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EFEKTIFITAS PENGGUNAAN *FRAME TRUSS* TERHADAP STRUKTUR *CORE BRACE* PADA STRUKTUR BAJA BERTINGKAT BANYAK AKIBAT BEBAN GEMPA

Diajukan Kepada Universitas Islam Indonesia Jogjakarta Untuk Memenuhi Persyaratan Memperoleh Derajat Sarjana Strata Satu (S1) Teknik Sipil

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FAKULTAS TEKNIK SIPIL DAN PERENCANAAN

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FAKULTAS TEKNIK SIPIL DAN
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HALAMAN PENGESAHAN

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KATA PENGANTAR

بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

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Penyusun

MOTTO

Dan Kepada Allahlah Orang-orang Mukmin Bertawakkal
(Ali-Imran : 122)

Sesungguhnya Sesudah Kesulitan itu ada Kemudahan
(Asy-syarh : 6)

Maka apabila Kamu Telah Selesai (Dari Suatu Urusan)
Kerjakan Dengan Urusan yang lain
(Asy-syarh : 7)

Dan hanya kepada Allahlah Hendaknya Kamu bertawakkal
(Asy-syarh : 8)

Barangsiapa menginginkan Dunia maka atas orang itu Ilmu dan barang siapa menginginkan Akhirat maka atas orang itu Ilmu dan barang siapa menginginkan kedua-duanya maka atas Orang itu Ilmu
(Hadits Nabi)

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(Hadits Nabi)

Tuntutlah Ilmu Walaupun Sampai Negeri China
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DAFTAR NOTASI

A = Luas penampang profil
Ae = Luas efektif penampang
Ag = Luas penampang kotor
An = Luas bersih penampang
Ast = Luas total tulangan
Aw = Luas badan profil
B = Lebar struktur pada arah yang ditinjau
bE = Lebar efektif
bf = Lebar sayap
C1 = Faktor respon gempa
Cb = Faktor pengali momen
Cw = Konstanta wraping
D = Beban mati
D = Lebar bangunan (*code Puerto Rico*)
D = Lendutan pada balok
E = Beban gempa
e = Eksentrisitas
E = Elastisitas baja
Ec = Elastisitas beton
Eg = Efisiensi tiang
F'c = Kuat tekan beton
Fcr = Tegangan kritis
Fi = Gaya horisontal akibat gempa tingkat ke-i
Fp = Tegangan ujung plat
Fr = Tegangan reduksi baja
Fu = Tegangan tarik maksimum
Fy = Tegangan leleh profil baja
G = Modulus geser

G = Nilai kondisi ujung

H = Beban hujan

h = tinggi kolom

H = Tinggi total struktur

hc = Tinggi bersih badan

hi = Tinggi lantai ke-i

hn = tinggi bersih kolom

hn = Tinggi total bangunan (*code Puerto Rico*)

I = Faktor keutamaan gedung

Iy = Inersia sumbu y

J = Konstanta torsional

K = Faktor panjang tekuk

L = Beban hidup

L = Lebar bangunan

L = Panjang elemen

L' = Panjang bersih balok

L = Panjang balok

La = Beban hidup di atas atap

Lp = Panjang limit tanpa pengaku

Lr = Panjang tanpa pengaku pada batas antara tekuk torsi elastis dan inelastis

M1 = Momen ujung balok yang kecil

M2 = Momen pada ujung balok yang besar

Ma = Momen pada ujung kiri

Mb = Momen pada ujung kanan

MD,k = Momen akibat beban mati

ME = Momen akibat beban gempa

Mf = Momen pada muka kolom

ML,k = Momen akibat beban hidup

Mn = Kuat lentur nominal penampang

Mp = Momen plastis balok

Mpb = Momen kapasitas balok

Mr = Momen tekuk

Ms = Momen pada tengah bentang

Mu = Momen lentur terfaktor

Mu,k = Momen ultimit kolom

Ng,k = Gaya aksial akibat beban grafitasi

Pn = Gaya aksial nominal

Pu,k = Gaya aksial ultimit kolom

Puf = Gaya aksial sayap kolom

Puw = Gaya aksial badan

Py = Gaya aksial leleh

R = Faktor reduksi gempa

r = Radius girasi

r = Rasio tulangan

Rn = Kuat geser baut

Rnw = Kuat geser las

Rv = Faktor tinggi tingkat

S = Jarak tulangan

Sx = Modulus elastis penampang

T = Waktu getar alami fundamental

tf = Tebal sayap

Tn = Kuat tarik nominal

tp = Tebal plat

Tu = Kuat terik terfaktor

tw = Tebal badan

U = Faktor reduksi luas efektif

V = Gaya geser dasar nominal statik ekivalen

Vc = Gaya geser kolom

Vn = Gaya geser nominal

Vu = gaya geser ultimit

Vup = Gaya geser *panel zone*

W = Beban angin

Wi	= Berat lantai ke-i
Wt	= Berat total struktur
Zx	= Modulus plastis penampang
α	= Koefisien distribusi momen
β	= *Overstrenght factor*
ω	= Koefisien *magnifikasi dinamik*
ϕt	= Faktor reduksi kapasitas tarik penampang
ϕ	= Faktor reduksi
ϕc	= Faktor reduksi elemen tekan
λc	= Parameter kelangsingan
λp	= Rasio tinggi terhadap tebal untuk profil kompak
λ	= Rasio tinggi terhadap tebal penampang

ABSTRAKSI

Pada struktur baja yang relatif tinggi dan langsing, tentu saja akan memiliki respons struktur yang relatif besar, sehingga mengakibatkan hasil disain struktur yang bertambah besar, hal ini berimplikasi terhadap berkurangnya tingkat effisiensi dan efektifitas struktur yang didisain. Untuk menanggulangi hal tersebut, maka perlu penambahan pengekang berupa Frame Truss yang dapat memberikan konstribusi yang besar untuk mengurangi besarnya respons struktur. yang terjadi akibat pembebanan struktur yaitu akibat gaya gempa (statik dan dinamik) maupun beban angin.

Dalam penelitian ini dilakukan analisis struktur baja 3 dimensi dengan Frame Truss sebagai pengekang yang dipasang pada struktur inti dan tingkat tertentu. Dalam analisis struktur digunakan variasi model struktur yang meliputi variasi banyak tingkat. Variasi banyak tingkat yang dipakai adalah 20,30 dan 40 tingkat, dimana tiap tingkat merupakan struktur Open frame(OF), Core Brace dan Frame Truss(BOF). Pada struktur 20 tingkat membandingkan variasi jumlah Outrigger dan belt truss, yaitu dua, tiga dan empat buah. Analisis menggunakan program Bantu ETABS dengan analisis 3 Dimensi.

Dari hasil penelitian diperoleh bahwa penggunaan dua Outrigger pada struktur frame truss terbukti dapat mengurangi respons struktur (simpangan, momen balok dan momen kolom) baik akibat beban gempa statik ekuivalen maupun dinamik. Penggunaan dua Outrigger cukup efisien dibandingkan dengan penggunaan tiga atau empat Outrigger. Apabila ditinjau dari berat struktur secara keseluruhan, ternyata penggunaan Frame Truss lebih efektif dari Core Braced. Efisiensi berat struktur pengaku Frame Truss terhadap Open Frame adalah 57,60 %, sedangakan Core Braced terhadap Open Frame 49,10 %. Penggunaan Frame Truss pada struktur 30 lantai ternyata lebih efisien dibanding Core Braced

BAB 1
PENDAHULUAN

1.1 Latar Belakang

Indonesia merupakan daerah yang mempunyai tingkat resiko gempa yang tinggi karena dilalui oleh dua jalur gempa yaitu *Circum Pasific Earthquake Belt* (melalui Sulawesi utara, Kepulauan Maluku, Irian Jaya) dan *Trans Asiatic Earthquake Belt* (melalui Sumatra, Jawa, Nusa Tenggara Irian Jaya). Getaran yang diakibatkan gempa tersebut akan sangat mempengaruhi konstruksi bangunan tingkat tinggi, sehingga diperlukan suatu analisa struktur perencanaan bangunan tingkat tinggi tahan gempa.

Pemodelan struktur yang dilakukan pada analisis struktur yang mendekati kondisi sebenarnya merupakan cara pemenuhan kebutuhan kekuatan secara benar dan proporsional. Termasuk beban-beban yang akan bekerja pada struktur, yakni beban gravitasi yang merupakan beban tetap, maupun beban sementara yang berupa beban angin dan beban gempa. Beban grafitasi merupakan beban yang bersifat statik, tetapi beban angin dan beban gempa merupakan beban yang bersifat dinamik. Maka sudah sewajarnya apabila pemenuhan kebutuhan kekuatan akibat beban angin maupun beban gempa dilakukan dengan analisis dinamik.

Untuk desain bangunan tingkat banyak, peraturan-peraturan yang ada sekarang ini sudah mensyaratkan analisis dengan mempertimbangkan pengaruh beban dinamik, baik berupa beban angin maupun beban gempa. Hal ini telah diadopsi oleh peraturan-peraturan yang ada di Indonesia, terutama pengaruh terhadap beban gempa. Bangunan-bangunan tingkat tinggi (*high story building*) yang didominasi oleh beban gempa dan beban angin akan memberikan simpangan yang semakin besar pada tingkat yang semakin tinggi.

Respons tinggi akan terjadi pada struktur portal terbuka (*open frame*), sehingga struktur menjadi tidak efisien lagi karena membutuhkan kekakuan yang semakin besar. Kekuatan, kekakuan, dan stabilitas portal dalam menahan beban lateral sangat tergantung pada kemampuan dari masing-masing elemen struktur

potal terbuka. Agar elemen-elemen portal mampu menahan momen akibat beban lateral, maka portal diberi sambungan kaku pada titik buhulnya (rigid joint).

Pada struktur portal baja yang tinggi cara untuk mengurangi respons struktur dapat diminimalkan dengan memberikan pengaku *(bracing)*. Untuk memberikan nilai kekakuan pada struktur baja dapat dilakukan dengan memakai pengekang lateral (*bracing*). Dari hasil penelitian menunjukkan bahwa struktur baja dengan menggunakan pengaku lokal (*local braced*) pada tingkat yang semakin tinggi akan menghasilkan respon struktur yang mendekati respon struktur bangunan baja tanpa pengekang (*unbraced steel frame*), **(Arif Widyatmoko dan Fatkurrohman, 2004).**

Dengan memberikan tambahan pengaku local pada respon struktur baja bertingkat banyak, didapatkan respon struktur yang kurang memuaskan maka kemudian dicarilah cara yang lain yaitu dengan memberikan pengaku global. Pengaku ini dipasang dengan melalui beberapa tingkat sekaligus. Struktur *global braced* ini sangat efektif untuk menahan jumlah portal *open frame* yang semakin banyak, **(Hanif kurniawan dan Iwan Setyawan, 2005).**

Pada penelitian tugas akhir tentang Efek penggunaan *Outrigger* dan *belttruss* pada respon struktur baja bertingkat banyak untuk struktur *Core Brace* (CB), peneliti mencoba mendesain struktur portal baja bertingkat banyak dengan tujuan untuk mengurangi simpangan yang terjadi pada portal baja. Agar lebih efektif menahan jumlah portal *open frame* peneliti mencoba menambah pengaku lateral berupa *outrigger* dan *belttruss* untuk mendapatkan nilai respon yang lebih efektif, **(Akhmad Asrofi dan Iwan Indra Lesmana 2006).**

Untuk mengontrol respon struktur yang terjadi pada bangunan yang lebih tinggi dan jumlah *frame* yang lebih banyak maka dicarilah cara yang lain, cara yang digunakan adalah dengan membandingkan dan melanjutkan penelitian tentang *outrigger* dan *belttruss (Core Brace)* dengan model yang berbeda berupa *frame truss (Outer Brace). Frame truss (FT)* sebenarnya hanya perubahan letak konfigurasi brace dengan pengaku yang di pasang di struktur portal baja dibagian tepi yang merupakan salah satu solusi untuk meminimalkan respon struktur yang terjadi pada portal bertingkat banyak. Pada struktur ini digunakan *Frame Truss*

dan *Outrigger* yang dikombinasikan dengan kolom *eksterior*. Kolom diikat ke struktur *Frame truss* melalui sistem *Outrigger*. Pada struktur *Frame truss* ini tinggi total bangunan dibagi lebar bangunan (H/B) > 3, sehingga didapatkan struktur bangunan yang langsing, karena struktur bangunannya tinggi dan langsing maka akan diperoleh simpangan yang besar sehingga apakah mungkin kolom pada struktur *frame truss* ini mengalami tarik.

1.2 Perumusan Masalah

Berdasarkan pada penjelasan yang ada pada bab pendahuluan, permasalahan yang dapat dirumuskan adalah :

1. Seberapa besar keefektifan sistem *Frame truss* (FT) dalam mengurangi respons (Simpangan horizontal, drift ratio, momen, geser dan aksial) yang terjadi akibat beban angin dan gempa.
2. Seperti apa pengaruh penggunaan pengaku *frame truss* (FT) terhadap respons struktur baja bertingkat banyak akibat beban gempa statik ekivalen dan beban dinamik.
3. Apakah kemungkinan terjadi gaya tarik pada kolom struktur *frame truss* ini.

Nilai keefektifan tersebut digunakan untuk mengukur besarnya pengurangan respon struktur akibat penambahan pengaku yang ditampilkan dalam bentuk rasio.

1.3 Tujuan Penelitian

Tujuan yang hendak dicapai dalam penelitian ini adalah

1. Mengetahui pengaruh beban gempa dan angin pada struktur portal baja bertingkat banyak dengan perlengkapan *Frame truss* dan *outrigger* terhadap gaya-gaya dalam dan respons struktur (Simpangan horizontal, drift ratio, momen, geser dan aksial) yang terjadi.
2. Mengetahui implikasi penggunaan struktur *Open Frame*, *Frame truss* serta *Core Brace* pada kebutuhan bahan bangunan yang digunakan.
3. Mengetahui pada tingkat berapa kolom akan mengalami tarik, dengan menggunakan sistem pengaku *Frame truss* untuk menahan gaya-gaya yang terjadi.

1.4 Manfaat Penelitian

Manfaat dari tugas akhir ini diharapkan dapat dijadikan sebagai pertimbangan dalam menganalisa dan mendesain jenis struktur portal baja yang sesuai dengan proses perancangan juga sebagai tambahan pengetahuan dan wawasan untuk para pembaca maupun praktisi dilapangan.

1.5 Batasan Masalah

Batasan masalah pada penelitian numeris tentang efektifitas penggunaan *frame truss* terhadap struktur *core brace* ini adalah sebagai berikut:

1. Struktur portal baja bertingkat banyak (*multistory steel frame*) meliputi 20, 30 dan 40 tingkat dengan tinggi lantai 3,75 m dan fungsi bangunan adalah perkantoran.
2. Struktur yang digunakan adalah struktur dengan *Frame truss* dengan menggunakan sistem pengaku *Outrigger.*
3. Pembebanan gravitasi pada struktur menggunakan Peraturan Pembebanan Indonesia untuk gedung tahun 1987.
4. Perencanaan elemen struktur baja menggunakan AISC-LRFD 1993.
5. Bangunan yang direncanakan pada wilayah gempa 6 dengan jenis tanah keras dengan tingkat daktilitas penuh sesuai *draft* peraturan perencanaan peraturan tahan gempa SKSNI-1726-2002.
6. Beban lateral yang digunakan untuk desain adalah beban gempa dan angin.
7. Tumpuan struktur pada awal perencanaan diasumsikan jepit.
8. Analisa desain awal struktur menggunakan program ETABS dengan model 3 dimensi.
9. Balok komposit hanya direncanakan pada balok anak, balok induk direncanakan sebagai balok murni.
10. Beban gempa yang digunakan dalam analisis struktur yaitu gempa Koyna, gempa Elcentro dan gempa Parkfield dengan skala gempa didasarkan pada struktur tanpa pengaku 15 lantai dengan percepatan gempa Elcentro.

11. Pengaku pada *Frame truss, Outrigger* dan *Brace core* digunakan pengaku tipe V terbalik, sedangkan pada *Belttruss* digunakan pengaku tipe X.

BAB II
TINJAUAN PUSTAKA

2.1 Pendahuluan

Struktur portal merupakan hubungan antara balok dan kolom yang saling sambung menyambung sedemikian hingga membuat bangun grid-grid atau membentuk suatu struktur portal bertingkat. Suatu hal yang sangat penting yang harus diperhatikan pada struktur portal adalah titik simpul atau titik join yaitu sambungan antara balok dan kolom. Sebagaimana asumsi yang umum dipakai dalam analisis struktur elastik maupun inelastik bahwa titik join tersebut dapat saja berotasi tetapi antara balok dan kolom harus tetap siku-siku.**(Widodo, 2001)**

2.2 Pustaka Penelitian Sebelumnya

Pada penelitian ini juga digunakan tinjauan pustaka penelitian-penelitian yang dilaksanakan sebelumnya, antara lain:

1. **Siswoyo dan Andi Wibowo, 2000** (Analisis Pengaruh Pengekang *(bracing)* pada struktur baja 3 dimensi dengan variasi panjang bentang.)

Penelitian ini bertujuan untuk meminimalkan simpangan yang terjadi pada struktur portal 3 dimensi. Peneliti mencoba mendesain struktur portal baja bertingkat banyak dengan menambahkan pengekang pada struktur. Dari hasil penelitian portal baja akan mengalami lendutan akibat beban lateral sehingga struktur akan mengalami simpangan yang dapat menghancurkan struktur bila simpangan tersebut melebihi batas simpangan plastis. Untuk mengurangi simpangan peneliti mencoba dengan memperkaku portal.

Pada penelitian ini struktur yang diteliti yaitu struktur portal baja dengan variasi bentang, sistem pengaku tipe Z, beban angin tidak diperhitungkan, analisis struktur dengan SAP 90. Penelitian ini mengambil pendekatan model 3 Dimensi, tinggi portal maksimum 35,5 meter dengan 3 bentang.

Pada penelitian ini peneliti mengambil kesimpulan bahwa simpangan antar tingkat kurang dari 2 cm, momen kolom antar tingkat yang terjadi akan mengalami kenaikan sesuai penambahan bentang, tetapi dalam penelitian ini beban angin sebaiknya didikutsertakan dalam hitungan.

2. **Argha Syahputra Aji dan wiwik Eliya Safrudin, 2005** (Efek Beban Statik dan Dinamik Terhadap Respon Struktur Bangunan BertingkatBanyak (4-Bays) Berpengaku Global.)

Penelitian ini bertujuan untuk mengetahui perbedaan respon struktur portal baja menggukan pengaku global 4 bentang akibat beban gempa statik ekivalen dan dinamik riwayat waktu untuk satu kesatuan bangunan utuh (analisis 3D).

Batasan penelitian yang diambil adalah struktur portal baja dengan variasi tingkat dan juga variasi bentuk bangunan. Dalam variasi tingkat mereka menggunakan portal baja 6, 10, 14, 18 dan 22 lantai. Untuk variasi bentuk bangunan digunakan portal baja terbuka dan portal baja berpengaku.

Hasil dari penelitian ini menunjukkan bahwa respon struktur yang terjadi pada struktur *Global Braced frame* lebih kecil dibandingkan dengan struktur *open frame*. Penggunaan *global brace* sangat efektif untuk menahan beban gempa statik dan dinamik.

3. **Akhmad Asrofi dan Iwan Indra Lesmana, 2006** (Efek Penggunaan *Outrigger* dan *Belttruss* Pada Respon Struktur Baja Bertingkat Banyak)

Penelitian ini mempunyai tujuan untuk mengetahui seberapa besar efek penambahan pengaku horizontal pada struktur baja bertingkat banyak yang menggunakan kombinasi outrigger dan belttruss yang dipasang di beberapa variasi perletakan.

Pada penelitian ini peneliti mencoba memecahkan masalah dengan menganalisa tempat atau lokasi yang efektif untuk penempatan outrigger dan belttruss. Dengan batasan-batasan masalah diantaranya adalah struktur yang dianalisis adalah struktur portal bertingkat tinggi, dengan variasi tingkat 20, 30, dan

40 m . Dengan variasi jarak antar tingkat 3.75 m, lebar inti bangunan 6 m dan jarak inti dengan kolom terluar adalah 12 m. Digunakan untuk perkantoran, jenis bracing tipe V. Model yang di jadikan bahan oleh peneliti adalah bentuk struktur open frame, penggunaan pengaku belttruss, penggunaan kombinasi pengaku outrigger dan belttruss, model analisis yang digunakan 3 dimensi dengan *software Etabs*.

Dari penelitian diatas peneliti memperoleh hasil bahwa terdapat perpedaan keefektifan penggunaan outrigger dan belttruss terlihat dapat meminimumkan simpangan (*displesemen)* yang terjadi pada portal baja bertingkat banyak, tetapi jika ada penambahan outrigger pada bangunan hasil yang didapatkan tidak terlihat secara mencolok hanya struktur yang memakai outrigger yang lebih banyak kekakuannya lebih besar. Sehingga peneliti memilih struktur yang memakai outrigger lebih sedikit.

Dari penelitian-penelitian tersebut diatas dapat disimpulkan beberapa hal yang belum diteliti oleh peneliti terdahulu adalah :

a. Belum ditelitinya gaya-gaya dalam pada kolom dari penelitian yang diteliti.
b. Penggunaan pengaku *Frame Truss yang* dikombinasikan dengan *Outrigger* yang dipasang di tepi portal pada struktur.

2.3 Keaslian Penelitian

Penelitian yang akan dilakukan adalah untuk mengetahui pengaruh beban gempa dan angin pada struktur portal baja bertingkat banyak dengan perlengkapan pengaku *frame truss* terhadap respons (Simpangan horizontal, drift ratio, momen, geser dan aksial) dan gaya-gaya dalam yang terjadi juga untuk mengetahui pada tingkat berapa kolom akan mulai mengalami tarik. Penelitian ini memperbaiki, melengkapi, menyempurnakan penelitian sebelumnya maka keaslian penelitian ini dapat dijaga.

BAB III
LANDASAN TEORI

3.1 Pendahuluan

Dalam merencanakan bangunan tahan gempa, portal bangunan harus mempunyai kekakuan yang cukup, maka untuk menambah kekakuan pada portal tersebut, portal diberi pengekang berupa *frame truss*.

Frame truss adalah model pengaku lateral yang digunakan pada struktur baja bertingkat banyak untuk mengurangi nilai respons struktur yang terjadi, sehingga kebutuhan dalam disain dapat diminimalkan. *Frame truss* dipasang pada struktur rangka baja pada bagian tepi dari portal. *Frame truss* dapat berupa beton bertulang atau pengaku baja yang dihubungkan antara *Outrigger* ke kolom eksterior dengan kantilever horisontal

Diasumsikan bahwa hanya struktur *Outrigger* yang menyediakan kekangan lateral, perilaku dari struktur *Outrigger* akan mirip dengan kantilever, tapi dengan *frame truss* yang dipasangkan dengan kolom luar melalui sistem *outrigger*. *Outrigger* tidak lagi bebas berotasi seperti halnya kantilever. Lengan *Outrigger* yang bersama-sama *Frame truss* apabila berotasi akan ditahan oleh kolom luar.

Rotasi dari sistem *Frame truss* akan ditahan oleh kolom luar. Kolom yang terkena beban angin dan gempa secara langsung akan mengalami tarikan sedangkan kolom yang tidak mengalami beban lateral akibat beban angin dan gempa secara langsung akan mengalami gaya tekan. Gaya ini akan menghasilkan rotasi pembalikan sebagian dari struktur inti. Sistem ini tidak lagi sebagai kantilever murni, Karena mengalami kekangan pada bagian atas seperti halnya pada bagian bawahnya. Akibat dari sistem ini adalah pengurangan momen lentur pada sistem *frame truss* dan dengan demikian juga akan mengurangi defleksinya.

Mengingat kriteria dari disain pengaku (*Bracing*) adalah: kekuatan, keadaan layan dan murah maka material yang digunakan harus efisien, tetapi tetap memenuhi keadaan batas kestabilan dan kekuatan, sehingga tetap nyaman dan dapat meminimalkan kerusakan yang disebabkan oleh kejadian alam yang besar.

Dilihat dari fungsinya penggunaan bresing pada struktur portal baja bertingkat banyak bertujuan untuk memperoleh kestabilan struktur, terutama untuk gedung bertingkat banyak yang menahan beban lateral berupa beban gempa atau beban angin. **(Robert Englekirk, 1994)**

Menurut **Bruneau (1998)**, beberapa bentuk pemasangan pengaku yang biasanya digunakan adalah sebagai berikut :

1. Portal Penahan Momen (*Moment Resisting Frame* – MRF)

Momen *Resisting Frame* merupakan portal yang mengandalkan kekakuan antara balok dan kolom untuk menahan beban lateral, sehingga bangunan tidak dapat menyimpang secara lateral tanpa terjadi lentur dari balok maupun kolomnya. Elemen yang kuat dan kaku merupakan sumber utama dari kekakuan lateral dan kekuatan dari struktur *Momen Resisting Frame*.

Gambar 3.1 Portal Rangka Penahan Momen

2. Portal Dengan Sistem Pengaku Konsentrik (*Concentriccally Braced Frame* – CBF)

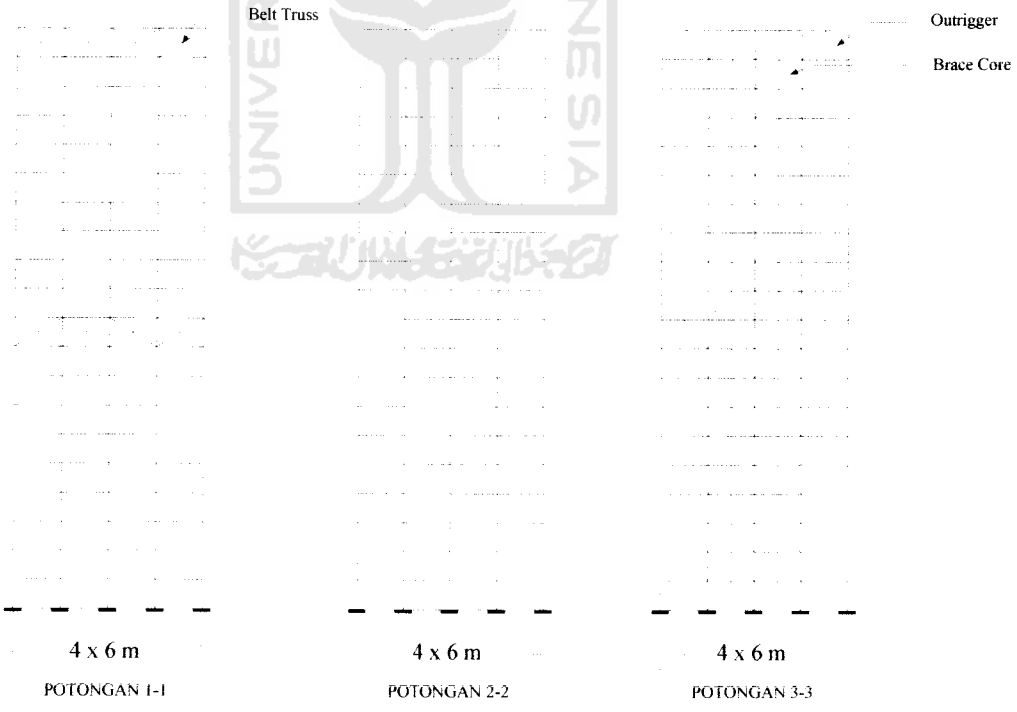
Seperti halnya *Moment Resisting Frame* portal dengan sistem pengaku konsentrik merupakan penahan gaya lateral yang mempunyai karakteristik berkekakuan elastis yang besar. Kekakuan elastis yang besar dicapai dengan menggunakan diagonal bresing yang menahan beban lateral dengan membentuk gaya aksial yang lebih besar daripada lenturnya.

a. Diagonal Brace CBF b. Inverted V-Brace CBF c. V-brace CBF d. X-brace CBF

Gambar 3.2 Portal Dengan Sistem Pengaku Konsentrik Tipe V dan X

3. Portal Dengan Sistem Pengaku *Outrigger* dan *Belttruss (Core Braced)*

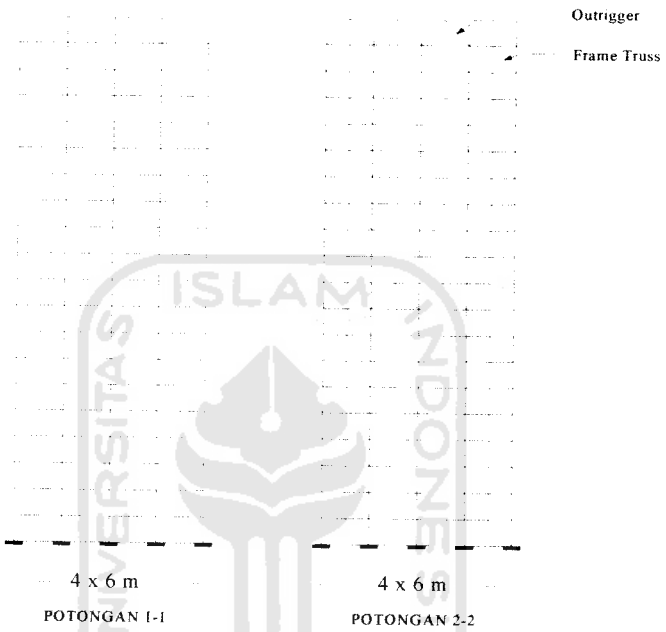
Pemakaian pengaku ini berupa struktur inti yang dikombinasikan dengan *Outrigger* dan *Belt Truss*. Struktur inti berupa *Local braced* yang dipasang pada seluruh lantai pada portal tertentu dimana lokasi struktur inti ini dipakai. Sedangkan *Outrigger* merupakan pengikat antara struktur inti dengan kolom terluar. *Belt truss* adalah pengikat antar kolom terluar.



Gambar 3.3 Sistem Pengaku *Outrigger* dan *Beltruss* (*Core Braced*)

4. Portal Dengan Sistem Pengaku *Frame Truss*

Pada sistem ini dipakai pengaku *Frame truss* yang dikombinasikan dengan *Outrigger*. Struktur *Frame truss* merupakan suatu pengaku lateral yang di pasang di struktur portal baja dibagian tepi. Pada struktur ini juga digunakan struktur *Outrigger* yang dikombinasikan dengan kolom *eksterior*. Kolom diikat ke struktur *Frame truss* melalui sistem *Outrigger*.



Gambar 3.4 Sistem Pengaku *Frame Truss*

Dari bahan bangunan yang digunakan struktur *frame truss* dan struktur *core brace* sama, perbedaan struktur *frame truss* hanya pada perubahan letak dan konfigurasi brace dari struktur *core braced.*

3.2 Prinsip Perencanaan Bangunan Tahan Gempa

Untuk mendapatkan struktur bangunan tahan gempa yang dapat bertahan dengan baik ada beberapa hal yang perlu diperhatikan. Diantara yang perlu diperhatikan dalam perencanaan bangunan tahan gempa adalah mendesain kolom harus lebih kuat dari pada balok *(strong coloumn and weak beam)* yang merupakan pola keruntuhan bangunan yang terbaik, jangan sampai mendesain balok lebih kuat dari pada kolom *(strong beam and weak coloumn)*.

3.3 Beban Angin

Dalam penghitungan beban angin ini menggunakan peraturan UBC 1994

$$P = Ce\ Cq\ qs \qquad (3.1)$$

Tabel 3.1 Nilai Ce

Tinggi diatas tanah (ft)	Eksposure D	Eksposure C	Eksposure B
20	1,45	1,33	0,84
60	1,73	1,43	0,95
100	1,88	1,61	1,13
160	2,02	1,79	1,31
200	2,1	1,87	1,42
300	2,33	2,05	1,63
400	2,34	2,19	1,8

Eksposure D merupakan daerah yang datar dan disekelilingnya tidak ada daratan. Eksposure C adalah daerah datar yang lapang. Ekspusure B adalah daerah yang disekeliling bangunan terdapat pohon-pohon dan bangunan lain. q_s adalah tekanan yang diberikan oleh aliran angin yang tetap dan dipengaruhi oleh kecepatan angin.

Tabel 3.2 nilai qs

Kecepatan angin	Tekanan angin (PSF)
70	12,6
80	16,4
90	20,8
100	25,6
110	31
120	36,9
130	43,3

Cq adalah koefisien tekanan yang bergantung dari cara angin mengenai bangunan dan untuk jenis struktur yang berbeda untuk gedung yang lebih dari 40

ft tetapi kurang dari 400 ft maka faktor pengalinya 1,4. sedang untuk bangunan yang lebih dari 200 ft di gunakan metode gaya angin normal. Dimana bagian bangunan yang berhadapan langsung dengan angin dikalikan dengan 0,8 sedangkan untuk bagian bangunan yang kebalikannya faktor pengalinya 0,5.

I adalah faktor keutamaan gedung. Untuk gedung biasa faktor keutamaannya adalah 1 sedangkan untuk gedung-gedung yang penting seperti rumah sakit, stasiun pemadam kebakaran serta pusat komunikasi di perbesar 15 persennya.

3.4 Beban Gempa Statik Ekivalen dan Beban Dinamik

3.4.1 Beban Gempa Statik ekivalen

Menurut pedoman perencanaan Ketahanan Gempa untuk Rumah dan Gedung SNI 03-1726-2002 nilai beban geser dasar nominal ekuivalen akibat gempa dapat dinyatakan dalam:

$$V = \frac{C_1 I}{R} W_t \qquad (3\text{-}4)$$

V adalah beban gempa nominal atau beban geser total.

C_1 adalah nilai faktor respon gempa berlaku untuk wilayah gempa tertentu dan untuk jenis tanah tertentu pula. Nilai C diperoleh dari spektrum respon gempa rencana menurut wilayah gempa bangunan tersebut akan dibangun.

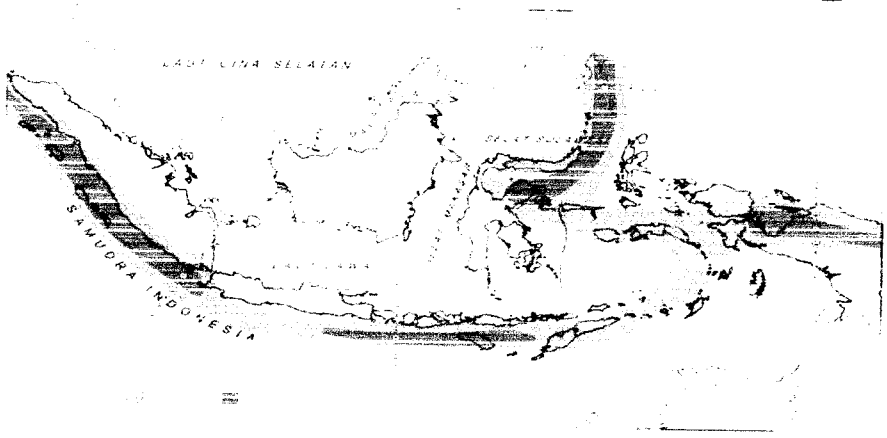
I adalah faktor keutamaan. Pemakaian faktor keutamaan (I) ini disesuaikan menurut kegunaan gedung yang akan di bangun.

R adalah factor reduksi gempa, Faktor reduksi gempa ditentukan dengan cara-cara rasional

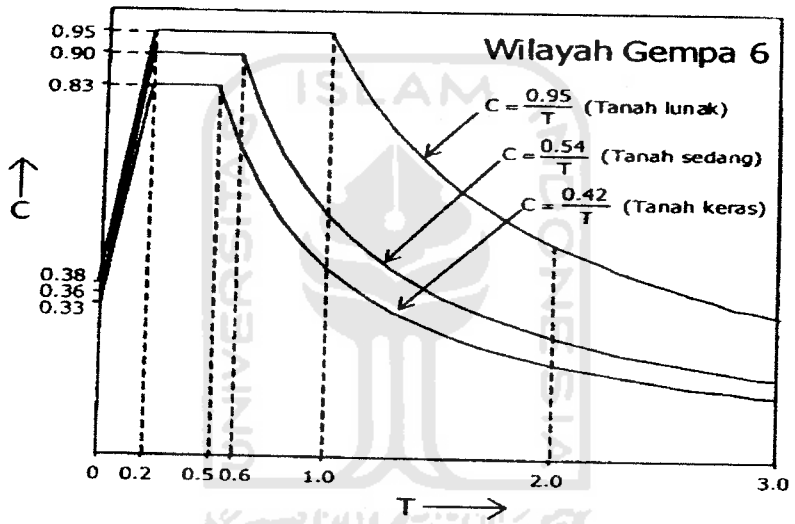
Faktor C, I dan R dapat dilihat pada buku SNI 03-1726-2002.

Wt adalah berat total struktur kombinasi beban mati ditambah beban hidup yang sesuai.

Pada penelitian ini, bangunan yang direncanakan berada pada wilayah gempa VI. Faktor respon gempa (C) dapat diperoleh dari Gambar 3.5.



Gambar 3.5a Wilayah gempa di Indonesia



Gambar 3.5b Faktor Respon Gempa Pada Wilayah Gempa VI

Periode ulang dari kerusakan struktur gedung akibat gempa akan disesuaikan dengan pemakaian suatu faktor keutamaan (I), sehingga penggunaan faktor keutamaan ini dikategorikan menurut kegunaan gedung tersebut.

1. Waktu Getar alami Struktur (T)

Waktu getar alami struktur (T) untuk struktur portal baja tanpa pengaku dapat ditentukan dengan rumus pendekatan :

$$T = 0{,}085.H^{3/4} \qquad (3\text{-}5)$$

Waktu getar alami struktur (T) untuk struktur portal baja dengan pengaku dapat ditentukan dengan rumus:

$$T = 0{,}08\frac{h}{\sqrt{L}}\sqrt{\frac{H}{L+H}} \qquad \textit{(code perancis)} \qquad (3\text{-}6)$$

$$T = 0.049xH^{3/4} \qquad \textit{(code Israel)} \qquad (3\text{-}7)$$

$$T = \frac{hn(ft)}{20\sqrt{D}(ft)} \qquad \textit{(Code Puerto Rico)} \qquad (3\text{-}8)$$

$$T = 0.85\sqrt{\frac{1}{1+\frac{L}{H}}}x0.1\frac{H}{\sqrt{L}} \qquad \textit{(Code Spanyol)} \qquad (3\text{-}9)$$

dengan :

H dan hn adalah tinggi bangunan total, D dan L adalah lebar bangunan searah datang gaya gempa untuk code perancis, code Israel, dan code spanyol (dalam m), untuk code Puerto Rico dalam ft, T adalah waktu getar alami.

Setelah struktur gedung direncanakan, waktu getar alami struktur dapat dihitung dengan rumus Rayleigh:

$$T_R = 6.3\sqrt{\frac{\sum Wi.di^2}{g.\sum Fi.di}} \qquad (3\text{-}10)$$

dengan:

Wt dan Fi adalah berat lantai tingkat ke-I, di adalah simpangan horizontal lantai tingkat ke-i dinyatakan dalam mm, g adalah percepatan gravitasi yang ditetapkan 9810 mm/det^2.

2. Distribusi Gaya Horisontal Akibat Beban Gempa (Fi)

Distribusi beban-beban gempa nominal statik ekuivalen akibat gempa (Fi) tergantung pada perbandingan tinggi total struktur (H) terhadap lebar struktur (B) pada arah yang ditinjau.

Adapun distribusinya adalah sebagai berikut:

1. Struktur bangunan yang memiliki H/B <3, maka gaya horizontal akibat beban gempa (Fi) untuk masing-masing lantai dapat dihitung menurut persamaan berikut ini :

$$Fi = \frac{Wi.hi}{\sum Wi.hi}.V \qquad (3\text{-}11)$$

2. Struktur bangunan gedung yang memilik nilai H/B>3, maka 90% beban didistribusikan berupa gaya horizontal akibat gempa (Fi) untuk masing-masing lantai dihitung dan 10% beban lainnya ditambahkan pada tingkat paling atas atau atap yang dihitung dengan persamaan berikut ini

$$Fi = 0.1V + \frac{Wi.hi}{\sum Wi.hi}0.9V \qquad (3\text{-}12)$$

untuk lantai selain atap dihitung dengan persamaan berikut :

$$Fi = \frac{Wi.hi}{\sum Wi.hi}0.9V \qquad (3\text{-}13)$$

dengan

Fi adalah gaya horizontal akibat gempa tingkat ke I, hi adalah tinggi lantai ke I, hn adalah tinggi atap,V adalah gaya geser dasar, Wi adalah berat lantai ke i.

3.4.2 Beban Dinamis Riwayat Waktu

Untuk menentukan riwayat waktu respons dinamik struktur gedung 3 dimensi yang berperilaku elastik penuh terhadap pengaruh gerakan tanah akibat gempa rencana pada taraf pembebanan nominal sebagai data masukan, di mana respons dinamik dalam setiap interval waktu di hitung dengan metode integarasi langsung atau juga melalui metode analisis ragam.

Struktur gedung yang tingginya diukur dari taraf penjepitan lateral adalah lebih dari 10 tingkat atau 40 m, sehingga harus diperhitungkan terhadap respon beban dinamik. Durasi gempa dapat diambil variasi mulai dari durasi pendek dengan kandungan frekuensi tinggi (misalnya gempa *koyna*), durasi panjang dengan kandungan frekuensi menengah (misalnya gempa *El-Centro* 1940), dan yang mempunyai kandungan frekuensi rendah (misalnya gempa *Parkfield*). Dengan ditentukannya rekaman gempa sebagai beban dinamik, maka analisis struktur dengan beban dinamik dapat dilakukan.

3.5 Perencanaan Struktur Baja Dengan Metode LRFD

Perencanaan struktur baja dengan metode LRFD adalah perencanaan dengan mengkombinasikan tegangan ultimit dan *serviceability* dengan probabilitas berdasarkan pendekatan keamanan. Dalam metode ini,beban-beban yang terjadi dikalikan dengan suatu faktor *(overcapacity factor)* yang nilainya lebih dari 1, kemudian struktur didisain untuk memperoleh tegangan yang cukup dalam menahan beban terfaktor tersebut. Kapasitas nominal dari setiap elemen yang telah didisain dikalikan dengan suatu faktor yang nilainya kurang dari 1 *(undercapacity factor).* Filosofi perencanaan dengan metode LRFD adalah sebagai berikut.

Supply Kekuatan $\geq \sum$ Kebutuhan Kekuatan

3.6 Kombinasi Pembebanan Dalam LRFD

Dalam peraturan *American Institute of Steel Construction–Load and Resistance Factor Design 1993 (AISC–LRFD93)* menggunakan kombinasi pembebanan sebagai berikut :

$1{,}4\ D$ (3.14-a)

$1{,}2\ D + 1{,}6\ L + 0{,}5\ (La \text{ atau } H)$ (3.14-b)

$1{,}2\ D + 1{,}6\ (La \text{ atau } H) + (0{,}5.L \text{ atau } 0{,}8W)$ (3.14-c)

$1{,}2\ D + 1{,}3\ W + 0{,}5\ L + 0{,}5\ (La \text{ atau } H)$ (3.14-d)

$1{,}2\ D \pm 1{,}0\ E + 0{,}5\ L$ (3.14-e)

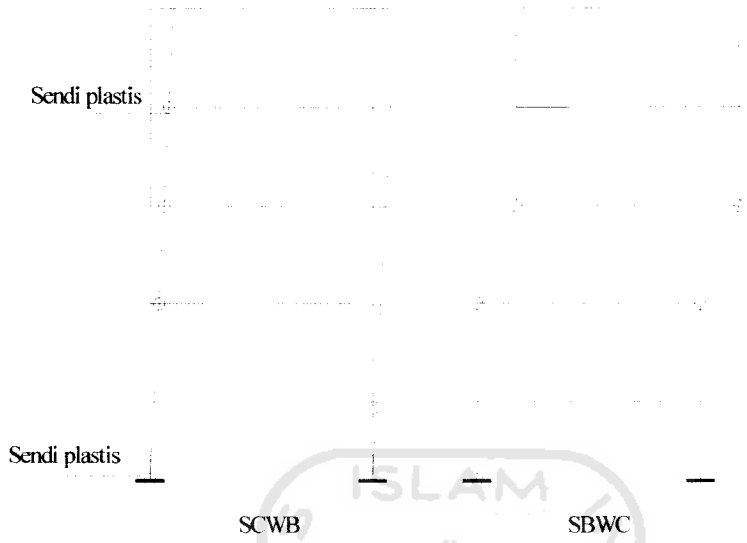
dengan :

D adalah beban mati, L adalah beban hidup, La adalah beban hidup diatas atap selama perawatan atau selama penggunaan, H adalah beban hujan, W adalah beban angina, E adalah beban gempa.

3.7 Perencanaan Struktur Baja Daktail

Prinsip struktur baja daktail adalah menggunakan konsep kolom lebih kuat dari pada balok (*strong column weak beam)* dan dikehendaki terjadinya sendi plastis sebagian besar pada ujung bentang balok (*beam sway mechanism*). Untuk memastikan hal itu terjadi tidaklah mudah karena harus dilakukan terlebih dahulu

penentuan distribusi momen rencana pada kolom akibat momen balok. Pola keruntuhan akibat sendi plastis dan balok dapat dilihat pada gambar 3.2



Gambar 3.6 Pola keruntuhan akibat sendi plastis pada balok dan kolom.

3.8 Perencanaan Lentur dan Geser Balok

Balok adalah batang-batang yang mendapat beban transversal. Balok paling efesien bila luasanya didistribusikan sedemikian rupa sehingga berada pada suatu jarak praktis terjauh dari sumbu netralnya. Elemen struktur yang direncanakan mampu menahan kombinasi momen lentur dan gaya geser. Besarnya momen lentur dan gaya geser rencana diambil dari hasil analisis struktur di titik sendi plastis.

3.8.1 Lentur Balok

Dalam balok, harus memenuhi persamaan sebagai berikut:

$$\frac{M_U}{\varphi M_n} \leq 1 \qquad (3.15)$$

M_u adalah momen lentur terfaktor , ϕ adalah faktor reduksi = 0,9

M_n adalah kuat kuat lentur nominal penampang.

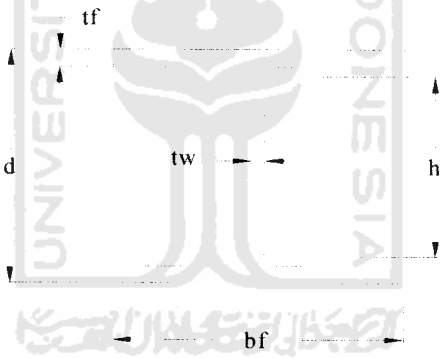
Disain balok dan kolom dalam rangka baja di daerah rawan gempa mensyaratkan bahwa struktur haruslah berpenampang kompak dengan maksud untuk mencegah tekuk lokal, baik tekuk lokal pada badan maupun tekuk lokal pada sayap

Sehingga rasio tinggi terhadap tebal penampang (λ) harus lebih kecil atau sama dengan batas rasio tinggi terhadap tebal untuk profil kompak (λ_p),

$$\lambda = \frac{b_f}{2\,t_f} \le \lambda p = \frac{65}{\sqrt{F_y}} \quad \text{(Ksi)} \qquad \text{sayap} \tag{3.16}$$

$$\lambda = \frac{h_c}{2\,t_w} \le \lambda p = \frac{640}{\sqrt{F_y}} \quad \text{(Ksi)} \qquad \text{badan} \tag{3.17}$$

dengan F_y tegangan leleh profil baja (36 ksi), hc tinggi bersih badan (in), b_f lebar sayap (in), t_w tebal badan (in), λ rasio tinggi terhadap tabal penampang dan dan λ_p adalah batas rasio tinggi terhadap tebal untuk profil kompak.



Gambar 3.7 Penampang dan Variabel Profil W

Perencanaan kuat lentur nominal penampang tergantung dari panjang bentang penampang tersebut terhadap kriteria batas panjang bentang yang telah ditentukan. Kuat lentur nominal dihitung dengan persamaan sebagai berikut :

1. Bentang Pendek ($L \le L_p$)

Kuat lentur nominal komponen struktur yang memenuhi $L \le Lp$ kuat nominal komponen struktur terhadap momen lentur adalah :

$$Mn = Mp = Zx.Fy \tag{3.18}$$

Dimana Mn adalah momen nominal komponen struktur, Mp adalah momen pada sendi plastis, L adalah bentang antara dua pengekang lateral yang berdekatan, Zx adalah modulus penampang plastis dan Lp panjang penopang lateral maksimum

$$Lp = 300.ry.\frac{1}{\sqrt{Fy\,(Ksi)}} \tag{3.19}$$

2. Bentang Menengah ($L_p < L < L_r$)

Untuk komponen struktur yang memenuhi $L_p < L < L_r$, kuat nominal komponen terhadap momen lentur adalah

$$Mn = C_b.\left[M_p - (M_p - M_r)\frac{(L_b - L_p)}{(L_r - L_p)}\right] \le M_p \tag{3.20}$$

Dimana: Mr = kekuatan momen batas tekuk

$$Mr = (F_y - F_r)\,.\,S_x, \text{ dengan tegangan sisa Fr} = 10 \text{ ksi} \tag{3.21}$$

Lr = panjang tanpa penopang lateral maksimum

$$L_r = \frac{r_y.X_1}{F_1}\sqrt{1+\sqrt{1+X_2.F_1^2}} \tag{3.22}$$

$$F_1 = F_y - F_r \tag{3.23}$$

$$X_1 = \frac{\pi}{S}\sqrt{\frac{E.G.J.A}{2}}, \quad J = \text{konstanta } \textit{torsional} \tag{3.24}$$

$$X_2 = \frac{4.C_W}{I_y}\left(\frac{S_X}{G.J}\right)^2, \quad C_W = \text{konstanta } \textit{warping} \tag{3.25}$$

C_b = faktor pengali momen

$$C_b = \frac{12{,}5\,M_{max}}{2{,}5M_{max} + 3M_A + 4M_B + 3M_C} \tag{3.26}$$

dengan M_{max} adalah momen maksimum pada batang yang ditinjau, M_A, M_B, M_C berturut –turut adalah momen pada 1/4, 1/2, dan 3/4 bentang.

3. Bentang Panjang (L>Lr)

Untuk komponen struktur yang memenuhi L>Lr, kuat nominal komponen struktur terhadap lentur adalah

$$Mn = Mcr \le Mp \tag{3.27}$$

dimana $$Mcr = \frac{C_b.S_X.X_1\sqrt{2}}{L/r_y}\sqrt{1+\frac{X_1^2.X_2}{2.(L/r_y)^2}} \quad (3.28)$$

3.8.2 Geser Balok

Gaya geser balok ditentukan oleh momen plastis (M_{pb}) balok pada kedua ujung balok,

$$V_u = 1{,}2.V_D + 0{,}5.V_L + \frac{2.M_{pb}}{L'} \quad (3.29)$$

tetapi tidak perlu lebih besar dari,

$$V_u = 1{,}2.V_D + 0{,}5.V_L + \mu..V_E \quad (3.30)$$

dengan V_u adalah Gaya geser terfaktor

V_D adalah Gaya geser akibat beban mati

V_L adalah Gaya geser akibat beban hidup

V_E adalah Gaya geser akibat beban gempa

μ adalah Faktor daktilitas tergantung dari jenis struktur

M_{pb} adalah Kapasitas momen balok

$$M_{pb} = \beta \, . \, M_p \, Zx \, , \quad (3.31)$$

dengan β = *over strenght factor* sebesar 1,1

Perencanaan gaya geser nominal balok terlebih dulu dicek rasio tinggi terhadap tebal badan. Hal ini disebabkan geser pada balok ditahan oleh badan.

$$\frac{h}{t_w} \le \frac{418}{\sqrt{F_y}} \text{ (Ksi)} \quad (3.32)$$

Kapasitas nominal balok dalam menahan geser adalah :

$$\phi Vn = \phi \, 0{,}6 \, . \, F_y \, . \, A_w \quad (3.33)$$

dimana ϕadalah faktor reduksi untuk geser yang nilainya 0,9

A_w = luas badan elemen struktur (in^2)

$$A_w = d \, . \, t_w \quad (3.34)$$

Kapasitas geser penampang,

$$\frac{V_u}{\phi V_n} \le 1 \quad (3.35)$$

Perencanaan balok harus dikontrol aman terhadap lendutan. Dimana AISC membatasi lendutan maksimum yang boleh terjadi pada balok sebesar :
Untuk balok yang mendukung beban lantai,

$$\frac{L}{360} \geq \Delta_{\text{pertengahan bentang}} \qquad (3.36)$$

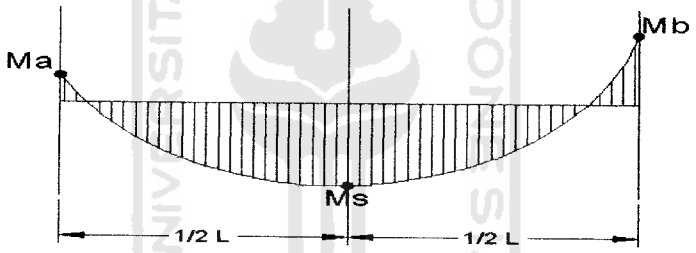
Untuk balok yang mendukung beban atap,

$$\frac{L}{240} \geq \Delta_{\text{pertengahan bentang}} \qquad (3.37)$$

Dimana lendutan pada tengah bentang dapat dilihat dari program bantu analisis struktur maupun menggunakan rumus persamaan :

$$\Delta_{\text{pertengahan bentang}} = \frac{5L^2}{48EI}\left[M_s - 0{,}1(M_a + M_b)\right] \qquad (3.38)$$

Dengan L adalah panjang bentang balok, Ma, Mb, Ms dapat dilihat pada gambar dibawah ini,



Gambar 3.8 Momen Akibat gravitasi

3.9 Perencanaan Kolom

Dalam perencanaan kolom harus diperhatikan beban apa saja yang membebani elemen kolom. Struktur kolom akan menerima kombinasi beban aksial tekan, momen lentur dan geser. Nilai beban aksial dan nilai geser rencana pada kolom dapat langsung dibaca pada hasil output analisis Etab.

3.9.1 Momen Rencana Kolom

Untuk momen rencana pada kolom sebagai aplikasi dari konsep *strong column–weak beam* maka nilai momen ultimit diambil dari nilai terkecil dari persamaan (3.15 dan 3.17)

$$M_{u,k} = \frac{h_n}{h}.0,7.\omega 0,7_k\left(\frac{L_{ki}}{L'_{ki}}M_{pb,ki} + \frac{L_{ka}}{L'_{ka}}M_{pb,ka}\right) \quad (3.39)$$

$$M_{u,k} = 1,2.M_D + 0,5.M_L + \mu.M_E \quad (3.40)$$

dengan M_u adalah Momen terfaktor

M_D adalah Momen akibat beban mati

M_L adalah Momen akibat beban hidup

M_E adalah Momen akibat beban gempa

μ adalah Faktor daktilitas tergantung dari jenis struktur

$M_{pb,ka}$ adalah Kapasitas momen balok sebelah kanan

$M_{pb,ki}$ adalah Kapasitas momen balok sebelah kiri

M_{pb} adalah β . M_p , (3.41)

$Mp = Z_x$. F_y

β = *over strenght factor* sebesar 1,1

ω_d adalah *Dinamic Magnification factor* – DMF

h adalah tinggi kolom (in)

h_n adalah tinggi bersih kolom (in)

L adalah panjang balok (in)

L' adalah panjang balok antara ujung sendi plastis (in)

α_k adalah koefisien distribusi momen kolom

$$\alpha_k = \frac{M_{E,kol} - n}{\sum M_{E,kol} - n} \quad (3.42)$$

ME_{kol}-n momen gempa dari ujung kolom lantai ke-n

3.9.2 Gaya Aksial Rencana Kolom

Gaya aksial rencana kolom (Pu,k) merupakan nilai terkecil dari persamaan betrkut ini:

$$P_{u,k} = 0,7.Rv\left(\frac{M_{pb,ki}}{l'_{ki}} + \frac{M_{pb,ka}}{l'_{ka}}\right) + 1,05.N_{g,k} \quad (3.43)$$

$$P_{u,k\ max} = 1,2.P_D + 0,5.P_L + \mu.P_E \quad (3.44)$$

dengan P_u = Aksial terfaktor (Kips)

$N_{g,k}$ = ($N_D + N_L$)

N_D = Aksial akibat beban mati

N_L = Aksial akibat beban hidup

$N_{E,k}$ = Aksial akibat beban gempa

μ = Faktor daktilitas tergantung dari jenis struktur

Rv = Faktor reduksi yang nilainya tergantung dari jumlah lantai,

1,0	untuk $1 < n \leq 4$
1,1 – 0,025 n	untuk $4 < n \leq 20$
0,6	untuk $n > 20$

n = jumlah lantai bangunan

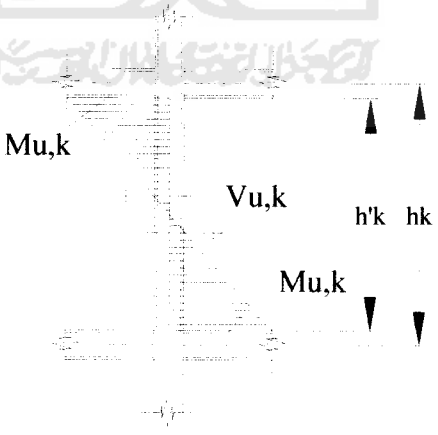
(keterangan lain sama dengan keterangan pada momen kolom)

3.9.3 Gaya Geser Rencana Kolom

Gaya geser rencana kolom (Vu,k) merupakan nilai terkecil dari persamaan

$$V_{u,k} = \frac{M_{u,k}\,\text{bawah} + M_{u,k}\,\text{atas}}{h'_k} \qquad (3.45)$$

$$V_{u,k} = 1{,}2.V_D + 0{,}5.V_L + \mu..V_E \qquad (3.46)$$



Gambar 3.9 Gaya geser pada kolom

dengan V_u = Geser terfaktor

V_D = Geser akibat beban mati

V_L = Geser akibat beban hidup

V_E = Geser akibat beban gempa

3.9.4 Kuat Tekan Aksial Kolom

Masalah yang harus dihindari dalam merencanakan kuat tekan aksial pada kolom adalah terjadinya tekuk lokal *(local buckling)*, sehingga rasio tinggi terhadap tebal penampang (λ) harus lebih kecil atau sama dengan batas rasio tinggi terhadap tebal untuk profil kompak (λ_p),

$$\lambda = \frac{b_f}{2\,t_f} \le \lambda p = \frac{65}{\sqrt{F_y}} \quad \text{(Ksi)} \qquad \text{sayap} \tag{3.47}$$

$$\lambda = \frac{h_c}{2\,t_w} \le \lambda p = \frac{640}{\sqrt{F_y}} \quad \text{(Ksi)} \qquad \text{badan} \tag{3.48}$$

Kemudian menentukan nilai kondisi ujung *(end condition)* joint kolom, G dengan persamaan :

$$G = \frac{\sum\left(\frac{I}{L}\right)_c}{\sum\left(\frac{I}{L}\right)_b} \tag{3.49}$$

dengan :

G = Nilai kondisi ujung atau joint kolom

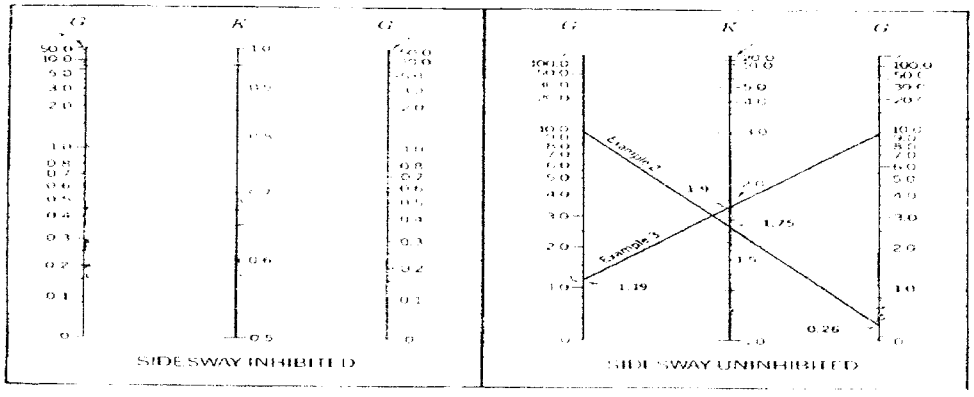
I_c = Inersia penampang kolom (in^4)

L_c = Panjang elemen kolom (in)

I_b = Inersia penampang balok (in^4)

L_b = Panjang elemen balok (in)

Kemudian koefisian panjang efektif K dari kolom didapatkan dengan menghubungkan nilai G ujung atas dan G ujung bawah elemen tekan pada nomogram gambar 3.5, dimana nomogram kondisi kolom bergoyang untuk (USF) dan nomogram kondisi kolom tidak bergoyang untuk (BSF). Selain itu terdapat ketentuan untuk kolom pondasi, dimana untuk dukungan jepit G = 1,0 dan untuk dukungan sendi G = 10.



Gambar 3.10

Sidesway inhibited adalah komponen struktur tak bergoyang, sedang sidesway uninhibited adalah komponen struktur bergoyang. *(AISC-LRFD93)*

Dalam perencanaan kolom harus diperhitungkan pengaruh tekuk, dimana tekuk ini sangat dipengaruhi oleh kelangsingan dari penampang profil yang di pilih. Nilai parameter kelangsingan λc dihitung dengan persamaan.

$$\lambda c = \frac{K.L}{r.\pi}\sqrt{\frac{F_y}{E}} \qquad (3.50)$$

dengan λ_c = Nilai kelangsingan

K = koefisien panjang efektif

r = jari-jari girasi penampang (in)

Tegangan kritis profil F_{cr} ditentukan dengan memperhitungkan besarnya nilai parameter kelangsingan λ_c.

Jika nilai $\lambda_c \leq 1{,}5$ maka

$$F_{cr} = (0{,}658^{\lambda c^2}).F_y \qquad (3.51)$$

Jika nilai $\lambda c > 1{,}5$ maka

$$F_{cr} = \left[\frac{0{,}877}{\lambda_c^2}\right].F_y \qquad (3.52)$$

Nilai kapasitas penampang tekan dihitung dengan persamaan.

$$\phi_c P_n = \phi_c . Ag . F_{cr} \qquad (3.53)$$

dengan A_g luas bruto penampang profil, P_n kuat tekan penampang profil dan φ_c adalah faktor reduksi elemen tekan (0,85).

3.9.5 Kombinasi kolom

Perencanaan kolom didasarkan pada kombinasi beban gaya tekan dan momen lentur dimana nilai interaksi antara komponen aksial dengan momen lentur harus ≤ 1,0. Persamaan interaksi yang digunakan berdasarkan nilai rasio beban aksial tekan P_u dengan kapasitas tekan penampang $\phi_c P_n$.

Jika $\frac{P_u}{\phi_c P_n} < 0{,}2$ maka

$$\frac{P_u}{2\phi c P_n} + \left(\frac{M_{ux}}{\phi b M_{nx}} + \frac{M_{uy}}{\phi b M_{ny}} \right) \leq 1{,}0 \qquad (3.54)$$

Jika $\frac{P_u}{\phi_c P_n} \geq 0{,}2$ maka

$$\frac{P_u}{\phi_c P_n} + \frac{8}{9}\left(\frac{M_{ux}}{\phi_b M_{nx}} + \frac{M_{uy}}{\phi_b M_{ny}} \right) \leq 1{,}0 \qquad (3.55)$$

$M_n = Z_x . F_y$

dengan M_{nx}, M_{ny}, M_{ux}, M_{uy} berturut – turut adalah momen nominal arah sumbu y, momen nominal arah sumbu x, momen ultimit arah sumbu y, momen ultimit arah sumbu x

Dengan asumsi bahwa profil yang di pakai adalah profil kompak sehingga tidak terjadi tekuk lokal pada profil tersebut.

3.9.6 *Strong Column Weak Beam*

Setelah profil kolom direncanakan, maka cek prinsip desain *strong column and weak beam* harus dilakukan dengan mencari rasio momen tahanan dari kolom dan balok. Rasio tersebut dapat dicari dengan persamaan (3.56).

$$\frac{\sum M_{pc}}{\sum M_{pb}} > 1{,}0 \qquad (3.56)$$

dengan besarnya M_{pc} dan M_{pb} adalah

$$\Sigma M_{pc} = \Sigma Z_{xc}(F_{yc} - \frac{P_{uc}}{A_g}) \quad (3.57)$$

$$\Sigma M_{pb} = (1{,}1 \,.\, M_p + M_y) \quad (3.58)$$

dengan Z_c = modulus plastis kolom (in^3)

f_{yc} = tegangan leleh (Ksi)

N_{uc} = gaya aksial kolom (Kips)

A_g = luas profil kolom (in^2)

3.10 Perencanaan Pengaku *(Bracing) Pada* Struktur *Frame Truss.*

Perencanaan *bracing* tekan tidak berbeda dengan kolom. Yang membedakan adalah penentuan nilai panjang efektif (k). Dalam penentuan nilai (k) diasumsikan diujung-ujung *bracing* merupakan dukungan sendi. Sehingga nilai K adalah 1, penentuan nilai k ini dapat dilihat pada gambar 3.11

Buckled Shape of Column Shown by Dashed Line	(a)	(b)	(c)	(d)	(e)	(f)
Theoretical K value	0.5	0.7	1.0	1.0	2.0	2.0
Recommended design values when ideal conditions are approximated	0.65	0.80	1.2	1.0	2.10	2.0
End condition code	Rotation fixed and translation fixed Rotation free and translation fixed Rotation fixed and translation free Rotation free and translation free					

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Gambar 3.11 Nilai kc untuk kondisi kolom ideal.

Untuk perencanaan tarik pada *bracing* dapat digunakan persamaan (3.59) sampai (3.62). Terdapat dua kondisi yang berbeda dalam perencanaan yaitu

1. Untuk kondisi leleh pada luas bruto penampang

$$\phi P_n = 0{,}90 \,.\, F_y \,.\, A_g \quad (3.59)$$

2. Untuk kondisi patah pada luas tampang efektif

$$A_n = A_g - (t \,.\, d_b) \quad (3.60)$$

$$A_e = U.A_n \quad (3.61)$$

$$\phi_t P_n = 0{,}75 \,.\, F_u \,.\, A_e \quad (3.62)$$

Dengan:

A_e luas efektif profil (in^2), A_n luas bersih profil (in^2), F_u tegangan tarik maksimum baja profil (Ksi), P_n kuat tarik penampang profil (Kips), U faktor reduksi luas efektif. dan ϕ_t adalah faktor reduksi untuk kapasitas tarik penampang.

3.11 Perencanaan Balok Anak

3.11.1 Perhitungan Properti Elastis Penampang Komposit

$$E_c = 1750.\sqrt{F_C'(Ksi)} \tag{3.63}$$

Rasio modular

$$n = \frac{E_s}{E_c} \tag{3.64}$$

Lebar efektif slab beton untuk balok interior merupakan nilai terkecil dari:

$$b_E \leq \tfrac{1}{4}.L \tag{3.65}$$

$$b_E \leq 16\ ts + bf \tag{3.66}$$

$$b_E \leq bo \tag{3.67}$$

Lebar sayap beton ekuivalen, $\frac{b_E}{n}$ (3.68)

Luas baja transformasi,

$$A_{tr} = (b_E/n\ .\ ts) + A_s \tag{3.69}$$

Letak garis netral komposit terhadap sisi atas

$$Ya = \frac{((\frac{bE}{n}.ts).0{,}5ts) + (As.((0{,}5ds) + ts))}{(\frac{bE}{n}.ts) + As} \tag{3.70}$$

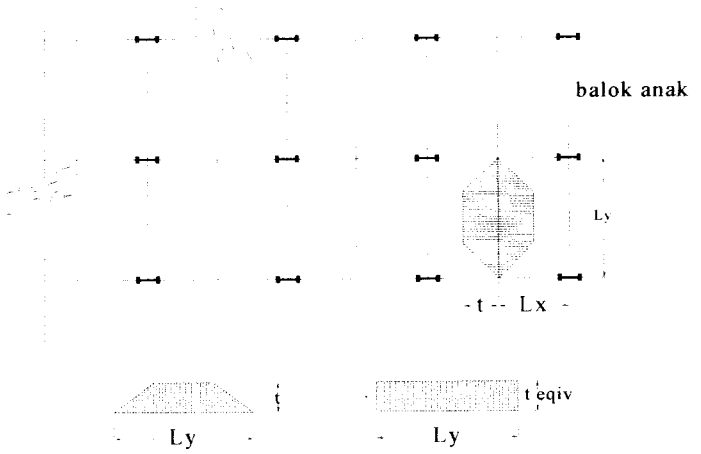
$$Yb = ds + ts - Ya \tag{3.71}$$

Momen inersia penampang komposit

$$I_{tr} = Ix_s + A_s.Y_2^2 + Ix_{cr} + A_{cr}.Y_1^2 \tag{3.72}$$

3.11.2 Pembebanan dan Gaya Dalam Penampang Komposit

Balok anak diasumsikan sebagai balok sederhana sehingga dukungan pada balok anak adalah sendi-rol.



Gambar 3.12 Distribusi beban pada balok anak

Lx = sisi terpendek

Ly = sisi terpanjang

$t = 0{,}5.Lx$ (3.73)

$$t_{eq} = t - \frac{4.t^3}{3.L_y^{\ 2}} \quad (3.74)$$

$$Q_{D\ eqiv} = Q_D \cdot t_{eq} \quad (3.75)$$

$$Q_{L\ eqiv} = Q_L \cdot t_{eq} \quad (3.76)$$

$$Qu = 1{,}2\ Q_D + 1{,}6\ Q_L \quad (3.77)$$

Momen maksimum ultimit

$$Mu = \frac{1}{8} Qu.L^2 \quad (3.78)$$

Gaya geser ultimit

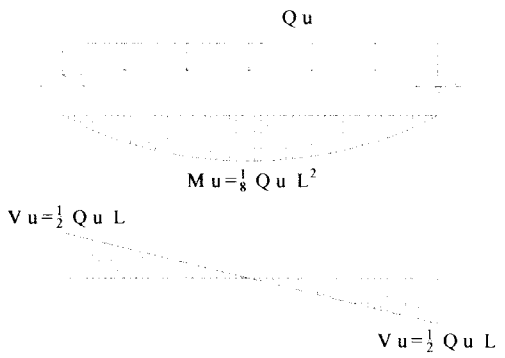
$$Vu = \frac{1}{2} Qu.L \quad (3.79)$$

Gaya geser akibat beban mati

$$V_D = \frac{1}{2} Q_D.L \quad (3.80)$$

Gaya geser akibat beban hidup

$$V_L = \frac{1}{2} Q_L.L \quad (3.81)$$



Gambar 3.13 Gaya dalam pada balok anak

3.11.3 Kapasitas Lentur Nominal Balok Komposit

Kontrol rasio tinggi terhadap tebal badan profil dicek dengan persamaan :

$$\lambda = \frac{h_c}{t_w} \le \lambda p = \frac{640}{\sqrt{F_y}} \quad \text{(Ksi)} \qquad (3.82)$$

Gaya desak beton, $C = 0{,}85 f_c' . b_E . a$ (3.83)

Gaya tarik penampang baja, $T = A_s . f_y$ (3.84)

Kesetimbangan gaya dalam $C = T$

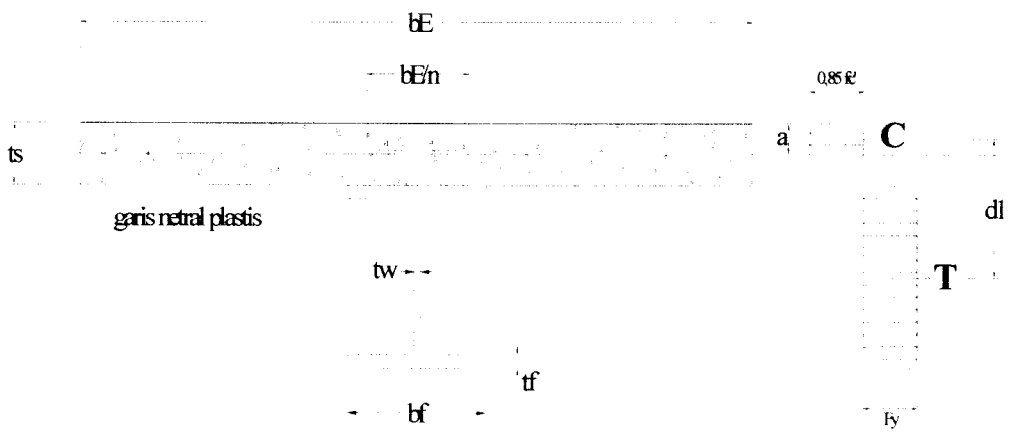
$$0{,}85 f_c' . b_E . a = A_s . f_y$$

Sehingga nilai a dapat dicari berdasarkan blok tegangan yang terjadi

$$a = \frac{A_s . f_y}{0{,}85 . f_c' . b_E} \qquad (3.85)$$

Kapasitas nominal balok komposit

Apabila a < ts , maka garis netral plastis ada di beton

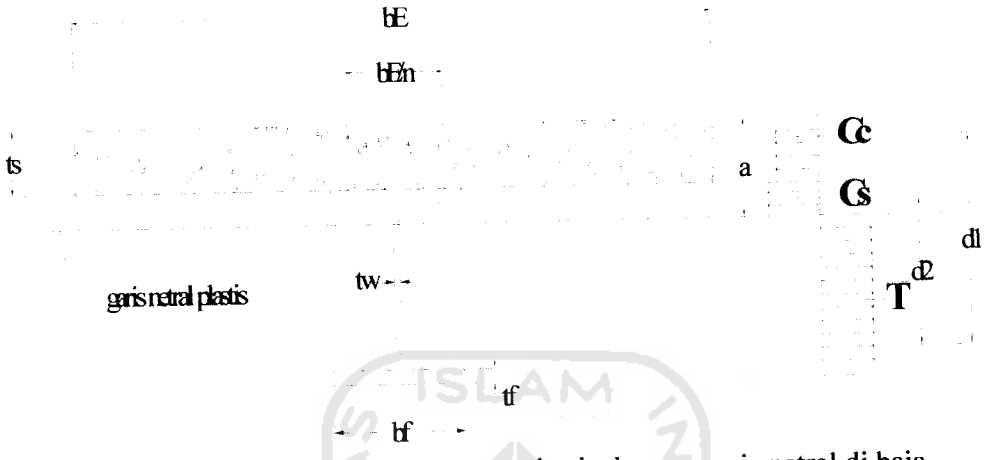


Gambar 3.14a Diagram tegangan plastis dengan garis netral di beton.

$$M_n = C.d_1 = T.d_1 \quad (3.86)$$

$$\phi_b M_n \geq M_u \quad (3.87)$$

Apabila a > ts , maka garis netral plastis ada di baja



Gambar 3.14b Diagram tegangan plastis dengan garis netral di baja.

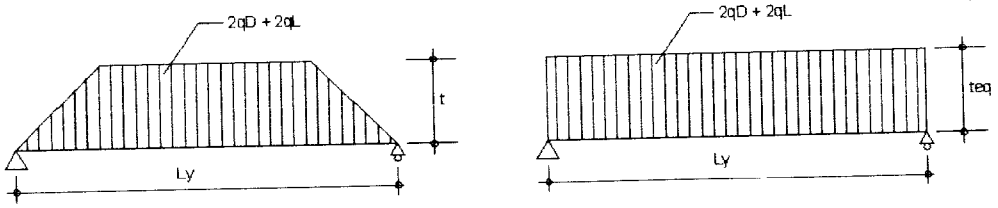
$$M_n = Cc.d_1 + Cs.d_2 \quad (3.88)$$

Cek dengan persamaan yaitu

$$\phi_b M_n \geq M_u$$

3.11.4 Kontrol Terhadap Lendutan

Balok Komposit yang telah didisain harus dikontrol besarnya lendutan yang terjadi. Besarnya lendutan sangat tergantung pada beban-beban yang bekerja pada balok tersebut. Perhitungan beban merata equivalen dapat dilakukan dengan menggunakan persamaan 3.89 sampai 3.93.



Gambar 3.15 Distribusi Beban Plat

Lx = sisi terpendek dari pelat

$$t = 0{,}5.Lx \quad (3.89)$$

$$t_{eq} = t - \frac{4.t^3}{3.L_y^2} \quad (3.90)$$

$$q_D = t_{eq}.Q_D \quad (3.91)$$

$$q_L = t_{eq}.Q_L \quad (3.92)$$

$$q_{total} = 2q_D + 2q_L + q_s \quad (3.93)$$

Lendutan yang terjadi pada balok komposit

1. Apabila pada pelaksanaan terdapat dukungan

$$\Delta_{max} = \frac{5}{384}.\frac{q_{total}.L^4}{E_s.I_{Kmp}} < \frac{L}{360} \quad (3.94)$$

2. Apabila pada pelaksanaan tanpa dukungan

$$q_{mati} = q_D + q_s \quad (3.95)$$

$$\Delta_{baja} = \frac{5}{384}.\frac{q_{mati}.L^4}{E_s.I_s} \quad (3.96)$$

$$\Delta_{Kmp} = \frac{5}{384}.\frac{q_L.L^4}{E_s.I_{Kmp}} \quad (3.97)$$

$$\Delta_{max} = \Delta_{baja} + \Delta_{Kmp} < \frac{L}{360} \quad (3.98)$$

3.11.5 Perencanaan Konektor Geser

Perlunya shear conector diantara profil baja dan beton (pelat) dipasang baut penghubung untuk menjamin kinerja penampang komposit sehingga menjadi lebih efektif.

Gaya geser horizontal yang terjadi antara beton dan baja (V_n) merupakan nilai terkecil dari persamaan:

$$Vn = 0{,}85.f_c'.A_c \quad (3.99)$$

$$Vn = A_s.f_y \quad (3.100)$$

dengan $A_c = b_E$. ts

A_c = Luas beton efektif

b_E = lebar efektif

ts = tebal beton

A_s = Luas baja

Kuat nominal satu penghubung geser jenis paku yang ditanam di dalam pelat beton masif adalah:

$$Q_n = 0{,}5.A_{sc}.\sqrt{f_c'.E_c} \leq A_{sc}.f_u \qquad (3.101)$$

dengan A_{sc} = Luas baut *shear conector*

f_u = kekuatan baut

E_c = Modulus elastisitas beton

Jumlah stud geser yang dibutuhkan:

$$n = \frac{V_n}{Q_n} \qquad (3.102)$$

Untuk pengecekan kapasitas geser balok anak dapat dicari dengan persamaan (3.32) sampai (3.35).

3.12 Perencanaan Sambungan Balok-Kolom

Pada struktur ini akan direncanakan sambungan-sambungan yang didesain dengan perencanna tahan gempa. Data yang digunakan untuk desain sambungan adalah sebagai berikut :

1. Baut

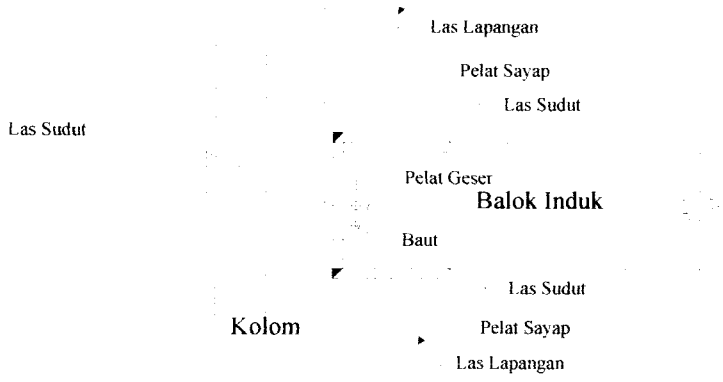
   Baut yang digunakan adalah baut yang berkekuatan tinggi A325, dengan tidak menggunakan ulir pada bidang gesernya dan kuat tarik bahan baut F_u^b = 120 ksi.

2. Las

   Elektroda yang digunakan E70XX dengan kuat tarik F_{exx} = 70 ksi

3. Pelat sambung

   Pelat sambung yang digunakan mempunyai F_y = 36 ksi dan F_u = 58 ksi.



Gambar 3.16 Sambungan yang digunakan

Untuk menjamin mekanisme transfer beban dari balok ke kolom, sambungan harus mampu menahan rotasi leleh yang besar ketika terjadi gempa. Momen plastis yang terjadi pada balok akan didistribusikan menjadi tegangan tarik dan tekan pada sayap balok sebesar :

$$T_u = \frac{M_f}{0{,}95d} \tag{3.103}$$

dengan T_u = kuat tarik/tekan terfaktor, (Kips)

M_f = momen plastis yang terjadi pada muka kolom. (K-in)

Sedangkan badan balok akan menahan gaya geser (V_f) sebesar :

$$V_f = \frac{2.M_f}{L_n} + V_g \tag{3.104}$$

dimana V_f adalah gaya geser pada *flens* kolom, M_f momen plastis balok pada muka kolom, V_g gaya geser akibat beban grafitasi yang terjadi pada balok, dan L_n adalah bentang bersih balok.

Pada umumnya elemen tarik dapat mengalami retak akibat pelelehan pada penampang bruto, maupun retakan pada penampang bersihnya. Sehingga disain plat sambung (*flange plate*) dapat digunakan persamaan (3.59) sampai (3.62), dengan mengganti gaya aksial nominal P_n dengan kuat nominal penyambung R_n, dimana nilai U unuk plat sambung diambil sama dengan 1.

Untuk menghindari kegagalan tumpu pada masing-masing elemen yang disambung, kuat tumpu elemen yang paling kritis (sayap balok/*flange plate*) harus lebih besar dari tegangan yang terjadi, yakni sebesar :

$$\phi R_n = \phi \,.\, 2{,}4 \,.\, F_u \,.\, d_b \,.\, t \geq V_f \qquad (3.105)$$

dimana ϕ = koefisien reduksi yang diambil sebesar 0,75

Cek blok geser pada bagian yang paling kritis dalam menahan beban :

$$\phi R_n \geq T_u \qquad (3.106)$$

dimana ϕ = koefisien reduksi yang diambil sebesar 0.75

R_n = kuat nominal penyambung yang nilainya tergantunf pada kondisi,

apabila $F_u \,.\, A_{nt} > 0{,}6 \,.\, F_u \,.\, A_{ns}$,

$$R_n = 0{,}6.F_y.\, A_{vg} + F_u.\, A_{nt} \qquad (3.107a)$$

atau apabila $F_u \,.\, A_{nt} < 0{,}6 \,.\, F_u \,.\, A_{ns}$,

$$R_n = 0{,}6.\, F_u.\, A_{ns} + F_y.\, A_{tg} \qquad (3.107b)$$

A_{vg} = luas *bruto* yang mengalami pelelehan geser

A_{tg} = luas *bruto* yang mengalami pelelehan tarik

A_{ns} = luas *netto* yang mengalami retakan geser

A_{nt} = luas *netto* yang mengalami retakan tarik

b. Sambungan yang menahan geser

Kekuatan satu baut dalam menahan beban :

$$\phi R_n = \phi \,.\, (0{,}6 \,.\, F_u^{\,b}) \,.\, m \,.\, A_b \qquad (3.108)$$

dimana ϕ = koefisien reduksi sebesar 0,75

m = banyaknya bidang geser pada baut

A_b = luas penampang lintang baut

Penyusunan letak baut pada plat digunakan untuk disain panjang plat geser yang dibutuhkan, dengan cara coba-coba tentukan tebal plat geser yang dibutuhkan, dimana plat geser harus dikontrol terhadap :

geser leleh pada plat :

$$\phi R_n = \phi \,.(0{,}6 \,.\, F_y).\, A_g \geq V_f \qquad (3.109)$$

dimana ϕ = koefisien reduksi yang nilainya 0,9

Geser fraktur pada plat :

$$\phi R_n = \phi \,.\, (0{,}6 \,.\, F_u) \,.\, A_n \qquad (3.110)$$

dimana ϕ = koefisien reduksi sebesar 0,75

Kekutan las sambung antara plat geser ke sayap kolom ditentukan dengan, resistensi geser melalui leher las sebesar :

$$\phi R_{nw} = \phi.(0{,}6 \,.\, F_{Exx}).t_e \qquad (3.111a)$$

Tapi tidak perlu lebih besar dari kekuatan fraktur geser dari logam dasar sebesar,

$$\phi R_{nw} = \phi.(0{,}6 \,.\, F_u).t_{pl} \qquad (3.111b)$$

dimana F_{Exx} = kekuatan tarik elektroda las

t_e = dimensi leher efektif

t = tebal material dasar sepanjang las

3.13 Perencanaan panel zone

3.13.1 Perencanaan daerah tarik dan tekan

Untuk rangka baja yang menahan gaya dan deformasi berasal dari gempa yang besar, gaya yang terjadi pada *flens* balok akan di transfer kekolom sebesar,

$$P_{bf} = 1{,}8 \,.\, b_{fb} \,.\, t_{fb} \,.\, F_{yb} \qquad (3.112)$$

Apabila nilai dari $P_{bf} < \phi R_n$ maka dalam pelaksanaannya daerah tersebut tidak memerlukan pengaku (*stiffener*), dimana nilai ϕR_n ditentukan seperti persamaan di bawah ini :

1. Pelelehan sayap lokal

$$\phi R_n = \phi\, 6{,}25 \,.\, t_{fc}^2 \,.\, F_{yc} \qquad (3.113)$$

Dengan t_{fc} adalah tebal *flens* kolom dan F_{yc} adalah tegangan leleh badan kolom

2. Pelelehan badan lokal

$$\phi R_n = . \phi (5k + t_{fb}).F_{yc}.t_{wc} \quad (3.114)$$

Dengan ϕ adalah faktor resistensi yang bernilai 1, Rn adalah kekuatan desain dari badan balok untuk menahan gaya dari *flens* balok, F_{yc} adalah tegangan leleh badan kolom dan t_{wc} adalah tebal pelat badan kolom

3. Pelipatan pelat badan

$$\phi R_n = \phi.135.t_{wc}^{\ 2}.\left[1+3\left(\frac{t_{fb}}{d_c}\right)\left(\frac{t_{wc}}{t_{fc}}\right)^{1.5}\right]\sqrt{\frac{F_{yc}.t_{fc}}{t_{wc}}} \quad (3.115)$$

Dengan ϕ adalah faktor resistensi yang bernilai 0,75. t_{wc} adalah tebal pelat badan kolom, t_{fb} adalah tebal *flens* balok, t_{fc} adalah tebal *flens* kolom dan d adalah kedalaman penampang kolom.

4. Tekuk tekan pelat badan

$$\phi R_n = \frac{\phi.4100.t_{wc}^{\ 3}\sqrt{F_{yc}}}{d_c'} \quad (3.116)$$

Dengan ϕ adalah faktor resisitensi yang mepunyai nilai 0,9. t_{wc} adalah tebal pelat-badan kolom, t_{fc} adalah tebal *flens* balok, F_{yc} adalah tegangan leleh pelat badan kolom dan d_c adalah tinggi pelat badan bebas dari bagian *fillet*

3.13.2 Perencanan daerah geser

Gaya geser pada *panel zone* adalah, V_u adalah:

$$V_u = \frac{M_{P1}}{0{,}95d_{b1}} + \frac{M_{P2}}{0{,}95d_{b2}} - V_c \quad (3.117)$$

dengan $$V_c = \frac{M_1\left(\frac{L_1}{L_{n1}}\right) + M_2\left(\frac{L_2}{L_{n2}}\right)}{h} \quad (3.118)$$

Apabila hanya ada satu balok pada sayap kolom, maka persamaan (3.117) direduksi menjadi,

$$V_u = \frac{M_{P1}}{0{,}95 d_{b1}} - V_c \qquad (3.119)$$

dimana M_P = momen kapasitas plastis pada balok (K-in)

d_b = tingi balok (in)

Penggunaan *double plate* atau pengaku diagonal diperlukan apabila :

$$\phi R_v < V_u$$

dengan ΦR_v apabila kestabilan dari frame diperhatikan, ditentukan menurut persamaan di bawah ini :

1. Untuk $P_u \leq 0{,}75\ P_y$

$$\phi R_v = \phi\ 0{,}6.F_y.d_c.t_w.\left(1 + \frac{3.b_{cf}.t_{cf}^2}{d_b.d_c.t_w}\right) \qquad (3.120)$$

2. Untuk $P_u > 0{,}75\ P_y$

$$\phi R_v = \phi 0{,}6.F_y.d_c.t_w.\left(1 + \frac{3.b_{cf}.t_{cf}^2}{d_b.d_c.t_w}\right)\left(1{,}9 - \frac{1{,}2.P_u}{P_y}\right) \qquad (3.121)$$

dengan P_u = Gaya aksial kolom pada join yang bersangkutan (Kips)

$$P_y = A\ .\ F_y \qquad (3.122)$$

dengan A = luas penampang bruto dari kolom (in^2)

F_y = kuat leleh baja (Ksi)

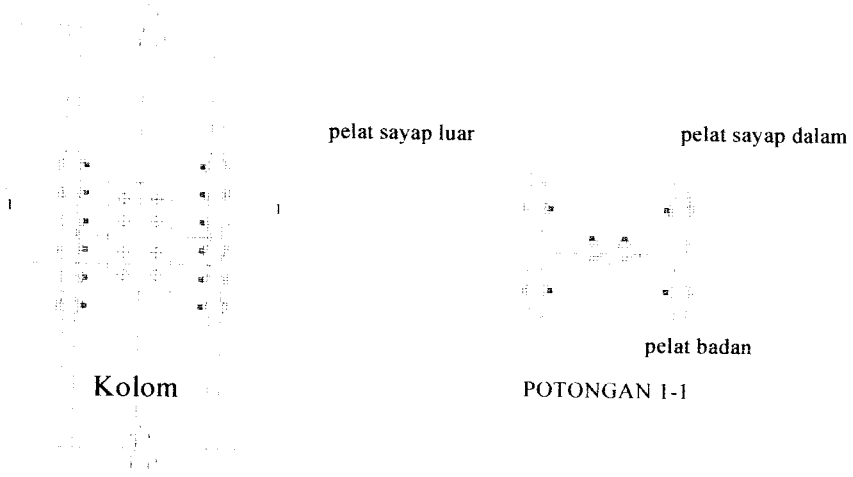
3.14 Perencanaan Sambungan Balok ke Balok

Dalam perencanaan sambungan balok ke balok mempunyai prinsip yang sama dengan sambungan geser pada sambungan balok ke kolom . Sehingga dapat digunakan persamaan (3.108) sampai dengan (3.111b)

3.15 Perencanaan Sambungan Kolom

Keterbatasan panjang profil yang tersedia dilapangan menyebabkan harus adanya sambungan untuk menhubungkan profil tersebut.

Dalam perencanaanya sambungan dibagi menjadi dua, yaitu sambungan sayap dan sambungan badan.



Gambar 3.17 Sambungan Kolom

Sambungan sayap merupakan sambungan yang berada pada sayap kolom. Gaya pada sayap kolom diperoleh melalui persamaan (3.123)

$$P_{uf} = \frac{Mu,k}{0,95d} \qquad (3.123)$$

dengan P_{uf} = gaya pada tiap sayap kolom (Kips)

Mu,k = momen ultimit kolom (K-in)

d = merupakan tinggi profil kolom. (in)

Jumlah baut minimum yang diperlukan pada sambungan diperoleh melalui persamaan (3.113).

$$n = \frac{T_{uf}}{\phi R_n} \qquad (3.124)$$

Setelah jumlah baut diketahui, maka langkah selanjutnya adalah mendisain pelat sambung. Luas tampang dan tebal pelat sambung dapat dicari melalui persamaan (3.114) dan (3.115).

$$A_g = \frac{T_{uf}}{2.0,9.F_y} \qquad (3.125)$$

$$t_{min} = \frac{A_g}{\text{lebar pelat}} \qquad (3.126)$$

Kemudian kontrol kekuatan pelat sambung dengan persamaan (3.127).

$$\phi Rn = \phi \,.\, F_u \,.\, A_{nt} \qquad (3.127)$$

Kuat tumpu pelat sambung dapat digunakan persamaan (3.105).

Sambungan badan merupakan sambungan yang berada pada badan kolom. Gaya pada badan kolom diperoleh melalui persamaan (3.128).

$$P_{uw} = \frac{P_{u,k} . A_w}{A} \qquad (3.128)$$

Disain jumlah baut dan pelat sambung sama dengan sambungan pada sayap, sehingga persamaan (3.59)sampai (3.62) dapat digunakan.

3.16 Perencanaan Sambungan *Frame Truss, Outrigger.*

Perencanaan *bracing* direncanakan berdasarkan gaya aksial tarik yang terjadi, sedangkan gaya aksial tekan dianggap dapat ditahan oleh sistem sambungan yang ada, hal ini dikarenakan sabungan *bracing* dianggap mampu menahan gaya tekan yang terjadi. Gaya tarik yang terjadi kemudian didistribusikan ke sayap dan badan *bracing.*

Distribusi gaya pada *brace* berdasarkan luas sayap dan badan dapat dihitung menurut persamaan (3.118) dan (3.119).

Gaya pada sayap,

$$P_{uf} = \frac{P_u . (b_f . t_f)}{A} \qquad (3.129)$$

Gaya pada badan,

$$P_{uw} = P_u - 2P_{uf} \qquad (3.130)$$

Pengecekan geser balok akibat transfer gaya dari badan dan gaya total dicari dengan persamaan berikut ini :

Apabila, $F_u . A_{nt} > 0{,}6 . F_u . A_{ns}$, maka

$$\phi_t R_n = \phi.(f_u . A_{nt} + 0{,}6 . f_y . A_{gs}) \qquad (3.131)$$

Apabila, $0{,}6 . F_u . A_{ns} > F_u . A_{nt}$, maka

$$\phi_t R_n = \phi.(0{,}6 . F_u . A_{nt} + F_y . A_{gt}) \qquad (3.132)$$

Kontrol kuat tarik leleh pada daerah pertemuan *brace* dengan pelat sambung dapat dicari menurut persamaan (3.122) :

$$\phi R_n = \phi . F_y . A_w \tag{3.133}$$

Distribusi gaya *brace* ke kolom dan balok

Kalkulasi gaya pada pelat sambung dapat dicari dengan persamaan berikut

$$r = \sqrt{(\alpha + e_c)^2 + (\beta + e_b)^2} \tag{3.134}$$

Distribusi gaya pada sambungan pelat-ke-kolom

$$H_{uc} = \frac{e_c}{r} P_u \tag{3.135}$$

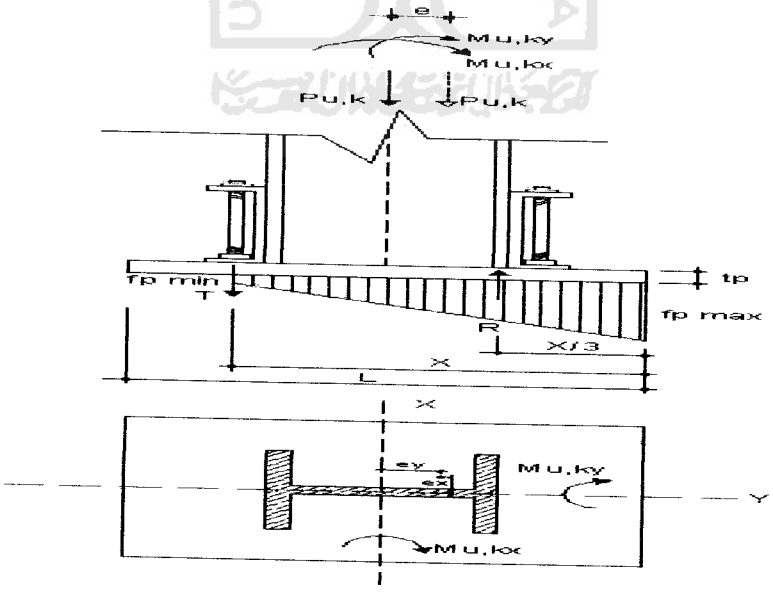
$$V_{uc} = \frac{\beta}{r} P_u \tag{3.136}$$

Distribusi gaya pada sambungan pelat-ke-balok

$$H_{ub} = \frac{\alpha}{r} P_u \tag{3.137}$$

$$V_{ub} = \frac{e_b}{r} P_u \tag{3.138}$$

3.17 Perencanaan Pelat Dasar Kolom



Gambar 3.18 Analisis pelat dasar kolom

Pelat dasar kolom direncanakann sebagai penghubung antara kolom baja dengan beton (*pedestal*), yang direncanakan untuk menahan gaya momen dan aksial yang terjadi

Eksentrisitas akibat momen :

$$e_y = \frac{M_{uK,x}}{P_{uK}} \tag{3.139}$$

$$e_x = \frac{M_{uK,y}}{P_{uK}} \tag{3.140}$$

Akibat eksentrisitas terjadi pembesaran gaya aksial, maka diberi sayap tambahan. Jika e > $\frac{1}{2}d_c$, diasumsikan resultan reaksi distribusi segitiga (R) bekerja pada pusat flens, sehingga

$$P_u = R + P_{u,k} + T$$

kesetimbangan momen pada pusat flens :

$$P_{u,k}\left(e_y - {}^{d_c}\!/_{2} + {}^{t_f}\!/_{2}\right) + P_{u,k}.e_x = T\left(d_c + {}^{d_{canal}}\!/_{2} - {}^{t_f}\!/_{2}\right) \tag{3.141}$$

Jika e < $\frac{1}{2}d_c$, diasumsikan resultan reaksi distribusi segitiga (R) bekerja pada pusat flens, sehingga $P_u = R = T$

kesetimbangan momen pada pusat gaya aksial T :

$$P_{u,k}\left({}^{d_c}\!/_{2} + {}^{d_{canal}}\!/_{2} + e_y\right) + P_{u,k}.e_x = R\left(d_c - {}^{t_f}\!/_{2} + {}^{d_{canal}}\!/_{2}\right) \tag{3.142}$$

Cek kapasitas sayap kolom

$$\phi\ (½\ F_p\ .\ X\ .\ B) = Pu \tag{3.143}$$

dengan F_p adalah kekuatan tekan beton sebesar $0{,}85f_c'$

$$m = \frac{N - 0{,}95.d_f}{2} \tag{3.144}$$

$$n = \frac{B - 0{,}80.b_f}{2} \tag{3.145}$$

cek kapasitas penumpu (pedestal)

$$\phi P_p \geq P_u \tag{3.146}$$

$$\phi P_p = \phi_e \cdot F_p \cdot A \qquad (3.147)$$

Tegangan pada ujung pelat,

$$fp = \frac{P_u}{A} \pm \frac{M_{uK,x}}{\frac{1}{6}.BL^2} \pm \frac{M_{uK,y}}{\frac{1}{6}.B^2L} \leq f_{beton} \qquad (3.148)$$

Batas pelelehan untuk lentur pada pelat menghendaki

$$\phi M_n \geq M_u$$

$$\phi M_n = \phi M_p = \phi_b \cdot Z \cdot F_y = 0{,}9 \cdot (B \cdot \frac{t_p^2}{4}) \cdot Fy \geq M_u$$

Tebal pelat yang diperlukan dihitung dengan persamaan :

$$t_p = \sqrt{\frac{4.M_u}{0{,}9.B.F_y}} \qquad (3.149)$$

Gaya tarik pada angkur

$$T = \frac{Mu,k}{d} \qquad (3.150)$$

Kapasitas tarik satu angkur :

$$\phi T_n = \phi.0{,}75.fu.Ab \qquad (3.151)$$

Jumlah angkur minimum yang diperlukan :

$$n = \frac{T}{\phi T_n} \qquad (3.152)$$

3.18 Perencanaan Pondasi Tiang Pancang

Untuk perancanaan Tugas Akhir ini, digunakan pondasi tiang pancang karena pondasi tiang pancang dapat mendukung beban struktur yang besar dan kedalamannya dapat dibuat sedemikian rupa sampai menembus ke lapisan keras. Pondasi tiang pancang adalah suatu struktur pondasi berbentuk tiang penempatannya pada lapisan tanah didasarkan pada kapasitas dukung ujung tiang maupun lekatan tanah pada keliling permukaan tiang pancang (Sardjono,1988)

3.18.1 Daya Dukung Ujung Tiang Pancang Tunggal

Pendekatan untuk menghitung kapasitas ultimit tiang yaitu dengan metode statis dan metode dinamik. Metode statis menggunakan parameter-parameter

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tanah dalam menghitung kapasitas daya dukung dan metode dinamik mengestimasikan kapasitas daya dukung dari hasil analisis pemancangan tiang. Parameter tanah yang dipakai dalam metode statis adalah kohesi (c), sudut gesek (φ), berat volume tanah (γ) dan faktor daya dukung tanah (N_c, N_q, N_γ). Nilai faktor daya dukung dipengaruhi oleh sudut gesek dalam, bila φ besar maka harga daya dukung bertambah. Berdasarkan data laboratorium, kapasitas daya dukung ujung tiang untuk tanah berbutir halus dan tanah berbutir kasar maupun tanah pada umumnya. *Meyerhoff* memberikan persamaan untuk menghitung kapasitas daya dukung ujung tiang sebagai berikut:

$$Q_p = A_p * N_c * Cu \qquad (3.153)$$

Dengan Q_p adalah daya dukung ujung tiang, A_p adalah luas penampang tiang. C_u adalah kohesi tanah pada ujung tiang. N_c adalah faktor daya dukung yang telah disesuaikan.

Untuk data pengujian penetrasi standart (SPT = *Standart Penetration Test*) maka *Meyerhof* menggunakan rumus :

$$Q_p = A_p . qp \leq A_p.(400\,\overline{N}) \text{ satuan dalam KN} \qquad (3.154)$$

$$qp = 40.\overline{N}\frac{Lb}{D} \qquad (3.155)$$

Dengan $\overline{N}$ adalah nilai rata-rata statistik dari bilangan SPT dalam daerah kira-kira 8D diatas sampai dengan 3D diatas tiang pancang. D adalah lebar atau diameter

$\frac{L_b}{D}$ adalah perbandingan kedalaman rata-rata dari sebuah titik.

Untuk tahanan selimut N-SPT menggunakan persamaan berikut ini:

$$Qs = fav.As \qquad (3.156a)$$

$$\text{Dengan: } fav = 2.\overline{Ns} \qquad (3.156b)$$

Jika data yang diperoleh hasil penetrasi kerucut (*CPT = Cone Penetration Test*) digunakan rumus:

$$Q_p = A_p.q_c \qquad (3.157)$$

Dengan q_c merupakan nilai rata-rata statistic dari tahanan titik kerucut seperti dalam daerah $\overline{N}$ dari persamaan 3.154. Kapasitas daya dukung selimut tiang-tiang dihitung menggunakan persamaan:

$$Qs = As.\ JHP \tag{3.158}$$

3.18.2 Kapasitas Tahanan Selimut Tiang

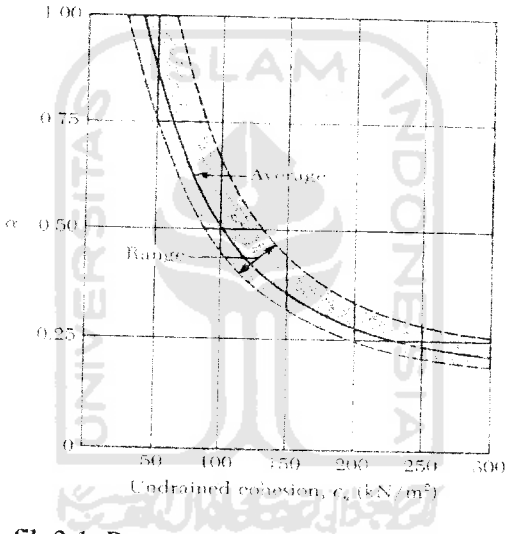
Untuk menghitung kapasitas tahanan kulit, ada beberapa metode yang dapat digunakan:

1. Metode α

Persamaan yang digunakan dalam metode ini adalah :

$$Qs = As.\alpha.Cu \tag{3.159}$$

Dengan α adalah koefisien dari grafik 3.1, Cu adalah kohesi tanah dan As adalah luas permukaan efektif.



Grafik 3.1 Penentuan nilai adhesion factor (α)

2. Meode λ

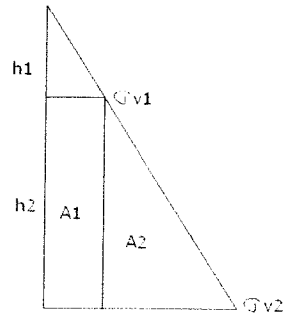
Persamaan yang digunakan dalam metode ini adalah :

$$Ai = \tfrac{1}{2}\, hi.\sigma\, vi \tag{3.160}$$

dengan $\sigma vi = hi.\gamma bi$ (3.161)

Dengan Ai adalah luas diagram tegangan efektif vertikal ke-i, hi adalah kedalaman tanah ke-i, σvi adalah tegangan efektif lapisan tanah ke-i dan γbi adalah berat basah volume tanah ke-i.

untuk mencari tegangan efektif tanah dapat dilihat dalam gambar 3.19



Gambar 3.19 Tegangan efektif tanah

sedangkan $\bar{\sigma} = \frac{\sum Ai}{L}$ (3.162)

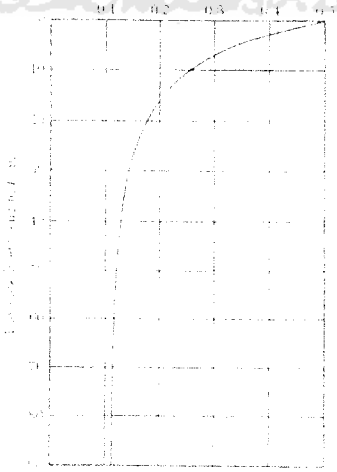
$$\overline{Cu} = \frac{\sum (Cui.hi)}{L} \quad (3.163)$$

Selanjutunya dicari tahanan selimut dengan persamaan :

$Qs = As.L.fs$ (3.164)

Dengan $fs = \lambda (\bar{\sigma}v + (2.\overline{Cu}))$ (3.165)

Dengan L adalah panjang tiang pancang, Fs adalah tahanan kulit, $\overline{\sigma v}$ adalah tegangan efektif tanah dan λ adalah koefisien yang dapat dicari berdasarkan Grafik 3.2.



Grafik 3.2 Penentuan nilai λ

Untuk memperoleh daya dukung ultimit tiang pancang tunggal digunakan rumus :

$$Qu = Qp + Qs \quad (3.166)$$

Dengan Qp adalah tahanan ujung tiang dan Qs adalah tahanan selimut tiang.

Sedangkan daya dukung ijin tiang (Qa) adalah :

$$Qa = \frac{Qu}{SF} \quad (3.167)$$

Besar nilai angka keamanan (*SF = Safety Factor*) bekisar dari 1,5 sampai 4

3.18.3 Kapasitas Dukung Tiang Kelompok

Kemungkinan struktur pondasi terdiri dari sebuah tiang pancang tunggal sangat jarang, umumnya paling sedikit dua atau tiga tiang pancang di bawah elemen pondasi atau kaki pondasi karena masalah penjajaran atau eksentrisitas yang kurang baik. Bila beberapa tiang pancang dikelompokkan, diperkirakan bahwa tekanan-tekanan tanah (baik gesekan maupun ujung) yang terjadi di dalam tanah sebagai hambatan akan saling *overlap* (tumpang tindih).

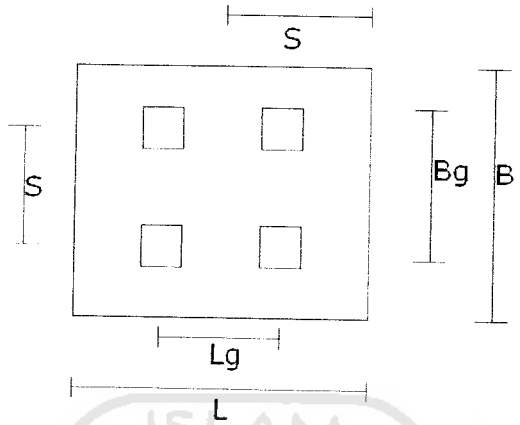
Jarak antara tiang pancang besar sering kali tidak praktis karena sungkup tiang pancang (*pile cap*) dicor di atas kelompok tiang pancang (*pile group*) sebagai dasar kolom dan untuk menyebarkan beban pada beberapa tiang pancang dalam kelompok tersebut. Jarak minimum antar tiang pancang yang disarankan oleh beberapa peraturan bangunan dalam table 3.3 berikut ini:

Tabel 3.3 Jarak antara tiang pancang

Tipe Tiang pancang	**BOCA,1984**	**NBC,1976**	**Chicago,1987**
Gesekan	2D atau 1,75 H ≥ 30 in	2D atau 1,75 H ≥ 30 in	D atau 1,75 H≥ 30 in
Dukungan ujung	2D atau 1,75 H≥ 24 in	2D atau 1,75 H ≥24 in	

Dengan D adalah diameter tiang pancang dan H adalah diagonal empat persegi panjang atau tiang pancang H

Untuk beban vertikal, jarak antara (s) yang optimal berkisar antara 2,5D sampai 3,5D. Untuk gambar susunan kelompok tiang pancang dapat dilihat dalam gambar berikut ini.



Gambar 3.20 Susunan Kelompok Tiang Pancang

$$Bg = Lg = (m-1).s + 2.\frac{D}{2} \qquad (3.168)$$

$$B = L = Bg + 2.(\text{jarak tepi tiang ke tepi poer}) \qquad (3.169)$$

Dengan : Bg = Lg adalah Panjang dari titik tiang ke titik terluar tiang yang lain, m adalah jumlah tiang pancang arah horizontal, n adalah jumlah tiang pancang arah vertikal dan D adalah diameter tiang pancang.

Untuk mencari kapasitas dukung kelompok tiang digunakan 2 cara yaitu:

1. Kapasitas dukung individual tiang dengan rumus :

$$\Sigma Qui = m.n.(9.Ap.Cu + \Sigma\alpha.Ap.Cu.L) \qquad (3.170)$$

2. Kapasitas kelompok tiang berdasarkan blok

$$\Sigma Qub = Lg.Bg.Cu.Nc + \Sigma 2.(Lg + Bg).Cu.L \qquad (3.171)$$

Dengan Ap adalah keliling tiang, Cu adalah kohesi tanah, α adalah koefisien berdasarkan Grafik 3.1, L adalah panjang tiang pancang dan Nc adalah faktor daya dukung yang telah disesuaikan.

Hasil dari kedua rumus diatas diambil nilai Qu yang terkecil. Untuk memperoleh daya dukung bersih tiang maka :

Efisiensi tiang berdasarkan *Converse – Laberre Formula* :

$$E_g = 1 - \text{arctg}\ \frac{d}{s}\left(\frac{(n-1)m + (m-1)n}{90.m.n}\right) \qquad (3.172)$$

Dengan E_g adalah Efisiensi tiang, d adalah diameter tiang, s adalah jarak antar tiang, n adalah jumlah baris dalam konfigurasi tiang dan m adalah jumlah tiang dalam sebaris

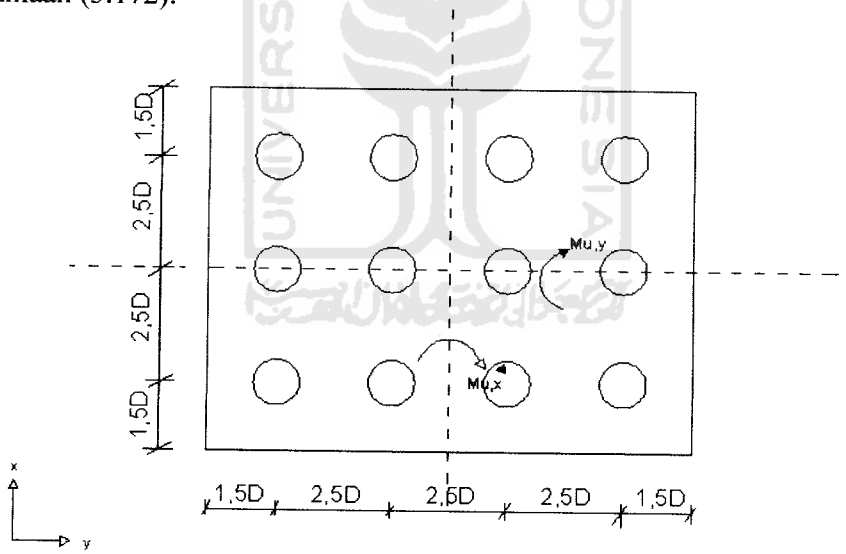
$$Q_{g(u)} = E_g.\Sigma Qu \qquad (3.173)$$

Dengan E_g adalah Efisiensi tiang dan ΣQu adalah kapasitas dukung tiang

$$Qall = \frac{Qu}{SF} \qquad (3.174)$$

dengan Qu adalah kapasitas tahanan Ultimit (T) dan SF adalah faktor keamanan

Dalam merencanakan pondasi tiang, perlu diketahui terlebih dahulu daya dukung tiang yang direncanakan. Penentuan jumlah tiang dilakukan dengan coba-coba sampai ditemukan konfigurasi jumlah tiang yang cocok. Setelah ditemukan jumlah tiang yang diperlukan, kemudian dapat dihitung efisiensi tiang dengan persamaan (3.172).



Gambar 3.21 Konfigurasi kelompok tiang pancang

Setelah didapatkan konfigurasi yang tepat, kemudian dihitung beban servis yang diterima oleh kelompok tiang.

$$\Sigma P = P + \text{berat pile cap} \qquad (3.175)$$

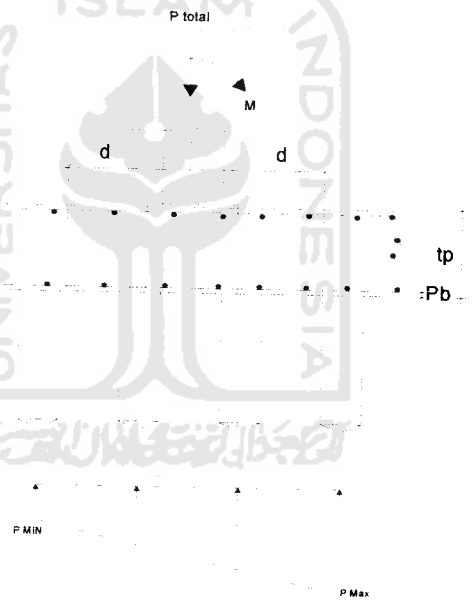
$$\Sigma P_u = 1{,}05.\ \Sigma P \tag{3.176}$$

Beban pada konfigurasi tiang :

$$P_{max} = \frac{\Sigma P_u}{n} + \frac{Mu,x.Ymax}{nx.\Sigma Y^2} + \frac{Mu,y.Xmax}{ny.\Sigma X^2} \tag{3.177}$$

$$P_{min} = \frac{\Sigma P_u}{n} - \frac{Mu,x.Ymax}{nx.\Sigma Y^2} - \frac{Mu,y.Xmax}{ny.\Sigma X^2} \tag{3.178}$$

Dimana Mu,x momen searah sumbu y, Mu,y momen searah sumbu x, X max jarak tiang terjauh dalam arah sumbu x, Ymax jarak tiang terjauh dalam arah sumbu y, nx jumlah tiang sebaris dalam arah sumbu x, ny jumlah tiang sebaris dalam arah sumbu y, ΣX^2 jumlah jarak tiang kuadrat searah sumbu x, dan ΣY^2 jumlah jarak tiang kuadrat searah sumbu y.



Gambar 3.22 Reaksi tiang pancang akibat gaya aksial dan momen

Kontrol terhadap geser satu arah (sejauh d)

$$d = tp - pb - 0{,}5.\ \phi tul \tag{3.179a}$$

$$Vu = \Sigma\ n.P_{max} \tag{3.179b}$$

$$Vc = \tfrac{1}{6}.\sqrt{fc'}.b.d \tag{3.179c}$$

$$\phi Vc \geq Vu \tag{3.179d}$$

Menurut SK-SNI -1991

Untuk 0.5 $\phi Vc < Vu < \phi Vc$

$$\text{Maka } s = \frac{3\,Av\,fy}{bw} \tag{3.179e}$$

Kontrol terhadap geser dua arah (sejauh d/2)

$$Vu = \Sigma\, n.P \tag{3.180a}$$

$$bo = 2.(hc + d) + 2.(bc + d) \tag{3.180b}$$

$$\beta o = 1/0.85 = 1{,}18 \tag{3.180c}$$

$$Vc = \left(1 + \frac{1}{\beta o}\right)\left(\frac{\sqrt{fc'}}{6}\right) bo.d \tag{3.180d}$$

$$Vc = 0{,}33.\sqrt{fc'}.bo.d \tag{3.180e}$$

$\phi Vc \geq Vu$; Vc diambil yang terkecil dari persamaan (3.180d) dan (3.180e)

Menurut SK-SNI -1991

Untuk 0.5 $\phi Vc < Vu < \phi Vc$

$$\text{Maka } s = \frac{3\,Av\,fy}{bw} \tag{3.180f}$$

Penulangan lentur

Sebelum menghitung penulangan lentur, perlu dicari terlebih dulu besarnya beban max *(ultimit)*, P_{ul} yang diterima satu tiang.

$$P_{ul} = Pmax \tag{3.181}$$

$$\frac{Mu}{\varphi} = 0{,}85.fc'.a.b\left(d - \frac{a}{2}\right) \tag{3.182}$$

$$As\ perlu = \frac{0{,}85.fc'.a.b}{F_y} \tag{3.183}$$

$$As\ min = \frac{1{,}4}{F_y}.b.d \tag{3.184}$$

Jarak antar tulangan didapat dengan persamaan

$$S = \frac{A_{1\varphi}.1000}{As_{pakai}} \tag{3.185}$$

$$As_{ada} = \frac{A_{1\varphi}.1000}{S_{pakai}} \geq As_{pakai} \quad (3.186)$$

Kemudian kontrol kapasitas tulangan pelat dengan persamaan

$$a = \frac{As_{ada}.F_y}{0{,}85.fc'.b} \quad (3.187)$$

$$M_n = As_{ada} . F_y .(d - a/2) \quad (3.188)$$

$$\phi M_n \geq M_u \quad (3.189)$$

Tulangan susut

$$A_{st} = 0{,}002.b.tp \quad (3.190)$$

Jarak tulangan susut dapat dicari dengan menggunakan persamaan (3.185)

BAB IV
METODE PENELITIAN

4.1 Waktu dan Lokasi

Waktu tidak berpengaruh dalam penelitian ini, waktu hanya berhubungan dengan jadwal penelitian. Lokasi objek penelitian direncanakan berada pada daerah gempa VI yang terletak diatas lapisan tanah keras (SNI 03-1726-2002). Lokasi penelitian hanya berpengaruh pada pembebaban struktur akibat beban gempa.

Penggunaan pengaku *frame truss* hanya akan efektif bila digunakan pada struktur baja bertingkat banyak dan berada di daerah yang mempunyai aktifitas gempa yang tinggi (Bruneau et.al,1998). Pada kondisi seperti itu efisiensi yang signifikan akan diperoleh karena efektifnya penggunaan *frame truss* untuk menahan gaya horisontal akibat gempa dan angin.

4.2 Pengumpulan Data

Data-data yang diperlukan dalam tugas akhir ini meliputi data struktur dan data beban gempa. Data struktur diperoleh dari pemodelan pada program bantu analisis struktur, suatu struktur portal baja tahan gempa dengan penambahan pengaku (*bracing*) dan struktur portal baja tahan gempa tanpa menggunakan pengaku. Beban gempa dihitung berdasarkan metode pendekatan statik ekuivalen dan dinamis riwayat waktu (*time history*).

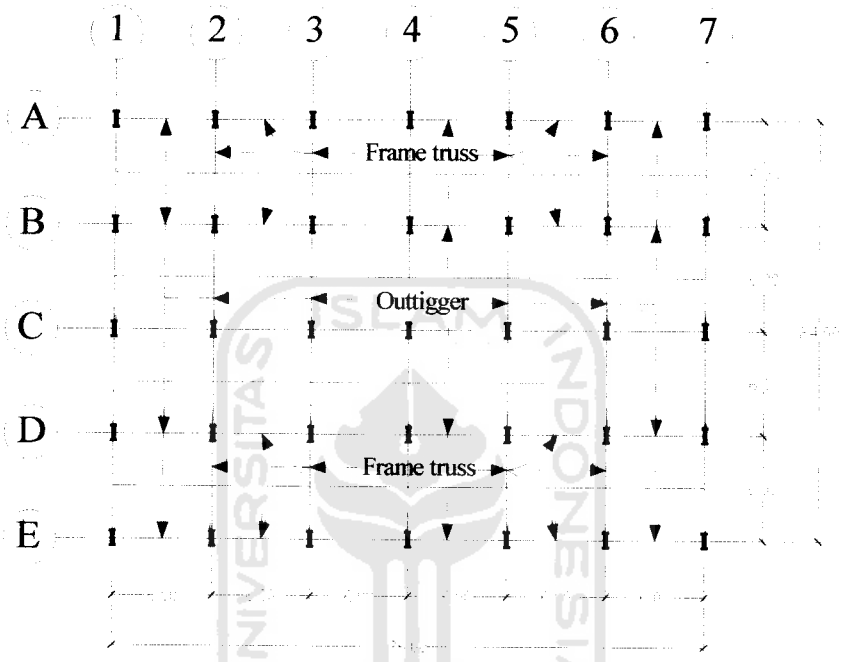
4.3 Model Struktur

Model struktur yang digunakan adalah struktur portal baja bertingkat banyak dengan variasi antara lain,

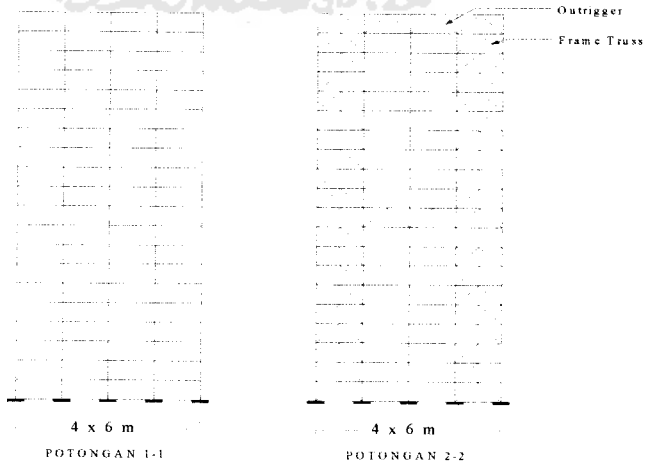
1) Variasi tingkat terdapat tiga jenis variasi, yaitu :
   a) Portal baja 20 Lantai,
   b) Portal baja 30 Lantai,
   c) Portal baja 40 Lantai.

2) Variasi bentuk pemasangan pengaku
   a) Portal baja terbuka (*open frame*).
   b) Portal baja dengan pemasangan *frame truss* (*Outer Brace*)
   c) Portal baja dengan pemasangan *Outrigger* dan *belttruss* (*Core Brace*)

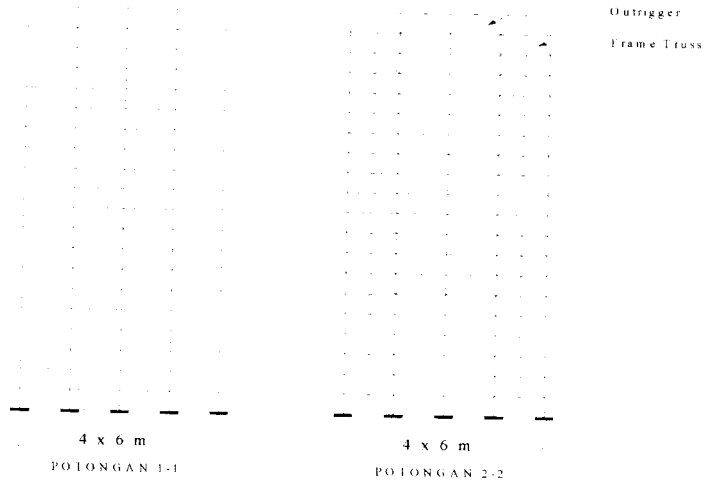
Model variasi struktur dapat dilihat pada gambar-gambar berikut ini :



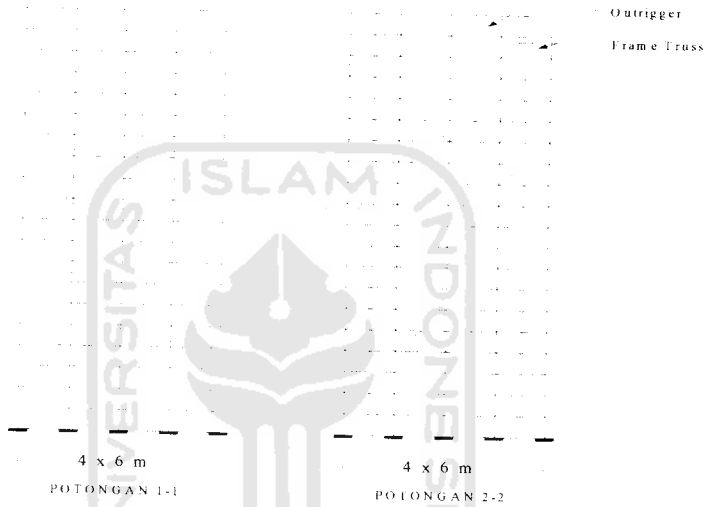
Gambar 4.1 Denah Struktur baja *Frame truss (Outer Brace Frame)* 20 lantai.



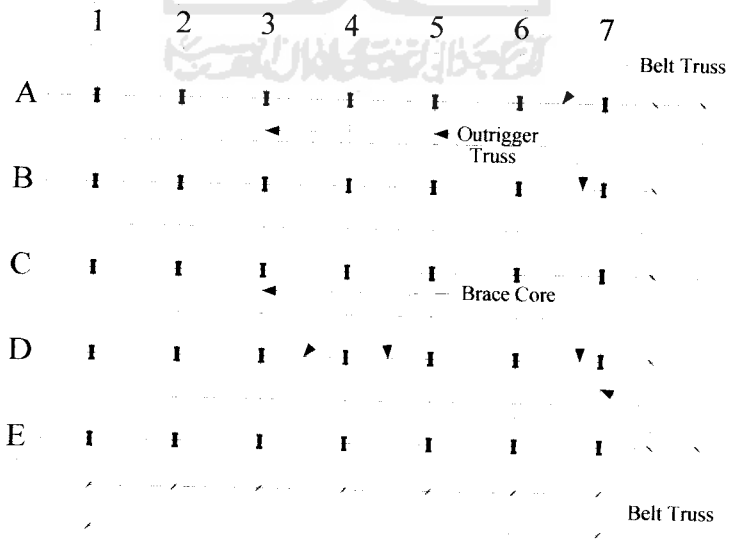
Gambar 4.2 Potongan *frame truss* 20 lantai 2 *Outrigger*



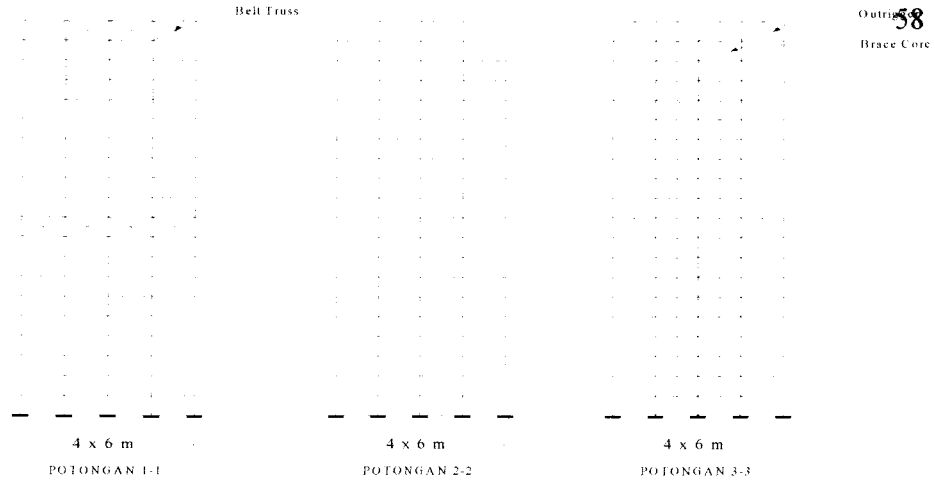
Gambar 4.3 Potongan *frame truss* 20 lantai 3 *Outrigger*



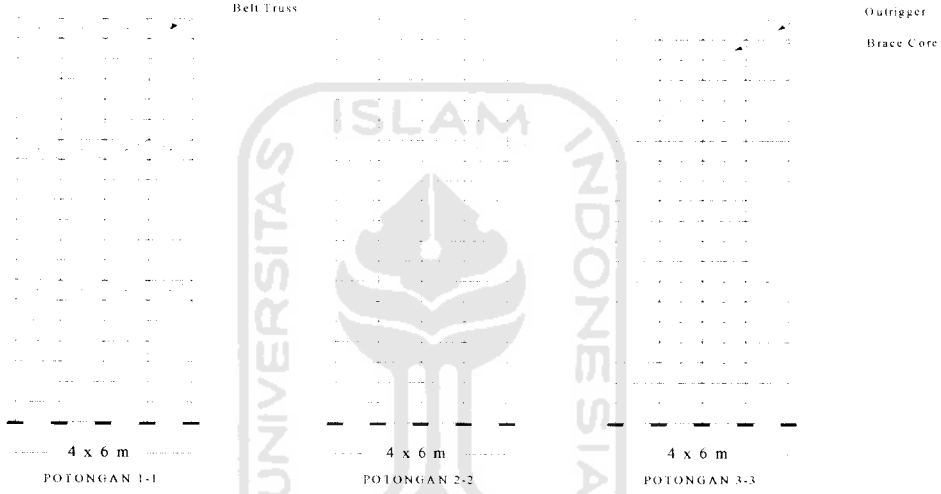
Gambar 4.4 Potongan *frame truss* 20 lantai 4 *Outrigger*



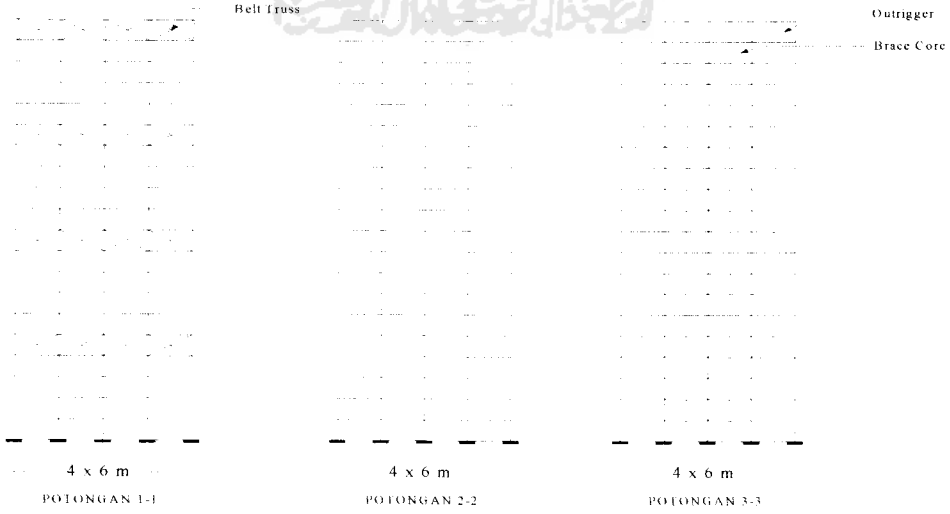
Gambar 4.5 Denah Struktur baja *Outrigger and Belt truss* (*Core Brace Frame*)



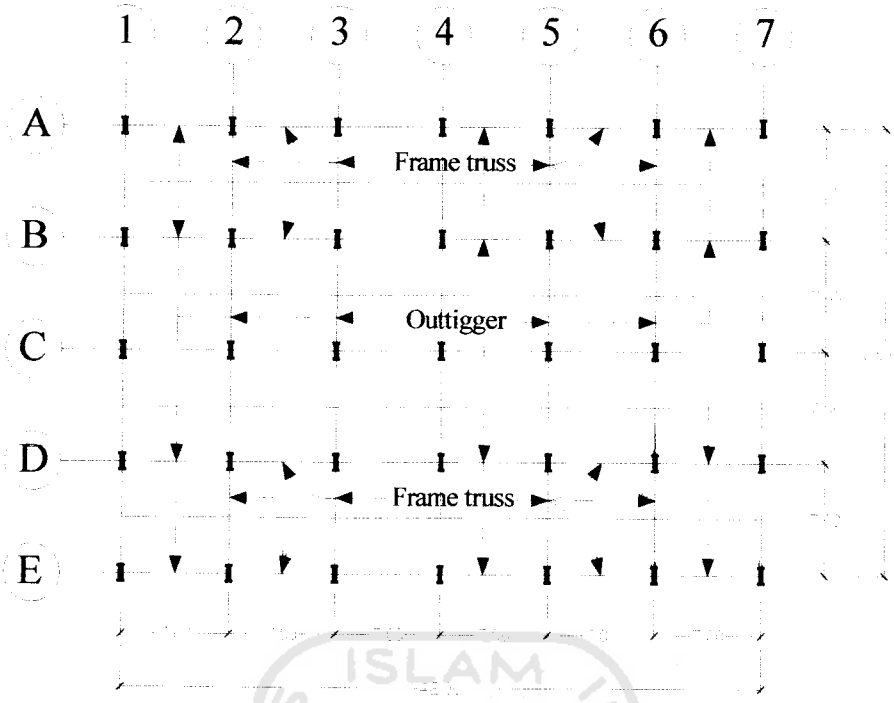
Gambar 4.6 Potongan *Core Brace Frame* 20 lantai 2 *Outrigger*



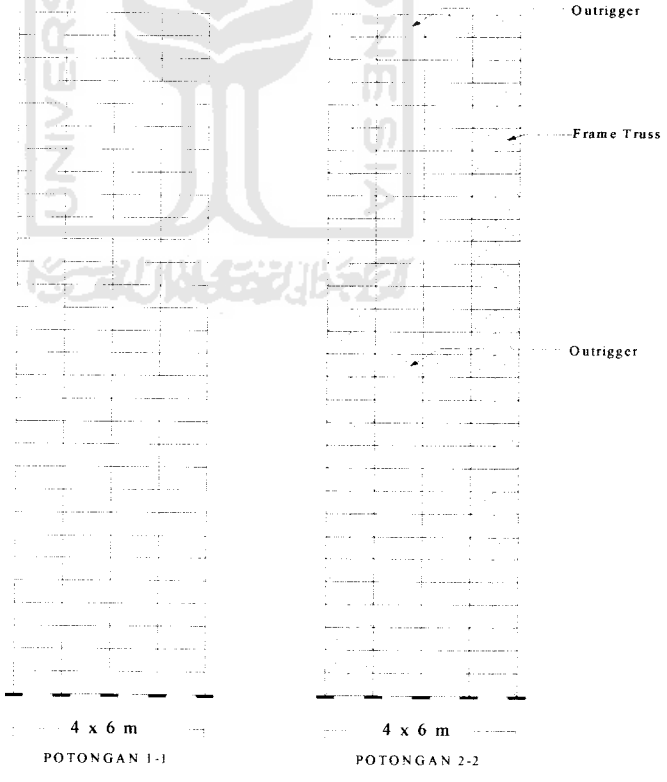
Gambar 4.7 Potongan *Core Brace Frame* 20 lantai 3 *Outrigger*



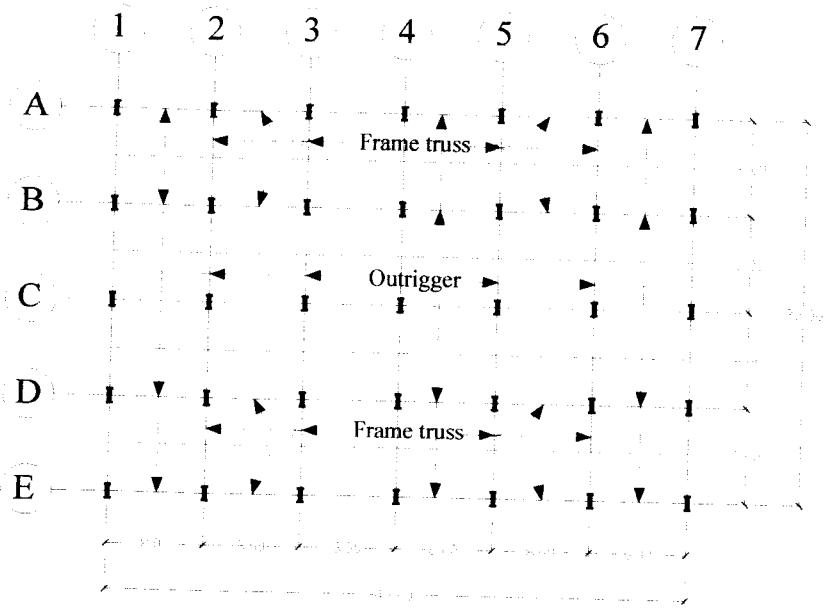
Gambar 4.8 Potongan *Core Brace Frame* 20 lantai 4 *Outrigger*



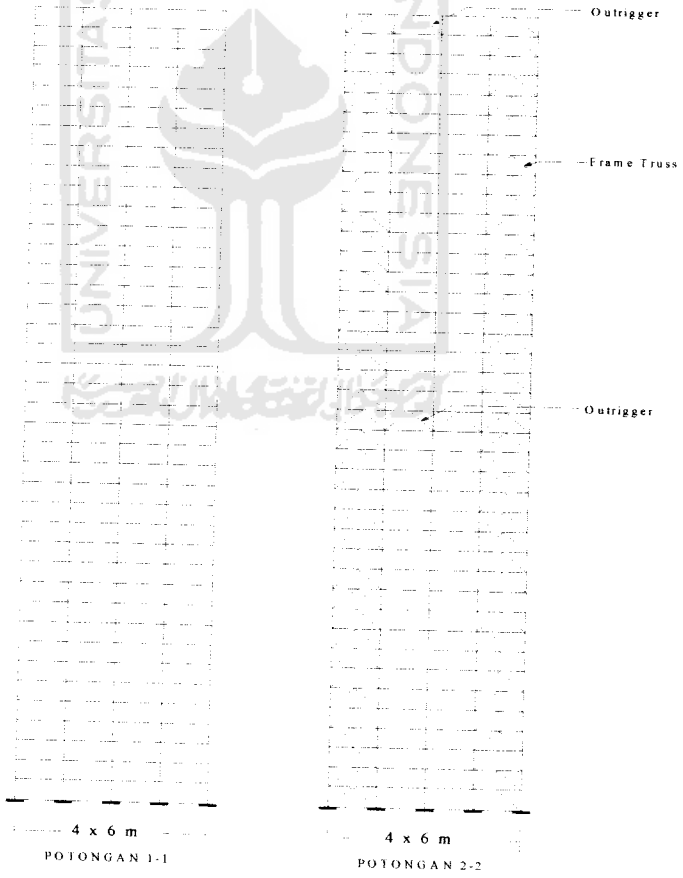
Gambar 4.9 Denah Struktur baja Frame truss 30 lantai.



Gambar 4.10 Potongan pada as 1-1 dan as 2-2 untuk 30 lantai



Gambar 4.11 Denah Struktur baja Frame truss 40 lantai.



Gambar 4.12 Potongan pada as 1-1 dan as 2-2 untuk 40 lantai

4.4 Beban Angin

Aksi angin merupakan masalah yang besar bagi perencanaan bangunan tingkat tinggi. Untuk memperkirakan perilaku secara ilmiah yang tepat mungkin mustahil. Aksi angin pada bangunan tingkat tinggi bersifat dinamis dan dipengaruhi oleh fakor-faktor lingkungan. Pada perhitungan beban angin yang terjadi, digunakan perhitungan menurut UBC-1994, beban lateral akibat angin dapat dinyatakan dalam persamaan sebagai berikut :

P = Ce*Cq*Qs*Iw

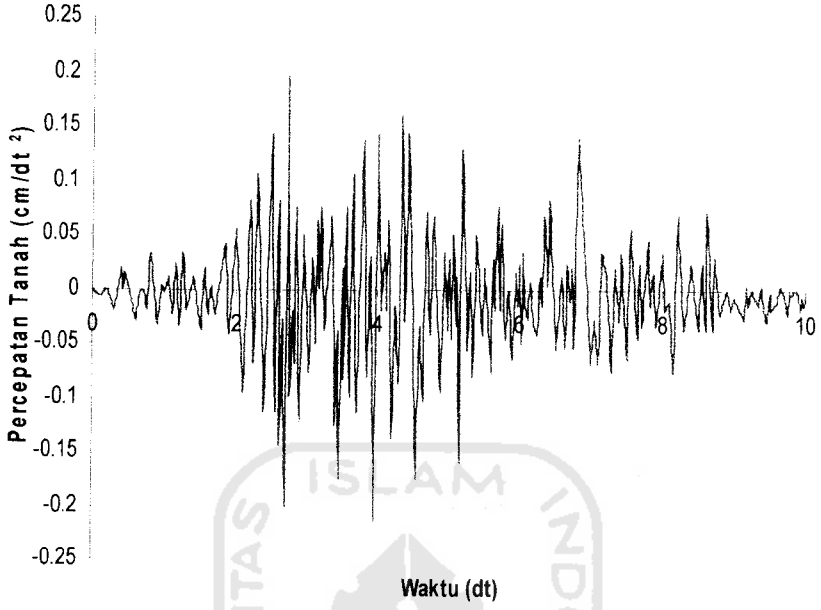
dengan digunakan ekspusure B (daerah yang sekeliling bangunan terdapat pohon-pohon dan bangunan lain), nilai Ce (koefisien hembus angin terhadap bangunan) di peroleh dari tinggi total bangunan kemudian diplotin ke tabel 3.1, nilai Cq (koefisien tekan) untuk bagian yang langsung berhadapan dengan angin dipakai Cq = 0,8, sedang yang membelakangi angin dipakai Cq = 0,5. Nilai Qs untuk angin yang mempunyai kecepatan 30 mil/jam berdasarkan tabel 3.2

I adalah faktor keutamaan gedung. Untuk gedung biasa faktor keutamaannya adalah 1 sedangkan untuk gedung-gedung yang penting seperti rumah sakit, stasiun pemadam kebakaran serta pusat komunikasi di perbesar 15 persennya.

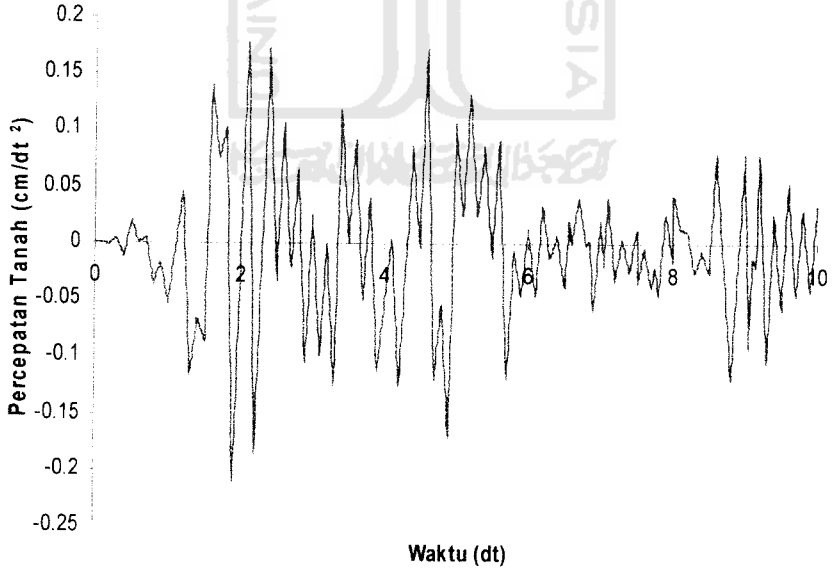
4.5 Pembebanan Dinamik Riwayat Waktu *(Time History)*

Pembebanan dinamik riwayat waktu yang digunakan memiliki percepatan maksimum yang sama. besarnya skala pecepatan didasarkan pada analisis inelastik bangunan struktur baja *Open frame* 15 lantai, dengan menggunakan percepatan gempa Elcentro. Data gempa ini adalah data gempa yang kami ambil dari tugas akhir Argha Syahputra Aji dan Wiwik Eliya Safrudin yang berjudul " Efek Gempa Statik dan Dinamik terhadap Respon Struktur Bangunan Bertingkat Banyak (4-Bays) Berpengaku Global (Analisis dan Desain)" Percepatan maksimum yang dipakai adalah 207 cm/dt^2 karena dengan percepatan tersebut struktur masih elastik. Pada penelitian terdahulu beberapa lantai dicoba-coba dengan menggunakan percepatan tersebut hingga menyebabkan struktur itu masih

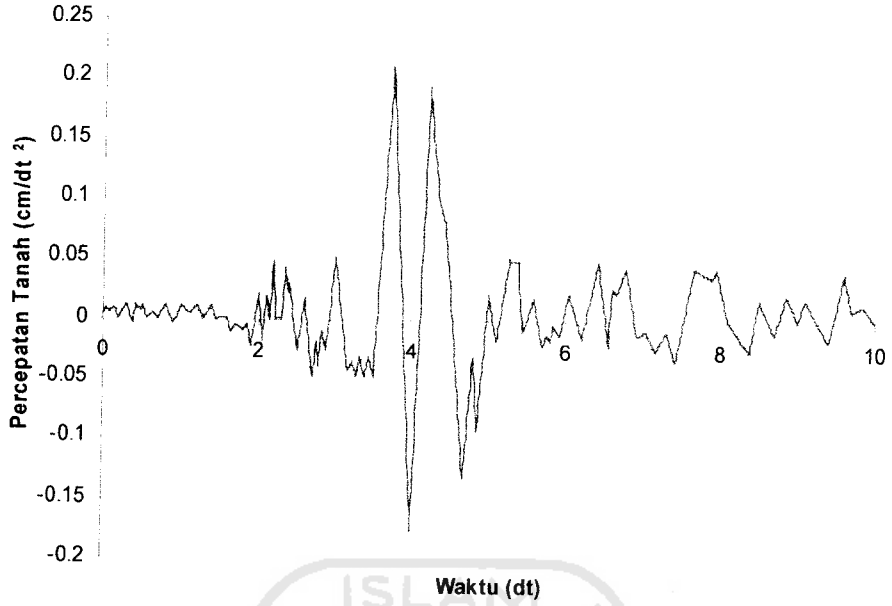
elastik. Dan percepatan tersebut di pakai sama semua untuk semua gempa karena dengan percepatan yang sama dapat diketahui respon gempa terhadap struktur.



Gambar 4.13 Gempa Koyna Skala Beban 38% Dengan Percepatan Maximum 207 cm/dt^2 (Daerah Gempa 6)



Gambar 4.14 Gempa El-Centro Skala Beban 66% Dengan Percepatan Maximum 207 cm/dt^2 (Daerah Gempa 6)



Gambar 4.15 Gempa Parkfield Skala Beban 44% Dengan Percepatan Maximum 207 cm/dt^2 (Daerah Gempa 6)

4.6 Perlakuan dan Rancangan

1. Model struktur yang diteliti

   Model struktur bangunan yang diteliti adalah bangunan baja tingkat tinggi dengan memakai *frame truss* dan *Outrigger (Outer Brace frame)*

2. Jenis Portal

   Portal yang akan diteliti yaitu bangunan baja dengan *Frame truss.*

3. Banyak tingkat

   Jumlah tingkat pada model yang akan diteliti yaitu 20,30 dan 40 tingkat..

4. Jenis Beban dan bahan

   Jenis beban yang membebani struktur yang diteliti adalah beban ekivalen statik yang diakibatkan oleh beban angin dan beban dinamik yang diakibatkan oleh beban gempa. Data dari beban gempa dapat diambil dari rekaman gempa. Dengan ketentuan sebagai berikut :

   a. Mutu baja yang dipakai adalah A36 dengan tegangan leleh Fy = 36 ksi dan modulus elastis (E_s) = 29000 ksi.

b. Mutu beton yang dipakai F_c'= 4 Ksi dan modulus elastis $E_c = 1750\sqrt{Fc'(ksi)}$.

c. Fungsi bangunan untuk gedung perkantoran.

d. Pembebanan struktur menggunakan Peraturan Pembebanan Indonesia Untuk Gedung 1987.

e. Beban gempa menggunakan beban horisontal metode statik ekivalen dan dinamis riwayat waktu *(time history)* yang mengacu pada SNI 03-1726-2002.

4.7 Pengamatan

Penelitian menggunakan respon struktur akibat beban statik dan dinamik. Proses penelitian dengan menggunakan komputer dan segala paket program yang disediakan (dalam hal ini adalah *Microsoft Excel* dan *sofware ETABS*) untuk keperluan analisis struktur. Etabs adalah program aplikasi untuk stuktur konstruksi keluaran CSI (*Computers and Structure Inc*) yang dirancang untuk mampu digunakan pada model struktur 3D.

4.8 Prosedur Percobaan

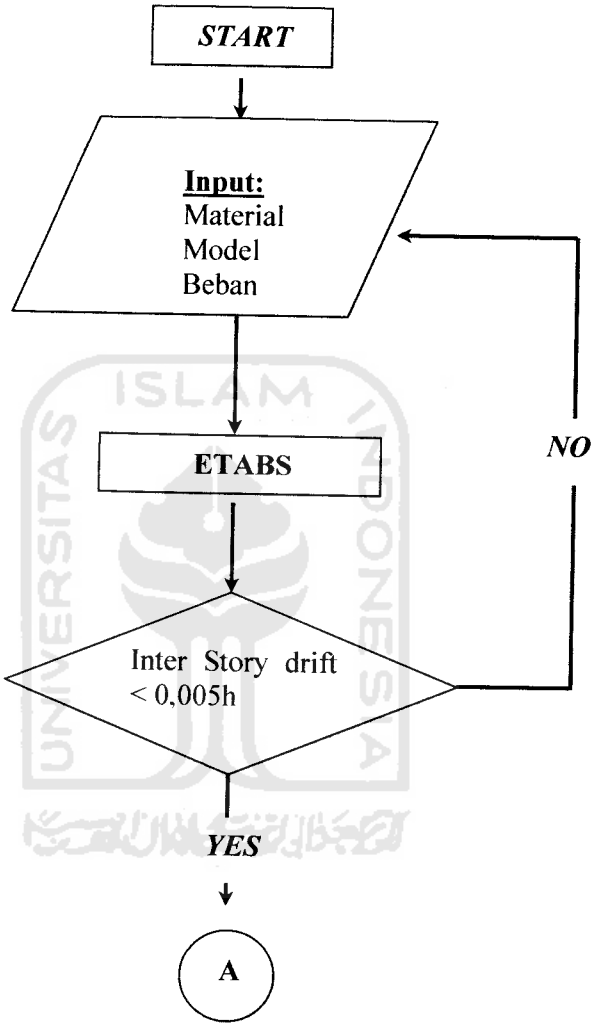
Analisis secara keseluruhan diambil dari output *software Etab*, dengan prosedur percobaan sebagai berikut :

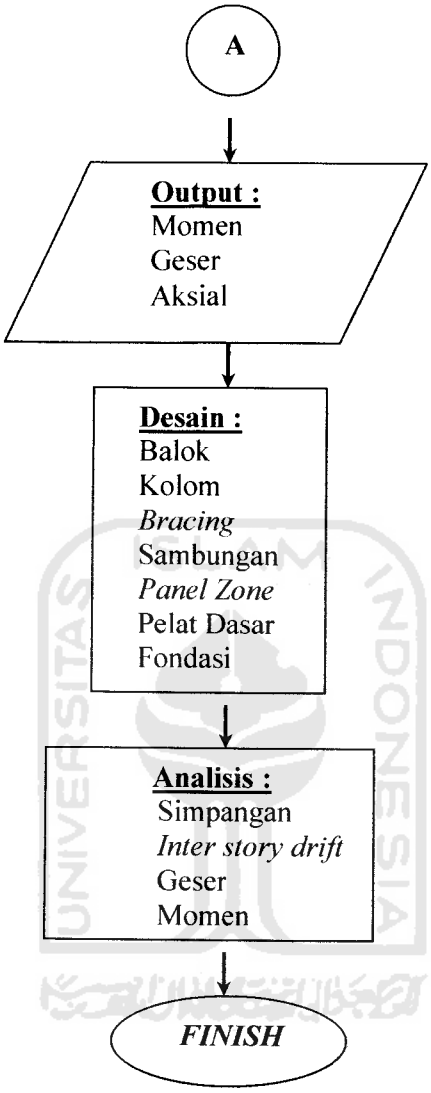
1. Menghitung beban gravitasi (beban mati dan beban berguna) yang bekerja pada keseluruhan struktur.
2. Menghitung periode getar menurut persamaan pedoman perencanaan bangunan tahan gempa untuk rumah dan gedung.
3. Dengan memakai spektrum respon daerah gempa satu dan jenis tanah yang ada maka nilai koefisien gempa dasar C dapat di hitung.
4. Dengan memperhatikan peruntukan bangunan dan jenis struktur maka gaya geser dasar menurut persamaan 1 dapat dihitung.
5. Berikutnya adalah menghitung gaya horisontal tingkat F1 menurut. Pedoman perencanaan bangunan tahan gempa untuk rumah dan gedung.

6. Kontrol periode getar struktur menurut kaidah *Rayleigh* sampai *konvergence*.
7. Analisis struktur dengan beban statik ekivalen dapat dilakukan dengan menggunakan program ETABS.
8. *Microsoft Excel* digunakan untuk mencari grafik hubungan antara simpangan yang terjadi dengan waktu yang di butuhkan.
9. Menentukan percepatan tanah maksimum akibat gempa untuk beban dinamik, dengan memperhatikan daerah gempa dan faktor amplifikasi.
10. Masukkan beban angin dan struktur beban dinamik dapat dianalisis.
11. Pola momen kolom akibat beban ekivalen statik dan beban dinamik dapat diidentifikasi berdasarkan hasil analisis struktur langkah 7 dan langkah 9.
12. Analisis untuk mengetahui pada tingkat berapa kolom mengalami gaya tarik.
13. Analisa *drift* dengan variasi tinggi bangunan.
14. Analisis gaya dalam pada kolom.

4.9 Tahapan Analisis

Pengolahan data dilakukan dengan langkah-langkah sesuai gambar 4.16 dan analisis menggunakan ETABS dengan pendekatan 3D





Gambar 4.16 *Flow Chart* Tahapan Analisis dan Desain

4.10 Jadwal penelitian

Jadwal penelitian ini meliputi 8 bulan efektif , yang apabila disusun adalah seperti berikut ini :

Tabel 4.1 Waktu Penelitian Penelitian

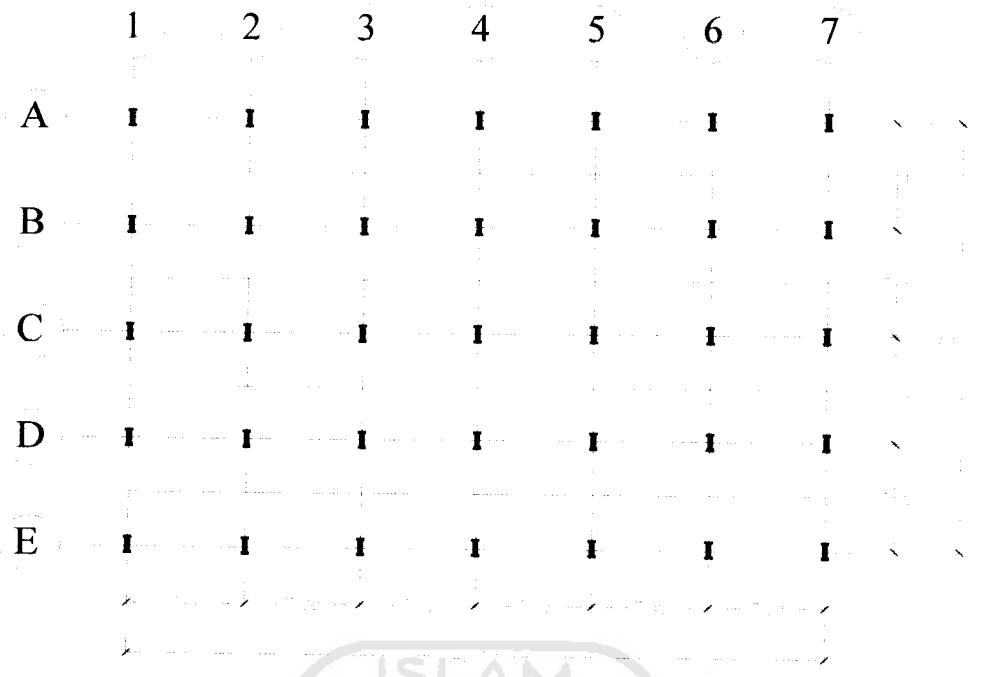
No	Kegiatan	Maret	April	Mei	Juni	Juli	Agst	Sept.	Okt.
1	Proposal								
2	Pengumpulan Data								
3	Pengolahan Data								
4	pelaporan								
5	Evaluasi								
6	Seminar								

BAB V
ANALISIS STRUKTUR DAN PEMBAHASAN

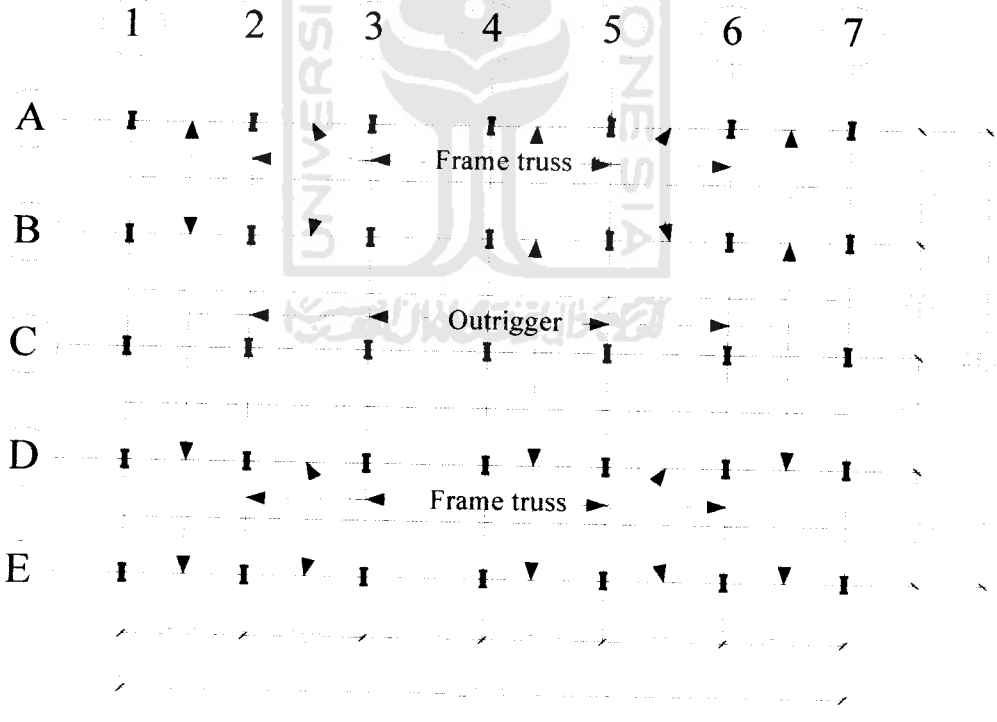
5.1 Pendahuluan

Dalam mendesain suatu struktur, perlu adanya data-data yang jelas mengenai peraturan maupun anggapan-anggapan yang akan di gunakan, adapun data-data tersebut adalah

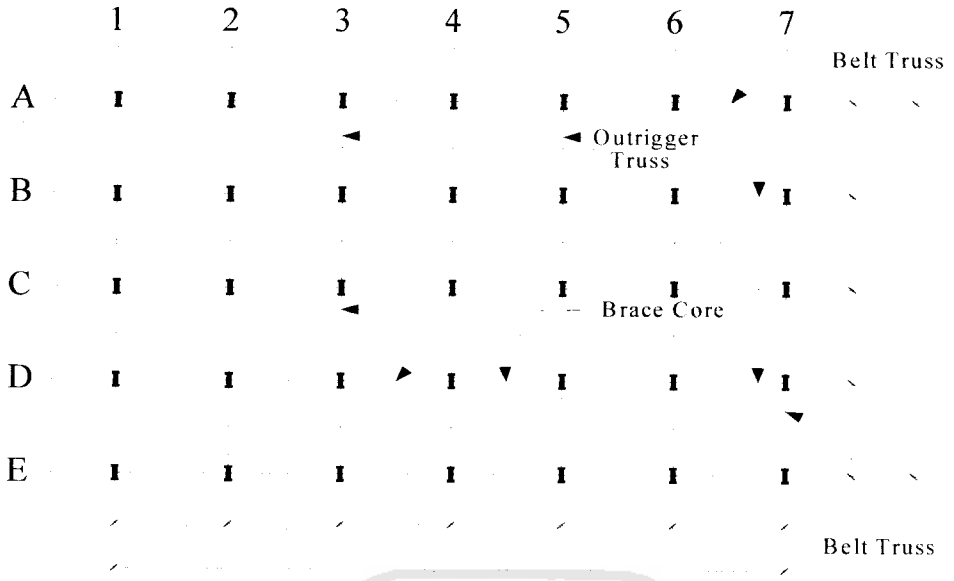
1. Dasar pendisainan menggunakan metode AISC-LRFD 1993 *(American Institut Steel Design-Load and Resisten Factor Design).*
2. Pendisainan ini mengguanakan model 3-D dengan bantuan software *ETABS*, variasi tingkat sebanyak 20,30 dan 40 lantai.
3. Perencanaan gaya geser gempa didasarkan pada Pedoman Perencanaan Ketahanan Gempa Untuk Rumah dan Gedung SNI 03-1726-2002, dimana gaya geser gempa tersebut direncanakan menggunakan struktur baja daktail dengan tingkat daktilitas penuh.
4. Model yang dianalisis adalah Rangka Bresing Biasa dengan Sistem Rangka Pemikul Momen Khusus (SRPMK) Baja untuk *Frame Truss* (FT), *Outrigger* dan *belttruss/ Core Brace* (CB) dan *Open Frame* (OF). Untuk struktur 30 lantai model yang dianalisis adalah stuktur OF, *Frame truss*, dan *Outrigger*. Dasar pendisainan menggunakan AISC-LRFD *(American Institut Steel Design-Load and Resistant Factor Design)* 1993 Untuk menjamin agar gedung berperilaku elastis maka perlu diambil nilai faktor reduksi gempa (R) sebesar 6,5 untuk struktur memakai pengaku dan 8,5 untuk struktur *Open Frame*.
5. Tahap perencanaan kapasitas dimulai setelah dimensi elemen pemencar energi gempa diperoleh dari analisis perencanaan yang meliputi *"strength design"*. Kriteria batas *"limit state"* yang menjadi batasan selain kekuatan *(strength)* adalah simpangan antar tingkat (*inter story drift*) yang diambil maksimal sebesar 0,005h (0,5%) atau setara dengan 56,25 mm.



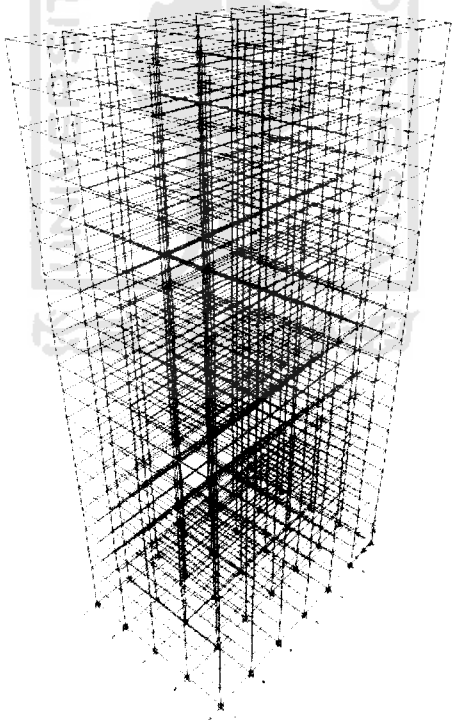
Gambar 5.1 Denah struktur baja 30 lantai *Open Frame (OF)*



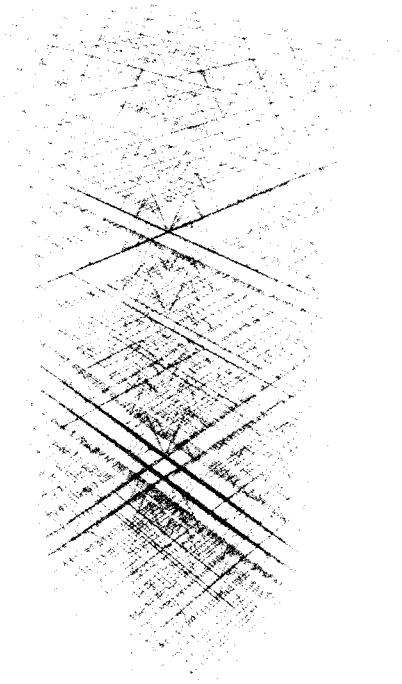
Gambar 5.2 Denah struktur baja 30 lantai memakai *Frame Truss (FT)*



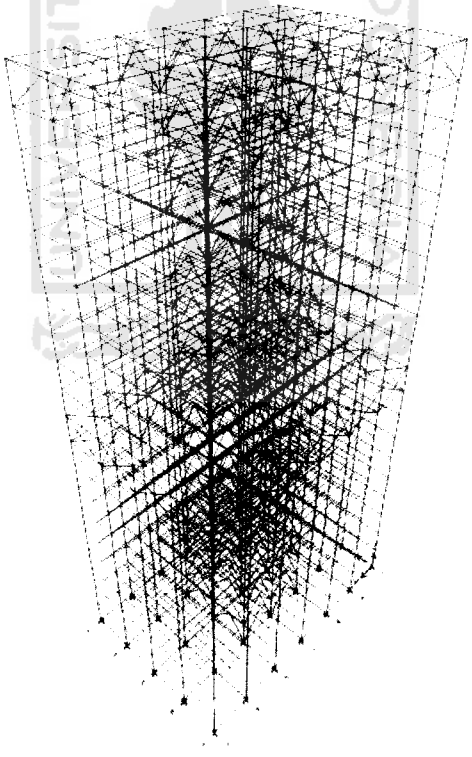
Gambar 5.3 Denah struktur baja 30 lantai memakai *Outriggger* dan *belttruss (CB)*



Gambar 5.4 Model 3D Struktur baja *Open Frame (OF)*



Gambar 5.5 Model 3 D Struktur *Frame Truss (FT)*

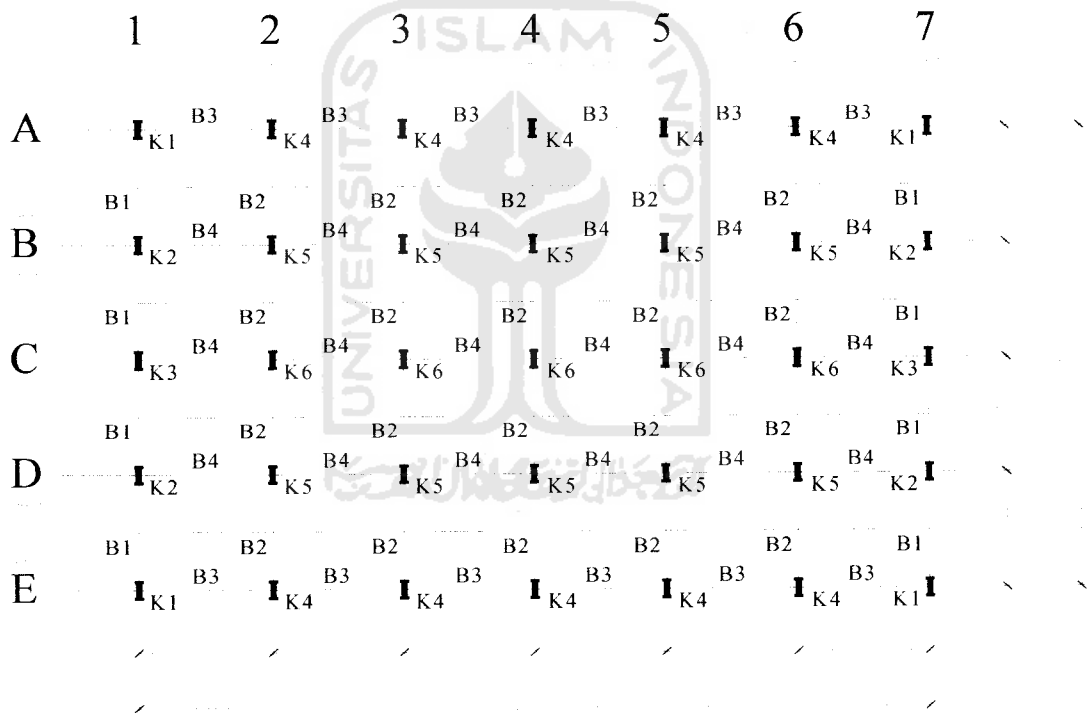


Gambar 5.6 Model 3 D Struktur *Core Brace (CB)*

5.2 Pembebanan Struktur

5.2.1 Rencana Penempatan Elemen Struktur

Cara pemilihan profil untuk elemen struktur adalah dengan cara *trial and error*, dengan mempertimbangkan kekuatan elemen dan simpangan antar tingkat. Profil yang sudah dipilih tersebut kemudian didisain sesuai dengan kapasitasnya masing-masing. Rencana penempatan elemen struktur pada struktur portal baja BOF dan OF, disajikan secara lengkap pada tabel 5.1 sampai dengan 5.5. Tabel tersebut didasarkan pada penempatan elemen struktur yang denahnya dapat dilihat pada gambar 5.6 berikut.



Gambar 5.7 Denah Balok dan Kolom Struktur *Open frame* (OF), *Frame truss* (FT), dan *Core Brace* (CB).

Tabel 5.1 Profil Rencana Balok Struktur OF

Lantai	Balok				
	B1	B2	B3	B4	B. Anak
30	W14x22	W18X35	W12X26	W12X30	W10X33
29	W16x40	W21X55	W12X58	W14X61	W10X49
28	W16x40	W21X55	W12X58	W14X61	W10X49
27	W16x40	W21X55	W12X58	W14X61	W10X49
26	W16x40	W21X55	W12X58	W14X61	W10X49
25	W16x40	W21X55	W12X58	W14X61	W10X49
24	W16x40	W21X55	W12X58	W14X61	W10X49
23	W18x50	W21X62	W12X58	W14X61	W10X49
22	W18x50	W21X62	W12X58	W14X61	W10X49
21	W18x50	W21X62	W12X58	W14X61	W10X49
20	W18x50	W21X62	W12X58	W14X61	W10X49
19	W21x68	W21X68	W14x68	W16x77	W10X49
18	W21x68	W21X68	W14x68	W16x77	W10X49
17	W21x68	W21X68	W14x68	W16x77	W10X49
16	W21x68	W21X68	W14x68	W16x77	W10X49
15	W21x68	W21X68	W14x68	W16x77	W10X49
14	W21x68	W21X68	W14x68	W16x77	W10X49
13	W21x68	W24X76	W14x68	W16x77	W10X49
12	W21x68	W24X76	W14x68	W16x77	W10X49
11	W21x68	W24X76	W14x68	W16x77	W10X49
10	W21x68	W24X76	W14x68	W16x77	W10X49
9	W21x68	W24X76	W14x68	W16x77	W10X49
8	W21x68	W24X76	W14x68	W16x77	W10X49
7	W21x68	W24X76	W14x68	W16x77	W10X49
6	W21x68	W24X76	W14x68	W16x77	W10X49
5	W21x68	W24X76	W14x68	W16x77	W10X49
4	W21x68	W24X76	W14x68	W16x77	W10X49
3	W21x68	W24X76	W14x68	W16x77	W10X49
2	W21X68	W24X76	W14x68	W16x77	W10X49
1	W21X68	W24X76	W14x68	W16x77	W10X49

Tabel 5.2 Profil Rencana Kolom Struktur OF

LANTAI	Kolom					
	K1	K2	K3	K4	K5	K6
30	W14X132	W14X145	W14X145	W14X145	W14X193	W14X193
29	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233
28	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233
27	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233
26	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233

25	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233
24	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233
23	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233
22	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257
21	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257
20	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257
19	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257
18	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257
17	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257
16	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257
15	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283
14	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283
13	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283
12	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283
11	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283
10	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283
9	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283
8	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370
7	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370
6	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370
5	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370
4	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370
3	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370
2	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370
1	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370

Tabel 5.3 Profil Rencana Balok Struktur FT (BOF)

Lantai	B1	B2	B3	B4	B.anak
30	W12x19	W14X22	W12X16	W12X16	W10X33
29	W16x36	W14X22	W14X30	W16X36	W10X49
28	W16x36	W14X22	W14X30	W16X36	W10X49
27	W16x36	W14X22	W14X30	W16X36	W10X49
26	W16x36	W14X22	W14X30	W16X36	W10X49
25	W16x36	W14X22	W14X30	W16X36	W10X49
24	W16x36	W14X22	W14X30	W16X36	W10X49
23	W16x36	W14X22	W14X30	W16X36	W10X49
22	W16x36	W14X22	W14X30	W16X36	W10X49
21	W16x36	W14X22	W14X30	W16X36	W10X49
20	W16x36	W14X22	W14X30	W16X36	W10X49
19	W16x36	W14X22	W14X30	W16x40	W10X49
18	W16x36	W14X22	W14X30	W16x40	W10X49
17	W16x36	W14X22	W14X30	W16x40	W10X49

16	W16x36	W14X22	W14X30	W16x40	W10X49
15	W16x36	W14X22	W14X30	W16x40	W10X49
14	W16x36	W14X22	W14X30	W16x40	W10X49
13	W18X40	W16X26	W14X30	W16x40	W10X49
12	W18X40	W16X26	W14X30	W16x40	W10X49
11	W18X40	W16X26	W14X30	W16x40	W10X49
10	W18X40	W16X26	W14X30	W16x40	W10X49
9	W18X40	W16X26	W14X30	W16x40	W10X49
8	W18X40	W16X26	W14X30	W16x40	W10X49
7	W18X40	W16X26	W14X30	W16x40	W10X49
6	W18X40	W16X26	W14X30	W16x40	W10X49
5	W18X40	W16X26	W14X30	W16x40	W10X49
4	W18X40	W16X26	W14X30	W16x40	W10X49
3	W18X40	W16X26	W14X30	W16x40	W10X49
2	W18X40	W16X26	W14X30	W16x40	W10X49
1	W18X40	W16X26	W14X30	W16x40	W10X49

Tabel 5.4 Profil Rencana Kolom Struktur FT (BOF)

LANTAI	K1	K2	K3	K4	K5	K6
30	W14X109	W14X120	W14X132	W14X120	W14X132	W14X132
29	W14X120	W14X132	W14X145	W14X132	W14X145	W14X145
28	W14X120	W14X132	W14X145	W14X132	W14X145	W14X145
27	W14X120	W14X132	W14X145	W14X132	W14X145	W14X145
26	W14X120	W14X132	W14X145	W14X132	W14X145	W14X145
25	W14X120	W14X132	W14X145	W14X132	W14X145	W14X145
24	W14X120	W14X132	W14X145	W14X132	W14X145	W14X145
23	W14X120	W14X132	W14X145	W14X132	W14X145	W14X145
22	W14X132	W14X159	W14X159	W14X159	W14X176	W14X176
21	W14X132	W14X159	W14X159	W14X159	W14X176	W14X176
20	W14X132	W14X159	W14X159	W14X159	W14X176	W14X176
19	W14X132	W14X159	W14X159	W14X159	W14X176	W14X176
18	W14X132	W14X159	W14X159	W14X159	W14X176	W14X176
17	W14X132	W14X159	W14X159	W14X159	W14X176	W14X176
16	W14X132	W14X159	W14X159	W14X159	W14X176	W14X176
15	W14X145	W14X176	W14X176	W14X193	W14X193	W14X193
14	W14X145	W14X176	W14X176	W14X193	W14X193	W14X193
13	W14X145	W14X176	W14X176	W14X193	W14X193	W14X193
12	W14X145	W14X176	W14X176	W14X193	W14X193	W14X193
11	W14X145	W14X176	W14X176	W14X193	W14X193	W14X193
10	W14X145	W14X176	W14X176	W14X193	W14X193	W14X193
9	W14X145	W14X176	W14X176	W14X193	W14X193	W14X193
8	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233

7	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233
6	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233
5	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233
4	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233
3	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233
2	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233
1	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233

Tabel 5.5 Profil Rencana Balok Struktur CB (BOF)

Lantai	B1	B2	B3	B4	B.anak
30	W14x22	W18X35	W12X19	W12x22	W10X33
29	W16x36	W21X55	W14X38	W16x40	W10X49
28	W16x36	W21X55	W14X38	W16x40	W10X49
27	W16x36	W21X55	W14X38	W16x40	W10X49
26	W16x36	W21X55	W14X38	W16x40	W10X49
25	W16x36	W21X55	W14X38	W16x40	W10X49
24	W16x36	W21X55	W14X38	W16x40	W10X49
23	W18x40	W21X55	W14X38	W16x40	W10X49
22	W18x40	W21X55	W14X38	W16x40	W10X49
21	W18x40	W21X57	W14X38	W16x40	W10X49
20	W18x40	W21X57	W14X38	W16x40	W10X49
19	W18x40	W21X57	W14X38	W16x40	W10X49
18	W18x46	W24X62	W14X38	W16x40	W10X49
17	W18x46	W24X62	W14X38	W16x40	W10X49
16	W18x46	W24X62	W14X38	W16x40	W10X49
15	W18x46	W24X62	W14X38	W16x40	W10X49
14	W18x46	W24X62	W14X38	W16x40	W10X49
13	W21X55	W24X62	W14X38	W16x40	W10X49
12	W21X55	W24X62	W14X38	W16x40	W10X49
11	W21X55	W24X62	W14X38	W16x40	W10X49
10	W21X55	W24X62	W14X38	W16x40	W10X49
9	W21X55	W24X62	W14X38	W16x40	W10X49
8	W21X55	W24X62	W14X38	W16x40	W10X49
7	W21X55	W24X62	W14X38	W16x40	W10X49
6	W21X55	W24X62	W14X38	W16x40	W10X49
5	W21X55	W24X62	W14X38	W16x40	W10X49
4	W21X55	W24X62	W14X38	W16x40	W10X49
3	W21X55	W24X62	W14X38	W16x40	W10X49
2	W21X55	W24X62	W14X38	W16x40	W10X49
1	W21X55	W24X62	W14X38	W16x40	W10X49

Tabel 5.6 Profil Rencana Kolom Struktur CB (BOF)

LANTAI	K1	K2	K3	K4	K5	K6
30	W14X120	W14X120	W14X120	W14X120	W14X193	W14X193
29	W14X132	W14X145	W14X145	W14X145	W14X211	W14X211
28	W14X132	W14X145	W14X145	W14X145	W14X211	W14X211
27	W14X132	W14X145	W14X145	W14X145	W14X211	W14X211
26	W14X132	W14X145	W14X145	W14X145	W14X211	W14X211
25	W14X132	W14X145	W14X145	W14X145	W14X211	W14X211
24	W14X132	W14X145	W14X145	W14X145	W14X211	W14X211
23	W14X132	W14X145	W14X145	W14X145	W14X211	W14X211
22	W14X145	W14X159	W14X159	W14X176	W14X257	W14X257
21	W14X145	W14X159	W14X159	W14X176	W14X257	W14X257
20	W14X145	W14X159	W14X159	W14X176	W14X257	W14X257
19	W14X145	W14X159	W14X159	W14X176	W14X257	W14X257
18	W14X145	W14X159	W14X159	W14X176	W14X257	W14X257
17	W14X145	W14X159	W14X159	W14X176	W14X257	W14X257
16	W14X145	W14X159	W14X159	W14X176	W14X257	W14X257
15	W14X159	W14X193	W14X193	W14X193	W14X283	W14X283
14	W14X159	W14X193	W14X193	W14X193	W14X283	W14X283
13	W14X159	W14X193	W14X193	W14X193	W14X283	W14X283
12	W14X159	W14X193	W14X193	W14X193	W14X283	W14X283
11	W14X159	W14X193	W14X193	W14X193	W14X283	W14X283
10	W14X159	W14X193	W14X193	W14X193	W14X283	W14X283
9	W14X159	W14X193	W14X193	W14X193	W14X283	W14X283
8	W14X193	W14X233	W14X233	W14X233	W14X311	W14X311
7	W14X193	W14X233	W14X233	W14X233	W14X311	W14X311
6	W14X193	W14X233	W14X233	W14X233	W14X311	W14X311
5	W14X193	W14X233	W14X233	W14X233	W14X311	W14X311
4	W14X193	W14X233	W14X233	W14X233	W14X311	W14X311
3	W14X193	W14X233	W14X233	W14X233	W14X311	W14X311
2	W14X193	W14X233	W14X233	W14X233	W14X311	W14X311
1	W14X193	W14X233	W14X233	W14X233	W14X311	W14X311

Tabel 5.7 Profil Rencana Bresing FT dan CB

Lantai	Frame truss (FT)		Core Brace (Outrigger dan Belttruss)/CB					
	Frame Truss	Outrigger	Core Arah X	Core Arah Y	Outrigger Arah X	Outrigger Arah Y	Belttruss Arah X	Belttruss Arah Y
30	W10X33	W12x45	W10x33	W10X22	W10x33	W10x33	W12X30	W10x33
29	W10X33		W10x33	W10X22				
28	W10X33		W10x33	W10X22				
27	W10X33		W10x33	W10X22				
26	W10X33		W10x33	W10X22				

25	W10X33		W10x33	W10X22				
24	W10X33		W10x33	W10X22				
23	W10X33		W10x33	W10X22				
22	W10X33		W10x33	W10X22				
21	W10X33		W10x33	W10X22				
20	W12X40		W10x39	W12X30				
19	W12X40		W10x39	W12X30				
18	W12X40		W10x39	W12X30				
17	W12X40		W10x39	W12X30				
16	W12X40		W10x39	W12X30				
15	W12X40	W14X48	W10x39	W12X30	W12x65	W14X45	W12x50	W12x50
14	W12X40		W10x39	W12X30				
13	W12X40		W10x39	W12X30				
12	W12X40		W10x39	W12X30				
11	W12X40		W10x39	W12X30				
10	W12X45		W10x49	W12X45				
9	W12X45		W10x49	W12X45				
8	W12X45		W10x49	W12X45				
7	W12X45		W10x49	W12X45				
6	W12X45		W10x49	W12X45				
5	W12X45		W10x49	W12X45				
4	W12X45		W10x49	W12X45				
3	W12X45		W10x49	W12X45				
2	W12X45		W10x49	W12X45				
1	W12X45		W10x49	W12X45				

5.2.2 Pembebanan Lantai dan Berat Total Struktur

1. Pembebanan atap

   Beban yang bekerja:

   a. Beban mati

Berat pelat	= 0,1 . 2400	= 240 Kg/m^2
Berat plafond	= 1 . 18	= 18 Kg/m^2
Lapis kedap air	= 0,02 . 2400	= 48 Kg/m^2
Ducting AC	= 1 . 15	= 15 Kg/m^2
		321 Kg/m^2

   b. Beban hidup = 100 = 100 Kg/m^2

2. Pembebanan lantai

Beban yang bekerja:

a. Beban mati

Berat pelat	= 0,12 . 2400	= 288 Kg/m^2
Berat pasir	= 0,05 . 1800	= 90 Kg/m^2
Berat spesie	= 0,02 . 2400	= 48 Kg/m^2
Berat keramik	= 0,01 . 2400	= 24 Kg/m^2
Berat plafond	= 1 . 18	= 18 Kg/m^2
Ducting AC	= 1 . 15	= 15 Kg/m^2
		483 Kg/m^2
b. Beban hidup	= 250	= 250 Kg/m^2
c. Beban tembok	= 0,15 . 3,3 . 1700	= 841,2 Kg/m

Kontrol tebal pelat rencana

$$h_{min} = \frac{0{,}8 + \frac{fy}{1500}}{36 + 9.\beta}.(l_n) = \frac{0{,}8 + \frac{300}{1500}}{36 + 9.(7000/3500)}(3500) = 64{,}81 \text{ mm.}$$

Dipakai tebal pelat rencana = 120 mm, berarti anggapan bisa dipakai

Perhitungan berat total struktur Struktur *Frame truss* dan *Core Brace* (BOF)

A. Berat Lantai 30

Tabel 5.8 hitungan berat struktur lantai 30

Elemen	Jumlah	Luas/Panjang	Berat	Berat Total (Kg)
	1	2	3	(1 x 2 x 3)
Berat Plat Atap	24	49	321	377496
Berat balok B 1	8	7	32.80	1837
Berat balok B 2	20	7	52.05	7287
Berat balok B 3	12	7	32.75	2751
Berat balok B 4	18	7	38.66	4871
Berat balok anak	24	7	49.07	8244
Berat Kolom K 1	4	3.75	313.32	4700
Berat Kolom K 2	4	3.75	382.05	5731
Berat Kolom K 3	2	3.75	382.05	2865

Berat Kolom K 4	10	3.75	420.96	15786
Berat Kolom K 5	10	3.75	461.89	17321
Berat Kolom K 6	5	3.75	461.89	8661
Berat Outrigger arah x	32	4.8	66.20	10169
Berat Outrigger arah y	16	4.8	66.20	5084
Berat Frame truss arah X	16	4.8	32.74	2514
Berat Frame truss arah Y	16	4.8	28.27	2172
Beban hidup (0.3 x WL)	24	49	100	117600
Berat Total / lantai				595087.5

2. Berat Lantai 29, 28, 27, 26, 25 dan 24

Tabel 5.9 hitungan berat struktur lantai 29, 28, 27, 26, 25 dan 24

Elemen	Jumlah	Luas/Panjang	Berat	Berat Total (Kg)
	1	2	3	(1 x 2 x 3)
Berat Pelat lantai	24	49	483	568008
Berat balok B 1	8	7	46.14	2584
Berat balok B 2	20	7	71.25	9976
Berat balok B 3	12	7	38.66	3247
Berat balok B 4	18	7	50.54	6367
Berat balok anak	24	7	72.77	12226
Berat Kolom K 1	4	3.75	420.96	6314
Berat Kolom K 2	4	3.75	591.26	8869
Berat Kolom K 3	2	3.75	591.26	4434
Berat Kolom K 4	10	3.75	591.26	22172
Berat Kolom K 5	10	3.75	677.17	25394
Berat Kolom K 6	5	3.75	677.17	12697
Berat Frame truss arah X	16	4.8	32.74	2514
Berat Frame truss arah Y	16	4.8	28.27	2172
Berat Tembok 1/2 bata (15 cm)	58	7	841.5	341649
Beban hidup (0.3 x WL)	24	49	250	294000
Berat Total / lantai				1322624.0

3. Berat Lantai 23, 22, 21 dan 20

Tabel 5.10 hitungan berat struktur lantai 23, 22, 21 dan 20

Elemen	Jumlah	Luas/Panjang	Berat	Berat Total (Kg)
	1	2	3	(1 x 2 x 3)
Berat Pelat Lantai	24	36	483	417312
Berat balok B 1	8	7	52.05	2915
Berat balok B 2	20	7	74.29	10400
Berat balok B 3	12	7	38.66	3247
Berat balok B 4	18	7	50.54	6367
Berat balok anak	24	7	72.77	12226
Berat Kolom K 1	4	3.75	550.84	8263
Berat Kolom K 2	4	3.75	631.69	9475
Berat Kolom K 3	2	3.75	631.69	4738
Berat Kolom K 4	10	3.75	591.26	22172
Berat Kolom K 5	10	3.75	677.17	25394
Berat Kolom K 6	5	3.75	677.17	12697
Berat Frame truss arah X	16	4.8	32.74	2514
Berat Frame truss arah Y	16	4.8	28.27	2172
Berat Tembok 1/2 bata (15 cm)	58	7.0	841.5	341649
Beban hidup (0.3 x WL)	24	49	250	294000
Berat Total / lantai				1175541.4

4. Berat Lantai 19, 18, 17, 16, 15 dan 14

Tabel 5.11 hitungan berat struktur lantai 19, 18, 17, 16, 15 dan 14

Elemen	Jumlah	Luas/Panjang	Berat	Berat Total (Kg)
	1	2	3	(1 x 2 x 3)
Berat Pelat Lantai	24	49	483	568008
Berat balok B 1	8	7	59.63	3339
Berat balok B 2	20	7	81.87	11461
Berat balok B 3	12	7	44.42	3731
Berat balok B 4	18	7	56.60	7132
Berat balok anak	24	7	72.77	12226

Berat Kolom K 1	4	3.75	591.26	8869
Berat Kolom K 2	4	3.75	677.17	10158
Berat Kolom K 3	2	3.75	677.17	5079
Berat Kolom K 4	10	3.75	677.17	25394
Berat Kolom K 5	10	3.75	742.87	27858
Berat Kolom K 6	5	3.75	742.87	13929
Berat Outrigger arah x	32	4.8	71.25	10945
Berat Outrigger arah y	16	4.8	71.25	5472
Berat Frame truss arah X	16	4.8	59.13	4541
Berat Frame truss arah Y	16	4.8	59.13	4541
Berat Tembok 1/2 bata (15 cm)	58	7	841.5	341649
Beban hidup (0.3 x WL)	24	49	250	294000
Berat Total / lantai				1358331.0

5. Berat Lantai 13, 12, 11, 10 dan 9

Tabel 5.12 hitungan berat struktur lantai 13, 12, 11, 10 dan 9

Elemen	Jumlah	Luas/Panjang	Berat	Berat Total (Kg)
	1	2	3	(1 x 2 x 3)
Berat Pelat Lantai	24	49	483	568008
Berat balok B 1	8	7	65.70	3679
Berat balok B 2	20	7	82.37	11532
Berat balok B 3	12	7	44.42	3731
Berat balok B 4	18	7	56.60	7132
Berat balok anak	24	7	72.77	12226
Berat Kolom K 1	4	3.75	591.26	8869
Berat Kolom K 2	4	3.75	677.17	10158
Berat Kolom K 3	2	3.75	677.17	5079
Berat Kolom K 4	10	3.75	677.17	25394
Berat Kolom K 5	10	3.75	742.87	27858
Berat Kolom K 6	5	3.75	742.87	13929
Berat Frame truss arah X	16	4.8	59.13	4541
Berat Frame truss arah Y	16	4.8	59.13	4541
Berat Tembok 1/2 bata (15 cm)	58	7.0	841.5	341649
Beban hidup (0.3 x WL)	24	49	250	294000

Berat Total / lantai				1342324.2

6. Berat Lantai 8, 7, 6, 5 dan 4

Tabel 5.13 hitungan berat struktur lantai 8, 7, 6, 5 dan 4

Elemen	Jumlah	Luas/Panjang	Berat	Berat Total (Kg)
	1	2	3	(1 x 2 x 3)
Berat Pelat Lantai	24	49	483	568008
Berat balok B 1	8	7	71.25	3990
Berat balok B 2	20	7	92.48	12947
Berat balok B 3	12	7	50.54	4245
Berat balok B 4	18	7	67.21	8469
Berat balok anak	24	7	72.77	12226
Berat Kolom K 1	4	3.75	631.69	9475
Berat Kolom K 2	4	3.75	742.87	11143
Berat Kolom K 3	2	3.75	742.87	5572
Berat Kolom K 4	10	3.75	742.87	27858
Berat Kolom K 5	10	3.75	899.53	33732
Berat Kolom K 6	5	3.75	899.53	16866
Berat Frame truss arah X	16	4.8	66.20	5084
Berat Frame truss arah Y	16	4.8	66.20	5084
Berat Tembok 1/2 bata (15 cm)	58	7	841.5	341649
Beban hidup (0.3 x WL)	24	49	250	294000
Berat Total / lantai				1360348.3

7. Berat Lantai 3, 2 dan 1

Tabel 5.14 hitungan berat struktur lantai 3, 2 dan 1

Elemen	Jumlah	Luas/Panjang	Berat	Berat Total (Kg)
	1	2	3	(1 x 2 x 3)
Berat Pelat Lantai	24	49	483	568008
Berat balok B 1	8	7	84.39	4726

Berat balok B 2	20	7	101.58	14221
Berat balok B 3	12	7	50.54	4245
Berat balok B 4	18	7	67.21	8469
Berat balok anak	24	7	72.77	12226
Berat Kolom K 1	4	3.75	677.17	10158
Berat Kolom K 2	4	3.75	818.67	12280
Berat Kolom K 3	2	3.75	818.67	6140
Berat Kolom K 4	10	3.75	818.67	30700
Berat Kolom K 5	10	3.75	990.49	37144
Berat Kolom K 6	5	3.75	990.49	18572
Berat Frame truss arah X	16	4.8	66.20	5084
Berat Frame truss arah Y	16	4.8	66.20	5084
Berat Tembok 1/2 bata (15 cm)	58	7	841.5	341649
Beban hidup (0.3 x WL)	24	49	250	294000
Berat Total / lantai				1372704.7

Perhitungan berat total struktur Struktur *Open Frame* (OF)

1. Berat Lantai 30

Tabel 5.15 hitungan berat struktur lantai 30

Elemen	Jumlah	Luas/Panjang	Berat	Berat Total
	1	2	3	(1 x 2 x 3)
Berat pelat atap	24	49	321.0	277344.0
Berat balok B1	8	7	32.8	2214.7
Berat balok B2	20	7	52.1	6246.2
Berat balok B3	12	7	38.7	2783.5
Berat balok B4	18	7	44.4	5330.4
Berat balok anak	24	7	49.1	7066.1
Berat kolom K1	4	3.75	382.0	2941.2
Berat kolom K2	4	3.75	461.9	3926.6
Berat kolom K3	2	3.75	461.9	1770.0
Berat kolom K4	10	3.75	510.4	8850.0
Berat kolom K5	10	3.75	550.8	11749.5

Berat kolom K6	5	3.75	550.8	5874.7
Beban hidup (0.3 x WL)	24	49	100.0	25920.0
Berat Total / Lantai				362016.9

2. Berat Lantai 29, 28, 27, 26, 25 dan 24

Tabel 5.16 hitungan berat struktur lantai 29, 28, 27, 26, 25 dan 24

Elemen	Jumlah	Luas/Panjang	Berat	Berat Total
	1	2	3	(1 x 2 x 3)
Berat pelat Lantai	24	49	483.0	417312.0
Berat balok B1	8	7	53.6	2862.3
Berat balok B2	20	7	74.3	8914.4
Berat balok B3	12	7	44.4	2783.5
Berat balok B4	18	7	59.1	5330.5
Berat balok anak	24	7	72.8	10479.0
Berat kolom K1	4	3.75	591.3	4305.6
erat kolom K2	4	3.75	677.2	5192.5
Berat kolom K3	2	3.75	677.2	2349.9
Berat kolom K4	10	3.75	677.2	10764.0
Berat kolom K5	10	3.75	818.7	17321.0
Berat kolom K6	5	3.75	818.7	8660.5
Berat Tembok 1/2 Bata (15 cm)	58	7	841.5	292842.0
Beban hidup (0.3 x WL)	24	49	250.0	216000.0
Berat Total / Lantai				1005117.2

3. Berat Lantai 23, 22, 21 dan 20

Tabel 5.17 hitungan berat struktur lantai 23, 22, 21 dan 20

Elemen	Jumlah	Luas/Panjang	Berat	Berat Total
	1	2	3	(1 x 2 x 3)
Berat pelat Lantai	24	49	483.0	417312.0
Berat balok B1	8	7	59.6	2862.3
Berat balok B2	20	7	81.9	8914.4

Berat balok B3	12	7	44.4	2783.5
Berat balok B4	18	7	59.1	5330.5
Berat balok anak	24	7	72.8	10479.0
Berat kolom K1	4	3.75	591.3	4305.6
Berat kolom K2	4	3.75	677.2	5192.5
Berat kolom K3	2	3.75	677.2	2349.9
Berat kolom K4	10	3.75	677.2	10764.0
Berat kolom K5	10	3.75	818.7	17321.0
Berat kolom K6	5	3.75	818.7	8660.5
Berat Tembok 1/2 Bata (15 cm)	58	7	841.5	292842.0
Beban hidup (0.3 x WL)	24	49	250.0	216000.0
Berat Total / Lantai				1005117.2

4. Berat Lantai 19,18,17, 16, 15 dan 14

Tabel 5.18 hitungan berat struktur lantai 19, 18, 17, 16, 15 dan 14

Elemen	Jumlah	Luas/Panjang	Berat	Berat Total
	1	2	3	(1 x 2 x 3)
Berat pelat Lantai	24	49	483.0	417312.0
Berat balok B1	8	7	68.2	2862.3
Berat balok B2	20	7	84.4	8914.4
Berat balok B3	12	7	59.1	2783.5
Berat balok B4	18	7	71.3	5330.5
Berat balok anak	24	7	72.8	10479.0
Berat kolom K1	4	3.75	631.7	4305.6
Berat kolom K2	4	3.75	742.9	5192.5
Berat kolom K3	2	3.75	742.9	2349.9
Berat kolom K4	10	3.75	818.7	10764.0
Berat kolom K5	10	3.75	899.5	17321.0
Berat kolom K6	5	3.75	899.5	8660.5
Berat Tembok 1/2 Bata (15 cm)	58	7	841.5	292842.0
Beban hidup (0.3 x WL)	24	49	250.0	216000.0
Berat Total / Lantai				1005117.2

5. Berat Lantai 13, 12, 11 dan 10

Tabel 5.19 hitungan berat struktur lantai 13, 12 , 11, dan 10

Elemen	Jumlah	Luas/Panjang	Berat	Berat Total
	1	2	3	(1 x 2 x 3)
Berat pelat Lantai	24	49	483.0	417312.0
Berat balok B1	8	7	74.3	2862.3
Berat balok B2	20	7	92.5	8914.4
Berat balok B3	12	7	59.1	2783.5
Berat balok B4	18	7	71.3	5330.5
Berat balok anak	24	7	72.8	10479.0
Berat kolom K1	4	3.75	677.2	4305.6
Berat kolom K2	4	3.75	818.7	5192.5
Berat kolom K3	2	3.75	818.7	2349.9
Berat kolom K4	10	3.75	818.7	10764.0
Berat kolom K5	10	3.75	990.5	17321.0
Berat kolom K6	5	3.75	990.5	8660.5
Berat Tembok 1/2 Bata (15 cm)	58	7	841.5	292842.0
Beban hidup (0.3 x WL)	24	49	250.0	216000.0
Berat Total / Lantai				1005117.2

6. Berat lantai 9, 8, 7, 6, 5 dan 4

Tabel 5.20 hitungan berat struktur lantai 9, 8, 7, 6, 5 dan 4

Elemen	Jumlah	Luas/Panjang	Berat	Berat Total
	1	2	3	(1 x 2 x 3)
Berat pelat Lantai	24	49	483.0	417312.0
Berat balok B1	8	7	81.9	2862.3
Berat balok B2	20	7	101.6	8914.4
Berat balok B3	12	7	63.7	2783.5
Berat balok B4	18	7	74.3	5330.5
Berat balok anak	24	7	72.8	10479.0

Berat kolom K1	4	3.75	818.7	4305.6
Berat kolom K2	4	3.75	899.5	5192.5
Berat kolom K3	2	3.75	899.5	2349.9
Berat kolom K4	10	3.75	990.5	10764.0
Berat kolom K5	10	3.75	1086.5	17321.0
Berat kolom K6	5	3.75	1086.5	8660.5
Berat Tembok 1/2 Bata (15 cm)	58	7	841.5	292842.0
Beban hidup (0.3 x WL)	24	49	250.0	216000.0
Berat Total / Lantai				1005117.2

7. Berat. lantai 3, 2, dan 1

Tabel 5.21 hitungan berat struktur lantai 3, 2, dan 1

Elemen	Jumlah	Luas/Panjang	Berat	Berat Total
	1	2	3	(1 x 2 x 3)
Berat pelat Lantai	24	49	483.0	417312.0
Berat balok B1	8	7	101.1	2862.3
Berat balok B2	20	7	113.2	8914.4
Berat balok B3	12	7	63.7	2783.5
Berat balok B4	18	7	74.3	5330.5
Berat balok anak	24	7	72.8	10479.0
Berat kolom K1	4	3.75	899.5	4305.6
Berat kolom K2	4	3.75	990.5	5192.5
Berat kolom K3	2	3.75	990.5	2349.9
Berat kolom K4	10	3.75	990.5	10764.0
Berat kolom K5	10	3.75	1197.7	17321.0
Berat kolom K6	5	3.75	1197.7	8660.5
Berat Tembok 1/2 Bata (15 cm)	58	7	841.5	292842.0
Beban hidup (0.3 x WL)	24	49	250.0	216000.0
Berat Total / Lantai				1005117.2

Tabel 5.22 Berat Tiap Lantai dan Berat Total Struktur Portal Baja

Lantai	Wi (Kg)		
	Tanpa Pengaku	Dengan Pengaku	
	OF	FT	CB
30	714454.4	719736.9	733693.4
29	1054196.7	1030682.6	1045050.4
28	1054196.7	1030682.6	1045050.4
27	1054196.7	1030682.6	1045050.4
26	1054196.7	1030682.6	1045050.4
25	1054196.7	1030682.6	1045050.4
24	1054196.7	1030682.6	1045050.4
23	1056503.1	1030682.6	1045390.0
22	1061166.9	1035782.2	1053258.3
21	1061166.9	1035782.2	1053662.6
20	1061166.9	1040480.4	1055549.9
19	1068326.8	1041244.5	1055549.9
18	1068326.8	1041244.5	1057324.7
17	1068326.8	1041244.5	1057324.7
16	1068326.8	1041244.5	1057324.7
15	1072391.7	1061134.6	1096317.4
14	1072391.7	1045455.3	1062348.6
13	1074089.7	1046636.8	1063112.7
12	1074089.7	1046636.8	1063112.7
11	1074089.7	1046636.8	1063112.7
10	1074089.7	1046636.8	1064608.0
9	1074089.7	1046636.8	1064608.0
8	1085988.9	1057978.9	1071269.2
7	1085988.9	1057978.9	1071269.2
6	1085988.9	1057978.9	1071269.2
5	1085988.9	1057978.9	1071269.2
4	1085988.9	1057978.9	1071269.2
3	1085988.9	1057978.9	1071269.2
2	1085988.9	1057978.9	1071269.2
1	1085988.9	1057978.9	1071269.2
Σ =	**31756088.0**	**31015142.7**	**31486754.0**

5.2.3 Perhitungan Gaya Geser Dasar Akibat Gempa dan Distribusinya ke Sepanjang Tinggi Gedung

1. Waktu getar struktur (T) untuk struktur baja 30 lantai dimana tinggi antar tingkat 3,75 m.

   a. Struktur *Open Frame* berdasarkan persamaan (3.5)

   $T = 0{,}085.H^{3/4} = 0{,}085.\ 112{,}5^{3/4} = 2{,}936$ detik

   b. Struktur *Frame Truss* dan *Core Brace (BOF)*

   - Berdasarkan code Prancis menurut persamaan (3.6)

   $$T = 0{,}08.\frac{H(m)}{\sqrt{L(m)}}.\sqrt{\frac{H(m)}{L(m)+H(m)}}$$

   $$= 0{,}08.\frac{112{,}5}{\sqrt{28}}.\sqrt{\frac{112{,}5}{28+112{,}5}} = 1{,}52 \text{ detik.}$$

   - Berdasarkan code Israel menurut persamaan (3.7)

   $T = 0{,}049.\ H^{3/4}(m) = 0{,}049.\ 112{,}5^{3/4} = 1{,}69$ detik.

