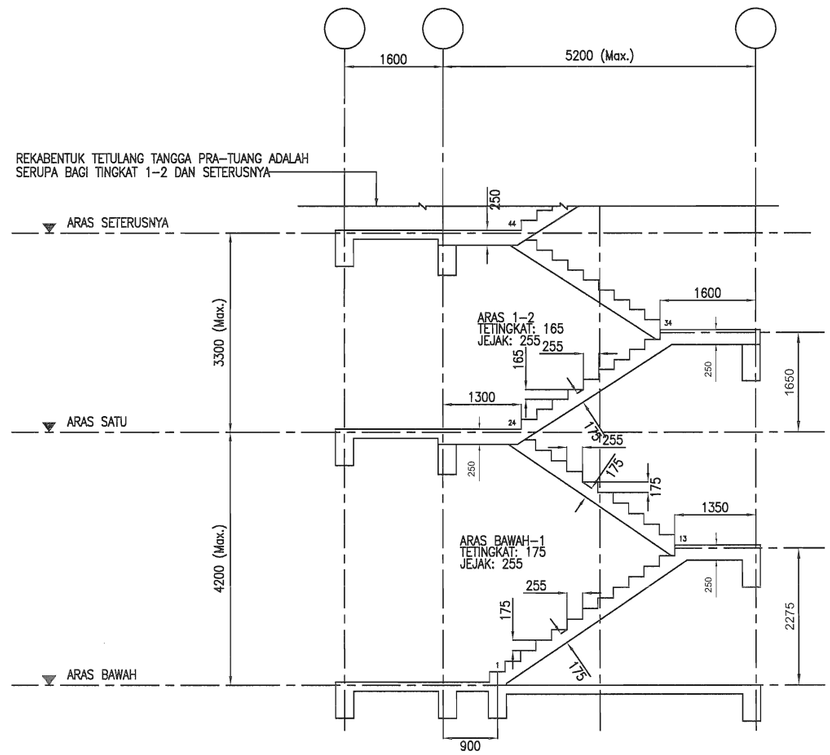
NO. LUKISAN :
JKR.CKAS/P-IBS/PEL 15/ST/ST 01-2



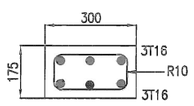
PELAN TANGGA



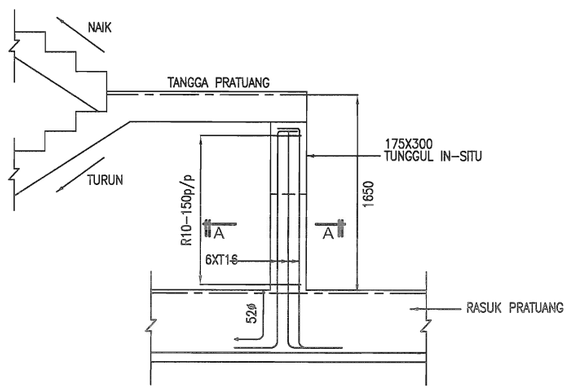
BUTIRAN A: BUTIRAN TETULANG



KERATAN TANGGA



KERATAN A-A



BUTIRAN B: BUTIRAN TETULANG TUNGGUL

NOTA:

TANGGA PRATUANG DI SOKONG OLEH RASUK

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 :
KAMALUDDIIN BIN ABDUL RASHID
PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS
PENGARAH KHIDMAT PAKAR :
Ir. HJH. NORMA BINTI NORMAN
PENGARAH KEJURUTERAAN PAKAR STRUKTUR :
Ir. MOHD NOOR AZUDIN BIN MANSOR
KETUA PENOLONG PENGARAH :
HAFIZAH BINTI ZAKARIA
DIREKABENTUK :
HAFIZAH BINTI ZAKARIA
DISEMAK :

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

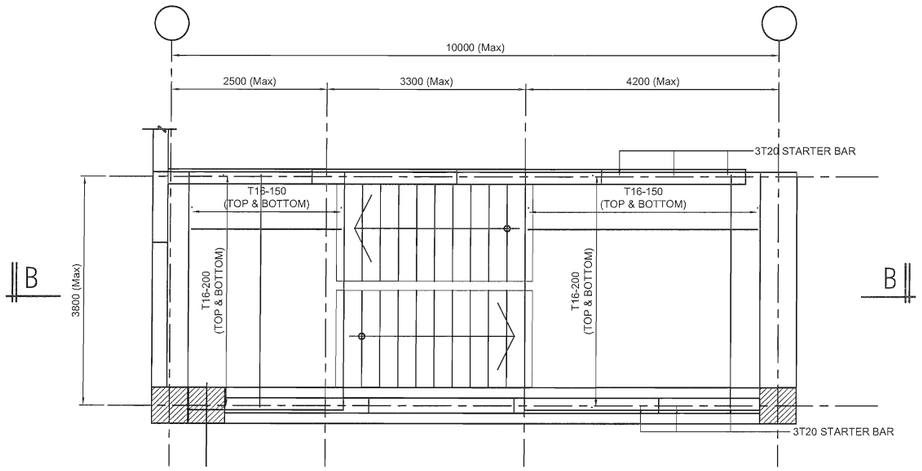
TAJUK LUKISAN :

BUTIRAN
TANGGA PRATUANG
JENIS 2

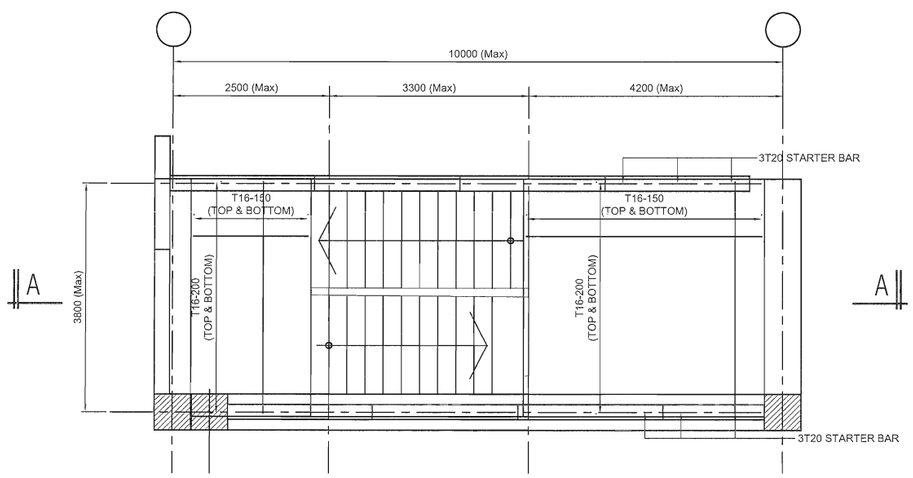
DILUKIS : NORHAFIZA BINTI ZULKIFFLI

TARIKH : APRIL 2016 | SKALA : N.T.S

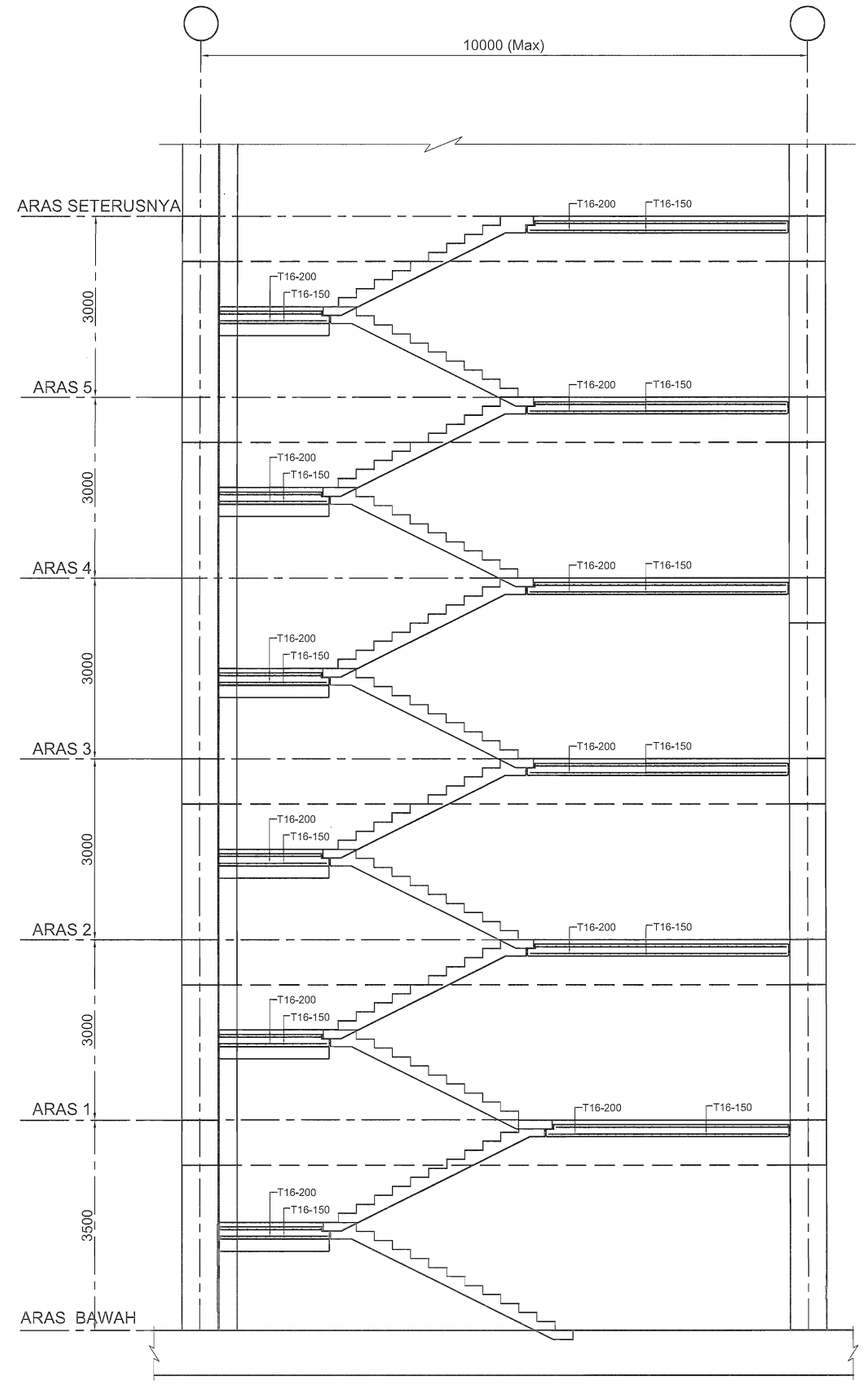
NO. LUKISAN :
JKR/LK/KAS/P–IBS/PEL 15/ST/ST 02