   - Berdasarkan code Puerto Rico menurut persamaan (3.8)

   $$T = \frac{Hn(ft)}{20.\sqrt{D(ft)}} = \frac{369{,}09}{20.\sqrt{78.74}} = 1{,}4 \text{ detik}$$

   - Berdasarkan code Spanyol menurut persamaan (3.9)

   $$T = 0{,}85.\sqrt{\frac{1}{1+\frac{L(m)}{H(m)}}}.0{,}1.\frac{H(m)}{\sqrt{L(m)}}$$

   $$= 0{,}85.\sqrt{\frac{1}{1+\frac{112{,}5}{28}}}.0{,}1.\frac{112{,}5}{\sqrt{28}} = 0{,}806 \text{ detik}$$

   Dipakai T empiris berdasarkan code Israel, T = 1,69 detik.

2. Koefisien gempa dasar

   Struktur berada di wilayah gempa 6 (BOF dan OF) dan di atas tanah keras.

   a. Struktur *Open Frame*

To = 2,936 detik, maka C (menurut Gambar 3.1) = 0,143

b. Struktur *frame Truss dan Core Brace(BOF)*

Ta = 1,69 detik, maka C (menurut Gambar 3.1) = 0,202

3. Faktor keutamaan (I) dan faktor reduksi beban gempa (R)

Ditentukan nilai I = 1 (gedung perkantoran) dan R= 8,5 (Rangka pemikul momen khusus) untuk struktur OF, serta R = 6,5 (rangka bresing biasa) untuk struktur BOF.

4. Gaya geser dasar horizontal akibat gempa

$$V = \frac{C_i.I}{R}.W_t \quad \text{menurut} \qquad \text{(Pers 3.4)}$$

$$V = \frac{0{,}202.1}{6{,}5}.31015142{,}7 = 963855{,}2039 \text{ Kg (FT)}$$

$$V = \frac{0{,}202.1}{6{,}5}.31446248{,}6 = 977252{,}6488 \text{ Kg (CB)}$$

$$V = \frac{0{,}143.1}{8{,}5}.31756088 = 534249{,}48 \text{ Kg (OF)}$$

5. Distribusi gaya geser dasar akibat gempa

Karena rasio H/B = 112,5/28 = 4,017 > 3 maka gaya geser dasar horizontal di sepanjang tinggi gedung didistribusikan dengan persamaan berikut.

$$Fi = 0{,}1.V + \frac{Wi.hi}{\sum Wi.hi}.0{,}9\,V \qquad \text{(Pers3.12)}$$

Untuk lantai selain atap dihitung dengan persamaan berikut :

$$Fi = \frac{Wi \times hi}{\sum Wi \times hi} \times 0.9V \qquad \text{(Pers3.13)}$$

Tabel 5.23 Distribusi Gaya Geser Dasar Horizontal Struktur OF

Lantai	hi (m)	wi (Kg)	hi.wi	Fx,y (Kg)
30	112.50	714454.4	80376117.1	74729.0
29	108.75	1054196.7	114643889.0	30364.1
28	105.00	1054196.7	110690651.4	29317.1
27	101.25	1054196.7	106737413.9	28270.0
26	97.50	1054196.7	102784176.3	27223.0

25	93.75	1054196.7	98830938.8	26176.0
24	90.00	1054196.7	94877701.2	25128.9
23	86.25	1056503.1	91123393.9	24134.6
22	82.50	1061166.9	87546269.5	23187.1
21	78.75	1061166.9	83566893.6	22133.2
20	75.00	1061166.9	79587517.7	21079.2
19	71.25	1068326.8	76118281.3	20160.4
18	67.50	1068326.8	72112056.0	19099.3
17	63.75	1068326.8	68105830.6	18038.2
16	60.00	1068326.8	64099605.3	16977.2
15	56.25	1072391.7	60322032.7	15976.6
14	52.50	1072391.7	56300563.8	14911.5
13	48.75	1074089.7	52361871.7	13868.3
12	45.00	1074089.7	48334035.4	12801.6
11	41.25	1074089.7	44306199.2	11734.8
10	37.50	1074089.7	40278362.9	10668.0
9	33.75	1074089.7	36250526.6	9601.2
8	30.00	1085988.9	32579666.0	8628.9
7	26.25	1085988.9	28507207.7	7550.3
6	22.50	1085988.9	24434749.5	6471.7
5	18.75	1085988.9	20362291.2	5393.1
4	15.00	1085988.9	16289833.0	4314.5
3	11.25	1085988.9	12217374.7	3235.8
2	7.50	1085988.9	8144916.5	2157.2
1	3.75	1085988.9	4072458.2	1078.6
		Σ =	1815962824.8	

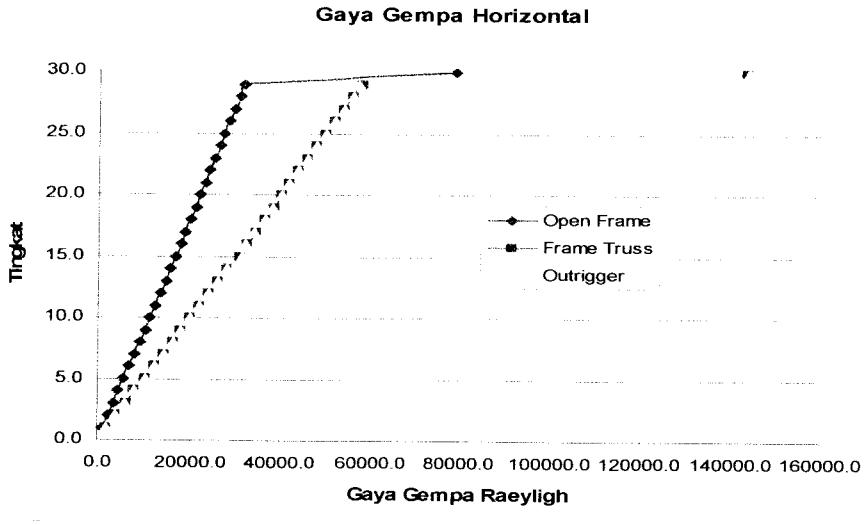
Tabel 5.24 Distribusi Gaya Geser Dasar Horizontal Struktur FT

Lantai	hi (m)	wi (Kg)	hi.wi	Fx,y (Kg)
30	112.50	721218.7	81137105.3	136035.5
29	108.75	1030682.6	112086731.3	54742.9
28	105.00	1030682.6	108221671.6	52855.2
27	101.25	1030682.6	104356611.9	50967.5
26	97.50	1030682.6	100491552.2	49079.8
25	93.75	1030682.6	96626492.5	47192.1
24	90.00	1030682.6	92761432.8	45304.4
23	86.25	1030682.6	88896373.1	43416.7
22	82.50	1035782.2	85452034.7	41734.5
21	78.75	1035782.2	81567851.3	39837.5
20	75.00	1040480.4	78036027.3	38112.6
19	71.25	1041244.5	74188667.5	36233.5
18	67.50	1041244.5	70284000.8	34326.5
17	63.75	1041244.5	66379334.1	32419.5
16	60.00	1041244.5	62474667.4	30512.5
15	56.25	1063001.1	59793813.6	29203.1
14	52.50	1045455.3	54886404.2	26806.4
13	48.75	1046636.8	51023545.7	24919.8
12	45.00	1046636.8	47098657.6	23002.9

11	41.25	1046636.8	43173769.4	21086.0
10	37.50	1047798.3	39292435.0	19190.3
9	33.75	1047798.3	35363191.5	17271.3
8	30.00	1059140.3	31774209.0	15518.4
7	26.25	1059140.3	27802432.9	13578.6
6	22.50	1059140.3	23830656.8	11638.8
5	18.75	1059140.3	19858880.6	9699.0
4	15.00	1059140.3	15887104.5	7759.2
3	11.25	1059140.3	11915328.4	5819.4
2	7.50	1059140.3	7943552.3	3879.6
1	3.75	1059140.3	3971776.1	1939.8
		Σ =	1776576311.7	

Tabel 5.25 Distribusi Gaya Geser Dasar Horizontal Struktur CB

Lantai	hi (m)	wi (Kg)	hi.wi	Fx,y (Kg)
30	112.50	733693.4	82540507.6	137976.8
29	108.75	1045050.4	113649229.2	55454.9
28	105.00	1045050.4	109730290.2	53542.7
27	101.25	1045050.4	105811351.3	51630.5
26	97.50	1045050.4	101892412.4	49718.2
25	93.75	1045050.4	97973473.4	47806.0
24	90.00	1045050.4	94054534.5	45893.8
23	86.25	1045390.0	90164885.8	43995.8
22	82.50	1051730.9	86767800.1	42338.2
21	78.75	1052135.2	82855646.4	40429.3
20	75.00	1054022.5	79051685.6	38573.1
19	71.25	1054022.5	75099101.3	36644.5
18	67.50	1055797.3	71266316.5	34774.3
17	63.75	1055797.3	67307076.7	32842.4
16	60.00	1055797.3	63347836.9	30910.5
15	56.25	1094354.1	61557418.6	30036.8
14	52.50	1060385.3	55670226.2	27164.2
13	48.75	1061149.4	51731031.1	25242.1
12	45.00	1061149.4	47751721.0	23300.4
11	41.25	1061149.4	43772410.9	21358.7
10	37.50	1062644.7	39849175.8	19444.3
9	33.75	1062644.7	35864258.2	17499.9
8	30.00	1069260.4	32077812.0	15652.3
7	26.25	1069260.4	28068085.5	13695.8
6	22.50	1069260.4	24058359.0	11739.2
5	18.75	1069260.4	20048632.5	9782.7
4	15.00	1069260.4	16038906.0	7826.2
3	11.25	1069260.4	12029179.5	5869.6
2	7.50	1069260.4	8019453.0	3913.1
1	3.75	1069260.4	4009726.5	1956.5
		Σ =	1802058543.4	



Grafik 5.1 Perbandingan Gaya Gempa pada OF dan BOF

6. Kontrol waktu getar struktur dengan persamaan Rayleigh

$$T = 6{,}3\sqrt{\frac{\sum Wi.di^2}{g.\sum Fi.di}} \qquad \text{(Pers 3.10)}$$

Tabel 5.26 Evaluasi Periode Getar (T Rayleigh) Struktur FT

Lt	Fy	Gaya Geser (V)	Kekakuan Tingkat (K)	Simpangan Tingkat	Total Simpangan (δ)	Wi	Wi.δi2	Fi.δi
	Kg	Kg	Kg/cm	cm	cm	Kg	kg.cm2	kg.cm
30	136035.5	136035.5	952651.2	0.1428	13.1878	721218.7	125433306.9	1794011.2
29	54742.9	190778.3	1061006.1	0.1798	13.0450	1030682.6	175393913.0	714121.7
28	52855.2	243633.5	1061006.1	0.2296	12.8652	1030682.6	170592075.6	679993.0
27	50967.5	294601.0	1061006.1	0.2777	12.6356	1030682.6	164556789.2	644004.1
26	49079.8	343680.8	1061006.1	0.3239	12.3579	1030682.6	157404112.9	606524.5
25	47192.1	390872.9	1061006.1	0.3684	12.0340	1030682.6	149260661.4	567910.2
24	45304.4	436177.3	1061006.1	0.4111	11.6656	1030682.6	140261876.0	528503.7
23	43416.7	479594.1	1061006.1	0.4520	11.2545	1030682.6	130550360.7	488634.2
22	41734.5	521328.6	1299879.3	0.4011	10.8025	1035782.2	120869381.7	450837.0
21	39837.5	561166.2	1299879.3	0.4317	10.4014	1035782.2	112061058.4	414367.2
20	38112.6	599278.7	1299879.3	0.4610	9.9697	1040480.4	103418990.3	379972.0
19	36233.5	635512.3	1299879.3	0.4889	9.5087	1041244.5	94144490.4	344533.9
18	34326.5	669838.8	1299879.3	0.5153	9.0198	1041244.5	84712272.4	309618.2
17	32419.5	702258.3	1299879.3	0.5402	8.5045	1041244.5	75309404.0	275711.2
16	30512.5	732770.7	1299879.3	0.5637	7.9642	1041244.5	66045230.5	243008.6
15	29203.1	761973.9	1509390.6	0.5048	7.4005	1063001.1	58218100.7	216118.4
14	26806.4	788780.3	1509390.6	0.5226	6.8957	1045455.3	49712057.3	184848.6
13	24919.8	813700.0	1509390.6	0.5391	6.3731	1046636.8	42510816.5	158816.5
12	23002.9	836702.9	1509390.6	0.5543	5.8340	1046636.8	35623143.3	134199.2

11	21086.0	857788.8	1509390.6	0.5683	5.2797	1046636.8	29175145.9	111327.3
10	19190.3	876979.1	1509390.6	0.5810	4.7114	1047798.3	23258179.5	90413.1
9	17271.3	894250.4	1509390.6	0.5925	4.1304	1047798.3	17875429.3	71336.9
8	15518.4	909768.9	2133946.4	0.4263	3.5379	1059140.3	13257102.0	54902.9
7	13578.6	923347.5	2133946.4	0.4327	3.1116	1059140.3	10254552.9	42251.1
6	11638.8	934986.3	2133946.4	0.4381	2.6789	1059140.3	7600868.2	31179.1
5	9699.0	944685.4	2133946.4	0.4427	2.2407	1059140.3	5317858.5	21733.0
4	7759.2	952444.6	2133946.4	0.4463	1.7980	1059140.3	3424171.5	13951.4
3	5819.4	958264.0	2133946.4	0.4491	1.3517	1059140.3	1935195.6	7866.2
2	3879.6	962143.6	2133946.4	0.4509	0.9027	1059140.3	862981.4	3502.0
1	1939.8	964083.4	2133946.4	0.4518	0.4518	1059140.3	216180.1	876.4
		20317426.2				**Σ**	**2169255706.0**	**9585072.8**

Tabel 5.27 Evaluasi Periode Getar (T Rayleigh) Struktur CB

Lt	Fy	Gaya Geser (V)	Kekakuan Tingkat (K)	Simpangan Tingkat	Total Simpangan (δ)	Wi	Wi.δi2	Fi.δi
	Kg	Kg	Kg/cm	cm	cm	Kg	kg.cm2	kg.cm
30	137976.8	137976.8	1204784.6	0.1145	10.7630	733693.4	84992999.7	1485047.1
29	55454.9	193431.7	1390048.7	0.1392	10.6485	1045050.4	118498819.7	590512.0
28	53542.7	246974.4	1390048.7	0.1777	10.5093	1045050.4	115421969.9	562698.8
27	51630.5	298604.9	1390048.7	0.2148	10.3317	1045050.4	111552262.9	533429.0
26	49718.2	348323.1	1390048.7	0.2506	10.1169	1045050.4	106961697.8	502992.1
25	47806.0	396129.1	1390048.7	0.2850	9.8663	1045050.4	101728670.8	471666.9
24	45893.8	442022.9	1390048.7	0.3180	9.5813	1045050.4	95936927.8	439721.6
23	43995.8	486018.7	1390048.7	0.3496	9.2633	1045390.0	89703695.2	407546.6
22	42338.2	528356.9	1717007.5	0.3077	8.9137	1051730.9	83563608.6	377388.5
21	40429.3	568786.1	1717007.5	0.3313	8.6059	1052135.2	77923535.8	347932.1
20	38573.1	607359.3	1717007.5	0.3537	8.2747	1054022.5	72169243.9	319180.3
19	36644.5	644003.8	1717007.5	0.3751	7.9209	1054022.5	66130854.9	290259.0
18	34774.3	678778.0	1717007.5	0.3953	7.5459	1055797.3	60117325.6	262402.3
17	32842.4	711620.4	1717007.5	0.4145	7.1505	1055797.3	53983269.6	234841.0
16	30910.5	742530.9	1717007.5	0.4325	6.7361	1055797.3	47906763.0	208215.8
15	30036.8	772567.7	1962510.8	0.3937	6.3036	1094354.1	43485088.7	189341.3
14	27164.2	799731.9	1962510.8	0.4075	5.9100	1060385.3	37036926.4	160539.7
13	25242.1	824974.0	1962510.8	0.4204	5.5025	1061149.4	32128609.7	138893.7
12	23300.4	848274.3	1962510.8	0.4322	5.0821	1061149.4	27407130.4	118414.9
11	21358.7	869633.0	1962510.8	0.4431	4.6499	1061149.4	22943363.9	99314.9
10	19444.3	889077.4	1962510.8	0.4530	4.2067	1062644.7	18805278.9	81797.3
9	17499.9	906577.3	1962510.8	0.4619	3.7537	1062644.7	14973033.2	65689.6
8	15652.3	922229.6	2324514.5	0.3967	3.2918	1069260.4	11586192.7	51523.7
7	13695.8	935925.4	2324514.5	0.4026	2.8950	1069260.4	8961639.4	39649.6
6	11739.2	947664.6	2324514.5	0.4077	2.4924	1069260.4	6642255.2	29258.8
5	9782.7	957447.3	2324514.5	0.4119	2.0847	1069260.4	4647011.0	20394.1
4	7826.2	965273.4	2324514.5	0.4153	1.6728	1069260.4	2992126.1	13091.7
3	5869.6	971143.1	2324514.5	0.4178	1.2576	1069260.4	1690984.2	7381.4
2	3913.1	975056.1	2324514.5	0.4195	0.8398	1069260.4	754065.7	3286.1
1	1956.5	977012.7	2324514.5	0.4203	0.4203	1069260.4	188894.5	822.3
		20593504.7				**Σ**	**1520834245.1**	**8053232.3**

Tabel 5.28 Evaluasi Periode Getar (T Rayleigh) Struktur OF

Tingkat	Fy	Gaya Geser (V)	Kekakuan Tingkat (K)	Simpangan Tingkat	Total Simpangan (δ)	Wi	Wi.δi2	Fi.δi
	Kg	Kg	Kg/cm	cm	cm	Kg	kg.cm2	kg.cm
30	74729.0	74729.0	1316170.4	0.0568	4.9946	714454.4	17822714.7	373240.7
29	30364.1	105093.1	1712271.7	0.0614	4.9378	1054196.7	25703394.3	149932.2
28	29317.1	134410.2	1712271.7	0.0785	4.8764	1054196.7	25068384.9	142962.8
27	28270.0	162680.2	1712271.7	0.0950	4.7979	1054196.7	24267806.5	135637.8
26	27223.0	189903.2	1712271.7	0.1109	4.7029	1054196.7	23316223.3	128027.8
25	26176.0	216079.2	1712271.7	0.1262	4.5920	1054196.7	22229476.8	120200.5
24	25128.9	241208.1	1712271.7	0.1409	4.4658	1054196.7	21024477.5	112221.4
23	24134.6	265342.7	1712271.7	0.1550	4.3250	1056503.1	19762145.7	104380.9
22	23187.1	288529.8	1954175.8	0.1476	4.1700	1061166.9	18452439.9	96690.2
21	22133.2	310663.0	1954175.8	0.1590	4.0223	1061166.9	17168873.6	89027.2
20	21079.2	331742.2	1954175.8	0.1698	3.8634	1061166.9	15838571.0	81436.8
19	20160.4	351902.6	1954175.8	0.1801	3.6936	1068326.8	14574904.0	74464.5
18	19099.3	371001.9	1954175.8	0.1899	3.5135	1068326.8	13188385.1	67106.0
17	18038.2	389040.1	1954175.8	0.1991	3.3237	1068326.8	11801643.5	59953.3
16	16977.2	406017.3	1954175.8	0.2078	3.1246	1068326.8	10430197.8	53046.8
15	15976.6	421993.9	2200815.7	0.1917	2.9168	1072391.7	9123794.9	46601.1
14	14911.5	436905.4	2200815.7	0.1985	2.7251	1072391.7	7963676.1	40635.2
13	13868.3	450773.8	2200815.7	0.2048	2.5266	1074089.7	6856486.3	35039.3
12	12801.6	463575.3	2200815.7	0.2106	2.3217	1074089.7	5789875.8	29721.9
11	11734.8	475310.1	2200815.7	0.2160	2.1111	1074089.7	4786969.8	24773.3
10	10668.0	485978.1	2200815.7	0.2208	1.8951	1074089.7	3857637.3	20217.2
9	9601.2	495579.2	2200815.7	0.2252	1.6743	1074089.7	3011042.8	16075.4
8	8628.9	504208.1	2887694.5	0.1746	1.4491	1085988.9	2280581.3	12504.5
7	7550.3	511758.4	2887694.5	0.1772	1.2745	1085988.9	1764118.7	9623.1
6	6471.7	518230.1	2887694.5	0.1795	1.0973	1085988.9	1307634.5	7101.5
5	5393.1	523623.2	2887694.5	0.1813	0.9179	1085988.9	914892.6	4950.0
4	4314.5	527937.7	2887694.5	0.1828	0.7365	1085988.9	589111.0	3177.7
3	3235.8	531173.5	2887694.5	0.1839	0.5537	1085988.9	332945.3	1791.7
2	2157.2	533330.7	2887694.5	0.1847	0.3698	1085988.9	148475.2	797.6
1	1078.6	534409.3	2887694.5	0.1851	0.1851	1085988.9	37193.8	199.6
		11253129.5				**Σ**	**329414074.0**	**2041538.1**

Frame Truss (FT):

$$T_{R1} = 6{,}3.\sqrt{\frac{2169255706}{981.9585072{,}8}} = 3{,}026 \text{ detik}, \quad \frac{Ta}{T_{R1}} = \frac{2{,}1}{3{,}026} = 0{,}687 \; ; \; 0{,}687 \leq 0.8 \leq 1{,}2$$

Karena nilai $\frac{Ta}{T_{R1}} \leq 0{,}8$, maka gaya gempa baru perlu dicari berdasarkan nilai C baru dengan menggunakan T_R. Nilai C baru untuk struktur *Frame truss* menurut Gambar 3.1 untuk kondisi tanah keras, C = 0,244

Selanjutnya, perhitungan untuk struktur *Frame Truss* diulang dari menghitung gaya geser horizontal total.

$$V = \frac{C_i.I}{R}.W_t = \frac{0{,}244\,.1}{6{,}5}.\ 31015142{,}7 = \ 1164260{,}741\ \text{Kg}\quad \text{(FT)} \qquad \text{(Pers 3.4)}$$

Tabel 5.29 Distribusi Gaya Geser Dasar Horizontal Iterasi 1 Struktur FT

Lantai	hi (m)	wi (Kg)	hi.wi	Fx,y (Kg)
30	112.50	721218.7	81137105.3	92905.3
29	108.75	1030682.6	112086731.3	36808.3
28	105.00	1030682.6	108221671.6	35539.0
27	101.25	1030682.6	104356611.9	34269.8
26	97.50	1030682.6	100491552.2	33000.5
25	93.75	1030682.6	96626492.5	31731.3
24	90.00	1030682.6	92761432.8	30462.0
23	86.25	1030682.6	88896373.1	29192.8
22	82.50	1035782.2	85452034.7	28061.7
21	78.75	1035782.2	81567851.3	26786.1
20	75.00	1040480.4	78036027.3	25626.3
19	71.25	1041244.5	74188667.5	24362.9
18	67.50	1041244.5	70284000.8	23080.6
17	63.75	1041244.5	66379334.1	21798.4
16	60.00	1041244.5	62474667.4	20516.1
15	56.25	1063001.1	59793813.6	19635.7
14	52.50	1045455.3	54886404.2	18024.2
13	48.75	1046636.8	51023545.7	16755.7
12	45.00	1046636.8	47098657.6	15466.8
11	41.25	1046636.8	43173769.4	14177.9
10	37.50	1047798.3	39292435.0	12903.3
9	33.75	1047798.3	35363191.5	11612.9
8	30.00	1059140.3	31774209.0	10434.4
7	26.25	1059140.3	27802432.9	9130.1
6	22.50	1059140.3	23830656.8	7825.8
5	18.75	1059140.3	19858880.6	6521.5
4	15.00	1059140.3	15887104.5	5217.2
3	11.25	1059140.3	11915328.4	3912.9
2	7.50	1059140.3	7943552.3	2608.6
1	3.75	1059140.3	3971776.1	1304.3
			1776576311.7	

Tabel 5.30 Evaluasi Periode Getar (T Rayleigh) Iterasi 1 Struktur FT

Lt	Fy	Gaya Geser (V)	Kekakuan Tingkat (K)	Simpangan Tingkat	Total Simpangan (δ)	Wi	Wi.δi2	Fi.δi
	Kg	Kg	Kg/cm	cm	cm	Kg	kg.cm2	kg.cm
30	92905.3	92905.3	1204784.6	0.0771	7.1642	721218.7	37017581.4	665596.5
29	36808.3	129713.6	1390048.7	0.0933	7.0871	1030682.6	51768562.3	260865.0
28	35539.0	165252.6	1390048.7	0.1189	6.9938	1030682.6	50414270.5	248553.3
27	34269.8	199522.3	1390048.7	0.1435	6.8749	1030682.6	48714929.7	235602.3
26	33000.5	232522.8	1390048.7	0.1673	6.7314	1030682.6	46702005.1	222139.5
25	31731.3	264254.1	1390048.7	0.1901	6.5641	1030682.6	44409734.8	208287.8
24	30462.0	294716.1	1390048.7	0.2120	6.3740	1030682.6	41874673.7	194165.3
23	29192.8	323908.8	1390048.7	0.2330	6.1620	1030682.6	39135255.7	179885.7
22	28061.7	351970.5	1717007.5	0.2050	5.9290	1035782.2	36410639.4	166377.0
21	26786.1	378756.6	1717007.5	0.2206	5.7240	1035782.2	33936415.2	153323.5
20	25626.3	404382.9	1717007.5	0.2355	5.5034	1040480.4	31513426.9	141031.8
19	24362.9	428745.8	1717007.5	0.2497	5.2679	1041244.5	28895130.2	128340.8
18	23080.6	451826.4	1717007.5	0.2631	5.0182	1041244.5	26220711.8	115822.6
17	21798.4	473624.8	1717007.5	0.2758	4.7550	1041244.5	23542844.1	103651.8
16	20516.1	494140.9	1717007.5	0.2878	4.4792	1041244.5	20890591.6	91895.4
15	19635.7	513776.7	1962510.8	0.2618	4.1914	1063001.1	18674567.2	82301.1
14	18024.2	531800.9	1962510.8	0.2710	3.9296	1045455.3	16143647.0	70827.8
13	16755.7	548556.5	1962510.8	0.2795	3.6586	1046636.8	14009741.1	61302.6
12	15466.8	564023.3	1962510.8	0.2874	3.3791	1046636.8	11950831.9	52263.8
11	14177.9	578201.2	1962510.8	0.2946	3.0917	1046636.8	10004400.7	43833.7
10	12903.3	591104.4	1962510.8	0.3012	2.7971	1047798.3	8197602.9	36091.5
9	11612.9	602717.4	1962510.8	0.3071	2.4959	1047798.3	6527172.8	28984.5
8	10434.4	613151.7	2324514.5	0.2638	2.1888	1059140.3	5074013.6	22838.4
7	9130.1	622281.8	2324514.5	0.2677	1.9250	1059140.3	3924729.5	17575.3
6	7825.8	630107.6	2324514.5	0.2711	1.6573	1059140.3	2909025.9	12969.5
5	6521.5	636629.0	2324514.5	0.2739	1.3862	1059140.3	2035232.0	9040.2
4	5217.2	641846.2	2324514.5	0.2761	1.1123	1059140.3	1310469.1	5803.3
3	3912.9	645759.1	2324514.5	0.2778	0.8362	1059140.3	740613.4	3272.0
2	2608.6	648367.7	2324514.5	0.2789	0.5584	1059140.3	330266.8	1456.7
1	1304.3	649672.0	2324514.5	0.2795	0.2795	1059140.3	82732.7	364.5
		13704239.1				**Σ**	**663361818.9**	**3564463.3**

Setelah didapat gaya geser horizontal gempa dasar baru dicek lagi waktu getar Raylighnya dapat dilihat pada lampiran A-5. hasil akhir seperti terlihat pada tabel 5.25

$$T_{R2} = 6{,}3.\sqrt{\frac{663361818{,}9}{981.3564463{,}3}} = 2{,}744 \text{ detik}, \quad \frac{T_{R1}}{T_{R2}} = \frac{3{,}026}{2{,}744} = 1{,}103 \; ; \; 0{,}8 \le 1{,}103 \ge 1{,}2$$

Karena nilai $\frac{T_{R1}}{T_{R2}} = 1{,}103$, maka gaya gempa baru tidak perlu dicari.

Outrigger dan Belttruss/ Core Brace (CB):

$$T_{RI} = 6{,}3.\sqrt{\frac{1520834245{,}1}{981.8053232{,}3}} = 2{,}764 \text{ detik}, \quad \frac{Ta}{T_{R2}} = \frac{2{,}1}{2{,}764} = 0{,}752 \; ; \; 0{,}752 \leq 0{,}8 \leq 1{,}2$$

Karena nilai $\frac{Ta}{T_{R2}} \leq 0{,}8$, maka gaya gempa baru perlu dicari berdasarkan nilai C baru dengan menggunakan T_R. Nilai C baru untuk struktur *Core Brace* menurut Gambar 3.1 untuk kondisi tanah keras, C = 0,243

Selanjutnya, perhitungan untuk struktur *Core Brace* diulang dari menghitung gaya geser horizontal total.

$$V = \frac{C_i.I}{R}.W_t = \frac{0{,}243.1}{6{,}5}.31486754 = 1177120{,}188 \text{ Kg} \quad \text{(CB)} \qquad \text{(Pers 3.4)}$$

Tabel 5.29 Distribusi Gaya Geser Dasar Horizontal Iterasi 1 Struktur CB

Lantai	hi (m)	wi (Kg)	hi.wi	Fx,y (Kg)
30	112.50	733693.4	82540507.6	103580.2
29	108.75	1045050.4	113649229.2	41404.3
28	105.00	1045050.4	109730290.2	39976.5
27	101.25	1045050.4	105811351.3	38548.8
26	97.50	1045050.4	101892412.4	37121.1
25	93.75	1045050.4	97973473.4	35693.3
24	90.00	1045050.4	94054534.5	34265.6
23	86.25	1045390.0	90164885.8	32848.5
22	82.50	1051730.9	86767800.1	31610.9
21	78.75	1052135.2	82855646.4	30185.7
20	75.00	1054022.5	79051685.6	28799.8
19	71.25	1054022.5	75099101.3	27359.8
18	67.50	1055797.3	71266316.5	25963.5
17	63.75	1055797.3	67307076.7	24521.1
16	60.00	1055797.3	63347836.9	23078.6
15	56.25	1094354.1	61557418.6	22426.4
14	52.50	1060385.3	55670226.2	20281.6
13	48.75	1061149.4	51731031.1	18846.5
12	45.00	1061149.4	47751721.0	17396.7
11	41.25	1061149.4	43772410.9	15947.0
10	37.50	1062644.7	39849175.8	14517.7
9	33.75	1062644.7	35864258.2	13065.9
8	30.00	1069260.4	32077812.0	11686.5
7	26.25	1069260.4	28068085.5	10225.7

6	22.50	1069260.4	24058359.0	8764.8
5	18.75	1069260.4	20048632.5	7304.0
4	15.00	1069260.4	16038906.0	5843.2
3	11.25	1069260.4	12029179.5	4382.4
2	7.50	1069260.4	8019453.0	2921.6
1	3.75	1069260.4	4009726.5	1460.8
			1802058543.4	

Tabel 5.30 Evaluasi Periode Getar (T Rayleigh) Iterasi 1 Struktur CB

Lt	Fy	Gaya Geser (V)	Kekakuan Tingkat (K)	Simpangan Tingkat	Total Simpangan (δ)	Wi	Wi.δi2	Fi.δi
	Kg	Kg	Kg/cm	cm	cm	Kg	kg.cm2	kg.cm
30	103580.2	103580.2	952651.2	0.1087	9.9923	733693.4	73255845.1	1035001.0
29	41404.3	144984.5	1061006.1	0.1366	9.8835	1045050.4	102084959.3	409220.3
28	39976.5	184961.0	1061006.1	0.1743	9.7469	1045050.4	99281653.2	389646.6
27	38548.8	223509.8	1061006.1	0.2107	9.5726	1045050.4	95762045.7	369010.6
26	37121.1	260630.9	1061006.1	0.2456	9.3619	1045050.4	91593650.5	347523.7
25	35693.3	296324.2	1061006.1	0.2793	9.1163	1045050.4	86850096.2	325389.5
24	34265.6	330589.8	1061006.1	0.3116	8.8370	1045050.4	81610124.2	302804.0
23	32848.5	363438.3	1061006.1	0.3425	8.5254	1045390.0	75981305.4	280046.5
22	31610.9	395049.2	1299879.3	0.3039	8.1828	1051730.9	70422849.5	258667.3
21	30185.7	425234.9	1299879.3	0.3271	7.8789	1052135.2	65314056.1	237830.8
20	28799.8	454034.7	1299879.3	0.3493	7.5518	1054022.5	60110592.2	217490.4
19	27359.8	481394.5	1299879.3	0.3703	7.2025	1054022.5	54678653.4	197059.4
18	25963.5	507358.0	1299879.3	0.3903	6.8322	1055797.3	49283137.8	177387.0
17	24521.1	531879.0	1299879.3	0.4092	6.4419	1055797.3	43813041.2	157961.3
16	23078.6	554957.7	1299879.3	0.4269	6.0327	1055797.3	38423953.9	139226.2
15	22426.4	577384.0	1509390.6	0.3825	5.6058	1094354.1	34389535.2	125716.7
14	20281.6	597665.6	1509390.6	0.3960	5.2232	1060385.3	28929552.8	105935.2
13	18846.5	616512.0	1509390.6	0.4085	4.8273	1061149.4	24727405.0	90976.8
12	17396.7	633908.8	1509390.6	0.4200	4.4188	1061149.4	20719901.4	76872.9
11	15947.0	649855.8	1509390.6	0.4305	3.9988	1061149.4	16968509.5	63769.4
10	14517.7	664373.5	1509390.6	0.4402	3.5683	1062644.7	13530360.7	51803.4
9	13065.9	677439.4	1509390.6	0.4488	3.1281	1062644.7	10398215.1	40872.0
8	11686.5	689125.9	2133946.4	0.3229	2.6793	1069260.4	7675945.3	31311.8
7	10225.7	699351.5	2133946.4	0.3277	2.3564	1069260.4	5937110.2	24095.6
6	8764.8	708116.4	2133946.4	0.3318	2.0287	1069260.4	4400481.6	17780.9
5	7304.0	715420.4	2133946.4	0.3353	1.6968	1069260.4	3078618.3	12393.7
4	5843.2	721263.6	2133946.4	0.3380	1.3616	1069260.4	1982257.2	7955.9
3	4382.4	725646.1	2133946.4	0.3400	1.0236	1069260.4	1120258.1	4485.7
2	2921.6	728567.7	2133946.4	0.3414	0.6835	1069260.4	499558.8	1997.0
1	1460.8	730028.5	2133946.4	0.3421	0.3421	1069260.4	125140.0	499.7
		15392585.7				**Σ**	**1262948812.7**	**5500731.2**

Setelah didapat gaya geser horizontal gempa dasar baru dicek lagi waktu getar Raylighnya dapat dilihat pada lampiran A-5. hasil akhir seperti terlihat pada tabel 5.25

$T_{R2} = 6{,}3.\ \sqrt{\frac{1262948812{,}7}{981.5500731{,}2}} = 3{,}048$ detik, $\frac{T_{R1}}{T_{R2}} = \frac{2{,}764}{3{,}048} = 0{,}907$; $0{,}8 \leq 0{,}907 \geq 1{,}2$

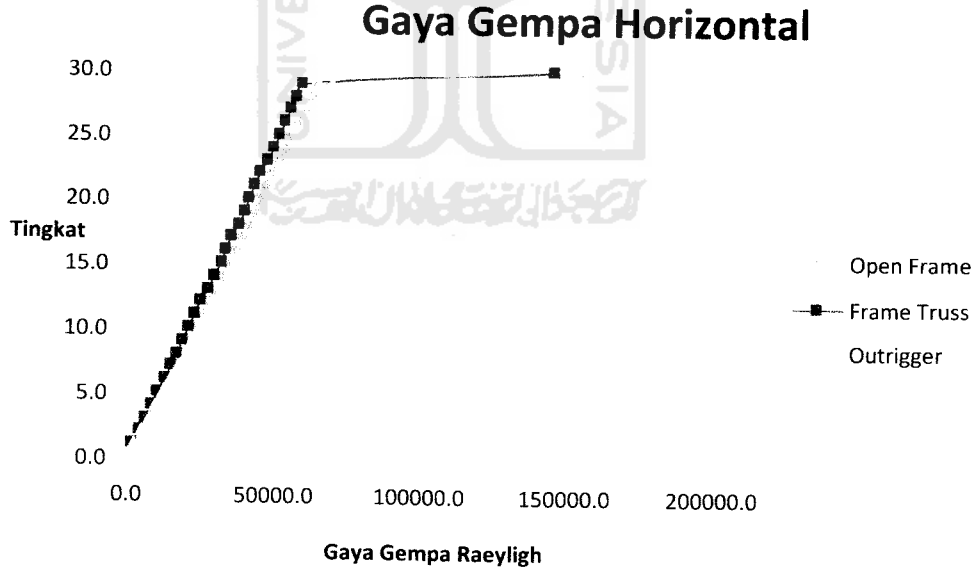
Karena nilai $\frac{T_{R1}}{T_{R2}} = 0{,}907$, maka gaya gempa baru tidak perlu dicari.

Open Frame (OF) :

$T_R = 6{,}3.\ \sqrt{\frac{329414074}{981.2041538{,}1}} = 2{,}555$ detik, $\frac{To}{T_R} = 1{,}149$; $0{,}8 \leq 1{,}149 \geq 1{,}2$

Karena nilai $\frac{To}{T_R} = 1{,}149$, maka gaya gempa baru tidak perlu dicari lagi.perlu dicari

Setelah didapat gaya geser horizontal gempa dasar baru dicek lagi waktu getar Raylighnya dapat dilihat pada lampiran A-5. hasil akhir seperti terlihat pada Tabel 5.28



Grafik 5.2 Perbandingan Gaya Gempa Rayleigh pada OF dan BOF

5.2.4 Perhitungan Beban Gravitasi

Pada analisis struktur dengan menggunakan *software ETABS*, beban gravitasi adalah beban akibat beban mati dan beban hidup yang bekerja secara merata pada elemen balok portal, yaitu dengan mengunakan nilai beban pelat atap dan pelat lantai dengan terlebih dahulu merancang pelat (*define*) sebagai elemen tersendiri (*slab section*). Beban gravitasi yang bekerja pada plat atap dan lantai yang berupa beban merata permukaan (*uniform area loads*), secara otomatis akan didistribusikan berdasarkan *tributary area* ke masing-masing balok pada setiap panel. Beban mati (qd) merata permukaan (*gravity uniform area loads*) yang bekerja merupakan beban plat atap/lantai yang dikurangi dengan berat plat beton, sedangkan beban hidup (ql) sama dengan beban pada masing-masing plat. Berikut ini adalah beban-beban yang digunakan sebagai *input data* pada program ***ETABS***.

1. **Pembebanan plat atap**

   Beban mati merata (qd) = 321 – 240 = 81 Kg/m^2

   Beban hidup merata (ql) = 100 = 100 Kg/m^2

2. **Pembebanan plat lantai**

   Beban mati merata (qd) = 483 – 288 = 195 Kg/m^2

   Beban hidup merata (ql) = 250 = 250 Kg/m^2

3. **Berat Sendiri Balok**

   Berat sendiri elemen balok sudah dianggap termasuk di dalam berat mati elemen tersebut.

4. **Berat tembok pasangan bata ½ batu**

   Berat tembok $= 0{,}15 \times 3{,}3 \times 1700$ = 841,5 Kg/m'

   Direncanakan setiap balok induk yang terletak pada lantai selain atap akan menerima beban tembok pasangan bata ½ batu.

5.2.5 Perhitungan Beban Angin

Pada perhitungan beban angin yang terjadi, digunakan perhitungan menurut UBC-1994, dengan persamaan sebagai berikut:

$P = Ce * Cq * Qs * Iw$ (3.1)

Untuk gedung perkantoran yang mempunyai tinggi 30 lantai dengan tinggi antar lantai 3,75 m, yang terletak didaerah perkotaan dan kecepatan angin yang diperkirakan 30 Mil/jam maka tekanan anginnya adalah :

$P = Ce * Cq * Qs * Iw$ (3.1)

$h = (3,75*30)/0.3048$

$= 369,094$ ft

Ce untuk bangunan dengan tinggi 369,063 berdasarkan tabel 3.1 adalah Ce = 1,747

Qs untuk angin yang mempunyai kecepatan 30 mil/jam berdasarkan tabel 3.2 adalah 12,6 PSF.

Faktor keutamaan bangunan untuk gedung perkantoran adalah 1

Cq untuk bagian yang berhadapan dengan angin langsung adalah 0,8

Cq untuk bagian yang membelakangi datangnya angin adalah 0,5

$P = Ce * Cq * Qs * Iw$ (3.1)

Untuk daerah yang berhadapan dengan angin .

$P = Ce * Cq * Qs * Iw$ (3.1)

$= 1,747* 0,8 * 12,6$ PSF $* 1$

$= 17,609$ PSF

$= 86,059$ Kg/m^2

$P = Ce * Cq * Qs * Iw$ (3.1)

$= 1,747 * 0,5 * 12,6$ PSF $* 1$

$= 13,608$ PSF

$= 53,789$ Kg/m^2

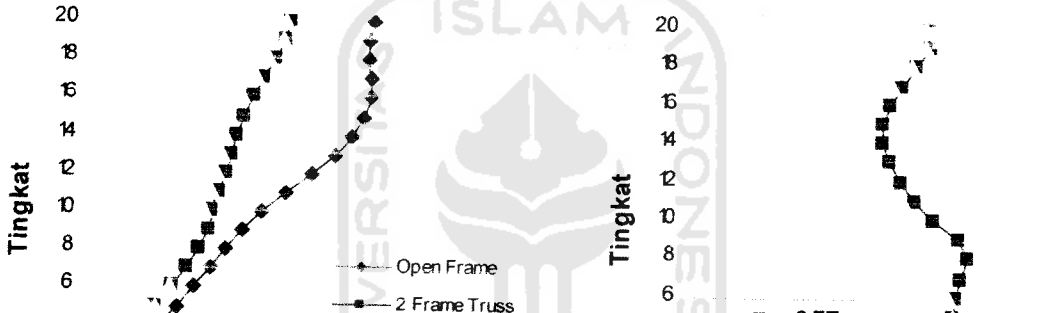
5.3 Hasil Analisis

5.3.1 Perbandingan Respon Struktur antara *Open Frame* dengan struktur yang memakai 2, 3 dan 4 *frame truss.*

Pada analisis perbandingan respon antara struktur *Open Frame* dengan struktur yang memakai 2 *Frame truss*, 3 *Frame truss* dan 4 *Frame truss* ini beban yang diperhitungkan hanya beban akibat gempa parkfield karena respon akibat gempa parkfield ini lebih besar bila dibandingkan dengan beban yang lain.

5.3.1.1 Simpangan total Struktur

Hasil analisis struktur yang memakai 2 *Frame truss*, 3 *Frame truss* dan 4 *Frame truss* Terhadap *Open Frame* didapatkan nilai *displacement* akibat gempa parkfield yang dapat dilihat pada grafik berikut:



(a) (b)

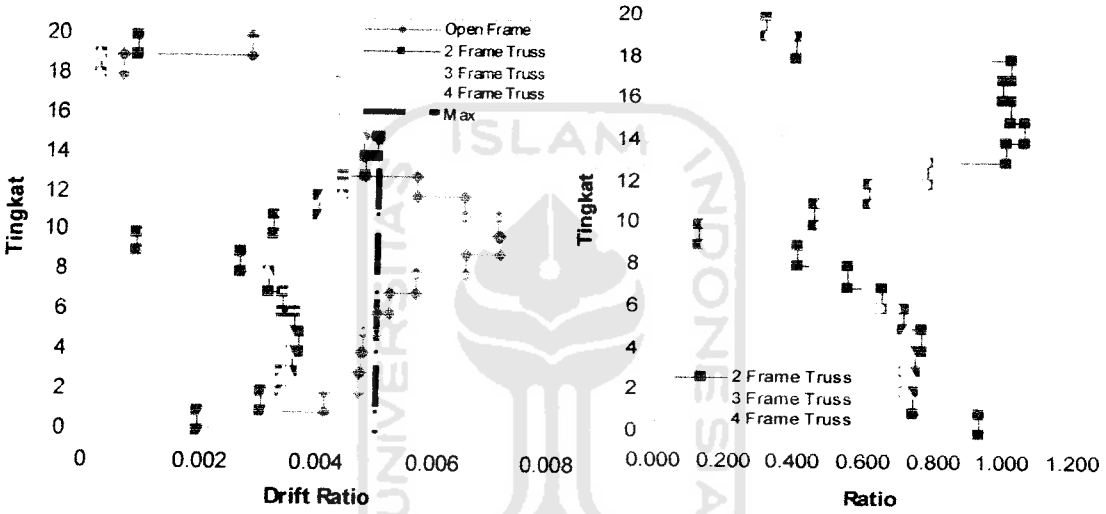
Grafik 5.3: a) Simpangan Total akibat parkfiled antara OF, 2, 3 dan 4 *Frame truss*; b) Rasio Simpangan Total akibat parkfiled antara 2, 3 dan 4 *Frame truss* terhadap OF

Dari Grafik 5.3a yang menunjukkan simpangan total struktur dan Grafik 5.3b yang menunjukkan rasio simpangan terhadap struktur *Open Frame* sangat signifikan akan tetapi bila rasio terhadap sesama struktur *frame truss* maka rasio menjadi tidak signifikan lagi. Penggunaan 2 *Frame truss* tidak begitu besar perbedaan rasionya bila

dibandingkan dengan struktur yang memakai 3 dan 4 *Frame truss*, hal ini karena dengan penambahan 1 dan 2 *Frame truss* maka struktur akan menjadi lebih kaku bila dibandingkan dengan struktur yang memakai 2 *Frame truss*. Untuk rasio simpangan struktur yang memakai 2 *Frame truss*, 3 *Frame truss* dan 4 *Frame truss* terhadap *Open Frame* sangat signifikan selengkapnya dapat dilihat pada lampiran E-1.

5.3.1.2 Simpangan Antar Tingkat (*Inter Story Drift*)

Grafik yang menunjukkan perbandingan simpangan antar tingkat antara struktur *Open Frame* dengan struktur yang memakai 2 *Frame truss*, 3 *Frame truss* dan 4 *Frame truss* dapat dilihat pada Grafik 5.4:



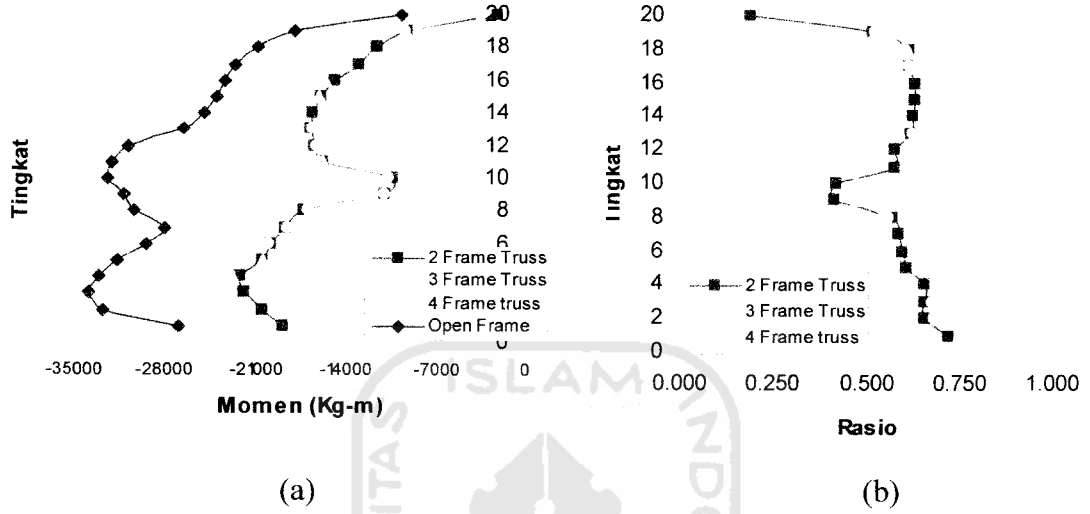
Grafik 5.4: a) *Inter Story Drift* Akibat Parkfiled antara OF, 2, 3 dan 4 *Frame truss*; b) Rasio *Inter Story Drift* Akibat Parkfiled antara 2, 3 dan 4 *Frame truss* Terhadap OF

Dari Grafik 5.4a dan 5.4b yang menunjukkan rasio penggunaan 2 *Frame truss* tidak besar perbedaan rasionya bila dibandingkan dengan struktur yang memakai 3 dan 4 *Frame truss*, hal ini karena dengan penambahan beberapa *Frame truss* struktur akan menjadi sedikit lebih kaku bila dibandingkan dengan struktur yang memakai 2 *Frame truss*. Pola *Inter Story drift* tidak pada biasanya, hal ini karena pengaruh beban dinamik sehingga pola simpangan antar tingkatnya tidak regular lagi.

5.3.1.3 Momen dan Geser Balok

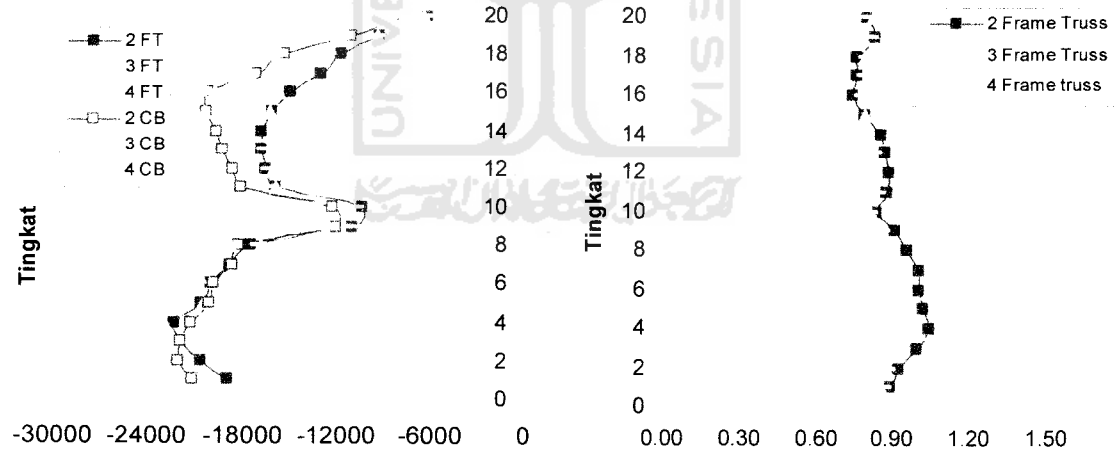
5.3.1.3.1 Momen Balok

Perbandingan momen balok dan rasio momen balok akibat parkfield pada struktur yang memakai 4 *Frame truss*, 3 *Frame truss* dan 2 *Frame truss* terhadap OF dapat dilihat pada Grafik 5.5a dan Grafik 5.5b.



(a) (b)

Grafik 5.5: a) Momen Balok Akibat Parkfiled antara OF, 2, 3 dan 4 *Frame truss*; b) Rasio Momen Balok Akibat Parkfiled antara 2, 3 dan 4 *Frame truss* Terhadap OF

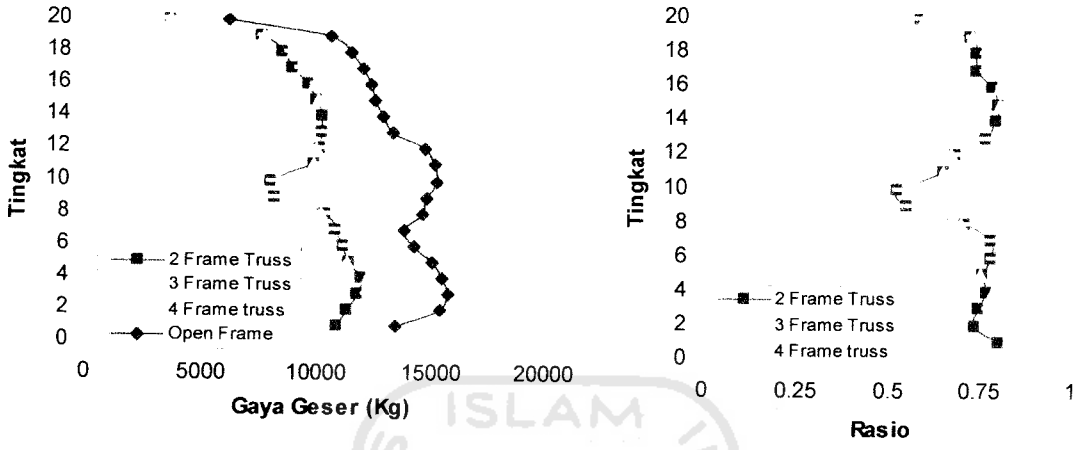


(a) (b)

Grafik 5.6: a) Momen Balok Akibat Parkfiled antara 2, 3 dan 4 Core Brace, dan 2, 3 dan 4 *Frame truss*; b) Rasio Momen Balok Akibat Parkfiled antara 2, 3 dan 4 *Frame truss* Terhadap 2, 3 dan 4 Core Brace

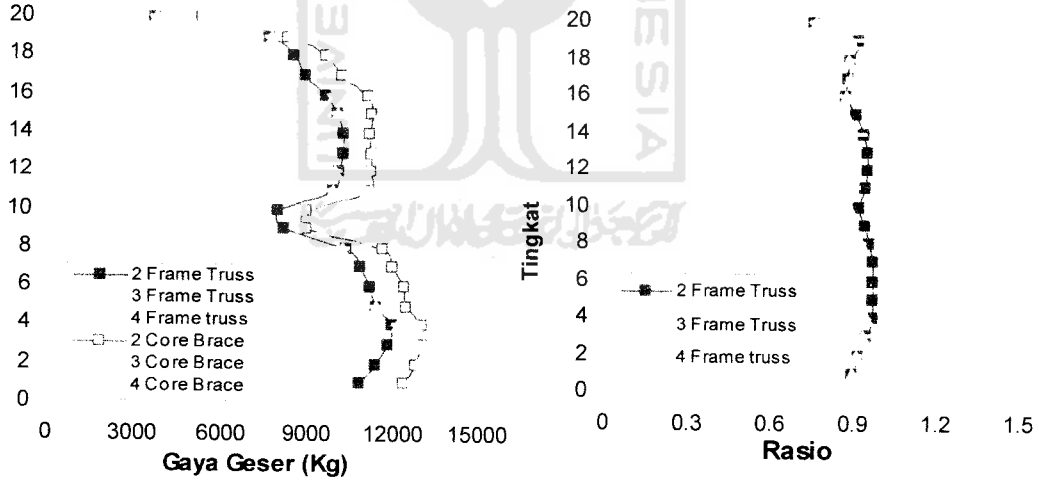
5.3.1.3.2 Geser Balok

Perbandingan geser balok dan rasio geser balok akibat parkfield pada struktur yang memakai 4 *Frame truss*, 3 *Frame truss* dan 2 *Frame truss* terhadap OF dapat dilihat pada Grafik 5.7a dan Grafik 5.7b.



(a) (b)

Grafik 5.7: a) Geser Balok Akibat Parkfiled antara OF, 2, 3 dan 4 *Frame truss*; b) Rasio Geser Balok Akibat Parkfiled antara 2, 3 dan 4 *Frame truss* Terhadap OF



(a) (b)

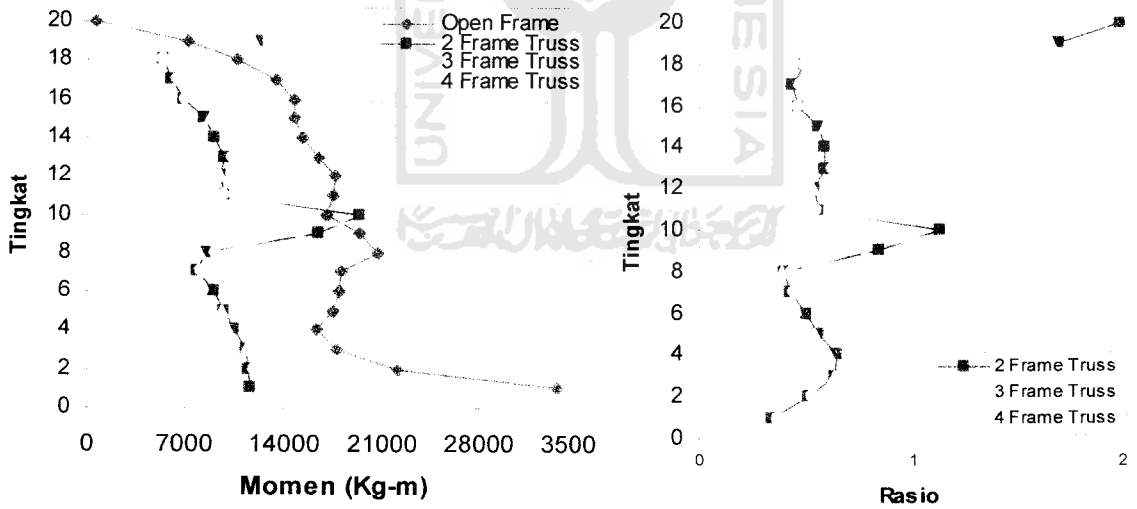
Grafik 5.8: a) Geser Balok Akibat Parkfiled antara 2, 3 dan 4 *Frame truss*; dan 2, 3 dan 4 *Core Brace*; b) Rasio Geser Balok Akibat Parkfiled antara 2, 3 dan 4 *Frame truss* Terhadap 2, 3, dan 4 *Core Brace*

Dari Grafik 5.5a sampai 5.8a yang menunjukkan momen dan geser balok antara struktur *Open Frame*, 2, 3 dan 4 *frame truss* dapat dilihat bahwa struktur yang memakai lebih banyak *frame truss* akan mempunyai momen dan geser balok lebih kecil bila dibandingkan dengan struktur yang memakai 2 *Frame truss*. Dari Grafik 5.5b sampai 5.8b yang menunjukkan rasio momen dan geser balok antara 4, 3 dan 2 *Frame truss* terhadap *Open Frame* berturut-turut mempunyai rasio 0,560; 0,568; 0,569 dan 0,721; 0,717; 0,711. Hal ini berarti semakin banyak jumlah *Frame truss* maka akan mempunyai rasio momen dan geser balok yang lebih kecil. Hal ini disebabkan struktur yang mempunyai lebih banyak *Frame truss* maka struktur akan menjadi lebih kaku.

5.3.1.4 Momen, Gaya Geser dan Gaya Aksial Kolom

5.3.1.4.1 Momen Kolom

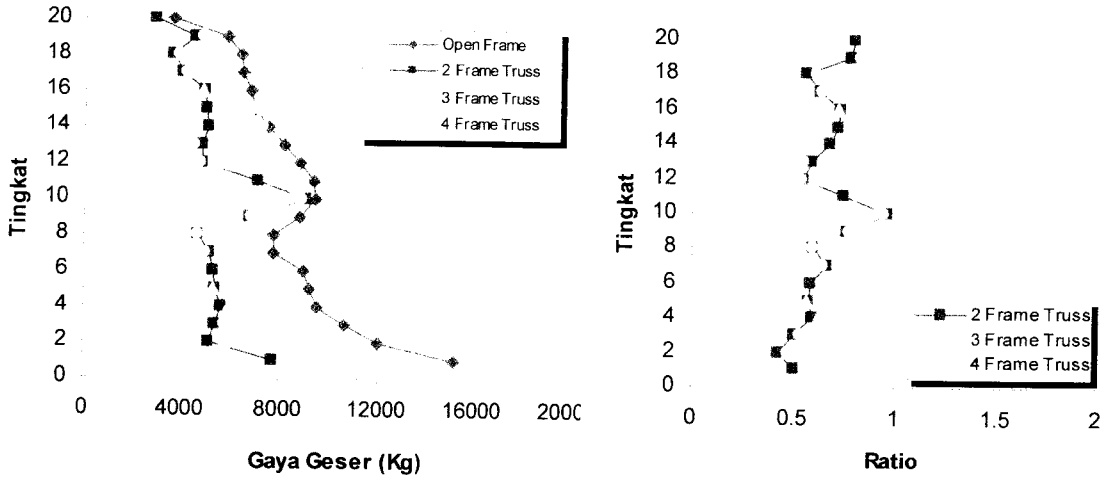
Pola momen kolom diambil berdasarkan momen kolom maksimum yang terjadi pada setiap joint lantai pada kolom tepi portal tepi, dimana pada kolom tersebut pengaruh akibat beban lateral relatif lebih besar dari kolom yang lain.



(a) (b)

Grafik 5.9: a) Momen Kolom Akibat Parkfiled antara OF, 2, 3 dan 4 *Frame truss*; b) Rasio Momen Kolom Akibat Parkfiled antara 2, 3 dan 4 *Frame truss* Terhadap OF

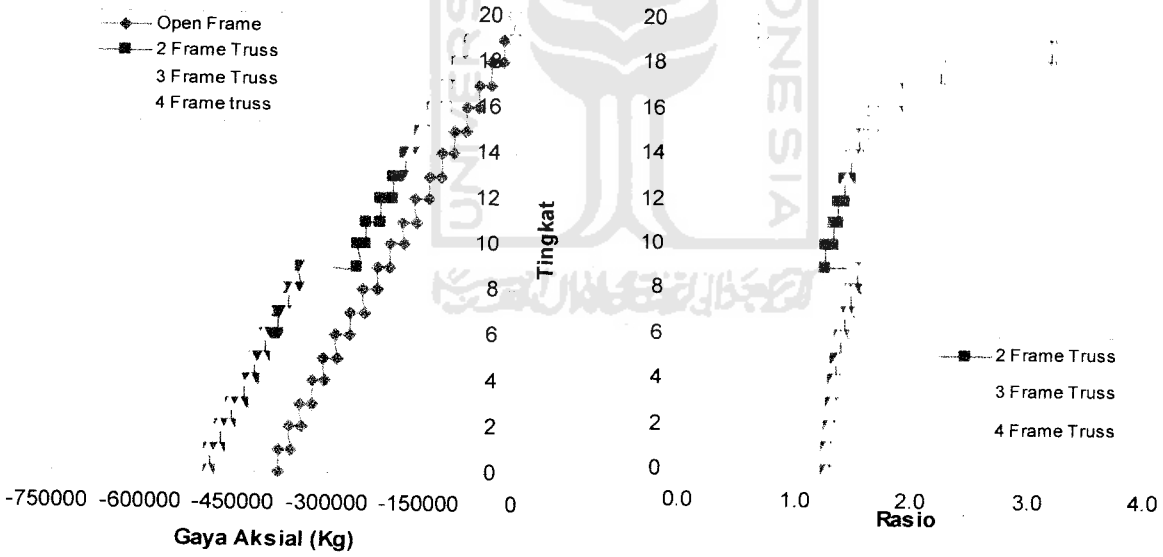
5.3.1.4.2 Gaya Geser Kolom



(a) (b)

Grafik 5.10: a) Geser Kolom Akibat Parkfiled antara OF, 2, 3 dan 4 *Frame truss*; b) Rasio Geser Kolom Akibat Parkfiled antara 2, 3 dan 4 Terhadap OF

5.3.1.4.3 Gaya Aksial Kolom



(a) (b)

Grafik 5.11: a) Aksial Kolom Akibat Parkfiled antara OF, 2, 3 dan 4 *Frame truss*; b) Rasio Aksial Kolom Akibat Parkfiled antara 2, 3 dan 4 *Frame truss* Terhadap OF

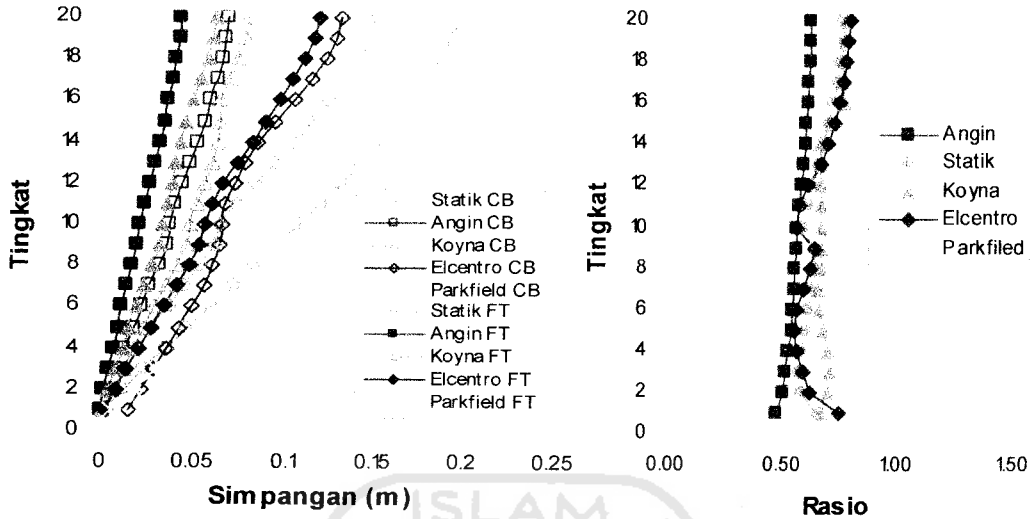
Dari Grafik 5.9 dan 5.10 yang menunjukkan besarnya momen dan geser kolom bahwa struktur yang memakai 2 *Frame truss* mempunyai momen dan geser kolom lebih kecil bila dibandingkan dengan struktur yang memakai 3 dan 4 *Frame truss*, ini terjadi karena semakin banyak jumlah *Outrigger* pada struktur *frame truss* maka momen dan geser pada tingkat dimana *Outrigger* dipasang naik secara signifikan, hal ini karena dengan penambahan *Outrigger* maka arah momen kolom pada join bagian bawah pada pertemuan kolom dan balok arah momennya sama dengan momen baloknya. Ini terjadi karena untuk mengimbangi arah momen join bagian atas sehingga momen kolomnya menjadi lebih besar. Untuk selengkapnya dapat dilihat pada pembahasan kolom perbandingan struktur *Frame truss* dengan *Open Frame* dan lihat ilustrasi Gambar 5.8.

Rasio momen kolom dan gaya geser kolom struktur yang memakai 4, 3 dan 2 *Frame truss* terhadap *Open frame* berturut-turut 0,774; 0,733; 0,700 dan 0,776; 0,738; 0,647. Hal ini menunjukkan bahwa rasio momen dan geser kolom struktur yang menggunakan 2 *Frame truss* lebih kecil dari pada struktur yang menggunakan 3 dan 4 *Frame truss* untuk selengkapnya dapat dilihat pada lampiran E-2. Dari Grafik 5.11 yang menunjukkan aksial kolom pada struktur yang menggunakan 4, 3 dan 2 *Frame truss* terhadap *Open Frame* memperlihatkan bahwa struktur yang memakai lebih banyak *Frame truss* akan mempunyai aksial kolom yang lebih besar, hal ini terjadi karena gaya aksial pada pengaku menambah besarnya gaya aksial kolom.

Rasio aksial kolom pada struktur yang menggunakan 4, 3 dan 2 *Frame truss* terhadap *Open Frame* berturut-turut 1,360; 1,437; 1,333. Hal ini menunjukkan bahwa rasio aksial kolom yang menggunakan 2 *Frame truss* lebih kecil daripada struktur yang menggunakan 3 dan 4 *Frame truss*. Untuk lebih lengkapnya lihat lampiran E-3. Dari hasil diatas maka secara umum dapat disimpulkan bahwa penggunaaan dua *Frame truss* relatif lebih efisien dibandingkan dengan tiga atau empat *Frame truss*.

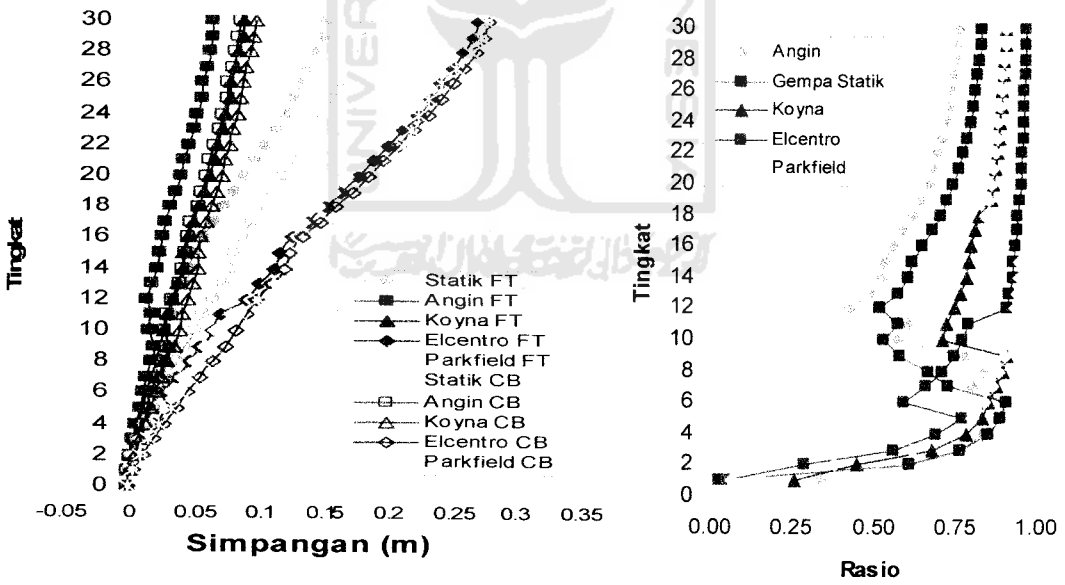
5.3.2 Perbandingan Respon Struktur Antara *Frame truss* dengan *Core Brace*

5.3.2.1 Simpangan Struktur Akibat Gaya Lateral



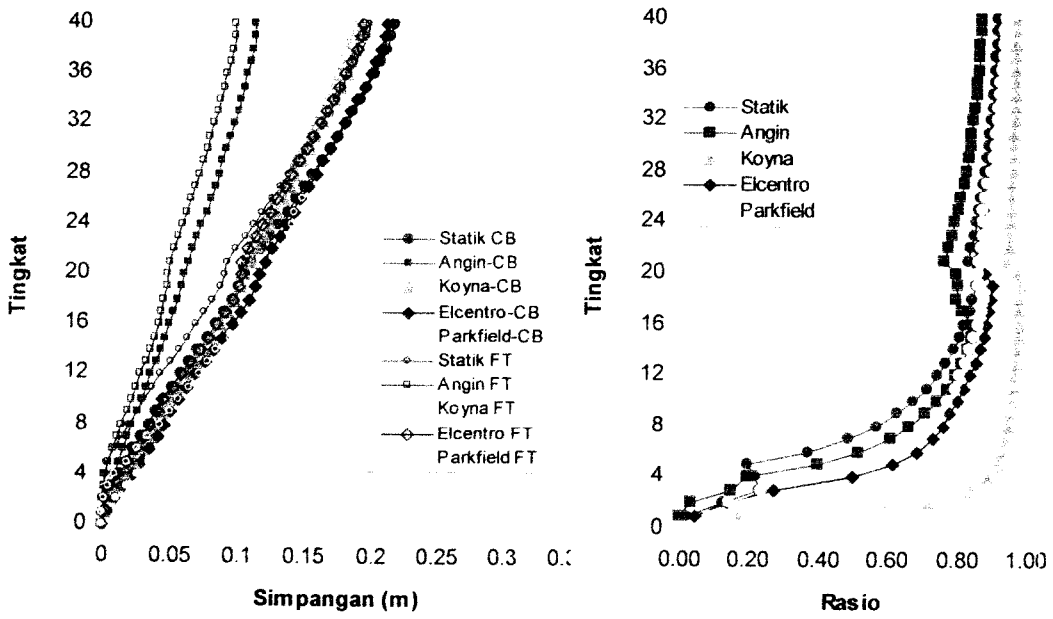
(a) (b)

Grafik 5.12: a) Simpangan Akibat Gaya Lateral *Frame Truss* Vs Core Brace ; b) Rasio Simpangan Akibat Gaya Lateral *Core Brace* Terhadap *Frame Truss*



(a) (b)

Grafik 5.13: a) Simpangan Akibat Gaya Lateral *Frame Truss* Vs *Core Brace*; b) Rasio Simpangan Akibat Gaya Lateral *Core Brace* Terhadap *Frame Truss*



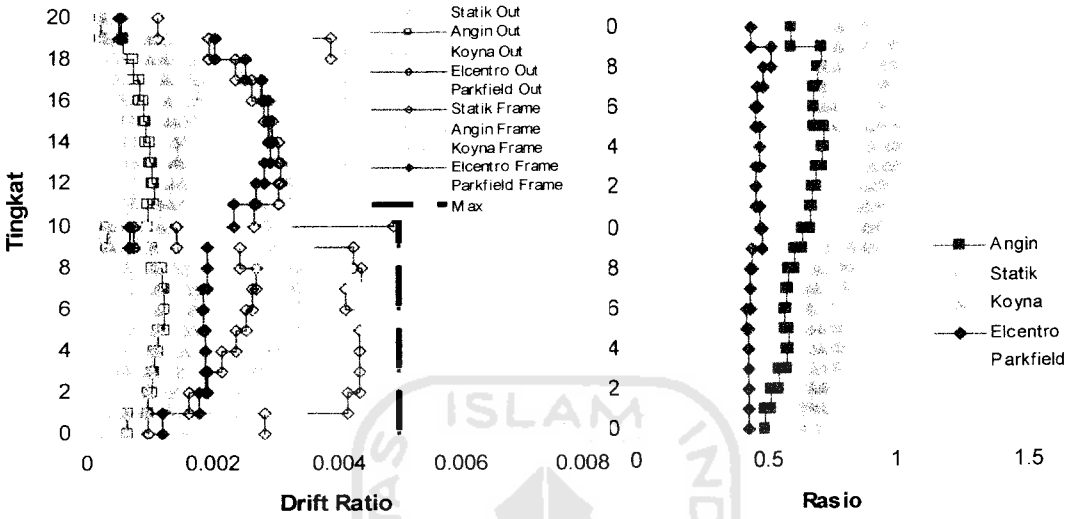
(a) (b)

Grafik 5.14: a) Simpangan Akibat Gaya Lateral *Frame Truss* Vs *Core Bace*; b) Rasio Simpangan Akibat Gaya Lateral *Core Brace* Terhadap 2 *Frame Truss*

Dari Grafik 5.12a, 5.13a dan 5.14a simpangan total akibat beban angin, beban gempa dan beban dinamik struktur memakai *Frame truss* dan *Core Brace* memperlihatkan simpangan total pada struktur yang memakai *Frame truss* lebih kecil dibandingkan struktur yang memakai *Core Brace*, hal ini karena *Frame truss* diikat oleh bressing pada kedua sisi tepinya, sehinggga ikatan antara balok, kolom, bressing semakin kuat, sehingga kekakuan antar tingkat lebih merata dan lebih kaku. Pada grafik tersebut memperlihatkan bahwa nilai simpangan total akibat beban angin kecil bila dibandingkan dengan beban gempa statik maupun dinamik, hal ini karena beban lateral akibat angin yang terjadi juga kecil. Pada grafik juga menunjukkan nilai simpangan total akibat gempa parkfield adalah yang terbesar dibandingkan dengan elcentro dan koyna, hal ini karena gempa parkfield mempunyai frekuensi yang lebih rendah dibanding dengan elcentro dan koyna sehingga akan sangat mempengaruhi bangunan yang tinggi. Rasio simpangan total *Core Brace* terhadap *Frame truss* pada grafik 5.13b akibat beban angin, beban gempa statik, koyna, elcentro dan parkfield

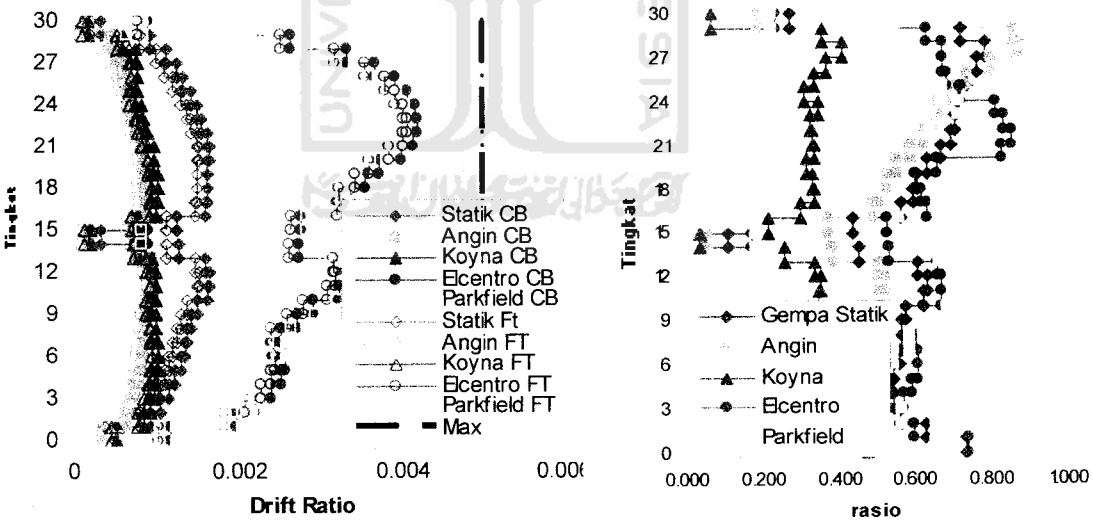
berturut-turut 0,678; 0,703; 0,807; 0,824 dan 0,833. hasil selengkapnya dapat dilihat pada lampiran E-4

5.3.2.2 Simpangan Antar Tingkat (*Inter Story Drift*)



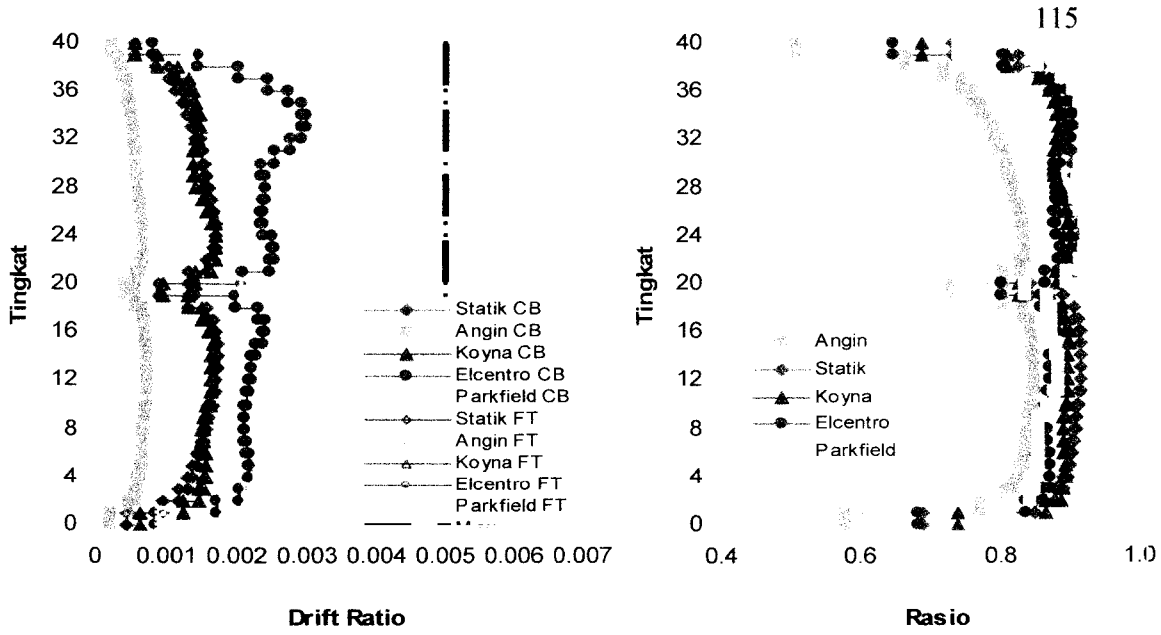
(a) (b)

Grafik 5.15: a) *Inter Story Drift Frame truss* Vs *Core Brace*; b) Rasio *Inter Story Drift Core Brace* Terhadap *Frame truss*



(a) (b)

Grafik 5.16: a) *Inter Story Drift Frame truss* Vs *Core Brace*; b) Rasio *Inter Story Drift Core Brace* Terhadap *Frame truss*



Grafik 5.17: a) *Inter Story Drift Frame truss* Vs *Core Brace*; b) Rasio *Inter Story Drift Core Brace* Terhadap *Frame truss*

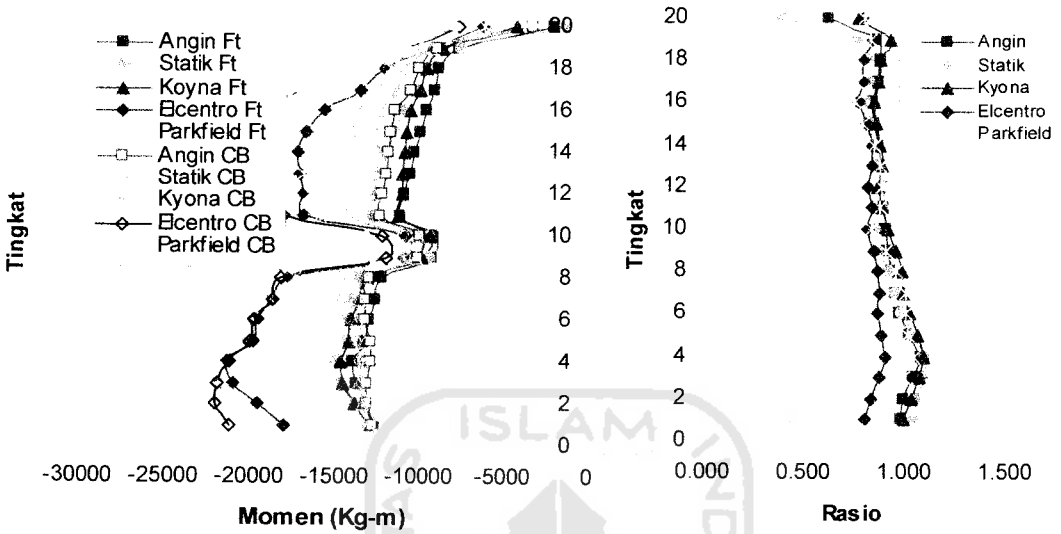
Dari Grafik 5.15a, 5.16a dan 5.17a memperlihatkan nilai simpangan antar tingkat struktur yang menggunakan *Frame truss* lebih kecil dibandingkan dengan struktur yang memakai *Core brace*, ini karena struktur yang menggunakan *Frame truss* mempunyai kekakuan yang merata pada beberapa tingkat daripada struktur yang menggunakan *Core Brace*. Pada grafik tersebut juga menunjukkan bahwa nilai simpangan antar tingkat akibat gempa parkfield adalah yang terbesar dibandingkan dengan elcentro dan koyna, hal ini karena gempa parkfield mempunyai frekuensi yang lebih rendah bila dibanding dengan elcentro dan koyna sehingga akan mempengaruhi bangunan yang tinggi. Pada Grafik 5.15a, 5.16a dan 5.17a simpangan antar tingkat struktur yang menggunakan *Frame truss* maupun struktur yang memakai *Core Brace* mempunyai simpangan antar tingkat lebih kecil daripada 0,005h.

Rasio Simpangan antar tingkat *Core Brace* terhadap *Frame truss* pada grafik 5.16b akibat beban angin, beban gempa statik, koyna, elcentro dan parkfield berturut-turut

0,878; 0,858; 0,890; 0,945 dan 0.918. Hasil selengkapnya dapat dilihat pada lampiran E-4

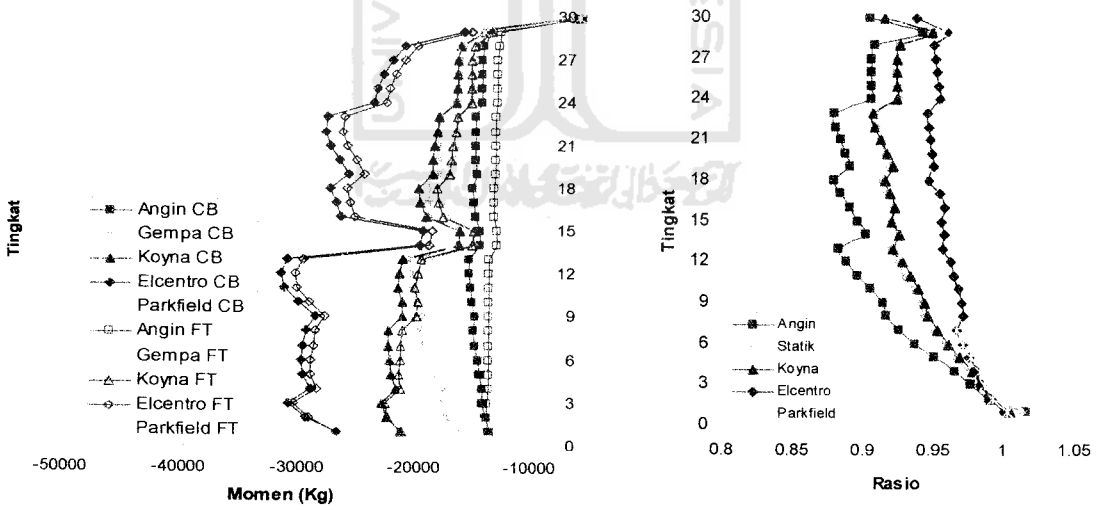
5.3.2.3 Momen dan Gaya Geser Balok

5.3.2.3.1 Momen Balok



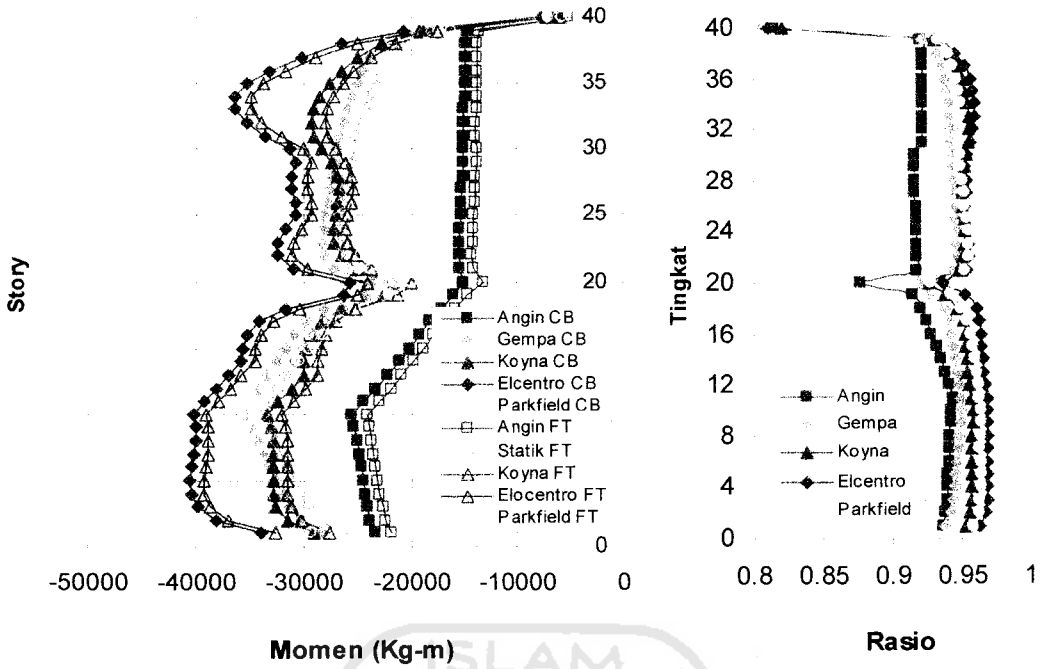
(a) (b)

Grafik 5.18: a) Momen Balok *Frame truss* Vs *Core brace* ; b) Rasio Momen Balok *Core Brace* terhadap *Frame truss*



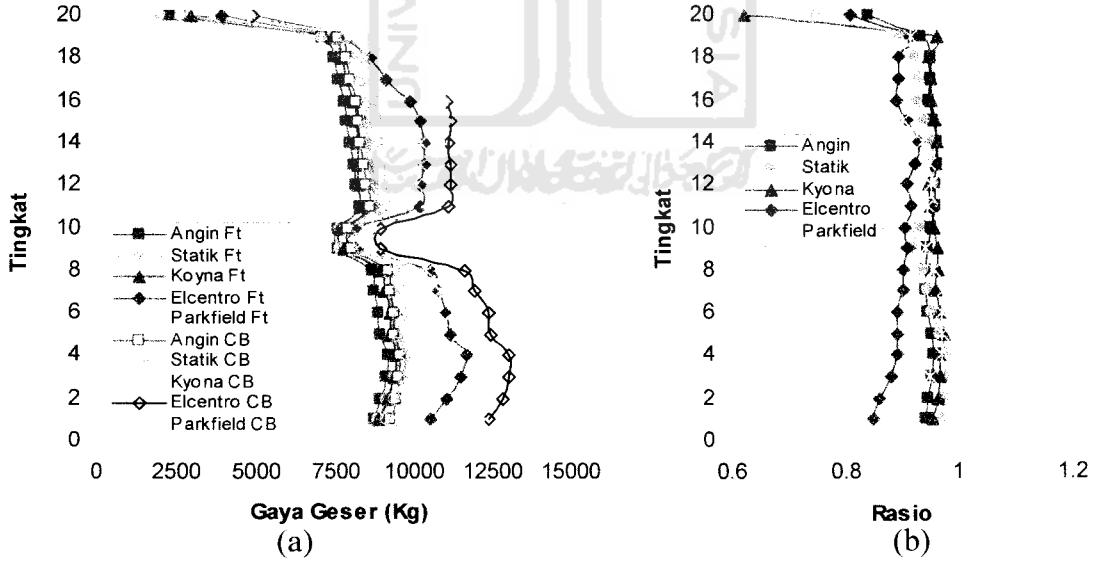
(a) (b)

Grafik 5.19: a) Momen Balok *Frame truss* Vs *Core Brace* ; b) Rasio Momen Balok *Core Brace* terhadap *Frame truss*

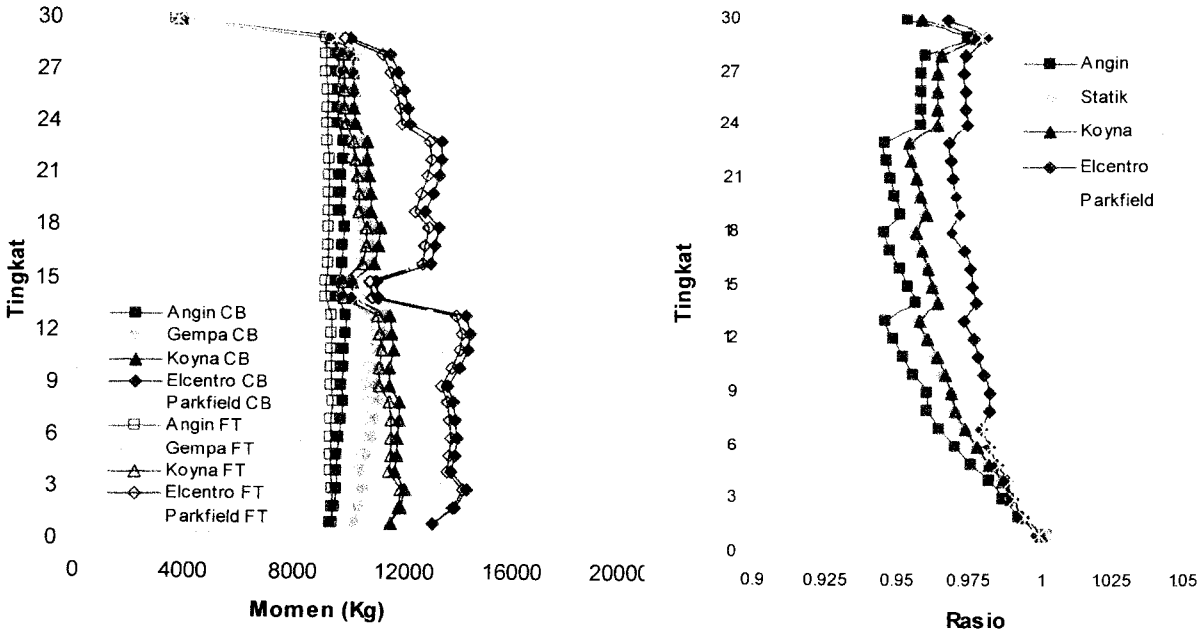


Grafik 5.20: a) Momen Balok *Frame truss* Vs *Core brace* ; b) Rasio Momen Balok *Core brace* terhadap *Frame truss*

5.3.2.3.2 Geser Balok

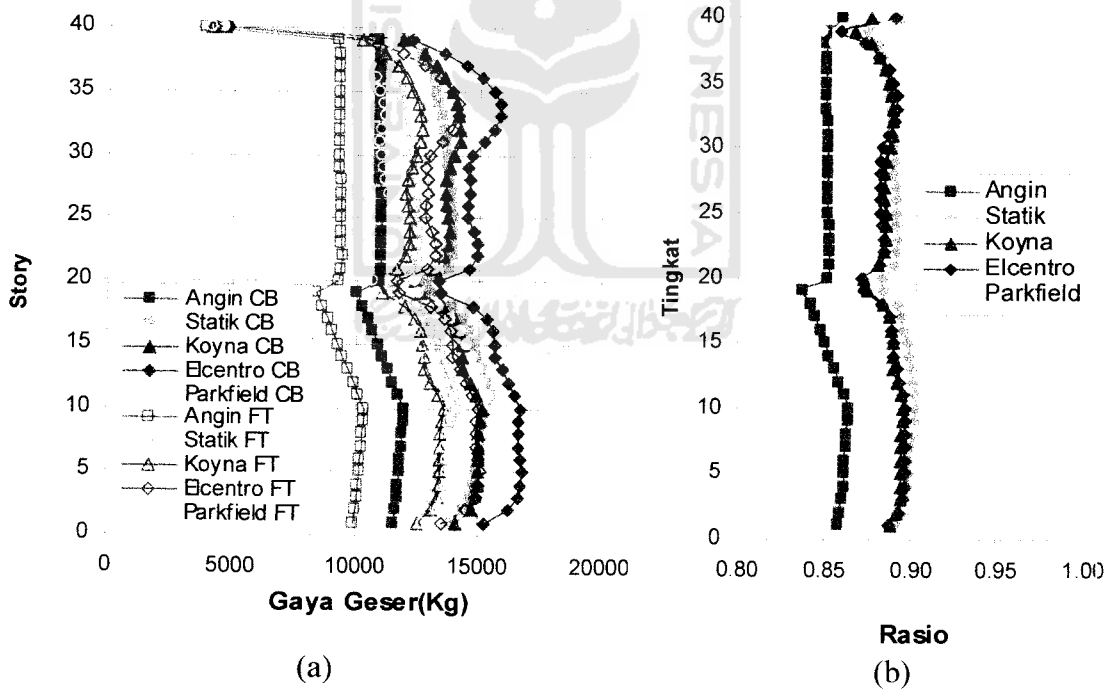


Grafik 5.21: a) Geser Balok *Frame truss* Vs *Core Brace*; b) Rasio Geser Balok *Frame truss* terhadap *Core Brace*



(a) (b)

Grafik 5.22: a) Geser Balok *Frame truss* Vs *Core brace*; b) Rasio Geser Balok 2 *Frame truss* terhadap *Core brace*

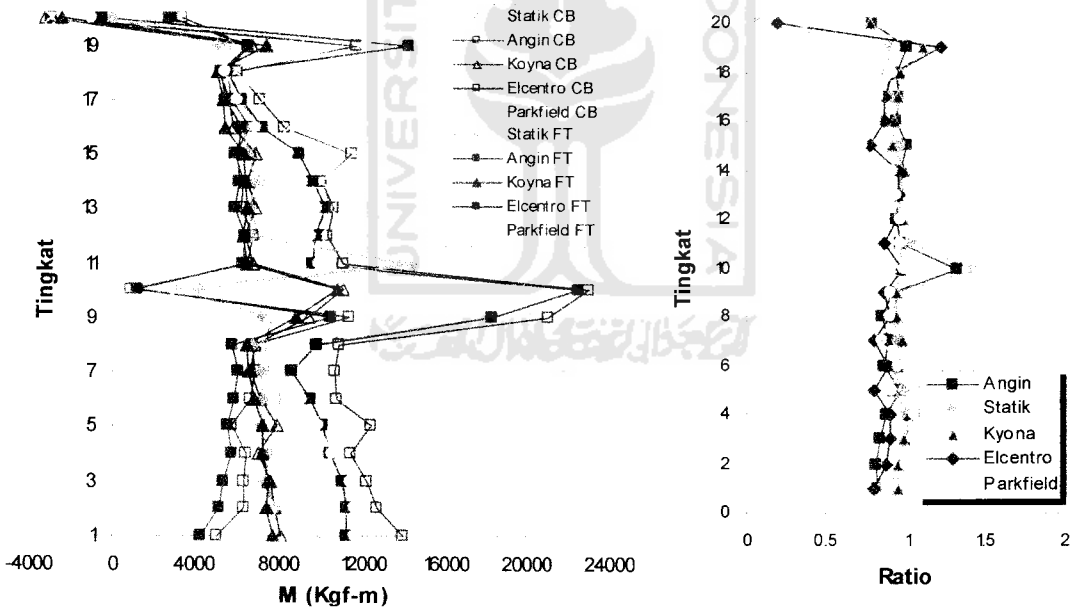


(a) (b)

Grafik 5.23: a) Geser Balok *Frame truss* Vs *Core Brace*; b) Rasio Geser Balok 2 *Frame truss* terhadap *Core Brace*

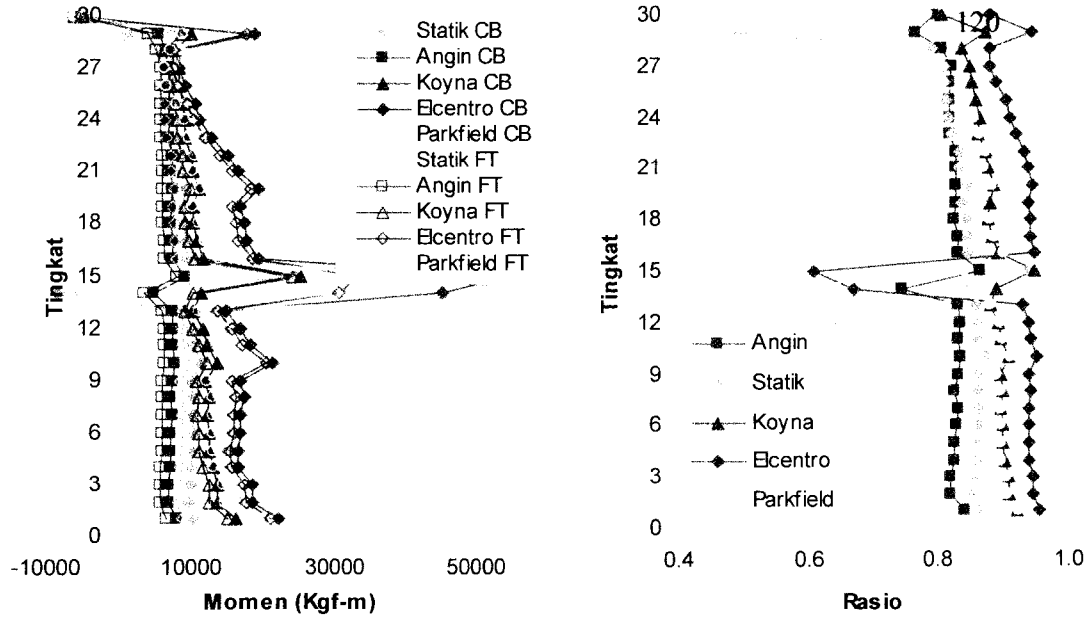
Dari Grafik 5.18a sampai 5.23a menunjukkan bahwa nilai momen dan geser balok struktur yang memakai *Frame truss* lebih kecil bila dibandingkan struktur yang memakai *Core Brace*, hal ini karena struktur yang memakai pengaku *Frame trussl* mempunyai kekakuan yang lebih merata pada tiap tingkat daripada struktur yang menggunakan *Core brace*. Momen yang paling kecil adalah momen akibat beban angin, hal ini karena gaya lateral akibat beban angin lebih kecil dari pada beban lateral akibat beban yang lain. Momen akibat gempa parkfield lebih besar dari pada beban dinamik akibat gempa koyna maupun akibat gempa elcentro, hal ini karena frekuensi gempa parkfield lebih rendah bila dibandingkan beban gempa yang lain. Dari Grafik 5.18b sampai 5.23b menunjukkan bahwa rasio momen dan geser struktur yang memakai pengaku *Frame truss* kecil terhadap struktur dengan *Core brace*. Hasil selengkapnya dapat dilihat pada lampiran E-4.

5.3.2.4 Momen, Gaya Geser dan Gaya Aksial Kolom



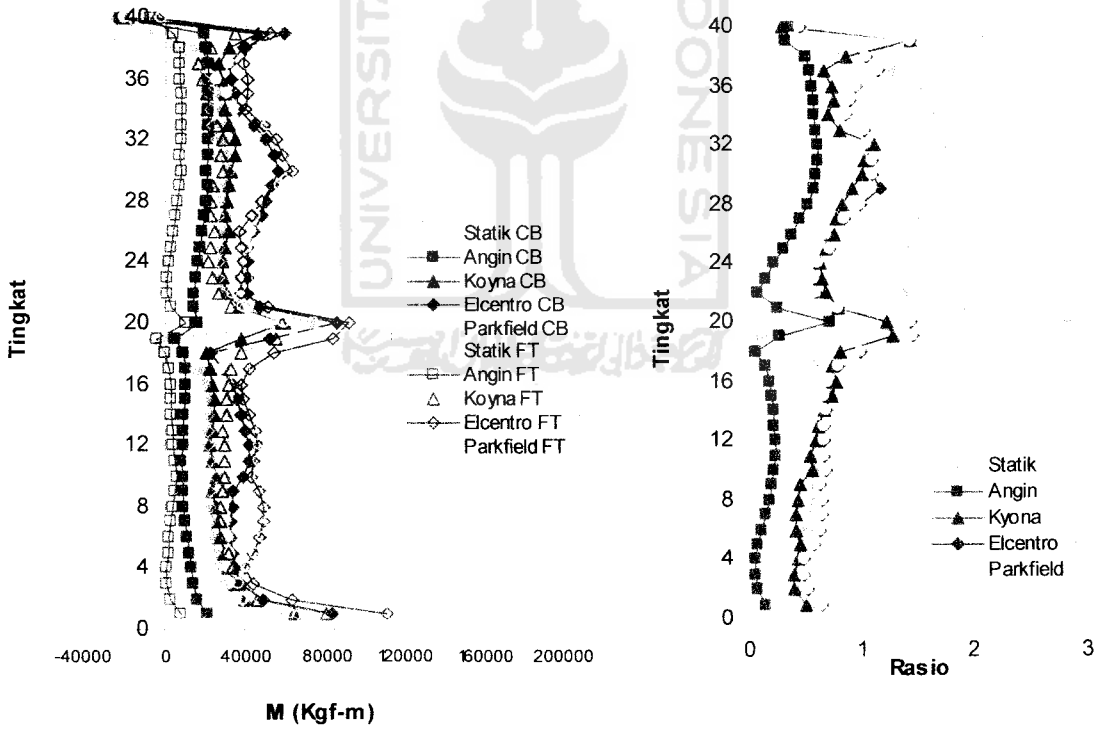
(a) (b)

Grafik 5.24: a) Momen Kolom *Farme truss* Vs *Core brace*; b) Rasio Momen Kolom *Core brace* Terhadap *Frame truss*



(a) (b)

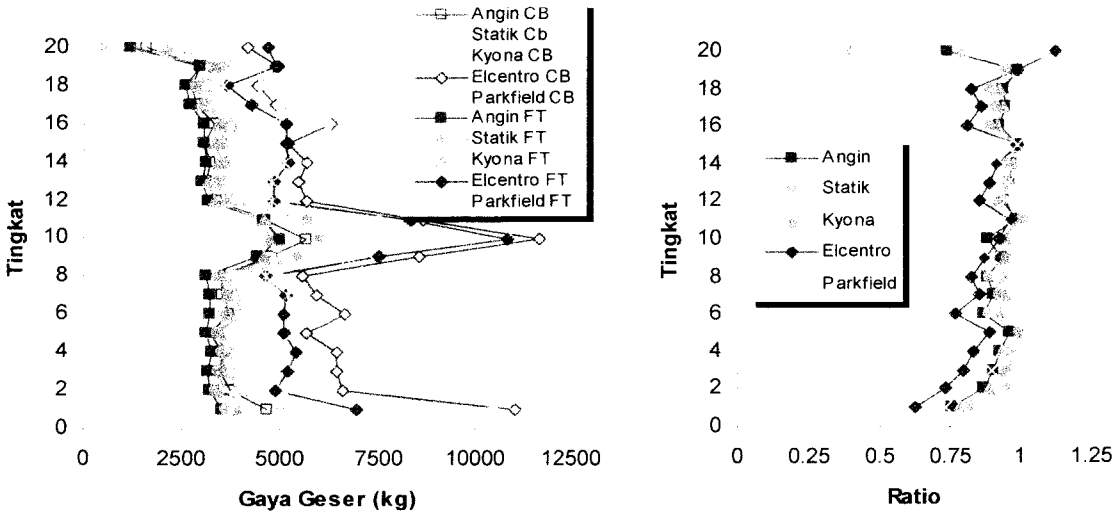
Grafik 5.25: a) Momen Kolom *Frame truss* Vs *Core brace*; b) Rasio Momen Kolom *Core brace* Terhadap *Frame truss*



(a) (b)

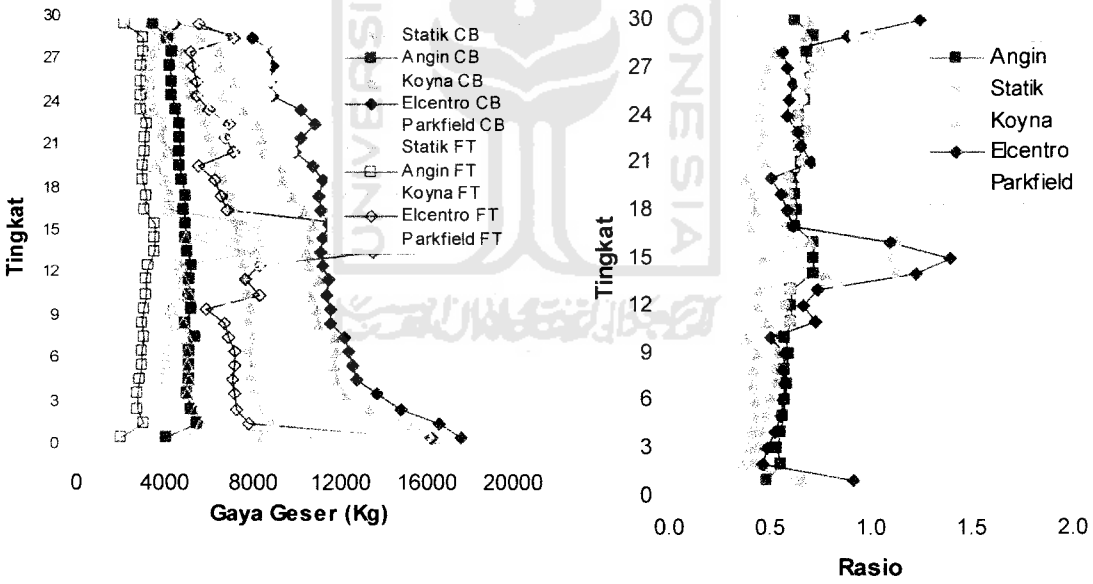
Grafik 5.26: a) Momen Kolom *Farme truss* Vs *Core brace*; b) Rasio Momen Kolom *Core brace* Terhadap *Frame truss*

5.3.2.4.2 Geser Kolom



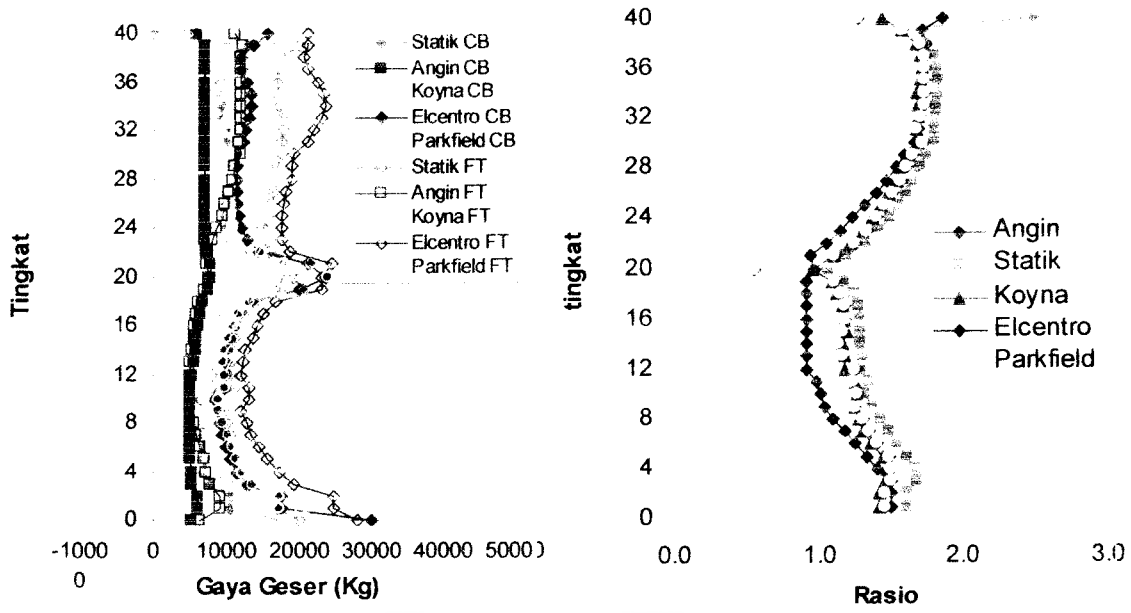
(a) (b)

Grafik 5.27: a) Geser Kolom *Frame truss* Vs *Core brace* ; b) Rasio Geser Kolom *Core brace* Terhadap *Frame truss*



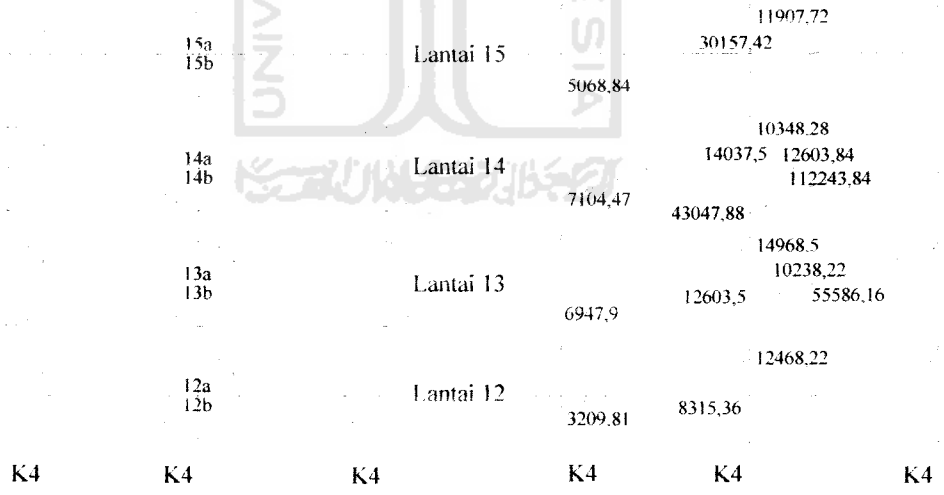
(a) (b)

Grafik 5.28: a) Geser Kolom *Frame truss* Vs *Core brace* ; b) Rasio Geser Kolom *Core brace* Terhadap *Frame truss*



(a) (b)

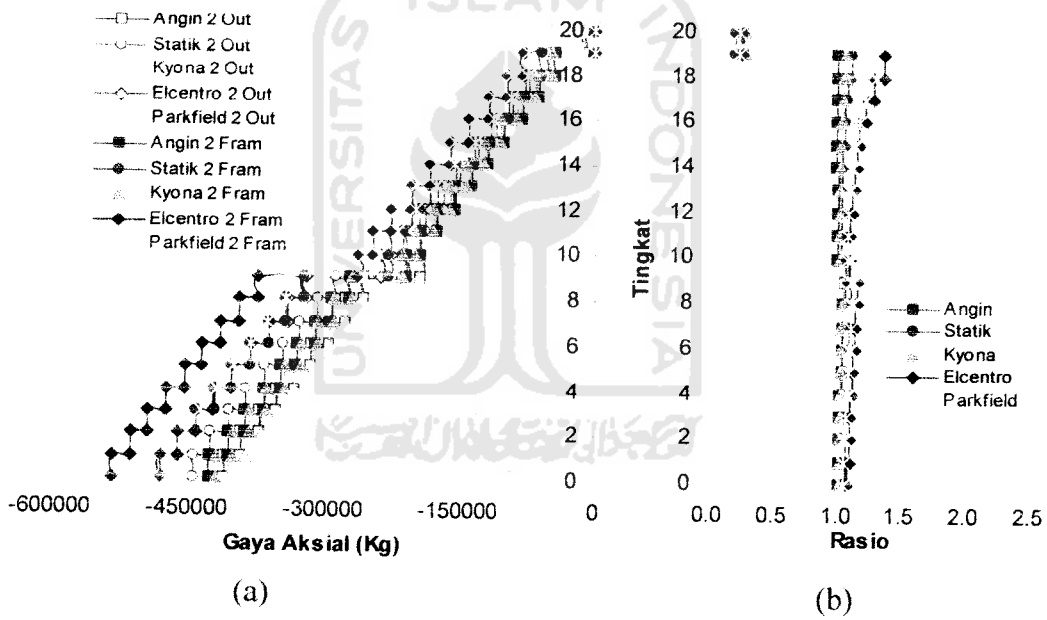
Grafik 5.29: a) Geser Kolom *Frame truss* Vs *Core brace* ; b) Rasio Geser Kolom *Core brace* Terhadap *Frame truss*



Gambar 5.8 Pola Momen Balok dan Kolom Pada Struktur FT *dan* CB akibat beban lateral

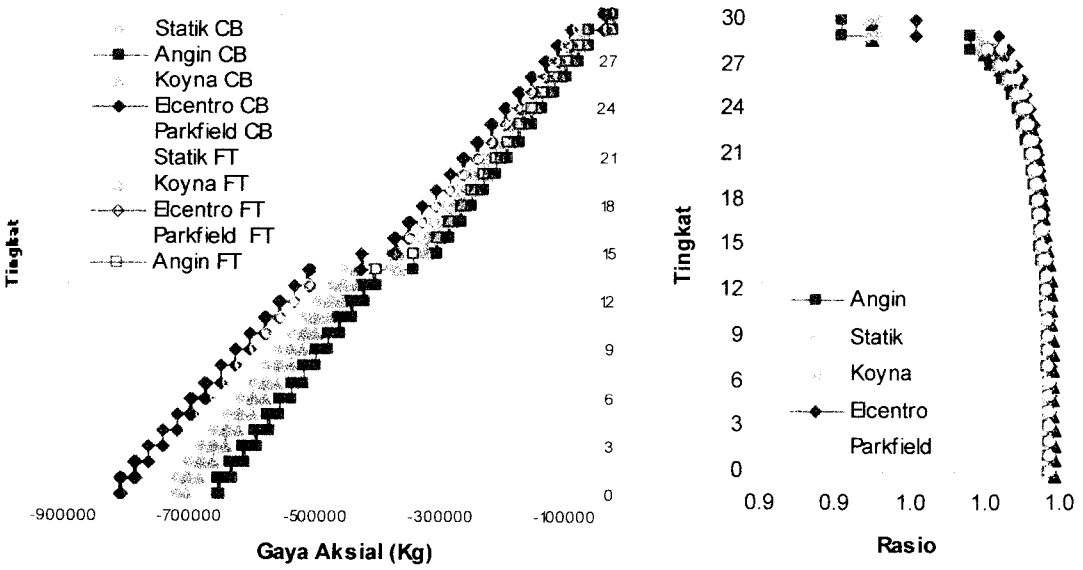
Pada tingkat dimana *Outrigger* dipasang besarnya momen maupun geser kolom akibat gempa dinamik, statik dan angin naik secara signifikan. Hal ini karena pada struktur yang menggunakan *Outrigger* pada lantai yang ada *Outrigger*nya momen kolom pada lantai 14 join atas (14a Gambar 5.8) momen kolom tidak lagi melawan momen balok yang positif sehingga momen pada lantai 14 join bawah (14b) menjadi besar untuk melawan momen balok dan momen pada join bagian atas (14a). Hal ini terjadi pula pada join lantai 15 bagian atas (15a Gambar 5.8) menjadi besar untuk mengimbangi momen balok dan momen kolom lantai 15 join bagian bawah (15b). Dengan kata lain terjadi pembalikan arah momen dan geser pada kolom akibat adanya penambahan *outrigger* pada lantai 15.

5.3.2.4.3 Aksial Kolom



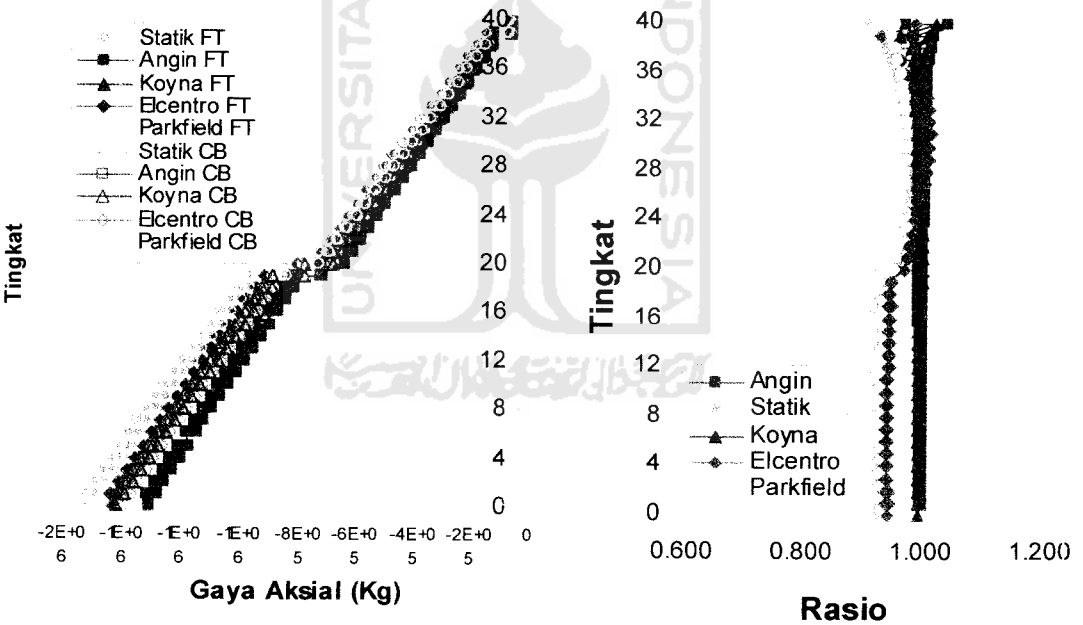
(a) (b)

Grafik 5.30: a) Aksial Kolom *Frame truss* Vs *Core brace*; b) Rasio Aksial Kolom *Core brace* Terhadap *Frame truss*



(a) (b)

Grafik 5.31: a) Aksial Kolom *Frame truss* Vs *Core brace*; b) Rasio Aksial Kolom *Core brace* Terhadap *Frame truss*



(a) (b)

Grafik 5.32: a) Aksial Kolom *Frame truss* Vs *Core brace*; b) Rasio Aksial Kolom *Core brace* Terhadap *Frame truss*

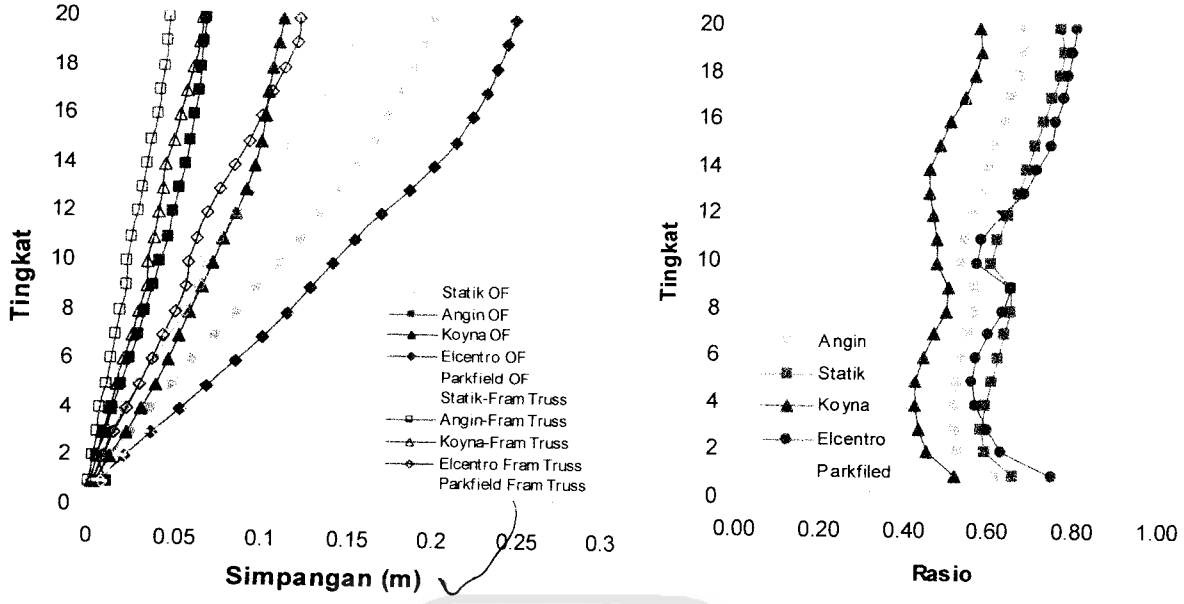
Dari Grafik 5.24 sampai 5.29 yang menunjukkan momen dan geser kolom struktur yang memakai pengaku *Frame truss* lebih kecil bila dibandingkan dengan struktur yang memakai *Core brace.* Hal ini karena kekakuan struktur berpengaku *Frame truss* lebih merata pada tiap tingkat daripada struktur yang memakai Core *brace*. Momen dan geser akibat beban angin lebih kecil bila dibandingkan dengan beban gempa statik dan dinamik, hal ini karena gaya lateral akibat beban angin lebih kecil daripada akibat beban yang lain. Momen akibat beban gempa elcentro dan parkfield lebih besar daripada gempa dinamis yang lain hal ini karena frekuensi gempa elcentro dan parkfield lebih rendah daripada beban dinamis yang lain.

Dari Grafik 5.30 dan 5.32 menunjukkan aksial kolom struktur dengan pengaku *Frame truss* lebih besar daripada struktur dengan *Core brace,* hal ini karena pada struktur dengan pengaku *Frame truss* terjadi pertemuan antara *bracing* tekan dan tarik lebih banyak dari pada *Core brace* sehingga gaya aksial tekan dan tarik tersebut akan disalurkan ke kolom. Dari Grafik 5.30 dan 5.32 menunjukkan bahwa aksial kolom akibat beban angin, gempa statik maupun gempa dinamik menunjukkan sedikit perbedaan, hal ini karena yang mempengaruhi beban aksial adalah berat sendiri dan beban hidup yang bekerja pada struktur. Untuk selengkapnya rasio momen kolom, geser kolom dan aksial kolom struktur dengan pengaku *Core brace* terhadap struktur *Frame truss* dapat dilihat pada lampiran E-5.

5.3.3 Perbandingan Respon Struktur Antara *Frame truss* Dengan *Open Frame*

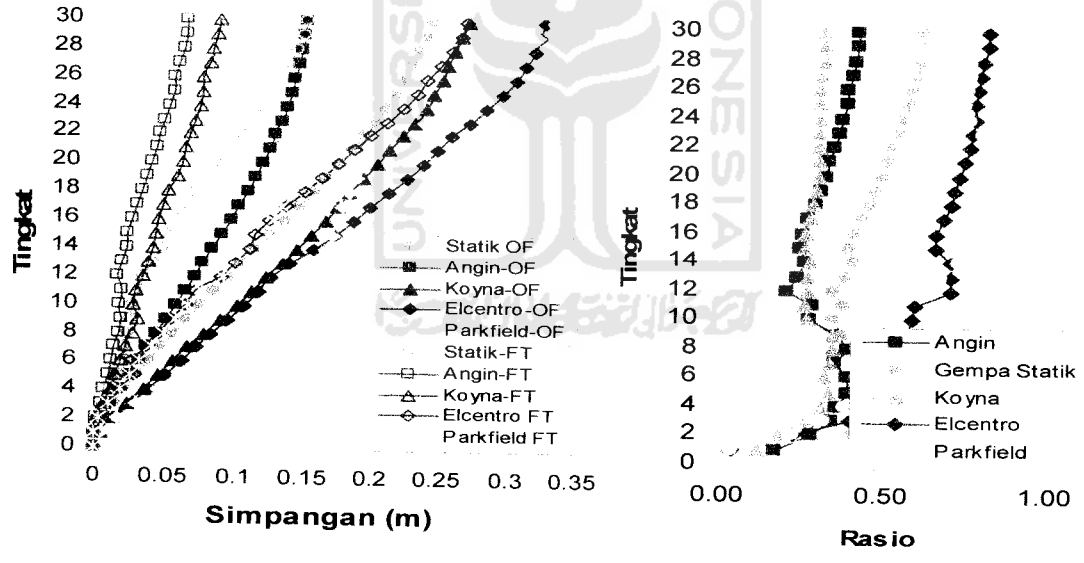
5.3.3.1 Simpangan Total Struktur

Hasil Analisis Struktur *Frame truss (BOF)* dan O*pen Frame (OF)*, didapatkan nilai *displacement* yang dapat dilihat pada grafik berikut:



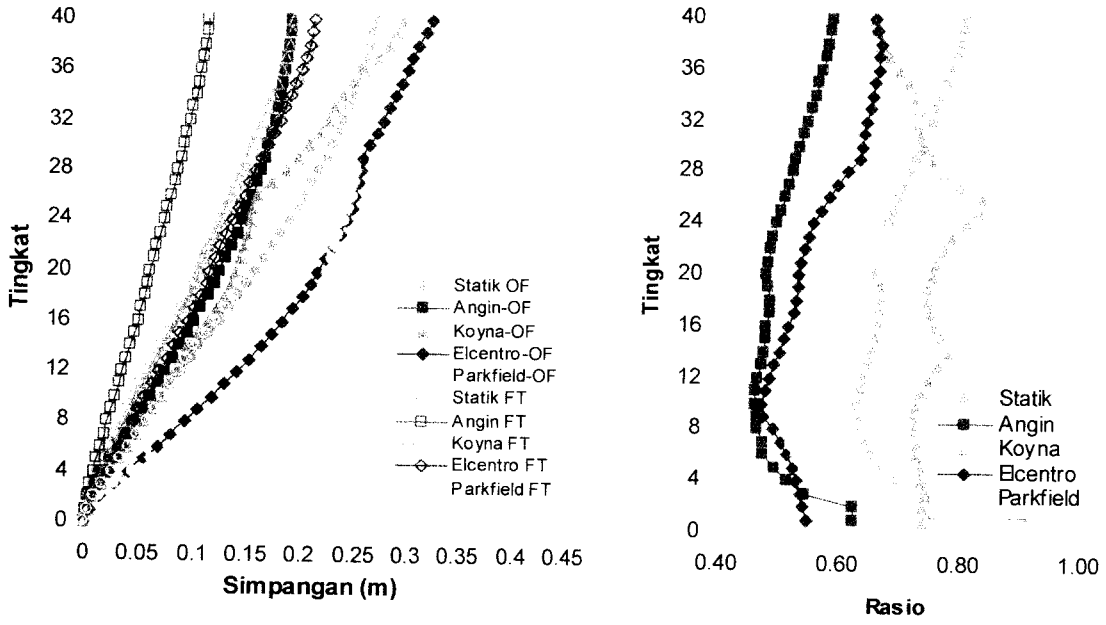
(a) (b)

Grafik 5.33: a) Simpangan Total Struktur 20 Lantai, b) Rasio Simpangan Total Struktur *Frame truss* terhadap OF



(a) (b)

Grafik 5.34: a) Simpangan Total Struktur 30 Lantai, b) Rasio Simpangan Total Struktur *Frame truss* terhadap OF



(a) (b)

Grafik 5.35: a) Simpangan Total Struktur 40 Lantai, b) Rasio Simpangan Total Struktur *Frame truss* terhadap OF

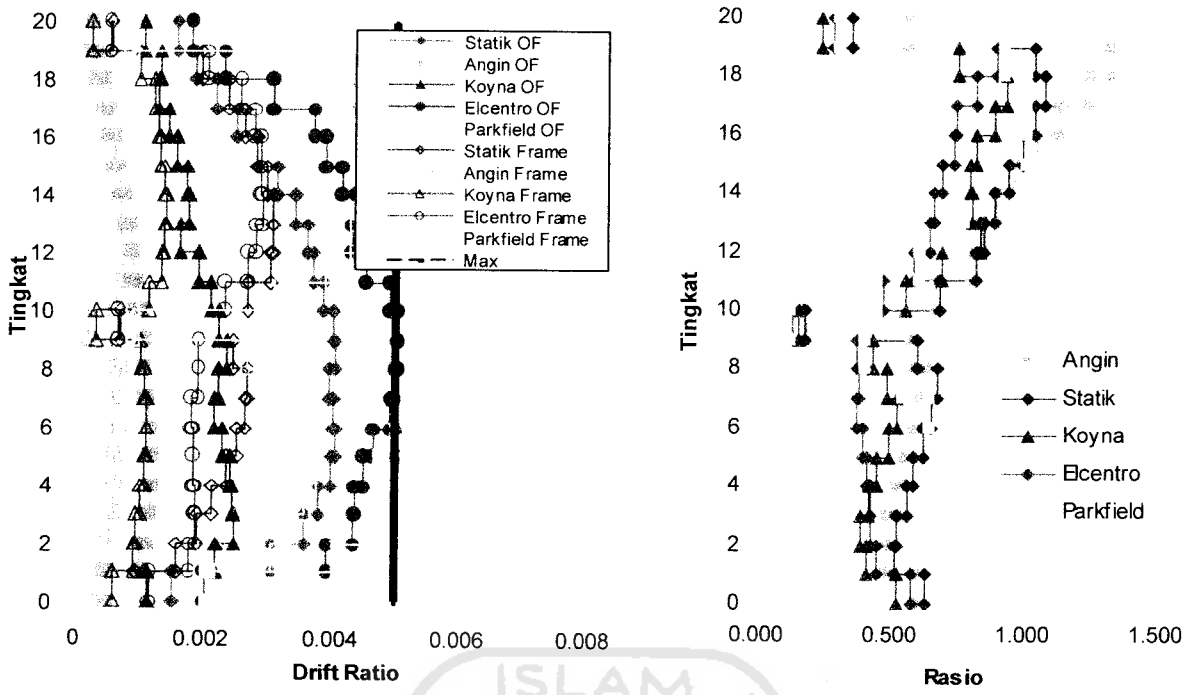
Simpangan total akibat beban angin, beban gempa dan beban dinamik yang terlihat pada 5.33a, 5.34a dan 5.35a memperlihatkan bahwa simpangan struktur yang menggunakan *Frame Truss* lebih kecil daripada simpangan struktur *Open Frame*. Hal ini terjadi karena struktur yang memakai *Frame truss* mempunyai kekakuan yang lebih besar dari pada struktur *Open Frame*. Dari Grafik 5.33a, 5.34a dan 5.35a juga memperlihatkan bahwa simpangan terkecil adalah akibat beban angin bila dibandingkan dengan beban gempa statik maupun beban dinamik. Hal ini terjadi karena gaya lateral akibat beban angin lebih kecil dari pada beban gempa. Pada grafik tersebut simpangan akibat beban dinamik yang terbesar dipengaruhi oleh gempa parkfield dan elcentro, hal ini terjadi karena gempa parkfield dan elcentro mempunyai frekuensi yang rendah bila dibandingkan koyna sehingga akan sangat mempengaruhi bangunan yang tinggi.

Simpangan akibat beban angin, beban gempa statik maupun dinamik pada Grafik 5.33a, 5.34a dan 5.35a akan mempunyai simpangan yang semakin besar pada struktur bangunan yang semakin tinggi. Hal ini terjadi karena gaya gaya lateral akan semakin besar pada struktur yang semakin tinggi. Dari Grafik 5.33a menunjukkan simpangan akibat beban angin masih lebih kecil bila dibandingkan dengan beban gempa dan beban dinamik hal ini terjadi karena beban lateral akibat angin lebih kecil daripada beban gempa statik dan beban gempa dinamik. Hal ini juga terlihat pada Grafik 5.34a, 5.35a. Dari Grafik 5.33a, 5.34a dan 5.35a terlihat pada lantai dimana *Frame truss* dipasang mempunyai simpangan yang sama dengan lantai di bawahnya hal ini terjadi karena *Frame truss* akan meningkatkan kekakuan bangunan.

Grafik 5.33b, 5.34b dan 5.35b menunjukkan rasio penggunaan *Frame truss* terhadap *Open Frame*. Dari Grafik 5.34b yang memperlihatkan rasio untuk struktur 30 lantai akibat beban angin, gempa statik, koyna, Elcentro dan parkfield mempunyai rasio 0,333; 0,473; 0,293; 0,640; 0,634. Untuk selengkapnya dapat dilihat pada lampiran E-6, E-9 dan E-12.

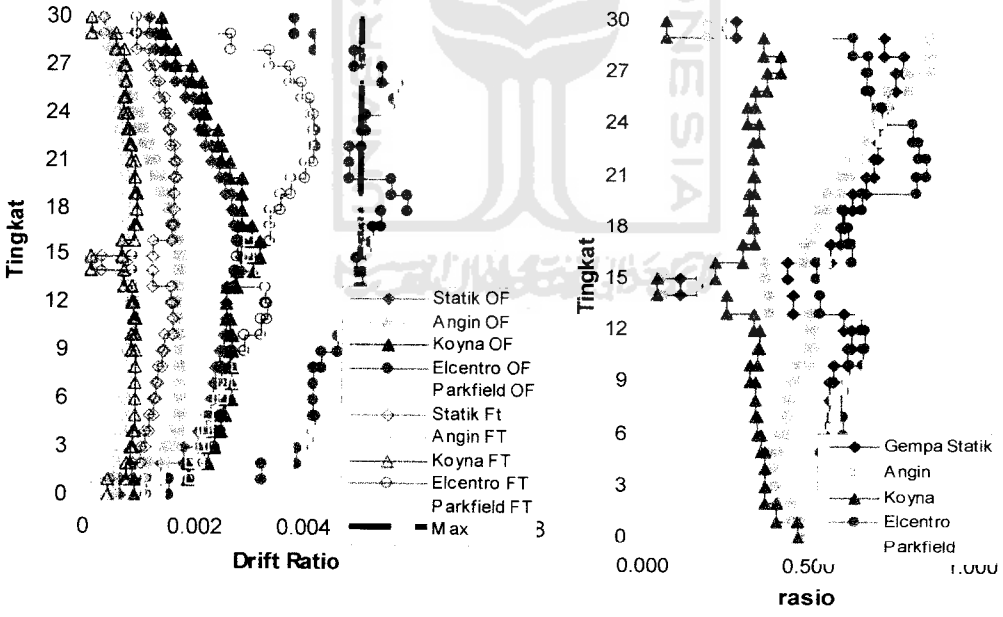
5.3.3.2 Simpangan Antar Tingkat *(Inter Story Drift)*

Simpangan struktur akan mempengaruhi besarnya simpangan antar tingkat (*Inter Story Drift*). Grafik simpangan antar tingkat akibat beban gempa statik, beban angin dan beban gempa dinamik (gempa akibat beban gempa koyna, beban gempa akibat beban gempa elcentro maupun beban gempa akibat beban gempa parkfield) dapat dilihat pada grafik berikut:



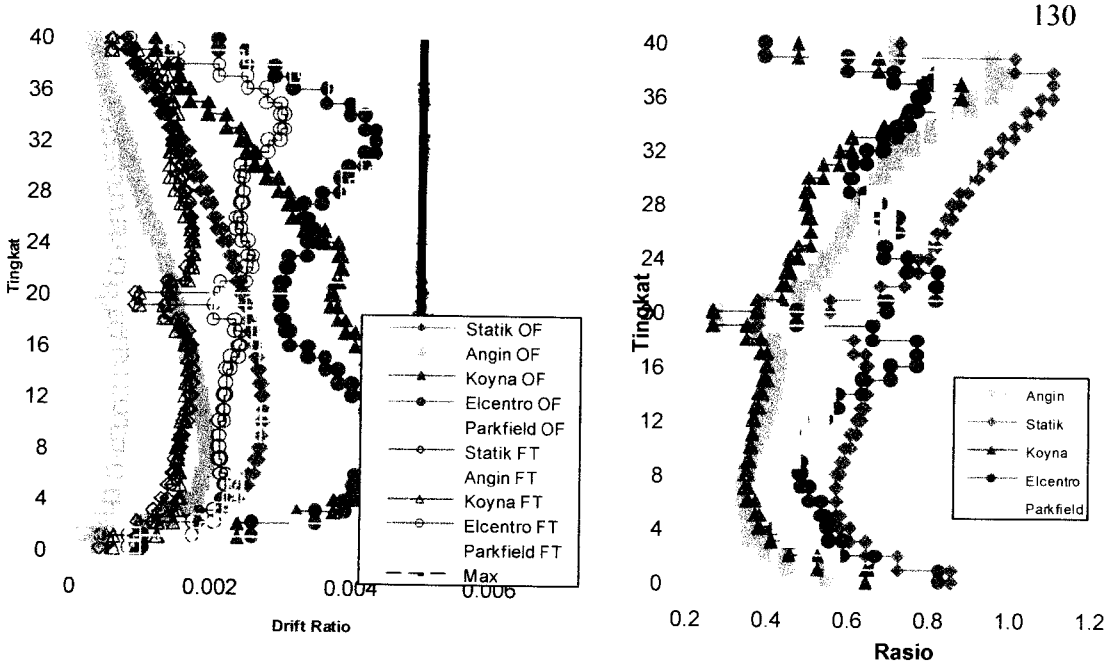
(a) (b)

Grafik 5.36: a) Simpangan Antar Tingkat Struktur 20 Lantai, b) Rasio Simpangan Antar Tingkat *Frame truss* Terhadap OF



(a) (b)

Grafik 5.37: a) Simpangan Antar Tingkat Struktur 30 Lantai, b) Rasio Simpangan Antar Tingkat *Frame truss* Terhadap OF



(a) (b)

Grafik 5.38 a) Simpangan Antar Tingkat Struktur 40 Lantai, b) Rasio Simpangan Antar Tingkat *Frame truss* Terhadap OF

Simpangan antar tingkat akibat beban angin, beban gempa dan beban dinamik yang terlihat pada Grafik 5.36, 5.37 dan 5.38 memperlihatkan bahwa simpangan struktur yang menggunakan *Frame truss* lebih kecil daripada simpangan struktur *Open Frame.* Hal ini terjadi karena struktur yang memakai *Frame truss* mempunyai kekakuan yang lebih besar daripada struktur *Open Frame.*

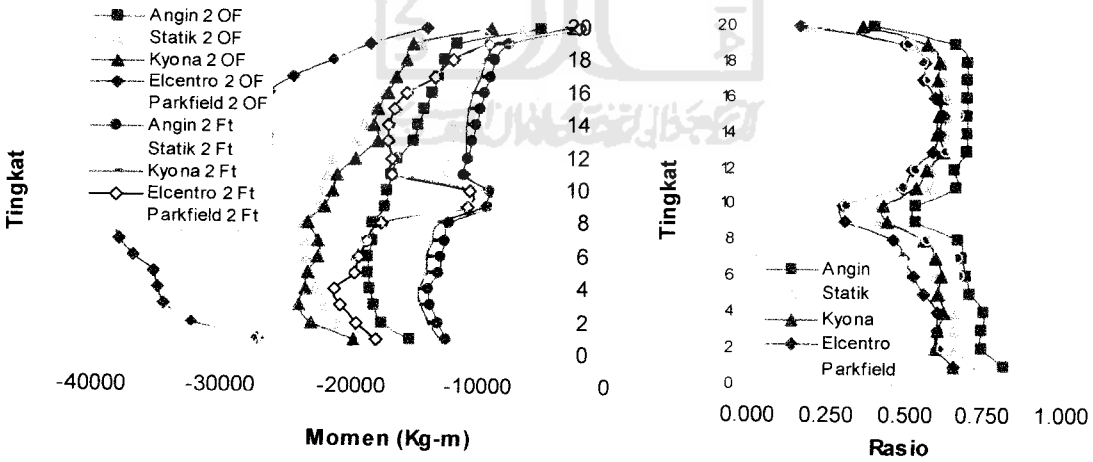
Grafik 5.36, 5.37 dan 5.38 memperlihatkan nilai simpangan antar tingkat pada struktur *Frame truss* dan *Open Frame* akibat gempa statik dan beban angin menunjukkan angka di bawah 0,005h. ini menunjukkan bahwa kriteria batas *"limit state"* masih memenuhi keadaan layan batas *"Service ability limit state"*. Simpangan antar tingkat pada struktur *Frame truss* akibat gempa dinamik, lebih kecil dari 0,005h (Grafik 5.36, 5.37 dan 5.38) tidak demikian pada struktur *Open Frame* dimana simpangan antar tingkat akibat beban dinamik dengan gempa parkfield melebihi keadaan batas 0,005h. Hal ini disebabkan kekakuan struktur *Frame truss* lebih besar dari struktur *Open Frame* akibat penambahan pengaku.

Simpangan antar tingkat struktur *Frame truss* pada lantai dimana pengaku dipasang menunjukkan perbedaan yang signifikan dengan simpangan antar tingkat pada lantai yang lain. Hal ini disebabkan pengaku memberi kekangan struktur yang lebih besar daripada lantai yang tidak ada pengakunya. Untuk rasio simpangan antar tingkat pada penggunaan *Frame truss* terhadap *Open Frame* pada Grafik 5.37b untuk struktur 30 lantai akibat beban angin, gempa statik, koyna, elcentro dan parkfield masing-masing 0,598; 0,518; 0,326; 0,629 dan 0,600. untuk 20 lantai dan 40 lantai dapat dilihat pada lampiran E-6, E-9 dan E-12.

5.3.3.3 Momen dan Geser Balok

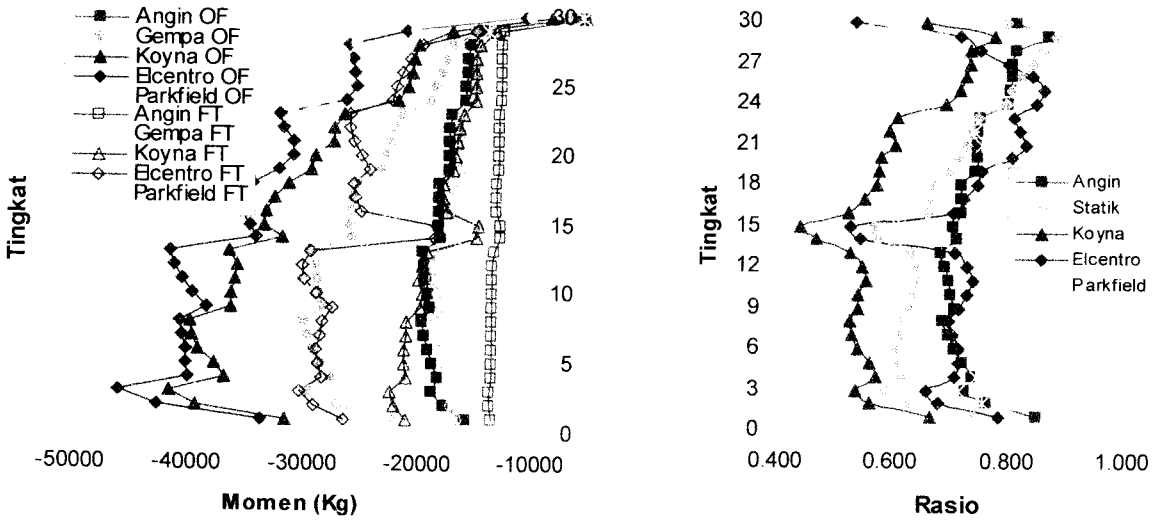
5.3.3.3.1 Momen Balok

Beban-beban yang bekerja pada struktur meliputi beban gravitasi, beban angin dan beban gempa akan mempengaruhi besarnya respons struktur berupa momen dan geser. Berdasarkan hasil analisa terhadap diagram momen balok, ternyata momen balok yang terjadi pada masing-masing variasi tingkat menunjukkan pola yang hampir sama. Oleh sebab itu pada bahasan berikut grafik yang diambil pada momen balok dimana momen dominan terjadi berlawanan dengan arah gempa horisontal. Besarnya momen balok dapat dilihat pada Grafik 5.39, Grafik 5.40 dan pada Grafik 5.41.



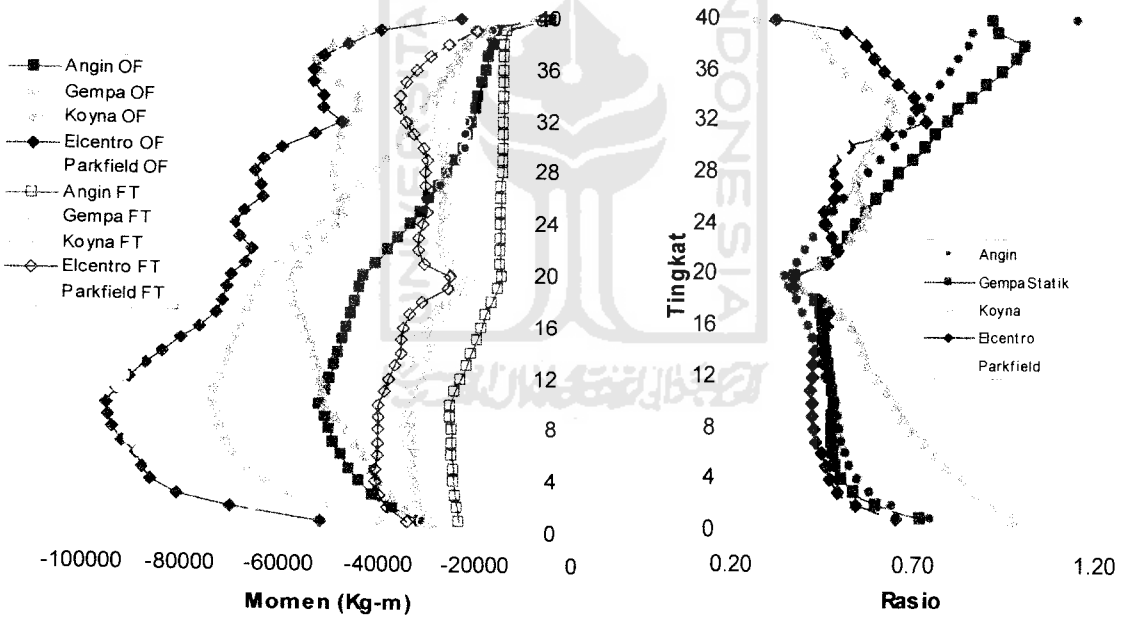
(a) (b)

Grafik 5.39: a) Momen Balok Struktur 20 Lantai, b) Rasio Momen Balok *Frame truss* Terhadap OF



(a) (b)

Grafik 5.40: a) Momen Balok Struktur 30 Lantai, b) Rasio Momen Balok *Frame truss* Terhadap OF

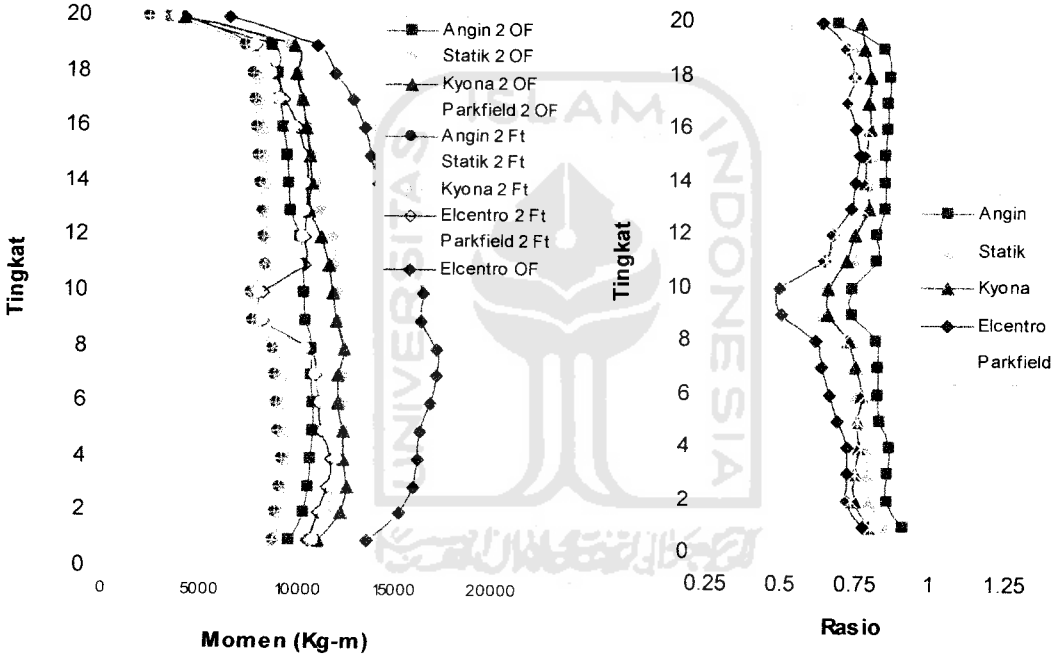


(a) (b)

Grafik 5.41: a) Momen Balok Struktur 40 Lantai, b) Rasio Momen Balok *Frame truss* Terhadap OF

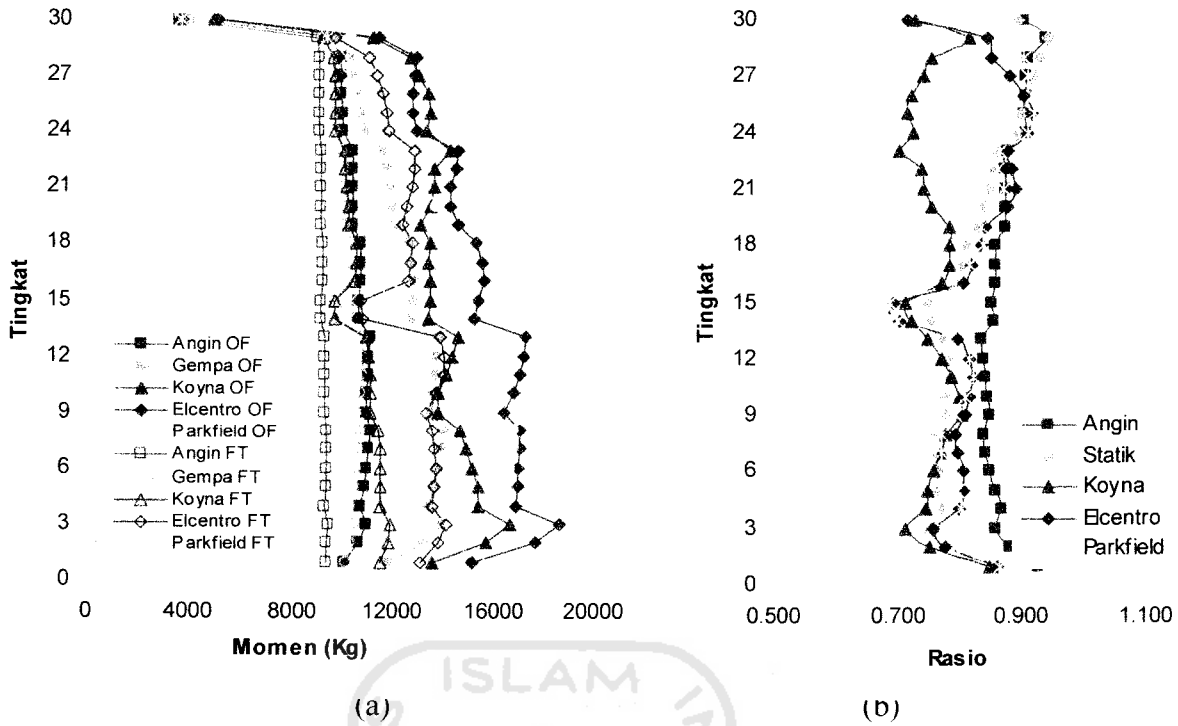
5.3.3.3.2 Geser Balok

Besarnya gaya geser yang terjadi tergantung dari besarnya nilai momen baloknya, sehingga pola yang dihasilkan dari momen balok akan cenderung sama untuk gaya gesernya. Pada grafik momen balok pada lantai dimana *Frame truss* dipasang momen baloknya menjadi lebih kecil, sehingga gaya gesernya akan mengikuti momen baloknya yang akan mengalami pengurangan besarnya gaya geser yang terjadi. Contoh diagram yang menunjukkan gaya geser balok pada struktur *Frame truss* dan struktur *Open Frame* dapat dilihat pada Grafik 5.42a, 5.43a dan 5.44a.



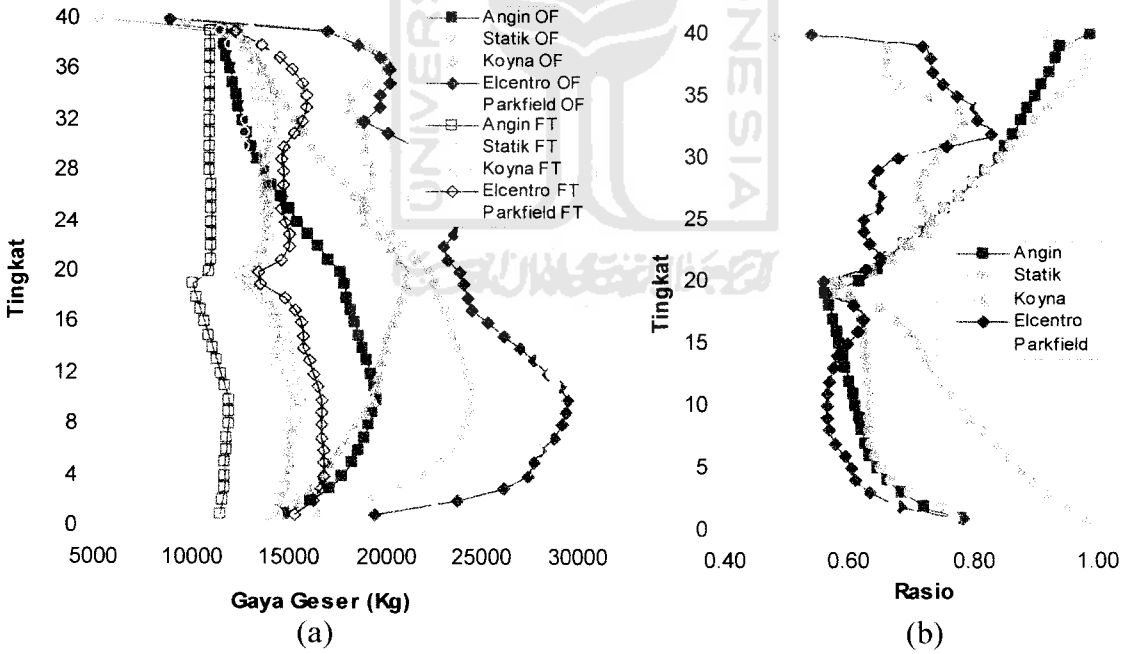
(a) (b)

Grafik 5.42: a) Geser Balok Struktur 20 Lantai, b) Rasio Geser Balok *Frame truss* Terhadap OF



(a) (b)

Grafik 5.43: a) Geser Balok Struktur 30 Lantai, b) Rasio Geser Balok *Frame truss* Terhadap OF



(a) (b)

Grafik 5.44: a) Geser Balok Struktur 40 Lantai, b) Rasio Geser Balok *Frame truss* Terhadap OF

Grafik 5.39a sampai 5.44a menunjukkan bahwa momen dan geser balok pada struktur *Open Frame* lebih besar daripada momen dan geser balok pada struktur *Frame truss*, hal ini karena adanya struktur pengaku berupa *Frame truss* yang menyebabkan pengaruh momen dan geser akibat gaya lateral menjadi lebih kecil. Momen & geser balok akibat beban angin lebih kecil bila dibandingkan dengan beban gempa statik maupun dinamik ditunjukkan pada Grafik 5.39a sampai 5.44a. Hal ini karena gaya lateral akibat beban angin lebih kecil daripada beban statik maupun dinamik. Momen dan geser balok akibat beban dinamik yang diakibatkan gempa elcentro dan parkfield lebih besar daripada yang disebabkan oleh gempa koyna hal ini disebabkan karena frekuensi gempa elcentro dan parkfield yang lebih rendah daripada koyna.

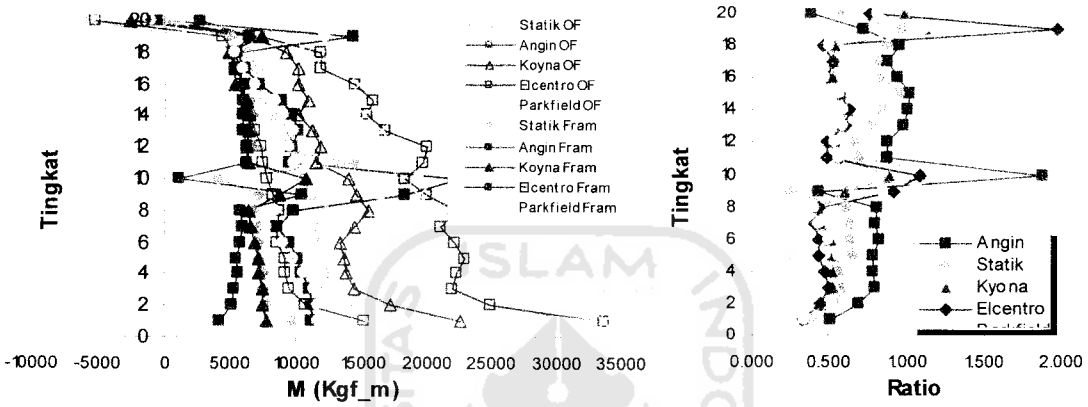
Semakin tinggi bangunan maka momen dan geser yang dihasilkan akan semakin besar hal ini terjadi karena semakin tinggi bangunan maka bebannya juga akan semakin besar. Grafik 5.39a sampai 5.44a menunjukkan momen dan geser balok minimum di lantai-lantai yang ada pengaku *Frame truss* hal ini disebabkan karena *Frame truss* akan menambah kekakuan bangunan.

Grafik 5.39b sampai 5.41b menunjukkan rasio momen balok pada penggunaan *Frame truss* terhadap *Open Frame*. Dari Grafik 5.40b yang memperlihatkan rasio momen balok untuk struktur 30 lantai akibat beban angin, gempa statik, koyna, Elcentro dan parkfield mempunyai rasio 0,749; 0,694; 0,594; 0,732; 0,747. untuk selengkapnya dapat dilihat pada lampiran E-7, E-10 dan E-13. Grafik 5.42b, 5.43b dan 5.44b menunjukkan rasio geser balok pada penggunaan *Frame truss* terhadap *Open Frame*. Dari Grafik 5.43b yang memperlihatkan rasio geser balok untuk struktur 30 lantai akibat beban angin, gempa statik, koyna, Elcentro dan parkfield mempunyai rasio 0,874; 0,823; 0,759; 0,826; 0,827. untuk selengkapnya dapat dilihat pada lampiran E-7, E-10 dan E-13.

5.3.3.4 Momen, Gaya Geser dan Gaya Aksial Kolom

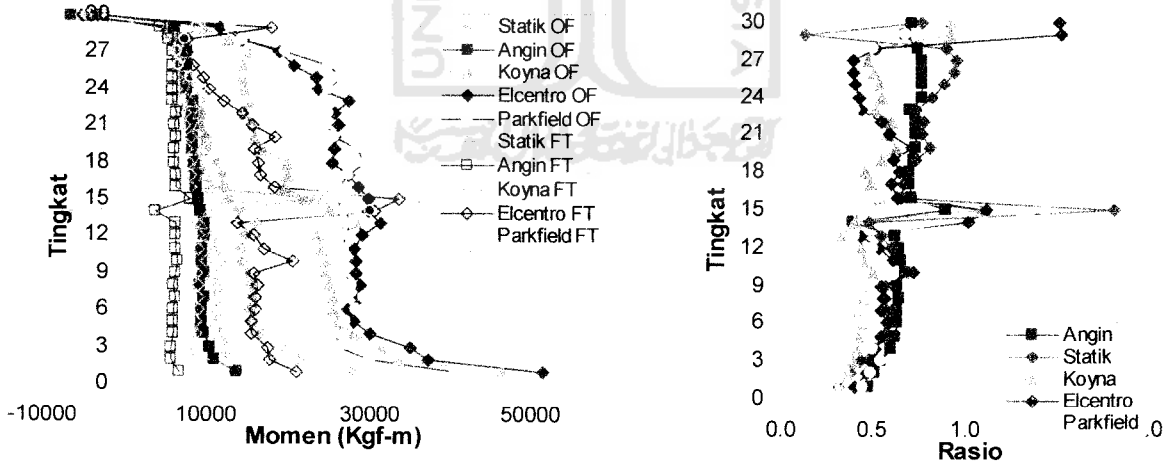
5.3.3.4.1 Momen Kolom

Pola momen kolom yang terjadi akibat beban angin, gempa statik dan dinamik dapat dilihat pada Grafik 5.45 sampai 5.46. Pola tersebut diambil berdasarkan momen kolom maksimum yang terjadi pada setiap join lantai pada kolom tepi potal tepi, dimana pada kolom tersebut pengaruh akibat beban gempa relatif lebih besar dari kolom lain.



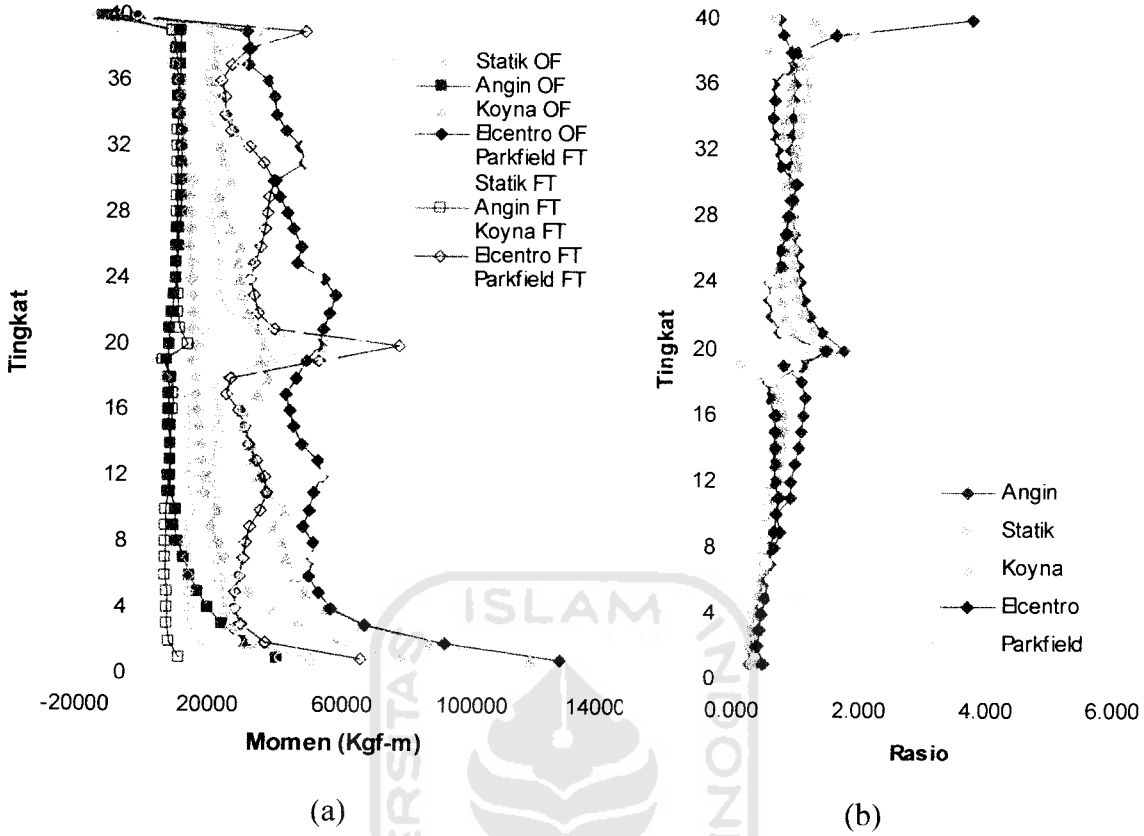
(a) (b)

Grafik 5.45: a) Momen Kolom Struktur 20 Lantai, b) Rasio Momen Kolom *Frame truss* Terhadap OF



(a) (b)

Grafik 5.46: a) Momen Kolom Struktur 30 Lantai, b) Rasio Momen Kolom *Frame truss* Terhadap OF

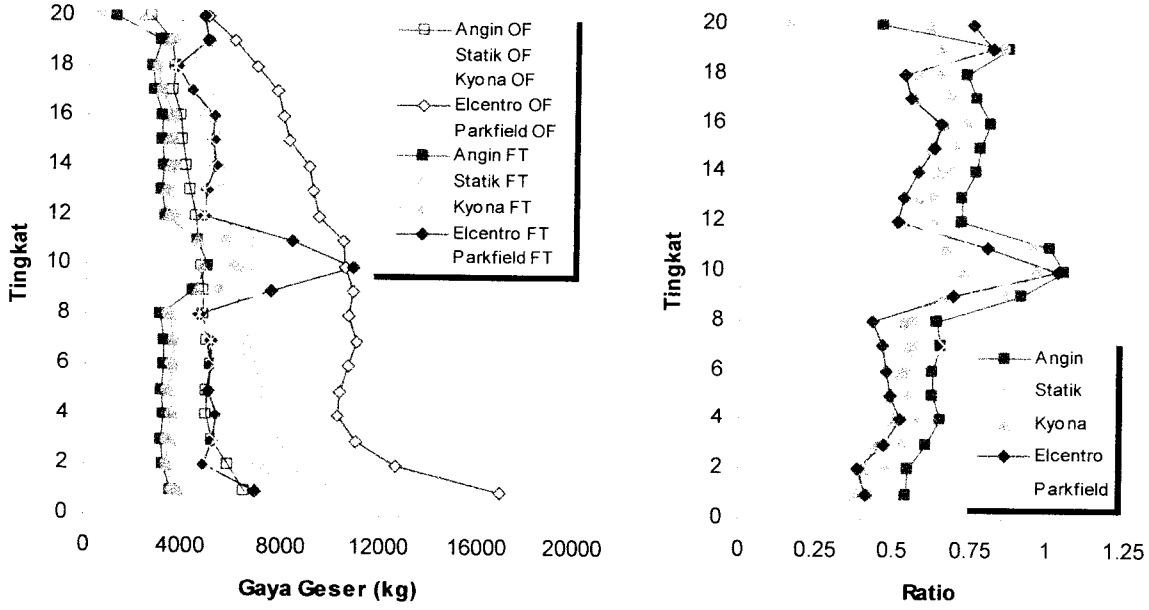


(a) (b)

Grafik 5.47: a) Momen Kolom Struktur 40 Lantai, b) Rasio Momen Kolom *Frame truss* Terhadap OF

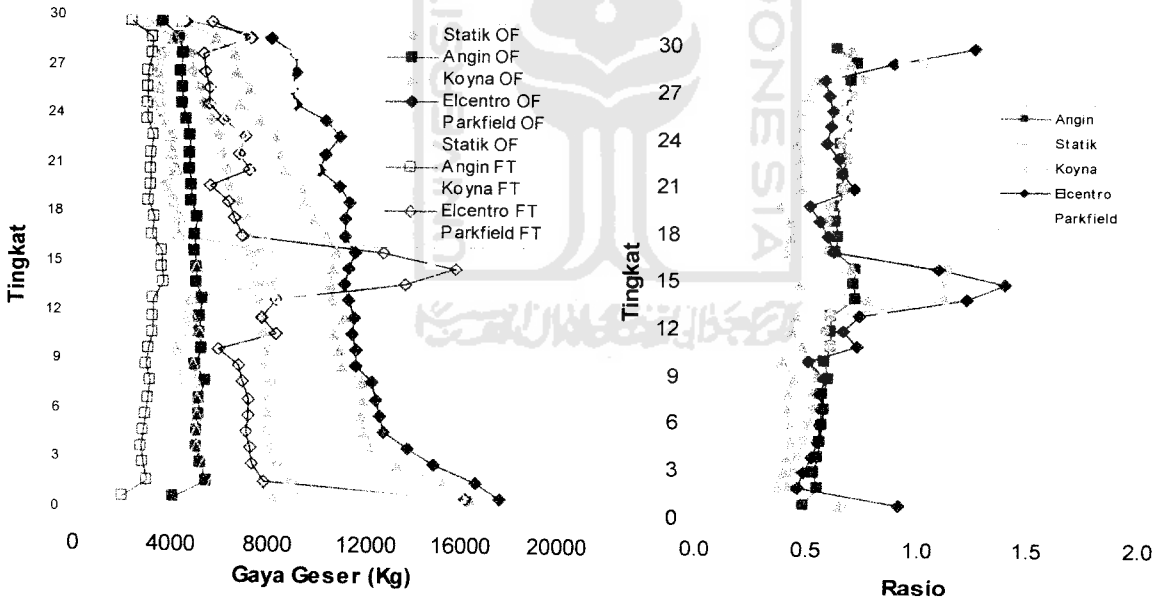
5.3.3.4.2 Gaya Geser Kolom

Pola gaya geser kolom sama dengan pola momen kolom. Gaya geser akan mempunyai nilai yang sama dalam satu tingkat, sehingga pada setiap variasi tingkat akan diambil nilai maksimum yang terjadi pada setiap tingkat struktur. Contoh pola gaya geser yang terjadi akibat beban angin, Gempa statik maupun dinamik dapat dilihat pada Grafik 5.48, Grafik 5.49 dan Grafik 5.50 sebagai berikut:



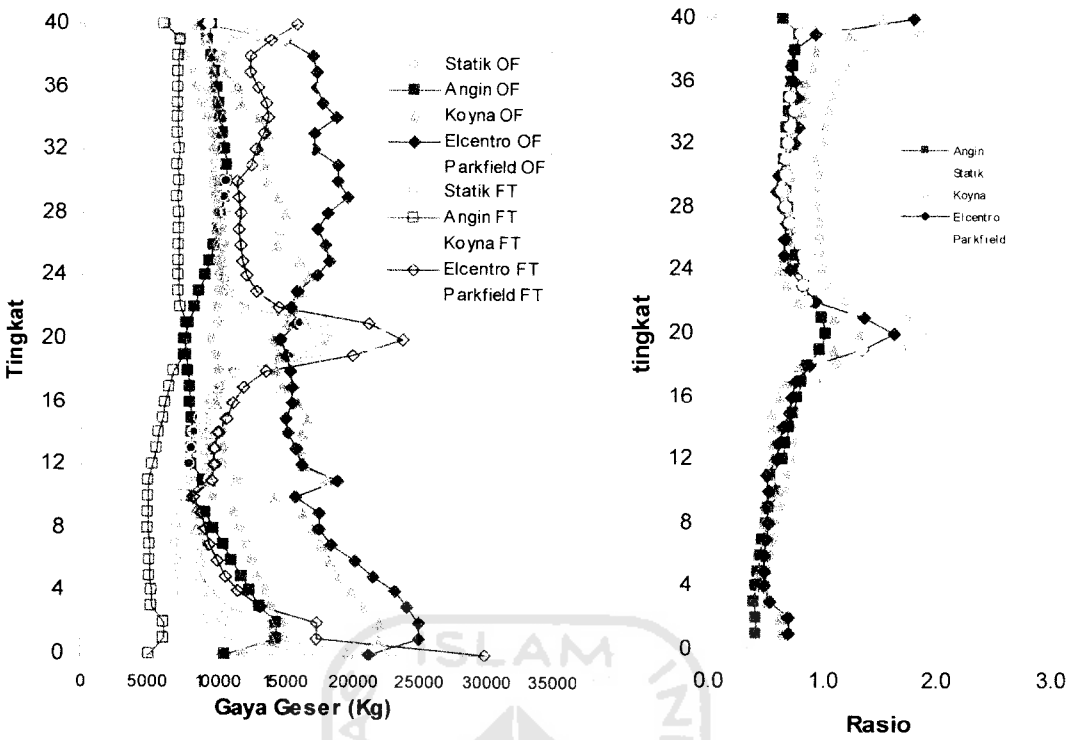
(a) (b)

Grafik 5.48: a) Geser Kolom Struktur 20 Lantai, b) Rasio Geser Kolom *Frame truss* Terhadap OF



(a) (b)

Grafik 5.49: a) Geser Kolom Struktur 30 Lantai, b) Rasio Geser Kolom *Frame truss*Terhadap OF

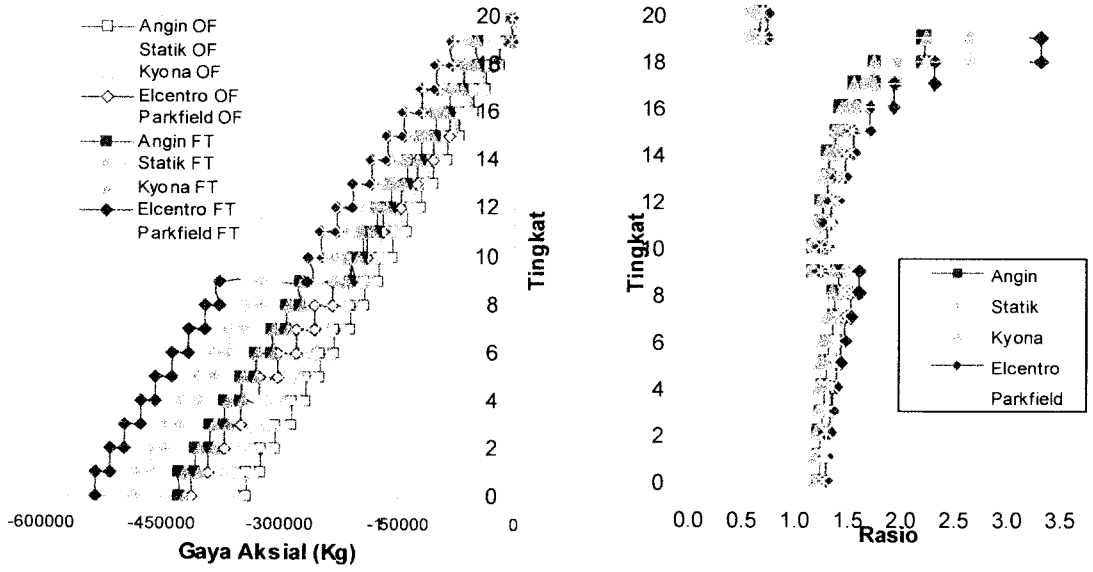


(a) (b)

Grafik 5.50: a) Geser Kolom Struktur 40 Lantai, b) Rasio Geser Kolom *Frame truss* Terhadap OF

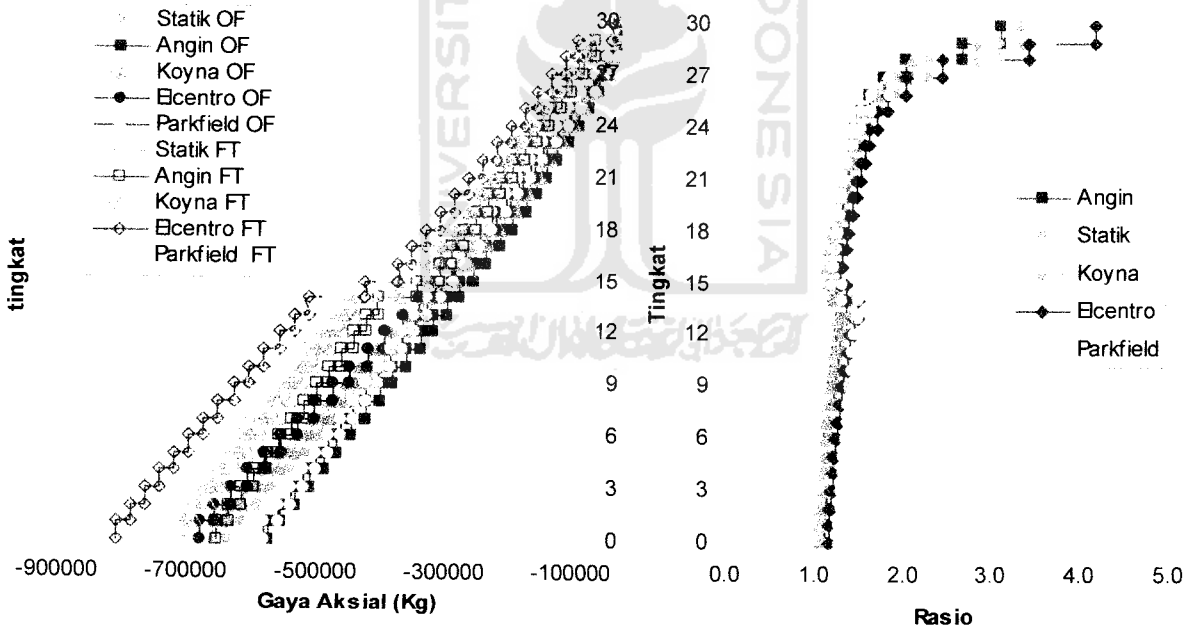
5.3.3.4.3 Gaya Aksial Kolom

Gaya aksial kolom adalah gaya yang arah kerjanya searah dengan garis netralnya. Gaya ini merupakan reaksi yang ditimbulkan akibat momen yang terjadi pada balok. Gaya aksial yang terjadi pada setiap lantai struktur merupakan komulatif gaya yang berasal dari lantai yang berada di atasnya, sehingga akan semakin besar pada lantai-lantai bawah. Contoh pola gaya aksial yang disebabkan oleh beban angin, gempa statik dan dinamik. Grafik gaya aksial dapat dilihat pada Grafik 5.44 sampai dengan Grafik 5.46 sebagai berikut:



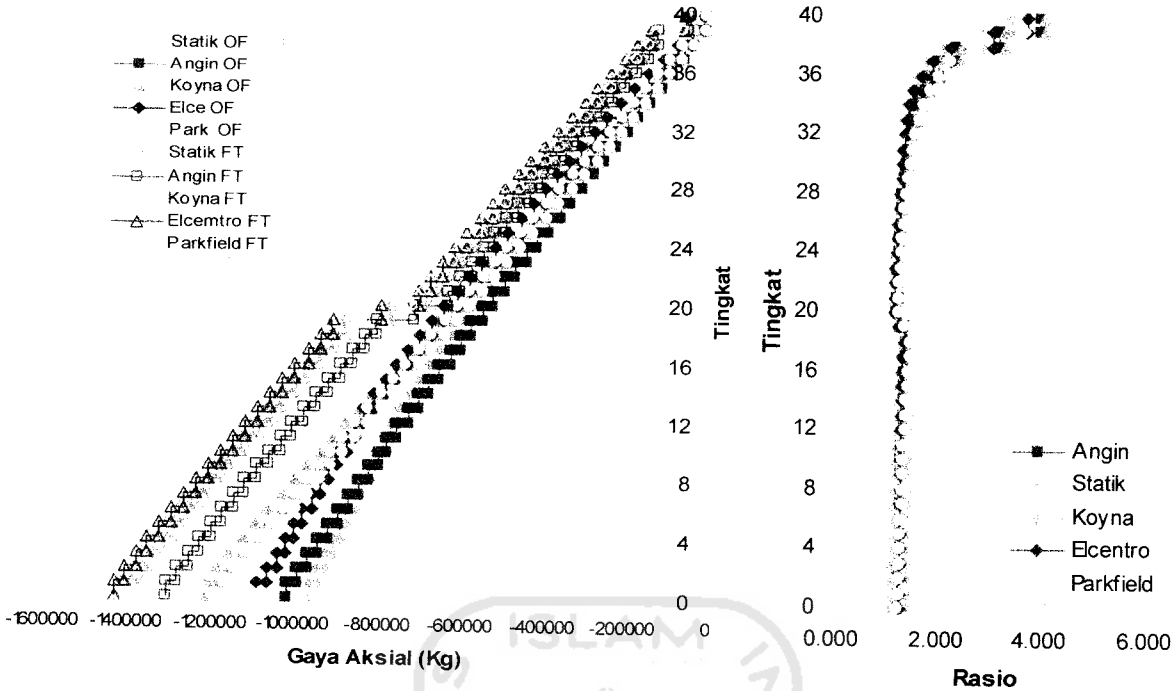
(a) (b)

Grafik 5.51: a) Aksial Kolom Struktur 20 Lantai, b) Rasio Aksial Kolom *Frame truss* Terhadap OF



(a) (b)

Grafik 5.52: a) Aksial Kolom Struktur 30 Lantai, b) Rasio Aksial Kolom *Frame truss* Terhadap OF



(a) (b)

Grafik 5.53: a) Aksial Kolom Struktur 40 Lantai, b) Rasio Aksial Kolom *Frame truss* Terhadap OF

Grafik 5.38 sampai dengan Grafik 5.43 menunjukkan bahwa momen dan geser kolom akibat gempa angin, statik dan dinamik pada struktur *Open Frame* maupun *Frame truss* akan semakin besar pada variasi tingkat yang semakin banyak. Hal ini karena semakin tinggi bangunan maka gaya lateral akan menjadi besar. Momen & geser kolom akibat beban angin lebih kecil bila dibandingkan dengan beban gempa statik maupun dinamik hal ini karena gaya lateral akibat beban angin lebih kecil daripada beban statik maupun dinamik ditunjukkan yang ditunjukkan pada Grafik 5.38 sampai 5.43. Beban dinamik akibat gempa elcentro dan parkfield lebih besar daripada gempa koyna hal ini karena frekuensi dari gempa elcentro dan parkfield yang lebih rendah daripada gempa koyna.

Gaya aksial kolom pada struktur *Frame truss* secara keseluruhan lebih besar bila dibandingkan dengan *Open Frame* ditunjukkan pada Grafik 5.44 sampai dengan Grafik 5.46. Gaya aksial pada pengaku menambah besarnya gaya aksial kolom. Gaya

aksial kolom pada struktur *Frame truss* akan semakin menjadi besar disetiap perletakan pengaku tersebut. Hal ini disebabkan gaya aksial pada pengaku disalurkan ke kolom. Nilai gaya aksial pada struktur O*pen Frame* akibat gempa dinamik tidak memberikan pengaruh signifikan. Hal ini ditunjukkan besarnya gaya aksial saling berdekatan antara gempa statik dan dinamik. Ini karena yang mempengaruhi beban aksial adalah kombinasi antara beban mati dan hidup.

5.3.4 Keefektifan sistem Struktur Dengan *Frame Truss*

Berdasarkan hasil-hasil analisis dan pembahasan seperti yang disampaikan didepan maka dapat diketahui bahwa respon struktur (Simpangan, momen dan geser) struktur dengan *Frame truss* semuanya lebih kecil dibanding dengan struktur *Core brace* dan *Open Frame*. Hal ini ditunjukkan oleh adanya rasio respon yang nilainya kurang dari satu akan tetapi aksial kolom struktur *Frame truss* lebih besar daripada struktur *Core brace* dan *Open Frame*. Oleh karena itu dapat disimpulkan bahwa sistem struktur dengan *Frame truss* lebih efektif dibanding dengan struktur *Core brace* dan *Open Frame*.

BAB VI
APLIKASI DESAIN

Pada tahap aplikasi desain ini struktur yang didesain adalah struktur 30 lantai dengan model *Frame truss (FT).*

6.1 Perencanaan Balok Portal *Frame truss* (FT)

6.1.1 Momen Rencana Balok, Mu,b

Perhitungan momen rencana balok (Mu,b) dihitung berdasarkan kombinasi pembebanan maksimum Dari :

$Mu,b = 1,2\ M_D + 1,6\ M_L$

$Mu,b = 1,2\ M_D + 0,5\ M_L \pm M_E$

$Mu,b = 1,2\ M_D + 0,5\ M_L \pm 1,3\ M_w$

Perhitungan momen lentur rencana balok disajikan secara lengkap dalam tabel pada lampiran B-1 (OF), B-2 dan B-3 (BOF)

6.1.2 Kuat Lentur Nominal Balok Portal

Pada struktur *Farme truss* diambil contoh hitungan untuk balok B1 lantai 4 Portal 1 dengan momen rencana hasil dari analisis struktur Sebagai berikut :

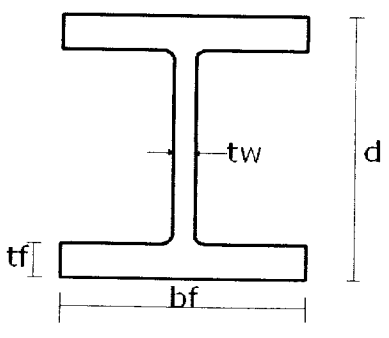
Mu,b = 2024,62 K-in (berdasarkan lampiran B-2)

L = 275,590 in

Ln = 266,24 in

Lb = 137,795 in

Profil yang digunakan adalah W18x40, dengan data propertis sebagai berikut:



Gambar 6.1 Penampang Profil

A	= 11,8 in^2	I_x	= 612 in^4	I_y	= 19,1 in^4
d	= 17,9 in	S_x	= 68,380 in^3	S_y	= 6,346 in^3
t_w	= 0,315 in	Z_x	= 78,4 in^3	Z_y	= 9,95 in^3
b_f	= 6,02 in	E_S	= 29000 Ksi	f_u	= 58 Ksi
t_f	= 0,525 in	F_y	= 36 Ksi	f_r	= 10 Ksi
r_x	= 7,202	G	= 11200 Ksi	C_w	= 1380,79 in^6
r_y	= 1,272 in	J	= 2,17 in^4		

Kontrol rasio lebar terhadap tebal (b/t) dan (h/t) penampang berdasarkan persamaan : $\lambda \leq \lambda_p$.

Pada sayap, $\lambda_s = \frac{b_f}{2t_f} = \frac{6,02}{2.0,525} = 5,733 \leq \lambda_{ps} = \frac{65}{\sqrt{f_y(ksi)}} = \frac{65}{\sqrt{36}} = 10,83$ (3.16)

Pada badan, $\lambda_b = \frac{h_c}{t_w} = \frac{16,85}{0,315} = 53,492 \leq \lambda_{pb} = \frac{640}{\sqrt{f_y(ksi)}} = \frac{640}{\sqrt{36}} = 106,67$ (3.17)

Karena memenuhi persyaratan maka profil W18x40 termasuk profil plastis.

Kuat lentur berdasarkan stabilitas tekuk local, $\phi M_{n,tl}$

Karena harus menggunakan profil sangat kompak, maka $\phi M_n = \phi M_p$

$\phi M_n = 0,9\ Z_x . F_y$ (Pers 3.18)

$= 0,9 . 78,4 . 36 = 2540,16$ K-in

$L_p = 300.r_y . \frac{1}{\sqrt{F_y(ksi)}} = 300.1,272 . \frac{1}{\sqrt{36}} = 63,62$ in (Pers 3.19)

$X_1 = \frac{\pi}{S_x}\sqrt{\frac{E.G.J.A}{2}} = \frac{\pi}{68,380}\sqrt{\frac{29000.11200.2,17.11,8}{2}}$ (Pers 3.24)

$= 1809,2$ Ksi

$X_2 = 4.\frac{C_w}{I_y}\left(\frac{S_x}{G.J}\right)^2 = 4.\frac{1380,79}{19,1}\left(\frac{68,38}{11200.2,17}\right)^2$ (Pers 3.25)

$= 0,016$ Ksi

$F_l = Fy - fr = 36 - 10 = 26$ Ksi (Pers 3.23)

$L_r = \frac{r_y.X_1}{F_l}.\sqrt{1+\sqrt{1+X_2.F_l^2}} = \frac{1,272.1446,1}{26}\sqrt{1+\sqrt{1+0,016.26^2}}$ (Pers 3.22)

$= 187,5$ in

Karena $Lp \leq Lb \leq Lr$ maka termasuk bentang menengah

Kuat lentur berdasarkan stabilitas tekuk puntir lateral, ϕM_n

Dari analisis struktur balok B1 lantai 4 Portal 1 ditampilkan pada lampiran B-1 didapatkan Mmax = 1088,115 Kips-in, M_A= 147,849 Kips-in, M_B= 863,099 Kips-in, M_C= 225,295 Kips-in

$$C_b = \frac{12{,}5\, M_{max}}{2{,}5M_{max} + 3M_A + 4M_B + 3M_C} \quad \text{(Pers 3.26)}$$

$$= \frac{12{,}5.1088{,}115}{2{,}5.1088{,}115 + 3.147{,}849 + 4.863{,}099 + 3.225{,}295}$$

$$= 2{,}627 > 2{,}3 \text{ , Cb Pakai} = 2.3.$$

$$M_r = S_x(Fy\text{-}F_r) \quad \text{(Pers 3.21)}$$

$$= 68{,}38\ (36\text{-}10)$$

$$= 1777{,}9 \text{ K-in}$$

$$M_n = Cb\left[Mp - \left(Mp - Mr \right)\frac{(Lb - Lp)}{(Lr - Lp)} \right] \leq Mp \quad \text{(Pers3.20)}$$

$$= 2{,}3\left[2822 - (2822 - 1777{,}9)\frac{(275{,}6 - 63{,}62)}{(187{,}5 - 63{,}62)} \right]$$

$$= 13186 \text{ K-in} > M_p = Zx\ .Fy = 78{,}4.36 = 2822{,}4 \text{ K-in}$$

Karena $M_{cr} = M_n > M_p$, maka

$$\phi M_n = \phi M_p \quad \text{(Pers 3.15)}$$

$$= 0{,}9.2822{,}4 = 2540{,}2 \text{ K-in}$$

Rasio kapasitas lentur yang terjadi, $\frac{M_{u,b}}{\phi M_n} = \frac{2392{,}5}{2540{,}2} = 0{,}94 < 1{,}0 \rightarrow Ok\ !$

Perhitungan kuat lentur balok disajikan secara lengkap dalam tabel pada lampiran B-4 (OF), B-5 dan B-6 (BOF). Tabel 6.1 sampai 6.2 merupakan tabel rekapitulasi momen rencana balok dan kapasitas nominal balok untuk struktur *Frame truss* (BOF) dan OF. Untuk *Core Brace (CB)* ada pada table lampiran B-6

Tabel 6.1 Mu,b dan φMn Balok Portal Tepi

Lantai	Mu,b (K-in)			ΦMn (K-in)			Rasio		
	OF	CB	FT	OF	CB	FT	OF	CB	FT
30	688.355	867.399	785.029	1075.7	1075.68	800.28	0.6399	0.8064	0.9809
29	1658.807	1320.782	1138.487	2365.2	2073.6	2073.6	0.7013	0.6370	0.5490
28	1777.378	1498.376	1291.145	2365.2	2073.6	2073.6	0.7515	0.7226	0.6227
27	1915.76	1627.139	1339.556	2365.2	2073.6	2073.6	0.8100	0.7847	0.6460
26	2062.706	1732.882	1380.829	2365.2	2073.6	2073.6	0.8721	0.8357	0.6659
25	2201.598	1828.881	1420.168	2365.2	2073.6	2073.6	0.9308	0.8820	0.6849
24	2322.035	1914.429	1456.301	2365.2	2073.6	2073.6	0.9817	0.9232	0.7023
23	2946.318	2309.032	1715.366	3272.4	2540.16	2073.6	0.9004	0.9090	0.8272
22	3070.622	2402.524	1756.147	3272.4	2540.16	2073.6	0.9383	0.9458	0.8469
21	3181.365	2473.784	1787.168	3272.4	2540.16	2073.6	0.9722	0.9739	0.8619
20	3251.174	2476.915	1789.837	3272.4	2540.16	2073.6	0.9935	0.9751	0.8632
19	3631.532	2459.391	1784.353	5184	2540.16	2073.6	0.7005	0.9682	0.8605
18	3679.711	2727.725	1968.52	5184	2938.68	2073.6	0.7098	0.9282	0.9493
17	3758.685	2712.057	1974.908	5184	2938.68	2073.6	0.7251	0.9229	0.9524
16	3830.783	2505.119	1951.044	5184	2938.68	2073.6	0.7390	0.8525	0.9409
15	3870.442	1583.221	1386.137	5184	2938.68	2073.6	0.7466	0.5388	0.6685
14	3838.68	1609.373	1385.81	5184	2938.68	2073.6	0.7405	0.5477	0.6683
13	4705.446	3158.61	2348.712	5184	4082.4	2540.16	0.9077	0.7737	0.9246
12	4632.004	3539.702	2392.512	5184	4082.4	2540.16	0.8935	0.8671	0.9419
11	4602.369	3631.331	2393.854	5184	4082.4	2540.16	0.8878	0.8895	0.9424
10	4537.44	2727.725	1968.52	5184	4082.4	2540.16	0.8753	0.6682	0.7750
9	4879.014	2712.057	1974.908	5184	4082.4	2540.16	0.9412	0.6643	0.7775
8	4816.792	2505.119	1951.044	5184	4082.4	2540.16	0.9292	0.6136	0.7681
7	4794.464	1583.221	1386.137	5184	4082.4	2540.16	0.9249	0.3878	0.5457
6	4768.513	1609.373	1385.81	5184	4082.4	2540.16	0.9199	0.3942	0.5456
5	4696.781	3158.61	2348.712	5184	4082.4	2540.16	0.9060	0.7737	0.9246
4	4519.81	3539.702	2392.512	5184	4082.4	2540.16	0.8719	0.8671	0.9419
3	5032.819	3631.331	2393.854	5184	4082.4	2540.16	0.9708	0.8895	0.9424
2	4420.208	3499.403	2311.233	5184	4082.4	2540.16	0.8527	0.8572	0.9099
1	3242.265	3330.833	2215.649	5184	4082.4	2540.16	0.6254	0.8159	0.8722

Tabel 6.2 Mu,b dan φMn Balok Portal Tengah

Lantai	Mu,b (K-in)			ΦMn (K-in)			Rasio		
	OF	CB	FT	OF	CB	FT	OF	CB	FT
30	1528.286	1980.533	785.029	2154.6	2154.6	800.28	0.7093	0.9192	0.9809
29	3053.131	3551.546	1138.487	4082.4	4082.4	2073.6	0.7479	0.8700	0.5490
28	3229.289	3560.517	1291.145	4082.4	4082.4	2073.6	0.7910	0.8722	0.6227
27	3422.052	3575.269	1339.556	4082.4	4082.4	2073.6	0.8382	0.8758	0.6460
26	3628.489	3569.47	1380.829	4082.4	4082.4	2073.6	0.8888	0.8744	0.6659
25	3824.499	3628.634	1420.168	4082.4	4082.4	2073.6	0.9368	0.8888	0.6849
24	3986.257	3761.413	1456.301	4082.4	4082.4	2073.6	0.9764	0.9214	0.7023

23	4109.918	3914.591	1715.366	4665.6	4082.4	2073.6	0.8809	0.9589	0.8272
22	4231.737	4018.408	1756.147	4665.6	4082.4	2073.6	0.9070	0.9843	0.8469
21	4347.104	4100.937	1787.168	4665.6	4179.6	2073.6	0.9317	0.9812	0.8619
20	4415.586	4097.745	1789.837	4665.6	4179.6	2073.6	0.9464	0.9804	0.8632
19	4883.361	4066.06	1784.353	5184	4179.6	2073.6	0.9420	0.9728	0.8605
18	4942.891	4324.884	1968.52	5184	4989.6	2073.6	0.9535	0.8668	0.9493
17	5010.582	4307.521	1974.908	5184	4989.6	2073.6	0.9665	0.8633	0.9524
16	5074.706	4033.305	1951.044	5184	4989.6	2073.6	0.9789	0.8083	0.9409
15	5101.823	3378.104	1386.137	5184	4989.6	2073.6	0.9841	0.6770	0.6685
14	5053.101	3360.063	1385.81	5184	4989.6	2073.6	0.9747	0.6734	0.6683
13	5867.746	4438.934	2348.712	6480	4989.6	2540.16	0.9055	0.8896	0.9246
12	5774.316	4835.239	2392.512	6480	4989.6	2540.16	0.8911	0.9691	0.9419
11	5734.807	4917.412	2393.854	6480	4989.6	2540.16	0.8850	0.9855	0.9424
10	4415.586	4097.745	1968.52	6480	4989.6	2540.16	0.6814	0.8213	0.7750
9	4883.361	4066.06	1974.908	6480	4989.6	2540.16	0.7536	0.8149	0.7775
8	4942.891	4324.884	1951.044	6480	4989.6	2540.16	0.7628	0.8668	0.7681
7	5010.582	4307.521	1386.137	6480	4989.6	2540.16	0.7732	0.8633	0.5457
6	5074.706	4033.305	1385.81	6480	4989.6	2540.16	0.7831	0.8083	0.5456
5	5101.823	3378.104	2348.712	6480	4989.6	2540.16	0.7873	0.6770	0.9246
4	5053.101	3360.063	2392.512	6480	4989.6	2540.16	0.7798	0.6734	0.9419
3	5867.746	4438.934	2393.854	6480	4989.6	2540.16	0.9055	0.8896	0.9424
2	5774.316	4835.239	2311.233	6480	4989.6	2540.16	0.8911	0.9691	0.9099
1	5734.807	4917.412	2215.649	6480	4989.6	2540.16	0.8850	0.9855	0.8722

6.1.3 Gaya Geser Rencana Balok

Gaya geser pada balok lebih ditentukan oleh momen plastis balok (M_{pb}) pada kedua ujung balok pada arah yang berlawanan dengan arah datangnya gempa.

Gaya geser balok diambil dari nilai minimum dua persamaan berikut:

$$V_u = 1{,}2.VD + 0{,}5\ VL + \frac{2.\beta\, M_{pb}}{L'} \qquad \text{(Pers 3.29)}$$

$$V_u = 1{,}2.V_D + 0{,}5.V_L + \mu.V_E \qquad \text{(Pers 3.30)}$$

Gaya geser pada B1 lantai 4 portal 1 dengan hasil sesuai dengan lampiran B-8:

V_D = 2,87 kips

V_L = 3,67 kips

V_E = 7,14 kips

Jarak antar sendi plastis L' = 256,441 in

$$V_u = 1{,}2.2{,}87 + 0{,}5.3{,}67 + \frac{2.1{,}1.3104{,}64}{256{,}441} = 29{,}492 \text{ kips}$$

$$V_u = 1{,}2 .2{,}87 + 0{,}5.3{,}67 + 4.7{,}14 = 33{,}839 \text{ kips}$$

Gaya geser rencana balok, $V_u = 33{,}839$ Kips

Perhitungan gaya geser rencana balok disajikan dalam tabel pada lampiran B-8 untuk struktur *Frame truss(FT)*, lampiran B-7 untuk struktur OF dan lampiran B9 untuk *Core Brace* (CB).

6.1.4 Kuat Geser Nominal Balok Portal

Contoh hitungan kuat geser balok:

Diketahui gaya geser yang bekerja pada balok B1 lantai 4 portal 1 berdasarkan lampiran B-8 adalah,

$V_u = 33{,}839$ Kips.

Kontrol perbandingan tinggi terhadap tebal panel (h/t_w) pendukung geser,

$$\frac{h}{t_w} = 53{,}492 < \frac{418}{\sqrt{F_y(\text{ksi})}} = \frac{418}{\sqrt{36}} = 69{,}67 \qquad \text{(Pers 3.32)}$$

$$A_w = d \,.\, t_w \qquad \text{(Pers 3.34)}$$

$$= 17{,}9 \,.\, 0{,}315 = 5{,}638 \text{ in}$$

$$\phi V_n = 0{,}9 \,.\, 0{,}6 \,.\, F_y \,.\, A_w \qquad \text{(Pers 3.33)}$$

$$= 0{,}9 \,.\, 0{,}6 \,.\, 36 \,.\, 5{,}638$$

$$= 104{,}132 \text{ Kips}$$

Rasio kapasitas geser yang terjadi,

$$\frac{V_{ub}}{\varphi V_n} = \frac{33{,}839}{104{,}132} = 0{,}324 < 1{,}0 \rightarrow Ok\,! \qquad \text{(Pers 3.35)}$$

Perhitungan kuat geser nominal balok portal disajikan dalam tabel pada lampiran B-10 dan B-11. Tabel 6.3 sampai 6.4 merupakan rekapitulasi gaya geser rencana dan kuat geser nominal balok untuk struktur *Frame truss(FT)* dan OF. Sedangkan untuk *Core Brace (CB)* dapat dilihat pada lampiran B-12.

Tabel 6.3 Vu,b dan ϕVn Balok Portal Tepi

Lantai	Vu,b (K-in)			ΦVn (K-in)			Rasio		
	OF	CB	FT	OF	CB	FT	OF	CB	FT
30	8.324	3.612	4.852	58.193	58.1927	58.1927	0.1430	0.0621	0.0834

29	20.515	7.357	8.900	90.124	86.6242	86.6242	0.2276	0.0849	0.1027
28	23.200	14.063	15.691	90.124	86.6242	86.6242	0.2574	0.1623	0.1811
27	26.560	17.028	16.903	90.124	86.6242	86.6242	0.2947	0.1966	0.1951
26	28.297	19.548	17.983	90.124	86.6242	86.6242	0.3140	0.2257	0.2076
25	28.285	21.868	19.023	90.124	86.6242	86.6242	0.3138	0.2524	0.2196
24	28.280	23.908	20.023	90.124	86.6242	86.6242	0.3138	0.2760	0.2311
30	37.095	29.765	25.316	118.011	104.1318	86.6242	0.3143	0.2858	0.2922
29	37.078	29.753	25.316	118.011	104.1318	86.6242	0.3142	0.2857	0.2922
28	37.061	29.748	25.299	118.011	104.1318	86.6242	0.3141	0.2857	0.2921
27	37.039	29.731	25.294	118.011	104.1318	86.6242	0.3139	0.2855	0.2920
26	55.400	29.714	25.277	167.560	104.1318	86.6242	0.3306	0.2854	0.2918
25	55.378	33.595	25.364	167.560	120.3375	86.6242	0.3305	0.2792	0.2928
24	55.344	33.578	25.342	167.560	120.3375	86.6242	0.3303	0.2790	0.2926
30	55.310	33.556	25.325	167.560	120.3375	86.6242	0.3301	0.2788	0.2924
29	55.271	15.495	17.496	167.560	120.3375	86.6242	0.3299	0.1288	0.2020
28	55.232	16.439	17.862	167.560	120.3375	86.6242	0.3296	0.1366	0.2062
27	55.499	44.509	29.820	167.560	144.0504	104.1318	0.3312	0.3090	0.2864
26	55.448	44.475	29.798	167.560	144.0504	104.1318	0.3309	0.3087	0.2862
25	55.397	44.448	29.759	167.560	144.0504	104.1318	0.3306	0.3086	0.2858
24	55.346	15.459	17.472	167.560	144.0504	104.1318	0.3303	0.1073	0.1678
30	55.559	44.363	29.652	167.560	144.0504	104.1318	0.3316	0.3080	0.2848
29	55.503	44.434	29.699	167.560	144.0504	104.1318	0.3312	0.3085	0.2852
28	55.413	44.395	29.660	167.560	144.0504	104.1318	0.3307	0.3082	0.2848
27	55.335	44.344	29.604	167.560	144.0504	104.1318	0.3302	0.3078	0.2843
26	55.245	44.288	29.548	167.560	144.0504	104.1318	0.3297	0.3074	0.2838
25	55.155	44.232	29.492	167.560	144.0504	104.1318	0.3292	0.3071	0.2832
24	55.258	44.267	29.501	167.560	144.0504	104.1318	0.3298	0.3073	0.2833
2	55.158	44.211	29.445	167.560	144.0504	104.1318	0.3292	0.3069	0.2828
1	55.029	44.133	27.979	167.560	144.0504	104.1318	0.3284	0.3064	0.2687

Tabel 6.4 Vu,b dan ϕVn Balok Portal Tengah

Lantai	Vu,b (K-in)			ΦVn (K-in)			Rasio		
	OF	CB	FT	OF	CB	FT	OF	CB	FT
30	15.072	12.703	11.826	98.065	98.065	58.193	0.1537	0.1295	0.2032
29	34.152	19.532	12.260	144.050	144.050	58.193	0.2371	0.1356	0.2107
28	38.111	22.548	14.503	144.050	144.050	58.193	0.2646	0.1565	0.2492
27	42.854	27.605	14.362	144.050	144.050	58.193	0.2975	0.1916	0.2468
26	47.877	31.805	14.228	144.050	144.050	58.193	0.3324	0.2208	0.2445
25	52.695	35.668	14.082	144.050	144.050	58.193	0.3658	0.2476	0.2420
24	54.044	39.051	13.953	144.050	144.050	58.193	0.3752	0.2711	0.2398
30	59.574	42.623	13.863	155.131	144.050	58.193	0.3840	0.2959	0.2382
29	59.535	45.389	13.734	155.131	144.050	58.193	0.3838	0.3151	0.2360
28	59.496	47.710	13.605	155.131	157.818	58.193	0.3835	0.3023	0.2338

27	59.445	48.059	13.291	155.131	157.818	58.193	0.3832	0.3045	0.2284
26	64.859	47.763	13.167	167.560	157.818	58.193	0.3871	0.3026	0.2263
25	64.815	52.783	13.261	167.560	188.207	58.193	0.3868	0.2805	0.2279
24	64.725	52.767	13.149	167.560	188.207	58.193	0.3863	0.2804	0.2259
30	64.635	46.917	13.003	167.560	188.207	58.193	0.3857	0.2493	0.2234
29	64.540	21.219	12.857	167.560	188.207	58.193	0.3852	0.1127	0.2209
28	64.433	22.595	4.636	167.560	188.207	58.193	0.3845	0.1201	0.0797
27	77.310	56.981	16.144	194.209	188.207	72.487	0.3981	0.3028	0.2227
26	77.198	62.259	15.959	194.209	188.207	72.487	0.3975	0.3308	0.2202
25	77.086	62.130	15.779	194.209	188.207	72.487	0.3969	0.3301	0.2177
24	76.940	61.989	15.241	194.209	188.207	72.487	0.3962	0.3294	0.2103
30	77.334	61.838	15.044	194.209	188.207	72.487	0.3982	0.3286	0.2075
29	77.176	61.998	15.146	194.209	188.207	72.487	0.3974	0.3294	0.2089
28	76.969	61.891	15.000	194.209	188.207	72.487	0.3963	0.3288	0.2069
27	76.767	61.757	14.854	194.209	188.207	72.487	0.3953	0.3281	0.2049
26	76.548	61.611	14.703	194.209	188.207	72.487	0.3942	0.3274	0.2028
25	76.324	61.448	14.557	194.209	188.207	72.487	0.3930	0.3265	0.2008
24	76.193	61.475	14.575	194.209	188.207	72.487	0.3923	0.3266	0.2011
2	75.991	61.312	14.390	194.209	188.207	72.487	0.3913	0.3258	0.1985
1	66.461	61.071	14.390	194.209	188.207	72.487	0.3422	0.3245	0.1985

6.1.5 Kontrol Lendutan

Lendutan yang terjadi pada tengah bentang diperoleh dari momen akibat beban gravitasi. Lendutan balok B1 lantai 4 portal 1. Struktur *frame truss* yang berasal dari analisis struktur akibat beban mati, dan hidup (lampiran B-17) adalah sebagai berikut:

M_a = - 1088,115 kips-in

M_s = 863,099 kips-in

M_b = - 936,276kips-in

Untuk balok yang mendukung beban lantai, lendutan ijin maksimum pada tengah bentang adalah : $\frac{L}{360} = \frac{275,59}{360} = 0,765$ in (Pers3.36)

Dimana lendutan pada tengah bentang dapat dicari dengan menggunakan persamaan

$$\Delta_{\text{pertengahan bentang}} = \frac{5L^2}{48EI}\left[M_s - 0,1(M_a + M_b)\right] \quad \text{(Pers 3.38)}$$

$$= \frac{5.275,59^2}{48.29000.800}[863,099 + 0,1(-1088,115 + -936,276)]$$

$$= 0,225 \text{ in} < \frac{L}{360} = 0,765 \text{ in} \rightarrow OK!$$

Perhitungan selengkapnya dapat dilihat pada lampiran B-16 sampai B-18.

6.2 Perencanaan Kolom

6.2.1 Momen dan Gaya Aksial Rencana Kolom

Hasil analisis struktur pada kolom K2 lantai 4 berdasarkan lampiran C-4 struktur *frame truss* adalah:

$P_D = 292,18$ kips

$P_L = 374,35$ kips

$P_E = 205,12$ Kips

Profil Balok (B1) lantai 3 dan 4 adalah W18x40 (d = 17,9 in; I = 612 in^4 ;Z_x = 78,4 in^3)

$M_p = Z_x . F_y = 78,4 \times 36 = 2822,4$ K-in (Pers 3.41)

Asumsi profil kolom W14x193 (d = 15,5 in)

L balok = 7 m = 275,59 in

h kolom = 3,75 m = 147,6378 in

Gaya aksial rencana kolom (P_u) (Robert Englerkirk,1993):

$P_u = 1,2 P_D + 0,5 P_L + P_E$ (Pers 3.44)

$P_u = 1,2.292,18 + 0,5.374,35 + 205,12$

$= 742,911$ kips

Momen rencana Kolom (M_u) :

$L` = L_{Balok} - d/2_{kolom} = 275,59 - (15,5/2+15,5/2) = 260,09$ in

$h` = h_{kolom} - (d/2_{balok\ lantai\ 4} + d/2_{balok\ lantai\ 3})$

$= 147,6378 - (17,9.\ 0,5_{balok\ lantai\ 4} + 17,9.\ 0,5_{balok\ lantai\ 3}) = 129,737$ in

$$M_u = M_{pb}.\left(\frac{L}{L`}\right).\left(\frac{h`}{2.h}\right) \quad \text{(Pers 3.43)}$$

$$= 2822,4.\left(\frac{275,59}{260,09}\right).\left(\frac{129,737}{2.147,6378}\right) = 1313,997 \text{ K-in}$$

Dan berikut ini pada table 6.5 samapai 6.10 adalah hasil rekapitulasi gaya pada kolom. Sedangkan untuk *Core Brace (CB)* dapat dilihat pada lampiran C-3.

Tabel 6.5 Rekapitulasi Gaya Pada Kolom K1

Lantai	Momen, Mu,k (K-in)				Pu (Kips)		Geser, Vu,k (Kips)			
	OF		BOF				OF		BOF	
	Mu x	Mu y	Mu x	Mu y	OF	BOF	Vu x	Vu y	Vu x	Vu y
30	607.83	641.93	449.73	347.10	6.15	3.82	6.62	15.04	36.02	10.27
29	1107.55	711.43	1100.68	777.01	17.35	141.93	14.15	19.68	36.49	23.48
28	1098.38	711.17	1085.44	771.82	28.89	155.31	20.59	27.25	12.31	6.32
27	1098.38	711.17	1085.44	771.82	40.74	169.00	25.53	32.69	13.23	9.26
26	1098.38	711.17	1085.44	771.82	52.91	183.08	30.38	38.17	14.35	9.44
25	1098.38	711.17	1085.44	771.82	11.58	88.48	34.74	43.69	15.38	9.70
24	1098.38	711.17	1085.44	771.82	78.28	212.25	41.48	47.55	17.92	9.83
23	1335.30	711.17	1085.44	771.82	89.00	228.46	48.35	51.40	21.66	10.66
22	1327.79	711.17	1086.48	771.82	99.77	244.98	52.80	56.26	22.60	10.19
21	1327.79	711.17	1086.48	771.82	110.43	261.72	58.45	63.21	26.85	11.66
20	1327.79	711.17	1086.48	771.82	120.74	278.49	61.07	62.88	19.82	10.13
19	1534.92	941.91	1086.48	771.82	132.07	295.58	57.81	56.43	24.74	11.56
18	1533.74	943.30	1086.48	771.82	143.03	313.66	65.07	65.85	27.13	12.45
17	1533.74	943.30	1086.48	771.82	153.86	331.72	68.32	68.40	30.08	5.91
16	1533.74	943.30	1086.48	771.82	164.70	349.75	72.27	71.85	104.62	47.72
15	1531.31	943.30	1087.10	771.82	175.70	361.31	76.62	75.58	170.33	62.77
14	1531.31	943.30	1087.10	771.82	187.13	530.48	80.39	75.98	109.04	50.36
13	1837.80	943.30	1321.59	771.82	194.06	550.58	80.67	72.87	39.13	5.12
12	1818.44	943.30	1311.48	771.82	201.37	570.81	86.12	78.05	37.57	10.93
11	1818.44	943.30	1311.48	771.82	208.67	591.05	90.52	81.89	44.66	12.56
10	1818.44	943.30	1311.48	771.82	215.70	610.76	89.62	83.65	27.23	9.50
9	2082.94	943.30	1311.48	771.82	225.65	630.61	87.35	82.38	34.99	12.61
8	2091.94	1136.55	1312.74	771.82	235.17	651.00	91.43	87.08	36.05	12.32
7	2091.94	1136.55	1312.74	771.82	244.38	670.94	93.90	89.03	35.53	11.15
6	2091.94	1136.55	1312.74	771.82	253.44	690.27	96.68	91.04	33.84	10.27
5	2091.94	1136.55	1312.74	771.82	262.48	708.85	99.78	93.60	32.10	9.10
4	2091.94	1136.55	1312.74	771.82	271.73	726.54	106.40	95.43	31.83	7.73
3	2653.29	1136.55	1312.74	771.82	276.36	744.44	112.70	96.26	32.12	7.26
2	2650.15	1136.55	1312.74	771.82	281.68	761.18	123.96	108.01	31.86	2.68
1	2650.15	1136.55	1312.74	771.82	288.74	776.46	143.49	136.55	91.36	17.02

Tabel 6.6 Rekapitulasi Gaya Pada Kolom K2

Lantai	Momen, Mu,k (K-in)				Pu,k (Kips)		Geser, Vu,k (Kips)			
	OF		BOF				OF		BOF	
	Mu x	Mu y	Mu x	Mu y	OF	BOF	Vu x	Vu y	Vu x	Vu y
30	1215.93	743.48	900.15	347.10	10.10	5.76	17.27	14.28	38.88	18.67

29	2218.61	1060.11	2202.63	1043.15	31.79	106.05	30.79	22.96	43.94	34.59
28	2200.24	1060.89	2172.12	1027.93	54.61	127.00	38.69	29.21	18.85	10.46
27	2200.24	1060.89	2172.12	1027.93	78.76	148.00	47.19	35.24	20.60	14.32
26	2200.24	1060.89	2172.12	1027.93	104.27	169.17	55.50	40.84	22.71	14.47
25	2200.24	1060.89	2172.12	1027.93	131.11	190.46	61.70	46.44	24.19	14.96
24	2200.24	1060.89	2172.12	1027.93	159.21	211.89	76.92	51.02	29.63	15.09
23	2674.84	1060.89	2172.12	1027.93	187.89	233.42	92.40	55.47	37.13	16.05
22	2656.78	1060.89	2174.21	1027.93	217.54	255.03	98.64	60.79	38.27	15.74
21	2656.78	1060.89	2174.21	1027.93	247.91	276.68	106.61	66.16	43.71	17.60
20	2656.78	1060.89	2174.21	1027.93	278.46	298.31	112.15	72.76	35.22	16.27
19	3071.23	1287.42	2174.21	1172.04	315.63	320.97	116.25	75.83	42.47	19.79
18	3068.86	1279.29	2174.21	1171.60	352.83	343.62	123.17	82.43	47.41	20.45
17	3068.86	1279.29	2174.21	1171.60	390.65	366.22	128.86	86.34	51.27	13.43
16	3068.86	1279.29	2174.21	1171.60	429.24	388.95	134.71	90.23	130.40	71.02
15	3073.04	1279.29	2175.88	1171.60	468.66	404.42	138.60	94.40	183.96	98.09
14	3073.04	1279.29	2175.88	1171.60	508.73	520.39	148.75	95.45	138.66	75.02
13	3688.11	1279.29	2645.22	1171.60	548.67	542.88	162.49	96.48	69.29	12.05
12	3649.27	1279.29	2624.98	1171.60	588.96	565.08	163.12	100.41	66.23	18.86
11	3649.27	1279.29	2624.98	1171.60	629.43	587.21	168.06	104.52	74.15	21.18
10	3073.04	1279.29	2175.88	1171.60	468.66	404.42	169.75	106.79	52.45	16.50
9	3073.04	1487.19	2175.88	1171.60	508.73	520.39	168.43	103.19	60.87	22.11
8	4187.68	1473.17	2628.01	1171.60	759.97	655.12	173.10	109.84	64.96	21.40
7	4187.68	1473.17	2628.01	1171.60	804.95	677.72	175.00	111.17	62.04	19.92
6	4187.68	1473.17	2628.01	1171.60	850.12	699.93	177.42	113.29	59.20	18.61
5	4187.68	1473.17	2628.01	1171.60	895.43	721.67	177.07	115.31	55.32	17.02
4	4187.68	1473.17	2628.01	1171.60	940.35	742.91	186.32	116.55	54.69	14.94
3	5311.40	1473.17	2628.01	1171.60	983.83	763.60	198.43	117.92	56.71	14.47
2	5305.11	1473.17	2628.01	1171.60	1024.29	783.75	191.02	124.28	53.13	8.57
1	5305.11	1473.17	2628.01	1171.60	1057.78	803.41	179.97	138.19	119.93	36.21

Tabel 6.7 Rekapitulasi Gaya Pada Kolom K3

Lantai	Momen, Mu,k (K-in)				Pu,k (Kips)		Geser, Vu,k (Kips)			
	OF		BOF				OF		BOF	
	Mu x	Mu y	Mu x	Mu y	OF	BOF	Vu x	Vu y	Vu x	Vu y
30	1369.68	743.48	733.03	347.10	10.30	9.16	20.88	11.33	31.84	24.14
29	1522.78	1060.11	1641.89	1043.15	32.85	31.34	35.48	20.04	49.56	39.77
28	1522.22	1060.89	1630.93	1027.93	56.38	55.75	42.84	24.94	27.44	15.44
27	1522.22	1060.89	1630.93	1027.93	81.03	80.20	51.44	30.05	28.00	18.62
26	1522.22	1060.89	1630.93	1027.93	106.83	104.78	59.68	34.76	30.28	19.15
25	1522.22	1060.89	1630.93	1027.93	133.77	129.47	65.72	39.28	31.08	19.73
24	1522.22	1060.89	1630.93	1027.93	161.78	154.27	81.72	43.70	38.84	20.24
23	1522.22	1060.89	1630.93	1027.93	190.75	179.74	98.00	48.04	46.20	20.67
22	1523.60	1060.89	1632.49	1027.93	220.55	205.24	104.04	52.34	47.32	20.86
21	1523.60	1060.89	1632.49	1027.93	250.91	230.78	111.92	57.43	52.40	22.94

20	1523.60	1060.89	1632.49	1027.93	281.30	256.24	117.68	61.56	43.28	21.40
19	2017.94	1287.42	1632.49	1172.04	317.40	283.16	122.52	62.70	52.56	27.00
18	2020.92	1279.29	1632.49	1171.60	353.40	310.43	129.04	68.76	57.68	27.32
17	2020.92	1279.29	1632.49	1171.60	389.78	337.54	134.64	71.92	61.12	19.31
16	2020.92	1279.29	1632.49	1171.60	426.80	364.78	140.28	75.27	140.04	92.47
15	2023.67	1279.29	1633.74	1171.60	464.45	388.46	143.88	78.29	174.48	125.94
14	2023.67	1279.29	1633.74	1171.60	502.73	412.10	154.56	80.93	149.04	91.69
13	2023.67	1279.29	1633.74	1171.60	541.54	439.50	169.48	84.00	80.80	18.73
12	2023.67	1279.29	1633.74	1171.60	580.73	466.26	169.40	86.65	76.44	25.44
11	2023.67	1279.29	1633.74	1171.60	619.92	492.66	173.92	90.68	83.56	28.33
10	2023.67	1279.29	1633.74	1171.60	658.47	518.43	175.36	91.14	60.92	22.44
9	2454.63	1487.19	1633.74	1171.60	701.82	545.77	174.24	86.86	68.68	30.36
8	2442.68	1473.17	1635.63	1171.60	744.26	572.76	178.04	92.91	72.76	28.98
7	2442.68	1473.17	1635.63	1171.60	786.50	599.08	179.40	94.00	68.52	27.23
6	2442.68	1473.17	1635.63	1171.60	828.70	624.64	181.12	95.91	64.72	25.40
5	2442.68	1473.17	1635.63	1171.60	870.78	649.36	180.04	97.37	59.80	23.44
4	2442.68	1473.17	1635.63	1171.60	912.41	673.14	188.68	99.77	58.28	20.55
3	2442.68	1473.17	1635.63	1171.60	952.80	696.10	200.36	102.54	59.76	19.70
2	2442.68	1473.17	1635.63	1171.60	990.45	718.04	192.00	107.88	54.76	12.87
1	2442.68	1473.17	1635.63	1171.60	1021.78	739.05	180.20	118.35	120.44	50.97

Tabel 6.8 Rekapitulasi Gaya Pada Kolom K4

Lantai	Momen, Mu,k (K-in)				Pu,k (Kips)		Geser, Vu,k (Kips)			
	OF		BOF				OF		BOF	
	Mu x	Mu y	Mu x	Mu y	OF	BOF	Vu x	Vu y	Vu x	Vu y
30	1202.36	1283.87	601.75	694.19	10.28	7.26	16.51	36.03	38.92	18.65
29	1844.84	1422.86	572.80	1554.02	35.83	282.58	25.65	40.01	31.52	26.18
28	1822.57	1422.33	572.80	1543.64	62.39	273.61	30.87	51.35	8.82	3.86
27	1822.57	1422.33	572.80	1543.64	90.16	285.33	37.01	61.21	9.72	6.91
26	1822.57	1422.33	572.80	1543.64	119.18	290.48	42.46	70.97	10.49	7.21
25	1822.57	1422.33	572.80	1543.64	149.42	287.46	48.68	80.65	11.52	7.31
24	1822.57	1422.33	572.80	1543.64	180.67	276.90	50.16	88.12	11.97	7.74
23	2087.67	1422.33	572.80	1543.64	212.71	259.19	51.28	95.11	12.02	8.22
22	2090.51	1422.33	573.57	1543.64	245.56	234.73	56.30	102.98	13.07	7.89
21	2090.51	1422.33	573.57	1543.64	279.15	255.50	61.28	111.60	15.50	9.38
20	2090.51	1422.33	573.57	1543.64	313.24	350.52	62.18	112.38	10.16	7.20
19	2137.75	1883.82	573.57	1543.64	349.81	451.68	66.22	118.32	12.65	8.43
18	2135.22	1886.60	573.57	1543.64	386.72	556.19	69.71	123.29	13.67	9.31
17	2135.22	1886.60	573.57	1543.64	424.21	664.43	73.57	129.73	16.99	3.84
16	2135.22	1886.60	573.57	1543.64	462.21	781.68	77.24	135.03	67.56	47.73
15	2140.08	1886.60	574.45	1543.64	500.51	847.05	81.14	140.57	140.52	76.90
14	2140.08	1886.60	574.45	1543.64	538.70	529.62	85.05	143.22	74.46	53.73

13	2528.58	1886.60	759.08	1543.64	581.58	615.99	82.50	136.32	20.55	3.89
12	2502.33	1886.60	753.37	1543.64	624.11	749.00	88.98	144.78	18.01	8.36
11	2502.33	1886.60	753.37	1543.64	666.57	881.80	92.24	146.89	22.60	11.02
10	2502.33	1886.60	753.37	1543.64	708.74	1014.50	91.37	152.79	8.30	5.97
9	2876.06	2288.37	753.37	1543.64	753.20	1150.15	92.98	165.30	13.81	8.89
8	2885.91	2273.09	756.57	1543.64	797.36	1283.87	94.71	163.43	14.09	9.20
7	2885.91	2273.09	756.57	1543.64	841.54	1420.94	97.12	167.07	14.23	7.91
6	2885.91	2273.09	756.57	1543.64	885.69	1562.83	99.16	168.75	13.34	7.21
5	2885.91	2273.09	756.57	1543.64	929.55	1708.86	102.21	170.83	13.01	6.06
4	2885.91	2273.09	756.57	1543.64	972.44	1859.05	102.58	170.82	13.22	5.14
3	3258.29	2273.09	756.57	1543.64	1015.88	2014.73	96.04	159.12	13.91	5.10
2	3255.66	2273.09	756.57	1543.64	1056.08	2173.03	107.62	165.47	15.50	3.39
1	3255.66	2273.09	756.57	1543.64	1089.92	2338.33	111.78	167.38	70.26	19.52

Tabel 6.9 Rekapitulasi Gaya Pada Kolom K5

Lantai	Momen, Mu,k (K-in)				Pu,k (Kips)		Geser, Vu,k (Kips)			
	OF		BOF				OF		BOF	
	Mu x	Mu y	Mu x	Mu y	OF	BOF	Vu x	Vu y	Vu x	Vu y
30	2408.53	1486.97	1203.97	694.19	14.99	4.58	30.59	32.63	40.37	28.90
29	3693.87	2120.21	1145.83	2086.30	52.95	19.11	45.07	42.73	53.40	42.21
28	3649.27	2121.78	1145.83	2055.87	90.88	51.20	53.99	54.41	30.59	10.63
27	3649.27	2121.78	1145.83	2055.87	128.82	83.47	65.22	65.51	32.03	14.70
26	3649.27	2121.78	1145.83	2055.87	166.79	115.74	75.50	76.31	34.64	15.49
25	3649.27	2121.78	1145.83	2055.87	204.80	148.07	86.39	86.85	37.20	16.18
24	3649.27	2121.78	1145.83	2055.87	242.86	180.44	90.55	95.88	39.48	17.10
23	4180.07	2121.78	1145.83	2055.87	280.93	212.89	93.85	104.18	41.20	17.91
22	4187.68	2121.78	1147.59	2055.87	319.06	245.36	102.57	113.77	43.74	18.23
21	4187.68	2121.78	1147.59	2055.87	357.28	277.95	109.56	119.29	47.98	20.49
20	4187.68	2121.78	1147.59	2055.87	395.55	310.38	116.73	137.24	42.17	19.13
19	4282.32	2574.83	1147.59	2344.08	433.19	341.73	124.90	155.62	46.87	23.29
18	4277.25	2558.58	1147.59	2343.19	470.91	373.56	130.35	159.95	52.29	24.21
17	4277.25	2558.58	1147.59	2343.19	508.78	405.45	136.33	167.89	57.50	19.53
16	4277.25	2558.58	1147.59	2343.19	546.78	438.00	142.02	174.39	105.79	77.81
15	4287.00	2558.58	1148.91	2343.19	584.95	453.22	145.67	181.94	144.02	116.19
14	4287.00	2558.58	1148.91	2343.19	623.28	487.44	153.89	182.67	118.11	86.25
13	5065.23	2558.58	1518.15	2343.19	661.35	520.75	167.46	188.01	66.24	18.65
12	5012.65	2558.58	1506.73	2343.19	699.61	554.72	167.02	192.18	63.48	23.56
11	5012.65	2558.58	1506.73	2343.19	738.05	589.22	171.14	194.81	69.45	27.33
10	5012.65	2558.58	1506.73	2343.19	776.69	623.91	173.59	203.69	52.82	21.74
9	5761.30	2558.58	1506.73	2343.19	815.10	658.23	176.44	211.00	57.51	28.01
8	5787.69	2946.34	1508.76	2343.19	853.72	694.55	178.85	212.93	66.70	29.77
7	5787.69	2946.34	1508.76	2343.19	892.66	730.41	180.96	215.61	63.08	27.27
6	5787.69	2946.34	1508.76	2343.19	738.05	589.22	182.52	217.50	62.30	26.30

5	5787.69	2946.34	1508.76	2343.19	971.47	803.15	183.43	219.72	60.78	24.79
4	5787.69	2946.34	1508.76	2343.19	1011.39	840.25	180.16	215.69	60.07	22.60
3	6534.48	2946.34	1508.76	2343.19	1051.60	878.38	180.17	217.36	62.96	22.40
2	6529.21	2946.34	1508.76	2343.19	1092.11	916.91	173.40	210.47	64.35	16.69
1	6529.21	2946.34	1508.76	2343.19	1133.02	956.64	159.59	201.94	115.23	50.27

Tabel 6.10 Rekapitulasi Gaya Pada Kolom K6

Lantai	Momen, Mu,k (K-in)				Pu,k (Kips)		Geser, Vu,k (Kips)			
	OF		BOF				OF		BOF	
	Mu x	Mu y	Mu x	Mu y	OF	BOF	Vu x	Vu y	Vu x	Vu y
30	2408.53	1486.97	1203.97	694.19	15.74	6.61	34.64	25.25	11.04	34.80
29	3693.87	2120.21	1145.83	2086.30	55.12	2.62	49.96	35.56	74.48	47.93
28	3649.27	2121.78	1145.83	2055.87	94.47	41.32	58.36	45.05	54.04	16.73
27	3649.27	2121.78	1145.83	2055.87	133.83	79.99	69.68	54.52	56.88	21.26
26	3649.27	2121.78	1145.83	2055.87	173.22	118.66	79.88	63.59	61.08	22.54
25	3649.27	2121.78	1145.83	2055.87	212.62	157.34	90.76	72.33	64.88	23.82
24	3649.27	2121.78	1145.83	2055.87	252.06	196.04	94.88	80.71	68.92	25.04
23	4180.07	2121.78	1145.83	2055.87	291.48	234.70	98.12	88.61	72.16	26.03
22	4187.68	2121.78	1147.59	2055.87	330.95	273.41	106.80	96.53	75.24	26.82
21	4187.68	2121.78	1147.59	2055.87	370.46	312.17	113.72	101.81	79.80	29.13
20	4187.68	2121.78	1147.59	2055.87	410.00	351.00	121.00	114.80	73.48	29.01
19	4282.32	2574.83	1147.59	2344.08	449.12	389.68	129.76	127.79	79.92	35.56
18	4277.25	2558.58	1147.59	2343.19	488.28	428.27	134.88	132.05	90.04	36.60
17	4277.25	2558.58	1147.59	2343.19	527.52	466.94	140.84	138.54	90.76	29.19
16	4277.25	2558.58	1147.59	2343.19	566.83	505.82	146.36	144.19	144.48	105.97
15	4283.09	2558.58	1148.91	2343.19	606.22	521.04	149.80	150.23	100.00	139.41
14	4283.09	2558.58	1148.91	2343.19	645.71	544.30	158.36	153.62	151.68	106.04
13	5060.62	2558.58	1518.15	2343.19	685.23	583.31	172.84	161.45	105.08	29.26
12	5008.09	2558.58	1506.73	2343.19	724.84	622.49	171.92	164.29	102.08	35.63
11	5008.09	2558.58	1506.73	2343.19	764.55	661.83	175.68	167.25	107.20	38.78
10	5008.09	2558.58	1506.73	2343.19	804.36	701.35	177.84	172.61	88.64	34.11
9	5756.05	2974.38	1506.73	2343.19	844.03	740.83	180.80	176.83	92.08	44.06
8	5787.69	2946.34	1509.63	2343.19	883.82	780.39	182.60	179.01	105.96	44.83
7	5787.69	2946.34	1509.63	2343.19	923.76	820.11	184.32	181.23	94.92	40.94
6	5787.69	2946.34	1509.63	2343.19	963.85	860.06	185.40	183.04	89.68	38.54
5	5787.69	2946.34	1509.63	2343.19	1004.09	900.23	185.80	184.82	81.72	35.41
4	5787.69	2946.34	1509.63	2343.19	1044.50	940.62	182.00	183.57	75.92	30.96
3	6534.48	2946.34	1509.63	2343.19	1085.06	981.23	181.80	187.46	74.04	29.20
2	6529.21	2946.34	1509.63	2343.19	1125.78	1022.03	174.36	181.56	63.52	19.85
1	6529.21	2946.34	1509.63	2343.19	1166.69	1063.20	159.88	172.58	111.52	67.04

6.2.2 Perencanaan Kolom Terhadap Kombinasi Momen Lentur dan Gaya Aksial Kolom

Pada hitungan manual ini digunakan kolom 2 lantai 4 seperti berikut ini

Nilai Mux, Muy dan Pu seperti Tabel 6.6 dengan nilai sebagai berikut:

Mux = 2628,01 Kips-in

Muy = 1171,60 Kips-in

Pu = 742,91 Kips

Profil Balok (B1) lantai 4 adalah W18x40 (d = 17,9 in; I = 612 in^4 ;Zx = 78,4 in^3)

Profil Balok (B4) lantai 4 adalah W16X40 (d =16 in; I = 518 in^4 ;Zx = 73 in^3)

Profil Kolom yang digunakan adalah W14X193 dengan data sebagai berikut:

A	=	56,8 in^2	I_x	=	2400 in^4	F_y	= 36 Ksi
d	=	15,5 in	I_y	=	931 in^4	J	= 79,1 Ksi
t_w	=	0,89 in	S_x	=	309,677 in^3	Cw	= 50460,16 in^6
b_f	=	15,7 in	S_y	=	118,599 in^3	G	= 11200 Ksi
t_f	=	1,44 in	Z_x	=	355 in^3	Fr	= 10 Ksi
r_x	=	6,5 in	Z_y	=	180 in^3		
r_y	=	4,049 in	E_s	=	29000 Ksi		

Cek kompak penampang, $\lambda \leq \lambda_p$.

$$\text{Kontrolsayap, } \lambda_s = \frac{bf}{2tf} = \frac{15,7}{2.1,44} = 5,451 < \lambda_{ps} = \frac{65}{\sqrt{f_y(ksi)}} = \frac{65}{\sqrt{36}} = 10,8 \text{ (Pers3.47)}$$

$$\text{Kontrol badan, } \lambda_b = \frac{h_c}{t_w} = 12,62 < \lambda_{pb} = \frac{640}{\sqrt{f_y(ksi)}} = \frac{640}{\sqrt{36}} = 106,667 \quad \text{(Pers 3.48)}$$

Menentukan nilai kondisi ujung *(end condition)* join kolom

$$G_A = \frac{\sum\left(\frac{I}{L}\right)_c}{\sum\left(\frac{I}{L}\right)_b} = \frac{\left(\frac{2400}{147,638} + \frac{2400}{147,638}\right)}{\left(\frac{612}{275,59} + \frac{612}{275,59}\right)} = 7,32 \quad \text{(Pers 3.49)}$$

$$G_B = \frac{\sum\left(\frac{I}{L}\right)_c}{\sum\left(\frac{I}{L}\right)_b} = \frac{\left(\frac{2400}{147,638} + \frac{2400}{147,638}\right)}{\left(\frac{612}{275,59} + \frac{612}{275,59}\right)} = 7,32 \quad \text{(Pers 3.49)}$$

Dari nomogram untuk portal tidak bergoyang *Johnson dan moreland* diperoleh $k_x = 0{,}952$

$$G_A = \frac{\sum\left(\frac{I}{L}\right)_c}{\sum\left(\frac{I}{L}\right)_b} = \frac{\left(\frac{931}{147{,}638} + \frac{931}{147{,}638}\right)}{\left(\frac{518}{275{,}59}\right)} = 3{,}355 \qquad \text{(Pers 3.49)}$$

$$G_B = \frac{\sum\left(\frac{I}{L}\right)_c}{\sum\left(\frac{I}{L}\right)_b} = \frac{\left(\frac{931}{147{,}638} + \frac{931}{147{,}638}\right)}{\left(\frac{518}{275{,}59}\right)} = 3{,}355 \qquad \text{(Pers 3.49)}$$

Dari nomogram untuk portal tidak bergoyang *Johnson dan moreland* diperoleh $k_y = 0{,}96$

Menentukan nilai parameter kelangsingan kolom :

$$\lambda_x = \frac{k_x.L}{\pi.r_x}\sqrt{\frac{f_y}{E}} = \frac{0{,}952.147{,}638}{\pi.6{,}5}\sqrt{\frac{36}{29000}} = 0{,}243 \qquad \text{(Pers 3.50)}$$

$$\lambda_y = \frac{k_x.L}{\pi.r_y}\sqrt{\frac{f_y}{E}} = \frac{0{,}96.147{,}638}{\pi.4{,}049}\sqrt{\frac{36}{29000}} = 0{,}392 \qquad \text{(Pers3.50)}$$

Diambil λ_c adalah λ terbesar = 0,392 ; karena $\lambda_c < 1{,}5$ maka:

$$Fcr = \left(0{,}658^{\lambda c^2}\right)fy = \left(0{,}658^{0{,}392^2}\right)36 = 33{,}748 \text{ Ksi} \qquad \text{(Pers 3.51)}$$

$$\varphi c.Pn = \varphi c.Ag.Fcr = 0{,}85.56{,}8.33{,}748 = 1629{,}4 \text{ Kips} \qquad \text{(Pers 3.53)}$$

$\phi Pn = 1629{,}4$ Kips

$$L_p = 300.r_y.\frac{1}{\sqrt{F_y(ksi)}} = 300.4{,}049.\frac{1}{\sqrt{36}} = 202{,}43 \text{ in} \qquad \text{(Pers 3.19)}$$

$$X_1 = \frac{\pi}{S_x}\sqrt{\frac{E.G.J.A}{2}} = \frac{\pi}{309{,}677}\sqrt{\frac{29000.11200.79{,}1.56{,}8}{2}} \qquad \text{(Pers 3.24)}$$

$= 5745$ Ksi

$$X_2 = 4.\frac{C_w}{I_y}\left(\frac{S_x}{G.J}\right)^2 = 4.\frac{50460{,}16}{931}\left(\frac{309{,}677}{11200.79{,}1}\right)^2 \qquad \text{(Pers 3.25)}$$

$= 1{,}369\text{x}10^{-4}$ Ksi

$F_l = Fy - Fr = 36 - 10 = 26$ Ksi (Pers 3.23)

$$L_r = \frac{r_y.X_1}{F_l}.\sqrt{1+\sqrt{1+X_2.F_l^2}} = \frac{4{,}049.5745}{26}\sqrt{1+\sqrt{1+0{,}0001369.26^2}} \qquad \text{(Pers3.22)}$$

$= 1279{,}32$ in

Karena $L_b \leq L_p$ maka Mn ditentukan dengan persamaan:

Mn = Mp =Zx.Fy =355.36 = 12780 K-in (Pers 3.41)

ϕM_n =0,9.12780

= 11502 K-in

Kontrol rasio beban aksial tekan Pu dengan kapasitas tekan nominal :

$$\frac{P_u}{\varphi P_n} = \frac{742{,}91}{1629{,}4} = 0{,}456 > 0{,}2 \text{ maka:}$$

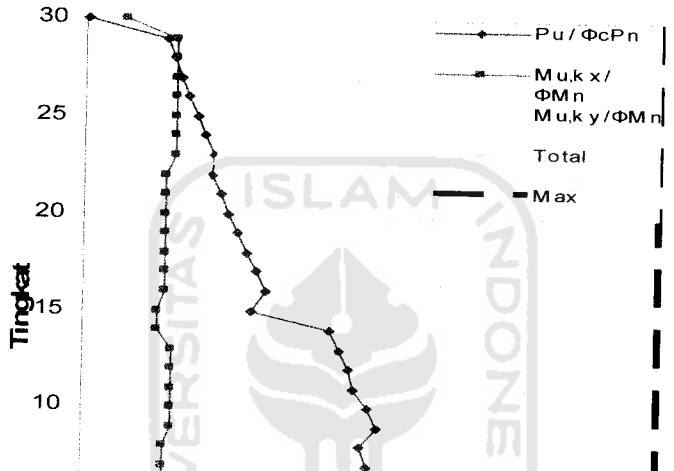
$$\frac{P_u}{\varphi P_n} + \frac{8}{9}\left(\frac{M_{ux}}{\varphi_b M_{nx}} + \frac{M_{uy}}{\varphi_b M_{ny}}\right) \leq 1{,}0 \qquad \text{(Pers 3.55)}$$

$$\frac{742{,}9}{1629{,}4} + \frac{8}{9}\left(\frac{2628{,}01}{11502} + \frac{1171{,}60}{5832}\right) = 0{,}456 + 0{,}381 = 0{,}837 \leq 1{,}0 \rightarrow OK!$$

Tabel 6.11 Interaksi Aksial-Momen Kolom K1

	Kuat Nominal						Pu/ΦPn		Mu,x/ΦMn,x		Mu,y/ΦMn,y		Rasio Total	
	OF			BOF										
Lt	ΦPn	ΦMn, x	ΦMn,y	ΦPn	ΦMn, x	ΦMn,y	OF	BOF	OF	BOF	OF	BOF	OF	BOF
30	1108	7581.6	3661.2	913.37	6220.8	3003	0.01	0.00	0.08	0.07	0.18	0.12	0.26	0.19
29	1226	8424	4309.2	1004.8	6868.8	3305	0.01	0.14	0.13	0.16	0.17	0.24	0.30	0.47
28	1223	8424	4309.2	1002.6	6868.8	3305	0.02	0.15	0.13	0.16	0.17	0.23	0.31	0.47
27	1223	8424	4309.2	1002.6	6868.8	3305	0.03	0.17	0.13	0.16	0.17	0.23	0.31	0.48
26	1223	8424	4309.2	1002.4	6868.8	3305	0.04	0.18	0.13	0.16	0.17	0.23	0.32	0.48
25	1223	8424	4309.2	1002.3	6868.8	3305	0.05	0.20	0.13	0.16	0.17	0.23	0.32	0.49
24	1223	8424	4309.2	1002.3	6868.8	3305	0.06	0.21	0.13	0.16	0.17	0.23	0.33	0.56
23	1223	8424	4309.2	1002.3	6868.8	3305	0.07	0.23	0.16	0.16	0.17	0.23	0.36	0.58
22	1630	11502	5832	1102.1	7581.6	3661	0.06	0.22	0.12	0.14	0.12	0.21	0.27	0.54
21	1630	11502	5832	1102.1	7581.6	3661	0.07	0.24	0.12	0.14	0.12	0.21	0.27	0.55
20	1630	11502	5832	1101.9	7581.6	3661	0.07	0.25	0.12	0.14	0.12	0.21	0.27	0.57
19	1630	11502	5832	1101.9	7581.6	3661	0.08	0.27	0.13	0.14	0.16	0.21	0.34	0.58
18	1630	11502	5832	1101.7	7581.6	3661	0.09	0.28	0.13	0.14	0.16	0.21	0.34	0.60
17	1629	11502	5832	1101.5	7581.6	3661	0.09	0.30	0.13	0.14	0.16	0.21	0.34	0.62
16	1629	11502	5832	1101.5	7581.6	3661	0.10	0.32	0.13	0.14	0.16	0.21	0.35	0.63
15	1001	6868.8	3304.8	1222.1	8424	4309	0.18	0.30	0.22	0.13	0.29	0.18	0.60	0.57
14	1001	6868.8	3304.8	1222.1	8424	4309	0.19	0.43	0.22	0.13	0.29	0.18	0.60	0.71
13	1001	6868.8	3304.8	1221.9	8424	4309	0.19	0.45	0.27	0.16	0.29	0.18	0.65	0.75

12	1001	6868.8	3304.8	1221.7	8424	4309	0.20	0.47	0.26	0.16	0.29	0.18	0.69	0.76
11	1019	6868.8	3304.8	1240.6	8424	4309	0.20	0.48	0.26	0.16	0.29	0.18	0.69	0.77
10	1002	6868.8	3304.8	1222.6	8424	4309	0.22	0.50	0.26	0.16	0.29	0.18	0.70	0.80
9	1002	6868.8	3304.8	1222.6	8424	4309	0.23	0.52	0.30	0.16	0.29	0.18	0.75	0.81
8	1968	14126	7160.4	1337.8	9298.8	4730	0.12	0.49	0.15	0.14	0.16	0.16	0.37	0.76
7	1968	14126	7160.4	1337.6	9298.8	4730	0.12	0.50	0.15	0.14	0.16	0.16	0.37	0.77
6	1968	14126	7160.4	1337.6	9298.8	4730	0.13	0.52	0.15	0.14	0.16	0.16	0.37	0.79
5	1968	14126	7160.4	1337.4	9298.8	4730	0.13	0.53	0.15	0.14	0.16	0.16	0.37	0.80
4	1968	14126	7160.4	1337.4	9298.8	4730	0.14	0.54	0.15	0.14	0.16	0.16	0.38	0.81
3	1967	14126	7160.4	1337.3	9298.8	4730	0.14	0.56	0.19	0.14	0.16	0.16	0.42	0.83
2	1967	14126	7160.4	1337.1	9298.8	4730	0.14	0.57	0.19	0.14	0.16	0.16	0.42	0.84
1	1996	14126	7160.4	1357.5	9298.8	4730	0.14	0.57	0.19	0.14	0.16	0.16	0.42	0.84

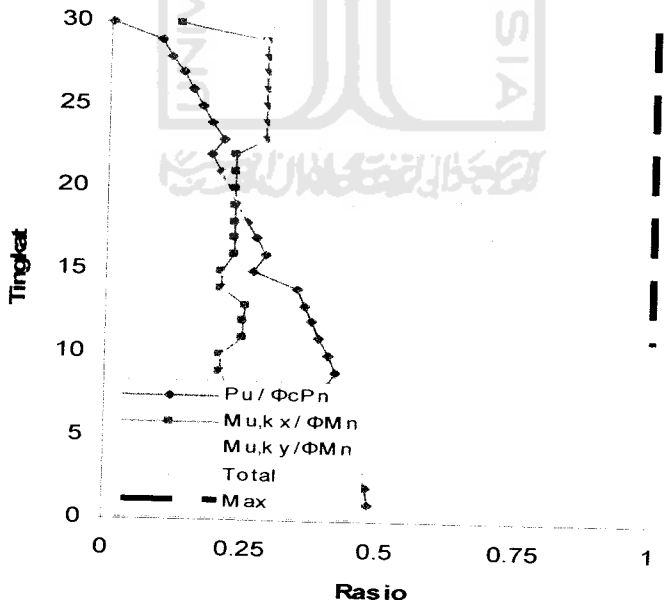


Grafik 6.1 Interaksi rasio kolom 1 (K1) Struktur *Frame Truss*

Tabel 6.12 Interaksi Aksial-Momen Kolom K2

	Kuat Nominal						Pu/ΦPn		Mu,x/ΦMn,x		Mu,y/ΦMn,y		Rasio Total	
	OF			BOF										
Lt	ΦPn	ΦMn, x	ΦMn,y	ΦPn	ΦMn, x	ΦMn,y	OF	BOF	OF	BOF	OF	BOF	OF	BOF
30	1233.7	8424	4309.2	1012.3	6868.8	3305	0.01	0.01	0.14	0.13	0.17	0.11	0.32	0.24
29	1640.1	11502	5832	1110	7581.6	3661	0.02	0.10	0.19	0.29	0.18	0.28	0.38	0.62
28	1640.1	11502	5832	1110	7581.6	3661	0.03	0.11	0.19	0.29	0.18	0.28	0.39	0.62
27	1639.9	11502	5832	1109.8	7581.6	3661	0.05	0.13	0.19	0.29	0.18	0.28	0.40	0.63
26	1640.1	11502	5832	1110	7581.6	3661	0.06	0.15	0.19	0.29	0.18	0.28	0.40	0.64

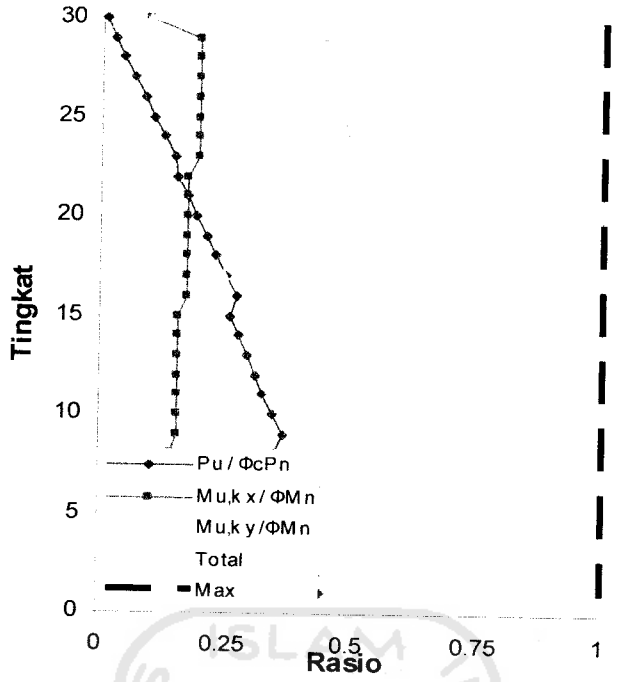
25	1640.1	11502	5832	1110	7581.6	3661	0.08	0.17	0.19	0.29	0.18	0.28	0.41	0.65
24	1639.7	11502	5832	1109.6	7581.6	3661	0.10	0.19	0.19	0.29	0.18	0.28	0.42	0.66
23	1639.5	11502	5832	1109.5	7581.6	3661	0.11	0.21	0.23	0.29	0.18	0.28	0.47	0.71
22	1790.7	12636	6415.2	1345.9	9298.8	4730	0.12	0.19	0.21	0.23	0.17	0.22	0.44	0.55
21	1790.7	12636	6415.2	1345.9	9298.8	4730	0.14	0.21	0.21	0.23	0.17	0.22	0.44	0.61
20	1790.7	12636	6415.2	1345.9	9298.8	4730	0.16	0.22	0.21	0.23	0.17	0.22	0.45	0.62
19	1790.5	12636	6415.2	1345.7	9298.8	4730	0.18	0.24	0.24	0.23	0.20	0.25	0.53	0.67
18	1790	12636	6415.2	1345.4	9298.8	4730	0.20	0.26	0.24	0.23	0.20	0.25	0.54	0.68
17	1781.3	12636	6415.2	1338.5	9298.8	4730	0.22	0.27	0.24	0.23	0.20	0.25	0.61	0.70
16	1781.3	12636	6415.2	1338.5	9298.8	4730	0.24	0.29	0.24	0.23	0.20	0.25	0.63	0.72
15	1968	14126	7160.4	1484.7	10368	5281	0.24	0.27	0.22	0.21	0.18	0.22	0.59	0.66
14	1968	14126	7160.4	1484.7	10368	5281	0.26	0.35	0.22	0.21	0.18	0.22	0.61	0.73
13	1968	14126	7160.4	1484.7	10368	5281	0.28	0.37	0.26	0.26	0.18	0.22	0.67	0.79
12	1968	14126	7160.4	1484.7	10368	5281	0.30	0.38	0.26	0.25	0.18	0.22	0.69	0.80
11	1994.3	14126	7160.4	1505.3	10368	5281	0.32	0.39	0.26	0.25	0.18	0.22	0.70	0.81
10	1979.7	14126	7160.4	1493.8	10368	5281	0.34	0.41	0.22	0.21	0.18	0.22	0.69	0.79
9	1979.4	14126	7160.4	1493.6	10368	5281	0.36	0.42	0.22	0.21	0.21	0.22	0.74	0.81
8	2186	15779	7970.4	1638.6	11502	5832	0.35	0.40	0.27	0.23	0.18	0.20	0.75	0.78
7	2175.6	15779	7970.4	1630.5	11502	5832	0.37	0.42	0.27	0.23	0.18	0.20	0.77	0.80
6	2175.6	15779	7970.4	1630.5	11502	5832	0.39	0.43	0.27	0.23	0.18	0.20	0.79	0.81
5	2174.2	15779	7970.4	1629.4	11502	5832	0.41	0.44	0.27	0.23	0.18	0.20	0.81	0.82
4	2174.2	15779	7970.4	1629.4	11502	5832	0.43	0.46	0.27	0.23	0.18	0.20	0.83	0.84
3	2174.2	15779	7970.4	1629.4	11502	5832	0.45	0.47	0.34	0.23	0.18	0.20	0.92	0.85
2	2174.2	15779	7970.4	1629.4	11502	5832	0.47	0.48	0.34	0.23	0.18	0.20	0.93	0.86
1	2202.8	15779	7970.4	1651.7	11502	5832	0.48	0.49	0.34	0.23	0.18	0.20	0.94	0.87



Grafik 6.2 Interaksi rasio kolom 2 (K2) Struktur *Frame truss*

Tabel 6.13 Interaksi Aksial-Momen Kolom K3

Lt	Kuat Nominal						Pu/ΦPn		Mu,x/ΦMn,x		Mu,y/ΦMn,y		Rasio Total	
	OF			BOF										
	ΦPn	ΦMn, x	ΦMn,y	ΦPn	ΦMn, x	ΦMn,y	OF	BOF	OF	BOF	OF	BOF	OF	BOF
30	1223.9	8424	4309.2	1103.3	7581.6	3661	0.01	0.01	0.16	0.10	0.17	0.09	0.34	0.20
29	1631.1	11502	5832	1223.6	8424	4309	0.02	0.03	0.13	0.19	0.18	0.24	0.32	0.45
28	1630.9	11502	5832	1223.4	8424	4309	0.03	0.05	0.13	0.19	0.18	0.24	0.33	0.45
27	1630.9	11502	5832	1223.4	8424	4309	0.05	0.07	0.13	0.19	0.18	0.24	0.34	0.46
26	1630.9	11502	5832	1223.4	8424	4309	0.07	0.09	0.13	0.19	0.18	0.24	0.35	0.47
25	1630.7	11502	5832	1223.2	8424	4309	0.08	0.11	0.13	0.19	0.18	0.24	0.36	0.49
24	1630.5	11502	5832	1223.1	8424	4309	0.10	0.13	0.13	0.19	0.18	0.24	0.36	0.50
23	1630.5	11502	5832	1223.1	8424	4309	0.12	0.15	0.13	0.19	0.18	0.24	0.37	0.51
22	1781.3	12636	6415.2	1338.5	9298.8	4730	0.12	0.15	0.12	0.18	0.17	0.22	0.35	0.47
21	1781	12636	6415.2	1338.4	9298.8	4730	0.14	0.17	0.12	0.18	0.17	0.22	0.36	0.48
20	1781	12636	6415.2	1338.4	9298.8	4730	0.16	0.19	0.12	0.18	0.17	0.22	0.36	0.49
19	1781	12636	6415.2	1338.4	9298.8	4730	0.18	0.21	0.16	0.18	0.20	0.25	0.45	0.59
18	1780.8	12636	6415.2	1338.2	9298.8	4730	0.20	0.23	0.16	0.18	0.20	0.25	0.46	0.61
17	1780.8	12636	6415.2	1338.2	9298.8	4730	0.22	0.25	0.16	0.18	0.20	0.25	0.54	0.63
16	1780.6	12636	6415.2	1338	9298.8	4730	0.24	0.27	0.16	0.18	0.20	0.25	0.56	0.65
15	1968.3	14126	7160.4	1484.9	10368	5281	0.24	0.26	0.14	0.16	0.18	0.22	0.52	0.60
14	1968.5	14126	7160.4	1485.1	10368	5281	0.26	0.28	0.14	0.16	0.18	0.22	0.54	0.61
13	1968.3	14126	7160.4	1484.9	10368	5281	0.28	0.30	0.14	0.16	0.18	0.22	0.56	0.63
12	1968	14126	7160.4	1484.7	10368	5281	0.30	0.31	0.14	0.16	0.18	0.22	0.58	0.65
11	1994.5	14126	7160.4	1505.5	10368	5281	0.31	0.33	0.14	0.16	0.18	0.22	0.60	0.66
10	1969	14126	7160.4	1485.5	10368	5281	0.33	0.35	0.14	0.16	0.18	0.22	0.62	0.69
9	1969	14126	7160.4	1485.5	10368	5281	0.36	0.37	0.17	0.16	0.21	0.22	0.70	0.70
8	2175	15779	7970.4	1630	11502	5832	0.34	0.35	0.15	0.14	0.18	0.20	0.64	0.66
7	2175	15779	7970.4	1630	11502	5832	0.36	0.37	0.15	0.14	0.18	0.20	0.66	0.67
6	2174.8	15779	7970.4	1629.8	11502	5832	0.38	0.38	0.15	0.14	0.18	0.20	0.68	0.69
5	2174.5	15779	7970.4	1629.6	11502	5832	0.40	0.40	0.15	0.14	0.18	0.20	0.70	0.70
4	2174.8	15779	7970.4	1629.8	11502	5832	0.42	0.41	0.15	0.14	0.18	0.20	0.72	0.72
3	2174.5	15779	7970.4	1629.6	11502	5832	0.44	0.43	0.15	0.14	0.18	0.20	0.74	0.73
2	2174.2	15779	7970.4	1629.4	11502	5832	0.46	0.44	0.15	0.14	0.18	0.20	0.76	0.75
1	2203	15779	7970.4	1651.9	11502	5832	0.46	0.45	0.15	0.14	0.18	0.20	0.77	0.75

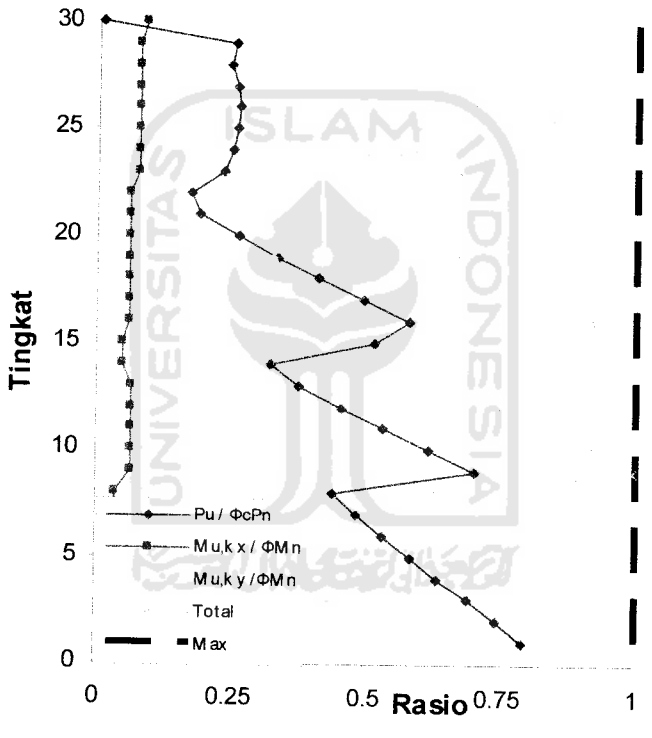


Grafik 6.3 Interaksi rasio kolom 3 (K3) Struktur *Frame Truss*

Tabel 6.14 Interaksi Aksial-Momen Kolom K4

Lt	Kuat Nominal						Pu/ΦPn		Mu,x/ΦMn,x		Mu,y/ΦMn,y		Rasio Total	
	OF			BOF										
	ΦPn	ΦMn, x	ΦMn,y	ΦPn	ΦMn, x	ΦMn,y	OF	BOF	OF	BOF	OF	BOF	OF	BOF
30	1240	8424	4309.2	1018.1	6868.8	3305	0.01	0.01	0.14	0.09	0.30	0.21	0.44	0.30
29	1639	11502	5832	1109.1	7581.6	3661	0.02	0.25	0.16	0.08	0.24	0.42	0.42	0.70
28	1638.8	11502	5832	1109	7581.6	3661	0.04	0.25	0.16	0.08	0.24	0.42	0.42	0.69
27	1638.6	11502	5832	1108.8	7581.6	3661	0.06	0.26	0.16	0.08	0.24	0.42	0.43	0.70
26	1638	11502	5832	1108.3	7581.6	3661	0.07	0.26	0.16	0.08	0.24	0.42	0.44	0.70
25	1637.8	11502	5832	1108.1	7581.6	3661	0.09	0.26	0.16	0.08	0.24	0.42	0.45	0.70
24	1637.6	11502	5832	1108	7581.6	3661	0.11	0.25	0.16	0.08	0.24	0.42	0.46	0.69
23	1637.4	11502	5832	1107.8	7581.6	3661	0.13	0.23	0.18	0.08	0.24	0.42	0.49	0.68
22	1787.1	12636	6415.2	1343.1	9298.8	4730	0.14	0.17	0.17	0.06	0.22	0.33	0.46	0.48
21	1784.8	12636	6415.2	1341.3	9298.8	4730	0.16	0.19	0.17	0.06	0.22	0.33	0.47	0.48
20	1784.8	12636	6415.2	1341.3	9298.8	4730	0.18	0.26	0.17	0.06	0.22	0.33	0.47	0.61
19	1784.8	12636	6415.2	1341.3	9298.8	4730	0.20	0.34	0.17	0.06	0.29	0.33	0.56	0.68
18	1783.6	12636	6415.2	1340.4	9298.8	4730	0.22	0.41	0.17	0.06	0.29	0.33	0.63	0.76
17	1782.4	12636	6415.2	1339.5	9298.8	4730	0.24	0.50	0.17	0.06	0.29	0.33	0.65	0.84
16	1782.2	12636	6415.2	1339.3	9298.8	4730	0.26	0.58	0.17	0.06	0.29	0.33	0.67	0.93
15	1969.8	14126	7160.4	1630.9	11502	5832	0.25	0.52	0.15	0.05	0.26	0.26	0.62	0.80
14	1969.6	14126	7160.4	1630.7	11502	5832	0.27	0.32	0.15	0.05	0.26	0.26	0.64	0.60

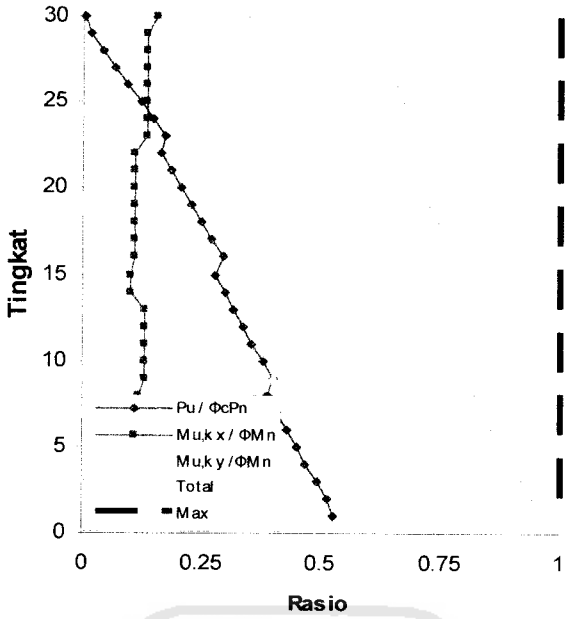
13	1969.6	14126	7160.4	1630.7	11502	5832	0.30	0.38	0.18	0.07	0.26	0.26	0.69	0.67
12	1969	14126	7160.4	1630.3	11502	5832	0.32	0.46	0.18	0.07	0.26	0.26	0.71	0.75
11	1992.7	14126	7160.4	1650.3	11502	5832	0.33	0.53	0.18	0.07	0.26	0.26	0.73	0.83
10	1973.1	14126	7160.4	1633.7	11502	5832	0.36	0.62	0.18	0.07	0.26	0.26	0.75	0.91
9	1973.1	14126	7160.4	1633.7	11502	5832	0.38	0.70	0.20	0.07	0.32	0.26	0.85	1.00
8	2402.1	17561	8877.6	2918.7	21773	10951	0.33	0.44	0.16	0.03	0.26	0.14	0.71	0.60
7	2400.6	17561	8877.6	2916.9	21773	10951	0.35	0.49	0.16	0.03	0.26	0.14	0.72	0.64
6	2400.3	17561	8877.6	2916.5	21773	10951	0.37	0.54	0.16	0.03	0.26	0.14	0.74	0.69
5	2399.7	17561	8877.6	2915.8	21773	10951	0.39	0.59	0.16	0.03	0.26	0.14	0.76	0.74
4	2399.4	17561	8877.6	2915.5	21773	10951	0.41	0.64	0.16	0.03	0.26	0.14	0.78	0.79
3	2399.4	17561	8877.6	2915.5	21773	10951	0.42	0.69	0.19	0.03	0.26	0.14	0.82	0.85
2	2398.8	17561	8877.6	2914.8	21773	10951	0.44	0.75	0.19	0.03	0.26	0.14	0.83	0.90
1	2426.7	17561	8877.6	2947.5	21773	10951	0.45	0.79	0.19	0.03	0.26	0.14	0.84	0.95



Grafik 6.4 Interaksi rasio kolom 4 (K4) Struktur *Frame Truss*

Tabel 6.15 Interaksi Aksial-Momen Kolom K5

Lt	Kuat Nominal						Pu/ΦPn		Mu,x/ΦMn,x		Mu,y/ΦMn,y		Rasio Total	
	OF			BOF										
	ΦPn	ΦMn, x	ΦMn,y	ΦPn	ΦMn, x	ΦMn,y	OF	BOF	OF	BOF	OF	BOF	OF	BOF
30	1639	11502	5832	1109.1	7581.6	3661	0.01	0.00	0.21	0.16	0.25	0.19	0.47	0.35
29	1975.7	14126	7160.4	1227.3	8424	4309	0.03	0.02	0.26	0.14	0.30	0.48	0.57	0.63
28	1971.9	14126	7160.4	1224.8	8424	4309	0.05	0.04	0.26	0.14	0.30	0.48	0.58	0.63
27	1970.6	14126	7160.4	1223.9	8424	4309	0.07	0.07	0.26	0.14	0.30	0.48	0.59	0.65
26	1969	14126	7160.4	1222.9	8424	4309	0.08	0.09	0.26	0.14	0.30	0.48	0.60	0.66
25	1968.8	14126	7160.4	1222.7	8424	4309	0.10	0.12	0.26	0.14	0.30	0.48	0.61	0.67
24	1968.8	14126	7160.4	1222.7	8424	4309	0.12	0.15	0.26	0.14	0.30	0.48	0.62	0.69
23	1968.8	14126	7160.4	1222.7	8424	4309	0.14	0.17	0.30	0.14	0.30	0.48	0.66	0.70
22	2174.8	15779	7970.4	1485.1	10368	5281	0.15	0.17	0.27	0.11	0.27	0.39	0.60	0.58
21	2174.5	15779	7970.4	1484.9	10368	5281	0.16	0.19	0.27	0.11	0.27	0.39	0.61	0.59
20	2174.5	15779	7970.4	1484.9	10368	5281	0.18	0.21	0.27	0.11	0.27	0.39	0.62	0.65
19	2174.5	15779	7970.4	1484.9	10368	5281	0.20	0.23	0.27	0.11	0.32	0.44	0.69	0.72
18	2174.2	15779	7970.4	1484.7	10368	5281	0.22	0.25	0.27	0.11	0.32	0.44	0.74	0.74
17	2173.9	15779	7970.4	1484.5	10368	5281	0.23	0.27	0.27	0.11	0.32	0.44	0.76	0.77
16	2173.9	15779	7970.4	1484.5	10368	5281	0.25	0.30	0.27	0.11	0.32	0.44	0.78	0.79
15	2633	19537	9849.6	1628.9	11502	5832	0.22	0.28	0.22	0.10	0.26	0.40	0.65	0.72
14	2632.7	19537	9849.6	1628.7	11502	5832	0.24	0.30	0.22	0.10	0.26	0.40	0.66	0.75
13	2632.4	19537	9849.6	1628.5	11502	5832	0.25	0.32	0.26	0.13	0.26	0.40	0.71	0.79
12	2632.1	19537	9849.6	1628.3	11502	5832	0.27	0.34	0.26	0.13	0.26	0.40	0.72	0.81
11	2668.1	19537	9849.6	1652.3	11502	5832	0.28	0.36	0.26	0.13	0.26	0.40	0.74	0.83
10	2634	19537	9849.6	1629.6	11502	5832	0.29	0.38	0.26	0.13	0.26	0.40	0.75	0.86
9	2634	19537	9849.6	1629.6	11502	5832	0.31	0.40	0.29	0.13	0.26	0.40	0.80	0.88
8	3147.5	23846	11988	1780.1	12636	6415	0.27	0.39	0.24	0.12	0.25	0.37	0.71	0.82
7	3147.1	23846	11988	1779.8	12636	6415	0.28	0.41	0.24	0.12	0.25	0.37	0.72	0.84
6	3147.1	23846	11988	1779.8	12636	6415	0.30	0.43	0.24	0.12	0.25	0.37	0.73	0.86
5	3146.7	23846	11988	1779.6	12636	6415	0.31	0.45	0.24	0.12	0.25	0.37	0.74	0.88
4	3146.4	23846	11988	1779.4	12636	6415	0.32	0.47	0.24	0.12	0.25	0.37	0.76	0.90
3	3146	23846	11988	1779.1	12636	6415	0.33	0.49	0.27	0.12	0.25	0.37	0.80	0.92
2	3145.6	23846	11988	1778.9	12636	6415	0.35	0.52	0.27	0.12	0.25	0.37	0.81	0.95
1	3187.2	23846	11988	1804.8	12636	6415	0.36	0.53	0.27	0.12	0.25	0.37	0.82	0.96

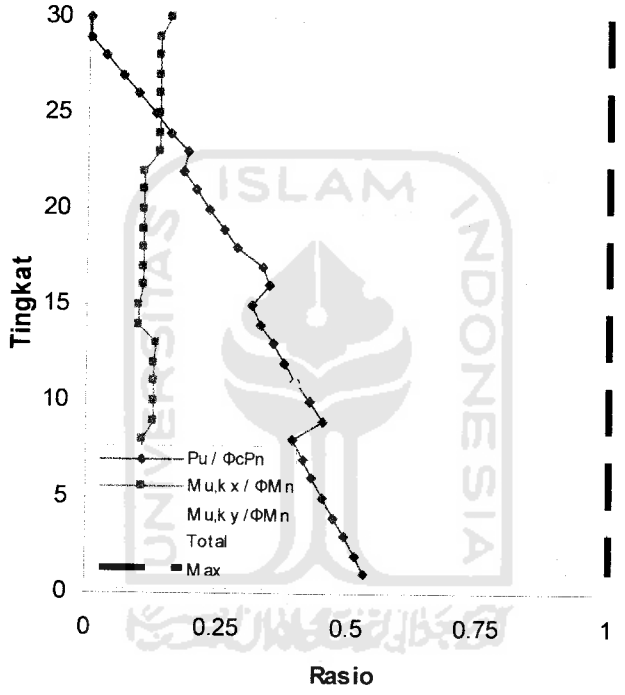


Grafik 6.5 Interaksi rasio kolom 5 (K5) Struktur *Frame Truss*

Tabel 6.16 Interaksi Aksial-Momen Kolom K6

Lt	Kuat Nominal						Pu/ΦPn		Mu,x/ΦMn,x		Mu,y/ΦMn,y		Rasio Total	
	OF			BOF										
	ΦPn	ΦMn, x	ΦMn,y	ΦPn	ΦMn, x	ΦMn,y	OF	BOF	OF	BOF	OF	BOF	OF	BOF
30	1644.2	11502	5832	1113.2	7581.6	3661	0.01	0.01	0.21	0.16	0.25	0.19	0.47	0.35
29	1983.1	14126	7160.4	1232.1	8424	4309	0.03	0.00	0.26	0.14	0.30	0.48	0.57	0.62
28	1980.6	14126	7160.4	1230.5	8424	4309	0.05	0.03	0.26	0.14	0.30	0.48	0.58	0.63
27	1973.1	14126	7160.4	1225.6	8424	4309	0.07	0.07	0.26	0.14	0.30	0.48	0.59	0.65
26	1970.6	14126	7160.4	1223.9	8424	4309	0.09	0.10	0.26	0.14	0.30	0.48	0.60	0.66
25	1970.6	14126	7160.4	1223.9	8424	4309	0.11	0.13	0.26	0.14	0.30	0.48	0.61	0.68
24	1970.6	14126	7160.4	1223.9	8424	4309	0.13	0.16	0.26	0.14	0.30	0.48	0.62	0.69
23	1970.3	14126	7160.4	1223.8	8424	4309	0.15	0.19	0.30	0.14	0.30	0.48	0.67	0.71
22	2176.2	15779	7970.4	1486.1	10368	5281	0.15	0.18	0.27	0.11	0.27	0.39	0.61	0.59
21	2176.2	15779	7970.4	1486.1	10368	5281	0.17	0.21	0.27	0.11	0.27	0.39	0.62	0.65
20	2176.2	15779	7970.4	1486.1	10368	5281	0.19	0.24	0.27	0.11	0.27	0.39	0.63	0.68
19	2175.9	15779	7970.4	1485.9	10368	5281	0.21	0.26	0.27	0.11	0.32	0.44	0.73	0.76
18	2175.9	15779	7970.4	1485.9	10368	5281	0.22	0.29	0.27	0.11	0.32	0.44	0.75	0.78
17	2175.6	15779	7970.4	1485.7	10368	5281	0.26	0.34	0.27	0.11	0.32	0.44	0.79	0.83
16	2175.6	15779	7970.4	1485.7	10368	5281	0.28	0.35	0.27	0.11	0.32	0.44	0.80	0.84
15	2399.1	17561	8877.6	1630.5	11502	5832	0.25	0.32	0.24	0.10	0.29	0.40	0.73	0.77
14	2398.8	17561	8877.6	1630.3	11502	5832	0.27	0.33	0.24	0.10	0.29	0.40	0.74	0.78
13	2398.5	17561	8877.6	1630	11502	5832	0.29	0.36	0.29	0.13	0.29	0.40	0.80	0.83

12	2398.5	17561	8877.6	1630	11502	5832	0.30	0.38	0.29	0.13	0.29	0.40	0.81	0.86
11	2426.7	17561	8877.6	1650.3	11502	5832	0.32	0.40	0.29	0.13	0.29	0.40	0.82	0.87
10	2399.7	17561	8877.6	1630.9	11502	5832	0.34	0.43	0.29	0.13	0.29	0.40	0.84	0.90
9	2399.4	17561	8877.6	1630.7	11502	5832	0.35	0.45	0.33	0.13	0.34	0.40	0.94	0.93
8	3149.8	23846	11988	1969.6	14126	7160	0.28	0.40	0.24	0.11	0.25	0.33	0.71	0.78
7	3149.4	23846	11988	1969.3	14126	7160	0.29	0.42	0.24	0.11	0.25	0.33	0.73	0.80
6	3149.4	23846	11988	1969.3	14126	7160	0.31	0.44	0.24	0.11	0.25	0.33	0.74	0.82
5	3149.4	23846	11988	1969.3	14126	7160	0.32	0.46	0.24	0.11	0.25	0.33	0.75	0.84
4	3149	23846	11988	1969	14126	7160	0.33	0.48	0.24	0.11	0.25	0.33	0.77	0.86
3	3148.6	23846	11988	1968.8	14126	7160	0.34	0.50	0.27	0.11	0.25	0.33	0.81	0.88
2	3148.6	23846	11988	1968.8	14126	7160	0.36	0.52	0.27	0.11	0.25	0.33	0.82	0.90
1	3183.8	23846	11988	1992.7	14126	7160	0.37	0.53	0.27	0.11	0.25	0.33	0.83	0.92



Grafik 6.6 Interaksi rasio kolom 6 (K6) Struktur *Frame Truss*

Dari Grafik 6.1 sampai dengan Grafik 6.6 yang menunjukkan interaksi rasio kolom memperlihatkan bahwa dilihat dari prinsip disain sudah memenuhi syarat aman dan tidak boros dalam penggunaan bahan bangunan yang digunakan karena nilai rasio dari grafik 6.1 sampai 6.6 jauh mendekati angka 1, sehingga faktor tegangan dan displesement yang terjadi pada struktur *Frame Truss* sudah mendekati batas maksimum khususnya pada struktur yang fleksibel, oleh kare itu

itu kriteria disain yang mendekati adalah displesemen. Rasio gaya aksial kolom lebih dominan daripada rasio momen yang terjadi, hal ini karena untuk kolom gaya yang paling berpengaruh adalah gaya aksialnya. Faktor penyebab momen layan pada arah ini menjadi besar adalah karena untuk arah y pada kolom ini diapit oleh dua balok sehingga momen plastis dari kedua balok tersebut akan mempengaruhi momen beban layannya. Untuk hasil selengkapnya dapat dilihat pada lampiran C-7 sampai dengan C-9.

6.2.3 Perencanaan Kolom Terhadap Geser

Pada hitungan manual ini diambil contoh kolom 2 (K2) Lantai 4 Struktur *Frame Truss* lampiran C-5 adalah:

$V_D = 0{,}06$ Kips

$V_L = 0{,}07$ Kips

$V_E = 13{,}64$ Kips

$$V_u = 1{,}05.V_D + V_L + \mu.V_E \qquad \text{(Pers 3.46)}$$

$$= 1{,}05\ .0{,}06 + 0{,}07 + 4.13{,}64 = 54{,}693 \text{ Kips}$$

Menentukan rasio tinggi badan dengan tebal badan :

$$\frac{h}{t_w} = 12{,}62 < \frac{640}{\sqrt{fy(ksi)}} = \frac{640}{\sqrt{36}} = 106{,}67 \qquad \text{(Pers 3.17)}$$

Berdasarkan nilai rasio diatas, dihitung kapasitas geser penampang:

$$Aw = d.tw = 15{,}5.0{,}89 = 13{,}795 \text{ in}^2$$

$$\phi V_n = 0{,}9.0{,}6.f_y.A_w \qquad \text{(Pers 3.33)}$$

$$= 0{,}9.0{,}6.36.13{,}795 = 268{,}174 \text{ Kips}$$

Rasio kapasitas geser yang terjadi

$$\frac{V_u}{\varphi V_n} = \frac{54{,}693}{268{,}174} = 0{,}204 \le 1{,}0 \rightarrow Ok\ ! \qquad \text{(Pers 3.35)}$$

Hasil selengkapnya untuk V_u struktur dapat dilihat pada lampiran C-5 untuk struktur *Frame Truss*, C-4 untuk OF dan C-6 untuk *Core Brace (CB).*

6.2.4 Kontrol *Strong Column Weak Beam*

Strong Column Weak Beam merupakan prinsip desain dimana kolom didesain jauh lebih kuat dari pada baloknya. Hal tersebut biasanya dikontrol menurut persamaan :

$$\frac{\sum M_{pc}}{\sum M_{pb}} > 1{,}0 \qquad \text{(Pers 3.56)}$$

Pada hitungan manual ini diambil contoh pada Kolom 2 (K2) lantai 4 struktur *Frame Truss*. Nilai Pu seperti pada lempiran C-2 (untuk *frame truss*). Untuk Kolom 2 lantai 4 Nilai Pu yang berpengaruh adalah :

Puc Lantai 5 = 721,674 Kips

Puc Lantai 3 = 763,596 Kips

$\Sigma M_{pc} = \Sigma Zx_c(f_{yc} - P_{uc}/A_g)$ (Pers 3.57)

$$= 355.\left(36 - \frac{721{,}674}{56{,}8}\right) + 355.\left(36 - \frac{763{,}596}{147}\right)$$

$$= 16406{,}344 \text{ K-in}$$

Vu = 54,693 Kips (Dilihat pada Lampiran B-8)

$\Sigma M_{pb} = \Sigma(1{,}1Ry.M_p + M_v)$ (Pers 3.58)

$$= (1{,}1.1{,}3.Zx.Fy + \tfrac{1}{2}.d.Vu)$$

$$= \left(1{,}1.1{,}3.355.36 + (1/2.15{,}5.54{,}693)\right)$$

$$= 8529{,}194 \text{ K-in}$$

$$\frac{\Sigma M_{pc}}{\Sigma M_{pb}} = \frac{16406{,}344}{8529{,}194} = 1{,}924 > 1 \rightarrow OK! \qquad \text{(Pers 3.56)}$$

Hasil selengkapnya dapat dilihat pada lampiran C-13 sampai C-15.

Tabel 6.17 Rekapitulasi Kontrol *Strong Column Weak Beam* Kolom K1

	OF						BOF					
	Arah x			Arah y			Arah x			Arah y		
Lt	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras
30	8386.91	1770.3	4.7	4050	1915	2.11	6889	1306.2	5.274	3326.1	1034.7	3.2
29	17641.29	3446.5	5.1	8784	2219	3.96	13669	3359.2	4.069	6588	2435	2.7
28	18438.49	3466.4	5.3	9432	2219	4.25	13479	3408.5	3.955	6485.1	2435	2.7
27	18296.02	3491.3	5.2	9359	2219	4.22	13316	3417.3	3.897	6406.9	2435	2.6

26	18149.74	3504.1	5.2	9284	2219	4.18	13149	3425.1	3.839	6326.6	2435	2.6
25	17999.5	3504	5.1	9207	2219	4.15	12978	3432.6	3.781	6244.3	2435	2.6
24	17845	3504	5.1	9128	2219	4.11	12803	3439.9	3.722	6160	2435	2.5
23	17701.45	4310.5	4.1	9055	2219	4.08	12617	3478.3	3.627	6070.6	2435	2.5
22	20974.58	4323.4	4.9	10675	2219	4.81	13207	3480.8	3.794	6366.4	2435	2.6
21	24246.29	4323.3	5.6	12294	2219	5.54	13792	3480.7	3.963	6660.3	2435	2.7
20	24115.22	4323.1	5.6	12227	2219	5.51	13590	3480.6	3.904	6562.7	2435	2.7
19	23979.99	5098.6	4.7	12159	2934	4.14	13386	3480.5	3.846	6464.1	2435	2.7
18	23840.63	5098.4	4.7	12088	2934	4.12	13174	3481.1	3.784	6361.7	2435	2.6
17	23704.39	5098.2	4.6	12019	2934	4.1	12956	3481	3.722	6256.4	2435	2.6
16	23568.98	5097.9	4.6	11950	2934	4.07	12738	3480.9	3.659	6151.3	2435	2.5
15	18327.43	5069.9	3.6	9122	2934	3.11	13475	3424.2	3.935	6712	2435	2.8
14	13084.95	5069.7	2.6	6296	2934	2.15	13290	3426.9	3.878	6798.3	2435	2.8
13	12974.68	6065.2	2.1	6243	2934	2.13	12137	4256.7	2.851	6208.8	2435	2.5
12	12889.19	6064.8	2.1	6201	2934	2.11	11892	4256.5	2.794	6083.2	2435	2.5
11	12801.47	6064.4	2.1	6159	2934	2.1	11645	4256.2	2.736	5957.1	2435	2.4
10	12715.38	6064.1	2.1	6118	2934	2.08	11402	4165.3	2.737	5832.7	2435	2.4
9	12613.39	6889.3	1.8	6069	3583	1.69	11161	4255.5	2.623	5709.4	2435	2.3
8	20475.97	6930.5	3	10217	3583	2.85	11851	4258.8	2.783	6044.5	2435	2.5
7	28339.69	6929.8	4.1	14365	3583	4.01	12540	4258.5	2.945	6379.2	2435	2.6
6	28223.39	6929.2	4.1	14306	3583	3.99	12299	4258.1	2.888	6256.4	2435	2.6
5	28108.14	6928.4	4.1	14247	3583	3.98	12066	4257.6	2.834	6137.9	2435	2.5
4	27991.75	6927.7	4	14188	3583	3.96	11843	4257.2	2.782	6024.5	2435	2.5
3	27903.45	8678.9	3.2	14144	3583	3.95	11624	4257.3	2.73	5913.2	2435	2.4
2	27840.1	8678.1	3.2	14112	3583	3.94	11411	4256.9	2.681	5804.9	2435	2.4
1	27761.28	8677	3.2	14072	3583	3.93	11214	4245.9	2.641	5704.8	2435	2.3

Tabel 6.18 Rekapitulasi Kontrol *Strong Column Weak Beam* Kolom K2

	OF						BOF					
	Arah x			Arah y			Arah x			Arah y		
Lt	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras
30	9298.519	3541.5	2.6	9299	4438	2.1	7597	2613.5	2.907	7597.4	2069.5	3.7
29	21879.81	6907.4	3.2	11136	6610	1.68	15382	6720.3	2.289	7414.5	6589.4	1.1
28	25019.99	6949	3.6	12686	6610	1.92	15443	6820.1	2.264	7457.3	6589.4	1.1
27	24726.48	7001.1	3.5	12537	6610	1.9	15190	6837.9	2.221	7335.1	6589.4	1.1
26	24416.12	7028	3.5	12380	6610	1.87	14935	6853.8	2.179	7212.3	6589.4	1.1
25	24088.93	7027.9	3.4	12214	6610	1.85	14679	6869.1	2.137	7088.6	6589.4	1.1
24	23745.51	7027.8	3.4	12040	6610	1.82	14421	6883.8	2.095	6964.2	6589.4	1.1
23	23390.6	8647	2.7	11860	6610	1.79	14162	6961.6	2.034	6839.1	6589.4	1
22	24277.27	8654.2	2.8	12318	6610	1.86	15781	6969.2	2.264	7846.9	6589.4	1.2
21	25152.16	8653.9	2.9	12770	6610	1.93	17396	6968.9	2.496	8849.7	6589.4	1.3
20	24768.99	8653.6	2.9	12575	6610	1.9	17130	6968.8	2.458	8714.4	6589.4	1.3
19	24343.01	10208	2.4	12359	8072	1.53	16858	6968.6	2.419	8575.9	7516.1	1.1
18	23875.17	10208	2.3	12121	8072	1.5	16580	6969.9	2.379	8434.3	7516.1	1.1
17	23403.29	10207	2.3	11882	8072	1.47	16302	6969.6	2.339	8292.8	7516.1	1.1
16	22922.66	10207	2.2	11638	8072	1.44	16023	6969.3	2.299	8151.1	7516.1	1.1
15	24052.94	10223	2.4	12201	8072	1.51	16963	6855.4	2.474	8635.4	7516.1	1.1
14	25170.94	10222	2.5	12759	8072	1.58	17327	6860.9	2.525	8825.9	7516.1	1.2
13	24661.71	12214	2	12501	8072	1.55	16472	8525.3	1.932	8390.2	7516.1	1.1
12	24151.08	12213	2	12242	8072	1.52	16195	8525	1.9	8249.6	7516.1	1.1
11	23637	12212	1.9	11981	8072	1.48	15922	8524.4	1.868	8110.1	7516.1	1.1
10	23125.24	12211	1.9	11722	8072	1.45	15650	8337.6	1.877	7971.7	7516.1	1.1

9	22580.5	13862	1.6	11446	9472	1.21	15372	8522.8	1.804	7830	7516.1	1
8	23781.36	13883	1.7	12032	9472	1.27	16300	8532.4	1.91	8282.5	7516.1	1.1
7	24983.11	13882	1.8	12620	9472	1.33	17230	8531.8	2.019	8736.2	7516.1	1.2
6	24402.38	13880	1.8	12326	9472	1.3	16950	8530.9	1.987	8594.2	7516.1	1.1
5	23819.5	13879	1.7	12032	9472	1.27	16675	8530.1	1.955	8454.9	7516.1	1.1
4	23238.26	13878	1.7	11738	9472	1.24	16406	8529.2	1.924	8318.7	7516.1	1.1
3	22668.83	17380	1.3	11451	9472	1.21	16144	8529.3	1.893	8185.9	7516.1	1.1
2	22128.11	17378	1.3	11178	9472	1.18	15889	8528.5	1.863	8056.4	7516.1	1.1
1	21651.74	17376	1.2	10937	9472	1.15	15640	8505.7	1.839	7930.3	7516.1	1.1

Tabel 6.19 Rekapitulasi Kontrol *Strong Column Weak Beam* Kolom K3

	OF						BOF					
	Arah x			Arah y			Arah x			Arah y		
Lt	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras
30	9297.296	3479.9	2.7	9297	2347	3.96	8369	2578.8	3.245	8368.8	554.88	15
29	21872.01	6748.4	3.2	11132	4665	2.39	17538	6655.3	2.635	8731.7	2651.6	3.3
28	25002.33	6769.2	3.7	12677	4665	2.72	18190	6705.6	2.713	9304.8	2651.6	3.5
27	24701.19	6795.3	3.6	12525	4665	2.68	17892	6714.5	2.665	9152.6	2651.6	3.5
26	24385.88	6808.7	3.6	12365	4665	2.65	17594	6722.5	2.617	8999.8	2651.6	3.4
25	24056.27	6808.6	3.5	12198	4665	2.61	17294	6730.2	2.57	8846.3	2651.6	3.3
24	23712.86	6808.6	3.5	12023	4665	2.58	16992	6737.6	2.522	8692.2	2651.6	3.3
23	23356.69	8359.6	2.8	11843	4665	2.54	16686	6776.8	2.462	8535.7	2651.6	3.2
22	24240.49	8363.1	2.9	12299	4665	2.64	17336	6779.3	2.557	8842.5	2651.6	3.3
21	25114.4	8363	3	12750	4665	2.73	17984	6779.2	2.653	9148.9	2651.6	3.5
20	24732.23	8362.8	3	12556	4665	2.69	17671	6779.1	2.607	8989.4	2651.6	3.4
19	24313.97	9773.4	2.5	12344	4812	2.57	17349	6779	2.559	8825.7	3118.1	2.8
18	23860.47	9773.2	2.4	12114	4812	2.52	17016	6779.7	2.51	8656.2	3118.1	2.8
17	23405.15	9772.9	2.4	11883	4812	2.47	16682	6779.5	2.461	8486.2	3118.1	2.7
16	22943.44	9772.7	2.3	11648	4812	2.42	16348	6779.4	2.411	8316.3	3118.1	2.7
15	24095.1	9780.6	2.5	12223	4812	2.54	17210	6722.4	2.56	8761.2	3118.1	2.8
14	25235.92	9780.3	2.6	12792	4812	2.66	18094	6725.2	2.691	9216.9	3118.1	3
13	24745.23	11770	2.1	12543	4812	2.61	17779	8298.7	2.142	9056.2	3118.1	2.9
12	24248.81	11769	2.1	12291	4812	2.55	17445	8298.5	2.102	8885.8	3118.1	2.8
11	23749.94	11769	2	12038	4812	2.5	17116	8298.2	2.063	8718.5	3118.1	2.8
10	23255.14	11768	2	11788	4812	2.45	16794	8204.9	2.047	8554.4	3118.1	2.7
9	22733.82	13417	1.7	11523	4002	2.88	16466	8297.4	1.984	8387.3	3118.1	2.7
8	23966.56	13428	1.8	12126	4002	3.03	17349	8302.2	2.09	8815.5	3118.1	2.8
7	25203.14	13427	1.9	12731	4002	3.18	18236	8301.9	2.197	9246.4	3118.1	3
6	24659.21	13427	1.8	12456	4002	3.11	17912	8301.5	2.158	9082	3118.1	2.9
5	24116.29	13426	1.8	12182	4002	3.04	17597	8301.1	2.12	8922.7	3118.1	2.9
4	23577.01	13425	1.8	11910	4002	2.98	17294	8300.6	2.084	8769	3118.1	2.8
3	23048.7	16927	1.4	11643	4002	2.91	17002	8300.7	2.048	8620.9	3118.1	2.8
2	22546.03	16926	1.3	11389	4002	2.85	16722	8300.3	2.015	8478.6	3118.1	2.7
1	22101.63	16925	1.3	11164	4002	2.79	16453	8288.9	1.985	8342.5	3118.1	2.7

Tabel 6.20 Rekapitulasi Kontrol *Strong Column Weak Beam* Kolom K4

	OF						BOF					
	Arah x			Arah y			Arah x			Arah y		
Lt	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras
30	9297.43	7069.9	1.3	9297	1660	5.6	7588	3589.8	2.114	7588.4	903.99	8.4

29	21853.47	11855	1.8	11122	2512	4.43	14308	3598.5	3.976	6896	903.99	7.6
28	24946.08	11916	2.1	12649	2512	5.03	13494	3631.5	3.716	6516.2	903.99	7.2
27	24606.55	11990	2.1	12477	2512	4.97	13477	3629.4	3.713	6508.2	903.99	7.2
26	24251.67	12068	2	12297	2512	4.89	13375	3627.4	3.687	6459	903.99	7.1
25	23881.27	12142	2	12109	2512	4.82	13363	3625.3	3.686	6452.8	903.99	7.1
24	23496.96	12163	1.9	11914	2512	4.74	13444	3623.4	3.71	6492.4	903.99	7.2
23	23101.4	13896	1.7	11713	3789	3.09	13615	3622.1	3.759	6574.7	903.99	7.3
22	23945.92	13908	1.7	12150	3789	3.21	15750	3624.3	4.346	7835.3	903.99	8.7
21	24779.4	13907	1.8	12580	3789	3.32	17651	3622.3	4.873	8979.4	903.99	9.9
20	24353.66	13906	1.8	12364	3789	3.26	16940	3617.6	4.683	8617.4	903.99	9.5
19	23909.24	14300	1.7	12139	3048	3.98	15734	3615.8	4.351	8004.1	903.99	8.9
18	23447.01	14299	1.6	11904	3048	3.91	14470	3617.2	4	7361.1	903.99	8.1
17	22978.96	14298	1.6	11666	3048	3.83	13163	3615.5	3.641	6695.9	903.99	7.4
16	22504.14	14297	1.6	11425	3048	3.75	11777	3613.3	3.259	5991	903.99	6.6
15	23642.82	14314	1.7	11993	3048	3.94	13014	3617.5	3.597	6607.9	903.99	7.3
14	24777.45	14313	1.7	12559	3048	4.12	16956	3490.1	4.858	8597.3	903.99	9.5
13	24261.45	17093	1.4	12298	3254	3.78	18400	4801.1	3.832	9329.6	1128.4	8.3
12	23717.83	17091	1.4	12022	3254	3.7	17029	4798.2	3.549	8634.3	1128.4	7.7
11	23176.88	17089	1.4	11748	3254	3.61	15367	4795.4	3.205	7792	1128.4	6.9
10	22638.2	17087	1.3	11475	3254	3.53	13708	4787.1	2.864	6950.6	1128.4	6.2
9	22086.8	19461	1.1	11195	5045	2.22	12031	4784	2.515	6100.2	1128.4	5.4
8	25225.8	19513	1.3	12767	5045	2.53	21241	4815.9	4.411	10707	1128.4	9.5
7	28360.34	19509	1.5	14337	5045	2.84	30388	4813.3	6.313	15284	1128.4	14
6	27785.61	19506	1.4	14047	5045	2.78	28532	4810.8	5.931	14351	1128.4	13
5	27212.94	19502	1.4	13757	5045	2.73	26616	4808.1	5.536	13387	1128.4	12
4	26648.48	19499	1.4	13472	5045	2.67	24645	4805.6	5.128	12396	1128.4	11
3	26086.75	21864	1.2	13188	5889	2.24	22610	4805.9	4.705	11372	1128.4	10
2	25542.55	21861	1.2	12913	5889	2.19	20521	4802.7	4.273	10322	1128.4	9.1
1	25060.8	21702	1.2	12669	5889	2.15	18368	4802.7	3.825	9238.6	1128.4	8.2

Tabel 6.21 Rekapitulasi Kontrol *Strong Column Weak Beam* Kolom K5

	OF						BOF					
	Arah x			Arah y			Arah x			Arah y		
Lt	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras
30	12686.33	11821	1.1	12686	1666	7.62	8396	5958.6	1.409	8396.4	393.78	21
29	28045.3	19713	1.4	14218	3311	4.29	17640	5966.2	2.957	8783.1	1881.8	4.7
28	30476.55	19776	1.5	15448	3311	4.67	18292	5999.4	3.049	9357	1881.8	5
27	29993.66	19852	1.5	15203	3311	4.59	17900	5997.3	2.985	9156.5	1881.8	4.9
26	29510.48	19932	1.5	14958	3311	4.52	17507	5995.3	2.92	8955.5	1881.8	4.8
25	29026.85	20010	1.5	14713	3311	4.44	17114	5993.2	2.856	8754.3	1881.8	4.7
24	28542.67	20031	1.4	14468	3311	4.37	16720	5991.3	2.791	8552.8	1881.8	4.5
23	28058.11	22907	1.2	14222	3311	4.3	16325	5989.9	2.725	8350.9	1881.8	4.4
22	29384.56	22931	1.3	14867	3311	4.49	18068	5993.5	3.015	9220.8	1881.8	4.9
21	30707.19	22930	1.3	15511	3311	4.69	19807	5991.6	3.306	10089	1881.8	5.4
20	30214.42	22929	1.3	15262	3311	4.61	19406	5986.8	3.241	9884.7	1881.8	5.3
19	29725.42	23541	1.3	15015	3415	4.4	19012	5984.9	3.177	9684	2212.8	4.4
18	29239.99	23540	1.2	14770	3415	4.32	18621	5986.3	3.111	9485.2	2212.8	4.3
17	28753.04	23538	1.2	14524	3415	4.25	18228	5984.6	3.046	9284.7	2212.8	4.2
16	28264.29	23537	1.2	14277	3415	4.18	17830	5982.4	2.98	9081.9	2212.8	4.1
15	31858.62	23581	1.4	16075	3415	4.71	18762	5984	3.135	9533.5	2212.8	4.3
14	35444.89	23579	1.5	17869	3415	5.23	19681	5856.6	3.36	9979	2212.8	4.5
13	34940.82	28155	1.2	17615	3415	5.16	19259	7951.6	2.422	9765	2212.8	4.4

12	34437.22	28153	1.2	17361	3415	5.08	18838	7948.8	2.37	9551.8	2212.8	4.3
11	33931.23	28151	1.2	17106	3415	5.01	18410	7946	2.317	9334.8	2212.8	4.2
10	33422.67	28149	1.2	16850	3415	4.93	17978	7937.6	2.265	9115.6	2212.8	4.1
9	32914.38	32163	1	16594	2840	5.84	17547	7934.6	2.211	8896.9	2212.8	4
8	37061.94	32222	1.2	18655	2840	6.57	18337	7939.2	2.31	9304	2212.8	4.2
7	41199.95	32218	1.3	20712	2840	7.29	19117	7936.9	2.409	9705.3	2212.8	4.4
6	40672.03	32215	1.3	20447	2840	7.2	18663	7934.6	2.352	9475.3	2212.8	4.3
5	40139.83	32211	1.2	20179	2840	7.1	18206	7932.2	2.295	9243	2212.8	4.2
4	39603.13	32207	1.2	19909	2840	7.01	17743	7929.9	2.237	9007.7	2212.8	4.1
3	39062.11	36212	1.1	19637	2840	6.91	17269	7930.2	2.178	8767.5	2212.8	4
2	38517.03	36208	1.1	19363	2840	6.82	16787	7927.3	2.118	8522.7	2212.8	3.9
1	37967.22	36038	1.1	19087	2840	6.72	16295	7927.3	2.056	8272.7	2212.8	3.7

Tabel 6.22 Rekapitulasi Kontrol *Strong Column Weak Beam* Kolom K6

	OF						BOF					
	Arah x			Arah y			Arah x			Arah y		
Lt	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras	Σ Mpc	Σ Mpb	Ras
30	12681.63	6027.1	2.1	12682	1666	7.61	8384	3066.2	2.734	8384.1	393.78	21
29	28026.78	10130	2.8	14208	3311	4.29	17728	3073.8	5.767	8828.6	1881.8	4.7
28	30439.88	10193	3	15429	3311	4.66	18453	3107	5.939	9439.2	1881.8	5
27	29938.89	10269	2.9	15175	3311	4.58	17981	3104.9	5.791	9198.2	1881.8	4.9
26	29437.61	10349	2.8	14921	3311	4.51	17510	3103	5.643	8957.2	1881.8	4.8
25	28936.12	10426	2.8	14667	3311	4.43	17039	3100.8	5.495	8716.3	1881.8	4.6
24	28434.34	10448	2.7	14413	3311	4.35	16568	3098.9	5.347	8475.3	1881.8	4.5
23	27932.43	11930	2.3	14158	3311	4.28	16097	3097.6	5.197	8234.3	1881.8	4.4
22	29240.83	11953	2.4	14795	3311	4.47	17762	3101.1	5.728	9064.6	1881.8	4.8
21	30545.66	11953	2.6	15430	3311	4.66	19422	3099.2	6.267	9893.3	1881.8	5.3
20	30036.42	11952	2.5	15172	3311	4.58	18943	3094.4	6.122	9649.2	1881.8	5.1
19	29529.67	12302	2.4	14916	3415	4.37	18464	3092.5	5.971	9405.3	2212.8	4.3
18	29025.41	12301	2.4	14662	3415	4.29	17987	3093.9	5.814	9162.1	2212.8	4.1
17	28267.21	12300	2.3	14279	3415	4.18	17270	3092.2	5.585	8796.7	2212.8	4
16	27507.48	12298	2.2	13895	3415	4.07	16696	3090	5.403	8504.8	2212.8	3.8
15	29194.42	12316	2.4	14753	3415	4.32	17825	3091.7	5.765	9057.2	2212.8	4.1
14	30878.19	12315	2.5	15610	3415	4.57	18902	2964.2	6.377	9583.9	2212.8	4.3
13	30364.08	14708	2.1	15350	3415	4.49	18512	4100.9	4.514	9386.6	2212.8	4.2
12	29849.23	14706	2	15090	3415	4.42	18024	4098.1	4.398	9138.8	2212.8	4.1
11	29333.16	14704	2	14829	3415	4.34	17533	4095.3	4.281	8890	2212.8	4
10	28815.73	14701	2	14567	3415	4.27	17040	4086.9	4.169	8640.1	2212.8	3.9
9	28298.59	16712	1.7	14306	2840	5.04	16546	4083.9	4.052	8389.7	2212.8	3.8
8	34548.45	16802	2.1	17408	2840	6.13	18879	4093	4.612	9570.5	2212.8	4.3
7	40786.71	16798	2.4	20504	2840	7.22	21205	4090.7	5.184	10748	2212.8	4.9
6	40246.33	16794	2.4	20233	2840	7.12	20698	4088.4	5.063	10491	2212.8	4.7
5	39703.95	16790	2.4	19960	2840	7.03	20188	4085.9	4.941	10233	2212.8	4.6
4	39159.36	16786	2.3	19686	2840	6.93	19675	4083.6	4.818	9972.9	2212.8	4.5
3	38612.62	18788	2.1	19411	2840	6.83	19159	4083.9	4.691	9711.6	2212.8	4.4
2	38063.76	18784	2	19135	2840	6.74	18641	4080.9	4.568	9448.9	2212.8	4.3
1	37512.58	18614	2	18858	2840	6.64	18120	4080.9	4.44	9184.5	2212.8	4.2

6.3 Perencanaan Bracing

Bracing merupakan sistem pengaku yang dirancang untuk mengurangi besarnya simpangan akibat beban lateral. Dalam disainya *bracing* harus dirancang kuat terhadap gaya tarik maupun gaya tekan. Hal tersebut dikarenakan beban lateral yang akan diterima struktur akan bersifat *siklik* (bolak-balik).

6.3.1 Perencanaan *Bracing* Terhadap Gaya Aksial Tekan

Direncanakan *bracing* pada lantai 4 struktur *Frame Truss* dengan gaya aksial tekan rencana berdasarkan lampiran D-1, $P_{u,br}$ = 96,32 Kips dan Lb = 189,069 in. Digunakan profil W12x45 dengan data propertis sebagai berikut :

d	= 12,1 in	I_x	= 348 in^4	f_y	= 36 Ksi
b_f	= 8,05 in	I_y	= 50 in^4	E_s	= 29000 Ksi
t_w	= 0,335 in	r_x	= 5,154 in	Fu	= 58 Ksi
t_f	= 0,575 in	r_y	= 1,954 in		
A	= 13,1 in^2	Z_x	= 64,2 in^3		
w	= 44,49 lb/ft	Z_y	= 19 in^3		

Kontrol penampang kompak untuk menghindari terjadinya *local buckling* menurut persamaan dimana disyaratkan $\lambda \leq \lambda_p$.

Kontrol sayap, $\lambda_s = \frac{bf}{2tf} = \frac{8,05}{2.0,575} = 7 \leq \lambda_{ps} = \frac{65}{\sqrt{f_y}} = \frac{52}{\sqrt{36}} = 10,833$ (Pers 3.47)

Kontrol badan, $\lambda_b = \frac{d}{tw} = 36,12 \leq \lambda_{pb} = \frac{640}{\sqrt{f_y}} = \frac{640}{\sqrt{36}} = 106,667$ (Pers 3.48)

Dukungan pada kedua ujung dianggap sendi-sendi, sehingga k = 1

$$\lambda c = \frac{k \ .L}{\pi.r_y}\sqrt{\frac{f_y}{E}} = \frac{1.189,069}{\pi.1,954}\sqrt{\frac{36}{29000}} = 1,085 \quad \text{(Pers 3.50)}$$

Diambil λ_c = 1,085 ; karena λ_c < 1,5 maka:

$$Fcr = \left(0,658^{\lambda c^2}\right)fy = \left(0,658^{1,085^2}\right)36 = 22,86 \text{ Ksi} \quad \text{(Pers 3.51)}$$

$$\phi c.Pn = \varphi c.Ag.Fcr = 0,85.13,1.22,86 = 254,546 \text{ Kips} \quad \text{(Pers 3.53)}$$

ϕPn = 254,546 Kips > $P_{u,br}$ = 96,32 Kips

Rasio beban aksial:

$$\frac{P_{u.br}}{\phi P_n} = \frac{96,32}{254,546} = 0,378 < 1,0 \rightarrow Ok!$$

6.3.2 Rencana *Bracing* Terhadap Gaya Aksial Tarik

Diketahui gaya aksial tarik *bracing* pada lantai 4 struktur *Frame Truss* lampiran D-1, $P_{u,br}$ = 84,19 Kips dengan Lb = 189,069 in. Data propertis profil sama dengan *bracing* tekan.

Untuk kondisi leleh pada luas bruto penampang

$\phi P_n = 0,9.A_g.f_y = 0,9.13,1.36 = 424,44$ Kips > $P_{u,br}$ = 84,19 Kips (Pers 3.59)

Untuk kondisi patah pada luas tampang efektif

Digunakan baut diameter ¾ in, maka :

$A_{nt} = Ag - (n.(db+1/16).t_w) - (n.(db+1/16).t_f)$ (Pers 3.60)

$= 13,1 - (2.(¾+1/16).0,335) - (2.(¾+1/16).0,575)$

$= 11,621 \text{ in}^2$

$Ae = U.A_{nt} = 0,85.11,621 = 9,877 \text{ in}^2$ (Pers 3.61)

$\phi P_n = 0,75.Fu.Ae = 0,75.58.9,877 = 429,649$ Kips (Pers 3.62)

Dari kedua nilai kuat dukung tersebut diambil yang terkecil, ϕP_n = 429,649 Kips

Sehingga, $\frac{P_u}{\varphi P_n} = \frac{84,19}{429,649} = 0,196 < 1,0 \rightarrow OK!$

6.4 Perencanaan Balok Anak

Dalam perencanaan balok anak, baja didesain komposit dengan pelat beton. Prosedur desain balok komposit akan dipaparkan dalam sub bab berikut:

6.4.1 Perhitungan Propertis Elastis Penampang Komposit

Perhitungan Balok Anak anak untuk lantai 1-29 Struktur *Open Frame*

Data :

Bentang balok anak = 7 m= 275,59 in

Tebal Slab Beton = 5 in

Mutu Beton (fc') = 4 Ksi

Digunakan Profil Baja W10x 49

Dengan Propertis :

A_s = 14,4 in^2	I_x = 272 in^4
d = 9,98 in	I_y = 93,4 in^4
t_w = 0,34 in	S_x = 54,509 in^3
b_f = 10 in	S_y = 18,68 in^3
t_f = 0,56 in	Z_x = 60,4 in^3
r_f = 4,346 in	Z_y= 28,3 in^3
r_y = 2,547 in	E_s = 29000 Ksi

Hitungan Momen Ultimit

1) Tebal Plat = 5 in

Berat per Panjang = (7*3,28*(5/12)*150) = 1435 Lb/ft

2) Berat Sendiri Baja = 48,9 Lb/ft

W mati = 1483,9 Lb/ft

3) Berat Beban Hidup = 250 kg/m^2 = 51,16 Lb/ft^2

Berat per panjang = 51,16 *(7/0,3048) = 1174,93 Lb/ft

Jadi Didapat QD = 1483,9 Lb/ft

QL = 1174,93 Lb/ft

Qu = 1,2 QD +1,6 QL (Pers 3.77)

= 1,2*1483,9 + 1,6*1174,93

= 3660,568 Lb/ft

$$Mu = \frac{1}{8} q_u L^2 \quad \text{(Pers 3.78)}$$

$$= \frac{1}{8}(3660{,}586)(22{,}966^2)$$

= 241341,1336 Lbft

=241,341 Kft

= 2896,09 Kin

Hitungan Momen Terfaktor

Tebal Slab Beton (t_s) = 5 in

$$E_c = 1750\sqrt{fc'} \quad \text{(Pers 3.63)}$$

$$= 1750\sqrt{4}$$

$$= 3500 \text{ Ksi}$$

$$\text{Rasio Modular, } n = \frac{E_s}{E_c} \quad \text{(Pers 3.64)}$$

$$= \frac{29000}{3500}$$

$$= 8{,}286$$

Lebar efektif Slab beton

$$b_E \leq \frac{1}{4}L = \frac{1}{4} * 275{,}59 \text{ in} = 68{,}897 \text{ in (Menentukan)} \quad \text{(Pers 3.65)}$$

$$b_E \leq 16\,ts + bf = (16 * 5) + (10) = 90 \text{ in} \quad \text{(Pers 3.66)}$$

$$b_E \leq bo = 7m = 275{,}59 \text{ in} \quad \text{(Pers 3.67)}$$

Lebar Sayap beton Ekivalen

$$\frac{b_E}{n} = \frac{68{,}897}{8{,}286} \quad \text{(Pers 3.68)}$$

$$= 8{,}241 \text{ in}$$

Luas Baja Transformasi

$$A = \left(\frac{b_E}{n} * t_s\right) + A_s \quad \text{(Pers 3.69)}$$

$$= (8{,}241 * 5) + 14{,}4$$

$$= 55{,}605 \text{ in}$$

Letak garis netral Komposit terhadap sisi atas

$$Ya = \frac{\left(\frac{b_E}{n} * t_s\right)(0{,}5t_s) + (A_s(0{,}5d + t_s))}{\left(\frac{b_E}{n} * t_s\right) + A_s} \quad \text{(Pers 3.70)}$$

$$= \frac{(8{,}241 * 5)(0{,}5 * 5) + (14{,}4((0{,}5 * 9{,}98) + 5))}{(8{,}241 * 5) + (14{,}4)}$$

$= 3{,}373$ in

$Yb = d + t_s - ya$ (Pers 3.71)

$= 9{,}98 + 5 - 3{,}373 \quad = 11{,}607$ in

Momen Inersia Penampang Kompak

$I\,komp = Ix + (A_s * y^2) + Ix\,(A_s.y^2)$ (Pers 3.72)

$$= \left(\frac{1}{12}(8{,}241 * 5^3) + (8{,}241 * 5) * 0{,}873^2\right) + (272 + (14{,}4 * 6{,}617^2))$$

$= 85{,}843 + 31{,}403 + 272 + 630{,}49$

$= 1019{,}745\ in^4$

6.4.2 Kapasitas Lentur Nominal Balok Komposit

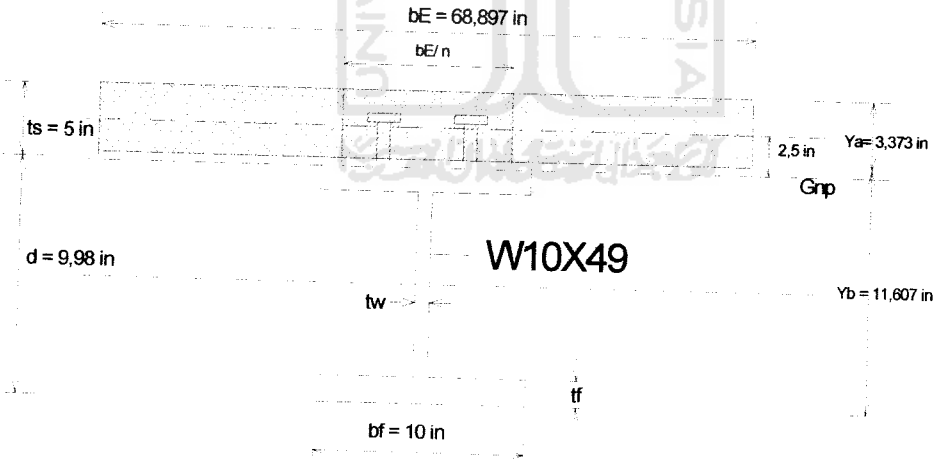
Rasio tinggi terhadap tebal badan

$$\lambda = \frac{h_c}{t_w} \quad \text{(Pers 3.82)}$$

$$= \frac{0{,}9 * 9{,}98}{0{,}34}$$

$$= 27{,}89 < \frac{640}{\sqrt{fy}}$$

$< 106{,}67$



Gambar 6.2 Penampang komposit balok anak bentang 7 m

Gaya desak Beton $C = 0{,}85 * fc' * b_E * a$ (Pers 3.83)

Gaya Tarik baja $T = A_s * f_y$ (Pers 3.84)

Keseimbangan gaya dalam $C=T$

maka $C=T$

$0,85 * fc' * b_E * a = A_s * f_y$

$$a = \frac{A_s * f_y}{0,85 * fc' * b_E}$$ (Pers 3.85)

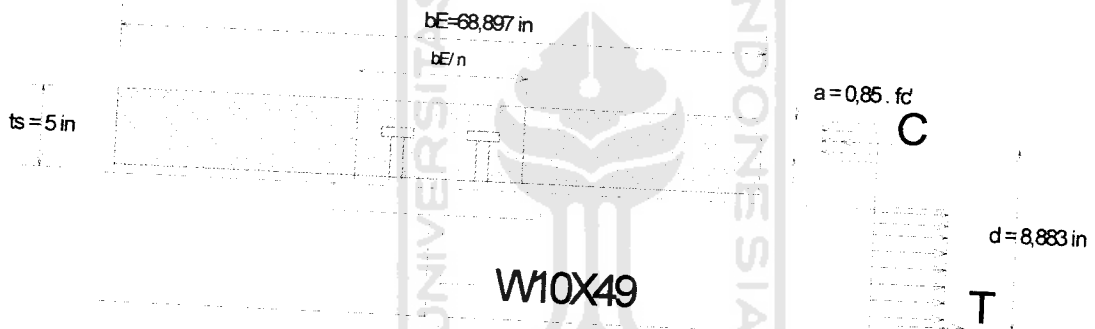
$$= \frac{14,4 * 36}{0,85 * 4 * 68,897}$$

$= 2,213 \text{ in} < t_s = 5 \text{ in}$

$di = 0,5d + t_s - 0,5a$

$= 0,5*9,98+5-(0,5*2,213)$

$= 8,883$ in



Gambar 6.3 Digram tegangan lentur plastis

$Mn = A_s * f_y * di$ (Pers 3.86)

$= 14,4*36*8,883$

$= 4604,947$ Kin

Kontrol Kapasitas

$\varphi M_n \geq M_u$ (Pers 3.87)

$0,85 * 4604,947 \text{ Kin} \geq M_u$

$3914,205 \geq 2896,09 \text{ Kin}$

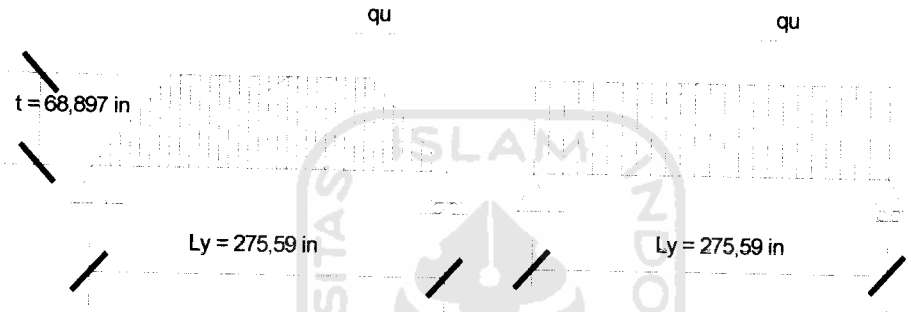
6.4.3 Kontrol Terhadap Lendutan

Untuk lantai

$$\text{Beban mati (qd)} = 483 \text{ Kg/m}^2 = 483 * \frac{2,2026 * 10^{-3}}{39,37^2} = 6,8637 * 10^{-4} \text{ K/in}^2$$

$$\text{Beban hidup (ql)} = 250 \text{ Kg/m}^2 = 250 * \frac{2,2026 * 10^{-3}}{39,37^2} = 3,5526 * 10^{-4} \text{ K/in}^2$$

$$\text{Berat Sendiri Profil W10x49} = 49 \text{ Lb/ft} = \frac{49 * 10^{-3} \text{ Kip}}{12 \text{ in}} = 4,083 * 10^{-3} \text{ K/in}$$



Gambar 6.4 Pembebanan pada balok anak

$Lx = 3,5 \text{ m} = 137,795 \text{ in}$

$Ly = 7 \text{ m} = 275,59 \text{ in}$

$t = 0,5 \text{ Lx} = 68,897 \text{ in}$ (Pers 3.89)

$$teq = t - \frac{4t^3}{3 \text{ Ly}^2} \quad \text{(Pers 3.90)}$$

$$= 68,897 - \frac{4 * 68,897^3}{3 * 275,59^2}$$

$= 63,155 \text{ in}$

$qd = teq * qd$ (Pers 3.91)

$= 63,155 * 6,8637 * 10^{-4}$

$= 0,0433 \text{ k/in}$

$ql = teq * ql$ (Pers 3.92)

$= 63,155 * 3,526 * 10^{-4}$

q total = 2qd + 2ql +qs (Pers 3.93)

= 2(0,0433) + 2(0,0222) + 4,083 $*10^{-3}$

= 0,135 K/in

Lendutan yang terjadi pada balok Komposit

1) Apabila pada pelaksanaan terdapat dukungan

$$\Delta \max = \frac{5}{384}\frac{qtotal * L^4}{E * Ikomp} \quad \text{(Pers 3.94)}$$

$$= \frac{5}{384}\frac{0,135 * 275,59^4}{29000 * 1019,745}$$

$$= 0,343 < \frac{L}{360} = \frac{275,59}{360} = 0,765\ in$$

2) Apabila pada pelaksanaan tanpa dukungan

q mati = qd +qs (Pers 3.95)

= 0,0433 + 4,083*10^{-3}

= 0,0474 k/in

$$\Delta baja = \frac{5}{384}\frac{qmati * L^4}{Es * Ix} \quad \text{(Pers 3.96)}$$

$$= \frac{5}{384}\frac{0,0433 * 275,59^4}{29000 * 272}$$

= 0,412 in

$$\Delta komp = \frac{5}{384}\frac{qmati * L^4}{Es * Ikomp} \quad \text{(Pers 3.97)}$$

$$= \frac{5}{384}\frac{0,0433 * 275,59^4}{29000 * 1019,745}$$

= 0,1099 in

$\Delta max = \Delta baja + \Delta komp$ (Pers 3.98)

= 0,412 + 0,1099

$$= 0,522 < \frac{L}{360} = \frac{275,59}{360} = 0,765\ in$$

6.4.4 Perencanaan Konektor geser

$Vn = 0{,}85 * fc' * b_E * ts$ (Pers 3.99)

$= 0{,}85 * 4 * 68{,}897 * 5$

$= 1171{,}249$ Kips

$Vn = As * fy$ (Pers 3.100)

$= 14{,}4 * 36$

$= 518{,}4$ kips (menentukan)

Digunakan konektor geser jenis paku diameter 5/8 inx 2,5 in dengan Fu = 60 Ksi

$Qn = 0{,}5 * Asc \sqrt{fc' * Ec} \leq Asc * Fu$ (Pers 3.101)

$= 0{,}5 * 0{,}25 * \pi * (5/8^2) \sqrt{4 * 3500}$

$= 18{,}15$ Kips

Jumlah Stud geser yang dibutuhkan untuk setengah bentang balok

$$n = \frac{Vn}{Qn}$$ (Pers 3.102)

$$= \frac{518{,}4 \text{ Kips}}{18{,}15 \text{ Kips}}$$

$= 28{,}57$ dipakai 30 persetengah bentang balok

6.5 Pendetailan khusus Pada Struktur

6.5.1 Sambungan Balok ke Kolom

Sambungan balok ke kolom direncanakan dengan menggunakan momen kapasitas plastis dan gaya geser yang terjadi pada lokasi sendi plastis balok.

Contoh perhitungan :

Sambungan balok ke kolom direncanakan dengan menggunakan momen kapasitas plastis dan gaya geser yang terjadi pada balok. Diambil hitungan struktur *Frame truss*, antara balok B1 dengan kolom K2 pada lantai 4.

Data Profil desain yang di pakai:

Balok W18X 40

$A_s = 11{,}8 \text{ in}^2$ $Z_x = 78{,}4 \text{ in}^4$

$d = 17{,}9$ in $Z_y = 9{,}95 \text{ in}^4$

t_w = 0,315 in Fy = 36 ksi

b_f = 6,02 in Fu = 58 ksi

t_f = 0,525 in

Kolom W14X 193

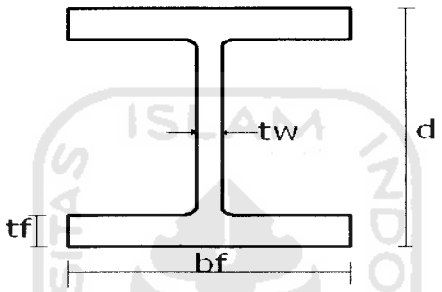
A_s = 56,8 in^2 Z_x = 355 in^4

d = 15,5 in Z_y = 180 in^4

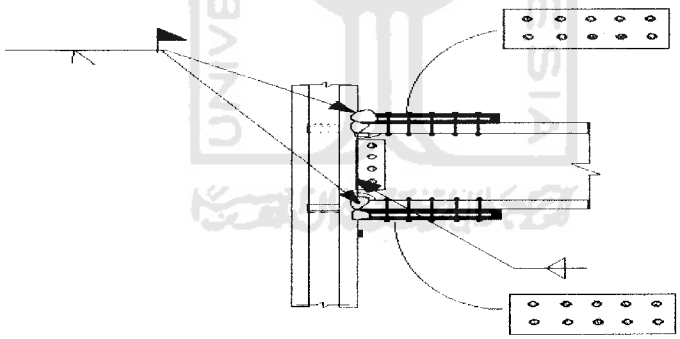
t_w = 0,89 in Fy = 36 ksi

b_f = 15,7 in Fu = 58 ksi

t_f = 1,44 in k = 2 in



Gambar 6.5 Penampang Profil kolom



Gambar 6.6 Rencana Sambungan yang digunakan

Prosedur Desain

a. Menentukan beban yang bekerja berdasarkan kapasitas plastis balok

Momen kapasitas plastis balok supaya terjadi strain hardening

Mp = 1,1 . Zx . Fy

= 1,1 . 78,4 . 36 = 3104,64 k-in.

Gaya geser pada lokasi muka kolom, balok B1 lampiran B-8 hasil dari analisis struktur:

Vd = 2,87 kips

Vl = 3,67 kips

Ve = 7,14 kips

Gaya geser pada balok, merupakan nilai terkecil dari :

$$Vp = 1{,}2Vd + 0{,}5Vl + \frac{2\,Mp}{L'}$$

$$= 1{,}2.2{,}87 + 0{,}5.3{,}67 + \frac{2.3104{,}64}{256{,}441} = 29{,}492 \text{ kips}$$

$$Vp = 1{,}2V_D + 0{,}5V_L + \mu V_E$$

$$= 1{,}2.2{,}87 + 0{,}5.3{,}67 + 4.7{,}14 = 33{,}839 \text{ kips}$$

Momen pada muka kolom, M_f.

$$M_f = M_{pb} + Vp.X$$

$$= 3104{,}64 + 33{,}839.\ 8{,}2 = 3382{,}1198 \text{ k-in}$$

b. Sambungan *flange plate* ke sayap kolom

Gaya tarik terfaktor, T_u.

$$T_u = \frac{M_f}{0{,}95d} = \frac{3382{,}1198}{0{,}95.17{,}9} = 198{,}889 \text{ kips.}$$

Menentukan ukuran *flange plate* yang menahan tarik dan desak :

Kondisi leleh tarik :

$$T_u \le \phi.\ F_y\ A_g \qquad \text{(Pers.3.107)}$$

$$A_{g\ min} = \frac{198{,}889}{0{,}9.36} = 6{,}137 \text{ in}^2 \text{ (menentukan)}$$

Kondisi fraktur :

$$T_u \le \phi\ .\ F_u\ .\ A_e\ ;\ A_e = U\ .\ A_n \qquad \text{(Pers.3.61)}$$

Untuk $A_n \le 0{,}85\ .\ A_g$

$U = 1 \rightarrow$ untuk pelat sambung/batang tarik pendek

$$T_u \le \phi\ .\ F_u\ .\ U\ .\ 0{,}85\ .\ A_g$$

$$A_{g\ min} = \frac{198{,}889}{0{,}75.58.1.0{,}85} = 5{,}379 \text{ in}^2 \approx 7 \text{ in}$$

Lebar *flange plate*, $b_{pl} = bf - 1\frac{1}{2} = 7 - 1\frac{1}{2} = 5{,}5$ in ≈ 6 in

Maka tebal *flange plate*, $t_{pl} = \frac{7}{6} = 1{,}167$ in $\approx 1\frac{1}{4}$ in

Menentukan jumlah baut yang diperlukan untuk mentransfer gaya tarik dan tekan pada bagian atas dan bawah balok :

Kuat geser satu baut A_{325}-X diameter $\frac{3}{4}$ in

$$\phi R_n = \phi \,.\, (0{,}6 \,.\, F_u^{\,b}) \,.\, m \,.\, A_b \qquad \text{(Pers.3.108)}$$

$$= 0{,}75 \,.\, (0{,}6 \,.\, 120).\, 1 \,.\, (\tfrac{1}{4} \,.\, \pi \,.\, \tfrac{3}{4}^2) = 23{,}856 \text{ kips}$$

Kebutuhan baut minimal untuk menahan geser

$$n_{min} = \frac{T_u}{\phi R_n}$$

$$= \frac{198{,}889}{23{,}856} = 8{,}33 \rightarrow 10 \text{ baut}$$

Sayap balok lebih kritis, coba baut 10-buah.

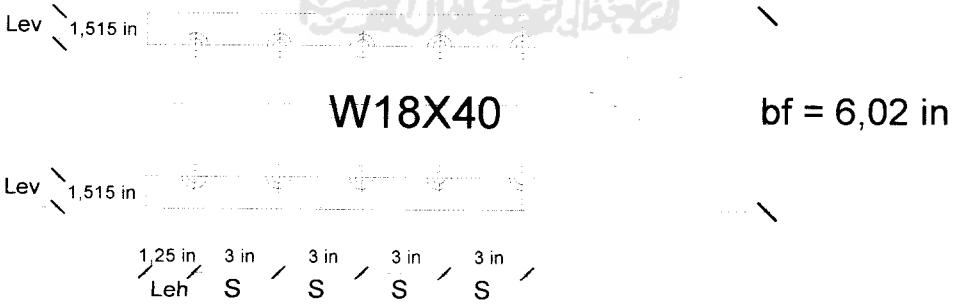
Kuat tumpu sayap balok

$$\phi R_n = \phi \,.\, 2{,}4 \,.\, F_u \,.\, d_b \,.\, t_{fb} \qquad \text{(Pers.3.105)}$$

$$= 0{,}75 \,.\, 2{,}4 \,.\, 58 \,.\, \tfrac{3}{4} \,.\, 0{,}525 = 41{,}1075 \text{ kips} > 23{,}856 \text{ kips}$$

Kontrol blok geser :

Sayap balok lebih kritis dari plat, cek blok geser pada sayap balok :



Gambar 6.7 Penampang Pelat Sambung Sayap Balok

Pada flange plate digunakan $l_{ev} = 1\frac{1}{4}$ in, sehingga pada sayap balok $l_{ev} =$ 1,515 in, dan $l_{eh} = 1\frac{1}{4}$ in.

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$A_{vg} = 2 \cdot t_f \cdot (l_{eh} + 4.S)$ (Luas pelelehan geser)

$= 2 \cdot 0{,}525 \cdot (1{,}25 + 4 \cdot 3) = 13{,}9125 \text{ in}^2$

$A_{nt} = 2 \cdot t_f \cdot (l_{ev} - 0{,}5 \cdot (d + 1/16))$ (Luas fraktur tarik)

$= 2 \cdot 0{,}525 \cdot (1{,}515 - 0{,}5 \cdot (3/4 + 1/16)) = 1{,}164 \text{ in}^2$

$A_{ns} = A_{vg} - 2 \cdot t_f \cdot (5{,}5 \cdot (d + 1/16))$ (Luas fraktur geser)

$= 13{,}9125 - 2 \cdot 0{,}525 \cdot (5{,}5 \cdot (3/4 + 1/16)) = 9{,}22 \text{ in}^2$

$A_{tg} = 2 \cdot t_f \cdot l_{ev}$ (Luas leleh tarik)

$= 2 \cdot 0{,}525 \cdot 1{,}515 = 1{,}591 \text{ in}^2$

Untuk reaksi nominal pilih nilai terbesar dari :

$F_u \cdot A_{nt} = 67{,}512 < 0{,}6 \cdot F_u \cdot A_{ns} = 320{,}856$

$T_n = 0{,}6 \cdot F_u \cdot A_{ns} + F_y \cdot A_{tg}$ (Pers.3.107b)

$= 0{,}6 \cdot 58 \cdot 9{,}22 + 36 \cdot 1{,}591 = 378{,}132$ kips

Kapasitas reaksi terfaktor,

$\phi T_n = 0{,}75 \cdot 378{,}132 = 283{,}599$ kips $> T_u = 198{,}889$ kips → *ok*

Menentukan ukuran plat geser, jumlah baut, dan panjang las :

Tranfer gaya geser dari balok ke kolom, merupakan nilai terkecil dari :

$$V_f = \frac{2.M_f}{L_n} + V_g$$

$$= \frac{2.3382{,}1198}{275{,}59} + (1{,}2.2{,}87 + 0{,}5.3{,}67) = 29{,}823 \text{ kips.}$$

$$V_f = 1{,}05\left(V_D + V_L + \frac{4}{K} V_E\right).\left(\frac{Ln}{L'}\right)$$

$$= 1{,}05.(2{,}87 + 3{,}67 + \frac{4}{1} 7{,}14).\left(\frac{275{,}59}{256{,}441}\right) = 39{,}607 \text{ kips}$$

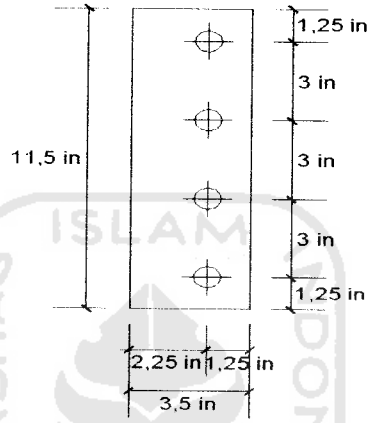
Apabila digunakan baut dengan diameter 3/4 in,

$\phi R_n = \phi \,.\, (0{,}6 \,.\, F_u^b) \,.\, m \,.\, A_b$ (Pers.3.108)

$= 0{,}75 \,.\, (0{,}6 \,.\, 120).\ 1 \,.\, (\frac{1}{4} \,.\, \pi \,.\, \frac{3}{4}^2) = 23{,}87$ kips

Jumlah baut $n = \dfrac{V_f}{\varphi Rn} = \dfrac{39{,}607}{23{,}87} = 1{,}659 \rightarrow 2$ buah.

Untuk menghindari gagal geser pada plat dipakai baut 4-buah, dengan pemasangan seperti di bawah ini :



Coba plat $\frac{3}{8}$ X $3\frac{1}{2}$ X $11\frac{1}{2}$

Kontrol geser leleh pada plat :

$\phi R_n = \phi \,.(0{,}6 \,.\, F_y).\ A_g$ (Pers.3.109)

$= 0{,}9 \,.(0{,}6 \,.\, 36).(\frac{3}{8} \,.\, 11\frac{1}{2}) = 83{,}83$ kips $> V_f = 39{,}607$ kips $\rightarrow$ *ok*

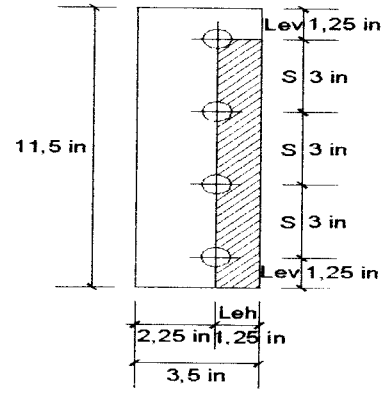
Kontrol geser fraktur pada plat :

$\phi R_n = \phi \,.\, (0{,}6 \,.\, F_u) \,.\, A_n$ (Pers.3.110)

$= 0{,}75 \,.(0{,}6 \,.\, 58).[\ \frac{3}{8} \,.(11{,}5 - 4 \,.\, (\frac{3}{4} + \frac{1}{16}))]$

$= 80{,}75$ kips $> V_f = 39{,}607$ kips $\rightarrow$ *ok*

Cek blok geser dari plat :



L_{eh} = 1,25 in, dan L_{ev} = 1,25 in

$A_{vg} = t_{pl} . (l_{ev} + 3.S)$ (Luas pelelehan geser)

$= \frac{3}{8} . (1,25 + 3 .3) = 3,84 \text{ in}^2$

$A_{nt} = t_{pl} . (l_{eh} - 0,5. (d + \frac{1}{16}))$ (Luas fraktur tarik)

$= \frac{3}{8} . (1,25 - 0,5. (\frac{3}{4} + \frac{1}{16})) = 0,32 \text{ in}^2$

$A_{ns} = A_{vg} - t_{pl} . (3,5.(d + \frac{1}{16}))$ (Luas fraktur geser)

$= 3,84 - \frac{3}{8} . (3,5. (\frac{3}{4} + \frac{1}{16})) = 2,77 \text{ in}^2$

$A_{tg} = t_{pl} . l_{eh}$ (Luas leleh tarik)

$= \frac{3}{8} . 1,25 = 0,47 \text{ in}^2$

Untuk reaksi nominal pilih nilai terbesar dari :

$F_u . A_{nt} = 18,56 < 0,6 . F_u . A_{ns} = 96,396$

$V_n = 0,6 . F_u . A_{ns} + F_y . A_{tg}$ (Pers.3.107b)

$= 0,6 . 58 . 2,77 + 36 . 0,47 = 113,32$ kips

Kapasitas reaksi terfaktor,

$\phi V_n = 0,75 . 113,32 = 84,99$ kips $> V_f = 39,067$ kips → *ok*

Menentukan panjang las fillet pada plat geser

Digunakan las fillet, bila $t_{pl} = \frac{3}{8}$ in $\geq \frac{1}{4}$ in,

$a_{max} = t_{pl} - \frac{1}{16} = \frac{3}{8} - \frac{1}{16} = \frac{5}{16}$ in; dan $a_{min} = \frac{3}{16}$ in.

$a_{pakai} = \frac{1}{4}$ in.

$t_e = 0{,}707 \cdot a = 0{,}707 \cdot 0{,}25 = 0{,}177$ in.

Kekuatan las terhadap geser,

$$\phi R_{nw} = \phi.(0{,}6 \cdot F_{Exx}).t_e \qquad \text{(Pers.3.111a)}$$

$$= 0{,}75 \cdot (0{,}6 \cdot 70) \cdot 0{,}177 = 5{,}575 \text{ k/in. (menentukan)}$$

Kekuatan las terhadap geser fraktur dari logam dasar,

$$\phi R_{nw} = \phi.(0{,}6 \cdot F_u).t_{pl} \qquad \text{(Pers.3.111b)}$$

$$= 0{,}75 \cdot (0{,}6 \cdot 58). \frac{3}{8} = 9{,}79 \text{ k/in.}$$

Panjang las yang dibutuhkan,

$$P_{las} = \frac{V_f}{\varphi R_{nw}} = \frac{39{,}607}{5{,}575} = 7{,}104 \text{ in} \rightarrow \text{pakai 8 in.}$$

Pakai 5 in pada setiap sisinya.

6.5.2 Perencanaan Daerah Panel Zone

Pelat Pengaku (*stiffener*):

Akibat transfer momen lentur ke sayap kolom menimbulkan gaya aksial (P_{bf}) tarik atau tekan pada sayap kolom. Untuk menghindari robeknya las antara sayap kolom dan *flange plate* maka harus dipenuhi persamaan di bawah ini:

$$\phi R_n \geq P_{bf}$$

Nilai kapasitas beban terfaktor, P_{bf} akibat *strain hardening*:

$$P_{bf} = 1{,}8 \cdot b_f \cdot t_f \cdot F_y \qquad \text{(Pers 3.112)}$$

$$= 1{,}8 \cdot 6{,}02 \cdot 0{,}525 \cdot 36 = 204{,}80 \text{ kips.}$$

Pelelehan sayap lokal (*Local flange bending*):

$$\phi R_n = \phi 6{,}25 \cdot t_{fc}^2 \cdot F_{yc} \qquad \text{(Pers 3.113)}$$

$$= 0{,}9 \cdot 6{,}25 \cdot 1{,}44^2 \cdot 36 = 419{,}904 \text{ kips} > P_{bf} = 204{,}80 \text{ kips}$$

Pelelehan badan local (*Local Web Yielding*):

$$\phi R_n = \phi .(5k + t_{fb}).F_{yc}.t_{wc} \quad \text{(Pers 3.114)}$$

$$= 1.(5.2+ 0,525).36.0,89$$

$$= 337,221 \text{ kips} > P_{bf} = 204,80 \text{ kips}$$

Pelipatan pelat badan (*Web Cripping*):

$$\phi R_n = \varphi.135.t_{wc}^2 \left[1 + 3\left(\frac{t_{fb}}{d_c}\right)\left(\frac{t_{wc}}{t_{fc}}\right)^{1.5}\right]\sqrt{\frac{F_{yc}.t_{fc}}{t_{wc}}} \quad \text{(Pers 3.115)}$$

$$= 0,75.135.0,89^2\left[1 + 3\left(\frac{0,525}{15,5}\right)\left(\frac{0,89}{1,44}\right)^{1.5}\right]\sqrt{\frac{36.1,44}{0,89}}$$

$$= 642,30 \text{ kips} > P_{bf} = 204,80 \text{ kips}$$

Tekuk tekan dari pelat badan (*Compression Buckling of The Web*):

$$\phi R_n = \frac{\phi.4100.t_{wc}^3\sqrt{F_{yc}}}{d_c} \quad \text{(Pers 3.116)}$$

$$= \frac{0,9.4100.0,89^3.\sqrt{36}}{(15,5 - 2.2)} = 1357,218 \text{ in} > P_{bf} = 204,80 \text{ kips}$$

Karena ϕR_n pada pelelehan sayap lokal (ϕR_n = 419,904 kips), pelelehan badan lokal (ϕR_n = 337,221 kips), pelipatan pelat badan(ϕR_n = 642,30 kips), dan tekuk tekan dari pelat badan (ϕR_n = 1357,218 kips) lebih besar dari P_{bf} kapasitas beban terfaktor(P_{bf} = 204,80 kips) maka tidak diperlukan pelat pengaku (*stiffener*).

Menentukan Gaya Geser pada Panel Zone

Terdapat dua balok pada kolom maka persamaan 3.117 dapat dapat dimodifikasi menjadi:

$$Vc = \frac{M_1\left[\frac{L_1}{L_{n1}}\right] + M2\left[\frac{L_2}{L_{n2}}\right]}{h} \quad \text{(Pers 3.118)}$$

$$Vc = \frac{3104,64\left[\frac{275,59}{256,441}\right] + 3104,64\left[\frac{275,59}{256,441}\right]}{147,64}$$

$Vc = 45,197$ Kips

Gaya geser pada *Panel Zone* :

$$V_u = \frac{M_{P1}}{0,95d_{b1}} + \frac{M_{P2}}{0,95d_{b2}} - V_c \qquad \text{(Pers 3.117)}$$

$$V_u = \frac{3104,64}{0,95.17,9} + \frac{3104,64}{0,95.17,9} - 45,197 = \text{ Kips}$$

Pu = Kips $\leq$ Py = Fy. Ac =36.56,8 = 2044,8 Kips maka :

$$\phi R_v = \phi\ 0,6.F_y.d_c.t_w.\left(1 + \frac{3.b_{cf}.t_{cf}^2}{d_b.d_c.t_w}\right) \qquad \text{(Pers 3.120)}$$

$$\phi R_v = 0,9.0,6.36.15,5.0,89\left(1 + \frac{15,7.1,44^2}{17,9.15,5.0,89}\right)$$

$\phi R_v = 303,531$ Kips

Dengan demikian tidak memerlukan double plat, tetapi untuk menambah kapasitas geser dari panel zone yang berulang-ulang digunakan panel zone dengan tebal sebagai berikut :

Menentukan dimensi pelat pengaku

$$t_{reg} = \frac{\sum Fu}{\phi\left(0,6.fy.d_c.\left(1,4 - \frac{Pu}{Py}\right)\right)}$$

Pu = 742,911 Kips

Py = Fy. Ac =36. 56,8 = 2044,8 Kips

$$t_{reg} = \frac{\sum Fu}{\phi\left(0,6.fy.d_c.\left(1,4 - \frac{Pu}{Py}\right)\right)}$$

$$= \frac{198,889}{0,9\left(0,6.36.15,5\left(1,4-\frac{742,911}{2044,8}\right)\right)} = 0,636 \text{ in}$$

Coba pelat ½ inchi x 12,5 inchi x 16 inchi dengan 3/16 las sambung

Cek *double plat buckling*

$$\frac{h}{t_w} \leq 1,87\sqrt{\frac{kv}{fy}}$$

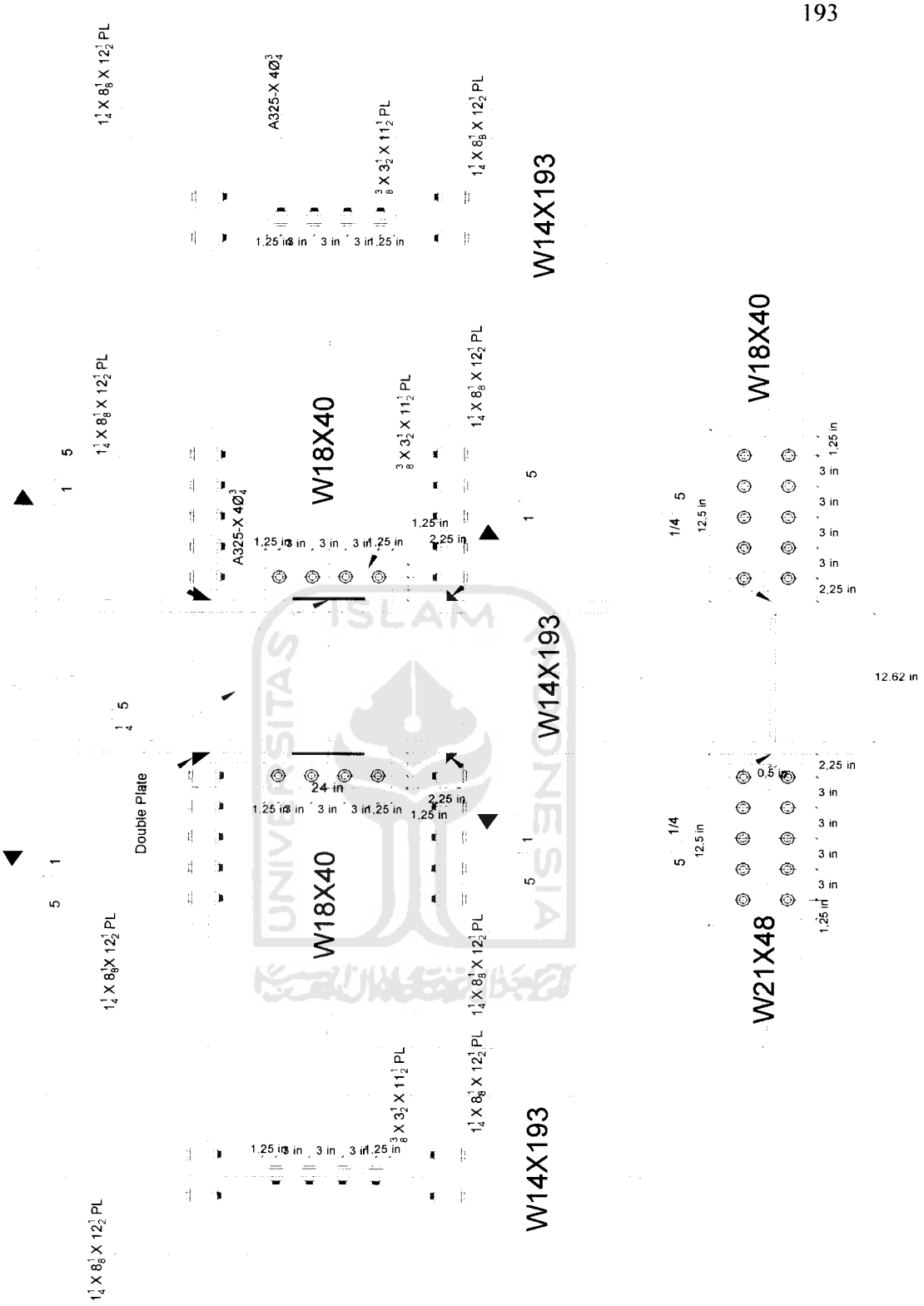
$$\frac{h}{t_w} = \frac{12,5}{0,5} = 25$$

$$kv = 5 + \frac{5}{\left(\frac{a}{h}\right)^2} = 5 + \frac{5}{\left(\frac{16}{12,5}\right)^2} = 8,05$$

$$187\sqrt{\frac{kv}{fy}} = 187\sqrt{\frac{8,05}{36}} = 88,42$$

$$\frac{h}{t_w} \leq 1,87\sqrt{\frac{kv}{fy}} = 25 \leq 88,42 \quad \textit{doubel plat} \text{ OK}$$

Jadi digunakan *double plat* ½ x 12,5 x 16 inchi dengan las penyambung 3/16.



Gambar 6.8 Detail Sambungan Balok ke Kolom

6.5.3 Sambungan Balok Anak ke Balok

Diambil hitungan untuk struktur *Frame truss* balok anak lantai 2 dengan balok B1 W18X40, yang mempunyai bentang bentang 7 m = 275,59 in, dengan data balok anak sebagai berikut :

Balok W10x49

A_s	= 14,4 in^2	Z_x	= 60,4 in^4
d	= 9,98 in	Z_y	= 28,3 in^4
t_w	= 0,34 in	F_y	= 36 ksi
b_f	= 10 in	F_u	= 58 ksi
t_f	= 0,56 in		

V_d = 2,82 kips (Lampiran B-8)

V_l = 3,61 kips (Lampiran B-8)

$V_u = 1{,}2\ V_d + 0{,}5\ V_l$

$= 1{,}2 \cdot 2{,}82 + 0{,}5 \cdot 3{,}61 = 5{,}189$ kips.

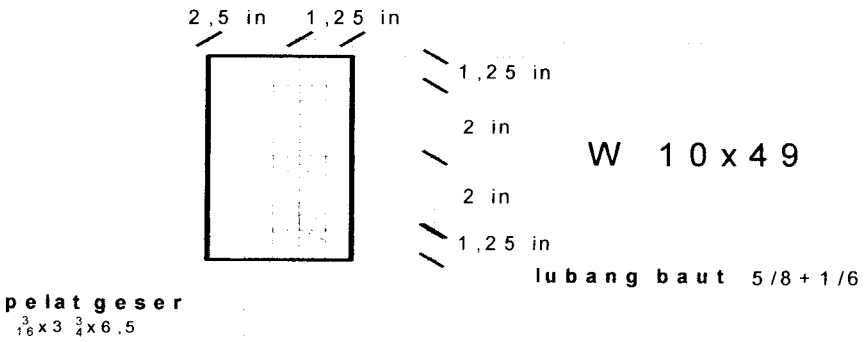
Dicoba menggunakan baut A325, Ø⅝ in, dengan $A_b = \frac{1}{4} \cdot \pi \cdot \frac{5}{8}^2 = 0{,}307\ in^2$.

$\phi R_n = \phi \cdot (0{,}6 \cdot F_u^b) \cdot m \cdot A_b$ (Pers 3.108)

$= 0{,}75 \cdot (0{,}6 \cdot 120) \cdot 1 \cdot 0{,}307 = 16{,}578$ kips

Jumlah baut $n = \frac{V_u}{\phi R_n} = \frac{5{,}189}{16{,}578} = 0{,}313$ baut

Untuk menghindari gagal geser pada plat dipakai baut 3 buah, dengan pemasangan seperti di bawah ini :



Gambar 6.9 Sambungan Balok anak ke balok

Coba plat 3/16x3 3/4x 6,5

Kontrol leleh geser pada plat :

$\phi R_n = \phi .(0{,}6 . F_y). A_g$ (Pers 3.109)

$= 0{,}9 .(0{,}6 . 36).(3/16 \times 6{,}5) = 23{,}693$ kips $> V_u = 5{,}189$ kips → *ok*

Kontrol fraktur geser pada plat :

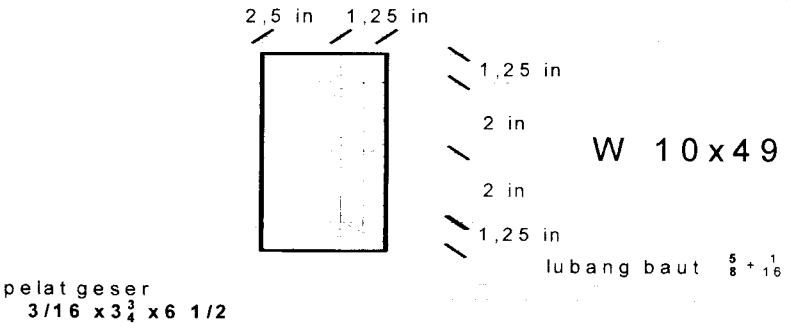
$\phi R_n = \phi . (0{,}6 . F_u) . A_n$ (Pers 3.110)

$= 0{,}75 .(0{,}6 . 58).[\ 3/16 .(6{,}5 - 3 . (5/8 + 1/16))]$

$= 21{,}716$ kips $> V_u = 5{,}189$ kips → *ok*

Cek blok geser pada penampang plat (tampang kritis).

Ambil $l_{ev} = 1\ 1/4$ in dan $l_{eh} = 1\ 1/4$ in



Gambar 6.10 Detail Sambungan Balok ank ke Balok

$A_{vg} = t_{pl} . (l_{ev} + 2.S)$ (Luas pelelehan geser)

$= 3/16 . (1,25+ 2 . 2) = 0,984 \text{ in}^2$

$A_{nt} = t_{pl} . (l_{eh} - 0,5(d+1/16))$ (Luas fraktur tarik)

$= 3/16 . (1,25 - 0,5(5/8 + 1/16)) = 0,17 \text{ in}^2$

$A_{ns} = A_{vg} - t_{pl} . (2,5.(d+1/16))$ (Luas fraktur geser)

$= 0,984 - 3/16 . (2,5. (5/8 + 1/16)) = 0,661 \text{ in}^2$

$A_{tg} = t_{pl} . l_{eh}$ (Luas leleh tarik)

$= 3/16 . 1,25 = 0,234 \text{ in}^2$

Untuk reaksi nominal pilih nilai terbesar dari :

$F_u . A_{nt} = 9,86 < 0,6 . F_u . A_{ns} = 23.0028$

$V_n = 0,6 . F_u . A_{ns} + F_y . A_{tg}$ (Pers 3.107b)

$= 0,6 . 58 . 0,661 + 36 . 0,234 = 31,426$ kips

Kapasitas reaksi terfaktor, $\phi V_n = 0,75 . 31,426 = 23,570$ kips $> V_u = 5,189$ kips.

Menentukan panjang las :

Tebal plat yang digunakan $t_{pl} = 3/16$ in.

Digunakan las fillet, bila $t_{pl} = 3/16$ in $< 1/4$ in,

$a_{max} = t_{pl} = 1/8$ in; dan $a_{min} = 1/8$ in (dari tabel AISC).

$a_{pakai} = 1/8$ in.

$t_e = 0,707 . a = 0,088$ in.

Kekuatan las berdasar leleh tarik,

$\phi R_{nw} = \phi.(0,6 . F_{Exx}).t_e$ (Pers 3.111a)

$= 0,75 . (0,6 . 70) . 0,088 = 2,78$ k/in. (menentukan)

Kekuatan las terhadap geser fraktur dari logam dasar,

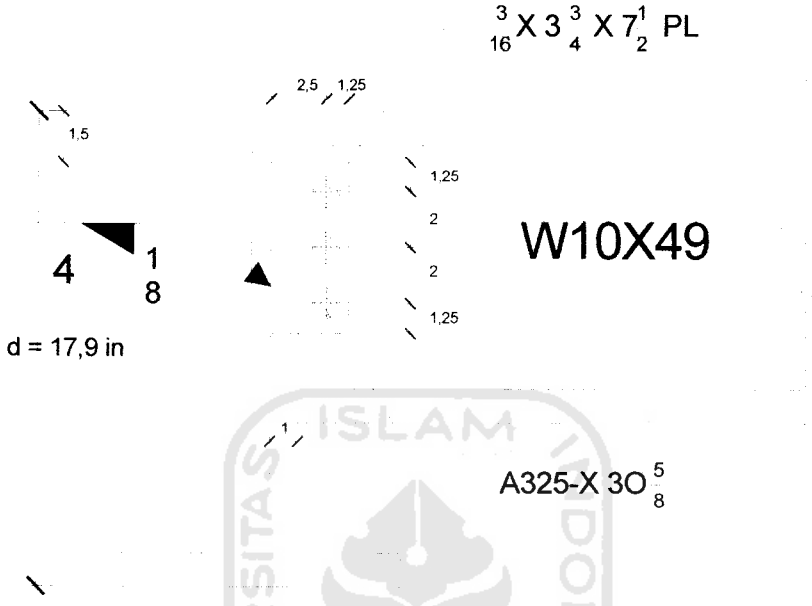
$\phi R_{nw} = \phi.(0,6 . F_u).t_{pl}$ (Pers 3.111b)

$= 0,75 . (0,6 . 58). 3/16 = 4,89$ k/in.

Panjang las yang dibutuhkan,

$$P_{las} = \frac{V_u}{\phi R_{nw}} = \frac{5{,}189}{2{,}78} = 1{,}86 \text{ in} \approx 4 \text{ in}$$

Pakai 4 in las $\frac{1}{8}$ in pada satu sisi balok



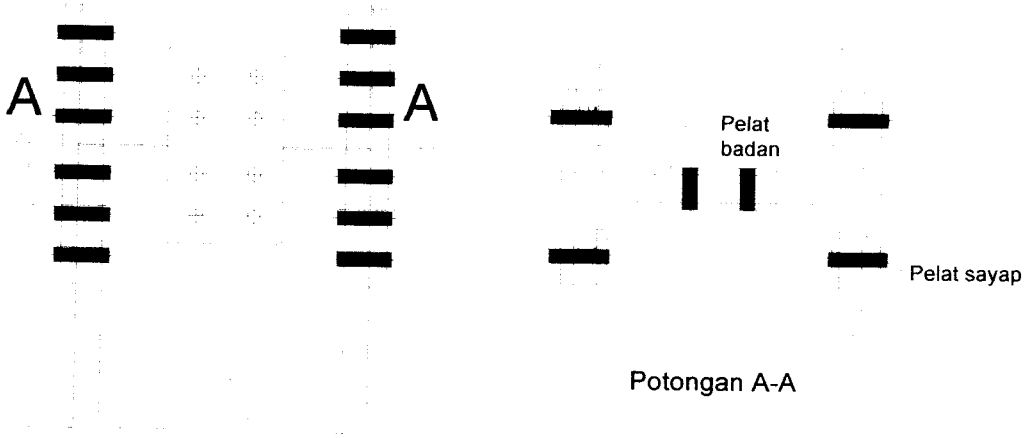
Gambar 6.11 Detail Sambungan Balok anak ke balok

6.5.4 Sambungan Kolom

Direncanakan sambungan kolom K2 pada lantai 3 dengan profil W14X193 dan kolom lantai 4 dengan profil W14X193 struktur *Frame truss*, berdasarkan lampiran C-2 dengan $M_u = 2628{,}01$ K-in dan $P_u = 742{,}911$ Kips.