PELAN TANGGA (ARAS 1 DAN SETERUSNYA)



PELAN TANGGA (ARAS BAWAH)



KERATAN TANGGA

NOTA:

TANGGA PRATUANG DI SOKONG OLEH PAPAK PELANTAR

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 :
KAMALUDDIIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN PAKAR STRUKTUR :
Ir. MOHD NOOR AZUDIN BIN MANSOR

KETUA PENOLONG PENGARAH :
HAFIZAH BINTI ZAKARIA

DIREKABENTUK :
HAFIZAH BINTI ZAKARIA

DISEMAK :

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI KOMPONEN STRUKTUR IBS BAGI BANGUNAN

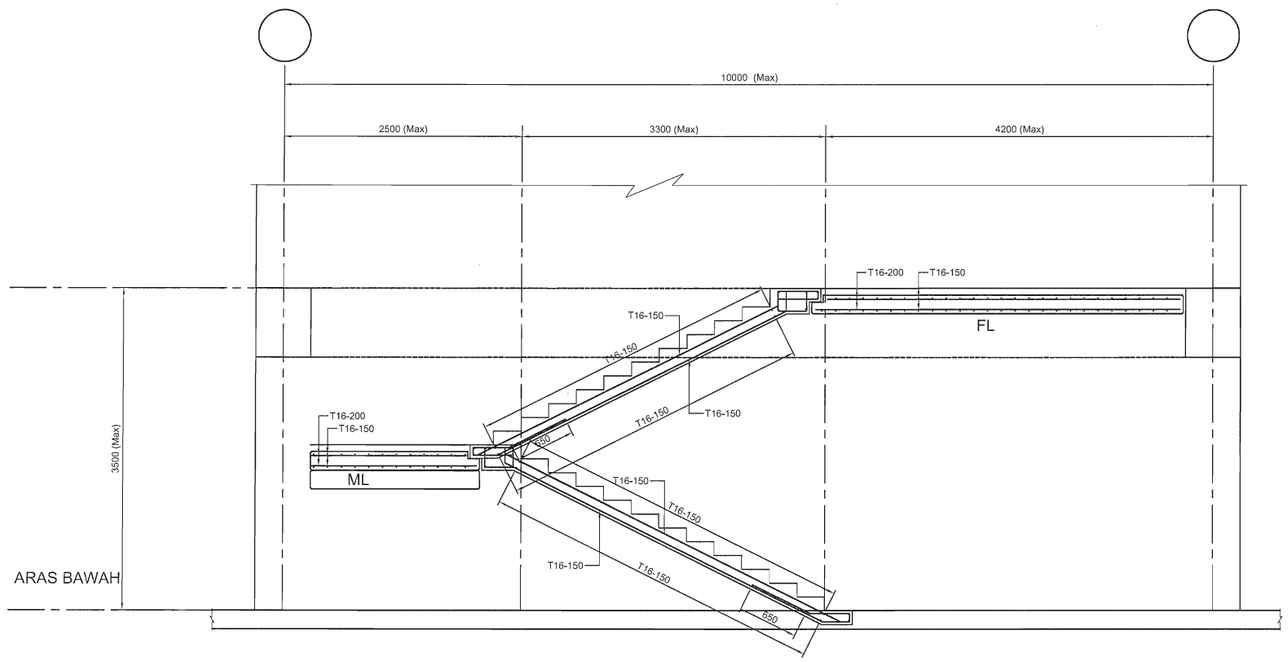
TAJUK LUKISAN :

BUTIRAN TANGGA PRATUANG JENIS 3

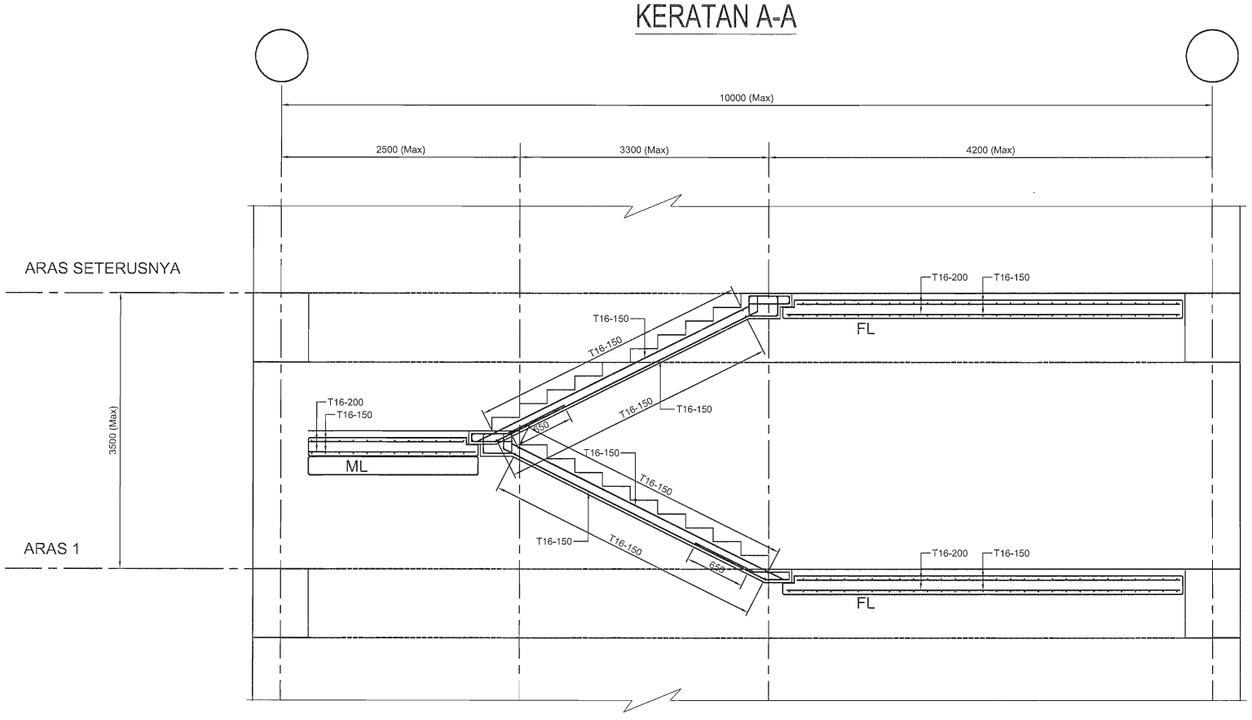
DILUKIS : NORHAFIZA BINTI ZULKIFFLI

TARIKH : APRIL 2016 | SKALA : N.T.S

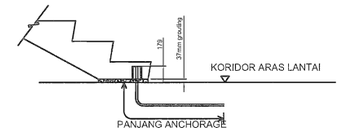
NO. LUKISAN :
JKR.CKAS/P–IBS/PEL 15/ST/ST 03–1



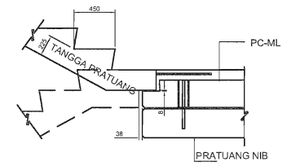
KERATAN A-A



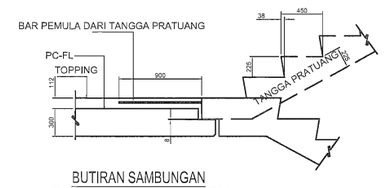
KERATAN B-B



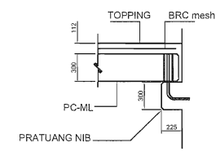
BUTIRAN SAMBUNGAN
TANGGA PRATUANG & RASUK / LANTAI