Data propertis profil W14X193 sebagai berikut :

A_s	= 56,8 in^2	F_y	= 36 ksi
d	= 15,5 in	F_u	= 58 ksi
t_w	= 0,89 in		
b_f	= 15,7 in		
t_f	= 1,44 in		



Gambar 6.12 Rencana Sambungan antar Kolom

Gaya pada sayap

$$T_{uf} = \frac{M_{u,k}}{0,95d} = \frac{2628,01}{0,95.15,5} = 178,472 \text{ Kips} \qquad \text{(Pers 3.123)}$$

Sambungan pada sayap

1. Desain jumlah baut

Digunakan tipe baut A325 X diameter 7/8 *(double shear)*

$$\phi R_n = \phi.0,6.F_u^b.Ab = 0,75.0,6.120.(1/4.\pi.(7/8)^2) = 32,471 \text{Kips} \qquad \text{(Pers 3.108)}$$

$$\text{n perlu} = \frac{T_{uf}}{\phi R_n} = \frac{178,472}{2.32,471} = 2,747 \approx 4 \text{ baut}$$

Kontrol kekuatan sayap kolom

$$A_{vg} = 3,75.1,44.2 = 10,8 \text{ in}^2$$

$$A_{tg} = \left(\frac{15,5 - 7,5}{2}\right).1,44.2 = 11,52 \text{ in}^2$$

A_{ns} = (3,75– 1,5.(7/8+1/16)). 1,44.2 = 6,75 in^2

$$A_{nt} = \left(\frac{15,5-7,5}{2} - 0,5.(7/8+1/16)\right).1,44.2 = 10,17\ in^2$$

$F_u.A_{nt}$ = 58.10,17 = 589,86 Kips

$0,6.\ _u.A_{ns}$ = 0,6.58. 6,75 = 234,9 Kips

$F_u.A_{nt} > 0,6.F_{\ u}.A_{ns}$

$\phi R_n = \phi.F_y.A_{vg} + F_u.A_{nt}$

= 0,6.36.10,8 + 58.10,17

= 233,28 + 589,86 = 823,14 Kips > T_{uf} = 178,472 Kips *OK!*

2. Desain pelat sambung

Dicoba pelat dengan lebar 10,5 in

$$A_g = \frac{178,472}{2.0,9.36} = 2,754\ in^2$$ (Pers 3.125)

$$t_{min} = \frac{2,754}{10,5} = 0,262\ in \approx$$ dipakai tebal pelat 0,75 in (Pers 3.126)

Pakai pelat sambung PL 0,75 x 10,5 in

Kontrol kekuatan pelat sambung

A_{gt} = 0,75.10,5= 7,875 in^2

A_{nt} = (10,5– 2.(3/4+1/16)). 3/4 = 6,656 in^2

0,85 A_{gt} = 0,85. 7,875 = 6,693 in^2 > A_{nt} = 6,656 in^2

$\phi R_n = \phi.F_u.A_{nt}$ (Pers 3.127)

$$= 0,75.58.6,656 = 289,536\ Kips > \frac{T_{uf}}{2} = 89,236\ Kips$$

Kontrol blok geser

A_{vg} = 3,75. 3/4.2 = 5,625 in^2

A_{tg} = 1,5. 3/4.2 = 2,25 in^2

A_{ns} = (3,75 – 1,5.(3/4+1/16)). 3/4.2 = 3,797 in^2

A_{nt} = (1,5 – 0,5.(3/4+1/16)). 3/4.2 = 1,641 in^2

$F_u.A_{nt}$ = 58.1,641 = 95,178 Kips

$0,6.F_u.A_{ns}$ = 0,6.58.3,797 = 132,136 Kips

$0,6.F_u.A_{ns} > F_u.A_{nt}$

$\phi R_n = \phi\ (0,6.F_u.A_{ns} + f_y.A_{tg})$ (Pers 3.107a)

= 0,75.(132,136 + 36.2,25)

= 159,852 Kips > $\frac{T_{uf}}{2}$ = 89,236 Kips *OK!*

Kuat tumpu pelat sambung

$\phi R_n = \phi.2,4.F_u.t_p.db$ (Pers 3.105)

= 0,75.2,4.58.(3/4).(3/4).4= 234,9 Kips > T_{uf}= 178,472 Kips

Sambungan pada badan

1. Desain jumlah baut

$$P_{uw} = \frac{P_{u,k}.A_w}{A} = \frac{742,911.((15,5-2.1,44).0,89)}{56,8} = 146,,905 \text{ Kips}$$ (Pers 3.128)

Digunakan tipe baut A325 X diameter 7/8 *(double shear)*

$\phi R_n = \phi.0,6.f_u^b.Ab$ = 0,75.0,6.120.(1/4.π. $(7/8)^2$) = 32,471 Kips

$$\text{n perlu} = \frac{P_{uw}}{2\phi R_n} = \frac{146,905}{2.32,471} = 2,262 \text{ baut} \longrightarrow \text{pakai 4 baut}$$ (Pers 3.124)

Kontrol kekuatan badan

A_{ns} = (3,75 – 1,5.(7/8+1/16)).1,41.2 = 6,345 in^2

A_{nt} = (7 – 1.(7/8+1/16)). 0,89 = 5,395 in^2

A_{vg} = 3,75. 0,89.2 = 6,675 in^2

A_{tg} = 7. 0,89 = 6,23 in^2

$F_u.A_{nt}$ = 58. 5,395 = 312,91 Kips

$0,6.F_u.A_{ns}$ = 0,6.58. 6,345 = 220,806 Kips

$F_u.A_{nt} > 0,6.F_u.A_{ns}$

$\phi R_n = \phi (F_u.A_{nt} + 0,6.f_y.A_{vg})$

= 0,75 (312,91 + 0,6.36.6,675)

= 342,817 Kips > P_{uw} = 146,905 Kips *OK!*

2. Desain pelat sambung

Digunakan dua pelat dengan pemasangan satu pelat pada tiap sisi badan. Dicoba pelat dengan lebar 10 in

$$A_g = \frac{146,905}{2.0,9.36} = 2,267 \text{ in}^2 \qquad \text{(Pers 3.125)}$$

$$t_{min} = \frac{2,267}{10} = 0,226 \text{ in} \approx \text{dipakai tebal pelat 3/8 in} \qquad \text{(Pers 3.126)}$$

Pakai pelat sambung PL 3/8 x 10 in

Kontrol kekuatan pelat sambung

Kondisi fraktur

A_{nt} = (10 – 2.(7/8+1/16)).3/8.2 = 6,093 in^2

0,85 A_{gt} = 0,85.3/8.10.2 = 6,375 in^2 > A_{nt}= 6,093 in^2

$\phi R_n = \phi.F_u.A_{nt}$ (Pers 3.127)

= 0,75.58.6,093 = 265,045 Kips > P_{uw} = 146,905 Kips

Kondisi leleh (Pers 3.59)

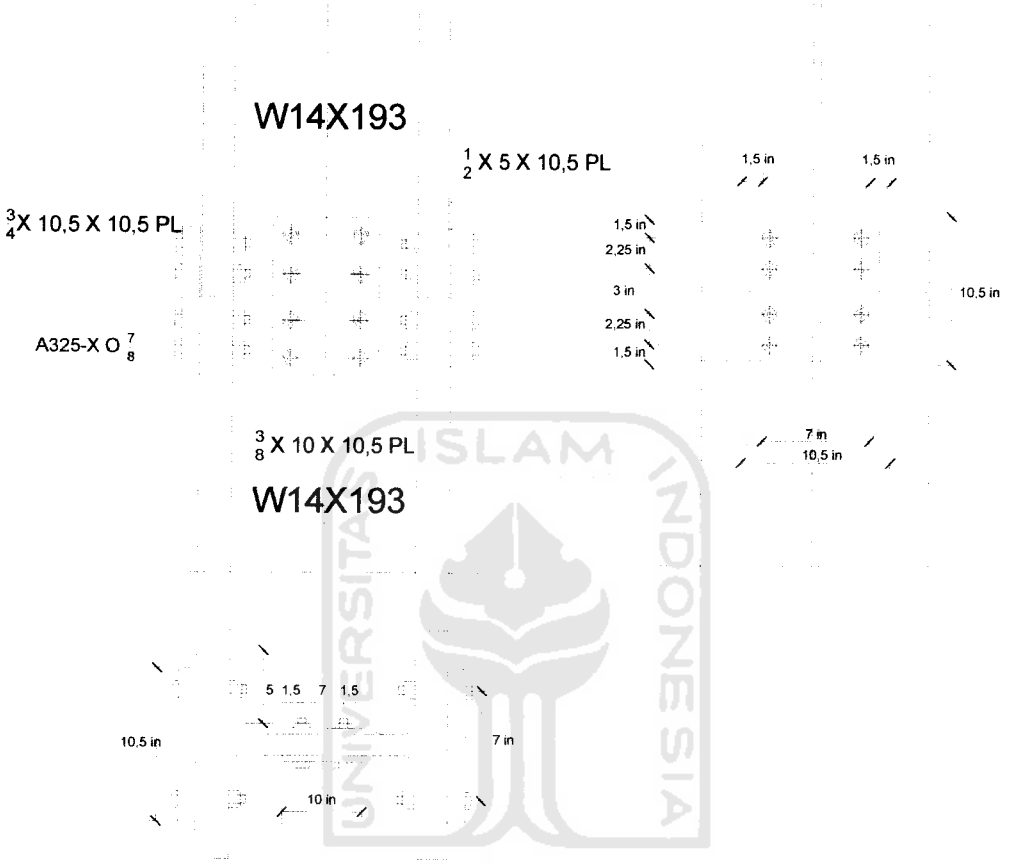
$\phi R_n = 0,9.f_y.A_g$

= 0,9.36.3/8.10.2 = 243 Kips > P_{uw} = 146,905 Kips

Kuat tumpu pelat sambung

$\phi R_n = 0,75.2,4.58.(3/8).(7/8).2.4$ (Pers 3.105)

$= 274,05$ Kips $> P_{uw} = 146,905$ Kips



Gambar 6.13 Detail Sambungan Kolom

6.5.5 Sambungan *Bracing*

Direncanakan sambungan *bracing* pada lantai 2, dengan gaya aksial yang terjadi berdasarkan lampiran D-1 adalah, P_u tekan = 153,02 Kips dan Pu tarik = 132,02 Kips. Dari perencanaan bracing didapatkan profil W12X40, dengan data propertis sebagai berikut :

d = 11,9 in A = 11,7 in^2 Z_y = 16,8 in^3

b_f	= 6,05 in	I_x	= 307 in^4
t_f	= 0,515 in	I_y	= 44,1 in^4
t_w	= 0,295 in	Z_x	= 57 in^3

Prosedur disain:

1). Sambungan *brace*-ke-pelat (*gusset*)

Distribusi gaya pada *brace* berdasarkan luas sayap dan badan.

Gaya pada sayap,

$$P_{uf} = \frac{P_u.(b_f.t_f)}{A} = \frac{132,02.(6,05.0,515)}{11,7} = 35,157 \text{ Kips} \qquad \text{(Pers 3.129)}$$

Gaya pada badan,

$$Puw = P_u - 2P_{uf} = 132,02 - (2.35,157) = 61,706 \text{ Kips} \qquad \text{(Pers 3.130)}$$

Disain sambungan sayap brace ke pelat sambung *(brace flange to gusset).*

Kuat geser satu baut A_{325} – X diameter 3/4 in

$$\phi R_n = \phi_f.0,6.F_u^b.A_b \qquad \text{(Pers 3.108)}$$

$$= 0,75.0,6.120.(1/4.\pi.(3/4)^2)$$

$$= 32,471 \text{ Kips / baut}$$

Kebutuhan baut minimal untuk menahan geser

$$n_{min} = \frac{P_{uf}}{\varphi R_n} = \frac{35,157}{32,471} = 1,083 \approx 2 \text{ dipakai 6 baut}$$

Kuat tumpu sayap *brace*

$$\phi R_b = \phi_f.2,4.d_b.t_{fb}.F_u \qquad \text{(Pers 3.105)}$$

$$= 0,75.2,4.(3/4+1/16).0,515.58 = 43,684 \text{ Kips} > \phi R_n = 32,471 \text{ Kips}$$

Untuk menghubungkan antara sayap *brace* dengan pelat sambung, digunakan profil 2L 4x4x3/8 (A_g = 2,86 in^2) dengan baut disusun dalam satu baris.

Kontrol kekuatan pelat sambung

Kondisi leleh,

$\phi R_n = 0{,}9.A_g.f_y$ (Pers 3.59)

$= 0{,}9.2{,}86.36 = 92{,}664$ Kips $> P_{uf} = 35{,}157$ kips

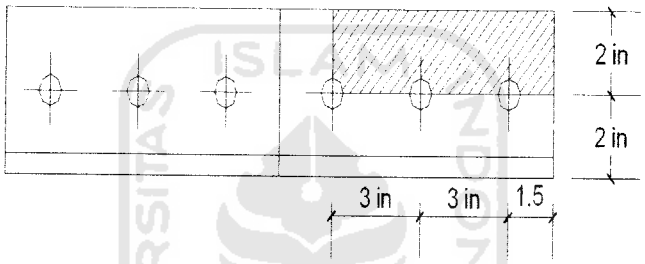
Kondisi fraktur,

$\phi R_n = 0{,}75.F_u.A_e = 0{,}75.F_u.A_n.U$ (Pers 3.62)

$A_n = 2{,}86 - 1(3/4+1/16).3/8 = 2{,}55$ in^2 ; U = 1

$\phi R_n = 0{,}75.58.2{,}55.1 = 110{,}9$ Kips $> P_{uf} = 35{,}157$ Kips

Pengecekan Geser Blok



Gambar 6.14 Geser Blok *Brace* ke Plat

Ambil L eh =1,5 in, L ev = 2 in

$A_{vg} = 2\ t_{pl}\ .\ (l_{eh} + 2.S)$ (Luas pelelehan geser)

$= 2\ .\ 3/8.\ (1{,}5+ 2\ .\ 3) = 5{,}625$ in^2

$A_{nt} = 2\ .\ t_{pl}\ .\ (l_{ev} - 0{,}5(d+ 1/16))$ (Luas fraktur tarik)

$= 2\ .\ 3/8\ .\ (2 - 0{,}5(3/4 + 1/16)) = 1{,}195$ in^2

$A_{ns} = A_{vg} - 2.\ t_{pl}\ .\ (1{,}5.(d+ 1/16))$ (Luas fraktur geser)

$= 5{,}625 - 2.3/8\ .\ (1{,}5.\ (3/4 + 1/16)) = 4{,}711$ in^2

$A_{tg} = 2\ .\ t_{pl}\ .\ l_{ev}$ (Luas leleh tarik)

$= 2\ .\ 3/8\ .\ 2 = 1{,}5$ in^2

$F_u.A_{nt}$ = 58.1,195 = 69,31 Kips

$0,6.F_u.A_{ns}$ = 0,6.58.4,711 = 163,943 Kips

$0,6.F_u.A_{ns} > F_u.A_{nt}$

$\phi R_n = \phi.(f_y.A_{tg} + 0,6.F_u.A_{ns})$

$= 0,75.(36.(1,5) + 163,943)$

$= 163,457$ Kips $> P_{uf} = 35,157$ Kips→*OK!*

2). Disain sambungan badan ke pelat (*brace web to gusset*)

Dipakai baut A_{325} – X diameter 7/8 in.

Kebutuhan baut minimum,

$$n_{min} = \frac{P_{uw}}{\varphi R_n} = \frac{61,706}{35,157} = 1,755 \approx 2 \text{ dipakai. 2 baut}$$

Pakai baut dengan diameter 7/8 in yang dipasang dua baris dengan pelat sambung 2PL 3/8x6.

Kuat tumpu rencana

$\phi R_n = \phi_f.2,4.d_b.t_{pl}.F_u$ (Pers 3.105)

$= 0,75.2,4.(3/4+1/16).3/8.58 = 31,809$ Kips

Kontrol kekuatan pada pelat

Kondisi leleh,

$\phi R_n = 0,9.A_g.f_y = 0,9.(3/8.6).58$ (Pers 3.59)

$= 117,45$ Kips $> P_{uw} = 61,706$ Kips

Kondisi fraktur

$\phi R_n = 0,75.F_u.A_e = 0,75.F_u.A_n.U$ (Pers 3.62)

$= 0,75.58.(3/8.6 – 2(3/4+1/16).3/8) = 71,367$ Kips $> P_{uw} = 61,706$ Kips

Pengecekan Geser Blok

Gambar 6.15 Gesesr Blok Badan ke Plat

Ambil L ev = 1,5 in, L eh = 3 in

$A_{vg} = 2\ t_{pl}\ .\ (l_{eh} + 1.S)$ (Luas pelelehan geser)

$= 2\ .\ 3/8\ .(3 + 1\ .\ 3) = 4{,}5\ in^2$

$A_{nt} = 2\ .\ t_{pl}\ .\ (l_{ev} - 0{,}5(d + 1/16))$ (Luas fraktur tarik)

$= 2\ .3/8\ .(1{,}5 - 0{,}5(3/4+1/16)) = 0{,}82\ in^2$

$A_{ns} = A_{vg} - 2.\ t_{pl}\ .\ (1{,}5.(d + 1/16))$ (Luas fraktur geser)

$= 4{,}5 - 2\ .\ 3/8\ .\ (1{,}5.\ (3/4 + 1/16)) = 3{,}585\ in^2$

$A_{tg} = 2\ .\ t_{pl}\ .\ l_{ev}$ (Luas leleh tarik)

$= 2\ .\ 3/8\ .\ 1{,}5 = 1{,}125\ in^2$

$F_u\ .\ A_{nt} = 58.0{,}82 = 47{,}56$ Kips

$0{,}6.F_u.A_{ns} = 0{,}6.58.3{,}585 = 124{,}758$ Kips

$0{,}6.F_u.A_{ns} > F_u.A_{nt}$

$\phi R_n = \phi.(f_y.A_{tg} + 0{,}6.F_u.A_{ns})$ (Pers 3.107a)

$= 0{,}75.(36.(2.1{,}5.3/8) + 124{,}758)$

$= 155{,}133$ Kips $> P_{uw} = 61{,}706$ Kips→*OK*!

Kontrol kekuatan *brace*

Kondisi leleh,

$\phi R_n = 0{,}9.A_g.f_y$ (Pers 3.59)

$= 0,9.11,7.36 = 379,08$ Kips $> P_u = 132,02$ Kips → *OK!*

Kondisi fraktur,

$\phi R_n = 0,75.F_u.A_e = 0,75.F_u.A_n.U$ (Pers 3.62)

$A_n = 11,7 - 2(3/4+1/16).0,515 = 10,863$ in^2

$\phi R_n = 0,75.58.10,863.1 = 472,540$ Kips $> P_u = 132,02$ Kips

3). Disain pelat sambung (*gusset*)

Dipakai pelat sambung (*gusset*) PL 3/4 in

Kuat tumpu rencana tiap lubang baut

$\phi R_n = \phi_f.2,4\, d_b.t_{pl}.F_u$ (Pers 3.105)

$= 0,75.2,4.(3/4+1/16).3/4.58 = 63,619$ Kips

Pengecekan geser blok akibat transfer gaya dari badan

Tarik fraktur

$A_{nt} = 2 \,.\, t_{pl} \,.\, (l_{ev} - 0,5(d+1/16))$

$= 2 \,.3/4 \,.(1,5 - 0,5(3/4+1/16)) = 1,641$ in^2

$F_u.A_{nt} = 58.1,641 = 95,156$ Kips

Geser fraktur

$A_{vg} = 2\, t_{pl} \,.\, (l_{eh} + 1.S)$

$= 2 \,.\, 3/4 \,.(1.5 + 1.\, 3) = 6,75$ in^2

$A_{ns} = A_{vg} - 2.\, t_{pl} \,.\, (1,5.(d+1/16))$

$= 6,75 - 2 \,.\, 3/4 \,.\, (1,5.\,(3/4 + 1/16)) = 4,922$ in^2

$0,6.F_u.A_{ns} = 0,6.58.4,922 = 171,285$ Kips

$0,6.F_u.A_{ns} > F_u.A_{nt}$

$\phi_t R_n = \phi.(f_y.A_{gt} + 0,6.F_u.A_{ns})$

$= 0,75.(36.(2.1,5.3/4) + 171,285)$

$= 198{,}285$ Kips $> P_{uw} = 61{,}706$ Kips→*OK!*

Pengecekan geser blok akibat beban total *brace*

Tarik fraktur

$F_u.A_{nt} = 58.\ 2\ .3/4\ .(1{,}5 - 0{,}5(3/4+1/16)) = 95{,}156$ Kips

Geser fraktur

$A_{vg} = 4\ .3/4\ .(1.5 + 1.\ 3) = 13{,}5$ in^2

$A_{ns} = 13{,}5 - 4\ .\ 3/4\ .\ (1{,}5.\ (¾ + 1/16)) = 9{,}844$ in^2

$0{,}6.F_u.A_{ns} = 0{,}6.58.9{,}844 = 342{,}571$ Kips

$0{,}6.F_u.A_{ns} > F_u.A_{nt}$

$\phi_t R_n = \phi_t.(f_y.A_{gt} + 0{,}6.F_u.A_{ns})$ (Pers 3.107a)

$= 0{,}75.(36.(2.1{,}5.3/4) + 342{,}571)$

$= 403{,}321$ Kips $> P_u = 132{,}02$ Kips→ *OK!*

Kontrol kuat tarik leleh pada daerah pertemuan *brace* dengan pelat sambung, di mana panjang total (Lw) = 15 in, 7 in pada pelat sambung, dan 7 in diteruskan pada badan balok, sisanya untuk *space* antara *bracing* dengan pelat *(gusset)*

$\phi R_n = \phi.f_y.A_w$

$= 0{,}9.(36.7.3/4 + 36.7.0{,}515) = 141{,}574$ Kips $>$ Pu $= 132{,}02$ Kips

4). Distribusi gaya *brace* ke kolom dan balok.

Untuk Kolom lantai 2 dipakai K 5 dengan profil W14X211 (d=15,7)

Untuk Balok lantai 2 dipakai B 2 dengan profil W16X26 (d=15,7)

$$e_b = \frac{d_b}{2} = \frac{15{,}7}{2} = 7{,}85 \text{ in} ; \quad e_c = \frac{d_c}{2} = \frac{15{,}7}{2} = 7{,}85 \text{ in}$$

Dicoba pelat sambung *(gusset)* PL 3/4x45x25 in.

$\alpha = 45/2 \quad = 22{,}5$ in

$\beta = 25/2 \quad = 12{,}5$ in

Diapakai $\alpha = 22{,}5$ in dan $\beta = 12{,}5$ in

Kalkulasi gaya pada pelat sambung

$$r = \sqrt{(\alpha + e_c)^2 + (\beta + e_b)^2} \qquad \text{(Pers 3.134)}$$

$$= \sqrt{(22{,}5 + 7{,}85)^2 + (12{,}5 + 7{,}85)^2} = 36{,}541 \text{ in}$$

Distribusi gaya pada sambungan pelat-ke-kolom

$$H_{uc} = \frac{e_c}{r} P_u = \frac{7{,}85}{36{,}541}.86{,}82 = 18{,}651 \text{Kips} \qquad \text{(Pers 3.135)}$$

$$V_{uc} = \frac{\beta}{r} P_u = \frac{12{,}5}{36{,}541}.86{,}82 = 29{,}699 \text{ Kips} \qquad \text{(Pers 3.136)}$$

Distribusi gaya pada sambungan pelat-ke-balok

$$H_{ub} = \frac{\alpha}{r} P_u = \frac{22{,}5}{36{,}541}.86{,}82 = 53{,}459 \text{ Kips} \qquad \text{(Pers 3.137)}$$

$$V_{ub} = \frac{e_b}{r} P_u = \frac{10{,}55}{36{,}541}.86{,}82 = 25{,}066 \text{ Kips} \qquad \text{(Pers 3.138)}$$

5). Disain sambungan pelat-ke-kolom

Dipakai pelat sambung L 4x4x1/2, dengan 2 baut 3/4 in pada kedua sisinya.

Gaya tarik tiap baut

$$r_{ut} = \frac{H_{uc}}{n} = \frac{18{,}651}{2.2} = 4{,}662 \text{ Kips / baut}$$

Kontrol kuat desain baut terhadap geser dan tarik

$$r_{uv} = \frac{V_{uc}}{n}$$

$$= \frac{29,699}{4} = 7,425 \text{ Kips / baut}$$

$Ft = 117 - 1,9fv$

$$= 117 - 1,9\left(\frac{7,425}{1/4 .\pi.(3/4)^2}\right)$$

$= 85,067$ Ksi

$\phi Rn = \phi Ft.Ab$

$= 0,75.85,067.(0,25.\pi.(3/4)^2 = 28,186$ Kips $> r_{ut} = 4,662$ Kips / baut

Kontrol kuat tumpu sayap pelat sambung

$\phi Rn = \phi.2,4.d.t.fu$

$= 0,75.2,4.(3/4).(1/2).58 = 39,15$ Kips

Menentukan panjang las :

Tebal plat yang digunakan $t_{pl} = ½$ in.

Digunakan las fillet, bila $t_{pl} = ½$ in $> ¼$ in,

$a_{max} = t_{pl} = ½ - 1/16 = 7/16$ in; dan $a_{min} = ¼$ in (dari tabel AISC).

$a_{pakai} = 5/16$ in.

$t_e = 0,707 . a = 0,265$ in.

Kekuatan las berdasar leleh tarik,

$\phi R_{nw} = \phi.(0,6 . F_{Exx}).t_e$

$= 0,75 . (0,6 . 70) . 0,265 = 8,347$ k/in. (menentukan)

Kekuatan las terhadap geser fraktur dari logam dasar,

$\phi R_{nw} = \Phi.(0,6 . F_u).t_{pl}$

$= 0,75 . (0,6 . 58). ½ = 13,05$ k/in.

Panjang las yang dibutuhkan,

$$P_{las} = \frac{V_u}{\phi R_{nw}} = \frac{29,699}{8,347} = 3,558 \text{ in} \approx 5 \text{ in.}$$

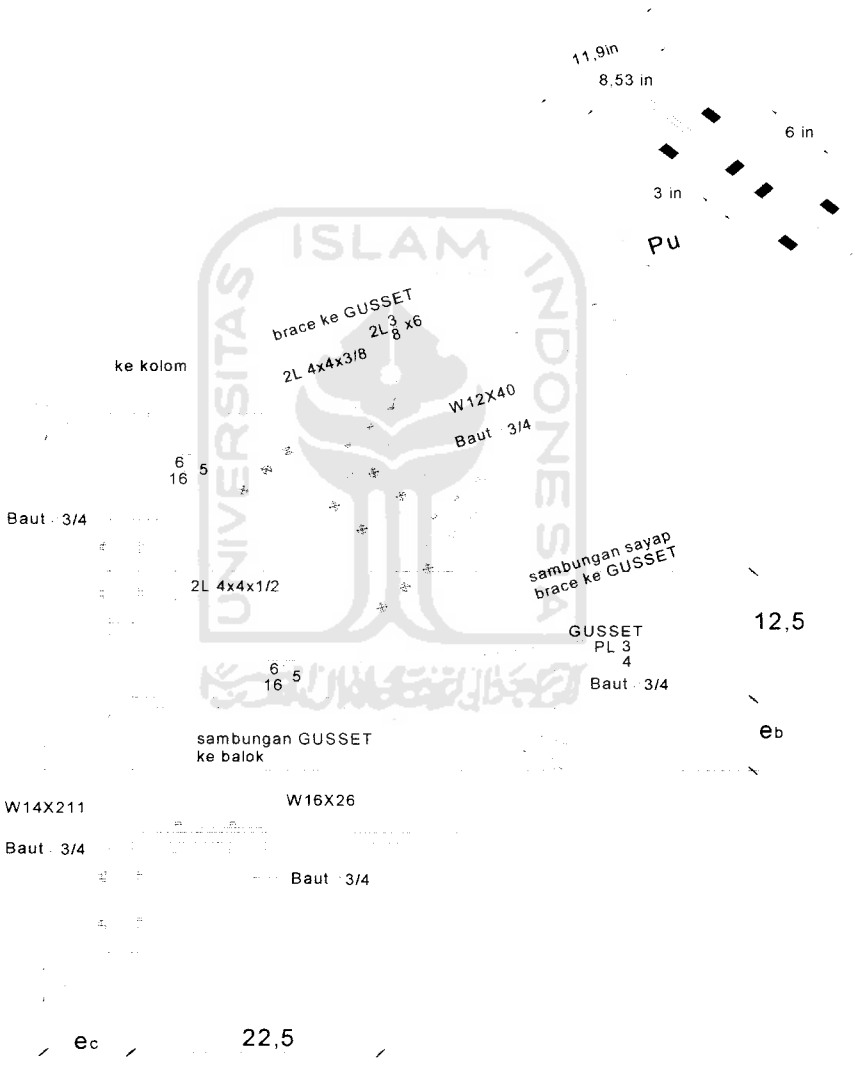
Pakai 5 in las $\frac{6}{16}$ in pada satu sisi *gusset*

6). Disain sambungan pelat *(gusset)* -ke-balok

Untuk sambungan antara *gusset* dengan sayap balok digunakan tipe las sudut dengan tebal 6/16 in.

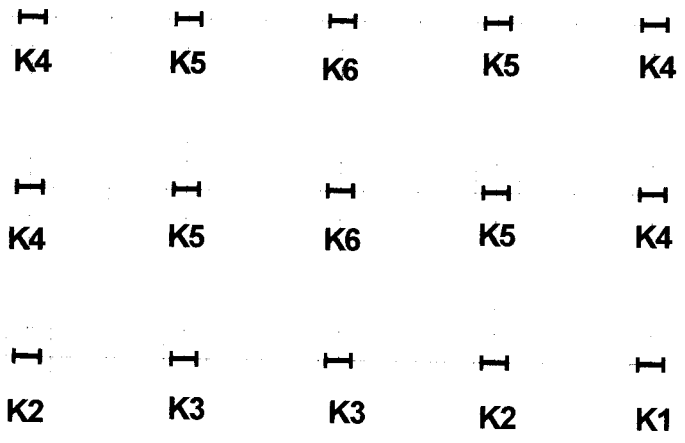
$$P_{las} = \frac{V_u}{\phi R_{nw}} = \frac{25{,}066}{8{,}347} = 3{,}00 \text{ in} \approx 5 \text{ in.}$$

Pakai 5 in las $\frac{6}{16}$ in pada satu sisi *gusset*



Gambar 6.16 Detail Sambungan Bresing

6.6 Perencanaan Pelat Dasar Kolom



Gambar 6.17 Denah Rencana Peletakan Plat Dasar Kolom

Pelat dasar kolom merupakan penghubung antara kolom baja dengan beton (*pilecap*). Dalam perencanaanya pelat dasar kolom akan didesain berdasarkan beban aksial dan momen yang terjadi di dasar kolom.

Direncanakan pelat dasar kolom K2 pada strutur *Frame truss* dengan beban yang bekerja berdasarkan lampiran C-2 di dasar kolom sebagai berikut :

Mu x = 2628,01 K-in

Mu y = 1171,6 K-in

Pu = 803,405 Kips

Digunakan kolom W14X193, dengan data propertis sebagai berikut :

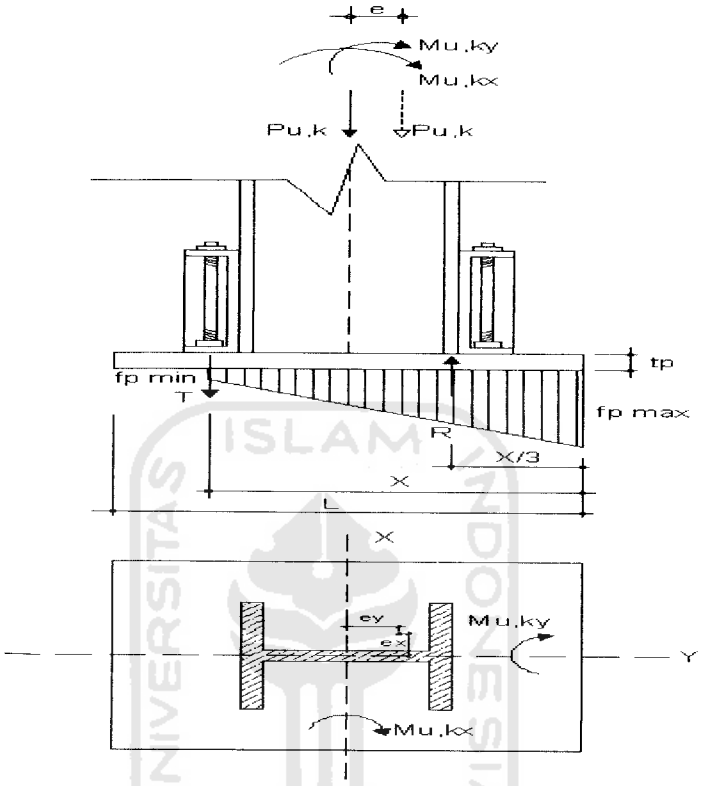
A_s	= 56,8 in^2	Fy	= 36 ksi
d	= 15,5 in	Fu	= 58 ksi
t_w	= 0,89 in	fc'	= 4 Ksi
b_f	= 15,7 in	Fp	=0,85.fc' = 3,4 Ksi
t_f	= 1,44 in		

Eksentrisitas akibat momen :

$$e_y = \frac{Mu,kx}{Pu,k} = \frac{2628,01}{803,405} = 3,271in < \frac{1}{2} \times d_c = 7,75in \quad \text{(Pers 3.139)}$$

$$e_x = \frac{Mu,ky}{Pu,k} = \frac{11716}{80340} = 1{,}458\ in \qquad \text{(Pers 3.140)}$$

diasumsikan e > L/6. Akibat eksentrisitas terjadi pembesaran gaya aksial, maka diberi sayap tambahan = 3,89 in (menggunakan profil MC12X40)



Gambar 6.18 Analisis Pelat Dasar Kolom

Diasumsikan resultan reaksi distribusi segitiga (R) bekerja pada pusat flens, sehingga

$P_u = R = T$

Kesetimbangan momen pada pusat gaya aksial T :

$$Pu,k\left(dc/2+3,98/2+e_y\right)+Pu,k.e_x=R\left(dc-tf/2+3,98/2\right) \quad \text{(Pers3.142)}$$

$$T=\frac{803,405\left(\frac{15,5}{2}+\frac{3,98}{2}+3,271\right)+(803,405\times 1,458)}{\left(15,5-\frac{1,44}{2}+\frac{3,98}{2}\right)}$$

Pu = T = 693,170 Kips

Diasumsikan luas bidang tekan efektif penumpu akibat momen yang bekerja adalah (X.B), sehingga gaya tekan yang terjadi harus memenuhi :

$$\phi P_p \geq P_u$$

$$\phi\ (\ ½\ F_p\ .X.B) = Pu \quad \text{(Pers 3.143)}$$

$$(X.B)=\frac{2.(Pu)}{\varphi(Fp)}=\frac{2.693,170}{0,6.(0,85.4)}=679,578\ in^2$$

Coba, B = 30 in ; panjang bidang tekan

$$X=\frac{697,578}{30}=23,252\ in$$

Jarak dari pusat flens ke ujung pelat

$$1/3.X = 1/3(23,252) = 7,751\ in$$

Panjang pelat dasar yang dibutuhkan

$$L = (2\ .7,751) + 15,5 - 1,44 = 29,562\ in$$

Diambil, L = 35 in

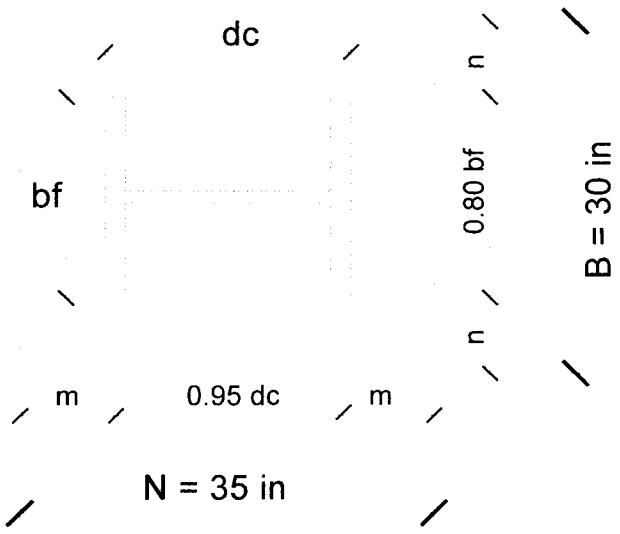
Dipakai, B = 30 in dan L = 35 in

$$m=\frac{L-0,95.dc}{2} \quad \text{(Pers 3.144)}$$

$$=\frac{35-0,95.15,5}{2}=10,1375\ in$$

$$n=\frac{B-0,8.bf}{2} \quad \text{(Pers 3.145)}$$

$$=\frac{30-0,8.15,7}{2}=8,72\ in$$



Gambar 6.19 Disain Pelat Dasar Kolom

Kontrol eksentrisitas, e_y = 3,271 in < L/6 = 35/6 = 5,833 in, sehingga dapat dianggap tidak ada tegangan tarik awal pada baut angkur.

Tegangan pada ujung pelat:

$$fp = \frac{Pu}{B.L} \pm \frac{Mu,kx}{1/6.BL^2} \pm \frac{Mu,ky}{1/6.B^2L} \qquad \text{(Pers 3.148)}$$

$$fp_{max} = \frac{803,405}{30 \times 35} + \frac{2628,01}{1/6.30.35^2} + \frac{1171,6}{1/6.30^2.35} = 1,417 \text{ Ksi}$$

$$fp_{min} = \frac{803,405}{30 \times 35} - \frac{2628,01}{1/6.30.35^2} - \frac{1171,6}{1/6.30^2.35} = 0,113 \text{ Ksi}$$

Cek kapasitas penumpu

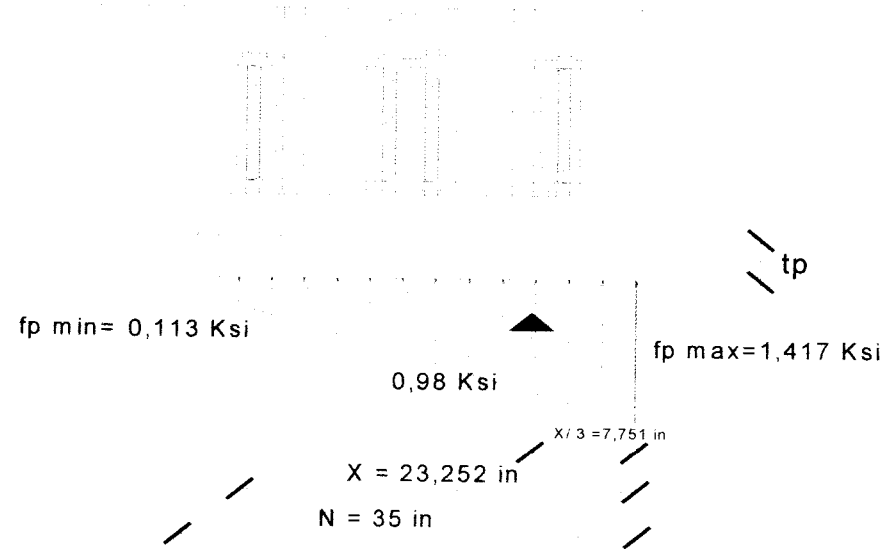
$$\phi P_p \geq P_u \qquad \text{(Pers 3.146)}$$

$$\phi P_p = \phi_e.F_p.A \qquad \text{(Pers 3.147)}$$

$$= 0,6.(0,85.fc'.A)$$

$$= 0,6.(0,85.4.30.35)$$

$$= 2142 \text{ Kips} > P_u = 803,405 \text{ Kips}$$



Gambar 6.20 Distribusi Tegangan pada Pelat Dasar Kolom

Momen lentur pelat di titik A, sepanjang B = 1 in

$$M_u = \tfrac{1}{2}.0{,}98.7{,}751.1\left(\frac{7{,}751}{3}\right) + \tfrac{1}{2}.1{,}417.7{,}751.1.\left(\frac{2.7{,}751}{3}\right)$$

$$= 38{,}189 \text{Ksi}$$

Batas pelelehan untuk lentur pada pelat menghendaki

$$\phi M_n \geq M_u$$

$$\phi M_n = \phi M_p = \phi_b \, Zfy = 0{,}9.(B.t_p^2/4).fy \geq M_u$$

Tebal pelat yang diperlukan :

$$tp = \sqrt{\frac{4.Mu}{0{,}9.B.fy}} = \sqrt{\frac{4.38{,}189}{0{,}9.1.36}} = 2{,}171 \text{ in} \qquad \text{(Pers 3.149)}$$

digunakan tebal pelat, $t_p = 2.5$ in

Pada perencanaan baut angkur, karena tidak ada gaya tarik pada angkur maka hitungan untuk angkur dihitung dengan hitungan praktis sebagai berikut :

Perencanaan baut angkur arah y yang menahan Mu,k x = 2628,01 K-in

$$T = \frac{Mu, kx}{d\,c + d \text{ sayap tambahan}} = \frac{2628{,}01}{15{,}5 + 3{,}89} = 135{,}534 \text{ Kips} \qquad \text{(Pers 3.150)}$$

Digunakan baut angkur A_{307} (Fu = 58 Ksi) diameter 1 in

Kapasitas tarik satu angkur :

$\phi T_n = \phi.0{,}75.fu.Ab$

$= 0,75.0,75.58.(\ ¼.\pi.\ 1^2) = 25,62$ Kips

Jumlah angkur minimum yang diperlukan :

$$n = \frac{T}{\varphi T_n} = \frac{135,534}{25,62} = 5,290 \rightarrow 7 \text{ angkur} \qquad \text{(Pers 3.152)}$$

Perencanaan baut angkur arah x yang menahan Mu,k y = 1171,60 K-in

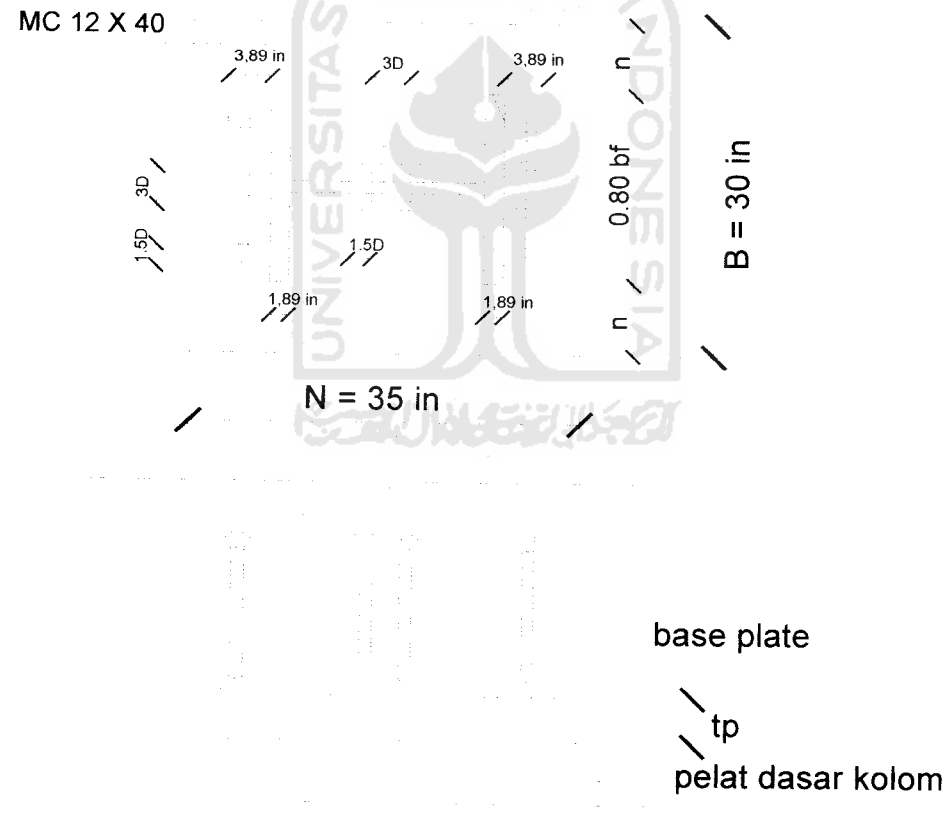
$$T = \frac{Mu,ky}{bf} = \frac{1171,60}{15,7} = 74,624 \text{ Kips}$$

Digunakan baut angkur A_{307} diameter 1 in (ϕT_n = 36,36 Kips)

Jumlah angkur minimum yang diperlukan, diguanakan baut angkur yang sama :

$$n = \frac{T}{\varphi T_n} = \frac{74,624}{36,36} = 2,11 \rightarrow 4 \text{ angkur} \qquad \text{(Pers 3.152)}$$

Detail hasil perencanaan pelat dasar pondasi dapat dilihat pada gambar di bawah ini :

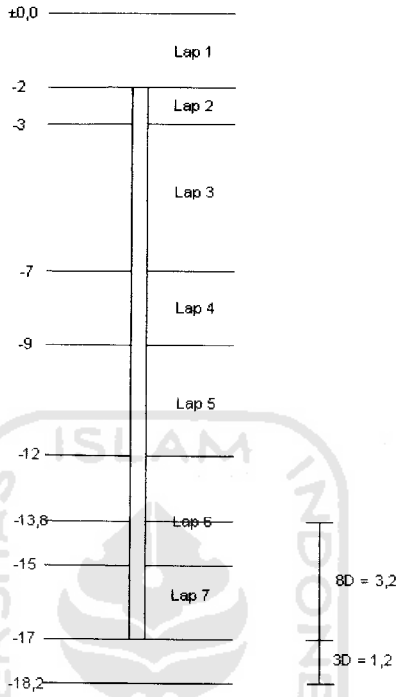


Gambar 6.21 Detail Perencanaan *Base Plate*

6.7 Perencanaan Pondasi Tiang Pancang

6.7.1 Perhitungan Kapasitas Tiang Tunggal

Kedalaman tiang dan data penyelidikan tanah dapat dilihat dalam gambar dibawah ini:



Gambar 6.22 Kedalaman Tanah

Tabel 6.23 Data hasil penyondiran Tanah

Depth	N-Value	Qc	JHL
		(Kg/Cm^2)	(Kg/Cm^2)
1	2	4	-
-2	2	7	-
-3	2	4	-
-4	3	4	-
-5	3	10	-
-6	4	10	-
-7	4	30	-
-8	8	12	-
-9	15	22	-
-10	15	26	-
-11	13	20	-
-12	25	80	-
-13	57	90	-

-13.8	83	96	-
-14	96	92	-
-15	100	138	-
-16	100	176	-
-17	100	185	1710
-18	100	205	-
-18.2	100	240	-

Data-data :

Diameter Tiang pancang = 0,4 m

Safety Faktor (SF) = 3

a. Perhitungan daya dukung tiang pancang tunggal cara *N-SPT*

Tahanan Ujung (Qp)

$Qp = Ap.qp \leq Ap.(400\tilde{N})$ (Pers 3.154)

$Ap = \frac{1}{4}.\pi.(0,4)^2 = 0,126\ m^2$

$\tilde{N} = \frac{83+96+100+100+100+100+100}{7} = 97$

$qp = 40N\frac{Lb}{D}$ (Pers 3.155)

$= 40.97.\frac{15}{0,4} = 145500\ KN/m^2$

$Qp = Ap.qp$ (Pers 3.157)

$= 0,126 . 145500 \leq Ap.(400\tilde{N})$

$= 18333\ KN \leq 4838,4\ KN$

Maka diambil Qp yang kecil = 4838,4 KN

Tahanan Selimut (Qs)

$Qs = fav . As$ (Pers 3.156a)

$As = \pi . D . h$

$= 3.14 . 0,4 . 15 = 18,85\ m^2$

$$\bar{Ns} = \frac{(2+2+2+3+3+4+4+8+15+15+13+25+57+83+96+100+100+100}{18}$$

$= 35,11\ KN/m^2$

$fav = 2.\bar{N}s$ (Pers 3.156b)

$= 2.\ 35{,}11$

$= 70{,}22\ \text{KN/ m}^2$

$Qs = fav\ .\ As$ (Pers 3.156a)

$= 70{,}22\ .\ 18{,}85$

$= 1323{,}688\ \text{KN}$

$Qu = Qp + Qs$ (Pers 3.166)

$= 4838{,}4 + 1323{,}688$

$= 6162{,}08\ \text{KN}$

$$QNet = \frac{Qu}{SF}$$ (Pers 3.167)

$$= \frac{6162{,}08}{3} = 2054{,}029\ \text{KN} = 209{,}384\ \text{Ton}$$

b. Perhitungan daya dukung tiang pancang tunggal cara *CPT*

Tahanan Ujung

$$Qc = \frac{(96 + 92 + 138 + 176 + 185 + 205 + 240)}{7} = 161{,}714\ \text{Kg/cm}^2$$

$Qp = Ap\ .\ qc$ (Pers 3.157)

$= (1/4.(3{,}14).(40)^2.\ 161{,}714$

$= 203215{,}806\ \text{Kg}$

$= 203{,}215\ \text{Ton}$

Tahanan Selimut

$Qs = As.JHP$ (Pers 3.158)

$= (\pi.D).JHP$

$= (3{,}14.40).1710$

$= 214776\ \text{Kg} = 214{,}776\ \text{Ton}$

$Qu = Qp + Qs$ (Pers 3.166)

$= 203{,}215 + 214{,}776$

$= 417{,}991\ \text{Ton}$

$$QNet = \frac{Qu}{SF} = \frac{417{,}991}{3} = 139{,}33\ \text{Ton}$$ (Pers 3.167)

c. Perhitungan daya dukung tiang pancang tunggal cara Laboratorium

Data Tanah

Lap 1

Gs = 2,537

γ b = 1,846 T/m^3

γ k = 1,401 T/m^3

cu = 0,304 Kg/cm^3

ø = 2 °

Lap 2

Gs = 2,645

γ b = 2 T/m^3

cu = 0,795 Kg/cm^3

ø = 2 °

Lap 3

Gs = 2,619

γ b = 1,821 T/m^3

cu = 0,9276 Kg/cm^3

ø = 2 °

Lap 4

Gs = 2,67

γ b = 2,11 T/m^3

cu = 1193 Kg/cm^3

ø = 2 °

Lap 5

Gs = 2,612

γ b = 2,811 T/m^3

cu = 1,926 Kg/cm^3

ø = 2 °

Lap 6

Gs = 2,608

γ b = 1,917 T/m^3

cu = 2,395 Kg/cm^3

ø = 2 °

Lap 7

Gs = 2,601

γ b = 2,18 T/m^3

γ k = 2,5484 T/m^3

cu = 2,751 Kg/cm^3

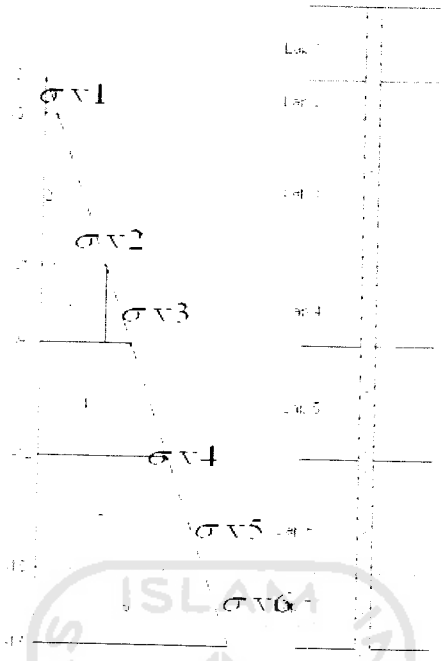
ø = 2 °

1. Metode α

Tabel 6.24 Perhitungan tahanan Selimut (Qs) dengan metode α

Depth	As = Ap.ΔL	Cu	α	Qs = As.α.Cu
2 -- 3	(3,14 x 0,4) x1 = 1,256	78	0,85	83,273
3 -- 7	(3,14 x 0,4) x4 = 5,024	91	0,75	342,89
7 -- 9	(3,14 x 0,4) x2 = 2,512	117	0,5	146,952
9 -- 12	(3,14 x 0,4) x3 = 3,768	189	0,5	356,076
12 -- 15	(3,14 x 0,4) x3 = 3,768	235	0,5	442,74
15 - 17	(3,14 x 0,4) x2 = 2,512	270	0,5	339,12
			∑ Qs	**1711,051** KN
				174,42 Ton

2. Metode λ



Gambar 6.23 Tegangan Efektif Tanah

Tabel 6.25 Data lapisan tanah

Lapian	Gs	γb (T/m^3)	γk (T/m³)	cu (Kg/Cm²)	φ (°)
Lapisan 1	2,537	1,846	1,401	0,304	2
Lapisan 2	2,645	2		0,795	2
Lapisan 3	2,619	1,821		0,9276	2
Lapisan 4	2,670	2,110		1,193	2
Lapisan 5	2,612	2,811		1,926	2
Lapisan 6	2,608	1,917		2,395	2
Lapisan 7	2,601	2,180		2,75	2

Maka besarnya σ v dapat dihitung sebagai berikut :

σ v1 = h1. γ b1 = 1. 2 = 2 t/m (Pers 3.161)

σ v2 = σ v1+(h2 γ b2) = 2+(4.1,821) = 9,284 t/m^2

σ v3 = σ v2+(h3 γ b3) = 9,284+(2.2,11) = 13,504 t/m^2

$\sigma v4 = \sigma v3+(h4\,\gamma b4)$ $= 13{,}504+(3.1{,}811)$ $= 18{,}937\ t/m^2$

$\sigma v5 = \sigma v4+(h5\,\gamma b5)$ $= 18{,}937+(3.1{,}917)$ $= 24{,}688\ t/m^2$

$\sigma v6 = \sigma v5+(h6\,\gamma b6)$ $= 24{,}688+(2.2{,}18)$ $= 29{,}048\ t/m^2$

$97{,}461\ t/m^2$

Maka luas dapat dihitung sebagai berikut :

$A1 = ½ . h1 . \sigma v1$ $= ½ . 1 . 2$ $= 1\ t/m$ (Pers 3.160)

$A2 = ½ . h2 .(\sigma v1+\sigma v2)$ $= ½ . 4(2+9{,}284)$ $= 22{,}568\ t/m$

$A3 = ½ . h3 .(\sigma v2+\sigma v3)$ $= ½ . 2(9{,}284+13{,}504)$ $= 22{,}788\ t/m$

$A4 = ½ . h4 .(\sigma v3+\sigma v4)$ $= ½ . 3(13{,}504+18{,}934)$ $= 48{,}6615\ t/m$

$A5 = ½ . h5 .(\sigma v4+\sigma v5)$ $= ½ . 3(18{,}937+24{,}688)$ $= 65{,}4375\ t/m$

$A6 = ½ . h6 .(\sigma v5+\sigma v6)$ $= ½ . 2(24{,}688+29{,}048)$ $= 53{,}7360\ t/m$

$214{,}191\ t/m$

$$\bar{\sigma V} = \frac{\sum Ai}{L} \qquad \text{(Pers 3.162)}$$

$$= \frac{214{,}1910}{15} = 14{,}2794\ t/m$$

$$\bar{Cu} = \frac{\sum (cu.i.hi.)}{L} \qquad \text{(Pers 3.163)}$$

$$= \frac{78.1+91.4+117.2+189.3+235.3+270.2}{15} = \frac{2488}{15}$$

$$= 165{,}87\ kN/m^2 \quad = 16{,}91\ T/m^2$$

$$fs = \lambda.(\bar{\sigma V} + (2.\bar{cu})) \qquad \text{(Pers 3.165)}$$

$$= 0{,}21.(14{,}2794 + (2.16{,}91))$$

$$= 10{,}1\ T/m^2$$

$$Qs = Ap.L.fs \qquad \text{(Pers 3.164)}$$

$$=(3{,}14.0{,}4).15.10{,}1 = 190{,}3\ Ton$$

Dari kedua metode diatas diperoleh *Qs* sebagai berikut :

$Qs\alpha = 174{,}42\ Ton$

$Qs\lambda = 190{,}3\ Ton$

Maka Q*s* yang dipakai adalah yang terkecil = 174,42 Ton

(Pers 3.153)

$Qp = Ap.Nc.Cu$

$= ¼ .3,14. 0,4^2.9,5.165,87 = 197,916$ KN $= 20,174$ Ton

(Pers 3.166)

$Qu = Qp + Qs$

$=20,174 + 174,42 = 194,594$ Ton

(Pers 3.167)

$$Qnet = \frac{Qu}{SF} = \frac{194,594}{3} = 64,864 \text{ Ton}$$

Qnet dapat disimpulkan :

Qnet N-SPT = 209,384 Ton

Qnet CPT = 139,33 Ton

Qnet laboratorium = 64,864 Ton

Kesimpulan :

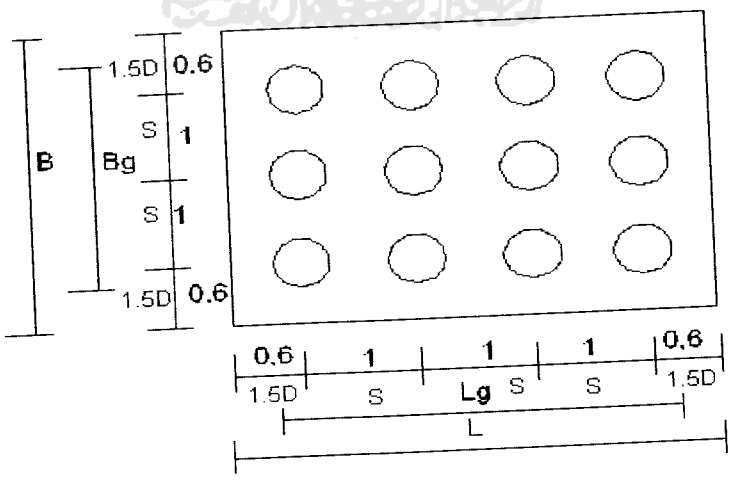
Hasil Qnet laboratorium sangat kecil dibandingkan *Qnet N-SPT* dan *Qnet CPT* karena dimungkinkan adanya kesalahan pengukuran dan pengujian sampel tanah. Oleh karena itu *Qnet* yang diambil adalah *Qnet* terkecil dari uji *N-SPT* dan *CPT* yaitu *Qnet CPT* yaitu sebesar 139,33 Ton/tiang.

Beban Rencana 1 Kolom adalah *Qg* = 803,405 Kips = 81,896 Ton

Dengan Q ijin = 139,33 Ton.

6.7.2 Analisa Daya Dukung Kelompok Tiang

Setelah dicoba berulang kali maka jumlah tiang pancang yang digunakan adalah 12 buah dan dapat dilihat dalam gambar berikut :



Gambar 6.24 Dimensi *Pile cap* 12 Tiang

Kapasitas dukung tiang sebagai blok

Jarak antar pusat tiang = 2,5.D = 2,5 . 0,4 = 1,00 m

Jarak antara pusat tiang ke tepi poer = 1,5.D = 1,5.0,4 = 0,6 m

$$Lg = (m-1).s + 2.\frac{D}{2} \qquad \text{(Pers 3.168)}$$

$$= (4-1).1 + 2\frac{0,4}{2} = 3,4 \text{ m}$$

$$Bg = (n-1).s + 2.\frac{D}{2} \qquad \text{(Pers 3.168)}$$

$$= (3-1).1 + 2\frac{0,4}{2} = 2,4 \text{ m}$$

L = Lg + 2.(jarak tepi tiang ke poer) (Pers 3.169)

= 3,4 + 2.(0,6) = 4,6 m

B = Bg + 2.(jarak tepi tiang ke poer) (Pers 3.169)

= 2,4 + 2.(0,.6) = 3,6 m

$$\sum Qu = Lg.Bg.Cu.Nc + 2(Lg + Bg)\sum Cu.L \qquad \text{(Pers 3.171)}$$

= 3,4.2,4.270.9 + (2.(3,4+2,4)(78.1+91.4+117.2+189.3+235.3+270.2)

= 19828,8 + 16,32(2488)

= 60432,96 KN = 6160,342 Ton

Kapasitas ijin kelompok tiang berdasar blok = 6160,342/3 = 2053,447 Ton

Kapasitas dukung individual tiang

$$\sum Qu = n1.n2(Ap.9.Cu + P\sum \alpha.Cu.L) \qquad \text{(Pers 3.170)}$$

= 4.3.(1/4 .3,14.0,4^2 .9.270 + 3,14.0,4.0,85.78.1 + 3,14.0,4 .0,75.91.4 + 3,14.0,4.0,5,117.2 + 3,14.0,4.0, 5.189.3 + 3,14.0,4.0,5.235.3 + 3,14.0,4. 0,5.270.2)

= 24952 KN = 2544 Ton

Kapasitas tiang tunggal = 2544/3 = 848 Ton

Efisiensi tiang :

$$Eg = 1 - \text{arctg}\ \frac{d}{s}\left(\frac{(n_1-1)n_2 + (n_2-1)n_1}{90.n_2.n_1}\right) \qquad \text{(Pers 3.172)}$$

$$= 1 - \text{arctg}\ \frac{0,4}{1}\left(\frac{(4-1)3+(3-1)4}{90.3.4}\right)$$

$= 0,65$

Kapasitas kelompok tiang ijin $Q_{g(u)} = E_g \Sigma Qu$ (Pers 3.173)

$= 0,65.\ 848\ T = 551,2\ T$

Dari perbandingan kapasitas kelompok tiang berdasarkan blok dan kapasitas dukung individual tiang maka diambil yang terkecil yaitu 551,2 T

Untuk satu tiang pancang maka kapasitas dukungnya = 551,2/12 = 45,93 T

Gaya-gaya yang bekerja pada pondasi berdasarkan lampiran C-2 adalah:

Pu,k = 742,911 Kips = 3249,348 KN

$$P = \frac{P_{uk}}{1,05} = \frac{3249,348}{1,05} = 3094,617\ KN$$

Mu,k x = 2628,012 K-in = 297,296 KNm

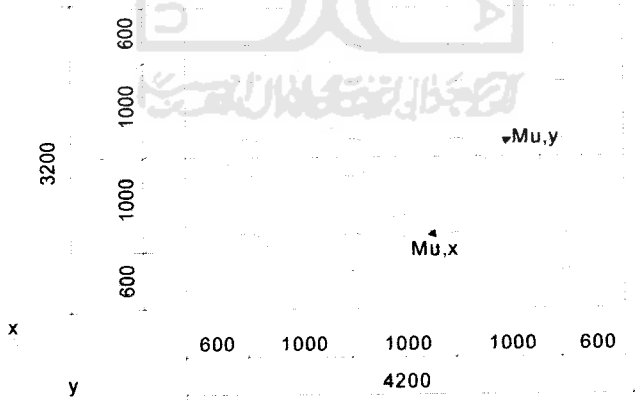
Mu,k y = 1171,597 K-in =132,538 KNm

Diameter tiang = 400 mm

Coba tebal *pile cap*, tp = 1000 mm

Dipakai jarak antar tiang = $2,5.D_{tiang}$ = 2,5.400 = 1000 mm

Jarak tiang dengan tepi pile cap = $1,5\ D_{tiang}$ = 600 mm



Gambar 6.25 Konfigurasi Kelompok Tiang Pancang

$\Sigma X^2 = (8.1^2) = 8\ m^2$

$\Sigma Y^2 = (6.1,5^2 + 6.0,5^2) = 15\ m^2$

Beban yang diterima tiang :

ΣP = P + berat *pile cap* (Pers 3.175)

= 3094,617 + (4,2.3,2.1.24) = 3669,167 KN

$\Sigma Pu = 1{,}05.\Sigma P = 3852{,}625$ KN (Pers 3.176)

$$Pmax = \frac{\Sigma Pu}{n} + \frac{Mu, x.Ymax}{\Sigma Y^2} + \frac{Mu, y.Xmax}{\Sigma X^2} \quad \text{(Pers 3.177)}$$

$$= \frac{3852{,}625}{12} + \frac{485{,}844.1{,}5}{15} + \frac{149{,}308.1}{8}$$

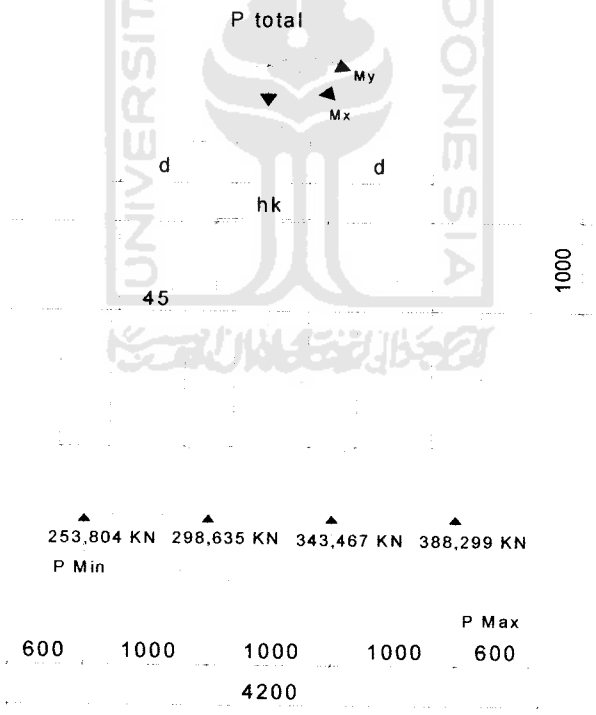
= 388,299 KN = 45,93 T < Q ijin satu tiang

< 49,93 T *Ok !*

$$Pmin = \frac{\Sigma Pu}{n} - \frac{Mu, x.Ymax}{.\Sigma Y^2} - \frac{Mu, y.Xmax}{\Sigma X^2} \quad \text{(Pers 3.178)}$$

$$= \frac{3852{,}625}{12} - \frac{485{,}844.1{,}5}{15} - \frac{149{,}308.1}{8}$$

= 253,804 KN = 25,872 T



Gambar 6.26 Reaksi Tiang Pancang akibat Gaya Aksial dan Momen

6.8 PERENCANAAN *PILE CAP*

Pile cap digunakan untuk menyatukan kelompok tiang pancang. Pada perencanaan *pile cap* diambil contoh hitungan untuk *pile cap* pada kolom 2 (K-2)

Kontrol terhadap geser satu arah (Geser Lentur)

Dipakai tebal *pile cap*, tp = 1000 mm

$d = tp - pb - 0{,}5.\Phi tul = 1000 - 50 - 0{,}5.25 = 937{,}5$ mm (Pers 3.179a)

Letak bidang kritis geser satu arah searah L *pile cap* = 0,5hk + d = 380 + 937,5 = 1317,5 mm dari pusat kolom. Letak tiang pondasi 1800 mm dari pusat kolom, dengan demikian letak bidang kritis geser satu arah berada di dalam tiang. Maka geser satu arah perlu ditinjau.

$Vu = \Sigma\, n.P_{max}$ (Pers3.179b)

$= 3.388{,}299 = 1164{,}897$ KN

$Vc = \frac{1}{6}.\sqrt{fc'}.b.d$ (Pers 3.179c)

$= \frac{1}{6}.\sqrt{28}.3200.937{,}5.10^{-3} = 2645{,}75$ KN

$\phi Vc = 0{,}6.2645{,}75 = 1587{,}5$ KN > Vu = 1164,897 KN *Ok !* (Pers 3.179d)

$0.5\ \phi Vc = 0.5*1587{,}5 = 793{,}73$ KN

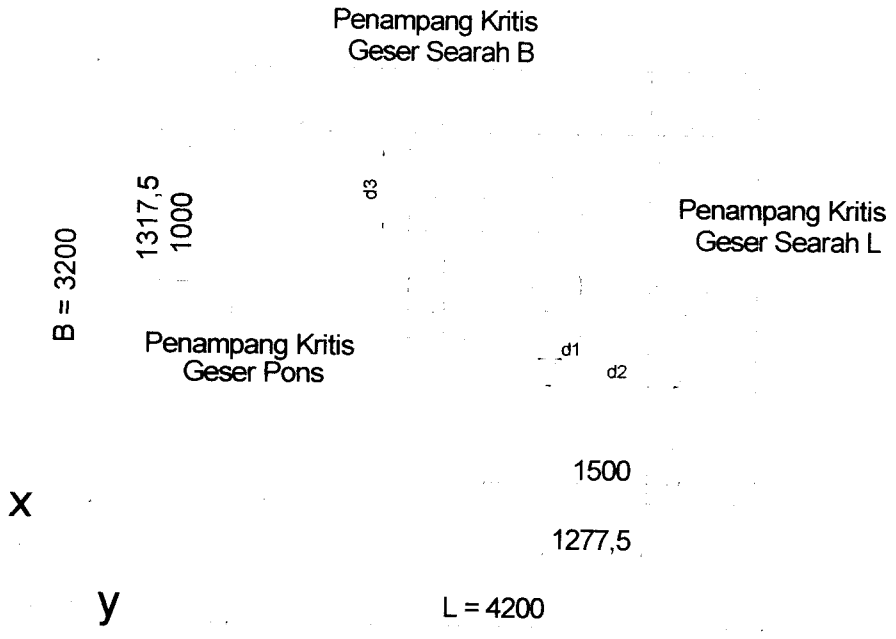
Menurut SK-SNI -1991

Untuk $0.5\ \phi Vc < Vu < \phi Vc$

Maka $S = \frac{3\,Av\,fy}{bw}$ (Pers 3.179e)

$$S = \frac{3*0.25*3{,}14*16^2*400}{3200} = 75{,}36 \text{ mm} = 75 \text{ mm}$$

bidang kritis geser satu arah searah B *pile cap* = 0,5bk + d = 340 + 937,5 = 1277,5 mm dari pusat kolom. Letak tiang pondasi 1000 mm dari pusat kolom, dengan demikian letak bidang kritis geser satu arah di luar tiang. Maka geser satu arah tidak perlu ditinjau.



Gambar 6.27 Penampang Kritis *Pile cap* akibat Geser

Kontrol terhadap geser dua arah (sejauh d/2)

$Vu = \Sigma n.P$ (Pers 3.180a)

$= 3.(253,804) + 3.(298,635) + 3.(343,467) + 3.(388,299)$

$= 3852,615$ KN

$bo = 2.(hc+d)+2.(bc+d) = 2((760+ 937,5) + (680+ 937,5)) = 6630$ mm

$\beta o = 1/0.85 = 1,18$ (Pers 3.180c)

$$Vc = \left(1+\frac{1}{\beta o}\right)\left(\frac{\sqrt{fc'}}{6}\right)bo.d \quad \text{(Pers 3.180d)}$$

$$= \left(1+\frac{1}{1,18}\right)\left(\frac{\sqrt{28}}{6}\right)6630.937,5.10^{-3} = 10127,14 \text{ KN (menentukan)}$$

$Vc = 0,33.\sqrt{fc'}.bo.d = 0,33.\sqrt{28}.6630.937,5.10^{-3} = 10853,698$ KN

$\phi Vc = 0,6.10853,698 = 6512,219$ KN $> Vu = 3852,615$ KN *Ok!* (Per 3.180e)

$0.5\ \phi Vc = 0.5*6512,219 = 3256,109$ KN

Menurut SK-SNI -1991

Untuk $0.5\phi Vc < Vu < \phi Vc$

Maka $S = \frac{3\,Av\,fy}{bw}$ (Pers 3.180f)

$$S = \frac{3*0.25*3.14*16^2*400}{3200} = 75{,}36 \text{ mm} = 75 \text{ mm}$$

Penulangan lentur

P_{u1} untuk 1 tiang = Pmax = 388,299 KN

Penulangan lentur Mu x

$Mux = 3.Pu_1.d_1 + 3.Pu_2.d_2$

$= (3.388{,}299.0{,}12) + (3.343{,}467.1{,}12)$

$= 1293{,}838$ KNm

$$\frac{Mu}{\varphi} = 0{,}85.fc'.a.b\left(d - \frac{a}{2}\right) \quad \text{(Pers3.182)}$$

$$\frac{1293{,}838.10^6}{0{,}8} = 0{,}85.28.a.3200\left(937{,}5 - \frac{a}{2}\right)$$

$$37988{,}44 = 1875.a. - a^2$$

$a_1 = 1852$ mm

$a_2 = 22{,}931$ mm

$$\text{As perlu} = \frac{0{,}85.fc'.a.b}{fy} = \frac{0{,}85.28.22{,}931.3200}{400} = 4366{,}062 \text{ mm}^2 \quad \text{(Pers 3.183)}$$

$$\text{As min} = \frac{1{,}4}{fy}bd = \frac{1{,}4}{400}.3200.937{,}5 = 10500 \text{mm}^2 \quad \text{(Pers 3.184)}$$

As perlu < As min ⟶ As pakai = 10500 mm^2

Pakai tulangan D28 ⟶ $A_{28} = 615{,}752$ mm^2

$$S = \frac{615{,}752.3200}{10500} = 187{,}66 \text{ mm} \quad \text{(Pers 3.185)}$$

Pakai tulangan **D28 – 180**

$$\text{As}_{ada} = \frac{615{,}752.3200}{180} = 10946{,}702 \text{ mm}^2 > \text{As}_{perlu} = 10500 \text{ mm}^2 \quad \text{(Pers 3.186)}$$

Cek Kapasitas

$$a = \frac{\text{As}_{ada}.fy}{0{,}85.fc'.b} = \frac{10946{,}702400}{0{,}85.28.3200} = 57{,}493 \text{ mm} \quad \text{(Pers 3.187)}$$

$M_n = \text{As}_{ada}.fy.(d\text{-}a/2)$ (Pers 3.188)

$= 10946{,}702.400.(937{,}5 - (0{,}5.57{,}493)).10^{-6} = 3979{,}141$ KNm

$\phi M_n \geq M_u$ (Pers 3.189)

$\phi M_n = 0{,}8.3979{,}141 = 3183{,}31$ KNm > $M_u = 1293{,}838$ KNm *Ok !*

Penulangan lentur Mu y

$Muy = 4.Pu_1.d_1$

$= 4.(388{,}299)(0{,}66) = 1025{,}109$ KNm

$$\frac{Mu}{\varphi} = 0{,}85.fc'.a.b\left(d - \frac{a}{2}\right)$$ (Pers3.182)

$$\frac{1025{,}109.10^6}{0{,}8} = 0{,}85.28.a.4200\left(937{,}5 - \frac{a}{2}\right)$$

$20540{,}616 = 1875a - a^2$

$a_1 = 1861{,}2$ mm

$a_2 = 13{,}744$ mm

$$Asperlu = \frac{0{,}85.fc'.a.b}{fy} = \frac{0{,}85.28.13{,}744.4200}{400} = 3434{,}625\ mm^2$$ (Pers3.183)

$$As\ min = \frac{1{,}4}{fy}.b.d = \frac{1{,}4}{400}.4200.937{,}5 = 13781{,}25\ mm^2$$ (Pers 3.184)

As perlu < As min ------ As pakai = $13781{,}25\ mm^2$

Pakai tulangan D28 ⟶ $A_{28} = 615{,}752\ mm^2$

$$S = \frac{615{,}752.4200}{13781{,}25} = 187{,}66\ mm$$ (Pers 3.185)

Pakai tulangan **D28 – 180**

$As_{ada} = \frac{615{,}752.4200}{180} = 14367{,}55\ mm^2 > As_{pakai} = 13781{,}25\ mm^2$ (Pers 3.186)

Cek Kapasitas

$$a = \frac{As_{ada}.fy}{0{,}85.fc'.b} = \frac{14367{,}55.400}{0{,}85.28.4200} = 57{,}493\ mm$$ (Pers 3.187)

$M_n = As_{ada}.fy.(d-a/2)$

$= 14367{,}55.400.(937{,}5 - (0{,}5.57{,}493).10^{-6} = 5009{,}50$ KNm

$\phi M_n \geq M_u$ (Pers 3.188)

$\phi M_n = 0{,}8.5009{,}50 = 4007{,}602$ KNm > $M_u = 1025{,}109$ KNm→*Ok !*

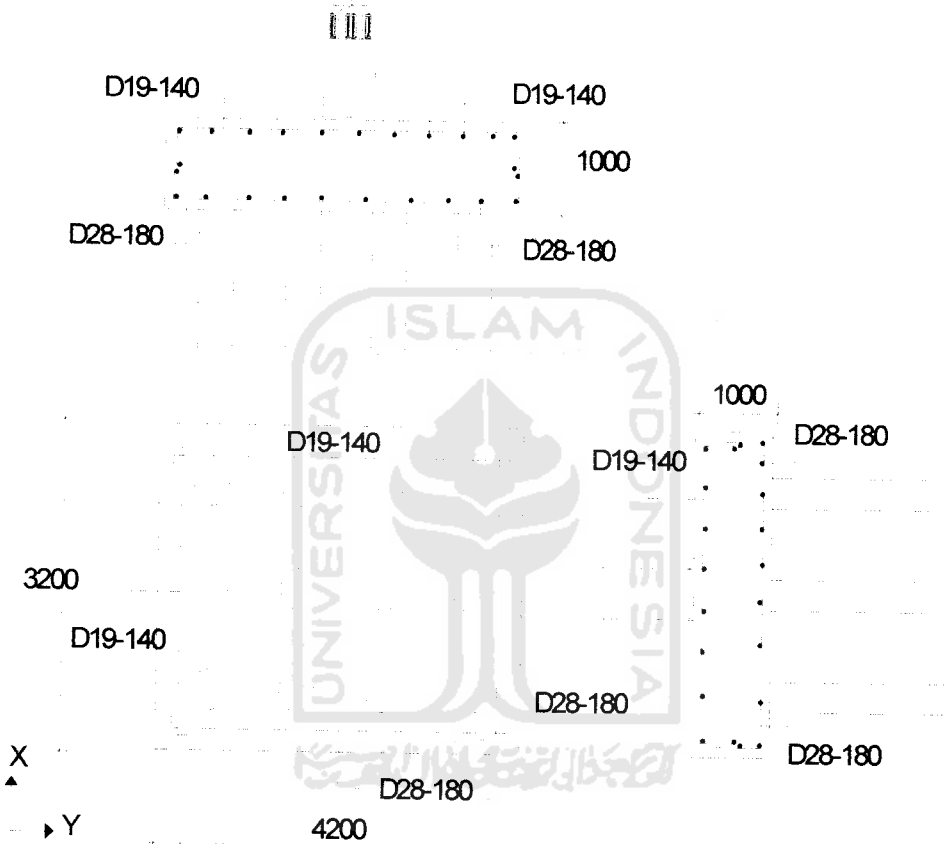
Tulangan susut

As st = 0,002.b.h = 0,002.1000.937.5 = 1875 mm^2 (Pers3.190)

Pakai tulangan D19 ⟶ A_{19} = 283,529 mm^2

$$S = \frac{283{,}529.1000}{1875} = 141{,}21 mm$$ (Pers3.185)

Pakai tulangan susut **D19 – 140**



Gambar 6.28 Penulangan *Pile cap*

6.9 Perbandingan Berat Struktur Untuk Keseluruhan Bangunan

Nilai berat struktur merupakan berat balok dan kolom yang diperoleh dari hasil desain struktur, dimana penggunaan elemen struktur seperti pelat sambung, baut sambungan, *panel zone*, pelat dasar kolom dianggap sama pada seluruh

bangunan. Dengan membandingkan elemen pada struktur *Frame Truss* (FT) terhadap struktur *Open Frame* (OF) dan *Outrigger* dan *Belttruss/ Core Brace* (CB) terhadap *Open Frame* (OF). Sehingga efisiensi penggunaan pengaku *Frame truss,* maupun penggunaan pengaku *Frame truss* dapat kita ketahui.

Tabel 6.26 Berat Balok B1

Lantai	B1					
	OF (OF)		Frame Truss (FT)		Core Brace (CB)	
	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)
30	W14x22	1836.7	W14x22	1836.7	W14x22	1836.7
29	W16x40	3339.4	W16x36	2999.8	W16x36	2999.8
28	W16x40	3339.4	W16x36	2999.8	W16x36	2999.8
27	W16x40	3339.4	W16x36	2999.8	W16x36	2999.8
26	W16x40	3339.4	W16x36	2999.8	W16x36	2999.8
25	W16x40	3339.4	W16x36	2999.8	W16x36	2999.8
24	W16x40	3339.4	W16x36	2999.8	W16x36	2999.8
23	W18x50	4160.1	W16x36	2999.8	W18x40	3339.4
22	W18x50	4160.1	W16x36	2999.8	W18x40	3339.4
21	W18x50	4160.1	W16x36	2999.8	W18x40	3339.4
20	W18x50	4160.1	W16x36	2999.8	W18x40	3339.4
19	W21X68	5660.0	W16x36	2999.8	W18x40	3339.4
18	W21X68	5660.0	W16x36	2999.8	W18x46	3820.5
17	W21X68	5660.0	W16x36	2999.8	W18x46	3820.5
16	W21X68	5660.0	W16x36	2999.8	W18x46	3820.5
15	W21X68	5660.0	W16x36	2999.8	W18x46	3820.5
14	W21X68	5660.0	W16x36	2999.8	W18x46	3820.5
13	W21X68	5660.0	W18X40	3339.4	W21X55	4584.6
12	W21X68	5660.0	W18X40	3339.4	W21X55	4584.6
11	W21X68	5660.0	W18X40	3339.4	W21X55	4584.6
10	W21X68	5660.0	W18X40	3339.4	W21X55	4584.6
9	W21X68	5660.0	W18X40	3339.4	W21X55	4584.6
8	W21X68	5660.0	W18X40	3339.4	W21X55	4584.6
7	W21X68	5660.0	W18X40	3339.4	W21X55	4584.6
6	W21X68	5660.0	W18X40	3339.4	W21X55	4584.6
5	W21X68	5660.0	W18X40	3339.4	W21X55	4584.6
4	W21X68	5660.0	W18X40	3339.4	W21X55	4584.6
3	W21X68	5660.0	W18X40	3339.4	W21X55	4584.6
2	W21X68	5660.0	W18X40	3339.4	W21X55	4584.6
1	W21X68	5660.0	W18X40	3339.4	W21X55	4584.6
Base	W12x30	2487.6	W12x26	2164.9	W12x26	2164.9
Jumlah		148540.1		95410.0		117399.0

Tabel 6.27 Berat Balok B2

Lantai	B2					
	OF (OF)		Frame Truss (FT)		Core Brace (CB)	
	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)
30	W18X35	7287.2	W14X22	4591.6	W18X35	8328.2
29	W21X55	11461.4	W14X22	4591.6	W21X55	13098.8

28	W21X55	11461.4	W14X22	4591.6	W21X55	13098.8
27	W21X55	11461.4	W14X22	4591.6	W21X55	13098.8
26	W21X55	11461.4	W14X22	4591.6	W21X55	13098.8
25	W21X55	11461.4	W14X22	4591.6	W21X55	13098.8
24	W21X55	11461.4	W14X22	4591.6	W21X55	13098.8
23	W21X62	12947.2	W14X22	4591.6	W21X55	13098.8
22	W21X62	12947.2	W14X22	4591.6	W21X55	13098.8
21	W21X62	12947.2	W14X22	4591.6	W21X57	13503.1
20	W21X62	12947.2	W14X22	4591.6	W21X57	13503.1
19	W21X68	14149.9	W14X22	4591.6	W21X57	13503.1
18	W21X68	14149.9	W14X22	4591.6	W24X62	14796.8
17	W21X68	14149.9	W14X22	4591.6	W24X62	14796.8
16	W21X68	14149.9	W14X22	4591.6	W24X62	14796.8
15	W21X68	14149.9	W14X22	4591.6	W24X62	14796.8
14	W21X68	14149.9	W14X22	4591.6	W24X62	14796.8
13	W24X76	15847.9	W16X26	5433.6	W24X62	14796.8
12	W24X76	15847.9	W16X26	5433.6	W24X62	14796.8
11	W24X76	15847.9	W16X26	5433.6	W24X62	14796.8
10	W24X76	15847.9	W16X26	5433.6	W24X62	14796.8
9	W24X76	15847.9	W16X26	5433.6	W24X62	14796.8
8	W24X76	15847.9	W16X26	5433.6	W24X62	14796.8
7	W24X76	15847.9	W16X26	5433.6	W24X62	14796.8
6	W24X76	15847.9	W16X26	5433.6	W24X62	14796.8
5	W24X76	15847.9	W16X26	5433.6	W24X62	14796.8
4	W24X76	15847.9	W16X26	5433.6	W24X62	14796.8
3	W24X76	15847.9	W16X26	5433.6	W24X62	14796.8
2	W24X76	15847.9	W16X26	5433.6	W24X62	14796.8
1	W24X76	15847.9	W16X26	5433.6	W24X62	14796.8
Base	W12x30	6218.9	W12x26	5412.3	W12x26	6185.5
Jumlah		424985.3		154106.7		426154.8

Tabel 6.28 Berat Balok B3

Lantai	B3					
	OF (OF)		Frame Truss (FT)		Core Brace (CB)	
	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)
30	W12X26	3247.4	W12X16	1999.4	W12X19	2364.4
29	W12X58	7216.5	W14X30	3756.8	W14X38	4754.4
28	W12X58	7216.5	W14X30	3756.8	W14X38	4754.4
27	W12X58	7216.5	W14X30	3756.8	W14X38	4754.4
26	W12X58	7216.5	W14X30	3756.8	W14X38	4754.4
25	W12X58	7216.5	W14X30	3756.8	W14X38	4754.4
24	W12X58	7216.5	W14X30	3756.8	W14X38	4754.4
23	W12X58	7216.5	W14X30	3756.8	W14X38	4754.4
22	W12X58	7216.5	W14X30	3756.8	W14X38	4754.4
21	W12X58	7216.5	W14X30	3756.8	W14X38	4754.4
20	W12X58	7216.5	W14X30	3756.8	W14X38	4754.4
19	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
18	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
17	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
16	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
15	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4

14	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
13	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
12	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
11	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
10	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
9	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
8	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
7	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
6	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
5	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
4	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
3	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
2	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
1	W14x68	8489.9	W14X30	3756.8	W14X38	4754.4
Base	W12x30	3731.3	W12x26	3247.4	W12x26	3247.4
Jumlah		240452.2		114194.1		143488.5

Tabel 6.29 Berat Balok B4

Lantai	B4					
	OF (OF)		Frame Truss (FT)		Core Brace (CB)	
	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)
30	W12X30	5597.0	W12X16	2999.1	W12x22	4126.1
29	W14X61	11397.7	W16X36	6749.5	W16x40	7513.6
28	W14X61	11397.7	W16X36	6749.5	W16x40	7513.6
27	W14X61	11397.7	W16X36	6749.5	W16x40	7513.6
26	W14X61	11397.7	W16X36	6749.5	W16x40	7513.6
25	W14X61	11397.7	W16X36	6749.5	W16x40	7513.6
24	W14X61	11397.7	W16X36	6749.5	W16x40	7513.6
23	W14X61	11397.7	W16X36	6749.5	W16x40	7513.6
22	W14X61	11397.7	W16X36	6749.5	W16x40	7513.6
21	W14X61	11397.7	W16X36	6749.5	W16x40	7513.6
20	W14X61	11397.7	W16X36	6749.5	W16x40	7513.6
19	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
18	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
17	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
16	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
15	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
14	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
13	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
12	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
11	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
10	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
9	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
8	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
7	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
6	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
5	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
4	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
3	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
2	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
1	W16x77	14581.5	W16x40	7513.6	W16x40	7513.6
Base	W12x30	5597.0	W12x26	4871.1	W12x26	4871.1

Jumlah		402219.5		218123.7		226891.7

Tabel 6.30 Berat Kolom K1

Lantai	K1					
	OF (OF)		Frame Truss (FT)		Core Brace (CB)	
	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)
30	W14X132	2941.2	W14X109	2425.7	W14X120	2675.8
29	W14X156	3236.8	W14X120	2675.8	W14X132	2941.2
28	W14X156	3236.8	W14X120	2675.8	W14X132	2941.2
27	W14X156	3236.8	W14X120	2675.8	W14X132	2941.2
26	W14X156	3236.8	W14X120	2675.8	W14X132	2941.2
25	W14X156	3236.8	W14X120	2675.8	W14X132	2941.2
24	W14X156	3236.8	W14X120	2675.8	W14X132	2941.2
23	W14X156	3236.8	W14X120	2675.8	W14X132	2941.2
22	W14X193	4305.6	W14X132	2941.2	W14X145	3236.8
21	W14X193	4305.6	W14X132	2941.2	W14X145	3236.8
20	W14X193	4305.6	W14X132	2941.2	W14X145	3236.8
19	W14X193	4305.6	W14X132	2941.2	W14X145	3236.8
18	W14X193	4305.6	W14X132	2941.2	W14X145	3236.8
17	W14X193	4305.6	W14X132	2941.2	W14X145	3236.8
16	W14X193	4305.6	W14X132	2941.2	W14X145	3236.8
15	W14X1211	2675.8	W14X145	3236.8	W14X176	3926.6
14	W14X1211	2675.8	W14X145	3236.8	W14X176	3926.6
13	W14X1211	2675.8	W14X145	3236.8	W14X176	3926.6
12	W14X1211	2675.8	W14X145	3236.8	W14X176	3926.6
11	W14X1211	2675.8	W14X145	3236.8	W14X176	3926.6
10	W14X1211	2675.8	W14X145	3236.8	W14X176	3926.6
9	W14X1211	2675.8	W14X145	3236.8	W14X176	3926.6
8	W14X233	5192.5	W14X159	3540.0	W14X211	4699.8
7	W14X233	5192.5	W14X159	3540.0	W14X211	4699.8
6	W14X233	5192.5	W14X159	3540.0	W14X211	4699.8
5	W14X233	5192.5	W14X159	3540.0	W14X211	4699.8
4	W14X233	5192.5	W14X159	3540.0	W14X211	4699.8
3	W14X233	5192.5	W14X159	3540.0	W14X211	4699.8
2	W14X233	5192.5	W14X159	3540.0	W14X211	4699.8
1	W14X233	5192.5	W14X159	3540.0	W14X211	4699.8
Jumlah		116009.0		92722.3		111006.0

Tabel 6.31 Berat Kolom K2

Lantai	K2					
	OF (OF)		Frame Truss (FT)		Core Brace (CB)	
	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)
30	W14X145	3236.8	W14X120	2675.8	W14X120	2675.8
29	W14X193	4305.6	W14X132	2941.2	W14X145	3236.8
28	W14X193	4305.6	W14X132	2941.2	W14X145	3236.8
27	W14X193	4305.6	W14X132	2941.2	W14X145	3236.8
26	W14X193	4305.6	W14X132	2941.2	W14X145	3236.8
25	W14X193	4305.6	W14X132	2941.2	W14X145	3236.8
24	W14X193	4305.6	W14X132	2941.2	W14X145	3236.8
23	W14X193	4305.6	W14X132	2941.2	W14X145	3236.8
22	W14X211	4699.8	W14X159	3540.0	W14X176	3926.6

21	W14X211	4699.8	W14X159	3540.0	W14X176	3926.6
20	W14X211	4699.8	W14X159	3540.0	W14X176	3926.6
19	W14X211	4699.8	W14X159	3540.0	W14X176	3926.6
18	W14X211	4699.8	W14X159	3540.0	W14X176	3926.6
17	W14X211	4699.8	W14X159	3540.0	W14X176	3926.6
16	W14X211	4699.8	W14X159	3540.0	W14X176	3926.6
15	W14X233	5192.5	W14X176	3926.6	W14X211	4699.8
14	W14X233	5192.5	W14X176	3926.6	W14X211	4699.8
13	W14X233	5192.5	W14X176	3926.6	W14X211	4699.8
12	W14X233	5192.5	W14X176	3926.6	W14X211	4699.8
11	W14X233	5192.5	W14X176	3926.6	W14X211	4699.8
10	W14X233	5192.5	W14X176	3926.6	W14X211	4699.8
9	W14X233	5192.5	W14X176	3926.6	W14X211	4699.8
8	W14X257	5730.7	W14X193	4305.6	W14X233	5192.5
7	W14X257	5730.7	W14X193	4305.6	W14X233	5192.5
6	W14X257	5730.7	W14X193	4305.6	W14X233	5192.5
5	W14X257	5730.7	W14X193	4305.6	W14X233	5192.5
4	W14X257	5730.7	W14X193	4305.6	W14X233	5192.5
3	W14X257	5730.7	W14X193	4305.6	W14X233	5192.5
2	W14X257	5730.7	W14X193	4305.6	W14X233	5192.5
1	W14X257	5730.7	W14X193	4305.6	W14X233	5192.5
Jumlah		148467.9		109975.1		127258.2

Tabel 6.32 Berat Kolom K3

Lantai	K3					
	OF (OF)		Frame Truss (FT)		Core Brace (CB)	
	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)
30	W14X145	1618.4	W14X132	1470.6	W14X120	1337.9
29	W14X193	2152.8	W14X145	1618.4	W14X145	1618.4
28	W14X193	2152.8	W14X145	1618.4	W14X145	1618.4
27	W14X193	2152.8	W14X145	1618.4	W14X145	1618.4
26	W14X193	2152.8	W14X145	1618.4	W14X145	1618.4
25	W14X193	2152.8	W14X145	1618.4	W14X145	1618.4
24	W14X193	2152.8	W14X145	1618.4	W14X145	1618.4
23	W14X193	2152.8	W14X145	1618.4	W14X145	1618.4
22	W14X211	2349.9	W14X159	1770.0	W14X176	1963.3
21	W14X211	2349.9	W14X159	1770.0	W14X176	1963.3
20	W14X211	2349.9	W14X159	1770.0	W14X176	1963.3
19	W14X211	2349.9	W14X159	1770.0	W14X176	1963.3
18	W14X211	2349.9	W14X159	1770.0	W14X176	1963.3
17	W14X211	2349.9	W14X159	1770.0	W14X176	1963.3
16	W14X211	2349.9	W14X159	1770.0	W14X176	1963.3
15	W14X233	2596.3	W14X176	1963.3	W14X211	2349.9
14	W14X233	2596.3	W14X176	1963.3	W14X211	2349.9
13	W14X233	2596.3	W14X176	1963.3	W14X211	2349.9
12	W14X233	2596.3	W14X176	1963.3	W14X211	2349.9
11	W14X233	2596.3	W14X176	1963.3	W14X211	2349.9
10	W14X233	2596.3	W14X176	1963.3	W14X211	2349.9
9	W14X233	2596.3	W14X176	1963.3	W14X211	2349.9
8	W14X257	2865.4	W14X193	2152.8	W14X257	2865.4
7	W14X257	2865.4	W14X193	2152.8	W14X257	2865.4
6	W14X257	2865.4	W14X193	2152.8	W14X257	2865.4

5	W14X257	2865.4	W14X193	2152.8	W14X257	2865.4
4	W14X257	2865.4	W14X193	2152.8	W14X257	2865.4
3	W14X257	2865.4	W14X193	2152.8	W14X257	2865.4
2	W14X257	2865.4	W14X193	2152.8	W14X257	2865.4
1	W14X257	2865.4	W14X193	2152.8	W14X257	2865.4
Jumlah		74234.0		56154.9		65781.9

Tabel 6.33 Berat Kolom K4

Lantai	K4					
	OF (OF)		Frame Truss (FT)		Core Brace (CB)	
	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)
30	W14X145	8092.0	W14X120	6689.6	W14X120	6689.6
29	W14X193	10764.0	W14X132	7352.9	W14X145	8092.0
28	W14X193	10764.0	W14X132	7352.9	W14X145	8092.0
27	W14X193	10764.0	W14X132	7352.9	W14X145	8092.0
26	W14X193	10764.0	W14X132	7352.9	W14X145	8092.0
25	W14X193	10764.0	W14X132	7352.9	W14X145	8092.0
24	W14X193	10764.0	W14X132	7352.9	W14X145	8092.0
23	W14X193	10764.0	W14X132	7352.9	W14X145	8092.0
22	W14X211	11749.5	W14X159	8850.0	W14X193	10764.0
21	W14X211	11749.5	W14X159	8850.0	W14X193	10764.0
20	W14X211	11749.5	W14X159	8850.0	W14X193	10764.0
19	W14X211	11749.5	W14X159	8850.0	W14X193	10764.0
18	W14X211	11749.5	W14X159	8850.0	W14X193	10764.0
17	W14X211	11749.5	W14X159	8850.0	W14X193	10764.0
16	W14X211	11749.5	W14X159	8850.0	W14X193	10764.0
15	W14X233	12981.3	W14X193	10764.0	W14X211	11749.5
14	W14X233	12981.3	W14X193	10764.0	W14X211	11749.5
13	W14X233	12981.3	W14X193	10764.0	W14X211	11749.5
12	W14X233	12981.3	W14X193	10764.0	W14X211	11749.5
11	W14X233	12981.3	W14X193	10764.0	W14X211	11749.5
10	W14X233	12981.3	W14X193	10764.0	W14X211	11749.5
9	W14X233	12981.3	W14X193	10764.0	W14X211	11749.5
8	W14X283	15786.0	W14X342	19140.3	W14X257	14326.8
7	W14X283	15786.0	W14X342	19140.3	W14X257	14326.8
6	W14X283	15786.0	W14X342	19140.3	W14X257	14326.8
5	W14X283	15786.0	W14X342	19140.3	W14X257	14326.8
4	W14X283	15786.0	W14X342	19140.3	W14X257	14326.8
3	W14X283	15786.0	W14X342	19140.3	W14X257	14326.8
2	W14X283	15786.0	W14X342	19140.3	W14X257	14326.8
1	W14X283	15786.0	W14X342	19140.3	W14X257	14326.8
Jumlah		382843.4		348580.4		335542.3

Tabel 6.34 Berat Kolom K5

Lantai	K5					
	OF (OF)		Frame Truss (FT)		Core Brace (CB)	
	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)
30	W14X193	10764.0	W14X132	7352.9	W14X193	10764.0
29	W14X233	12981.3	W14X145	8092.0	W14X211	11749.5
28	W14X233	12981.3	W14X145	8092.0	W14X211	11749.5

27	W14X233	12981.3	W14X145	8092.0	W14X211	11749.5
26	W14X233	12981.3	W14X145	8092.0	W14X211	11749.5
25	W14X233	12981.3	W14X145	8092.0	W14X211	11749.5
24	W14X233	12981.3	W14X145	8092.0	W14X211	11749.5
23	W14X233	12981.3	W14X145	8092.0	W14X211	11749.5
22	W14X257	14326.8	W14X176	9816.5	W14X257	14326.8
21	W14X257	14326.8	W14X176	9816.5	W14X257	14326.8
20	W14X257	14326.8	W14X176	9816.5	W14X257	14326.8
19	W14X257	14326.8	W14X176	9816.5	W14X257	14326.8
18	W14X257	14326.8	W14X176	9816.5	W14X257	14326.8
17	W14X257	14326.8	W14X176	9816.5	W14X257	14326.8
16	W14X257	14326.8	W14X176	9816.5	W14X257	14326.8
15	W14X311	17321.0	W14X193	10764.0	W14X283	15786.0
14	W14X311	17321.0	W14X193	10764.0	W14X283	15786.0
13	W14X311	17321.0	W14X193	10764.0	W14X283	15786.0
12	W14X311	17321.0	W14X193	10764.0	W14X283	15786.0
11	W14X311	17321.0	W14X193	10764.0	W14X283	15786.0
10	W14X311	17321.0	W14X193	10764.0	W14X283	15786.0
9	W14X311	17321.0	W14X193	10764.0	W14X283	15786.0
8	W14X370	20656.3	W14X211	11749.5	W14X311	17321.0
7	W14X370	20656.3	W14X211	11749.5	W14X311	17321.0
6	W14X370	20656.3	W14X211	11749.5	W14X311	17321.0
5	W14X370	20656.3	W14X211	11749.5	W14X311	17321.0
4	W14X370	20656.3	W14X211	11749.5	W14X311	17321.0
3	W14X370	20656.3	W14X211	11749.5	W14X311	17321.0
2	W14X370	20656.3	W14X211	11749.5	W14X311	17321.0
1	W14X370	20656.3	W14X211	11749.5	W14X311	17321.0
Jumlah		488418.2		302056.3		442367.8

Tabel 6.35 Berat Kolom K6

Lantai	K6					
	OF (OF)		Frame Truss (FT)		Core Brace (CB)	
	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)	Profil Pakai	Total (Kg)
30	W14X193	5382.0	W14X132	3676.4	W14X193	5382.0
29	W14X233	6490.6	W14X145	4046.0	W14X211	5874.7
28	W14X233	6490.6	W14X145	4046.0	W14X211	5874.7
27	W14X233	6490.6	W14X145	4046.0	W14X211	5874.7
26	W14X233	6490.6	W14X145	4046.0	W14X211	5874.7
25	W14X233	6490.6	W14X145	4046.0	W14X211	5874.7
24	W14X233	6490.6	W14X145	4046.0	W14X211	5874.7
23	W14X233	6490.6	W14X145	4046.0	W14X211	5874.7
22	W14X257	7163.4	W14X176	4908.2	W14X257	7163.4
21	W14X257	7163.4	W14X176	4908.2	W14X257	7163.4
20	W14X257	7163.4	W14X176	4908.2	W14X257	7163.4
19	W14X257	7163.4	W14X176	4908.2	W14X257	7163.4
18	W14X257	7163.4	W14X176	4908.2	W14X257	7163.4
17	W14X257	7163.4	W14X176	4908.2	W14X257	7163.4
16	W14X257	7163.4	W14X176	4908.2	W14X257	7163.4
15	W14X283	7893.0	W14X193	5382.0	W14X283	7893.0
14	W14X283	7893.0	W14X193	5382.0	W14X283	7893.0
13	W14X283	7893.0	W14X193	5382.0	W14X283	7893.0
12	W14X283	7893.0	W14X193	5382.0	W14X283	7893.0

11	W14X283	7893.0	W14X193	5382.0	W14X283	7893.0
10	W14X283	7893.0	W14X193	5382.0	W14X283	7893.0
9	W14X283	7893.0	W14X193	5382.0	W14X283	7893.0
8	W14X370	10328.2	W14X233	6490.6	W14X311	8660.5
7	W14X370	10328.2	W14X233	6490.6	W14X311	8660.5
6	W14X370	10328.2	W14X233	6490.6	W14X311	8660.5
5	W14X370	10328.2	W14X233	6490.6	W14X311	8660.5
4	W14X370	10328.2	W14X233	6490.6	W14X311	8660.5
3	W14X370	10328.2	W14X233	6490.6	W14X311	8660.5
2	W14X370	10328.2	W14X233	6490.6	W14X311	8660.5
1	W14X370	10328.2	W14X233	6490.6	W14X311	8660.5
Jumlah		238836.5		155955.4		221183.9

Tabel 6.36 Berat Pengaku

	Brace				Outrigger FT		Outrigger CB		Belt truss	
	Frame truss (FT)		Core Brace (CB)		Outrigger		Outrigger		Outrigger	
Lantai	Profil	Total (Kg)	Profil	Total (Kg)	Profil	Total (Kg)	Profil	Total (Kg)	Profil	Total (Kg)
30	W10X33	5008.1	W10X22	2320.8	W12x45	16301.4	W10x33	6041.5	W10x33	14698.6
29	W10X33	5008.1	W10X22	2320.8						
28	W10X33	5008.1	W10X22	2320.8						
27	W10X33	5008.1	W10X22	2320.8						
26	W10X33	5008.1	W10X22	2320.8						
25	W10X33	5008.1	W10X22	2320.8						
24	W10X33	5008.1	W10X22	2320.8						
23	W10X33	5008.1	W10X22	2320.8						
22	W10X33	5008.1	W10X22	2320.8						
21	W10X33	5008.1	W10X22	2320.8						
20	W12X40	9706.2	W12X30	4208.1						
19	W12X40	9706.2	W12X30	4208.1						
18	W12X40	9706.2	W12X30	4208.1						
17	W12X40	9706.2	W12X30	4208.1						
16	W12X40	9706.2	W12X30	4208.1						
15	W12X40	9706.2	W12X30	4208.1	W14X48	17545.8	W14X45	10535.8	W12x50	23433.1
14	W12X40	9706.2	W12X30	4208.1						
13	W12X40	9706.2	W12X30	4208.1						
12	W12X40	9706.2	W12X30	4208.1						
11	W12X40	9706.2	W12X30	4208.1						
10	W12X45	10867.6	W12X45	5703.4						
9	W12X45	10867.6	W12X45	5703.4						
8	W12X45	10867.6	W12X45	5703.4						
7	W12X45	10867.6	W12X45	5703.4						
6	W12X45	10867.6	W12X45	5703.4						
5	W12X45	10867.6	W12X45	5703.4						
4	W12X45	10867.6	W12X45	5703.4						
3	W12X45	10867.6	W12X45	5703.4						
2	W12X45	10867.6	W12X45	5703.4						
1	W12X45	10867.6	W12X45	5703.4						
Jumlah		255818.7		122323.2		17545.8		10535.8		23433.1

Tabel 6.37 Total Berat Balok dan Kolom

Tingkat	Balok (Kg)			Kolom (Kg)		
	Open Frame	Frame truss	Core Brace	Open Frame	Frame truss	Core Brace
30	26212.0	19670.5	24899.2	32034.4	24291.1	29525.3
29	45640.5	30323.3	40592.0	39931.2	26726.3	33512.5
28	45640.5	30323.3	40592.0	39931.2	26726.3	33512.5
27	45640.5	30323.3	40592.0	39931.2	26726.3	33512.5
26	45640.5	30323.3	40592.0	39931.2	26726.3	33512.5
25	45640.5	30323.3	40592.0	39931.2	26726.3	33512.5
24	45640.5	30323.3	40592.0	39931.2	26726.3	33512.5
23	47947.0	30323.3	40931.6	39931.2	26726.3	33512.5
22	47947.0	30323.3	40931.6	44595.0	31825.9	41380.9
21	47947.0	30323.3	41335.9	44595.0	31825.9	41380.9
20	47947.0	30323.3	41335.9	44595.0	31825.9	41380.9
19	55106.8	31087.3	41335.9	44595.0	31825.9	41380.9
18	55106.8	31087.3	43110.7	44595.0	31825.9	41380.9
17	55106.8	31087.3	43110.7	44595.0	31825.9	41380.9
16	55106.8	31087.3	43110.7	44595.0	31825.9	41380.9
15	55106.8	31087.3	43110.7	48659.9	36036.8	46404.7
14	55106.8	31087.3	43110.7	48659.9	36036.8	46404.7
13	56804.8	32268.9	43874.8	48659.9	36036.8	46404.7
12	56804.8	32268.9	43874.8	48659.9	36036.8	46404.7
11	56804.8	32268.9	43874.8	48659.9	36036.8	46404.7
10	56804.8	32268.9	43874.8	48659.9	36036.8	46404.7
9	56804.8	32268.9	43874.8	48659.9	36036.8	46404.7
8	56804.8	32268.9	43874.8	60559.1	47378.8	53065.9
7	56804.8	32268.9	43874.8	60559.1	47378.8	53065.9
6	56804.8	32268.9	43874.8	60559.1	47378.8	53065.9
5	56804.8	32268.9	43874.8	60559.1	47378.8	53065.9
4	56804.8	32268.9	43874.8	60559.1	47378.8	53065.9
3	56804.8	32268.9	43874.8	60559.1	47378.8	53065.9
2	56804.8	32268.9	43874.8	60559.1	47378.8	53065.9
1	56804.8	32268.9	43874.8	60559.1	47378.8	53065.9
Base	18034.8	15695.8	16469.0			
Jumlah	1578980.8	944618.2	1276717.6	3800316.5	1065444.4	1303140.1

Dari Tabel 5.25 berat total struktur 30 lantai, dapat dicari perbandingan efisiensi berat struktur antara *Frame truss* (FT), *Open frame* (OF) dan *Core Brace* (CB) dengan *Open frame* (OF). Berat balok, kolom dan pengaku struktur dapat diketahui sebagai berikut:

W total OF = 1578980,8 + 3800316,5 = 5379297,3Kg

W total *Frame Truss* = 944618,2+ 1065444,4 + 255818,7 + 17545,8

= 2283427,1 Kg

W total *Core Brace* = 1276717,6 + 1303140,1 + 122323,2 + 10535,8 + 23433,1

= 2736149,8Kg

Efisiensi berat struktur antara *Frame Truss* (FT) terhadap *Open frame* (OF) sebagai berikut :

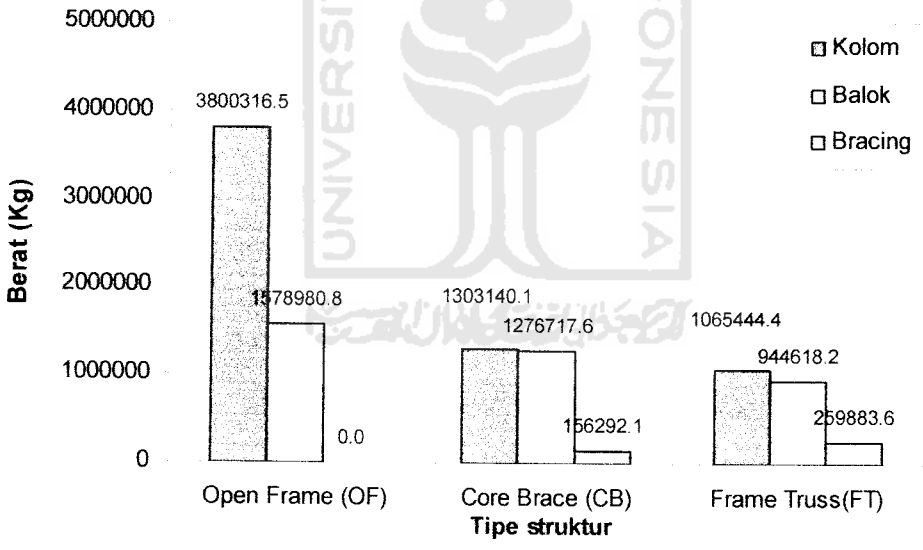
$$Eff = \frac{5379297,3 - 2283427,1}{5379297,3} x100\% = 57,6\%$$

Efisiensi berat struktur antara *Core Brace (CB)* terhadap *Open frame (OF)* sebagai berikut:

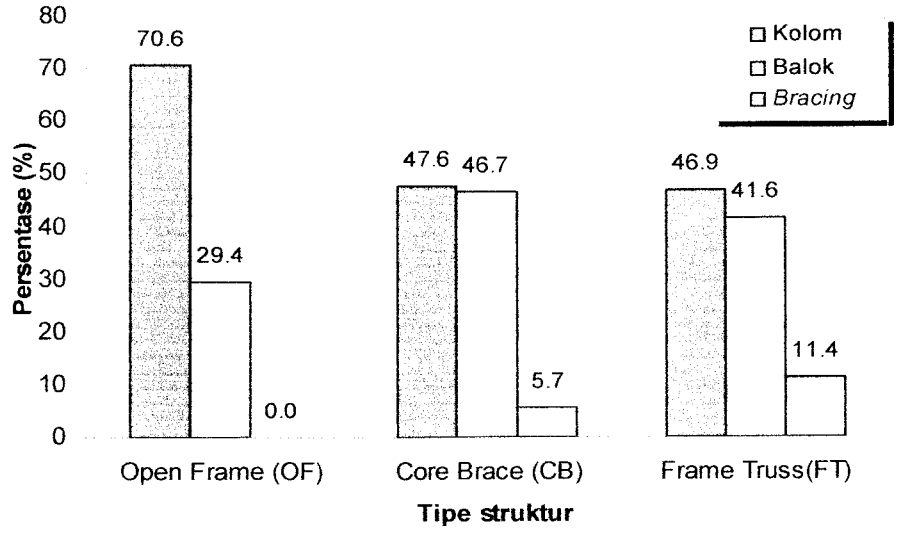
$$Eff = \frac{5379297,3 - 2736149,8}{5379297,3} x100\% = 49,1\%$$

Dari hasil perbandingan nilai efisiensi berat struktur diatas, diperoleh hasil bahwa efisiensi struktur bangunan *Frame Truss (FT)* lebih besar daripada struktur bangunan menggunakan *Core Brace (CB)*

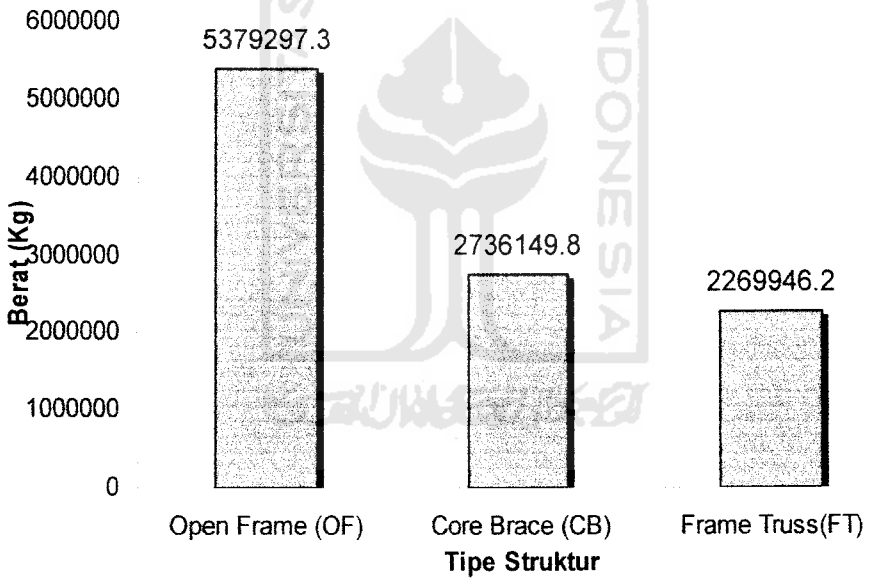
Dengan menganggap hubungan berat struktur, berat kolom, berat balok, Berat Brasing antara *Frame truss (FT), Core Brace (CB)* & *Open frame (OF)* maka hubungan berat struktur dan effisiensi dapat dilihat pada Grafik 6.7 sampai dengan Grafik 6.8



Grafik 6.7 Hubungan Berat Balok dan kolom dan *Bracing pada Struktur Frame Truss, Core Brace* dan *Open Frame*



Grafik 6.8 Persentase Kebutuhan Bahan struktur *Open Frame, Core Brace*, dan *Frame Truss*



Grafik 6.9 Hubungan Berat total struktur *Open Frame, Core Brace dan Frame Truss*

Dari Grafik 6.8 menunjukkan bahwa berat balok struktur open frame lebih berat dari pada struktur yang menggunakan pengaku, hal ini terjadi karena momen balok struktur open frame lebih berat dari struktur memakai pengaku (*bracing*). Dari Grafik 6.8 juga menunjukkan bahwa berat kolom struktur *Open*

Frame lebih berat dari pada struktur yang menggunakan pengaku, hal ini terjadi karena :

1. Walaupun gaya aksial kolom struktur memakai pengaku lebih besar dari struktur *Open Frame* akan tetapi momen kolom struktur memakai pengaku lebih kecil dari *Open Frame*.
2. Pada perencanaan kuat desak kolom, perencanaan faktor panjang struktur *Open Frame* sebagai struktur bergoyang sedangkan struktur berpengaku (*Frame Truss* maupun *Core Brace*) sebagai struktur tak bergoyang. Sehingga kolom *Open Frame* mempunyai faktor panjang lebih besar, maka kapasitas penampang desak kolom struktur bergoyang lebih kecil dari pada kolom tidak bergoyang.

Dari Grafik 6.9 juga terlihat bahwa berat total struktur *Frame truss* lebih kecil dari pada struktur *Core Brace* dan *Open Frame*. Nilai efisiensi berat struktur Frame truss terhadap *Open Frame* adalah 57,6 %. Sedangkan *Core Brace* terhadap *Open Frame* adalah 49,1%.

BAB VII
KESIMPULAN DAN SARAN

7.1 Kesimpulan

Dari hasil analisis dan desain yang telah dilakukan, maka dapat diambil beberapa kesimpulan sebagai berikut :

1. Perbedaan gaya-gaya dalam yang terjadi (momen, geser dan aksial) antara struktur yang menggunakan dua *Frame truss* dengan struktur yang menggunakan tiga dan empat *Frame truss* tidak jauh perbedaan nilainya, hanya struktur yang memakai *Frame truss* lebih banyak struktur akan menjadi lebih kaku. Sehingga struktur dengan dua *Frame truss* lebih efektif daripada struktur yang menggunakan tiga dan empat *Frame truss*.
2. Pada disain *Frame truss* ini tidak terjadi tarik pada kolom, karena kolom dari struktur frame truss mampu untuk menopang komponen struktur diatasnya.
3. Penggunaan *bracing* pada struktur *Core Brace* (CB) dan *Frame truss* (FT) dapat memperbesar nilai gaya gempa Fi dan gaya aksial kolom. Hal ini disebabkan karena pengaruh gaya aksial pada bresing sehingga dapat menambah besarnya gaya aksial kolom, akan tetapi memperkecil momen lentur pada balok. Walaupun gaya membesar akan tetapi respon menjadi lebih kecil karena respons struktur akan dipengaruhi oleh kekakuan bangunan. Tidak selalu gaya yang lebih besar merugikan.
4. Penggunaan pengaku *Core Brace* (CB) dan pengaku *Frame truss* (FT) sangat efektif untuk menahan beban angin, gempa statik dan dinamik, yang terlihat dari pola dan besar respons struktur *Core Brace* dan struktur *Frame truss* baik akibat beban gempa statik, angin dan dinamik relatif reguler dan berdekatan. Jika dilihat dari hasil respons struktur baik akibat beban angin, gempa statik, dan gempa dinamik maka akan diperoleh respons struktur *Frame truss* yang lebih kecil dari pada *Core brace* dan *Open frame*.
5. Nilai effektifitas berat struktur yang menggunakan bresing *Frame truss* terhadap struktur *Open frame* adalah 57,6 %, dan nilai efektifitas berat

struktur *Core Brace* terhadap *Open frame* adalah 49,1 %. Sehingga struktur *Frame truss* lebih efektif dari pada struktur *Core Brace* dan *Open frame* baik dari segi respons strukturnya maupun implikasi penggunaan bahan bangunan.

7.2 Saran

1. Pada kondisi sebenarnya gempa yang terjadi tidak hanya berasal dari satu arah, besar kemungkinan terjadi dari segala penjuru. Oleh karena itu pada penelitian selanjutnya disarankan untuk menganalisis gempa yang berasal dari dua arah sekaligus. Dengan menggunakan 100% fi pada sumbu kuat dan 30% fi pada sumbu lemahnya
2 Supaya respon struktur akibat gempa dinamis mendekati kondisi sebenarnya, disarankan untuk menggunakan skala percepatan beban gempa dinamis sesuai dengan bangunan dan gempanya.
3. Penghitungan beban angin sebaiknya di hitung dengan peraturan yang terbaru.

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LAMPIRAN

Tabel Total Beban yang bekerja Pada Atap dan Lantai Struktur OF, BOF 20 Lantai

Lokasi	bagian	berat	satuan	p (m)	l (m)	t (m)	Total (Kg)
			ATAP				
	Beban Mati						
1	Pelat lantai	321	Kg/m²	36	24	1	277344
						WD	**277344**
	Beban Hidup						
1	Atap	100	Kg/m²	36	24	1	86400
						WL 0.3	**25920**
			LANTAI				
	Beban Mati						
1	Pelat lantai	483	Kg/m²	36	24	1	417312
2	Dinding	1700	Kg/m³	346	0.15	3.3	291159
						WD	**708471**
	Beban Hidup						
1	Perkantoran	250	Kg/m²	36	24	1	216000
						WL 0.3	**64800**

Keterangan :

WD = Berat total beban mati
WL = Berat total beban hidup

Tabel Total Beban yang bekerja Pada Atap dan Lantai Struktur OF, BOF 30 Lantai

Lokasi	bagian	berat	satuan	p (m)	l (m)	t (m)	Total (Kg)
			ATAP				
	Beban Mati						
1	Pelat lantai	321	Kg/m²	42	28	1	377496
						WD	**377496**
	Beban Hidup						
1	Atap	100	Kg/m²	42	28	1	117600
						WL 0.3	**35280**
			LANTAI				
	Beban Mati						
1	Pelat lantai	483	Kg/m²	30	30	1	434700
2	Dinding	1700	Kg/m³	346	0.15	3.3	291159
						WD	**725859**
	Beban Hidup						
1	Perkantoran	250	Kg/m²	30	30	1	225000
						WL 0.3	**67500**

Keterangan :

WD = Berat Total Berat Mati

WL = Berat Total Berat Hidup

Tabel Total Beban yang bekerja Pada Atap dan Lantai Struktur OF, BOF 40 Lantai

Lokasi	bagian	berat	satuan	p (m)	l (m)	t (m)	Total (Kg)
			ATAP				
	Beban Mati						
1	Pelat lantai	321	Kg/m²	48	32	1	493056
						WD	**493056**
	Beban Hidup						
1	Atap	100	Kg/m²	48	32	1	153600
						WL 0.3	**46080**
			LANTAI				
	Beban Mati						
1	Pelat lantai	483	Kg/m²	48	32	1	741888
2	Dinding	1700	Kg/m³	346	0.15	3.3	291159
						WD	**1033047**
	Beban Hidup						
1	Perkantoran	250	Kg/m²	48	32	1	384000
						WL 0.3	**115200**

Perhitungan Beban Statik Ekivalen Struktur baja 20 Lantai

20 Lantai Frame Truss

lantai	Balok					Kolom						Bracing	
	B1	B2	B3	B4	B. anak	K1	K2	K3	K4	K5	K6	Str Inti	Fr. Truss
20	W16x26	W16x26	W10x33	W10x33	W10X33	W14X90	W14X99	W14X159	W14X99	W14X193	W14X193	W10X33	W12x65
19	W16x31	W18x35	W12x26	W12x30	W10X49	W14X90	W14X109	W14X176	W14X109	W14X211	W14X211	W10X33	
18	W16x31	W18x35	W12x26	W12x30	W10X49	W14X90	W14X109	W14X193	W14X109	W14X211	W14X211	W10X33	
17	W16x31	W18x35	W12x26	W12x30	W10X49	W14X90	W14X109	W14X193	W14X109	W14X211	W14X211	W10X33	
16	W16x36	W18x40	W12x26	W12x30	W10X49	W14X109	W14X120	W14X211	W14X120	W14X233	W14X233	W10X33	
15	W16x36	W18x40	W12x26	W12x30	W10X49	W14X109	W14X120	W14X211	W14X120	W14X233	W14X233	W10X33	
14	W16x36	W18x40	W12x26	W12x30	W10X49	W14X109	W14X120	W14X211	W14X120	W14X233	W14X233	W10X33	
13	W16x36	W18x40	W12x26	W12x30	W10X49	W14X109	W14X120	W14X211	W14X120	W14X233	W14X233	W10X33	
12	W16x36	W18x40	W12x26	W12x30	W10X49	W14X132	W14X145	W14X233	W14X159	W14X257	W14X257	W10X33	
11	W16x36	W18x40	W12x26	W12x30	W10X49	W14X132	W14X145	W14X233	W14X159	W14X257	W14X257	W10X33	
10	W16x36	W18x40	W12x26	W12x30	W10X49	W14X132	W14X145	W14X233	W14X159	W14X257	W14X257	W10X45	W12x79
9	W16x36	W18x40	W12x26	W12x30	W10X49	W14X132	W14X145	W14X233	W14X159	W14X257	W14X257	W10X45	
8	W16x40	W18x46	W12x26	W12x30	W10X49	W14X145	W14X176	W14X257	W14X193	W14X311	W14X311	W10X45	
7	W16x40	W18x46	W12x26	W12x30	W10X49	W14X145	W14X176	W14X257	W14X193	W14X311	W14X311	W10X45	
6	W16x40	W18x46	W12x26	W12x30	W10X49	W14X145	W14X176	W14X257	W14X193	W14X311	W14X311	W10X45	
5	W16x40	W18x46	W12x26	W12x30	W10X49	W14X145	W14X176	W14X257	W14X193	W14X311	W14X311	W10X45	
4	W16x45	W18x50	W12x26	W12x30	W10X49	W14X159	W14X257	W14X283	W14X257	W14X370	W14X370	W10X45	
3	W16x45	W18x50	W12x26	W12x30	W10X49	W14X159	W14X257	W14X283	W14X257	W14X370	W14X370	W10X45	
2	W16x45	W18x50	W12x26	W12x30	W10X49	W14X159	W14X257	W14X283	W14X257	W14X370	W14X370	W10X45	
1	W16x45	W18x50	W12x26	W12x30	W10X49	W14X159	W14X257	W14X283	W14X257	W14X370	W14X370	W10X45	

lanta	W Balok (Kg)	W Kolom (kg)	W Bracing (Kg)		WD + 0.3 WL (Kg)	Wi (Kg)
			Inti	Frm Trus		
20	22418.90	26978.3	7543.2	22238.81	303264	382448.00
19	26520.76	29335.8	7543.2		773271	813297.72
18	26520.76	29335.8	7543.2		773271	813297.72
17	26520.76	29335.8	7543.2		773271	813297.72
16	27786.98	32601.0	7543.2		773271	817829.16
15	27786.98	32601.0	7543.2		773271	817829.16
14	27786.98	32601.0	7543.2		773271	817829.16
13	27786.98	32601.0	7543.2		773271	817829.16
12	27786.98	38136.5	7543.2		773271	823364.67
11	27786.98	38136.5	7543.2		773271	823364.67

10	27786.98	38136.5	10286.1	27012.57	773271	853125.02
9	27786.98	38136.5	10286.1		773271	826107.64
8	29108.98	45872.2	10286.1		773271	835165.35
7	29108.98	45872.2	10286.1		773271	835165.35
6	29108.98	45872.2	10286.1		773271	835165.35
5	29108.98	46774.3	10286.1		773271	836067.41
4	30200.55	57739.2	10286.1		773271	848123.88
3	30200.55	57739.2	10286.1		773271	848123.88
2	30200.55	57739.2	10286.1		773271	848123.88
1	30200.55	57739.2	10286.1		773271	848123.88
	Total					16153678.8

Jml Lantai	Tipe	H (m)	T	c	I	R	Wt (Kg)	V (Kg)
20.0	Frame truss	75.00	1.40	0.30	1.00	6.50	16153678.78	745554.41

Lantai	hi (m)	Wi (Kg)	hi *Wi	Fx,y (Kg)
19.0	71.25	813297.7	57947462.6	63183.5
18.0	67.50	813297.7	54897596.1	59858.1
17.0	63.75	813297.7	51847729.7	56532.6
16.0	60.00	817829.2	49069749.3	53503.6
15.0	56.25	817829.2	46002890.0	50159.6
14.0	52.50	817829.2	42936030.6	46815.7
13.0	48.75	817829.2	39869171.3	43471.7
12.0	45.00	823364.7	37051410.4	40399.3
11.0	41.25	823364.7	33963792.8	37032.7
10.0	37.50	853125.0	31992188.2	34883.0
9.0	33.75	826107.6	27881133.0	30400.4
8.0	30.00	835165.3	25054960.5	27318.9
7.0	26.25	835165.3	21923090.4	23904.0
6.0	22.50	835165.3	18791220.3	20489.2
5.0	18.75	836067.4	15676263.9	17092.7
4.0	15.00	848123.9	12721858.3	13871.4
3.0	11.25	848123.9	9541393.7	10403.5
2.0	7.50	848123.9	6360929.1	6935.7
1.0	3.75	848123.9	3180464.6	3467.8
		Σ =	615392934.4	

20 lantai Open Frame

lantai	Balok					Kolom					
	B1	B2	B3	B4	B. anak	K1	K2	K3	K4	K5	K6
20	W16X31	W18X35	W12X26	W12X30	W10X33	W14X132	W14X176	W14X159	W14X159	W14X211	W14X211
19	W18X40	W21X50	W12X26	W12X30	W10X49	W14X193	W14X233.	W14X211	W14X193	W14X311	W14X311
18	W21X44	W21X55	W12X26	W12X30	W10X49	W14X233.	W14X257	W14X233.	W14X311	W14X342	W14X370
17	W21X44	W21X55	W12X26	W12X30	W10X49	W14X233.	W14X257	W14X233.	W14X311	W14X342	W14X370
16	W21X50	W24X55	W12X26	W12X30	W10X49	W14X257	W14X283	W14X257	W14X342	W14X370	W14X398
15	W21X50	W24X55	W12X26	W12X30	W10X49	W14X257	W14X283	W14X257	W14X342	W14X370	W14X398
14	W21X50	W24X55	W12X26	W12X30	W10X49	W14X257	W14X283	W14X257	W14X342	W14X370	W14X398
13	W21X55	W24X62	W12X26	W12X30	W10X49	W14X283	W14X311	W14X283	W14X342	W14X398	W14X426
12	W21X55	W24X62	W12X26	W12X30	W10X49	W14X283	W14X311	W14X283	W14X370	W14X398	W14X426
11	W21X55	W24X62	W12X26	W12X30	W10X49	W14X283	W14X311	W14X283	W14X370	W14X398	W14X426
10	W21X57	W24X68	W12X26	W12X30	W10X49	W14X311	W14X342	W14X311	W14X370	W14X455	W14X455
9	W21X57	W24X68	W12X26	W12X30	W10X49	W14X311	W14X342	W14X311	W14X426	W14X455	W14X455
8	W21X57	W24X68	W12X26	W12X30	W10X49	W14X311	W14X342	W14X311	W14X426	W14X455	W14X455
7	W21X62	W24X76	W12X26	W12X30	W10X49	W14X342	W14X370	W14X342	W14X455	W14X500	W14X500
6	W21X62	W24X76	W12X26	W12X30	W10X49	W14X342	W14X370	W14X342	W14X455	W14X500	W14X500
5	W21X62	W24X76	W12X26	W12X30	W10X49	W14X342	W14X370	W14X342	W14X455	W14X500	W14X500
4	W21X62	W24X76	W12X26	W12X30	W10X49	W14X342	W14X370	W14X342	W14X455	W14X500	W14X500
3	W21X62	W24X76	W12X26	W12X30	W10X49	W14X342	W14X370	W14X342	W14X455	W14X500	W14X500
2	W21X62	W24X76	W12X26	W12X30	W10X49	W14X342	W14X370	W14X342	W14X455	W14X500	W14X500
1	W21X62	W24X76	W12X26	W12X30	W10X49	W14X342	W14X370	W14X342	W14X455	W14X500	W14X500

lantai	W Balok (Kg)	W Kolom (kg)	WD + 0.3 WL (Kg)	Wi (Kg)
20	23107.8	34918.7	303264	381084.6
19	29836.7	48347.2	773271	825104.7
18	31037.4	60039.8	773271	838044.3
17	31037.4	60039.8	773271	838044.3
16	31510.4	65501.4	773271	844123.7
15	31510.4	65501.4	773271	844707.4
14	31510.4	65501.4	773271	844707.4
13	31510.4	65501.4	773271	844707.4
12	33087.1	69249.9	773271	850551.8
11	33087.1	70766.0	773271	852977.5
10	33087.1	70766.0	773271	852977.5
9	33087.1	70766.0	773271	852977.5

8	34300.0	76432.2	773271	862930.5
7	34300.0	79464.4	773271	865507.8
6	34300.0	79464.4	773271	865507.8
5	34300.0	79464.4	773271	866114.2
4	36082.9	86624.0	773271	879637.5
3	36082.9	86624.0	773271	879637.5
2	36082.9	86624.0	773271	879637.5
1	36082.9	86624.0	773271	886343.5
Total				16655324.6

Jml Lantai	Tipe	H (m)	T	c	I	R	Wt (Kg)	V (Kg)
20.0	OF	75.00	2.20	0.19	1.00	8.50	16614487.16	373159.60

Lantai	hi (m)	Wi (Kg)	hi *Wi	Fx,y (Kg)
20.0	75.00	361290.5	27096787.0	51717.1
19.0	71.25	828081.9	59000834.8	31357.2
18.0	67.50	840975.2	56765828.4	30169.3
17.0	63.75	840975.2	53612171.3	28493.2
16.0	60.00	846909.9	50814591.8	27006.4
15.0	56.25	846909.9	47638679.8	25318.5
14.0	52.50	846909.9	44462767.8	23630.6
13.0	48.75	846909.9	41286855.8	21942.7
12.0	45.00	852235.0	38350576.3	20382.2
11.0	41.25	853751.1	35217232.5	18716.9
10.0	37.50	853751.1	32015665.9	17015.4
9.0	33.75	853751.1	28814099.3	15313.8
8.0	30.00	860630.2	25818906.6	13722.0
7.0	26.25	863662.3	22671136.5	12049.0
6.0	22.50	863662.3	19432402.7	10327.7
5.0	18.75	863662.3	16193668.9	8606.4
4.0	15.00	872604.8	13089072.4	6956.4
3.0	11.25	872604.8	9816804.3	5217.3
2.0	7.50	872604.8	6544536.2	3478.2
1.0	3.75	872604.8	3272268.1	1739.1
		Σ =	631914886.2	

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20 Lantai Outrigger dan Belt truss

lantai	Balok					Kolom						Bracing		
	B1	B2	B3	B4	B. anak	K1	K2	K3	K4	K5	K6	Str Inti	outrigger	Belt truss
20	W16x26	W16x26	W10x33	W10x33	W10X33	W14X90	W14X99	W14X159	W14X99	W14X193	W14X193	W10X26	W10X49	W12X45
19	W16x31	W18x35	W12x26	W12x30	W10X49	W14X90	W14X109	W14X176	W14X109	W14X211	W14X211	W10X26		
18	W16x31	W18x35	W12x26	W12x30	W10X49	W14X90	W14X109	W14X193	W14X109	W14X211	W14X211	W10X26		
17	W16x31	W18x35	W12x26	W12x30	W10X49	W14X90	W14X109	W14X193	W14X109	W14X211	W14X211	W10X26		
16	W16x36	W18x40	W12x26	W12x30	W10X49	W14X109	W14X120	W14X211	W14X120	W14X233	W14X233	W10X26		
15	W16x36	W18x40	W12x26	W12x30	W10X49	W14X109	W14X120	W14X211	W14X120	W14X233	W14X233	W10X26		
14	W16x36	W18x40	W12x26	W12x30	W10X49	W14X109	W14X120	W14X211	W14X120	W14X233	W14X233	W10X26		
13	W16x36	W18x40	W12x26	W12x30	W10X49	W14X109	W14X120	W14X211	W14X120	W14X233	W14X233	W10X26		
12	W16x36	W18x40	W12x26	W12x30	W10X49	W14X132	W14X145	W14X233	W14X159	W14X257	W14X257	W10X26		
11	W16x36	W18x40	W12x26	W12x30	W10X49	W14X132	W14X145	W14X233	W14X159	W14X257	W14X257	W10X26		
10	W16x36	W18x40	W12x26	W12x30	W10X49	W14X132	W14X145	W14X233	W14X159	W14X257	W14X257	W10X26	W12X65	W12X65
9	W16x36	W18x40	W12x26	W12x30	W10X49	W14X132	W14X145	W14X233	W14X159	W14X257	W14X257	W10X33		
8	W16x40	W18x46	W12x26	W12x30	W10X49	W14X145	W14X176	W14X257	W14X193	W14X311	W14X311	W10X33		
7	W16x40	W18x46	W12x26	W12x30	W10X49	W14X145	W14X176	W14X257	W14X193	W14X311	W14X311	W10X33		
6	W16x40	W18x46	W12x26	W12x30	W10X49	W14X145	W14X176	W14X257	W14X193	W14X311	W14X311	W10X33		
5	W16x40	W18x46	W12x26	W12x30	W10X49	W14X145	W14X176	W14X257	W14X193	W14X311	W14X311	W10X33		
4	W16x45	W18x50	W12x26	W12x30	W10X49	W14X159	W14X257	W14X283	W14X257	W14X370	W14X370	W10X33		
3	W16x45	W18x50	W12x26	W12x30	W10X49	W14X159	W14X257	W14X283	W14X257	W14X370	W14X370	W10X33		
2	W16x45	W18x50	W12x26	W12x30	W10X49	W14X159	W14X257	W14X283	W14X257	W14X370	W14X370	W10X33		
1	W16x45	W18x50	W12x26	W12x30	W10X49	W14X159	W14X257	W14X283	W14X257	W14X370	W14X370	W10X33		

lantai	W Balok (Kg)	W Kolom (kg)	W Bracing (Kg)			WD + 0.3 WL (Kg	Wi (Kg)
			Inti	Outrigger	Belt Truss		
20	21310.97	27645.4	2971.6	8383.21	18721.8	303264.0	382308.73
19	26706.33	30086.2	2971.6			773271.0	809666.92
18	26706.33	30275.7	2971.6			773271.0	809856.43
17	26706.33	30275.7	2971.6			773271.0	809856.43
16	28774.85	33613.0	2971.6			773271.0	815262.18
15	28774.85	33613.0	2971.6			773271.0	815262.18
14	28774.85	33613.0	2971.6			773271.0	815262.18
13	28774.85	33613.0	2971.6			773271.0	815262.18
12	28774.85	39114.4	2971.6			773271.0	820763.58
11	28774.85	39114.4	2971.6			773271.0	820763.58
10	28774.85	39114.4	2971.6	11119.40	27296.6	773271.0	859186.65
9	28774.85	39114.4	3771.6			773271.0	821563.62

8	30751.79	46774.3	3771.6			773271.0	831200.46
7	30751.79	46774.3	3771.6			773271.0	831200.46
6	30751.79	46774.3	3771.6			773271.0	831200.46
5	30751.79	46774.3	3771.6			773271.0	831200.46
4	32662.02	57739.2	3771.6			773271.0	844075.61
3	32662.02	57739.2	3771.6			773271.0	844075.61
2	32662.02	57739.2	3771.6			773271.0	844075.61
1	32662.02	57739.2	3771.6			773271.0	844075.61
Total							16096118.9

Jml Lantai	Tipe	H (m)	T	c	I	R	Wt (Kg)	V (Kg)
20.0	Outrigger	75.00	1.40	0.30	1.00	6.50	16096118.91	742897.80

lantai	hi (m)	Wi (Kg)	hi *Wi	Fx,y (Kg)
20.0	75.00	382308.7	28673155.1	105819.5
19.0	71.25	809666.9	57688767.9	62901.4
18.0	67.50	809856.4	54665308.7	59604.8
17.0	63.75	809856.4	51628347.1	56293.4
16.0	60.00	815262.2	48915730.6	53335.7
15.0	56.25	815262.2	45858497.4	50002.2
14.0	52.50	815262.2	42801264.3	46668.7
13.0	48.75	815262.2	39744031.1	43335.2
12.0	45.00	820763.6	36934361.3	40271.7
11.0	41.25	820763.6	33856497.9	36915.7
10.0	37.50	859186.7	32219499.5	35130.8
9.0	33.75	821563.6	27727772.1	30233.2
8.0	30.00	831200.5	24936013.7	27189.2
7.0	26.25	831200.5	21819012.0	23790.5
6.0	22.50	831200.5	18702010.3	20391.9
5.0	18.75	831200.5	15585008.5	16993.2
4.0	15.00	844075.6	12661134.1	13805.2
3.0	11.25	844075.6	9495850.6	10353.9
2.0	7.50	844075.6	6330567.1	6902.6
1.0	3.75	844075.6	3165283.5	3451.3
		Σ =	613408112.6	

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Perhitungan Beban Statik Ekivalen Struktur Baja 30 Lantai
30 Lantai Frame Truss (FT)

lantai	Balok					Kolom						Inti	Inti	Fr. truss	Fr. truss
	B1	B2	B3	B4	B. anak	K1	K2	K3	K4	K5	K6	arah x	arah y	arah x	arah y
30.0	W14x22	W14X22	W12X16	W12X16	W10X33	W14X109	W14X120	W14X132	W14X120	W14X132	W14X132	W10X33	W10X33	W12x40	W12x40
29.0	W16x36	W14X22	W14X30	W16X36	W10X49	W14X120	W14X132	W14X145	W14X132	W14X145	W14X145	W10X33	W10X33		
28.0	W16x36	W14X22	W14X30	W16X36	W10X49	W14X120	W14X132	W14X145	W14X132	W14X145	W14X145	W10X33	W10X33		
27.0	W16x36	W14X22	W14X30	W16X36	W10X49	W14X120	W14X132	W14X145	W14X132	W14X145	W14X145	W10X33	W10X33		
26.0	W16x36	W14X22	W14X30	W16X36	W10X49	W14X120	W14X132	W14X145	W14X132	W14X145	W14X145	W10X33	W10X33		
25.0	W16x36	W14X22	W14X30	W16X36	W10X49	W14X120	W14X132	W14X145	W14X132	W14X145	W14X145	W10X33	W10X33		
24.0	W16x36	W14X22	W14X30	W16X36	W10X49	W14X120	W14X132	W14X145	W14X132	W14X145	W14X145	W10X33	W10X33		
23.0	W16x36	W14X22	W14X30	W16X36	W10X49	W14X120	W14X132	W14X145	W14X132	W14X145	W14X145	W10X33	W10X33		
22.0	W16x36	W14X22	W14X30	W16X36	W10X49	W14X132	W14X159	W14X159	W14X159	W14X176	W14X176	W10X33	W10X33		
21.0	W16x36	W14X22	W14X30	W16X36	W10X49	W14X132	W14X159	W14X159	W14X159	W14X176	W14X176	W10X33	W10X33		
20.0	W16x36	W14X22	W14X30	W16X36	W10X49	W14X132	W14X159	W14X159	W14X159	W14X176	W14X176	W12X40	W12X40		
19.0	W16x36	W14X22	W14X30	W16x40	W10X49	W14X132	W14X159	W14X159	W14X159	W14X176	W14X176	W12X40	W12X40		
18.0	W16x36	W14X22	W14X30	W16x40	W10X49	W14X132	W14X159	W14X159	W14X159	W14X176	W14X176	W12X40	W12X40		
17.0	W16x36	W14X22	W14X30	W16x40	W10X49	W14X132	W14X159	W14X159	W14X159	W14X176	W14X176	W12X40	W12X40		
16.0	W16x36	W14X22	W14X30	W16x40	W10X49	W14X132	W14X159	W14X159	W14X159	W14X176	W14X176	W12X40	W12X40		
15.0	W16x36	W14X22	W14X30	W16x40	W10X49	W14X145	W14X176	W14X176	W14X193	W14X193	W14X193	W12X40	W12X40	W14X43	W14X43
14.0	W16x36	W14X22	W14X30	W16x40	W10X49	W14X145	W14X176	W14X176	W14X193	W14X193	W14X193	W12X40	W12X40		
13.0	W18X40	W16X26	W14X30	W16x40	W10X49	W14X145	W14X176	W14X176	W14X193	W14X193	W14X193	W12X40	W12X40		
12.0	W18X40	W16X26	W14X30	W16x40	W10X49	W14X145	W14X176	W14X176	W14X193	W14X193	W14X193	W12X40	W12X40		
11.0	W18X40	W16X26	W14X30	W16x40	W10X49	W14X145	W14X176	W14X176	W14X193	W14X193	W14X193	W12X40	W12X40		
10.0	W18X40	W16X26	W14X30	W16x40	W10X49	W14X145	W14X176	W14X176	W14X193	W14X193	W14X193	W12X40	W12X40		
9.0	W18X40	W16X26	W14X30	W16x40	W10X49	W14X145	W14X176	W14X176	W14X193	W14X193	W14X193	W12X40	W12X40		
8.0	W18X40	W16X26	W14X30	W16x40	W10X49	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233	W12X40	W12X40		
7.0	W18X40	W16X26	W14X30	W16x40	W10X49	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233	W12X40	W12X40		
6.0	W18X40	W16X26	W14X30	W16x40	W10X49	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233	W12X40	W12X40		
5.0	W18X40	W16X26	W14X30	W16x40	W10X49	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233	W12X40	W12X40		
4.0	W18X40	W16X26	W14X30	W16x40	W10X49	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233	W12X40	W12X40		
3.0	W18X40	W16X26	W14X30	W16x40	W10X49	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233	W12X40	W12X40		
2.0	W18X40	W16X26	W14X30	W16x40	W10X49	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233	W12X40	W12X40		
1.0	W18X40	W16X26	W14X30	W16x40	W10X49	W14X159	W14X193	W14X193	W14X342	W14X211	W14X233	W12X40	W12X40		

lantai	W Balok (Kg)	W Kolom (kg)	W Bracing (Kg)		WD + 0.3 WL (Kg)	Wi (Kg)
			Inti	FT		
30.0	19670.49	24291.10	5008.06	14559.3	388080.0	719736.92
29.0	30323.26	26726.27	5008.06		746109.0	1030682.59
28.0	30323.26	26726.27	5008.06		746109.0	1030682.59
27.0	30323.26	26726.27	5008.06		746109.0	1030682.59
26.0	30323.26	26726.27	5008.06		746109.0	1030682.59
25.0	30323.26	26726.27	5008.06		746109.0	1030682.59
24.0	30323.26	26726.27	5008.06		746109.0	1030682.59
23.0	30323.26	26726.27	5008.06		746109.0	1030682.59
22.0	30323.26	31825.92	5008.06		746109.0	1035782.24
21.0	30323.26	31825.92	5008.06		746109.0	1035782.24
20.0	30323.26	31825.92	9706.19		746109.0	1040480.36
19.0	31087.35	31825.92	9706.19		746109.0	1041244.46
18.0	31087.35	31825.92	9706.19		746109.0	1041244.46
17.0	31087.35	31825.92	9706.19		746109.0	1041244.46
16.0	31087.35	31825.92	9706.19		746109.0	1041244.46
15.0	31087.35	36036.78	9706.19	15679.2	746109.0	1061134.56
14.0	31087.35	36036.78	9706.19		746109.0	1045455.32
13.0	32268.86	36036.78	9706.19		746109.0	1046636.83
12.0	32268.86	36036.78	9706.19		746109.0	1046636.83
11.0	32268.86	36036.78	9706.19		746109.0	1046636.83
10.0	32268.86	36036.78	9706.19		746109.0	1046636.83
9.0	32268.86	36036.78	9706.19		746109.0	1046636.83
8.0	32268.86	47378.82	9706.19		746109.0	1057978.87
7.0	32268.86	47378.82	9706.19		746109.0	1057978.87
6.0	32268.86	47378.82	9706.19		746109.0	1057978.87
5.0	32268.86	47378.82	9706.19		746109.0	1057978.87
4.0	32268.86	47378.82	9706.19		746109.0	1057978.87
3.0	32268.86	47378.82	9706.19		746109.0	1057978.87
2.0	32268.86	47378.82	9706.19		746109.0	1057978.87
1.0	32268.86	47378.82	9706.19		746109.0	1057978.87
					Total	31015142.7

Jml Lt	Tipe	H (m)	T	c	I	R	Wt (Kg)	V (Kg)
30.0	FT	112.50	2.08	0.20	1.00	6.50	31015142.70	963618.52

Lantai	hi (m)	Wi (Kg)	hi *Wi	Fx,y (Kg)
30.0	112.50	719736.9	80970404.0	135899.9
29.0	108.75	1030682.6	112086731.3	54732.2
28.0	105.00	1030682.6	108221671.6	52844.9
27.0	101.25	1030682.6	104356611.9	50957.6
26.0	97.50	1030682.6	100491552.2	49070.3
25.0	93.75	1030682.6	96626492.5	47182.9
24.0	90.00	1030682.6	92761432.8	45295.6
23.0	86.25	1030682.6	88896373.1	43408.3
22.0	82.50	1035782.2	85452034.7	41726.4
21.0	78.75	1035782.2	81567851.3	39829.8
20.0	75.00	1040480.4	78036027.3	38105.2
19.0	71.25	1041244.5	74188667.5	36226.5
18.0	67.50	1041244.5	70284000.8	34319.8
17.0	63.75	1041244.5	66379334.1	32413.2
16.0	60.00	1041244.5	62474667.4	30506.5
15.0	56.25	1061134.6	59688818.8	29146.2
14.0	52.50	1045455.3	54886404.2	26801.2
13.0	48.75	1046636.8	51023545.7	24914.9
12.0	45.00	1046636.8	47098657.6	22998.4
11.0	41.25	1046636.8	43173769.4	21081.9
10.0	37.50	1046636.8	39248881.3	19165.3
9.0	33.75	1046636.8	35323993.2	17248.8
8.0	30.00	1057978.9	31739366.1	15498.4
7.0	26.25	1057978.9	27771945.3	13561.1
6.0	22.50	1057978.9	23804524.5	11623.8
5.0	18.75	1057978.9	19837103.8	9686.5
4.0	15.00	1057978.9	15869683.0	7749.2
3.0	11.25	1057978.9	11902262.3	5811.9
2.0	7.50	1057978.9	7934841.5	3874.6
1.0	3.75	1057978.9	3967420.8	1937.3
		Σ =	1776065070.32	

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30 lantai Open Frame

lantai	Balok					Kolom					
	B1	B2	B3	B4	B. anak	K1	K2	K3	K4	K5	K6
30.0	W14x22	W18X35	W12X26	W12X30	W10X33	W14X132	W14X145	W14X145	W14X145	W14X193	W14X193
29.0	W16x40	W21X55	W12X58	W14X61	W10X49	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233
28.0	W16x40	W21X55	W12X58	W14X61	W10X49	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233
27.0	W16x40	W21X55	W12X58	W14X61	W10X49	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233
26.0	W16x40	W21X55	W12X58	W14X61	W10X49	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233
25.0	W16x40	W21X55	W12X58	W14X61	W10X49	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233
24.0	W16x40	W21X55	W12X58	W14X61	W10X49	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233
23.0	W18x50	W21X62	W12X58	W14X61	W10X49	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233
22.0	W18x50	W21X62	W12X58	W14X61	W10X49	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257
21.0	W18x50	W21X62	W12X58	W14X61	W10X49	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257
20.0	W18x50	W21X62	W12X58	W14X61	W10X49	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257
19.0	W21X68	W21X68	W14x68	W16x77	W10X49	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257
18.0	W21X68	W21X68	W14x68	W16x77	W10X49	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257
17.0	W21X68	W21X68	W14x68	W16x77	W10X49	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257
16.0	W21X68	W21X68	W14x68	W16x77	W10X49	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257
15.0	W21X68	W21X68	W14x68	W16x77	W10X49	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283
14.0	W21X68	W21X68	W14x68	W16x77	W10X49	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283
13.0	W21X68	W24X76	W14x68	W16x77	W10X49	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283
12.0	W21X68	W24X76	W14x68	W16x77	W10X49	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283
11.0	W21X68	W24X76	W14x68	W16x77	W10X49	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283
10.0	W21X68	W24X76	W14x68	W16x77	W10X49	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283
9.0	W21X68	W24X76	W14x68	W16x77	W10X49	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283
8.0	W21X68	W24X76	W14x68	W16x77	W10X49	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370
7.0	W21X68	W24X76	W14x68	W16x77	W10X49	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370
6.0	W21X68	W24X76	W14x68	W16x77	W10X49	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370
5.0	W21X68	W24X76	W14x68	W16x77	W10X49	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370
4.0	W21X68	W24X76	W14x68	W16x77	W10X49	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370
3.0	W21X68	W24X76	W14x68	W16x77	W10X49	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370
2.0	W21X68	W24X76	W14x68	W16x77	W10X49	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370
1.0	W21X68	W24X76	W14x68	W16x77	W10X49	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370

lantai	W Balok (Kg)	W Kolom (kg)	WD + 0.3 WL (Kg)	Wi (Kg)
30.0	26211.99	32034.38	388080.0	714454.37
29.0	45640.52	39931.17	746109.0	1054196.68
28.0	45640.52	39931.17	746109.0	1054196.68
27.0	45640.52	39931.17	746109.0	1054196.68
26.0	45640.52	39931.17	746109.0	1054196.68
25.0	45640.52	39931.17	746109.0	1054196.68
24.0	45640.52	39931.17	746109.0	1054196.68
23.0	47946.95	39931.17	746109.0	1056503.12
22.0	47946.95	44594.95	746109.0	1061166.90
21.0	47946.95	44594.95	746109.0	1061166.90
20.0	47946.95	44594.95	746109.0	1061166.90
19.0	55106.80	44594.95	746109.0	1068326.75
18.0	55106.80	44594.95	746109.0	1068326.75
17.0	55106.80	44594.95	746109.0	1068326.75
16.0	55106.80	44594.95	746109.0	1068326.75
15.0	55106.80	48659.89	746109.0	1072391.69
14.0	55106.80	48659.89	746109.0	1072391.69
13.0	56804.79	48659.89	746109.0	1074089.68
12.0	56804.79	48659.89	746109.0	1074089.68
11.0	56804.79	48659.89	746109.0	1074089.68
10.0	56804.79	48659.89	746109.0	1074089.68
9.0	56804.79	48659.89	746109.0	1074089.68
8.0	56804.79	60559.08	746109.0	1085988.87
7.0	56804.79	60559.08	746109.0	1085988.87
6.0	56804.79	60559.08	746109.0	1085988.87
5.0	56804.79	60559.08	746109.0	1085988.87
4.0	56804.79	60559.08	746109.0	1085988.87
3.0	56804.79	60559.08	746109.0	1085988.87
2.0	56804.79	60559.08	746109.0	1085988.87
1.0	56804.79	60559.08	746109.0	1085988.87
TOTAL				31756088.00

Jml Lantai	Tipe	H (m)	T	c	I	R	Wt (Kg)	V (Kg)
30.0	Open Frame	112.50	2.94	0.14	1.00	8.50	31756088.00	534409.34

Lantai	hi (m)	Wi (Kg)	hi *Wi	Fx,y (Kg)
30.0	112.50	714454.4	80376117.1	74729.0
29.0	108.75	1054196.7	114643889.0	30364.1
28.0	105.00	1054196.7	110690651.4	29317.1
27.0	101.25	1054196.7	106737413.9	28270.0
26.0	97.50	1054196.7	102784176.3	27223.0
25.0	93.75	1054196.7	98830938.8	26176.0
24.0	90.00	1054196.7	94877701.2	25128.9
23.0	86.25	1056503.1	91123393.9	24134.6
22.0	82.50	1061166.9	87546269.5	23187.1
21.0	78.75	1061166.9	83566893.6	22133.2
20.0	75.00	1061166.9	79587517.7	21079.2
19.0	71.25	1068326.8	76118281.3	20160.4
18.0	67.50	1068326.8	72112056.0	19099.3
17.0	63.75	1068326.8	68105830.6	18038.2
16.0	60.00	1068326.8	64099605.3	16977.2
15.0	56.25	1072391.7	60322032.7	15976.6
14.0	52.50	1072391.7	56300563.8	14911.5
13.0	48.75	1074089.7	52361871.7	13868.3
12.0	45.00	1074089.7	48334035.4	12801.6
11.0	41.25	1074089.7	44306199.2	11734.8
10.0	37.50	1074089.7	40278362.9	10668.0
9.0	33.75	1074089.7	36250526.6	9601.2
8.0	30.00	1085988.9	32579666.0	8628.9
7.0	26.25	1085988.9	28507207.7	7550.3
6.0	22.50	1085988.9	24434749.5	6471.7
5.0	18.75	1085988.9	20362291.2	5393.1
4.0	15.00	1085988.9	16289833.0	4314.5
3.0	11.25	1085988.9	12217374.7	3235.8
2.0	7.50	1085988.9	8144916.5	2157.2
1.0	3.75	1085988.9	4072458.2	1078.6
		Σ =	1815962824.79	

30 Lantai Outrigger dan Belt truss/ Core Brace (CB)

Lt	Balok					Kolom						Inti	Inti	Outrigr	Outrigr	Belt Truss	
	B1	B2	B3	B4	B. anak	K1	K2	K3	K4	K5	K6	arah x	arah y	arah x	arah y	arah x	arah y
30.0	W14x22	W18X35	W12X19	W12x22	W10X33	W14X120	W14X120	W14X120	W14X120	W14X193	W14X193	W10x33	W10X22	W10x33	W10x33	W12X30	W10x33
29.0	W16x36	W21X55	W14X38	W16x40	W10X49	W14X132	W14X145	W14X145	W14X145	W14X211	W14X211	W10x33	W10X22				
28.0	W16x36	W21X55	W14X38	W16x40	W10X49	W14X132	W14X145	W14X145	W14X145	W14X211	W14X211	W10x33	W10X22				
27.0	W16x36	W21X55	W14X38	W16x40	W10X49	W14X132	W14X145	W14X145	W14X145	W14X211	W14X211	W10x33	W10X22				
26.0	W16x36	W21X55	W14X38	W16x40	W10X49	W14X132	W14X145	W14X145	W14X145	W14X211	W14X211	W10x33	W10X22				
25.0	W16x36	W21X55	W14X38	W16x40	W10X49	W14X132	W14X145	W14X145	W14X145	W14X211	W14X211	W10x33	W10X22				
24.0	W16x36	W21X55	W14X38	W16x40	W10X49	W14X132	W14X145	W14X145	W14X145	W14X211	W14X211	W10x33	W10X22				
23.0	W18x40	W21X55	W14X38	W16x40	W10X49	W14X132	W14X145	W14X145	W14X145	W14X211	W14X211	W10x33	W10X22				
22.0	W18x40	W21X55	W14X38	W16x40	W10X49	W14X145	W14X176	W14X176	W14X193	W14X257	W14X257	W10x33	W10X22				
21.0	W18x40	W21X57	W14X38	W16x40	W10X49	W14X145	W14X176	W14X176	W14X193	W14X257	W14X257	W10x33	W10X22				
20.0	W18x40	W21X57	W14X38	W16x40	W10X49	W14X145	W14X176	W14X176	W14X193	W14X257	W14X257	W10x39	W12X30				
19.0	W18x40	W21X57	W14X38	W16x40	W10X49	W14X145	W14X176	W14X176	W14X193	W14X257	W14X257	W10x39	W12X30				
18.0	W18x46	W24X62	W14X38	W16x40	W10X49	W14X145	W14X176	W14X176	W14X193	W14X257	W14X257	W10x39	W12X30				
17.0	W18x46	W24X62	W14X38	W16x40	W10X49	W14X145	W14X176	W14X176	W14X193	W14X257	W14X257	W10x39	W12X30				
16.0	W18x46	W24X62	W14X38	W16x40	W10X49	W14X145	W14X176	W14X176	W14X193	W14X257	W14X257	W10x39	W12X30				
15.0	W18x46	W24X62	W14X38	W16x40	W10X49	W14X176	W14X211	W14X211	W14X211	W14X283	W14X283	W10x39	W12X30	W12x65	W14X45	W12x50	W12x50
14.0	W18x46	W24X62	W14X38	W16x40	W10X49	W14X176	W14X211	W14X211	W14X211	W14X283	W14X283	W10x39	W12X30				
13.0	W21X55	W24X62	W14X38	W16x40	W10X49	W14X176	W14X211	W14X211	W14X211	W14X283	W14X283	W10x39	W12X30				
12.0	W21X55	W24X62	W14X38	W16x40	W10X49	W14X176	W14X211	W14X211	W14X211	W14X283	W14X283	W10x39	W12X30				
11.0	W21X55	W24X62	W14X38	W16x40	W10X49	W14X176	W14X211	W14X211	W14X211	W14X283	W14X283	W10x39	W12X30				
10.0	W21X55	W24X62	W14X38	W16x40	W10X49	W14X176	W14X211	W14X211	W14X211	W14X283	W14X283	W10x49	W12X45				
9.0	W21X55	W24X62	W14X38	W16x40	W10X49	W14X176	W14X211	W14X211	W14X211	W14X283	W14X283	W10x49	W12X45				
8.0	W21X55	W24X62	W14X38	W16x40	W10X49	W14X211	W14X233	W14X257	W14X257	W14X311	W14X311	W10x49	W12X45				
7.0	W21X55	W24X62	W14X38	W16x40	W10X49	W14X211	W14X233	W14X257	W14X257	W14X311	W14X311	W10x49	W12X45				
6.0	W21X55	W24X62	W14X38	W16x40	W10X49	W14X211	W14X233	W14X257	W14X257	W14X311	W14X311	W10x49	W12X45				
5.0	W21X55	W24X62	W14X38	W16x40	W10X49	W14X211	W14X233	W14X257	W14X257	W14X311	W14X311	W10x49	W12X45				
4.0	W21X55	W24X62	W14X38	W16x40	W10X49	W14X211	W14X233	W14X257	W14X257	W14X311	W14X311	W10x49	W12X45				
3.0	W21X55	W24X62	W14X38	W16x40	W10X49	W14X211	W14X233	W14X257	W14X257	W14X311	W14X311	W10x49	W12X45				
2.0	W21X55	W24X62	W14X38	W16x40	W10X49	W14X211	W14X233	W14X257	W14X257	W14X311	W14X311	W10x49	W12X45				
1.0	W21X55	W24X62	W14X38	W16x40	W10X49	W14X211	W14X233	W14X257	W14X257	W14X311	W14X311	W10x49	W12X45				

lantai	W Balok (Kg)	W Kolom (kg)	W Bracing (Kg)			WD + 0.3 WL (Kg)	Wi (Kg)
			Inti	Outrigger	Belttruss		
30.0	24899.19	29525.30	2320.8	6041.5	14698.6	388080.0	733693.40
29.0	40592.04	33512.54	2320.8			746109.0	1045050.38
28.0	40592.04	33512.54	2320.8			746109.0	1045050.38
27.0	40592.04	33512.54	2320.8			746109.0	1045050.38
26.0	40592.04	33512.54	2320.8			746109.0	1045050.38
25.0	40592.04	33512.54	2320.8			746109.0	1045050.38
24.0	40592.04	33512.54	2320.8			746109.0	1045050.38
23.0	40931.63	33512.54	2320.8			746109.0	1045389.98
22.0	40931.63	41380.90	2320.8			746109.0	1053258.34
21.0	41335.92	41380.90	2320.8			746109.0	1053662.63
20.0	41335.92	41380.90	4208.1			746109.0	1055549.91
19.0	41335.92	41380.90	4208.1			746109.0	1055549.91
18.0	43110.72	41380.90	4208.1			746109.0	1057324.71
17.0	43110.72	41380.90	4208.1			746109.0	1057324.71
16.0	43110.72	41380.90	4208.1			746109.0	1057324.71
15.0	43110.72	46404.75	4208.1	10535.8	23433.1	746109.0	1096317.41
14.0	43110.72	46404.75	4208.1			746109.0	1062348.56
13.0	43874.82	46404.75	4208.1			746109.0	1063112.66
12.0	43874.82	46404.75	4208.1			746109.0	1063112.66
11.0	43874.82	46404.75	4208.1			746109.0	1063112.66
10.0	43874.82	46404.75	5703.4			746109.0	1064607.99
9.0	43874.82	46404.75	5703.4			746109.0	1064607.99
8.0	43874.82	53065.94	5703.4			746109.0	1071269.18
7.0	43874.82	53065.94	5703.4			746109.0	1071269.18
6.0	43874.82	53065.94	5703.4			746109.0	1071269.18
5.0	43874.82	53065.94	5703.4			746109.0	1071269.18
4.0	43874.82	53065.94	5703.4			746109.0	1071269.18
3.0	43874.82	53065.94	5703.4			746109.0	1071269.18
2.0	43874.82	53065.94	5703.4			746109.0	1071269.18
1.0	43874.82	53065.94	5703.4			746109.0	1071269.18
TOTAL							31486753.96

Jml Lant	Tipe	H (m)	T	c	I	R	Wt (Kg)	V (Kg)
30.0	Outrigger	112.50	2.08	0.20	1.00	6.50	31486753.96	978271.15

Lt	hi (m)	Wi (Kg)	hi *Wi	Fx,y (Kg)
30.0	112.50	733693.4	82540507.6	138117.6
29.0	108.75	1045050.4	113649229.2	55475.5
28.0	105.00	1045050.4	109730290.2	53562.6
27.0	101.25	1045050.4	105811351.3	51649.6
26.0	97.50	1045050.4	101892412.4	49736.7
25.0	93.75	1045050.4	97973473.4	47823.7
24.0	90.00	1045050.4	94054534.5	45910.8
23.0	86.25	1045390.0	90164885.8	44012.1
22.0	82.50	1053258.3	86893813.2	42415.4
21.0	78.75	1053662.6	82975931.8	40503.0
20.0	75.00	1055549.9	79166243.0	38643.4
19.0	71.25	1055549.9	75207930.9	36711.2
18.0	67.50	1057324.7	71369418.2	34837.5
17.0	63.75	1057324.7	67404450.5	32902.1
16.0	60.00	1057324.7	63439482.8	30966.7
15.0	56.25	1096317.4	61667854.2	30101.9
14.0	52.50	1062348.6	55773299.4	27224.6
13.0	48.75	1063112.7	51826741.9	25298.2
12.0	45.00	1063112.7	47840069.5	23352.1
11.0	41.25	1063112.7	43853397.0	21406.1
10.0	37.50	1064608.0	39922799.5	19487.5
9.0	33.75	1064608.0	35930519.6	17538.7
8.0	30.00	1071269.2	32138075.4	15687.5
7.0	26.25	1071269.2	28120816.0	13726.6
6.0	22.50	1071269.2	24103556.6	11765.7
5.0	18.75	1071269.2	20086297.2	9804.7
4.0	15.00	1071269.2	16069037.7	7843.8
3.0	11.25	1071269.2	12051778.3	5882.8
2.0	7.50	1071269.2	8034518.9	3921.9
1.0	3.75	1071269.2	4017259.4	1960.9
		Σ =	1803709975.34	

UNIVERSITAS ISLAM INDONESIA

Perhitungan Beban Statik Ekivalen Struktur Baja 40 Lantai

40 Lantai Frame Truss

lantai	Balok					Kolom						Intl		Frame	
	B1	B2	B3	B4	B. anak	K1	K2	K3	K4	K5	K6	arah x	arah y	arah x	arah y
40.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87	W12x87	W12x87
39.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87		
38.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87		
37.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87		
36.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87		
35.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87		
34.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87		
33.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87		
32.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87		
31.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87		
30.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87		
29.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87		
28.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87		
27.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87		
26.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87		
25.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87		
24.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87		
23.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87		
22.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87		
21.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87		
20.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87	W12x87	W12x87
19.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87		
18.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87		
17.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87		
16.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87		
15.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87		
14.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87		
13.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87		
12.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87		
11.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87		
10.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87		
9.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87		
8.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87		
7.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87		

6.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87		
5.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87		
4.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87		
3.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87		
2.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87		
1.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87		

lantai	W Balok	W Kolom	W Bracing (Kg)		WD + 0.3 WL (Kg)	WI
	(Kg)	(kg)	Intl	Fr. Trus		(Kg)
40.0	52184.9	146527.3	22686.4	34029.6	506880.0	794564.3
39.0	52184.9	146527.3	22686.4		1067607.0	1468803.4
38.0	52184.9	146527.3	22686.4		1067607.0	1468803.4
37.0	52184.9	146527.3	22686.4		1067607.0	1468803.4
36.0	52184.9	146527.3	22686.4		1067607.0	1468803.4
35.0	52184.9	146527.3	22686.4		1067607.0	1468803.4
34.0	52184.9	146527.3	22686.4		1067607.0	1468803.4
33.0	52184.9	146527.3	22686.4		1067607.0	1468803.4
32.0	52184.9	146527.3	22686.4		1067607.0	1468803.4
31.0	52184.9	146527.3	22686.4		1067607.0	1468803.4
30.0	56252.0	162392.9	22686.4		1067607.0	1488736.1
29.0	56252.0	162392.9	22686.4		1067607.0	1488736.1
28.0	56252.0	162392.9	22686.4		1067607.0	1488736.1
27.0	56252.0	162392.9	22686.4		1067607.0	1488736.1
26.0	56252.0	162392.9	22686.4		1067607.0	1488736.1
25.0	56252.0	162392.9	22686.4		1067607.0	1488736.1
24.0	56252.0	162392.9	22686.4		1067607.0	1488736.1
23.0	56252.0	162392.9	22686.4		1067607.0	1488736.1
22.0	56252.0	162392.9	22686.4		1067607.0	1488736.1
21.0	56252.0	162392.9	22686.4		1067607.0	1488736.1
20.0	60391.8	191137.5	22686.4	34029.6	1067607.0	1555650.1
19.0	60391.8	191137.5	22686.4		1067607.0	1521620.5
18.0	60391.8	191137.5	22686.4		1067607.0	1521620.5
17.0	60391.8	191137.5	22686.4		1067607.0	1521620.5
16.0	60391.8	191137.5	22686.4		1067607.0	1521620.5
15.0	60391.8	191137.5	22686.4		1067607.0	1521620.5
14.0	60391.8	191137.5	22686.4		1067607.0	1521620.5
13.0	60391.8	191137.5	22686.4		1067607.0	1521620.5
12.0	60391.8	191137.5	22686.4		1067607.0	1521620.5

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11.0	60391.8	191137.5	22686.4		1067607.0	1521620.5
10.0	64669.1	231843.7	22686.4		1067607.0	1566604.0
9.0	64669.1	231843.7	22686.4		1067607.0	1566604.0
8.0	64669.1	231843.7	22686.4		1067607.0	1566604.0
7.0	64669.1	231843.7	22686.4		1067607.0	1566604.0
6.0	64669.1	231843.7	22686.4		1067607.0	1566604.0
5.0	64669.1	231843.7	22686.4		1067607.0	1566604.0
4.0	64669.1	231843.7	22686.4		1067607.0	1566604.0
3.0	64669.1	231843.7	22686.4		1067607.0	1566604.0
2.0	64669.1	231843.7	22686.4		1067607.0	1566604.0
1.0	64669.1	231843.7	22686.4		1067607.0	1566604.0
TOTAL						59817431.4

Jml Lant	Tipe	H (m)	T	c	I	R	Wt (Kg)	V (Kg)
40.0	Fr. truss	150.00	2.10	0.20	1.00	6.50	59817431.43	1840344.68

Lantai	hi (m)	Wi (Kg)	hi *Wi	Fx,y (Kg)
40.0	150.0	794564.3	119184643.4	228286.8
39.0	146.3	1468803.4	214812503.7	79758.3
38.0	142.5	1468803.4	209304490.7	77713.2
37.0	138.8	1468803.4	203796477.8	75668.1
36.0	135.0	1468803.4	198288464.9	73623.0
35.0	131.3	1468803.4	192780452.0	71577.9
34.0	127.5	1468803.4	187272439.1	69532.9
33.0	123.8	1468803.4	181764426.2	67487.8
32.0	120.0	1468803.4	176256413.3	65442.7
31.0	116.3	1468803.4	170748400.3	63397.6
30.0	112.5	1488736.1	167482812.8	62185.1
29.0	108.8	1488736.1	161900052.4	60112.3
28.0	105.0	1488736.1	156317292.0	58039.4
27.0	101.3	1488736.1	150734531.6	55966.6
26.0	97.5	1488736.1	145151771.1	53893.8
25.0	93.8	1488736.1	139569010.7	51820.9
24.0	90.0	1488736.1	133986250.3	49748.1
23.0	86.3	1488736.1	128403489.8	47675.3
22.0	82.5	1488736.1	122820729.4	45602.4
21.0	78.8	1488736.1	117237969.0	43529.6
20.0	75.0	1555650.1	116673759.9	43320.1

19.0	71.3	1521620.5	108415459.7	40253.9
18.0	67.5	1521620.5	102709382.8	38135.2
17.0	63.8	1521620.5	97003306.0	36016.6
16.0	60.0	1521620.5	91297229.2	33898.0
15.0	56.3	1521620.5	85591152.4	31779.4
14.0	52.5	1521620.5	79885075.5	29660.7
13.0	48.8	1521620.5	74178998.7	27542.1
12.0	45.0	1521620.5	68472921.9	25423.5
11.0	41.3	1521620.5	62766845.1	23304.9
10.0	37.5	1566604.0	58747651.8	21812.6
9.0	33.8	1566604.0	52872886.7	19631.3
8.0	30.0	1566604.0	46998121.5	17450.1
7.0	26.3	1566604.0	41123356.3	15268.8
6.0	22.5	1566604.0	35248591.1	13087.5
5.0	18.8	1566604.0	29373825.9	10906.3
4.0	15.0	1566604.0	23499060.7	8725.0
3.0	11.3	1566604.0	17624295.6	6543.8
2.0	7.5	1566604.0	11749530.4	4362.5
1.0	3.8	1566604.0	5874765.2	2181.3
		Σ =	4487918836.98	

40 lantai Open Frame

lantai	Balok					Kolom					
	B1	B2	B3	B4	B. anak	K1	K2	K3	K4	K5	K6
40.0	W24x176	W24x207	W18x119	W18x130	W12X65	W36X328	W36X393	W36X359	W36X439	W36X527	W36X527
39.0	W24x176	W24x207	W18x119	W18x130	W12X65	W36X328	W36X393	W36X359	W36X439	W36X527	W36X527
38.0	W24x176	W24x207	W18x119	W18x130	W12X65	W36X328	W36X393	W36X359	W36X439	W36X527	W36X527
37.0	W24x176	W24x207	W18x119	W18x130	W12X65	W36X328	W36X393	W36X359	W36X439	W36X527	W36X527
36.0	W24x176	W24x207	W18x119	W18x130	W12X65	W36X328	W36X393	W36X359	W36X439	W36X527	W36X527
35.0	W24x176	W24x207	W18x119	W18x130	W12X65	W36X328	W36X393	W36X359	W36X439	W36X527	W36X527
34.0	W24x176	W24x207	W18x119	W18x130	W12X65	W36X328	W36X393	W36X359	W36X439	W36X527	W36X527
33.0	W24x176	W24x207	W18x119	W18x130	W12X65	W36X328	W36X393	W36X359	W36X439	W36X527	W36X527
32.0	W24x176	W24x207	W18x119	W18x130	W12X65	W36X328	W36X393	W36X359	W36X439	W36X527	W36X527
31.0	W24x176	W24x207	W18x119	W18x130	W12X65	W36X328	W36X393	W36X359	W36X439	W36X527	W36X527
30.0	W24x192	W24x229	W18x119	W18x130	W12X65	W36X359	W36X439	W36X393	W36X527	W36X650	W36X650
29.0	W24x192	W24x229	W18x119	W18x130	W12X65	W36X359	W36X439	W36X393	W36X527	W36X650	W36X650
28.0	W24x192	W24x229	W18x119	W18x130	W12X65	W36X359	W36X439	W36X393	W36X527	W36X650	W36X650
27.0	W24x192	W24x229	W18x119	W18x130	W12X65	W36X359	W36X439	W36X393	W36X527	W36X650	W36X650

26.0	W24x192	W24x229	W18x119	W18x130	W12X65	W36X359	W36X439	W36X393	W36X527	W36X650	W36X650
25.0	W24x192	W24x229	W18x119	W18x130	W12X65	W36X359	W36X439	W36X393	W36X527	W36X650	W36X650
24.0	W24x192	W24x229	W18x119	W18x130	W12X65	W36X359	W36X439	W36X393	W36X527	W36X650	W36X650
23.0	W24x192	W24x229	W18x119	W18x130	W12X65	W36X359	W36X439	W36X393	W36X527	W36X650	W36X650
22.0	W24x192	W24x229	W18x119	W18x130	W12X65	W36X359	W36X439	W36X393	W36X527	W36X650	W36X650
21.0	W24x192	W24x229	W18x119	W18x130	W12X65	W36X359	W36X439	W36X393	W36X527	W36X650	W36X650
20.0	W24x207	W24x250	W18x143	W18x143	W12X65	W36X393	W36X527	W36X439	W36X650	W36X798	W36X798
19.0	W24x207	W24x250	W18x143	W18x143	W12X65	W36X393	W36X527	W36X439	W36X650	W36X798	W36X798
18.0	W24x207	W24x250	W18x143	W18x143	W12X65	W36X393	W36X527	W36X439	W36X650	W36X798	W36X798
17.0	W24x207	W24x250	W18x143	W18x143	W12X65	W36X393	W36X527	W36X439	W36X650	W36X798	W36X798
16.0	W24x207	W24x250	W18x143	W18x143	W12X65	W36X393	W36X527	W36X439	W36X650	W36X798	W36X798
15.0	W24x207	W24x250	W18x143	W18x143	W12X65	W36X393	W36X527	W36X439	W36X650	W36X798	W36X798
14.0	W24x207	W24x250	W18x143	W18x143	W12X65	W36X393	W36X527	W36X439	W36X650	W36X798	W36X798
13.0	W24x207	W24x250	W18x143	W18x143	W12X65	W36X393	W36X527	W36X439	W36X650	W36X798	W36X798
12.0	W24x207	W24x250	W18x143	W18x143	W12X65	W36X393	W36X527	W36X439	W36X650	W36X798	W36X798
11.0	W24x207	W24x250	W18x143	W18x143	W12X65	W36X393	W36X527	W36X439	W36X650	W36X798	W36X798
10.0	W24x229	W24x279	W18x143	W18x143	W12X65	W36X439	W36X650	W36X527	W36X798	W36X848	W36X848
9.0	W24x229	W24x279	W18x143	W18x143	W12X65	W36X439	W36X650	W36X527	W36X798	W36X848	W36X848
8.0	W24x229	W24x279	W18x143	W18x143	W12X65	W36X439	W36X650	W36X527	W36X798	W36X848	W36X848
7.0	W24x229	W24x279	W18x143	W18x143	W12X65	W36X439	W36X650	W36X527	W36X798	W36X848	W36X848
6.0	W24x229	W24x279	W18x143	W18x143	W12X65	W36X439	W36X650	W36X527	W36X798	W36X848	W36X848
5.0	W24x229	W24x279	W18x143	W18x143	W12X65	W36X439	W36X650	W36X527	W36X798	W36X848	W36X848
4.0	W24x229	W24x279	W18x143	W18x143	W12X65	W36X439	W36X650	W36X527	W36X798	W36X848	W36X848
3.0	W24x229	W24x279	W18x143	W18x143	W12X65	W36X439	W36X650	W36X527	W36X798	W36X848	W36X848
2.0	W24x229	W24x279	W18x143	W18x143	W12X65	W36X439	W36X650	W36X527	W36X798	W36X848	W36X848
1.0	W24x229	W24x279	W18x143	W18x143	W12X65	W36X439	W36X650	W36X527	W36X798	W36X848	W36X848

lantai	W Balok (Kg)	W Kolom (kg)	WD + 0.3 WL (Kg)	WI (Kg)
40.0	129160.4	177174.5	506880.0	845470.9
39.0	129160.4	177174.5	1067607.0	1553739.7
38.0	129160.4	177174.5	1067607.0	1553739.7
37.0	129160.4	177174.5	1067607.0	1553739.7
36.0	129160.4	177174.5	1067607.0	1553739.7
35.0	129160.4	177174.5	1067607.0	1553739.7
34.0	129160.4	177174.5	1067607.0	1553739.7
33.0	129160.4	177174.5	1067607.0	1553739.7
32.0	129160.4	177174.5	1067607.0	1553739.7

31.0	129160.4	177174.5	1067607.0	1553739.7
30.0	135903.8	211604.3	1067607.0	1594912.9
29.0	135903.8	211604.3	1067607.0	1594912.9
28.0	135903.8	211604.3	1067607.0	1594912.9
27.0	135903.8	211604.3	1067607.0	1594912.9
26.0	135903.8	211604.3	1067607.0	1594912.9
25.0	135903.8	211604.3	1067607.0	1594912.9
24.0	135903.8	211604.3	1067607.0	1594912.9
23.0	135903.8	211604.3	1067607.0	1594912.9
22.0	135903.8	211604.3	1067607.0	1594912.9
21.0	135903.8	211604.3	1067607.0	1594912.9
20.0	148654.9	256858.7	1067607.0	1652918.4
19.0	148654.9	256858.7	1067607.0	1652918.4
18.0	148654.9	256858.7	1067607.0	1652918.4
17.0	148654.9	256858.7	1067607.0	1652918.4
16.0	148654.9	256858.7	1067607.0	1652918.4
15.0	148654.9	256858.7	1067607.0	1652918.4
14.0	148654.9	256858.7	1067607.0	1652918.4
13.0	148654.9	256858.7	1067607.0	1652918.4
12.0	148654.9	256858.7	1067607.0	1652918.4
11.0	148654.9	256858.7	1067607.0	1652918.4
10.0	157630.0	282935.0	1067607.0	1687969.8
9.0	157630.0	282935.0	1067607.0	1687969.8
8.0	157630.0	282935.0	1067607.0	1687969.8
7.0	157630.0	282935.0	1067607.0	1687969.8
6.0	157630.0	282935.0	1067607.0	1687969.8
5.0	157630.0	282935.0	1067607.0	1687969.8
4.0	157630.0	282935.0	1067607.0	1687969.8
3.0	157630.0	282935.0	1067607.0	1687969.8
2.0	157630.0	282935.0	1067607.0	1687969.8
1.0	157630.0	282935.0	1067607.0	1687969.8
TOTAL				64187138.5

Jml Lant	Tipe	H (m)	T	c	I	R	Wt (Kg)	V (Kg)
40.0	Open Fram	150.00	3.65	0.12	1.00	8.50	64187138.46	869457.97

Lantai	hi (m)	Wi (Kg)	hi *Wi	Fx,y (Kg)
40.0	150.0	845470.9	126820632.1	107636.8

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39.0	146.3	1553739.7	227234428.3	37073.8
38.0	142.5	1553739.7	221407904.5	36123.2
37.0	138.8	1553739.7	215581380.7	35172.5
36.0	135.0	1553739.7	209754856.9	34221.9
35.0	131.3	1553739.7	203928333.1	33271.3
34.0	127.5	1553739.7	198101809.3	32320.7
33.0	123.8	1553739.7	192275285.5	31370.1
32.0	120.0	1553739.7	186448761.7	30419.5
31.0	116.3	1553739.7	180622237.8	29468.9
30.0	112.5	1594912.9	179427699.1	29274.0
29.0	108.8	1594912.9	173446775.8	28298.2
28.0	105.0	1594912.9	167465852.5	27322.4
27.0	101.3	1594912.9	161484929.2	26346.6
26.0	97.5	1594912.9	155504005.9	25370.8
25.0	93.8	1594912.9	149523082.6	24395.0
24.0	90.0	1594912.9	143542159.3	23419.2
23.0	86.3	1594912.9	137561236.0	22443.4
22.0	82.5	1594912.9	131580312.7	21467.6
21.0	78.8	1594912.9	125599389.4	20491.8
20.0	75.0	1652918.4	123968880.9	20225.8
19.0	71.3	1652918.4	117770436.8	19214.5
18.0	67.5	1652918.4	111571992.8	18203.2
17.0	63.8	1652918.4	105373548.7	17191.9
16.0	60.0	1652918.4	99175104.7	16180.6
15.0	56.3	1652918.4	92976660.6	15169.3
14.0	52.5	1652918.4	86778216.6	14158.0
13.0	48.8	1652918.4	80579772.6	13146.8
12.0	45.0	1652918.4	74381328.5	12135.5
11.0	41.3	1652918.4	68182884.5	11124.2
10.0	37.5	1687969.8	63298865.7	10327.3
9.0	33.8	1687969.8	56968979.2	9294.6
8.0	30.0	1687969.8	50639092.6	8261.9
7.0	26.3	1687969.8	44309206.0	7229.1
6.0	22.5	1687969.8	37979319.4	6196.4
5.0	18.8	1687969.8	31649432.9	5163.7
4.0	15.0	1687969.8	25319546.3	4130.9
3.0	11.3	1687969.8	18989659.7	3098.2
2.0	7.5	1687969.8	12659773.1	2065.5

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1.0	3.8	1687969.8	6329886.6	1032.7
		Σ =	4796213660.41	

40 Lantai Outrigger dan Belt truss

lantai	Balok					Kolom						Intl	Intl	Outrigr	Outrigr	Belt Truss	
	B1	B2	B3	B4	B. anak	K1	K2	K3	K4	K5	K6	arah x	arah y	arah x	arah y	arah x	arah y
40.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87	W12x96	W12x96	W12x96	W12x96
39.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87				
38.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87				
37.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87				
36.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87				
35.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87				
34.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87				
33.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87				
32.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87				
31.0	W24x55	W24x62	W18x35	W18x40	W12X65	W36X300	W36X359	W36X328	W36X393	W36X393	W36X393	W12x87	W12x87				
30.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87				
29.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87				
28.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87				
27.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87				
26.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87				
25.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87				
24.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87				
23.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87				
22.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87				
21.0	W24x62	W24x68	W18x40	W18x46	W12X65	W36X328	W36X393	W36X359	W36X439	W36X439	W36X439	W12x87	W12x87				
20.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87	W12x96	W12x96	W12x96	W12x96
19.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87				
18.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87				
17.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87				
16.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87				
15.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87				
14.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87				
13.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87				
12.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87				
11.0	W24x68	W24x76	W18x46	W18x50	W12X65	W36X359	W36X439	W36X393	W36X527	W36X527	W36X527	W12x87	W12x87				
10.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87				
9.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87				

8.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87					
7.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87					
6.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87					
5.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87					
4.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87					
3.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87					
2.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87					
1.0	W24x76	W24x84	W18x50	W18x55	W12X65	W36X393	W36X527	W36X439	W36X650	W36X650	W36X650	W12x87	W12x87					

lantai	W Balok	W Kolom	W Bracing (Kg)			WD + 0.3 WL (Kg)		Wi
	(Kg)	(kg)	Intl	Outrigger	Belt truss			(Kg)
40.0	52184.9	146527.3	11343.2	18742.9	50363.0	506880.0		818297.3
39.0	52184.9	146527.3	11343.2			1067607.0		1457460.2
38.0	52184.9	146527.3	11343.2			1067607.0		1457460.2
37.0	52184.9	146527.3	11343.2			1067607.0		1457460.2
36.0	52184.9	146527.3	11343.2			1067607.0		1457460.2
35.0	52184.9	146527.3	11343.2			1067607.0		1457460.2
34.0	52184.9	146527.3	11343.2			1067607.0		1457460.2
33.0	52184.9	146527.3	11343.2			1067607.0		1457460.2
32.0	52184.9	146527.3	11343.2			1067607.0		1457460.2
31.0	52184.9	146527.3	11343.2			1067607.0		1457460.2
30.0	56252.0	162392.9	11343.2			1067607.0		1477392.9
29.0	56252.0	162392.9	11343.2			1067607.0		1477392.9
28.0	56252.0	162392.9	11343.2			1067607.0		1477392.9
27.0	56252.0	162392.9	11343.2			1067607.0		1477392.9
26.0	56252.0	162392.9	11343.2			1067607.0		1477392.9
25.0	56252.0	162392.9	11343.2			1067607.0		1477392.9
24.0	56252.0	162392.9	11343.2			1067607.0		1477392.9
23.0	56252.0	162392.9	11343.2			1067607.0		1477392.9
22.0	56252.0	162392.9	11343.2			1067607.0		1477392.9
21.0	56252.0	162392.9	11343.2			1067607.0		1477392.9
20.0	60391.8	191137.5	11343.2	18742.9	50363.0	1067607.0		1579383.1
19.0	60391.8	191137.5	11343.2			1067607.0		1510277.3
18.0	60391.8	191137.5	11343.2			1067607.0		1510277.3
17.0	60391.8	191137.5	11343.2			1067607.0		1510277.3
16.0	60391.8	191137.5	11343.2			1067607.0		1510277.3
15.0	60391.8	191137.5	11343.2			1067607.0		1510277.3
14.0	60391.8	191137.5	11343.2			1067607.0		1510277.3

13.0	60391.8	191137.5	11343.2			1067607.0		1510277.3
12.0	60391.8	191137.5	11343.2			1067607.0		1510277.3
11.0	60391.8	191137.5	11343.2			1067607.0		1510277.3
10.0	64669.1	231843.7	11343.2			1067607.0		1555260.8
9.0	64669.1	231843.7	11343.2			1067607.0		1555260.8
8.0	64669.1	231843.7	11343.2			1067607.0		1555260.8
7.0	64669.1	231843.7	11343.2			1067607.0		1555260.8
6.0	64669.1	231843.7	11343.2			1067607.0		1555260.8
5.0	64669.1	231843.7	11343.2			1067607.0		1555260.8
4.0	64669.1	231843.7	11343.2			1067607.0		1555260.8
3.0	64669.1	231843.7	11343.2			1067607.0		1555260.8
2.0	64669.1	231843.7	11343.2			1067607.0		1555260.8
1.0	64669.1	231843.7	11343.2			1067607.0		1555260.8
TOTAL								59433855.2

Jml Lant	Tipe	H (m)	T	c	I	R	Wt (Kg)	V (Kg)
40.0	Outrigger	150.00	2.10	0.20	1.00	6.50	59433855.20	1828543.56

Lantai	hi (m)	Wi (Kg)	hi *Wi	Fx,y (Kg)
40.0	150.0	818297.3	122744589.5	228136.3
39.0	146.3	1457460.2	213153558.4	78634.8
38.0	142.5	1457460.2	207688082.6	76618.6
37.0	138.8	1457460.2	202222606.7	74602.3
36.0	135.0	1457460.2	196757130.9	72586.0
35.0	131.3	1457460.2	191291655.0	70569.7
34.0	127.5	1457460.2	185826179.1	68553.4
33.0	123.8	1457460.2	180360703.3	66537.2
32.0	120.0	1457460.2	174895227.4	64520.9
31.0	116.3	1457460.2	169429751.6	62504.6
30.0	112.5	1477392.9	166206701.1	61315.6
29.0	108.8	1477392.9	160666477.8	59271.7
28.0	105.0	1477392.9	155126254.4	57227.9
27.0	101.3	1477392.9	149586031.0	55184.0
26.0	97.5	1477392.9	144045807.6	53140.2
25.0	93.8	1477392.9	138505584.3	51096.3
24.0	90.0	1477392.9	132965360.9	49052.5
23.0	86.3	1477392.9	127425137.5	47008.6
22.0	82.5	1477392.9	121884914.2	44964.8