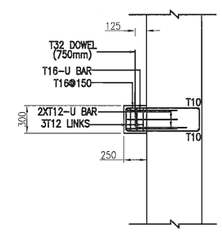
BUTIRAN SAMBUNGAN
TANGGA PRATUANG & PELANTAR



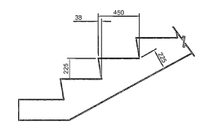
BUTIRAN SAMBUNGAN
TANGGA PRATUANG & LANTAI



BUTIRAN TIPIKAL DINDING PRATUANG NIB
(PANDANGAN SISI)



BUTIRAN PERINCIAN NIB



TETINGKAT	150mm
JEJAK	300mm
HIDUNG	25mm
CEKAK	150mm

NOTA:

PW : DINDING PRATUANG
FL : PAPAK PELANTAR PRATUANG ARAS LANTAI
ML : PAPA PELANTAR PERTENGAHAN PRATUANG
ST : TANGGA PRATUANG
PB : RASUK PRATUANG
PC : TIANG PRATUANG

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 :
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN PAKAR STRUKTUR :
Ir. MOHD NOOR AZUDIN BIN MANSOR

KETUA PENOLONG PENGARAH :
HAFIZAH BINTI ZAKARIA

DIREKABENTUK :
HAFIZAH BINTI ZAKARIA

DISEMAK :

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

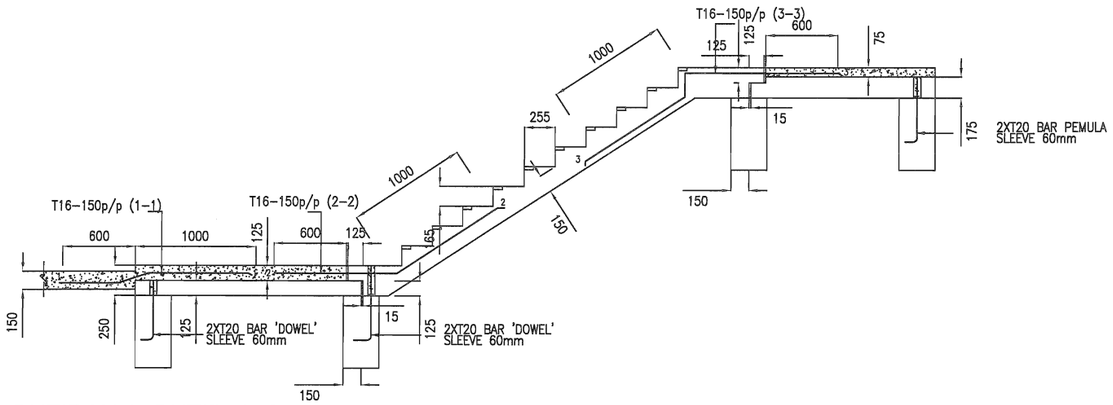
TAJUK LUKISAN :

BUTIRAN
TANGGA PRATUANG
JENIS 3

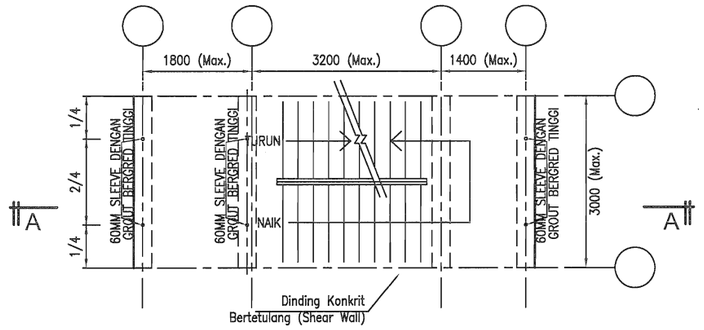
DILUKIS : NORHAFIZA BINTI ZULKIFFLI

TARIKH : APRIL 2016 | SKALA : N.T.S

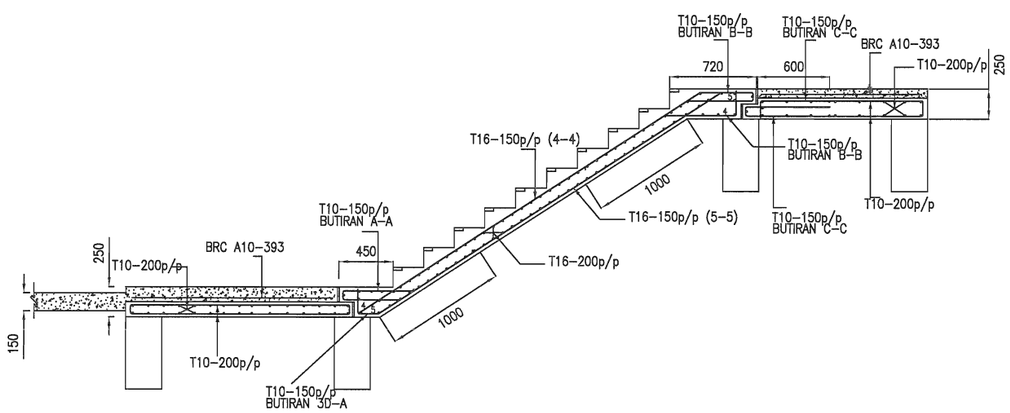
NO. LUKISAN :
JKR.CKAS/P–IBS/PEL 15/ST/ST 03–2



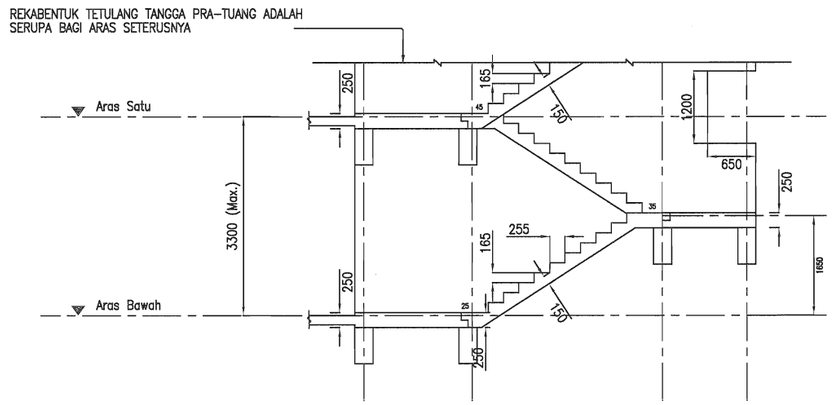
BUTIRAN A: BUTIRAN SAMBUNGAN TANGGA PRATUANG



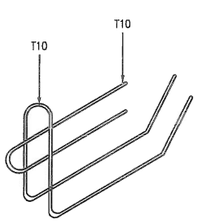
PELAN TANGGA



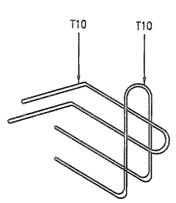
BUTIRAN A: BUTIRAN TETULANG TANGGA PRATUANG



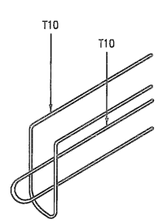
KERATAN A - A



BUTIRAN A-A



BUTIRAN B-B



BUTIRAN C-C

NOTA:

TANGGA PRATUANG DI SOKONG OLEH RASUK

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 :
KAMALUDDIIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR :
Ir. HJH. NORMA BINTI NORMAN

PENGARAH KEJURUTERAAN PAKAR STRUKTUR
Ir. MOHD NOOR AZUDIN BIN MANSOR

KETUA PENOLONG PENGARAH :
HAFIZAH BINTI ZAKARIA

DIREKABENTUK :
HAFIZAH BINTI ZAKARIA

DISEMAK :

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

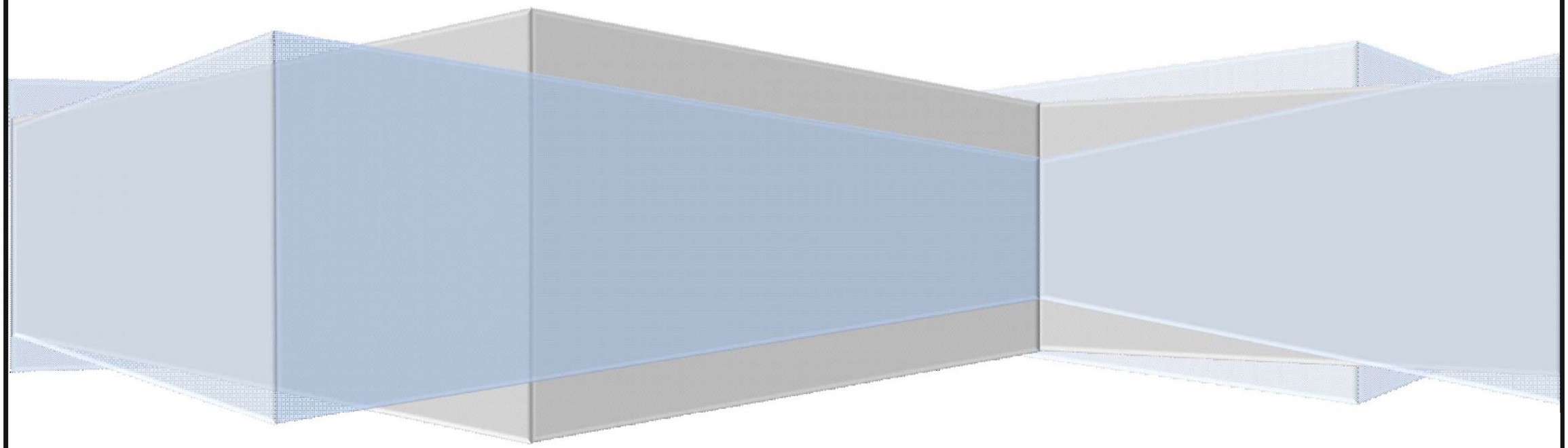
BUTIRAN
TANGGA PRATUANG
JENIS 4

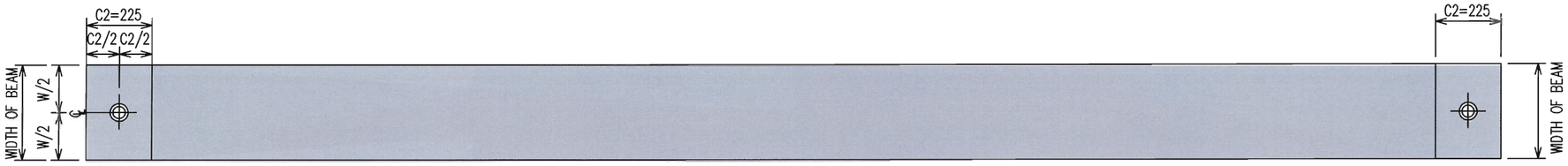
DILUKIS : NORHAFIZA BINTI ZULKIFFLI

TARIKH : APRIL 2016 | SKALA : N.T.S

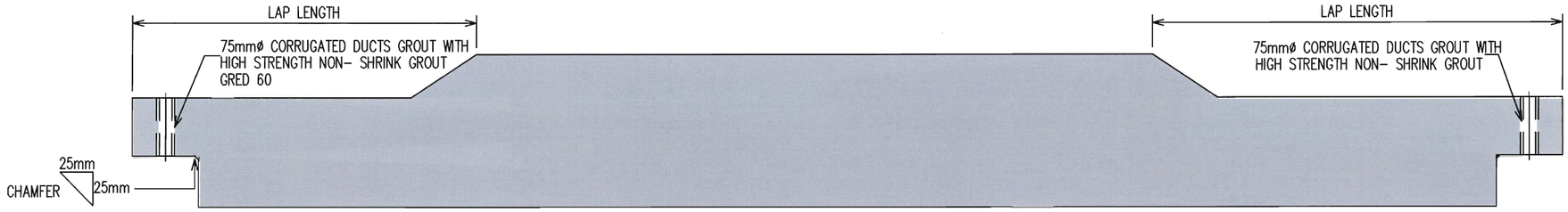
NO. LUKISAN :
JKR.CKAS/P-IBS/PEL 15/ST/ST 04

PRECAST CONNECTION

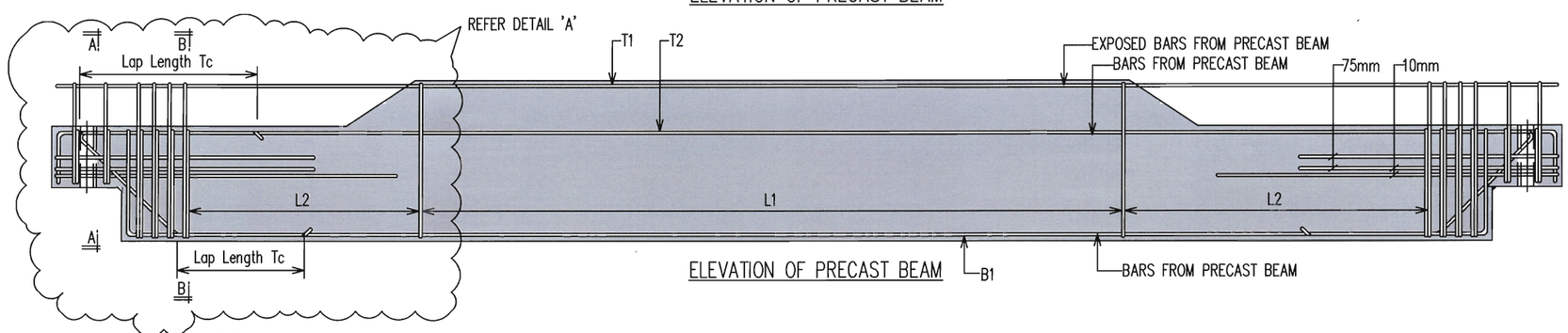




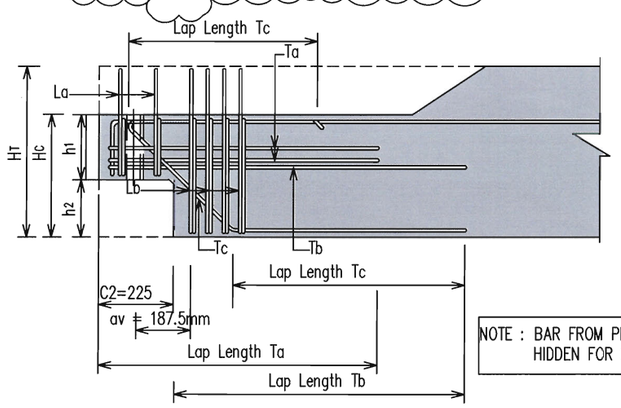
PLAN OF PRECAST BEAM



ELEVATION OF PRECAST BEAM

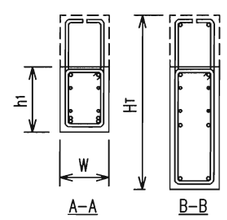


ELEVATION OF PRECAST BEAM

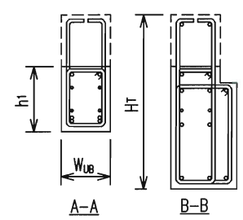


TYPICAL DETAIL 'A' OF HALF JOINT

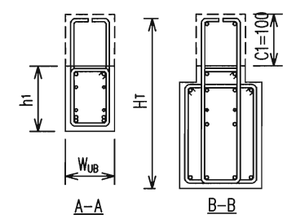
NOTE : BAR FROM PRECAST BEAM IS HIDDEN FOR CLARIFICATION



RECTANGULAR BEAM



L BEAM

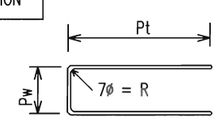


INVERTED T BEAM

NOTES:

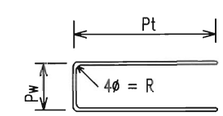
Lap Length, Tc		= 56ø
Lap Length, Ta & Tb		= 40ø
Spacing La		= 150mm c/c
Spacing Lb		= 50mm c/c
Constant,	C1	= 100mm
	C2	= 225mm

L1, L2, T1, T2 AND B1– REFER IBS STRUCTURE COMPONENT
W AND W_{UB} STANDARD DRAWING FOR BUILDING



Lap Length, Ta

W(FOR RECTANGULAR BEAM) W_{UB} (FOR L-BEAM OR INVERTED T BEAM)	Pw (mm)	Pt (mm)	R (mm)
300	226	40ø	7ø
350	276		
400	326		



Lap Length, Tb

W(FOR RECTANGULAR BEAM) W_{UB} (FOR L-BEAM OR INVERTED T BEAM)	Pw (mm)	Pt (mm)	R (mm)
300	226	40ø	4ø
350	276		
400	326		

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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

KETUA PENOLONG PENGARAH KANAN :
AHMAD ROSLI BIN ABDUL RAHMAN

PENOLONG PENGARAH KANAN :
Ir. NADIA BINTI JAILAN

DIREKABENTUK :
ZALEHA BINTI JAMBUL

DISEMAK :
ABDUL KHALID S. ABDULLAH

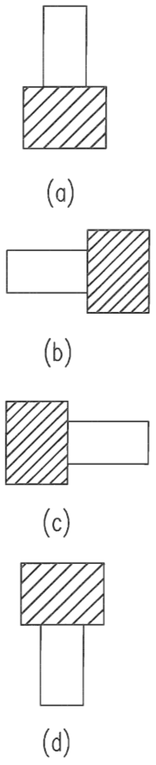
HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PIAWAI KOMPONEN STRUKTUR IBS BAGI BANGUNAN

TAJUK LUKISAN :
'PRECAST BEAM WITH HALF JOINT'