21.0	78.8	1477392.9	116344690.8	42920.9
20.0	75.0	1579383.1	118453733.0	43699.0
19.0	71.3	1510277.3	107607255.6	39697.6
18.0	67.5	1510277.3	101943715.8	37608.2
17.0	63.8	1510277.3	96280176.1	35518.9
16.0	60.0	1510277.3	90616636.3	33429.5
15.0	56.3	1510277.3	84953096.5	31340.2
14.0	52.5	1510277.3	79289556.7	29250.8
13.0	48.8	1510277.3	73626017.0	27161.5
12.0	45.0	1510277.3	67962477.2	25072.1
11.0	41.3	1510277.3	62298937.4	22982.8
10.0	37.5	1555260.8	58322281.3	21515.8
9.0	33.8	1555260.8	52490053.1	19364.2
8.0	30.0	1555260.8	46657825.0	17212.6
7.0	26.3	1555260.8	40825596.9	15061.0
6.0	22.5	1555260.8	34993368.8	12909.5
5.0	18.8	1555260.8	29161140.6	10757.9
4.0	15.0	1555260.8	23328912.5	8606.3
3.0	11.3	1555260.8	17496684.4	6454.7
2.0	7.5	1555260.8	11664456.3	4303.2
1.0	3.8	1555260.8	5832228.1	2151.6
		Σ =	4460930592.79	

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Kontrol Raeyligh Struktur 20 Lt Open Frame

Tingkat	Fy	Gaya Geser (V)	Kekakuan Tingkat (K)	Simpangan Tingkat	Total Simpangan (δ)	Wi	Wi.δi2	Fi.δi
	Kg	Kg	Kg/cm	cm	cm	Kg	kg.cm2	kg.cm
20.0	97484.47	97484.47	1456728.59	0.067	2.636	361290.49	2510311.24	256963.21
19.0	59106.89	156591.36	2182440.85	0.072	2.569	828081.89	5465227.06	151846.78
18.0	56867.87	213459.23	2848671.60	0.075	2.497	840975.24	5244619.21	142014.38
17.0	53708.54	267167.77	2848671.60	0.094	2.422	840975.24	4934601.82	130100.15
16.0	50905.93	318073.70	3187754.07	0.100	2.329	846909.86	4592066.59	118536.99
15.0	47724.31	365798.01	3187754.07	0.115	2.229	846909.86	4206952.33	106366.50
14.0	44542.69	410340.70	3187754.07	0.129	2.114	846909.86	3784903.79	94164.08
13.0	41361.07	451701.77	3187754.07	0.142	1.985	846909.86	3338006.12	82113.91
12.0	38419.51	490121.29	3435909.39	0.143	1.844	852235.03	2896614.44	70830.04
11.0	35280.54	525401.82	3538202.43	0.148	1.701	853751.09	2470095.62	60010.39
10.0	32073.22	557475.04	3538202.43	0.158	1.552	853751.09	2057639.15	49792.22
9.0	28865.89	586340.93	3538202.43	0.166	1.395	853751.09	1661173.24	40264.92
8.0	25865.32	612206.25	3915360.64	0.156	1.229	860630.22	1300309.46	31793.10
7.0	22711.89	634918.14	4135101.23	0.154	1.073	863662.34	994023.50	24365.74
6.0	19467.33	654385.47	4135101.23	0.158	0.919	863662.34	729852.36	17895.84
5.0	16222.78	670608.25	4135101.23	0.162	0.761	863662.34	500196.24	12345.92
4.0	13112.60	683720.85	4643535.50	0.147	0.599	872604.83	312933.86	7852.47
3.0	9834.45	693555.30	4643535.50	0.149	0.452	872604.83	177967.38	4441.31
2.0	6556.30	700111.60	4643535.50	0.151	0.302	872604.83	79716.04	1981.63
1.0	3278.15	703389.75	4643535.50	0.151	0.151	872604.83	20022.22	496.56
		9792851.7				Σ =	47277231.65	1404176.15

Tr	1.1671
T	1.1671
rasio	1.0000
Cek	OK

Kontrol Raeyligh Struktur 20 Lt Frame Truss

Tingkat	Fy	Gaya Geser (V)	Kekakuan Tingkat (K)	Simpangan Tingkat	Total Simpangan (δ)	Wi	Wi.δi2	Fi.δi
	Kg	Kg	Kg/cm	cm	cm	Kg	kg.cm2	kg.cm
20.0	92356.4	92356.4	1594979.7	0.1	4.8	382448.0	8907211.9	445709.2
19.0	55138.9	147495.3	1207360.9	0.1	4.8	813297.7	18489882.8	262906.1
18.0	52236.9	199732.2	1207360.9	0.2	4.6	813297.7	17554555.9	242687.5
17.0	49334.8	249067.0	1207360.9	0.2	4.5	813297.7	16326667.5	221043.5
16.0	46691.5	295758.5	1367506.3	0.2	4.3	817829.2	14940633.1	199568.0
15.0	43773.3	339531.8	1367506.3	0.2	4.1	817829.2	13466880.6	177627.9
14.0	40855.1	380386.8	1367506.3	0.3	3.8	817829.2	11869339.2	155642.4
13.0	37936.8	418323.7	1367506.3	0.3	3.5	817829.2	10199329.6	133972.5
12.0	35255.6	453579.3	1636309.7	0.3	3.2	823364.7	8566477.8	113719.2
11.0	32317.7	485897.0	1636309.7	0.3	2.9	823364.7	7157380.0	95284.2
10.0	30441.6	516338.6	2244731.0	0.2	2.7	853125.0	5997474.5	80713.4
9.0	26529.8	542868.4	1636309.7	0.3	2.4	826107.6	4843590.0	64239.1
8.0	23840.6	566709.1	2057794.9	0.3	2.1	835165.3	3646792.8	49818.1
7.0	20860.5	587569.6	2057794.9	0.3	1.8	835165.3	2748898.8	37845.9
6.0	17880.5	605450.1	2057794.9	0.3	1.5	835165.3	1951716.9	27333.9
5.0	14916.5	620366.6	2105531.6	0.3	1.2	836067.4	1274111.0	18414.1
4.0	12105.3	632471.8	2736907.0	0.2	0.9	848123.9	749147.8	11377.0
3.0	9079.0	641550.8	2736907.0	0.2	0.7	848123.9	426035.6	6434.7
2.0	6052.6	647603.4	2736907.0	0.2	0.5	848123.9	190829.1	2871.0
1.0	3026.3	650629.7	2736907.0	0.2	0.2	848123.9	47930.0	719.4
		9073686.1					149354885.1	2347927.0

Tr	1.6043
T	1.6043
rasio	1.0000
Cek	OK

Kontrol Raeyligh Struktur 20 Lt Outrigger dan Belttruss

Tingkat	Fy	Gaya Geser (V)	Kekakuan Tingkat (K)	Simpangan Tingkat	Total Simpangan (δ)	Wi	Wi.δi2	Fi.δi
	Kg	Kg	Kg/cm	cm	cm	Kg	kg.cm2	kg.cm
20.0	92434.7	92434.7	1773865.5	0.1	4.7	382308.7	8416865.7	433713.7
19.0	55070.4	147505.1	1241458.6	0.1	4.6	809666.9	17431803.0	255526.6
18.0	52184.2	199689.3	1251309.0	0.2	4.5	809856.4	16554358.4	235934.2
17.0	49285.0	248974.3	1251309.0	0.2	4.4	809856.4	15406344.3	214961.6
16.0	46695.5	295669.9	1416000.8	0.2	4.2	815262.2	14126435.2	194376.2
15.0	43777.1	339446.9	1416000.8	0.2	4.0	815262.2	12744756.8	173086.8
14.0	40858.6	380305.5	1416000.8	0.3	3.7	815262.2	11246164.9	151752.9
13.0	37940.1	418245.7	1416000.8	0.3	3.4	815262.2	9678488.0	130723.6
12.0	35258.0	453503.6	1685561.9	0.3	3.2	820763.6	8144810.7	111068.0
11.0	32319.8	485823.5	1685561.9	0.3	2.9	820763.6	6812941.4	93116.6
10.0	30757.1	516580.6	2579658.4	0.2	2.6	859186.7	5776304.9	79749.3
9.0	26469.3	543049.9	1685561.9	0.3	2.4	821563.6	4703155.0	63330.9
8.0	23804.2	566854.1	2105531.6	0.3	2.1	831200.5	3563140.3	49285.3
7.0	20828.7	587682.8	2105531.6	0.3	1.8	831200.5	2696750.5	37517.1
6.0	17853.2	605535.9	2105531.6	0.3	1.5	831200.5	1925739.2	27174.5
5.0	14877.6	620413.6	2105531.6	0.3	1.2	831200.5	1266775.1	18366.7
4.0	12086.5	632500.0	2736907.0	0.2	0.9	844075.6	745599.2	11359.6
3.0	9064.9	641564.9	2736907.0	0.2	0.7	844075.6	424010.3	6424.8
2.0	6043.2	647608.1	2736907.0	0.2	0.5	844075.6	189919.6	2866.6
1.0	3021.6	650629.7	2736907.0	0.2	0.2	844075.6	47701.2	718.3
		9074018.0					141902063.8	2291053.3

Tr	1.5830
T	1.5830
rasio	1.0000
Cek	OK

Kontrol Raeyligh Stuktur 30 Lt Open Frame

Tingkat	Fy	Gaya Geser (V)	Kekakuan Tingkat (K)	Simpangan Tingkat	Total Simpangan (δ)	Wi	Wi.δi2	Fi.δi
	Kg	Kg	Kg/cm	cm	cm	Kg	kg.cm2	kg.cm
30.0	154825.9	154825.9	3223746.1	0.048	3.397	748668.1	8637193.9	525878.5
29.0	62878.0	217704.0	5313365.4	0.041	3.349	1109815.3	12444136.8	210550.4
28.0	60709.8	278413.8	5313365.4	0.052	3.308	1109815.3	12141466.9	200802.6
27.0	58541.6	336955.4	5313365.4	0.063	3.255	1109815.3	11759823.0	190563.6
26.0	56373.4	393328.9	5313365.4	0.074	3.192	1109815.3	11306082.7	179930.6
25.0	54205.2	447534.1	5313365.4	0.084	3.118	1109815.3	10787722.2	168997.6
24.0	52037.0	499571.1	5313365.4	0.094	3.034	1109815.3	10212719.0	157854.7
23.0	49972.4	549543.5	5313365.4	0.103	2.939	1112121.7	9609386.0	146893.4
22.0	47799.7	597343.2	5313365.4	0.112	2.836	1112121.7	8945065.0	135562.9
21.0	45627.0	642970.2	5313365.4	0.121	2.724	1112121.7	8249948.0	124271.5
20.0	43454.3	686424.5	5313365.4	0.129	2.603	1112121.7	7533150.6	113095.4
19.0	41990.5	728415.1	6288369.6	0.116	2.473	1131220.6	6920701.0	103861.0
18.0	39780.5	768195.5	6288369.6	0.122	2.358	1131220.6	6287663.9	93786.7
17.0	37570.5	805766.0	6288369.6	0.128	2.235	1131220.6	5652944.1	83986.6
16.0	35360.4	841126.4	6288369.6	0.134	2.107	1131220.6	5023462.4	74515.3
15.0	33150.4	874276.9	6288369.6	0.139	1.974	1131220.6	4405983.9	65423.9
14.0	30940.4	905217.2	6288369.6	0.144	1.835	1131220.6	3807072.4	56760.7
13.0	28964.1	934181.3	6926375.1	0.135	1.691	1140423.1	3259347.2	48965.7
12.0	26736.1	960917.4	6926375.1	0.139	1.556	1140423.1	2760032.3	41593.1
11.0	24508.1	985425.4	6926375.1	0.142	1.417	1140423.1	2289715.6	34727.0
10.0	22280.1	1007705.5	6926375.1	0.145	1.275	1140423.1	1852996.4	28400.1
9.0	20329.6	1028035.1	8354310.1	0.123	1.129	1156209.0	1474276.3	22956.2
8.0	18070.8	1046105.9	8354310.1	0.125	1.006	1156209.0	1170466.1	18181.8
7.0	15811.9	1061917.8	8354310.1	0.127	0.881	1156209.0	897259.8	13929.2
6.0	13553.1	1075470.9	8354310.1	0.129	0.754	1156209.0	657007.5	10216.6
5.0	11294.2	1086765.1	8354310.1	0.130	0.625	1156209.0	451769.0	7059.9
4.0	9035.4	1095800.5	8354310.1	0.131	0.495	1156209.0	283302.4	4472.5
3.0	6832.3	1102632.8	9123023.3	0.121	0.364	1165722.3	154314.5	2485.8
2.0	4554.9	1107187.7	9123023.3	0.121	0.243	1165722.3	68819.7	1106.7
1.0	2277.4	1109465.1	9123023.3	0.122	0.122	1165722.3	17240.3	277.0
		23329222.47				Σ =	159061069.18	2867107.09

Tr	1.4982
T	1.4982
rasio	1.0000
Cek	OK

Kontrol Raeyligh Stuktur 30 Lt Frame Truss

Tingkat	Fy	Gaya Geser (V)	Kekakuan Tingkat (K)	Simpangan Tingkat	Total Simpangan (δ)	Wi	Wi.δi2	Fi.δi
	Kg	Kg	Kg/cm	cm	cm	Kg	kg.cm2	kg.cm
30.0	172965.6	172965.6	2545770.6	0.068	4.969	77224.3	1906360.7	859380.3
29.0	68732.4	241698.1	3416208.5	0.071	4.901	111068.1	2667356.0	336827.5
28.0	66444.1	308142.2	4232847.9	0.073	4.830	111204.9	2594084.1	320912.3
27.0	64071.1	372213.2	4232847.9	0.088	4.757	111204.9	2516474.3	304786.9
26.0	61698.1	433911.3	4232847.9	0.103	4.669	111204.9	2424298.9	288073.1
25.0	59325.1	493236.4	4232847.9	0.117	4.567	111204.9	2319015.7	270911.9
24.0	56952.1	550188.4	4232847.9	0.130	4.450	111204.9	2202176.2	253439.1
23.0	54671.9	604860.3	4341960.5	0.139	4.320	111394.0	2078939.1	236186.0
22.0	52294.9	657155.2	4341960.5	0.151	4.181	111394.0	1947024.8	218632.0
21.0	49917.8	707073.0	4341960.5	0.163	4.029	111394.0	1808605.8	201139.2
20.0	47745.2	754818.2	4341960.5	0.174	3.867	111873.0	1672531.9	184609.5
19.0	45789.4	800607.6	4341960.5	0.184	3.693	112937.2	1540028.8	169087.3
18.0	43379.4	843987.0	4966705.7	0.170	3.508	112937.2	1390072.0	152189.3
17.0	40969.5	884956.5	4966705.7	0.178	3.338	112937.2	1258674.4	136772.4
16.0	38559.5	923516.0	4966705.7	0.186	3.160	112937.2	1127903.4	121856.5
15.0	36722.0	960238.0	4966705.7	0.193	2.974	114725.7	1014903.0	109221.6
14.0	33739.6	993977.5	4966705.7	0.200	2.781	112937.2	873417.1	93827.8
13.0	31341.2	1025318.7	4966705.7	0.206	2.581	112979.0	752509.7	80885.9
12.0	28930.3	1054249.1	4966705.7	0.212	2.374	112979.0	636938.6	68691.5
11.0	26519.5	1080768.5	4966705.7	0.218	2.162	112979.0	528147.7	57338.1
10.0	24133.9	1104902.4	4966705.7	0.222	1.945	113097.4	427635.8	46928.6
9.0	21720.5	1126622.9	4966705.7	0.227	1.722	113097.4	335385.6	37403.8
8.0	19594.7	1146217.6	6057263.1	0.189	1.495	114782.4	256615.5	29298.4
7.0	17145.4	1163363.0	6057263.1	0.192	1.306	114782.4	195772.6	22391.6
6.0	14696.1	1178059.1	6057263.1	0.194	1.114	114782.4	142425.2	16370.3
5.0	12246.7	1190305.8	6057263.1	0.197	0.919	114782.4	97033.0	11260.1
4.0	9797.4	1200103.2	6057263.1	0.198	0.723	114782.4	59988.2	7082.8
3.0	7428.7	1207531.9	6926375.1	0.174	0.525	116042.0	31960.0	3898.6
2.0	4952.4	1212484.3	6926375.1	0.175	0.350	116042.0	14252.9	1735.7
1.0	2476.2	1214960.5	6926375.1	0.175	0.175	116042.0	3570.5	434.4
		25608431.4				Σ =	34824101.3	4641572.4

Tr	1.7500
T	1.7226
rasio	0.9843
Cek	OK

Kontrol Raeyligh Stuktur 30 Lt Outrigger dan Belttruss

Tingkat	Fy	Gaya Geser (V)	Kekakuan Tingkat (K)	Simpangan Tingkat	Total Simpangan (δ)	Wi	Wi.δi2	Fi.δi
	Kg	Kg	Kg/cm	cm	cm	Kg	kg.cm2	kg.cm
30.0	172787.6	172787.6	2545770.6	0.068	4.925	760362.7	18443616.4	850991.3
29.0	68065.8	240853.4	4152528.9	0.058	4.857	1081260.2	25509516.6	330609.2
28.0	66455.2	307308.5	4232847.9	0.073	4.799	1093377.4	25183002.4	318931.6
27.0	64081.8	371390.3	4232847.9	0.088	4.727	1093377.4	24426843.0	302888.8
26.0	61708.4	433098.7	4232847.9	0.102	4.639	1093377.4	23528386.8	286256.4
25.0	59335.0	492433.7	4232847.9	0.116	4.537	1093377.4	22501910.0	269175.5
24.0	56961.6	549395.3	4232847.9	0.130	4.420	1093377.4	21362617.5	251781.7
23.0	54680.8	604076.1	4341960.5	0.139	4.290	1095233.0	20160626.2	234603.1
22.0	52303.4	656379.5	4341960.5	0.151	4.151	1095233.0	18874327.3	217126.3
21.0	49926.0	706305.5	4341960.5	0.163	4.000	1095233.0	17524719.0	199709.5
20.0	47630.5	753936.0	4341960.5	0.174	3.837	1097120.3	16156162.2	182779.3
19.0	45249.0	799184.9	4966705.7	0.161	3.664	1097120.3	14727148.8	165783.3
18.0	43270.7	842455.6	4966705.7	0.170	3.503	1107441.9	13588617.8	151572.8
17.0	40866.8	883322.4	4966705.7	0.178	3.333	1107441.9	12304477.7	136220.3
16.0	38462.9	921785.3	4966705.7	0.186	3.155	1107441.9	11026481.5	121366.7
15.0	37165.0	958950.3	4966705.7	0.193	2.970	1141410.8	10067138.6	110373.8
14.0	33655.0	992605.3	4966705.7	0.200	2.777	1107441.9	8538799.7	93451.8
13.0	31272.6	1023877.9	4966705.7	0.206	2.577	1108206.0	7358977.9	80586.6
12.0	28867.1	1052745.0	4966705.7	0.212	2.371	1108206.0	6228660.6	68436.8
11.0	26461.5	1079206.5	4966705.7	0.217	2.159	1108206.0	5164687.4	57124.9
10.0	24088.3	1103294.8	4966705.7	0.222	1.942	1109701.3	4182970.2	46767.7
9.0	21679.5	1124974.3	4966705.7	0.227	1.719	1109701.3	3280537.8	37275.1
8.0	19525.9	1144500.2	6057263.1	0.189	1.493	1124398.8	2505894.8	29149.6
7.0	17085.2	1161585.4	6057263.1	0.192	1.304	1124398.8	1911713.0	22277.7
6.0	14644.4	1176229.8	6057263.1	0.194	1.112	1124398.8	1390751.9	16286.8
5.0	12203.7	1188433.5	6057263.1	0.196	0.918	1124398.8	947492.3	11202.6
4.0	9763.0	1198196.4	6057263.1	0.198	0.722	1124398.8	585755.3	7046.6
3.0	7400.0	1205596.4	6926375.1	0.174	0.524	1136342.8	311961.2	3877.3
2.0	4933.3	1210529.8	6926375.1	0.175	0.350	1136342.8	139121.0	1726.2
1.0	2466.7	1212996.4	6926375.1	0.175	0.175	1136342.8	34851.1	432.0
		25568434.7				Σ =	337967766.3	4605811.3

Tr	1.7230
T	1.7263
rasio	1.0019
Cek	OK

Kontrol Raeyligh Struktur 40 Lt Open Frame

Tingkat	Fy	Gaya Geser (V)	Kekakuan Tingkat (K)	Simpangan Tingkat	Total Simpangan (δ)	Wi	Wi.δi2	Fi.δi
	Kg	Kg	Kg/cm	cm	cm	Kg	kg.cm2	kg.cm
40 (Atap)	397262.5	397262.5	21483426.6	0.018	2.904	845470.9	7129299.6	1153590.5
39.0	136830.6	534093.1	21483426.6	0.025	2.885	1553739.7	12935334.1	394805.3
38.0	133322.1	667415.2	21483426.6	0.031	2.860	1553739.7	12713388.5	381367.6
37.0	129813.7	797228.9	21483426.6	0.037	2.829	1553739.7	12438739.8	367298.8
36.0	126305.2	923534.1	21483426.6	0.043	2.792	1553739.7	12114602.2	352684.7
35.0	122796.7	1046330.8	21483426.6	0.049	2.749	1553739.7	11744461.2	337609.1
34.0	119288.2	1165619.0	21483426.6	0.054	2.701	1553739.7	11332043.6	322153.3
33.0	115779.8	1281398.8	21483426.6	0.060	2.646	1553739.7	10881287.4	306396.4
32.0	112271.3	1393670.1	21483426.6	0.065	2.587	1553739.7	10396313.9	290415.1
31.0	108762.8	1502432.9	21483426.6	0.070	2.522	1553739.7	9881399.5	274284.0
30.0	108043.5	1610476.4	26420017.4	0.061	2.452	1594912.9	9588478.7	264914.1
29.0	104442.1	1714918.4	26420017.4	0.065	2.391	1594912.9	9117650.6	249717.2
28.0	100840.6	1815759.0	26420017.4	0.069	2.326	1594912.9	8629319.0	234560.7
27.0	97239.2	1912998.2	26420017.4	0.072	2.257	1594912.9	8126920.8	219500.6
26.0	93637.7	2006635.9	26420017.4	0.076	2.185	1594912.9	7613916.3	204590.9
25.0	90036.3	2096672.2	26420017.4	0.079	2.109	1594912.9	7093772.8	189883.6
24.0	86434.8	2183107.0	26420017.4	0.083	2.030	1594912.9	6569948.5	175428.9
23.0	82833.4	2265940.3	26420017.4	0.086	1.947	1594912.9	6045878.3	161274.8
22.0	79231.9	2345172.2	26420017.4	0.089	1.861	1594912.9	5524958.2	147467.4
21.0	75630.5	2420802.7	26420017.4	0.092	1.772	1594912.9	5010532.1	134051.0
20.0	74648.6	2495451.3	33211140.3	0.075	1.681	1652918.4	4669753.0	125470.9
19.0	70916.2	2566367.5	33211140.3	0.077	1.606	1652918.4	4261574.2	113868.8
18.0	67183.8	2633551.3	33211140.3	0.079	1.528	1652918.4	3861263.0	102684.1
17.0	63451.3	2697002.6	33211140.3	0.081	1.449	1652918.4	3470994.4	91947.9
16.0	59718.9	2756721.5	33211140.3	0.083	1.368	1652918.4	3092867.5	81689.6
15.0	55986.5	2812708.0	33211140.3	0.085	1.285	1652918.4	2728898.3	71936.8
14.0	52254.0	2864962.0	33211140.3	0.086	1.200	1652918.4	2381012.9	62715.5
13.0	48521.6	2913483.6	33211140.3	0.088	1.114	1652918.4	2051041.1	54050.1
12.0	44789.2	2958272.8	33211140.3	0.089	1.026	1652918.4	1740710.3	45963.2
11.0	41056.7	2999329.6	33211140.3	0.090	0.937	1652918.4	1451639.7	38475.9
10.0	38115.8	3037445.4	37151317.6	0.082	0.847	1687969.8	1210471.2	32277.5
9.0	34304.2	3071749.6	37151317.6	0.083	0.765	1687969.8	988019.4	26245.1
8.0	30492.6	3102242.2	37151317.6	0.084	0.682	1687969.8	786005.5	20807.8

7.0	26681.1	3128923.3	37151317.6	0.084	0.599	1687969.8	605410.0	15978.9
6.0	22869.5	3151792.8	37151317.6	0.085	0.515	1687969.8	447105.4	11770.1
5.0	19057.9	3170850.7	37151317.6	0.085	0.430	1687969.8	311853.0	8191.6
4.0	15246.3	3186097.0	37151317.6	0.086	0.344	1687969.8	200301.2	5252.0
3.0	11434.7	3197531.7	37151317.6	0.086	0.259	1687969.8	112982.8	2958.4
2.0	7623.2	3205154.9	37151317.6	0.086	0.173	1687969.8	50314.2	1316.1
1.0	3811.6	3208966.5	37151317.6	0.086	0.086	1687969.8	12593.5	329.2
		89240072.05				Σ =	219323055.73	7075923.56

Tr	1.1198
T	1.1198
rasio	1.0000
Cek	OK

Kontrol Raeyligh Struktur 40 Lt Frame Truss

Tingkat	Fy	Gaya Geser (V)	Kekakuan Tingkat (K)	Simpangan Tingkat	Total Simpangan (δ)	Wi	Wi.δi2	Fi.δi
	Kg	Kg	Kg/cm	cm	cm	Kg	kg.cm2	kg.cm
40 (Atap)	351752.76	351752.76	28229294.59	0.012	3.904	794564.29	12108645.75	1373158.84
39.0	122298.02	474050.78	16979209.51	0.028	3.891	1468803.44	22240948.20	475898.40
38.0	119162.18	593212.96	16979209.51	0.035	3.863	1468803.44	21922942.37	460368.93
37.0	116026.33	709239.29	16979209.51	0.042	3.828	1468803.44	21528224.99	444200.28
36.0	112890.48	822129.77	16979209.51	0.048	3.787	1468803.44	21061011.31	427479.31
35.0	109754.64	931884.41	16979209.51	0.055	3.738	1468803.44	20525844.96	410290.59
34.0	106618.79	1038503.19	16979209.51	0.061	3.683	1468803.44	19927561.37	392716.35
33.0	103482.94	1141986.14	16979209.51	0.067	3.622	1468803.44	19271252.23	374836.52
32.0	100347.10	1242333.23	16979209.51	0.073	3.555	1468803.44	18562230.91	356728.70
31.0	97211.25	1339544.48	16979209.51	0.079	3.482	1468803.44	17805998.86	338468.18
30.0	95352.07	1434896.55	18100643.45	0.079	3.403	1488736.11	17239026.21	324472.30
29.0	92173.67	1527070.22	18100643.45	0.084	3.324	1488736.11	16445185.31	306349.65
28.0	88995.27	1616065.48	18100643.45	0.089	3.239	1488736.11	15620903.03	288277.74
27.0	85816.86	1701882.35	18100643.45	0.094	3.150	1488736.11	14771663.71	270320.19
26.0	82638.46	1784520.81	18100643.45	0.099	3.056	1488736.11	13902986.15	252538.39
25.0	79460.06	1863980.87	18100643.45	0.103	2.957	1488736.11	13020398.33	234991.50
24.0	76281.66	1940262.52	18100643.45	0.107	2.854	1488736.11	12129413.12	217736.45
23.0	73103.25	2013365.78	18100643.45	0.111	2.747	1488736.11	11235504.83	200827.94
22.0	69924.85	2083290.63	18100643.45	0.115	2.636	1488736.11	10344086.73	184318.43
21.0	66746.45	2150037.08	18100643.45	0.119	2.521	1488736.11	9460489.51	168258.15
20.0	66425.23	2216462.31	31275352.99	0.071	2.402	1555650.13	8976031.45	159558.26
19.0	61723.58	2278185.89	20025267.91	0.114	2.331	1521620.49	8269263.45	143890.24
18.0	58474.97	2336660.85	20025267.91	0.117	2.217	1521620.49	7481857.07	129664.63

17.0	55226.36	2391887.21	20025267.91	0.119	2.101	1521620.49	6715156.96	116016.92
16.0	51977.75	2443864.96	20025267.91	0.122	1.981	1521620.49	5973251.99	102983.99
15.0	48729.14	2492594.10	20025267.91	0.124	1.859	1521620.49	5260067.41	90600.63
14.0	45480.53	2538074.64	20025267.91	0.127	1.735	1521620.49	4579351.61	78899.52
13.0	42231.92	2580306.56	20025267.91	0.129	1.608	1521620.49	3934663.73	67911.21
12.0	38983.31	2619289.87	20025267.91	0.131	1.479	1521620.49	3329362.03	57664.17
11.0	35734.70	2655024.57	20025267.91	0.133	1.348	1521620.49	2766593.08	48184.75
10.0	33446.48	2688471.05	22923572.93	0.117	1.216	1566604.05	2315777.14	40664.85
9.0	30101.83	2718572.88	22923572.93	0.119	1.099	1566604.05	1890558.09	33068.03
8.0	26757.18	2745330.06	22923572.93	0.120	0.980	1566604.05	1504400.35	26220.59
7.0	23412.53	2768742.60	22923572.93	0.121	0.860	1566604.05	1159160.92	20139.13
6.0	20067.89	2788810.49	22923572.93	0.122	0.739	1566604.05	856491.74	14838.28
5.0	16723.24	2805533.72	22923572.93	0.122	0.618	1566604.05	597834.68	10330.74
4.0	13378.59	2818912.32	22923572.93	0.123	0.495	1566604.05	384417.25	6627.23
3.0	10033.94	2828946.26	22923572.93	0.123	0.372	1566604.05	217248.88	3736.55
2.0	6689.30	2835635.55	22923572.93	0.124	0.249	1566604.05	97117.94	1665.52
1.0	3344.65	2838980.20	22660413.05	0.125	0.125	1566604.05	24589.42	419.03
		79150295.38				Σ =	395457513.07	8655321.12

Tr	1.3596
T	1.3596
rasio	1.0000
Cek	OK

Kontrol Raeyligh Struktur 40 Lt Outrigger dan Belttruss

Tingkat	Fy	Gaya Geser (V)	Kekakuan Tingkat (K)	Simpangan Tingkat	Total Simpangan (δ)	Wi	Wi.δi2	Fi.δi
	Kg	Kg	Kg/cm	cm	cm	Kg	kg.cm2	kg.cm
40 (Atap)	356226.93	356226.93	35899547.11	0.010	4.810	818297.26	18931693.70	1713428.28
39.0	122785.58	479012.51	13229181.15	0.036	4.800	1457460.23	33580049.79	589372.24
38.0	119637.23	598649.74	13229181.15	0.045	4.764	1457460.23	33075339.96	569928.21
37.0	116488.88	715138.62	13229181.15	0.054	4.719	1457460.23	32449947.40	549658.72
36.0	113340.53	828479.15	13229181.15	0.063	4.664	1457460.23	31710686.50	528676.15
35.0	110192.19	938671.34	13229181.15	0.071	4.602	1457460.23	30864912.04	507089.91
34.0	107043.84	1045715.18	13229181.15	0.079	4.531	1457460.23	29920458.99	485006.37
33.0	103895.49	1149610.67	13229181.15	0.087	4.452	1457460.23	28885583.82	462528.94
32.0	100747.14	1250357.81	13229181.15	0.095	4.365	1457460.23	27768907.63	439758.03
31.0	97598.79	1347956.60	13229181.15	0.102	4.270	1457460.23	26579360.80	416791.03
30.0	95742.18	1443698.78	14350615.09	0.101	4.169	1477392.90	25672497.18	399107.01
29.0	92550.77	1536249.55	14350615.09	0.107	4.068	1477392.90	24448315.90	376492.66
28.0	89359.37	1625608.92	14350615.09	0.113	3.961	1477392.90	23178498.07	353944.14

27.0	86167.96	1711776.88	14350615.09	0.119	3.848	1477392.90	21871691.89	331542.34
26.0	82976.55	1794753.43	14350615.09	0.125	3.728	1477392.90	20536599.85	309365.35
25.0	79785.15	1874538.58	14350615.09	0.131	3.603	1477392.90	19181938.53	287488.38
24.0	76593.74	1951132.33	14350615.09	0.136	3.473	1477392.90	17816399.90	265983.85
23.0	73402.34	2024534.66	14350615.09	0.141	3.337	1477392.90	16448614.03	244921.29
22.0	70210.93	2094745.59	14350615.09	0.146	3.196	1477392.90	15087113.32	224367.42
21.0	67019.52	2161765.12	14350615.09	0.151	3.050	1477392.90	13740298.14	204386.13
20.0	68234.42	2229999.54	38945605.51	0.057	2.899	1579383.11	13273556.85	197812.37
19.0	61986.39	2291985.93	16275239.55	0.141	2.842	1510277.27	12196326.26	176149.94
18.0	58723.95	2350709.88	16275239.55	0.144	2.701	1510277.27	11017470.02	158609.00
17.0	55461.51	2406171.38	16275239.55	0.148	2.556	1510277.27	9870635.69	141786.82
16.0	52199.06	2458370.44	16275239.55	0.151	2.409	1510277.27	8762004.07	125729.18
15.0	48936.62	2507307.07	16275239.55	0.154	2.258	1510277.27	7697507.35	110479.25
14.0	45674.18	2552981.25	16275239.55	0.157	2.104	1510277.27	6682809.13	96077.56
13.0	42411.74	2595392.99	16275239.55	0.159	1.947	1510277.27	5723285.55	82562.05
12.0	39149.30	2634542.28	16275239.55	0.162	1.787	1510277.27	4824007.75	69968.03
11.0	35886.86	2670429.14	16275239.55	0.164	1.625	1510277.27	3989725.46	58328.20
10.0	33596.13	2704025.27	19173544.58	0.141	1.461	1555260.83	3320903.93	49092.58
9.0	30236.52	2734261.79	19173544.58	0.143	1.320	1555260.83	2710821.90	39919.09
8.0	26876.91	2761138.70	19173544.58	0.144	1.178	1555260.83	2156825.16	31650.83
7.0	23517.29	2784655.99	19173544.58	0.145	1.034	1555260.83	1661575.55	24307.81
6.0	20157.68	2804813.67	19173544.58	0.146	0.888	1555260.83	1227440.96	17907.68
5.0	16798.07	2821611.73	19173544.58	0.147	0.742	1555260.83	856488.09	12465.75
4.0	13438.45	2835050.19	19173544.58	0.148	0.595	1555260.83	550476.30	7994.97
3.0	10078.84	2845129.03	19173544.58	0.148	0.447	1555260.83	310852.31	4505.95
2.0	6719.23	2851848.25	19173544.58	0.149	0.299	1555260.83	138745.94	2006.91
1.0	3359.61	2855207.87	19041964.63	0.150	0.150	1555260.83	34966.74	503.75
		79624254.78				Σ =	588755332.46	10667694.14

Tr	1.494
T	1.494
rasio	1.000
Cek	OK

Tabel Distribusi momen Balok Struktur Open Frame 30 Lantai

B1									B2								
Lantai	Lokasi (in)		Momen kombinasi			Mub	Cb	Cb pakai	Lantai	Lokasi (in)		Momen kombinasi			Mub	Cb	Cb pakai
			1,2D+1,6L	1,2D+0,5L+E	1,2D+0,5L+1,3W							1,2D+1,6L	1,2D+0,5L+E	2D+0,5L+1,3			
			Kip -in	Kip -in	Kip -in							Kip -in	Kip -in	Kip -in			
30	Tepi kiri	8.2	-548.626	-631.107	-688.355	688.355	2.35026	2.3	30	Tepi kiri	8.75	-1491.551	-1447.788	-1528.286	1528.29	2.0431	2.04311
	1/4 L	72.91	1.445	-92.018	-120.447					1/4 L	73.22	-51.039	-167.88	-209.742			
	1/2 L	137.8	390.266	316.732	317.197					1/2 L	137.8	1072.573	856.302	853.139			
	3/4 L	202.33	124.924	191.761	219.463					3/4 L	202.2	362.039	409.061	447.773			
	Tepi Kanan	267.04	-303.094	-64.705	-9.693					Tepi Kanan	266.6	-667.814	-295.851	-215.199			
29	Tepi kiri	9.15	-1305.271	-1517.445	-1658.807	1658.81	2.3745	2.3	29	Tepi kiri	9.5	-3001.76	-2875.984	-3053.131	3053.13	2.065	2.065036
	1/4 L	73.385	43.475	-192.986	-263.515					1/4 L	73.5	-64.091	-342.038	-432.991			
	1/2 L	137.8	874.495	690.054	690.546					1/2 L	137.8	2090.988	1559.691	1555.341			
	3/4 L	201.86	318.989	486.949	555.704					3/4 L	201.5	764.015	873.566	960.262			
	Tepi Kanan	266.09	-756.763	-159.42	-22.216					Tepi Kanan	265.5	-1358.481	-454.14	-275.968			
28	Tepi kiri	9.15	-1313.931	-1610.265	-1777.378	1777.38	2.46674	2.3	28	Tepi kiri	9.5	-3022.237	-3014.801	-3229.289	3229.29	2.1298	2.129781
	1/4 L	73.385	38.026	-240.134	-323.49					1/4 L	73.5	-76.424	-412.826	-522.433			
	1/2 L	137.8	872.265	688.698	689.323					1/2 L	137.8	2086.838	1557.253	1553.023			
	3/4 L	201.86	320.041	531.248	613.041					3/4 L	201.5	767.775	938.677	1044.082			
	Tepi Kanan	266.09	-752.419	-69.342	93.841					Tepi Kanan	265.5	-1346.773	-321.163	-105.606			
27	Tepi kiri	9.15	-1309.865	-1715.967	-1915.76	1915.76	2.35373	2.3	27	Tepi kiri	9.5	-3012.58	-3161.445	-3422.052	3422.05	2.2035	2.203501
	1/4 L	73.385	40.251	-293.162	-392.958					1/4 L	73.5	-71.056	-486.37	-619.218			
	1/2 L	137.8	872.645	688.483	688.951					1/2 L	137.8	2087.896	1557.15	1552.667			
	3/4 L	201.86	318.73	583.742	681.593					3/4 L	201.5	764.234	1011.026	1138.937			
	Tepi Kanan	266.09	-755.425	36.005	231.506					Tepi Kanan	265.5	-1354.935	-176.019	84.909			
26	Tepi kiri	9.15	-1307.458	-1828.569	-2062.706	2062.71	2.37073	2.3	26	Tepi kiri	9.5	-3006.572	-3319.188	-3628.489	3628.49	2.1427	2.14272
	1/4 L	73.385	41.354	-349.79	-466.832					1/4 L	73.5	-68.015	-565.713	-723.059			
	1/2 L	137.8	872.439	687.978	688.343					1/2 L	137.8	2087.956	1556.577	1551.904			
	3/4 L	201.86	317.422	639.291	754.115					3/4 L	201.5	760.878	1088.062	1239.842			
	Tepi Kanan	266.09	-757.838	147.761	377.358					Tepi Kanan	265.5	-1361.722	-21.01	287.961			
25	Tepi kiri	9.15	-1303.556	-1934.702	-2201.598	2201.6	2.38513	2.3	25	Tepi kiri	9.5	-2997.464	-3468.389	-3824.499	3824.5	2.1497	2.149709
	1/4 L	73.385	43.249	-403.202	-536.714					1/4 L	73.5	-63.276	-640.678	-821.579			
	1/2 L	137.8	872.322	687.428	687.653					1/2 L	137.8	2088.307	1556.197	1551.331			
	3/4 L	201.86	315.563	691.606	822.562					3/4 L	201.5	756.283	1161.018	1335.721			
	Tepi Kanan	266.09	-761.445	253.087	515.131					Tepi Kanan	265.5	-1371.287	125.629	480.745			
24	Tepi kiri	9.15	-1299.732	-2026.655	-2322.035	2322.04	2.39584	2.3	24	Tepi kiri	9.5	-2986.547	-3590.932	-3986.257	3986.26	2.155	2.154967
	1/4 L	73.385	45.067	-449.298	-597.066					1/4 L	73.5	-57.612	-702.182	-902.807			
	1/2 L	137.8	872.127	687.309	687.544					1/2 L	137.8	2088.693	1556.019	1551.011			
	3/4 L	201.86	313.681	737.575	882.765					3/4 L	201.5	750.711	1220.881	1414.794			
	Tepi Kanan	266.09	-765.018	345.269	635.809					Tepi Kanan	265.5	-1382.845	245.816	639.587			
23	Tepi kiri	9.15	-1384.379	-2522.256	-2946.318	2946.32	2.43185	2.3	23	Tepi kiri	9.5	-2970.72	-3683.292	-4109.918	4109.92	2.1591	2.15909
	1/4 L	73.385	5.903	-696.606	-909.419					1/4 L	73.5	-51.242	-749.878	-966.237			
	1/2 L	137.8	876.882	687.283	686.285					1/2 L	137.8	2085.562	1553.192	1548.09			
	3/4 L	201.86	357.81	979.886	1187.363					3/4 L	201.5	743.849	1266.879	1476.134			
	Tepi Kanan	266.09	-683.087	828.901	1245.421					Tepi Kanan	265.5	-1393.455	340.867	765.49			
22	Tepi kiri	9.15	-1377.101	-2616.56	-3070.622	3070.62	2.43889	2.3	22	Tepi kiri	9.5	-2955.681	-3774.407	-4231.737	4231.74	2.1625	2.16252

LAMPIRAN B - 1

	1/4 L	73.385	9.416	-743.914	-971.746					1/4 L	73.5	-43.424	-795.466	-1027.255				
	1/2 L	137.8	876.619	687.096	686.102					1/2 L	137.8	2086.126	1553.344	1548.159				
	3/4 L	201.86	354.223	1027.046	1249.513					3/4 L	201.5	736.226	1311.344	1535.647				
	Tepi Kanan	266.09	-690.006	923.535	1370.074					Tepi Kanan	265.5	-1409.304	429.854	884.726				
21	Tepi kiri	9.15	-1367.669	-2700.043	-3181.365	3181.37	2.44558	2.3	21	Tepi kiri	9.5	-2939.048	-3860.288	-4347.104	4347.1	2.1658	2.16579	
	1/4 L	73.385	13.999	-786.109	-1027.676					1/4 L	73.5	-34.861	-838.533	-1085.157				
	1/2 L	137.8	876.34	686.299	685.129					1/2 L	137.8	2086.58	1553.293	1547.991				
	3/4 L	201.86	349.602	1067.948	1303.772					3/4 L	201.5	727.505	1352.78	1591.467				
	Tepi Kanan	266.09	-698.981	1006.251	1479.716					Tepi Kanan	265.5	-1427.244	512.973	996.798				
20	Tepi kiri	9.15	-1357.462	-2751.898	-3251.174	3251.17	3.19409	2.3	20	Tepi kiri	9.5	-2918.373	-3909.402	-4415.586	4415.59	2.5534	2.3	
	1/4 L	73.385	18.99	-812.229	-1062.806					1/4 L	73.5	-23.817	-862.428	-1118.699				
	1/2 L	137.8	876.099	685.982	684.771					1/2 L	137.8	2087.951	1554.734	1549.552				
	3/4 L	201.86	344.7	1093.848	1338.594					3/4 L	201.5	718.037	1378.084	1626.48				
	Tepi Kanan	266.09	-708.557	1058.439	1549.814					Tepi Kanan	265.5	-1447.601	562.253	1065.421				
19	Tepi kiri	9.35	-1392.758	-3050.966	-3631.532	3631.53	3.31321	2.3	19	Tepi kiri	10.1	-3005.061	-4284.389	-4883.361	4883.36	2.6422	2.3	
	1/4 L	73.46	2.328	-962.358	-1254.116					1/4 L	73.86	-64.931	-1049.509	-1352.667				
	1/2 L	137.8	878.135	685.58	683.631					1/2 L	137.8	2091.758	1553.6	1547.071				
	3/4 L	201.68	367.531	1242.504	1526.422					3/4 L	201.4	777.608	1572.551	1865.732				
	Tepi Kanan	265.79	-665.565	1356.429	1927.221					Tepi Kanan	265.1	-1327.496	954.278	1547.993				
18	Tepi kiri	9.35	-1383.298	-3086.342	-3679.711	3679.71	2.464	2.3	18	Tepi kiri	10.1	-2988.807	-4327.325	-4942.891	4942.89	2.1785	2.178451	
	1/4 L	73.46	6.705	-979.83	-1277.841					1/4 L	73.86	-58.156	-1071.916	-1383.341				
	1/2 L	137.8	877.408	686.074	684.444					1/2 L	137.8	2089.031	1551.778	1545.334				
	3/4 L	201.68	362.3	1261.444	1552.264					3/4 L	201.4	764.12	1589.829	1891.279				
	Tepi Kanan	265.79	-675.317	1393.881	1978.18					Tepi Kanan	265.1	-1351.775	990.708	1600.901				
17	Tepi kiri	9.35	-1369.463	-3144.605	-3758.685	3758.69	2.46821	2.3	17	Tepi kiri	10.1	-2950.441	-4372.653	-5010.582	5010.58	2.1796	2.179638	
	1/4 L	73.46	13.518	-1009.422	-1317.905					1/4 L	73.86	-38.243	-1094.197	-1416.854				
	1/2 L	137.8	877.174	685.25	683.423					1/2 L	137.8	2090.443	1552.609	1546.095				
	3/4 L	201.68	355.638	1289.831	1590.723					3/4 L	201.4	745.807	1612.239	1924.594				
	Tepi Kanan	265.79	-688.43	1451.58	2056.257					Tepi Kanan	265.1	-1389.866	1034.757	1666.859				
16	Tepi kiri	9.35	-1355.25	-3197.514	-3830.783	3830.78	2.4718	2.3	16	Tepi kiri	10.1	-2913.266	-4415.45	-5074.706	5074.71	2.181	2.180969	
	1/4 L	73.46	20.455	-1036.2	-1354.336					1/4 L	73.86	-19.321	-1115.425	-1448.769				
	1/2 L	137.8	876.808	684.692	682.781					1/2 L	137.8	2091.064	1553.01	1546.479				
	3/4 L	201.68	348.642	1316.031	1626.416					3/4 L	201.4	726.779	1632.585	1955.388				
	Tepi Kanan	265.79	-702.077	1504.632	2128.415					Tepi Kanan	265.1	-1428.598	1075.103	1728.145				
15	Tepi kiri	9.35	-1339.694	-3225.228	-3870.442	3870.44	2.47447	2.3	15	Tepi kiri	10.1	-2872.052	-4429.075	-5101.823	5101.82	2.1816	2.181551	
	1/4 L	73.46	28.059	-1050.436	-1374.62					1/4 L	73.86	1.755	-1121.942	-1462.048				
	1/2 L	137.8	876.429	683.979	681.938					1/2 L	137.8	2091.949	1553.621	1547.076				
	3/4 L	201.68	341.004	1329.523	1645.741					3/4 L	201.4	706.031	1638.587	1967.923				
	Tepi Kanan	265.79	-717	1532.381	2167.978					Tepi Kanan	265.1	-1471.037	1086.511	1752.652				
14	Tepi kiri	9.35	-1323.731	-3197.93	-3838.68	3838.68	2.47397	2.3	14	Tepi kiri	10.1	-2830.521	-4384.305	-5053.101	5053.1	2.1801	2.180136	
	1/4 L	73.46	35.875	-1036.613	-1358.476					1/4 L	73.86	22.925	-1098.723	-1436.692				
	1/2 L	137.8	876.067	684.278	682.407					1/2 L	137.8	2092.704	1555.233	1549.003				
	3/4 L	201.68	333.239	1317.229	1631.572					3/4 L	201.4	684.815	1616.861	1944.52				
	Tepi Kanan	265.79	-732.194	1507.45	2139.12					Tepi Kanan	265.1	-1514.285	1041.383	1703.848				
13	Tepi kiri	9.5	-1399.667	-3878.512	-4705.446	4705.45	2.49538	2.3	13	Tepi kiri	10.1	-2964.469	-5034.126	-5867.746	5867.75	2.1943	2.194283	
	1/4 L	73.498	-1.008	-1380.763	-1797.234					1/4 L	73.77	-41.042	-1426.948	-1849.139				

	1/2 L	137.8	879.161	679.717	675.623					1/2 L	137.8	2103.582	1556.266	1547.77			
	3/4 L	201.49	378.838	1648.675	2051.643					3/4 L	201.1	767.547	1935.021	2339.49			
	Tepi Kanan	265.49	-644.203	2177.295	2989.243					Tepi Kanan	264.8	-1362.414	1678.841	2498.558			
12	Tepi kiri	9.5	-1382.372	-3818.957	-4632.004	4632	2.49258	2.3	12	Tepi kiri	10.1	-2922.924	-4955.156	-5774.316	5774.32	2.1892	2.189186
	1/4 L	73.498	7.189	-1349.685	-1758.715					1/4 L	73.77	-19.499	-1383.713	-1797.722			
	1/2 L	137.8	878.216	682.186	679.054					1/2 L	137.8	2105.016	1563.569	1556.942			
	3/4 L	201.49	369.637	1623.705	2021.31					3/4 L	201.1	747.226	1904.75	2304.652			
	Tepi Kanan	265.49	-661.698	2124.757	2924.987					Tepi Kanan	264.8	-1404.61	1610.789	2419.467			
11	Tepi kiri	9.5	-1359.397	-3792.062	-4602.369	4602.37	2.49379	2.3	11	Tepi kiri	10.1	-2875.18	-4916.598	-5734.807	5734.81	2.1893	2.189271
	1/4 L	73.498	18.473	-1336.794	-1744.576					1/4 L	73.77	4.82	-1364.445	-1778.081			
	1/2 L	137.8	877.751	681.006	677.624					1/2 L	137.8	2105.782	1563.443	1556.606			
	3/4 L	201.49	358.399	1609.592	2005.57					3/4 L	201.1	722.689	1883.162	2282.046			
	Tepi Kanan	265.49	-683.762	2097.651	2894.87					Tepi Kanan	264.8	-1454.588	1567.62	2374.467			
10	Tepi kiri	9.5	-1335.062	-3737.771	-4537.44	4537.44	3.54795	2.3	10	Tepi kiri	10.1	-2822.774	-4846.927	-5655.906	5655.91	2.8554	2.3
	1/4 L	73.498	30.562	-1309.328	-1711.679					1/4 L	73.77	32.067	-1327.988	-1736.759			
	1/2 L	137.8	877.537	681.522	678.338					1/2 L	137.8	2107.733	1566.504	1560.143			
	3/4 L	201.49	346.9	1584.441	1975.541					3/4 L	201.1	697.514	1850.798	2245.572			
	Tepi Kanan	265.49	-706.598	2046.713	2833.952					Tepi Kanan	264.8	-1507.039	1499.635	2297.761			
9	Tepi kiri	10.1	-1343.478	-4002.174	-4879.014	4879.01	3.61592	2.3	9	Tepi kiri	10.8	-2840.4	-5145.953	-6040.443	6040.44	2.9272	2.3
	1/4 L	73.86	26.465	-1442.346	-1883.63					1/4 L	74.2	24.914	-1477.301	-1929.229			
	1/2 L	137.8	878.151	677.863	673.321					1/2 L	137.8	2110.924	1564.005	1556.039			
	3/4 L	201.38	358.97	1719.876	2148.644					3/4 L	201	724.932	2009.575	2445.623			
	Tepi Kanan	265.14	-680.914	2320.513	3183.784					Tepi Kanan	264.4	-1448.998	1821.519	2702.987			
8	Tepi kiri	10.1	-1315.783	-3949.29	-4816.792	4816.79	3.60683	2.3	8	Tepi kiri	10.8	-2781.148	-5077.274	-5964.653	5964.65	2.9159	2.3
	1/4 L	73.86	39.308	-1416.86	-1853.521					1/4 L	74.2	53.104	-1443.864	-1892.175			
	1/2 L	137.8	876.099	675.876	671.227					1/2 L	137.8	2107.958	1562.089	1554.235			
	3/4 L	201.38	343	1691.595	2115.66					3/4 L	201	688.914	1970.138	2402.567			
	Tepi Kanan	265.14	-710.839	2265.865	3119.826					Tepi Kanan	264.4	-1518.172	1744.442	2618.548			
7	Tepi kiri	10.1	-1278.179	-3925.259	-4794.464	4794.46	3.60193	2.3	7	Tepi kiri	10.8	-2696.647	-5022.008	-5912.075	5912.08	2.9035	2.3
	1/4 L	73.86	58.034	-1404.923	-1842.446					1/4 L	74.2	96.396	-1415.12	-1864.677			
	1/2 L	137.8	875.894	675.683	671.016					1/2 L	137.8	2109.913	1564.229	1556.575			
	3/4 L	201.38	324.891	1680.443	2105.455					3/4 L	201	647.64	1943.322	2377.115			
	Tepi Kanan	265.14	-746.903	2243.725	3099.597					Tepi Kanan	264.4	-1602.812	1688.58	2565.217			
6	Tepi kiri	10.1	-1240.599	-3898.453	-4768.513	4768.51	3.59708	2.3	6	Tepi kiri	10.8	-2612.508	-4965.271	-5857.493	5857.49	2.8918	2.3
	1/4 L	73.86	76.546	-1391.784	-1829.75					1/4 L	74.2	139.038	-1386.001	-1836.539			
	1/2 L	137.8	875.284	675.116	670.418					1/2 L	137.8	2110.93	1565.643	1558.186			
	3/4 L	201.38	306.234	1667.421	2092.946					3/4 L	201	605.029	1914.537	2349.404			
	Tepi Kanan	265.14	-783.656	2218.214	3075.146					Tepi Kanan	264.4	-1689.188	1629.498	2508.091			
5	Tepi kiri	10.1	-1201.067	-3836.074	-4696.781	4696.78	3.58227	2.3	5	Tepi kiri	10.8	-2523.469	-4870.381	-5754.426	5754.43	2.8693	2.3
	1/4 L	73.86	96.05	-1360.819	-1794.117					1/4 L	74.2	184.27	-1337.563	-1783.875			
	1/2 L	137.8	874.702	674.579	669.851					1/2 L	137.8	2112.219	1567.484	1560.29			
	3/4 L	201.38	286.69	1636.788	2057.753					3/4 L	201	560.284	1867.262	2298.142			
	Tepi Kanan	265.14	-822.213	2157.402	3005.231					Tepi Kanan	264.4	-1780.114	1532.953	2403.293			
4	Tepi kiri	10.1	-1159.756	-3692.42	-4519.81	4519.81	3.54326	2.3	4	Tepi kiri	10.8	-2430.926	-4685.035	-5534.56	5534.56	2.8209	2.3
	1/4 L	73.86	116.486	-1288.459	-1704.891					1/4 L	74.2	231.222	-1243.422	-1672.185			
	1/2 L	137.8	874.203	675.449	671.093					1/2 L	137.8	2113.437	1570.134	1563.463			

	3/4 L	201.38	266.434	1567.849	1972.929					3/4 L	201	513.576	1776.021	2190.169			
	Tepi Kanan	265.14	-862.281	2018.461	2834.105					Tepi Kanan	264.4	-1874.899	1347.524	2183.823			
3	Tepi kiri	10.45	-1143.382	-4084.267	-5032.819	5032.82	3.63936	2.3	3	Tepi kiri	10.8	-2355.832	-4704.786	-5577.278	5577.28	2.8229	2.3
	1/4 L	74.035	128.831	-1484.585	-1962.919					1/4 L	74.15	272.171	-1251.768	-1692.532			
	1/2 L	137.8	879.959	672.684	665.853					1/2 L	137.8	2120.473	1574.997	1568.009			
	3/4 L	201.21	265.898	1757.601	2219.636					3/4 L	200.8	485.124	1785.926	2209.543			
	Tepi Kanan	264.79	-871.656	2398.378	3330.572					Tepi Kanan	264.2	-1942.955	1361.111	2217.38			
2	Tepi kiri	10.45	-1097.11	-3604.63	-4420.208	4420.21	3.51058	2.3	2	Tepi kiri	10.8	-2279.579	-4228.625	-4975.175	4975.18	2.6821	2.3
	1/4 L	74.035	151.023	-1242.425	-1653.345					1/4 L	74.15	310.523	-1008.436	-1384.701			
	1/2 L	137.8	878.004	676.717	671.561					1/2 L	137.8	2120.744	1584.397	1580.174			
	3/4 L	201.21	241.092	1526.015	1924.444					3/4 L	200.8	444.958	1560.506	1925.42			
	Tepi Kanan	264.79	-919.375	1930.522	2733.651					Tepi Kanan	264.2	-2023.75	899.752	1635.56			
1	Tepi kiri	10.45	-1034.598	-2687.089	-3242.265	3242.27	3.16218	2.3	1	Tepi kiri	10.8	-2174.13	-3360.391	-3870.064	3870.06	2.3606	2.3
	1/4 L	74.035	183.242	-780.238	-1060.171					1/4 L	74.15	367.113	-568.663	-825.679			
	1/2 L	137.8	879.847	682.307	678.368					1/2 L	137.8	2128.246	1593.679	1590.517			
	3/4 L	201.21	213.928	1078.583	1349.219					3/4 L	200.8	401.039	1140.16	1388.737			
	Tepi Kanan	264.79	-975.626	1028.819	1574.787					Tepi Kanan	264.2	-2119.336	47.733	549.248			

B3									B4								
Lantai	Lokasi (ln)		Momen kombinasi			Mub	Cb	Cb pakai	Lantai	Lokasi (ln)		Momen kombinasi			Mub	Cb	Cb pakai
			1,2D+1,6L	1,2D+0,5L+E	1,2D+0,5L+1,3W							1,2D+1,6L	1,2D+0,5L+E	1,2D+0,5L+1,3W			
			Kip -in	Kip -in	Kip -in							Kip -in	Kip -in	Kip -in			
30	Tepi kiri	8	-422.755	105.204	237.25	654.14	2.902	2.3	30	Tepi kiri	8.1	-755.601	-185.441	-63.403	755.794	2.3687	2.3
	1/4 L	72.85	-19.486	210.017	276.738					1/4 L	72.91	-2.651	211.899	273.783			
	1/2 L	137.7	177.26	147.748	149.145					1/2 L	137.72	346.8	284.576	286.304			
	3/4 L	202.5	138.28	-104.917	-168.844					3/4 L	202.53	234.629	-13.815	-72.241			
	Tepi Kanan	267.4	-107.509	-524.892	-654.144					Tepi Kanan	267.341	-281.471	-637.213	-755.794			
29	Tepi kiri	8.3	-953.524	-134.439	59.188	1319.8	2.644	2.3	29	Tepi kiri	8.4	-1541.799	-540.586	-341.654	1576.97	2.2696	2.2696
	1/4 L	73.02	67.93	388.129	485.45					1/4 L	73.048	100.974	421.302	521.267			
	1/2 L	137.7	489.415	409.111	410.125					1/2 L	137.695	790.985	626.814	627.812			
	3/4 L	202.5	259.236	-108.682	-203.975					3/4 L	202.343	425.359	1.944	-96.026			
	Tepi Kanan	267.2	-571.168	-1128.246	-1319.845					Tepi Kanan	266.991	-894.046	-1380.033	-1576.971			
28	Tepi kiri	8.3	-960.202	-12.37	219.632	1483.6	2.799	2.3	28	Tepi kiri	8.4	-1550.622	-400.154	-157.03	1764.55	2.4169	2.3
	1/4 L	73.02	63.446	448.297	564.84					1/4 L	73.048	95.147	490.696	612.839			
	1/2 L	137.7	487.124	407.377	408.46					1/2 L	137.695	788.153	625.17	626.333			
	3/4 L	202.5	259.139	-172.317	-286.693					3/4 L	202.343	425.522	-70.739	-190.556			
	Tepi Kanan	267.2	-569.071	-1253.782	-1483.618					Tepi Kanan	266.991	-890.887	-1523.755	-1764.552			
27	Tepi kiri	8.3	-956.712	144.048	422.112	1683.2	2.951	2.3	27	Tepi kiri	8.4	-1545.746	-225.746	68.576	1987.16	2.5635	2.3
	1/4 L	73.02	65.481	527.111	666.792					1/4 L	73.048	97.941	578.54	726.392			
	1/2 L	137.7	487.703	408.588	409.885					1/2 L	137.695	788.867	626.451	627.833			
	3/4 L	202.5	258.263	-248.71	-385.796					3/4 L	202.343	424.155	-156.021	-301.109			
	Tepi Kanan	267.2	-571.403	-1407.779	-1683.248					Tepi Kanan	266.991	-894.336	-1695.6	-1987.159			
26	Tepi kiri	8.3	-954.954	303.585	629.115	1888.9	3.089	2.3	26	Tepi kiri	8.4	-1543.105	-47.274	299.996	2216.98	2.7004	2.3
	1/4 L	73.02	66.285	607.128	770.635					1/4 L	73.048	99.17	668.067	842.502			
	1/2 L	137.7	487.555	409.085	410.569					1/2 L	137.695	788.683	627.032	628.631			
	3/4 L	202.5	257.161	-327.733	-488.271					3/4 L	202.343	422.559	-244.385	-415.622			
	Tepi Kanan	267.2	-573.458	-1566.322	-1888.883					Tepi Kanan	266.991	-897.344	-1872.91	-2216.983			
25	Tepi kiri	8.3	-951.957	461.25	833.38	2091.4	3.208	2.3	25	Tepi kiri	8.4	-1538.739	129.538	528.868	2443.92	2.8207	2.3
	1/4 L	73.02	67.801	686.296	873.2					1/4 L	73.048	101.374	756.849	957.421			
	1/2 L	137.7	487.59	409.756	411.432					1/2 L	137.695	788.725	627.783	629.597			
	3/4 L	202.5	255.716	-405.559	-589.11					3/4 L	202.343	420.44	-331.665	-528.609			
	Tepi Kanan	267.2	-576.384	-1722.645	-2091.422					Tepi Kanan	266.991	-901.625	-2048.221	-2443.922			
24	Tepi kiri	8.3	-948.468	607.366	1022.523	2279.1	3.306	2.3	24	Tepi kiri	8.4	-1533.641	295.95	744.057	2657.41	2.9231	2.3
	1/4 L	73.02	69.539	759.639	968.143					1/4 L	73.048	103.914	840.38	1065.441			
	1/2 L	137.7	487.577	410.325	412.175					1/2 L	137.695	788.708	628.435	630.448			
	3/4 L	202.5	253.952	-477.763	-682.566					3/4 L	202.343	417.865	-413.893	-634.927			
	Tepi Kanan	267.2	-579.898	-1867.622	-2279.078					Tepi Kanan	266.991	-906.757	-2213.329	-2657.409			
23	Tepi kiri	8.3	-944.282	737.909	1191.26	2446.5	3.384	2.3	23	Tepi kiri	8.4	-1527.51	446.838	938.836	2850.6	3.0078	2.3
	1/4 L	73.02	71.634	825.167	1052.845					1/4 L	73.048	106.981	916.13	1163.228			
	1/2 L	137.7	487.579	410.838	412.842					1/2 L	137.695	788.711	629.047	631.243			
	3/4 L	202.5	251.862	-542.265	-765.934					3/4 L	202.343	414.803	-488.419	-731.123			

	Tepi Kanan	267.2	-584.081	-1997.139	-2446.481					Tepi Kanan	266.991	-912.883	-2362.993	-2850.598			
22	Tepi kiri	8.3	-939.503	852.636	1339.299	2593.4	3.447	2.3	22	Tepi kiri	8.4	-1520.536	578.322	1108.201	3018.78	3.0761	2.3
	1/4 L	73.02	74.021	882.748	1127.146					1/4 L	73.048	110.465	982.098	1248.205			
	1/2 L	137.7	487.575	411.272	413.407					1/2 L	137.695	788.705	629.499	631.833			
	3/4 L	202.5	249.466	-598.978	-839.106					3/4 L	202.343	411.308	-553.482	-814.922			
	Tepi Kanan	267.2	-588.869	-2110.999	-2593.391					Tepi Kanan	266.991	-919.869	-2493.571	-3018.784			
21	Tepi kiri	8.3	-934.031	940.2	1451.867	2704.9	3.492	2.3	21	Tepi kiri	8.4	-1512.297	673.989	1230.726	3139.65	2.5802	2.3
	1/4 L	73.02	76.754	926.73	1183.692					1/4 L	73.048	114.576	1030.249	1309.882			
	1/2 L	137.7	487.569	411.673	413.93					1/2 L	137.695	788.688	630.134	632.662			
	3/4 L	202.5	246.722	-642.158	-894.606					3/4 L	202.343	407.162	-600.364	-874.94			
	Tepi Kanan	267.2	-594.351	-2197.76	-2704.913					Tepi Kanan	266.991	-928.142	-2587.97	-3139.65			
20	Tepi kiri	8.3	-928.167	962.835	1479.934	2733.3	3.503	2.3	20	Tepi kiri	8.4	-1504.323	699.83	1262.527	3139.65	2.5815	2.3
	1/4 L	73.02	79.688	937.995	1197.656					1/4 L	73.048	118.582	1042.691	1325.154			
	1/2 L	137.7	487.573	411.567	413.791					1/2 L	137.695	788.726	629.176	631.406			
	3/4 L	202.5	243.796	-653.634	-908.848					3/4 L	202.343	403.233	-614.722	-892.725			
	Tepi Kanan	267.2	-600.207	-2220.607	-2733.257					Tepi Kanan	266.991	-936.039	-2615.727	-3173.963			
19	Tepi kiri	8.35	-967.607	1316.257	1948.662	3196.3	3.65	2.3	19	Tepi kiri	8.5	-1638.227	1456.399	2276.013	3173.96	2.5659	2.3
	1/4 L	73.01	63.639	1120.343	1438.25					1/4 L	73.098	56.316	1430.587	1843.1			
	1/2 L	137.7	491.913	419.658	423.068					1/2 L	137.695	795.82	645.915	651.329			
	3/4 L	202.3	265.651	-822.892	-1133.98					3/4 L	202.293	477.917	-971.256	-1372.943			
	Tepi Kanan	267	-564.219	-2570.67	-3196.256					Tepi Kanan	266.891	-796.04	-3348.016	-4156.802			
18	Tepi kiri	8.35	-963.648	1317.952	1950.01	3206.9	3.654	2.3	18	Tepi kiri	8.5	-1629.74	1462.089	2281.556	4156.8	2.9019	2.3
	1/4 L	73.01	65.477	1119.366	1436.588					1/4 L	73.098	60.019	1431.503	1843.492			
	1/2 L	137.7	491.631	416.01	418.396					1/2 L	137.695	794.738	642.058	646.569			
	3/4 L	202.3	263.248	-829.212	-1141.662					3/4 L	202.293	472.051	-979.886	-1382.854			
	Tepi Kanan	267	-568.742	-2579.663	-3206.948					Tepi Kanan	266.891	-806.69	-3361.42	-4171.865			
17	Tepi kiri	8.35	-956.538	1381.906	2031.543	3285.6	3.678	2.3	17	Tepi kiri	8.5	-1611.613	1549.374	2390.967	4171.87	2.9091	2.3
	1/4 L	73.01	69.063	1151.911	1478.085					1/4 L	73.098	69.201	1475.809	1899.032			
	1/2 L	137.7	491.692	417.145	419.856					1/2 L	137.695	794.976	643.385	648.237			
	3/4 L	202.3	259.785	-859.487	-1180.238					3/4 L	202.293	463.344	-1021.539	-1435.057			
	Tepi Kanan	267	-575.729	-2641.347	-3285.561					Tepi Kanan	266.891	-824.341	-3446.051	-4277.939			
16	Tepi kiri	8.35	-949.515	1458.274	2129.243	3383.2	3.706	2.3	16	Tepi kiri	8.5	-1594.136	1660.244	2531.196	4277.94	2.9424	2.3
	1/4 L	73.01	72.564	1190.103	1526.948					1/4 L	73.098	77.899	1531.381	1969.334			
	1/2 L	137.7	491.672	417.161	419.882					1/2 L	137.695	794.894	643.659	648.612			
	3/4 L	202.3	256.242	-897.646	-1229.049					3/4 L	202.293	454.483	-1076.563	-1504.609			
	Tepi Kanan	267	-582.795	-2717.682	-3383.209					Tepi Kanan	266.891	-841.981	-3556.373	-4417.419			
15	Tepi kiri	8.35	-941.889	1533.485	2225.302	3478.4	3.733	2.3	15	Tepi kiri	8.5	-1575.147	1774.72	2675.778	4417.42	2.9843	2.3
	1/4 L	73.01	76.364	1227.874	1575.196					1/4 L	73.098	87.359	1588.839	2041.918			
	1/2 L	137.7	491.646	417.493	420.319					1/2 L	137.695	794.824	644.098	649.199			
	3/4 L	202.3	252.391	-934.755	-1276.423					3/4 L	202.293	444.884	-1133.142	-1576.02			
	Tepi Kanan	267	-590.471	-2792.23	-3478.394					Tepi Kanan	266.891	-861.11	-3669.971	-4560.827			
14	Tepi kiri	8.35	-933.401	1588.892	2295.415	3548.4	3.751	2.3	14	Tepi kiri	8.5	-1553.738	1872.363	2797.923	4560.83	3.0259	2.3
	1/4 L	73.01	80.645	1255.598	1610.269					1/4 L	73.098	98.158	1638.071	2103.502			

	1/2 L	137.7	491.719	417.532	420.352					1/2 L	137.695	795.013	644.919	650.221					
	3/4 L	202.3	248.256	-962.399	-1311.43					3/4 L	202.293	434.462	-1180.732	-1635.559					
	Tepi Kanan	267	-598.814	-2847.559	-3548.441					Tepi Kanan	266.891	-882.142	-3765.971	-4680.928					
13	Tepi kiri	8.4	-924.905	1612.705	2324.461	3576.5	3.759	2.3	13	Tepi kiri	8.6	-1532.906	1945.091	2887.82	4680.93	3.0615	2.3		
	1/4 L	73.05	84.676	1267.469	1624.801					1/4 L	73.135	107.308	1673.269	2147.238					
	1/2 L	137.7	491.41	417.578	420.489					1/2 L	137.67	794.02	643.832	649.042					
	3/4 L	202.3	243.861	-973.969	-1325.48					3/4 L	202.205	425.371	-1216.494	-1680.043					
	Tepi Kanan	267	-607.043	-2870.535	-3576.468					Tepi Kanan	266.741	-898.042	-3835.342	-4767.651					
12	Tepi kiri	8.4	-915.22	1633.615	2349.441	3600.1	3.766	2.3	12	Tepi kiri	8.6	-1515.287	1999.825	2955.08	4767.65	3.0867	2.3		
	1/4 L	73.05	89.368	1278.15	1637.623					1/4 L	73.135	115.713	1699.84	2179.929					
	1/2 L	137.7	491.109	418.031	421.152					1/2 L	137.67	793.211	642.24	647.164					
	3/4 L	202.3	238.567	-983.744	-1336.976					3/4 L	202.205	415.348	-1246.249	-1716.491					
	Tepi Kanan	267	-617.329	-2890.538	-3600.122					Tepi Kanan	266.741	-917.279	-3893.26	-4838.667					
11	Tepi kiri	8.4	-903.629	1645.93	2362.791	3613.4	3.77	2.3	11	Tepi kiri	8.6	-1491.982	2024.171	2981.522	4838.67	3.1077	2.3		
	1/4 L	73.05	95.176	1284.319	1644.311					1/4 L	73.135	127.436	1712.36	2193.585					
	1/2 L	137.7	491.134	418.056	421.178					1/2 L	137.67	793.351	642.935	648.033					
	3/4 L	202.3	232.809	-989.864	-1343.611					3/4 L	202.205	403.906	-1257.38	-1728.407					
	Tepi Kanan	267	-628.871	-2902.802	-3613.42					Tepi Kanan	266.741	-940.303	-3916.216	-4863.37					
10	Tepi kiri	8.4	-891.321	1594.196	2292.703	3545.3	3.751	2.3	10	Tepi kiri	8.6	-1468.739	1957.586	2889.765	4775.89	3.5731	2.3		
	1/4 L	73.05	101.399	1258.082	1608.768					1/4 L	73.135	139.087	1678.25	2146.637					
	1/2 L	137.7	491.273	417.315	420.179					1/2 L	137.67	793.411	641.301	645.893					
	3/4 L	202.3	226.863	-965.108	-1310.066					3/4 L	202.205	392.375	-1226.538	-1685.739					
	Tepi Kanan	267	-640.901	-2852.55	-3545.329					Tepi Kanan	266.741	-963.426	-3852.899	-4775.894					
9	Tepi kiri	8.6	-919.052	2203.723	3091.464	4320.7	3.921	2.3	9	Tepi kiri	8.7	-1517.455	2658.957	3812.31	5663.97	3.7328	2.3		
	1/4 L	73.14	88.338	1567.127	2013.464					1/4 L	73.185	116.418	2035.675	2616.229					
	1/2 L	137.7	493.377	426.123	431.056					1/2 L	137.67	797.071	654.855	662.609					
	3/4 L	202.2	245.134	-1255.927	-1692.398					3/4 L	202.155	423.15	-1556.416	-2121.461					
	Tepi Kanan	266.7	-606.092	-3442.839	-4320.713					Tepi Kanan	266.641	-905.25	-4526.129	-5663.974					
8	Tepi kiri	8.6	-908.271	2134.885	2999.569	4239.4	3.907	2.3	8	Tepi kiri	8.7	-1490.861	2561.422	3679.625	5543.67	3.7146	2.3		
	1/4 L	73.14	93.273	1530.581	1964.865					1/4 L	73.185	129.151	1984.426	2546.792					
	1/2 L	137.7	492.465	421.868	425.752					1/2 L	137.67	795.943	649.89	656.42					
	3/4 L	202.2	238.376	-1227.89	-1654.407					3/4 L	202.155	408.161	-1515.094	-2064.402					
	Tepi Kanan	266.7	-618.697	-3382.51	-4239.427					Tepi Kanan	266.641	-934.099	-4438.522	-5543.666					
7	Tepi kiri	8.6	-891.398	2130.553	2990.055	4227.8	3.904	2.3	7	Tepi kiri	8.7	-1455.594	2570.368	3683.374	5545.28	3.7145	2.3		
	1/4 L	73.14	101.816	1528.838	1960.631					1/4 L	73.185	146.891	1989.329	2549.2					
	1/2 L	137.7	492.678	422.715	426.799					1/2 L	137.67	796.156	650.751	657.488					
	3/4 L	202.2	230.258	-1224.454	-1648.079					3/4 L	202.155	390.847	-1518.276	-2064.674					
	Tepi Kanan	266.7	-635.145	-3376.485	-4227.819					Tepi Kanan	266.641	-968.941	-4445.747	-5545.279					
6	Tepi kiri	8.6	-875.124	2140.842	2999.705	4238.2	3.906	2.3	6	Tepi kiri	8.7	-1420.391	2599.691	3713.64	5576.35	3.72	2.3		
	1/4 L	73.14	109.92	1533.834	1965.271					1/4 L	73.185	164.436	2003.825	2564.132					
	1/2 L	137.7	492.611	422.418	426.429					1/2 L	137.67	796.041	650.421	657.085					
	3/4 L	202.2	222.021	-1230.044	-1653.459					3/4 L	202.155	373.073	-1533.432	-2080.411					
	Tepi Kanan	266.7	-651.552	-3387.368	-4238.209					Tepi Kanan	266.641	-1004.374	-4475.729	-5576.351					
5	Tepi kiri	8.6	-857.914	2137.237	2991.076	4229.8	3.905	2.3	5	Tepi kiri	8.7	-1383.351	2616.243	3726.895	5590.22	3.7226	2.3		
	1/4 L	73.14	118.514	1531.994	1960.91					1/4 L	73.185	182.912	2011.976	2570.606					

	1/2 L	137.7	492.589	422.342	426.336					1/2 L	137.67	795.955	650.17	656.778				
	3/4 L	202.2	213.384	-1228.355	-1649.284					3/4 L	202.155	354.424	-1542.085	-2087.499				
	Tepi Kanan	266.7	-668.805	-3383.914	-4229.767					Tepi Kanan	266.641	-1041.586	-4492.784	-5590.22				
4	Tepi kiri	8.6	-839.704	2082.712	2916.016	4155.6	3.889	2.3	4	Tepi kiri	8.7	-1343.893	2572.625	3661.38	5524.73	3.7111	2.3	
	1/4 L	73.14	127.652	1504.565	1923.156					1/4 L	73.185	202.692	1990.171	2537.841				
	1/2 L	137.7	492.655	422.01	425.887					1/2 L	137.67	796.057	650.179	656.764				
	3/4 L	202.2	204.377	-1201.591	-1612.427					3/4 L	202.155	334.848	-1520.263	-2054.763				
	Tepi Kanan	266.7	-686.884	-3330.054	-4155.603					Tepi Kanan	266.641	-1080.839	-4449.149	-5524.734				
3	Tepi kiri	8.7	-820.48	1917.017	2696.189	3939.2	3.843	2.3	3	Tepi kiri	8.85	-1301.994	2395.594	3421.862	5276.28	3.6658	2.3	
	1/4 L	73.21	136.972	1420.623	1811.897					1/4 L	73.21	221.567	1899.835	2416.213				
	1/2 L	137.7	492.325	420.059	423.433					1/2 L	137.57	795.236	649.211	655.699				
	3/4 L	202.2	194.902	-1121.132	-1505.657					3/4 L	201.93	318.416	-1428.647	-1932.049				
	Tepi Kanan	266.7	-704.997	-3166.766	-3939.19					Tepi Kanan	266.291	-1110.541	-4262.986	-5276.278				
2	Tepi kiri	8.7	-800.67	1596.495	2274.943	3517.9	3.742	2.3	2	Tepi kiri	8.85	-1269.786	1999.456	2899.788	4768.47	3.5682	2.3	
	1/4 L	73.21	146.464	1260.296	1601.29					1/4 L	73.21	236.814	1698.866	2151.609				
	1/2 L	137.7	491.499	419.926	423.467					1/2 L	137.57	793.522	643.409	648.564				
	3/4 L	202.2	183.758	-961.07	-1294.984					3/4 L	201.93	299.74	-1239.281	-1681.715				
	Tepi Kanan	266.7	-726.459	-2846.51	-3517.877					Tepi Kanan	266.291	-1146.178	-3878.451	-4768.474				
1	Tepi kiri	8.7	-771.141	918.347	1386.364	2635.2	3.445	2.3	1	Tepi kiri	8.85	-1217.237	1106.582	1727.146	3600.8	3.2566	2.3	
	1/4 L	73.21	162.063	920.243	1155.519					1/4 L	73.21	264.857	1251.796	1564.045				
	1/2 L	137.7	493.168	417.968	420.503					1/2 L	137.57	797.059	642.144	646.077				
	3/4 L	202.2	171.498	-624.933	-855.14					3/4 L	201.93	278.772	-794.74	-1099.123				
	Tepi Kanan	266.7	-752.65	-2172.277	-2635.225					Tepi Kanan	266.291	-1191.653	-2988.106	-3600.804				

Tabel Distribusi momen Balok Struktur Frame truss (FT) 30 Lantai

B1									B2								
Lantai	Lokasi (in)		Momen kombinasi			Mub	Cb	Cb pakai	Lantai	Lokasi (in)		Momen kombinasi			Mub	Cb	Cb pakai
			1,2D+1,6L	1,2D+0,5L+E	1,2D+0,5L+1,3W							1,2D+1,6L	1,2D+0,5L+E	1,2D+0,5L+1,3W			
			Kip -in	Kip -in	Kip -in							Kip -in	Kip -in	Kip -in			
30	Tepi kiri	7.85	-785.029	-617.245	-596.531	785.029	1.9696	1.96964	30	Tepi kiri	8.35	-331.33	-45.931	22.513	424.415	2.2641	2.26414
	1/4 L	72.74	89.823	114.612	122.893					1/4 L	73.02	81.684	159.907	184.626			
	1/2 L	137.8	564.495	476.996	472.81					1/2 L	137.8	-137.642	-130.091	-149.164			
	3/4 L	202.5	164.01	112.73	103.72					3/4 L	202.4	162.161	50.119	23.9			
	Tepi Kanan	267.4	-638.005	-622.022	-635.868					Tepi Kanan	267	-93.833	-348.61	-424.415			
29	Tepi kiri	8.35	-1138.487	-964.558	-979.06	1138.49	1.9549	1.95493	29	Tepi kiri	8.75	-646.456	-341.509	-294.391	646.456	2.7872	2.3
	1/4 L	73.02	117.497	61.911	50.688					1/4 L	73.17	115.167	125.121	134.407			
	1/2 L	137.8	852.411	644.129	636.19					1/2 L	137.8	75.862	-56.439	-130.369			
	3/4 L	202.4	223.746	213.577	222.803					3/4 L	202	211.385	103.693	84.566			
	Tepi Kanan	267	-927.331	-662.096	-635.669					Tepi Kanan	266.4	-384.768	-334.857	-345.668			
28	Tepi kiri	8.75	-1190.732	-1213.909	-1291.145	1291.15	2.0891	2.08908	28	Tepi kiri	9.15	-609.016	-607.296	-649.086	649.086	2.9271	2.3
	1/4 L	73.17	93.719	-61.872	-104.868					1/4 L	73.39	110.734	-1.252	-28.958			
	1/2 L	137.8	859.677	648.088	639.438					1/2 L	137.8	33.832	-159.865	-194.382			
	3/4 L	202	259.28	345.471	385.88					3/4 L	201.9	227.197	239.949	258.135			
	Tepi Kanan	266.4	-862.344	-401.012	-311.376					Tepi Kanan	266.1	-306.641	-1.628	69.404			
27	Tepi kiri	8.75	-1195.307	-1252.038	-1339.556	1339.56	2.3026	2.3	27	Tepi kiri	9.15	-575.113	-624.014	-678.909	678.909	3.1489	2.3
	1/4 L	73.17	91.114	-81.881	-130.213					1/4 L	73.39	111.048	-16.229	-48.469			
	1/2 L	137.8	859.048	646.256	637.23					1/2 L	137.8	0.464	-182.273	-216.212			
	3/4 L	202	260.206	364.112	409.89					3/4 L	201.9	220.913	251.59	274.769			
	Tepi Kanan	266.4	-859.857	-361.826	-261.057					Tepi Kanan	266.1	-288.882	44.156	124.607			
26	Tepi kiri	8.75	-1194.834	-1283.682	-1380.829	1380.83	2.3112	2.3	26	Tepi kiri	9.15	-539.065	-638.84	-706.828	706.828	2.35	2.3
	1/4 L	73.17	91.501	-98.35	-151.729					1/4 L	73.39	112.362	-29.09	-65.481			
	1/2 L	137.8	859.349	645.008	635.534					1/2 L	137.8	-33.049	-201.04	-233.258			
	3/4 L	202	260.164	380.323	430.978					3/4 L	201.9	214.494	260.381	287.717			
	Tepi Kanan	266.4	-860.242	-328.096	-217.106					Tepi Kanan	266.1	-271.256	80.579	167.631			
25	Tepi kiri	8.75	-1194.423	-1313.867	-1420.168	1420.17	2.3193	2.3	25	Tepi kiri	9.15	-505.361	-656.199	-737.477	737.477	2.3141	2.3
	1/4 L	73.17	91.716	-114.114	-172.272					1/4 L	73.39	112.84	-41.93	-82.265			
	1/2 L	137.8	859.368	643.71	633.844					1/2 L	137.8	-65.888	-217.434	-247.247			
	3/4 L	202	259.846	395.531	450.826					3/4 L	201.9	208.832	269.868	301.394			
	Tepi Kanan	266.4	-860.897	-296.324	-175.647					Tepi Kanan	266.1	-252.236	116.018	209.051			
24	Tepi kiri	8.75	-1193.104	-1341.417	-1456.301	1456.3	2.3259	2.3	24	Tepi kiri	9.15	-472.997	-672.736	-766.746	766.746	2.2922	2.29219
	1/4 L	73.17	92.394	-128.352	-190.944					1/4 L	73.39	112.891	-53.392	-97.156			
	1/2 L	137.8	859.402	642.826	632.687					1/2 L	137.8	-98.239	-231.124	-257.723			
	3/4 L	202	259.215	409.797	469.521					3/4 L	201.9	203.656	278.637	314.021			
	Tepi Kanan	266.4	-862.194	-266.857	-137.032					Tepi Kanan	266.1	-232.26	147.306	244.844			
23	Tepi kiri	8.95	-1243.852	-1549.903	-1715.366	1715.37	2.355	2.3	23	Tepi kiri	9.15	-448.543	-700.806	-809.271	809.271	2.2945	2.29452
	1/4 L	73.27	69.489	-231.956	-320.313					1/4 L	73.39	111.419	-68.193	-116.042			

	1/2 L	137.8	864.285	644.08	633.07					1/2 L	137.8	-126.55	-239.687	-262.181			
	3/4 L	201.9	289.625	514.752	598.789					3/4 L	201.9	200.394	289.986	329.563			
	Tepi Kanan	266.2	-806.318	-58.221	121.183					Tepi Kanan	266.1	-212.703	177.782	279.601			
22	Tepi kiri	8.95	-1242.168	-1580.971	-1756.147	1756.15	2.3608	2.3	22	Tepi kiri	9.15	-417.425	-718.136	-839.278	839.278	2.293	2.29299
	1/4 L	73.27	70.004	-247.873	-341.122					1/4 L	73.39	110.689	-78.297	-128.98			
	1/2 L	137.8	863.627	643.362	632.295					1/2 L	137.8	-159.215	-248.74	-266.423			
	3/4 L	201.9	288.061	530.388	619.487					3/4 L	201.9	195.834	298.313	341.471			
	Tepi Kanan	266.2	-808.792	-26.176	163.424					Tepi Kanan	266.1	-190.659	203.538	307.703			
21	Tepi kiri	8.95	-1236.783	-1603.85	-1787.168	1787.17	2.3657	2.3	21	Tepi kiri	9.15	-386.099	-737.068	-871.407	871.407	2.2992	2.29924
	1/4 L	73.27	72.643	-259.608	-357.005					1/4 L	73.39	109.987	-87.818	-141.163			
	1/2 L	137.8	863.511	642.805	631.597					1/2 L	137.8	-192.033	-256.417	-268.813			
	3/4 L	201.9	285.597	541.783	634.884					3/4 L	201.9	191.726	306.742	353.402			
	Tepi Kanan	266.2	-813.611	-2.79	194.968					Tepi Kanan	266.1	-167.427	228.116	333.994			
20	Tepi kiri	8.95	-1230.52	-1604.768	-1789.837	1789.84	2.4861	2.3	20	Tepi kiri	9.15	-319.542	-707.732	-848.89	848.89	2.6178	2.3
	1/4 L	73.27	75.341	-260.475	-358.771					1/4 L	73.39	106.1	-86.632	-138.688			
	1/2 L	137.8	862.633	641.989	630.736					1/2 L	137.8	-266.556	-306.282	-314.511			
	3/4 L	201.9	282.697	542.467	636.459					3/4 L	201.9	182.24	298.459	344.84			
	Tepi Kanan	266.2	-818.541	-0.599	198.99					Tepi Kanan	266.1	-104.654	261.53	362.67			
19	Tepi kiri	8.95	-1223.574	-1599.284	-1784.353	1784.35	2.4825	2.3	19	Tepi kiri	9.15	-288.726	-700.056	-846.311	846.311	2.5395	2.3
	1/4 L	73.27	78.677	-257.553	-355.763					1/4 L	73.39	104.78	-83.628	-134.44			
	1/2 L	137.8	862.349	642.343	631.262					1/2 L	137.8	-300.099	-306.07	-306.596			
	3/4 L	201.9	279.42	540.038	634.076					3/4 L	201.9	178.393	296.238	342.861			
	Tepi Kanan	266.2	-824.822	-5.821	193.688					Tepi Kanan	266.1	-80.767	256.868	350.769			
18	Tepi kiri	9.15	-1249.56	-1745.704	-1968.52	1968.52	2.3831	2.3	18	Tepi kiri	9.5	-304.305	-800.611	-973.784	973.784	2.3451	2.3
	1/4 L	73.39	67.738	-329.416	-446.688					1/4 L	73.57	96.655	-119.419	-179.108			
	1/2 L	137.8	865.499	644.003	632.563					1/2 L	137.8	-298.877	-275.567	-266.841			
	3/4 L	201.9	296.299	613.355	725.395					3/4 L	201.7	184.367	328.725	383.758			
	Tepi Kanan	266.1	-794.825	138.345	374.227					Tepi Kanan	265.8	-68.989	291.92	393.368			
17	Tepi kiri	9.15	-1241.891	-1749.232	-1974.908	1974.91	2.3842	2.3	17	Tepi kiri	9.5	-274.584	-819.021	-1004.931	1004.93	2.3509	2.3
	1/4 L	73.39	71.117	-330.808	-449.29					1/4 L	73.57	94.788	-126.79	-188.247			
	1/2 L	137.8	864.577	644.753	633.757					1/2 L	137.8	-332.407	-281.673	-266.028			
	3/4 L	201.9	291.844	615.105	728.722					3/4 L	201.7	184.362	341.725	400.711			
	Tepi Kanan	266.1	-802.822	141.096	379.691					Tepi Kanan	265.8	-32.589	324.07	426.499			
16	Tepi kiri	9.15	-1230.708	-1728.841	-1951.044	1951.04	2.3837	2.3	16	Tepi kiri	9.5	-240.126	-816.945	-1010.53	1010.53	2.417	2.3
	1/4 L	73.39	76.609	-320.38	-437.035					1/4 L	73.57	94.103	-113.964	-171.397			
	1/2 L	137.8	864.362	645.19	634.372					1/2 L	137.8	-368.318	-282.113	-262.971			
	3/4 L	201.9	286.456	603.932	715.471					3/4 L	201.7	169.389	321.516	377.945			
	Tepi Kanan	266.1	-813.4	118.281	352.535					Tepi Kanan	265.8	-48.399	284.046	377.849			
15	Tepi kiri	9.15	-1218.843	-1292.139	-1386.137	1386.14	2.2997	2.29966	15	Tepi kiri	9.5	-214.761	-273.774	-310.56	413.276	2.04	2.03996
	1/4 L	73.39	82.277	-98.561	-150.01					1/4 L	73.57	84.347	75.027	76.558			
	1/2 L	137.8	863.815	651.542	642.758					1/2 L	137.8	-413.276	-220.744	-180.807			
	3/4 L	201.9	280.816	389.087	437.508					3/4 L	201.7	230.171	181.632	182.094			

	Tepi Kanan	266.1	-824.152	-318.393	-212.595												
14	Tepi kiri	9.15	-1206.656	-1289.67	-1385.81	1385.81	2.302	2.3	14	Tepi Kanan	265.8	147.67	-93.03	-157.884			
	1/4 L	73.39	88.111	-98.305	-151.058					Tepi kiri	9.5	-203.673	-170.621	-179.483	399.748	1.6107	1.61068
	1/2 L	137.8	863.279	649.579	640.33					1/4 L	73.57	96.654	81.535	82.192			
	3/4 L	201.9	274.593	389.073	438.96					1/2 L	137.8	-399.748	-387.726	-388.801			
	Tepi Kanan	266.1	-836.078	-316.451	-207.249					3/4 L	201.7	161.08	106.445	100.388			
13	Tepi kiri	9.15	-1256.585	-2039.392	-2348.712	2348.71	2.4179	2.3	13	Tepi Kanan	265.8	-18.694	-40.741	-51.789			
	1/4 L	73.39	66.613	-474.801	-635.561					Tepi kiri	9.5	-159.775	-788.193	-993.906	993.906	1.8729	1.87295
	1/2 L	137.8	868.602	645.636	633.842					1/4 L	73.57	84.896	-203.522	-285.6			
	3/4 L	201.9	303.559	754.57	907.311					1/2 L	137.8	-467.432	-480.472	-492.204			
	Tepi Kanan	266.1	-785.084	417.831	735.578					3/4 L	201.7	165.597	369.082	440.971			
12	Tepi kiri	9.15	-1241.728	-2070.39	-2392.512	2392.51	2.4211	2.3	12	Tepi Kanan	265.8	57.854	577.976	733.682			
	1/4 L	73.39	73.793	-489.797	-656.749					Tepi kiri	9.5	-111.403	-827.113	-1056.094	1056.09	1.9397	1.93966
	1/2 L	137.8	868.083	646.687	635.329					1/4 L	73.57	89.676	-214.867	-301.443			
	3/4 L	201.9	295.946	771.734	931.417					1/2 L	137.8	-506.345	-468.779	-468.759			
	Tepi Kanan	266.1	-799.812	451.153	782.368					3/4 L	201.7	152.495	382.969	462.112			
11	Tepi kiri	9.15	-1224.493	-2068.296	-2393.854	2393.85	2.4232	2.3	11	Tepi Kanan	265.8	65.562	594.06	752.513			
	1/4 L	73.39	82.214	-488.71	-657.322					Tepi kiri	9.5	-60.744	-835.886	-1079.603	1079.6	1.9979	1.99786
	1/2 L	137.8	867.667	646.764	635.525					1/4 L	73.57	94.85	-211.586	-298.359			
	3/4 L	201.9	287.402	770.295	931.561					1/2 L	137.8	-546.763	-454.929	-442.084			
	Tepi Kanan	266.1	-816.507	448.194	782.458					3/4 L	201.7	142.174	382.624	464.11			
10	Tepi kiri	9.15	-1203.783	-2001.008	-2311.233	2311.23	2.7934	2.3	10	Tepi Kanan	265.8	80.694	579.488	729.776			
	1/4 L	73.39	90.944	-456.05	-616.926					Tepi kiri	9.5	59.639	-739.164	-982.173	982.173	2.1234	2.12339
	1/2 L	137.8	864.384	644.703	633.581					1/4 L	73.57	93.117	-185.46	-263.964			
	3/4 L	201.9	277.941	738.325	892.227					1/2 L	137.8	-670.897	-510.227	-484.308			
	Tepi Kanan	266.1	-832.163	386.232	705.63					3/4 L	201.7	121.164	348.546	424.727			
9	Tepi kiri	9.15	-1183.491	-1923.8	-2215.649	2215.65	2.7418	2.3	9	Tepi Kanan	265.8	165.2	566.68	693.241			
	1/4 L	73.39	100.873	-416.397	-567.722					Tepi kiri	9.5	113.675	-685.021	-924.713	924.713	1.9982	1.99821
	1/2 L	137.8	863.921	646.697	636.279					1/4 L	73.57	99.303	-154.846	-225.588			
	3/4 L	201.9	267.998	700.499	845.397					1/2 L	137.8	-712.675	-481.458	-438.781			
	Tepi Kanan	266.1	-851.614	308.472	609.133					3/4 L	201.7	108.077	323.202	394.873			
8	Tepi kiri	9.35	-1177.91	-2009.414	-2328.259	2328.26	2.7961	2.3	8	Tepi Kanan	265.8	172.34	487.096	587.829			
	1/4 L	73.46	104.24	-458.537	-623.37					Tepi kiri	9.8	113.943	-787.47	-1058.342	1058.34	2.1762	2.17617
	1/2 L	137.8	865.838	648.956	638.676					1/4 L	73.64	105.771	-183.14	-263.982			
	3/4 L	201.7	270.624	744.265	901.664					1/2 L	137.8	-700.549	-422.334	-367.572			
	Tepi Kanan	265.8	-848.194	394.199	719.887					3/4 L	201.3	104.593	356.897	439.639			
7	Tepi kiri	9.35	-1159.778	-1968.774	-2279.649	2279.65	2.7724	2.3	7	Tepi Kanan	265.1	145.831	499.929	610.792			
	1/4 L	73.46	112.763	-436.845	-597.154					Tepi kiri	9.8	146.246	-799.961	-1082.259	1082.26	2.1495	2.14945
	1/2 L	137.8	864.719	651.633	642.42					1/4 L	73.64	102.181	-184.129	-264.327			
	3/4 L	201.7	260.687	724.789	878.667					1/2 L	137.8	-740.216	-412.344	-344.612			
	Tepi Kanan	265.8	-866.982	352.486	670.048					3/4 L	201.3	106.918	372.607	459.493			
6	Tepi kiri	9.35	-1137.1	-1912.262	-2211.493	2211.49	2.7353	2.3	6	Tepi Kanan	265.1	191.727	521.386	627.525			
										Tepi kiri	9.8	180.58	-808.701	-1101.737	1101.74	2.129	2.12902

	1/4 L	73.46	123.908	-407.307	-561.366					1/4 L	73.64	100.951	-180.021	-258.578			
	1/2 L	137.8	864.289	654.103	645.726					1/2 L	137.8	-777.191	-390.573	-307.51			
	3/4 L	201.7	249.595	696.325	844.26					3/4 L	201.3	100.872	372.554	460.785			
	Tepi Kanan	265.8	-888.777	292.973	597.787					Tepi Kanan	265.1	215.762	499.399	592.823			
5	Tepi kiri	9.35	-1113.55	-1842.568	-2126.403	2126.4	2.6875	2.3	5	Tepi kiri	9.8	216.88	-813.038	-1115.959	1115.96	2.1018	2.10176
	1/4 L	73.46	135.385	-370.876	-515.692					1/4 L	73.64	100.342	-173.713	-250.117			
	1/2 L	137.8	863.653	657.156	649.841					1/2 L	137.8	-814.896	-367.93	-269.107			
	3/4 L	201.7	237.834	661.398	801.608					3/4 L	201.3	95.511	373.276	462.928			
	Tepi Kanan	265.8	-911.705	219.925	508.195					Tepi Kanan	265.1	241.893	478.088	558.522			
4	Tepi kiri	9.35	-1088.115	-1759.693	-2024.621	2024.62	2.6271	2.3	4	Tepi kiri	9.8	254.377	-813.029	-1124.799	1124.8	2.0714	2.07136
	1/4 L	73.46	147.849	-327.452	-463.162					1/4 L	73.64	100.432	-164.469	-237.997			
	1/2 L	137.8	863.099	660.99	654.951					1/2 L	137.8	-852.404	-342.55	-227.517			
	3/4 L	201.7	225.295	620.216	751.008					3/4 L	201.3	88.295	371.487	462.236			
	Tepi Kanan	265.8	-936.276	133.559	401.677					Tepi Kanan	265.1	262.698	448.991	515.33			
3	Tepi kiri	9.5	-1071.754	-1828.024	-2117.128	2117.13	2.6703	2.3	3	Tepi kiri	10.1	263.89	-911.795	-1255.665	1255.67	2.1812	2.18124
	1/4 L	73.5	159.174	-357.816	-505.416					1/4 L	73.77	100.632	-192.647	-274.579			
	1/2 L	137.8	867.995	667.487	662.043					1/2 L	137.8	-877.411	-285.633	-151.529			
	3/4 L	201.5	222.78	654.207	795.723					3/4 L	201.1	81.703	406.031	508.692			
	Tepi Kanan	265.5	-948.61	193.189	482.356					Tepi Kanan	264.8	257.106	462.017	533.063			
2	Tepi kiri	9.5	-1048.806	-1716.247	-1977.093	1977.09	2.5891	2.3	2	Tepi kiri	10.1	308.956	-909.054	-1262.757	1262.76	2.1424	2.14236
	1/4 L	73.5	169.742	-299.406	-431.904					1/4 L	73.77	103.284	-180.952	-259.87			
	1/2 L	137.8	866.128	672.29	668.731					1/2 L	137.8	-917.353	-261.403	-110.281			
	3/4 L	201.5	209.614	599.174	727.231					3/4 L	201.1	77.207	408.081	512.346			
	Tepi Kanan	265.5	-973.129	78.038	338.331					Tepi Kanan	264.8	288.252	441.766	498.915			
1	Tepi kiri	9.5	-1009.949	-1547.579	-1766.958	1766.96	2.4416	2.3	1	Tepi kiri	10.1	352.474	-867.955	-1219.409	1219.41	2.0876	2.08757
	1/4 L	73.5	190.371	-211.732	-322.792					1/4 L	73.77	106.209	-141.304	-208.813			
	1/2 L	137.8	868.445	678.602	676.36					1/2 L	137.8	-940.631	-238.414	-74.531			
	3/4 L	201.5	194.545	517.312	624.316					3/4 L	201.1	57.307	374.606	473.394			
	Tepi Kanan	265.5	-1005.665	-92.413	124.35					Tepi Kanan	264.8	271.749	351.515	384.847			

B3									B4								
LT	Lokasi (in)		Momen kombinasi			Mub	Cb	Cb pakai	LT	Lokasi (in)		Momen kombinasi			Mub	Cb	Cb pakai
			1,2D+1,6L	1,2D+0,5L+E	1,2D+0,5L+1,3W							1,2D+1,6L	1,2D+0,5L+E	1,2D+0,5L+1,3W			
			Kip -in	Kip -in	Kip -in							Kip -in	Kip -in	Kip -in			
30	Tepi kiri	7.9	-245.69	-229.706	-237.373	245.69	1.52672	1.526724	30	Tepi kiri	8	-280.477	-209.602	-203.512	280.477	1.3969	1.396862
	1/4 L	72.81	49.912	56.977	58.84					1/4 L	72.873	87.51	101.008	106.8			
	1/2 L	137.795	-223.895	-216.707	-223.23					1/2 L	137.795	-271.703	-233.685	-233.811			
	3/4 L	202.63	117.346	87.344	83.019					3/4 L	202.618	153.117	100.119	91.192			
	Tepi Kanan	267.541	15.632	-12.084	-14.21					Tepi Kanan	267.491	-62.2	-127.31	-145.043			
29	Tepi kiri	8.05	-905.446	-521.167	-454.298	905.446	2.15635	2.156347	29	Tepi kiri	8.1	-1343.614	-741.979	-647.354	1343.61	2.0456	2.045617
	1/4 L	72.885	94.362	195.266	228.833					1/4 L	72.898	206.605	322.941	370.003			
	1/2 L	137.72	494.202	410.326	410.592					1/2 L	137.695	802.693	630.731	630.228			
	3/4 L	202.555	241.739	86.365	53.33					3/4 L	202.493	340.234	106.277	58.209			
	Tepi Kanan	267.391	-611.077	-739.246	-805.582					Tepi Kanan	267.291	-1077.383	-1176.047	-1271.68			
28	Tepi kiri	8.2	-921.017	-297.182	-159.462	1106.163	2.42443	2.3	28	Tepi kiri	8.3	-1362.247	-468.323	-287.351	1634.76	2.3089	2.3
	1/4 L	72.973	83.587	304.576	373.511					1/4 L	73.023	191.821	456.456	546.992			
	1/2 L	137.745	489.094	405.722	405.873					1/2 L	137.745	793.178	625.291	625.39			
	3/4 L	202.518	243.556	-31.113	-99.747					3/4 L	202.468	338.439	-36.193	-126.53			
	Tepi Kanan	267.291	-601.335	-968.745	-1106.163					Tepi Kanan	267.191	-1069.521	-1453.989	-1634.762			
27	Tepi kiri	8.2	-926.88	-280.463	-136.359	1130.449	2.45158	2.3	27	Tepi kiri	8.3	-1368.927	-442.549	-252.286	1672.49	2.3387	2.3
	1/4 L	72.973	80.653	312.706	384.767					1/4 L	73.023	188.211	468.781	563.86			
	1/2 L	137.745	489.09	405.265	405.282					1/2 L	137.745	792.638	624.167	624.062			
	3/4 L	202.518	246.481	-40.16	-112.186					3/4 L	202.468	340.969	-50.765	-146.055			
	Tepi Kanan	267.291	-595.481	-986.379	-1130.449					Tepi Kanan	267.191	-1063.921	-1482.01	-1672.485			
26	Tepi kiri	8.2	-930.324	-245.576	-90.222	1175.773	2.50029	2.3	26	Tepi kiri	8.3	-1370.464	-393.786	-188.562	1735.02	2.3837	2.3
	1/4 L	72.973	78.981	330.316	408.039					1/4 L	73.023	187.587	493.419	596.019			
	1/2 L	137.745	489.189	405.596	405.688					1/2 L	137.745	792.928	624.679	624.656			
	3/4 L	202.518	248.351	-57.106	-134.645					3/4 L	202.468	342.173	-74.38	-177.026			
	Tepi Kanan	267.291	-591.84	-1020.604	-1175.773					Tepi Kanan	267.191	-1061.803	-1529.751	-1735.02			
25	Tepi kiri	8.2	-932.832	-214.863	-49.72	1216.123	2.5423	2.3	25	Tepi kiri	8.3	-1372.367	-351.192	-132.757	1790.79	2.423	2.3
	1/4 L	72.973	77.747	345.705	428.328					1/4 L	73.023	186.652	514.726	623.931			
	1/2 L	137.745	489.228	405.662	405.764					1/2 L	137.745	792.962	624.699	624.675			
	3/4 L	202.518	249.664	-72.364	-154.782					3/4 L	202.468	343.176	-95.646	-204.9			
	Tepi Kanan	267.291	-589.253	-1051.185	-1216.123					Tepi Kanan	267.191	-1059.832	-1572.303	-1790.786			
24	Tepi kiri	8.2	-933.659	-186.134	-12.192	1253.375	2.57935	2.3	24	Tepi kiri	8.3	-1372.623	-311.747	-81.427	1841.81	2.4575	2.3
	1/4 L	72.973	77.408	360.137	447.161					1/4 L	73.023	186.648	534.53	649.672			
	1/2 L	137.745	489.379	405.796	405.903					1/2 L	137.745	793.209	624.862	624.827			
	3/4 L	202.518	250.303	-86.527	-173.339					3/4 L	202.468	343.673	-115.125	-230.337			
	Tepi Kanan	267.291	-588.125	-1079.646	-1253.375					Tepi Kanan	267.191	-1059.084	-1611.423	-1841.813			
23	Tepi kiri	8.25	-933.866	-160.306	21.427	1286.139	2.61225	2.3	23	Tepi kiri	8.35	-1372.962	-276.658	-35.733	1886.48	2.4881	2.3
	1/4 L	73.01	77.124	372.993	463.942					1/4 L	73.06	186.216	551.958	672.433			
	1/2 L	137.77	489.141	405.796	405.961					1/2 L	137.77	792.837	624.767	624.792			
	3/4 L	202.53	250.363	-99.177	-189.795					3/4 L	202.48	343.769	-132.422	-252.847			
	Tepi Kanan	267.291	-587.516	-1104.737	-1286.139					Tepi Kanan	267.191	-1058.112	-1645.602	-1886.478			
22	Tepi kiri	8.25	-932.928	-137.441	50.934	1315.587	2.6415	2.3	22	Tepi kiri	8.35	-1372.644	-246.511	3.382	1925.57	2.5147	2.3
	1/4 L	73.01	77.472	384.413	478.71					1/4 L	73.06	186.195	567.004	691.997			
	1/2 L	137.77	488.898	405.772	405.99					1/2 L	137.77	792.477	624.712	624.804			
	3/4 L	202.53	249.529	-110.645	-204.504					3/4 L	202.48	343.07	-147.579	-272.387			
	Tepi Kanan	267.291	-588.941	-1127.649	-1315.587					Tepi Kanan	267.191	-1059.15	-1675.861	-1925.569			
21	Tepi kiri	8.25	-929.261	-115.737	78.278	1342.471	2.66612	2.3	21	Tepi kiri	8.35	-1368.969	-219.599	37.509	1959.33	2.0181	2.018123

	1/4 L	73.01	79.373	395.367	492.497					1/4 L	73.06	188.136	580.55	709.153					
	1/2 L	137.77	489.033	405.974	406.22					1/2 L	137.77	792.683	624.892	624.99					
	3/4 L	202.53	247.899	-121.193	-217.831					3/4 L	202.48	341.542	-160.764	-289.172					
	Tepi Kanan	267.291	-592.337	-1148.948	-1342.471					Tepi Kanan	267.191	-1062.412	-1702.411	-1959.325					
20	Tepi kiri	8.25	-925.205	-111.126	83.319	1347.588	2.6707	2.3	20	Tepi kiri	8.35	-1365.842	-211.527	47.275	1959.33	2.01852	2.018521		
	1/4 L	73.01	81.419	397.661	494.999					1/4 L	73.06	189.773	584.66	714.114					
	1/2 L	137.77	489.069	405.952	406.183					1/2 L	137.77	792.83	625.04	625.146					
	3/4 L	202.53	245.925	-123.533	-220.409					3/4 L	202.48	340.198	-164.579	-293.82					
	Tepi Kanan	267.291	-596.321	-1153.604	-1347.588					Tepi Kanan	267.191	-1065.246	-1710.188	-1968.777					
19	Tepi kiri	8.25	-945.17	-33.938	188.339	1453.754	2.755423	2.3	19	Tepi kiri	8.35	-1403.916	25.716	364.295	1968.78	2.01246	2.012456		
	1/4 L	73.01	73.605	438.379	549.657					1/4 L	73.06	174.477	706.261	875.537					
	1/2 L	137.77	491.784	408.577	408.857					1/2 L	137.77	799.032	629.718	629.691					
	3/4 L	202.53	257.544	-160.625	-271.343					3/4 L	202.48	366.618	-278.102	-447.432					
	Tepi Kanan	267.291	-577.421	-1232.037	-1453.754					Tepi Kanan	267.191	-1019.888	-1943.194	-2281.827					
18	Tepi kiri	8.3	-936.702	-23.568	199.819	1463.402	2.764754	2.3	18	Tepi kiri	8.4	-1395.761	38.967	379.618	2281.83	2.19448	2.19448		
	1/4 L	73.023	77.275	443.175	555.034					1/4 L	73.073	177.701	712.518	882.924					
	1/2 L	137.745	491.281	408.331	408.662					1/2 L	137.745	798.295	629.761	629.922					
	3/4 L	202.468	253.625	-165.288	-276.485					3/4 L	202.418	363.146	-283.311	-453.395					
	Tepi Kanan	267.191	-584.256	-1240.676	-1463.402					Tepi Kanan	267.091	-1025.381	-1953.057	-2293.386					
17	Tepi kiri	8.3	-931.48	-25.97	195.524	1463.179	2.77007	2.3	17	Tepi kiri	8.4	-1392.628	29.972	367.253	2293.39	2.20349	2.203487		
	1/4 L	73.023	79.228	441.065	551.868					1/4 L	73.073	177.935	706.522	875.111					
	1/2 L	137.745	489.967	406.512	406.626					1/2 L	137.745	795.631	626.763	626.66					
	3/4 L	202.468	249.042	-166.815	-277.391					3/4 L	202.418	357.582	-283.31	-452.105					
	Tepi Kanan	267.191	-592.107	-1241.913	-1463.179					Tepi Kanan	267.091	-1033.844	-1950.057	-2287.544					
16	Tepi kiri	8.3	-917.91	1.198	227.602	1483.53	2.77138	2.3	16	Tepi kiri	8.4	-1372.262	66.056	409.378	2287.54	2.19687	2.196868		
	1/4 L	73.023	87.903	457.265	570.839					1/4 L	73.073	192.211	729.226	901.257					
	1/2 L	137.745	493.746	411.746	412.489					1/2 L	137.745	803.816	636.089	636.827					
	3/4 L	202.468	247.926	-172.548	-284.635					3/4 L	202.418	359.677	-287.363	-457.916					
	Tepi Kanan	267.191	-598.12	-1258.612	-1483.53					Tepi Kanan	267.091	-1037.839	-1967.49	-2309.335					
15	Tepi kiri	8.3	-267.476	159.674	271.517	488.692	1.805225	1.8052249	15	Tepi kiri	8.4	-331.484	349.864	530.711	2309.34	3.28868	2.3		
	1/4 L	73.023	54.145	198.05	242.823					1/4 L	73.073	102.476	349.855	429.749					
	1/2 L	137.795	-382.275	-265.727	-288.076					1/2 L	137.795	-533.303	-407.368	-428.505					
	3/4 L	202.468	156.869	-25.179	-70.969					3/4 L	202.418	230.368	-89.254	-169.887					
	Tepi Kanan	267.191	96.456	-360.687	-488.692					Tepi Kanan	267.091	41.661	-691.969	-907.776					
14	Tepi kiri	8.3	-897.12	-401.552	-300.771	963.958	2.236083	2.2360829	14	Tepi kiri	8.4	-1353.489	-491.312	-319.48	907.776	1.18896	1.188958		
	1/4 L	73.023	98.112	254.165	304.452					1/4 L	73.073	201.205	447.97	533.569					
	1/2 L	137.745	493.375	408.296	408.088					1/2 L	137.745	803.031	630.945	630.31					
	3/4 L	202.468	236.974	23.652	-27.049					3/4 L	202.418	349.114	-16.395	-103.264					
	Tepi Kanan	267.191	-619.652	-862.763	-963.958					Tepi Kanan	267.091	-1058.181	-1420.41	-1593.512					
13	Tepi kiri	8.3	-896.779	9.533	233.644	1494.71	2.795013	2.3	13	Tepi kiri	8.4	-1356.469	55.391	392.03	1593.51	1.77394	1.773939		
	1/4 L	73.023	96.742	460.114	572.576					1/4 L	73.073	196.464	721.431	890.252					
	1/2 L	137.745	490.293	409.108	409.92					1/2 L	137.745	796.528	631.163	632.166					
	3/4 L	202.468	232.182	-180.673	-291.509					3/4 L	202.418	340.849	-289.42	-456.234					
	Tepi Kanan	267.191	-626.155	-1272.224	-1494.71					Tepi Kanan	267.091	-1068.207	-1966.678	-2301.309					
12	Tepi kiri	8.3	-888.626	-4.635	213.312	1478.539	2.778182	2.3	12	Tepi kiri	8.4	-1345.078	38.063	366.857	2301.31	2.21359	2.213588		
	1/4 L	73.023	101.227	452.309	561.369					1/4 L	73.073	203.022	711.871	876.293					
	1/2 L	137.745	491.11	407.665	407.84					1/2 L	137.745	798.253	629.371	629.42					
	3/4 L	202.468	229.33	-175.753	-284.464					3/4 L	202.418	337.741	-283.444	-447.767					
	Tepi Kanan	267.191	-632.675	-1260.941	-1478.539					Tepi Kanan	267.091	-1076.148	-1952.932	-2281.629					
11	Tepi kiri	8.3	-881.001	8.073	228.072	1491.534	2.789513	2.3	11	Tepi kiri	8.4	-1335.567	53.737	385.06	2281.63	2.20482	2.204824		
	1/4 L	73.023	104.975	458.989	569.19					1/4 L	73.073	207.657	720.098	885.931					

	1/2 L	137.745	490.982	408.318	408.722					1/2 L	137.745	798.012	630.152	630.493					
	3/4 L	202.468	225.326	-181.126	-290.521					3/4 L	202.418	332.625	-290.109	-455.259					
	Tepi Kanan	267.191	-640.555	-1272.342	-1491.534					Tepi Kanan	267.091	-1086.141	-1967.045	-2297.686					
10	Tepi kiri	8.3	-872.588	-18.819	191.165	1455.566	2.75912	2.3	10	Tepi kiri	8.4	-1325.093	19.671	338.369	2251.66	2.69482	2.3		
	1/4 L	73.023	109.212	445.368	550.502					1/4 L	73.073	213.012	702.959	862.419					
	1/2 L	137.745	491.041	407.969	408.252					1/2 L	137.745	798.248	629.939	630.161					
	3/4 L	202.468	221.208	-168.205	-272.772					3/4 L	202.418	327.74	-273.396	-432.412					
	Tepi Kanan	267.191	-648.851	-1246.15	-1455.566					Tepi Kanan	267.091	-1096.145	-1933.405	-2251.659					
9	Tepi kiri	8.3	-901.718	169.235	442.339	1703.467	2.931706	2.3	9	Tepi kiri	8.4	-1354.175	393.619	831.012	2736.62	2.90302	2.3		
	1/4 L	73.023	98.217	542.753	679.49					1/4 L	73.073	206.744	896.496	1115.134					
	1/2 L	137.745	496.461	412.963	413.332					1/2 L	137.745	811.813	640.083	639.966					
	3/4 L	202.468	241.32	-257.322	-393.321					3/4 L	202.418	358.155	-449.628	-668.5					
	Tepi Kanan	267.191	-615.767	-1431.099	-1703.467					Tepi Kanan	267.091	-1051.864	-2298.996	-2736.623					
8	Tepi kiri	8.35	-886.885	152.75	417.47	1677.114	2.915842	2.3	8	Tepi kiri	8.5	-1331.473	368.142	792.626	2695.79	2.89293	2.3		
	1/4 L	73.035	104.827	534.007	666.602					1/4 L	73.098	215.093	881.795	1094.112					
	1/2 L	137.72	495.476	412.49	412.959					1/2 L	137.695	807.753	637.723	637.873					
	3/4 L	202.405	233.498	-248.897	-380.553					3/4 L	202.293	344.14	-437.716	-649.732					
	Tepi Kanan	267.091	-629.924	-1413.332	-1677.114					Tepi Kanan	266.891	-1074.392	-2271.609	-2695.792					
7	Tepi kiri	8.35	-873.871	124.051	377.192	1638.107	2.889162	2.3	7	Tepi kiri	8.5	-1321.816	312.445	718.146	2626.97	2.86584	2.3		
	1/4 L	73.035	111.091	519.366	646.145					1/4 L	73.098	219.021	852.694	1055.458					
	1/2 L	137.72	494.991	411.907	412.323					1/2 L	137.695	805.951	635.218	635.045					
	3/4 L	202.405	226.263	-235.421	-381.367					3/4 L	202.293	336.609	-413.624	-616.734					
	Tepi Kanan	267.091	-643.909	-1385.799	-1638.107					Tepi Kanan	266.891	-1087.653	-2220.92	-2626.968					
6	Tepi kiri	8.35	-858.766	86.951	325.493	1585.688	2.848618	2.3	6	Tepi kiri	8.5	-1308.118	236.936	616.972	2523.61	2.81499	2.3		
	1/4 L	73.035	118.738	500.973	620.475					1/4 L	73.098	226.189	815.419	1005.417					
	1/2 L	137.72	495.181	412.221	412.683					1/2 L	137.695	806.59	636.176	636.136					
	3/4 L	202.405	218.996	-216.401	-334.978					3/4 L	202.293	330.719	-374.432	-564.51					
	Tepi Kanan	267.091	-658.633	-1348.072	-1585.688					Tepi Kanan	266.891	-1100.072	-2143.496	-2523.611					
5	Tepi kiri	8.35	-842.895	38.814	259.276	1519.289	2.796121	2.3	5	Tepi kiri	8.5	-1293.645	142.858	491.489	2397.75	2.75201	2.3		
	1/4 L	73.035	126.664	476.938	587.412					1/4 L	73.098	233.396	768.448	942.771					
	1/2 L	137.72	495.161	412.287	412.774					1/2 L	137.695	806.532	636.314	636.328					
	3/4 L	202.405	211.03	-192.232	-301.733					3/4 L	202.293	323.395	-327.187	-501.481					
	Tepi Kanan	267.091	-674.544	-1299.801	-1519.289					Tepi Kanan	266.891	-1114.662	-2049.142	-2397.745					
4	Tepi kiri	8.35	-825.905	-20.441	178.346	1437.705	2.726983	2.3	4	Tepi kiri	8.5	-1277.01	29.436	340.364	2245.08	2.66877	2.3		
	1/4 L	73.035	135.269	447.457	547.111					1/4 L	73.098	242.029	712.093	867.594					
	1/2 L	137.72	495.38	412.581	413.102					1/2 L	137.695	807.162	637.024	637.099					
	3/4 L	202.405	202.864	-162.165	-260.777					3/4 L	202.293	316.023	-269.411	-424.762					
	Tepi Kanan	267.091	-691.096	-1239.959	-1437.705					Tepi Kanan	266.891	-1130.037	-1934.3	-2245.078					
3	Tepi kiri	8.4	-806.936	-87.842	86.353	1344.175	2.64525	2.3	3	Tepi kiri	8.6	-1257.212	-98.147	170.083	2070.35	2.57086	2.3		
	1/4 L	73.048	144.099	413.292	500.675					1/4 L	73.135	250.241	647.304	781.564					
	1/2 L	137.695	494.701	412.186	412.756					1/2 L	137.67	805.324	636.273	636.563					
	3/4 L	202.343	193.432	-128.164	-214.406					3/4 L	202.205	306.177	-204.516	-338.197					
	Tepi Kanan	266.991	-708.778	-1171.12	-1344.175					Tepi Kanan	266.741	-1146.603	-1802.696	-2070.346					
2	Tepi kiri	8.4	-792.743	-164.465	-16.451	1244.447	2.554131	2.3	2	Tepi kiri	8.6	-1244.213	-239.258	-16.166	1888.87	2.46357	2.3		
	1/4 L	73.048	150.588	374.273	448.504					1/4 L	73.135	255.306	575.569	687.247					
	1/2 L	137.695	493.486	410.77	411.218					1/2 L	137.67	802.453	633.912	634.176					
	3/4 L	202.343	184.513	-91.976	-165.311					3/4 L	202.205	295.372	-137.502	-248.652					
	Tepi Kanan	266.991	-725.401	-1097.328	-1244.447					Tepi Kanan	266.741	-1165.342	-1666.307	-1888.871					
1	Tepi kiri	8.4	-771.269	-230.702	-107.566	1145.023	2.436766	2.3	1	Tepi kiri	8.6	-1214.646	-364.988	-186.331	1704.08	2.31739	2.3		
	1/4 L	73.048	162.919	343.058	405.023					1/4 L	73.135	273.577	516.156	605.821					
	1/2 L	137.695	496.674	414.577	415.372					1/2 L	137.67	809.429	640.818	641.489					
	3/4 L	202.343	178.557	-53.147	-113.522					3/4 L	202.205	291.052	-64.278	-152.6					
	Tepi Kanan	266.991	-740.501	-1023.477	-1145.023					Tepi Kanan	266.741	-1180.958	-1526.765	-1704.079					

Tabel Distribusi momen Balok Struktur Core Brace/ Outrigger dan Belttruss (CB)

B1									B2								
Lantai	Lokasi (in)		Momen kombinasi			Mub	Cb	Cb pakai	Lantai	Lokasi (in)		Momen kombinasi			Mub	Cb	Cb pakai
			1,2D+1,6L	1,2D+0,5L+E	1,2D+0,5L+1,3W							1,2D+1,6L	1,2D+0,5L+E	1,2D+0,5L+1,3V			
			Kip -in	Kip -in	Kip -in							Kip -in	Kip -in	Kip -in			
30	Tepi kiri	7.85	-867.399	-738.393	-729.042	867.399	1.94913	1.94913	30	Tepi kiri	8.35	-1980.533	-1487.072	-1429.648	1980.53	2.037	2.03696
	1/4 L	72.74	100.967	114.664	120.007					1/4 L	73.02	29.535	134.71	160.856			
	1/2 L	137.8	641.966	571.116	572.437					1/2 L	137.8	1430.217	1208.244	1203.062			
	3/4 L	202.5	174.486	137.811	132.811					3/4 L	202.4	464.3	295.974	268.292			
	Tepi Kanan	267.4	-722.061	-693.527	-704.864					Tepi Kanan	267	-1113.776	-1166.807	-1217.023			
29	Tepi kiri	8.35	-1320.782	-1157.825	-1175.533	1320.78	1.93407	1.93407	29	Tepi kiri	8.75	-3551.546	-2732.45	-2696.477	3551.55	2.0388	2.0388
	1/4 L	73.02	139.933	93.948	85.875					1/4 L	73.17	-30.033	27.091	40.784			
	1/2 L	137.8	1014.303	836.176	837.742					1/2 L	137.8	2568.274	2014.702	2006.037			
	3/4 L	202.4	252.437	237.249	244.744					3/4 L	202	844.211	624.441	607.527			
	Tepi Kanan	267	-1097.571	-872.611	-859.178					Tepi Kanan	266.4	-1813.853	-1545.995	-1571.184			
28	Tepi kiri	8.75	-1380.139	-1417.167	-1498.376	1498.38	2.07022	2.07022	28	Tepi kiri	9.15	-3560.517	-3033.303	-3086.618	3560.52	2.0393	2.03928
	1/4 L	73.17	112.364	-33.427	-73.183					1/4 L	73.39	-44.869	-133.419	-164.975			
	1/2 L	137.8	1021.724	843.6	845.415					1/2 L	137.8	2551.624	1998.417	1988.667			
	3/4 L	202	292.432	375.81	415.087					3/4 L	201.9	860.741	782.312	808.892			
	Tepi Kanan	266.4	-1023.533	-601.446	-524.59					Tepi Kanan	266.1	-1758.649	-1208.968	-1145.959			
27	Tepi kiri	8.75	-1385.554	-1517.286	-1627.139	1627.14	2.26955	2.26955	27	Tepi kiri	9.15	-3575.269	-3205.139	-3306.325	3575.27	2.042	2.042
	1/4 L	73.17	109.33	-83.963	-138.093					1/4 L	73.39	-53.781	-221.314	-277.001			
	1/2 L	137.8	1021.077	842.797	844.55					1/2 L	137.8	2548.573	1994.687	1984.608			
	3/4 L	202	293.916	423.62	476.872					3/4 L	201.9	864.015	864.749	915.297			
	Tepi Kanan	266.4	-1019.913	-504.87	-399.958					Tepi Kanan	266.1	-1749.034	-1040.128	-928.787			
26	Tepi kiri	8.75	-1385.793	-1598.661	-1732.882	1732.88	2.28727	2.28727	26	Tepi kiri	9.15	-3569.47	-3333.414	-3474.561	3569.47	2.1312	2.13115
	1/4 L	73.17	109.353	-124.53	-190.843					1/4 L	73.39	-50.692	-286.34	-362.328			
	1/2 L	137.8	1021.362	843.163	844.952					1/2 L	137.8	2548.947	1993.077	1982.413			
	3/4 L	202	294.23	463.937	529.208					3/4 L	201.9	862.269	928.528	998.654			
	Tepi Kanan	266.4	-1019.569	-424.478	-295.529					Tepi Kanan	266.1	-1752.904	-910.782	-759.644			
25	Tepi kiri	8.75	-1385.864	-1672.523	-1828.881	1828.88	2.30227	2.3	25	Tepi kiri	9.15	-3563.511	-3450.807	-3628.634	3628.63	2.106	2.10603
	1/4 L	73.17	109.328	-161.512	-238.912					1/4 L	73.39	-47.831	-346.003	-440.591			
	1/2 L	137.8	1021.384	843.17	844.958					1/2 L	137.8	2548.703	1991.298	1980.16			
	3/4 L	202	294.162	500.116	576.256					3/4 L	201.9	859.304	986.236	1074.406			
	Tepi Kanan	266.4	-1019.726	-352.014	-201.291					Tepi Kanan	266.1	-1758.6	-793.425	-605.675			
24	Tepi kiri	8.75	-1384.836	-1738.134	-1914.429	1914.43	2.31417	2.3	24	Tepi kiri	9.15	-3553.825	-3551.13	-3761.413	3761.41	2.1121	2.11211
	1/4 L	73.17	109.886	-194.229	-281.582					1/4 L	73.39	-42.975	-396.869	-507.899			
	1/2 L	137.8	1021.468	843.446	845.296					1/2 L	137.8	2548.716	1990.023	1978.498			
	3/4 L	202	293.725	532.748	618.784					3/4 L	201.9	854.696	1035.762	1139.913			
	Tepi Kanan	266.4	-1020.686	-286.926	-116.441					Tepi Kanan	266.1	-1767.841	-692.959	-472.815			
23	Tepi kiri	8.95	-1440.159	-2052.063	-2309.032	2309.03	2.35077	2.3	23	Tepi kiri	9.15	-3561.203	-3670.303	-3914.591	3914.59	2.1192	2.11919
	1/4 L	73.27	84.618	-350.172	-478.215					1/4 L	73.39	-47.549	-458.035	-586.355			
	1/2 L	137.8	1026.382	845.808	847.075					1/2 L	137.8	2546.111	1986.171	1974.116			

	3/4 L	201.9	327.15	690.581	815.797					3/4 L	201.9	860.484	1095.38	1216.039			
	Tepi Kanan	266.2	-958.627	26.694	276.245					Tepi Kanan	266.1	-1754.476	-570.537	-316.8			
22	Tepi kiri	8.95	-1438.655	-2123.702	-2402.524	2402.52	2.36012	2.3	22	Tepi kiri	9.15	-3544.306	-3747.029	-4018.408	4018.41	2.1233	2.12331
	1/4 L	73.27	85.057	-386.167	-525.111					1/4 L	73.39	-38.961	-496.742	-638.744			
	1/2 L	137.8	1025.751	845.565	846.917					1/2 L	137.8	2546.371	1985.587	1973.293			
	3/4 L	201.9	325.648	725.841	862.002					3/4 L	201.9	852.122	1133.049	1267.025			
	Tepi Kanan	266.2	-961.002	97.566	368.958					Tepi Kanan	266.1	-1771.484	-494.511	-213.864			
21	Tepi kiri	8.95	-1432.695	-2177.391	-2473.784	2473.78	2.36739	2.3	21	Tepi kiri	9.15	-3523.338	-3806.636	-4100.937	4100.94	2.1265	2.12652
	1/4 L	73.27	88.019	-413.217	-561.005					1/4 L	73.39	-28.276	-526.748	-680.321			
	1/2 L	137.8	1025.704	845.234	846.496					1/2 L	137.8	2546.748	1985.262	1972.779			
	3/4 L	201.9	322.91	752.232	896.983					3/4 L	201.9	841.683	1161.99	1307.16			
	Tepi Kanan	266.2	-966.44	150.764	439.451					Tepi Kanan	266.1	-1792.768	-436.223	-132.969			
20	Tepi kiri	8.95	-1426.133	-2178.562	-2476.915	2476.92	2.6861	2.3	20	Tepi kiri	9.15	-3499.275	-3799.737	-4097.745	4097.75	2.23	2.23001
	1/4 L	73.27	91.171	-413.929	-562.703					1/4 L	73.39	-16.03	-523.064	-678.473			
	1/2 L	137.8	1025.434	844.981	846.234					1/2 L	137.8	2547.149	1985.724	1973.281			
	3/4 L	201.9	319.664	752.831	898.558					3/4 L	201.9	829.407	1158.271	1305.272			
	Tepi Kanan	266.2	-972.671	152.216	442.867					Tepi Kanan	266.1	-1817.755	-444.135	-137.255			
19	Tepi kiri	8.95	-1418.128	-2163.57	-2459.391	2459.39	2.67734	2.3	19	Tepi kiri	9.15	-3469.88	-3769.941	-4066.06	4066.06	2.2284	2.22841
	1/4 L	73.27	95.09	-406.43	-553.917					1/4 L	73.39	-0.675	-507.202	-661.536			
	1/2 L	137.8	1025.252	844.962	846.253					1/2 L	137.8	2548.428	1987.616	1975.433			
	3/4 L	201.9	315.89	745.925	890.506					3/4 L	201.9	815.717	1144.704	1290.919			
	Tepi Kanan	266.2	-980.048	138.402	426.72					Tepi Kanan	266.1	-1846.456	-473.202	-168.156			
18	Tepi kiri	9.15	-1444.732	-2375.003	-2727.725	2727.73	2.38561	2.3	18	Tepi kiri	9.5	-3537.57	-3981.51	-4324.884	4324.88	2.1318	2.13177
	1/4 L	73.39	83.466	-511.549	-687.814					1/4 L	73.57	-33.781	-613.579	-791.972			
	1/2 L	137.8	1027.754	845.239	845.897					1/2 L	137.8	2551.328	1987.344	1974.299			
	3/4 L	201.9	333.908	852.569	1024.732					3/4 L	201.7	864.163	1256.612	1424.786			
	Tepi Kanan	266.1	-946.925	350.845	694.983					Tepi Kanan	265.8	-1749.682	-247.167	102.651			
17	Tepi kiri	9.15	-1435.603	-2361.235	-2712.057	2712.06	2.38542	2.3	17	Tepi kiri	9.5	-3512.61	-3963.52	-4307.521	4307.52	2.1317	2.13171
	1/4 L	73.39	87.626	-504.879	-680.158					1/4 L	73.57	-22.606	-604.659	-783.07			
	1/2 L	137.8	1026.93	844.791	845.517					1/2 L	137.8	2548.69	1987.18	1974.725			
	3/4 L	201.9	328.623	845.896	1017.354					3/4 L	201.7	846.892	1245.042	1413.914			
	Tepi Kanan	266.1	-956.682	337.932	680.588					Tepi Kanan	265.8	-1781.618	-270.169	80.455			
16	Tepi kiri	9.15	-1422.267	-2199.531	-2505.119	2505.12	2.37022	2.3	16	Tepi kiri	9.5	-3463.027	-3743.492	-4033.305	4033.31	2.1217	2.12172
	1/4 L	73.39	94.138	-424.087	-576.731					1/4 L	73.57	3.063	-492.969	-644.057			
	1/2 L	137.8	1026.596	844.452	845.154					1/2 L	137.8	2550.892	1990.283	1978.227			
	3/4 L	201.9	322.384	766.181	915.256					3/4 L	201.7	823.393	1136.055	1277.888			
	Tepi Kanan	266.1	-968.843	178.624	476.477					Tepi Kanan	265.8	-1830.879	-491.509	-195.426			
15	Tepi kiri	9.15	-1416.575	-1489.306	-1583.221	1583.22	2.24715	2.24715	15	Tepi kiri	9.5	-3378.104	-2856.631	-2901.044	3378.1	2.2527	2.25266
	1/4 L	73.39	102.378	-63.138	-109.504					1/4 L	73.57	23.794	-62.088	-88.887			
	1/2 L	137.8	1037.388	855.191	856.495					1/2 L	137.8	2506.773	1964.127	1954.968			
	3/4 L	201.9	315.003	412.863	457.754					3/4 L	201.7	793.967	715.117	737.763			
	Tepi Kanan	266.1	-994.447	-539.747	-451.15					Tepi Kanan	265.8	-1845.578	-1308.156	-1253.631			
	Tepi kiri	9.15	-1397.737	-1505.829	-1609.373	1609.37	2.25702	2.25702	14	Tepi kiri	9.5	-3360.063	-2886.66	-2944.33	3360.06	2.2231	2.22311

	1/4 L	73.39	106.275	-75.923	-127.124					1/4 L	73.57	55.775	-58.099	-91.413			
	1/2 L	137.8	1026.297	846.15	847.425					1/2 L	137.8	2552.743	2002.219	1993.3			
14	3/4 L	201.9	311.24	425.778	475.484					3/4 L	201.7	771.301	719.113	748.403			
	Tepi Kanan	266.1	-990.863	-504.815	-406.546					Tepi Kanan	265.8	-1937.04	-1338.336	-1270.747			
13	Tepi kiri	9.15	-1459.763	-2709.197	-3158.61	3158.61	2.41458	2.3	13	Tepi kiri	9.5	-3423.839	-4047.874	-4438.934	4438.93	2.1366	2.13659
	1/4 L	73.39	78.108	-679.628	-905.159					1/4 L	73.57	25.974	-644.539	-846.795			
	1/2 L	137.8	1030.389	842.033	840.978					1/2 L	137.8	2556.864	1991.763	1978.735			
	3/4 L	201.9	345.525	1016.077	1234.524					3/4 L	201.7	809.806	1283.015	1472.378			
	Tepi Kanan	266.1	-927.981	679.843	1118.392					Tepi Kanan	265.8	-1864.21	-198.867	193.362			
12	Tepi kiri	9.15	-1442.59	-2999.123	-3539.702	3539.7	2.43542	2.3	12	Tepi kiri	9.5	-3366.65	-4342.087	-4835.239	4835.24	2.1475	2.14754
	1/4 L	73.39	86.66	-825.215	-1096.511					1/4 L	73.57	54.965	-791.858	-1045.32			
	1/2 L	137.8	1030.292	841.169	839.876					1/2 L	137.8	2557.595	1991.68	1978.451			
	3/4 L	201.9	337.163	1159.416	1422.899					3/4 L	201.7	781.799	1428.829	1668.712			
	Tepi Kanan	266.1	-944.629	967.779	1496.763					Tepi Kanan	265.8	-1921.024	93.186	586.775			
11	Tepi kiri	9.15	-1424.447	-3066.21	-3631.331	3631.33	2.44128	2.3	11	Tepi kiri	9.5	-3301.375	-4393.174	-4917.412	4917.41	2.1499	2.14987
	1/4 L	73.39	95.606	-859.222	-1142.896					1/4 L	73.57	87.87	-817.374	-1086.435			
	1/2 L	137.8	1030.013	840.331	838.855					1/2 L	137.8	2558.06	1991.796	1978.491			
	3/4 L	201.9	328.061	1192.03	1467.514					3/4 L	201.7	749.443	1453.188	1708.192			
	Tepi Kanan	266.1	-962.578	1033.937	1587.137					Tepi Kanan	265.8	-1986.277	141.844	665.787			
10	Tepi kiri	9.15	-1404.337	-2960.958	-3499.403	3499.4	3.09403	2.3	10	Tepi kiri	9.5	-3231.815	-4265.312	-4767.976	4767.98	2.4161	2.3
	1/4 L	73.39	105.503	-806.413	-1076.657					1/4 L	73.57	122.994	-752.008	-1009.934			
	1/2 L	137.8	1029.665	840.554	839.228					1/2 L	137.8	2558.672	1994.523	1981.889			
	3/4 L	201.9	318.012	1140.695	1403.227					3/4 L	201.7	714.791	1391.311	1636.115			
	Tepi Kanan	266.1	-982.356	930.903	1458.014					Tepi Kanan	265.8	-2056.275	15.212	518.058			
9	Tepi kiri	9.15	-1382.058	-2827.108	-3330.833	3330.83	3.03563	2.3	9	Tepi kiri	9.5	-3155.133	-4103.802	-4576.507	4576.51	2.364	2.3
	1/4 L	73.39	116.533	-739.177	-991.941					1/4 L	73.57	161.962	-669.487	-912.054			
	1/2 L	137.8	1029.41	840.995	839.862					1/2 L	137.8	2559.843	1997.876	1985.967			
	3/4 L	201.9	307.081	1079.7	1321.399					3/4 L	201.7	677.341	1312.783	1543.062			
	Tepi Kanan	266.1	-1003.992	800.294	1293.5					Tepi Kanan	265.8	-2132.437	-145.389	327.646			
8	Tepi kiri	9.35	-1375.405	-2990.292	-3544.596	3544.6	3.10365	2.3	8	Tepi kiri	9.8	-3125.166	-4280.319	-4813.375	4813.38	2.4175	2.3
	1/4 L	73.46	120.031	-822.016	-1100.551					1/4 L	73.64	175.59	-759.328	-1032.34			
	1/2 L	137.8	1030.826	840.159	838.349					1/2 L	137.8	2565.977	2004.008	1992.345			
	3/4 L	201.7	310.344	1158.675	1428.453					3/4 L	201.3	688.089	1415.986	1674.764			
	Tepi Kanan	265.8	-998.647	968.074	1510.397					Tepi Kanan	265.1	-2117.638	56.945	587.548			
7	Tepi kiri	9.35	-1355.337	-2991.673	-3551.236	3551.24	3.10762	2.3	7	Tepi kiri	9.8	-3078.378	-4289.734	-4836.624	4836.62	2.4252	2.3
	1/4 L	73.46	129.61	-822.565	-1103.575					1/4 L	73.64	198.231	-761.686	-1040.724			
	1/2 L	137.8	1029.877	840.446	838.955					1/2 L	137.8	2564.352	2008.748	1998.908			
	3/4 L	201.7	299.327	1160.88	1433.989					3/4 L	201.3	661.854	1424.363	1691.85			
	Tepi Kanan	265.8	-1019.767	972.205	1520.88					Tepi Kanan	265.1	-2168.607	68.978	615.211			
6	Tepi kiri	9.35	-1329.785	-3002.997	-3572.161	3572.16	3.11458	2.3	6	Tepi kiri	9.8	-3012.164	-4289.98	-4852.599	4852.6	2.4285	2.3
	1/4 L	73.46	142.307	-828.764	-1114.718					1/4 L	73.64	231.918	-760.836	-1047.584			
	1/2 L	137.8	1029.672	839.388	837.627					1/2 L	137.8	2565.35	2010.708	2001.219			
	3/4 L	201.7	286.81	1166.295	1444.065					3/4 L	201.3	629.572	1423.173	1697.93			

	Tepi Kanan	265.8	-1044.641	984.114	1542.401					Tepi Kanan	265.1	-2234.34	64.621	625.079			
5	Tepi kiri	9.35	-1303.125	-3006.843	-3583.631	3583.63	3.11884	2.3	5	Tepi kiri	9.8	-2944.839	-4285.201	-4862.294	4862.29	2.4308	2.3
	1/4 L	73.46	155.449	-831.178	-1121.047					1/4 L	73.64	265.878	-757.053	-1050.691			
	1/2 L	137.8	1029.245	838.41	836.457					1/2 L	137.8	2565.778	2013.497	2004.745			
	3/4 L	201.7	273.471	1168.315	1449.93					3/4 L	201.3	595.76	1420.076	1701.894			
	Tepi Kanan	265.8	-1070.938	989.143	1555.326					Tepi Kanan	265.1	-2302.569	55.608	629.483			
4	Tepi kiri	9.35	-1274.14	-2990.305	-3569.174	3569.17	3.11435	2.3	4	Tepi kiri	9.8	-2870.815	-4254.174	-4839.466	4839.47	2.424	2.3
	1/4 L	73.46	169.799	-823.21	-1114.176					1/4 L	73.64	303.595	-739.515	-1036.811			
	1/2 L	137.8	1028.906	837.777	835.713					1/2 L	137.8	2567.007	2017.489	2009.644			
	3/4 L	201.7	259.181	1160.947	1443.824					3/4 L	201.3	559.634	1405.006	1690.844			
	Tepi Kanan	265.8	-1099.227	975.015	1543.837					Tepi Kanan	265.1	-2376.24	21.379	602.402			
3	Tepi kiri	9.5	-1254.281	-3302.702	-3979.995	3980	3.23024	2.3	3	Tepi kiri	10.1	-2806.5	-4452.73	-5112.776	5112.78	2.4845	2.3
	1/4 L	73.5	182.648	-979.703	-1320.858					1/4 L	73.77	337.285	-837.883	-1172.755			
	1/2 L	137.8	1033.683	837.637	834.186					1/2 L	137.8	2572.457	2021.971	2014.052			
	3/4 L	201.5	256.217	1314.677	1644.337					3/4 L	201.1	546.675	1512.136	1833.102			
	Tepi Kanan	265.5	-1112.258	1282.078	1946.416					Tepi Kanan	264.8	-2406.537	232.762	884.431			
2	Tepi kiri	9.5	-1228.009	-3175.185	-3820.514	3820.51	3.18655	2.3	2	Tepi kiri	10.1	-2736.854	-4317.578	-4953.478	4953.48	2.4488	2.3
	1/4 L	73.5	194.914	-915.445	-1240.252					1/4 L	73.77	370.35	-768.842	-1090.771			
	1/2 L	137.8	1031.873	838.34	835.547					1/2 L	137.8	2568.744	2024.552	2018.312			
	3/4 L	201.5	241.121	1254.462	1569.697					3/4 L	201.1	505.331	1442.525	1752.384			
	Tepi Kanan	265.5	-1140.704	1160.657	1795.417					Tepi Kanan	264.8	-2485.72	90.561	718.265			
1	Tepi kiri	9.5	-1182.883	-2710.51	-3227.45	3227.45	2.98059	2.3	1	Tepi kiri	10.1	-2615.333	-3809.827	-4322.303	4322.3	2.2698	2.26979
	1/4 L	73.5	218.934	-681.627	-942.165					1/4 L	73.77	436.204	-508.125	-767.518			
	1/2 L	137.8	1034.686	840.222	837.28					1/2 L	137.8	2578.63	2036.891	2031.97			
	3/4 L	201.5	223.706	1028.854	1280.62					3/4 L	201.1	458.175	1201.837	1450.651			
	Tepi Kanan	265.5	-1178.441	706.487	1214.161					Tepi Kanan	264.8	-2590.233	-404.554	99.399			

B3									B4								
Lantai	Lokasi (In)		Momen kombinasi			Mub	Cb	Cb pakai	Lantai	Lokasi (In)		Momen kombinasi			Mub	Cb	Cb pakai
			1,2D+1,6L	1,2D+0,5L+E	2D+0,5L+1,3V							1,2D+1,6L	1,2D+0,5L+E	2D+0,5L+1,3V			
			Kip -in	Kip -in	Kip -in							Kip -in	Kip -in	Kip -in			
30	Tepi kiri	7.9	-646.719	-602.71	-608.405	646.72	2.03779	2.037794	30	Tepi kiri	8	-417.096	-343.006	-341.5	417.1	1.688	1.68798
	1/4 L	72.81	110.24	95.519	92.629					1/4 L	72.873	49.604	58.856	60.712			
	1/2 L	137.72	388.889	354.939	354.853					1/2 L	137.795	-307.083	-281.297	-285.235			
	3/4 L	202.63	154.652	146.888	149.607					3/4 L	202.618	222.943	185.504	184.223			
	Tepi Kanan	267.54	-558.149	-500.182	-494.659					Tepi Kanan	267.491	43.127	21.39	22.769			
29	Tepi kiri	8.05	-960.547	-658.752	-611.696	960.55	2.09157	2.091565	29	Tepi kiri	8.1	-1696.526	-1142.083	-1068.395	1696.5	2.1476	2.1476
	1/4 L	72.885	140.924	202.362	226.406					1/4 L	72.898	181.945	277.35	314.508			
	1/2 L	137.72	558.532	478.208	479.242					1/2 L	137.695	938.655	772.022	772.649			
	3/4 L	202.56	227.444	118.641	96.663					3/4 L	202.493	444.257	241.888	205.985			
	Tepi Kanan	267.39	-787.985	-826.564	-871.553					Tepi Kanan	267.291	-1173.175	-1213.991	-1286.425			
28	Tepi kiri	8.2	-970.688	-445.684	-332.496	1152.2	2.31709	2.3	28	Tepi kiri	8.3	-1725.046	-920.881	-773.969	1725	2.184	2.184
	1/4 L	72.973	134.962	307.307	364.138					1/4 L	73.023	162.809	384.746	458.752			
	1/2 L	137.75	557.714	475.885	476.36					1/2 L	137.745	930.524	766.999	768.098			
	3/4 L	202.52	233.213	10.273	-45.608					3/4 L	202.468	450.026	126.818	55.01			
	Tepi Kanan	267.29	-774.504	-1039.997	-1152.235					Tepi Kanan	267.191	-1151.244	-1437.227	-1581.943			
27	Tepi kiri	8.2	-975.55	-400.779	-272.852	1212.1	2.38304	2.3	27	Tepi kiri	8.3	-1732.029	-879.88	-718.974	1732	2.1909	2.19085
	1/4 L	72.973	132.145	329.638	393.91					1/4 L	73.023	158.892	404.801	485.777			
	1/2 L	137.75	556.941	475.642	476.259					1/2 L	137.745	929.673	766.108	767.154			
	3/4 L	202.52	234.485	-12.544	-75.582					3/4 L	202.468	452.241	104.98	26.096			
	Tepi Kanan	267.29	-771.187	-1085.388	-1212.081					Tepi Kanan	267.191	-1145.963	-1480.012	-1638.825			
26	Tepi kiri	8.2	-976.894	-350.192	-206.791	1277.4	2.44775	2.3	26	Tepi kiri	8.3	-1731.975	-831.225	-655.764	1732	2.1903	2.19031
	1/4 L	72.973	131.56	355.1	427.131					1/4 L	73.023	159.032	429.434	517.751			
	1/2 L	137.75	557.155	475.979	476.639					1/2 L	137.745	929.899	766.719	767.891			
	3/4 L	202.52	235.478	-37.331	-108.042					3/4 L	202.468	452.553	81.568	-4.403			
	Tepi Kanan	267.29	-769.415	-1135.3	-1277.382					Tepi Kanan	267.191	-1145.566	-1527.446	-1700.561			
25	Tepi kiri	8.2	-978.195	-304.622	-147.232	1336.5	2.50451	2.3	25	Tepi kiri	8.3	-1731.959	-786.492	-597.627	1758.2	2.209	2.20901
	1/4 L	72.973	130.898	377.967	457.025					1/4 L	73.023	158.991	451.895	546.954			
	1/2 L	137.75	557.092	476.142	476.868					1/2 L	137.745	929.802	766.908	768.162			
	3/4 L	202.52	236.034	-59.872	-137.478					3/4 L	202.468	452.4	59.486	-33.066			
	Tepi Kanan	267.29	-768.24	-1180.545	-1336.483					Tepi Kanan	267.191	-1145.775	-1571.8	-1758.157			
24	Tepi kiri	8.2	-978.119	-262.779	-92.864	1390.4	2.55356	2.3	24	Tepi kiri	8.3	-1729.419	-744.322	-543.432	1811.6	2.2456	2.24564
	1/4 L	72.973	130.991	398.978	484.311					1/4 L	73.023	160.347	473.135	574.232			
	1/2 L	137.75	557.202	476.322	477.074					1/2 L	137.745	929.973	767.218	768.522			
	3/4 L	202.52	236.162	-80.523	-164.353					3/4 L	202.468	451.387	38.866	-59.622			
	Tepi Kanan	267.29	-768.096	-1222.027	-1390.439					Tepi Kanan	267.191	-1147.972	-1613.35	-1811.631			
23	Tepi kiri	8.25	-977.836	-225.173	-44.048	1438.1	2.59653	2.3	23	Tepi kiri	8.35	-1726.604	-705.67	-493.868	1859.7	2.2791	2.27906
	1/4 L	73.01	130.905	417.75	508.739					1/4 L	73.06	161.381	492.359	598.976			
	1/2 L	137.77	556.878	476.383	477.235					1/2 L	137.77	929.392	767.164	768.595			
	3/4 L	202.53	235.886	-98.93	-188.213					3/4 L	202.48	449.672	19.929	-83.825			
	Tepi Kanan	267.29	-768.034	-1258.656	-1438.076					Tepi Kanan	267.191	-1150.338	-1650.775	-1859.715			
22	Tepi kiri	8.25	-976.78	-190.427	0.865	1483	2.6361	2.3	22	Tepi kiri	8.35	-1722.665	-669.671	-448.023	1905.8	2.3108	2.3
	1/4 L	73.01	131.276	435.065	531.187					1/4 L	73.06	163.056	510.252	621.833			
	1/2 L	137.77	556.563	476.307	477.217					1/2 L	137.77	928.803	766.952	768.465			
	3/4 L	202.53	234.886	-116.416	-210.698					3/4 L	202.48	446.819	1.611	-106.944			

	Tepi Kanan	267.29	-769.718	-1293.554	-1483.026					Tepi Kanan	267.191	-1155.455	-1687.198	-1905.821			
21	Tepi kiri	8.25	-973.286	-158.053	42.085	1523.6	2.66937	2.3	21	Tepi kiri	8.35	-1714.05	-634.894	-404.902	1947.8	1.8078	1.80779
	1/4 L	73.01	133.068	451.406	551.959					1/4 L	73.06	167.439	527.867	643.669			
	1/2 L	137.77	556.653	476.574	477.541					1/2 L	137.77	928.953	767.404	769.015			
	3/4 L	202.53	233.274	-132.203	-230.821					3/4 L	202.48	442.737	-15.1	-127.678			
	Tepi Kanan	267.29	-773.032	-1325.393	-1523.597					Tepi Kanan	267.191	-1163.77	-1721.072	-1947.841			
20	Tepi kiri	8.25	-969.621	-156.104	43.717	1525.9	2.67133	2.3	20	Tepi kiri	8.35	-1705.92	-629.802	-400.25	1947.8	1.8089	1.80892
	1/4 L	73.01	134.889	452.251	552.61					1/4 L	73.06	171.477	530.057	645.538			
	1/2 L	137.77	556.63	476.315	477.211					1/2 L	137.77	928.898	766.691	768.102			
	3/4 L	202.53	231.407	-133.566	-232.132					3/4 L	202.48	438.59	-18.714	-131.374			
	Tepi Kanan	267.29	-776.744	-1327.86	-1525.889					Tepi Kanan	267.191	-1172.01	-1727.589	-1954.318			
19	Tepi kiri	8.25	-979.793	-75.722	150.722	1631.9	2.74881	2.3	19	Tepi kiri	8.35	-1774.396	-465.39	-170.23	1954.3	1.8004	1.80038
	1/4 L	73.01	131.645	494.924	608.802					1/4 L	73.06	140.039	617.288	766.33			
	1/2 L	137.77	558.691	479.654	480.968					1/2 L	137.77	933.221	775.462	778.386			
	3/4 L	202.53	237.149	-171.184	-282.435					3/4 L	202.48	477.392	-89.685	-232.878			
	Tepi Kanan	267.29	-768.944	-1408.06	-1631.875					Tepi Kanan	267.191	-1100.008	-1879.579	-2168.891			
18	Tepi kiri	8.3	-973.724	-59.245	170.649	1651.2	2.76329	2.3	18	Tepi kiri	8.4	-1759.137	-436.744	-136.678	2168.9	1.9247	1.92465
	1/4 L	73.023	134.201	502.46	617.978					1/4 L	73.073	146.956	630.414	781.727			
	1/2 L	137.75	558.442	478.864	480.006					1/2 L	137.745	932.925	774.009	776.569			
	3/4 L	202.47	234.961	-179.565	-292.799					3/4 L	202.418	471.331	-104.53	-250.722			
	Tepi Kanan	267.19	-772.52	-1423.54	-1651.151					Tepi Kanan	267.091	-1111.016	-1907.12	-2202.065			
17	Tepi kiri	8.3	-969.274	-56.043	173.749	1656.1	2.76815	2.3	17	Tepi kiri	8.4	-1749.859	-426.56	-125.611	2202.1	1.9452	1.94522
	1/4 L	73.023	136.27	503.672	619.062					1/4 L	73.073	150.655	634.289	785.912			
	1/2 L	137.75	558.13	478.085	479.073					1/2 L	137.745	931.046	771.576	773.873			
	3/4 L	202.47	232.269	-182.335	-295.748					3/4 L	202.418	46[illegible].873	-113.271	-260.301			
	Tepi Kanan	267.19	-777.594	-1428.301	-1656.115					Tepi Kanan	267.091	-1124.054	-1922.17	-2218.525			
16	Tepi kiri	8.3	-962.863	-72.607	150.646	1631.9	2.74867	2.3	16	Tepi kiri	8.4	-1711.37	-412.292	-116.462	2218.5	1.9556	1.95563
	1/4 L	73.023	139.643	495.644	607.798					1/4 L	73.073	172.624	644.299	793.548			
	1/2 L	137.75	558.464	478.593	479.649					1/2 L	137.745	936.494	777.326	779.996			
	3/4 L	202.47	229.565	-173.29	-283.333					3/4 L	202.418	452.802	-111.78	-255.691			
	Tepi Kanan	267.19	-783.336	-1410.72	-1631.861					Tepi Kanan	267.091	-1151.645	-1924.938	-2215.428			
15	Tepi kiri	8.3	-954.482	-574.749	-504.132	982.03	2.12172	2.121725	15	Tepi kiri	8.4	-493.425	-13.374	101.108	2215.4	2.9222	2.3
	1/4 L	73.023	143.284	243.515	279.172					1/4 L	73.073	81.196	239.874	290.835			
	1/2 L	137.75	557.366	476.476	477.174					1/2 L	137.795	-711.024	-537.318	-522.92			
	3/4 L	202.47	223.728	74.605	40.344					3/4 L	202.418	316.759	93.267	44.08			
	Tepi Kanan	267.19	-793.913	-912.812	-982.033					Tepi Kanan	267.091	225.065	-199.315	-312.137			
14	Tepi kiri	8.3	-945.762	-558.623	-485.338	998.86	2.13873	2.138734	14	Tepi kiri	8.4	-1668.446	-1007.174	-900.112	1007.2	1.1337	1.13366
	1/4 L	73.023	148.158	252.057	289.061					1/4 L	73.073	193.705	344.324	398.52			
	1/2 L	137.75	558.392	477.436	478.158					1/2 L	137.745	935.734	772.26	773.589			
	3/4 L	202.47	220.906	67.982	32.424					3/4 L	202.418	430.199	178.061	126.524			
	Tepi Kanan	267.19	-800.582	-927.018	-998.858					Tepi Kanan	267.091	-1196.09	-1340.189	-1444.592			
13	Tepi kiri	8.3	-948.819	-29.503	203.281	1684.7	2.78903	2.3	13	Tepi kiri	8.4	-1671.193	-352.786	-48.606	1444.6	1.4826	1.48262
	1/4 L	73.023	146.536	517.124	634.055					1/4 L	73.073	190.115	671.688	825.049			
	1/2 L	137.75	558.206	478.449	479.528					1/2 L	137.745	931.3	772.599	775.141			
	3/4 L	202.47	222.155	-195.059	-309.832					3/4 L	202.418	424.921	-148.623	-296.9			
	Tepi Kanan	267.19	-797.896	-1454.113	-1684.738					Tepi Kanan	267.091	-1202.212	-1993.897	-2292.993			
12	Tepi kiri	8.3	-943.842	19.231	265.417	1746.9	2.83337	2.3	12	Tepi kiri	8.4	-1651.095	-307.026	5.991	2293	2.0063	2.00635
	1/4 L	73.023	149.06	541.489	665.111					1/4 L	73.073	200.717	694.69	852.368			
	1/2 L	137.75	558.277	478.445	479.504					1/2 L	137.745	932.405	772.843	775.182			

	3/4 L	202.47	219.773	-219.432	-340.937					3/4 L	202.418	416.53	-171.137	-324.138				
	Tepi Kanan	267.19	-802.732	-1502.855	-1746.923					Tepi Kanan	267.091	-1220.1	-2039.169	-2347.51				
11	Tepi kiri	8.3	-939.724	41.938	293.936	1774.7	2.85273	2.3	11	Tepi kiri	8.4	-1633.722	-281.858	34.529	2347.5	2.0373	2.03728	
	1/4 L	73.023	151.119	552.98	679.55					1/4 L	73.073	209.271	707.505	866.971				
	1/2 L	137.75	558.277	478.72	479.862					1/2 L	137.745	932.141	773.306	775.849				
	3/4 L	202.47	217.715	-230.372	-354.658					3/4 L	202.418	407.448	-183.027	-337.406				
	Tepi Kanan	267.19	-806.849	-1525.01	-1774.724					Tepi Kanan	267.091	-1237.999	-2063.412	-2374.713				
10	Tepi kiri	8.3	-934.815	-0.558	237.497	1720.2	2.81435	2.3	10	Tepi kiri	8.4	-1614.859	-326.763	-28.396	2316.4	2.5466	2.3	
	1/4 L	73.023	153.58	531.374	650.863					1/4 L	73.073	218.724	684.169	834.354				
	1/2 L	137.75	558.289	478.003	478.928					1/2 L	137.745	932.184	771.538	773.541				
	3/4 L	202.47	215.277	-210.199	-327.84					3/4 L	202.418	398.08	-163.227	-309.407				
	Tepi Kanan	267.19	-811.735	-1483.948	-1720.154					Tepi Kanan	267.091	-1256.777	-2022.043	-2316.405				
9	Tepi kiri	8.3	-949.74	208.4	512.713	1986.6	2.97869	2.3	9	Tepi kiri	8.4	-1660.743	-37.193	358.763	2673	2.7082	2.3	
	1/4 L	73.023	148.76	640.099	793.247					1/4 L	73.073	201.522	839.47	1040.048				
	1/2 L	137.75	561.855	484.774	486.757					1/2 L	137.745	940.68	789.587	794.787				
	3/4 L	202.47	225.507	-307.103	-456.286					3/4 L	202.418	429.292	-285.412	-475.591				
	Tepi Kanan	267.19	-796.563	-1686.249	-1986.598					Tepi Kanan	267.091	-1205.832	-2287.445	-2673.003				
8	Tepi kiri	8.35	-941.246	199.338	498.873	1973.3	2.97092	2.3	8	Tepi kiri	8.5	-1629.624	-29.52	361.253	2680.8	2.7123	2.3	
	1/4 L	73.035	152.48	634.618	785.229					1/4 L	73.098	215.401	839.684	1037.002				
	1/2 L	137.72	561.511	483.49	485.176					1/2 L	137.695	939.587	784.231	788.093				
	3/4 L	202.41	221.967	-303.455	-450.692					3/4 L	202.293	416.126	-293.964	-483.557				
	Tepi Kanan	267.09	-802.747	-1677.174	-1973.336					Tepi Kanan	266.891	-1229.429	-2297.786	-2680.835				
7	Tepi kiri	8.35	-934.087	192.774	488.634	1964.9	2.96693	2.3	7	Tepi kiri	8.5	-1610.498	-35.419	349.129	2677	2.7128	2.3	
	1/4 L	73.035	155.895	630.956	779.658					1/4 L	73.098	224.452	835.036	1028.858				
	1/2 L	137.72	561.182	482.73	484.273					1/2 L	137.695	938.564	780.834	783.93				
	3/4 L	202.41	217.894	-301.313	-446.929					3/4 L	202.293	405.029	-296.109	-483.738				
	Tepi Kanan	267.09	-810.564	-1672.13	-1964.904					Tepi Kanan	266.891	-1250.599	-2298.681	-2677.035				
6	Tepi kiri	8.35	-924.255	189.952	482.59	1958.6	2.96269	2.3	6	Tepi kiri	8.5	-1583.515	-42.592	333.438	2660.6	2.7046	2.3	
	1/4 L	73.035	160.864	629.598	776.692					1/4 L	73.098	238.059	831.613	1021.197				
	1/2 L	137.72	561.288	482.837	484.385					1/2 L	137.695	938.795	781.161	784.298				
	3/4 L	202.41	213.137	-299.741	-443.738					3/4 L	202.293	391.883	-292.032	-475.342				
	Tepi Kanan	267.09	-820.184	-1669.093	-1958.635					Tepi Kanan	266.891	-1277.122	-2290.853	-2660.61				
5	Tepi kiri	8.35	-913.925	180.869	468.293	1944.8	2.95421	2.3	5	Tepi kiri	8.5	-1555.921	-57.17	307.993	2637.1	2.6939	2.3	
	1/4 L	73.035	166.019	624.964	769.424					1/4 L	73.098	251.788	823.935	1007.984				
	1/2 L	137.72	561.268	482.65	484.148					1/2 L	137.695	938.657	780.382	783.318				
	3/4 L	202.41	207.941	-295.479	-436.944					3/4 L	202.293	377.88	-285.912	-464.088				
	Tepi Kanan	267.09	-830.554	-1660.383	-1944.812					Tepi Kanan	266.891	-1304.991	-2277.834	-2637.124				
4	Tepi kiri	8.35	-902.266	162.811	442.002	1918.6	2.93756	2.3	4	Tepi kiri	8.5	-1524.695	-81.069	269.557	2599.6	2.6757	2.3	
	1/4 L	73.035	171.882	615.922	756.254					1/4 L	73.098	267.49	811.82	988.529				
	1/2 L	137.72	561.335	482.624	484.097					1/2 L	137.695	938.838	780.051	782.843				
	3/4 L	202.41	202.213	-286.489	-423.876					3/4 L	202.293	362.538	-274.459	-445.584				
	Tepi Kanan	267.09	-842.078	-1642.378	-1918.624					Tepi Kanan	266.891	-1335.855	-2254.597	-2599.639				
3	Tepi kiri	8.4	-889.7	130.875	397.45	1872.9	2.90803	2.3	3	Tepi kiri	8.6	-1492.374	-116.968	215.269	2543	2.6487	2.3	
	1/4 L	73.048	177.717	599.352	733.311					1/4 L	73.135	282.315	792.207	959.555				
	1/2 L	137.7	561.147	482.035	483.379					1/2 L	137.67	937.95	778.216	780.675				
	3/4 L	202.34	196.871	-270.361	-401.632					3/4 L	202.205	348.352	-256.538	-418.967				
	Tepi Kanan	266.99	-852.022	-1609.038	-1872.924					Tepi Kanan	266.741	-1361.864	-2215.667	-2542.984				
2	Tepi kiri	8.4	-881.898	79.539	328.896	1808.1	2.86801	2.3	2	Tepi kiri	8.6	-1468.458	-172.636	137.349	2472.6	2.6185	2.3	
	1/4 L	73.048	181.206	572.894	698.113					1/4 L	73.135	293.194	762.711	918.701				

	1/2 L	137.7	560.325	480.455	481.536					1/2 L	137.67	935.792	774.892	776.888				
	3/4 L	202.34	191.736	-247.064	-370.12					3/4 L	202.205	333.156	-233.689	-385.689				
	Tepi Kanan	266.99	-861.469	-1560.863	-1808.057					Tepi Kanan	266.741	-1390.098	-2166.645	-2472.64				
1	Tepi kiri	8.4	-862.726	-15.455	200.683	1675.6	2.76676	2.3	1	Tepi kiri	8.6	-1417.687	-256.396	16.3	2343.8	2.5416	2.3	
	1/4 L	73.048	191.849	526.418	635.063					1/4 L	73.135	320.859	722.763	860.125				
	1/2 L	137.7	562.437	482.498	483.65					1/2 L	137.67	940.35	778.757	780.784				
	3/4 L	202.34	185.319	-196.501	-302.842					3/4 L	202.205	314.608	-186.013	-319.32				
	Tepi Kanan	266.99	-876.416	-1461.782	-1675.615					Tepi Kanan	266.741	-1431.752	-2075.157	-2343.798				

Tabel Perhitungan Kuat Lentur Balok 30 Lantai Open Frame (OF)

Balok B1

Lt	Profil	Mp	Lb		Lp	X1	X2	Lr	Ket	Cb	Cek Profil		Mr	Mn	Mn pakai	ϕMn	Mu,b	Cek Kapasitas	Rasio	L	Kontrol Δ		
		(K-in)	(m)	in	(in)	Ksi	Ksi	(in)	(bentang)		Sayap	Badan	(K-in)	(K-in)	(K-in)	(K-in)	(K-in)			in	in	max	Cek
30	W14x22	1195.2	7	275.591	51.925	1600.35	0.02634	147.67	Lb>Lr	2.3	Kompak	Kompak	755.3286	3694.7	1195.2	1075.68	688.355	Aman	0.64	236.22	0.47886	0.9843	Aman
29	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.3	Kompak	Kompak	1683.5	12510.9	2628	2365.2	1658.81	Aman	0.701	236.22	0.41816	0.6562	Aman
28	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.3	Kompak	Kompak	1683.5	12510.9	2628	2365.2	1777.38	Aman	0.751	236.22	0.41746	0.6562	Aman
27	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.354	Kompak	Kompak	1683.5	12803.2	2628	2365.2	1915.76	Aman	0.81	236.22	0.41757	0.6562	Aman
26	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.3	Kompak	Kompak	1683.5	12510.9	2628	2365.2	2062.71	Aman	0.872	236.22	0.41749	0.6562	Aman
25	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.3	Kompak	Kompak	1683.5	12510.9	2628	2365.2	2201.6	Aman	0.931	236.22	0.41743	0.6562	Aman
24	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.3	Kompak	Kompak	1683.5	12510.9	2628	2365.2	2322.04	Aman	0.982	236.22	0.41735	0.6562	Aman
23	W18x50	3636	7	275.591	82.58	1921.96	0.01198	244.67	Lb>Lr	2.3	Kompak	Kompak	2311.111	19923.9	3636	3272.4	2946.32	Aman	0.9	236.22	0.27149	0.6562	Aman
22	W18x50	3636	7	275.591	82.58	1921.96	0.01198	244.67	Lb>Lr	2.3	Kompak	Kompak	2311.111	19923.9	3636	3272.4	3070.62	Aman	0.938	236.22	0.27142	0.6562	Aman
21	W18x50	3636	7	275.591	82.58	1921.96	0.01198	244.67	Lb>Lr	2.3	Kompak	Kompak	2311.111	19923.9	3636	3272.4	3181.37	Aman	0.972	236.22	0.27133	0.6562	Aman
20	W18x50	3636	7	275.591	82.58	1921.96	0.01198	244.67	Lb>Lr	2.3	Kompak	Kompak	2311.111	19923.9	3636	3272.4	3251.17	Aman	0.994	236.22	0.27126	0.6562	Aman
19	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	3631.53	Aman	0.701	236.22	0.1468	0.6562	Aman
18	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	3679.71	Aman	0.71	236.22	0.1467	0.6562	Aman
17	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	3758.69	Aman	0.725	236.22	0.14666	0.6562	Aman
16	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	3830.78	Aman	0.739	236.22	0.1466	0.6562	Aman
15	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	3870.44	Aman	0.747	236.22	0.14654	0.6562	Aman
14	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	3838.68	Aman	0.74	236.22	0.14648	0.6562	Aman
13	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	4705.45	Aman	0.908	236.22	0.14674	0.6562	Aman
12	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	4632	Aman	0.894	236.22	0.14662	0.6562	Aman
11	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	4602.37	Aman	0.888	236.22	0.14654	0.6562	Aman
10	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	4537.44	Aman	0.875	236.22	0.1467	0.6562	Aman
9	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	4879.01	Aman	0.941	236.22	0.14666	0.6562	Aman
8	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	4816.79	Aman	0.929	236.22	0.1466	0.6562	Aman
7	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	4794.46	Aman	0.925	236.22	0.14654	0.6562	Aman
6	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	4768.51	Aman	0.92	236.22	0.14648	0.6562	Aman
5	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	4696.78	Aman	0.906	236.22	0.14674	0.6562	Aman
4	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	4519.81	Aman	0.872	236.22	0.14662	0.6562	Aman
3	W21x68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	5032.82	Aman	0.971	236.22	0.14654	0.6562	Aman
2	W21X68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	4420.21	Aman	0.853	236.22	0.14649	0.6562	Aman
1	W21X68	5760	7	275.591	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	3242.27	Aman	0.625	236.22	0.14634	0.6562	Aman

Balok B2

Lt	Profil	Mp	Lb		Lp	X1	X2	Lr	Ket	Cb	Cek Profil		Mr	Mn	Mn pakai	ϕMn	Mu,b	Cek Kapasitas	Rasio	L	Kontrol Δ		
		(K-in)	(m)	in	(in)	Ksi	Ksi	(in)	(bentang)		Sayap	Badan	(K-in)	(K-in)	(K-in)	(K-in)	(K-in)			in	in	max	Cek
30	W18X35	2394	7	275.59	60.94	1585.22	0.02924	175.17	Lb>Lr	2.043	Kompak	Kompak	1498.305	8833.46	2394	2154.6	1528.29	Aman	0.709	236.22	0.50639	0.9843	Aman
29	W21X55	4536	7	275.59	86.425	1636.14	0.02432	247.48	Lb>Lr	2.065	Kompak	Kompak	2850	24073.3	4536	4082.4	3053.13	Aman	0.748	236.22	0.44429	0.6562	Aman
28	W21X55	4536	7	275.59	86.425	1636.14	0.02432	247.48	Lb>Lr	2.13	Kompak	Kompak	2850	24828	4536	4082.4	3229.29	Aman	0.791	236.22	0.44371	0.6562	Aman
27	W21X55	4536	7	275.59	86.425	1636.14	0.02432	247.48	Lb>Lr	2.204	Kompak	Kompak	2850	25687.4	4536	4082.4	3422.05	Aman	0.838	236.22	0.44387	0.6562	Aman
26	W21X55	4536	7	275.59	86.425	1636.14	0.02432	247.48	Lb>Lr	2.143	Kompak	Kompak	2850	24978.9	4536	4082.4	3628.49	Aman	0.889	236.22	0.4439	0.6562	Aman
25	W21X55	4536	7	275.59	86.425	1636.14	0.02432	247.48	Lb>Lr	2.15	Kompak	Kompak	2850	25060.3	4536	4082.4	3824.5	Aman	0.937	236.22	0.44397	0.6562	Aman
24	W21X55	4536	7	275.59	86.425	1636.14	0.02432	247.48	Lb>Lr	2.155	Kompak	Kompak	2850	25121.6	4536	4082.4	3986.26	Aman	0.976	236.22	0.44405	0.6562	Aman
23	W21X62	5184	7	275.59	88.63	1828.15	0.0152	260.19	Lb>Lr	2.159	Kompak	Kompak	3293.334	31318.5	5184	4665.6	4109.92	Aman	0.881	236.22	0.38006	0.6562	Aman
22	W21X62	5184	7	275.59	88.63	1828.15	0.0152	260.19	Lb>Lr	2.163	Kompak	Kompak	3293.334	31368.2	5184	4665.6	4231.74	Aman	0.907	236.22	0.38016	0.6562	Aman
21	W21X62	5184	7	275.59	88.63	1828.15	0.0152	260.19	Lb>Lr	2.166	Kompak	Kompak	3293.334	31415.6	5184	4665.6	4347.1	Aman	0.932	236.22	0.38025	0.6562	Aman
20	W21X62	5184	7	275.59	88.63	1828.15	0.0152	260.19	Lb>Lr	2.3	Kompak	Kompak	3293.334	33362.4	5184	4665.6	4415.59	Aman	0.946	236.22	0.38045	0.6562	Aman
19	W21X68	5760	7	275.59	89.93	1996.69	0.0105	270.88	Lb>Lr	2.3	Kompak	Kompak	3647.394	39108.3	5760	5184	4883.36	Aman	0.942	236.22	0.34195	0.6562	Aman
18	W21X68	5760	7	275.59	89.93	1996.69	0.0105	270.88	Lb>Lr	2.178	Kompak	Kompak	3647.394	37041.5	5760	5184	4942.89	Aman	0.953	236.22	0.34169	0.6562	Aman
17	W21X68	5760	7	275.59	89.93	1996.69	0.0105	270.88	Lb>Lr	2.18	Kompak	Kompak	3647.394	37061.7	5760	5184	5010.58	Aman	0.967	236.22	0.34188	0.6562	Aman
16	W21X68	5760	7	275.59	89.93	1996.69	0.0105	270.88	Lb>Lr	2.181	Kompak	Kompak	3647.394	37084.3	5760	5184	5074.71	Aman	0.979	236.22	0.34198	0.6562	Aman
15	W21X68	5760	7	275.59	89.93	1996.69	0.0105	270.88	Lb>Lr	2.182	Kompak	Kompak	3647.394	37094.2	5760	5184	5101.82	Aman	0.98	236.22	0.34212	0.6562	Aman
14	W21X68	5760	7	275.59	89.93	1996.69	0.0105	270.88	Lb>Lr	2.18	Kompak	Kompak	3647.394	37070.2	5760	5184	5053.1	Aman	0.97	236.22	0.34225	0.6562	Aman
13	W24X76	7200	7	275.59	95.955	1764.26	0.01767	279.23	Lp<Lb<Lr	2.194	Kompak	Kompak	4569.037	10140.5	7200	6480	5867.75	Aman	0.91	236.22	0.24207	0.6562	Aman
12	W24X76	7200	7	275.59	95.955	1764.26	0.01767	279.23	Lp<Lb<Lr	2.189	Kompak	Kompak	4569.037	10117	7200	6480	5774.32	Aman	0.89	236.22	0.24221	0.6562	Aman
11	W24X76	7200	7	275.59	95.955	1764.26	0.01767	279.23	Lp<Lb<Lr	2.180	Kompak	Kompak	4569.037	10117.3	7200	6480	5734.81	Aman	0.885	236.22	0.24231	0.6562	Aman
10	W24X76	7200	7	275.59	95.955	1764.26	0.01767	279.23	Lp<Lb<Lr	2.3	Kompak	Kompak	4569.037	10629.1	7200	6480	4415.59	Aman	0.681	236.22	0.24081	0.6562	Aman
9	W24X76	7200	7	275.59	95.955	1764.26	0.01767	279.23	Lp<Lb<Lr	2.3	Kompak	Kompak	4569.037	10629.1	7200	6480	4883.36	Aman	0.754	236.22	0.24094	0.6562	Aman
8	W24X76	7200	7	275.59	95.955	1764.26	0.01767	279.23	Lp<Lb<Lr	2.178	Kompak	Kompak	4569.037	10067.3	7200	6480	4942.89	Aman	0.763	236.22	0.24102	0.6562	Aman
7	W24X76	7200	7	275.59	95.955	1764.26	0.01767	279.23	Lp<Lb<Lr	2.18	Kompak	Kompak	4569.037	10072.8	7200	6480	5010.58	Aman	0.773	236.22	0.24111	0.6562	Aman
6	W24X76	7200	7	275.59	95.955	1764.26	0.01767	279.23	Lp<Lb<Lr	2.181	Kompak	Kompak	4569.037	10079	7200	6480	5074.71	Aman	0.783	236.22	0.2412	0.6562	Aman
5	W24X76	7200	7	275.59	95.955	1764.26	0.01767	279.23	Lp<Lb<Lr	2.182	Kompak	Kompak	4569.037	10081.7	7200	6480	5101.82	Aman	0.79	236.22	0.24207	0.6562	Aman
4	W24X76	7200	7	275.59	95.955	1764.26	0.01767	279.23	Lp<Lb<Lr	2.18	Kompak	Kompak	4569.037	10075.1	7200	6480	5053.1	Aman	0.78	236.22	0.24221	0.6562	Aman
3	W24X76	7200	7	275.59	95.955	1764.26	0.01767	279.23	Lp<Lb<Lr	2.194	Kompak	Kompak	4569.037	10140.5	7200	6480	5867.75	Aman	0.91	236.22	0.24231	0.6562	Aman
2	W24X76	7200	7	275.59	95.955	1764.26	0.01767	279.23	Lp<Lb<Lr	2.189	Kompak	Kompak	4569.037	10117	7200	6480	5774.32	Aman	0.89	236.22	0.24249	0.6562	Aman
1	W24X76	7200	7	275.59	95.955	1764.26	0.01767	279.23	Lp<Lb<Lr	2.189	Kompak	Kompak	4569.037	10117.3	7200	6480	5734.81	Aman	0.885	236.22	0.24241	0.6562	Aman

Balok B3

Lt	Profil	Mp	Lb		Lp	X1	X2	Lr	Ket	Cb	Cek Profil		Mr	Mn	Mn pakai	ϕMn	Mu,b	Cek Kapasitas	Rasio	L	Kontrol Δ		
		(K-in)	(m)	in	(in)	Ksi	Ksi	(in)	(bentang)		Sayap	Badan	(K-in)	(K-in)	(K-in)	(K-in)	(K-in)			in	in	max	Cek
30	W12X26	1339.2	7	275.591	75.19	1812.65	0.01331	213.88	Lb>Lr	2.3	Kompak	Kompak	869.5076	4746.55	1339.2	1205.28	654.144	Aman	0.5427	236.22	0.22626	0.9843	Aman
29	W12X58	3110.4	7	275.591	125.44	3070.38	0.00147	460.18	Lp<Lb<Lr	2.3	Kompak	Kompak	2024.591	6033.7	3110.4	2799.36	1319.85	Aman	0.4715	236.22	0.27085	0.6562	Aman
28	W12X58	3110.4	7	275.591	125.44	3070.38	0.00147	460.18	Lp<Lb<Lr	2.3	Kompak	Kompak	2024.591	6033.7	3110.4	2799.36	1483.62	Aman	0.53	236.22	0.27008	0.6562	Aman

27	W12X58	3110.4	7	275.591	125.44	3070.38	0.00147	460.18	Lp<Lb<Lr	2.3	Kompak	Kompak	2024.591	6033.7	3110.4	2799.36	1683.25	Aman	0.6013	236.22	0.36787	0.6562	Aman
26	W12X58	3110.4	7	275.591	125.44	3070.38	0.00147	460.18	Lp<Lb<Lr	2.3	Kompak	Kompak	2024.591	6033.7	3110.4	2799.36	1888.88	Aman	0.6748	236.22	0.3678	0.6562	Aman
25	W12X58	3110.4	7	275.591	125.44	3070.38	0.00147	460.18	Lp<Lb<Lr	2.3	Kompak	Kompak	2024.591	6033.7	3110.4	2799.36	2091.42	Aman	0.7471	236.22	0.36782	0.6562	Aman
24	W12X58	3110.4	7	275.591	125.44	3070.38	0.00147	460.18	Lp<Lb<Lr	2.3	Kompak	Kompak	2024.591	6033.7	3110.4	2799.36	2279.08	Aman	0.8141	236.22	0.36781	0.6562	Aman
23	W12X58	3110.4	7	275.591	125.44	3070.38	0.00147	460.18	Lp<Lb<Lr	2.3	Kompak	Kompak	2024.591	6033.7	3110.4	2799.36	2446.48	Aman	0.8739	236.22	0.36781	0.6562	Aman
22	W12X58	3110.4	7	275.591	125.44	3070.38	0.00147	460.18	Lp<Lb<Lr	2.3	Kompak	Kompak	2024.591	6033.7	3110.4	2799.36	2593.39	Aman	0.9264	236.22	0.36781	0.6562	Aman
21	W12X58	3110.4	7	275.591	125.44	3070.38	0.00147	460.18	Lp<Lb<Lr	2.3	Kompak	Kompak	2024.591	6033.7	3110.4	2799.36	2704.91	Aman	0.9663	236.22	0.36781	0.6562	Aman
20	W12X58	3110.4	7	275.591	125.44	3070.38	0.00147	460.18	Lp<Lb<Lr	2.3	Kompak	Kompak	2024.591	6033.7	3110.4	2799.36	2733.26	Aman	0.9764	236.22	0.36781	0.6562	Aman
19	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3196.26	Aman	0.8578	236.22	0.24375	0.6562	Aman
18	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3206.95	Aman	0.8607	236.22	0.24367	0.6562	Aman
17	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3285.56	Aman	0.8818	236.22	0.24368	0.6562	Aman
16	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3383.21	Aman	0.908	236.22	0.24368	0.6562	Aman
15	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3478.39	Aman	0.9335	236.22	0.24367	0.6562	Aman
14	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3548.44	Aman	0.9523	236.22	0.24369	0.6562	Aman
13	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3576.47	Aman	0.9599	236.22	0.24357	0.6562	Aman
12	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3600.12	Aman	0.9662	236.22	0.24347	0.6562	Aman
11	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3613.42	Aman	0.9698	236.22	0.24348	0.6562	Aman
10	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	2733.26	Aman	0.7336	236.22	0.24367	0.6562	Aman
9	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3196.26	Aman	0.8578	236.22	0.24368	0.6562	Aman
8	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3206.95	Aman	0.8607	236.22	0.24368	0.6562	Aman
7	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3285.56	Aman	0.8818	236.22	0.24367	0.6562	Aman
6	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3383.21	Aman	0.908	236.22	0.24369	0.6562	Aman
5	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3478.39	Aman	0.9335	236.22	0.24357	0.6562	Aman
4	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3548.44	Aman	0.9523	236.22	0.24347	0.6562	Aman
3	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3576.47	Aman	0.9599	236.22	0.24348	0.6562	Aman
2	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3600.12	Aman	0.9662	236.22	0.24352	0.6562	Aman
1	W14x68	4140	7	275.591	122.985	3010.1	0.00166	446.26	Lp<Lb<Lr	2.3	Kompak	Kompak	2681.715	7938.67	4140	3726	3613.42	Aman	0.9698	236.22	0.24405	0.6562	Aman

Balok B4

Lt	Profil	Mp	Lb		Lp	X1	X2	Lr	Keterangan	Cb	Cek Profil		Mr	Mn	Mn pakai	ϕMn	Mu,b	Cek Kapasitas	Rasio	L	Kontrol Δ		
		(K-in)	(m)	in	(in)	Ksi	Ksi	(in)	(bentang)		Sayap	Badan	(K-in)	(K-in)	(K-in)	(K-in)	(K-in)			in	in	max	Cek
30	W12X30	1551.6	7	275.591	75.985	2072.4	0.00781	226.79	Lb>Lr	2.3	Kompak	Kompak	1006.179	6050.98	1551.6	1396.44	755.794	Aman	0.5412	236.22	0.27865	0.9843	Aman
29	W14X61	3672	7	275.591	122.245	2720.67	0.00246	415.01	Lp<Lb<Lr	2.27	Kompak	Kompak	2394.244	6814.93	3672	3304.8	1576.97	Aman	0.4772	236.22	0.441	0.6562	Aman
28	W14X61	3672	7	275.591	122.245	2720.67	0.00246	415.01	Lp<Lb<Lr	2.3	Kompak	Kompak	2394.244	6906.28	3672	3304.8	1764.55	Aman	0.5339	236.22	0.44003	0.6562	Aman
27	W14X61	3672	7	275.591	122.245	2720.67	0.00246	415.01	Lp<Lb<Lr	2.3	Kompak	Kompak	2394.244	6906.28	3672	3304.8	1987.16	Aman	0.6013	236.22	0.44028	0.6562	Aman
26	W14X61	3672	7	275.591	122.245	2720.67	0.00246	415.01	Lp<Lb<Lr	2.3	Kompak	Kompak	2394.244	6906.28	3672	3304.8	2216.98	Aman	0.6708	236.22	0.44022	0.6562	Aman
25	W14X61	3672	7	275.591	122.245	2720.67	0.00246	415.01	Lp<Lb<Lr	2.3	Kompak	Kompak	2394.244	6906.28	3672	3304.8	2443.92	Aman	0.7395	236.22	0.44023	0.6562	Aman
24	W14X61	3672	7	275.591	122.245	2720.67	0.00246	415.01	Lp<Lb<Lr	2.3	Kompak	Kompak	2394.244	6906.28	3672	3304.8	2657.41	Aman	0.8041	236.22	0.44022	0.6562	Aman
23	W14X61	3672	7	275.591	122.245	2720.67	0.00246	415.01	Lp<Lb<Lr	2.3	Kompak	Kompak	2394.244	6906.28	3672	3304.8	2850.6	Aman	0.8626	236.22	0.44023	0.6562	Aman
22	W14X61	3672	7	275.591	122.245	2720.67	0.00246	415.01	Lp<Lb<Lr	2.3	Kompak	Kompak	2394.244	6906.28	3672	3304.8	3018.78	Aman	0.9135	236.22	0.44022	0.6562	Aman
21	W14X61	3672	7	275.591	122.245	2720.67	0.00246	415.01	Lp<Lb<Lr	2.3	Kompak	Kompak	2394.244	6906.28	3672	3304.8	3139.65	Aman	0.95	236.22	0.3833	0.6562	Aman

20	W14X61	3672	7	275.591	122.245	2720.67	0.00246	415.01	Lp<Lb<Lr	2.3	Kompak	Kompak	2394.244	6906.28	3672	3304.8	3139.65	Aman	0.95	236.22	-0.0062	0.6562	Aman
19	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	3173.96	Aman	0.6445	236.22	0.02488	0.6562	Aman
18	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4156.8	Aman	0.8441	236.22	0.02251	0.6562	Aman
17	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4171.87	Aman	0.8471	236.22	0.02522	0.6562	Aman
16	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4277.94	Aman	0.8687	236.22	0.02798	0.6562	Aman
15	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4417.42	Aman	0.897	236.22	0.03095	0.6562	Aman
14	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4560.83	Aman	0.9261	236.22	0.0343	0.6562	Aman
13	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4680.93	Aman	0.9505	236.22	0.03726	0.6562	Aman
12	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4767.65	Aman	0.9681	236.22	0.03994	0.6562	Aman
11	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4838.67	Aman	0.9825	236.22	0.04355	0.6562	Aman
10	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	3139.65	Aman	0.6375	236.22	-0.0163	0.6562	Aman
9	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	3173.96	Aman	0.6445	236.22	0.02522	0.6562	Aman
8	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4156.8	Aman	0.8441	236.22	0.02798	0.6562	Aman
7	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4171.87	Aman	0.8471	236.22	0.03095	0.6562	Aman
6	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4277.94	Aman	0.8687	236.22	0.0343	0.6562	Aman
5	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4417.42	Aman	0.897	236.22	0.03726	0.6562	Aman
4	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4560.83	Aman	0.9261	236.22	0.03994	0.6562	Aman
3	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4680.93	Aman	0.9505	236.22	0.04355	0.6562	Aman
2	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4767.65	Aman	0.9681	236.22	0.04723	0.6562	Aman
1	W16x77	5472	7	275.591	122.74	2771.21	0.00242	423.85	Lp<Lb<Lr	2.3	Kompak	Kompak	3529.698	10317.9	5472	4924.8	4838.67	Aman	0.9825	236.22	0.04152	0.6562	Aman