DILUKIS : ENGKU NORHUDA BINTI ENGKU ZAINAL AABIDIN
TARIKH : APRIL 2016
SKALA : N.T.S

NO. LUKISAN :
JKR.CKAS/P–IBS/PEL 15/CN/HJ 01

PLAN VIEW	HALF JOINT NAME	DIMENSION TYPE	SHEAR TYPE	SHEAR RANGE (kN)	W(RECTANGULAR BEAM) W_{US}(L & INVERTED T-BEAM) (mm)	H_T (mm)	Hc (mm)	h1 (mm)	h2 (mm)	REINFORCEMENT (Ta)	REINFORCEMENT (Tb)	REINFORCEMENT (Tc)	LINK (La)	LINK (Lb)
	HJ1	A1	1	0–100	300	600	500	300	200	2T16	2T20	2T16	2T12	3T12
			2	101–200						2T16	2T25	2T16	2T12	3T12
		A2	3	201–300	300	700	600	300	300	2T16	4T25	2T16	2T12	4T12
		A3	3	201–300	300	800	700	400	300	2T16	4T25	2T16	2T12	4T12
		A4	4	301–400	300	800	700	350	350	2T16	4T25	2T16	2T12	5T12
		B1	3	201–300	350	700	600	300	300	2T16	4T20	2T16	2T12	3T12
		B2	3	201–300	350	800	700	400	300	2T16	4T20	2T16	2T12	3T12
		B3	4	301–400	350	800	700	350	350	2T16	4T25	2T16	2T12	4T12
		C1	1	0–100	400	600	500	300	200	2T16	2T20	2T16	2T12	4T12
			2	101–200						2T16	2T25	2T16	2T12	5T12
		C2	3	201–300	400	700	600	300	300	2T16	2T25	2T16	2T12	3T12
		C3	3	201–300	400	800	700	400	300	2T16	2T25	2T16	2T12	4T12
		C4	4	301–400	400	800	700	350	350	2T16	4T25	2T16	2T12	5T12

(a)

(b)

(c)

(d)

LEGEND:

COLUMN BEAM

TABLE 1

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:
KAMALUDDIIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

KETUA PENOLONG PENGARAH KANAN :
AHMAD ROSLI BIN ABDUL RAHMAN

PENOLONG PENGARAH KANAN :
Ir. NADIA BINTI JAILAN

DIREKABENTUK :
ZALEHA BINTI JAMBUL

DISEMAK :
ABDUL KHALID S. ABDULLAH

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

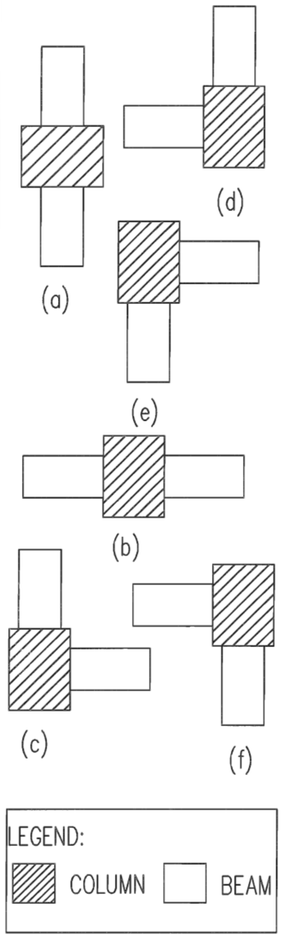
TAJUK LUKISAN :

TABLE 1–
'BEAM HALF–JOINT DETAILS'

DILUKIS : ENGKU NORHUDA BINTI ENGKU ZAINAL AABIDIN

TARIKH : APRIL 2016 SKALA : N.T.S

NO. LUKISAN :
JKR.CKAS/P–IBS/PEL 15/CN/HJ 02



PLAN VIEW	HALF JOINT NAME	DIMENSION TYPE	SHEAR TYPE	SHEAR RANGE (kN)	W(RECTANGULAR BEAM) W_{ub}(L & INVERTED T-BEAM) (mm)	H_T (mm)	Hc (mm)	h1 (mm)	h2 (mm)	REINFORCEMENT (Ta)	REINFORCEMENT (Tb)	REINFORCEMENT (Tc)	LINK (La)	LINK (Lb)
	HJ2	A1	1	0–100	300	600	500	300	200	2T16	2T20	2T16	2T12	3T12
			2	101–200						2T16	2T25	2T16	2T12	3T12
		A2	3	201–300	300	700	600	300	300	2T16	4T25	2T16	2T12	4T12
		A3	3	201–300	300	800	700	400	300	2T16	4T25	2T16	2T12	4T12
		A4	4	301–400	300	800	700	350	350	2T16	4T25	2T16	2T12	5T12
		B1	3	201–300	350	700	600	300	300	2T16	4T20	2T16	2T12	3T12
		B2	3	201–300	350	800	700	400	300	2T16	4T20	2T16	2T12	3T12
		B3	4	301–400	350	800	700	350	350	2T16	4T25	2T16	2T12	4T12
		C1	1	0–100	400	600	500	300	200	2T16	2T20	2T16	2T12	4T12
			2	101–200						2T16	2T25	2T16	2T12	5T12
		C2	3	201–300	400	700	600	300	300	2T16	2T25	2T16	2T12	3T12
		C3	3	201–300	400	800	700	400	300	2T16	2T25	2T16	2T12	4T12
		C4	4	301–400	400	800	700	350	350	2T16	4T25	2T16	2T12	5T12

TABLE 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:
KAMALUDDIIN BIN ABDUL RASHID
PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS
PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. H.M. NORMA BINTI NORMAN
KETUA PENOLONG PENGARAH KANAN :
AHMAD ROSLI BIN ABDUL RAHMAN
PENOLONG PENGARAH KANAN :
Ir. NADIA BINTI JAILAN
DIREKABENTUK :
ZALEHA BINTI JAMBUL
DISEMAK :
ABDUL KHALID S. ABDULLAH

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

TABLE 2–
'BEAM HALF–JOINT DETAILS'

DILUKIS : ENGKU NORHUDA BINTI ENGKU ZAINAL AABIDIN

TARIKH : APRIL 2016 | SKALA : N.T.S

NO. LUKISAN :
JKR.CKAS/P–IBS/PEL 15/CN/HJ 03

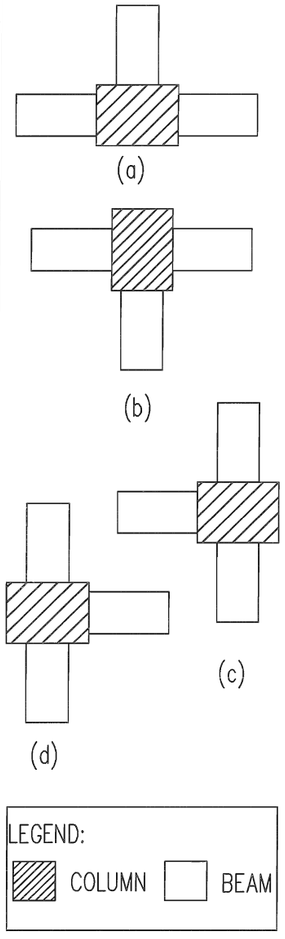
PLAN VIEW	HALF JOINT NAME	DIMENSION TYPE	SHEAR TYPE	SHEAR RANGE (kN)	W(RECTANGULAR BEAM) Wue(L & INVERTED T-BEAM) (mm)	H_T (mm)	H_C (mm)	h1 (mm)	h2 (mm)	REINFORCEMENT (Ta)	REINFORCEMENT (Tb)	REINFORCEMENT (Tc)	LINK (La)	LINK (Lb)
	HJ3	A1	1	0–100	300	600	500	300	200	2T16	2T20	2T16	2T12	3T12
			2	101–200						2T16	2T25	2T16	2T12	3T12
		A2	3	201–300	300	700	600	300	300	2T16	4T25	2T16	2T12	4T12
		A3	3	201–300	300	800	700	400	300	2T16	4T25	2T16	2T12	4T12
		A4	4	301–400	300	800	700	350	350	2T16	4T25	2T16	2T12	5T12
		B1	3	201–300	350	700	600	300	300	2T16	4T20	2T16	2T12	3T12
		B2	3	201–300	350	800	700	400	300	2T16	4T20	2T16	2T12	3T12
		B3	4	301–400	350	800	700	350	350	2T16	4T25	2T16	2T12	4T12
		C1	1	0–100	400	600	500	300	200	2T16	2T20	2T16	2T12	4T12
			2	101–200						2T16	2T25	2T16	2T12	5T12
		C2	3	201–300	400	700	600	300	300	2T16	2T25	2T16	2T12	3T12
		C3	3	201–300	400	800	700	400	300	2T16	2T25	2T16	2T12	4T12
		C4	4	301–400	400	800	700	350	350	2T16	4T25	2T16	2T12	5T12

TABLE 3

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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

KETUA PENOLONG PENGARAH KANAN :
AHMAD ROSLI BIN ABDUL RAHMAN

PENOLONG PENGARAH KANAN :
Ir. NADIA BINTI JAILAN

DIREKABENTUK :
ZALEHA BINTI JAMBUL

DISEMAK :
ABDUL KHALID S. ABDULLAH

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

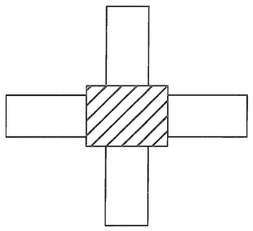
NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :
TABLE 3–
'BEAM HALF–JOINT DETAILS'

DILUKIS : ENGKU NORHUDA BINTI ENGKU ZAINAL AABIDIN

TARIKH : APRIL 2016 | SKALA : N.T.S

NO. LUKISAN :
JKR.CKAS/P–IBS/PEL 15/CN/HJ 04

PLAN VIEW	HALF JOINT NAME	DIMENSION TYPE	SHEAR TYPE	SHEAR RANGE (kN)	W(RECTANGULAR BEAM) W_{UB}(L & INVERTED T-BEAM) (mm)	H_T (mm)	Hc (mm)	h1 (mm)	h2 (mm)	REINFORCEMENT (Ta)	REINFORCEMENT (Tb)	REINFORCEMENT (Tc)	LINK (La)	LINK (Lb)
 (a)	HJ4	A1	1	0–100	300	600	500	300	200	2T16	2T20	2T16	2T12	3T12
			2	101–200						2T16	2T25	2T16	2T12	3T12
		A2	3	201–300	300	700	600	300	300	2T16	4T25	2T16	2T12	4T12
		A3	3	201–300	300	800	700	400	300	2T16	4T25	2T16	2T12	4T12
		A4	4	301–400	300	800	700	350	350	2T16	4T25	2T16	2T12	5T12
		B1	3	201–300	350	700	600	300	300	2T16	4T20	2T16	2T12	3T12
		B2	3	201–300	350	800	700	400	300	2T16	4T20	2T16	2T12	3T12
		B3	4	301–400	350	800	700	350	350	2T16	4T25	2T16	2T12	4T12
		C1	1	0–100	400	600	500	300	200	2T16	2T20	2T16	2T12	4T12
			2	101–200						2T16	2T25	2T16	2T12	5T12
		C2	3	201–300	400	700	600	300	300	2T16	2T25	2T16	2T12	3T12
		C3	3	201–300	400	800	700	400	300	2T16	2T25	2T16	2T12	4T12
		C4	4	301–400	400	800	700	350	350	2T16	4T25	2T16	2T12	5T12

LEGEND:
COLUMN BEAM

TABLE 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:
KAMALUDDIIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN
Ir. HJH. NORMA BINTI NORMAN

KETUA PENOLONG PENGARAH KANAN :
AHMAD ROSLI BIN ABDUL RAHMAN

PENOLONG PENGARAH KANAN :
Ir. NADIA BINTI JAILAN

DIREKABENTUK :
ZALEHA BINTI JAMBUL

DISEMAK :
ABDUL KHALID S. ABDULLAH

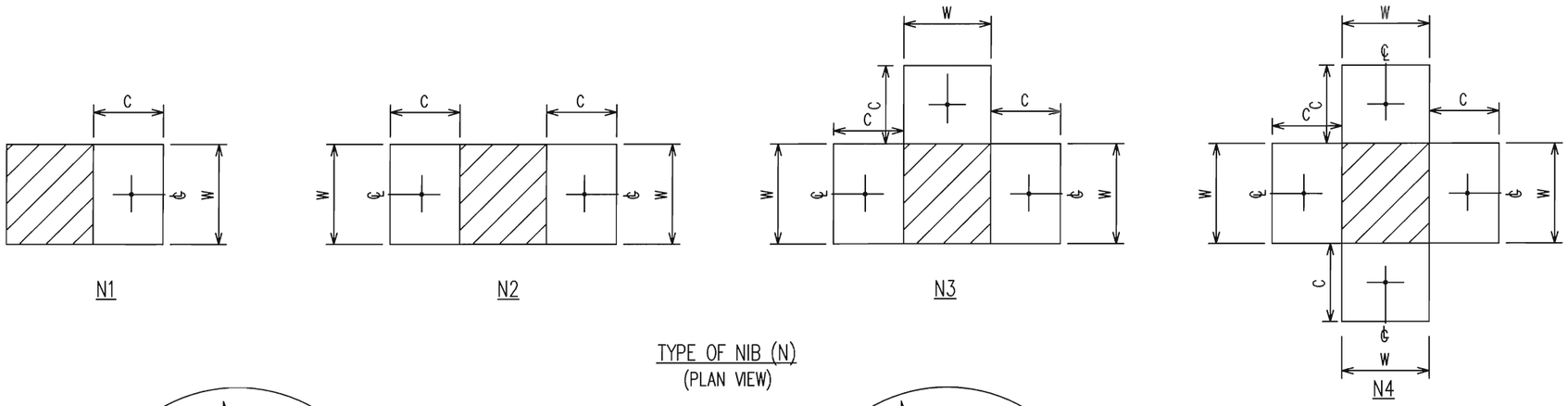
HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :
LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

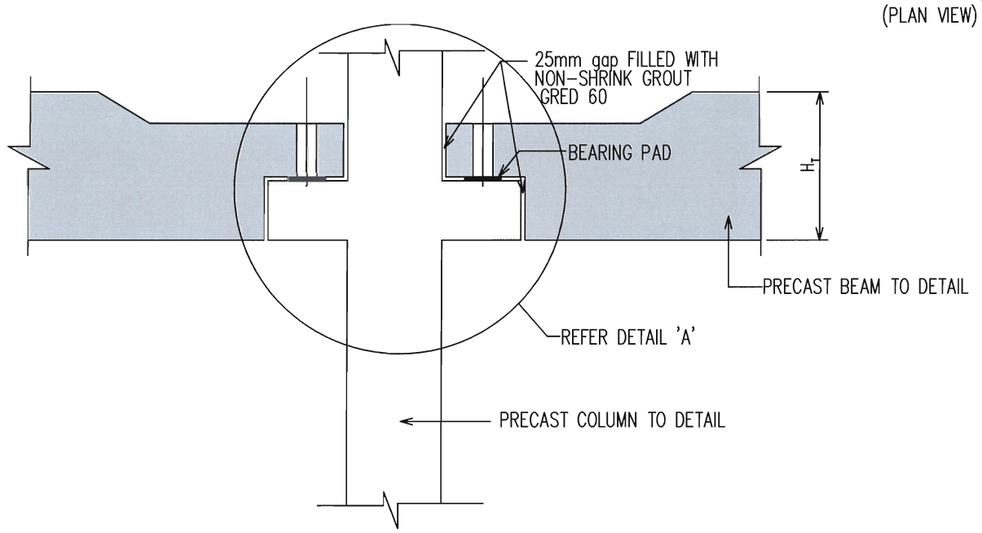
TAJUK LUKISAN :
TABLE 4–
'BEAM HALF–JOINT DETAILS'

DILUKIS : ENGKU NORHUDA BINTI ENGKU ZAINAL AABIDIN
TARIKH : APRIL 2016
SKALA : N.T.S

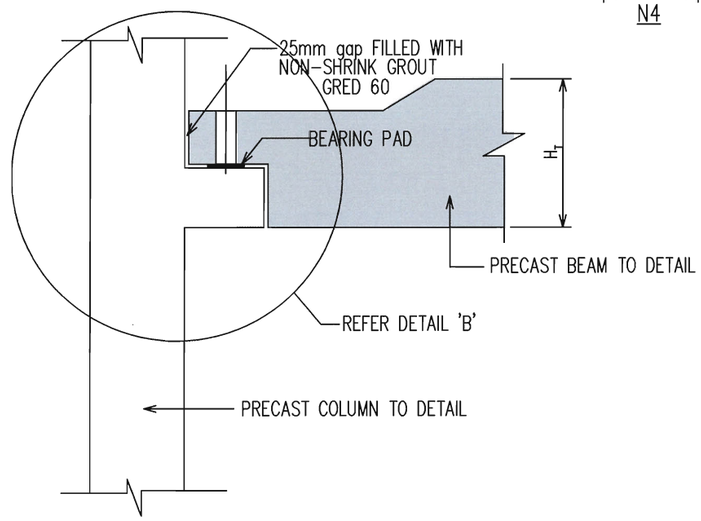
NO. LUKISAN :
JKR.CKAS/P–IBS/PEL 15/CN/HJ 05



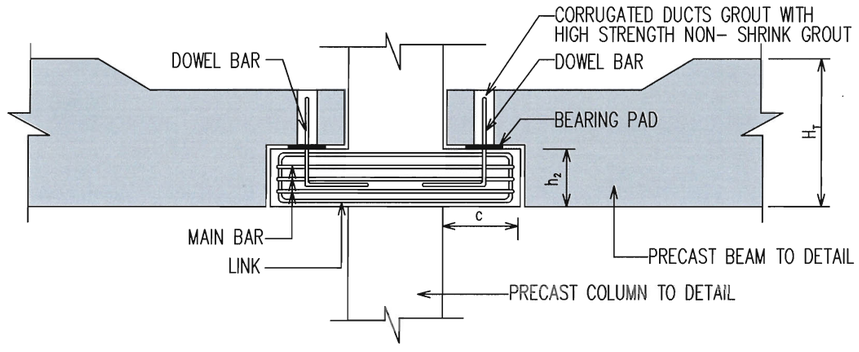
TYPE OF NIB (N)
(PLAN VIEW)