Tabel Perhitungan Kuat Lentur Balok 30 Lantai Frame Truss (FT)

Balok B1

Lt	Profil	Mp	Lb		Lp	X1	X2	Lr	Keterangan	Cb	Cek Profil		Mr	Mn	Mn pakai	ϕMn	Mu,b	Cek Kapasitas	Rasio	L	Kontrol Δ		
		(K-in)	(m)	in	(in)	Ksi	Ksi	(in)	(bentang)		Sayap	Badan	(K-in)	(K-in)	(K-in)	(K-in)	(K-in)			in	in	max	Cek
30	W14x22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	1.97	Kompak	Kompak	755.33	3164	1195.2	1075.68	785.029	Aman	0.73	275.59	0.969	1.148	Aman
29	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	1.955	Kompak	Kompak	1465.2	8557.7	2304	2073.6	1138.49	Aman	0.55	275.59	0.645	0.766	Aman
28	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.089	Kompak	Kompak	1465.2	9144.9	2304	2073.6	1291.15	Aman	0.62	275.59	0.649	0.766	Aman
27	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.303	Kompak	Kompak	1465.2	10080	2304	2073.6	1339.56	Aman	0.65	275.59	0.648	0.766	Aman
26	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1380.83	Aman	0.67	275.59	0.648	0.766	Aman
25	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1420.17	Aman	0.68	275.59	0.648	0.766	Aman
24	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1456.3	Aman	0.7	275.59	0.648	0.766	Aman
23	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1715.37	Aman	0.83	275.59	0.651	0.766	Aman
22	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1756.15	Aman	0.85	275.59	0.651	0.766	Aman
21	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1787.17	Aman	0.86	275.59	0.651	0.766	Aman
20	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1789.84	Aman	0.86	275.59	0.65	0.766	Aman
19	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1784.35	Aman	0.86	275.59	0.65	0.766	Aman
18	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1968.52	Aman	0.95	275.59	0.652	0.766	Aman
17	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1974.91	Aman	0.95	275.59	0.651	0.766	Aman
16	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1951.04	Aman	0.94	275.59	0.651	0.766	Aman
15	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10067	2304	2073.6	1386.14	Aman	0.67	275.59	0.65	0.766	Aman
14	W16x36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1385.81	Aman	0.67	275.59	0.65	0.766	Aman
13	W18X40	2822.4	7	275.59	63.62	1809.2	0.0164	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.9	13186	2822.4	2540.16	2348.71	Aman	0.92	275.59	0.478	0.766	Aman
12	W18X40	2822.4	7	275.59	63.62	1809.2	0.0164	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.9	13186	2822.4	2540.16	2392.51	Aman	0.94	275.59	0.478	0.766	Aman
11	W18X40	2822.4	7	275.59	63.62	1809.2	0.0164	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.9	13186	2822.4	2540.16	2393.85	Aman	0.94	275.59	0.478	0.766	Aman
10	W18X40	2822.4	7	275.59	63.62	1809.2	0.0164	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.9	13186	2822.4	2540.16	1968.52	Aman	0.77	275.59	0.477	0.766	Aman
9	W18X40	2822.4	7	275.59	63.62	1809.2	0.0164	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.9	13186	2822.4	2540.16	1974.91	Aman	0.78	275.59	0.477	0.766	Aman
8	W18X40	2822.4	7	275.59	63.62	1809.2	0.0164	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.9	13186	2822.4	2540.16	1951.04	Aman	0.77	275.59	0.476	0.766	Aman
7	W18X40	2822.4	7	275.59	63.62	1809.2	0.0164	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.9	13184	2822.4	2540.16	1386.14	Aman	0.55	275.59	0.476	0.766	Aman
6	W18X40	2822.4	7	275.59	63.62	1809.2	0.0164	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.9	13186	2822.4	2540.16	1385.81	Aman	0.55	275.59	0.476	0.766	Aman
5	W18X40	2822.4	7	275.59	63.62	1809.2	0.0164	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.9	13186	2822.4	2540.16	2348.71	Aman	0.92	275.59	0.478	0.766	Aman
4	W18X40	2822.4	7	275.59	63.62	1809.2	0.0164	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.9	13186	2822.4	2540.16	2392.51	Aman	0.94	275.59	0.478	0.766	Aman
3	W18X40	2822.4	7	275.59	63.62	1809.2	0.0164	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.9	13186	2822.4	2540.16	2393.85	Aman	0.94	275.59	0.478	0.766	Aman
2	W18X40	2822.4	7	275.59	63.62	1809.2	0.0164	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.9	13186	2822.4	2540.16	2311.23	Aman	0.91	275.59	0.476	0.766	Aman
1	W18X40	2822.4	7	275.59	63.62	1809.2	0.0164	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.9	13186	2822.4	2540.16	2215.65	Aman	0.87	275.59	0.476	0.766	Aman

Balok B2

Lt	Profil	Mp	Lb		Lp	X1	X2	Lr	Keterangan	Cb	Cek Profil		Mr	Mn	Mn pakai	ϕMn	Mu,b	Cek Kapasitas	Rasio	L	Kontrol Δ		
		(K-in)	(m)	in	(in)	Ksi	Ksi	(in)	(bentang)		Sayap	Badan	(K-in)	(K-in)	(K-in)	(K-in)	(K-in)			in	in	max	Cek
30	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.264	Kompak	Kompak	755.33	3637.1	1195.2	1075.68	424.415	Aman	0.39	275.59	-0.13	1.148	Aman
29	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.3	Kompak	Kompak	755.33	3694.7	1195.2	1075.68	646.456	Aman	0.6	275.59	0.245	0.766	Aman
28	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.3	Kompak	Kompak	755.33	3694.7	1195.2	1075.68	649.086	Aman	0.6	275.59	0.172	0.766	Aman
27	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.3	Kompak	Kompak	755.33	3694.7	1195.2	1075.68	678.909	Aman	0.63	275.59	0.119	0.766	Aman
26	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.3	Kompak	Kompak	755.33	3694.7	1195.2	1075.68	706.828	Aman	0.66	275.59	0.066	0.766	Aman
25	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.3	Kompak	Kompak	755.33	3694.7	1195.2	1075.68	737.477	Aman	0.69	275.59	0.014	0.766	Aman
24	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.292	Kompak	Kompak	755.33	3682.2	1195.2	1075.68	766.746	Aman	0.71	275.59	-0.04	0.766	Aman
23	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.295	Kompak	Kompak	755.33	3685.9	1195.2	1075.68	809.271	Aman	0.75	275.59	-0.08	0.766	Aman
22	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.293	Kompak	Kompak	755.33	3683.4	1195.2	1075.68	839.278	Aman	0.78	275.59	-0.13	0.766	Aman
21	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.299	Kompak	Kompak	755.33	3693.5	1195.2	1075.68	871.407	Aman	0.81	275.59	-0.19	0.766	Aman
20	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.3	Kompak	Kompak	755.33	3694.7	1195.2	1075.68	848.89	Aman	0.79	275.59	-0.31	0.766	Aman
19	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.3	Kompak	Kompak	755.33	3694.7	1195.2	1075.68	846.311	Aman	0.79	275.59	-0.36	0.766	Aman
18	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.3	Kompak	Kompak	755.33	3694.7	1195.2	1075.68	973.784	Aman	0.91	275.59	-0.36	0.766	Aman
17	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.3	Kompak	Kompak	755.33	3694.7	1195.2	1075.68	1004.93	Aman	0.93	275.59	-0.41	0.766	Aman
16	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.3	Kompak	Kompak	755.33	3694.7	1195.2	1075.68	1010.53	Aman	0.94	275.59	-0.47	0.766	Aman
15	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	2.04	Kompak	Kompak	755.33	3277	1195.2	1075.68	413.276	Aman	0.38	275.59	-0.56	0.766	Aman
14	W14X22	1195.2	7	275.59	51.93	1600.3	0.0263	147.67	Lb>Lr	1.611	Kompak	Kompak	755.33	2587.4	1195.2	1075.68	399.748	Aman	0.37	275.59	-0.52	0.766	Aman
13	W16X26	1591.2	7	275.59	55.88	1480.3	0.038	157.98	Lb>Lr	1.873	Kompak	Kompak	996.94	4431.8	1591.2	1432.08	993.906	Aman	0.69	275.59	-0.41	0.766	Aman
12	W16X26	1591.2	7	275.59	55.88	1480.3	0.038	157.98	Lb>Lr	1.94	Kompak	Kompak	996.94	4589.6	1591.2	1432.08	1056.09	Aman	0.74	275.59	-0.45	0.766	Aman
11	W16X26	1591.2	7	275.59	55.88	1480.3	0.038	157.98	Lb>Lr	1.998	Kompak	Kompak	996.94	4727.3	1591.2	1432.08	1079.6	Aman	0.75	275.59	-0.5	0.766	Aman
10	W16X26	1591.2	7	275.59	55.88	1480.3	0.038	157.98	Lb>Lr	2.3	Kompak	Kompak	996.94	5442.3	1591.2	1432.08	848.89	Aman	0.59	275.59	-0.24	0.766	Aman
9	W16X26	1591.2	7	275.59	55.88	1480.3	0.038	157.98	Lb>Lr	2.3	Kompak	Kompak	996.94	5442.3	1591.2	1432.08	846.311	Aman	0.59	275.59	-0.27	0.766	Aman
8	W16X26	1591.2	7	275.59	55.88	1480.3	0.038	157.98	Lb>Lr	2.3	Kompak	Kompak	996.94	5442.3	1591.2	1432.08	973.784	Aman	0.68	275.59	-0.31	0.766	Aman
7	W16X26	1591.2	7	275.59	55.88	1480.3	0.038	157.98	Lb>Lr	2.3	Kompak	Kompak	996.94	5442.3	1591.2	1432.08	1004.93	Aman	0.7	275.59	-0.37	0.766	Aman
6	W16X26	1591.2	7	275.59	55.88	1480.3	0.038	157.98	Lb>Lr	2.3	Kompak	Kompak	996.94	5442.3	1591.2	1432.08	1010.53	Aman	0.71	275.59	-0.34	0.766	Aman
5	W16X26	1591.2	7	275.59	55.88	1480.3	0.038	157.98	Lb>Lr	2.04	Kompak	Kompak	996.94	4827	1591.2	1432.08	413.276	Aman	0.29	275.59	-0.41	0.766	Aman
4	W16X26	1591.2	7	275.59	55.88	1480.3	0.038	157.98	Lb>Lr	1.611	Kompak	Kompak	996.94	3811.2	1591.2	1432.08	399.748	Aman	0.28	275.59	-0.45	0.766	Aman
3	W16X26	1591.2	7	275.59	55.88	1480.3	0.038	157.98	Lb>Lr	1.873	Kompak	Kompak	996.94	4431.8	1591.2	1432.08	993.906	Aman	0.69	275.59	-0.5	0.766	Aman
2	W16X26	1591.2	7	275.59	55.88	1480.3	0.038	157.98	Lb>Lr	1.94	Kompak	Kompak	996.94	4589.6	1591.2	1432.08	1056.09	Aman	0.74	275.59	-0.63	0.766	Aman
1	W16X26	1591.2	7	275.59	55.88	1480.3	0.038	157.98	Lb>Lr	1.998	Kompak	Kompak	996.94	4727.3	1591.2	1432.08	1079.6	Aman	0.75	275.59	-0.67	0.766	Aman

Balok B3

Lt	Profil	Mp	Lb		Lp	X1	X2	Lr	Keterangan	Cb	Cek Profil		Mr	Mn	Mn pakai	ϕMn	Mu,b	Cek Kapasitas	Rasio	L	Kontrol Δ		
		(K-in)	(m)	in	(in)	Ksi	Ksi	(in)	(bentang)		Sayap	Badan	(K-in)	(K-in)	(K-in)	(K-in)	(K-in)			in	in	max	Cek
30	W12X16	723.6	7	275.59	38.69	1623.5	0.0288	113.55	Lb>Lr	1.527	Kompak	Kompak	446.33	1163.6	723.6	651.24	245.69	Aman	0.38	275.59	-0.53	1.148	Aman
29	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.156	Kompak	Kompak	1096.5	6149.7	1702.8	1532.52	905.446	Aman	0.59	275.59	0.605	0.766	Aman

28	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1106.16	Aman	0.72	275.59	0.601	0.766	Aman
27	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1130.45	Aman	0.74	275.59	0.601	0.766	Aman
26	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1175.77	Aman	0.77	275.59	0.601	0.766	Aman
25	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1216.12	Aman	0.79	275.59	0.601	0.766	Aman
24	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1253.38	Aman	0.82	275.59	0.601	0.766	Aman
23	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1286.14	Aman	0.84	275.59	0.601	0.766	Aman
22	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1315.59	Aman	0.86	275.59	0.601	0.766	Aman
21	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1342.47	Aman	0.88	275.59	0.601	0.766	Aman
20	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1347.59	Aman	0.88	275.59	0.601	0.766	Aman
19	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1453.75	Aman	0.95	275.59	0.604	0.766	Aman
18	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1463.4	Aman	0.95	275.59	0.603	0.766	Aman
17	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1463.18	Aman	0.95	275.59	0.602	0.766	Aman
16	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1483.53	Aman	0.97	275.59	0.605	0.766	Aman
15	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	1.805	Kompak	Kompak	1096.5	5148.4	1702.8	1532.52	488.692	Aman	0.32	275.59	-0.34	0.766	Aman
14	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.236	Kompak	Kompak	1096.5	6377.1	1702.8	1532.52	963.958	Aman	0.63	275.59	0.605	0.766	Aman
13	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1494.71	Aman	0.98	275.59	0.602	0.766	Aman
12	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1478.54	Aman	0.96	275.59	0.603	0.766	Aman
11	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1491.53	Aman	0.97	275.59	0.603	0.766	Aman
10	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1347.59	Aman	0.88	275.59	0.603	0.766	Aman
9	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1453.75	Aman	0.95	275.59	0.602	0.766	Aman
8	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1463.4	Aman	0.95	275.59	0.605	0.766	Aman
7	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1463.18	Aman	0.95	275.59	-0.34	0.766	Aman
6	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1483.53	Aman	0.97	275.59	0.605	0.766	Aman
5	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	1.805	Kompak	Kompak	1096.5	5148.4	1702.8	1532.52	488.692	Aman	0.32	275.59	0.602	0.766	Aman
4	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.236	Kompak	Kompak	1096.5	6377.1	1702.8	1532.52	963.958	Aman	0.63	275.59	0.603	0.766	Aman
3	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1494.71	Aman	0.98	275.59	0.603	0.766	Aman
2	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1478.54	Aman	0.96	275.59	0.603	0.766	Aman
1	W14X30	1702.8	7	275.59	74.41	1740	0.0169	211.8	Lb>Lr	2.3	Kompak	Kompak	1096.5	6559.4	1702.8	1532.52	1491.53	Aman	0.97	275.59	0.608	0.766	Aman

Balok B4

Lt	Profil	Mp	Lb		Lp	X1	X2	Lr	Keterangan	Cb	Cek Profil		Mr	Mn	Mn pakai	ϕMn	Mu,b	Cek Kapasitas	Rasio	L	Kontrol Δ		
		(K-in)	(m)	in	(in)	Ksi	Ksi	(in)	(bentang)		Sayap	Badan	(K-in)	(K-in)	(K-in)	(K-in)	(K-in)			in	in	max	Cek
30	W12X16	723.6	7	275.59	38.69	1623.5	0.0288	113.55	Lb>Lr	1.397	Kompak	Kompak	446.33	1064.7	723.6	651.24	280.477	Aman	0.43	275.59	0.629	1.148	Aman
29	W16X36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.046	Kompak	Kompak	1465.2	8954.7	2304	2073.6	1343.61	Aman	0.65	275.59	0.636	0.766	Aman
28	W16X36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1634.76	Aman	0.79	275.59	0.631	0.766	Aman
27	W16X36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1672.49	Aman	0.81	275.59	0.631	0.766	Aman
26	W16X36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1735.02	Aman	0.84	275.59	0.631	0.766	Aman
25	W16X36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1790.79	Aman	0.86	275.59	0.631	0.766	Aman
24	W16X36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1841.81	Aman	0.89	275.59	0.631	0.766	Aman
23	W16X36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1886.48	Aman	0.91	275.59	0.631	0.766	Aman
22	W16X36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.2	10068	2304	2073.6	1925.57	Aman	0.93	275.59	0.631	0.766	Aman

21	W16X36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.018	Kompak	Kompak	1465.2	8834.3	2304	2073.6	1959.33	Aman	0.94	275.59	0.545	0.766	Aman
20	W16X36	2304	7	275.59	76.02	1706.7	0.0194	217.76	Lb>Lr	2.019	Kompak	Kompak	1465.2	8836	2304	2073.6	1959.33	Aman	0.94	275.59	0.03	0.766	Aman
19	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	2.012	Kompak	Kompak	1683.5	10947	2628	2365.2	1968.78	Aman	0.83	275.59	0.129	0.766	Aman
18	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	2.194	Kompak	Kompak	1683.5	11937	2628	2365.2	2281.83	Aman	0.96	275.59	0.128	0.766	Aman
17	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	2.203	Kompak	Kompak	1683.5	11986	2628	2365.2	2293.39	Aman	0.97	275.59	0.129	0.766	Aman
16	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	2.197	Kompak	Kompak	1683.5	11950	2628	2365.2	2287.54	Aman	0.97	275.59	0.137	0.766	Aman
15	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	2.3	Kompak	Kompak	1683.5	12511	2628	2365.2	2309.34	Aman	0.98	275.59	0.096	0.766	Aman
14	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	1.189	Kompak	Kompak	1683.5	6467.4	2628	2365.2	907.776	Aman	0.38	275.59	0.085	0.766	Aman
13	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	1.774	Kompak	Kompak	1683.5	9649.4	2628	2365.2	1593.51	Aman	0.67	275.59	0.141	0.766	Aman
12	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	2.214	Kompak	Kompak	1683.5	12041	2628	2365.2	2301.31	Aman	0.97	275.59	0.145	0.766	Aman
11	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	2.205	Kompak	Kompak	1683.5	11993	2628	2365.2	2281.63	Aman	0.96	275.59	0.149	0.766	Aman
10	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	2.019	Kompak	Kompak	1683.5	10980	2628	2365.2	1959.33	Aman	0.83	275.59	0.021	0.766	Aman
9	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	2.012	Kompak	Kompak	1683.5	10947	2628	2365.2	1968.78	Aman	0.83	275.59	0.129	0.766	Aman
8	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	2.194	Kompak	Kompak	1683.5	11937	2628	2365.2	2281.83	Aman	0.96	275.59	0.137	0.766	Aman
7	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	2.203	Kompak	Kompak	1683.5	11986	2628	2365.2	2293.39	Aman	0.97	275.59	0.096	0.766	Aman
6	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	2.197	Kompak	Kompak	1683.5	11950	2628	2365.2	2287.54	Aman	0.97	275.59	0.085	0.766	Aman
5	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	2.3	Kompak	Kompak	1683.5	12511	2628	2365.2	2309.34	Aman	0.98	275.59	0.141	0.766	Aman
4	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	1.189	Kompak	Kompak	1683.5	6467.4	2628	2365.2	907.776	Aman	0.38	275.59	0.145	0.766	Aman
3	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	1.774	Kompak	Kompak	1683.5	9649.4	2628	2365.2	1593.51	Aman	0.67	275.59	0.149	0.766	Aman
2	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	2.214	Kompak	Kompak	1683.5	12041	2628	2365.2	2301.31	Aman	0.97	275.59	0.152	0.766	Aman
1	W16x40	2628	7	275.59	78.25	1891.6	0.0122	229.04	Lb>Lr	2.205	Kompak	Kompak	1683.5	11993	2628	2365.2	2281.63	Aman	0.96	275.59	0.148	0.766	Aman

Tabel Perhitungan Kuat Lentur Balok 30 Lantai Core Brace (CB)

Balok B1

Lt	Profil	Mp	Lb		Lp	X1	X2	Lr	Ket	Cb	Cek Profil		Mr	Mn	Mn pakai	ϕMn	Mu,b	Cek Kapasitas	Rasio	L	Kontrol Δ		
		(K-in)	(m)	in	(in)	Ksi	Ksi	(in)	(bentang)		Sayap	Badan	(K-in)	(K-in)	(K-in)	(K-in)	(K-in)			in	in	max	Cek
30	W14x22	1195.2	7	275.591	51.925	1600.35	0.02634	147.67	Lb>Lr	1.9491	Kompak	Kompak	755.3286	3131.07	1195.2	1075.68	867.399	Aman	0.8064	236.22	0.80667	0.98425	Aman
29	W16x36	2304	7	275.591	76.015	1706.72	0.01945	217.76	Lb>Lr	1.9341	Kompak	Kompak	1465.157	8466.37	2304	2073.6	1320.78	Aman	0.637	236.22	0.56198	0.65617	Aman
28	W16x36	2304	7	275.591	76.015	1706.72	0.01945	217.76	Lb>Lr	2.0702	Kompak	Kompak	1465.157	9062.34	2304	2073.6	1498.38	Aman	0.7226	236.22	0.56465	0.65617	Aman
27	W16x36	2304	7	275.591	76.015	1706.72	0.01945	217.76	Lb>Lr	2.2696	Kompak	Kompak	1465.157	9934.93	2304	2073.6	1627.14	Aman	0.7847	236.22	0.56444	0.65617	Aman
26	W16x36	2304	7	275.591	76.015	1706.72	0.01945	217.76	Lb>Lr	2.2873	Kompak	Kompak	1465.157	10012.5	2304	2073.6	1732.88	Aman	0.8357	236.22	0.56456	0.65617	Aman
25	W16x36	2304	7	275.591	76.015	1706.72	0.01945	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.157	10068.2	2304	2073.6	1828.88	Aman	0.882	236.22	0.56458	0.65617	Aman
24	W16x36	2304	7	275.591	76.015	1706.72	0.01945	217.76	Lb>Lr	2.3	Kompak	Kompak	1465.157	10068.2	2304	2073.6	1914.43	Aman	0.9232	236.22	0.56461	0.65617	Aman
23	W18x40	2822.4	7	275.591	63.615	1809.16	0.01643	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.877	13186.3	2822.4	2540.16	2309.03	Aman	0.909	236.22	0.4147	0.65617	Aman
22	W18x40	2822.4	7	275.591	63.615	1809.16	0.01643	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.877	13186.3	2822.4	2540.16	2402.52	Aman	0.9458	236.22	0.41452	0.65617	Aman
21	W18x40	2822.4	7	275.591	63.615	1809.16	0.01643	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.877	13186.3	2822.4	2540.16	2473.78	Aman	0.9739	236.22	0.41449	0.65617	Aman
20	W18x40	2822.4	7	275.591	63.615	1809.16	0.01643	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.877	13186.3	2822.4	2540.16	2476.92	Aman	0.9751	236.22	0.41439	0.65617	Aman
19	W18x40	2822.4	7	275.591	63.615	1809.16	0.01643	187.37	Lb>Lr	2.3	Kompak	Kompak	1777.877	13186.3	2822.4	2540.16	2459.39	Aman	0.9682	236.22	0.41431	0.65617	Aman
18	W18x46	3265.2	7	275.591	64.55	2064.14	0.0098	198.78	Lb>Lr	2.3	Kompak	Kompak	2045.524	16806.2	3265.2	2938.68	2727.73	Aman	0.9282	236.22	0.35664	0.65617	Aman
17	W18x46	3265.2	7	275.591	64.55	2064.14	0.0098	198.78	Lb>Lr	2.3	Kompak	Kompak	2045.524	16806.2	3265.2	2938.68	2712.06	Aman	0.9229	236.22	0.35643	0.65617	Aman
16	W18x46	3265.2	7	275.591	64.55	2064.14	0.0098	198.78	Lb>Lr	2.3	Kompak	Kompak	2045.524	16806.2	3265.2	2938.68	2505.12	Aman	0.8525	236.22	0.3563	0.65617	Aman
15	W18x46	3265.2	7	275.591	64.55	2064.14	0.0098	198.78	Lb>Lr	2.2472	Kompak	Kompak	2045.524	16420	3265.2	2938.68	1583.22	Aman	0.5388	236.22	0.3599	0.65617	Aman
14	W18x46	3265.2	7	275.591	64.55	2064.14	0.0098	198.78	Lb>Lr	2.3	Kompak	Kompak	2045.524	16806.2	3265.2	2938.68	1609.37	Aman	0.5477	236.22	0.35615	0.65617	Aman
13	W21X55	4536	7	275.591	86.425	1636.14	0.02432	247.48	Lb>Lr	2.3	Kompak	Kompak	2850	26812.4	4536	4082.4	3158.61	Aman	0.7737	236.22	0.22314	0.65617	Aman
12	W21X55	4536	7	275.591	86.425	1636.14	0.02432	247.48	Lb>Lr	2.3	Kompak	Kompak	2850	26812.4	4536	4082.4	3539.7	Aman	0.8671	236.22	0.22311	0.65617	Aman
11	W21X55	4536	7	275.591	86.425	1636.14	0.02432	247.48	Lb>Lr	2.3	Kompak	Kompak	2850	26812.4	4536	4082.4	3631.33	Aman	0.8895	236.22	0.22306	0.65617	Aman
10	W21X55	4536	7	275.591	86.425	1636.14	0.02432	247.48	Lb>Lr	2.3	Kompak	Kompak	2850	26812.4	4536	4082.4	2727.73	Aman	0.6682	236.22	0.22275	0.65617	Aman
9	W21X55	4536	7	275.591	86.425	1636.14	0.02432	247.48	Lb>Lr	2.3	Kompak	Kompak	2850	26812.4	4536	4082.4	2712.06	Aman	0.6643	236.22	0.22261	0.65617	Aman
8	W21X55	4536	7	275.591	86.425	1636.14	0.02432	247.48	Lb>Lr	2.3	Kompak	Kompak	2850	26812.4	4536	4082.4	2505.12	Aman	0.6136	236.22	0.22253	0.65617	Aman
7	W21X55	4536	7	275.591	86.425	1636.14	0.02432	247.48	Lb>Lr	2.2472	Kompak	Kompak	2850	26196.3	4536	4082.4	1583.22	Aman	0.3878	236.22	0.22478	0.65617	Aman
6	W21X55	4536	7	275.591	86.425	1636.14	0.02432	247.48	Lb>Lr	2.257	Kompak	Kompak	2850	26311.4	4536	4082.4	1609.37	Aman	0.3942	236.22	0.22244	0.65617	Aman
5	W21X55	4536	7	275.591	86.425	1636.14	0.02432	247.48	Lb>Lr	2.3	Kompak	Kompak	2850	26812.4	4536	4082.4	3158.61	Aman	0.7737	236.22	0.22314	0.65617	Aman
4	W21X55	4536	7	275.591	86.425	1636.14	0.02432	247.48	Lb>Lr	2.3	Kompak	Kompak	2850	26812.4	4536	4082.4	3539.7	Aman	0.8671	236.22	0.22311	0.65617	Aman
3	W21X55	4536	7	275.591	86.425	1636.14	0.02432	247.48	Lb>Lr	2.3	Kompak	Kompak	2850	26812.4	4536	4082.4	3631.33	Aman	0.8895	236.22	0.22306	0.65617	Aman
2	W21X55	4536	7	275.591	86.425	1636.14	0.02432	247.48	Lb>Lr	2.3	Kompak	Kompak	2850	26812.4	4536	4082.4	3499.4	Aman	0.8572	236.22	0.22299	0.65617	Aman
1	W21X55	4536	7	275.591	86.425	1636.14	0.02432	247.48	Lb>Lr	2.3	Kompak	Kompak	2850	26812.4	4536	4082.4	3330.83	Aman	0.8159	236.22	0.22294	0.65617	Aman

Balok B2

Lt	Profil	Mp	Lb		Lp	X1	X2	Lr	Ket	Cb	Cek Profil		Mr	Mn	Mn pakai	ϕMn	Mu,b	Cek Kapasitas	Rasio	L	Kontrol Δ		
		(K-in)	(m)	In	(in)	Ksi	Ksi	(in)	(bentang)		Sayap	Badan	(K-in)	(K-in)	(K-in)	(K-in)	(K-in)			in	in	max	Cek
30	W18X35	2394	7	275.59	60.94	1585.22	0.02924	175.17	Lb>Lr	2.037	Kompak	Kompak	1498.305	8806.89	2394	2154.6	1980.53	Aman	0.9192	236.22	0.68368	0.98425	Aman
29	W21X55	4536	7	275.59	86.425	1636.14	0.02432	247.48	Lb>Lr	2.0388	Kompak	Kompak	2850	23767.5	4536	4082.4	3551.55	Aman	0.87	236.22	0.54588	0.65617	Aman
28	W21X55	4536	7	275.59	86.425	1636.14	0.02432	247.48	Lb>Lr	2.0393	Kompak	Kompak	2850	23773	4536	4082.4	3560.52	Aman	0.8722	236.22	0.54214	0.65617	Aman
27	W21X55	4536	7	275.59	86.425	1636.14	0.02432	247.48	Lb>Lr	2.042	Kompak	Kompak	2850	23804.7	4536	4082.4	3575.27	Aman	0.8758	236.22	0.54169	0.65617	Aman
26	W21X55	4536	7	275.59	86.425	1636.14	0.02432	247.48	Lb>Lr	2.1312	Kompak	Kompak	2850	24844	4536	4082.4	3569.47	Aman	0.8744	236.22	0.54172	0.65617	Aman
25	W21X55	4536	7	275.59	86.425	1636.14	0.02432	247.48	Lb>Lr	2.106	Kompak	Kompak	2850	24551.1	4536	4082.4	3628.63	Aman	0.8888	236.22	0.54168	0.65617	Aman
24	W21X55	4536	7	275.59	86.425	1636.14	0.02432	247.48	Lb>Lr	2.1121	Kompak	Kompak	2850	24622.1	4536	4082.4	3761.41	Aman	0.9214	236.22	0.54167	0.65617	Aman
23	W21X55	4536	7	275.59	86.425	1636.14	0.02432	247.48	Lb>Lr	2.1192	Kompak	Kompak	2850	24704.6	4536	4082.4	3914.59	Aman	0.9589	236.22	0.54111	0.65617	Aman
22	W21X55	4536	7	275.59	86.425	1636.14	0.02432	247.48	Lb>Lr	2.1233	Kompak	Kompak	2850	24752.6	4536	4082.4	4018.41	Aman	0.9843	236.22	0.54115	0.65617	Aman
21	W21X57	4644	7	275.59	67.68	1961.71	0.01257	206.35	Lb>Lr	2.1265	Kompak	Kompak	2883.413	25003.1	4644	4179.6	4100.94	Aman	0.9812	236.22	0.52735	0.65617	Aman
20	W21X57	4644	7	275.59	67.68	1961.71	0.01257	206.35	Lb>Lr	2.23	Kompak	Kompak	2883.413	26220	4644	4179.6	4097.75	Aman	0.9804	236.22	0.52743	0.65617	Aman
19	W21X57	4644	7	275.59	67.68	1961.71	0.01257	206.35	Lb>Lr	2.2284	Kompak	Kompak	2883.413	26201.1	4644	4179.6	4066.06	Aman	0.9728	236.22	0.52764	0.65617	Aman
18	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.1318	Kompak	Kompak	3422.786	31113.9	5544	4989.6	4324.88	Aman	0.8668	236.22	0.39573	0.65617	Aman
17	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.1317	Kompak	Kompak	3422.786	31113	5544	4989.6	4307.52	Aman	0.8633	236.22	0.39548	0.65617	Aman
16	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.1217	Kompak	Kompak	3422.786	30967.2	5544	4989.6	4033.31	Aman	0.8083	236.22	0.39576	0.65617	Aman
15	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.2527	Kompak	Kompak	3422.786	32878.3	5544	4989.6	3378.1	Aman	0.68	236.22	0.38919	0.65617	Aman
14	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.2231	Kompak	Kompak	3422.786	32447.1	5544	4989.6	3360.06	Aman	0.67	236.22	0.39604	0.65617	Aman
13	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.1366	Kompak	Kompak	3422.786	31184.2	5544	4989.6	4438.93	Aman	0.89	236.22	0.39645	0.65617	Aman
12	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.1475	Kompak	Kompak	3422.786	31344.1	5544	4989.6	4835.24	Aman	0.97	236.22	0.39654	0.65617	Aman
11	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.1499	Kompak	Kompak	3422.786	31378	5544	4989.6	4917.41	Aman	0.9855	236.22	0.3966	0.65617	Aman
10	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.23	Kompak	Kompak	3422.786	32547.8	5544	4989.6	4097.75	Aman	0.8213	236.22	0.39573	0.65617	Aman
9	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.2284	Kompak	Kompak	3422.786	32524.5	5544	4989.6	4066.06	Aman	0.8149	236.22	0.39548	0.65617	Aman
8	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.1318	Kompak	Kompak	3422.786	31113.9	5544	4989.6	4324.88	Aman	0.8668	236.22	0.39576	0.65617	Aman
7	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.1317	Kompak	Kompak	3422.786	31113	5544	4989.6	4307.52	Aman	0.8633	236.22	0.38919	0.65617	Aman
6	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.1217	Kompak	Kompak	3422.786	30967.2	5544	4989.6	4033.31	Aman	0.8083	236.22	0.39604	0.65617	Aman
5	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.2527	Kompak	Kompak	3422.786	32878.3	5544	4989.6	3378.1	Aman	0.68	236.22	0.39645	0.65617	Aman
4	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.2231	Kompak	Kompak	3422.786	32447.1	5544	4989.6	3360.06	Aman	0.67	236.22	0.39654	0.65617	Aman
3	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.1366	Kompak	Kompak	3422.786	31184.2	5544	4989.6	4438.93	Aman	0.89	236.22	0.3966	0.65617	Aman
2	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.1475	Kompak	Kompak	3422.786	31344.1	5544	4989.6	4835.24	Aman	0.97	236.22	0.39668	0.65617	Aman
1	W24X62	5544	7	275.59	68.65	1729.93	0.02235	204.56	Lb>Lr	2.1499	Kompak	Kompak	3422.786	31378	5544	4989.6	4917.41	Aman	0.9855	236.22	0.39683	0.65617	Aman

Balok B3

Lt	Profil	Mp	Lb		Lp	X1	X2	Lr	Ket	Cb	Cek Profil		Mr	Mn	Mn pakai	ϕMn	Mu,b	Cek Kapasitas	Rasio	L	Kontrol Δ		
		(K-in)	(m)	in	(in)	Ksi	Ksi	(in)	(bentang)		Sayap	Badan	(K-in)	(K-in)	(K-in)	(K-in)	(K-in)			in	in	max	Cek
30	W12X19	889.2	7	275.591	41.08	1880.06	0.01501	123.75	Lb>Lr	2.0378	Kompak	Kompak	554.099	2249.83	889.2	800.28	646.719	Aman	0.8081	236.22	0.78534	0.98425	Aman
29	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.0916	Kompak	Kompak	1419.857	9232.15	2214	1992.6	960.547	Aman	0.4821	236.22	0.3818	0.65617	Aman

28	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1152.24	Aman	0.5783	236.22	0.3812	0.65617	Aman
27	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1212.08	Aman	0.6083	236.22	0.51842	0.65617	Aman
26	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1277.38	Aman	0.6411	236.22	0.51854	0.65617	Aman
25	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1336.48	Aman	0.6707	236.22	0.5185	0.65617	Aman
24	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1390.44	Aman	0.6978	236.22	0.51857	0.65617	Aman
23	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1438.08	Aman	0.7217	236.22	0.51831	0.65617	Aman
22	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1483.03	Aman	0.7443	236.22	0.51813	0.65617	Aman
21	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1523.6	Aman	0.7646	236.22	0.51819	0.65617	Aman
20	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1525.89	Aman	0.7658	236.22	0.51817	0.65617	Aman
19	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1631.88	Aman	0.819	236.22	0.5198	0.65617	Aman
18	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1651.15	Aman	0.8286	236.22	0.51945	0.65617	Aman
17	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1656.12	Aman	0.8311	236.22	0.51927	0.65617	Aman
16	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1631.86	Aman	0.819	236.22	0.51946	0.65617	Aman
15	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.1217	Kompak	Kompak	1419.857	9365.28	2214	1992.6	982.033	Aman	0.4928	236.22	0.51884	0.65617	Aman
14	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.1387	Kompak	Kompak	1419.857	9440.36	2214	1992.6	998.858	Aman	0.5013	236.22	0.51942	0.65617	Aman
13	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1684.74	Aman	0.8455	236.22	0.51931	0.65617	Aman
12	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1746.92	Aman	0.8767	236.22	0.51935	0.65617	Aman
11	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1774.72	Aman	0.8907	236.22	0.51935	0.65617	Aman
10	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1525.89	Aman	0.7658	236.22	0.51945	0.65617	Aman
9	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1631.88	Aman	0.819	236.22	0.51927	0.65617	Aman
8	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1651.15	Aman	0.8286	236.22	0.51946	0.65617	Aman
7	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1656.12	Aman	0.8311	236.22	0.51884	0.65617	Aman
6	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1631.86	Aman	0.819	236.22	0.51942	0.65617	Aman
5	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.1217	Kompak	Kompak	1419.857	9365.28	2214	1992.6	982.033	Aman	0.4928	236.22	0.51931	0.65617	Aman
4	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.1387	Kompak	Kompak	1419.857	9440.36	2214	1992.6	998.858	Aman	0.5013	236.22	0.51935	0.65617	Aman
3	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1684.74	Aman	0.8455	236.22	0.51935	0.65617	Aman
2	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1746.92	Aman	0.8767	236.22	0.51936	0.65617	Aman
1	W14X38	2214	7	275.591	77.2	2190.59	0.0067	238.14	Lb>Lr	2.3	Kompak	Kompak	1419.857	10152.2	2214	1992.6	1774.72	Aman	0.8907	236.22	0.52187	0.65617	Aman

Balok B4

Lt	Profil	Mp	Lb		Lp	X1	X2	Lr	Ket	Cb	Cek Profil		Mr	Mn	Mn pakai	ϕMn	Mu,b	Cek Kapasitas	Rasio	L	Kontrol Δ		
		(K-in)	(m)	in	(in)	Ksi	Ksi	(in)	(bentang)		Sayap	Badan	(K-in)	(K-in)	(K-in)	(K-in)	(K-in)			in	in	max	Cek
30	W12x22	1054.8	7	275.591	42.4	2173.67	0.00816	133.62	Lb>Lr	1.688	Kompak	Kompak	659.5134	2547.8	1054.8	949.32	417.096	Aman	0.4394	236.22	0.45654	0.98425	Aman
29	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.1476	Kompak	Kompak	1683.5	11681.9	2628	2365.2	1696.53	Aman	0.7173	236.22	0.64549	0.65617	Aman
28	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.184	Kompak	Kompak	1683.5	11879.9	2628	2365.2	1725.05	Aman	0.7293	236.22	0.64155	0.65617	Aman
27	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.1909	Kompak	Kompak	1683.5	11917.2	2628	2365.2	1732.03	Aman	0.7323	236.22	0.64119	0.65617	Aman
26	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.1903	Kompak	Kompak	1683.5	11914.3	2628	2365.2	1731.98	Aman	0.7323	236.22	0.64129	0.65617	Aman
25	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.209	Kompak	Kompak	1683.5	12016	2628	2365.2	1758.16	Aman	0.7433	236.22	0.64125	0.65617	Aman
24	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.2456	Kompak	Kompak	1683.5	12215.2	2628	2365.2	1811.63	Aman	0.766	236.22	0.64132	0.65617	Aman
23	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.2791	Kompak	Kompak	1683.5	12397	2628	2365.2	1859.72	Aman	0.7863	236.22	0.64099	0.65617	Aman
22	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.3	Kompak	Kompak	1683.5	12510.9	2628	2365.2	1905.82	Aman	0.8058	236.22	0.64074	0.65617	Aman

21	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	1.8078	Kompak	Kompak	1683.5	9833.54	2628	2365.2	1947.84	Aman	0.8235	236.22	0.5562	0.65617	Aman
20	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	1.8089	Kompak	Kompak	1683.5	9839.68	2628	2365.2	1947.84	Aman	0.8235	236.22	0.00592	0.65617	Aman
19	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	1.8004	Kompak	Kompak	1683.5	9793.21	2628	2365.2	1954.32	Aman	0.8263	236.22	0.11034	0.65617	Aman
18	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	1.9247	Kompak	Kompak	1683.5	10469.2	2628	2365.2	2168.89	Aman	0.917	236.22	0.11051	0.65617	Aman
17	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	1.9452	Kompak	Kompak	1683.5	10581.1	2628	2365.2	2202.07	Aman	0.931	236.22	0.11343	0.65617	Aman
16	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	1.9556	Kompak	Kompak	1683.5	10637.7	2628	2365.2	2218.53	Aman	0.938	236.22	0.12627	0.65617	Aman
15	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.3	Kompak	Kompak	1683.5	12510.9	2628	2365.2	2215.43	Aman	0.9367	236.22	0.08673	0.65617	Aman
14	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	1.1337	Kompak	Kompak	1683.5	6166.6	2628	2365.2	1007.17	Aman	0.4258	236.22	0.06751	0.65617	Aman
13	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	1.4826	Kompak	Kompak	1683.5	8064.73	2628	2365.2	1444.59	Aman	0.6108	236.22	0.14074	0.65617	Aman
12	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.0063	Kompak	Kompak	1683.5	10913.6	2628	2365.2	2292.99	Aman	0.9695	236.22	0.14709	0.65617	Aman
11	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.0373	Kompak	Kompak	1683.5	11081.9	2628	2365.2	2347.51	Aman	0.9925	236.22	0.15301	0.65617	Aman
10	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	1.8089	Kompak	Kompak	1683.5	9839.68	2628	2365.2	1947.84	Aman	0.8235	236.22	-0.0054	0.65617	Aman
9	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	1.8004	Kompak	Kompak	1683.5	9793.21	2628	2365.2	1954.32	Aman	0.8263	236.22	0.11343	0.65617	Aman
8	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	1.9247	Kompak	Kompak	1683.5	10469.2	2628	2365.2	2168.89	Aman	0.917	236.22	0.12627	0.65617	Aman
7	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	1.9452	Kompak	Kompak	1683.5	10581.1	2628	2365.2	2202.07	Aman	0.931	236.22	0.08673	0.65617	Aman
6	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	1.9556	Kompak	Kompak	1683.5	10637.7	2628	2365.2	2218.53	Aman	0.938	236.22	0.06751	0.65617	Aman
5	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.3	Kompak	Kompak	1683.5	12510.9	2628	2365.2	2215.43	Aman	0.9367	236.22	0.14074	0.65617	Aman
4	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	1.1337	Kompak	Kompak	1683.5	6166.6	2628	2365.2	1007.17	Aman	0.4258	236.22	0.14709	0.65617	Aman
3	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	1.4826	Kompak	Kompak	1683.5	8064.73	2628	2365.2	1444.59	Aman	0.6108	236.22	0.15301	0.65617	Aman
2	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.0063	Kompak	Kompak	1683.5	10913.6	2628	2365.2	2292.99	Aman	0.9695	236.22	0.15943	0.65617	Aman
1	W16x40	2628	7	275.591	78.25	1891.62	0.01225	229.04	Lb>Lr	2.0373	Kompak	Kompak	1683.5	11081.9	2628	2365.2	2347.51	Aman	0.9925	236.22	0.14971	0.65617	Aman

LAMPIRAN B - 7

Tabel Gaya Geser Rencana Balok Open Frame (OF) 30 Lt

Balok B1

Lantai	Profil	L' (in)	Geser Balok (Kips)			Mpb	Geser Rencana Balok (Kips)		Vu pakai
			VD	VL	VE	(K-in)	Pers (1)	Pers (2)	(Kips)
30	W14x22	258.841	1.32	1.64	1.48	1314.72	12.5625	8.324	8.3240
29	W16x40	256.941	3.15	4.03	3.68	2890.8	28.2967	20.515	20.5150
28	W16x40	256.941	3.15	4.04	4.35	2890.8	28.3017	23.2	23.2000
27	W16x40	256.941	3.15	4.04	5.19	2890.8	28.3017	26.56	26.5600
26	W16x40	256.941	3.15	4.03	6.08	2890.8	28.2967	30.115	28.2967
25	W16x40	256.941	3.14	4.03	6.92	2890.8	28.2847	33.463	28.2847
24	W16x40	256.941	3.14	4.02	7.66	2890.8	28.2797	36.418	28.2797
23	W18x50	256.941	3.24	4.15	10.96	3999.6	37.0954	49.803	37.0954
22	W18x50	256.941	3.23	4.14	11.74	3999.6	37.0784	52.906	37.0784
21	W18x50	256.941	3.22	4.13	12.44	3999.6	37.0614	55.689	37.0614
20	W18x50	256.941	3.21	4.11	12.91	3999.6	37.0394	57.547	37.0394
19	W21x68	256.441	3.25	4.17	15.02	6336	55.3999	66.065	55.3999
18	W21x68	256.441	3.24	4.15	15.36	6336	55.3779	67.403	55.3779
17	W21x68	256.441	3.22	4.13	15.89	6336	55.3439	69.489	55.3439
16	W21x68	256.441	3.2	4.11	16.38	6336	55.3099	71.415	55.3099
15	W21x68	256.441	3.18	4.08	16.69	6336	55.2709	72.616	55.2709
14	W21x68	256.441	3.16	4.05	16.58	6336	55.2319	72.137	55.2319
13	W21x68	255.991	3.26	4.17	21.38	6336	55.4987	91.517	55.4987
12	W21x68	255.991	3.23	4.14	21.04	6336	55.4477	90.106	55.4477
11	W21x68	255.991	3.2	4.11	20.97	6336	55.3967	89.775	55.3967
10	W21x68	255.991	3.17	4.08	16.69	6336	55.3457	72.604	55.3457
9	W21x68	255.041	3.19	4.09	22.77	6336	55.5591	96.953	55.5591
8	W21x68	255.041	3.16	4.05	22.52	6336	55.5031	95.897	55.5031
7	W21x68	255.041	3.11	3.99	22.57	6336	55.4131	96.007	55.4131
6	W21x68	255.041	3.07	3.93	22.59	6336	55.3351	96.009	55.3351
5	W21x68	255.041	3.02	3.87	22.34	6336	55.2451	94.919	55.2451
4	W21x68	255.041	2.97	3.81	21.48	6336	55.1551	91.389	55.1551
3	W21x68	254.341	2.95	3.79	24.65	6336	55.2579	104.035	55.2579
2	W21X68	254.341	2.9	3.71	21.22	6336	55.1579	90.215	55.1579
1	W21X68	254.341	2.83	3.62	14.43	6336	55.0289	62.926	55.0289

Balok B2

Lantai	Profil	L' (in)	Geser Balok (Kips)			Mpb	Geser Rencana Balok (Kips)		Vu pakai
			VD	VL	VE	(K-in)	Pers (1)	Pers (2)	(Kips)
30	W18X35	257.891	3.51	4.36	2.17	2633.4	26.8146	15.072	15.0720
29	W21X55	255.991	8.21	10.52	4.76	4989.6	54.0946	34.152	34.1520
28	W21X55	255.991	8.23	10.55	5.74	4989.6	54.1336	38.111	38.1110
27	W21X55	255.991	8.22	10.54	6.93	4989.6	54.1166	42.854	42.8540
26	W21X55	255.991	8.21	10.53	8.19	4989.6	54.0996	47.877	47.8770
25	W21X55	255.991	8.2	10.51	9.4	4989.6	54.0776	52.695	52.6950
24	W21X55	255.991	8.18	10.49	10.41	4989.6	54.0436	56.701	54.0436
23	W21X62	255.991	8.16	10.46	11.22	5702.4	59.5736	59.902	59.5736
22	W21X62	255.991	8.14	10.43	12.01	5702.4	59.5346	63.023	59.5346
21	W21X62	255.991	8.12	10.4	12.77	5702.4	59.4956	66.024	59.4956
20	W21X62	255.991	8.09	10.37	13.27	5702.4	59.4446	67.973	59.4446
19	W21X68	255.041	8.24	10.57	15.71	6336	64.8591	78.013	64.8591

18	W21X68	255.041	8.22	10.53	16.14	6336	64.8151	79.689	64.8151
17	W21X68	255.041	8.17	10.47	16.72	6336	64.7251	81.919	64.7251
16	W21X68	255.041	8.12	10.41	17.26	6336	64.6351	83.989	64.6351
15	W21X68	255.041	8.07	10.34	17.61	6336	64.5401	85.294	64.5401
14	W21X68	255.041	8.01	10.27	17.5	6336	64.4331	84.747	64.4331
13	W24X76	254.691	8.21	10.53	21.74	7920	77.3100	102.077	77.3100
12	W24X76	254.691	8.15	10.45	21.4	7920	77.1980	100.605	77.1980
11	W24X76	254.691	8.09	10.37	21.36	7920	77.0860	100.333	77.0860
10	W24X76	254.691	8.01	10.27	21.12	7920	76.9400	99.227	76.9400
9	W24X76	253.591	8.08	10.35	23.42	7920	77.3338	108.551	77.3338
8	W24X76	253.591	7.99	10.25	23.22	7920	77.1758	107.593	77.1758
7	W24X76	253.591	7.88	10.1	23.28	7920	76.9688	107.626	76.9688
6	W24X76	253.591	7.77	9.96	23.33	7920	76.7668	107.624	76.7668
5	W24X76	253.591	7.65	9.81	23.11	7920	76.5478	106.525	76.5478
4	W24X76	253.591	7.53	9.65	22.2	7920	76.3238	102.661	76.3238
3	W24X76	253.391	7.43	9.53	22.77	7920	76.1931	104.761	76.1931
2	W24X76	253.391	7.32	9.39	19.52	7920	75.9911	91.559	75.9911
1	W24X76	253.391	7.18	9.21	13.31	7920	75.7331	66.461	66.4610

Balok B3

Lantai	Profil	L' (in)	Geser Balok (Kips)			Mpb	Geser Rencana Balok (Kips)		Vu pakai
			VD	VL	VE	(K-in)	Pers (1)	Pers (2)	(Kips)
30	W12X26	259.391	1.02	1.27	3.36	1473.12	13.2173	15.299	13.2173
29	W12X58	259.391	2.22	2.84	4.96	3421.44	30.4646	23.924	23.9240
28	W12X58	259.391	2.22	2.85	5.95	3421.44	30.4696	27.889	27.8890
27	W12X58	259.391	2.22	2.84	7.13	3421.44	30.4646	32.604	30.4646
26	W12X58	259.391	2.21	2.84	8.34	3421.44	30.4526	37.432	30.4526
25	W12X58	258.891	2.21	2.83	9.54	3421.44	30.4985	42.227	30.4985
24	W12X58	258.891	2.21	2.83	10.64	3421.44	30.4985	46.627	30.4985
23	W12X58	258.891	2.2	2.82	11.62	3421.44	30.4815	50.53	30.4815
22	W12X58	258.891	2.2	2.81	12.48	3421.44	30.4765	53.965	30.4765
21	W12X58	258.891	2.19	2.81	13.12	3421.44	30.4645	56.513	30.4645
20	W12X58	258.891	2.18	2.8	13.26	3421.44	30.4475	57.056	30.4475
19	W14x68	258.891	2.23	2.86	16.21	4554	39.2868	68.946	39.2868
18	W14x68	258.891	2.22	2.85	16.23	4554	39.2698	69.009	39.2698
17	W14x68	258.891	2.21	2.84	16.68	4554	39.2528	70.792	39.2528
16	W14x68	258.891	2.2	2.83	17.22	4554	39.2358	72.935	39.2358
15	W14x68	258.641	2.19	2.81	17.76	4554	39.2478	75.073	39.2478
14	W14x68	258.641	2.18	2.8	18.14	4554	39.2308	76.576	39.2308
13	W14x68	258.641	2.17	2.78	18.27	4554	39.2088	77.074	39.2088
12	W14x68	258.641	2.16	2.77	18.37	4554	39.1918	77.457	39.1918
11	W14x68	258.641	2.14	2.75	18.4	4554	39.1578	77.543	39.1578
10	W14x68	258.641	2.13	2.73	17.93	4554	39.1358	75.641	39.1358
9	W14x68	258.641	2.17	2.78	22.8	4554	39.2088	95.194	39.2088
8	W14x68	258.641	2.15	2.76	22.23	4554	39.1748	92.88	39.1748
7	W14x68	258.641	2.13	2.73	22.09	4554	39.1358	92.281	39.1358
6	W14x68	258.641	2.11	2.7	22.08	4554	39.0968	92.202	39.0968
5	W14x68	258.591	2.09	2.67	21.95	4554	39.0646	91.643	39.0646
4	W14x68	258.591	2.06	2.64	21.42	4554	39.0136	89.472	39.0136
3	W14x68	258.591	2.04	2.61	20.04	4554	38.9746	83.913	38.9746
2	W14x68	258.591	2.01	2.58	17.44	4554	38.9236	73.462	38.9236
1	W14x68	258.591	1.98	2.54	12.03	4554	38.8676	51.766	38.8676

Balok B4

Lantai	Profil	L' (in)	Geser Balok (Kips)			Mpb	Geser Rencana Balok (Kips)		Vu pakai
			VD	VL	VE	(K-in)	Pers (1)	Pers (2)	(Kips)
30	W12X30	259.241	1.97	2.45	3.09	1706.76	16.7564	15.949	15.9490
29	W14X61	259.241	4.39	5.62	5.1	4039.2	39.2397	28.478	28.4780
28	W14X61	259.241	4.39	5.63	6.24	4039.2	39.2447	33.043	33.0430
27	W14X61	259.241	4.39	5.63	7.55	4039.2	39.2447	38.283	38.2830
26	W14X61	259.241	4.39	5.62	8.91	4039.2	39.2397	43.718	39.2397
25	W14X61	258.591	4.38	5.61	10.25	4039.2	39.3011	49.061	39.3011
24	W14X61	258.591	4.37	5.6	11.5	4039.2	39.2841	54.044	39.2841
23	W14X61	258.591	4.36	5.59	12.63	4039.2	39.2671	58.547	39.2671
22	W14X61	258.591	4.35	5.58	13.6	4039.2	39.2501	62.41	39.2501
21	W14X61	258.591	4.34	5.57	14.29	4039.2	39.2331	65.153	39.2331
20	W14X61	258.591	4.33	5.55	14.45	4039.2	39.2111	65.771	39.2111
19	W16x77	258.591	4.53	5.8	21.01	6019.2	54.8898	92.376	54.8898
18	W16x77	258.591	4.51	5.79	21.03	6019.2	54.8608	92.427	54.8608
17	W16x77	258.591	4.49	5.75	21.59	6019.2	54.8168	94.623	54.8168
16	W16x77	258.591	4.46	5.72	22.34	6019.2	54.7658	97.572	54.7658
15	W16x77	258.391	4.44	5.69	23.12	6019.2	54.7629	100.653	54.7629
14	W16x77	258.391	4.41	5.65	23.74	6019.2	54.7069	103.077	54.7069
13	W16x77	258.391	4.38	5.61	24.21	6019.2	54.6509	104.901	54.6509
12	W16x77	258.391	4.35	5.58	24.54	6019.2	54.5999	106.17	54.5999
11	W16x77	258.391	4.32	5.54	24.59	6019.2	54.5439	106.314	54.5439
10	W16x77	258.391	4.29	5.5	23.96	6019.2	54.4879	103.738	54.4879
9	W16x77	258.391	4.36	5.6	29.61	6019.2	54.6219	126.472	54.6219
8	W16x77	258.391	4.33	5.54	28.73	6019.2	54.5559	122.886	54.5559
7	W16x77	258.391	4.28	5.48	28.59	6019.2	54.4659	122.236	54.4659
6	W16x77	258.391	4.23	5.42	28.62	6019.2	54.3759	122.266	54.3759
5	W16x77	258.141	4.17	5.35	28.53	6019.2	54.3140	121.799	54.3140
4	W16x77	258.141	4.12	5.28	27.97	6019.2	54.2190	119.464	54.2190
3	W16x77	258.141	4.06	5.21	26.41	6019.2	54.1120	113.117	54.1120
2	W16x77	258.141	4.01	5.15	23.18	6019.2	54.0220	100.107	54.0220
1	W16x77	258.141	3.95	5.06	15.97	6019.2	53.9050	71.15	53.905

LAMPIRAN B - 8

Tabel Gaya Geser Rencana Balok Frame Truss (FT) 30 Lt

Balok B1

Lantai	Profil	L' (in)	Geser Balok (Kips)			Mpb	Geser Rencana Balok (Kips)		Vu pakai
			VD	VL	VE	(K-in)	Pers (1)	Pers (2)	(Kips)
30	W14x22	259.541	1.26	1.56	0.64	1314.72	12.4231	4.852	4.852
29	W16x36	258.691	2.9	3.72	0.89	2534.4	24.9340	8.9	8.9
28	W16x36	257.691	2.98	3.83	2.55	2534.4	25.1611	15.691	15.691
27	W16x36	257.691	2.99	3.83	2.85	2534.4	25.1731	16.903	16.903
26	W16x36	257.691	2.99	3.83	3.12	2534.4	25.1731	17.983	17.983
25	W16x36	257.691	2.99	3.83	3.38	2534.4	25.1731	19.023	19.023
24	W16x36	257.691	2.99	3.83	3.63	2534.4	25.1731	20.023	20.023
23	W16x36	257.291	3.05	3.91	4.94	2534.4	25.3157	25.375	25.31565
22	W16x36	257.291	3.05	3.91	5.21	2534.4	25.3157	26.455	25.31565
21	W16x36	257.291	3.04	3.9	5.42	2534.4	25.2987	27.278	25.29865
20	W16x36	257.291	3.04	3.89	5.47	2534.4	25.2937	27.473	25.29365
19	W16x36	257.291	3.03	3.88	5.47	2534.4	25.2767	27.456	25.27665
18	W16x36	256.941	3.06	3.93	6.43	2534.4	25.3645	31.357	25.36449
17	W16x36	256.941	3.05	3.91	6.49	2534.4	25.3425	31.575	25.34249
16	W16x36	256.941	3.04	3.9	6.37	2534.4	25.3255	31.078	25.32549
15	W16x36	256.941	3.03	3.88	2.98	2534.4	25.3035	17.496	17.496
14	W16x36	256.941	3.01	3.86	3.08	2534.4	25.2695	17.862	17.862
13	W18X40	256.941	3.07	3.94	8.56	3104.64	29.8202	39.894	29.82017
12	W18X40	256.941	3.06	3.92	8.9	3104.64	29.7982	41.232	29.79817
11	W18X40	256.941	3.04	3.89	8.98	3104.64	29.7592	41.513	29.75917
10	W18X40	256.941	3.01	3.88	2.98	3104.64	29.7182	17.472	17.472
9	W18X40	256.941	2.98	3.82	8.08	3104.64	29.6522	37.806	29.65217
8	W18X40	256.441	2.98	3.82	8.75	3104.64	29.6993	40.486	29.69929
7	W18X40	256.441	2.96	3.79	8.51	3104.64	29.6603	39.487	29.66029
6	W18X40	256.441	2.93	3.75	8.16	3104.64	29.6043	38.031	29.60429
5	W18X40	256.441	2.9	3.71	7.7	3104.64	29.5483	36.135	29.54829
4	W18X40	256.441	2.87	3.67	7.14	3104.64	29.4923	33.839	29.49229
3	W18X40	255.991	2.85	3.65	7.69	3104.64	29.5009	36.005	29.50085
2	W18X40	255.991	2.82	3.61	6.89	3104.64	29.4449	32.749	29.44485
1	W18X40	255.991	2.77	3.55	5.72	3104.64	29.354853	27.979	27.979

Balok B2

Lantai	Profil	L' (in)	Geser Balok (Kips)			Mpb	Geser Rencana Balok (Kips)		Vu pakai
			VD	VL	VE	(K-in)	Pers (1)	Pers (2)	(Kips)
30	W14X22	258.691	0.91	1.14	2.56	1314.72	11.826405	11.902	11.8264
29	W14X22	257.691	2.4	3.08	1.96	1314.72	14.623849	12.26	12.26
28	W14X22	256.941	2.32	2.97	2.74	1314.72	14.502633	15.229	14.50263
27	W14X22	256.941	2.24	2.88	2.97	1314.72	14.361633	16.008	14.36163
26	W14X22	256.941	2.17	2.78	3.1	1314.72	14.227633	16.394	14.22763
25	W14X22	256.941	2.09	2.68	3.19	1314.72	14.081633	16.608	14.08163
24	W14X22	256.941	2.02	2.59	3.23	1314.72	13.952633	16.639	13.95263
23	W14X22	256.941	1.97	2.53	3.23	1314.72	13.862633	16.549	13.86263
22	W14X22	256.941	1.9	2.44	3.66	1314.72	13.733633	18.14	13.73363
21	W14X22	256.941	1.83	2.35	4.2	1314.72	13.604633	20.171	13.60463
20	W14X22	256.941	1.66	2.13	4.62	1314.72	13.290633	21.537	13.29063
19	W14X22	256.941	1.59	2.05	4.95	1314.72	13.166633	22.733	13.16663
18	W14X22	256.291	1.63	2.09	5.9	1314.72	13.260588	26.601	13.26059
17	W14X22	256.291	1.57	2.01	6.47	1314.72	13.148588	28.769	13.14859
16	W14X22	256.291	1.49	1.91	7.08	1314.72	13.002588	31.063	13.00259
15	W14X22	256.291	1.41	1.81	3.4	1314.72	12.856588	16.197	12.85659

14	W14X22	256.291	1.43	1.84	0.5	1314.72	12.895588	4.636	4.636
13	W16X26	256.291	1.35	1.73	6.43	1750.32	16.143849	28.205	16.14385
12	W16X26	256.291	1.25	1.6	7.41	1750.32	15.958849	31.94	15.95885
11	W16X26	256.291	1.15	1.48	8.16	1750.32	15.778849	34.76	15.77885
10	W16X26	256.291	0.86	1.1	8.56	1750.32	15.240849	35.822	15.24085
9	W16X26	256.291	0.75	0.97	8.79	1750.32	15.043849	36.545	15.04385
8	W16X26	255.341	0.78	1	9.92	1750.32	15.145667	41.116	15.14567
7	W16X26	255.341	0.7	0.9	10.55	1750.32	14.999667	43.49	14.99967
6	W16X26	255.341	0.62	0.8	11.2	1750.32	14.853667	45.944	14.85367
5	W16X26	255.341	0.54	0.69	11.83	1750.32	14.702667	48.313	14.70267
4	W16X26	255.341	0.46	0.59	12.44	1750.32	14.556667	50.607	14.55667
3	W16X26	254.691	0.45	0.58	13.71	1750.32	14.574655	55.67	14.57466
2	W16X26	254.691	0.35	0.45	14.39	1750.32	14.389655	58.205	14.38966
1	W16X26	254.691	0.35	0.45	14.86	1750.32	14.389655	60.085	14.38966

Balok B3

Lantai	Profil	L' (in)	Geser Balok (Kips)			Mpb	Geser Rencana Balok (Kips)		Vu pakai
			VD	VL	VE	(K-in)	Pers (1)	Pers (2)	(Kips)
30	W12X16	259.641	0.56	0.71	0.49	795.96	7.1582351	2.987	2.987
29	W14X30	259.641	2.15	2.76	1.71	1873.08	18.38823	10.8	10.8
28	W14X30	259.641	2.17	2.78	3.54	1873.08	18.42223	18.154	18.154
27	W14X30	259.641	2.18	2.79	3.71	1873.08	18.43923	18.851	18.43923
26	W14X30	259.641	2.18	2.79	4	1873.08	18.43923	20.011	18.43923
25	W14X30	259.091	2.18	2.8	4.25	1873.08	18.474858	21.016	18.47486
24	W14X30	259.091	2.18	2.8	4.47	1873.08	18.474858	21.896	18.47486
23	W14X30	259.091	2.19	2.8	4.67	1873.08	18.486858	22.708	18.48686
22	W14X30	259.091	2.18	2.8	4.84	1873.08	18.474858	23.376	18.47486
21	W14X30	259.091	2.18	2.79	4.99	1873.08	18.469858	23.971	18.46986
20	W14X30	259.041	2.17	2.79	5	1873.08	18.460649	23.999	18.46065
19	W14X30	259.041	2.2	2.82	5.71	1873.08	18.511649	26.89	18.51165
18	W14X30	259.041	2.19	2.81	5.74	1873.08	18.494649	26.993	18.49465
17	W14X30	259.041	2.18	2.8	5.7	1873.08	18.477649	26.816	18.47765
16	W14X30	259.041	2.17	2.78	5.81	1873.08	18.455649	27.234	18.45565
15	W14X30	258.891	0.92	1.18	4.23	1873.08	16.164028	18.614	16.16403
14	W14X30	258.891	2.14	2.75	2.6	1873.08	18.413028	14.343	14.343
13	W14X30	258.891	2.14	2.74	5.75	1873.08	18.408028	26.938	18.40803
12	W14X30	258.891	2.13	2.73	5.61	1873.08	18.391028	26.361	18.39103
11	W14X30	258.891	2.12	2.72	5.65	1873.08	18.374028	26.504	18.37403
10	W14X30	258.891	2.11	2.7	5.4	1873.08	18.352028	25.482	18.35203
9	W14X30	258.891	2.15	2.76	7.02	1873.08	18.430028	32.04	18.43003
8	W14X30	258.891	2.13	2.73	6.81	1873.08	18.391028	31.161	18.39103
7	W14X30	258.891	2.11	2.71	6.51	1873.08	18.357028	29.927	18.35703
6	W14X30	258.891	2.1	2.69	6.13	1873.08	18.335028	28.385	18.33503
5	W14X30	258.891	2.08	2.66	5.67	1873.08	18.296028	26.506	18.29603
4	W14X30	258.891	2.05	2.63	5.11	1873.08	18.245028	24.215	18.24503
3	W14X30	258.891	2.03	2.6	4.48	1873.08	18.206028	21.656	18.20603
2	W14X30	258.891	2.01	2.58	3.8	1873.08	18.172028	18.902	18.17203
1	W14X30	258.891	1.99	2.55	3.15	1873.08	18.133028	16.263	16.263

Balok B4

Lantai	Profil	L' (in)	Geser Balok (Kips)			Mpb	Geser Rencana Balok (Kips)		Vu pakai
			VD	VL	VE	(K-in)	Pers (1)	Pers (2)	(Kips)
30	W12X16	259.491	0.85	1.06	0.45	795.96	7.6847792	3.35	3.35
29	W16X36	259.491	4.11	5.27	2.45	2534.4	27.100625	17.367	17.367
28	W16X36	259.491	4.13	5.29	4.66	2534.4	27.134625	26.241	26.241
27	W16X36	259.491	4.14	5.3	4.9	2534.4	27.151625	27.218	27.15163

26	W16X36	259.491	4.14	5.31	5.29	2534.4	27.156625	28.783	27.15663
25	W16X36	258.891	4.14	5.31	5.63	2534.4	27.201896	30.143	27.2019
24	W16X36	258.891	4.14	5.31	5.93	2534.4	27.201896	31.343	27.2019
23	W16X36	258.891	4.14	5.31	6.2	2534.4	27.201896	32.423	27.2019
22	W16X36	258.891	4.14	5.31	6.43	2534.4	27.201896	33.343	27.2019
21	W16X36	258.891	4.14	5.3	6.62	2534.4	27.196896	34.098	27.1969
20	W16X36	258.841	4.13	5.3	6.66	2534.4	27.188678	34.246	27.18868
19	W16x40	258.841	4.19	5.37	8.72	2890.8	30.049492	42.593	30.04949
18	W16x40	258.841	4.18	5.36	8.77	2890.8	30.032492	42.776	30.03249
17	W16x40	258.841	4.17	5.35	8.69	2890.8	30.015492	42.439	30.01549
16	W16x40	258.841	4.16	5.33	8.83	2890.8	29.993492	42.977	29.99349
15	W16x40	258.691	1.61	2.06	6.97	2890.8	25.311444	30.842	25.31144
14	W16x40	258.691	4.13	5.3	4.44	2890.8	29.955444	25.366	25.366
13	W16x40	258.691	4.13	5.29	8.65	2890.8	29.950444	42.201	29.95044
12	W16x40	258.691	4.12	5.28	8.47	2890.8	29.933444	41.464	29.93344
11	W16x40	258.691	4.1	5.26	8.53	2890.8	29.899444	41.67	29.89944
10	W16x40	258.691	4.09	5.24	8.21	2890.8	29.877444	40.368	29.87744
9	W16x40	258.691	4.14	5.31	11.27	2890.8	29.972444	52.703	29.97244
8	W16x40	258.691	4.11	5.27	10.95	2890.8	29.916444	51.367	29.91644
7	W16x40	258.691	4.1	5.25	10.47	2890.8	29.894444	49.425	29.89444
6	W16x40	258.691	4.08	5.23	9.81	2890.8	29.860444	46.751	29.86044
5	W16x40	258.691	4.06	5.2	8.99	2890.8	29.821444	43.432	29.82144
4	W16x40	258.691	4.03	5.17	8.02	2890.8	29.770444	39.501	29.77044
3	W16x40	258.691	4	5.13	6.92	2890.8	29.714444	35.045	29.71444
2	W16x40	258.691	3.98	5.1	5.75	2890.8	29.675444	30.326	29.67544
1	W16x40	258.691	3.95	5.06	4.6	2890.8	29.619444	25.67	25.67

Tabel Gaya Geser Rencana Balok Core Brace (CB) 30 Lt

Balok B1

Lantai	Profil	L' (in)	Geser Balok (Kips)			Mpb	Geser Rencana Balok (Kips)		Vu pakai
			VD	VL	VE	(K-in)	Pers (1)	Pers (2)	(Kips)
30	W14x22	259.541	1.26	1.56	0.33	1314.72	12.42311609	3.612	3.612
29	W16x36	258.691	2.91	3.73	0.5	2534.4	24.95103304	7.357	7.357
28	W16x36	257.691	2.99	3.83	2.14	2534.4	25.17306997	14.063	14.063
27	W16x36	257.691	2.99	3.84	2.88	2534.4	25.17806997	17.028	17.028
26	W16x36	257.691	2.99	3.84	3.51	2534.4	25.17806997	19.548	19.548
25	W16x36	257.691	2.99	3.84	4.09	2534.4	25.17806997	21.868	21.868
24	W16x36	257.691	2.99	3.84	4.6	2534.4	25.17806997	23.908	23.908
23	W18x40	257.291	3.06	3.92	6.68	3104.64	29.76529654	32.352	29.7653
22	W18x40	257.291	3.05	3.92	7.25	3104.64	29.75329654	34.62	29.7533
21	W18x40	257.291	3.05	3.91	7.7	3104.64	29.74829654	36.415	29.7483
20	W18x40	257.291	3.04	3.9	7.75	3104.64	29.73129654	36.598	29.7313
19	W18x40	257.291	3.03	3.89	7.69	3104.64	29.71429654	36.341	29.7143
18	W18x46	256.941	3.06	3.93	9.16	3591.72	33.59454667	42.277	33.5945
17	W18x46	256.941	3.05	3.92	9.11	3591.72	33.57754667	42.06	33.5775
16	W18x46	256.941	3.04	3.9	7.94	3591.72	33.55554667	37.358	33.5555
15	W18x46	256.941	3.05	3.91	2.47	3591.72	33.57254667	15.495	15.495
14	W18x46	256.941	3.02	3.87	2.72	3591.72	33.51654667	16.439	16.439
13	W21X55	256.941	3.08	3.95	11.62	4989.6	44.50948821	52.151	44.5095
12	W21X55	256.941	3.06	3.93	13.97	4989.6	44.47548821	61.517	44.4755
11	W21X55	256.941	3.05	3.9	14.61	4989.6	44.44848821	64.05	44.4485
10	W21X55	256.941	3.02	3.91	2.47	4989.6	44.41748821	15.459	15.459
9	W21X55	256.941	3	3.85	13 02	4989.6	44.36348821	57.605	44.3635
8	W21X55	256.441	3	3.84	14.34	4989.6	44.43421419	62.88	44.4342
7	W21X55	256.441	2.98	3.81	14.48	4989.6	44.39521419	63.401	44.3952
6	W21X55	256.441	2.95	3.78	14.73	4989.6	44.34421419	64.35	44.3442
5	W21X55	256.441	2.92	3.74	14.92	4989.6	44.28821419	65.054	44.2882
4	W21X55	256.441	2.89	3.7	14.97	4989.6	44.23221419	65.198	44.2322
3	W21X55	255.991	2.87	3.68	17.51	4989.6	44.26662048	75.324	44.2666
2	W21X55	255.991	2.84	3.64	16.69	4989.6	44.21062048	71.988	44.2106
1	W21X55	255.991	2.8	3.58	13.35	4989.6	44.13262048	58.55	44.1326

Balok B2

Lantai	Profil	L' (in)	Geser Balok (Kips)			Mpb	Geser Rencana Balok (Kips)		Vu pakai
			VD	VL	VE	(K-in)	Pers (1)	Pers (2)	(Kips)
30	W18X35	258.691	3.44	4.27	1.61	2633.4	26.62242495	12.703	12.703
29	W21X55	257.691	8.11	10.4	1.15	4989.6	53.65745025	19.532	19.532
28	W21X55	256.941	8.14	10.44	1.89	4989.6	53.82648821	22.548	22.548
27	W21X55	256.941	8.15	10.45	3.15	4989.6	53.84348821	27.605	27.605
26	W21X55	256.941	8.15	10.45	4.2	4989.6	53.84348821	31.805	31.805
25	W21X55	256.941	8.14	10.44	5.17	4989.6	53.82648821	35.668	35.668
24	W21X55	256.941	8.13	10.43	6.02	4989.6	53.80948821	39.051	39.051
23	W21X55	256.941	8.14	10.43	6.91	4989.6	53.82148821	42.623	42.623
22	W21X55	256.941	8.12	10.41	7.61	4989.6	53.78748821	45.389	45.389
21	W21X57	256.941	8.1	10.38	8.2	5108.4	54.67321412	47.71	47.71
20	W21X57	256.941	8.07	10.35	8.3	5108.4	54.62221412	48.059	48.059
19	W21X57	256.941	8.04	10.31	8.24	5108.4	54.56621412	47.763	47.763
18	W24X62	256.291	8.14	10.43	9.45	6098.4	62.57265395	52.783	52.783

17	W24X62	256.291	8.11	10.39	9.46	6098.4	62.51665395	52.767	52.767
16	W24X62	256.291	8.06	10.33	8.02	6098.4	62.42665395	46.917	46.917
15	W24X62	256.291	7.92	10.15	1.66	6098.4	62.16865395	21.219	21.219
14	W24X62	256.291	7.95	10.19	1.99	6098.4	62.22465395	22.595	22.595
13	W24X62	256.291	8.03	10.29	10.55	6098.4	62.37065395	56.981	56.981
12	W24X62	256.291	7.97	10.21	13.2	6098.4	62.25865395	67.469	62.2587
11	W24X62	256.291	7.9	10.12	13.99	6098.4	62.12965395	70.5	62.1297
10	W24X62	256.291	7.82	10.03	13.42	6098.4	61.98865395	68.079	61.9887
9	W24X62	256.291	7.74	9.92	12.63	6098.4	61.83765395	64.768	61.8377
8	W24X62	255.341	7.73	9.91	14.19	6098.4	61.99771197	70.991	61.9977
7	W24X62	255.341	7.67	9.84	14.56	6098.4	61.89071197	72.364	61.8907
6	W24X62	255.341	7.6	9.74	14.92	6098.4	61.75671197	73.67	61.7567
5	W24X62	255.341	7.52	9.64	15.25	6098.4	61.61071197	74.844	61.6107
4	W24X62	255.341	7.43	9.53	15.41	6098.4	61.44771197	75.321	61.4477
3	W24X62	254.691	7.38	9.46	17.31	6098.4	61.47461797	82.826	61.4746
2	W24X62	254.691	7.29	9.35	16.64	6098.4	61.31161797	79.983	61.3116
1	W24X62	254.691	7.16	9.18	13.36	6098.4	61.07061797	66.622	61.0706

Balok B3

Lantai	Profil	L' (in)	Geser Balok (Kips)			Mpb	Geser Rencana Balok (Kips)		Vu pakai
			VD	VL	VE	(K-in)	Pers (1)	Pers (2)	(Kips)
30	W12X19	259.641	0.88	1.09	0.14	978.12	9.135403272	2.161	2.161
29	W14X38	259.641	2.06	2.64	1.18	2435.4	22.55174904	8.512	8.512
28	W14X38	259.641	2.07	2.66	2.9	2435.4	22.57374904	15.414	15.414
27	W14X38	259.641	2.08	2.66	3.28	2435.4	22.58574904	16.946	16.946
26	W14X38	259.641	2.08	2.66	3.67	2435.4	22.58574904	18.506	18.506
25	W14X38	259.091	2.08	2.66	4.03	2435.4	22.62557235	19.946	19.946
24	W14X38	259.091	2.08	2.66	4.35	2435.4	22.62557235	21.226	21.226
23	W14X38	259.091	2.08	2.66	4.64	2435.4	22.62557235	22.386	22.386
22	W14X38	259.091	2.08	2.66	4.9	2435.4	22.62557235	23.426	22.6256
21	W14X38	259.091	2.07	2.66	5.13	2435.4	22.61357235	24.334	22.6136
20	W14X38	259.041	2.07	2.65	5.12	2435.4	22.61220104	24.289	22.6122
19	W14X38	259.041	2.08	2.67	5.79	2435.4	22.63420104	26.991	22.6342
18	W14X38	259.041	2.08	2.66	5.89	2435.4	22.62920104	27.386	22.6292
17	W14X38	259.041	2.07	2.65	5.89	2435.4	22.61220104	27.369	22.6122
16	W14X38	259.041	2.06	2.65	5.72	2435.4	22.60020104	26.677	22.6002
15	W14X38	258.891	2.05	2.63	1.8	2435.4	22.58909551	10.975	10.975
14	W14X38	258.891	2.05	2.62	1.87	2435.4	22.58409551	11.25	11.25
13	W14X38	258.891	2.05	2.63	5.97	2435.4	22.58909551	27.655	22.5891
12	W14X38	258.891	2.04	2.62	6.31	2435.4	22.57209551	28.998	22.5721
11	W14X38	258.891	2.04	2.62	6.46	2435.4	22.57209551	29.598	22.5721
10	W14X38	258.891	2.03	2.61	6.11	2435.4	22.55509551	28.181	22.5551
9	W14X38	258.891	2.05	2.63	7.79	2435.4	22.58909551	34.935	22.5891
8	W14X38	258.891	2.04	2.62	7.67	2435.4	22.57209551	34.438	22.5721
7	W14X38	258.891	2.04	2.61	7.58	2435.4	22.56709551	34.073	22.5671
6	W14X38	258.891	2.03	2.6	7.5	2435.4	22.55009551	33.736	22.5501
5	W14X38	258.891	2.01	2.58	7.37	2435.4	22.51609551	33.132	22.5161
4	W14X38	258.891	2	2.57	7.16	2435.4	22.49909551	32.325	22.4991
3	W14X38	258.891	1.99	2.55	6.84	2435.4	22.47709551	31.023	22.4771
2	W14X38	258.891	1.98	2.54	6.4	2435.4	22.46009551	29.246	22.4601
1	W14X38	258.891	1.97	2.52	5.54	2435.4	22.43809551	25.784	22.4381

Balok B4

Lantai	Profil	L' (in)	Geser Balok (Kips)			Mpb	Geser Rencana Balok (Kips)		Vu pakai
			VD	VL	VE	(K-in)	Pers (1)	Pers (2)	(Kips)
30	W12x22	259.491	0.96	1.2	0.14	1160.28	10.6947379	2.312	2.312
29	W16x40	259.491	4.22	5.42	1.88	2890.8	30.05454152	15.294	15.294
28	W16x40	259.491	4.25	5.45	3.75	2890.8	30.10554152	22.825	22.825
27	W16x40	259.491	4.26	5.46	4.12	2890.8	30.12254152	24.322	24.322
26	W16x40	259.491	4.26	5.46	4.49	2890.8	30.12254152	25.802	25.802
25	W16x40	258.891	4.26	5.46	4.83	2890.8	30.17417841	27.162	27.162
24	W16x40	258.891	4.26	5.46	5.14	2890.8	30.17417841	28.402	28.402
23	W16x40	258.891	4.26	5.46	5.42	2890.8	30.17417841	29.522	29.522
22	W16x40	258.891	4.25	5.45	5.67	2890.8	30.15717841	30.505	30.1572
21	W16x40	258.891	4.24	5.44	5.88	2890.8	30.14017841	31.328	30.1402
20	W16x40	258.841	4.23	5.43	5.88	2890.8	30.12749229	31.311	30.1275
19	W16x40	258.841	4.31	5.53	7.53	2890.8	30.27349229	38.057	30.2735
18	W16x40	258.841	4.3	5.51	7.67	2890.8	30.25149229	38.595	30.2515
17	W16x40	258.841	4.29	5.49	7.7	2890.8	30.22949229	38.693	30.2295
16	W16x40	258.841	4.25	5.45	7.55	2890.8	30.16149229	38.025	30.1615
15	W16x40	258.691	1.74	2.23	3.28	2890.8	25.55244393	16.323	16.323
14	W16x40	258.691	4.2	5.39	2.72	2890.8	30.08444393	18.615	18.615
13	W16x40	258.691	4.2	5.39	7.77	2890.8	30.08444393	38.815	30.0844
12	W16x40	258.691	4.18	5.36	8.01	2890.8	30.04544393	39.736	30.0454
11	W16x40	258.691	4.16	5.34	8.09	2890.8	30.01144393	40.022	30.0114
10	W16x40	258.691	4.14	5.31	7.64	2890.8	29.97244393	38.183	29.9724
9	W16x40	258.691	4.2	5.39	10.07	2890.8	30.08444393	48.015	30.0844
8	W16x40	258.691	4.17	5.35	9.98	2890.8	30.02844393	47.599	30.0284
7	W16x40	258.691	4.15	5.32	9.84	2890.8	29.98944393	47	29.9894
6	W16x40	258.691	4.12	5.28	9.62	2890.8	29.93344393	46.064	29.9334
5	W16x40	258.691	4.08	5.23	9.35	2890.8	29.86044393	44.911	29.8604
4	W16x40	258.691	4.05	5.19	8.97	2890.8	29.80444393	43.335	29.8044
3	W16x40	258.691	4.01	5.14	8.52	2890.8	29.73144393	41.462	29.7314
2	W16x40	258.691	3.98	5.1	7.95	2890.8	29.67544393	39.126	29.6754
1	W16x40	258.691	3.93	5.04	6.99	2890.8	29.58544393	35.196	29.5854

Tabel Gaya Geser Rencana Balok Open Frame (OF) 30 Lt

B1

Lantai	Profil	Vu Rencana	h	tw	h/tw	Vn	ΦVn	Cek Geser	Rasio
		(Kips)	(in)	(in)		(Kips)	(Kips)		
30	W14x22	8.3240	13.015	0.23	53.3	64.65852	58.1927	Aman	0.143
29	W16x40	20.5150	15.2	0.305	46.6	100.1376	90.1238	Aman	0.228
28	W16x40	23.2000	15.2	0.305	46.6	100.1376	90.1238	Aman	0.257
27	W16x40	26.5600	15.2	0.305	46.6	100.1376	90.1238	Aman	0.295
26	W16x40	28.2967	15.2	0.305	46.6	100.1376	90.1238	Aman	0.314
25	W16x40	28.2847	15.2	0.305	46.6	100.1376	90.1238	Aman	0.314
24	W16x40	28.2797	15.2	0.305	46.6	100.1376	90.1238	Aman	0.314
23	W18x50	37.0954	17.1	0.355	45.2	131.1228	118.011	Aman	0.314
22	W18x50	37.0784	17.1	0.355	45.2	131.1228	118.011	Aman	0.314
21	W18x50	37.0614	17.1	0.355	45.2	131.1228	118.011	Aman	0.314
20	W18x50	37.0394	17.1	0.355	45.2	131.1228	118.011	Aman	0.314
19	W21x68	55.3999	20.045	0.43	43.6	186.178	167.56	Aman	0.331
18	W21x68	55.3779	20.045	0.43	43.6	186.178	167.56	Aman	0.330
17	W21x68	55.3439	20.045	0.43	43.6	186.178	167.56	Aman	0.330
16	W21x68	55.3099	20.045	0.43	43.6	186.178	167.56	Aman	0.330
15	W21x68	55.2709	20.045	0.43	43.6	186.178	167.56	Aman	0.330
14	W21x68	55.2319	20.045	0.43	43.6	186.178	167.56	Aman	0.330
13	W21x68	55.4987	20.045	0.43	43.6	186.178	167.56	Aman	0.331
12	W21x68	55.4477	20.045	0.43	43.6	186.178	167.56	Aman	0.331
11	W21x68	55.3967	20.045	0.43	43.6	186.178	167.56	Aman	0.331
10	W21x68	55.3457	20.045	0.43	43.6	186.178	167.56	Aman	0.330
9	W21x68	55.5591	20.045	0.43	43.6	186.178	167.56	Aman	0.332
8	W21x68	55.5031	20.045	0.43	43.6	186.178	167.56	Aman	0.331
7	W21x68	55.4131	20.045	0.43	43.6	186.178	167.56	Aman	0.331
6	W21x68	55.3351	20.045	0.43	43.6	186.178	167.56	Aman	0.330
5	W21x68	55.2451	20.045	0.43	43.6	186.178	167.56	Aman	0.330
4	W21x68	55.1551	20.045	0.43	43.6	186.178	167.56	Aman	0.329
3	W21x68	55.2579	20.045	0.43	43.6	186.178	167.56	Aman	0.330
2	W21X68	55.1579	20.045	0.43	43.6	186.178	167.56	Aman	0.329
1	W21X68	55.0289	20.045	0.43	43.6	186.178	167.56	Aman	0.328

B2

Lantai	Profil	Vu Rencana	h	tw	h/tw	Vn	ΦVn	Cek Geser	Rasio
		(Kips)	(in)	(in)		(Kips)	(Kips)		
30	W18X35	15.0720	16.815	0.3	56.05	108.9612	98.0651	Aman	0.154
29	W21X55	34.1520	19.76	0.375	52.693	160.056	144.05	Aman	0.237
28	W21X55	38.1110	19.76	0.375	52.693	160.056	144.05	Aman	0.265
27	W21X55	42.8540	19.76	0.375	52.693	160.056	144.05	Aman	0.297
26	W21X55	47.8770	19.76	0.375	52.693	160.056	144.05	Aman	0.332
25	W21X55	52.6950	19.76	0.375	52.693	160.056	144.05	Aman	0.366
24	W21X55	54.0436	19.76	0.375	52.693	160.056	144.05	Aman	0.375
23	W21X62	59.5736	19.95	0.4	49.875	172.368	155.131	Aman	0.384
22	W21X62	59.5346	19.95	0.4	49.875	172.368	155.131	Aman	0.384
21	W21X62	59.4956	19.95	0.4	49.875	172.368	155.131	Aman	0.384
20	W21X62	59.4446	19.95	0.4	49.875	172.368	155.131	Aman	0.383
19	W21X68	64.8591	20.045	0.43	46.616	186.178	167.56	Aman	0.387

18	W21X68	64.8151	20.045	0.43	46.616	186.178	167.56	Aman	0.387
17	W21X68	64.7251	20.045	0.43	46.616	186.178	167.56	Aman	0.386
16	W21X68	64.6351	20.045	0.43	46.616	186.178	167.56	Aman	0.386
15	W21X68	64.5401	20.045	0.43	46.616	186.178	167.56	Aman	0.385
14	W21X68	64.4331	20.045	0.43	46.616	186.178	167.56	Aman	0.385
13	W24X76	77.3100	22.705	0.44	51.602	215.7883	194.209	Aman	0.398
12	W24X76	77.1980	22.705	0.44	51.602	215.7883	194.209	Aman	0.397
11	W24X76	77.0860	22.705	0.44	51.602	215.7883	194.209	Aman	0.397
10	W24X76	76.9400	22.705	0.44	51.602	215.7883	194.209	Aman	0.396
9	W24X76	77.3338	22.705	0.44	51.602	215.7883	194.209	Aman	0.398
8	W24X76	77.1758	22.705	0.44	51.602	215.7883	194.209	Aman	0.397
7	W24X76	76.9688	22.705	0.44	51.602	215.7883	194.209	Aman	0.396
6	W24X76	76.7668	22.705	0.44	51.602	215.7883	194.209	Aman	0.395
5	W24X76	76.5478	22.705	0.44	51.602	215.7883	194.209	Aman	0.394
4	W24X76	76.3238	22.705	0.44	51.602	215.7883	194.209	Aman	0.393
3	W24X76	76.1931	22.705	0.44	51.602	215.7883	194.209	Aman	0.392
2	W24X76	75.9911	22.705	0.44	51.602	215.7883	194.209	Aman	0.391
1	W24X76	66.4610	22.705	0.44	51.602	215.7883	194.209	Aman	0.342

B3

Lantai	Profil	Vu Rencana	h	tw	h/tw	Vn	ΦVn	Cek Geser	Rasio
		(Kips)	(in)	(in)		(Kips)	(Kips)		
30	W12X26	13.2173	11.59	0.23	50.391	57.57912	51.8212	Aman	0.255
29	W12X58	23.9240	11.59	0.36	32.194	90.12384	81.1115	Aman	0.295
28	W12X58	27.8890	11.59	0.36	32.194	90.12384	81.1115	Aman	0.344
27	W12X58	30.4646	11.59	0.36	32.194	90.12384	81.1115	Aman	0.376
26	W12X58	30.4526	11.59	0.36	32.194	90.12384	81.1115	Aman	0.375
25	W12X58	30.4985	11.59	0.36	32.194	90.12384	81.1115	Aman	0.376
24	W12X58	30.4985	11.59	0.36	32.194	90.12384	81.1115	Aman	0.376
23	W12X58	30.4815	11.59	0.36	32.194	90.12384	81.1115	Aman	0.376
22	W12X58	30.4765	11.59	0.36	32.194	90.12384	81.1115	Aman	0.376
21	W12X58	30.4645	11.59	0.36	32.194	90.12384	81.1115	Aman	0.376
20	W12X58	30.4475	11.59	0.36	32.194	90.12384	81.1115	Aman	0.375
19	W14x68	39.2868	13.3	0.415	32.048	119.2212	107.299	Aman	0.366
18	W14x68	39.2698	13.3	0.415	32.048	119.2212	107.299	Aman	0.366
17	W14x68	39.2528	13.3	0.415	32.048	119.2212	107.299	Aman	0.366
16	W14x68	39.2358	13.3	0.415	32.048	119.2212	107.299	Aman	0.366
15	W14x68	39.2478	13.3	0.415	32.048	119.2212	107.299	Aman	0.366
14	W14x68	39.2308	13.3	0.415	32.048	119.2212	107.299	Aman	0.366
13	W14x68	39.2088	13.3	0.415	32.048	119.2212	107.299	Aman	0.365
12	W14x68	39.1918	13.3	0.415	32.048	119.2212	107.299	Aman	0.365
11	W14x68	39.1578	13.3	0.415	32.048	119.2212	107.299	Aman	0.365
10	W14x68	39.1358	13.3	0.415	32.048	119.2212	107.299	Aman	0.365
9	W14x68	39.2088	13.3	0.415	32.048	119.2212	107.299	Aman	0.365
8	W14x68	39.1748	13.3	0.415	32.048	119.2212	107.299	Aman	0.365
7	W14x68	39.1358	13.3	0.415	32.048	119.2212	107.299	Aman	0.365
6	W14x68	39.0968	13.3	0.415	32.048	119.2212	107.299	Aman	0.364
5	W14x68	39.0646	13.3	0.415	32.048	119.2212	107.299	Aman	0.364
4	W14x68	39.0136	13.3	0.415	32.048	119.2212	107.299	Aman	0.364
3	W14x68	38.9746	13.3	0.415	32.048	119.2212	107.299	Aman	0.363
2	W14x68	38.9236	13.3	0.415	32.048	119.2212	107.299	Aman	0.363
1	W14x68	38.8676	13.3	0.415	32.048	119.2212	107.299	Aman	0.362

B4

Lantai	Profil	Vu Rencana	h	tw	h/tw	Vn	ΦVn	Cek Geser	Rasio
		(Kips)	(in)	(in)		(Kips)	(Kips)		
30	W12X30	15.9490	11.685	0.26	44.942	65.62296	59.0607	Aman	0.270
29	W14X61	28.4780	13.205	0.375	35.213	106.9605	96.2645	Aman	0.296
28	W14X61	33.0430	13.205	0.375	35.213	106.9605	96.2645	Aman	0.343
27	W14X61	38.2830	13.205	0.375	35.213	106.9605	96.2645	Aman	0.398
26	W14X61	39.2397	13.205	0.375	35.213	106.9605	96.2645	Aman	0.408
25	W14X61	39.3011	13.205	0.375	35.213	106.9605	96.2645	Aman	0.408
24	W14X61	39.2841	13.205	0.375	35.213	106.9605	96.2645	Aman	0.408
23	W14X61	39.2671	13.205	0.375	35.213	106.9605	96.2645	Aman	0.408
22	W14X61	39.2501	13.205	0.375	35.213	106.9605	96.2645	Aman	0.408
21	W14X61	39.2331	13.205	0.375	35.213	106.9605	96.2645	Aman	0.408
20	W14X61	39.2111	13.205	0.375	35.213	106.9605	96.2645	Aman	0.407
19	W16x77	54.8898	15.675	0.455	34.451	154.0539	138.649	Aman	0.396
18	W16x77	54.8608	15.675	0.455	34.451	154.0539	138.649	Aman	0.396
17	W16x77	54.8168	15.675	0.455	34.451	154.0539	138.649	Aman	0.395
16	W16x77	54.7658	15.675	0.455	34.451	154.0539	138.649	Aman	0.395
15	W16x77	54.7629	15.675	0.455	34.451	154.0539	138.649	Aman	0.395
14	W16x77	54.7069	15.675	0.455	34.451	154.0539	138.649	Aman	0.395
13	W16x77	54.6509	15.675	0.455	34.451	154.0539	138.649	Aman	0.394
12	W16x77	54.5999	15.675	0.455	34.451	154.0539	138.649	Aman	0.394
11	W16x77	54.5439	15.675	0.455	34.451	154.0539	138.649	Aman	0.393
10	W16x77	54.4879	15.675	0.455	34.451	154.0539	138.649	Aman	0.393
9	W16x77	54.6219	15.675	0.455	34.451	154.0539	138.649	Aman	0.394
8	W16x77	54.5559	15.675	0.455	34.451	154.0539	138.649	Aman	0.393
7	W16x77	54.4659	15.675	0.455	34.451	154.0539	138.649	Aman	0.393
6	W16x77	54.3759	15.675	0.455	34.451	154.0539	138.649	Aman	0.392
5	W16x77	54.3140	15.675	0.455	34.451	154.0539	138.649	Aman	0.392
4	W16x77	54.2190	15.675	0.455	34.451	154.0539	138.649	Aman	0.391
3	W16x77	54.1120	15.675	0.455	34.451	154.0539	138.649	Aman	0.390
2	W16x77	54.0220	15.675	0.455	34.451	154.0539	138.649	Aman	0.390
1	W16x77	53.9050	15.675	0.455	34.451	154.0539	138.649	Aman	0.389

Tabel Gaya Geser Rencana Balok Frame Truss (FT)

B1

Lantai	Profil	Vu Rencana	h	tw	h/tw	Vn	ΦVn	Cek Geser	Rasio
		(Kips)	(in)	(in)		(Kips)	(Kips)		
30	W14x22	4.8520	13.015	0.23	53.3	64.65852	58.19267	Aman	0.0834
29	W16x36	8.9000	15.105	0.295	48.1	96.24906	86.62415	Aman	0.1027
28	W16x36	15.6910	15.105	0.295	48.1	96.24906	86.62415	Aman	0.1811
27	W16x36	16.9030	15.105	0.295	48.1	96.24906	86.62415	Aman	0.1951
26	W16x36	17.9830	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2076
25	W16x36	19.0230	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2196
24	W16x36	20.0230	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2311
23	W16x36	25.3157	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2922
22	W16x36	25.3157	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2922
21	W16x36	25.2987	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2921
20	W16x36	25.2937	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2920
19	W16x36	25.2767	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2918
18	W16x36	25.3645	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2928
17	W16x36	25.3425	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2926
16	W16x36	25.3255	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2924
15	W16x36	17.4960	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2020
14	W16x36	17.8620	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2062
13	W18X40	29.8202	17.005	0.315	51	115.70202	104.1318	Aman	0.2864
12	W18X40	29.7982	17.005	0.315	51	115.70202	104.1318	Aman	0.2862
11	W18X40	29.7592	17.005	0.315	51	115.70202	104.1318	Aman	0.2858
10	W18X40	17.4720	17.005	0.315	51	115.70202	104.1318	Aman	0.1678
9	W18X40	29.6522	17.005	0.315	51	115.70202	104.1318	Aman	0.2848
8	W18X40	29.6993	17.005	0.315	51	115.70202	104.1318	Aman	0.2852
7	W18X40	29.6603	17.005	0.315	51	115.70202	104.1318	Aman	0.2848
6	W18X40	29.6043	17.005	0.315	51	115.70202	104.1318	Aman	0.2843
5	W18X40	29.5483	17.005	0.315	51	115.70202	104.1318	Aman	0.2838
4	W18X40	29.4923	17.005	0.315	51	115.70202	104.1318	Aman	0.2832
3	W18X40	29.5009	17.005	0.315	51	115.70202	104.1318	Aman	0.2833
2	W18X40	29.4449	17.005	0.315	51	115.70202	104.1318	Aman	0.2828
1	W18X40	27.9790	17.005	0.315	51	115.70202	104.1318	Aman	0.2687

B2

Lantai	Profil	Vu Rencana	h	tw	h/tw	Vn	ΦVn	Cek Geser	Rasio
		(Kips)	(in)	(in)		(Kips)	(Kips)		
30	W14X22	11.8264	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2032
29	W14X22	12.2600	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2107
28	W14X22	14.5026	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2492
27	W14X22	14.3616	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2468
26	W14X22	14.2276	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2445
25	W14X22	14.0816	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2420
24	W14X22	13.9526	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2398
23	W14X22	13.8626	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2382

22	W14X22	13.7336	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2360
21	W14X22	13.6046	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2338
20	W14X22	13.2906	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2284
19	W14X22	13.1666	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2263
18	W14X22	13.2606	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2279
17	W14X22	13.1486	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2259
16	W14X22	13.0026	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2234
15	W14X22	12.8566	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.2209
14	W14X22	4.6360	13.015	0.23	56.586957	64.65852	58.19267	Aman	0.0797
13	W16X26	16.1438	14.915	0.25	59.66	80.541	72.4869	Aman	0.2227
12	W16X26	15.9588	14.915	0.25	59.66	80.541	72.4869	Aman	0.2202
11	W16X26	15.7788	14.915	0.25	59.66	80.541	72.4869	Aman	0.2177
10	W16X26	15.2408	14.915	0.25	59.66	80.541	72.4869	Aman	0.2103
9	W16X26	15.0438	14.915	0.25	59.66	80.541	72.4869	Aman	0.2075
8	W16X26	15.1457	14.915	0.25	59.66	80.541	72.4869	Aman	0.2089
7	W16X26	14.9997	14.915	0.25	59.66	80.541	72.4869	Aman	0.2069
6	W16X26	14.8537	14.915	0.25	59.66	80.541	72.4869	Aman	0.2049
5	W16X26	14.7027	14.915	0.25	59.66	80.541	72.4869	Aman	0.2028
4	W16X26	14.5567	14.915	0.25	59.66	80.541	72.4869	Aman	0.2008
3	W16X26	14.5747	14.915	0.25	59.66	80.541	72.4869	Aman	0.2011
2	W16X26	14.3897	14.915	0.25	59.66	80.541	72.4869	Aman	0.1985
1	W16X26	14.3897	14.915	0.25	59.66	80.541	72.4869	Aman	0.1985

B3

Lantai	Profil	Vu Rencana	h	tw	h/tw	Vn	ΦVn	Cek Geser	Rasio
		(Kips)	(in)	(in)		(Kips)	(Kips)		
30	W12X16	2.9870	11.4	0.22	51.818182	54.1728	48.75552	Aman	0.0613
29	W14X30	10.8000	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.1569
28	W14X30	18.1540	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2638
27	W14X30	18.4392	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2680
26	W14X30	18.4392	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2680
25	W14X30	18.4749	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2685
24	W14X30	18.4749	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2685
23	W14X30	18.4869	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2687
22	W14X30	18.4749	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2685
21	W14X30	18.4699	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2684
20	W14X30	18.4606	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2683
19	W14X30	18.5116	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2690
18	W14X30	18.4946	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2688
17	W14X30	18.4776	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2685
16	W14X30	18.4556	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2682
15	W14X30	16.1640	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2349
14	W14X30	14.3430	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2084
13	W14X30	18.4080	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2675
12	W14X30	18.3910	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2673
11	W14X30	18.3740	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2670
10	W14X30	18.3520	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2667
9	W14X30	18.4300	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2678
8	W14X30	18.3910	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2673
7	W14X30	18.3570	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2668
6	W14X30	18.3350	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2665
5	W14X30	18.2960	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2659
4	W14X30	18.2450	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2651

3	W14X30	18.2060	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2646
2	W14X30	18.1720	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2641
1	W14X30	16.2630	13.11	0.27	48.555556	76.45752	68.81177	Aman	0.2363

B4

Lantai	Profil	Vu Rencana	h	tw	h/tw	Vn	ΦVn	Cek Geser	Rasio
		(Kips)	(in)	(in)		(Kips)	(Kips)		
30	W12X16	3.3500	11.4	0.22	51.818182	54.1728	48.75552	Aman	0.0687
29	W16X36	17.3670	15.105	0.295	51.20339	96.24906	86.62415	Aman	0.2005
28	W16X36	26.2410	15.105	0.295	51.20339	96.24906	86.62415	Aman	0.3029
27	W16X36	27.1516	15.105	0.295	51.20339	96.24906	86.62415	Aman	0.3134
26	W16X36	27.1566	15.105	0.295	51.20339	96.24906	86.62415	Aman	0.3135
25	W16X36	27.2019	15.105	0.295	51.20339	96.24906	86.62415	Aman	0.3140
24	W16X36	27.2019	15.105	0.295	51.20339	96.24906	86.62415	Aman	0.3140
23	W16X36	27.2019	15.105	0.295	51.20339	96.24906	86.62415	Aman	0.3140
22	W16X36	27.2019	15.105	0.295	51.20339	96.24906	86.62415	Aman	0.3140
21	W16X36	27.1969	15.105	0.295	51.20339	96.24906	86.62415	Aman	0.3140
20	W16X36	27.1887	15.105	0.295	51.20339	96.24906	86.62415	Aman	0.3139
19	W16x40	30.0495	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3334
18	W16x40	30.0325	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3332
17	W16x40	30.0155	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3330
16	W16x40	29.9935	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3328
15	W16x40	25.3114	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.2809
14	W16x40	25.3660	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.2815
13	W16x40	29.9504	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3323
12	W16x40	29.9334	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3321
11	W16x40	29.8994	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3318
10	W16x40	29.8774	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3315
9	W16x40	29.9724	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3326
8	W16x40	29.9164	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3319
7	W16x40	29.8944	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3317
6	W16x40	29.8604	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3313
5	W16x40	29.8214	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3309
4	W16x40	29.7704	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3303
3	W16x40	29.7144	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3297
2	W16x40	29.6754	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.3293
1	W16x40	25.6700	15.2	0.305	49.836066	100.1376	90.12384	Aman	0.2848

Tabel Gaya Geser Rencana Balok Core Brace (CB) 30Lt

B1

Lantai	Profil	Vu Rencana	h	tw	h/tw	Vn	ΦVn	Cek Geser	Rasio
		(Kips)	(in)	(in)		(Kips)	(Kips)		
30	W14x22	3.612	13.015	0.23	53.3	64.65852	58.19267	Aman	0.0621
29	W16x36	7.357	15.105	0.295	48.1	96.24906	86.62415	Aman	0.0849
28	W16x36	14.063	15.105	0.295	48.1	96.24906	86.62415	Aman	0.1623
27	W16x36	17.028	15.105	0.295	48.1	96.24906	86.62415	Aman	0.1966
26	W16x36	19.548	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2257
25	W16x36	21.868	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2524
24	W16x36	23.908	15.105	0.295	48.1	96.24906	86.62415	Aman	0.2760
23	W18x40	29.765	17.005	0.315	51	115.702	104.1318	Aman	0.2858
22	W18x40	29.753	17.005	0.315	51	115.702	104.1318	Aman	0.2857
21	W18x40	29.748	17.005	0.315	51	115.702	104.1318	Aman	0.2857
20	W18x40	29.731	17.005	0.315	51	115.702	104.1318	Aman	0.2855
19	W18x40	29.714	17.005	0.315	51	115.702	104.1318	Aman	0.2854
18	W18x46	33.595	17.195	0.36	44.6	133.7083	120.3375	Aman	0.2792
17	W18x46	33.578	17.195	0.36	44.6	133.7083	120.3375	Aman	0.2790
16	W18x46	33.556	17.195	0.36	44.6	133.7083	120.3375	Aman	0.2788
15	W18x46	15.495	17.195	0.36	44.6	133.7083	120.3375	Aman	0.1288
14	W18x46	16.439	17.195	0.36	44.6	133.7083	120.3375	Aman	0.1366
13	W21X55	44.509	19.76	0.375	49.92	160.056	144.0504	Aman	0.3090
12	W21X55	44.475	19.76	0.375	49.92	160.056	144.0504	Aman	0.3087
11	W21X55	44.448	19.76	0.375	49.92	160.056	144.0504	Aman	0.3086
10	W21X55	15.459	19.76	0.375	49.92	160.056	144.0504	Aman	0.1073
9	W21X55	44.363	19.76	0.375	49.92	160.056	144.0504	Aman	0.3080
8	W21X55	44.434	19.76	0.375	49.92	160.056	144.0504	Aman	0.3085
7	W21X55	44.395	19.76	0.375	49.92	160.056	144.0504	Aman	0.3082
6	W21X55	44.344	19.76	0.375	49.92	160.056	144.0504	Aman	0.3078
5	W21X55	44.288	19.76	0.375	49.92	160.056	144.0504	Aman	0.3074
4	W21X55	44.232	19.76	0.375	49.92	160.056	144.0504	Aman	0.3071
3	W21X55	44.267	19.76	0.375	49.92	160.056	144.0504	Aman	0.3073
2	W21X55	44.211	19.76	0.375	49.92	160.056	144.0504	Aman	0.3069
1	W21X55	44.133	19.76	0.375	49.92	160.056	144.0504	Aman	0.3064

B2

Lantai	Profil	Vu Rencana	h	tw	h/tw	Vn	ΦVn	Cek Geser	Rasio
		(Kips)	(in)	(in)		(Kips)	(Kips)		
30	W18X35	12.703	16.815	0.3	56.05	108.9612	98.06508	Aman	0.1295
29	W21X55	19.532	19.76	0.375	52.69333	160.056	144.0504	Aman	0.1356
28	W21X55	22.548	19.76	0.375	52.69333	160.056	144.0504	Aman	0.1565
27	W21X55	27.605	19.76	0.375	52.69333	160.056	144.0504	Aman	0.1916
26	W21X55	31.805	19.76	0.375	52.69333	160.056	144.0504	Aman	0.2208
25	W21X55	35.668	19.76	0.375	52.69333	160.056	144.0504	Aman	0.2476
24	W21X55	39.051	19.76	0.375	52.69333	160.056	144.0504	Aman	0.2711
23	W21X55	42.623	19.76	0.375	52.69333	160.056	144.0504	Aman	0.2959
22	W21X55	45.389	19.76	0.375	52.69333	160.056	144.0504	Aman	0.3151
21	W21X57	47.710	20.045	0.405	49.49383	175.3537	157.8183	Aman	0.3023
20	W21X57	48.059	20.045	0.405	49.49383	175.3537	157.8183	Aman	0.3045
19	W21X57	47.763	20.045	0.405	49.49383	175.3537	157.8183	Aman	0.3026
18	W24X62	52.783	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.2805
17	W24X62	52.767	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.2804
16	W24X62	46.917	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.2493
15	W24X62	21.219	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.1127
14	W24X62	22.595	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.1201
13	W24X62	56.981	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.3028

12	W24X62	62.259	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.3308
11	W24X62	62.130	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.3301
10	W24X62	61.989	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.3294
9	W24X62	61.838	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.3286
8	W24X62	61.998	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.3294
7	W24X62	61.891	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.3288
6	W24X62	61.757	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.3281
5	W24X62	61.611	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.3274
4	W24X62	61.448	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.3265
3	W24X62	61.475	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.3266
2	W24X62	61.312	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.3258
1	W24X62	61.071	22.515	0.43	52.36047	209.1193	188.2074	Aman	0.3245

B3

Lantai	Profil	Vu Rencana	h	tw	h/tw	Vn	ΦVn	Cek Geser	Rasio
		(Kips)	(in)	(in)		(Kips)	(Kips)		
30	W12X19	2.161	11.59	0.235	49.31915	58.83084	52.94776	Aman	0.0408
29	W14X38	8.512	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.1054
28	W14X38	15.414	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.1909
27	W14X38	16.946	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2099
26	W14X38	18.506	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2293
25	W14X38	19.946	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2471
24	W14X38	21.226	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2629
23	W14X38	22.386	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2773
22	W14X38	22.626	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2803
21	W14X38	22.614	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2801
20	W14X38	22.612	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2801
19	W14X38	22.634	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2804
18	W14X38	22.629	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2803
17	W14X38	22.612	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2801
16	W14X38	22.600	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2800
15	W14X38	10.975	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.1360
14	W14X38	11.250	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.1394
13	W14X38	22.589	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2798
12	W14X38	22.572	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2796
11	W14X38	22.572	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2796
10	W14X38	22.555	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2794
9	W14X38	22.589	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2798
8	W14X38	22.572	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2796
7	W14X38	22.567	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2796
6	W14X38	22.550	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2793
5	W14X38	22.516	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2789
4	W14X38	22.499	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2787
3	W14X38	22.477	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2784
2	W14X38	22.460	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2782
1	W14X38	22.438	13.395	0.31	43.20968	89.69292	80.72363	Aman	0.2780

B4

Lantai	Profil	Vu Rencana	h	tw	h/tw	Vn	ΦVn	Cek Geser	Rasio
		(Kips)	(in)	(in)		(Kips)	(Kips)		
30	W12x22	2.312	11.685	0.26	44.94231	65.62296	59.06066	Aman	0.0391
29	W16x40	15.294	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.1697
28	W16x40	22.825	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.2533
27	W16x40	24.322	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.2699
26	W16x40	25.802	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.2863
25	W16x40	27.162	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3014
24	W16x40	28.402	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3151

23	W16x40	29.522	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3276
22	W16x40	30.157	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3346
21	W16x40	30.140	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3344
20	W16x40	30.127	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3343
19	W16x40	30.273	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3359
18	W16x40	30.251	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3357
17	W16x40	30.229	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3354
16	W16x40	30.161	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3347
15	W16x40	16.323	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.1811
14	W16x40	18.615	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.2065
13	W16x40	30.084	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3338
12	W16x40	30.045	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3334
11	W16x40	30.011	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3330
10	W16x40	29.972	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3326
9	W16x40	30.084	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3338
8	W16x40	30.028	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3332
7	W16x40	29.989	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3328
6	W16x40	29.933	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3321
5	W16x40	29.860	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3313
4	W16x40	29.804	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3307
3	W16x40	29.731	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3299
2	W16x40	29.675	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3293
1	W16x40	29.585	15.2	0.305	49.83607	100.1376	90.12384	Aman	0.3283

Tabel Momen Akibat Beban Grafitasi Struktur 30 Lt Open Frame

Lantai	Station	B1	B2	B3	B4
		1.2D+1.6L	1.2D+1.6L	1.2D+1.6L	1.2D+1.6L
30	Tepi kiri	-548.626	-1491.551	-422.755	-755.601
	1/2 L	390.266	1072.573	177.26	346.8
	Tepi Kanan	-303.094	-667.814	-107.509	-281.471
29	Tepi kiri	-1305.271	-3001.76	-953.524	-1541.799
	1/2 L	874.495	2090.988	489.415	790.985
	Tepi Kanan	-756.763	-1358.481	-571.168	-894.046
28	Tepi kiri	-1313.931	-3022.237	-960.202	-1550.622
	1/2 L	872.265	2086.838	487.124	788.153
	Tepi Kanan	-752.419	-1346.773	-569.071	-890.887
27	Tepi kiri	-1309.865	-3012.58	-956.712	-1545.746
	1/2 L	872.645	2087.896	487.703	788.867
	Tepi Kanan	-755.425	-1354.935	-571.403	-894.336
26	Tepi kiri	-1307.458	-3006.572	-954.954	-1543.105
	1/2 L	872.439	2087.956	487.555	788.683
	Tepi Kanan	-757.838	-1361.722	-573.458	-897.344
25	Tepi kiri	-1303.556	-2997.464	-951.957	-1538.739
	1/2 L	872.322	2088.307	487.59	788.725
	Tepi Kanan	-761.445	-1371.287	-576.384	-901.625
24	Tepi kiri	-1299.732	-2986.547	-948.468	-1533.641
	1/2 L	872.127	2088.693	487.577	788.708
	Tepi Kanan	-765.018	-1382.845	-579.898	-906.757
23	Tepi kiri	-1384.379	-2970.72	-944.282	-1527.51
	1/2 L	876.882	2085.562	487.579	788.711
	Tepi Kanan	-683.087	-1393.455	-584.081	-912.883
22	Tepi kiri	-1377.101	-2955.681	-939.503	-1520.536
	1/2 L	876.619	2086.126	487.575	788.705
	Tepi Kanan	-690.006	-1409.304	-588.869	-919.869
21	Tepi kiri	-1367.669	-2939.048	-934.031	-1512.297
	1/2 L	876.34	2086.58	487.569	114.576
	Tepi Kanan	-698.981	-1427.244	-594.351	407.162
20	Tepi kiri	-1357.462	-2918.373	-928.167	-928.142
	1/2 L	876.099	2087.951	487.573	118.582
	Tepi Kanan	-708.557	-1447.601	-600.207	403.233
19	Tepi kiri	-1392.758	-3005.061	-967.607	-936.039
	1/2 L	878.135	2091.758	491.913	56.316
	Tepi Kanan	-665.565	-1327.496	-564.219	477.917
18	Tepi kiri	-1383.298	-2988.807	-963.648	-796.04
	1/2 L	877.408	2089.031	491.631	60.019
	Tepi Kanan	-675.317	-1351.775	-568.742	472.051
17	Tepi kiri	-1369.463	-2950.411	-956.538	-806.69
	1/2 L	877.174	2090.443	491.692	69.201
	Tepi Kanan	-688.43	-1389.866	-575.729	463.344
16	Tepi kiri	-1355.25	-2913.266	-949.515	-824.341
	1/2 L	876.808	2091.064	491.672	77.899
	Tepi Kanan	-702.077	-1428.538	-582.795	454.483

15	Tepi kiri	-1339.694	-2872.052	-941.889	-841.981
	1/2 L	876.429	2091.949	491.646	87.359
	Tepi Kanan	-717	-1471.037	-590.471	444.884
14	Tepi kiri	-1323.731	-2830.521	-933.401	-861.11
	1/2 L	876.067	2092.704	491.719	98.158
	Tepi Kanan	-732.194	-1514.285	-598.814	434.462
13	Tepi kiri	-1399.667	-2964.469	-924.905	-882.142
	1/2 L	879.161	2103.582	491.41	107.308
	Tepi Kanan	-644.203	-1362.414	-607.043	425.371
12	Tepi kiri	-1382.372	-2922.924	-915.22	-898.042
	1/2 L	878.216	2105.016	491.109	115.713
	Tepi Kanan	-661.698	-1404.61	-617.329	415.348
11	Tepi kiri	-1359.397	-2875.18	-903.629	-917.279
	1/2 L	877.751	2105.782	491.134	127.436
	Tepi Kanan	-683.762	-1454.588	-628.871	403.906
10	Tepi kiri	-1323.731	-2830.521	-933.401	-861.11
	1/2 L	876.067	2092.704	491.719	98.158
	Tepi Kanan	-732.194	-1514.285	-598.814	434.462
9	Tepi kiri	-1399.667	-2964.469	-924.905	-882.142
	1/2 L	879.161	2103.582	491.41	107.308
	Tepi Kanan	-644.203	-1362.414	-607.043	425.371
8	Tepi kiri	-1382.372	-2922.924	-915.22	-898.042
	1/2 L	878.216	2105.016	491.109	115.713
	Tepi Kanan	-661.698	-1404.61	-617.329	415.348
7	Tepi kiri	-1359.397	-2875.18	-903.629	-917.279
	1/2 L	877.751	2105.782	491.134	127.436
	Tepi Kanan	-683.762	-1454.588	-628.871	403.906
6	Tepi kiri	-1335.062	-2822.774	-891.321	-940.303
	1/2 L	877.537	2107.733	491.273	139.087
	Tepi Kanan	-706.598	-1507.039	-640.901	392.375
5	Tepi kiri	-1343.478	-2840.4	-919.052	-963.426
	1/2 L	878.151	2110.924	493.377	116.418
	Tepi Kanan	-680.914	-1448.998	-606.092	423.15
4	Tepi kiri	-1315.783	-2781.148	-908.271	-905.25
	1/2 L	876.099	2107.958	492.465	129.151
	Tepi Kanan	-710.839	-1518.172	-618.697	408.161
3	Tepi kiri	-1278.179	-2696.647	-891.398	-934.099
	1/2 L	875.894	2109.913	492.678	146.891
	Tepi Kanan	-746.903	-1602.812	-635.145	390.847
2	Tepi kiri	-1240.599	-2612.508	-875.124	-968.941
	1/2 L	875.284	2110.93	492.611	164.436
	Tepi Kanan	-783.656	-1689.188	-651.552	373.073
1	Tepi kiri	-1201.067	-2523.469	-857.914	-1004.374
	1/2 L	874.702	2112.219	492.589	182.912
	Tepi Kanan	-822.213	-1780.114	-668.805	354.424

Tabel Momen Akibat Beban Grafitasi Struktur 30 Lt Frame truss (FT)

Lantai	Station	B1	B2	B3	B4
		1.2D+1.6L	1.2D+1.6L	1.2D+1.6L	1.2D+1.6L
30	Tepi kiri	-785.029	-331.33	-245.69	-280.477
	1/2 L	564.495	-137.642	-223.895	-271.703
	Tepi Kanan	-638.005	-93.833	15.632	-62.2
29	Tepi kiri	-1138.487	-646.456	-905.446	-1343.614
	1/2 L	852.411	75.862	494.202	802.693
	Tepi Kanan	-927.331	-384.768	-611.077	-1077.383
28	Tepi kiri	-1190.732	-609.016	-921.017	-1362.247
	1/2 L	859.677	33.832	489.094	793.178
	Tepi Kanan	-862.344	-306.641	-601.335	-1069.521
27	Tepi kiri	-1195.307	-575.113	-926.88	-1368.927
	1/2 L	859.048	0.464	489.09	792.638
	Tepi Kanan	-859.857	-288.882	-595.481	-1063.921
26	Tepi kiri	-1194.834	-539.065	-930.324	-1370.464
	1/2 L	859.349	-33.049	489.189	792.928
	Tepi Kanan	-860.242	-271.256	-591.84	-1061.803
25	Tepi kiri	-1194.423	-505.361	-932.832	-1372.367
	1/2 L	859.368	-65.888	489.228	792.962
	Tepi Kanan	-860.897	-252.236	-589.253	-1059.832
24	Tepi kiri	-1193.104	-472.997	-933.659	-1372.623
	1/2 L	859.402	-98.239	489.379	793.209
	Tepi Kanan	-862.194	-232.26	-588.125	-1059.084
23	Tepi kiri	-1243.852	-448.543	-933.866	-1372.962
	1/2 L	864.285	-126.55	489.141	792.837
	Tepi Kanan	-806.318	-212.703	-587.516	-1058.112
22	Tepi kiri	-1242.168	-417.425	-932.928	-1372.644
	1/2 L	863.627	-159.215	488.898	792.477
	Tepi Kanan	-808.792	-190.659	-588.941	-1059.15
21	Tepi kiri	-1236.783	-386.099	-929.261	-1368.969
	1/2 L	863.511	-192.033	489.033	188.136
	Tepi Kanan	-813.611	-167.427	-592.337	341.542
20	Tepi kiri	-1230.52	-319.542	-925.205	-1062.412
	1/2 L	862.633	-266.556	489.069	189.773
	Tepi Kanan	-818.541	-104.654	-596.321	340.198
19	Tepi kiri	-1223.574	-288.726	-945.17	-1065.246
	1/2 L	862.349	-300.099	491.784	174.477
	Tepi Kanan	-824.822	-80.767	-577.421	366.618
18	Tepi kiri	-1249.56	-304.305	-936.702	-1019.888
	1/2 L	865.499	-298.877	491.281	177.701
	Tepi Kanan	-794.825	-68.989	-584.256	363.146
17	Tepi kiri	-1241.891	-274.584	-931.48	-1025.381
	1/2 L	864.577	-332.407	489.967	177.935
	Tepi Kanan	-802.822	-32.589	-592.107	357.582
16	Tepi kiri	-1230.708	-240.126	-917.91	-1033.844
	1/2 L	864.362	-368.318	493.746	192.211
	Tepi Kanan	-813.4	-48.399	-598.12	359.677
15	Tepi kiri	-1218.843	-214.761	-267.476	-1037.839
	1/2 L	863.815	-413.276	-382.275	102.476
	Tepi Kanan	-824.152	147.67	96.456	230.368

14	Tepi kiri	-1206.656	-203.673	-897.12	41.661
	1/2 L	863.279	-399.748	493.375	201.205
	Tepi Kanan	-836.078	-18.694	-619.652	349.114
13	Tepi kiri	-1256.585	-159.775	-896.779	-1058.181
	1/2 L	868.602	-467.432	490.293	196.464
	Tepi Kanan	-785.084	57.854	-626.155	340.849
12	Tepi kiri	-1241.728	-111.403	-888.626	-1068.207
	1/2 L	868.083	-506.345	491.11	203.022
	Tepi Kanan	-799.812	65.562	-632.675	337.741
11	Tepi kiri	-1224.493	-60.744	-881.001	-1076.148
	1/2 L	867.667	-546.763	490.982	207.657
	Tepi Kanan	-816.507	80.694	-640.555	332.625
10	Tepi kiri	-1206.656	-203.673	-897.12	41.661
	1/2 L	863.279	-399.748	493.375	201.205
	Tepi Kanan	-836.078	-18.694	-619.652	349.114
9	Tepi kiri	-1256.585	-159.775	-896.779	-1058.181
	1/2 L	868.602	-467.432	490.293	196.464
	Tepi Kanan	-785.084	57.854	-626.155	340.849
8	Tepi kiri	-1241.728	-111.403	-888.626	-1068.207
	1/2 L	868.083	-506.345	491.11	203.022
	Tepi Kanan	-799.812	65.562	-632.675	337.741
7	Tepi kiri	-1224.493	-60.744	-881.001	-1076.148
	1/2 L	867.667	-546.763	490.982	207.657
	Tepi Kanan	-816.507	80.694	-640.555	332.625
6	Tepi kiri	-1203.783	59.639	-872.588	-1086.141
	1/2 L	864.384	-670.897	491.041	213.012
	Tepi Kanan	-832.163	165.2	-648.851	327.74
5	Tepi kiri	-1183.491	113.675	-901.718	-1096.145
	1/2 L	863.921	-712.675	496.461	206.744
	Tepi Kanan	-851.614	172.34	-615.767	358.155
4	Tepi kiri	-1177.91	113.943	-886.885	-1051.864
	1/2 L	865.838	-700.549	495.476	215.093
	Tepi Kanan	-848.194	145.831	-629.924	344.14
3	Tepi kiri	-1159.778	146.246	-873.871	-1074.392
	1/2 L	864.719	-740.216	494.991	219.021
	Tepi Kanan	-866.982	191.727	-643.909	336.609
2	Tepi kiri	-1137.1	180.58	-858.766	-1087.653
	1/2 L	864.289	-777.191	495.181	226.189
	Tepi Kanan	-888.777	215.762	-658.633	330.719
1	Tepi kiri	-1113.55	216.88	-842.895	-1100.072
	1/2 L	863.653	-814.896	495.161	233.396
	Tepi Kanan	-911.705	241.893	-674.544	323.395

LAMPIRAN B - 15

Tabel Momen Akibat Beban Grafitasi Struktur 30 Lt Core Brace (CB)

Lantai	Station	B1	B2	B3	B4
		1.2D+1.6L	1.2D+1.6L	1.2D+1.6L	1.2D+1.6L
30	Tepi kiri	-867.399	-1980.533	-646.719	-417.096
	1/2 L	641.966	1430.217	388.889	-307.083
	Tepi Kanan	-722.061	-1113.776	-558.149	43.127
29	Tepi kiri	-1320.782	-3551.546	-960.547	-1696.526
	1/2 L	1014.303	2568.274	558.532	938.655
	Tepi Kanan	-1097.571	-1813.853	-787.985	-1173.175
28	Tepi kiri	-1380.139	-3560.517	-970.688	-1725.046
	1/2 L	1021.724	2551.624	557.714	930.524
	Tepi Kanan	-1023.533	-1758.649	-774.504	-1151.244
27	Tepi kiri	-1385.554	-3575.269	-975.55	-1732.029
	1/2 L	1021.077	2548.573	556.941	929.673
	Tepi Kanan	-1019.913	-1749.034	-771.187	-1145.963
26	Tepi kiri	-1385.793	-3569.47	-976.894	-1731.975
	1/2 L	1021.362	2548.947	557.155	929.899
	Tepi Kanan	-1019.569	-1752.904	-769.415	-1145.566
25	Tepi kiri	-1385.864	-3563.511	-978.195	-1731.959
	1/2 L	1021.384	2548.703	557.092	929.802
	Tepi Kanan	-1019.726	-1758.6	-768.24	-1145.775
24	Tepi kiri	-1384.836	-3553.825	-978.119	-1729.419
	1/2 L	1021.468	2548.716	557.202	929.973
	Tepi Kanan	-1020.686	-1767.841	-768.096	-1147.972
23	Tepi kiri	-1440.159	-3561.203	-977.836	-1726.604
	1/2 L	1026.382	2546.111	556.878	929.392
	Tepi Kanan	-958.627	-1754.476	-768.034	-1150.338
22	Tepi kiri	-1438.655	-3544.306	-976.78	-1722.665
	1/2 L	1025.751	2546.371	556.563	928.803
	Tepi Kanan	-961.002	-1771.484	-769.718	-1155.455
21	Tepi kiri	-1432.695	-3523.338	-973.286	-1714.05
	1/2 L	1025.704	2546.748	556.653	167.439
	Tepi Kanan	-966.44	-1792.768	-773.032	442.737
20	Tepi kiri	-1426.133	-3499.275	-969.621	-1163.77
	1/2 L	1025.434	2547.149	556.63	171.477
	Tepi Kanan	-972.671	-1817.755	-776.744	438.59
19	Tepi kiri	-1418.128	-3469.88	-979.793	-1172.01
	1/2 L	1025.252	2548.428	558.691	140.039
	Tepi Kanan	-980.048	-1846.456	-768.944	477.392
18	Tepi kiri	-1444.732	-3537.57	-973.724	-1100.008
	1/2 L	1027.754	2551.328	558.442	146.956
	Tepi Kanan	-946.925	-1749.682	-772.52	471.331
17	Tepi kiri	-1435.603	-3512.61	-969.274	-1111.016
	1/2 L	1026.93	2548.69	558.13	150.655
	Tepi Kanan	-956.682	-1781.618	-777.594	463.873
16	Tepi kiri	-1422.267	-3463.527	-962.863	-1124.054
	1/2 L	1026.596	2550.892	558.464	172.624
	Tepi Kanan	-968.843	-1830.879	-783.336	452.802
15	Tepi kiri	-1416.575	-3378.104	-954.482	-1151.645

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	1/2 L	1037.388	2506.773	557.366	81.196
	Tepi Kanan	-994.447	-1845.578	-793.913	316.759
14	Tepi kiri	-1397.737	-3360.063	-945.762	225.065
	1/2 L	1026.297	2552.743	558.392	193.705
	Tepi Kanan	-990.863	-1937.04	-800.582	430.199
13	Tepi kiri	-1459.763	-3423.839	-948.819	-1196.09
	1/2 L	1030.389	2556.864	558.206	190.115
	Tepi Kanan	-927.981	-1864.21	-797.896	424.921
12	Tepi kiri	-1442.59	-3366.65	-943.842	-1202.212
	1/2 L	1030.292	2557.595	558.277	200.717
	Tepi Kanan	-944.629	-1921.024	-802.732	416.53
11	Tepi kiri	-1424.447	-3301.375	-939.724	-1220.1
	1/2 L	1030.013	2558.06	558.277	209.271
	Tepi Kanan	-962.578	-1986.277	-806.849	407.448
10	Tepi kiri	-1397.737	-3360.063	-945.762	225.065
	1/2 L	1026.297	2552.743	558.392	193.705
	Tepi Kanan	-990.863	-1937.04	-800.582	430.199
9	Tepi kiri	-1459.763	-3423.839	-948.819	-1196.09
	1/2 L	1030.389	2556.864	558.206	190.115
	Tepi Kanan	-927.981	-1864.21	-797.896	424.921
8	Tepi kiri	-1442.59	-3366.65	-943.842	-1202.212
	1/2 L	1030.292	2557.595	558.277	200.717
	Tepi Kanan	-944.629	-1921.024	-802.732	416.53
7	Tepi kiri	-1424.447	-3301.375	-939.724	-1220.1
	1/2 L	1030.013	2558.06	558.277	209.271
	Tepi Kanan	-962.578	-1986.277	-806.849	407.448
6	Tepi kiri	-1404.337	-3231.815	-934.815	-1237.999
	1/2 L	1029.665	2558.672	558.289	218.724
	Tepi Kanan	-982.356	-2056.275	-811.735	398.08
5	Tepi kiri	-1382.058	-3155.133	-949.74	-1256.777
	1/2 L	1029.41	2559.843	561.855	201.522
	Tepi Kanan	-1003.992	-2132.437	-796.563	429.292
4	Tepi kiri	-1375.405	-3125.166	-941.246	-1205.832
	1/2 L	1030.826	2565.977	561.511	215.401
	Tepi Kanan	-998.647	-2117.638	-802.747	416.126
3	Tepi kiri	-1355.337	-3078.378	-934.087	-1229.429
	1/2 L	1029.877	2564.352	561.182	224.452
	Tepi Kanan	-1019.767	-2168.607	-810.564	405.029
2	Tepi kiri	-1329.785	-3012.164	-924.255	-1250.599
	1/2 L	1029.672	2565.35	561.288	238.059
	Tepi Kanan	-1044.641	-2234.34	-820.184	391.883
1	Tepi kiri	-1303.125	-2944.839	-913.925	-1277.122
	1/2 L	1029.245	2565.778	561.268	251.788
	Tepi Kanan	-1070.938	-2302.569	-830.554	377.88

Tabel Lendutan yang terjadi pada struktur Open Frame

Lantai	B1				B2			
	Profil	Kontrol \			Profil	Kontrol \		
		in	max	Cek		in	max	Cek
30	W14x22	0.478856	0.98425	Aman	W18X35	0.5063858	0.98425	Aman
29	W16x40	0.418156	0.656167	Aman	W21X55	0.44429	0.6561667	Aman
28	W16x40	0.417461	0.656167	Aman	W21X55	0.4437146	0.6561667	Aman
27	W16x40	0.417567	0.656167	Aman	W21X55	0.4438743	0.6561667	Aman
26	W16x40	0.417487	0.656167	Aman	W21X55	0.4438985	0.6561667	Aman
25	W16x40	0.41743	0.656167	Aman	W21X55	0.4439683	0.6561667	Aman
24	W16x40	0.417345	0.656167	Aman	W21X55	0.4440474	0.6561667	Aman
23	W18x50	0.27149	0.656167	Aman	W21X62	0.3800616	0.6561667	Aman
22	W18x50	0.271416	0.656167	Aman	W21X62	0.3801588	0.6561667	Aman
21	W18x50	0.271334	0.656167	Aman	W21X62	0.3802469	0.6561667	Aman
20	W18x50	0.271258	0.656167	Aman	W21X62	0.3804487	0.6561667	Aman
19	W21x68	0.146797	0.656167	Aman	W21X68	0.3419528	0.6561667	Aman
18	W21x68	0.146703	0.656167	Aman	W21X68	0.3416921	0.6561667	Aman
17	W21x68	0.146662	0.656167	Aman	W21X68	0.3418796	0.6561667	Aman
16	W21x68	0.146604	0.656167	Aman	W21X68	0.3419848	0.6561667	Aman
15	W21x68	0.146544	0.656167	Aman	W21X68	0.3421213	0.6561667	Aman
14	W21x68	0.146485	0.656167	Aman	W21X68	0.3422468	0.6561667	Aman
13	W21x68	0.146741	0.656167	Aman	W24X76	0.2420696	0.6561667	Aman
12	W21x68	0.146615	0.656167	Aman	W24X76	0.2422127	0.6561667	Aman
11	W21x68	0.14654	0.656167	Aman	W24X76	0.2423072	0.6561667	Aman
10	W21x68	0.146703	0.656167	Aman	W24X76	0.2408116	0.6561667	Aman
9	W21x68	0.146662	0.656167	Aman	W24X76	0.2409437	0.6561667	Aman
8	W21x68	0.146604	0.656167	Aman	W24X76	0.2410179	0.6561667	Aman
7	W21x68	0.146544	0.656167	Aman	W24X76	0.241114	0.6561667	Aman
6	W21x68	0.146485	0.656167	Aman	W24X76	0.2412025	0.6561667	Aman
5	W21x68	0.146741	0.656167	Aman	W24X76	0.2420696	0.6561667	Aman
4	W21x68	0.146615	0.656167	Aman	W24X76	0.2422127	0.6561667	Aman
3	W21x68	0.14654	0.656167	Aman	W24X76	0.2423072	0.6561667	Aman
2	W21X68	0.146491	0.656167	Aman	W24X76	0.2424938	0.6561667	Aman
1	W21X68	0.14634	0.656167	Aman	W24X76	0.2424126	0.6561667	Aman

Lantai	B3				B4			
	Profil	Kontrol \			Profil	Kontrol \		
		in	max	Cek		in	max	Cek
30	W12X26	0.226257	0.98425	Aman	W12X30	0.27865	0.98425	Aman
29	W12X58	0.270849	0.656167	Aman	W14X61	0.441	0.656167	Aman
28	W12X58	0.270076	0.656167	Aman	W14X61	0.44003	0.656167	Aman
27	W12X58	0.36787	0.656167	Aman	W14X61	0.44028	0.656167	Aman
26	W12X58	0.367802	0.656167	Aman	W14X61	0.44022	0.656167	Aman
25	W12X58	0.367818	0.656167	Aman	W14X61	0.44023	0.656167	Aman
24	W12X58	0.367812	0.656167	Aman	W14X61	0.44022	0.656167	Aman
23	W12X58	0.367813	0.656167	Aman	W14X61	0.44023	0.656167	Aman
22	W12X58	0.367812	0.656167	Aman	W14X61	0.44022	0.656167	Aman
21	W12X58	0.367809	0.656167	Aman	W14X61	0.3833	0.656167	Aman
20	W12X58	0.367811	0.656167	Aman	W14X61	-0.0062	0.656167	Aman
19	W14x68	0.243751	0.656167	Aman	W16x77	0.02488	0.656167	Aman
18	W14x68	0.243666	0.656167	Aman	W16x77	0.02251	0.656167	Aman
17	W14x68	0.243684	0.656167	Aman	W16x77	0.02522	0.656167	Aman
16	W14x68	0.243678	0.656167	Aman	W16x77	0.02798	0.656167	Aman
15	W14x68	0.24367	0.656167	Aman	W16x77	0.03095	0.656167	Aman
14	W14x68	0.243692	0.656167	Aman	W16x77	0.0343	0.656167	Aman
13	W14x68	0.243565	0.656167	Aman	W16x77	0.03726	0.656167	Aman
12	W14x68	0.243474	0.656167	Aman	W16x77	0.03994	0.656167	Aman
11	W14x68	0.243482	0.656167	Aman	W16x77	0.04355	0.656167	Aman
10	W14x68	0.243666	0.656167	Aman	W16x77	-0.0163	0.656167	Aman
9	W14x68	0.243684	0.656167	Aman	W16x77	0.02522	0.656167	Aman
8	W14x68	0.243678	0.656167	Aman	W16x77	0.02798	0.656167	Aman
7	W14x68	0.24367	0.656167	Aman	W16x77	0.03095	0.656167	Aman
6	W14x68	0.243692	0.656167	Aman	W16x77	0.0343	0.656167	Aman
5	W14x68	0.243565	0.656167	Aman	W16x77	0.03726	0.656167	Aman
4	W14x68	0.243474	0.656167	Aman	W16x77	0.03994	0.656167	Aman
3	W14x68	0.243482	0.656167	Aman	W16x77	0.04355	0.656167	Aman
2	W14x68	0.243524	0.656167	Aman	W16x77	0.04723	0.656167	Aman
1	W14x68	0.244052	0.656167	Aman	W16x77	0.04152	0.656167	Aman

Tabel Lendutan yang terjadi pada struktur Frame truss (FT) 30 Lt

Lantai	B1				B2			
	Profil	Kontrol \			Profil	Kontrol \		
		in	max	Cek		in	max	Cek
30	W14x22	0.968947	1.14829	Aman	W14X22	-0.130407	1.1482917	Aman
29	W16x36	0.644871	0.76553	Aman	W14X22	0.2453691	0.7655278	Aman
28	W16x36	0.648519	0.76553	Aman	W14X22	0.1719072	0.7655278	Aman
27	W16x36	0.648264	0.76553	Aman	W14X22	0.1190809	0.7655278	Aman
26	W16x36	0.648441	0.76553	Aman	W14X22	0.0657799	0.7655278	Aman
25	W16x36	0.648468	0.76553	Aman	W14X22	0.0135331	0.7655278	Aman
24	W16x36	0.648487	0.76553	Aman	W14X22	-0.037992	0.7655278	Aman
23	W16x36	0.651148	0.76553	Aman	W14X22	-0.082837	0.7655278	Aman
22	W16x36	0.650796	0.76553	Aman	W14X22	-0.134905	0.7655278	Aman
21	W16x36	0.650691	0.76553	Aman	W14X22	-0.187375	0.7655278	Aman
20	W16x36	0.650075	0.76553	Aman	W14X22	-0.307268	0.7655278	Aman
19	W16x36	0.649862	0.76553	Aman	W14X22	-0.360751	0.7655278	Aman
18	W16x36	0.651535	0.76553	Aman	W14X22	-0.358555	0.7655278	Aman
17	W16x36	0.650994	0.76553	Aman	W14X22	-0.413585	0.7655278	Aman
16	W16x36	0.650826	0.76553	Aman	W14X22	-0.465372	0.7655278	Aman
15	W16x36	0.650425	0.76553	Aman	W14X22	-0.557361	0.7655278	Aman
14	W16x36	0.650083	0.76553	Aman	W14X22	-0.517529	0.7655278	Aman
13	W18X40	0.478203	0.76553	Aman	W16X26	-0.414415	0.7655278	Aman
12	W18X40	0.477966	0.76553	Aman	W16X26	-0.454766	0.7655278	Aman
11	W18X40	0.477757	0.76553	Aman	W16X26	-0.497361	0.7655278	Aman
10	W18X40	0.476941	0.76553	Aman	W16X26	-0.237051	0.7655278	Aman
9	W18X40	0.476545	0.76553	Aman	W16X26	-0.273433	0.7655278	Aman
8	W18X40	0.476422	0.76553	Aman	W16X26	-0.307671	0.7655278	Aman
7	W18X40	0.476128	0.76553	Aman	W16X26	-0.368488	0.7655278	Aman
6	W18X40	0.475878	0.76553	Aman	W16X26	-0.342154	0.7655278	Aman
5	W18X40	0.478203	0.76553	Aman	W16X26	-0.414415	0.7655278	Aman
4	W18X40	0.477966	0.76553	Aman	W16X26	-0.454766	0.7655278	Aman
3	W18X40	0.477757	0.76553	Aman	W16X26	-0.497361	0.7655278	Aman
2	W18X40	0.476068	0.76553	Aman	W16X26	-0.628439	0.7655278	Aman
1	W18X40	0.475824	0.76553	Aman	W16X26	-0.671849	0.7655278	Aman

Lantai	B3				B4			
	Profil	Kontrol \			Profil	Kontrol \		
		in	max	Cek		in	max	Cek
30	W12X16	-0.53208	1.148292	Aman	W12X16	0.62888	1.148292	Aman
29	W14X30	0.60548	0.765528	Aman	W16X36	0.63623	0.765528	Aman
28	W14X30	0.60124	0.765528	Aman	W16X36	0.63109	0.765528	Aman
27	W14X30	0.60124	0.765528	Aman	W16X36	0.63082	0.765528	Aman
26	W14X30	0.60131	0.765528	Aman	W16X36	0.63097	0.765528	Aman
25	W14X30	0.60134	0.765528	Aman	W16X36	0.63098	0.765528	Aman
24	W14X30	0.60145	0.765528	Aman	W16X36	0.6311	0.765528	Aman
23	W14X30	0.60119	0.765528	Aman	W16X36	0.63084	0.765528	Aman
22	W14X30	0.60101	0.765528	Aman	W16X36	0.63066	0.765528	Aman
21	W14X30	0.60111	0.765528	Aman	W16X36	0.54527	0.765528	Aman
20	W14X30	0.60114	0.765528	Aman	W16X36	0.03015	0.765528	Aman
19	W14X30	0.60378	0.765528	Aman	W16x40	0.12868	0.765528	Aman
18	W14X30	0.60316	0.765528	Aman	W16x40	0.12818	0.765528	Aman
17	W14X30	0.60217	0.765528	Aman	W16x40	0.12888	0.765528	Aman
16	W14X30	0.60501	0.765528	Aman	W16x40	0.13674	0.765528	Aman
15	W14X30	-0.34235	0.765528	Aman	W16x40	0.0965	0.765528	Aman
14	W14X30	0.60473	0.765528	Aman	W16x40	0.08539	0.765528	Aman
13	W14X30	0.60242	0.765528	Aman	W16x40	0.14125	0.765528	Aman
12	W14X30	0.60303	0.765528	Aman	W16x40	0.14539	0.765528	Aman
11	W14X30	0.60293	0.765528	Aman	W16x40	0.14852	0.765528	Aman
10	W14X30	0.60316	0.765528	Aman	W16x40	0.02075	0.765528	Aman
9	W14X30	0.60217	0.765528	Aman	W16x40	0.12888	0.765528	Aman
8	W14X30	0.60501	0.765528	Aman	W16x40	0.13674	0.765528	Aman
7	W14X30	-0.34235	0.765528	Aman	W16x40	0.0965	0.765528	Aman
6	W14X30	0.60473	0.765528	Aman	W16x40	0.08539	0.765528	Aman
5	W14X30	0.60242	0.765528	Aman	W16x40	0.14125	0.765528	Aman
4	W14X30	0.60303	0.765528	Aman	W16x40	0.14539	0.765528	Aman
3	W14X30	0.60293	0.765528	Aman	W16x40	0.14852	0.765528	Aman
2	W14X30	0.60298	0.765528	Aman	W16x40	0.15213	0.765528	Aman
1	W14X30	0.60769	0.765528	Aman	W16x40	0.14775	0.765528	Aman

Tabel Lendutan yang terjadi pada struktur Core Brace (CB) 30 LT

Lantai	B1				B2			
	Profil	Kontrol \			Profil	Kontrol \		
		in	max	Cek		in	max	Cek
30	W14x22	0.80667	0.98425	Aman	W18X35	0.68368	0.98425	Aman
29	W16x36	0.56198	0.65617	Aman	W21X55	0.54588	0.65617	Aman
28	W16x36	0.56465	0.65617	Aman	W21X55	0.54214	0.65617	Aman
27	W16x36	0.56444	0.65617	Aman	W21X55	0.54169	0.65617	Aman
26	W16x36	0.56456	0.65617	Aman	W21X55	0.54172	0.65617	Aman
25	W16x36	0.56458	0.65617	Aman	W21X55	0.54168	0.65617	Aman
24	W16x36	0.56461	0.65617	Aman	W21X55	0.54167	0.65617	Aman
23	W18x40	0.4147	0.65617	Aman	W21X55	0.54111	0.65617	Aman
22	W18x40	0.41452	0.65617	Aman	W21X55	0.54115	0.65617	Aman
21	W18x40	0.41449	0.65617	Aman	W21X57	0.52735	0.65617	Aman
20	W18x40	0.41439	0.65617	Aman	W21X57	0.52743	0.65617	Aman
19	W18x40	0.41431	0.65617	Aman	W21X57	0.52764	0.65617	Aman
18	W18x46	0.35664	0.65617	Aman	W24X62	0.39573	0.65617	Aman
17	W18x46	0.35643	0.65617	Aman	W24X62	0.39548	0.65617	Aman
16	W18x46	0.3563	0.65617	Aman	W24X62	0.39576	0.65617	Aman
15	W18x46	0.3599	0.65617	Aman	W24X62	0.38919	0.65617	Aman
14	W18x46	0.35615	0.65617	Aman	W24X62	0.39604	0.65617	Aman
13	W21X55	0.22314	0.65617	Aman	W24X62	0.39645	0.65617	Aman
12	W21X55	0.22311	0.65617	Aman	W24X62	0.39654	0.65617	Aman
11	W21X55	0.22306	0.65617	Aman	W24X62	0.3966	0.65617	Aman
10	W21X55	0.22275	0.65617	Aman	W24X62	0.39573	0.65617	Aman
9	W21X55	0.22261	0.65617	Aman	W24X62	0.39548	0.65617	Aman
8	W21X55	0.22253	0.65617	Aman	W24X62	0.39576	0.65617	Aman
7	W21X55	0.22478	0.65617	Aman	W24X62	0.38919	0.65617	Aman
6	W21X55	0.22244	0.65617	Aman	W24X62	0.39604	0.65617	Aman
5	W21X55	0.22314	0.65617	Aman	W24X62	0.39645	0.65617	Aman
4	W21X55	0.22311	0.65617	Aman	W24X62	0.39654	0.65617	Aman
3	W21X55	0.22306	0.65617	Aman	W24X62	0.3966	0.65617	Aman
2	W21X55	0.22299	0.65617	Aman	W24X62	0.39668	0.65617	Aman
1	W21X55	0.22294	0.65617	Aman	W24X62	0.39683	0.65617	Aman

Lantai	B3				B4			
	Profil	Kontrol \			Profil	Kontrol \		
		in	max	Cek		in	max	Cek
30	W12X19	0.785342	0.98425	Aman	W12x22	0.4565	0.9843	Aman
29	W14X38	0.3818	0.65617	Aman	W16x40	0.6455	0.6562	Aman
28	W14X38	0.3812	0.65617	Aman	W16x40	0.6416	0.6562	Aman
27	W14X38	0.518419	0.65617	Aman	W16x40	0.6412	0.6562	Aman
26	W14X38	0.518541	0.65617	Aman	W16x40	0.6413	0.6562	Aman
25	W14X38	0.518505	0.65617	Aman	W16x40	0.6412	0.6562	Aman
24	W14X38	0.518567	0.65617	Aman	W16x40	0.6413	0.6562	Aman
23	W14X38	0.518313	0.65617	Aman	W16x40	0.641	0.6562	Aman
22	W14X38	0.518134	0.65617	Aman	W16x40	0.6407	0.6562	Aman
21	W14X38	0.518185	0.65617	Aman	W16x40	0.5562	0.6562	Aman
20	W14X38	0.518173	0.65617	Aman	W16x40	0.0059	0.6562	Aman
19	W14X38	0.519801	0.65617	Aman	W16x40	0.1103	0.6562	Aman
18	W14X38	0.519448	0.65617	Aman	W16x40	0.1105	0.6562	Aman
17	W14X38	0.519271	0.65617	Aman	W16x40	0.1134	0.6562	Aman
16	W14X38	0.51946	0.65617	Aman	W16x40	0.1263	0.6562	Aman
15	W14X38	0.518838	0.65617	Aman	W16x40	0.0867	0.6562	Aman
14	W14X38	0.51942	0.65617	Aman	W16x40	0.0675	0.6562	Aman
13	W14X38	0.519314	0.65617	Aman	W16x40	0.1407	0.6562	Aman
12	W14X38	0.519354	0.65617	Aman	W16x40	0.1471	0.6562	Aman
11	W14X38	0.519354	0.65617	Aman	W16x40	0.153	0.6562	Aman
10	W14X38	0.519448	0.65617	Aman	W16x40	-0.0054	0.6562	Aman
9	W14X38	0.519271	0.65617	Aman	W16x40	0.1134	0.6562	Aman
8	W14X38	0.51946	0.65617	Aman	W16x40	0.1263	0.6562	Aman
7	W14X38	0.518838	0.65617	Aman	W16x40	0.0867	0.6562	Aman
6	W14X38	0.51942	0.65617	Aman	W16x40	0.0675	0.6562	Aman
5	W14X38	0.519314	0.65617	Aman	W16x40	0.1407	0.6562	Aman
4	W14X38	0.519354	0.65617	Aman	W16x40	0.1471	0.6562	Aman
3	W14X38	0.519354	0.65617	Aman	W16x40	0.153	0.6562	Aman
2	W14X38	0.519361	0.65617	Aman	W16x40	0.1594	0.6562	Aman
1	W14X38	0.521871	0.65617	Aman	W16x40	0.1497	0.6562	Aman

Tabel Distribusi Momen dan Gaya Aksial Kolom Struktur Open Frame (OF)

K1 (Kolom Eksterior) Arah X

Lantai	Stasion	Balok			(K1)			(K2)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B1	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W14x22	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	140.79	1195.2	-2.35	2.35	-2.92	2.92	1.87	1.87	6.15	602.0981
	0													-2.35		-2.92		1.87			
29	3.75	W16x36	7	275.59055	W14X156	3.75	147.64	W14X193	3.75	147.64	260.44	132.84	2304	-7.73	7.73	-9.82	9.82	3.16	3.16	17.346	1096.812
	0													-7.73		-9.82		3.16			
28	3.75	W16x36	7	275.59055	W14X156	3.75	147.64	W14X193	3.75	147.64	260.44	131.74	2304	-13.13	13.13	-16.74	16.74	4.76	4.76	28.886	1087.73
	0													-13.13		-16.74		4.76			
27	3.75	W16x36	7	275.59055	W14X156	3.75	147.64	W14X193	3.75	147.64	260.44	131.74	2304	-18.52	18.52	-23.64	23.64	6.7	6.7	40.744	1087.73
	0													-18.52		-23.64		6.7			
26	3.75	W16x36	7	275.59055	W14X156	3.75	147.64	W14X193	3.75	147.64	260.44	131.74	2304	-23.9	23.9	-30.54	30.54	8.96	8.96	52.91	1087.73
	0													-23.9		-30.54		8.96			
25	3.75	W16x36	7	275.59055	W14X156	3.75	147.64	W14X193	3.75	147.64	260.44	131.74	2304	-29.27	29.27	-37.43	37.43	11.58	11.58	65.419	1087.73
	0													-29.27		-37.43		11.58			
24	3.75	W16x36	7	275.59055	W14X156	3.75	147.64	W14X193	3.75	147.64	260.44	131.74	2304	-34.64	34.64	-44.31	44.31	14.56	14.56	78.283	1087.73
	0													-34.64		-44.31		14.56			
23	3.75	W18x40	7	275.59055	W14X156	3.75	147.64	W14X193	3.75	147.64	260.44	130.74	2822.4	-40.1	40.1	-51.31	51.31	15.22	15.22	88.995	1322.354
	0													-40.1		-51.31		15.22			
22	3.75	W18x40	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	259.99	129.74	2822.4	-45.55	45.55	-58.29	58.29	15.96	15.96	99.765	1314.511
	0													-45.55		-58.29		15.96			
21	3.75	W18x40	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	259.99	129.74	2822.4	-50.97	50.97	-65.25	65.25	16.64	16.64	110.429	1314.511
	0													-50.97		-65.25		16.64			
20	3.75	W18x40	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	259.99	129.74	2822.4	-56.38	56.38	-72.18	72.18	16.99	16.99	120.736	1314.511
	0													-56.38		-72.18		16.99			
19	3.75	W18x46	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	259.99	129.64	3265.2	-61.88	61.88	-79.24	79.24	18.19	18.19	132.066	1519.57
	0													-61.88		-79.24		18.19			
18	3.75	W18x46	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	259.99	129.54	3265.2	-67.37	67.37	-86.26	86.26	19.06	19.06	143.034	1518.398
	0													-67.37		-86.26		19.06			
17	3.75	W18x46	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	259.99	129.54	3265.2	-72.82	72.82	-93.26	93.26	19.85	19.85	153.864	1518.398
	0													-72.82		-93.26		19.85			

16	3.75	W18x46	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	259.99	129.54	3265.2	-78.25	78.25	-100.22	100.22	20.69	20.69	164.7	1518.398		
	0													-78.25		-100.22		20.69					
15	3.75	W18x46	7	275.59055	W14X1211	3.75	147.64	W14X233	3.75	147.64	260.34	129.54	3265.2	-83.65	83.65	-107.14	107.14	21.75	21.75	175.7	1516.356		
	0													-83.65		-107.14		21.75					
14	3.75	W18x46	7	275.59055	W14X1211	3.75	147.64	W14X233	3.75	147.64	260.34	129.54	3265.2	-89.01	89.01	-114.02	114.02	23.31	23.31	187.132	1516.356		
	0													-89.01		-114.02		23.31					
13	3.75	W21X50	7	275.59055	W14X1211	3.75	147.64	W14X233	3.75	147.64	260.34	128.19	3960	-94.46	94.46	-121	121	20.21	20.21	194.062	1819.855		
	0													-94.46		-121		20.21					
12	3.75	W21X50	7	275.59055	W14X1211	3.75	147.64	W14X233	3.75	147.64	260.34	126.84	3960	-99.88	99.88	-127.94	127.94	17.54	17.54	201.366	1800.689		
	0													-99.88		-127.94		17.54					
11	3.75	W21X50	7	275.59055	W14X1211	3.75	147.64	W14X233	3.75	147.64	260.34	126.84	3960	-105.24	105.24	-134.82	134.82	14.97	14.97	208.668	1800.689		
	0													-105.24		-134.82		14.97					
10	3.75	W21X50	7	275.59055	W14X1211	3.75	147.64	W14X233	3.75	147.64	260.34	126.84	3960	-110.56	110.56	-141.64	141.64	12.21	12.21	215.702	1800.689		
	0													-110.56		-141.64		12.21					
9	3.75	W21X55	7	275.59055	W14X1211	3.75	147.64	W14X233	3.75	147.64	260.34	126.84	4536	-115.95	115.95	-148.54	148.54	12.24	12.24	225.65	2062.608		
	0													-115.95		-148.54		12.24					
8	3.75	W21x55	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.84	4536	-121.28	121.28	-155.37	155.37	11.95	11.95	235.171	2070.162		
	0													-121.28		-155.37		11.95					
7	3.75	W21x55	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.84	4536	-126.54	126.54	-162.12	162.12	11.47	11.47	244.378	2070.162		
	0													-126.54		-162.12		11.47					
6	3.75	W21x55	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.84	4536	-131.74	131.74	-168.79	168.79	10.96	10.96	253.443	2070.162		
	0													-131.74		-168.79		10.96					
5	3.75	W21x55	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.84	4536	-136.87	136.87	-175.36	175.36	10.56	10.56	262.484	2070.162		
	0													-136.87		-175.36		10.56					
4	3.75	W21x55	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.84	4536	-141.92	141.92	-181.85	181.85	10.5	10.5	271.729	2070.162		
	0													-141.92		-181.85		10.5					
3	3.75	W21X68	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.69	5760	-146.94	146.94	-188.28	188.28	5.89	5.89	276.358	2625.668		
	0													-146.94		-188.28		5.89					
2	3.75	W21X68	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.54	5760	-151.88	151.88	-194.61	194.61	2.12	2.12	281.681	2622.56		
	0													-151.88		-194.61		2.12					
1	3.75	W21X68	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.54	5760	-156.71	156.71	-200.8	200.8	-0.29	0.29	288.742	2622.56		
	0													-156.71		-200.8		-0.29					

K1 (Kolom Eksterior) Arah Y

Lantai	Stasion	Balok			(K1)			(K4)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh y B3	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W12X26	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	275.59	141.54	1339.2	-2.35	2.35	-2.92	2.92	1.87	1.87	6.15	641.9339
	0													-2.35		-2.92		1.87			
29	3.75	W12X30	7	275.59055	W14X156	3.75	147.64	W14X193	3.75	147.64	275.59	135.39	1551.6	-7.73	7.73	-9.82	9.82	3.16	3.16	17.346	711.4293
	0													-7.73		-9.82		3.16			
28	3.75	W12X30	7	275.59055	W14X156	3.75	147.64	W14X193	3.75	147.64	275.59	135.34	1551.6	-13.13	13.13	-16.74	16.74	4.76	4.76	28.886	711.1666
	0													-13.13		-16.74		4.76			
27	3.75	W12X30	7	275.59055	W14X156	3.75	147.64	W14X193	3.75	147.64	275.59	135.34	1551.6	-18.52	18.52	-23.64	23.64	6.7	6.7	40.744	711.1666
	0													-18.52		-23.64		6.7			
26	3.75	W12X30	7	275.59055	W14X156	3.75	147.64	W14X193	3.75	147.64	275.59	135.34	1551.6	-23.9	23.9	-30.54	30.54	8.96	8.96	52.91	711.1666
	0													-23.9		-30.54		8.96			
25	3.75	W12X30	7	275.59055	W14X156	3.75	147.64	W14X193	3.75	147.64	275.59	135.34	1551.6	-29.27	29.27	-37.43	37.43	11.58	11.58	65.419	711.1666
	0													-29.27		-37.43		11.58			
24	3.75	W12X30	7	275.59055	W14X156	3.75	147.64	W14X193	3.75	147.64	275.59	135.34	1551.6	-34.64	34.64	-44.31	44.31	14.56	14.56	78.283	711.1666
	0													-34.64		-44.31		14.56			
23	3.75	W12X30	7	275.59055	W14X156	3.75	147.64	W14X193	3.75	147.64	275.59	135.34	1551.6	-40.1	40.1	-51.31	51.31	15.22	15.22	88.995	711.1666
	0													-40.1		-51.31		15.22			
22	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	275.59	135.34	1551.6	-45.55	45.55	-58.29	58.29	15.96	15.96	99.765	711.1666
	0													-45.55		-58.29		15.96			
21	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	275.59	135.34	1551.6	-50.97	50.97	-65.25	65.25	16.64	16.64	110.429	711.1666
	0													-50.97		-65.25		16.64			
20	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	275.59	135.34	1551.6	-56.38	56.38	-72.18	72.18	16.99	16.99	120.736	711.1666
	0													-56.38		-72.18		16.99			
19	3.75	W12X40	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	275.59	135.54	2052	-61.88	61.88	-79.24	79.24	18.19	18.19	132.066	941.9118
	0													-61.88		-79.24		18.19			
18	3.75	W12X40	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	275.59	135.74	2052	-67.37	67.37	-86.26	86.26	19.06	19.06	143.034	943.3017
	0													-67.37		-86.26		19.06			
17	3.75	W12X40	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	275.59	135.74	2052	-72.82	72.82	-93.26	93.26	19.85	19.85	153.864	943.3017
	0													-72.82		-93.26		19.85			
16	3.75	W12X40	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	275.59	135.74	2052	-78.25	78.25	-100.22	100.22	20.69	20.69	164.7	943.3017
	0													-78.25		-100.22		20.69			
15	3.75	W12X40	7	275.59055	W14X1211	3.75	147.64	W14X233	3.75	147.64	275.59	135.74	2052	-83.65	83.65	-107.14	107.14	21.75	21.75	175.7	943.3017

	0																						
14	3.75	W12X40	7	275.59055	W14X1211	3.75	147.64	W14X233	3.75	147.64	275.59	135.74	2052	-83.65		-107.14		21.75					
	0													-89.01	89.01	-114.02	114.02	23.31	23.31	187.132	943.3017		
13	3.75	W12X40	7	275.59055	W14X1211	3.75	147.64	W14X233	3.75	147.64	275.59	135.74	2052	-89.01		-114.02		23.31					
	0													-94.46	94.46	-121	121	20.21	20.21	194.062	943.3017		
12	3.75	W12X40	7	275.59055	W14X1211	3.75	147.64	W14X233	3.75	147.64	275.59	135.74	2052	-94.46		-121		20.21					
	0													-99.88	99.88	-127.94	127.94	17.54	17.54	201.366	943.3017		
11	3.75	W12X40	7	275.59055	W14X1211	3.75	147.64	W14X233	3.75	147.64	275.59	135.74	2052	-99.88		-127.94		17.54					
	0													-105.24	105.24	-134.82	134.82	14.97	14.97	208.668	943.3017		
10	3.75	W12X40	7	275.59055	W14X1211	3.75	147.64	W14X233	3.75	147.64	275.59	135.74	2052	-105.24		-134.82		14.97					
	0													-110.56	110.56	-141.64	141.64	12.21	12.21	215.702	943.3017		
9	3.75	W14x43	7	275.59055	W14X1211	3.75	147.64	W14X233	3.75	147.64	275.59	134.84	2505.6	-110.56		-141.64		12.21					
	0													-115.95	115.95	-148.54	148.54	12.24	12.24	225.65	1144.184		
8	3.75	W14x43	7	275.59055	W14X233	3.75	147.64	W14X283	3.75	147.64	275.59	133.94	2505.6	-115.95		-148.54		12.24					
	0													-121.28	121.28	-155.37	155.37	11.95	11.95	235.171	1136.547		
7	3.75	W14x43	7	275.59055	W14X233	3.75	147.64	W14X283	3.75	147.64	275.59	133.94	2505.6	-121.28		-155.37		11.95					
	0													-126.54	126.54	-162.12	162.12	11.47	11.47	244.378	1136.547		
6	3.75	W14x43	7	275.59055	W14X233	3.75	147.64	W14X283	3.75	147.64	275.59	133.94	2505.6	-126.54		-162.12		11.47					
	0													-131.74	131.74	-168.79	168.79	10.96	10.96	253.443	1136.547		
5	3.75	W14x43	7	275.59055	W14X233	3.75	147.64	W14X283	3.75	147.64	275.59	133.94	2505.6	-131.74		-168.79		10.96					
	0													-136.87	136.87	-175.36	175.36	10.56	10.56	262.484	1136.547		
4	3.75	W14x43	7	275.59055	W14X233	3.75	147.64	W14X283	3.75	147.64	275.59	133.94	2505.6	-136.87		-175.36		10.56					
	0													-141.92	141.92	-181.85	181.85	10.5	10.5	271.729	1136.547		
3	3.75	W14x43	7	275.59055	W14X233	3.75	147.64	W14X283	3.75	147.64	275.59	133.94	2505.6	-141.92		-181.85		10.5					
	0													-146.94	146.94	-188.28	188.28	5.89	5.89	276.358	1136.547		
2	3.75	W14x43	7	275.59055	W14X233	3.75	147.64	W14X283	3.75	147.64	275.59	133.94	2505.6	-146.94		-188.28		5.89					
	0													-151.88	151.88	-194.61	194.61	2.12	2.12	281.681	1136.547		
1	3.75	W14x43	7	275.59055	W14X233	3.75	147.64	W14X283	3.75	147.64	275.59	133.94	2505.6	-151.88		-194.61		2.12					
	0													-156.71	156.71	-200.8	200.8	-0.29	0.29	288.742	1136.547		
														-156.71		-200.8		-0.29					

K2 (Arah X)

Lantai	Stasion	Balok			(K2)			(K3)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B1	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)

30	3.75	W14x22	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	140.79	1195.2	-4.21	4.21	-5.21	5.21	2.44	2.44	10.097	1204.427		
	0													-4.21		-5.21		2.44					
29	3.75	W16x36	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	132.84	2304	-13.99	13.99	-17.75	17.75	6.13	6.13	31.793	2196.576		
	0													-13.99		-17.75		6.13					
28	3.75	W16x36	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.74	2304	-23.77	23.77	-30.29	30.29	10.94	10.94	54.609	2178.387		
	0													-23.77		-30.29		10.94					
27	3.75	W16x36	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.74	2304	-33.55	33.55	-42.83	42.83	17.08	17.08	78.755	2178.387		
	0													-33.55		-42.83		17.08					
26	3.75	W16x36	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.74	2304	-43.33	43.33	-55.36	55.36	24.59	24.59	104.266	2178.387		
	0													-43.33		-55.36		24.59					
25	3.75	W16x36	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.74	2304	-53.1	53.1	-67.89	67.89	33.44	33.44	131.105	2178.387		
	0													-53.1		-67.89		33.44					
24	3.75	W16x36	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.74	2304	-62.87	62.87	-80.42	80.42	43.56	43.56	159.214	2178.387		
	0													-62.87		-80.42		43.56					
23	3.75	W18x40	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	130.74	2822.4	-72.55	72.55	-92.82	92.82	54.42	54.42	187.89	2648.268		
	0													-72.55		-92.82		54.42					
22	3.75	W18x40	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	129.74	2822.4	-82.22	82.22	-105.22	105.22	66.27	66.27	217.544	2630.034		
	0													-82.22		-105.22		66.27					
21	3.75	W18x40	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	129.74	2822.4	-91.89	91.89	-117.62	117.62	78.83	78.83	247.908	2630.034		
	0													-91.89		-117.62		78.83					
20	3.75	W18x40	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	129.74	2822.4	-101.56	101.56	-130.01	130.01	91.58	91.58	278.457	2630.034		
	0													-101.56		-130.01		91.58					
19	3.75	W18x46	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	129.64	3265.2	-111.37	111.37	-142.59	142.59	110.69	110.69	315.629	3040.309		
	0													-111.37		-142.59		110.69					
18	3.75	W18x46	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	129.54	3265.2	-121.18	121.18	-155.17	155.17	129.83	129.83	352.831	3037.964		
	0													-121.18		-155.17		129.83					
17	3.75	W18x46	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	129.54	3265.2	-130.98	130.98	-167.74	167.74	149.6	149.6	390.646	3037.964		
	0													-130.98		-167.74		149.6					
16	3.75	W18x46	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	129.54	3265.2	-140.77	140.77	-180.29	180.29	170.17	170.17	429.239	3037.964		
	0													-140.77		-180.29		170.17					
15	3.75	W18x46	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	129.54	3265.2	-150.55	150.55	-192.82	192.82	191.59	191.59	468.66	3041.475		
	0													-150.55		-192.82		191.59					
14	3.75	W18x46	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	129.54	3265.2	-160.31	160.31	-205.34	205.34	213.69	213.69	508.732	3041.475		
	0													-160.31		-205.34		213.69					

13	3.75	W21X50	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	128.19	3960	-169.95	169.95	-217.69	217.69	235.88	235.88	548.665	3650.226		
	0													-169.95		-217.69		235.88					
12	3.75	W21X50	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	126.84	3960	-179.58	179.58	-230.04	230.04	258.44	258.44	588.956	3611.784		
	0													-179.58		-230.04		258.44					
11	3.75	W21X50	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	126.84	3960	-189.21	189.21	-242.38	242.38	281.19	281.19	629.432	3611.784		
	0													-189.21		-242.38		281.19					
10	3.75	W21X50	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	126.84	3960	-198.82	198.82	-254.71	254.71	303.42	303.42	669.359	3611.784		
	0													-198.82		-254.71		303.42					
9	3.75	W21X55	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	126.84	4536	-208.48	208.48	-267.1	267.1	331.29	331.29	715.016	4137.134		
	0													-208.48		-267.1		331.29					
8	3.75	W21x55	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.84	4536	-218.14	218.14	-279.47	279.47	358.47	358.47	759.973	4143.519		
	0													-218.14		-279.47		358.47					
7	3.75	W21x55	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.84	4536	-227.78	227.78	-291.84	291.84	385.69	385.69	804.946	4143.519		
	0													-227.78		-291.84		385.69					
6	3.75	W21x55	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.84	4536	-237.41	237.41	-304.18	304.18	413.14	413.14	850.122	4143.519		
	0													-237.41		-304.18		413.14					
5	3.75	W21x55	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.84	4536	-247.03	247.03	-316.51	316.51	440.74	440.74	895.431	4143.519		
	0													-247.03		-316.51		440.74					
4	3.75	W21x55	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.84	4536	-256.63	256.63	-328.83	328.83	467.98	467.98	940.351	4143.519		
	0													-256.63		-328.83		467.98					
3	3.75	W21X68	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.69	5760	-266.19	266.19	-341.08	341.08	493.86	493.86	983.828	5255.389		
	0													-266.19		-341.08		493.86					
2	3.75	W21X68	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.54	5760	-275.75	275.75	-353.34	353.34	516.72	516.72	1024.29	5249.167		
	0													-275.75		-353.34		516.72					
1	3.75	W21X68	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.54	5760	-285.31	285.31	-365.59	365.59	532.61	532.61	1057.777	5249.167		
	0													-285.31		-365.59		532.61					

K2 (Arah y)

Lantai	Stasion	Balok			(K2)			(K5)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh y B4	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W12X30	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	141.49	1551.6	-4.21	4.21	-5.21	5.21	2.44	2.44	10.097	743.4833
	0													-4.21		-5.21		2.44			

29	3.75	W12X45	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	135.44	2311.2	-13.99	13.99	-17.75	17.75	6.13	6.13	31.793	1060.107
	0													-13.99		-17.75		6.13			
28	3.75	W12X45	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	135.54	2311.2	-23.77	23.77	-30.29	30.29	10.94	10.94	54.609	1060.89
	0													-23.77		-30.29		10.94			
27	3.75	W12X45	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	135.54	2311.2	-33.55	33.55	-42.83	42.83	17.08	17.08	78.755	1060.89
	0													-33.55		-42.83		17.08			
26	3.75	W12X45	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	135.54	2311.2	-43.33	43.33	-55.36	55.36	24.59	24.59	104.266	1060.89
	0													-43.33		-55.36		24.59			
25	3.75	W12X45	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	135.54	2311.2	-53.1	53.1	-67.89	67.89	33.44	33.44	131.105	1060.89
	0													-53.1		-67.89		33.44			
24	3.75	W12X45	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	135.54	2311.2	-62.87	62.87	-80.42	80.42	43.56	43.56	159.214	1060.89
	0													-62.87		-80.42		43.56			
23	3.75	W12X45	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	135.54	2311.2	-72.55	72.55	-92.82	92.82	54.42	54.42	187.89	1060.89
	0													-72.55		-92.82		54.42			
22	3.75	W12X45	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	135.54	2311.2	-82.22	82.22	-105.22	105.22	66.27	66.27	217.544	1060.89
	0													-82.22		-105.22		66.27			
21	3.75	W12X45	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	135.54	2311.2	-91.89	91.89	-117.62	117.62	78.83	78.83	247.908	1060.89
	0													-91.89		-117.62		78.83			
20	3.75	W12X45	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	135.54	2311.2	-101.56	101.56	-130.01	130.01	91.58	91.58	278.457	1060.89
	0													-101.56		-130.01		91.58			
19	3.75	W14x48	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	134.69	2822.4	-111.37	111.37	-142.59	142.59	110.69	110.69	315.629	1287.417
	0													-111.37		-142.59		110.69			
18	3.75	W14x48	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	133.84	2822.4	-121.18	121.18	-155.17	155.17	129.83	129.83	352.831	1279.292
	0													-121.18		-155.17		129.83			
17	3.75	W14x48	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	133.84	2822.4	-130.98	130.98	-167.74	167.74	149.6	149.6	390.646	1279.292
	0													-130.98		-167.74		149.6			
16	3.75	W14x48	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	133.84	2822.4	-140.77	140.77	-180.29	180.29	170.17	170.17	429.239	1279.292
	0													-140.77		-180.29		170.17			
15	3.75	W14x48	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	275.59	133.84	2822.4	-150.55	150.55	-192.82	192.82	191.59	191.59	468.66	1279.292
	0													-150.55		-192.82		191.59			
14	3.75	W14x48	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	275.59	133.84	2822.4	-160.31	160.31	-205.34	205.34	213.69	213.69	508.732	1279.292
	0													-160.31		-205.34		213.69			
13	3.75	W14x48	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	275.59	133.84	2822.4	-169.95	169.95	-217.69	217.69	235.88	235.88	548.665	1279.292
	0													-169.95		-217.69		235.88			

12	3.75	W14x48	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	275.59	133.84	2822.4	-179.58	179.58	-230.04	230.04	258.44	258.44	588.956	1279.292
	0													-179.58		-230.04		258.44			
11	3.75	W14x48	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	275.59	133.84	2822.4	-189.21	189.21	-242.38	242.38	281.19	281.19	629.432	1279.292
	0													-189.21		-242.38		281.19			
10	3.75	W14x48	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	275.59	133.84	2822.4	-198.82	198.82	-254.71	254.71	303.42	303.42	669.359	1279.292
	0													-198.82		-254.71		303.42			
9	3.75	W16x50	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	275.59	132.59	3312	-208.48	208.48	-267.1	267.1	331.29	331.29	715.016	1487.19
	0													-208.48		-267.1		331.29			
8	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-218.14	218.14	-279.47	279.47	358.47	358.47	759.973	1473.169
	0													-218.14		-279.47		358.47			
7	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-227.78	227.78	-291.84	291.84	385.69	385.69	804.946	1473.169
	0													-227.78		-291.84		385.69			
6	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-237.41	237.41	-304.18	304.18	413.14	413.14	850.122	1473.169
	0													-237.41		-304.18		413.14			
5	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-247.03	247.03	-316.51	316.51	440.74	440.74	895.431	1473.169
	0													-247.03		-316.51		440.74			
4	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-256.63	256.63	-328.83	328.83	467.98	467.98	940.351	1473.169
	0													-256.63		-328.83		467.98			
3	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-266.19	266.19	-341.08	341.08	493.86	493.86	983.828	1473.169
	0													-266.19		-341.08		493.86			
2	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-275.75	275.75	-353.34	353.34	516.72	516.72	1024.29	1473.169
	0													-275.75		-353.34		516.72			
1	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-285.31	285.31	-365.59	365.59	532.61	532.61	1057.777	1473.169
	0													-285.31		-365.59		532.61			

K3 (Arah X)

Lantai	Stasion	Balok			(K3)			(K2)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B3	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W12X26	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	141.54	1339.2	-4.34	4.34	-5.38	5.38	2.4	2.4	10.298	1356.728
	0													-4.34		-5.38		2.4			
29	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	135.39	1551.6	-14.4	14.4	-18.27	18.27	6.43	6.43	32.845	1507.653
	0													-14.4		-18.27		6.43			

28	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	135.34	1551.6	-24.46	24.46	-31.16	31.16	11.45	11.45	56.382	1507.097		
	0													-24.46		-31.16		11.45					
27	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	135.34	1551.6	-34.51	34.51	-44.05	44.05	17.59	17.59	81.027	1507.097		
	0													-34.51		-44.05		17.59					
26	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	135.34	1551.6	-44.56	44.56	-56.94	56.94	24.89	24.89	106.832	1507.097		
	0													-44.56		-56.94		24.89					
25	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	135.34	1551.6	-54.6	54.6	-69.81	69.81	33.34	33.34	133.765	1507.097		
	0													-54.6		-69.81		33.34					
24	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	135.34	1551.6	-64.64	64.64	-82.68	82.68	42.87	42.87	161.778	1507.097		
	0													-64.64		-82.68		42.87					
23	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	135.34	1551.6	-74.66	74.66	-95.52	95.52	53.4	53.4	190.752	1507.097		
	0													-74.66		-95.52		53.4					
22	3.75	W12X30	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	135.34	1551.6	-84.66	84.66	-108.4	108.35	64.78	64.78	220.547	1508.256		
	0													-84.66		-108.4		64.78					
21	3.75	W12X30	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	135.34	1551.6	-94.66	94.66	-121.2	121.17	76.73	76.73	250.907	1508.256		
	0													-94.66		-121.2		76.73					
20	3.75	W12X30	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	135.34	1551.6	-104.6	104.64	-134	133.97	88.75	88.75	281.303	1508.256		
	0													-104.6		-134		88.75					
19	3.75	W12X40	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	135.54	2052	-114.8	114.82	-147	147.01	106.11	106.11	317.399	1997.625		
	0													-114.8		-147		106.11					
18	3.75	W12X40	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	135.74	2052	-125	124.99	-160	160.04	123.39	123.39	353.398	2000.573		
	0													-125		-160		123.39					
17	3.75	W12X40	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	135.74	2052	-135.1	135.12	-173	173.04	141.12	141.12	389.784	2000.573		
	0													-135.1		-173		141.12					
16	3.75	W12X40	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	135.74	2052	-145.2	145.24	-186	186	159.51	159.51	426.798	2000.573		
	0													-145.2		-186		159.51					
15	3.75	W12X40	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	135.74	2052	-155.3	155.32	-198.9	198.93	178.6	178.6	464.449	2002.885		
	0													-155.3		-198.9		178.6					
14	3.75	W12X40	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	135.74	2052	-165.4	165.37	-211.8	211.82	198.38	198.38	502.734	2002.885		
	0													-165.4		-211.8		198.38					
13	3.75	W12X40	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	135.74	2052	-175.4	175.38	-224.7	224.65	218.76	218.76	541.541	2002.885		
	0													-175.4		-224.7		218.76					
12	3.75	W12X40	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	135.74	2052	-185.4	185.36	-237.5	237.45	239.57	239.57	580.727	2002.885		
	0													-185.4		-237.5		239.57					

11	3.75	W12X40	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	135.74	2052	-195.3	195.31	-250.2	250.21	260.44	260.44	619.917	2002.885		
	0													-195.3		-250.2		260.44					
10	3.75	W12X40	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	135.74	2052	-205.2	205.23	-262.9	262.92	280.73	280.73	658.466	2002.885		
	0													-205.2		-262.9		280.73					
9	3.75	W14x43	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	134.84	2505.6	-215.2	215.23	-275.7	275.73	305.68	305.68	701.821	2429.413		
	0													-215.2		-275.7		305.68					
8	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	133.94	2505.6	-225.2	225.18	-288.5	288.49	329.8	329.8	744.261	2416.921		
	0													-225.2		-288.5		329.8					
7	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	133.94	2505.6	-235.1	235.08	-301.2	301.19	353.81	353.81	786.501	2416.921		
	0													-235.1		-301.2		353.81					
6	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	133.94	2505.6	-244.9	244.94	-313.8	313.82	377.86	377.86	828.698	2416.921		
	0													-244.9		-313.8		377.86					
5	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	133.94	2505.6	-254.7	254.74	-326.4	326.39	401.9	401.9	870.783	2416.921		
	0													-254.7		-326.4		401.9					
4	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	133.94	2505.6	-264.5	264.49	-338.9	338.89	425.58	425.58	912.413	2416.921		
	0													-264.5		-338.9		425.58					
3	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	133.94	2505.6	-274.2	274.18	-351.3	351.32	448.12	448.12	952.796	2416.921		
	0													-274.2		-351.3		448.12					
2	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	133.94	2505.6	-283.8	283.83	-363.7	363.68	468.01	468.01	990.446	2416.921		
	0													-283.8		-363.7		468.01					
1	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	133.94	2505.6	-293.4	293.41	-376	375.96	481.71	481.71	1021.782	2416.921		
	0													-293.4		-376		481.71					

K3 (Arah Y)

Lantai	Stasion	Balok			(K3)			(K6)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh Y B4	L bik (m)	L bik (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W12X30	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	141.49	1551.6	-4.34	4.34	-5.38	5.38	2.4	2.4	10.298	743.4833
	0													-4.34		-5.38		2.4			
29	3.75	W12X45	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	135.44	2311.2	-14.4	14.4	-18.27	18.27	6.43	6.43	32.845	1060.107
	0													-14.4		-18.27		6.43			
28	3.75	W12X45	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	135.54	2311.2	-24.46	24.46	-31.16	31.16	11.45	11.45	56.382	1060.89
	0													-24.46		-31.16		11.45			

27	3.75	W12X45	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	135.54	2311.2	-34.51	34.51	-44.05	44.05	17.59	17.59	81.027	1060.89
	0													-34.51		-44.05		17.59			
26	3.75	W12X45	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	135.54	2311.2	-44.56	44.56	-56.94	56.94	24.89	24.89	106.832	1060.89
	0													-44.56		-56.94		24.89			
25	3.75	W12X45	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	135.54	2311.2	-54.6	54.6	-69.81	69.81	33.34	33.34	133.765	1060.89
	0													-54.6		-69.81		33.34			
24	3.75	W12X45	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	135.54	2311.2	-64.64	64.64	-82.68	82.68	42.87	42.87	161.778	1060.89
	0													-64.64		-82.68		42.87			
23	3.75	W12X45	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	135.54	2311.2	-74.66	74.66	-95.52	95.52	53.4	53.4	190.752	1060.89
	0													-74.66		-95.52		53.4			
22	3.75	W12X45	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	135.54	2311.2	-84.66	84.66	-108.35	108.35	64.78	64.78	220.547	1060.89
	0													-84.66		-108.35		64.78			
21	3.75	W12X45	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	135.54	2311.2	-94.66	94.66	-121.17	121.17	76.73	76.73	250.907	1060.89
	0													-94.66		-121.17		76.73			
20	3.75	W12X45	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	135.54	2311.2	-104.64	104.64	-133.97	133.97	88.75	88.75	281.303	1060.89
	0													-104.64		-133.97		88.75			
19	3.75	W14x48	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	134.69	2822.4	-114.82	114.82	-147.01	147.01	106.11	106.11	317.399	1287.417
	0													-114.82		-147.01		106.11			
18	3.75	W14x48	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	133.84	2822.4	-124.99	124.99	-160.04	160.04	123.39	123.39	353.398	1279.292
	0													-124.99		-160.04		123.39			
17	3.75	W14x48	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	133.84	2822.4	-135.12	135.12	-173.04	173.04	141.12	141.12	389.784	1279.292
	0													-135.12		-173.04		141.12			
16	3.75	W14x48	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	133.84	2822.4	-145.24	145.24	-186	186	159.51	159.51	426.798	1279.292
	0													-145.24		-186		159.51			
15	3.75	W14x48	7	275.59055	W14X233	3.75	147.64	W14X283	3.75	147.64	275.59	133.84	2822.4	-155.32	155.32	-198.93	198.93	178.6	178.6	464.449	1279.292
	0													-155.32		-198.93		178.6			
14	3.75	W14x48	7	275.59055	W14X233	3.75	147.64	W14X283	3.75	147.64	275.59	133.84	2822.4	-165.37	165.37	-211.82	211.82	198.38	198.38	502.734	1279.292
	0													-165.37		-211.82		198.38			
13	3.75	W14x48	7	275.59055	W14X233	3.75	147.64	W14X283	3.75	147.64	275.59	133.84	2822.4	-175.38	175.38	-224.65	224.65	218.76	218.76	541.541	1279.292
	0													-175.38		-224.65		218.76			
12	3.75	W14x48	7	275.59055	W14X233	3.75	147.64	W14X283	3.75	147.64	275.59	133.84	2822.4	-185.36	185.36	-237.45	237.45	239.57	239.57	580.727	1279.292
	0													-185.36		-237.45		239.57			
11	3.75	W14x48	7	275.59055	W14X233	3.75	147.64	W14X283	3.75	147.64	275.59	133.84	2822.4	-195.31	195.31	-250.21	250.21	260.44	260.44	619.917	1279.292
	0													-195.31		-250.21		260.44			

10	3.75	W14x48	7	275.59055	W14X233	3.75	147.64	W14X283	3.75	147.64	275.59	133.84	2822.4	-205.23	205.23	-262.92	262.92	280.73	280.73	658.466	1279.292
	0													-205.23		-262.92		280.73			
9	3.75	W16x50	7	275.59055	W14X233	3.75	147.64	W14X283	3.75	147.64	275.59	132.59	3312	-215.23	215.23	-275.73	275.73	305.68	305.68	701.821	1487.19
	0													-215.23		-275.73		305.68			
8	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-225.18	225.18	-288.49	288.49	329.8	329.8	744.261	1473.169
	0													-225.18		-288.49		329.8			
7	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-235.08	235.08	-301.19	301.19	353.81	353.81	786.501	1473.169
	0													-235.08		-301.19		353.81			
6	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-244.94	244.94	-313.82	313.82	377.86	377.86	828.698	1473.169
	0													-244.94		-313.82		377.86			
5	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-254.74	254.74	-326.39	326.39	401.9	401.9	870.783	1473.169
	0													-254.74		-326.39		401.9			
4	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-264.49	264.49	-338.89	338.89	425.58	425.58	912.413	1473.169
	0													-264.49		-338.89		425.58			
3	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-274.18	274.18	-351.32	351.32	448.12	448.12	952.796	1473.169
	0													-274.18		-351.32		448.12			
2	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-283.83	283.83	-363.68	363.68	468.01	468.01	990.446	1473.169
	0													-283.83		-363.68		468.01			
1	3.75	W16x50	7	275.59055	W14X257	3.75	147.64	W14X370	3.75	147.64	275.59	131.34	3312	-293.41	293.41	-375.96	375.96	481.71	481.71	1021.782	1473.169
	0													-293.41		-375.96		481.71			

K4 (Arah X)

Lantai	Stasion	Balok			(K4)			(K5)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B2	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-In)
30	3.75	W18X35	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	260.44	138.79	2394	-4.93	4.93	-6.1	6.1	-1.31	1.31	10.276	1190.703
	0													-4.93		-6.1		-1.31			
29	3.75	W21X50	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	259.84	128.39	3960	-16.84	16.84	-21.37	21.37	-4.94	4.94	35.833	1826.202
	0													-16.84		-21.37		-4.94			
28	3.75	W21X50	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	259.84	126.84	3960	-28.77	28.77	-36.66	36.66	-9.54	9.54	62.394	1804.154
	0													-28.77		-36.66		-9.54			
27	3.75	W21X50	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	259.84	126.84	3960	-40.69	40.69	-51.94	51.94	-15.36	15.36	90.158	1804.154
	0													-40.69		-51.94		-15.36			