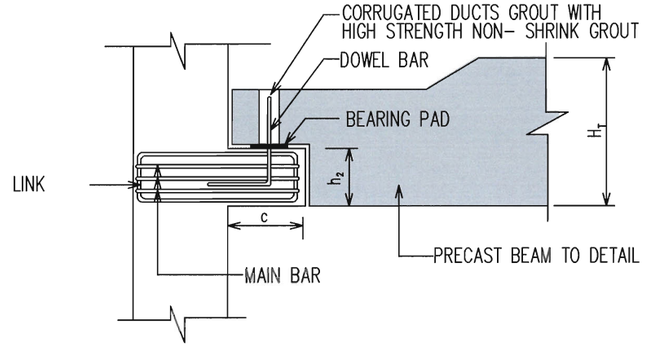
ELEVATION OF PRECAST COLUMN



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 T25 FOR DOWEL BAR WITH MINIMUM LENGTH 40 TIMES DIAMETER OF BAR.
4. CORRUGATED DUCTS 75mmø

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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

KETUA PENOLONG PENGARAH KANAN :
AHMAD ROSLI BIN ABDUL RAHMAN

PENOLONG PENGARAH KANAN :
Ir. NADIA BINTI JAILAN

DIREKABENTUK :
MOHAMAD FIRDAUS JAMALUDDIN

DISEMAK :
NOR IFTITAH IBRAHIM

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

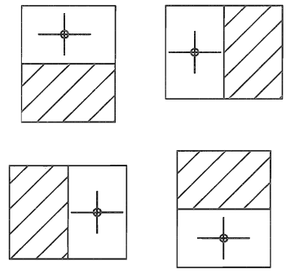
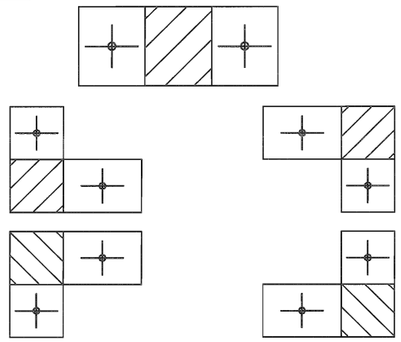
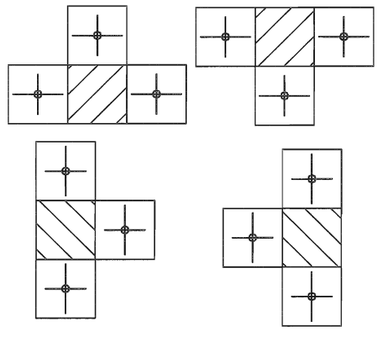
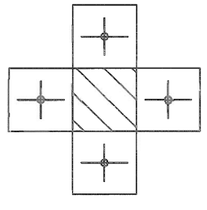
TAJUK LUKISAN :

TYPICAL DETAIL OF NIB
CONNECTION

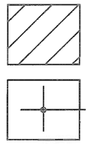
DILUKIS : MOHD SAIFUL ASRAFI BIN HARON

TARIKH : APRIL 2016 | SKALA : N.T.S

NO. LUKISAN :
JKR.CKAS/P-IBS/PEL 15/CN/NIB 01

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	200	3T16	2T12	W x (1/2)C x 5	
	2	101–200	200	4T16	4T12		
	3	201–300	300	4T20	3T16		
	4	301–400	350	4T25	4T16		
N2	1	0–100	200	3T16	2T12	W x (1/2)C x 5	
	2	101–200	200	4T16	4T12		
	3	201–300	300	4T20	3T16		
	4	301–400	350	4T25	4T16		
N3	1	0–100	200	3T16	2T12	W x (1/2)C x 5	
	2	101–200	200	4T16	4T12		
	3	201–300	300	4T20	3T16		
	4	301–400	350	4T25	4T16		
N4	1	0–100	200	3T16	2T12	W x (1/2)C x 5	
	2	101–200	200	4T16	4T12		
	3	201–300	300	4T20	3T16		
	4	301–400	350	4T25	4T16		

LEGEND:


COLUMN

NIB

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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

KETUA PENOLONG PENGARAH KANAN :
AHMAD ROSLI BIN ABDUL RAHMAN

PENOLONG PENGARAH KANAN :
Ir. NADIA BINTI JAILAN

DIREKABENTUK :
MOHAMAD FIRDAUS JAMALUDDIN

DISEMAK :
NOR IFTITAH IBRAHIM

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

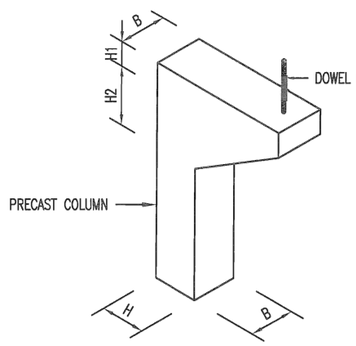
TAJUK LUKISAN :

NIB CONNECTION TABLE

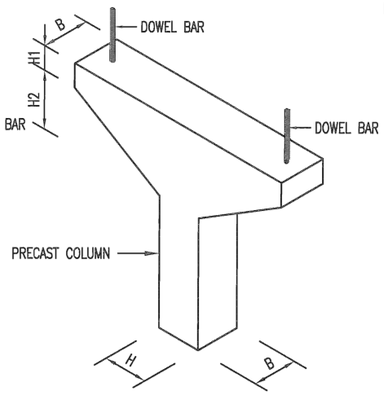
DILUKIS : MOHD SAIPUL ASRAFI BIN HARON

TARIKH : APRIL 2016 | SKALA : N.T.S

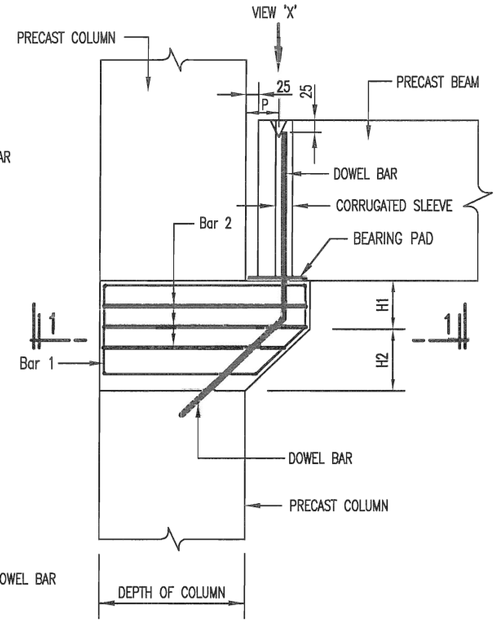
NO. LUKISAN :
JKR.CKAS/P–IBS/PEL 15/CN/NIB 02



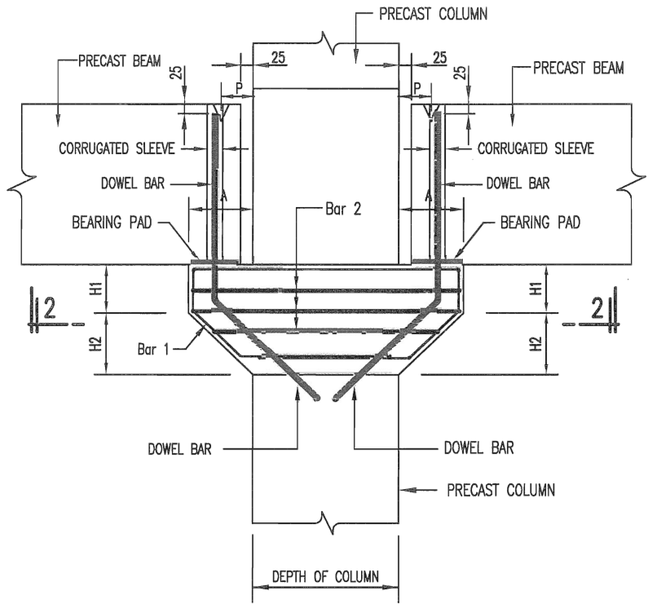
CORBEL TYPE1–ONE SIDE
(3D VIEW)



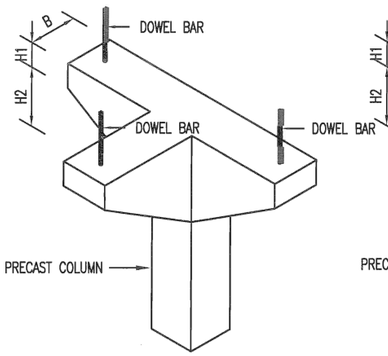
CORBEL TYPE2–TWO SIDE
(3D VIEW)



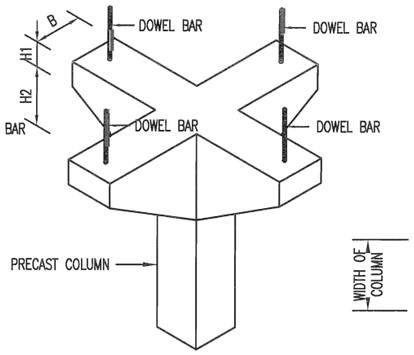
ELEVATION



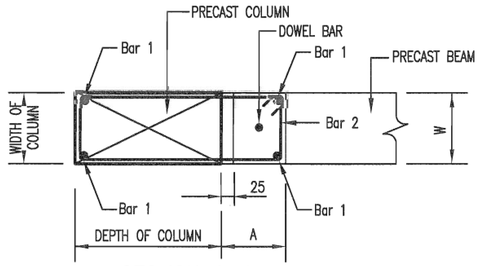
ELEVATION



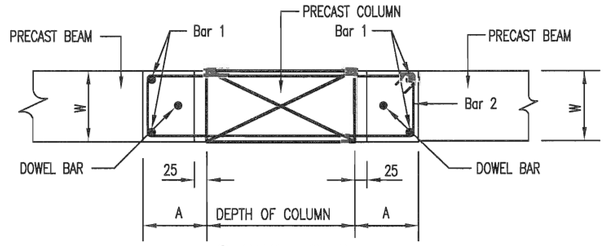
CORBEL TYPE3–THREE SIDE
(3D VIEW)



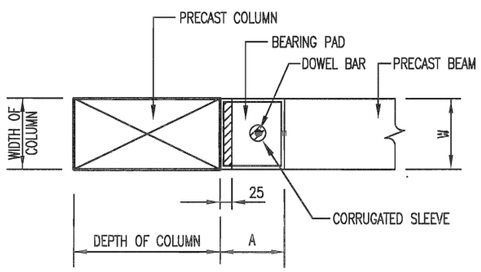
CORBEL TYPE4–FOUR SIDE
(3D VIEW)

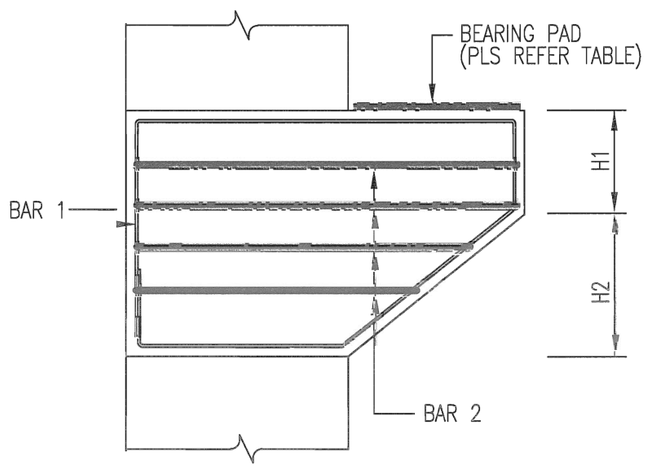


SECTION 1–1
CORBEL TYPE 1–ONE SIDE



SECTION 2–2
CORBEL TYPE 2–TWO SIDE





NOTES:

1) FOR CORBEL TYPE 3 :
   ARRANGEMENT OF BARS, COMBINATION OF TYPE 1 & 2
2) FOR CORBEL TYPE 4 :
   ARRANGEMENT OF BARS, TYPE 2 BOTH DIRECTIONS.

SPECIFICATIONS :–

1) MIN CONCRETE GRADE C30/37
   (PRECAST AND CAST IN–SITU CONCRETE)
2) FIRE RESISTANCE = 2 HOURS
3) CHARACTERISTIC OF STEEL REINFORCEMENT
   a) HIGH TENSILE (T),fy = 460 N/mm²
   b) MILD STEEL (R),fy = 250N/mm²
4) P DENOTES ULTIMATE POINT LOAD TRANSMIT TO THE CORBEL (kN)a IS DISTANCE FROM THE FACE OF COLUMN TO P
5) ONLY CORBEL TYPE 1 AND CORBEL TYPE 2 ARE PRESENTED IN THIS CATALOGUE. FOR OTHER TYPE, SHALL REFER TO COMPETENT PROFESSIONAL PERSONNEL
6) THE DESIGN HAVE BEEN PREPARED IN ACCORDANCE WITH BS 8110(1997)
7) CONCRETE COVER 40mm.
8) ANCHORAGE LENGTH FOR DOWEL BAR IS 40ø.
9) DOWEL BAR IS 25mm ø.
10) CORRUGETED SLEEVE IS 55mm ø.

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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

KETUA PENOLONG PENGARAH KANAN :
Ir. IHSAN BIN ATAN

KETUA PENOLONG PENGARAH :
ABD. LATIF BIN SIRIN

DIREKABENTUK :
SITI AISAH BINTI MAT YAACOB

DISEMAK :
MUNIRAH BINTI MOHMAD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PIAWAI
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

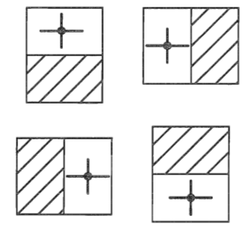
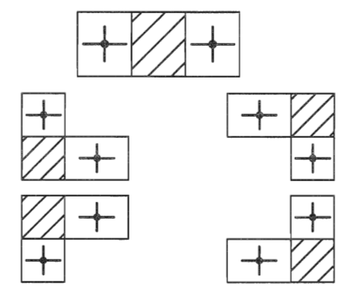
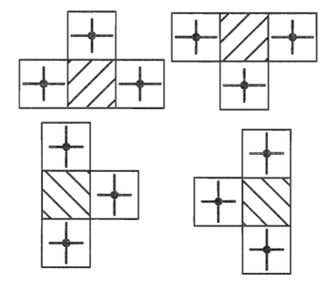
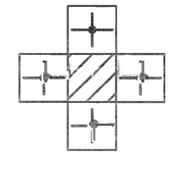
TAJUK LUKISAN :

CORBEL CONNECTION

DILUKIS : FARIDAH BINTI S[illegible]

TARIKH : SEPTEMBER 2015 | SKALA : N.T.S

NO. LUKISAN :
JKR.C[illegible]/P–IBS/PEL (1)/CH/CE 01

TYPE OF CORBEL (CR)	SHEAR TYPE	DESIGN SHEAR RANGE (kN)	MINIMUM DEPTH OF CORBEL, (h_1)	MINIMUM DEPTH OF CORBEL, (h_2)	BAR 1	BAR 2	BEARING PAD (width x length x thickness) mm	SELECTION OF CORBEL ORIENTATION
CR1	1	0–100	200	150	4T12	3T10	W x (1/2)C x 5	
	2	101–200	200	150	4T12	3T10		
	3	201–300	200	150	3T16	3T10		
	4	301–400	200	150	4T20	4T10		
	5	401–500	200	150	4T20	4T10		
	6	501–600	200	150	4T25	4T10		
CR2	1	0–100	200	150	4T12	3T10	W x (1/2)C x 5	
	2	101–200	200	150	4T12	3T10		
	3	201–300	200	150	3T16	3T10		
	4	301–400	200	150	4T20	4T10		
	5	401–500	200	150	4T20	4T10		
	6	501–600	200	150	4T25	4T10		
CR3	1	0–100	200	150	4T12	3T10	W x (1/2)C x 5	
	2	101–200	200	150	4T12	3T10		
	3	201–300	200	150	3T16	3T10		
	4	301–400	200	150	4T20	4T10		
	5	401–500	200	150	4T20	4T10		
	6	501–600	200	150	4T25	4T10		
CR4	1	0–100	200	150	4T12	3T10	W x (1/2)C x 5	
	2	101–200	200	150	4T12	3T10		
	3	201–300	200	150	3T16	3T10		
	4	301–400	200	150	4T20	4T10		
	5	401–500	200	150	4T20	4T10		
	6	501–600	200	150	4T25	4T10		

LEGEND:

COLUMN

CORBEL

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:
KAMALUDDIN BIN ABDUL RASHID

PENGARAH KHIDMAT REKABENTUK :
Ir. MUHAMMAD AZMAN BIN JAMRUS

PENGARAH KHIDMAT PAKAR DAN PENGURUSAN :
Ir. HJH. NORMA BINTI NORMAN

KETUA PENOLONG PENGARAH KANAN :
Ir. IHSAN BIN ATAN

KETUA PENOLONG PENGARAH :
ABD. LATIF BIN SIRIN

DIREKABENTUK :
SITI AISAH BINTI MAT YAACOB

DISEMAK :
MUNIRAH BINTI MOHMAD

HURUF PETUNJUK	PINDAAN	TARIKH	TANDA TANGAN

NAMA PROJEK :

LUKISAN PLAN
KOMPONEN STRUKTUR IBS
BAGI BANGUNAN

TAJUK LUKISAN :

CORBEL CONNECTION TABLE

DILUKIS : FARDAH BINTI SAMIN

TARIKH : SEPTEMBER 2015 | SKALA : N.T.S

NO. LUKISAN :
JBL/IBS/A-BS/PE 15/CR/CR 02

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