26	3.75	W21X50	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	259.84	126.84	3960	-52.6	52.6	-67.21	67.21	-22.45	22.45	119.175	1804.154
	0													-52.6		-67.21		-22.45			
25	3.75	W21X50	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	259.84	126.84	3960	-64.51	64.51	-82.48	82.48	-30.77	30.77	149.422	1804.154
	0													-64.51		-82.48		-30.77			
24	3.75	W21X50	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	259.84	126.84	3960	-76.4	76.4	-97.73	97.73	-40.12	40.12	180.665	1804.154
	0													-76.4		-97.73		-40.12			
23	3.75	W21X55	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	259.84	126.84	4536	-88.28	88.28	-112.95	112.95	-50.3	50.3	212.711	2066.577
	0													-88.28		-112.95		-50.3			
22	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	259.54	126.84	4536	-100.14	100.14	-128.16	128.16	-61.31	61.31	245.558	2068.966
	0													-100.14		-128.16		-61.31			
21	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	259.54	126.84	4536	-111.99	111.99	-143.35	143.35	-73.09	73.09	279.153	2068.966
	0													-111.99		-143.35		-73.09			
20	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	259.54	126.84	4536	-123.82	123.82	-158.51	158.51	-85.4	85.4	313.239	2068.966
	0													-123.82		-158.51		-85.4			
19	3.75	W21X57	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	259.54	126.69	4644	-135.75	135.75	-173.81	173.81	-100	100	349.805	2115.722
	0													-135.75		-173.81		-100			
18	3.75	W21X57	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	259.54	126.54	4644	-147.66	147.66	-189.08	189.08	-114.99	114.99	386.722	2113.217
	0													-147.66		-189.08		-114.99			
17	3.75	W21X57	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	259.54	126.54	4644	-159.54	159.54	-204.31	204.31	-130.61	130.61	424.213	2113.217
	0													-159.54		-204 31		-130.61			
16	3.75	W21X57	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	259.54	126.54	4644	-171.38	171.38	-219.48	219.48	-146.81	146.81	462.206	2113.217
	0													-171.38		-219.48		-146.81			
15	3.75	W21X57	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	259.04	126.54	4644	-183.17	183.17	-234.6	234.6	-163.41	163.41	500.514	2117.296
	0													-183.17		-234.6		-163.41			
14	3.75	W21X57	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	259.04	126.54	4644	-194.92	194.92	-249.67	249.67	-179.96	179.96	538.699	2117.296
	0													-194.92		-249.67		-179.96			
13	3.75	W24X62	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	259.04	125.24	5544	-206.89	206.89	-265.01	265.01	-200.81	200.81	581.583	2501.656
	0													-206.89		-265.01		-200.81			
12	3.75	W24X62	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	259.04	123.94	5544	-218.81	218.81	-280.29	280.29	-221.39	221.39	624.107	2475.689
	0													-218.81		-280.29		-221.39			
11	3.75	W24X62	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	259.04	123.94	5544	-230.68	230.68	-295.51	295.51	-242	242	666.571	2475.689
	0													-230.68		-295.51		-242			
10	3.75	W24X62	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	259.04	123.94	5544	-242.5	242.5	-310.66	310.66	-262.41	262.41	708.74	2475.689
	0													-242.5		-310.66		-262.41			

9	3.75	W24X68	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	259.04	123.94	6372	-254.33	254.33	-325.83	325.83	-285.09	285.09	753.201	2845.434
	0													-254.33		-325.83		-285.09			
8	3.75	W24X68	7	275.59055	W14X283	3.75	147.64	W14X370	3.75	147.64	258.29	123.94	6372	-266.1	266.1	-340.92	340.92	-307.58	307.58	797.36	2853.697
	0													-266.1		-340.92		-307.58			
7	3.75	W24X68	7	275.59055	W14X283	3.75	147.64	W14X370	3.75	147.64	258.29	123.94	6372	-277.79	277.79	-355.9	355.9	-330.24	330.24	841.538	2853.697
	0													-277.79		-355.9		-330.24			
6	3.75	W24X68	7	275.59055	W14X283	3.75	147.64	W14X370	3.75	147.64	258.29	123.94	6372	-289.38	289.38	-370.77	370.77	-353.05	353.05	885.691	2853.697
	0													-289.38		-370.77		-353.05			
5	3.75	W24X68	7	275.59055	W14X283	3.75	147.64	W14X370	3.75	147.64	258.29	123.94	6372	-300.88	300.88	-385.51	385.51	-375.74	375.74	929.551	2853.697
	0													-300.88		-385.51		-375.74			
4	3.75	W24X68	7	275.59055	W14X283	3.75	147.64	W14X370	3.75	147.64	258.29	123.94	6372	-312.29	312.29	-400.13	400.13	-397.63	397.63	972.443	2853.697
	0													-312.29		-400.13		-397.63			
3	3.75	W24X76	7	275.59055	W14X283	3.75	147.64	W14X370	3.75	147.64	258.29	123.84	7200	-323.62	323.62	-414.66	414.66	-420.21	420.21	1015.884	3221.914
	0													-323.62		-414.66		-420.21			
2	3.75	W24X76	7	275.59055	W14X283	3.75	147.64	W14X370	3.75	147.64	258.29	123.74	7200	-334.88	334.88	-429.09	429.09	-439.68	439.68	1056.081	3219.312
	0													-334.88		-429.09		-439.68			
1	3.75	W24X76	7	275.59055	W14X283	3.75	147.64	W14X370	3.75	147.64	258.29	123.74	7200	-346.02	346.02	-443.38	443.38	-453.01	453.01	1089.924	3219.312
	0													-346.02		-443.38		-453.01			

K4 (Arah Y)

Lantai	Stasion	Balok			(K4)			(K4)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PL Pakai	PE	Pu	Mu
		Arh Y B3	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W12X26	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	141.54	1339.2	-4.93	4.93	-6.1	6.1	-1.31	1.31	10.276	1283.868
	0													-4.93		-6.1		-1.31			
29	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	275.59	135.39	1551.6	-16.84	16.84	-21.37	21.37	-4.94	4.94	35.833	1422.859
	0													-16.84		-21.37		-4.94			
28	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	275.59	135.34	1551.6	-28.77	28.77	-36.66	36.66	-9.54	9.54	62.394	1422.333
	0													-28.77		-36.66		-9.54			
27	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	275.59	135.34	1551.6	-40.69	40.69	-51.94	51.94	-15.36	15.36	90.158	1422.333
	0													-40.69		-51.94		-15.36			
26	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	275.59	135.34	1551.6	-52.6	52.6	-67.21	67.21	-22.45	22.45	119.175	1422.333
	0													-52.6		-67.21		-22.45			

25	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	275.59	135.34	1551.6	-64.51	64.51	-82.48	82.48	-30.77	30.77	149.422	1422.333
	0													-64.51		-82.48		-30.77			
24	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	275.59	135.34	1551.6	-76.4	76.4	-97.73	97.73	-40.12	40.12	180.665	1422.333
	0													-76.4		-97.73		-40.12			
23	3.75	W12X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	275.59	135.34	1551.6	-88.28	88.28	-112.95	112.95	-50.3	50.3	212.711	1422.333
	0													-88.28		-112.95		-50.3			
22	3.75	W12X30	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	275.59	135.34	1551.6	-100.14	100.14	-128.16	128.16	-61.31	61.31	245.558	1422.333
	0													-100.14		-128.16		-61.31			
21	3.75	W12X30	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	275.59	135.34	1551.6	-111.99	111.99	-143.35	143.35	-73.09	73.09	279.153	1422.333
	0													-111.99		-143.35		-73.09			
20	3.75	W12X30	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	275.59	135.34	1551.6	-123.82	123.82	-158.51	158.51	-85.4	85.4	313.239	1422.333
	0													-123.82		-158.51		-85.4			
19	3.75	W12X40	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	275.59	135.54	2052	-135.75	135.75	-173.81	173.81	-100	100	349.805	1883.824
	0													-135.75		-173.81		-100			
18	3.75	W12X40	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	275.59	135.74	2052	-147.66	147.66	-189.08	189.08	-114.99	114.99	386.722	1886.603
	0													-147.66		-189.08		-114.99			
17	3.75	W12X40	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	275.59	135.74	2052	-159.54	159.54	-204.31	204.31	-130.61	130.61	424.213	1886.603
	0													-159.54		-204.31		-130.61			
16	3.75	W12X40	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	275.59	135.74	2052	-171.38	171.38	-219.48	219.48	-146.81	146.81	462.206	1886.603
	0													-171.38		-219.48		-146.81			
15	3.75	W12X40	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	275.59	135.74	2052	-183.17	183.17	-234.6	234.6	-163.41	163.41	500.514	1886.603
	0													-183.17		-234.6		-163.41			
14	3.75	W12X40	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	275.59	135.74	2052	-194.92	194.92	-249.67	249.67	-179.96	179.96	538.699	1886.603
	0													-194.92		-249.67		-179.96			
13	3.75	W12X40	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	275.59	135.74	2052	-206.89	206.89	-265.01	265.01	-200.81	200.81	581.583	1886.603
	0													-206.89		-265.01		-200.81			
12	3.75	W12X40	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	275.59	135.74	2052	-218.81	218.81	-280.29	280.29	-221.39	221.39	624.107	1886.603
	0													-218.81		-280.29		-221.39			
11	3.75	W12X40	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	275.59	135.74	2052	-230.68	230.68	-295.51	295.51	-242	242	666.571	1886.603
	0													-230.68		-295.51		-242			
10	3.75	W12X40	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	275.59	135.74	2052	-242.5	242.5	-310.66	310.66	-262.41	262.41	708.74	1886.603
	0													-242.5		-310.66		-262.41			
9	3.75	W14x43	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	275.59	134.84	2505.6	-254.33	254.33	-325.83	325.83	-285.09	285.09	753.201	2288.368
	0													-254.33		-325.83		-285.09			

8	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.94	2505.6	-266.1	266.1	-340.92	340.92	-307.58	307.58	797.36	2273.094		
	0													-266.1		-340.92		-307.58					
7	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.94	2505.6	-277.79	277.79	-355.9	355.9	-330.24	330.24	841.538	2273.094		
	0													-277.79		-355.9		-330.24					
6	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.94	2505.6	-289.38	289.38	-370.77	370.77	-353.05	353.05	885.691	2273.094		
	0													-289.38		-370.77		-353.05					
5	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.94	2505.6	-300.88	300.88	-385.51	385.51	-375.74	375.74	929.551	2273.094		
	0													-300.88		-385.51		-375.74					
4	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.94	2505.6	-312.29	312.29	-400.13	400.13	-397.63	397.63	972.443	2273.094		
	0													-312.29		-400.13		-397.63					
3	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.94	2505.6	-323.62	323.62	-414.66	414.66	-420.21	420.21	1015.884	2273.094		
	0													-323.62		-414.66		-420.21					
2	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.94	2505.6	-334.88	334.88	-429.09	429.09	-439.68	439.68	1056.081	2273.094		
	0													-334.88		-429.09		-439.68					
1	3.75	W14x43	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.94	2505.6	-346.02	346.02	-443.38	443.38	-453.01	453.01	1089.924	2273.094		
	0													-346.02		-443.38		-453.01					

K5 (Arah X)

Lantai	Stasion	Balok			(K5)			(K6)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B2	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W18X35	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	138.79	2394	-8.26	8.26	-10.15	10.15	-0.17	0.17	14.987	2384.611
	0													-8.26		-10.15		-0.17			
29	3.75	W21X50	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	128.39	3960	-28.88	28.88	-36.59	36.59	-0.93	0.93	52.951	3655.921
	0													-28.88		-36.59		-0.93			
28	3.75	W21X50	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	126.84	3960	-49.48	49.48	-63	63	-1.71	1.71	90.876	3611.784
	0													-49.48		-63		-1.71			

K1 (Arah X)

Lantai	Pu (Kips)	MU (K-In)
30	6.15	602.0981
29	17.346	1006.812
28	28.886	1087.73
27	40.744	1087.73
26	52.91	1087.73
25	11.58	1087.73
24	78.283	1087.73
23	88.995	1322.354
22	99.765	1314.511
21	110.429	1314.511
20	120.736	1314.511
19	132.066	1519.57
18	143.034	1518.398
17	153.864	1518.398
16	164.7	1518.398
15	175.7	1516.356
14	187.132	1516.356
13	194.062	1819.855
12	201.366	1800.689
11	208.668	1800.689
10	215.702	1800.689
9	225.65	2062.608
8	235.171	2070.162
7	244.378	2070.162
6	253.443	2070.162
5	262.484	2070.162
4	271.729	2070.162
3	276.358	2625.668

LANTAI	K1	K2	K3	K4	K5	K6	B1	B2
30	W14X132	W14X145	W14X145	W14X145	W14X193	W14X193	W14x22	W18X35
29	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233	W16x36	W21X50
28	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233	W16x36	W21X50
27	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233	W16x36	W21X50
26	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233	W16x36	W21X50
25	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233	W16x36	W21X50
24	W14X156	W14X193	W14X193	W14X193	W14X233	W14X233	W16x36	W21X50
23	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257	W18x40	W21X55
22	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257	W18x40	W21X55
21	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257	W18x40	W21X55
20	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257	W18x40	W21X55
19	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257	W18x46	W21X57
18	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257	W18x46	W21X57
17	W14X193	W14X211	W14X211	W14X211	W14X257	W14X257	W18x46	W21X57
16	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283	W18x46	W21X57
15	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283	W18x46	W21X57
14	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283	W21X50	W24X62
13	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283	W21X50	W24X62
12	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283	W21X50	W24X62
11	W14X1211	W14X233	W14X233	W14X233	W14X311	W14X283	W21X50	W24X62
10	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370	W21X55	W24X68
9	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370	W21x55	W24X68
8	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370	W21x55	W24X68
7	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370	W21x55	W24X68
6	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370	W21x55	W24X68
5	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370	W21x55	W24X68
4	W14X233	W14X257	W14X257	W14X283	W14X370	W14X370	W21x55	W24X68

Tabel Distribusi Momen dan Gaya Aksial Kolom Struktur Frame Truss (FT) 30 Lt

K1 (Kolom Eksterior) Arah X

Lantai	Stasion	Balok			(K1)			(K2)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B1	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-In)
30	3.75	W12x19	7	275.59055	W14X109	3.75	147.64	W14X120	3.75	147.64	261.19	141.54	3889.2	1.91	1.91	2.38	2.38	0.84	0.84	3.822	449.7293
	0													1.91		2.38		0.84			
29	3.75	W16x36	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	260.99	133.59	2304	-38.53	38.53	-48.26	48.26	21.06	71.06	141.926	1100.68
	0													38.53		48.26		21.06			
28	3.75	W16x36	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	260.99	131.74	2304	-43.7	43.7	-55.89	55.89	24.92	74.92	155.305	1085.438
	0													43.7		55.89		24.92			
27	3.75	W16x36	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	260.99	131.74	2304	-48.88	48.88	-62.53	62.53	29.09	79.09	169.991	1085.438
	0													48.88		62.53		29.09			
26	3.75	W16x36	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	260.99	131.74	2304	-54.07	54.07	-69.18	69.18	33.61	83.61	183.084	1085.438
	0													54.07		69.18		33.61			
25	3.75	W16x36	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	260.99	131.74	2304	-59.26	59.26	-75.83	75.83	36.48	88.48	197.507	1085.438
	0													59.26		75.83		36.48			
24	3.75	W16x36	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	260.99	131.74	2304	-64.45	64.45	-82.49	82.49	39.66	93.66	212.245	1085.438
	0													64.45		82.49		39.66			
23	3.75	W16x36	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	260.99	131.74	2304	-69.71	69.71	-89.23	89.23	43.84	100.19	228.457	1085.438
	0													69.71		89.23		43.84			
22	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X159	3.75	147.64	260.74	131.74	2304	-74.97	74.97	-95.97	95.97	47.03	107.03	244.979	1086.478
	0													74.97		95.97		47.03			
21	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X159	3.75	147.64	260.74	131.74	2304	-80.21	80.21	-102.69	102.69	50.21	114.12	261.717	1086.478
	0													80.21		102.69		50.21			
20	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X159	3.75	147.64	260.74	131.74	2304	-85.44	85.44	-109.4	109.4	53.39	121.26	278.488	1086.478
	0													85.44		109.4		53.39			
19	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X159	3.75	147.64	260.74	131.74	2304	-90.69	90.69	-116.13	116.13	56.57	128.69	295.583	1086.478
	0													90.69		116.13		56.57			
18	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X159	3.75	147.64	260.74	131.74	2304	-95.97	95.97	-122.89	122.89	59.75	137.05	313.659	1086.478
	0													95.97		122.89		59.75			
17	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X159	3.75	147.64	260.74	131.74	2304	-101.22	101.22	-129.63	129.63	62.93	145.44	331.719	1086.478
	0													101.22		129.63		62.93			
16	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X159	3.75	147.64	260.74	131.74	2304	-106.45	106.45	-136.33	136.33	66.11	153.84	349.745	1086.478

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	0																												
15	3.75	W16x36	7	275.59055	W14X145	3.75	147.64	W14X176	3.75	147.64	260.59	131.74	2804	106.45		106.45													
	0													110.44	110.44	110.44	110.44												
14	3.75	W16x36	7	275.59055	W14X145	3.75	147.64	W14X176	3.75	147.64	260.59	131.74	2804	114.43		114.43													
	0													114.43	114.43	114.43	114.43												
13	3.75	W18X40	7	275.59055	W14X145	3.75	147.64	W14X176	3.75	147.64	260.59	130.74	2822.4	148.75		148.75													
	0													148.75	148.75	148.75	148.75												
12	3.75	W18X40	7	275.59055	W14X145	3.75	147.64	W14X176	3.75	147.64	260.59	129.74	2822.4	153.96		153.96													
	0													153.96	153.96	153.96	153.96												
11	3.75	W18X40	7	275.59055	W14X145	3.75	147.64	W14X176	3.75	147.64	260.59	129.74	2822.4	159.18		159.18													
	0													159.18	159.18	159.18	159.18												
10	3.75	W18X40	7	275.59055	W14X145	3.75	147.64	W14X176	3.75	147.64	260.59	129.74	2822.4	164.27		164.27													
	0													164.27	164.27	164.27	164.27												
9	3.75	W18X40	7	275.59055	W14X145	3.75	147.64	W14X176	3.75	147.64	260.59	129.74	2822.4	169.42		169.42													
	0													169.42	169.42	169.42	169.42												
8	3.75	W18X40	7	275.59055	W14X159	3.75	147.64	W14X193	3.75	147.64	260.34	129.74	2822.4	174.56		174.56													
	0													174.56	174.56	174.56	174.56												
7	3.75	W18X40	7	275.59055	W14X159	3.75	147.64	W14X193	3.75	147.64	260.34	129.74	2822.4	179.69		179.69													
	0													179.69	179.69	179.69	179.69												
6	3.75	W18X40	7	275.59055	W14X159	3.75	147.64	W14X193	3.75	147.64	260.34	129.74	2822.4	184.69		184.69													
	0													184.69	184.69	184.69	184.69												
5	3.75	W18X40	7	275.59055	W14X159	3.75	147.64	W14X193	3.75	147.64	260.34	129.74	2822.4	189.69		189.69													
	0													189.69	189.69	189.69	189.69												
4	3.75	W18X40	7	275.59055	W14X159	3.75	147.64	W14X193	3.75	147.64	260.34	129.74	2822.4	194.63		194.63													
	0													194.63	194.63	194.63	194.63												
3	3.75	W18X40	7	275.59055	W14X159	3.75	147.64	W14X193	3.75	147.64	260.34	129.74	2822.4	199.53		199.53													
	0													199.53	199.53	199.53	199.53												
2	3.75	W18X40	7	275.59055	W14X159	3.75	147.64	W14X193	3.75	147.64	260.34	129.74	2822.4	204.38		204.38													
	0													204.38	204.38	204.38	204.38												
1	3.75	W18X40	7	275.59055	W14X159	3.75	147.64	W14X193	3.75	147.64	260.34	129.74	2822.4	209.16		209.16													
	0													209.16	209.16	209.16	209.16												

K1 (Kolom Eksterior) Arah Y

Lantai	Stasion	Balok			(K1)			(K4)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh y B3	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-In)
30	3.75	W12X16	7	275.59055	W14X109	3.75	147.64	W14X120	3.75	147.64	275.59	141.64	2236	-1.91	1.91	2.88	2.88	0.84	0.84	3.822	347.0964
	0													1.91		2.88		0.84			
29	3.75	W14X30	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	275.59	133.84	1702.8	-38.53	38.53	-49.26	49.26	-71.06	71.06	141.926	777.0081
	0													-38.53		-49.26		-71.06			
28	3.75	W14X30	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	275.59	133.84	1702.8	-43.7	43.7	-55.89	55.89	-74.92	74.92	155.305	771.8179
	0													-43.7		-55.89		-74.92			
27	3.75	W14X30	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	275.59	133.84	1702.8	-48.88	48.88	-62.53	62.53	-79.08	79.08	169.001	771.8179
	0													-48.88		-62.53		-79.08			
26	3.75	W14X30	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	275.59	133.84	1702.8	-54.07	54.07	-69.18	69.18	-83.61	83.61	183.084	771.8179
	0													-54.07		-69.18		-83.61			
25	3.75	W14X30	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	275.59	133.84	1702.8	-59.26	59.26	-75.83	75.83	-88.48	88.48	197.507	771.8179
	0													-59.26		-75.83		-88.48			
24	3.75	W14X30	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	275.59	133.84	1702.8	-64.45	64.45	-82.49	82.49	-93.66	93.66	212.245	771.8179
	0													-64.45		-82.49		-93.66			
23	3.75	W14X30	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	275.59	133.84	1702.8	-69.71	69.71	-89.23	89.23	-100.19	100.19	228.457	771.8179
	0													-69.71		-89.23		-100.19			
22	3.75	W14X30	7	275.59055	W14X132	3.75	147.64	W14X159	3.75	147.64	275.59	133.84	1702.8	-74.97	74.97	-95.97	95.97	-107.03	107.03	244.979	771.8179
	0													-74.97		-95.97		-107.03			
21	3.75	W14X30	7	275.59055	W14X132	3.75	147.64	W14X159	3.75	147.64	275.59	133.84	1702.8	-80.21	80.21	-102.69	102.69	-114.12	114.12	261.717	771.8179
	0													-80.21		-102.69		-114.12			
20	3.75	W14X30	7	275.59055	W14X132	3.75	147.64	W14X159	3.75	147.64	275.59	133.84	1702.8	-85.44	85.44	-109.4	109.4	-121.26	121.26	278.488	771.8179
	0													-85.44		-109.4		-121.26			
19	3.75	W14X30	7	275.59055	W14X132	3.75	147.64	W14X159	3.75	147.64	275.59	133.84	1702.8	-90.69	90.69	-116.13	116.13	-128.69	128.69	295.583	771.8179
	0													-90.69		-116.13		-128.69			
18	3.75	W14X30	7	275.59055	W14X132	3.75	147.64	W14X159	3.75	147.64	275.59	133.84	1702.8	-95.97	95.97	-122.89	122.89	-137.05	137.05	313.659	771.8179
	0													-95.97		-122.89		-137.05			
17	3.75	W14X30	7	275.59055	W14X132	3.75	147.64	W14X159	3.75	147.64	275.59	133.84	1702.8	-101.22	101.22	-129.63	129.63	-145.44	145.44	331.719	771.8179
	0													-101.22		-129.63		-145.44			
16	3.75	W14X30	7	275.59055	W14X132	3.75	147.64	W14X159	3.75	147.64	275.59	133.84	1702.8	-106.45	106.45	-136.33	136.33	-153.84	153.84	349.745	771.8179
	0													-106.45		-136.33		-153.84			
15	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	133.84	1702.8	-110.44	110.44	-141.44	141.44	-158.06	158.06	361.308	771.8179

	0																				
14	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	133.84	1702.8	-110.44		-141.44		-158.06			
	0													143.52	143.52	183.83	183.83	296.34	296.34	530.479	771.8179
13	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	133.84	1702.8	143.52		183.83		296.34			
	0													148.75	148.75	190.54	190.54	276.81	276.81	550.58	771.8179
12	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	133.84	1702.8	148.75		190.54		276.81			
	0													153.96	153.96	197.21	197.21	287.45	287.45	570.807	771.8179
11	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	133.84	1702.8	-153.96		-197.21		287.45			
	0													-159.13	159.13	-203.85	203.85	298.17	298.17	591.051	771.8179
10	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	133.84	1702.8	159.13		203.85		298.17			
	0													-164.27	164.27	-210.45	210.45	308.42	308.42	610.759	771.8179
9	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	133.84	1702.8	-164.27		-210.45		-308.42			
	0													-169.42	169.42	-217.04	217.04	-318.79	318.79	630.614	771.8179
8	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X342	3.75	147.64	275.59	133.84	1702.8	-169.42		-217.04		-318.79			
	0													-174.56	174.56	-223.62	223.62	-329.72	329.72	651.002	771.8179
7	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X342	3.75	147.64	275.59	133.84	1702.8	-174.56		-223.62		-329.72			
	0													-179.65	179.65	-230.15	230.15	-340.28	340.28	670.935	771.8179
6	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X342	3.75	147.64	275.59	133.84	1702.8	-179.65		-230.15		-340.28			
	0													-184.69	184.69	-236.62	236.62	-350.33	350.33	690.268	771.8179
5	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X342	3.75	147.64	275.59	133.84	1702.8	-184.69		-236.62		-350.33			
	0													-189.69	189.69	-243.02	243.02	-359.71	359.71	708.848	771.8179
4	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X342	3.75	147.64	275.59	133.84	1702.8	-189.69		-243.02		-359.71			
	0													-194.63	194.63	-249.35	249.35	-368.31	368.31	726.541	771.8179
3	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X342	3.75	147.64	275.59	133.84	1702.8	-194.63		-249.35		-368.31			
	0													-199.53	199.53	-255.64	255.64	-377.18	377.18	744.436	771.8179
2	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X342	3.75	147.64	275.59	133.84	1702.8	-199.53		-255.64		377.18			
	0													-204.38	204.38	-261.85	261.85	-385	385	761.181	771.8179
1	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X342	3.75	147.64	275.59	133.84	1702.8	-204.38		-261.85		-385			
	0													-209.16	209.16	-267.98	267.98	-391.48	391.48	776.462	771.8179
														-209.16		-267.98		-391.48			

K2 (Arah X)

Lantai	Stasion	Balok			(K2)			(K3)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B1	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-In)

30	3.75	W12x19	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	260.99	141.54	889.2	3.14	3.14	3.89	3.89	0.09	0.09	0.09	0.09	0.09	0.09
	0													3.14		3.89		0.09		0.09		0.09	
29	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	143.59	2304	36.69	36.69	46.81	46.81	38.62	38.62	38.62	38.62	106.053	2202.627
	0													36.69		46.81		38.62		38.62		106.053	
28	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	131.74	2304	46.15	46.15	58.93	58.93	42.15	42.15	42.15	42.15	126.995	2172.124
	0													46.15		58.93		42.15		42.15		126.995	
27	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	131.74	2304	55.61	55.61	71.07	71.07	45.73	45.73	45.73	45.73	147.997	2172.124
	0													55.61		71.07		45.73		45.73		147.997	
26	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	131.74	2304	65.09	65.09	83.22	83.22	49.45	49.45	49.45	49.45	169.168	2172.124
	0													65.09		83.22		49.45		49.45		169.168	
25	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	131.74	2304	74.57	74.57	95.38	95.38	53.29	53.29	53.29	53.29	190.464	2172.124
	0													74.57		95.38		53.29		53.29		190.464	
24	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	131.74	2304	84.06	84.06	107.55	107.55	57.24	57.24	57.24	57.24	211.887	2172.124
	0													84.06		107.55		57.24		57.24		211.887	
23	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	131.74	2304	93.47	93.47	119.6	119.6	61.46	61.46	61.46	61.46	233.424	2172.124
	0													93.47		119.6		61.46		61.46		233.424	
22	3.75	W16x36	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	260.59	131.74	2304	102.88	102.88	131.67	131.67	65.74	65.74	65.74	65.74	255.031	2174.207
	0													102.88		131.67		65.74		65.74		255.031	
21	3.75	W16x36	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	260.59	131.74	2304	112.29	112.29	143.74	143.74	70.06	70.06	70.06	70.06	276.678	2174.207
	0													112.29		143.74		70.06		70.06		276.678	
20	3.75	W16x36	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	260.59	131.74	2304	121.71	121.71	155.81	155.81	74.35	74.35	74.35	74.35	298.307	2174.207
	0													121.71		155.81		74.35		74.35		298.307	
19	3.75	W16x36	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	260.59	131.74	2304	131.19	131.19	167.97	167.97	79.56	79.56	79.56	79.56	320.973	2174.207
	0													131.19		167.97		79.56		79.56		320.973	
18	3.75	W16x36	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	260.59	131.74	2304	140.61	140.61	180.04	180.04	84.87	84.87	84.87	84.87	343.622	2174.207
	0													140.61		180.04		84.87		84.87		343.622	
17	3.75	W16x36	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	260.59	131.74	2304	150.04	150.04	192.13	192.13	90.11	90.11	90.11	90.11	366.223	2174.207
	0													150.04		192.13		90.11		90.11		366.223	
16	3.75	W16x36	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	260.59	131.74	2304	159.46	159.46	204.21	204.21	95.49	95.49	95.49	95.49	388.947	2174.207
	0													159.46		204.21		95.49		95.49		388.947	
15	3.75	W16x36	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	131.74	2304	166.29	166.29	212.96	212.96	98.39	98.39	98.39	98.39	404.418	2175.877
	0													166.29		212.96		98.39		98.39		404.418	
14	3.75	W16x36	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	131.74	2304	197.91	197.91	253.49	253.49	156.15	156.15	156.15	156.15	520.387	2175.877
	0													197.91		253.49		156.15		156.15		520.387	

13	3.75	W18X40	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	130.74	2822.4	-207.24	207.24	-265.45	265.45	-161.47	161.47	542.883	2645.217
	0													-207.24		-265.45		-161.47			
12	3.75	W18X40	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	129.74	2822.4	-216.59	216.59	-277.44	277.44	-166.45	166.45	565.078	2624.984
	0													-216.59		-277.44		-166.45			
11	3.75	W18X40	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	129.74	2822.4	-225.96	225.96	-289.45	289.45	-171.33	171.33	587.207	2624.984
	0													-225.96		-289.45		-171.33			
10	3.75	W18X40	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	129.74	2822.4	-235.34	235.34	-301.48	301.48	-175.92	175.92	609.068	2624.984
	0													-235.34		-301.48		-175.92			
9	3.75	W18X40	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	129.74	2822.4	-244.81	244.81	-313.62	313.62	-181.64	181.64	632.222	2624.984
	0													-244.81		-313.62		-181.64			
8	3.75	W18X40	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	129.74	2822.4	-254.25	254.25	-325.72	325.72	-187.16	187.16	655.12	2628.012
	0													-254.25		-325.72		-187.16			
7	3.75	W18X40	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	129.74	2822.4	-263.7	263.7	-337.84	337.84	-192.36	192.36	677.72	2628.012
	0													-263.7		-337.84		-192.36			
6	3.75	W18X40	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	129.74	2822.4	-273.18	273.18	-349.99	349.99	-197.12	197.12	699.931	2628.012
	0													-273.18		-349.99		-197.12			
5	3.75	W18X40	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	129.74	2822.4	-282.67	282.67	-362.16	362.16	-201.39	201.39	721.674	2628.012
	0													-282.67		-362.16		-201.39			
4	3.75	W18X40	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	129.74	2822.4	-292.18	292.18	-374.35	374.35	-205.12	205.12	742.911	2628.012
	0													-292.18		-374.35		-205.12			
3	3.75	W18X40	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	129.74	2822.4	-301.68	301.68	-386.54	386.54	-208.31	208.31	763.596	2628.012
	0													-301.68		-386.54		-208.31			
2	3.75	W18X40	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	129.74	2822.4	-311.21	311.21	-398.75	398.75	-210.92	210.92	783.747	2628.012
	0													-311.21		-398.75		-210.92			
1	3.75	W18X40	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	129.74	2822.4	-320.75	320.75	-410.99	410.99	-213.01	213.01	803.405	2628.012
	0													-320.75		-410.99		-213.01			

K2 (Arah y)

Lantai	Stasion	Balok			(K2)			(K5)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh y B4	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-In)
30	3.75	W12X16	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	275.59	141.64	723.6	-3.14	3.14	-3.89	3.89	0.05	0.05	5.763	347.0964
	0													-3.14		-3.89		0.05			
29	3.75	W16X36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	275.59	133.69	2304	-36.69	36.69	-46.81	46.81	-38.62	38.62	106.053	1043.15

	0																					
28	3.75	W16X36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	36.69		46.81		-38.62				
	0													-46.15	46.15	58.93	58.93	-42.15	42.15	126.985	1027.934	
27	3.75	W16X36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-46.15		-58.93		-42.15				
	0													55.61	55.61	71.07	71.07	-45.73	45.73	147.997	1027.934	
26	3.75	W16X36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-55.61		-71.07		-45.73				
	0													-65.09	65.09	83.22	83.22	-49.45	49.45	169.168	1027.934	
25	3.75	W16X36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-65.09		-83.22		-49.45				
	0													74.57	74.57	95.38	95.38	-53.29	53.29	190.464	1027.934	
24	3.75	W16X36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-74.57		-95.38		-53.29				
	0													84.06	84.06	107.55	107.55	-57.24	57.24	211.887	1027.934	
23	3.75	W16X36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-84.06		-107.55		-57.24				
	0													93.47	93.47	119.6	119.6	-61.46	61.46	233.424	1027.934	
22	3.75	W16X36	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	275.59	131.74	2304	-93.47		-119.6		-61.46				
	0													102.88	102.88	131.67	131.67	-65.74	65.74	255.031	1027.934	
21	3.75	W16X36	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	275.59	131.74	2304	-102.88		-131.67		-65.74				
	0													-112.29	112.29	-143.74	143.74	-70.06	70.06	276.678	1027.934	
20	3.75	W16X36	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	275.59	131.74	2304	-112.29		-143.74		-70.06				
	0													-121.71	121.71	-155.81	155.81	-74.35	74.35	298.307	1027.934	
19	3.75	W16x40	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	275.59	131.69	2628	-121.71		-155.81		-74.35				
	0													-131.19	131.19	-167.97	167.97	-79.56	79.56	320.973	1172.042	
18	3.75	W16x40	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-131.19		-167.97		-79.56				
	0													-140.61	140.61	-180.04	180.04	-84.87	84.87	343.622	1171.597	
17	3.75	W16x40	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-140.61		-180.04		-84.87				
	0													-150.04	150.04	-192.13	192.13	-90.11	90.11	366.223	1171.597	
16	3.75	W16x40	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-150.04		-192.13		-90.11				
	0													-159.46	159.46	-204.21	204.21	-95.49	95.49	388.947	1171.597	
15	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-159.46		-204.21		-95.49				
	0													-166.29	166.29	-212.96	212.96	-98.39	98.39	404.418	1171.597	
14	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-166.29		-212.96		-98.39				
	0													-197.91	197.91	-253.49	253.49	-156.15	156.15	520.387	1171.597	
13	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-197.91		-253.49		-156.15				
	0													-207.24	207.24	-265.45	265.45	-161.47	161.47	542.883	1171.597	
12	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-207.24		-265.45		-161.47				
														-216.59	216.59	-277.44	277.44	-166.45	166.45	565.078	1171.597	

	0													-216.59		-277.44		-166.45			
11	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-225.96	225.96	-289.45	289.45	-173.67	173.33	567.207	1171.597
	0													-225.96		-289.45		-173.67			
10	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-235.34	235.34	-301.48	301.48	-175.92	175.92	609.068	1171.597
	0													-235.34		-301.48		-175.92			
9	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-244.81	244.81	-313.62	313.62	-181.64	181.64	632.222	1171.597
	0													-244.81		-313.62		-181.64			
8	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-254.25	254.25	-325.72	325.72	-187.16	187.16	655.12	1171.597
	0													-254.25		-325.72		-187.16			
7	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-263.7	263.7	-337.84	337.84	-192.36	192.36	677.72	1171.597
	0													-263.7		-337.84		-192.36			
6	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-273.18	273.18	-349.99	349.99	-197.12	197.12	699.931	1171.597
	0													-273.18		-349.99		-197.12			
5	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-282.67	282.67	-362.16	362.16	-201.39	201.39	721.674	1171.597
	0													-282.67		-362.16		-201.39			
4	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-292.18	292.18	-374.35	374.35	-205.12	205.12	742.911	1171.597
	0													-292.18		-374.35		-205.12			
3	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-301.68	301.68	-386.54	386.54	-208.31	208.31	763.596	1171.597
	0													-301.68		-386.54		-208.31			
2	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-311.21	311.21	-398.75	398.75	-210.92	210.92	783.747	1171.597
	0													-311.21		-398.75		-210.92			
1	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-320.75	320.75	-410.99	410.99	-213.01	213.01	803.405	1171.597
	0													-320.75		-410.99		-213.01			

K3 (Arah X)

Lantai	Stasion	Balok			(K3)			(K2)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B3	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-In)
30	3.75	W12X16	7	275.59055	W14X132	3.75	147.64	W14X120	3.75	147.64	260.99	141.64	723.6	-4.38	4.38	-5.43	5.43	-1.19	1.19	9.161	733.0265
	0													-4.38		-5.43		-1.19			
29	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X132	3.75	147.64	260.84	134.74	1702.8	-14.52	14.52	-18.43	18.43	-4.7	4.7	31.339	1641.893
	0													-14.52		-18.43		-4.7			
28	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X132	3.75	147.64	260.84	133.84	1702.8	-24.78	24.78	-31.58	31.58	-10.22	10.22	55.746	1630.925
	0													-24.78		-31.58		-10.22			

27	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X132	3.75	147.64	260.84	133.84	1702.8	-35.03	35.03	-44.72	44.72	15.8	15.8	80.196	1630.925		
	0													-35.03		-44.72		-15.8					
26	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X132	3.75	147.64	260.84	133.84	1702.8	-45.27	45.27	-57.84	57.84	21.54	21.54	104.784	1630.925		
	0													-45.27		-57.84		-21.54					
25	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X132	3.75	147.64	260.84	133.84	1702.8	-55.49	55.49	-70.95	70.95	27.41	27.41	129.473	1630.925		
	0													-55.49		-70.95		-27.41					
24	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X132	3.75	147.64	260.84	133.84	1702.8	-65.71	65.71	-84.05	84.05	33.39	33.39	154.267	1630.925		
	0													-65.71		-84.05		-33.39					
23	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X132	3.75	147.64	260.84	133.84	1702.8	-75.98	75.98	-97.22	97.22	39.95	39.95	179.736	1630.925		
	0													-75.98		-97.22		-39.95					
22	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	260.59	133.84	1702.8	-86.24	86.24	-110.37	110.37	46.57	46.57	205.243	1632.49		
	0													-86.24		-110.37		-46.57					
21	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	260.59	133.84	1702.8	-96.48	96.48	-123.5	123.5	53.25	53.25	230.776	1632.49		
	0													-96.48		-123.5		-53.25					
20	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	260.59	133.84	1702.8	-106.71	106.71	-136.61	136.61	59.88	59.88	256.237	1632.49		
	0													-106.71		-136.61		-59.88					
19	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	260.59	133.84	1702.8	-117.04	117.04	-149.85	149.85	67.79	67.79	283.163	1632.49		
	0													-117.04		-149.85		-67.79					
18	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	260.59	133.84	1702.8	-127.38	127.38	-163.12	163.12	76.01	76.01	310.426	1632.49		
	0													-127.38		-163.12		-76.01					
17	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	260.59	133.84	1702.8	-137.7	137.7	-176.34	176.34	84.13	84.13	337.54	1632.49		
	0													-137.7		-176.34		-84.13					
16	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	260.59	133.84	1702.8	-147.99	147.99	-189.53	189.53	92.43	92.43	364.783	1632.49		
	0													-147.99		-189.53		-92.43					
15	3.75	W14X30	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.84	1702.8	-158.19	158.19	-202.6	202.6	97.33	97.33	388.458	1633.744		
	0													-158.19		-202.6		-97.33					
14	3.75	W14X30	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.84	1702.8	-168.4	168.4	-215.7	215.7	102.17	102.17	412.1	1633.744		
	0													-168.4		-215.7		-102.17					
13	3.75	W14X30	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.84	1702.8	-178.66	178.66	-228.86	228.86	110.68	110.68	439.502	1633.744		
	0													-178.66		-228.86		-110.68					
12	3.75	W14X30	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.84	1702.8	-188.87	188.87	-241.94	241.94	118.65	118.65	466.264	1633.744		
	0													-188.87		-241.94		-118.65					
11	3.75	W14X30	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.84	1702.8	-199.01	199.01	-254.94	254.94	126.38	126.38	492.662	1633.744		
	0													-199.01		-254.94		-126.38					

10	3.75	W14X30	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.84	1702.8	-209.1	209.1	-267.87	267.87	-133.57	133.57	518.425	1633.744		
	0													-209.1		-267.87		-133.57					
9	3.75	W14X30	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.84	1702.8	-219.24	219.24	-280.87	280.87	-142.25	142.25	545.773	1633.744		
	0													-219.24		-280.87		-142.25					
8	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	133.84	1702.8	-229.33	229.33	-293.81	293.81	-150.66	150.66	572.761	1635.628		
	0													-229.33		-293.81		-150.66					
7	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	133.84	1702.8	-239.35	239.35	-306.66	306.66	-158.53	158.53	599.08	1635.628		
	0													-239.35		-306.66		-158.53					
6	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	133.84	1702.8	-249.31	249.31	-319.42	319.42	-165.76	165.76	624.642	1635.628		
	0													-249.31		-319.42		-165.76					
5	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	133.84	1702.8	-259.2	259.2	-332.1	332.1	-172.27	172.27	649.36	1635.628		
	0													-259.2		-332.1		-172.27					
4	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	133.84	1702.8	-269.01	269.01	-344.68	344.68	-177.99	177.99	673.142	1635.628		
	0													-269.01		-344.68		-177.99					
3	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	133.84	1702.8	-278.77	278.77	-357.19	357.19	-182.98	182.98	696.099	1635.628		
	0													-278.77		-357.19		-182.98					
2	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	133.84	1702.8	-288.45	288.45	-369.61	369.61	-187.09	187.09	718.035	1635.628		
	0													-288.45		-369.61		-187.09					
1	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	133.84	1702.8	-298.05	298.05	-381.91	381.91	-190.43	190.43	739.045	1635.628		
	0													-298.05		-381.91		-190.43					

K3 (Arah Y)

Lantai	Stasion	Balok			(K3)			(K6)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh Y B4	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-In)
30	3.75	W12X16	7	275.59055	W14X132	3.75	147.64	W14X132	3.75	147.64	275.59	141.64	723.6	-4.38	4.38	-5.43	5.43	-1.19	1.19	9.161	347.0964
	0													-4.38		-5.43		-1.19			
29	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	133.69	2304	-14.52	14.52	-18.43	18.43	-4.7	4.7	31.339	1043.15
	0													-14.52		-18.43		-4.7			
28	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-24.78	24.78	-31.58	31.58	-10.22	10.22	55.746	1027.934
	0													-24.78		-31.58		-10.22			
27	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-35.03	35.03	-44.72	44.72	-15.8	15.8	80.196	1027.934
	0													-35.03		-44.72		-15.8			
26	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-45.27	45.27	-57.84	57.84	-21.54	21.54	104.784	1027.934

	0													-45.27		-57.84		-21.54			
25	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-55.49	55.49	-70.95	70.95	-27.41	27.41	129.473	1027.934
	0													-55.49		-70.95		-27.41			
24	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-65.71	65.71	-84.05	84.05	-33.39	33.39	154.267	1027.934
	0													-65.71		-84.05		-33.39			
23	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-75.98	75.98	-97.22	97.22	-39.95	39.95	179.736	1027.934
	0													-75.98		-97.22		-39.95			
22	3.75	W16X36	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	275.59	131.74	2304	-86.24	86.24	-110.37	110.37	-46.57	46.57	205.243	1027.934
	0													-86.24		-110.37		-46.57			
21	3.75	W16X36	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	275.59	131.74	2304	-96.48	96.48	-123.5	123.5	-53.25	53.25	230.776	1027.934
	0													-96.48		-123.5		-53.25			
20	3.75	W16X36	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	275.59	131.74	2304	-106.71	106.71	-136.61	136.61	-59.88	59.88	256.237	1027.934
	0													-106.71		-136.61		-59.88			
19	3.75	W16x40	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	275.59	131.69	2628	-117.04	117.04	-149.85	149.85	-67.79	67.79	283.163	1172.042
	0													-117.04		-149.85		-67.79			
18	3.75	W16x40	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-127.38	127.38	-163.12	163.12	-76.01	76.01	310.426	1171.597
	0													-127.38		-163.12		-76.01			
17	3.75	W16x40	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-137.7	137.7	-176.34	176.34	-84.13	84.13	337.54	1171.597
	0													-137.7		-176.34		-84.13			
16	3.75	W16x40	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-147.99	147.99	-189.53	189.53	-92.43	92.43	364.783	1171.597
	0													-147.99		-189.53		-92.43			
15	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-158.19	158.19	-202.6	202.6	-97.33	97.33	388.458	1171.597
	0													-158.19		-202.6		-97.33			
14	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-168.4	168.4	-215.7	215.7	-102.17	102.17	412.1	1171.597
	0													-168.4		-215.7		-102.17			
13	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-178.66	178.66	-228.86	228.86	-110.68	110.68	439.502	1171.597
	0													-178.66		-228.86		-110.68			
12	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-188.87	188.87	-241.94	241.94	-118.65	118.65	466.264	1171.597
	0													-188.87		-241.94		-118.65			
11	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-199.01	199.01	-254.94	254.94	-126.38	126.38	492.662	1171.597
	0													-199.01		-254.94		-126.38			
10	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-209.1	209.1	-267.87	267.87	-133.57	133.57	518.425	1171.597
	0													-209.1		-267.87		-133.57			
9	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-219.24	219.24	-280.87	280.87	-142.25	142.25	545.773	1171.597

	0													-219.24		280.87		-142.25				
8	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-229.33	229.33	-293.81	293.81	-150.66	150.66	572.761	1171.597	
	0													-229.33		-293.81		-150.66				
7	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-239.35	239.35	-306.66	306.66	-158.53	158.53	599.08	1171.597	
	0													-239.35		-306.66		-158.53				
6	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-249.31	249.31	-319.42	319.42	-165.76	165.76	624.642	1171.597	
	0													-249.31		-319.42		-165.76				
5	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-259.2	259.2	-332.1	332.1	-172.27	172.27	649.36	1171.597	
	0													-259.2		-332.1		-172.27				
4	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-269.01	269.01	-344.68	344.68	-177.99	177.99	673.142	1171.597	
	0													-269.01		-344.68		-177.99				
3	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-278.77	278.77	-357.19	357.19	-182.98	182.98	696.099	1171.597	
	0													-278.77		-357.19		-182.98				
2	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-288.45	288.45	-369.61	369.61	-187.09	187.09	718.035	1171.597	
	0													-288.45		-369.61		-187.09				
1	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-298.05	298.05	-381.91	381.91	-190.43	190.43	739.045	1171.597	
	0													-298.05		-381.91		-190.43				

K4 (Arah X)

Lantai	Stasion	Balok			(K4)			(K5)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B2	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-In)
30	3.75	W14X22	7	275.59055	W14X120	3.75	147.64	W14X132	3.75	147.64	260.99	140.79	1195.2	-1.22	1.22	-1.5	1.5	5.05	5.05	7.264	601.7521
	0													-1.22		-1.5		5.05			
29	3.75	W14X22	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	133.94	1195.2	13.14	13.14	17.03	17.03	258.3	258.3	282.583	572.8032
	0													13.14		17.03		258.3			
28	3.75	W14X22	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	133.94	1195.2	-5.46	5.46	-6.79	6.79	263.66	263.66	273.607	572.8032
	0													-5.46		-6.79		263.66			
27	3.75	W14X22	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	133.94	1195.2	-23.56	23.56	-29.99	29.99	242.06	242.06	285.327	572.8032
	0													-23.56		-29.99		242.06			
26	3.75	W14X22	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	133.94	1195.2	-41.2	41.2	-52.6	52.6	214.74	214.74	290.48	572.8032
	0													-41.2		-52.6		214.74			
25	3.75	W14X22	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	133.94	1195.2	-58.46	58.46	-74.71	74.71	179.95	179.95	287.457	572.8032
	0													-58.46		-74.71		179.95			

24	3.75	W14X22	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	133.94	1195.2	75.39	75.39	96.41	96.41	138.23	138.23	276.903	572.8032		
	0													-75.39		-96.41		-138.23					
23	3.75	W14X22	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	133.94	1195.2	92.08	92.08	117.8	117.8	89.79	89.79	259.186	572.8032		
	0													-92.08		-117.8		-89.79					
22	3.75	W14X22	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	260.49	133.94	1195.2	-108.52	108.52	-138.87	138.87	35.07	35.07	234.729	573.5728		
	0													-108.52		-138.87		-35.07					
21	3.75	W14X22	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	260.49	133.94	1195.2	-124.78	124.78	-159.72	159.72	-25.9	25.9	255.496	573.5728		
	0													-124.78		-159.72		25.9					
20	3.75	W14X22	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	260.49	133.94	1195.2	-140.8	140.8	-180.24	180.24	-91.44	91.44	350.52	573.5728		
	0													-140.8		-180.24		91.44					
19	3.75	W14X22	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	260.49	133.94	1195.2	-157.63	157.63	-201.82	201.82	-161.61	161.61	451.676	573.5728		
	0													-157.63		-201.82		161.61					
18	3.75	W14X22	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	260.49	133.94	1195.2	-174.57	174.57	-223.53	223.53	-234.94	234.94	556.189	573.5728		
	0													-174.57		-223.53		234.94					
17	3.75	W14X22	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	260.49	133.94	1195.2	-191.25	191.25	-244.91	244.91	-312.47	312.47	664.425	573.5728		
	0													-191.25		-244.91		312.47					
16	3.75	W14X22	7	275.59055	W14X159	3.75	147.64	W14X176	3.75	147.64	260.49	133.94	1195.2	-207.88	207.88	-266.23	266.23	-399.11	399.11	781.681	573.5728		
	0													-207.88		-266.23		399.11					
15	3.75	W14X22	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	133.94	1195.2	-222.59	222.59	-285.09	285.09	437.4	437.4	847.053	574.4549		
	0													-222.59		-285.09		-437.4					
14	3.75	W14X22	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	133.94	1195.2	-214.58	214.58	-274.84	274.84	-134.7	134.7	529.616	574.4549		
	0													-214.58		-274.84		134.7					
13	3.75	W16X26	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	132.94	1591.2	-230.61	230.61	-295.39	295.39	-191.56	191.56	615.987	759.0763		
	0													-230.61		-295.39		191.56					
12	3.75	W16X26	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.94	1591.2	-246.14	246.14	-315.29	315.29	-295.99	295.99	749.003	753.3663		
	0													-246.14		-315.29		295.99					
11	3.75	W16X26	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.94	1591.2	-261.09	261.09	-334.46	334.46	-401.26	401.26	881.798	753.3663		
	0													-261.09		-334.46		401.26					
10	3.75	W16X26	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.94	1591.2	-275.27	275.27	-352.63	352.63	-507.86	507.86	1014.499	753.3663		
	0													-275.27		-352.63		507.86					
9	3.75	W16X26	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.94	1591.2	-289.68	289.68	-371.11	371.11	-616.98	616.98	1150.151	753.3663		
	0													-289.68		-371.11		616.98					
8	3.75	W16X26	7	275.59055	W14X342	3.75	147.64	W14X211	3.75	147.64	258.99	131.94	1591.2	-303.57	303.57	-388.92	388.92	-725.13	725.13	1283.874	756.5661		
	0													-303.57		-388.92		725.13					

7	3.75	W16X26	7	275.59055	W14X342	3.75	147.64	W14X211	3.75	147.64	258.99	131.94	1591.2	-317.12	317.12	-406.29	406.29	-837.25	837.25	1420.939	756.5661	
	0													-317.12		-406.29		-837.25				
6	3.75	W16X26	7	275.59055	W14X342	3.75	147.64	W14X211	3.75	147.64	258.99	131.94	1591.2	-330.46	330.46	-423.39	423.39	-954.58	954.58	1562.827	756.5661	
	0													-330.46		-423.39		-954.58				
5	3.75	W16X26	7	275.59055	W14X342	3.75	147.64	W14X211	3.75	147.64	258.99	131.94	1591.2	-343.54	343.54	-440.17	440.17	-1076.53	1076.53	1708.863	756.5661	
	0													-343.54		-440.17		-1076.53				
4	3.75	W16X26	7	275.59055	W14X342	3.75	147.64	W14X211	3.75	147.64	258.99	131.94	1591.2	-356.33	356.33	-456.56	456.56	-1203.17	1203.17	1859.046	756.5661	
	0													-356.33		-456.56		-1203.17				
3	3.75	W16X26	7	275.59055	W14X342	3.75	147.64	W14X211	3.75	147.64	258.99	131.94	1591.2	-368.89	368.89	-472.67	472.67	-1335.73	1335.73	2014.733	756.5661	
	0													-368.89		-472.67		-1335.73				
2	3.75	W16X26	7	275.59055	W14X342	3.75	147.64	W14X211	3.75	147.64	258.99	131.94	1591.2	-380.91	380.91	-488.07	488.07	-1471.9	1471.9	2173.027	756.5661	
	0													-380.91		-488.07		-1471.9				
1	3.75	W16X26	7	275.59055	W14X342	3.75	147.64	W14X211	3.75	147.64	258.99	131.94	1591.2	-392.49	392.49	-502.92	502.92	-1615.88	1615.88	2338.328	756.5661	
	0													-392.49		-502.92		-1615.88				

K4 (Arah Y)

Lantai	Stasion	Balok			(K4)			(K4)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PL Pakai	PE	Pu	Mu
		Arh Y B3	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-In)
30	3.75	W12X16	7	275.59055	W14X120	3.75	147.64	W14X120	3.75	147.64	275.59	141.64	723.6	-1.22	1.22	-1.5	1.5	5.05	5.05	7.264	694.1929
	0													-1.22		-1.5		5.05			
29	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	134.74	1702.8	13.14	13.14	17.03	17.03	258.3	258.3	282.583	1554.016
	0													13.14		17.03		258.3			
28	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	133.84	1702.8	-5.46	5.46	-6.79	6.79	263.66	263.66	273.607	1543.636
	0													-5.46		-6.79		263.66			
27	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	133.84	1702.8	-23.56	23.56	-29.99	29.99	242.06	242.06	285.327	1543.636
	0													-23.56		-29.99		242.06			
26	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	133.84	1702.8	-41.2	41.2	-52.6	52.6	214.74	214.74	290.48	1543.636
	0													-41.2		-52.6		214.74			
25	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	133.84	1702.8	-58.46	58.46	-74.71	74.71	179.95	179.95	287.457	1543.636
	0													-58.46		-74.71		179.95			
24	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	133.84	1702.8	-75.39	75.39	-96.41	96.41	138.23	138.23	276.903	1543.636
	0													-75.39		-96.41		138.23			
23	3.75	W14X30	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	133.84	1702.8	-92.08	92.08	-117.8	117.8	89.79	89.79	259.186	1543.636

	0													-92.08		-117.8		89.79				
22	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	275.59	133.84	1702.8	-108.52	108.52	-138.87	138.87	35.07	35.07	234.729	1543.636	
	0													-108.52		-138.87		35.07				
21	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	275.59	133.84	1702.8	-124.78	124.78	-159.72	159.72	-25.9	25.9	255.496	1543.636	
	0													-124.78		-159.72		-25.9				
20	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	275.59	133.84	1702.8	-140.8	140.8	-180.24	180.24	-91.44	91.44	350.52	1543.636	
	0													-140.8		-180.24		-91.44				
19	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	275.59	133.84	1702.8	-157.63	157.63	-201.82	201.82	-161.61	161.61	451.676	1543.636	
	0													-157.63		-201.82		-161.61				
18	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	275.59	133.84	1702.8	-174.57	174.57	-223.53	223.53	-234.94	234.94	556.189	1543.636	
	0													-174.57		-223.53		-234.94				
17	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	275.59	133.84	1702.8	-191.25	191.25	-244.91	244.91	-312.47	312.47	664.425	1543.636	
	0													-191.25		-244.91		-312.47				
16	3.75	W14X30	7	275.59055	W14X159	3.75	147.64	W14X159	3.75	147.64	275.59	133.84	1702.8	-207.88	207.88	-266.23	266.23	-399.11	399.11	781.681	1543.636	
	0													-207.88		-266.23		-399.11				
15	3.75	W14X30	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	275.59	133.84	1702.8	-222.59	222.59	-285.09	285.09	-437.4	437.4	847.053	1543.636	
	0													-222.59		-285.09		-437.4				
14	3.75	W14X30	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	275.59	133.84	1702.8	-214.58	214.58	-274.84	274.84	-134.7	134.7	529.616	1543.636	
	0													-214.58		-274.84		-134.7				
13	3.75	W14X30	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	275.59	133.84	1702.8	-230.61	230.61	-295.39	295.39	-191.56	191.56	615.987	1543.636	
	0													-230.61		-295.39		-191.56				
12	3.75	W14X30	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	275.59	133.84	1702.8	-246.14	246.14	-315.29	315.29	-295.99	295.99	749.003	1543.636	
	0													-246.14		-315.29		-295.99				
11	3.75	W14X30	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	275.59	133.84	1702.8	-261.09	261.09	-334.46	334.46	-401.26	401.26	881.798	1543.636	
	0													-261.09		-334.46		-401.26				
10	3.75	W14X30	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	275.59	133.84	1702.8	-275.27	275.27	-352.63	352.63	-507.86	507.86	1014.499	1543.636	
	0													-275.27		-352.63		-507.86				
9	3.75	W14X30	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	275.59	133.84	1702.8	-289.68	289.68	-371.11	371.11	-616.98	616.98	1150.151	1543.636	
	0													-289.68		-371.11		-616.98				
8	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	275.59	133.84	1702.8	-303.57	303.57	-388.92	388.92	-725.13	725.13	1283.874	1543.636	
	0													-303.57		-388.92		-725.13				
7	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	275.59	133.84	1702.8	-317.12	317.12	-406.29	406.29	-837.25	837.25	1420.939	1543.636	
	0													-317.12		-406.29		-837.25				
6	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	275.59	133.84	1702.8	-330.46	330.46	-423.39	423.39	-954.58	954.58	1562.827	1543.636	

	0													-330.46		-423.39		-954.58			
5	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	275.59	133.84	1702.8	-343.54	343.54	-440.17	440.17	-1076.53	1076.53	1708.863	1543.636
	0													-343.54		-440.17		-1076.53			
4	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	275.59	133.84	1702.8	-356.33	356.33	-456.56	456.56	-1203.17	1203.17	1859.046	1543.636
	0													-356.33		-456.56		-1203.17			
3	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	275.59	133.84	1702.8	-368.89	368.89	-472.67	472.67	-1335.73	1335.73	2014.733	1543.636
	0													-368.89		-472.67		-1335.73			
2	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	275.59	133.84	1702.8	-380.91	380.91	-488.07	488.07	-1471.9	1471.9	2173.027	1543.636
	0													-380.91		-488.07		-1471.9			
1	3.75	W14X30	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	275.59	133.84	1702.8	-392.49	392.49	-502.92	502.92	-1615.88	1615.88	2338.328	1543.636
	0													-392.49		-502.92		-1615.88			

K5 (Arah X)

Lantai	Stasion	Balok			(K5)			(K6)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B2	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-In)
30	3.75	W14X22	7	275.59055	W14X132	3.75	147.64	W14X132	3.75	147.64	260.89	140.79	1195.2	-2.52	2.52	-3.11	3.11	-0.53	0.53	4.579	1203.965
	0													-2.52		-3.11		-0.53			
29	3.75	W14X22	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.94	1195.2	-10.49	10.49	-13.05	13.05	41.77	41.77	19.113	1145.826
	0													-10.49		-13.05		41.77			
28	3.75	W14X22	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.94	1195.2	-27.92	27.92	-35.4	35.4	24.14	24.14	51.204	1145.826
	0													-27.92		-35.4		24.14			
27	3.75	W14X22	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.94	1195.2	-45.44	45.44	-57.88	57.88	5.45	5.45	83.468	1145.826
	0													-45.44		-57.88		5.45			
26	3.75	W14X22	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.94	1195.2	-62.97	62.97	-80.36	80.36	-10.95	10.95	115.744	1145.826
	0													-62.97		-80.36		-10.95			
25	3.75	W14X22	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.94	1195.2	-80.53	80.53	-102.87	102.87	-27.26	27.26	148.071	1145.826
	0													-80.53		-102.87		-27.26			
24	3.75	W14X22	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.94	1195.2	-98.11	98.11	-125.42	125.42	-43.34	43.34	180.442	1145.826
	0													-98.11		-125.42		-43.34			
23	3.75	W14X22	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.94	1195.2	-115.73	115.73	-148.02	148.02	-60.34	60.34	212.686	1145.826
	0													-115.73		-148.02		-60.34			
22	3.75	W14X22	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.94	1195.2	-133.37	133.37	-170.64	170.64	-78.26	78.26	245.364	1147.586
	0													-133.37		-170.64		-78.26			

21	3.75	W14X22	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.94	1195.2	-151.07	151.07	-193.33	193.33	-96.1	96.1	277.949	1147.586		
	0													-151.07		-193.33		-96.1					
20	3.75	W14X22	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.94	1195.2	-168.68	168.68	-215.92	215.92	-114.31	114.31	310.376	1147.586		
	0													-168.68		-215.92		-114.31					
19	3.75	W14X22	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.94	1195.2	-185.71	185.71	-237.75	237.75	-131.48	131.48	341.727	1147.586		
	0													-185.71		-237.75		-131.48					
18	3.75	W14X22	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.94	1195.2	-203	203	-259.92	259.92	-149.21	149.21	373.56	1147.586		
	0													-203		-259.92		-149.21					
17	3.75	W14X22	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.94	1195.2	-220.32	220.32	-282.13	282.13	-167.61	167.61	405.449	1147.586		
	0													-220.32		-282.13		-167.61					
16	3.75	W14X22	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.94	1195.2	-238	238	-304.8	304.8	-191.15	191.15	438	1147.586		
	0													-238		-304.8		-191.15					
15	3.75	W14X22	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	133.94	1195.2	-246.27	246.27	-315.4	315.4	-213.64	213.64	453.224	1148.91		
	0													-246.27		-315.4		-213.64					
14	3.75	W14X22	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	133.94	1195.2	-264.85	264.85	-339.23	339.23	-182.99	182.99	487.435	1148.91		
	0													264.85		-339.23		-182.99					
13	3.75	W16X26	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	132.94	1591.2	-282.95	282.95	-362.42	362.42	-208.8	208.8	520.75	1518.153		
	0													-282.95		-362.42		-208.8					
12	3.75	W16X26	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.94	1591.2	-301.4	301.4	-386.08	386.08	-234.93	234.93	594.72	1506.733		
	0													-301.4		-386.08		-234.93					
11	3.75	W16X26	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.94	1591.2	-320.14	320.14	-410.11	410.11	-255.53	255.53	589.223	1506.733		
	0													-320.14		-410.11		-255.53					
10	3.75	W16X26	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.94	1591.2	-338.98	338.98	-434.27	434.27	-276.85	276.85	623.911	1506.733		
	0													-338.98		-434.27		-276.85					
9	3.75	W16X26	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.94	1591.2	-357.62	357.62	-458.17	458.17	-295.09	295.09	658.229	1506.733		
	0													-357.62		-458.17		-295.09					
8	3.75	W16X26	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	131.94	1591.2	-377.35	377.35	-483.45	483.45	-312.77	312.77	694.545	1508.763		
	0													-377.35		-483.45		-312.77					
7	3.75	W16X26	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	131.94	1591.2	-396.83	396.83	-508.43	508.43	-329.8	329.8	730.411	1508.763		
	0													-396.83		-508.43		-329.8					
6	3.75	W16X26	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	131.94	1591.2	-416.48	416.48	-533.63	533.63	-343.4	343.4	766.591	1508.763		
	0													-416.48		-533.63		-343.4					
5	3.75	W16X26	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	131.94	1591.2	-436.34	436.34	-559.08	559.08	-352.95	352.95	803.148	1508.763		
	0													-436.34		-559.08		-352.95					

4	3.75	W16X26	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	131.94	1591.2	-456.49	456.49	-584.92	584.92	-357.92	357.92	840.248	1508.763		
	0													456.49		584.92		-357.92					
3	3.75	W16X26	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	131.94	1591.2	-477.2	477.2	-611.47	611.47	-359.45	359.45	878.375	1508.763		
	0													-477.2		611.47		-359.45					
2	3.75	W16X26	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	131.94	1591.2	-498.13	498.13	-638.3	638.3	-357.07	357.07	916.906	1508.763		
	0													-498.13		-638.3		-357.07					
1	3.75	W16X26	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	131.94	1591.2	-519.71	519.71	-665.97	665.97	-352.01	352.01	956.637	1508.763		
	0													-519.71		-665.97		-352.01					

K5 (Arah Y)

Lantai	Stasion	Balok			(K5)			(K4)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE Pakai	PE	Pu	Mu
		Arh Y B4	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-In)
30	3.75	W12X16	7	275.59055	W14X132	3.75	147.64	W14X120	3.75	147.64	275.59	141.64	723.6	-2.52	2.52	-3.11	3.11	-0.53	0.53	4.579	694.1929
	0													-2.52		-3.11		-0.53			
29	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X132	3.75	147.64	275.59	133.69	2304	-10.49	10.49	-13.05	13.05	41.77	41.77	19.113	2086.3
	0													-10.49		-13.05		41.77			
28	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X132	3.75	147.64	275.59	131.74	2304	-27.92	27.92	-35.4	35.4	24.14	24.14	51.204	2055.868
	0													-27.92		-35.4		24.14			
27	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X132	3.75	147.64	275.59	131.74	2304	-45.44	45.44	-57.88	57.88	5.45	5.45	83.468	2055.868
	0													-45.44		-57.88		5.45			
26	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X132	3.75	147.64	275.59	131.74	2304	-62.97	62.97	-80.36	80.36	-10.95	10.95	115.744	2055.868
	0													-62.97		-80.36		-10.95			
25	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X132	3.75	147.64	275.59	131.74	2304	-80.53	80.53	-102.87	102.87	-27.26	27.26	148.071	2055.868
	0													-80.53		-102.87		-27.26			
24	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X132	3.75	147.64	275.59	131.74	2304	-98.11	98.11	-125.42	125.42	-43.34	43.34	180.442	2055.868
	0													-98.11		-125.42		-43.34			
23	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X132	3.75	147.64	275.59	131.74	2304	-115.73	115.73	-148.02	148.02	-60.34	60.34	212.886	2055.868
	0													-115.73		-148.02		-60.34			
22	3.75	W16X36	7	275.59055	W14X176	3.75	147.64	W14X159	3.75	147.64	275.59	131.74	2304	-133.37	133.37	-170.64	170.64	-78.26	78.26	245.364	2055.868
	0													-133.37		-170.64		-78.26			
21	3.75	W16X36	7	275.59055	W14X176	3.75	147.64	W14X159	3.75	147.64	275.59	131.74	2304	-151.07	151.07	-193.33	193.33	-96.1	96.1	277.949	2055.868
	0													-151.07		-193.33		-96.1			
20	3.75	W16X36	7	275.59055	W14X176	3.75	147.64	W14X159	3.75	147.64	275.59	131.74	2304	-168.68	168.68	-215.92	215.92	-114.31	114.31	310.376	2055.868

	0																						
19	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X159	3.75	147.64	275.59	131.69	2628	-168.68		-215.92		-114.31					
	0													-185.71	185.71	-237.75	237.75	-131.48	131.48	341.727	2344.085		
18	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X159	3.75	147.64	275.59	131.64	2628	-185.71		-237.75		-131.48					
	0													-203	203	-259.92	259.92	-149.21	149.21	373.56	2343.195		
17	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X159	3.75	147.64	275.59	131.64	2628	-203		-259.92		-149.21					
	0													-220.32	220.32	-282.13	282.13	-167.61	167.61	405.449	2343.195		
16	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X159	3.75	147.64	275.59	131.64	2628	-220.32		-282.13		-167.61					
	0													-238	238	-304.8	304.8	-191.15	191.15	438	2343.195		
15	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-238		-304.8		-191.15					
	0													-246.27	246.27	-315.4	315.4	-213.64	213.64	453.224	2343.195		
14	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-246.27		-315.4		-213.64					
	0													-264.85	264.85	-339.23	339.23	-182.99	182.99	487.435	2343.195		
13	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-264.85		-339.23		-182.99					
	0													-282.95	282.95	-362.42	362.42	-208.8	208.8	520.75	2343.195		
12	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-282.95		-362.42		-208.8					
	0													-301.4	301.4	-386.08	386.08	-234.93	234.93	554.72	2343.195		
11	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-301.4		-386.08		-234.93					
	0													-320.14	320.14	-410.11	410.11	-255.53	255.53	589.223	2343.195		
10	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-320.14		-410.11		-255.53					
	0													-338.98	338.98	-434.27	434.27	-276.85	276.85	623.911	2343.195		
9	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-338.98		-434.27		-276.85					
	0													-357.62	357.62	-458.17	458.17	-295.09	295.09	658.229	2343.195		
8	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-357.62		-458.17		-295.09					
	0													-377.35	377.35	-483.45	483.45	-312.77	312.77	694.545	2343.195		
7	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-377.35		-483.45		-312.77					
	0													-396.83	396.83	-508.43	508.43	-329.8	329.8	730.411	2343.195		
6	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-396.83		-508.43		-329.8					
	0													-416.48	416.48	-533.63	533.63	-343.4	343.4	766.591	2343.195		
5	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-416.48		-533.63		-343.4					
	0													-436.34	436.34	-559.08	559.08	-352.95	352.95	803.148	2343.195		
4	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-436.34		-559.08		-352.95					
	0													-456.49	456.49	-584.92	584.92	-357.92	357.92	840.248	2343.195		
3	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-456.49		-584.92		-357.92					
														-477.2	477.2	-611.47	611.47	-359.45	359.45	878.375	2343.195		

	0																					
2	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-477.2		-611.47		-359.45				
	0													-498.13	498.13	-638.3	638.3	-357.07	357.07	916.906	2343.195	
1	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-498.13		-638.3		-357.07				
	0													-519.71	519.71	-665.97	665.97	-352.01	352.01	956.637	2343.195	
														-519.71		-665.97		-352.01				

K6 (Arah X)

Lantai	Stasion	Balok			(K6)			(K5)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B2	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-In)
30	3.75	W14X22	7	275.59055	W14X132	3.75	147.64	W14X132	3.75	147.64	260.89	140.79	1195.2	3.65	3.65	4.46	4.46	0.97	0.97	6.61	1203.965
	0													-3.65		-4.46		-0.97			
29	3.75	W14X22	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.94	1195.2	-1.53	1.53	-1.56	1.56	-106.83	106.83	2.616	1145.826
	0													-1.53		-1.56		-106.83			
28	3.75	W14X22	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.94	1195.2	-22.55	22.55	-28.51	28.51	-106.92	106.92	41.315	1145.826
	0													-22.55		-28.51		-106.92			
27	3.75	W14X22	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.94	1195.2	-43.56	43.56	-55.44	55.44	-107.51	107.51	79.992	1145.826
	0													-43.56		-55.44		-107.51			
26	3.75	W14X22	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.94	1195.2	-64.56	64.56	-82.38	82.38	-108.53	108.53	118.662	1145.826
	0													-64.56		-82.38		-108.53			
25	3.75	W14X22	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.94	1195.2	-85.57	85.57	-109.31	109.31	-109.96	109.96	157.339	1145.826
	0													-85.57		-109.31		-109.96			
24	3.75	W14X22	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.94	1195.2	-106.59	106.59	-136.26	136.26	-111.77	111.77	196.038	1145.826
	0													-106.59		-136.26		-111.77			
23	3.75	W14X22	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.94	1195.2	-127.59	127.59	-163.19	163.19	-114.06	114.06	234.703	1145.826
	0													-127.59		-163.19		-114.06			
22	3.75	W14X22	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.94	1195.2	-148.62	148.62	-190.14	190.14	-116.64	116.64	273.414	1147.586
	0													-148.62		-190.14		-116.64			
21	3.75	W14X22	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.94	1195.2	-169.67	169.67	-217.14	217.14	-119.43	119.43	312.174	1147.586
	0													-169.67		-217.14		-119.43			
20	3.75	W14X22	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.94	1195.2	-190.76	190.76	-244.18	244.18	-122.39	122.39	351.002	1147.586
	0													-190.76		-244.18		-122.39			
19	3.75	W14X22	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.94	1195.2	-211.77	211.77	-271.11	271.11	-124.79	124.79	389.679	1147.586
	0													-211.77		-271.11		-124.79			

18	3.75	W14X22	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.94	1195.2	-232.73	232.73	-297.99	297.99	-128.13	128.13	428.271	1147.586		
	0													-232.73		-297.99		-128.13					
17	3.75	W14X22	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.94	1195.2	-253.73	253.73	-324.92	324.92	-131.42	131.42	466.936	1147.586		
	0													-253.73		-324.92		-131.42					
16	3.75	W14X22	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.94	1195.2	-274.85	274.85	-351.99	351.99	-134.54	134.54	505.815	1147.586		
	0													-274.85		-351.99		-134.54					
15	3.75	W14X22	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	133.94	1195.2	-283.12	283.12	-362.6	362.6	-138.53	138.53	521.044	1148.91		
	0													-283.12		-362.6		-138.53					
14	3.75	W14X22	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	133.94	1195.2	-295.75	295.75	-378.8	378.8	-326.23	326.23	544.3	1148.91		
	0													-295.75		-378.8		-326.23					
13	3.75	W16X26	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	132.94	1591.2	-316.94	316.94	-405.97	405.97	-330.43	330.43	583.313	1518.153		
	0													-316.94		-405.97		-330.43					
12	3.75	W16X26	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.94	1591.2	-338.22	338.22	-433.25	433.25	-335.15	335.15	622.489	1506.733		
	0													-338.22		-433.25		-335.15					
11	3.75	W16X26	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.94	1591.2	-359.59	359.59	-460.65	460.65	-340.22	340.22	661.833	1506.733		
	0													-359.59		-460.65		-340.22					
10	3.75	W16X26	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.94	1591.2	-381.05	381.05	-488.17	488.17	-345.51	345.51	701.345	1506.733		
	0													-381.05		-488.17		-345.51					
9	3.75	W16X26	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	131.94	1591.2	-402.5	402.5	-515.66	515.66	-350.14	350.14	740.83	1506.733		
	0													-402.5		-515.66		-350.14					
8	3.75	W16X26	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	131.94	1591.2	-423.99	423.99	-543.21	543.21	-355.84	355.84	780.393	1509.635		
	0													-423.99		-543.21		-355.84					
7	3.75	W16X26	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	131.94	1591.2	-445.56	445.56	-570.87	570.87	-361.4	361.4	820.107	1509.635		
	0													-445.56		-570.87		-361.4					
6	3.75	W16X26	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	131.94	1591.2	-467.26	467.26	-598.69	598.69	-366.61	366.61	860.057	1509.635		
	0													-467.26		-598.69		-366.61					
5	3.75	W16X26	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	131.94	1591.2	-489.08	489.08	-626.66	626.66	-371.33	371.33	900.226	1509.635		
	0													-489.08		-626.66		-371.33					
4	3.75	W16X26	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	131.94	1591.2	-511.02	511.02	-654.8	654.8	-375.39	375.39	940.624	1509.635		
	0													-511.02		-654.8		-375.39					
3	3.75	W16X26	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	131.94	1591.2	-533.08	533.08	-683.07	683.07	-379.31	379.31	981.231	1509.635		
	0													-533.08		-683.07		-379.31					
2	3.75	W16X26	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	131.94	1591.2	-555.24	555.24	-711.49	711.49	-382.15	382.15	1022.033	1509.635		
	0													-555.24		-711.49		-382.15					

1	3.75	W16X26	7	275.59055	W14X233	3.75	147.64	W14X233	3.75	147.64	259.59	131.94	1591.2	-577.6	577.6	-740.15	740.15	-383.75	383.75	1063.195	1509.635
	0													-577.6		-740.15		-383.75			

K6 (Arah Y)

Lantai	Stasion	Balok			(K6)			(K3)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PL Pakai	PE	Pu	Mu
		Arh Y B4	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-In)
30	3.75	W12X16	7	275.59055	W14X132	3.75	147.64	W14X132	3.75	147.64	275.59	141.64	723.6	-3.65	3.65	-4.46	4.46	-0.97	0.97	6.61	694.1929
	0													-3.65		-4.46		-0.97			
29	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	133.69	2304	-1.53	1.53	-1.56	1.56	-106.83	106.83	2.616	2086.3
	0													-1.53		-1.56		-106.83			
28	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-22.55	22.55	-28.51	28.51	-106.92	106.92	41.315	2055.868
	0													-22.55		-28.51		-106.92			
27	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-43.56	43.56	-55.44	55.44	-107.51	107.51	79.992	2055.868
	0													-43.56		-55.44		-107.51			
26	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-64.56	64.56	-82.38	82.38	-108.53	108.53	118.662	2055.868
	0													-64.56		-82.38		-108.53			
25	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-85.57	85.57	-109.31	109.31	-109.96	109.96	157.339	2055.868
	0													-85.57		-109.31		-109.96			
24	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-106.59	106.59	-136.26	136.26	-111.77	111.77	196.038	2055.868
	0													-106.59		-136.26		-111.77			
23	3.75	W16X36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	131.74	2304	-127.59	127.59	-163.19	163.19	-114.06	114.06	234.703	2055.868
	0													-127.59		-163.19		-114.06			
22	3.75	W16X36	7	275.59055	W14X176	3.75	147.64	W14X159	3.75	147.64	275.59	131.74	2304	-148.62	148.62	-190.14	190.14	-116.64	116.64	273.414	2055.868
	0													-148.62		-190.14		-116.64			
21	3.75	W16X36	7	275.59055	W14X176	3.75	147.64	W14X159	3.75	147.64	275.59	131.74	2304	-169.67	169.67	-217.14	217.14	-119.43	119.43	312.174	2055.868
	0													-169.67		-217.14		-119.43			
20	3.75	W16X36	7	275.59055	W14X176	3.75	147.64	W14X159	3.75	147.64	275.59	131.74	2304	-190.76	190.76	-244.18	244.18	-122.39	122.39	351.002	2055.868
	0													-190.76		-244.18		-122.39			
19	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X159	3.75	147.64	275.59	131.69	2628	-211.77	211.77	-271.11	271.11	-124.79	124.79	389.679	2344.085
	0													-211.77		-271.11		-124.79			
18	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X159	3.75	147.64	275.59	131.64	2628	-232.73	232.73	-297.99	297.99	-128.13	128.13	428.271	2343.195
	0													-232.73		-297.99		-128.13			

17	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X159	3.75	147.64	275.59	131.64	2628	-253.73	253.73	-324.92	324.92	-131.42	131.42	466.936	2343.195
	0													-253.73		-324.92		-131.42			
16	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X159	3.75	147.64	275.59	131.64	2628	-274.85	274.85	-351.99	351.99	-134.54	134.54	905.815	2343.195
	0													-274.85		-351.99		-134.54			
15	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-283.12	283.12	-362.6	362.6	-138.53	138.53	521.044	2343.195
	0													-283.12		-362.6		-138.53			
14	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-295.75	295.75	-378.8	378.8	-326.23	326.23	544.3	2343.195
	0													-295.75		-378.8		-326.23			
13	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-316.94	316.94	-405.97	405.97	-330.43	330.43	583.313	2343.195
	0													-316.94		-405.97		-330.43			
12	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-338.22	338.22	-433.25	433.25	-335.15	335.15	622.489	2343.195
	0													-338.22		-433.25		-335.15			
11	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-359.59	359.59	-460.65	460.65	-340.22	340.22	661.833	2343.195
	0													-359.59		-460.65		-340.22			
10	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-381.05	381.05	-488.17	488.17	-345.51	345.51	701.345	2343.195
	0													-381.05		-488.17		-345.51			
9	3.75	W16x40	7	275.59055	W14X193	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-402.5	402.5	-515.66	515.66	-350.14	350.14	740.83	2343.195
	0													-402.5		-515.66		-350.14			
8	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-423.99	423.99	-543.21	543.21	-355.84	355.84	780.393	2343.195
	0													-423.99		-543.21		-355.84			
7	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-445.56	445.56	-570.87	570.87	-361.4	361.4	820.107	2343.195
	0													-445.56		-570.87		-361.4			
6	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-467.26	467.26	-598.69	598.69	-366.61	366.61	860.057	2343.195
	0													-467.26		-598.69		-366.61			
5	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-489.08	489.08	-626.66	626.66	-371.33	371.33	900.226	2343.195
	0													-489.08		-626.66		-371.33			
4	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-511.02	511.02	-654.8	654.8	-375.39	375.39	940.624	2343.195
	0													-511.02		-654.8		-375.39			
3	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-533.08	533.08	-683.07	683.07	-379.31	379.31	981.231	2343.195
	0													-533.08		-683.07		-379.31			
2	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-555.24	555.24	-711.49	711.49	-382.15	382.15	1022.033	2343.195
	0													-555.24		-711.49		-382.15			
1	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X193	3.75	147.64	275.59	131.64	2628	-577.6	577.6	-740.15	740.15	-383.75	383.75	1063.195	2343.195
	0													-577.6		-740.15		-383.75			

Tabel Distribusi Momen dan Gaya Aksial Kolom Struktur Outrigger & Belttruss/ Core Brace (CB)

K1 (Kolom Eksterior) Arah X

Lantai	Stasion	Balok			(K1)			(K2)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B1	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W14x22	7	275.59055	W14X120	3.75	147.64	W14X120	3.75	147.64	261.09	140.79	1195.2	-14.89	14.89	-18.98	18.98	-3.99	3.99	31.348	601.5216
	0													-14.89		-18.98		-3.99			
29	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	132.84	2304	-33.1	33.1	-42.3	42.3	-11.7	11.7	72.57	1095.13
	0													-33.1		-42.3		-11.7			
28	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	131.74	2304	-38.18	38.18	-48.81	48.81	-15	15	85.221	1086.062
	0													-38.18		-48.81		-15			
27	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	131.74	2304	-43.27	43.27	-55.33	55.33	-18.89	18.89	98.479	1086.062
	0													-43.27		-55.33		-18.89			
26	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	131.74	2304	-48.36	48.36	-61.86	61.86	-23.34	23.34	112.302	1086.062
	0													-48.36		-61.86		-23.34			
25	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	131.74	2304	-53.45	53.45	-68.39	68.39	-28.3	28.3	126.635	1086.062
	0													-53.45		-68.39		-28.3			
24	3.75	W16x36	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	131.74	2304	-58.54	58.54	-74.91	74.91	-33.72	33.72	141.423	1086.062
	0													-58.54		-74.91		-33.72			
23	3.75	W18x40	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	260.84	130.74	2822.4	-63.69	63.69	-81.52	81.52	-41.25	41.25	158.438	1320.327
	0													-63.69		-81.52		-41.25			
22	3.75	W18x40	7	275.59055	W14X145	3.75	147.64	W14X176	3.75	147.64	260.59	129.74	2822.4	-68.85	68.85	-88.13	88.13	-49.3	49.3	175.985	1311.485
	0													-68.85		-88.13		-49.3			
21	3.75	W18x40	7	275.59055	W14X145	3.75	147.64	W14X176	3.75	147.64	260.59	129.74	2822.4	-73.99	73.99	-94.72	94.72	-57.78	57.78	193.928	1311.485
	0													-73.99		-94.72		-57.78			
20	3.75	W18x40	7	275.59055	W14X145	3.75	147.64	W14X176	3.75	147.64	260.59	129.74	2822.4	-79.12	79.12	-101.3	101.3	-66.26	66.26	211.854	1311.485
	0													-79.12		-101.3		-66.26			
19	3.75	W18x40	7	275.59055	W14X145	3.75	147.64	W14X176	3.75	147.64	260.59	129.74	2822.4	-84.25	84.25	-107.88	107.88	-74.72	74.72	229.76	1311.485
	0													-84.25		-107.88		-74.72			
18	3.75	W18x46	7	275.59055	W14X145	3.75	147.64	W14X176	3.75	147.64	260.59	129.64	3265.2	-89.42	89.42	-114.5	114.5	-84.71	84.71	249.264	1516.071
	0													-89.42		-114.5		-84.71			
17	3.75	W18x46	7	275.59055	W14X145	3.75	147.64	W14X176	3.75	147.64	260.59	129.54	3265.2	-94.56	94.56	-121.09	121.09	-94.69	94.69	268.707	1514.902
	0													-94.56		-121.09		-94.69			

16	3.75	W18x46	7	275.59055	W14X145	3.75	147.64	W14X176	3.75	147.64	260.59	129.54	3265.2	-99.69	99.69	-127.66	127.66	-103.85	103.85	287.308	1514.902
	0													-99.69		-127.66		-103.85			
15	3.75	W18x46	7	275.59055	W14X176	3.75	147.64	W14X211	3.75	147.64	260.14	129.54	3265.2	-117.14	117.14	-150.04	150.04	-129.38	129.38	344.968	1517.522
	0													-117.14		-150.04		-129.38			
14	3.75	W18x46	7	275.59055	W14X176	3.75	147.64	W14X211	3.75	147.64	260.14	129.54	3265.2	-141.52	141.52	-181.27	181.27	-161.72	161.72	422.179	1517.522
	0													-141.52		-181.27		-161.72			
13	3.75	W21X55	7	275.59055	W14X176	3.75	147.64	W14X211	3.75	147.64	260.14	128.19	4536	-146.67	146.67	-187.88	187.88	-174.55	174.55	444.494	2086.164
	0													-146.67		-187.88		-174.55			
12	3.75	W21X55	7	275.59055	W14X176	3.75	147.64	W14X211	3.75	147.64	260.14	126.84	4536	-151.8	151.8	-194.46	194.46	-189.25	189.25	468.64	2064.194
	0													-151.8		-194.46		-189.25			
11	3.75	W21X55	7	275.59055	W14X176	3.75	147.64	W14X211	3.75	147.64	260.14	126.84	4536	-156.91	156.91	-201	201	-204.46	204.46	493.252	2064.194
	0													-156.91		-201		-204.46			
10	3.75	W21X55	7	275.59055	W14X176	3.75	147.64	W14X211	3.75	147.64	260.14	126.84	4536	-161.99	161.99	-207.52	207.52	-218.88	218.88	517.028	2064.194
	0													-161.99		-207.52		-218.88			
9	3.75	W21X55	7	275.59055	W14X176	3.75	147.64	W14X211	3.75	147.64	260.14	126.84	4536	-167.07	167.07	-214.02	214.02	-232.38	232.38	539.874	2064.194
	0													-167.07		-214.02		-232.38			
8	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	126.84	4536	-172.13	172.13	-220.52	220.52	-247.18	247.18	563.996	2067.373
	0													-172.13		-220.52		-247.18			
7	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	126.84	4536	-177.16	177.16	-226.97	226.97	-262.01	262.01	588.087	2067.373
	0													-177.16		-226.97		-262.01			
6	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	126.84	4536	-182.16	182.16	-233.37	233.37	-276.88	276.88	612.157	2067.373
	0													-182.16		-233.37		-276.88			
5	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	126.84	4536	-187.12	187.12	-239.73	239.73	-291.73	291.73	636.139	2067.373
	0													-187.12		-239.73		-291.73			
4	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	126.84	4536	-192.03	192.03	-246.03	246.03	-306.44	306.44	659.891	2067.373
	0													-192.03		-246.03		-306.44			
3	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	126.84	4536	-196.91	196.91	-252.29	252.29	-323.59	323.59	686.027	2067.373
	0													-196.91		-252.29		-323.59			
2	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	126.84	4536	-201.75	201.75	-258.49	258.49	-339.88	339.88	711.225	2067.373
	0													-201.75		-258.49		-339.88			
1	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X233	3.75	147.64	259.74	126.84	4536	-206.53	206.53	-264.62	264.62	-353.22	353.22	733.366	2067.373
	0													-206.53		-264.62		-353.22			

K1 (Kolom Eksterior) Arah Y

Lantai	Stasion	Balok			(K1)			(K4)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh y B3	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W12X19	7	275.59055	W14X120	3.75	147.64	W14X120	3.75	147.64	275.59	141.54	889.2	-14.89	14.89	-18.98	18.98	-3.99	3.99	31.348	426.2303
	0													-14.89		-18.98		-3.99			
29	3.75	W14X38	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	275.59	134.49	2214	-33.1	33.1	-42.3	42.3	-11.7	11.7	72.57	1008.4
	0													-33.1		-42.3		-11.7			
28	3.75	W14X38	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	275.59	133.54	2214	-38.18	38.18	-48.81	48.81	-15	15	85.221	1001.277
	0													-38.18		-48.81		-15			
27	3.75	W14X38	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	275.59	133.54	2214	-43.27	43.27	-55.33	55.33	-18.89	18.89	98.479	1001.277
	0													-43.27		-55.33		-18.89			
26	3.75	W14X38	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	275.59	133.54	2214	-48.36	48.36	-61.86	61.86	-23.34	23.34	112.302	1001.277
	0													-48.36		-61.86		-23.34			
25	3.75	W 4X38	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	275.59	133.54	2214	-53.45	53.45	-68.39	68.39	-28.3	28.3	126.635	1001.277
	0													-53.45		-68.39		-28.3			
24	3.75	W14X38	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	275.59	133.54	2214	-58.54	58.54	-74.91	74.91	-33.72	33.72	141.423	1001.277
	0													-58.54		-74.91		-33.72			
23	3.75	W14X38	7	275.59055	W14X132	3.75	147.64	W14X145	3.75	147.64	275.59	133.54	2214	-63.69	63.69	-81.52	81.52	-41.25	41.25	158.438	1001.277
	0													-63.69		-81.52		-41.25			
22	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	133.54	2214	-68.85	68.85	-88.13	88.13	-49.3	49.3	175.985	1001.277
	0													-68.85		-88.13		-49.3			
21	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	133.54	2214	-73.99	73.99	-94.72	94.72	-57.78	57.78	193.928	1001.277
	0													-73.99		-94.72		-57.78			
20	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	133.54	2214	-79.12	79.12	-101.3	101.3	-66.26	66.26	211.854	1001.277
	0													-79.12		-101.3		-66.26			
19	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	133.54	2214	-84.25	84.25	-107.88	107.88	-74.72	74.72	229.76	1001.277
	0													-84.25		-107.88		-74.72			
18	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	133.54	2214	-89.42	89.42	-114.5	114.5	-84.71	84.71	249.264	1001.277
	0													-89.42		-114.5		-84.71			
17	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	133.54	2214	-94.56	94.56	-121.09	121.09	-94.69	94.69	268.707	1001.277
	0													-94.56		-121.09		-94.69			
16	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X193	3.75	147.64	275.59	133.54	2214	-99.69	99.69	-127.66	127.66	-103.85	103.85	287.308	1001.277
	0													-99.69		-127.66		-103.85			
15	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X211	3.75	147.64	275.59	133.54	2214	-117.14	117.14	-150.04	150.04	-129.38	129.38	344.968	1001.277

	0													-117.14		-150.04		-129.38			
14	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X211	3.75	147.64	275.59	133.54	2214	-141.52	141.52	-181.27	181.27	-161.72	161.72	422.179	1001.277
	0													-141.52		-181.27		-161.72			
13	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X211	3.75	147.64	275.59	133.54	2214	-146.67	146.67	-187.88	187.88	-174.55	174.55	444.494	1001.277
	0													-146.67		-187.88		-174.55			
12	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X211	3.75	147.64	275.59	133.54	2214	-151.8	151.8	-194.46	194.46	-189.25	189.25	468.64	1001.277
	0													-151.8		-194.46		-189.25			
11	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X211	3.75	147.64	275.59	133.54	2214	-156.91	156.91	-201	201	-204.46	204.46	493.252	1001.277
	0													-156.91		-201		-204.46			
10	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X211	3.75	147.64	275.59	133.54	2214	-161.99	161.99	-207.52	207.52	-218.88	218.88	517.028	1001.277
	0													-161.99		-207.52		-218.88			
9	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X211	3.75	147.64	275.59	133.54	2214	-167.07	167.07	-214.02	214.02	-232.38	232.38	539.874	1001.277
	0													-167.07		-214.02		-232.38			
8	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-172.13	172.13	-220.52	220.52	-247.18	247.18	563.996	1001.277
	0													-172.13		-220.52		-247.18			
7	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-177.16	177.16	-226.97	226.97	-262.01	262.01	588.087	1001.277
	0													-177.16		-226.97		-262.01			
6	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-182.16	182.16	-233.37	233.37	-276.88	276.88	612.157	1001.277
	0													-182.16		-233.37		-276.88			
5	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-187.12	187.12	-239.73	239.73	-291.73	291.73	636.139	1001.277
	0													-187.12		-239.73		-291.73			
4	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-192.03	192.03	-246.03	246.03	-306.44	306.44	659.891	1001.277
	0													-192.03		-246.03		-306.44			
3	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-196.91	196.91	-252.29	252.29	-323.59	323.59	686.027	1001.277
	0													-196.91		-252.29		-323.59			
2	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-201.75	201.75	-258.49	258.49	-339.88	339.88	711.225	1001.277
	0													-201.75		-258.49		-339.88			
1	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-206.53	206.53	-264.62	264.62	-353.22	353.22	733.366	1001.277
	0													-206.53		-264.62		-353.22			

K2 (Arah X)

Lantai	Stasion	Balok			(K2)			(K3)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B1	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)

30	3.75	W14x22	7	275.59055	W14X120	3.75	147.64	W14X120	3.75	147.64	261.09	140.79	1195.2	4.52	4.52	5.93	5.93	-2.8	2.8	11.189	1203.043		
	0													4.52		5.93		-2.8					
29	3.75	W16x36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	132.84	2304	-27.39	27.39	-34.91	34.91	-47.52	47.52	97.843	2190.681		
	0													-27.39		-34.91		-47.52					
28	3.75	W16x36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	131.74	2304	-37.12	37.12	-47.38	47.38	-49.81	49.81	118.044	2172.54		
	0													-37.12		-47.38		-49.81					
27	3.75	W16x36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	131.74	2304	-46.85	46.85	-59.85	59.85	-52.11	52.11	138.255	2172.54		
	0													-46.85		-59.85		-52.11					
26	3.75	W16x36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	131.74	2304	-56.59	56.59	-72.33	72.33	-54.47	54.47	158.543	2172.54		
	0													-56.59		-72.33		-54.47					
25	3.75	W16x36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	131.74	2304	-66.32	66.32	-84.81	84.81	-56.89	56.89	178.879	2172.54		
	0													-66.32		-84.81		-56.89					
24	3.75	W16x36	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	131.74	2304	-76.06	76.06	-97.3	97.3	-59.39	59.39	199.312	2172.54		
	0													-76.06		-97.3		-59.39					
23	3.75	W18x40	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	130.74	2822.4	-85.72	85.72	-109.69	109.69	-61.96	61.96	219.669	2641.16		
	0													-85.72		-109.69		-61.96					
22	3.75	W18x40	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	129.74	2822.4	-95.39	95.39	-122.08	122.08	-64.58	64.58	240.088	2624.984		
	0													-95.39		-122.08		-64.58					
21	3.75	W18x40	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	129.74	2822.4	-105.05	105.05	-134.46	134.46	-67.26	67.26	260.55	2624.984		
	0													-105.05		-134.46		-67.26					
20	3.75	W18x40	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	129.74	2822.4	-114.7	114.7	-146.84	146.84	-69.89	69.89	280.95	2624.984		
	0													-114.7		-146.84		-69.89					
19	3.75	W18x40	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	129.74	2822.4	-124.45	124.45	-159.33	159.33	-73.28	73.28	302.285	2624.984		
	0													-124.45		-159.33		-73.28					
18	3.75	W18x46	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	129.64	3265.2	-134.13	134.13	-171.74	171.74	-76.76	76.76	323.586	3034.471		
	0													-134.13		-171.74		-76.76					
17	3.75	W18x46	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	129.54	3265.2	-143.81	143.81	-184.15	184.15	-80.32	80.32	344.967	3032.13		
	0													-143.81		-184.15		-80.32					
16	3.75	W18x46	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	129.54	3265.2	-153.46	153.46	-196.53	196.53	-84.18	84.18	366.597	3032.13		
	0													-153.46		-196.53		-84.18					
15	3.75	W18x46	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	129.54	3265.2	-147.85	147.85	-189.35	189.35	-92.45	92.45	364.545	3037.964		
	0													-147.85		-189.35		-92.45					
14	3.75	W18x46	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	129.54	3265.2	-193.28	193.28	-247.57	247.57	-172.2	172.2	527.921	3037.964		
	0													-193.28		-247.57		-172.2					

13	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	128.19	4536	-202.81	202.81	-259.79	259.79	-176	176	549.267	4176.342
	0													-202.81		-259.79		-176			
12	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-212.35	212.35	-272.01	272.01	-179.4	179.4	570.225	4132.359
	0													-212.35		-272.01		-179.4			
11	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-221.89	221.89	-284.24	284.24	-182.71	182.71	591.098	4132.359
	0													-221.89		-284.24		-182.71			
10	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-231.43	231.43	-296.48	296.48	-185.79	185.79	611.746	4132.359
	0													-231.43		-296.48		-185.79			
9	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-241.07	241.07	-308.83	308.83	-189.74	189.74	633.439	4132.359
	0													-241.07		-308.83		-189.74			
8	3.75	W21X55	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.84	4536	-250.66	250.66	-321.14	321.14	-193.64	193.64	655.002	4140.324
	0													-250.66		-321.14		-193.64			
7	3.75	W21X55	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.84	4536	-260.26	260.26	-333.44	333.44	-197.39	197.39	676.422	4140.324
	0													-260.26		-333.44		-197.39			
6	3.75	W21X55	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.84	4536	-269.86	269.86	-345.75	345.75	-200.83	200.83	697.537	4140.324
	0													-269.86		-345.75		-200.83			
5	3.75	W21X55	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.84	4536	-279.46	279.46	-358.05	358.05	-203.91	203.91	718.287	4140.324
	0													-279.46		-358.05		-203.91			
4	3.75	W21X55	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.84	4536	-289.05	289.05	-370.35	370.35	-206.64	206.64	738.675	4140.324
	0													-289.05		-370.35		-206.64			
3	3.75	W21X55	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.84	4536	-298.62	298.62	-382.62	382.62	-209.01	209.01	758.664	4140.324
	0													-298.62		-382.62		-209.01			
2	3.75	W21X55	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.84	4536	-308.2	308.2	-394.9	394.9	-211.15	211.15	778.44	4140.324
	0													-308.2		-394.9		-211.15			
1	3.75	W21X55	7	275.59055	W14X233	3.75	147.64	W14X257	3.75	147.64	259.39	126.84	4536	-317.77	317.77	-407.17	407.17	-213.35	213.35	798.259	4140.324
	0													-317.77		-407.17		-213.35			

K2 (Arah y)

Lantai	Stasion	Balok			(K2)			(K5)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh y B4	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W12x22	7	275.59055	W14X120	3.75	147.64	W14X193	3.75	147.64	275.59	141.49	1054.8	4.52	4.52	5.93	5.93	-2.8	2.8	11.189	505.4306
	0													4.52		5.93		-2.8			
29	3.75	W16x40	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	275.59	133.49	2628	-27.39	27.39	-34.91	34.91	-47.52	47.52	97.843	1188.063

	0														-27.39		-34.91		-47.52			
28	3.75	W16x40	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-37.12	37.12	-47.38	47.38	-49.81	49.81	118.044	1171.597
	0													-37.12		-47.38		-49.81			
27	3.75	W16x40	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-46.85	46.85	-59.85	59.85	-52.11	52.11	138.255	1171.597
	0													-46.85		-59.85		-52.11			
26	3.75	W16x40	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-56.59	56.59	-72.33	72.33	-54.47	54.47	158.543	1171.597
	0													-56.59		-72.33		-54.47			
25	3.75	W16x40	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-66.32	66.32	-84.81	84.81	-56.89	56.89	178.879	1171.597
	0													-66.32		-84.81		-56.89			
24	3.75	W16x40	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-76.06	76.06	-97.3	97.3	-59.39	59.39	199.312	1171.597
	0													-76.06		-97.3		-59.39			
23	3.75	W16x40	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-85.72	85.72	-109.69	109.69	-61.96	61.96	219.669	1171.597
	0													-85.72		-109.69		-61.96			
22	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-95.39	95.39	-122.08	122.08	-64.58	64.58	240.088	1171.597
	0													-95.39		-122.08		-64.58			
21	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-105.05	105.05	-134.46	134.46	-67.26	67.26	260.55	1171.597
	0													-105.05		-134.46		-67.26			
20	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-114.7	114.7	-146.84	146.84	-69.89	69.89	280.95	1171.597
	0													-114.7		-146.84		-69.89			
19	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-124.45	124.45	-159.33	159.33	-73.28	73.28	302.285	1171.597
	0													-124.45		-159.33		-73.28			
18	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-134.13	134.13	-171.74	171.74	-76.76	76.76	323.586	1171.597
	0													-134.13		-171.74		-76.76			
17	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-143.81	143.81	-184.15	184.15	-80.32	80.32	344.967	1171.597
	0													-143.81		-184.15		-80.32			
16	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-153.46	153.46	-196.53	196.53	-84.18	84.18	366.597	1171.597
	0													-153.46		-196.53		-84.18			
15	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	275.59	131.64	2628	-147.85	147.85	-189.35	189.35	-92.45	92.45	364.545	1171.597
	0													-147.85		-189.35		-92.45			
14	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	275.59	131.64	2628	-193.28	193.28	-247.57	247.57	-172.2	172.2	527.921	1171.597
	0													-193.28		-247.57		-172.2			
13	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	275.59	131.64	2628	-202.81	202.81	-259.79	259.79	-176	176	549.267	1171.597
	0													-202.81		-259.79		-176			
12	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	275.59	131.64	2628	-212.35	212.35	-272.01	272.01	-179.4	179.4	570.225	1171.597

	0																				
11	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	275.59	131.64	2628	-212.35		-272.01		-179.4			
	0													-221.89	221.89	-284.24	284.24	-182.71	182.71	591.098	1171.597
														-221.89		-284.24		-182.71			
10	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	275.59	131.64	2628	-231.43	231.43	-296.48	296.48	-185.79	185.79	611.746	1171.597
	0													-231.43		-296.48		-185.79			
9	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	275.59	131.64	2628	-241.07	241.07	-308.83	308.83	-189.74	189.74	633.439	1171.597
	0													-241.07		-308.83		-189.74			
8	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-250.66	250.66	-321.14	321.14	-193.64	193.64	655.002	1171.597
	0													-250.66		-321.14		-193.64			
7	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-260.26	260.26	-333.44	333.44	-197.39	197.39	676.422	1171.597
	0													-260.26		-333.44		-197.39			
6	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-269.86	269.86	-345.75	345.75	-200.83	200.83	697.537	1171.597
	0													-269.86		-345.75		-200.83			
5	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-279.46	279.46	-358.05	358.05	-203.91	203.91	718.287	1171.597
	0													-279.46		-358.05		-203.91			
4	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-289.05	289.05	-370.35	370.35	-206.64	206.64	738.675	1171.597
	0													-289.05		-370.35		-206.64			
3	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-298.62	298.62	-382.62	382.62	-209.01	209.01	758.664	1171.597
	0													-298.62		-382.62		-209.01			
2	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-308.2	308.2	-394.9	394.9	-211.15	211.15	778.44	1171.597
	0													-308.2		-394.9		-211.15			
1	3.75	W16x40	7	275.59055	W14X233	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-317.77	317.77	-407.17	407.17	-213.35	213.35	798.259	1171.597
	0													-317.77		-407.17		-213.35			

K3 (Arah X)

Lantai	Stasion	Balok			(K3)			(K2)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B3	L bik (m)	L bik (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W12X19	7	275.59055	W14X120	3.75	147.64	W14X120	3.75	147.64	261.09	141.54	889.2	-6.85	6.85	-8.59	8.59	-10.66	10.66	23.175	899.8031
	0													-6.85		-8.59		-10.66			
29	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	134.49	2214	-19.55	19.55	-24.87	24.87	-22.88	22.88	58.775	2131.255
	0													-19.55		-24.87		-22.88			
28	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.54	2214	-29.79	29.79	-37.99	37.99	-25.64	25.64	80.383	2116.2
	0													-29.79		-37.99		-25.64			

27	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.54	2214	-40.02	40.02	-51.12	51.12	-28.6	28.6	102.184	2116.2
	0													-40.02		-51.12		-28.6			
26	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.54	2214	-50.25	50.25	-64.23	64.23	-31.76	31.76	124.175	2116.2
	0													-50.25		-64.23		-31.76			
25	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.54	2214	-60.47	60.47	-77.33	77.33	-35.13	35.13	146.359	2116.2
	0													-60.47		-77.33		-35.13			
24	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.54	2214	-70.68	70.68	-90.42	90.42	-38.69	38.69	168.716	2116.2
	0													-70.68		-90.42		-38.69			
23	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	260.79	133.54	2214	-80.91	80.91	-103.52	103.52	-42.51	42.51	191.362	2116.2
	0													-80.91		-103.52		-42.51			
22	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.54	2214	-91.12	91.12	-116.62	116.62	-46.49	46.49	214.144	2119.451
	0													-91.12		-116.62		-46.49			
21	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.54	2214	-101.32	101.32	-129.7	129.7	-50.61	50.61	237.044	2119.451
	0													-101.32		-129.7		-50.61			
20	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.54	2214	-111.51	111.51	-142.76	142.76	-54.7	54.7	259.892	2119.451
	0													-111.51		-142.76		-54.7			
19	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.54	2214	-121.83	121.83	-155.99	155.99	-59.91	59.91	284.101	2119.451
	0													-121.83		-155.99		-59.91			
18	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.54	2214	-132.14	132.14	-169.21	169.21	-65.31	65.31	308.483	2119.451
	0													-132.14		-169.21		-65.31			
17	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.54	2214	-142.43	142.43	-182.39	182.39	-70.77	70.77	332.881	2119.451
	0													-142.43		-182.39		-70.77			
16	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	260.39	133.54	2214	-152.68	152.68	-195.54	195.54	-76.31	76.31	357.296	2119.451
	0													-152.68		-195.54		-76.31			
15	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	133.54	2214	-162.32	162.32	-207.9	207.9	-91.29	91.29	390.024	2123.529
	0													-162.32		-207.9		-91.29			
14	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	133.54	2214	-179.37	179.37	-229.75	229.75	-110.17	110.17	440.289	2123.529
	0													-179.37		-229.75		-110.17			
13	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	133.54	2214	-189.57	189.57	-242.82	242.82	-115.97	115.97	464.864	2123.529
	0													-189.57		-242.82		-115.97			
12	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	133.54	2214	-199.72	199.72	-255.84	255.84	-121.69	121.69	489.274	2123.529
	0													-199.72		-255.84		-121.69			
11	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	133.54	2214	-209.82	209.82	-268.78	268.78	-127.39	127.39	513.564	2123.529
	0													-209.82		-268.78		-127.39			

10	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	133.54	2214	-219.87	219.87	-281.67	281.67	-132.71	132.71	537.389	2123.529
	0													-219.87		-281.67		-132.71			
9	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	133.54	2214	-230.01	230.01	-294.66	294.66	-139.6	139.6	562.942	2123.529
	0													-230.01		-294.66		-139.6			
8	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X233	3.75	147.64	259.39	133.54	2214	-240.07	240.07	-307.57	307.57	-146.45	146.45	588.319	2127.622
	0													-240.07		-307.57		-146.45			
7	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X233	3.75	147.64	259.39	133.54	2214	-250.09	250.09	-320.41	320.41	-153.15	153.15	613.463	2127.622
	0													-250.09		-320.41		-153.15			
6	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X233	3.75	147.64	259.39	133.54	2214	-260.04	260.04	-333.17	333.17	-159.6	159.6	638.233	2127.622
	0													-260.04		-333.17		-159.6			
5	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X233	3.75	147.64	259.39	133.54	2214	-269.93	269.93	-345.85	345.85	-165.76	165.76	662.601	2127.622
	0													-269.93		-345.85		-165.76			
4	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X233	3.75	147.64	259.39	133.54	2214	-279.75	279.75	-358.44	358.44	-171.57	171.57	686.49	2127.622
	0													-279.75		-358.44		-171.57			
3	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X233	3.75	147.64	259.39	133.54	2214	-289.52	289.52	-370.96	370.96	-177.05	177.05	709.954	2127.622
	0													-289.52		-370.96		-177.05			
2	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X233	3.75	147.64	259.39	133.54	2214	-299.22	299.22	-383.4	383.4	-182.13	182.13	732.894	2127.622
	0													-299.22		-383.4		-182.13			
1	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X233	3.75	147.64	259.39	133.54	2214	-308.84	308.84	-395.73	395.73	-186.8	186.8	755.273	2127.622
	0													-308.84		-395.73		-186.8			

K3 (Arah Y)

Lantai	Stasion	Balok			(K3)			(K6)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh Y B4	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W12x22	7	275.59055	W14X120	3.75	147.64	W14X193	3.75	147.64	275.59	141.49	1054.8	-6.85	6.85	-8.59	8.59	-10.66	10.66	23.175	505.4306
	0													-6.85		-8.59		-10.66			
29	3.75	W16x40	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	275.59	133.49	2628	-19.55	19.55	-24.87	24.87	-22.88	22.88	58.775	1188.063
	0													-19.55		-24.87		-22.88			
28	3.75	W16x40	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-29.79	29.79	-37.99	37.99	-25.64	25.64	80.383	1171.597
	0													-29.79		-37.99		-25.64			
27	3.75	W16x40	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-40.02	40.02	-51.12	51.12	-28.6	28.6	102.184	1171.597
	0													-40.02		-51.12		-28.6			
26	3.75	W16x40	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-50.25	50.25	-64.23	64.23	-31.76	31.76	124.175	1171.597

	0														-50.25		-64.23		-31.76				
25	3.75	W16x40	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-60.47	60.47	-77.33	77.33	-35.13	35.13	146.359	1171.597		
	0														-60.47		-77.33		-35.13				
24	3.75	W16x40	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-70.68	70.68	-90.42	90.42	-38.69	38.69	168.716	1171.597		
	0														-70.68		-90.42		-38.69				
23	3.75	W16x40	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-80.91	80.91	-103.52	103.52	-42.51	42.51	191.362	1171.597		
	0														-80.91		-103.52		-42.51				
22	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-91.12	91.12	-116.62	116.62	-46.49	46.49	214.144	1171.597		
	0														-91.12		-116.62		-46.49				
21	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-101.32	101.32	-129.7	129.7	-50.61	50.61	237.044	1171.597		
	0														-101.32		-129.7		-50.61				
20	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-111.51	111.51	-142.76	142.76	-54.7	54.7	259.892	1171.597		
	0														-111.51		-142.76		-54.7				
19	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-121.83	121.83	-155.99	155.99	-59.91	59.91	284.101	1171.597		
	0														-121.83		-155.99		-59.91				
18	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-132.14	132.14	-169.21	169.21	-65.31	65.31	308.483	1171.597		
	0														-132.14		-169.21		-65.31				
17	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-142.43	142.43	-182.39	182.39	-70.77	70.77	332.881	1171.597		
	0														-142.43		-182.39		-70.77				
16	3.75	W16x40	7	275.59055	W14X176	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-152.68	152.68	-195.54	195.54	-76.31	76.31	357.296	1171.597		
	0														-152.68		-195.54		-76.31				
15	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	275.59	131.64	2628	-162.32	162.32	-207.9	207.9	-91.29	91.29	390.024	1171.597		
	0														-162.32		-207.9		-91.29				
14	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	275.59	131.64	2628	-179.37	179.37	-229.75	229.75	-110.17	110.17	440.289	1171.597		
	0														-179.37		-229.75		-110.17				
13	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	275.59	131.64	2628	-189.57	189.57	-242.82	242.82	-115.97	115.97	464.864	1171.597		
	0														-189.57		-242.82		-115.97				
12	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	275.59	131.64	2628	-199.72	199.72	-255.84	255.84	-121.69	121.69	489.274	1171.597		
	0														-199.72		-255.84		-121.69				
11	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	275.59	131.64	2628	-209.82	209.82	-268.78	268.78	-127.39	127.39	513.564	1171.597		
	0														-209.82		-268.78		-127.39				
10	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	275.59	131.64	2628	-219.87	219.87	-281.67	281.67	-132.71	132.71	537.389	1171.597		
	0														-219.87		-281.67		-132.71				
9	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	275.59	131.64	2628	-230.01	230.01	-294.66	294.66	-139.6	139.6	562.942	1171.597		

	0														-230.01		-294.66		-139.6			
8	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-240.07	240.07	-307.57	307.57	-146.45	146.45	588.319	1171.597
	0													-240.07		-307.57		-146.45			
7	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-250.09	250.09	-320.41	320.41	-153.15	153.15	613.463	1171.597
	0													-250.09		-320.41		-153.15			
6	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-260.04	260.04	-333.17	333.17	-159.6	159.6	638.233	1171.597
	0													-260.04		-333.17		-159.6			
5	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-269.93	269.93	-345.85	345.85	-165.76	165.76	662.601	1171.597
	0													-269.93		-345.85		-165.76			
4	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-279.75	279.75	-358.44	358.44	-171.57	171.57	686.49	1171.597
	0													-279.75		-358.44		-171.57			
3	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-289.52	289.52	-370.96	370.96	-177.05	177.05	709.954	1171.597
	0													-289.52		-370.96		-177.05			
2	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-299.22	299.22	-383.4	383.4	-182.13	182.13	732.894	1171.597
	0													-299.22		-383.4		-182.13			
1	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	275.59	131.64	2628	-308.84	308.84	-395.73	395.73	-186.8	186.8	755.273	1171.597
	0													-308.84		-395.73		-186.8			

K4 (Arah X)

Lantai	Stasion	Balok			(K4)			(K5)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B2	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W18X35	7	275.59055	W14X120	3.75	147.64	W14X193	3.75	147.64	260.59	138.79	2394	-1.99	1.99	-2.35	2.35	-6.49	6.49	10.053	1190.018
	0													-1.99		-2.35		-6.49			
29	3.75	W21X55	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	260.34	128.39	4536	-11.22	11.22	-14.18	14.18	-14.73	14.73	35.284	2087.814
	0													-11.22		-14.18		-14.73			
28	3.75	W21X55	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	260.34	126.84	4536	-23.29	23.29	-29.65	29.65	-19.33	19.33	62.103	2062.608
	0													-23.29		-29.65		-19.33			
27	3.75	W21X55	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	260.34	126.84	4536	-35.36	35.36	-45.13	45.13	-25.13	25.13	90.127	2062.608
	0													-35.36		-45.13		-25.13			
26	3.75	W21X55	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	260.34	126.84	4536	-47.43	47.43	-60.59	60.59	-31.93	31.93	119.141	2062.608
	0													-47.43		-60.59		-31.93			
25	3.75	W21X55	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	260.34	126.84	4536	-59.48	59.48	-76.04	76.04	-39.64	39.64	149.036	2062.608
	0													-59.48		-76.04		-39.64			

24	3.75	W21X55	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	260.34	126.84	4536
	0												
23	3.75	W21X55	7	275.59055	W14X145	3.75	147.64	W14X211	3.75	147.64	260.34	126.84	4536
	0												
22	3.75	W21X55	7	275.59055	W14X193	3.75	147.64	W14X257	3.75	147.64	259.64	126.84	4536
	0												
21	3.75	W21X57	7	275.59055	W14X193	3.75	147.64	W14X257	3.75	147.64	259.64	126.69	4644
	0												
20	3.75	W21X57	7	275.59055	W14X193	3.75	147.64	W14X257	3.75	147.64	259.64	126.54	4644
	0												
19	3.75	W21X57	7	275.59055	W14X193	3.75	147.64	W14X257	3.75	147.64	259.64	126.54	4644
	0												
18	3.75	W24X62	7	275.59055	W14X193	3.75	147.64	W14X257	3.75	147.64	259.64	125.24	5544
	0												
17	3.75	W24X62	7	275.59055	W14X193	3.75	147.64	W14X257	3.75	147.64	259.64	123.94	5544
	0												
16	3.75	W24X62	7	275.59055	W14X193	3.75	147.64	W14X257	3.75	147.64	259.64	123.94	5544
	0												
15	3.75	W24X62	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	259.39	123.94	5544
	0												
14	3.75	W24X62	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	259.39	123.94	5544
	0												
13	3.75	W24X62	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	259.39	123.94	5544
	0												
12	3.75	W24X62	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	259.39	123.94	5544
	0												
11	3.75	W24X62	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	259.39	123.94	5544
	0												
10	3.75	W24X62	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	259.39	123.94	5544
	0												
9	3.75	W24X62	7	275.59055	W14X211	3.75	147.64	W14X283	3.75	147.64	259.39	123.94	5544
	0												
8	3.75	W24X62	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	258.84	123.94	5544
	0												

-71.52	71.52	-91.48	91.48	-48.16	48.16	179.724	2062.608
-71.52		-91.48		-48.16			
-83.57	83.57	-106.92	106.92	-57.59	57.59	211.334	2062.608
-83.57		-106.92		-57.59			
-95.6	95.6	-122.34	122.34	-67.68	67.68	243.57	2068.169
-95.6		-122.34		-67.68			
-107.6	107.6	-137.74	137.74	-78.33	78.33	276.32	2114.907
-107.6		-137.74		-78.33			
-119.59	119.59	-153.1	153.1	-89.03	89.03	309.088	2112.403
-119.59		-153.1		-89.03			
-131.53	131.53	-168.41	168.41	-99.68	99.68	341.721	2112.403
-131.53		-168.41		-99.68			
-143.58	143.58	-183.86	183.86	-111.84	111.84	376.066	2495.875
-143.58		-183.86		-111.84			
-155.6	155.6	-199.27	199.27	-124	124	410.355	2469.968
-155.6		-199.27		-124			
-167.58	167.58	-214.63	214.63	-134.69	134.69	443.101	2469.968
-167.58		-214.63		-134.69			
-170.98	170.98	-218.99	218.99	-146.94	146.94	461.611	2472.348
-170.98		-218.99		-146.94			
-182.18	182.18	-233.34	233.34	-165.94	165.94	501.226	2472.348
-182.18		-233.34		-165.94			
-194.14	194.14	-248.67	248.67	-179.36	179.36	536.663	2472.348
-194.14		-248.67		-179.36			
-206.04	206.04	-263.93	263.93	-195.17	195.17	574.383	2472.348
-206.04		-263.93		-195.17			
-217.87	217.87	-279.09	279.09	-211.49	211.49	612.479	2472.348
-217.87		-279.09		-211.49			
-229.62	229.62	-294.16	294.16	-226.98	226.98	649.604	2472.348
-229.62		-294.16		-226.98			
-241.28	241.28	-309.11	309.11	-241.45	241.45	685.541	2472.348
-241.28		-309.11		-241.45			
-252.94	252.94	-324.06	324.06	-257.43	257.43	722.988	2477.601
-252.94		-324.06		-257.43			

7	3.75	W24X62	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	258.84	123.94	5544	-264.55	264.55	-338.94	338.94	-273.54	273.54	760.47	2477.601
	0													-264.55		-338.94		-273.54			
6	3.75	W24X62	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	258.84	123.94	5544	-276.08	276.08	-353.73	353.73	-289.78	289.78	797.941	2477.601
	0													-276.08		-353.73		-289.78			
5	3.75	W24X62	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	258.84	123.94	5544	-287.54	287.54	-368.42	368.42	-306.13	306.13	835.388	2477.601
	0													-287.54		-368.42		-306.13			
4	3.75	W24X62	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	258.84	123.94	5544	-298.93	298.93	-383.02	383.02	-322.4	322.4	872.626	2477.601
	0													-298.93		-383.02		-322.4			
3	3.75	W24X62	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	258.84	123.94	5544	-310.27	310.27	-397.56	397.56	-340.44	340.44	911.544	2477.601
	0													-310.27		-397.56		-340.44			
2	3.75	W24X62	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	258.84	123.94	5544	-321.53	321.53	-412	412	-357.57	357.57	949.406	2477.601
	0													-321.53		-412		-357.57			
1	3.75	W24X62	7	275.59055	W14X257	3.75	147.64	W14X311	3.75	147.64	258.84	123.94	5544	-332.68	332.68	-426.29	426.29	-371.16	371.16	983.521	2477.601
	0													-332.68		-426.29		-371.16			

K4 (Arah Y)

Lantai	Stasion	Balok			(K4)			(K4)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PL Pakai	PE	Pu	Mu
		Arh Y B3	L bik (m)	L bik (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W12X19	7	275.59055	W14X120	3.75	147.64	W14X120	3.75	147.64	275.59	141.54	889.2	-1.99	1.99	-2.35	2.35	-6.49	6.49	10.053	852.4606
	0													-1.99		-2.35		-6.49			
29	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	134.49	2214	-11.22	11.22	-14.18	14.18	-14.73	14.73	35.284	2016.8
	0													-11.22		-14.18		-14.73			
28	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	133.54	2214	-23.29	23.29	-29.65	29.65	-19.33	19.33	62.103	2002.554
	0													-23.29		-29.65		-19.33			
27	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	133.54	2214	-35.36	35.36	-45.13	45.13	-25.13	25.13	90.127	2002.554
	0													-35.36		-45.13		-25.13			
26	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	133.54	2214	-47.43	47.43	-60.59	60.59	-31.93	31.93	119.141	2002.554
	0													-47.43		-60.59		-31.93			
25	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	133.54	2214	-59.48	59.48	-76.04	76.04	-39.64	39.64	149.036	2002.554
	0													-59.48		-76.04		-39.64			
24	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	133.54	2214	-71.52	71.52	-91.48	91.48	-48.16	48.16	179.724	2002.554
	0													-71.52		-91.48		-48.16			
23	3.75	W14X38	7	275.59055	W14X145	3.75	147.64	W14X145	3.75	147.64	275.59	133.54	2214	-83.57	83.57	-106.92	106.92	-57.59	57.59	211.334	2002.554

	0														-83.57		-106.92		-57.59			
22	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	275.59	133.54	2214	-95.6	95.6	-122.34	122.34	-67.68	67.68	243.57	2002.554
	0													-95.6		-122.34		-67.68			
21	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	275.59	133.54	2214	-107.6	107.6	-137.74	137.74	-78.33	78.33	276.32	2002.554
	0													-107.6		-137.74		-78.33			
20	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	275.59	133.54	2214	-119.59	119.59	-153.1	153.1	-89.03	89.03	309.088	2002.554
	0													-119.59		-153.1		-89.03			
19	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	275.59	133.54	2214	-131.53	131.53	-168.41	168.41	-99.68	99.68	341.721	2002.554
	0													-131.53		-168.41		-99.68			
18	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	275.59	133.54	2214	-143.58	143.58	-183.86	183.86	-111.84	111.84	376.066	2002.554
	0													-143.58		-183.86		-111.84			
17	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	275.59	133.54	2214	-155.6	155.6	-199.27	199.27	-124	124	410.355	2002.554
	0													-155.6		-199.27		-124			
16	3.75	W14X38	7	275.59055	W14X176	3.75	147.64	W14X176	3.75	147.64	275.59	133.54	2214	-167.58	167.58	-214.63	214.63	-134.69	134.69	443.101	2002.554
	0													-167.58		-214.63		-134.69			
15	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	275.59	133.54	2214	-170.98	170.98	-218.99	218.99	-146.94	146.94	461.611	2002.554
	0													-170.98		-218.99		-146.94			
14	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	275.59	133.54	2214	-182.18	182.18	-233.34	233.34	-165.94	165.94	501.226	2002.554
	0													-182.18		-233.34		-165.94			
13	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	275.59	133.54	2214	-194.14	194.14	-248.67	248.67	-179.36	179.36	536.663	2002.554
	0													-194.14		-248.67		-179.36			
12	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	275.59	133.54	2214	-206.04	206.04	-263.93	263.93	-195.17	195.17	574.383	2002.554
	0													-206.04		-263.93		-195.17			
11	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	275.59	133.54	2214	-217.87	217.87	-279.09	279.09	-211.49	211.49	612.479	2002.554
	0													-217.87		-279.09		-211.49			
10	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	275.59	133.54	2214	-229.62	229.62	-294.16	294.16	-226.98	226.98	649.604	2002.554
	0													-229.62		-294.16		-226.98			
9	3.75	W14X38	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	275.59	133.54	2214	-241.28	241.28	-309.11	309.11	-241.45	241.45	685.541	2002.554
	0													-241.28		-309.11		-241.45			
8	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-252.94	252.94	-324.06	324.06	-257.43	257.43	722.988	2002.554
	0													-252.94		-324.06		-257.43			
7	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-264.55	264.55	-338.94	338.94	-273.54	273.54	760.47	2002.554
	0													-264.55		-338.94		-273.54			
6	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-276.08	276.08	-353.73	353.73	-289.78	289.78	797.941	2002.554

	0													-276.08		-353.73		-289.78			
5	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-287.54	287.54	-368.42	368.42	-306.13	306.13	835.388	2002.554
	0													-287.54		-368.42		-306.13			
4	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-298.93	298.93	-383.02	383.02	-322.4	322.4	872.626	2002.554
	0													-298.93		-383.02		-322.4			
3	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-310.27	310.27	-397.56	397.56	-340.44	340.44	911.544	2002.554
	0													-310.27		-397.56		-340.44			
2	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-321.53	321.53	-412	412	-357.57	357.57	949.406	2002.554
	0													-321.53		-412		-357.57			
1	3.75	W14X38	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	275.59	133.54	2214	-332.68	332.68	-426.29	426.29	-371.16	371.16	983.521	2002.554
	0													-332.68		-426.29		-371.16			

K5 (Arah X)

Lantai	Stasion	Balok			(K5)			(K6)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B2	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W18X35	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	138.79	2394	-6.44	6.44	-7.92	7.92	-0.81	0.81	11.688	2384.611
	0													-6.44		-7.92		-0.81			
29	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	128.39	4536	-2.3	2.3	-2.55	2.55	-86.01	86.01	4.035	4182.857
	0													-2.3		-2.55		-86.01			
28	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-23.56	23.56	-29.81	29.81	-86.41	86.41	43.177	4132.359
	0													-23.56		-29.81		-86.41			
27	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-44.79	44.79	-57.03	57.03	-87	87	82.263	4132.359
	0													-44.79		-57.03		-87			
26	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-66	66	-84.23	84.23	-87.73	87.73	121.315	4132.359
	0													-66		-84.23		-87.73			
25	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-87.21	87.21	-111.42	111.42	-88.6	88.6	160.362	4132.359
	0													-87.21		-111.42		-88.6			
24	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-108.42	108.42	-138.62	138.62	-89.59	89.59	199.414	4132.359
	0													-108.42		-138.62		-89.59			
23	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-129.61	129.61	-165.78	165.78	-90.63	90.63	238.422	4132.359
	0													-129.61		-165.78		-90.63			
22	3.75	W21X55	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.84	4536	-150.81	150.81	-192.96	192.96	-91.74	91.74	277.452	4143.519
	0													-150.81		-192.96		-91.74			

21	3.75	W21X57	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.69	4644	-172.03	172.03	-220.17	220.17	-92.89	92.89	316.521	4237.157
	0													-172.03		-220.17		-92.89			
20	3.75	W21X57	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.54	4644	-193.27	193.27	-247.41	247.41	-94.09	94.09	355.629	4232.141
	0													-193.27		-247.41		-94.09			
19	3.75	W21X57	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.54	4644	-214.47	214.47	-274.58	274.58	-95.81	95.81	394.654	4232.141
	0													-214.47		-274.58		-95.81			
18	3.75	W24X62	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	125.24	5544	-235.64	235.64	-301.72	301.72	-97.25	97.25	433.628	5000.417
	0													-235.64		-301.72		-97.25			
17	3.75	W24X62	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	123.94	5544	-256.84	256.84	-328.9	328.9	-98.63	98.63	472.658	4948.512
	0													-256.84		-328.9		-98.63			
16	3.75	W24X62	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	123.94	5544	-278.14	278.14	-356.21	356.21	-99.86	99.86	511.873	4948.512
	0													-278.14		-356.21		-99.86			
15	3.75	W24X62	7	275.59055	W14X283	3.75	147.64	W14X283	3.75	147.64	258.89	123.94	5544	-292.85	292.85	-375.08	375.08	-101.41	101.41	538.96	4954.246
	0													-292.85		-375.08		-101.41			
14	3.75	W24X62	7	275.59055	W14X283	3.75	147.64	W14X283	3.75	147.64	258.89	123.94	5544	-284.43	284.43	-364.3	364.3	-302.66	302.66	523.466	4954.246
	0													-284.43		-364.3		-302.66			
13	3.75	W24X62	7	275.59055	W14X283	3.75	147.64	W14X283	3.75	147.64	258.89	123.94	5544	-305.83	305.83	-391.73	391.73	-303.43	303.43	562.861	4954.246
	0													-305.83		-391.73		-303.43			
12	3.75	W24X62	7	275.59055	W14X283	3.75	147.64	W14X283	3.75	147.64	258.89	123.94	5544	-327.28	327.28	-419.24	419.24	-304.48	304.48	602.356	4954.246
	0													-327.28		-419.24		-304.48			
11	3.75	W24X62	7	275.59055	W14X283	3.75	147.64	W14X283	3.75	147.64	258.89	123.94	5544	-348.78	348.78	-446.81	446.81	-305.7	305.7	641.941	4954.246
	0													-348.78		-446.81		-305.7			
10	3.75	W24X62	7	275.59055	W14X283	3.75	147.64	W14X283	3.75	147.64	258.89	123.94	5544	-370.35	370.35	-474.46	474.46	-307.15	307.15	681.65	4954.246
	0													-370.35		-474.46		-307.15			
9	3.75	W24X62	7	275.59055	W14X283	3.75	147.64	W14X283	3.75	147.64	258.89	123.94	5544	-391.93	391.93	-502.12	502.12	-309.58	309.58	721.376	4954.246
	0													-391.93		-502.12		-309.58			
8	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-413.55	413.55	-529.84	529.84	-311.92	311.92	761.18	4961.912
	0													-413.55		-529.84		-311.92			
7	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-435.23	435.23	-557.63	557.63	-314.26	314.26	801.091	4961.912
	0													-435.23		-557.63		-314.26			
6	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-456.99	456.99	-585.53	585.53	-316.42	316.42	841.153	4961.912
	0													-456.99		-585.53		-316.42			
5	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-478.83	478.83	-613.53	613.53	-318.35	318.35	881.361	4961.912
	0													-478.83		-613.53		-318.35			

4	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-500.77	500.77	-641.66	641.66	-319.97	319.97	921.754	4961.912
	0													-500.77		-641.66		-319.97			
3	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-522.79	522.79	-669.9	669.9	-321.13	321.13	962.298	4961.912
	0													-522.79		-669.9		-321.13			
2	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-544.91	544.91	-698.25	698.25	-321.93	321.93	1003.017	4961.912
	0													-544.91		-698.25		-321.93			
1	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-567.19	567.19	-726.81	726.81	-322.23	322.23	1044.033	4961.912
	0													-567.19		-726.81		-322.23			

K5 (Arah Y)

Lantai	Stasion	Balok			(K5)			(K4)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE Pakai	PE	Pu	Mu
		Arh Y B4	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W12x22	7	275.59055	W14X193	3.75	147.64	W14X120	3.75	147.64	275.59	141.49	1054.8	-6.44	6.44	-7.92	7.92	-0.81	0.81	11.688	1010.861
	0													-6.44		-7.92		-0.81			
29	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X145	3.75	147.64	275.59	133.49	2628	-2.3	2.3	-2.55	2.55	-86.01	86.01	4.035	2376.125
	0													-2.3		-2.55		-86.01			
28	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X145	3.75	147.64	275.59	131.64	2628	-23.56	23.56	-29.81	29.81	-86.41	86.41	43.177	2343.195
	0													-23.56		-29.81		-86.41			
27	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X145	3.75	147.64	275.59	131.64	2628	-44.79	44.79	-57.03	57.03	-87	87	82.263	2343.195
	0													-44.79		-57.03		-87			
26	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X145	3.75	147.64	275.59	131.64	2628	-66	66	-84.23	84.23	-87.73	87.73	121.315	2343.195
	0													-66		-84.23		-87.73			
25	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X145	3.75	147.64	275.59	131.64	2628	-87.21	87.21	-111.42	111.42	-88.6	88.6	160.362	2343.195
	0													-87.21		-111.42		-88.6			
24	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X145	3.75	147.64	275.59	131.64	2628	-108.42	108.42	-138.62	138.62	-89.59	89.59	199.414	2343.195
	0													-108.42		-138.62		-89.59			
23	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X145	3.75	147.64	275.59	131.64	2628	-129.61	129.61	-165.78	165.78	-90.63	90.63	238.422	2343.195
	0													-129.61		-165.78		-90.63			
22	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-150.81	150.81	-192.96	192.96	-91.74	91.74	277.452	2343.195
	0													-150.81		-192.96		-91.74			
21	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-172.03	172.03	-220.17	220.17	-92.89	92.89	316.521	2343.195
	0													-172.03		-220.17		-92.89			
20	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-193.27	193.27	-247.41	247.41	-94.09	94.09	355.629	2343.195

	0													-193.27		-247.41		-94.09			
19	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-214.47	214.47	-274.58	274.58	-95.81	95.81	394.654	2343.195
	0													-214.47		-274.58		-95.81			
18	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-235.64	235.64	-301.72	301.72	-97.25	97.25	433.628	2343.195
	0													-235.64		-301.72		-97.25			
17	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-256.84	256.84	-328.9	328.9	-98.63	98.63	472.658	2343.195
	0													-256.84		-328.9		-98.63			
16	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-278.14	278.14	-356.21	356.21	-99.86	99.86	511.873	2343.195
	0													-278.14		-356.21		-99.86			
15	3.75	W16x40	7	275.59055	W14X283	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-292.85	292.85	-375.08	375.08	-101.41	101.41	538.96	2343.195
	0													-292.85		-375.08		-101.41			
14	3.75	W16x40	7	275.59055	W14X283	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-284.43	284.43	-364.3	364.3	-302.66	302.66	523.466	2343.195
	0													-284.43		-364.3		-302.66			
13	3.75	W16x40	7	275.59055	W14X283	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-305.83	305.83	-391.73	391.73	-303.43	303.43	562.861	2343.195
	0													-305.83		-391.73		-303.43			
12	3.75	W16x40	7	275.59055	W14X283	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-327.28	327.28	-419.24	419.24	-304.48	304.48	602.356	2343.195
	0													-327.28		-419.24		-304.48			
11	3.75	W16x40	7	275.59055	W14X283	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-348.78	348.78	-446.81	446.81	-305.7	305.7	641.941	2343.195
	0													-348.78		-446.81		-305.7			
10	3.75	W16x40	7	275.59055	W14X283	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-370.35	370.35	-474.46	474.46	-307.15	307.15	681.65	2343.195
	0													-370.35		-474.46		-307.15			
9	3.75	W16x40	7	275.59055	W14X283	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-391.93	391.93	-502.12	502.12	-309.58	309.58	721.376	2343.195
	0													-391.93		-502.12		-309.58			
8	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-413.55	413.55	-529.84	529.84	-311.92	311.92	761.18	2343.195
	0													-413.55		-529.84		-311.92			
7	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-435.23	435.23	-557.63	557.63	-314.26	314.26	801.091	2343.195
	0													-435.23		-557.63		-314.26			
6	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-456.99	456.99	-585.53	585.53	-316.42	316.42	841.153	2343.195
	0													-456.99		-585.53		-316.42			
5	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-478.83	478.83	-613.53	613.53	-318.35	318.35	881.361	2343.195
	0													-478.83		-613.53		-318.35			
4	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-500.77	500.77	-641.66	641.66	-319.97	319.97	921.754	2343.195
	0													-500.77		-641.66		-319.97			
3	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-522.79	522.79	-669.9	669.9	-321.13	321.13	962.298	2343.195

	0																				
2	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-522.79		-669.9		-321.13			
	0													-544.91	544.91	-698.25	698.25	-321.93	321.93	1003.017	2343.195
1	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X233	3.75	147.64	275.59	131.64	2628	-544.91		-698.25		-321.93			
	0													-567.19	567.19	-726.81	726.81	-322.23	322.23	1044.033	2343.195
														-567.19		-726.81		-322.23			

K6 (Arah X)

Lantai	Stasion	Balok			(K6)			(K5)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PE	PE (Pakai)	Pu	Mu
		Arh x B2	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)			(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W18X35	7	275.59055	W14X193	3.75	147.64	W14X193	3.75	147.64	260.09	138.79	2394	-8.15	8.15	-10.02	10.02	-3.8	3.8	14.79	2384.611
	0													-8.15		-10.02		-3.8			
29	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	128.39	4536	-28.6	28.6	-36.24	36.24	-10.06	10.06	52.44	4182.857
	0													-28.6		-36.24		-10.06			
28	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-49.03	49.03	-62.43	62.43	-16.21	16.21	90.051	4132.359
	0													-49.03		-62.43		-16.21			
27	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-69.48	69.48	-88.64	88.64	-22.32	22.32	127.696	4132.359
	0													-69.48		-88.64		-22.32			
26	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-89.96	89.96	-114.9	114.9	-28.39	28.39	165.402	4132.359
	0													-89.96		-114.9		-28.39			
25	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-110.47	110.47	-141.21	141.21	-34.4	34.4	203.169	4132.359
	0													-110.47		-141.21		-34.4			
24	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-131.03	131.03	-167.56	167.56	-40.37	40.37	241.016	4132.359
	0													-131.03		-167.56		-40.37			
23	3.75	W21X55	7	275.59055	W14X211	3.75	147.64	W14X211	3.75	147.64	259.89	126.84	4536	-151.59	151.59	-193.92	193.92	-46.37	46.37	278.868	4132.359
	0													-151.59		-193.92		-46.37			
22	3.75	W21X55	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.84	4536	-172.18	172.18	-220.33	220.33	-52.31	52.31	316.781	4143.519
	0													-172.18		-220.33		-52.31			
21	3.75	W21X57	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.69	4644	-192.82	192.82	-246.79	246.79	-58.19	58.19	354.779	4237.157
	0													-192.82		-246.79		-58.19			
20	3.75	W21X57	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.54	4644	-213.5	213.5	-273.3	273.3	-64.05	64.05	392.85	4232.141
	0													-213.5		-273.3		-64.05			
19	3.75	W21X57	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	126.54	4644	-234.04	234.04	-299.63	299.63	-70.44	70.44	430.663	4232.141
	0													-234.04		-299.63		-70.44			

1	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-614.61	614.61	-787.57	787.57	-154.83	154.83	1131.317	4961.912
	0													-614.61		-787.57		-154.83			

K6 (Arah Y)

Lantai	Stasion	Balok			(K6)				(K3)			L' (in)	h' (in)	Mp	PD	PD Pakai	PL	PL Pakai	PL Pakai	PE	Pu	Mu
		Arh Y B4	L blk (m)	L blk (in)	Profil	h (m)	h (in)	Profil	h (m)	h (in)				(k.in)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(K-in)
30	3.75	W12x22	7	275.59055	W14X193	3.75	147.64	W14X120	3.75	147.64	275.59	141.49	1054.8	-8.15	8.15	-10.02	10.02	-3.8	3.8	14.79	1010.861
	0													-8.15		-10.02		-3.8			
29	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X145	3.75	147.64	275.59	133.49	2628	-28.6	28.6	-36.24	36.24	-10.06	10.06	52.44	2376.125
	0													-28.6		-36.24		-10.06			
28	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X145	3.75	147.64	275.59	131.64	2628	-49.03	49.03	-62.43	62.43	-16.21	16.21	90.051	2343.195
	0													-49.03		-62.43		-16.21			
27	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X145	3.75	147.64	275.59	131.64	2628	-69.48	69.48	-88.64	88.64	-22.32	22.32	127.696	2343.195
	0													-69.48		-88.64		-22.32			
26	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X145	3.75	147.64	275.59	131.64	2628	-89.96	89.96	-114.9	114.9	-28.39	28.39	165.402	2343.195
	0													-89.96		-114.9		-28.39			
25	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X145	3.75	147.64	275.59	131.64	2628	-110.47	110.47	-141.21	141.21	-34.4	34.4	203.169	2343.195
	0													-110.47		-141.21		-34.4			
24	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X145	3.75	147.64	275.59	131.64	2628	-131.03	131.03	-167.56	167.56	-40.37	40.37	241.016	2343.195
	0													-131.03		-167.56		-40.37			
23	3.75	W16x40	7	275.59055	W14X211	3.75	147.64	W14X145	3.75	147.64	275.59	131.64	2628	-151.59	151.59	-193.92	193.92	-46.37	46.37	278.868	2343.195
	0													-151.59		-193.92		-46.37			
22	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-172.18	172.18	-220.33	220.33	-52.31	52.31	316.781	2343.195
	0													-172.18		-220.33		-52.31			
21	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-192.82	192.82	-246.79	246.79	-58.19	58.19	354.779	2343.195
	0													-192.82		-246.79		-58.19			
20	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-213.5	213.5	-273.3	273.3	-64.05	64.05	392.85	2343.195
	0													-213.5		-273.3		-64.05			
19	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-234.04	234.04	-299.63	299.63	-70.44	70.44	430.663	2343.195
	0													-234.04		-299.63		-70.44			
18	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-254.55	254.55	-325.94	325.94	-77.1	77.1	468.43	2343.195
	0													-254.55		-325.94		-77.1			
17	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-275.11	275.11	-352.3	352.3	-83.68	83.68	506.282	2343.195

	0														-275.11		-352.3		-83.68			
16	3.75	W16x40	7	275.59055	W14X257	3.75	147.64	W14X176	3.75	147.64	275.59	131.64	2628	-295.73	295.73	-378.73	378.73	-90.1	90.1	544.241	2343.195
	0														-295.73		-378.73		-90.1			
15	3.75	W16x40	7	275.59055	W14X283	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-316.4	316.4	-405.24	405.24	-96.37	96.37	582.3	2343.195
	0														-316.4		-405.24		-96.37			
14	3.75	W16x40	7	275.59055	W14X283	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-337.14	337.14	-431.82	431.82	-102.6	102.6	620.478	2343.195
	0														-337.14		-431.82		-102.6			
13	3.75	W16x40	7	275.59055	W14X283	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-357.89	357.89	-458.43	458.43	-108.92	108.92	658.683	2343.195
	0														-357.89		-458.43		-108.92			
12	3.75	W16x40	7	275.59055	W14X283	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-378.76	378.76	-485.18	485.18	-114.84	114.84	697.102	2343.195
	0														-378.76		-485.18		-114.84			
11	3.75	W16x40	7	275.59055	W14X283	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-399.74	399.74	-512.08	512.08	-120.31	120.31	735.728	2343.195
	0														-399.74		-512.08		-120.31			
10	3.75	W16x40	7	275.59055	W14X283	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-420.83	420.83	-539.13	539.13	-125.46	125.46	774.561	2343.195
	0														-420.83		-539.13		-125.46			
9	3.75	W16x40	7	275.59055	W14X283	3.75	147.64	W14X211	3.75	147.64	275.59	131.64	2628	-441.88	441.88	-566.11	566.11	-130.89	130.89	813.311	2343.195
	0														-441.88		-566.11		-130.89			
8	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-463.03	463.03	-593.23	593.23	-136.03	136.03	852.251	2343.195
	0														-463.03		-593.23		-136.03			
7	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-484.3	484.3	-620.5	620.5	-140.63	140.63	891.41	2343.195
	0														-484.3		-620.5		-140.63			
6	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-505.7	505.7	-647.93	647.93	-144.62	144.62	930.805	2343.195
	0														-505.7		-647.93		-144.62			
5	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-527.22	527.22	-675.52	675.52	-147.98	147.98	970.424	2343.195
	0														-527.22		-675.52		-147.98			
4	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-548.87	548.87	-703.29	703.29	-150.66	150.66	1010.289	2343.195
	0														-548.87		-703.29		-150.66			
3	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-570.65	570.65	-731.21	731.21	-152.76	152.76	1050.385	2343.195
	0														-570.65		-731.21		-152.76			
2	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-592.56	592.56	-759.29	759.29	-154.17	154.17	1090.717	2343.195
	0														-592.56		-759.29		-154.17			
1	3.75	W16x40	7	275.59055	W14X311	3.75	147.64	W14X257	3.75	147.64	275.59	131.64	2628	-614.61	614.61	-787.57	787.57	-154.83	154.83	1131.317	2343.195
	0														-614.61		-787.57		-154.83			

18	3.75	W24X62	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	125.24	5544	-254.55	254.55	-325.94	325.94	-77.1	77.1	468.43	5000.417	
	0													-254.55		-325.94		-77.1				
17	3.75	W24X62	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	123.94	5544	-275.11	275.11	-352.3	352.3	-83.68	83.68	506.282	4948.512	
	0													-275.11		-352.3		-83.68				
16	3.75	W24X62	7	275.59055	W14X257	3.75	147.64	W14X257	3.75	147.64	259.19	123.94	5544	-295.73	295.73	-378.73	378.73	-90.1	90.1	544.241	4948.512	
	0													-295.73		-378.73		-90.1				
15	3.75	W24X62	7	275.59055	W14X283	3.75	147.64	W14X283	3.75	147.64	258.89	123.94	5544	-316.4	316.4	-405.24	405.24	-96.37	96.37	582.3	4954.246	
	0													-316.4		-405.24		-96.37				
14	3.75	W24X62	7	275.59055	W14X283	3.75	147.64	W14X283	3.75	147.64	258.89	123.94	5544	-337.14	337.14	-431.82	431.82	-102.6	102.6	620.478	4954.246	
	0													-337.14		-431.82		-102.6				
13	3.75	W24X62	7	275.59055	W14X283	3.75	147.64	W14X283	3.75	147.64	258.89	123.94	5544	-357.89	357.89	-458.43	458.43	-108.92	108.92	658.683	4954.246	
	0													-357.89		-458.43		-108.92				
12	3.75	W24X62	7	275.59055	W14X283	3.75	147.64	W14X283	3.75	147.64	258.89	123.94	5544	-378.76	378.76	-485.18	485.18	-114.84	114.84	697.102	4954.246	
	0													-378.76		-485.18		-114.84				
11	3.75	W24X62	7	275.59055	W14X283	3.75	147.64	W14X283	3.75	147.64	258.89	123.94	5544	-399.74	399.74	-512.08	512.08	-120.31	120.31	735.728	4954.246	
	0													-399.74		-512.08		-120.31				
10	3.75	W24X62	7	275.59055	W14X283	3.75	147.64	W14X283	3.75	147.64	258.89	123.94	5544	-420.83	420.83	-539.13	539.13	-125.46	125.46	774.561	4954.246	
	0													-420.83		-539.13		-125.46				
9	3.75	W24X62	7	275.59055	W14X283	3.75	147.64	W14X283	3.75	147.64	258.89	123.94	5544	-441.88	441.88	-566.11	566.11	-130.89	130.89	813.311	4954.246	
	0													-441.88		-566.11		-130.89				
8	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-463.03	463.03	-593.23	593.23	-136.03	136.03	852.251	4961.912	
	0													-463.03		-593.23		-136.03				
7	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-484.3	484.3	-620.5	620.5	-140.63	140.63	891.41	4961.912	
	0													-484.3		-620.5		-140.63				
6	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-505.7	505.7	-647.93	647.93	-144.62	144.62	930.805	4961.912	
	0													-505.7		-647.93		-144.62				
5	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-527.22	527.22	-675.52	675.52	-147.98	147.98	970.424	4961.912	
	0													-527.22		-675.52		-147.98				
4	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-548.87	548.87	-703.29	703.29	-150.66	150.66	1010.289	4961.912	
	0													-548.87		-703.29		-150.66				
3	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-570.65	570.65	-731.21	731.21	-152.76	152.76	1050.385	4961.912	
	0													-570.65		-731.21		-152.76				
2	3.75	W24X62	7	275.59055	W14X311	3.75	147.64	W14X311	3.75	147.64	258.49	123.94	5544	-592.56	592.56	-759.29	759.29	-154.17	154.17	1090.717	4961.912	
	0													-592.56		-759.29		-154.17				

LAMPIRAN C - 4

Tabel Gaya Geser Rencana Kolom Open Frame (OF) 30 Lt

Kolom 1 (K1)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	-1.18	0.9	-1.48	1.14	-0.91	-3.07	6.615	15.036
29	-1.63	1.04	-2.09	1.34	-2.44	-4.09	14.154	19.677
28	-1.41	0.94	-1.8	1.21	-4.1	-5.95	20.5905	27.2475
27	-1.45	0.97	-1.86	1.24	-5.25	-7.23	25.5255	32.6865
26	-1.44	0.96	-1.85	1.23	-6.41	-8.54	30.3765	38.1675
25	-1.42	0.95	-1.83	1.22	-7.46	-9.86	34.7445	43.6905
24	-1.48	0.95	-1.9	1.22	-9.03	-10.78	41.475	47.5545
23	-1.53	0.94	-1.96	1.21	-10.64	-11.7	48.3525	51.3975
22	-1.51	0.94	-1.94	1.2	-11.71	-12.86	52.8045	56.259
21	-1.5	0.93	-1.93	1.19	-13.06	-14.52	58.4535	63.21
20	-1.49	0.93	-1.91	1.2	-13.69	-14.44	61.068	62.8845
19	-1.57	0.99	-2.01	1.27	-12.87	-12.87	57.813	56.427
18	-1.51	0.96	-1.94	1.23	-14.63	-15.13	65.0685	65.8455
17	-1.5	0.96	-1.93	1.22	-15.41	-15.74	68.3235	68.397
16	-1.49	0.94	-1.9	1.21	-16.36	-16.57	72.2715	71.8515
15	-1.46	0.94	-1.87	1.2	-17.41	-17.46	76.6185	75.579
14	-1.47	0.91	-1.89	1.17	-18.3	-17.57	80.388	75.978
13	-1.57	0.93	-2.02	1.19	-18.31	-16.82	80.6715	72.87
12	-1.5	0.9	-1.92	1.15	-19.65	-18.07	86.121	78.0465
11	-1.49	0.89	-1.92	1.14	-20.7	-18.99	90.5205	81.8895
10	-1.4	0.85	-1.79	1.1	-20.54	-19.43	89.6175	83.6535
9	-1.56	0.96	-1.99	1.22	-19.91	-19.07	87.3495	82.383
8	-1.42	0.88	-1.82	1.13	-20.96	-20.23	91.434	87.0765
7	-1.4	0.87	-1.79	1.12	-21.56	-20.7	93.9015	89.0295
6	-1.35	0.85	-1.73	1.09	-22.25	-21.19	96.684	91.035
5	-1.31	0.83	-1.68	1.07	-23.01	-21.81	99.7815	93.597
4	-1.25	0.79	-1.6	1.02	-24.62	-22.27	106.3965	95.4345
3	-1.27	0.79	-1.62	1.01	-26.11	-22.47	112.6965	96.264
2	-1.27	0.82	-1.63	1.05	-28.79	-25.25	123.963	108.0135
1	-0.69	0.46	-0.89	0.59	-33.77	-32.25	143.493	136.5525

Kolom 2 (K2)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	-0.29	1.73	-0.37	2.18	-4.15	-2.57	17.2745	14.2765
29	-0.37	2.04	-0.48	2.62	-7.48	-4.55	30.7885	22.962
28	-0.33	1.84	-0.42	2.36	-9.48	-6.23	38.6865	29.212
27	-0.34	1.89	-0.43	2.42	-11.6	-7.71	47.187	35.2445
26	-0.33	1.87	-0.43	2.4	-13.68	-9.12	55.4965	40.8435
25	-0.32	1.87	-0.4	2.4	-15.24	-10.52	61.696	46.4435
24	-0.38	1.86	-0.48	2.38	-19.01	-11.67	76.919	51.023
23	-0.43	1.85	-0.55	2.37	-22.85	-12.79	92.4015	55.4725
22	-0.41	1.85	-0.53	2.37	-24.42	-14.12	98.6405	60.7925
21	-0.4	1.82	-0.51	2.33	-26.42	-15.48	106.61	66.161
20	-0.41	1.87	-0.52	2.4	-27.8	-17.1	112.1505	72.7635
19	-0.45	2.07	-0.58	2.66	-28.8	-17.75	116.2525	75.8335

18	-0.42	1.97	-0.53	2.52	-30.55	-19.46	123.171	82.4285
17	-0.4	1.96	-0.52	2.52	-31.98	-20.44	128.86	86.338
16	-0.39	1.93	-0.5	2.48	-33.45	-21.43	134.7095	90.2265
15	-0.36	1.92	-0.46	2.46	-34.44	-22.48	138.598	94.396
14	-0.39	1.84	-0.5	2.36	-36.96	-22.79	148.7495	95.452
13	-0.47	1.9	-0.6	2.44	-40.35	-23.01	162.4935	96.475
12	-0.41	1.82	-0.53	2.34	-40.54	-24.04	163.1205	100.411
11	-0.39	1.8	-0.49	2.31	-41.79	-25.08	168.0595	104.52
10	-0.37	1.78	-0.48	2.28	-42.22	-25.66	169.7485	106.789
9	-0.39	1.9	-0.5	2.43	-41.88	-24.69	168.4295	103.185
8	-0.33	1.78	-0.43	2.29	-43.08	-26.42	173.0965	109.839
7	-0.29	1.75	-0.38	2.25	-43.58	-26.77	175.0045	111.1675
6	-0.25	1.7	-0.32	2.18	-44.21	-27.33	177.4225	113.285
5	-0.2	1.66	-0.26	2.13	-44.15	-27.86	177.07	115.313
4	-0.17	1.57	-0.22	2.02	-46.48	-28.22	186.3185	116.5485
3	-0.15	1.56	-0.19	2	-49.52	-28.57	198.4275	117.918
2	-0.08	1.63	-0.1	2.09	-47.71	-30.12	191.024	124.2815
1	-0.02	0.92	-0.03	1.18	-44.98	-34.01	179.971	138.186

Kolom 3 (K3)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	0	1.75	0	2.21	-5.22	-1.82	20.88	11.3275
29	0	2.06	0	2.64	-8.87	-3.81	35.48	20.043
28	0	1.86	0	2.39	-10.71	-5.15	42.84	24.943
27	0	1.91	0	2.44	-12.86	-6.4	51.44	30.0455
26	0	1.89	0	2.42	-14.92	-7.59	59.68	34.7645
25	0	1.89	0	2.42	-16.43	-8.72	65.72	39.2845
24	0	1.88	0	2.41	-20.43	-9.83	81.72	43.704
23	0	1.87	0	2.4	-24.5	-10.92	98	48.0435
22	0	1.86	0	2.39	-26.01	-12	104.04	52.343
21	0	1.83	0	2.35	-27.98	-13.29	111.92	57.4315
20	0	1.89	0	2.42	-29.42	-14.29	117.68	61.5645
19	0	2.1	0	2.69	-30.63	-14.45	122.52	62.695
18	0	1.99	0	2.55	-32.26	-16.03	129.04	68.7595
17	0	1.99	0	2.55	-33.66	-16.82	134.64	71.9195
16	0	1.95	0	2.5	-35.07	-17.68	140.28	75.2675
15	0	1.94	0	2.49	-35.97	-18.44	143.88	78.287
14	0	1.86	0	2.38	-38.64	-19.15	154.56	80.933
13	0	1.92	0	2.46	-42.37	-19.88	169.48	83.996
12	0	1.84	0	2.36	-42.35	-20.59	169.4	86.652
11	0	1.82	0	2.33	-43.48	-21.61	173.92	90.681
10	0	1.79	0	2.3	-43.84	-21.74	175.36	91.1395
9	0	1.91	0	2.45	-43.56	-20.6	174.24	86.8555
8	0	1.8	0	2.3	-44.51	-22.18	178.04	92.91
7	0	1.77	0	2.26	-44.85	-22.47	179.4	93.9985
6	0	1.71	0	2.19	-45.28	-22.98	181.12	95.9055
5	0	1.67	0	2.14	-45.01	-23.37	180.04	97.3735
4	0	1.58	0	2.03	-47.17	-24.02	188.68	99.769
3	0	1.57	0	2.01	-50.09	-24.72	200.36	102.5385
2	0	1.63	0	2.09	-48	-26.02	192	107.8815
1	0	0.92	0	1.18	-45.05	-29.05	180.2	118.346

Kolom 4 (K4)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	-3.44	0.29	-4.34	0.37	-2.14	-8.84	16.512	36.035
29	-4.34	0.21	-5.57	0.27	-3.88	-9.88	25.647	40.011
28	-3.92	0.22	-5.03	0.28	-5.43	-12.71	30.866	51.351
27	-4	0.21	-5.13	0.27	-6.92	-15.18	37.010	61.211
26	-3.97	0.21	-5.09	0.27	-8.3	-17.62	42.459	70.971
25	-3.96	0.21	-5.08	0.27	-9.86	-20.04	48.678	80.651
24	-3.94	0.21	-5.06	0.26	-10.24	-21.91	50.157	88.121
23	-3.93	0.2	-5.03	0.26	-10.53	-23.66	51.277	95.110
22	-3.9	0.2	-5	0.25	-11.8	-25.63	56.295	102.980
21	-3.91	0.19	-5.01	0.24	-13.04	-27.79	61.276	111.600
20	-3.73	0.2	-4.78	0.25	-13.37	-27.98	62.177	112.380
19	-4.23	0.24	-5.42	0.31	-14.09	-29.44	66.222	118.322
18	-3.92	0.21	-5.03	0.27	-15.14	-30.7	69.706	123.291
17	-3.93	0.21	-5.04	0.27	-16.1	-32.31	73.567	129.731
16	-3.88	0.2	-4.97	0.26	-17.05	-33.64	77.244	135.030
15	-3.8	0.19	-4.87	0.25	-18.07	-35.03	81.140	140.570
14	-3.88	0.18	-4.98	0.23	-19	-35.7	85.054	143.219
13	-3.97	0.17	-5.09	0.22	-18.31	-33.98	82.499	136.319
12	-3.87	0.16	-4.96	0.21	-19.99	-36.1	88.984	144.778
11	-3.84	0.14	-4.93	0.18	-20.82	-36.64	92.242	146.887
10	-3.61	0.15	-4.62	0.19	-20.74	-38.11	91.371	152.788
9	-4.02	0.18	-5.16	0.23	-20.9	-41.22	92.981	165.299
8	-3.67	0.15	-4.7	0.19	-21.54	-40.77	94.714	163.428
7	-3.62	0.13	-4.64	0.17	-22.17	-41.69	97.121	167.067
6	-3.5	0.11	-4.48	0.15	-22.75	-42.12	99.155	168.746
5	-3.38	0.1	-4.34	0.12	-23.58	-42.65	102.209	170.825
4	-3.29	0.08	-4.21	0.1	-23.73	-42.66	102.585	170.824
3	-3.14	0.05	-4.02	0.07	-22.18	-39.75	96.037	159.123
2	-3.3	0.03	-4.23	0.04	-24.98	-41.35	107.615	165.472
1	-1.79	0.01	-2.3	0.01	-26.9	-41.84	111.780	167.381

Kolom 5 (K5)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	-1.06	0.48	-1.36	0.61	-7.03	-7.88	30.593	32.634
29	-1.27	0.4	-1.62	0.51	-10.53	-10.45	45.074	42.730
28	-1.14	0.4	-1.47	0.51	-12.83	-13.37	53.987	54.410
27	-1.16	0.39	-1.48	0.5	-15.63	-16.15	65.218	65.510
26	-1.14	0.39	-1.46	0.5	-18.21	-18.85	75.497	76.310
25	-1.13	0.38	-1.44	0.49	-20.94	-21.49	86.387	86.849
24	-1.11	0.38	-1.42	0.48	-21.99	-23.75	90.546	95.879
23	-1.09	0.37	-1.39	0.47	-22.83	-25.83	93.855	104.179
22	-1.07	0.36	-1.37	0.47	-25.02	-28.23	102.574	113.768
21	-1.03	0.33	-1.32	0.42	-26.79	-29.63	109.562	119.287
20	-1.07	0.41	-1.37	0.53	-28.56	-34.07	116.734	137.241
19	-1.21	0.54	-1.55	0.69	-30.52	-38.59	124.901	155.617
18	-1.11	0.48	-1.42	0.61	-31.94	-39.71	130.346	159.954

17	-1.07	0.47	-1.37	0.6	-33.46	-41.7	136.334	167.894
16	-1.02	0.44	-1.31	0.57	-34.91	-43.34	142.021	174.392
15	-0.94	0.42	-1.2	0.54	-35.87	-45.24	145.667	181.941
14	-1	0.39	-1.28	0.5	-37.89	-45.44	153.890	182.670
13	-1.16	0.38	-1.48	0.49	-41.19	-46.78	167.458	188.009
12	-1.02	0.35	-1.31	0.45	-41.16	-47.84	167.021	192.178
11	-0.95	0.31	-1.22	0.4	-42.23	-48.52	171.138	194.806
10	-0.92	0.33	-1.18	0.42	-42.86	-50.73	173.586	203.687
9	-0.98	0.38	-1.25	0.48	-43.54	-52.53	176.439	210.999
8	-0.83	0.31	-1.06	0.4	-44.23	-53.05	178.852	212.926
7	-0.72	0.28	-0.92	0.36	-44.82	-53.74	180.956	215.614
6	-0.6	0.23	-0.77	0.3	-45.28	-54.24	182.520	217.502
5	-0.48	0.19	-0.61	0.24	-45.58	-54.82	183.434	219.720
4	-0.36	0.14	-0.46	0.18	-44.83	-53.84	180.158	215.687
3	-0.28	0.1	-0.36	0.13	-44.88	-54.28	180.174	217.355
2	-0.14	0.05	-0.17	0.06	-43.27	-52.59	173.397	210.473
1	-0.03	0.01	-0.04	0.01	-39.88	-50.48	159.592	201.941

Kolom 6 (K6)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	0	0.5	0	0.64	-8.66	-6.02	34.640	25.245
29	0	0.41	0	0.53	-12.49	-8.65	49.960	35.561
28	0	0.42	0	0.53	-14.59	-11.02	58.360	45.051
27	0	0.41	0	0.53	-17.42	-13.39	69.680	54.521
26	0	0.41	0	0.52	-19.97	-15.66	79.880	63.591
25	0	0.4	0	0.51	-22.69	-17.85	90.760	72.330
24	0	0.39	0	0.5	-23.72	-19.95	94.880	80.710
23	0	0.38	0	0.49	-24.53	-21.93	98.120	88.609
22	0	0.38	0	0.49	-26.7	-23.91	106.800	96.529
21	0	0.35	0	0.44	-28.43	-25.25	113.720	101.808
20	0	0.43	0	0.55	-30.25	-28.45	121.000	114.802
19	0	0.56	0	0.72	-32.44	-31.62	129.760	127.788
18	0	0.5	0	0.64	-33.72	-32.72	134.880	132.045
17	0	0.49	0	0.63	-35.21	-34.35	140.840	138.545
16	0	0.46	0	0.59	-36.59	-35.78	146.360	144.193
15	0	0.44	0	0.57	-37.45	-37.3	149.800	150.232
14	0	0.4	0	0.52	-39.59	-38.17	158.360	153.620
13	0	0.4	0	0.51	-43.21	-40.13	172.840	161.450
12	0	0.36	0	0.47	-42.98	-40.86	171.920	164.288
11	0	0.33	0	0.42	-43.92	-41.62	175.680	167.247
10	0	0.35	0	0.44	-44.46	-42.95	177.840	172.608
9	0	0.39	0	0.5	-45.2	-43.98	180.800	176.830
8	0	0.33	0	0.42	-45.65	-44.56	182.600	179.007
7	0	0.29	0	0.37	-46.08	-45.14	184.320	181.235
6	0	0.24	0	0.31	-46.35	-45.62	185.400	183.042
5	0	0.2	0	0.25	-46.45	-46.09	185.800	184.820
4	0	0.14	0	0.18	-45.5	-45.81	182.000	183.567
3	0	0.11	0	0.14	-45.45	-46.8	181.800	187.456
2	0	0.05	0	0.07	-43.59	-45.36	174.360	181.563
1	0	0.01	0	0.01	-39.97	-43.14	159.880	172.581

LAMPIRAN C - 5

Tabel Gaya Geser Rencana Kolom Frame Truss (FT) 30 Lt

Kolom 1 (K1)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	1.09	-0.61	1.37	-0.77	-7.96	2.1	36.015	10.269
29	1.31	-0.98	1.68	-1.26	7.94	-5.03	36.488	23.478
28	1.35	-0.92	1.73	-1.18	2.16	-0.98	12.306	6.321
27	1.3	-0.92	1.66	-1.18	2.41	-1.68	13.230	9.261
26	1.31	-0.92	1.68	-1.19	2.67	-1.72	14.354	9.440
25	1.3	-0.93	1.67	-1.19	2.92	-1.78	15.383	9.702
24	1.31	-0.91	1.68	-1.17	3.52	-1.82	17.924	9.828
23	1.4	-0.94	1.79	-1.21	4.36	-2	21.662	10.658
22	1.35	-0.92	1.73	-1.18	4.61	-1.9	22.596	10.185
21	1.35	-0.92	1.74	-1.18	5.62	-2.25	26.849	11.655
20	1.35	-0.93	1.73	-1.2	3.95	-1.88	19.824	10.133
19	1.33	-0.93	1.71	-1.2	5.13	-2.22	24.738	11.561
18	1.4	-0.92	1.8	-1.18	5.66	-2.44	27.132	12.453
17	1.35	-1.01	1.74	-1.3	6.39	-0.83	30.083	5.912
16	1.35	-0.53	1.73	-0.68	24.14	-11.06	104.622	47.723
15	1.32	-0.52	1.7	-0.66	-39.8	14.65	170.331	62.769
14	1.35	-0.98	1.74	-1.26	25.19	-11.43	109.043	50.358
13	1.38	-0.86	1.77	-1.1	8.53	-0.73	39.134	5.124
12	1.36	-0.88	1.74	-1.13	8.17	-2.1	37.569	10.931
11	1.34	-0.86	1.71	-1.1	9.87	-2.5	44.657	12.558
10	1.32	-0.88	1.69	-1.13	5.73	-1.76	27.227	9.503
9	1.28	-0.88	1.64	-1.13	7.6	-2.5	34.986	12.611
8	1.32	-0.88	1.69	-1.13	7.83	-2.43	36.047	12.317
7	1.26	-0.85	1.62	-1.09	7.74	-2.17	35.532	11.151
6	1.24	-0.83	1.59	-1.07	7.35	-1.97	33.842	10.269
5	1.21	-0.82	1.56	-1.05	6.95	-1.7	32.099	9.104
4	1.17	-0.79	1.5	-1.01	6.91	-1.39	31.826	7.728
3	1.17	-0.77	1.5	-0.98	6.98	-1.29	32.120	7.256
2	1.22	-0.82	1.56	-1.05	6.89	-0.17	31.857	2.678
1	0.67	-0.46	0.86	-0.59	21.37	-3.79	91.361	17.021

Kolom 2 (K2)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	0.05	-0.94	0.07	-1.2	-9.69	4.12	38.883	18.667
29	0.06	-1.71	0.08	-2.19	10.95	-7.65	43.943	34.586
28	0.09	-1.67	0.12	-2.15	4.66	-1.64	18.855	10.464
27	0.09	-1.63	0.11	-2.09	5.1	-2.63	20.605	14.322
26	0.1	-1.64	0.12	-2.11	5.62	-2.66	22.705	14.472
25	0.1	-1.65	0.12	-2.11	5.99	-2.78	24.185	14.963
24	0.11	-1.62	0.15	-2.07	7.34	-2.83	29.626	15.091
23	0.14	-1.67	0.18	-2.14	9.2	-3.04	37.127	16.054
22	0.13	-1.64	0.17	-2.1	9.49	-2.98	38.267	15.742
21	0.13	-1.63	0.17	-2.09	10.85	-3.45	43.707	17.602
20	0.13	-1.66	0.16	-2.13	8.73	-3.1	35.217	16.273
19	0.13	-1.68	0.17	-2.15	10.54	-3.97	42.467	19.794

18	0.14	-1.65	0.18	-2.12	11.77	-4.15	47.407	20.453
17	0.13	-1.85	0.17	-2.37	12.74	-2.28	51.267	13.433
16	0.12	-0.9	0.15	-1.15	32.53	-17.23	130.396	71.015
15	0.1	-0.85	0.13	-1.08	-45.93	24.03	183.955	98.093
14	0.13	-1.79	0.16	-2.3	34.59	-17.71	138.657	75.020
13	0.14	-1.58	0.18	-2.03	17.24	-2.09	69.287	12.049
12	0.13	-1.62	0.17	-2.08	16.48	-3.77	66.227	18.861
11	0.13	-1.59	0.17	-2.03	18.46	-4.37	74.147	21.180
10	0.12	-1.62	0.16	-2.08	13.04	-3.18	52.446	16.501
9	0.11	-1.59	0.15	-2.04	15.15	-4.6	60.866	22.110
8	0.12	-1.63	0.15	-2.09	16.17	-4.4	64.956	21.402
7	0.1	-1.58	0.13	-2.02	15.45	-4.06	62.035	19.919
6	0.09	-1.56	0.11	-2.01	14.75	-3.74	59.205	18.608
5	0.07	-1.55	0.09	-1.99	13.79	-3.35	55.324	17.018
4	0.06	-1.5	0.07	-1.92	13.64	-2.86	54.693	14.935
3	0.05	-1.5	0.06	-1.93	14.15	-2.74	56.713	14.465
2	0.02	-1.6	0.03	-2.05	13.27	-1.21	53.131	8.570
1	0	-0.91	0.01	-1.17	29.98	-8.52	119.930	36.206

Kolom 3 (K3)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	0	-1.69	0	-2.13	-7.96	5.06	31.840	24.145
29	0	-1.8	0	-2.32	12.39	-8.89	49.560	39.770
28	0	-1.9	0	-2.44	6.86	-2.75	27.440	15.435
27	0	-1.81	0	-2.32	7	-3.6	28.000	18.621
26	0	-1.83	0	-2.35	7.57	-3.72	30.280	19.152
25	0	-1.82	0	-2.34	7.77	-3.87	31.080	19.731
24	0	-1.82	0	-2.33	9.71	-4	38.840	20.241
23	0	-1.81	0	-2.33	11.55	-4.11	46.200	20.671
22	0	-1.81	0	-2.32	11.83	-4.16	47.320	20.861
21	0	-1.79	0	-2.3	13.1	-4.69	52.400	22.940
20	0	-1.82	0	-2.33	10.82	-4.29	43.280	21.401
19	0	-1.9	0	-2.44	13.14	-5.64	52.560	26.995
18	0	-1.89	0	-2.42	14.42	-5.73	57.680	27.325
17	0	-1.85	0	-2.37	15.28	-3.75	61.120	19.313
16	0	-1.83	0	-2.35	35.01	-22.05	140.040	92.472
15	0	-1.81	0	-2.32	-43.62	30.43	174.480	125.941
14	0	-1.79	0	-2.29	37.26	-21.88	149.040	91.690
13	0	-1.77	0	-2.27	20.2	-3.65	80.800	18.729
12	0	-1.75	0	-2.24	19.11	-5.34	76.440	25.438
11	0	-1.7	0	-2.18	20.89	-6.09	83.560	28.325
10	0	-1.75	0	-2.24	15.23	-4.59	60.920	22.438
9	0	-1.73	0	-2.22	17.17	-6.58	68.680	30.357
8	0	-1.76	0	-2.25	18.19	-6.22	72.760	28.978
7	0	-1.68	0	-2.15	17.13	-5.83	68.520	27.234
6	0	-1.65	0	-2.11	16.18	-5.39	64.720	25.403
5	0	-1.61	0	-2.07	14.95	-4.92	59.800	23.441
4	0	-1.54	0	-1.97	14.57	-4.24	58.280	20.547
3	0	-1.53	0	-1.97	14.94	-4.03	59.760	19.697
2	0	-1.61	0	-2.06	13.69	-2.28	54.760	12.871
1	0	-0.91	0	-1.17	30.11	-12.21	120.440	50.966

Kolom 4 (K4)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	0.71	-0.16	0.89	-0.2	-9.32	4.57	38.916	18.648
29	0.89	0.35	1.15	0.45	7.36	-6.34	31.525	26.178
28	0.85	0.3	1.09	0.38	1.71	-0.79	8.823	3.855
27	0.79	0.32	1.01	0.41	1.97	-1.54	9.720	6.906
26	0.76	0.33	0.97	0.42	2.18	-1.61	10.488	7.207
25	0.72	0.34	0.92	0.43	2.46	-1.63	11.516	7.307
24	0.69	0.35	0.89	0.45	2.59	-1.73	11.975	7.738
23	0.66	0.37	0.85	0.47	2.62	-1.84	12.023	8.219
22	0.63	0.38	0.81	0.49	2.9	-1.75	13.072	7.889
21	0.57	0.4	0.74	0.52	3.54	-2.11	15.499	9.380
20	0.51	0.41	0.66	0.53	2.24	-1.56	10.156	7.201
19	0.5	0.39	0.64	0.5	2.87	-1.88	12.645	8.430
18	0.54	0.41	0.7	0.52	3.1	-2.09	13.667	9.311
17	0.48	0.53	0.61	0.68	3.97	-0.65	16.994	3.837
16	0.45	0.04	0.57	0.05	16.63	-11.91	67.563	47.732
15	0.43	0.01	0.55	0.01	-34.88	19.22	140.522	76.901
14	0.42	0.55	0.54	0.71	18.37	-13.11	74.461	53.728
13	0.37	0.5	0.48	0.64	4.92	-0.68	20.549	3.885
12	0.33	0.53	0.42	0.68	4.31	-1.78	18.007	8.357
11	0.22	0.56	0.29	0.71	5.52	-2.43	22.601	11.018
10	0.11	0.57	0.14	0.73	2.01	-1.16	8.296	5.969
9	0.09	0.55	0.12	0.71	3.4	-1.9	13.815	8.888
8	0.09	0.6	0.12	0.77	3.47	-1.95	14.095	9.200
7	0.05	0.61	0.06	0.79	3.53	-1.62	14.233	7.911
6	0.01	0.64	0.01	0.82	3.33	-1.43	13.341	7.212
5	-0.04	0.68	-0.05	0.87	3.23	-1.12	13.012	6.064
4	-0.06	0.68	-0.08	0.87	3.27	-0.89	13.223	5.144
3	-0.08	0.71	-0.11	0.91	3.43	-0.86	13.914	5.096
2	-0.16	0.8	-0.21	1.03	3.78	0.38	15.498	3.390
1	-0.11	0.46	-0.14	0.6	17.5	-4.61	70.256	19.523

Kolom 5 (K5)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	1.34	0.01	1.72	0.01	-9.31	7.22	40.367	28.901
29	3.04	0.88	3.89	1.13	11.58	-10.04	53.402	42.214
28	2.81	0.77	3.6	0.98	6.01	-2.21	30.591	10.629
27	2.81	0.8	3.6	1.02	6.37	-3.21	32.031	14.700
26	2.83	0.81	3.63	1.04	7.01	-3.4	34.642	15.491
25	2.85	0.83	3.65	1.07	7.64	-3.56	37.203	16.182
24	2.87	0.85	3.67	1.09	8.2	-3.78	39.484	17.103
23	2.88	0.87	3.7	1.12	8.62	-3.97	41.204	17.914
22	2.89	0.89	3.71	1.14	9.25	-4.04	43.745	18.235
21	2.94	0.93	3.77	1.19	10.28	-4.58	47.977	20.487
20	2.99	0.93	3.83	1.19	8.8	-4.24	42.170	19.127
19	2.93	0.88	3.75	1.13	10.01	-5.31	46.867	23.294
18	3.06	0.91	3.92	1.17	11.29	-5.52	52.293	24.206

17	3.32	1.12	4.25	1.43	12.44	-4.23	57.496	19.526
16	1.49	0.23	1.91	0.29	25.58	-19.32	105.795	77.812
15	1.47	0.2	1.88	0.26	-35.15	28.93	144.024	116.190
14	3.34	1.17	4.28	1.5	27.58	-20.88	118.107	86.249
13	3.04	1.05	3.89	1.35	14.79	-4.05	66.242	18.653
12	3.07	1.11	3.94	1.43	14.08	-5.24	63.484	23.556
11	3.09	1.15	3.97	1.48	15.56	-6.16	69.455	27.328
10	3.16	1.21	4.06	1.55	11.36	-4.73	52.818	21.741
9	2.93	1.12	3.75	1.43	12.67	-6.35	57.507	28.006
8	3.27	1.24	4.19	1.59	14.77	-6.72	66.704	29.772
7	3.09	1.23	3.96	1.58	13.97	-6.1	63.085	27.272
6	3.11	1.28	3.99	1.64	13.76	-5.83	62.296	26.304
5	3.11	1.33	3.99	1.71	13.38	-5.42	60.776	24.787
4	3	1.32	3.84	1.69	13.27	-4.88	60.070	22.596
3	3.09	1.37	3.96	1.76	13.94	-4.8	62.965	22.399
2	3.24	1.55	4.15	1.98	14.2	-3.27	64.352	16.688
1	1.78	0.89	2.28	1.14	27.77	-12.05	115.229	50.275

Kolom 6 (K6)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	0	-0.43	0	-0.55	-2.76	8.45	11.040	34.802
29	0	-0.36	0	-0.47	18.62	-11.77	74.480	47.928
28	0	-0.38	0	-0.49	13.51	-3.96	54.040	16.729
27	0	-0.37	0	-0.47	14.22	-5.1	56.880	21.259
26	0	-0.37	0	-0.47	15.27	-5.42	61.080	22.539
25	0	-0.37	0	-0.47	16.22	-5.74	64.880	23.819
24	0	-0.36	0	-0.46	17.23	-6.05	68.920	25.038
23	0	-0.36	0	-0.45	18.04	-6.3	72.160	26.028
22	0	-0.35	0	-0.45	18.81	-6.5	75.240	26.818
21	0	-0.33	0	-0.42	19.95	-7.09	79.800	29.127
20	0	-0.38	0	-0.49	18.37	-7.03	73.480	29.009
19	0	-0.43	0	-0.55	19.98	-8.64	79.920	35.562
18	0	-0.41	0	-0.53	22.51	-8.91	90.040	36.601
17	0	-0.39	0	-0.5	22.69	-7.07	90.760	29.190
16	0	-0.36	0	-0.47	36.12	-26.28	144.480	105.968
15	0	-0.38	0	-0.49	-25	34.63	100.000	139.409
14	0	-0.36	0	-0.46	37.92	-26.3	151.680	106.038
13	0	-0.3	0	-0.38	26.27	-7.14	105.080	29.255
12	0	-0.29	0	-0.37	25.52	-8.74	102.080	35.635
11	0	-0.25	0	-0.32	26.8	-9.55	107.200	38.783
10	0	-0.29	0	-0.37	22.16	-8.36	88.640	34.115
9	0	-0.3	0	-0.38	23.02	-10.84	92.080	44.055
8	0	-0.27	0	-0.35	26.49	-11.05	105.960	44.834
7	0	-0.23	0	-0.3	23.73	-10.1	94.920	40.942
6	0	-0.2	0	-0.25	22.42	-9.52	89.680	38.540
5	0	-0.16	0	-0.2	20.43	-8.76	81.720	35.408
4	0	-0.12	0	-0.15	18.98	-7.67	75.920	30.956
3	0	-0.09	0	-0.11	18.51	-7.25	74.040	29.205
2	0	-0.04	0	-0.05	15.88	-4.94	63.520	19.852
1	0	0	0	0	27.88	-16.76	111.520	67.040

LAMPIRAN C - 6

Tabel Gaya Geser Rencana Kolom Outrigger n Belttruss/ Core Brace (CB)

Kolom 1 (K1)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	1.14	-0.78	1.43	-0.98	-5.81	2.52	27.101	12.432
29	1.33	-0.87	1.71	-1.12	3.84	-4.59	19.320	21.368
28	1.34	-0.84	1.72	-1.07	3.09	-0.62	16.191	4.610
27	1.3	-0.83	1.66	-1.06	3.3	-0.89	16.968	5.723
26	1.31	-0.83	1.67	-1.07	3.79	-0.84	19.047	5.523
25	1.3	-0.84	1.67	-1.07	4.38	-0.74	21.515	5.114
24	1.3	-0.82	1.67	-1.05	5.34	-0.74	25.547	5.072
23	1.39	-0.85	1.79	-1.09	6.71	-0.84	31.521	5.565
22	1.35	-0.83	1.73	-1.06	7.7	-0.56	35.574	4.337
21	1.35	-0.83	1.73	-1.06	9.5	-0.97	43.134	6.059
20	1.35	-0.83	1.72	-1.07	5.93	-0.41	28.130	3.717
19	1.33	-0.82	1.7	-1.05	8.04	-0.64	36.950	4.652
18	1.4	-0.84	1.79	-1.08	9.81	-0.61	44.552	4.578
17	1.35	-0.82	1.72	-1.05	14.14	0.78	62.612	5.240
16	1.36	-0.82	1.74	-1.05	26.77	-9.32	115.689	41.108
15	1.41	-0.89	1.81	-1.14	-53.69	11.86	228.879	51.944
14	1.42	-0.86	1.82	-1.1	28.81	-9.16	124.404	40.530
13	1.37	-0.79	1.76	-1.01	18.14	0.76	79.475	5.082
12	1.36	-0.8	1.75	-1.03	15.96	0.07	70.298	2.216
11	1.34	-0.79	1.72	-1.01	17.62	-0.91	77.217	5.712
10	1.32	-0.8	1.7	-1.03	9.72	0.09	43.995	2.300
9	1.29	-0.79	1.65	-1.02	12.4	-0.39	55.167	3.539
8	1.32	-0.81	1.7	-1.04	12.92	-0.61	57.435	4.505
7	1.27	-0.78	1.63	-1.01	13.91	-0.21	61.467	2.762
6	1.25	-0.78	1.6	-1	14.15	-0.05	62.423	2.079
5	1.23	-0.77	1.57	-0.98	14.62	0.32	64.344	3.182
4	1.18	-0.75	1.52	-0.96	16.15	0.49	70.665	3.854
3	1.18	-0.74	1.51	-0.95	17.77	0.58	77.459	4.211
2	1.23	-0.8	1.57	-1.02	22.96	2.2	99.372	11.151
1	0.67	-0.45	0.86	-0.58	40.72	-3.97	172.631	17.756

Kolom 2 (K2)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	0.19	-1.11	0.24	-1.42	-6.99	3.4	28.400	16.186
29	0.14	-1.83	0.18	-2.35	6.04	-6.45	24.487	30.072
28	0.17	-1.8	0.22	-2.31	5.57	-1.99	22.679	12.160
27	0.16	-1.75	0.21	-2.24	6.53	-2.32	26.498	13.358
26	0.17	-1.76	0.21	-2.26	7.55	-2.4	30.589	13.708
25	0.16	-1.76	0.21	-2.26	8.55	-2.43	34.578	13.828
24	0.19	-1.73	0.24	-2.22	10.71	-2.47	43.280	13.917
23	0.22	-1.78	0.29	-2.28	13.66	-2.66	55.161	14.789
22	0.21	-1.74	0.27	-2.24	15	-2.53	60.491	14.187
21	0.21	-1.73	0.26	-2.22	17.43	-3.21	70.201	16.877
20	0.2	-1.78	0.25	-2.28	12.96	-2.41	52.300	13.789

19	0.2	-1.8	0.26	-2.3	16.04	-3.34	64.630	17.550
18	0.22	-1.77	0.28	-2.27	19.07	-3.33	76.791	17.449
17	0.19	-1.95	0.25	-2.5	23.79	-2.4	95.610	14.148
16	0.22	-1	0.28	-1.28	36.85	-16.1	147.911	66.730
15	0.25	-0.93	0.32	-1.19	-61.34	22.3	245.943	91.367
14	0.23	-1.86	0.29	-2.39	40.75	-16.54	163.532	70.503
13	0.21	-1.65	0.27	-2.12	32.01	-2.28	128.531	12.973
12	0.2	-1.69	0.26	-2.17	30.12	-2.9	120.950	15.545
11	0.19	-1.64	0.24	-2.11	32.06	-4.12	128.680	20.312
10	0.18	-1.69	0.22	-2.16	21.84	-2.32	87.769	13.215
9	0.16	-1.66	0.21	-2.13	24.81	-3.79	99.618	19.033
8	0.17	-1.69	0.21	-2.17	26.91	-3.83	108.029	19.265
7	0.14	-1.63	0.18	-2.09	27.63	-3.44	110.847	17.562
6	0.12	-1.61	0.16	-2.06	28.19	-3.14	113.046	16.311
5	0.1	-1.58	0.13	-2.02	28.67	-2.71	114.915	14.519
4	0.08	-1.51	0.1	-1.94	31.03	-2.35	124.304	12.926
3	0.07	-1.51	0.08	-1.94	34.96	-2.18	139.994	12.246
2	0.03	-1.6	0.04	-2.05	40.13	-0.76	160.592	6.770
1	0.01	-0.9	0.01	-1.16	57.95	-12	231.821	50.105

Kolom 3 (K3)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	0	-1.79	0	-2.27	-6.48	4.78	25.92	23.2695
29	0	-1.89	0	-2.43	6.38	-6.75	25.52	31.4145
28	0	-1.99	0	-2.55	6.03	-2.54	24.12	14.7995
27	0	-1.89	0	-2.43	6.95	-2.94	27.8	16.1745
26	0	-1.91	0	-2.45	8.01	-3.16	32.04	17.0955
25	0	-1.9	0	-2.44	8.91	-3.34	35.64	17.795
24	0	-1.9	0	-2.43	11.57	-3.53	46.28	18.545
23	0	-1.89	0	-2.42	14.1	-3.68	56.4	19.1245
22	0	-1.88	0	-2.41	15.49	-3.8	61.96	19.584
21	0	-1.86	0	-2.38	17.81	-4.65	71.24	22.933
20	0	-1.89	0	-2.43	13.36	-3.58	53.44	18.7345
19	0	-1.99	0	-2.54	16.9	-5.09	67.6	24.9895
18	0	-1.97	0	-2.52	19.72	-5.09	78.88	24.9485
17	0	-1.93	0	-2.47	24.47	-4.64	97.88	23.0565
16	0	-1.9	0	-2.44	37.54	-20.67	150.16	87.115
15	0	-1.87	0	-2.4	-60.71	31.81	242.84	131.6035
14	0	-1.85	0	-2.37	41.46	-20.66	165.84	86.9525
13	0	-1.82	0	-2.34	32.83	-4.8	131.32	23.451
12	0	-1.8	0	-2.31	30.86	-5.22	123.44	25.08
11	0	-1.75	0	-2.24	32.76	-6.63	131.04	30.5975
10	0	-1.8	0	-2.31	22.5	-4.16	90	20.84
9	0	-1.78	0	-2.29	25.44	-6.49	101.76	30.119
8	0	-1.8	0	-2.31	27.55	-6.37	110.2	29.68
7	0	-1.72	0	-2.2	28.18	-6.21	112.72	28.846
6	0	-1.68	0	-2.15	28.65	-5.94	114.6	27.674
5	0	-1.64	0	-2.1	29.04	-5.67	116.16	26.502
4	0	-1.56	0	-2	31.31	-5.27	125.24	24.718
3	0	-1.55	0	-1.98	35.18	-5.14	140.72	24.1675
2	0	-1.62	0	-2.07	40.2	-4.32	160.8	21.051

1	0	-0.91	0	-1.17	57.95	-18.92	231.8	77.8055

Kolom 4 (K4)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	3.42	-0.34	4.31	-0.44	-4.4	2.99	25.501	12.757
29	3.96	-0.2	5.09	-0.25	5.45	-7.01	31.048	28.500
28	4	-0.15	5.12	-0.19	5.33	-1.53	30.640	6.468
27	3.88	-0.16	4.98	-0.2	5.87	-1.9	32.534	7.968
26	3.9	-0.16	5	-0.2	6.71	-1.78	35.935	7.488
25	3.89	-0.15	4.98	-0.2	7.67	-1.61	39.745	6.798
24	3.89	-0.15	4.99	-0.2	8.36	-1.6	42.515	6.758
23	3.89	-0.15	4.98	-0.19	8.86	-1.65	44.505	6.948
22	3.87	-0.15	4.96	-0.19	9.97	-1.35	48.904	5.748
21	3.84	-0.14	4.92	-0.18	11.38	-1.75	54.472	7.327
20	3.83	-0.15	4.91	-0.19	8.75	-1.17	43.932	5.028
19	3.71	-0.15	4.75	-0.19	10.18	-1.43	49.366	6.068
18	4.03	-0.15	5.16	-0.2	12.33	-1.43	58.712	6.078
17	3.82	-0.12	4.89	-0.16	15.53	0.05	71.021	0.486
16	3.77	-0.19	4.84	-0.25	23.66	-11.99	103.439	48.410
15	3.69	-0.29	4.74	-0.37	-42.62	13.21	179.095	53.515
14	3.75	-0.18	4.81	-0.23	25.1	-11.63	109.148	46.939
13	3.77	-0.1	4.83	-0.13	18.5	0.15	82.789	0.835
12	3.69	-0.11	4.73	-0.14	16.77	-0.38	75.685	1.776
11	3.62	-0.09	4.64	-0.12	18.02	-1.49	80.521	6.175
10	3.56	-0.11	4.57	-0.14	11.38	-0.29	53.828	1.416
9	3.41	-0.11	4.38	-0.15	13.43	-0.86	61.681	3.706
8	3.57	-0.1	4.58	-0.13	14.5	-1.09	66.329	4.595
7	3.39	-0.09	4.35	-0.11	15.04	-0.47	68.070	2.085
6	3.34	-0.07	4.28	-0.09	15.27	-0.12	68.867	0.644
5	3.27	-0.06	4.2	-0.08	15.68	0.48	70.354	2.063
4	3.12	-0.04	4	-0.05	16.54	0.79	73.436	3.252
3	3.17	-0.03	4.06	-0.04	18.13	1.02	79.909	4.152
2	3.24	-0.01	4.16	-0.02	22.24	2.92	96.522	11.711
1	1.78	0	2.28	0	36.44	-5.07	149.909	20.280

Kolom 5 (K5)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	1.28	-0.43	1.64	-0.55	-6.21	2.94	27.824	12.762
29	1.31	-0.3	1.68	-0.38	7.09	-10.84	31.416	44.055
28	1.35	-0.35	1.73	-0.44	8.63	-5.34	37.668	22.168
27	1.3	-0.33	1.66	-0.43	9.88	-5.75	42.545	23.777
26	1.29	-0.34	1.65	-0.43	11.67	-5.98	49.685	24.707
25	1.26	-0.33	1.62	-0.43	13.46	-6.09	56.783	25.137
24	1.26	-0.33	1.62	-0.43	14.94	-6.31	62.703	26.017
23	1.26	-0.33	1.61	-0.42	16.11	-6.51	67.373	26.807
22	1.22	-0.33	1.57	-0.42	17.92	-6.53	74.531	26.887
21	1.19	-0.3	1.53	-0.39	19.88	-7.09	82.300	29.065
20	1.14	-0.36	1.46	-0.45	16.62	-6.9	69.137	28.428
19	1.16	-0.39	1.49	-0.5	18.77	-8.46	77.788	34.750

18	1.3	-0.38	1.66	-0.49	22	-8.48	91.025	34.809
17	1.18	-0.35	1.51	-0.45	25.3	-7.7	103.949	31.618
16	1.16	-0.35	1.49	-0.45	31.24	-22.09	127.668	89.178
15	1.07	-0.34	1.37	-0.43	-47.32	22.32	191.774	90.067
14	1.09	-0.3	1.39	-0.38	33.94	-22.7	138.295	91.495
13	1.13	-0.28	1.44	-0.35	31.25	-7.24	127.627	29.604
12	1.01	-0.26	1.29	-0.34	30.14	-7.65	122.911	31.213
11	0.91	-0.23	1.17	-0.29	31.61	-8.68	128.566	35.252
10	0.81	-0.27	1.03	-0.34	23.46	-7.51	95.721	30.664
9	0.71	-0.28	0.91	-0.36	24.95	-9.61	101.456	39.094
8	0.76	-0.26	0.97	-0.33	29.27	-9.94	118.848	40.363
7	0.61	-0.22	0.78	-0.28	28.84	-8.77	116.781	35.591
6	0.52	-0.19	0.67	-0.25	29.61	-8.05	119.656	32.650
5	0.41	-0.16	0.53	-0.21	30.16	-7.03	121.601	28.498
4	0.32	-0.12	0.41	-0.16	31.67	-5.99	127.426	24.246
3	0.26	-0.09	0.33	-0.12	34.85	-5.33	140.003	21.535
2	0.1	-0.05	0.13	-0.07	39.1	-3.23	156.635	13.043
1	0.01	-0.02	0.01	-0.02	52.45	-16.56	209.821	66.281

Kolom 6 (K6)

Lantai	VD,k		VL,k		VE,k	VE,k	VU	VU
	Arah X	Arah Y	Arah X	Arah Y	Arah X	Arah y	Arah x	Arah y
	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
30	0	-0.41	0	-0.53	-5.13	3.96	20.520	16.801
29	0	-0.34	0	-0.43	8.16	-11.9	32.640	48.387
28	0	-0.38	0	-0.48	9.72	-7.18	38.880	29.599
27	0	-0.36	0	-0.46	10.92	-7.54	43.680	30.998
26	0	-0.36	0	-0.46	12.71	-8.03	50.840	32.958
25	0	-0.36	0	-0.46	14.48	-8.39	57.920	34.398
24	0	-0.35	0	-0.45	15.96	-8.75	63.840	35.818
23	0	-0.35	0	-0.44	17.14	-9.03	68.560	36.928
22	0	-0.34	0	-0.44	18.93	-9.35	75.720	38.197
21	0	-0.32	0	-0.41	20.87	-10.12	83.480	41.226
20	0	-0.37	0	-0.48	17.59	-9.85	70.360	40.269
19	0	-0.41	0	-0.53	19.78	-12.12	79.120	49.441
18	0	-0.4	0	-0.52	23.12	-12.3	92.480	50.140
17	0	-0.38	0	-0.49	26.4	-12.03	105.600	49.009
16	0	-0.36	0	-0.46	32.14	-28.37	128.560	114.318
15	0	-0.34	0	-0.44	-46.75	33	187.000	132.797
14	0	-0.32	0	-0.41	34.83	-28.24	139.320	113.706
13	0	-0.3	0	-0.38	32.39	-12.03	129.560	48.815
12	0	-0.28	0	-0.36	31.14	-12.09	124.560	49.014
11	0	-0.24	0	-0.3	32.56	-13.18	130.240	53.272
10	0	-0.28	0	-0.35	24.33	-11.47	97.320	46.524
9	0	-0.29	0	-0.37	25.76	-14.62	103.040	59.155
8	0	-0.26	0	-0.34	30.2	-14.96	120.800	60.453
7	0	-0.22	0	-0.28	29.61	-13.88	118.440	56.031
6	0	-0.19	0	-0.24	30.27	-13.26	121.080	53.480
5	0	-0.15	0	-0.2	30.69	-12.44	122.760	50.118
4	0	-0.11	0	-0.14	32.08	-11.32	128.320	45.536
3	0	-0.08	0	-0.11	35.16	-10.77	140.640	43.274
2	0	-0.04	0	-0.05	39.23	-9.38	156.920	37.612
1	0	0	0	0	52.47	-26.24	209.880	104.960

Tabel Perhitungan Desain Kolom Struktur Open Frame (OF) 30 Lt

Kolom K1

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu & Pu
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	Pux (Kips)	Puy	Pu pakai			
30	W14X132	0.95	0.92	3.75	147.638	0.2506	0.406	0.406	33.605	1108.3	6.15	6.15	6.15	0.006	0.258	Aman
29	W14X156	0.96	0.94	3.75	147.638	0.2513	0.391	0.391	33.768	1225.6	17.346	17.346	17.346	0.014	0.302	Aman
28	W14X156	0.965	0.954	3.75	147.638	0.2526	0.397	0.397	33.703	1223.2	28.886	28.886	28.886	0.024	0.306	Aman
27	W14X156	0.957	0.954	3.75	147.638	0.2505	0.397	0.397	33.703	1223.2	40.744	40.744	40.744	0.033	0.311	Aman
26	W14X156	0.959	0.955	3.75	147.638	0.251	0.397	0.397	33.698	1223.1	52.91	52.91	52.91	0.043	0.316	Aman
25	W14X156	0.947	0.956	3.75	147.638	0.2479	0.398	0.398	33.694	1222.9	11.58	65.419	65.419	0.053	0.321	Aman
24	W14X156	0.947	0.956	3.75	147.638	0.2479	0.398	0.398	33.694	1222.9	78.283	78.283	78.283	0.064	0.326	Aman
23	W14X156	0.952	0.956	3.75	147.638	0.2492	0.398	0.398	33.694	1222.9	88.995	88.995	88.995	0.073	0.358	Aman
22	W14X193	0.945	0.957	3.75	147.638	0.2408	0.392	0.392	33.762	1630	99.765	99.765	99.765	0.061	0.267	Aman
21	W14X193	0.951	0.957	3.75	147.638	0.2424	0.392	0.392	33.762	1630	110.43	110.429	110.429	0.068	0.270	Aman
20	W14X193	0.951	0.958	3.75	147.638	0.2424	0.392	0.392	33.758	1629.8	120.74	120.736	120.736	0.074	0.273	Aman
19	W14X193	0.945	0.958	3.75	147.638	0.2408	0.392	0.392	33.758	1629.8	132.07	132.066	132.066	0.081	0.334	Aman
18	W14X193	0.946	0.959	3.75	147.638	0.2411	0.392	0.392	33.753	1629.6	143.03	143.034	143.034	0.088	0.338	Aman
17	W14X193	0.953	0.96	3.75	147.638	0.2429	0.393	0.393	33.748	1629.4	153.86	153.864	153.864	0.094	0.341	Aman
16	W14X193	0.954	0.96	3.75	147.638	0.2431	0.393	0.393	33.748	1629.4	164.7	164.7	164.7	0.101	0.344	Aman
15	W14X211	0.953	0.961	3.75	147.638	0.241	0.391	0.391	33.773	1779.8	175.7	175.7	175.7	0.099	0.317	Aman
14	W14X211	0.954	0.961	3.75	147.638	0.2413	0.391	0.391	33.773	1779.8	187.13	187.132	187.132	0.105	0.320	Aman
13	W14X211	0.961	0.962	3.75	147.638	0.243	0.391	0.391	33.769	1779.6	194.06	194.062	194.062	0.109	0.346	Aman
12	W14X211	0.961	0.963	3.75	147.638	0.243	0.391	0.391	33.764	1779.4	201.37	201.366	201.366	0.113	0.346	Aman
11	W14X211	0.855	0.846	3.75	147.638	0.2162	0.344	0.344	34.262	1805.6	208.67	208.668	208.668	0.116	0.348	Aman
10	W14X211	0.951	0.958	3.75	147.638	0.2405	0.389	0.389	33.787	1780.6	215.7	175.7	215.702	0.121	0.350	Aman
9	W14X211	0.945	0.958	3.75	147.638	0.239	0.389	0.389	33.787	1780.6	225.65	187.132	225.65	0.127	0.374	Aman
8	W14X233	0.946	0.959	3.75	147.638	0.2364	0.388	0.388	33.805	1968.3	235.17	235.171	235.171	0.119	0.365	Aman
7	W14X233	0.953	0.96	3.75	147.638	0.2382	0.388	0.388	33.8	1968	244.38	244.378	244.378	0.124	0.367	Aman
6	W14X233	0.954	0.96	3.75	147.638	0.2384	0.388	0.388	33.8	1968	253.44	253.443	253.443	0.129	0.370	Aman
5	W14X233	0.953	0.961	3.75	147.638	0.2382	0.389	0.389	33.796	1967.8	262.48	262.484	262.484	0.133	0.372	Aman
4	W14X233	0.954	0.961	3.75	147.638	0.2384	0.389	0.389	33.796	1967.8	271.73	271.729	271.729	0.138	0.374	Aman
3	W14X233	0.961	0.962	3.75	147.638	0.2402	0.389	0.389	33.791	1967.5	276.36	276.358	276.358	0.140	0.415	Aman
2	W14X233	0.961	0.963	3.75	147.638	0.2402	0.389	0.389	33.787	1967.2	281.68	244.378	281.681	0.143	0.416	Aman
1	W14X233	0.855	0.846	3.75	147.638	0.2137	0.342	0.342	34.28	1995.9	288.74	253.443	288.742	0.145	0.417	Aman

Kolom K2

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu & Pu
											Pux	Puy	Pu pakai			
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	(Kips)					
30	W14X145	0.957	0.89	3.75	147.638	0.2505	0.37	0.3703	33.992	1233.7	10.097	10.097	10.097	0.008184	0.32	Aman
29	W14X193	0.948	0.91	3.75	147.638	0.2416	0.372	0.3724	33.97	1640.1	31.793	31.793	31.793	0.019385	0.382	Aman
28	W14X193	0.94	0.91	3.75	147.638	0.2396	0.372	0.3724	33.97	1640.1	54.609	54.609	54.609	0.033296	0.388	Aman
27	W14X193	0.945	0.911	3.75	147.638	0.2408	0.373	0.3728	33.966	1639.9	78.755	78.755	78.755	0.048025	0.395	Aman
26	W14X193	0.955	0.91	3.75	147.638	0.2434	0.372	0.3724	33.97	1640.1	104.27	104.266	104.266	0.063573	0.403	Aman
25	W14X193	0.957	0.91	3.75	147.638	0.2439	0.372	0.3724	33.97	1640.1	131.11	131.105	131.105	0.079938	0.411	Aman
24	W14X193	0.957	0.912	3.75	147.638	0.2439	0.373	0.3732	33.962	1639.7	159.21	159.214	159.214	0.097101	0.42	Aman
23	W14X193	0.945	0.913	3.75	147.638	0.2408	0.374	0.3736	33.957	1639.5	187.89	187.89	187.89	0.114605	0.469	Aman
22	W14X211	0.945	0.914	3.75	147.638	0.239	0.371	0.3715	33.98	1790.7	217.54	217.544	217.544	0.121484	0.434	Aman
21	W14X211	0.947	0.914	3.75	147.638	0.2395	0.371	0.3715	33.98	1790.7	247.91	247.908	247.908	0.13844	0.443	Aman
20	W14X211	0.947	0.914	3.75	147.638	0.2395	0.371	0.3715	33.98	1790.7	278.46	278.457	278.457	0.1555	0.451	Aman
19	W14X211	0.946	0.915	3.75	147.638	0.2393	0.372	0.3719	33.975	1790.5	315.63	315.629	315.629	0.17628	0.529	Aman
18	W14X211	0.946	0.917	3.75	147.638	0.2393	0.373	0.3727	33.967	1790	352.83	352.831	352.831	0.197108	0.538	Aman
17	W14X211	0.95	0.955	3.75	147.638	0.2403	0.388	0.3882	33.8	1781.3	390.65	390.646	390.646	0.219309	0.61	Aman
16	W14X211	0.95	0.955	3.75	147.638	0.2403	0.388	0.3882	33.8	1781.3	429.24	429.239	429.239	0.240975	0.632	Aman
15	W14X233	0.951	0.96	3.75	147.638	0.2377	0.388	0.3881	33.8	1968	468.66	468.66	468.66	0.238139	0.588	Aman
14	W14X233	0.952	0.96	3.75	147.638	0.2379	0.388	0.3881	33.8	1968	508.73	508.732	508.732	0.2585	0.609	Aman
13	W14X233	0.952	0.96	3.75	147.638	0.2379	0.388	0.3881	33.8	1968	548.67	548.665	548.665	0.278791	0.667	Aman
12	W14X233	0.951	0.96	3.75	147.638	0.2377	0.388	0.3881	33.8	1968	588.96	588.956	588.956	0.299264	0.685	Aman
11	W14X233	0.845	0.853	3.75	147.638	0.2112	0.345	0.3449	34.252	1994.3	629.43	629.432	629.432	0.315614	0.702	Aman
10	W14X233	0.947	0.914	3.75	147.638	0.2367	0.37	0.3695	34	1979.7	468.66	669.359	669.359	0.338119	0.688	Aman
9	W14X233	0.946	0.915	3.75	147.638	0.2364	0.37	0.3699	33.996	1979.4	508.73	715.016	715.016	0.361227	0.737	Aman
8	W14X257	0.946	0.917	3.75	147.638	0.2337	0.368	0.3678	34.019	2186	759.97	759.973	759.973	0.347647	0.745	Aman
7	W14X257	0.95	0.955	3.75	147.638	0.2347	0.383	0.383	33.856	2175.6	804.95	804.946	804.946	0.369987	0.768	Aman
6	W14X257	0.95	0.955	3.75	147.638	0.2347	0.383	0.383	33.856	2175.6	850.12	850.122	850.122	0.390752	0.788	Aman
5	W14X257	0.951	0.96	3.75	147.638	0.2349	0.385	0.385	33.834	2174.2	895.43	895.431	895.431	0.411843	0.81	Aman
4	W14X257	0.952	0.96	3.75	147.638	0.2352	0.385	0.385	33.834	2174.2	940.35	940.351	940.351	0.432504	0.83	Aman
3	W14X257	0.952	0.96	3.75	147.638	0.2352	0.385	0.385	33.834	2174.2	983.83	983.828	983.828	0.4525	0.913	Aman
2	W14X257	0.951	0.96	3.75	147.638	0.2349	0.385	0.385	33.834	2174.2	1024.3	1024.29	1024.29	0.47111	0.931	Aman
1	W14X257	0.845	0.853	3.75	147.638	0.2087	0.342	0.3421	34.279	2202.8	1057.8	1057.78	1057.777	0.4802	0.94	Aman

Kolom K3

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu & Pu
											Pux	Puy	Pu pakai			
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	(Kips)					
30	W14X145	0.925	0.95	3.75	147.638	0.2421	0.395	0.3952	33.721	1223.9	10.298	10.298	10.298	0.008414	0.338	Aman
29	W14X193	0.93	0.952	3.75	147.638	0.237	0.39	0.3895	33.785	1631.1	32.845	32.845	32.845	0.020136	0.323	Aman
28	W14X193	0.93	0.953	3.75	147.638	0.237	0.39	0.3899	33.78	1630.9	56.382	56.382	56.382	0.034571	0.33	Aman
27	W14X193	0.915	0.953	3.75	147.638	0.2332	0.39	0.3899	33.78	1630.9	81.027	81.027	81.027	0.049682	0.338	Aman
26	W14X193	0.918	0.953	3.75	147.638	0.234	0.39	0.3899	33.78	1630.9	106.83	106.832	106.832	0.065505	0.346	Aman
25	W14X193	0.92	0.954	3.75	147.638	0.2345	0.39	0.3904	33.776	1630.7	133.77	133.765	133.765	0.08203	0.354	Aman
24	W14X193	0.92	0.955	3.75	147.638	0.2345	0.391	0.3908	33.771	1630.5	161.78	161.778	161.778	0.099222	0.363	Aman
23	W14X193	0.918	0.955	3.75	147.638	0.234	0.391	0.3908	33.771	1630.5	190.75	190.752	190.752	0.116992	0.371	Aman
22	W14X211	0.917	0.955	3.75	147.638	0.2319	0.388	0.3882	33.8	1781.3	220.55	220.547	220.547	0.123815	0.347	Aman
21	W14X211	0.921	0.956	3.75	147.638	0.2329	0.389	0.3886	33.796	1781	250.91	250.907	250.907	0.140878	0.355	Aman
20	W14X211	0.921	0.956	3.75	147.638	0.2329	0.389	0.3886	33.796	1781	281.3	281.303	281.303	0.157945	0.364	Aman
19	W14X211	0.917	0.956	3.75	147.638	0.2319	0.389	0.3886	33.796	1781	317.4	317.399	317.399	0.178212	0.448	Aman
18	W14X211	0.912	0.957	3.75	147.638	0.2307	0.389	0.389	33.791	1780.8	353.4	353.398	353.398	0.19845	0.457	Aman
17	W14X211	0.912	0.957	3.75	147.638	0.2307	0.389	0.389	33.791	1780.8	389.78	389.784	389.784	0.218883	0.537	Aman
16	W14X211	0.912	0.958	3.75	147.638	0.2307	0.389	0.3894	33.787	1780.6	426.8	426.798	426.798	0.2397	0.558	Aman
15	W14X233	0.91	0.959	3.75	147.638	0.2274	0.388	0.3877	33.805	1968.3	464.45	464.449	464.449	0.235968	0.521	Aman
14	W14X233	0.913	0.958	3.75	147.638	0.2282	0.387	0.3873	33.809	1968.5	502.73	502.734	502.734	0.255386	0.54	Aman
13	W14X233	0.921	0.959	3.75	147.638	0.2302	0.388	0.3877	33.805	1968.3	541.54	541.541	541.541	0.275135	0.56	Aman
12	W14X233	0.922	0.96	3.75	147.638	0.2304	0.388	0.3881	33.8	1968	580.73	580.727	580.727	0.295083	0.58	Aman
11	W14X233	0.845	0.852	3.75	147.638	0.2112	0.344	0.3445	34.256	1994.5	619.92	619.917	619.917	0.310807	0.596	Aman
10	W14X233	0.921	0.956	3.75	147.638	0.2302	0.387	0.3865	33.818	1969	658.47	658.466	658.466	0.334409	0.619	Aman
9	W14X233	0.917	0.956	3.75	147.638	0.2292	0.387	0.3865	33.818	1969	701.82	701.821	701.821	0.356427	0.694	Aman
8	W14X257	0.912	0.957	3.75	147.638	0.2253	0.384	0.3838	33.848	2175	744.26	744.261	744.261	0.342182	0.643	Aman
7	W14X257	0.912	0.957	3.75	147.638	0.2253	0.384	0.3838	33.848	2175	786.5	786.501	786.501	0.361602	0.662	Aman
6	W14X257	0.912	0.958	3.75	147.638	0.2253	0.384	0.3842	33.843	2174.8	828.7	828.698	828.698	0.381052	0.682	Aman
5	W14X257	0.91	0.959	3.75	147.638	0.2248	0.385	0.3846	33.839	2174.5	870.78	870.783	870.783	0.400455	0.701	Aman
4	W14X257	0.913	0.958	3.75	147.638	0.2255	0.384	0.3842	33.843	2174.8	912.41	912.413	912.413	0.419546	0.72	Aman
3	W14X257	0.921	0.959	3.75	147.638	0.2275	0.385	0.3846	33.839	2174.5	952.8	952.796	952.796	0.438171	0.739	Aman
2	W14X257	0.922	0.96	3.75	147.638	0.2278	0.385	0.385	33.834	2174.2	990.45	990.446	990.446	0.455544	0.756	Aman
1	W14X257	0.845	0.852	3.75	147.638	0.2087	0.342	0.3417	34.283	2203	1021.8	1021.78	1021.782	0.463807	0.764	Aman

Kolom K4

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu & Pu
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	Pux (Kips)	Puy	Pu pakai			
30	W14X145	0.92	0.85	3.75	147.638	0.2408	0.354	0.3536	34.164	1240	10.276	10.276	10.276	0.008287	0.443	Aman
29	W14X193	0.925	0.915	3.75	147.638	0.2357	0.374	0.3744	33.949	1639	35.833	35.833	35.833	0.021862	0.414	Aman
28	W14X193	0.927	0.916	3.75	147.638	0.2363	0.375	0.3748	33.944	1638.8	62.394	62.394	62.394	0.038072	0.42	Aman
27	W14X193	0.94	0.917	3.75	147.638	0.2396	0.375	0.3752	33.94	1638.6	90.158	90.158	90.158	0.055021	0.428	Aman
26	W14X193	0.94	0.92	3.75	147.638	0.2396	0.376	0.3764	33.927	1638	119.18	119.175	119.175	0.072757	0.437	Aman
25	W14X193	0.946	0.921	3.75	147.638	0.2411	0.377	0.3769	33.922	1637.8	149.42	149.422	149.422	0.091235	0.446	Aman
24	W14X193	0.946	0.922	3.75	147.638	0.2411	0.377	0.3773	33.918	1637.6	180.67	180.665	180.665	0.110326	0.456	Aman
23	W14X193	0.946	0.923	3.75	147.638	0.2411	0.378	0.3777	33.914	1637.4	212.71	212.711	212.711	0.129912	0.489	Aman
22	W14X211	0.943	0.93	3.75	147.638	0.2385	0.378	0.378	33.91	1787.1	245.56	245.558	245.558	0.137408	0.454	Aman
21	W14X211	0.942	0.94	3.75	147.638	0.2382	0.382	0.3821	33.866	1784.8	279.15	279.153	279.153	0.156409	0.464	Aman
20	W14X211	0.941	0.94	3.75	147.638	0.238	0.382	0.3821	33.866	1784.8	313.24	313.239	313.239	0.175507	0.473	Aman
19	W14X211	0.939	0.94	3.75	147.638	0.2375	0.382	0.3821	33.866	1784.8	349.81	349.805	349.805	0.195995	0.559	Aman
18	W14X211	0.936	0.945	3.75	147.638	0.2367	0.384	0.3841	33.844	1783.6	386.72	386.722	386.722	0.216821	0.627	Aman
17	W14X211	0.947	0.95	3.75	147.638	0.2395	0.386	0.3861	33.822	1782.4	424.21	424.213	424.213	0.237997	0.648	Aman
16	W14X211	0.947	0.951	3.75	147.638	0.2395	0.387	0.3865	33.818	1782.2	462.21	462.206	462.206	0.259346	0.669	Aman
15	W14X233	0.945	0.953	3.75	147.638	0.2362	0.385	0.3853	33.831	1969.8	500.51	500.514	500.514	0.254092	0.622	Aman
14	W14X233	0.935	0.954	3.75	147.638	0.2337	0.386	0.3857	33.827	1969.6	538.7	538.699	538.699	0.273512	0.641	Aman
13	W14X233	0.935	0.954	3.75	147.638	0.2337	0.386	0.3857	33.827	1969.6	581.58	581.583	581.583	0.295286	0.687	Aman
12	W14X233	0.935	0.956	3.75	147.638	0.2337	0.387	0.3865	33.818	1969	624.11	624.107	624.107	0.316959	0.707	Aman
11	W14X233	0.85	0.86	3.75	147.638	0.2124	0.348	0.3477	34.224	1992.7	666.57	666.571	666.571	0.334511	0.724	Aman
10	W14X233	0.941	0.94	3.75	147.638	0.2352	0.38	0.38	33.888	1973.1	708.74	500.514	708.74	0.359195	0.749	Aman
9	W14X233	0.939	0.94	3.75	147.638	0.2347	0.38	0.38	33.888	1973.1	753.2	538.699	753.201	0.381728	0.845	Aman
8	W14X283	0.936	0.945	3.75	147.638	0.2284	0.377	0.3765	33.926	2402.1	797.36	797.36	797.36	0.331939	0.704	Aman
7	W14X283	0.947	0.95	3.75	147.638	0.2311	0.379	0.3785	33.905	2400.6	841.54	841.538	841.538	0.35055	0.723	Aman
6	W14X283	0.947	0.951	3.75	147.638	0.2311	0.379	0.3789	33.9	2400.3	885.69	885.691	885.691	0.368989	0.741	Aman
5	W14X283	0.945	0.953	3.75	147.638	0.2306	0.38	0.3797	33.892	2399.7	929.55	929.551	929.551	0.38736	0.759	Aman
4	W14X283	0.935	0.954	3.75	147.638	0.2281	0.38	0.3801	33.888	2399.4	972.44	972.443	972.443	0.405285	0.777	Aman
3	W14X283	0.935	0.954	3.75	147.638	0.2281	0.38	0.3801	33.888	2399.4	1015.9	1015.88	1015.884	0.42339	0.814	Aman
2	W14X283	0.935	0.956	3.75	147.638	0.2281	0.381	0.3809	33.879	2398.8	1056.1	1056.08	1056.081	0.440255	0.831	Aman
1	W14X283	0.85	0.86	3.75	147.638	0.2074	0.343	0.3427	34.274	2426.7	1089.9	1089.92	1089.924	0.44913	0.84	Aman

Kolom K5

Kolom Lantai	Profil	K		L.b		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu & Pu
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	Pux (Kips)	Puy	Pu pakai			
30	W14X193	0.915	0.915	3.75	147.638	0.2332	0.374	0.3744	33.949	1639	14.987	14.987	14.987	0.009144	0.467	Aman
29	W14X233	0.92	0.93	3.75	147.638	0.2299	0.376	0.376	33.932	1975.7	52.951	52.951	52.951	0.026802	0.568	Aman
28	W14X233	0.925	0.945	3.75	147.638	0.2312	0.382	0.3821	33.866	1971.9	90.876	90.876	90.876	0.046086	0.575	Aman
27	W14X233	0.93	0.95	3.75	147.638	0.2324	0.384	0.3841	33.844	1970.6	128.82	128.818	128.818	0.06537	0.585	Aman
26	W14X233	0.93	0.956	3.75	147.638	0.2324	0.387	0.3865	33.818	1969	166.79	166.787	166.787	0.084705	0.594	Aman
25	W14X233	0.94	0.957	3.75	147.638	0.2349	0.387	0.3869	33.813	1968.8	204.8	204.802	204.802	0.104024	0.604	Aman
24	W14X233	0.94	0.957	3.75	147.638	0.2349	0.387	0.3869	33.813	1968.8	242.86	242.856	242.856	0.123353	0.614	Aman
23	W14X233	0.935	0.957	3.75	147.638	0.2337	0.387	0.3869	33.813	1968.8	280.93	280.932	280.932	0.142693	0.661	Aman
22	W14X257	0.935	0.958	3.75	147.638	0.231	0.384	0.3842	33.843	2174.8	319.06	319.059	319.059	0.14671	0.602	Aman
21	W14X257	0.935	0.959	3.75	147.638	0.231	0.385	0.3846	33.839	2174.5	357.28	357.276	357.276	0.164304	0.611	Aman
20	W14X257	0.935	0.959	3.75	147.638	0.231	0.385	0.3846	33.839	2174.5	395.55	395.554	395.554	0.181907	0.62	Aman
19	W14X257	0.93	0.959	3.75	147.638	0.2297	0.385	0.3846	33.839	2174.5	433.19	433.187	433.187	0.199214	0.691	Aman
18	W14X257	0.925	0.96	3.75	147.638	0.2285	0.385	0.385	33.834	2174.2	470.91	470.91	470.91	0.21659	0.74	Aman
17	W14X257	0.93	0.961	3.75	147.638	0.2297	0.385	0.3854	33.83	2173.9	508.78	508.779	508.779	0.234037	0.758	Aman
16	W14X257	0.935	0.961	3.75	147.638	0.231	0.385	0.3854	33.83	2173.9	546.78	546.782	546.782	0.251519	0.775	Aman
15	W14X311	0.93	0.962	3.75	147.638	0.2238	0.38	0.3797	33.892	2633	584.95	584.948	584.948	0.222156	0.646	Aman
14	W14X311	0.915	0.963	3.75	147.638	0.2202	0.38	0.3801	33.887	2632.7	623.28	623.277	623.277	0.236743	0.661	Aman
13	W14X311	0.92	0.964	3.75	147.638	0.2214	0.381	0.3805	33.883	2632.4	661.35	661.353	661.353	0.251237	0.71	Aman
12	W14X311	0.935	0.965	3.75	147.638	0.225	0.381	0.3809	33.879	2632.1	699.61	699.609	699.609	0.265803	0.722	Aman
11	W14X311	0.85	0.85	3.75	147.638	0.2046	0.336	0.3355	34.343	2668.1	738.05	738.05	738.05	0.276617	0.733	Aman
10	W14X311	0.935	0.959	3.75	147.638	0.225	0.379	0.3785	33.904	2634	776.69	584.948	776.693	0.294868	0.751	Aman
9	W14X311	0.93	0.959	3.75	147.638	0.2238	0.379	0.3785	33.904	2634	815.1	623.277	815.095	0.309447	0.8	Aman
8	W14X370	0.925	0.96	3.75	147.638	0.2169	0.372	0.3722	33.972	3147.5	853.72	853.721	853.721	0.271238	0.703	Aman
7	W14X370	0.93	0.961	3.75	147.638	0.2181	0.373	0.3726	33.968	3147.1	892.66	892.656	892.656	0.283642	0.715	Aman
6	W14X370	0.935	0.961	3.75	147.638	0.2193	0.373	0.3726	33.968	3147.1	738.05	931.905	931.905	0.296113	0.728	Aman
5	W14X370	0.93	0.962	3.75	147.638	0.2181	0.373	0.373	33.964	3146.7	971.47	971.473	971.473	0.308724	0.74	Aman
4	W14X370	0.915	0.963	3.75	147.638	0.2146	0.373	0.3734	33.96	3146.4	1011.4	1011.39	1011.389	0.321447	0.753	Aman
3	W14X370	0.92	0.964	3.75	147.638	0.2157	0.374	0.3738	33.956	3146	1051.6	1051.6	1051.597	0.334267	0.793	Aman
2	W14X370	0.935	0.965	3.75	147.638	0.2193	0.374	0.3741	33.951	3145.6	1092.1	1092.11	1092.114	0.347188	0.806	Aman
1	W14X370	0.85	0.85	3.75	147.638	0.1993	0.33	0.3296	34.4	3187.2	1133	1133.02	1133.023	0.355494	0.815	Aman

Kolom K6

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu & Pu
											Pux	Puy	Pu pakai			
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	(Kips)					
30	W14X193	0.89	0.89	3.75	147.638	0.2268	0.364	0.3642	34.056	1644.2	15.739	15.739	15.739	0.009572	0.467	Aman
29	W14X233	0.91	0.9	3.75	147.638	0.2274	0.364	0.3639	34.059	1983.1	55.122	55.122	55.122	0.027796	0.569	Aman
28	W14X233	0.912	0.91	3.75	147.638	0.2279	0.368	0.3679	34.017	1980.6	94.466	94.466	94.466	0.047695	0.576	Aman
27	W14X233	0.917	0.94	3.75	147.638	0.2292	0.38	0.38	33.888	1973.1	133.83	133.832	133.832	0.067827	0.586	Aman
26	W14X233	0.92	0.95	3.75	147.638	0.2299	0.384	0.3841	33.844	1970.6	173.22	173.222	173.222	0.087904	0.596	Aman
25	W14X233	0.92	0.95	3.75	147.638	0.2299	0.384	0.3841	33.844	1970.6	212.62	212.622	212.622	0.107898	0.606	Aman
24	W14X233	0.92	0.95	3.75	147.638	0.2299	0.384	0.3841	33.844	1970.6	252.06	252.056	252.056	0.127909	0.616	Aman
23	W14X233	0.919	0.951	3.75	147.638	0.2297	0.384	0.3845	33.84	1970.3	291.48	291.478	291.478	0.147934	0.663	Aman
22	W14X257	0.915	0.953	3.75	147.638	0.226	0.382	0.3822	33.865	2176.2	330.95	330.951	330.951	0.15208	0.605	Aman
21	W14X257	0.91	0.953	3.75	147.638	0.2248	0.382	0.3822	33.865	2176.2	370.46	370.458	370.458	0.170234	0.614	Aman
20	W14X257	0.91	0.953	3.75	147.638	0.2248	0.382	0.3822	33.865	2176.2	410	410.004	410.004	0.188407	0.623	Aman
19	W14X257	0.91	0.954	3.75	147.638	0.2248	0.383	0.3826	33.861	2175.9	449.12	449.124	449.124	0.20641	0.732	Aman
18	W14X257	0.91	0.954	3.75	147.638	0.2248	0.383	0.3826	33.861	2175.9	488.28	488.283	488.283	0.224407	0.748	Aman
17	W14X257	0.925	0.955	3.75	147.638	0.2285	0.383	0.383	33.856	2175.6	527.52	566.825	566.825	0.260537	0.784	Aman
16	W14X257	0.925	0.955	3.75	147.638	0.2285	0.383	0.383	33.856	2175.6	566.83	606.22	606.22	0.278644	0.802	Aman
15	W14X283	0.92	0.955	3.75	147.638	0.2245	0.381	0.3805	33.883	2399.1	606.22	606.22	606.22	0.252686	0.723	Aman
14	W14X283	0.92	0.956	3.75	147.638	0.2245	0.381	0.3809	33.879	2398.8	645.71	606.22	645.71	0.269181	0.74	Aman
13	W14X283	0.92	0.957	3.75	147.638	0.2245	0.381	0.3813	33.875	2398.5	685.23	685.234	685.234	0.285694	0.795	Aman
12	W14X283	0.92	0.957	3.75	147.638	0.2245	0.381	0.3813	33.875	2398.5	724.84	724.836	724.836	0.302205	0.809	Aman
11	W14X283	0.845	0.86	3.75	147.638	0.2062	0.343	0.3427	34.274	2426.7	764.55	724.836	764.55	0.315052	0.822	Aman
10	W14X283	0.91	0.953	3.75	147.638	0.222	0.38	0.3797	33.892	2399.7	804.36	764.55	804.359	0.33519	0.842	Aman
9	W14X283	0.91	0.954	3.75	147.638	0.222	0.38	0.3801	33.888	2399.4	844.03	844.029	844.029	0.351766	0.938	Aman
8	W14X370	0.91	0.954	3.75	147.638	0.2134	0.37	0.3699	33.997	3149.8	883.82	883.816	883.816	0.280596	0.712	Aman
7	W14X370	0.925	0.955	3.75	147.638	0.2169	0.37	0.3703	33.992	3149.4	923.76	923.761	923.761	0.293313	0.725	Aman
6	W14X370	0.925	0.955	3.75	147.638	0.2169	0.37	0.3703	33.992	3149.4	963.85	963.845	963.845	0.306041	0.738	Aman
5	W14X370	0.92	0.955	3.75	147.638	0.2157	0.37	0.3703	33.992	3149.4	1004.1	1004.09	1004.087	0.318819	0.751	Aman
4	W14X370	0.92	0.956	3.75	147.638	0.2157	0.371	0.3707	33.988	3149	1044.5	1044.5	1044.497	0.33169	0.763	Aman
3	W14X370	0.92	0.957	3.75	147.638	0.2157	0.371	0.371	33.984	3148.6	1085.1	1085.06	1085.058	0.344612	0.804	Aman
2	W14X370	0.92	0.957	3.75	147.638	0.2157	0.371	0.371	33.984	3148.6	1125.8	1125.78	1125.782	0.357545	0.817	Aman
1	W14X370	0.845	0.86	3.75	147.638	0.1981	0.333	0.3334	34.363	3183.8	1166.7	1166.69	1166.686	0.36645	0.825	Aman

Tabel Perhitungan Desain Kolom Struktur Frame Truss (FT) 30 Lt

Kolom K1

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu & Pu
											Pux	Puy	Pu pakai			
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	(Kips)					
30	W14X109	0.95	0.92	3.75	147.638	0.2528	0.408	0.408	33.5796	913.37	3.822	3.822	3.822	0.004	0.190	Aman
29	W14X120	0.96	0.94	3.75	147.638	0.2544	0.416	0.416	33.4864	1004.8	141.926	141.926	141.926	0.141	0.466	Aman
28	W14X120	0.965	0.954	3.75	147.638	0.2557	0.422	0.422	33.4138	1002.6	155.305	155.305	155.305	0.155	0.469	Aman
27	W14X120	0.957	0.954	3.75	147.638	0.2536	0.422	0.422	33.4138	1002.6	169.001	169.001	169.001	0.169	0.476	Aman
26	W14X120	0.959	0.955	3.75	147.638	0.2541	0.422	0.422	33.4086	1002.4	183.084	183.084	183.084	0.183	0.483	Aman
25	W14X120	0.947	0.956	3.75	147.638	0.2509	0.423	0.423	33.4033	1002.3	88.48	197.507	197.507	0.197	0.490	Aman
24	W14X120	0.947	0.956	3.75	147.638	0.2509	0.423	0.423	33.4033	1002.3	212.245	212.245	212.245	0.212	0.560	Aman
23	W14X120	0.952	0.956	3.75	147.638	0.2522	0.423	0.423	33.4033	1002.3	228.457	228.457	228.457	0.228	0.576	Aman
22	W14X132	0.945	0.957	3.75	147.638	0.2493	0.422	0.422	33.4161	1102.1	244.979	244.979	244.979	0.222	0.537	Aman
21	W14X132	0.951	0.957	3.75	147.638	0.2509	0.422	0.422	33.4161	1102.1	261.717	261.717	261.717	0.237	0.552	Aman
20	W14X132	0.951	0.958	3.75	147.638	0.2509	0.422	0.422	33.4109	1101.9	278.488	278.488	278.488	0.253	0.568	Aman
19	W14X132	0.945	0.958	3.75	147.638	0.2493	0.422	0.422	33.4109	1101.9	295.583	295.583	295.583	0.268	0.583	Aman
18	W14X132	0.946	0.959	3.75	147.638	0.2496	0.423	0.423	33.4057	1101.7	313.659	313.659	313.659	0.285	0.599	Aman
17	W14X132	0.953	0.96	3.75	147.638	0.2514	0.423	0.423	33.4004	1101.5	331.719	331.719	331.719	0.301	0.616	Aman
16	W14X132	0.954	0.96	3.75	147.638	0.2517	0.423	0.423	33.4004	1101.5	349.745	349.745	349.745	0.318	0.632	Aman
15	W14X145	0.953	0.961	3.75	147.638	0.2495	0.400	0.400	33.6701	1222.1	361.308	361.308	361.308	0.296	0.570	Aman
14	W14X145	0.954	0.961	3.75	147.638	0.2497	0.400	0.400	33.6701	1222.1	530.479	530.479	530.479	0.434	0.708	Aman
13	W14X145	0.961	0.962	3.75	147.638	0.2516	0.400	0.400	33.6654	1221.9	550.58	550.58	550.58	0.451	0.749	Aman
12	W14X145	0.961	0.963	3.75	147.638	0.2516	0.401	0.401	33.6608	1221.7	570.807	570.807	570.807	0.467	0.765	Aman
11	W14X145	0.855	0.846	3.75	147.638	0.2238	0.352	0.352	34.1809	1240.6	591.051	591.051	591.051	0.476	0.774	Aman
10	W14X145	0.951	0.958	3.75	147.638	0.249	0.399	0.399	33.6842	1222.6	610.759	361.308	610.759	0.500	0.797	Aman
9	W14X145	0.945	0.958	3.75	147.638	0.2474	0.399	0.399	33.6842	1222.6	630.614	530.479	630.614	0.516	0.813	Aman
8	W14X159	0.946	0.959	3.75	147.638	0.2457	0.397	0.397	33.7022	1337.8	651.002	651.002	651.002	0.487	0.757	Aman
7	W14X159	0.953	0.96	3.75	147.638	0.2475	0.397	0.397	33.6976	1337.6	670.935	670.935	670.935	0.502	0.772	Aman
6	W14X159	0.954	0.96	3.75	147.638	0.2478	0.397	0.397	33.6976	1337.6	690.268	690.268	690.268	0.516	0.787	Aman
5	W14X159	0.953	0.961	3.75	147.638	0.2475	0.398	0.398	33.6929	1337.4	708.848	708.848	708.848	0.530	0.801	Aman
4	W14X159	0.954	0.961	3.75	147.638	0.2478	0.398	0.398	33.6929	1337.4	726.541	726.541	726.541	0.543	0.814	Aman
3	W14X159	0.961	0.962	3.75	147.638	0.2496	0.398	0.398	33.6883	1337.3	744.436	744.436	744.436	0.557	0.827	Aman
2	W14X159	0.961	0.963	3.75	147.638	0.2496	0.399	0.399	33.6836	1337.1	761.181	670.935	761.181	0.569	0.840	Aman
1	W14X159	0.855	0.846	3.75	147.638	0.2221	0.350	0.350	34.1988	1357.5	776.462	690.268	776.462	0.572	0.842	Aman

Kolom K2

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu & Pu
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	Pux	Puy	Pu pakai (Kips)			
30	W14X120	0.957	0.89	3.75	147.638	0.2536	0.394	0.394	33.7384	1012.3	5.763	5.763	5.763	0.006	0.239	Aman
29	W14X132	0.948	0.91	3.75	147.638	0.2501	0.401	0.401	33.6554	1110	106.053	106.053	106.053	0.096	0.623	Aman
28	W14X132	0.94	0.91	3.75	147.638	0.248	0.401	0.401	33.6554	1110	126.995	126.995	126.995	0.114	0.624	Aman
27	W14X132	0.945	0.911	3.75	147.638	0.2493	0.402	0.402	33.6504	1109.8	147.997	147.997	147.997	0.133	0.634	Aman
26	W14X132	0.955	0.91	3.75	147.638	0.2519	0.401	0.401	33.6554	1110	169.168	169.168	169.168	0.152	0.643	Aman
25	W14X132	0.957	0.91	3.75	147.638	0.2525	0.401	0.401	33.6554	1110	190.464	190.464	190.464	0.172	0.653	Aman
24	W14X132	0.957	0.912	3.75	147.638	0.2525	0.402	0.402	33.6454	1109.6	211.887	211.887	211.887	0.191	0.663	Aman
23	W14X132	0.945	0.913	3.75	147.638	0.2493	0.402	0.402	33.6404	1109.5	233.424	233.424	233.424	0.210	0.715	Aman
22	W14X159	0.945	0.914	3.75	147.638	0.2454	0.378	0.378	33.9066	1345.9	255.031	255.031	255.031	0.189	0.546	Aman
21	W14X159	0.947	0.914	3.75	147.638	0.246	0.378	0.378	33.9066	1345.9	276.678	276.678	276.678	0.206	0.607	Aman
20	W14X159	0.947	0.914	3.75	147.638	0.246	0.378	0.378	33.9066	1345.9	298.307	298.307	298.307	0.222	0.623	Aman
19	W14X159	0.946	0.915	3.75	147.638	0.2457	0.379	0.379	33.9021	1345.7	320.973	320.973	320.973	0.239	0.667	Aman
18	W14X159	0.946	0.917	3.75	147.638	0.2457	0.380	0.380	33.8932	1345.4	343.622	343.622	343.622	0.255	0.683	Aman
17	W14X159	0.95	0.955	3.75	147.638	0.2467	0.395	0.395	33.7207	1338.5	366.223	366.223	366.223	0.274	0.702	Aman
16	W14X159	0.95	0.955	3.75	147.638	0.2467	0.395	0.395	33.7207	1338.5	388.947	388.947	388.947	0.291	0.719	Aman
15	W14X176	0.951	0.96	3.75	147.638	0.2451	0.395	0.395	33.7197	1484.7	404.418	404.418	404.418	0.272	0.656	Aman
14	W14X176	0.952	0.96	3.75	147.638	0.2454	0.395	0.395	33.7197	1484.7	520.387	520.387	520.387	0.351	0.734	Aman
13	W14X176	0.952	0.96	3.75	147.638	0.2454	0.395	0.395	33.7197	1484.7	542.883	542.883	542.883	0.366	0.790	Aman
12	W14X176	0.951	0.96	3.75	147.638	0.2451	0.395	0.395	33.7197	1484.7	565.078	565.078	565.078	0.381	0.803	Aman
11	W14X176	0.845	0.853	3.75	147.638	0.2178	0.351	0.351	34.1874	1505.3	587.207	587.207	587.207	0.390	0.812	Aman
10	W14X176	0.947	0.914	3.75	147.638	0.2441	0.376	0.376	33.9267	1493.8	404.418	609.068	609.068	0.408	0.791	Aman
9	W14X176	0.946	0.915	3.75	147.638	0.2438	0.377	0.377	33.9223	1493.6	520.387	632.222	632.222	0.423	0.807	Aman
8	W14X193	0.946	0.917	3.75	147.638	0.2411	0.375	0.375	33.9399	1638.6	655.12	655.12	655.12	0.400	0.781	Aman
7	W14X193	0.95	0.955	3.75	147.638	0.2421	0.391	0.391	33.7711	1630.5	677.72	677.72	677.72	0.416	0.797	Aman
6	W14X193	0.95	0.955	3.75	147.638	0.2421	0.391	0.391	33.7711	1630.5	699.931	699.931	699.931	0.429	0.811	Aman
5	W14X193	0.951	0.96	3.75	147.638	0.2424	0.393	0.393	33.7485	1629.4	721.674	721.674	721.674	0.443	0.825	Aman
4	W14X193	0.952	0.96	3.75	147.638	0.2426	0.393	0.393	33.7485	1629.4	742.911	742.911	742.911	0.456	0.838	Aman
3	W14X193	0.952	0.96	3.75	147.638	0.2426	0.393	0.393	33.7485	1629.4	763.596	763.596	763.596	0.469	0.850	Aman
2	W14X193	0.951	0.96	3.75	147.638	0.2424	0.393	0.393	33.7485	1629.4	783.747	783.747	783.747	0.481	0.863	Aman
1	W14X193	0.845	0.853	3.75	147.638	0.2153	0.349	0.349	34.2104	1651.7	803.405	803.405	803.405	0.486	0.868	Aman

Kolom K3

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu&Pu
											Pux	Puy	Pu pakai			
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	(Kips)					
30	W14X132	0.925	0.95	3.75	147.638	0.244	0.419	0.419	33.4524	1103.3	9.161	9.161	9.161	0.008	0.196	Aman
29	W14X145	0.93	0.952	3.75	147.638	0.2435	0.396	0.396	33.7122	1223.6	31.339	31.339	31.339	0.026	0.450	Aman
28	W14X145	0.93	0.953	3.75	147.638	0.2435	0.396	0.396	33.7075	1223.4	55.746	55.746	55.746	0.046	0.455	Aman
27	W14X145	0.915	0.953	3.75	147.638	0.2395	0.396	0.396	33.7075	1223.4	80.196	80.196	80.196	0.066	0.465	Aman
26	W14X145	0.918	0.953	3.75	147.638	0.2403	0.396	0.396	33.7075	1223.4	104.784	104.784	104.784	0.086	0.475	Aman
25	W14X145	0.92	0.954	3.75	147.638	0.2408	0.397	0.397	33.7029	1223.2	129.473	129.473	129.473	0.106	0.485	Aman
24	W14X145	0.92	0.955	3.75	147.638	0.2408	0.397	0.397	33.6982	1223.1	154.267	154.267	154.267	0.126	0.495	Aman
23	W14X145	0.918	0.955	3.75	147.638	0.2403	0.397	0.397	33.6982	1223.1	179.736	179.736	179.736	0.147	0.506	Aman
22	W14X159	0.917	0.955	3.75	147.638	0.2382	0.395	0.395	33.7207	1338.5	205.243	205.243	205.243	0.153	0.470	Aman
21	W14X159	0.921	0.956	3.75	147.638	0.2392	0.396	0.396	33.7161	1338.4	230.776	230.776	230.776	0.172	0.479	Aman
20	W14X159	0.921	0.956	3.75	147.638	0.2392	0.396	0.396	33.7161	1338.4	256.237	256.237	256.237	0.191	0.489	Aman
19	W14X159	0.917	0.956	3.75	147.638	0.2382	0.396	0.396	33.7161	1338.4	283.163	283.163	283.163	0.212	0.588	Aman
18	W14X159	0.912	0.957	3.75	147.638	0.2369	0.396	0.396	33.7115	1338.2	310.426	310.426	310.426	0.232	0.608	Aman
17	W14X159	0.912	0.957	3.75	147.638	0.2369	0.396	0.396	33.7115	1338.2	337.54	337.54	337.54	0.252	0.628	Aman
16	W14X159	0.912	0.958	3.75	147.638	0.2369	0.397	0.397	33.7069	1338	364.783	364.783	364.783	0.273	0.649	Aman
15	W14X176	0.91	0.959	3.75	147.638	0.2345	0.395	0.395	33.7243	1484.9	388.458	388.458	388.458	0.262	0.599	Aman
14	W14X176	0.913	0.958	3.75	147.638	0.2353	0.395	0.395	33.7289	1485.1	412.1	412.1	412.1	0.277	0.615	Aman
13	W14X176	0.921	0.959	3.75	147.638	0.2374	0.395	0.395	33.7243	1484.9	439.502	439.502	439.502	0.296	0.633	Aman
12	W14X176	0.922	0.96	3.75	147.638	0.2376	0.395	0.395	33.7197	1484.7	466.264	466.264	466.264	0.314	0.651	Aman
11	W14X176	0.845	0.852	3.75	147.638	0.2178	0.351	0.351	34.1915	1505.5	492.662	492.662	492.662	0.327	0.665	Aman
10	W14X176	0.921	0.956	3.75	147.638	0.2374	0.394	0.394	33.738	1485.5	518.425	518.425	518.425	0.349	0.686	Aman
9	W14X176	0.917	0.956	3.75	147.638	0.2363	0.394	0.394	33.738	1485.5	545.773	545.773	545.773	0.367	0.705	Aman
8	W14X193	0.912	0.957	3.75	147.638	0.2324	0.392	0.392	33.7621	1630	572.761	572.761	572.761	0.351	0.656	Aman
7	W14X193	0.912	0.957	3.75	147.638	0.2324	0.392	0.392	33.7621	1630	599.08	599.08	599.08	0.368	0.672	Aman
6	W14X193	0.912	0.958	3.75	147.638	0.2324	0.392	0.392	33.7576	1629.8	624.642	624.642	624.642	0.383	0.688	Aman
5	W14X193	0.91	0.959	3.75	147.638	0.2319	0.392	0.392	33.753	1629.6	649.36	649.36	649.36	0.398	0.703	Aman
4	W14X193	0.913	0.958	3.75	147.638	0.2327	0.392	0.392	33.7576	1629.8	673.142	673.142	673.142	0.413	0.718	Aman
3	W14X193	0.921	0.959	3.75	147.638	0.2347	0.392	0.392	33.753	1629.6	696.099	696.099	696.099	0.427	0.732	Aman
2	W14X193	0.922	0.96	3.75	147.638	0.235	0.393	0.393	33.7485	1629.4	718.035	718.035	718.035	0.441	0.746	Aman
1	W14X193	0.845	0.852	3.75	147.638	0.2153	0.349	0.349	34.2145	1651.9	739.045	739.045	739.045	0.447	0.752	Aman

Kolom K4

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu&Pu
											Pux	Puy	Pu pakai			
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	(Kips)					
30	W14X120	0.92	0.85	3.75	147.638	0.2438	0.376	0.376	33.9313	1018.1	7.264	7.264	7.264	0.007	0.301	Aman
29	W14X132	0.925	0.915	3.75	147.638	0.244	0.403	0.403	33.6304	1109.1	282.583	282.583	282.583	0.255	0.699	Aman
28	W14X132	0.927	0.916	3.75	147.638	0.2446	0.404	0.404	33.6254	1109	273.607	273.607	273.607	0.247	0.689	Aman
27	W14X132	0.94	0.917	3.75	147.638	0.248	0.404	0.404	33.6204	1108.8	285.327	285.327	285.327	0.257	0.699	Aman
26	W14X132	0.94	0.92	3.75	147.638	0.248	0.406	0.406	33.6053	1108.3	290.48	290.48	290.48	0.262	0.704	Aman
25	W14X132	0.946	0.921	3.75	147.638	0.2496	0.406	0.406	33.6003	1108.1	287.457	287.457	287.457	0.259	0.701	Aman
24	W14X132	0.946	0.922	3.75	147.638	0.2496	0.406	0.406	33.5953	1108	276.903	276.903	276.903	0.250	0.692	Aman
23	W14X132	0.946	0.923	3.75	147.638	0.2496	0.407	0.407	33.5902	1107.8	259.186	259.186	259.186	0.234	0.676	Aman
22	W14X159	0.943	0.93	3.75	147.638	0.2449	0.385	0.385	33.8349	1343.1	234.729	234.729	234.729	0.175	0.475	Aman
21	W14X159	0.942	0.94	3.75	147.638	0.2447	0.389	0.389	33.7895	1341.3	255.496	255.496	255.496	0.190	0.483	Aman
20	W14X159	0.941	0.94	3.75	147.638	0.2444	0.389	0.389	33.7895	1341.3	350.52	350.52	350.52	0.261	0.606	Aman
19	W14X159	0.939	0.94	3.75	147.638	0.2439	0.389	0.389	33.7895	1341.3	451.676	451.676	451.676	0.337	0.682	Aman
18	W14X159	0.936	0.945	3.75	147.638	0.2431	0.391	0.391	33.7667	1340.4	556.189	556.189	556.189	0.415	0.760	Aman
17	W14X159	0.947	0.95	3.75	147.638	0.246	0.393	0.393	33.7438	1339.5	664.425	664.425	664.425	0.496	0.841	Aman
16	W14X159	0.947	0.951	3.75	147.638	0.246	0.394	0.394	33.7392	1339.3	781.681	781.681	781.681	0.584	0.929	Aman
15	W14X193	0.945	0.953	3.75	147.638	0.2408	0.390	0.390	33.7802	1630.9	847.053	847.053	847.053	0.519	0.799	Aman
14	W14X193	0.935	0.954	3.75	147.638	0.2383	0.390	0.390	33.7757	1630.7	529.616	529.616	529.616	0.325	0.604	Aman
13	W14X193	0.935	0.954	3.75	147.638	0.2383	0.390	0.390	33.7757	1630.7	615.987	615.987	615.987	0.378	0.672	Aman
12	W14X193	0.935	0.956	3.75	147.638	0.2383	0.391	0.391	33.7666	1630.3	749.003	749.003	749.003	0.459	0.753	Aman
11	W14X193	0.85	0.86	3.75	147.638	0.2166	0.352	0.352	34.1817	1650.3	881.798	881.798	881.798	0.534	0.828	Aman
10	W14X193	0.941	0.94	3.75	147.638	0.2398	0.385	0.385	33.8385	1633.7	1014.5	847.053	1014.499	0.621	0.914	Aman
9	W14X193	0.939	0.94	3.75	147.638	0.2393	0.385	0.385	33.8385	1633.7	1150.15	529.616	1150.151	0.704	0.998	Aman
8	W14X342	0.936	0.945	3.75	147.638	0.2226	0.370	0.370	33.9973	2918.7	1283.87	1283.87	1283.874	0.440	0.596	Aman
7	W14X342	0.947	0.95	3.75	147.638	0.2252	0.372	0.372	33.9766	2916.9	1420.94	1420.94	1420.939	0.487	0.643	Aman
6	W14X342	0.947	0.951	3.75	147.638	0.2252	0.372	0.372	33.9725	2916.5	1562.83	1562.83	1562.827	0.536	0.692	Aman
5	W14X342	0.945	0.953	3.75	147.638	0.2248	0.373	0.373	33.9642	2915.8	1708.86	1708.86	1708.863	0.586	0.742	Aman
4	W14X342	0.935	0.954	3.75	147.638	0.2224	0.373	0.373	33.96	2915.5	1859.05	1859.05	1859.046	0.638	0.794	Aman
3	W14X342	0.935	0.954	3.75	147.638	0.2224	0.373	0.373	33.96	2915.5	2014.73	2014.73	2014.733	0.691	0.847	Aman
2	W14X342	0.935	0.956	3.75	147.638	0.2224	0.374	0.374	33.9517	2914.8	2173.03	2173.03	2173.027	0.746	0.902	Aman
1	W14X342	0.85	0.86	3.75	147.638	0.2022	0.337	0.337	34.3332	2947.5	2338.33	2338.33	2338.328	0.793	0.950	Aman

Kolom K5

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu&Pu
											Pux	Puy	Pu pakai			
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	(Kips)					
30	W14X132	0.915	0.915	3.75	147.638	0.2414	0.403	0.403	33.6304	1109.1	4.579	4.579	4.579	0.004	0.350	Aman
29	W14X145	0.92	0.93	3.75	147.638	0.2408	0.387	0.387	33.8134	1227.3	19.113	19.113	19.113	0.016	0.628	Aman
28	W14X145	0.925	0.945	3.75	147.638	0.2421	0.393	0.393	33.7446	1224.8	51.204	51.204	51.204	0.042	0.634	Aman
27	W14X145	0.93	0.95	3.75	147.638	0.2435	0.395	0.395	33.7215	1223.9	83.468	83.468	83.468	0.068	0.647	Aman
26	W14X145	0.93	0.956	3.75	147.638	0.2435	0.398	0.398	33.6935	1222.9	115.744	115.744	115.744	0.095	0.660	Aman
25	W14X145	0.94	0.957	3.75	147.638	0.2461	0.398	0.398	33.6889	1222.7	148.071	148.071	148.071	0.121	0.674	Aman
24	W14X145	0.94	0.957	3.75	147.638	0.2461	0.398	0.398	33.6889	1222.7	180.442	180.442	180.442	0.148	0.687	Aman
23	W14X145	0.935	0.957	3.75	147.638	0.2448	0.398	0.398	33.6889	1222.7	212.886	212.886	212.886	0.174	0.700	Aman
22	W14X176	0.935	0.958	3.75	147.638	0.241	0.395	0.395	33.7289	1485.1	245.364	245.364	245.364	0.165	0.583	Aman
21	W14X176	0.935	0.959	3.75	147.638	0.241	0.395	0.395	33.7243	1484.9	277.949	277.949	277.949	0.187	0.594	Aman
20	W14X176	0.935	0.959	3.75	147.638	0.241	0.395	0.395	33.7243	1484.9	310.376	310.376	310.376	0.209	0.653	Aman
19	W14X176	0.93	0.959	3.75	147.638	0.2397	0.395	0.395	33.7243	1484.9	341.727	341.727	341.727	0.230	0.723	Aman
18	W14X176	0.925	0.96	3.75	147.638	0.2384	0.395	0.395	33.7197	1484.7	373.56	373.56	373.56	0.252	0.744	Aman
17	W14X176	0.93	0.961	3.75	147.638	0.2397	0.396	0.396	33.7151	1484.5	405.449	405.449	405.449	0.273	0.766	Aman
16	W14X176	0.935	0.961	3.75	147.638	0.241	0.396	0.396	33.7151	1484.5	438.00	438.00	438.00	0.295	0.788	Aman
15	W14X193	0.93	0.962	3.75	147.638	0.237	0.394	0.394	33.7394	1628.9	453.224	453.224	453.224	0.278	0.724	Aman
14	W14X193	0.915	0.963	3.75	147.638	0.2332	0.394	0.394	33.7348	1628.7	487.435	487.435	487.435	0.299	0.745	Aman
13	W14X193	0.92	0.964	3.75	147.638	0.2345	0.394	0.394	33.7303	1628.5	520.75	520.75	520.75	0.320	0.794	Aman
12	W14X193	0.935	0.965	3.75	147.638	0.2383	0.395	0.395	33.7257	1628.3	554.72	554.72	554.72	0.341	0.814	Aman
11	W14X193	0.85	0.85	3.75	147.638	0.2166	0.348	0.348	34.2227	1652.3	589.223	589.223	589.223	0.357	0.830	Aman
10	W14X193	0.935	0.959	3.75	147.638	0.2383	0.392	0.392	33.753	1629.6	623.911	453.224	623.911	0.383	0.856	Aman
9	W14X193	0.93	0.959	3.75	147.638	0.237	0.392	0.392	33.753	1629.6	658.229	487.435	658.229	0.404	0.878	Aman
8	W14X211	0.925	0.96	3.75	147.638	0.2339	0.390	0.390	33.7776	1780.1	694.545	694.545	694.545	0.390	0.821	Aman
7	W14X211	0.93	0.961	3.75	147.638	0.2352	0.391	0.391	33.7731	1779.8	730.411	730.411	730.411	0.410	0.841	Aman
6	W14X211	0.935	0.961	3.75	147.638	0.2365	0.391	0.391	33.7731	1779.8	589.223	766.591	766.591	0.431	0.862	Aman
5	W14X211	0.93	0.962	3.75	147.638	0.2352	0.391	0.391	33.7686	1779.6	803.148	803.148	803.148	0.451	0.882	Aman
4	W14X211	0.915	0.963	3.75	147.638	0.2314	0.391	0.391	33.7641	1779.4	840.248	840.248	840.248	0.472	0.903	Aman
3	W14X211	0.92	0.964	3.75	147.638	0.2327	0.392	0.392	33.7596	1779.1	878.375	878.375	878.375	0.494	0.925	Aman
2	W14X211	0.935	0.965	3.75	147.638	0.2365	0.392	0.392	33.7551	1778.9	916.906	916.906	916.906	0.515	0.946	Aman
1	W14X211	0.85	0.85	3.75	147.638	0.215	0.345	0.345	34.2458	1804.8	956.637	956.637	956.637	0.530	0.961	Aman

Kolom K6

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu&Pu
											Pux	Puy	Pu pakai			
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	(Kips)					
30	W14X132	0.89	0.89	3.75	147.638	0.2348	0.392	0.392	33.7541	1113.2	6.61	6.61	6.61	0.006	0.351	Aman
29	W14X145	0.91	0.9	3.75	147.638	0.2382	0.374	0.374	33.9482	1232.1	2.616	2.616	2.616	0.002	0.621	Aman
28	W14X145	0.912	0.91	3.75	147.638	0.2387	0.379	0.379	33.9037	1230.5	41.315	41.315	41.315	0.034	0.630	Aman
27	W14X145	0.917	0.94	3.75	147.638	0.2401	0.391	0.391	33.7677	1225.6	79.992	79.992	79.992	0.065	0.646	Aman
26	W14X145	0.92	0.95	3.75	147.638	0.2408	0.395	0.395	33.7215	1223.9	118.662	118.662	118.662	0.097	0.662	Aman
25	W14X145	0.92	0.95	3.75	147.638	0.2408	0.395	0.395	33.7215	1223.9	157.339	157.339	157.339	0.129	0.677	Aman
24	W14X145	0.92	0.95	3.75	147.638	0.2408	0.395	0.395	33.7215	1223.9	196.038	196.038	196.038	0.160	0.693	Aman
23	W14X145	0.919	0.951	3.75	147.638	0.2406	0.396	0.396	33.7168	1223.8	234.703	234.703	234.703	0.192	0.709	Aman
22	W14X176	0.915	0.953	3.75	147.638	0.2358	0.393	0.393	33.7518	1486.1	273.414	273.414	273.414	0.184	0.592	Aman
21	W14X176	0.91	0.953	3.75	147.638	0.2345	0.393	0.393	33.7518	1486.1	312.174	312.174	312.174	0.210	0.654	Aman
20	W14X176	0.91	0.953	3.75	147.638	0.2345	0.393	0.393	33.7518	1486.1	351.002	351.002	351.002	0.236	0.681	Aman
19	W14X176	0.91	0.954	3.75	147.638	0.2345	0.393	0.393	33.7472	1485.9	389.679	389.679	389.679	0.262	0.755	Aman
18	W14X176	0.91	0.954	3.75	147.638	0.2345	0.393	0.393	33.7472	1485.9	428.271	428.271	428.271	0.288	0.781	Aman
17	W14X176	0.925	0.955	3.75	147.638	0.2384	0.393	0.393	33.7426	1485.7	466.936	505.815	505.815	0.340	0.833	Aman
16	W14X176	0.925	0.955	3.75	147.638	0.2384	0.393	0.393	33.7426	1485.7	505.815	521.044	521.044	0.351	0.843	Aman
15	W14X193	0.92	0.955	3.75	147.638	0.2345	0.391	0.391	33.7711	1630.5	521.044	521.044	521.044	0.320	0.765	Aman
14	W14X193	0.92	0.956	3.75	147.638	0.2345	0.391	0.391	33.7666	1630.3	544.3	521.044	544.3	0.334	0.780	Aman
13	W14X193	0.92	0.957	3.75	147.638	0.2345	0.392	0.392	33.7621	1630	583.313	583.313	583.313	0.358	0.832	Aman
12	W14X193	0.92	0.957	3.75	147.638	0.2345	0.392	0.392	33.7621	1630	622.489	622.489	622.489	0.382	0.855	Aman
11	W14X193	0.845	0.86	3.75	147.638	0.2153	0.352	0.352	34.1817	1650.3	661.833	622.489	661.833	0.401	0.875	Aman
10	W14X193	0.91	0.953	3.75	147.638	0.2319	0.390	0.390	33.7802	1630.9	701.345	661.833	701.345	0.430	0.904	Aman
9	W14X193	0.91	0.954	3.75	147.638	0.2319	0.390	0.390	33.7757	1630.7	740.83	740.83	740.83	0.454	0.928	Aman
8	W14X233	0.91	0.954	3.75	147.638	0.2274	0.386	0.386	33.8267	1969.6	780.393	780.393	780.393	0.396	0.782	Aman
7	W14X233	0.925	0.955	3.75	147.638	0.2312	0.386	0.386	33.8223	1969.3	820.107	820.107	820.107	0.416	0.802	Aman
6	W14X233	0.925	0.955	3.75	147.638	0.2312	0.386	0.386	33.8223	1969.3	860.057	860.057	860.057	0.437	0.823	Aman
5	W14X233	0.92	0.955	3.75	147.638	0.2299	0.386	0.386	33.8223	1969.3	900.226	900.226	900.226	0.457	0.843	Aman
4	W14X233	0.92	0.956	3.75	147.638	0.2299	0.387	0.387	33.8179	1969	940.624	940.624	940.624	0.478	0.864	Aman
3	W14X233	0.92	0.957	3.75	147.638	0.2299	0.387	0.387	33.8134	1968.8	981.231	981.231	981.231	0.498	0.884	Aman
2	W14X233	0.92	0.957	3.75	147.638	0.2299	0.387	0.387	33.8134	1968.8	1022.03	1022.03	1022.033	0.519	0.905	Aman
1	W14X233	0.845	0.86	3.75	147.638	0.2112	0.348	0.348	34.2236	1992.7	1063.2	1063.2	1063.195	0.534	0.919	Aman

Tabel Perhitungan Desain Kolom Struktur Outrigger & Belttruss/ Core Brace (CB) 30 Lt

Kolom K1

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu & Pu
											Pux	Puy	Pu pakai			
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	(Kips)					
30	W14X120	0.95	0.92	3.75	147.638	0.252	0.407	0.407	33.589	1007.8	31.348	31.348	31.348	0.0311	0.2321	Aman
29	W14X132	0.96	0.94	3.75	147.638	0.253	0.414	0.414	33.504	1105	72.57	72.57	72.57	0.0657	0.4527	Aman
28	W14X132	0.965	0.954	3.75	147.638	0.255	0.421	0.421	33.432	1102.6	85.221	85.221	85.221	0.0773	0.4554	Aman
27	W14X132	0.957	0.954	3.75	147.638	0.252	0.421	0.421	33.432	1102.6	98.479	98.479	98.479	0.0893	0.4614	Aman
26	W14X132	0.959	0.955	3.75	147.638	0.253	0.421	0.421	33.426	1102.4	112.302	112.302	112.302	0.1019	0.4677	Aman
25	W14X132	0.947	0.956	3.75	147.638	0.250	0.421	0.421	33.421	1102.2	28.3	126.635	126.635	0.1149	0.4742	Aman
24	W14X132	0.947	0.956	3.75	147.638	0.250	0.421	0.421	33.421	1102.2	141.423	141.423	141.423	0.1283	0.4809	Aman
23	W14X132	0.952	0.956	3.75	147.638	0.251	0.421	0.421	33.421	1102.2	158.438	158.438	158.438	0.1437	0.5195	Aman
22	W14X145	0.945	0.957	3.75	147.638	0.247	0.398	0.398	33.689	1222.7	175.985	175.985	175.985	0.1439	0.4600	Aman
21	W14X145	0.951	0.957	3.75	147.638	0.249	0.398	0.398	33.689	1222.7	193.928	193.928	193.928	0.1586	0.4673	Aman
20	W14X145	0.951	0.958	3.75	147.638	0.249	0.399	0.399	33.684	1222.6	211.854	211.854	211.854	0.1733	0.4747	Aman
19	W14X145	0.945	0.958	3.75	147.638	0.247	0.399	0.399	33.684	1222.6	229.76	229.76	229.76	0.1879	0.4820	Aman
18	W14X145	0.946	0.959	3.75	147.638	0.248	0.399	0.399	33.68	1222.4	249.264	249.264	249.264	0.2039	0.5704	Aman
17	W14X145	0.953	0.96	3.75	147.638	0.249	0.399	0.399	33.675	1222.2	268.707	268.707	268.707	0.2199	0.5862	Aman
16	W14X145	0.954	0.96	3.75	147.638	0.250	0.399	0.399	33.675	1222.2	287.308	287.308	287.308	0.2351	0.6015	Aman
15	W14X176	0.953	0.961	3.75	147.638	0.246	0.396	0.396	33.715	1484.5	344.968	344.968	344.968	0.2324	0.5310	Aman
14	W14X176	0.954	0.961	3.75	147.638	0.246	0.396	0.396	33.715	1484.5	422.179	422.179	422.179	0.2844	0.5830	Aman
13	W14X176	0.961	0.962	3.75	147.638	0.248	0.396	0.396	33.71	1484.3	444.491	444.494	444.494	0.2995	0.6469	Aman
12	W14X176	0.961	0.963	3.75	147.638	0.248	0.397	0.397	33.706	1484.1	468.64	468.64	468.64	0.3158	0.6613	Aman
11	W14X176	0.855	0.846	3.75	147.638	0.220	0.348	0.348	34.216	1506.5	493.252	493.252	493.252	0.3274	0.6729	Aman
10	W14X176	0.951	0.958	3.75	147.638	0.245	0.395	0.395	33.729	1485.1	517.028	344.968	517.028	0.3481	0.6936	Aman
9	W14X176	0.945	0.958	3.75	147.638	0.244	0.395	0.395	33.729	1485.1	539.874	422.179	539.874	0.3635	0.7090	Aman
8	W14X211	0.946	0.959	3.75	147.638	0.239	0.390	0.390	33.782	1780.3	563.996	563.996	563.996	0.3168	0.6010	Aman
7	W14X211	0.953	0.96	3.75	147.638	0.241	0.390	0.390	33.778	1780.1	588.087	588.087	588.087	0.3304	0.6145	Aman
6	W14X211	0.954	0.96	3.75	147.638	0.241	0.390	0.390	33.778	1780.1	612.157	612.157	612.157	0.3439	0.6281	Aman
5	W14X211	0.953	0.961	3.75	147.638	0.241	0.391	0.391	33.773	1779.8	636.139	636.139	636.139	0.3574	0.6416	Aman
4	W14X211	0.954	0.961	3.75	147.638	0.241	0.391	0.391	33.773	1779.8	659.891	659.891	659.891	0.3708	0.6549	Aman
3	W14X211	0.961	0.962	3.75	147.638	0.243	0.391	0.391	33.769	1779.6	686.027	686.027	686.027	0.3855	0.6697	Aman
2	W14X211	0.961	0.963	3.75	147.638	0.243	0.391	0.391	33.764	1779.4	711.225	588.087	711.225	0.3997	0.6839	Aman
1	W14X211	0.855	0.846	3.75	147.638	0.216	0.344	0.344	34.262	1805.6	733.366	612.157	733.366	0.4062	0.6903	Aman

Kolom K2

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu & Pu
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	Pux (Kips)	Puy	Pu pakai			
30	W14X120	0.957	0.89	3.75	147.638	0.254	0.394	0.394	33.738	1012.3	11.189	11.189	11.189	0.011	0.334	Aman
29	W14X145	0.948	0.91	3.75	147.638	0.248	0.379	0.379	33.904	1230.5	97.843	97.843	97.843	0.080	0.576	Aman
28	W14X145	0.94	0.91	3.75	147.638	0.246	0.379	0.379	33.904	1230.5	118.044	118.044	118.044	0.096	0.578	Aman
27	W14X145	0.945	0.911	3.75	147.638	0.247	0.379	0.379	33.899	1230.4	138.255	138.255	138.255	0.112	0.586	Aman
26	W14X145	0.955	0.91	3.75	147.638	0.250	0.379	0.379	33.904	1230.5	158.543	158.543	158.543	0.129	0.594	Aman
25	W14X145	0.957	0.91	3.75	147.638	0.251	0.379	0.379	33.904	1230.5	178.879	178.879	178.879	0.145	0.602	Aman
24	W14X145	0.957	0.912	3.75	147.638	0.251	0.379	0.379	33.895	1230.2	199.312	199.312	199.312	0.162	0.611	Aman
23	W14X145	0.945	0.913	3.75	147.638	0.247	0.380	0.380	33.89	1230	219.669	219.669	219.669	0.179	0.675	Aman
22	W14X176	0.945	0.914	3.75	147.638	0.244	0.376	0.376	33.927	1493.8	240.088	240.088	240.088	0.161	0.555	Aman
21	W14X176	0.947	0.914	3.75	147.638	0.244	0.376	0.376	33.927	1493.8	260.55	260.55	260.55	0.174	0.562	Aman
20	W14X176	0.947	0.914	3.75	147.638	0.244	0.376	0.376	33.927	1493.8	280.95	280.95	280.95	0.188	0.569	Aman
19	W14X176	0.946	0.915	3.75	147.638	0.244	0.377	0.377	33.922	1493.6	302.285	302.285	302.285	0.202	0.625	Aman
18	W14X176	0.946	0.917	3.75	147.638	0.244	0.378	0.378	33.913	1493.2	323.586	323.586	323.586	0.217	0.674	Aman
17	W14X176	0.95	0.955	3.75	147.638	0.245	0.393	0.393	33.743	1485.7	344.967	344.967	344.967	0.232	0.689	Aman
16	W14X176	0.95	0.955	3.75	147.638	0.245	0.393	0.393	33.743	1485.7	366.597	366.597	366.597	0.247	0.704	Aman
15	W14X211	0.951	0.96	3.75	147.638	0.241	0.390	0.390	33.778	1780.1	364.545	364.545	364.545	0.205	0.581	Aman
14	W14X211	0.952	0.96	3.75	147.638	0.241	0.390	0.390	33.778	1780.1	527.921	527.921	527.921	0.297	0.673	Aman
13	W14X211	0.952	0.96	3.75	147.638	0.241	0.390	0.390	33.778	1780.1	549.267	549.267	549.267	0.309	0.765	Aman
12	W14X211	0.951	0.96	3.75	147.638	0.241	0.390	0.390	33.778	1780.1	570.225	570.225	570.225	0.320	0.773	Aman
11	W14X211	0.845	0.853	3.75	147.638	0.214	0.347	0.347	34.234	1804.1	591.098	591.098	591.098	0.328	0.781	Aman
10	W14X211	0.947	0.914	3.75	147.638	0.240	0.371	0.371	33.98	1790.7	364.545	611.746	611.746	0.342	0.718	Aman
9	W14X211	0.946	0.915	3.75	147.638	0.239	0.372	0.372	33.975	1790.5	527.921	633.439	633.439	0.354	0.730	Aman
8	W14X233	0.946	0.917	3.75	147.638	0.236	0.371	0.371	33.987	1978.9	655.002	655.002	655.002	0.331	0.737	Aman
7	W14X233	0.95	0.955	3.75	147.638	0.237	0.386	0.386	33.822	1969.3	676.422	676.422	676.422	0.343	0.749	Aman
6	W14X233	0.95	0.955	3.75	147.638	0.237	0.386	0.386	33.822	1969.3	697.537	697.537	697.537	0.354	0.760	Aman
5	W14X233	0.951	0.96	3.75	147.638	0.238	0.388	0.388	33.8	1968	718.287	718.287	718.287	0.365	0.771	Aman
4	W14X233	0.952	0.96	3.75	147.638	0.238	0.388	0.388	33.8	1968	738.675	738.675	738.675	0.375	0.781	Aman
3	W14X233	0.952	0.96	3.75	147.638	0.238	0.388	0.388	33.8	1968	758.664	758.664	758.664	0.385	0.791	Aman
2	W14X233	0.951	0.96	3.75	147.638	0.238	0.388	0.388	33.8	1968	778.44	778.44	778.44	0.396	0.802	Aman
1	W14X233	0.845	0.853	3.75	147.638	0.211	0.345	0.345	34.252	1994.3	798.259	798.259	798.259	0.400	0.806	Aman

Kolom K3

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu & Pu
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	Pux (Kips)	Puy	Pu pakai			
30	W14X120	0.925	0.95	3.75	147.638	0.245	0.420	0.420	33.435	1003.2	23.175	23.175	23.175	0.023	0.295	Aman
29	W14X145	0.93	0.952	3.75	147.638	0.243	0.396	0.396	33.712	1223.6	58.775	58.775	58.775	0.048	0.553	Aman
28	W14X145	0.93	0.953	3.75	147.638	0.243	0.396	0.396	33.708	1223.4	80.383	80.383	80.383	0.066	0.556	Aman
27	W14X145	0.915	0.953	3.75	147.638	0.240	0.396	0.396	33.708	1223.4	102.184	102.184	102.184	0.084	0.565	Aman
26	W14X145	0.918	0.953	3.75	147.638	0.240	0.396	0.396	33.708	1223.4	124.175	124.175	124.175	0.101	0.574	Aman
25	W14X145	0.92	0.954	3.75	147.638	0.241	0.397	0.397	33.703	1223.2	146.359	146.359	146.359	0.120	0.583	Aman
24	W14X145	0.92	0.955	3.75	147.638	0.241	0.397	0.397	33.698	1223.1	168.716	168.716	168.716	0.138	0.592	Aman
23	W14X145	0.918	0.955	3.75	147.638	0.240	0.397	0.397	33.698	1223.1	191.362	191.362	191.362	0.156	0.601	Aman
22	W14X176	0.917	0.955	3.75	147.638	0.236	0.393	0.393	33.743	1485.7	214.144	214.144	214.144	0.144	0.498	Aman
21	W14X176	0.921	0.956	3.75	147.638	0.237	0.394	0.394	33.738	1485.5	237.044	237.044	237.044	0.160	0.506	Aman
20	W14X176	0.921	0.956	3.75	147.638	0.237	0.394	0.394	33.738	1485.5	259.892	259.892	259.892	0.175	0.514	Aman
19	W14X176	0.917	0.956	3.75	147.638	0.236	0.394	0.394	33.738	1485.5	284.101	284.101	284.101	0.191	0.522	Aman
18	W14X176	0.912	0.957	3.75	147.638	0.235	0.394	0.394	33.733	1485.3	308.483	308.483	308.483	0.208	0.587	Aman
17	W14X176	0.912	0.957	3.75	147.638	0.235	0.394	0.394	33.733	1485.3	332.881	332.881	332.881	0.224	0.603	Aman
16	W14X176	0.912	0.958	3.75	147.638	0.235	0.395	0.395	33.729	1485.1	357.296	357.296	357.296	0.241	0.619	Aman
15	W14X211	0.91	0.959	3.75	147.638	0.230	0.390	0.390	33.782	1780.3	390.024	390.024	390.024	0.219	0.531	Aman
14	W14X211	0.913	0.958	3.75	147.638	0.231	0.389	0.389	33.787	1780.6	440.289	440.289	440.289	0.247	0.559	Aman
13	W14X211	0.921	0.959	3.75	147.638	0.233	0.390	0.390	33.782	1780.3	464.864	464.864	464.864	0.261	0.573	Aman
12	W14X211	0.922	0.96	3.75	147.638	0.233	0.390	0.390	33.778	1780.1	489.274	489.274	489.274	0.275	0.587	Aman
11	W14X211	0.845	0.852	3.75	147.638	0.214	0.346	0.346	34.238	1804.3	513.564	513.564	513.564	0.285	0.596	Aman
10	W14X211	0.921	0.956	3.75	147.638	0.233	0.389	0.389	33.796	1781	537.389	537.389	537.389	0.302	0.613	Aman
9	W14X211	0.917	0.956	3.75	147.638	0.232	0.389	0.389	33.796	1781	562.942	562.942	562.942	0.316	0.628	Aman
8	W14X257	0.912	0.957	3.75	147.638	0.225	0.384	0.384	33.848	2175	588.319	588.319	588.319	0.270	0.521	Aman
7	W14X257	0.912	0.957	3.75	147.638	0.225	0.384	0.384	33.848	2175	613.463	613.463	613.463	0.282	0.533	Aman
6	W14X257	0.912	0.958	3.75	147.638	0.225	0.384	0.384	33.843	2174.8	638.233	638.233	638.233	0.293	0.544	Aman
5	W14X257	0.91	0.959	3.75	147.638	0.225	0.385	0.385	33.839	2174.5	662.601	662.601	662.601	0.305	0.555	Aman
4	W14X257	0.913	0.958	3.75	147.638	0.226	0.384	0.384	33.843	2174.8	686.49	686.49	686.49	0.316	0.566	Aman
3	W14X257	0.921	0.959	3.75	147.638	0.228	0.385	0.385	33.839	2174.5	709.954	709.954	709.954	0.326	0.577	Aman
2	W14X257	0.922	0.96	3.75	147.638	0.228	0.385	0.385	33.834	2174.2	732.894	732.894	732.894	0.337	0.588	Aman
1	W14X257	0.845	0.852	3.75	147.638	0.209	0.342	0.342	34.283	2203	755.273	755.273	755.273	0.343	0.593	Aman

Kolom K4

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu & Pu
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	Pux (Kips)	Puy	Pu pakai			
30	W14X120	0.92	0.85	3.75	147.638	0.244	0.376	0.376	33.931	1018.1	10.053	10.053	10.053	0.010	0.436	Aman
29	W14X145	0.925	0.915	3.75	147.638	0.242	0.381	0.381	33.881	1229.7	35.284	35.284	35.284	0.029	0.730	Aman
28	W14X145	0.9273	0.916	3.75	147.638	0.243	0.381	0.381	33.877	1229.6	62.103	62.103	62.103	0.051	0.735	Aman
27	W14X145	0.94	0.917	3.75	147.638	0.246	0.382	0.382	33.872	1229.4	90.127	90.127	90.127	0.073	0.746	Aman
26	W14X145	0.94	0.92	3.75	147.638	0.246	0.383	0.383	33.859	1228.9	119.141	119.141	119.141	0.097	0.758	Aman
25	W14X145	0.946	0.921	3.75	147.638	0.248	0.383	0.383	33.854	1228.7	149.036	149.036	149.036	0.121	0.770	Aman
24	W14X145	0.946	0.922	3.75	147.638	0.248	0.384	0.384	33.85	1228.6	179.724	179.724	179.724	0.146	0.783	Aman
23	W14X145	0.946	0.923	3.75	147.638	0.248	0.384	0.384	33.845	1228.4	211.334	211.334	211.334	0.172	0.796	Aman
22	W14X193	0.943	0.93	3.75	147.638	0.240	0.381	0.381	33.883	1635.9	243.57	243.57	243.57	0.149	0.598	Aman
21	W14X193	0.942	0.94	3.75	147.638	0.240	0.385	0.385	33.838	1633.7	276.32	276.32	276.32	0.169	0.612	Aman
20	W14X193	0.941	0.94	3.75	147.638	0.240	0.385	0.385	33.838	1633.7	309.088	309.088	309.088	0.189	0.622	Aman
19	W14X193	0.939	0.94	3.75	147.638	0.239	0.385	0.385	33.838	1633.7	341.72	341.721	341.721	0.209	0.678	Aman
18	W14X193	0.936	0.945	3.75	147.638	0.239	0.387	0.387	33.816	1632.6	376.066	376.066	376.066	0.230	0.728	Aman
17	W14X193	0.947	0.95	3.75	147.638	0.241	0.389	0.389	33.794	1631.6	410.355	410.355	410.355	0.252	0.748	Aman
16	W14X193	0.947	0.951	3.75	147.638	0.241	0.389	0.389	33.789	1631.3	443.101	443.101	443.101	0.272	0.768	Aman
15	W14X211	0.945	0.953	3.75	147.638	0.239	0.387	0.387	33.809	1781.7	461.611	461.611	461.611	0.259	0.710	Aman
14	W14X211	0.935	0.954	3.75	147.638	0.236	0.388	0.388	33.804	1781.5	501.226	501.226	501.226	0.281	0.733	Aman
13	W14X211	0.935	0.954	3.75	147.638	0.236	0.388	0.388	33.804	1781.5	536.663	536.663	536.663	0.301	0.753	Aman
12	W14X211	0.935	0.956	3.75	147.638	0.236	0.389	0.389	33.796	1781	574.383	574.383	574.383	0.323	0.774	Aman
11	W14X211	0.85	0.86	3.75	147.638	0.215	0.350	0.350	34.205	1802.6	612.479	612.479	612.479	0.340	0.791	Aman
10	W14X211	0.941	0.94	3.75	147.638	0.238	0.382	0.382	33.866	1784.8	649.604	461.611	649.604	0.364	0.815	Aman
9	W14X211	0.939	0.94	3.75	147.638	0.237	0.382	0.382	33.866	1784.8	685.541	501.226	685.541	0.384	0.836	Aman
8	W14X257	0.936	0.945	3.75	147.638	0.231	0.379	0.379	33.9	2178.4	722.988	722.988	722.988	0.332	0.695	Aman
7	W14X257	0.947	0.95	3.75	147.638	0.234	0.381	0.381	33.878	2177	760.47	760.47	760.47	0.349	0.712	Aman
6	W14X257	0.947	0.951	3.75	147.638	0.234	0.381	0.381	33.874	2176.7	797.941	797.941	797.941	0.367	0.729	Aman
5	W14X257	0.945	0.953	3.75	147.638	0.233	0.382	0.382	33.865	2176.2	835.388	835.388	835.388	0.384	0.747	Aman
4	W14X257	0.935	0.954	3.75	147.638	0.231	0.383	0.383	33.861	2175.9	872.626	872.626	872.626	0.401	0.764	Aman
3	W14X257	0.935	0.954	3.75	147.638	0.231	0.383	0.383	33.861	2175.9	911.544	911.544	911.544	0.419	0.782	Aman
2	W14X257	0.935	0.956	3.75	147.638	0.231	0.383	0.383	33.852	2175.3	949.406	949.406	949.406	0.436	0.799	Aman
1	W14X257	0.85	0.86	3.75	147.638	0.210	0.345	0.345	34.252	2201	983.521	983.521	983.521	0.447	0.810	Aman

Kolom K5

Kolom Lantai	Profil	K		Lb		λc			Fcr	ΦcPn	Pu			Pu / ΦcPn	Rasio	Cek Rasio Mu & Pu
		Kx	Ky	(m)	(in)	λcx	λcy	λc Pakai	(Ksi)	(Kips)	Pux (Kips)	Puy	Pu pakai			
30	W14X193	0.915	0.915	3.75	147.638	0.233	0.374	0.374	33.949	1639	11.688	11.688	11.688	0.007	0.384	Aman
29	W14X211	0.92	0.93	3.75	147.638	0.233	0.378	0.378	33.91	1787.1	4.035	4.035	4.035	0.002	0.703	Aman
28	W14X211	0.925	0.945	3.75	147.638	0.234	0.384	0.384	33.844	1783.6	43.177	43.177	43.177	0.024	0.704	Aman
27	W14X211	0.93	0.95	3.75	147.638	0.235	0.386	0.386	33.822	1782.4	82.263	82.263	82.263	0.046	0.715	Aman
26	W14X211	0.93	0.956	3.75	147.638	0.235	0.389	0.389	33.796	1781	121.315	121.315	121.315	0.068	0.726	Aman
25	W14X211	0.94	0.957	3.75	147.638	0.238	0.389	0.389	33.791	1780.8	160.362	160.362	160.362	0.090	0.737	Aman
24	W14X211	0.94	0.957	3.75	147.638	0.238	0.389	0.389	33.791	1780.8	199.414	199.414	199.414	0.112	0.748	Aman
23	W14X211	0.935	0.957	3.75	147.638	0.236	0.389	0.389	33.791	1780.8	238.422	238.422	238.422	0.134	0.759	Aman
22	W14X257	0.935	0.958	3.75	147.638	0.231	0.384	0.384	33.843	2174.8	277.452	277.452	277.452	0.128	0.620	Aman
21	W14X257	0.935	0.959	3.75	147.638	0.231	0.385	0.385	33.839	2174.5	316.521	316.521	316.521	0.146	0.635	Aman
20	W14X257	0.935	0.959	3.75	147.638	0.231	0.385	0.385	33.839	2174.5	355.629	355.629	355.629	0.164	0.644	Aman
19	W14X257	0.93	0.959	3.75	147.638	0.230	0.385	0.385	33.839	2174.5	394.654	394.654	394.654	0.181	0.653	Aman
18	W14X257	0.925	0.96	3.75	147.638	0.228	0.385	0.385	33.834	2174.2	433.628	433.628	433.628	0.199	0.711	Aman
17	W14X257	0.93	0.961	3.75	147.638	0.230	0.385	0.385	33.83	2173.9	472.658	472.658	472.658	0.217	0.758	Aman
16	W14X257	0.935	0.961	3.75	147.638	0.231	0.385	0.385	33.83	2173.9	511.873	511.873	511.873	0.235	0.776	Aman
15	W14X283	0.93	0.962	3.75	147.638	0.227	0.383	0.383	33.853	2397	538.96	538.96	538.96	0.225	0.710	Aman
14	W14X283	0.915	0.963	3.75	147.638	0.223	0.384	0.384	33.849	2396.7	523.466	523.466	523.466	0.218	0.704	Aman
13	W14X283	0.92	0.964	3.75	147.638	0.224	0.384	0.384	33.844	2396.3	562.861	562.861	562.861	0.235	0.720	Aman
12	W14X283	0.935	0.965	3.75	147.638	0.228	0.384	0.384	33.84	2396	602.356	602.356	602.356	0.251	0.737	Aman
11	W14X283	0.85	0.85	3.75	147.638	0.207	0.339	0.339	34.313	2429.5	641.941	641.941	641.941	0.264	0.750	Aman
10	W14X283	0.935	0.959	3.75	147.638	0.228	0.382	0.382	33.866	2397.9	681.65	538.96	681.65	0.284	0.770	Aman
9	W14X283	0.93	0.959	3.75	147.638	0.227	0.382	0.382	33.866	2397.9	721.376	523.466	721.376	0.301	0.786	Aman
8	W14X311	0.925	0.96	3.75	147.638	0.223	0.379	0.379	33.9	2633.7	761.18	761.18	761.18	0.289	0.726	Aman
7	W14X311	0.93	0.961	3.75	147.638	0.224	0.379	0.379	33.896	2633.4	801.091	801.091	801.091	0.304	0.741	Aman
6	W14X311	0.935	0.961	3.75	147.638	0.225	0.379	0.379	33.896	2633.4	641.941	841.153	841.153	0.319	0.757	Aman
5	W14X311	0.93	0.962	3.75	147.638	0.224	0.380	0.380	33.892	2633	881.361	881.361	881.361	0.335	0.772	Aman
4	W14X311	0.915	0.963	3.75	147.638	0.220	0.380	0.380	33.887	2632.7	921.754	921.754	921.754	0.350	0.787	Aman
3	W14X311	0.92	0.964	3.75	147.638	0.221	0.381	0.381	33.883	2632.4	962.298	962.298	962.298	0.366	0.803	Aman
2	W14X311	0.935	0.965	3.75	147.638	0.225	0.381	0.381	33.879	2632.1	1003.02	1003.02	1003.017	0.381	0.818	Aman
1	W14X311	0.85	0.85	3.75	147.638	0.205	0.336	0.336	34.343	2668.1	1044.03	1044.03	1044.033	0.391	0.829	Aman

LAMPIRAN C - 10

Tabel Desain Kolom Terhadap Geser Struktur Open Frame (OF) 30 Lt

Kolom K1

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X132	6.615	15.036	17.7	184.320	490.568	Aman	Aman	0.036	0.031
29	W14X156	14.154	19.677	16.8	195.644	547.397	Aman	Aman	0.072	0.036
28	W14X156	20.591	27.248	16.8	195.644	547.397	Aman	Aman	0.105	0.050
27	W14X156	25.526	32.687	16.8	195.644	547.397	Aman	Aman	0.130	0.060
26	W14X156	30.377	38.168	16.8	195.644	547.397	Aman	Aman	0.155	0.070
25	W14X156	34.745	43.691	16.8	195.644	547.397	Aman	Aman	0.178	0.080
24	W14X156	41.475	47.555	16.8	195.644	547.397	Aman	Aman	0.212	0.087
23	W14X156	48.353	51.398	16.8	195.644	547.397	Aman	Aman	0.247	0.094
22	W14X193	52.805	56.259	12.8	268.175	732.499	Aman	Aman	0.197	0.077
21	W14X193	58.454	63.210	12.8	268.175	732.499	Aman	Aman	0.218	0.086
20	W14X193	61.068	62.885	12.8	268.175	732.499	Aman	Aman	0.228	0.086
19	W14X193	57.813	56.427	12.8	268.175	732.499	Aman	Aman	0.216	0.077
18	W14X193	65.069	65.846	12.8	268.175	732.499	Aman	Aman	0.243	0.090
17	W14X193	68.324	68.397	12.8	268.175	732.499	Aman	Aman	0.255	0.093
16	W14X193	72.272	71.852	12.8	268.175	732.499	Aman	Aman	0.269	0.098
15	W14X211	76.619	75.579	11.6	299.104	798.595	Aman	Aman	0.256	0.095
14	W14X211	80.388	75.978	11.6	299.104	798.595	Aman	Aman	0.269	0.095
13	W14X211	80.672	72.870	11.6	299.104	798.595	Aman	Aman	0.270	0.091
12	W14X211	86.121	78.047	11.6	299.104	798.595	Aman	Aman	0.288	0.098
11	W14X211	90.521	81.890	11.6	299.104	798.595	Aman	Aman	0.303	0.103
10	W14X211	89.618	83.654	11.6	299.104	798.595	Aman	Aman	0.300	0.105
9	W14X211	87.350	82.383	11.6	299.104	798.595	Aman	Aman	0.292	0.103
8	W14X233	91.434	87.077	10.7	332.813	886.075	Aman	Aman	0.275	0.098
7	W14X233	93.902	89.030	10.7	332.813	886.075	Aman	Aman	0.282	0.100
6	W14X233	96.684	91.035	10.7	332.813	886.075	Aman	Aman	0.291	0.103
5	W14X233	99.782	93.597	10.7	332.813	886.075	Aman	Aman	0.300	0.106
4	W14X233	106.397	95.435	10.7	332.813	886.075	Aman	Aman	0.320	0.108
3	W14X233	112.697	96.264	10.7	332.813	886.075	Aman	Aman	0.339	0.109
2	W14X233	123.963	108.014	10.7	332.813	886.075	Aman	Aman	0.372	0.122
1	W14X233	143.493	136.553	10.7	332.813	886.075	Aman	Aman	0.431	0.154

Kolom K2

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X145	17.275	14.277	16.8	195.644	547.397	Aman	Aman	0.088	0.026
29	W14X193	30.789	22.962	12.8	268.175	732.499	Aman	Aman	0.115	0.031
28	W14X193	38.687	29.212	12.8	268.175	732.499	Aman	Aman	0.144	0.040
27	W14X193	47.187	35.245	12.8	268.175	732.499	Aman	Aman	0.176	0.048
26	W14X193	55.497	40.844	12.8	268.175	732.499	Aman	Aman	0.207	0.056
25	W14X193	61.696	46.444	12.8	268.175	732.499	Aman	Aman	0.230	0.063
24	W14X193	76.919	51.023	12.8	268.175	732.499	Aman	Aman	0.287	0.070
23	W14X193	92.402	55.473	12.8	268.175	732.499	Aman	Aman	0.345	0.076
22	W14X211	98.641	60.793	11.6	299.104	798.595	Aman	Aman	0.330	0.076
21	W14X211	106.610	66.161	11.6	299.104	798.595	Aman	Aman	0.356	0.083
20	W14X211	112.151	72.764	11.6	299.104	798.595	Aman	Aman	0.375	0.091
19	W14X211	116.253	75.834	11.6	299.104	798.595	Aman	Aman	0.389	0.095

18	W14X211	123.171	82.429	11.6	299.104	798.595	Aman	Aman	0.412	0.103
17	W14X211	128.860	86.338	11.6	299.104	798.595	Aman	Aman	0.431	0.108
16	W14X211	134.710	90.227	11.6	299.104	798.595	Aman	Aman	0.450	0.113
15	W14X233	138.598	94.396	10.7	332.813	886.075	Aman	Aman	0.416	0.107
14	W14X233	148.750	95.452	10.7	332.813	886.075	Aman	Aman	0.447	0.108
13	W14X233	162.494	96.475	10.7	332.813	886.075	Aman	Aman	0.488	0.109
12	W14X233	163.121	100.411	10.7	332.813	886.075	Aman	Aman	0.490	0.113
11	W14X233	168.060	104.520	10.7	332.813	886.075	Aman	Aman	0.505	0.118
10	W14X233	169.749	106.789	10.7	332.813	886.075	Aman	Aman	0.510	0.121
9	W14X233	168.430	103.185	10.7	332.813	886.075	Aman	Aman	0.506	0.116
8	W14X257	173.097	109.839	9.7	376.203	979.776	Aman	Aman	0.460	0.112
7	W14X257	175.005	111.168	9.7	376.203	979.776	Aman	Aman	0.465	0.113
6	W14X257	177.423	113.285	9.7	376.203	979.776	Aman	Aman	0.472	0.116
5	W14X257	177.070	115.313	9.7	376.203	979.776	Aman	Aman	0.471	0.118
4	W14X257	186.319	116.549	9.7	376.203	979.776	Aman	Aman	0.495	0.119
3	W14X257	198.428	117.918	9.7	376.203	979.776	Aman	Aman	0.527	0.120
2	W14X257	191.024	124.282	9.7	376.203	979.776	Aman	Aman	0.508	0.127
1	W14X257	179.971	138.186	9.7	376.203	979.776	Aman	Aman	0.478	0.141

Kolom K3

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X145	20.880	11.328	16.8	195.644	547.397	Aman	Aman	0.107	0.021
29	W14X193	35.480	20.043	12.8	268.175	732.499	Aman	Aman	0.132	0.027
28	W14X193	42.840	24.943	12.8	268.175	732.499	Aman	Aman	0.160	0.034
27	W14X193	51.440	30.046	12.8	268.175	732.499	Aman	Aman	0.192	0.041
26	W14X193	59.680	34.765	12.8	268.175	732.499	Aman	Aman	0.223	0.047
25	W14X193	65.720	39.285	12.8	268.175	732.499	Aman	Aman	0.245	0.054
24	W14X193	81.720	43.704	12.8	268.175	732.499	Aman	Aman	0.305	0.060
23	W14X193	98.000	48.044	12.8	268.175	732.499	Aman	Aman	0.365	0.066
22	W14X211	104.040	52.343	11.6	299.104	798.595	Aman	Aman	0.348	0.066
21	W14X211	111.920	57.432	11.6	299.104	798.595	Aman	Aman	0.374	0.072
20	W14X211	117.680	61.565	11.6	299.104	798.595	Aman	Aman	0.393	0.077
19	W14X211	122.520	62.695	11.6	299.104	798.595	Aman	Aman	0.410	0.079
18	W14X211	129.040	68.760	11.6	299.104	798.595	Aman	Aman	0.431	0.086
17	W14X211	134.640	71.920	11.6	299.104	798.595	Aman	Aman	0.450	0.090
16	W14X211	140.280	75.268	11.6	299.104	798.595	Aman	Aman	0.469	0.094
15	W14X233	143.880	78.287	10.7	332.813	886.075	Aman	Aman	0.432	0.088
14	W14X233	154.560	80.933	10.7	332.813	886.075	Aman	Aman	0.464	0.091
13	W14X233	169.480	83.996	10.7	332.813	886.075	Aman	Aman	0.509	0.095
12	W14X233	169.400	86.652	10.7	332.813	886.075	Aman	Aman	0.509	0.098
11	W14X233	173.920	90.681	10.7	332.813	886.075	Aman	Aman	0.523	0.102
10	W14X233	175.360	91.140	10.7	332.813	886.075	Aman	Aman	0.527	0.103
9	W14X233	174.240	86.856	10.7	332.813	886.075	Aman	Aman	0.524	0.098
8	W14X257	178.040	92.910	9.7	376.203	979.776	Aman	Aman	0.473	0.095
7	W14X257	179.400	93.999	9.7	376.203	979.776	Aman	Aman	0.477	0.096
6	W14X257	181.120	95.906	9.7	376.203	979.776	Aman	Aman	0.481	0.098
5	W14X257	180.040	97.374	9.7	376.203	979.776	Aman	Aman	0.479	0.099
4	W14X257	188.680	99.769	9.7	376.203	979.776	Aman	Aman	0.502	0.102
3	W14X257	200.360	102.539	9.7	376.203	979.776	Aman	Aman	0.533	0.105
2	W14X257	192.000	107.882	9.7	376.203	979.776	Aman	Aman	0.510	0.110
1	W14X257	180.200	118.346	9.7	376.203	979.776	Aman	Aman	0.479	0.121

Kolom K4

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X145	38.916	18.648	16.80	195.644	547.397	Aman	Aman	0.199	0.034
29	W14X193	31.525	26.178	12.80	268.175	732.499	Aman	Aman	0.118	0.036
28	W14X193	8.823	3.855	12.80	268.175	732.499	Aman	Aman	0.033	0.005
27	W14X193	9.720	6.906	12.80	268.175	732.499	Aman	Aman	0.036	0.009
26	W14X193	10.488	7.207	12.80	268.175	732.499	Aman	Aman	0.039	0.010
25	W14X193	11.516	7.307	12.80	268.175	732.499	Aman	Aman	0.043	0.010
24	W14X193	11.975	7.738	12.80	268.175	732.499	Aman	Aman	0.045	0.011
23	W14X193	12.023	8.219	12.80	268.175	732.499	Aman	Aman	0.045	0.011
22	W14X211	13.072	7.889	11.60	299.104	798.595	Aman	Aman	0.044	0.010
21	W14X211	15.499	9.380	11.60	299.104	798.595	Aman	Aman	0.052	0.012
20	W14X211	10.156	7.201	11.60	299.104	798.595	Aman	Aman	0.034	0.009
19	W14X211	12.645	8.430	11.60	299.104	798.595	Aman	Aman	0.042	0.011
18	W14X211	13.667	9.311	11.60	299.104	798.595	Aman	Aman	0.046	0.012
17	W14X211	16.994	3.837	11.60	299.104	798.595	Aman	Aman	0.057	0.005
16	W14X211	67.563	47.732	11.60	299.104	798.595	Aman	Aman	0.226	0.060
15	W14X233	140.522	76.901	10.70	332.813	886.075	Aman	Aman	0.422	0.087
14	W14X233	74.46	53.728	10.70	332.813	886.075	Aman	Aman	0.224	0.061
13	W14X233	20.549	3.885	10.70	332.813	886.075	Aman	Aman	0.062	0.004
12	W14X233	18.007	8.357	10.70	332.813	886.075	Aman	Aman	0.054	0.009
11	W14X233	22.601	11.018	10.70	332.813	886.075	Aman	Aman	0.068	0.012
10	W14X233	8.296	5.969	10.70	332.813	886.075	Aman	Aman	0.025	0.007
9	W14X233	13.815	8.888	10.70	332.813	886.075	Aman	Aman	0.042	0.010
8	W14X283	14.095	9.200	8.80	418.796	1079.795	Aman	Aman	0.034	0.009
7	W14X283	14.233	7.911	8.80	418.796	1079.795	Aman	Aman	0.034	0.007
6	W14X283	13.341	7.212	8.80	418.796	1079.795	Aman	Aman	0.032	0.007
5	W14X283	13.012	6.064	8.80	418.796	1079.795	Aman	Aman	0.031	0.006
4	W14X283	13.223	5.144	8.80	418.796	1079.795	Aman	Aman	0.032	0.005
3	W14X283	13.914	5.096	8.80	418.796	1079.795	Aman	Aman	0.033	0.005
2	W14X283	15.498	3.390	8.80	418.796	1079.795	Aman	Aman	0.037	0.003
1	W14X283	70.256	19.523	8.80	418.796	1079.795	Aman	Aman	0.168	0.018

Kolom K5

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X193	30.593	32.634	12.8	268.175	732.499	Aman	Aman	0.114	0.045
29	W14X233	45.074	42.730	10.7	332.813	886.075	Aman	Aman	0.135	0.048
28	W14X233	53.987	54.410	10.7	332.813	886.075	Aman	Aman	0.162	0.061
27	W14X233	65.218	65.510	10.7	332.813	886.075	Aman	Aman	0.196	0.074
26	W14X233	75.497	76.310	10.7	332.813	886.075	Aman	Aman	0.227	0.086
25	W14X233	86.387	86.849	10.7	332.813	886.075	Aman	Aman	0.260	0.098
24	W14X233	90.546	95.879	10.7	332.813	886.075	Aman	Aman	0.272	0.108
23	W14X233	93.855	104.179	10.7	332.813	886.075	Aman	Aman	0.282	0.118
22	W14X257	102.574	113.768	9.7	376.203	979.776	Aman	Aman	0.273	0.116
21	W14X257	109.562	119.287	9.7	376.203	979.776	Aman	Aman	0.291	0.122
20	W14X257	116.734	137.241	9.7	376.203	979.776	Aman	Aman	0.310	0.140
19	W14X257	124.901	155.617	9.7	376.203	979.776	Aman	Aman	0.332	0.159
18	W14X257	130.346	159.954	9.7	376.203	979.776	Aman	Aman	0.346	0.163
17	W14X257	136.334	167.894	9.7	376.203	979.776	Aman	Aman	0.362	0.171

16	W14X257	142.021	174.392	9.7	376.203	979.776	Aman	Aman	0.378	0.178
15	W14X311	145.667	181.941	8.1	468.718	1186.229	Aman	Aman	0.311	0.153
14	W14X311	153.890	182.670	8.1	468.718	1186.229	Aman	Aman	0.328	0.154
13	W14X311	167.458	188.009	8.1	468.718	1186.229	Aman	Aman	0.357	0.158
12	W14X311	167.021	192.178	8.1	468.718	1186.229	Aman	Aman	0.356	0.162
11	W14X311	171.138	194.806	8.1	468.718	1186.229	Aman	Aman	0.365	0.164
10	W14X311	173.586	203.687	8.1	468.718	1186.229	Aman	Aman	0.370	0.172
9	W14X311	176.439	210.999	8.1	468.718	1186.229	Aman	Aman	0.376	0.178
8	W14X370	178.852	212.926	6.9	577.640	1422.036	Aman	Aman	0.310	0.150
7	W14X370	180.956	215.614	6.9	577.640	1422.036	Aman	Aman	0.313	0.152
6	W14X370	182.520	217.502	6.9	577.640	1422.036	Aman	Aman	0.316	0.153
5	W14X370	183.434	219.720	6.9	577.640	1422.036	Aman	Aman	0.318	0.155
4	W14X370	180.158	215.687	6.9	577.640	1422.036	Aman	Aman	0.312	0.152
3	W14X370	180.174	217.355	6.9	577.640	1422.036	Aman	Aman	0.312	0.153
2	W14X370	173.397	210.473	6.9	577.640	1422.036	Aman	Aman	0.300	0.148
1	W14X370	159.592	201.941	6.9	577.640	1422.036	Aman	Aman	0.276	0.142

Kolom K6

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X193	11.040	34.802	12.80	268.175	732.499	Aman	Aman	0.041	0.048
29	W14X233	74.480	47.928	10.70	332.813	886.075	Aman	Aman	0.224	0.054
28	W14X233	54.040	16.729	10.70	332.813	886.075	Aman	Aman	0.162	0.019
27	W14X233	56.880	21.259	10.70	332.813	886.075	Aman	Aman	0.171	0.024
26	W14X233	61.080	22.539	10.70	332.813	886.075	Aman	Aman	0.184	0.025
25	W14X233	64.880	23.819	10.70	332.813	886.075	Aman	Aman	0.195	0.027
24	W14X233	68.920	25.038	10.70	332.813	886.075	Aman	Aman	0.207	0.028
23	W14X233	72.160	26.028	10.70	332.813	886.075	Aman	Aman	0.217	0.029
22	W14X257	75.240	26.818	9.70	376.203	979.776	Aman	Aman	0.200	0.027
21	W14X257	79.800	29.127	9.70	376.203	979.776	Aman	Aman	0.212	0.030
20	W14X257	73.480	29.009	9.70	376.203	979.776	Aman	Aman	0.195	0.030
19	W14X257	79.920	35.562	9.70	376.203	979.776	Aman	Aman	0.212	0.036
18	W14X257	90.040	36.601	9.70	376.203	979.776	Aman	Aman	0.239	0.037
17	W14X257	90.760	29.190	9.70	376.203	979.776	Aman	Aman	0.241	0.030
16	W14X257	144.480	105.968	9.70	376.203	979.776	Aman	Aman	0.384	0.108
15	W14X283	100.000	139.409	8.80	418.796	1079.795	Aman	Aman	0.239	0.129
14	W14X283	151.680	106.038	8.80	418.796	1079.795	Aman	Aman	0.362	0.098
13	W14X283	105.080	29.255	8.80	418.796	1079.795	Aman	Aman	0.251	0.027
12	W14X283	102.080	35.635	8.80	418.796	1079.795	Aman	Aman	0.244	0.033
11	W14X283	107.200	38.783	8.80	418.796	1079.795	Aman	Aman	0.256	0.036
10	W14X283	88.640	34.115	8.80	418.796	1079.795	Aman	Aman	0.212	0.032
9	W14X283	92.080	44.055	8.80	418.796	1079.795	Aman	Aman	0.220	0.041
8	W14X370	105.960	44.834	6.90	577.640	1422.036	Aman	Aman	0.183	0.032
7	W14X370	94.920	40.942	6.90	577.640	1422.036	Aman	Aman	0.164	0.029
6	W14X370	89.680	38.540	6.90	577.640	1422.036	Aman	Aman	0.155	0.027
5	W14X370	81.720	35.408	6.90	577.640	1422.036	Aman	Aman	0.141	0.025
4	W14X370	75.920	30.956	6.90	577.640	1422.036	Aman	Aman	0.131	0.022
3	W14X370	74.040	29.205	6.90	577.640	1422.036	Aman	Aman	0.128	0.021
2	W14X370	63.520	19.852	6.90	577.640	1422.036	Aman	Aman	0.110	0.014
1	W14X370	111.520	67.040	6.90	577.640	1422.036	Aman	Aman	0.193	0.047

LAMPIRAN C - 11

Tabel Desain Kolom Terhadap Geser Struktur Frame Truss (FT) 30 Lt

Kolom K1

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X109	36.015	10.269	21.7	145.946	406.82	Aman	Aman	0.2468	0.0252
29	W14X120	36.488	23.478	19.3	166.309	447.7	Aman	Aman	0.2194	0.0524
28	W14X120	12.306	6.321	19.3	166.309	447.7	Aman	Aman	0.0740	0.0141
27	W14X120	13.23	9.261	19.3	166.309	447.7	Aman	Aman	0.0796	0.0207
26	W14X120	14.354	9.4395	19.3	166.309	447.7	Aman	Aman	0.0863	0.0211
25	W14X120	15.383	9.702	19.3	166.309	447.7	Aman	Aman	0.0925	0.0217
24	W14X120	17.924	9.828	19.3	166.309	447.7	Aman	Aman	0.1078	0.0220
23	W14X120	21.662	10.658	19.3	166.309	447.7	Aman	Aman	0.1302	0.0238
22	W14X132	22.596	10.185	17.7	184.32	490.57	Aman	Aman	0.1226	0.0208
21	W14X132	26.849	11.655	17.7	184.32	490.57	Aman	Aman	0.1457	0.0238
20	W14X132	19.824	10.133	17.7	184.32	490.57	Aman	Aman	0.1076	0.0207
19	W14X132	24.738	11.561	17.7	184.32	490.57	Aman	Aman	0.1342	0.0236
18	W14X132	27.132	12.453	17.7	184.32	490.57	Aman	Aman	0.1472	0.0254
17	W14X132	30.083	5.9115	17.7	184.32	490.57	Aman	Aman	0.1632	0.0121
16	W14X132	104.62	47.723	17.7	184.32	490.57	Aman	Aman	0.5676	0.0973
15	W14X145	170.33	62.769	16.8	195.644	547.4	Aman	Aman	0.8706	0.1147
14	W14X145	109.04	50.358	16.8	195.644	547.4	Aman	Aman	0.5574	0.0920
13	W14X145	39.134	5.124	16.8	195.644	547.4	Aman	Aman	0.2000	0.0094
12	W14X145	37.569	10.931	16.8	195.644	547.4	Aman	Aman	0.1920	0.0200
11	W14X145	44.657	12.558	16.8	195.644	547.4	Aman	Aman	0.2283	0.0229
10	W14X145	27.227	9.5025	16.8	195.644	547.4	Aman	Aman	0.1392	0.0174
9	W14X145	34.986	12.611	16.8	195.644	547.4	Aman	Aman	0.1788	0.0230
8	W14X159	36.047	12.317	15.3	217.242	601.47	Aman	Aman	0.1659	0.0205
7	W14X159	35.532	11.151	15.3	217.242	601.47	Aman	Aman	0.1636	0.0185
6	W14X159	33.842	10.269	15.3	217.242	601.47	Aman	Aman	0.1558	0.0171
5	W14X159	32.099	9.1035	15.3	217.242	601.47	Aman	Aman	0.1478	0.0151
4	W14X159	31.826	7.728	15.3	217.242	601.47	Aman	Aman	0.1465	0.0128
3	W14X159	32.12	7.2555	15.3	217.242	601.47	Aman	Aman	0.1479	0.0121
2	W14X159	31.857	2.6775	15.3	217.242	601.47	Aman	Aman	0.1466	0.0045
1	W14X159	91.361	17.021	15.3	217.242	601.47	Aman	Aman	0.4205	0.0283

Kolom K2

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X120	38.883	18.667	19.3	166.309	447.7	Aman	Aman	0.2338	0.0417
29	W14X132	43.943	34.586	17.7	184.32	490.57	Aman	Aman	0.2384	0.0705
28	W14X132	18.855	10.464	17.7	184.32	490.57	Aman	Aman	0.1023	0.0213
27	W14X132	20.605	14.322	17.7	184.32	490.57	Aman	Aman	0.1118	0.0292
26	W14X132	22.705	14.472	17.7	184.32	490.57	Aman	Aman	0.1232	0.0295
25	W14X132	24.185	14.963	17.7	184.32	490.57	Aman	Aman	0.1312	0.0305
24	W14X132	29.626	15.091	17.7	184.32	490.57	Aman	Aman	0.1607	0.0308
23	W14X132	37.127	16.054	17.7	184.32	490.57	Aman	Aman	0.2014	0.0327
22	W14X159	38.267	15.742	15.3	217.242	601.47	Aman	Aman	0.1761	0.0262
21	W14X159	43.707	17.602	15.3	217.242	601.47	Aman	Aman	0.2012	0.0293
20	W14X159	35.217	16.273	15.3	217.242	601.47	Aman	Aman	0.1621	0.0271

19	W14X159	42.467	19.794	15.3	217.242	601.47	Aman	Aman	0.1955	0.0329
18	W14X159	47.407	20.453	15.3	217.242	601.47	Aman	Aman	0.2182	0.0340
17	W14X159	51.267	13.433	15.3	217.242	601.47	Aman	Aman	0.2360	0.0223
16	W14X159	130.4	71.015	15.3	217.242	601.47	Aman	Aman	0.6002	0.1181
15	W14X176	183.96	98.093	13.7	245.255	666.37	Aman	Aman	0.7501	0.1472
14	W14X176	138.66	75.02	13.7	245.255	666.37	Aman	Aman	0.5654	0.1126
13	W14X176	69.287	12.049	13.7	245.255	666.37	Aman	Aman	0.2825	0.0181
12	W14X176	66.227	18.861	13.7	245.255	666.37	Aman	Aman	0.2700	0.0283
11	W14X176	74.147	21.18	13.7	245.255	666.37	Aman	Aman	0.3023	0.0318
10	W14X176	52.446	16.501	13.7	245.255	666.37	Aman	Aman	0.2138	0.0248
9	W14X176	60.866	22.11	13.7	245.255	666.37	Aman	Aman	0.2482	0.0332
8	W14X193	64.956	21.402	12.8	268.175	732.5	Aman	Aman	0.2422	0.0292
7	W14X193	62.035	19.919	12.8	268.175	732.5	Aman	Aman	0.2313	0.0272
6	W14X193	59.205	18.608	12.8	268.175	732.5	Aman	Aman	0.2208	0.0254
5	W14X193	55.324	17.018	12.8	268.175	732.5	Aman	Aman	0.2063	0.0232
4	W14X193	54.693	14.935	12.8	268.175	732.5	Aman	Aman	0.2039	0.0204
3	W14X193	56.713	14.465	12.8	268.175	732.5	Aman	Aman	0.2115	0.0197
2	W14X193	53.131	8.57	12.8	268.175	732.5	Aman	Aman	0.1981	0.0117
1	W14X193	119.93	36.206	12.8	268.175	732.5	Aman	Aman	0.4472	0.0494

Kolom K3

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X132	31.84	24.145	17.7	184.32	490.57	Aman	Aman	0.1727	0.0492
29	W14X145	49.56	39.77	16.8	195.644	547.4	Aman	Aman	0.2533	0.0727
28	W14X145	27.44	15.435	16.8	195.644	547.4	Aman	Aman	0.1403	0.0282
27	W14X145	28	18.621	16.8	195.644	547.4	Aman	Aman	0.1431	0.0340
26	W14X145	30.28	19.152	16.8	195.644	547.4	Aman	Aman	0.1548	0.0350
25	W14X145	31.08	19.731	16.8	195.644	547.4	Aman	Aman	0.1589	0.0360
24	W14X145	38.84	20.241	16.8	195.644	547.4	Aman	Aman	0.1985	0.0370
23	W14X145	46.2	20.671	16.8	195.644	547.4	Aman	Aman	0.2361	0.0378
22	W14X159	47.32	20.861	15.3	217.242	601.47	Aman	Aman	0.2178	0.0347
21	W14X159	52.4	22.94	15.3	217.242	601.47	Aman	Aman	0.2412	0.0381
20	W14X159	43.28	21.401	15.3	217.242	601.47	Aman	Aman	0.1992	0.0356
19	W14X159	52.56	26.995	15.3	217.242	601.47	Aman	Aman	0.2419	0.0449
18	W14X159	57.68	27.325	15.3	217.242	601.47	Aman	Aman	0.2655	0.0454
17	W14X159	61.12	19.313	15.3	217.242	601.47	Aman	Aman	0.2813	0.0321
16	W14X159	140.04	92.472	15.3	217.242	601.47	Aman	Aman	0.6446	0.1537
15	W14X176	174.48	125.94	13.7	245.255	666.37	Aman	Aman	0.7114	0.1890
14	W14X176	149.04	91.69	13.7	245.255	666.37	Aman	Aman	0.6077	0.1376
13	W14X176	80.8	18.729	13.7	245.255	666.37	Aman	Aman	0.3295	0.0281
12	W14X176	76.44	25.438	13.7	245.255	666.37	Aman	Aman	0.3117	0.0382
11	W14X176	83.56	28.325	13.7	245.255	666.37	Aman	Aman	0.3407	0.0425
10	W14X176	60.92	22.438	13.7	245.255	666.37	Aman	Aman	0.2484	0.0337
9	W14X176	68.68	30.357	13.7	245.255	666.37	Aman	Aman	0.2800	0.0456
8	W14X193	72.76	28.978	12.8	268.175	732.5	Aman	Aman	0.2713	0.0396
7	W14X193	68.52	27.234	12.8	268.175	732.5	Aman	Aman	0.2555	0.0372
6	W14X193	64.72	25.403	12.8	268.175	732.5	Aman	Aman	0.2413	0.0347
5	W14X193	59.8	23.441	12.8	268.175	732.5	Aman	Aman	0.2230	0.0320
4	W14X193	58.28	20.547	12.8	268.175	732.5	Aman	Aman	0.2173	0.0281
3	W14X193	59.76	19.697	12.8	268.175	732.5	Aman	Aman	0.2228	0.0269
2	W14X193	54.76	12.871	12.8	268.175	732.5	Aman	Aman	0.2042	0.0176
1	W14X193	120.44	50.966	12.8	268.175	732.5	Aman	Aman	0.4491	0.0696

Kolom K4

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X132	38.92	18.65	19.30	166.31	447.70	Aman	Aman	0.2340	0.0417
29	W14X145	31.52	26.18	17.70	184.32	490.57	Aman	Aman	0.1710	0.0534
28	W14X145	8.82	3.86	17.70	184.32	490.57	Aman	Aman	0.0479	0.0079
27	W14X145	9.72	6.91	17.70	184.32	490.57	Aman	Aman	0.0527	0.0141
26	W14X145	10.49	7.21	17.70	184.32	490.57	Aman	Aman	0.0569	0.0147
25	W14X145	11.52	7.31	17.70	184.32	490.57	Aman	Aman	0.0625	0.0149
24	W14X145	11.97	7.74	17.70	184.32	490.57	Aman	Aman	0.0650	0.0158
23	W14X145	12.02	8.22	17.70	184.32	490.57	Aman	Aman	0.0652	0.0168
22	W14X176	13.07	7.89	15.30	217.24	601.47	Aman	Aman	0.0602	0.0131
21	W14X176	15.50	9.38	15.30	217.24	601.47	Aman	Aman	0.0713	0.0156
20	W14X176	10.16	7.20	15.30	217.24	601.47	Aman	Aman	0.0467	0.0120
19	W14X176	12.65	8.43	15.30	217.24	601.47	Aman	Aman	0.0582	0.0140
18	W14X176	13.67	9.31	15.30	217.24	601.47	Aman	Aman	0.0629	0.0155
17	W14X176	16.99	3.84	15.30	217.24	601.47	Aman	Aman	0.0782	0.0064
16	W14X176	67.56	47.73	15.30	217.24	601.47	Aman	Aman	0.3110	0.0794
15	W14X193	140.52	76.90	12.80	268.17	732.50	Aman	Aman	0.5240	0.1050
14	W14X193	74.46	53.73	12.80	268.17	732.50	Aman	Aman	0.2777	0.0733
13	W14X193	20.55	3.89	12.80	268.17	732.50	Aman	Aman	0.0766	0.0053
12	W14X193	18.01	8.36	12.80	268.17	732.50	Aman	Aman	0.0671	0.0114
11	W14X193	22.60	11.02	12.80	268.17	732.50	Aman	Aman	0.0843	0.0150
10	W14X193	8.30	5.97	12.80	268.17	732.50	Aman	Aman	0.0309	0.0081
9	W14X193	13.81	8.89	12.80	268.17	732.50	Aman	Aman	0.0515	0.0121
8	W14X211	14.09	9.20	7.40	523.91	1312.46	Aman	Aman	0.0269	0.0070
7	W14X211	14.23	7.91	7.40	523.91	1312.46	Aman	Aman	0.0272	0.0060
6	W14X211	13.34	7.21	7.40	523.91	1312.46	Aman	Aman	0.0255	0.0055
5	W14X211	13.01	6.06	7.40	523.91	1312.46	Aman	Aman	0.0248	0.0046
4	W14X211	13.22	5.14	7.40	523.91	1312.46	Aman	Aman	0.0252	0.0039
3	W14X211	13.91	5.10	7.40	523.91	1312.46	Aman	Aman	0.0266	0.0039
2	W14X211	15.50	3.39	7.40	523.91	1312.46	Aman	Aman	0.0296	0.0026
1	W14X211	70.26	19.52	7.40	523.91	1312.46	Aman	Aman	0.1341	0.0149

Kolom K5

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X132	40.37	28.90	17.70	184.32	490.57	Aman	Aman	0.2190	0.0589
29	W14X145	53.40	42.21	16.80	195.64	547.40	Aman	Aman	0.2730	0.0771
28	W14X145	30.59	10.63	16.80	195.64	547.40	Aman	Aman	0.1564	0.0194
27	W14X145	32.03	14.70	16.80	195.64	547.40	Aman	Aman	0.1637	0.0269
26	W14X145	34.64	15.49	16.80	195.64	547.40	Aman	Aman	0.1771	0.0283
25	W14X145	37.20	16.18	16.80	195.64	547.40	Aman	Aman	0.1902	0.0296
24	W14X145	39.48	17.10	16.80	195.64	547.40	Aman	Aman	0.2018	0.0312
23	W14X145	41.20	17.91	16.80	195.64	547.40	Aman	Aman	0.2106	0.0327
22	W14X176	43.74	18.23	13.70	245.26	666.37	Aman	Aman	0.1784	0.0274
21	W14X176	47.98	20.49	13.70	245.26	666.37	Aman	Aman	0.1956	0.0307
20	W14X176	42.17	19.13	13.70	245.26	666.37	Aman	Aman	0.1719	0.0287
19	W14X176	46.87	23.29	13.70	245.26	666.37	Aman	Aman	0.1911	0.0350

18	W14X176	52.29	24.21	13.70	245.26	666.37	Aman	Aman	0.2132	0.0363
17	W14X176	57.50	19.53	13.70	245.26	666.37	Aman	Aman	0.2344	0.0293
16	W14X176	105.79	77.81	13.70	245.26	666.37	Aman	Aman	0.4314	0.1168
15	W14X193	144.02	116.19	12.80	268.17	732.50	Aman	Aman	0.5371	0.1586
14	W14X193	118.11	86.25	12.80	268.17	732.50	Aman	Aman	0.4404	0.1177
13	W14X193	66.24	18.65	12.80	268.17	732.50	Aman	Aman	0.2470	0.0255
12	W14X193	63.48	23.56	12.80	268.17	732.50	Aman	Aman	0.2367	0.0322
11	W14X193	69.45	27.33	12.80	268.17	732.50	Aman	Aman	0.2590	0.0373
10	W14X193	52.82	21.74	12.80	268.17	732.50	Aman	Aman	0.1970	0.0297
9	W14X193	57.51	28.01	12.80	268.17	732.50	Aman	Aman	0.2144	0.0382
8	W14X211	66.70	29.77	11.60	299.10	798.60	Aman	Aman	0.2230	0.0373
7	W14X211	63.08	27.27	11.60	299.10	798.60	Aman	Aman	0.2109	0.0341
6	W14X211	62.30	26.30	11.60	299.10	798.60	Aman	Aman	0.2083	0.0329
5	W14X211	60.78	24.79	11.60	299.10	798.60	Aman	Aman	0.2032	0.0310
4	W14X211	60.07	22.60	11.60	299.10	798.60	Aman	Aman	0.2008	0.0283
3	W14X211	62.96	22.40	11.60	299.10	798.60	Aman	Aman	0.2105	0.0280
2	W14X211	64.35	16.69	11.60	299.10	798.60	Aman	Aman	0.2151	0.0209
1	W14X211	115.23	50.27	11.60	299.10	798.60	Aman	Aman	0.3852	0.0630

Kolom K6

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X132	11.04	34.80	17.70	184.32	490.57	Aman	Aman	0.0599	0.0709
29	W14X145	74.48	47.93	16.80	195.64	547.40	Aman	Aman	0.3807	0.0876
28	W14X145	54.04	16.73	16.80	195.64	547.40	Aman	Aman	0.2762	0.0306
27	W14X145	56.88	21.26	16.80	195.64	547.40	Aman	Aman	0.2907	0.0388
26	W14X145	61.08	22.54	16.80	195.64	547.40	Aman	Aman	0.3122	0.0412
25	W14X145	64.88	23.82	16.80	195.64	547.40	Aman	Aman	0.3316	0.0435
24	W14X145	68.92	25.04	16.80	195.64	547.40	Aman	Aman	0.3523	0.0457
23	W14X145	72.16	26.03	16.80	195.64	547.40	Aman	Aman	0.3688	0.0475
22	W14X176	75.24	26.82	13.70	245.26	666.37	Aman	Aman	0.3068	0.0402
21	W14X176	79.80	29.13	13.70	245.26	666.37	Aman	Aman	0.3254	0.0437
20	W14X176	73.48	29.01	13.70	245.26	666.37	Aman	Aman	0.2996	0.0435
19	W14X176	79.92	35.56	13.70	245.26	666.37	Aman	Aman	0.3259	0.0534
18	W14X176	90.04	36.60	13.70	245.26	666.37	Aman	Aman	0.3671	0.0549
17	W14X176	90.76	29.19	13.70	245.26	666.37	Aman	Aman	0.3701	0.0438
16	W14X176	144.48	105.97	13.70	245.26	666.37	Aman	Aman	0.5891	0.1590
15	W14X193	100.00	139.41	12.80	268.17	732.50	Aman	Aman	0.3729	0.1903
14	W14X193	151.68	106.04	12.80	268.17	732.50	Aman	Aman	0.5656	0.1448
13	W14X193	105.08	29.26	12.80	268.17	732.50	Aman	Aman	0.3918	0.0399
12	W14X193	102.08	35.63	12.80	268.17	732.50	Aman	Aman	0.3806	0.0486
11	W14X193	107.20	38.78	12.80	268.17	732.50	Aman	Aman	0.3997	0.0529
10	W14X193	88.64	34.11	12.80	268.17	732.50	Aman	Aman	0.3305	0.0466
9	W14X193	92.08	44.06	12.80	268.17	732.50	Aman	Aman	0.3434	0.0601
8	W14X233	105.96	44.83	10.70	332.81	886.08	Aman	Aman	0.3184	0.0506
7	W14X233	94.92	40.94	10.70	332.81	886.08	Aman	Aman	0.2852	0.0462
6	W14X233	89.68	38.54	10.70	332.81	886.08	Aman	Aman	0.2695	0.0435
5	W14X233	81.72	35.41	10.70	332.81	886.08	Aman	Aman	0.2455	0.0400
4	W14X233	75.92	30.96	10.70	332.81	886.08	Aman	Aman	0.2281	0.0349
3	W14X233	74.04	29.20	10.70	332.81	886.08	Aman	Aman	0.2225	0.0330
2	W14X233	63.52	19.85	10.70	332.81	886.08	Aman	Aman	0.1909	0.0224
1	W14X233	111.52	67.04	10.70	332.81	886.08	Aman	Aman	0.3351	0.0757

19	W14X176	64.63	17.55	13.7	245.255	666.370	Aman	Aman	0.264	0.026
18	W14X176	76.791	17.45	13.7	245.255	666.370	Aman	Aman	0.313	0.026
17	W14X176	95.61	14.15	13.7	245.255	666.370	Aman	Aman	0.390	0.021
16	W14X176	147.91	66.73	13.7	245.255	666.370	Aman	Aman	0.603	0.100
15	W14X211	245.94	91.37	11.6	299.104	798.595	Aman	Aman	0.822	0.114
14	W14X211	163.53	70.5	11.6	299.104	798.595	Aman	Aman	0.547	0.088
13	W14X211	128.53	12.97	11.6	299.104	798.595	Aman	Aman	0.430	0.016
12	W14X211	120.95	15.54	11.6	299.104	798.595	Aman	Aman	0.404	0.019
11	W14X211	128.68	20.31	11.6	299.104	798.595	Aman	Aman	0.430	0.025
10	W14X211	87.769	13.21	11.6	299.104	798.595	Aman	Aman	0.293	0.017
9	W14X211	99.618	19.03	11.6	299.104	798.595	Aman	Aman	0.333	0.024
8	W14X233	108.03	19.26	10.7	332.813	886.075	Aman	Aman	0.325	0.022
7	W14X233	110.85	17.56	10.7	332.813	886.075	Aman	Aman	0.333	0.020
6	W14X233	113.05	16.31	10.7	332.813	886.075	Aman	Aman	0.340	0.018
5	W14X233	114.92	14.52	10.7	332.813	886.075	Aman	Aman	0.345	0.016
4	W14X233	124.3	12.93	10.7	332.813	886.075	Aman	Aman	0.373	0.015
3	W14X233	139.99	12.25	10.7	332.813	886.075	Aman	Aman	0.421	0.014
2	W14X233	160.59	6.77	10.7	332.813	886.075	Aman	Aman	0.483	0.008
1	W14X233	231.82	50.11	10.7	332.813	886.075	Aman	Aman	0.697	0.057

Kolom K3

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X120	25.92	23.27	19.3	166.309	447.703	Aman	Aman	0.156	0.052
29	W14X145	25.52	31.41	16.8	195.644	547.397	Aman	Aman	0.130	0.057
28	W14X145	24.12	14.8	16.8	195.644	547.397	Aman	Aman	0.123	0.027
27	W14X145	27.8	16.17	16.8	195.644	547.397	Aman	Aman	0.142	0.030
26	W14X145	32.04	17.1	16.8	195.644	547.397	Aman	Aman	0.164	0.031
25	W14X145	35.64	17.8	16.8	195.644	547.397	Aman	Aman	0.182	0.033
24	W14X145	46.28	18.55	16.8	195.644	547.397	Aman	Aman	0.237	0.034
23	W14X145	56.4	19.12	16.8	195.644	547.397	Aman	Aman	0.288	0.035
22	W14X176	61.96	19.58	13.7	245.255	666.370	Aman	Aman	0.253	0.029
21	W14X176	71.24	22.93	13.7	245.255	666.370	Aman	Aman	0.290	0.034
20	W14X176	53.44	18.73	13.7	245.255	666.370	Aman	Aman	0.218	0.028
19	W14X176	67.6	24.99	13.7	245.255	666.370	Aman	Aman	0.276	0.038
18	W14X176	78.88	24.95	13.7	245.255	666.370	Aman	Aman	0.322	0.037
17	W14X176	97.88	23.06	13.7	245.255	666.370	Aman	Aman	0.399	0.035
16	W14X176	150.16	87.12	13.7	245.255	666.370	Aman	Aman	0.612	0.131
15	W14X211	242.84	131.6	11.6	299.104	798.595	Aman	Aman	0.812	0.165
14	W14X211	165.84	86.95	11.6	299.104	798.595	Aman	Aman	0.554	0.109
13	W14X211	131.32	23.45	11.6	299.104	798.595	Aman	Aman	0.439	0.029
12	W14X211	123.44	25.08	11.6	299.104	798.595	Aman	Aman	0.413	0.031
11	W14X211	131.04	30.6	11.6	299.104	798.595	Aman	Aman	0.438	0.038
10	W14X211	90	20.84	11.6	299.104	798.595	Aman	Aman	0.301	0.026
9	W14X211	101.76	30.12	11.6	299.104	798.595	Aman	Aman	0.340	0.038
8	W14X257	110.2	29.68	9.7	376.203	979.776	Aman	Aman	0.293	0.030
7	W14X257	112.72	28.85	9.7	376.203	979.776	Aman	Aman	0.300	0.029
6	W14X257	114.6	27.67	9.7	376.203	979.776	Aman	Aman	0.305	0.028
5	W14X257	116.16	26.5	9.7	376.203	979.776	Aman	Aman	0.309	0.027
4	W14X257	125.24	24.72	9.7	376.203	979.776	Aman	Aman	0.333	0.025
3	W14X257	140.72	24.17	9.7	376.203	979.776	Aman	Aman	0.374	0.025
2	W14X257	160.8	21.05	9.7	376.203	979.776	Aman	Aman	0.427	0.021
1	W14X257	231.8	77.81	9.7	376.203	979.776	Aman	Aman	0.616	0.079

Kolom K4

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X120	25.50	12.76	19.30	166.309	447.703	Aman	Aman	0.153	0.028
29	W14X145	31.05	28.50	16.80	195.644	547.397	Aman	Aman	0.159	0.052
28	W14X145	30.64	6.47	16.80	195.644	547.397	Aman	Aman	0.157	0.012
27	W14X145	32.53	7.97	16.80	195.644	547.397	Aman	Aman	0.166	0.015
26	W14X145	35.94	7.49	16.80	195.644	547.397	Aman	Aman	0.184	0.014
25	W14X145	39.74	6.80	16.80	195.644	547.397	Aman	Aman	0.203	0.012
24	W14X145	42.51	6.76	16.80	195.644	547.397	Aman	Aman	0.217	0.012
23	W14X145	44.50	6.95	16.80	195.644	547.397	Aman	Aman	0.227	0.013
22	W14X193	48.90	5.75	12.80	268.175	732.499	Aman	Aman	0.182	0.008
21	W14X193	54.47	7.33	12.80	268.175	732.499	Aman	Aman	0.203	0.010
20	W14X193	43.93	5.03	12.80	268.175	732.499	Aman	Aman	0.164	0.007
19	W14X193	49.37	6.07	12.80	268.175	732.499	Aman	Aman	0.184	0.008
18	W14X193	58.71	6.08	12.80	268.175	732.499	Aman	Aman	0.219	0.008
17	W14X193	71.02	0.49	12.80	268.175	732.499	Aman	Aman	0.265	0.001
16	W14X193	103.44	48.41	12.80	268.175	732.499	Aman	Aman	0.386	0.066
15	W14X211	179.09	53.51	11.60	299.104	798.595	Aman	Aman	0.599	0.067
14	W14X211	109.15	46.94	11.60	299.104	798.595	Aman	Aman	0.365	0.059
13	W14X211	82.79	0.84	11.60	299.104	798.595	Aman	Aman	0.277	0.001
12	W14X211	75.68	1.78	11.60	299.104	798.595	Aman	Aman	0.253	0.002
11	W14X211	80.52	6.17	11.60	299.104	798.595	Aman	Aman	0.269	0.008
10	W14X211	53.83	1.42	11.60	299.104	798.595	Aman	Aman	0.180	0.002
9	W14X211	61.68	3.71	11.60	299.104	798.595	Aman	Aman	0.206	0.005
8	W14X257	66.33	4.60	9.70	376.203	979.776	Aman	Aman	0.176	0.005
7	W14X257	68.07	2.08	9.70	376.203	979.776	Aman	Aman	0.181	0.002
6	W14X257	68.87	0.64	9.70	376.203	979.776	Aman	Aman	0.183	0.001
5	W14X257	70.35	2.06	9.70	376.203	979.776	Aman	Aman	0.187	0.002
4	W14X257	73.44	3.25	9.70	376.203	979.776	Aman	Aman	0.195	0.003
3	W14X257	79.91	4.15	9.70	376.203	979.776	Aman	Aman	0.212	0.004
2	W14X257	96.52	11.71	9.70	376.203	979.776	Aman	Aman	0.257	0.012
1	W14X257	149.91	20.28	9.70	376.203	979.776	Aman	Aman	0.398	0.021

Kolom K5

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X193	27.824	12.76	12.8	268.175	732.499	Aman	Aman	0.104	0.017
29	W14X211	31.416	44.06	11.6	299.104	798.595	Aman	Aman	0.105	0.055
28	W14X211	37.668	22.17	11.6	299.104	798.595	Aman	Aman	0.126	0.028
27	W14X211	42.545	23.78	11.6	299.104	798.595	Aman	Aman	0.142	0.030
26	W14X211	49.685	24.71	11.6	299.104	798.595	Aman	Aman	0.166	0.031
25	W14X211	56.783	25.14	11.6	299.104	798.595	Aman	Aman	0.190	0.031
24	W14X211	62.703	26.02	11.6	299.104	798.595	Aman	Aman	0.210	0.033
23	W14X211	67.373	26.81	11.6	299.104	798.595	Aman	Aman	0.225	0.034
22	W14X257	74.531	26.89	9.7	376.203	979.776	Aman	Aman	0.198	0.027
21	W14X257	82.3	29.07	9.7	376.203	979.776	Aman	Aman	0.219	0.030
20	W14X257	69.137	28.43	9.7	376.203	979.776	Aman	Aman	0.184	0.029
19	W14X257	77.788	34.75	9.7	376.203	979.776	Aman	Aman	0.207	0.035

18	W14X257	91.025	34.81	9.7	376.203	979.776	Aman	Aman	0.242	0.036
17	W14X257	103.95	31.62	9.7	376.203	979.776	Aman	Aman	0.276	0.032
16	W14X257	127.67	89.18	9.7	376.203	979.776	Aman	Aman	0.339	0.091
15	W14X283	191.77	90.07	8.8	418.796	1079.795	Aman	Aman	0.458	0.083
14	W14X283	138.29	91.5	8.8	418.796	1079.795	Aman	Aman	0.330	0.085
13	W14X283	127.63	29.6	8.8	418.796	1079.795	Aman	Aman	0.305	0.027
12	W14X283	122.91	31.21	8.8	418.796	1079.795	Aman	Aman	0.293	0.029
11	W14X283	128.57	35.25	8.8	418.796	1079.795	Aman	Aman	0.307	0.033
10	W14X283	95.721	30.66	8.8	418.796	1079.795	Aman	Aman	0.229	0.028
9	W14X283	101.46	39.09	8.8	418.796	1079.795	Aman	Aman	0.242	0.036
8	W14X311	118.85	40.36	8.1	468.718	1186.229	Aman	Aman	0.254	0.034
7	W14X311	116.78	35.59	8.1	468.718	1186.229	Aman	Aman	0.249	0.030
6	W14X311	119.66	32.65	8.1	468.718	1186.229	Aman	Aman	0.255	0.028
5	W14X311	121.6	28.5	8.1	468.718	1186.229	Aman	Aman	0.259	0.024
4	W14X311	127.43	24.25	8.1	468.718	1186.229	Aman	Aman	0.272	0.020
3	W14X311	140	21.53	8.1	468.718	1186.229	Aman	Aman	0.299	0.018
2	W14X311	156.64	13.04	8.1	468.718	1186.229	Aman	Aman	0.334	0.011
1	W14X311	209.82	66.28	8.1	468.718	1186.229	Aman	Aman	0.448	0.056

Kolom K6

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X193	20.52	16.80	12.80	268.175	732.499	Aman	Aman	0.077	0.023
29	W14X211	32.64	48.39	11.60	299.104	798.595	Aman	Aman	0.109	0.061
28	W14X211	38.88	29.60	11.60	299.104	798.595	Aman	Aman	0.130	0.037
27	W14X211	43.68	31.00	11.60	299.104	798.595	Aman	Aman	0.146	0.039
26	W14X211	50.84	32.96	11.60	299.104	798.595	Aman	Aman	0.170	0.041
25	W14X211	57.92	34.40	11.60	299.104	798.595	Aman	Aman	0.194	0.043
24	W14X211	63.84	35.82	11.60	299.104	798.595	Aman	Aman	0.213	0.045
23	W14X211	68.56	36.93	11.60	299.104	798.595	Aman	Aman	0.229	0.046
22	W14X257	75.72	38.20	9.70	376.203	979.776	Aman	Aman	0.201	0.039
21	W14X257	83.48	41.23	9.70	376.203	979.776	Aman	Aman	0.222	0.042
20	W14X257	70.36	40.27	9.70	376.203	979.776	Aman	Aman	0.187	0.041
19	W14X257	79.12	49.44	9.70	376.203	979.776	Aman	Aman	0.210	0.050
18	W14X257	92.48	50.14	9.70	376.203	979.776	Aman	Aman	0.246	0.051
17	W14X257	105.60	49.01	9.70	376.203	979.776	Aman	Aman	0.281	0.050
16	W14X257	128.56	114.32	9.70	376.203	979.776	Aman	Aman	0.342	0.117
15	W14X283	187.00	132.80	8.80	418.796	1079.795	Aman	Aman	0.447	0.123
14	W14X283	139.32	113.71	8.80	418.796	1079.795	Aman	Aman	0.333	0.105
13	W14X283	129.56	48.82	8.80	418.796	1079.795	Aman	Aman	0.309	0.045
12	W14X283	124.56	49.01	8.80	418.796	1079.795	Aman	Aman	0.297	0.045
11	W14X283	130.24	53.27	8.80	418.796	1079.795	Aman	Aman	0.311	0.049
10	W14X283	97.32	46.52	8.80	418.796	1079.795	Aman	Aman	0.232	0.043
9	W14X283	103.04	59.15	8.80	418.796	1079.795	Aman	Aman	0.246	0.055
8	W14X311	120.80	60.45	8.10	468.718	1186.229	Aman	Aman	0.258	0.051
7	W14X311	118.44	56.03	8.10	468.718	1186.229	Aman	Aman	0.253	0.047
6	W14X311	121.08	53.48	8.10	468.718	1186.229	Aman	Aman	0.258	0.045
5	W14X311	122.76	50.12	8.10	468.718	1186.229	Aman	Aman	0.262	0.042
4	W14X311	128.32	45.54	8.10	468.718	1186.229	Aman	Aman	0.274	0.038
3	W14X311	140.64	43.27	8.10	468.718	1186.229	Aman	Aman	0.300	0.036
2	W14X311	156.92	37.61	8.10	468.718	1186.229	Aman	Aman	0.335	0.032
1	W14X311	209.88	104.96	8.10	468.718	1186.229	Aman	Aman	0.448	0.088

Tabel Desain Kolom Terhadap Geser Struktur Core Brace (CB) 30 Lt

Kolom K1

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X120	27.101	12.43	19.3	166.309	447.703	Aman	Aman	0.163	0.028
29	W14X132	19.32	21.37	17.7	184.320	490.568	Aman	Aman	0.105	0.044
28	W14X132	16.191	4.61	17.7	184.320	490.568	Aman	Aman	0.088	0.009
27	W14X132	16.968	5.723	17.7	184.320	490.568	Aman	Aman	0.092	0.012
26	W14X132	19.047	5.523	17.7	184.320	490.568	Aman	Aman	0.103	0.011
25	W14X132	21.515	5.114	17.7	184.320	490.568	Aman	Aman	0.117	0.010
24	W14X132	25.547	5.072	17.7	184.320	490.568	Aman	Aman	0.139	0.010
23	W14X132	31.521	5.565	17.7	184.320	490.568	Aman	Aman	0.171	0.011
22	W14X145	35.574	4.337	16.8	195.644	547.397	Aman	Aman	0.182	0.008
21	W14X145	43.134	6.059	16.8	195.644	547.397	Aman	Aman	0.220	0.011
20	W14X145	28.13	3.717	16.8	195.644	547.397	Aman	Aman	0.144	0.007
19	W14X145	36.95	4.652	16.8	195.644	547.397	Aman	Aman	0.189	0.008
18	W14X145	44.552	4.578	16.8	195.644	547.397	Aman	Aman	0.228	0.008
17	W14X145	62.612	5.24	16.8	195.644	547.397	Aman	Aman	0.320	0.010
16	W14X145	115.69	41.11	16.8	195.644	547.397	Aman	Aman	0.591	0.075
15	W14X176	228.88	51.94	13.7	245.255	666.370	Aman	Aman	0.933	0.078
14	W14X176	124.4	40.53	13.7	245.255	666.370	Aman	Aman	0.507	0.061
13	W14X176	79.475	5.082	13.7	245.255	666.370	Aman	Aman	0.324	0.008
12	W14X176	70.298	2.216	13.7	245.255	666.370	Aman	Aman	0.287	0.003
11	W14X176	77.217	5.712	13.7	245.255	666.370	Aman	Aman	0.315	0.009
10	W14X176	43.995	2.3	13.7	245.255	666.370	Aman	Aman	0.179	0.003
9	W14X176	55.167	3.539	13.7	245.255	666.370	Aman	Aman	0.225	0.005
8	W14X211	57.435	4.505	11.6	299.104	798.595	Aman	Aman	0.192	0.006
7	W14X211	61.467	2.762	11.6	299.104	798.595	Aman	Aman	0.206	0.003
6	W14X211	62.423	2.079	11.6	299.104	798.595	Aman	Aman	0.209	0.003
5	W14X211	64.344	3.182	11.6	299.104	798.595	Aman	Aman	0.215	0.004
4	W14X211	70.665	3.854	11.6	299.104	798.595	Aman	Aman	0.236	0.005
3	W14X211	77.459	4.211	11.6	299.104	798.595	Aman	Aman	0.259	0.005
2	W14X211	99.372	11.15	11.6	299.104	798.595	Aman	Aman	0.332	0.014
1	W14X211	172.63	17.76	11.6	299.104	798.595	Aman	Aman	0.577	0.022

Kolom K2

Kolom Lantai	Profil	Vu,k pakai		h / tw	ΦVn		Cek Geser	Cek Geser	Rasio	Rasio
		Arah X	Arah Y		Arah X	Arah Y				
		Kips	Kips		Kips	Kips	Arah X	Arah Y	Arah X	Arah Y
30	W14X120	28.4	16.19	19.3	166.309	447.703	Aman	Aman	0.171	0.036
29	W14X145	24.487	30.07	16.8	195.644	547.397	Aman	Aman	0.125	0.055
28	W14X145	22.679	12.16	16.8	195.644	547.397	Aman	Aman	0.116	0.022
27	W14X145	26.498	13.36	16.8	195.644	547.397	Aman	Aman	0.135	0.024
26	W14X145	30.589	13.71	16.8	195.644	547.397	Aman	Aman	0.156	0.025
25	W14X145	34.578	13.83	16.8	195.644	547.397	Aman	Aman	0.177	0.025
24	W14X145	43.28	13.92	16.8	195.644	547.397	Aman	Aman	0.221	0.025
23	W14X145	55.161	14.79	16.8	195.644	547.397	Aman	Aman	0.282	0.027
22	W14X176	60.491	14.19	13.7	245.255	666.370	Aman	Aman	0.247	0.021
21	W14X176	70.201	16.88	13.7	245.255	666.370	Aman	Aman	0.286	0.025
20	W14X176	52.3	13.79	13.7	245.255	666.370	Aman	Aman	0.213	0.021

Tabel Kontrol Strong Kolom Weak Beam Struktur Open Frame (OF) 30 Lt

Cek Strong Kolom Weak Beam Kolom 1 (K1)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)		Xi	Vu pakai	ΣMpb (K-in)		Rasio			
		B1	B3	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X132	W14x22	W12X26	6.150	8386.910	4050.089	7.35	8.324	1770.317	1915.056	4.738	OK	2.115	OK
29	W14X156	W16x36	W12X30	17.346	17641.290	8784.060	7.4	20.515	3446.531	2218.788	5.119	OK	3.959	OK
28	W14X156	W16x36	W12X30	28.886	18438.494	9431.999	7.4	23.200	3466.400	2218.788	5.319	OK	4.251	OK
27	W14X156	W16x36	W12X30	40.744	18296.023	9359.120	7.4	26.560	3491.264	2218.788	5.241	OK	4.218	OK
26	W14X156	W16x36	W12X30	52.910	18149.741	9284.291	7.4	28.297	3504.115	2218.788	5.180	OK	4.184	OK
25	W14X156	W16x36	W12X30	65.419	17999.496	9207.434	7.4	28.285	3504.027	2218.788	5.137	OK	4.150	OK
24	W14X156	W16x36	W12X30	78.283	17845.000	9128.404	7.4	28.280	3503.990	2218.788	5.093	OK	4.114	OK
23	W14X156	W18x40	W12X30	88.995	17701.445	9054.970	7.4	37.095	4310.538	2218.788	4.107	OK	4.081	OK
22	W14X193	W18x40	W12X30	99.765	20974.579	10674.646	7.75	37.078	4323.390	2218.788	4.851	OK	4.811	OK
21	W14X193	W18x40	W12X30	110.429	24246.288	12293.892	7.75	37.061	4323.258	2218.788	5.608	OK	5.541	OK
20	W14X193	W18x40	W12X30	120.736	24115.219	12227.435	7.75	37.039	4323.088	2218.788	5.578	OK	5.511	OK
19	W14X193	W18x46	W12X40	132.066	23979.988	12158.867	7.75	55.400	5098.585	2934.360	4.703	OK	4.144	OK
18	W14X193	W18x46	W12X40	143.034	23840.625	12088.204	7.75	55.378	5098.415	2934.360	4.676	OK	4.120	OK
17	W14X193	W18x46	W12X40	153.864	23704.388	12019.126	7.75	55.344	5098.151	2934.360	4.650	OK	4.096	OK
16	W14X193	W18x46	W12X40	164.700	23568.975	11950.466	7.75	55.310	5097.888	2934.360	4.623	OK	4.073	OK
15	W14X211	W18x46	W12X40	175.700	24685.415	12524.957	7.85	55.271	5103.112	2934.360	4.837	OK	4.268	OK
14	W14X211	W18x46	W12X40	187.132	25797.670	13097.278	7.85	55.232	5102.806	2934.360	5.056	OK	4.463	OK
13	W14X211	W21X50	W12X40	194.062	25682.167	13038.639	7.85	55.499	6098.465	2934.360	4.211	OK	4.443	OK
12	W14X211	W21X50	W12X40	201.366	25592.630	12993.182	7.85	55.448	6098.065	2934.360	4.197	OK	4.428	OK
11	W14X211	W21X50	W12X40	208.668	25500.754	12946.537	7.85	55.397	6097.664	2934.360	4.182	OK	4.412	OK
10	W14X211	W21X50	W12X40	215.702	25410.576	12900.754	7.85	55.346	6097.264	2934.360	4.168	OK	4.396	OK
9	W14X211	W21X55	W14x43	225.650	25303.754	12846.521	7.85	55.559	6922.619	3583.008	3.655	OK	3.585	OK
8	W14X233	W21x55	W14x43	235.171	26819.734	13604.649	8	55.503	6930.505	3583.008	3.870	OK	3.797	OK
7	W14X233	W21x55	W14x43	244.378	28339.688	14364.842	8	55.413	6929.785	3583.008	4.090	OK	4.009	OK
6	W14X233	W21x55	W14x43	253.443	28223.388	14305.891	8	55.335	6929.161	3583.008	4.073	OK	3.993	OK
5	W14X233	W21x55	W14x43	262.484	28108.143	14247.476	8	55.245	6928.441	3583.008	4.057	OK	3.976	OK
4	W14X233	W21x55	W14x43	271.729	27991.754	14188.481	8	55.155	6927.721	3583.008	4.041	OK	3.960	OK
3	W14X233	W21X68	W14x43	276.358	27903.446	14143.719	8	55.258	8678.863	3583.008	3.215	OK	3.947	OK
2	W14X233	W21X68	W14x43	281.681	27840.102	14111.611	8	55.158	8678.063	3583.008	3.208	OK	3.938	OK
1	W14X233	W21X68	W14x43	288.742	27761.278	14071.657	8	55.029	8677.031	3583.008	3.199	OK	3.927	OK

Cek Strong Kolom Weak Beam Kolom 2 (K2)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)		Xi	Vu pakai	ΣMpb (K-in)		Rasio			
		B1	B3	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X145	W14x22	W12X30	10.097	9298.519	9298.519	7.4	8.324	3541.467	4437.576	2.626	OK	2.095	OK

29	W14X193	W16x36	W12X45	31.793	21879.813	11135.798	7.75	20.515	6907.423	6610.032	3.168	OK	1.685	OK
28	W14X193	W16x36	W12X45	54.609	25019.988	12686.191	7.75	23.200	6949.040	6610.032	3.600	OK	1.919	OK
27	W14X193	W16x36	W12X45	78.755	24726.475	12537.368	7.75	26.560	7001.120	6610.032	3.532	OK	1.897	OK
26	W14X193	W16x36	W12X45	104.266	24416.119	12380.004	7.75	28.297	7028.038	6610.032	3.474	OK	1.873	OK
25	W14X193	W16x36	W12X45	131.105	24088.931	12214.106	7.75	28.285	7027.852	6610.032	3.428	OK	1.848	OK
24	W14X193	W16x36	W12X45	159.214	23745.506	12039.975	7.75	28.280	7027.775	6610.032	3.379	OK	1.821	OK
23	W14X193	W18x40	W12X45	187.890	23390.600	11860.023	7.75	37.095	8647.043	6610.032	2.705	OK	1.794	OK
22	W14X211	W18x40	W12X45	217.544	24277.266	12317.837	7.85	37.078	8654.195	6610.032	2.805	OK	1.864	OK
21	W14X211	W18x40	W12X45	247.908	25152.157	12769.557	7.85	37.061	8653.929	6610.032	2.906	OK	1.932	OK
20	W14X211	W18x40	W12X45	278.457	24768.994	12575.028	7.85	37.039	8653.583	6610.032	2.862	OK	1.902	OK
19	W14X211	W18x46	W14x48	315.629	24343.007	12358.758	7.85	55.400	10208.250	8072.064	2.385	OK	1.531	OK
18	W14X211	W18x46	W14x48	352.831	23875.171	12121.241	7.85	55.378	10207.905	8072.064	2.339	OK	1.502	OK
17	W14X211	W18x46	W14x48	390.646	23403.290	11881.670	7.85	55.344	10207.371	8072.064	2.293	OK	1.472	OK
16	W14X211	W18x46	W14x48	429.239	22922.659	11637.658	7.85	55.310	10206.837	8072.064	2.246	OK	1.442	OK
15	W14X233	W18x46	W14x48	468.660	24052.944	12201.177	8	55.271	10222.806	8072.064	2.353	OK	1.512	OK
14	W14X233	W18x46	W14x48	508.732	25170.936	12758.662	8	55.232	10222.182	8072.064	2.462	OK	1.581	OK
13	W14X233	W21X50	W14x48	548.665	24661.707	12500.544	8	55.499	12213.580	8072.064	2.019	OK	1.549	OK
12	W14X233	W21X50	W14x48	588.956	24151.084	12241.719	8	55.448	12212.764	8072.064	1.978	OK	1.517	OK
11	W14X233	W21X50	W14x48	629.432	23637.005	11981.142	8	55.397	12211.948	8072.064	1.936	OK	1.484	OK
10	W14X233	W21X50	W14x48	669.359	23125.243	11721.740	8	55.346	12211.132	8072.064	1.894	OK	1.452	OK
9	W14X233	W21X55	W16x50	715.016	22580.504	11445.622	8	55.559	13861.906	9472.320	1.629	OK	1.208	OK
8	W14X257	W21x55	W16x50	759.973	23781.356	12032.232	8.2	55.503	13883.211	9472.320	1.713	OK	1.270	OK
7	W14X257	W21x55	W16x50	804.946	24983.106	12619.803	8.2	55.413	13881.735	9472.320	1.800	OK	1.332	OK
6	W14X257	W21x55	W16x50	850.122	24402.385	12326.461	8.2	55.335	13880.456	9472.320	1.758	OK	1.301	OK
5	W14X257	W21x55	W16x50	895.431	23819.499	12032.026	8.2	55.245	13878.980	9472.320	1.716	OK	1.270	OK
4	W14X257	W21x55	W16x50	940.351	23238.261	11738.424	8.2	55.155	13877.504	9472.320	1.675	OK	1.239	OK
3	W14X257	W21X68	W16x50	983.828	22668.826	11450.783	8.2	55.258	17379.829	9472.320	1.304	OK	1.209	OK
2	W14X257	W21X68	W16x50	1024.290	22128.108	11177.648	8.2	55.158	17378.189	9472.320	1.273	OK	1.180	OK
1	W14X257	W21X68	W16x50	1057.777	21651.743	10937.020	8.2	55.029	17376.074	9472.320	1.246	OK	1.155	OK

Cek Strong Kolom Weak Beam Kolom 3 (K3)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)		Xi	Vu pakai	ΣMpb (K-in)		Rasio			
		B1	B2	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X145	W14x22	W12X30	10.298	9297.296	9297.296	7.4	8.324	3479.870	2347.171	2.672	OK	3.961	OK
29	W14X193	W16x36	W12X45	32.845	21872.014	11131.838	7.75	20.515	6748.431	4664.880	3.241	OK	2.386	OK
28	W14X193	W16x36	W12X45	56.382	25002.331	12677.238	7.75	23.200	6769.240	4664.880	3.694	OK	2.718	OK
27	W14X193	W16x36	W12X45	81.027	24701.194	12524.549	7.75	26.560	6795.280	4664.880	3.635	OK	2.685	OK
26	W14X193	W16x36	W12X45	106.832	24385.881	12364.672	7.75	28.297	6808.739	4664.880	3.582	OK	2.651	OK
25	W14X193	W16x36	W12X45	133.765	24056.269	12197.545	7.75	28.285	6808.646	4664.880	3.533	OK	2.615	OK
24	W14X193	W16x36	W12X45	161.778	23712.856	12023.420	7.75	28.280	6808.607	4664.880	3.483	OK	2.577	OK
23	W14X193	W18x40	W12X45	190.752	23356.688	11842.827	7.75	37.095	8359.554	4664.880	2.794	OK	2.539	OK

22	W14X211	W18x40	W12X45	220.547	24240.488	12299.177	7.85	37.078	8363.130	4664.880	2.898	OK	2.637	OK
21	W14X211	W18x40	W12X45	250.907	25114.402	12750.389	7.85	37.061	8362.996	4664.880	3.003	OK	2.733	OK
20	W14X211	W18x40	W12X45	281.303	24732.227	12556.362	7.85	37.039	8362.824	4664.880	2.957	OK	2.692	OK
19	W14X211	W18x46	W14x48	317.399	24313.971	12344.016	7.85	55.400	9773.361	4812.192	2.488	OK	2.565	OK
18	W14X211	W18x46	W14x48	353.398	23860.470	12113.777	7.85	55.378	9773.188	4812.192	2.441	OK	2.517	OK
17	W14X211	W18x46	W14x48	389.784	23405.145	11882.612	7.85	55.344	9772.921	4812.192	2.395	OK	2.469	OK
16	W14X211	W18x46	W14x48	426.798	22943.436	11648.206	7.85	55.310	9772.655	4812.192	2.348	OK	2.421	OK
15	W14X233	W18x46	W14x48	464.449	24095.102	12222.559	8	55.271	9780.639	4812.192	2.464	OK	2.540	OK
14	W14X233	W18x46	W14x48	502.734	25235.916	12791.599	8	55.232	9780.327	4812.192	2.580	OK	2.658	OK
13	W14X233	W21X50	W14x48	541.541	24745.228	12542.879	8	55.499	11769.590	4812.192	2.102	OK	2.606	OK
12	W14X233	W21X50	W14x48	580.727	24248.805	12291.252	8	55.448	11769.182	4812.192	2.060	OK	2.554	OK
11	W14X233	W21X50	W14x48	619.917	23749.945	12038.389	8	55.397	11768.774	4812.192	2.018	OK	2.502	OK
10	W14X233	W21X50	W14x48	658.466	23255.139	11787.582	8	55.346	11768.366	4812.192	1.976	OK	2.450	OK
9	W14X233	W21X55	W16x50	701.821	22733.823	11523.337	8	55.559	13417.433	4001.976	1.694	OK	2.879	OK
8	W14X257	W21x55	W16x50	744.261	23966.555	12125.929	8.2	55.503	13428.086	4001.976	1.785	OK	3.030	OK
7	W14X257	W21x55	W16x50	786.501	25203.139	12730.949	8.2	55.413	13427.348	4001.976	1.877	OK	3.181	OK
6	W14X257	W21x55	W16x50	828.698	24659.213	12456.194	8.2	55.335	13426.708	4001.976	1.837	OK	3.113	OK
5	W14X257	W21x55	W16x50	870.783	24116.285	12181.943	8.2	55.245	13425.970	4001.976	1.796	OK	3.044	OK
4	W14X257	W21x55	W16x50	912.413	23577.010	11909.537	8.2	55.155	13425.232	4001.976	1.756	OK	2.976	OK
3	W14X257	W21X68	W16x50	952.796	23048.699	11642.669	8.2	55.258	16926.715	4001.976	1.362	OK	2.909	OK
2	W14X257	W21X68	W16x50	990.446	22546.026	11388.752	8.2	55.158	16925.895	4001.976	1.332	OK	2.846	OK
1	W14X257	W21X68	W16x50	1021.782	22101.632	11164.274	8.2	55.029	16924.837	4001.976	1.306	OK	2.790	OK

Cek Strong Kolom Weak Beam Kolom 4 (K4)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)		Xl	Vu pakai	ΣMpb (K-in)		Rasio			
		B3	B1	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X145	W12X26	W18X35	10.276	9297.430	9297.430	7.4	15.072	7069.906	1659.715	1.315	OK	5.602	OK
29	W14X193	W12X30	W21X50	35.833	21853.473	11122.438	7.75	34.152	11854.956	2512.224	1.843	OK	4.427	OK
28	W14X193	W12X30	W21X50	62.394	24946.081	12648.717	7.75	38.111	11916.321	2512.224	2.093	OK	5.035	OK
27	W14X193	W12X30	W21X50	90.158	24606.550	12476.561	7.75	42.854	11989.837	2512.224	2.052	OK	4.966	OK
26	W14X193	W12X30	W21X50	119.175	24251.669	12296.621	7.75	47.877	12067.694	2512.224	2.010	OK	4.895	OK
25	W14X193	W12X30	W21X50	149.422	23881.269	12108.812	7.75	52.695	12142.373	2512.224	1.967	OK	4.820	OK
24	W14X193	W12X30	W21X50	180.665	23496.956	11913.950	7.75	54.044	12163.276	2512.224	1.932	OK	4.742	OK
23	W14X193	W12X30	W21X55	212.711	23101.400	11713.386	7.75	59.574	13896.350	3788.928	1.662	OK	3.091	OK
22	W14X211	W12X30	W21X55	245.558	23945.917	12149.714	7.85	59.535	13907.653	3788.928	1.722	OK	3.207	OK
21	W14X211	W12X30	W21X55	279.153	24779.399	12580.310	7.85	59.496	13907.040	3788.928	1.782	OK	3.320	OK
20	W14X211	W12X30	W21X55	313.239	24353.663	12364.167	7.85	59.445	13906.240	3788.928	1.751	OK	3.263	OK
19	W14X211	W12X40	W21X57	349.805	23909.239	12138.537	7.85	64.859	14300.128	3047.616	1.672	OK	3.983	OK
18	W14X211	W12X40	W21X57	386.722	23447.008	11903.865	7.85	64.815	14299.438	3047.616	1.640	OK	3.906	OK
17	W14X211	W12X40	W21X57	424.213	22978.957	11666.240	7.85	64.725	14298.025	3047.616	1.607	OK	3.828	OK
16	W14X211	W12X40	W21X57	462.206	22504.139	11425.178	7.85	64.635	14296.612	3047.616	1.574	OK	3.749	OK
15	W14X233	W12X40	W21X57	500.514	23642.822	11993.126	8	64.540	14314.482	3047.616	1.652	OK	3.935	OK

14	W14X233	W12X40	W21X57	538.699	24777.447	12559.211	8	64.433	14312.770	3047.616	1.731	OK	4.121	OK
13	W14X233	W12X40	W24X62	581.583	24261.446	12297.660	8	77.310	17092.800	3253.536	1.419	OK	3.780	OK
12	W14X233	W12X40	W24X62	624.107	23717.827	12022.110	8	77.198	17091.008	3253.536	1.388	OK	3.695	OK
11	W14X233	W12X40	W24X62	666.571	23176.882	11747.915	8	77.086	17089.216	3253.536	1.356	OK	3.611	OK
10	W14X233	W12X40	W24X62	708.740	22638.196	11474.865	8	76.940	17086.880	3253.536	1.325	OK	3.527	OK
9	W14X233	W14x43	W24X68	753.201	22086.799	11195.373	8	77.334	19461.261	5045.040	1.135	OK	2.219	OK
8	W14X283	W14x43	W24X68	797.360	25225.798	12767.196	8.35	77.176	19512.756	5045.040	1.293	OK	2.531	OK
7	W14X283	W14x43	W24X68	841.538	28360.342	14337.147	8.35	76.969	19509.299	5045.040	1.454	OK	2.842	OK
6	W14X283	W14x43	W24X68	885.691	27785.607	14046.598	8.35	76.767	19505.925	5045.040	1.424	OK	2.784	OK
5	W14X283	W14x43	W24X68	929.551	27212.942	13757.096	8.35	76.548	19502.268	5045.040	1.395	OK	2.727	OK
4	W14X283	W14x43	W24X68	972.443	26648.481	13471.741	8.35	76.324	19498.527	5045.040	1.367	OK	2.670	OK
3	W14X283	W14x43	W24X76	1015.884	26086.746	13187.765	8.35	76.193	21864.425	5889.312	1.193	OK	2.239	OK
2	W14X283	W14x43	W24X76	1056.081	25542.547	12912.653	8.35	75.991	21861.051	5889.312	1.168	OK	2.193	OK
1	W14X283	W14x43	W24X76	1089.924	25060.798	12669.112	8.35	66.461	21701.899	5889.312	1.155	OK	2.151	OK

Cek Strong Kolom Weak Beam Kolom 5 (K5)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)			Vu pakai	ΣMpb (K-in)		Rasio			
		B1	B2	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X193	W18X35	W12X30	14.987	12686.331	12686.331	7.75	15.072	11820.576	1665.734	1.073	OK	7.616	OK
29	W14X233	W21X50	W12X45	52.951	28045.300	14217.671	8	34.152	19712.832	3310.560	1.423	OK	4.295	OK
28	W14X233	W21X50	W12X45	90.876	30476.546	15447.974	8	38.111	19776.176	3310.560	1.541	OK	4.666	OK
27	W14X233	W21X50	W12X45	128.818	29993.656	15203.206	8	42.854	19852.064	3310.560	1.511	OK	4.592	OK
26	W14X233	W21X50	W12X45	166.787	29510.485	14958.296	8	47.877	19932.432	3310.560	1.481	OK	4.518	OK
25	W14X233	W21X50	W12X45	204.802	29026.850	14713.151	8	52.695	20009.520	3310.560	1.451	OK	4.444	OK
24	W14X233	W21X50	W12X45	242.856	28542.673	14467.731	8	54.044	20031.098	3310.560	1.425	OK	4.370	OK
23	W14X233	W21X55	W12X45	280.932	28058.108	14222.115	8	59.574	22907.417	3310.560	1.225	OK	4.296	OK
22	W14X257	W21X55	W12X45	319.059	29384.564	14867.428	8.2	59.535	22930.607	3310.560	1.281	OK	4.491	OK
21	W14X257	W21X55	W12X45	357.276	30707.186	15511.227	8.2	59.496	22929.967	3310.560	1.339	OK	4.685	OK
20	W14X257	W21X55	W12X45	395.554	30214.421	15262.315	8.2	59.445	22929.131	3310.560	1.318	OK	4.610	OK
19	W14X257	W21X57	W14x48	433.187	29725.417	15015.303	8.2	64.859	23540.650	3415.104	1.263	OK	4.397	OK
18	W14X257	W21X57	W14x48	470.910	29239.989	14770.097	8.2	64.815	23539.928	3415.104	1.242	OK	4.325	OK
17	W14X257	W21X57	W14x48	508.779	28753.040	14524.123	8.2	64.725	23538.452	3415.104	1.222	OK	4.253	OK
16	W14X257	W21X57	W14x48	546.782	28264.288	14277.238	8.2	64.635	23536.976	3415.104	1.201	OK	4.181	OK
15	W14X311	W21X57	W14x48	584.948	31858.619	16075.229	8.55	64.540	23580.596	3415.104	1.351	OK	4.707	OK
14	W14X311	W21X57	W14x48	623.277	35444.888	17869.396	8.55	64.433	23578.767	3415.104	1.503	OK	5.232	OK
13	W14X311	W24X62	W14x48	661.353	34940.815	17615.270	8.55	77.310	28154.961	3415.104	1.241	OK	5.158	OK
12	W14X311	W24X62	W14x48	699.609	34437.224	17361.387	8.55	77.198	28153.046	3415.104	1.223	OK	5.084	OK
11	W14X311	W24X62	W14x48	738.050	33931.226	17106.290	8.55	77.086	28151.131	3415.104	1.205	OK	5.009	OK
10	W14X311	W24X62	W14x48	776.693	33422.674	16849.905	8.55	76.940	28148.634	3415.104	1.187	OK	4.934	OK
9	W14X311	W24X68	W16x50	815.095	32914.379	16593.650	8.55	77.334	32162.888	2840.112	1.023		5.843	OK
8	W14X370	W24X68	W16x50	853.721	37061.938	18655.010	8.95	77.176	32221.927	2840.112	1.150	OK	6.568	OK

7	W14X370	W24X68	W16x50	892.656	41199.950	20711.931	8.95	76.969	32218.221	2840.112	1.279	OK	7.293	OK
6	W14X370	W24X68	W16x50	931.905	40672.028	20446.536	8.95	76.767	32214.605	2840.112	1.263	OK	7.199	OK
5	W14X370	W24X68	W16x50	971.473	40139.833	20178.992	8.95	76.548	32210.685	2840.112	1.246	OK	7.105	OK
4	W14X370	W24X68	W16x50	1011.389	39603.134	19909.184	8.95	76.324	32206.676	2840.112	1.230	OK	7.010	OK
3	W14X370	W24X76	W16x50	1051.597	39062.113	19637.203	8.95	76.193	36211.856	2840.112	1.079	OK	6.914	OK
2	W14X370	W24X76	W16x50	1092.114	38517.034	19363.183	8.95	75.991	36208.240	2840.112	1.064	OK	6.818	OK
1	W14X370	W24X76	W16x50	1133.023	37967.222	19086.783	8.95	66.461	36037.652	2840.112	1.054	OK	6.720	OK

Cek Strong Kolom Weak Beam Kolom 6 (K6)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)		Xi	Vu pakai	ΣMpb (K-in)		Rasio			
		B2	B1	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X193	W18X35	W12X30	15.739	12681.631	12681.631	7.75	15.072	6027.096	1665.734	2.104	OK	7.613	OK
29	W14X233	W21X50	W12X45	55.122	28026.782	14208.284	8	34.152	10129.632	3310.560	2.767	OK	4.292	OK
28	W14X233	W21X50	W12X45	94.466	30439.878	15429.388	8	38.111	10192.976	3310.560	2.986	OK	4.661	OK
27	W14X233	W21X50	W12X45	133.832	29938.892	15175.447	8	42.854	10268.864	3310.560	2.916	OK	4.584	OK
26	W14X233	W21X50	W12X45	173.222	29437.612	14921.359	8	47.877	10349.232	3310.560	2.844	OK	4.507	OK
25	W14X233	W21X50	W12X45	212.622	28936.117	14667.160	8	52.695	10426.320	3310.560	2.775	OK	4.430	OK
24	W14X233	W21X50	W12X45	252.056	28434.341	14412.820	8	54.044	10447.898	3310.560	2.722	OK	4.354	OK
23	W14X233	W21X55	W12X45	291.478	27932.426	14158.409	8	59.574	11930.297	3310.560	2.341	OK	4.277	OK
22	W14X257	W21X55	W12X45	330.951	29240.833	14794.707	8.2	59.535	11953.487	3310.560	2.446	OK	4.469	OK
21	W14X257	W21X55	W12X45	370.458	30545.664	15429.637	8.2	59.496	11952.847	3310.560	2.556	OK	4.661	OK
20	W14X257	W21X55	W12X45	410.004	30036.421	15172.401	8.2	59.445	11952.011	3310.560	2.513	OK	4.583	OK
19	W14X257	W21X57	W14x48	449.124	29529.670	14916.425	8.2	64.859	12302.170	3415.104	2.400	OK	4.368	OK
18	W14X257	W21X57	W14x48	488.283	29025.413	14661.707	8.2	64.815	12301.448	3415.104	2.360	OK	4.293	OK
17	W14X257	W21X57	W14x48	566.825	28267.206	14278.712	8.2	64.725	12299.972	3415.104	2.298	OK	4.181	OK
16	W14X257	W21X57	W14x48	606.220	27507.480	13894.949	8.2	64.635	12298.496	3415.104	2.237	OK	4.069	OK
15	W14X283	W21X57	W14x48	606.220	29194.420	14753.330	8.35	64.540	12316.300	3415.104	2.370	OK	4.320	OK
14	W14X283	W21X57	W14x48	645.710	30878.189	15610.007	8.35	64.433	12314.513	3415.104	2.507	OK	4.571	OK
13	W14X283	W24X62	W14x48	685.234	30364.076	15350.105	8.35	77.310	14707.557	3415.104	2.065	OK	4.495	OK
12	W14X283	W24X62	W14x48	724.836	29849.235	15089.835	8.35	77.198	14705.687	3415.104	2.030	OK	4.419	OK
11	W14X283	W24X62	W14x48	764.550	29333.157	14828.939	8.35	77.086	14703.816	3415.104	1.995	OK	4.342	OK
10	W14X283	W24X62	W14x48	804.359	28815.733	14567.363	8.35	76.940	14701.378	3415.104	1.960	OK	4.266	OK
9	W14X283	W24X68	W16x50	844.029	28298.594	14305.931	8.35	77.334	16711.714	2840.112	1.693	OK	5.037	OK
8	W14X370	W24X68	W16x50	883.816	34548.454	17407.613	8.95	77.176	16801.687	2840.112	2.056	OK	6.129	OK
7	W14X370	W24X68	W16x50	923.761	40786.709	20504.188	8.95	76.969	16797.981	2840.112	2.428	OK	7.219	OK
6	W14X370	W24X68	W16x50	963.845	40246.330	20232.530	8.95	76.767	16794.365	2840.112	2.396	OK	7.124	OK
5	W14X370	W24X68	W16x50	1004.087	39703.945	19959.864	8.95	76.548	16790.445	2840.112	2.365	OK	7.028	OK
4	W14X370	W24X68	W16x50	1044.497	39159.359	19686.091	8.95	76.324	16786.436	2840.112	2.333	OK	6.931	OK
3	W14X370	W24X76	W16x50	1085.058	38612.619	19411.235	8.95	76.193	18787.856	2840.112	2.055	OK	6.835	OK
2	W14X370	W24X76	W16x50	1125.782	38063.759	19135.314	8.95	75.991	18784.240	2840.112	2.026	OK	6.738	OK
1	W14X370	W24X76	W16x50	1166.686	37512.583	18858.228	8.95	66.461	18613.652	2840.112	2.015	OK	6.640	OK

Tabel Kontrol Strong Kolom Weak Beam Struktur Frame Truss (FT) 30 Lt

Cek Strong Kolom Weak Beam Kolom 1 (K1)

Lantai	Profil Kolom	Profil Balok	Profil Balok	Pu, k	ΣMpc (K-in)		Xi	Vu pakai	ΣMpb (K-in)		Rasio			
		B1	B3	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X109	W12x19	W12X16	3.822	6889.068	3326.128	7.15	4.852	1306.248	1034.748	5.274	OK	3.214	OK
29	W14X120	W16x36	W14X30	141.926	13668.708	6588.030	7.25	8.900	3359.245	2435.004	4.069	OK	2.706	OK
28	W14X120	W16x36	W14X30	155.305	13478.930	6485.146	7.25	15.691	3408.480	2435.004	3.955	OK	2.663	OK
27	W14X120	W16x36	W14X30	169.001	13316.327	6406.912	7.25	16.903	3417.267	2435.004	3.897	OK	2.631	OK
26	W14X120	W16x36	W14X30	183.084	13149.495	6326.644	7.25	17.983	3425.097	2435.004	3.839	OK	2.598	OK
25	W14X120	W16x36	W14X30	197.507	12978.298	6244.275	7.25	19.023	3432.637	2435.004	3.781	OK	2.564	OK
24	W14X120	W16x36	W14X30	212.245	12803.166	6160.014	7.25	20.023	3439.887	2435.004	3.722	OK	2.530	OK
23	W14X120	W16x36	W14X30	228.457	12617.291	6070.583	7.25	25.316	3478.258	2435.004	3.627	OK	2.493	OK
22	W14X132	W16x36	W14X30	244.979	13206.513	6366.400	7.35	25.316	3480.790	2435.004	3.794	OK	2.615	OK
21	W14X132	W16x36	W14X30	261.717	13792.153	6660.313	7.35	25.299	3480.665	2435.004	3.963	OK	2.735	OK
20	W14X132	W16x36	W14X30	278.488	13590.063	6562.723	7.35	25.294	3480.628	2435.004	3.904	OK	2.695	OK
19	W14X132	W16x36	W14X30	295.583	13385.819	6464.092	7.35	25.277	3480.503	2435.004	3.846	OK	2.655	OK
18	W14X132	W16x36	W14X30	313.659	13173.705	6361.661	7.35	25.364	3481.149	2435.004	3.784	OK	2.613	OK
17	W14X132	W16x36	W14X30	331.719	12955.772	6256.420	7.35	25.342	3480.987	2435.004	3.722	OK	2.569	OK
16	W14X132	W16x36	W14X30	349.745	12738.140	6151.324	7.35	25.325	3480.862	2435.004	3.659	OK	2.526	OK
15	W14X145	W16x36	W14X30	361.308	13474.711	6712.027	7.4	17.496	3424.190	2435.004	3.935	OK	2.756	OK
14	W14X145	W16x36	W14X30	530.479	13289.915	6798.303	7.4	17.862	3426.899	2435.004	3.878	OK	2.792	OK
13	W14X145	W18X40	W14X30	550.580	12137.439	6208.767	7.4	29.820	4256.701	2435.004	2.851	OK	2.550	OK
12	W14X145	W18X40	W14X30	570.807	11891.882	6083.155	7.4	29.798	4256.538	2435.004	2.794	OK	2.498	OK
11	W14X145	W18X40	W14X30	591.051	11645.455	5957.098	7.4	29.759	4256.250	2435.004	2.736	OK	2.446	OK
10	W14X145	W18X40	W14X30	610.759	11402.187	5832.657	7.4	17.472	4165.325	2435.004	2.737	OK	2.395	OK
9	W14X145	W18X40	W14X30	630.514	11161.289	5709.428	7.4	29.652	4255.458	2435.004	2.623	OK	2.345	OK
8	W14X159	W18X40	W14X30	651.002	11851.391	6044.540	7.5	29.699	4258.777	2435.004	2.783	OK	2.482	OK
7	W14X159	W18X40	W14X30	670.935	12539.890	6379.178	7.5	29.660	4258.484	2435.004	2.945	OK	2.620	OK
6	W14X159	W18X40	W14X30	690.268	12298.577	6256.419	7.5	29.604	4258.064	2435.004	2.888	OK	2.569	OK
5	W14X159	W18X40	W14X30	708.848	12065.578	6137.890	7.5	29.548	4257.644	2435.004	2.834	OK	2.521	OK
4	W14X159	W18X40	W14X30	726.541	11842.659	6024.488	7.5	29.492	4257.224	2435.004	2.782	OK	2.474	OK
3	W14X159	W18X40	W14X30	744.436	11623.949	5913.228	7.5	29.501	4257.288	2435.004	2.730	OK	2.428	OK
2	W14X159	W18X40	W14X30	761.181	11411.065	5804.932	7.5	29.445	4256.868	2435.004	2.681	OK	2.384	OK
1	W14X159	W18X40	W14X30	776.462	11214.245	5704.808	7.5	27.979	4245.875	2435.004	2.641	OK	2.343	OK

Cek Strong Kolom Weak Beam Kolom 2 (K2)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)		Xi	Vu pakai	ΣMpb (K-in)		Rasio			
		B1	B2	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X120	W12x19	W12X16	5.763	7597.389	7597.389	7.25	3.350	2591.687	2069.496	2.931	OK	3.671	OK

21	W14X159	W16x36	W16X36	230.776	17984.397	9148.857	7.5	27.197	6793.417	2651.616	2.647	OK	3.450	OK
20	W14X159	W16x36	W16X36	256.237	17671.008	8989.433	7.5	27.189	6793.355	2651.616	2.601	OK	3.390	OK
19	W14X159	W16x36	W16x40	283.163	17349.058	8825.653	7.5	30.049	6814.811	3118.104	2.546	OK	2.830	OK
18	W14X159	W16x36	W16x40	310.426	17016.033	8656.240	7.5	30.032	6814.684	3118.104	2.497	OK	2.776	OK
17	W14X159	W16x36	W16x40	337.540	16681.853	8486.239	7.5	30.015	6814.556	3118.104	2.448	OK	2.722	OK
16	W14X159	W16x36	W16x40	364.783	16347.797	8316.301	7.5	29.993	6814.391	3118.104	2.399	OK	2.667	OK
15	W14X176	W16x36	W16x40	388.458	17210.445	8761.197	7.6	25.311	6781.807	3118.104	2.538	OK	2.810	OK
14	W14X176	W16x36	W16x40	412.100	18094.468	9216.870	7.6	25.366	6782.222	3118.104	2.668	OK	2.956	OK
13	W14X176	W18X40	W16x40	439.502	17779.138	9056.249	7.6	29.950	8299.687	3118.104	2.142	OK	2.904	OK
12	W14X176	W18X40	W16x40	466.264	17444.534	8885.810	7.6	29.933	8299.558	3118.104	2.102	OK	2.850	OK
11	W14X176	W18X40	W16x40	492.662	17116.133	8718.530	7.6	29.899	8299.300	3118.104	2.062	OK	2.796	OK
10	W14X176	W18X40	W16x40	518.425	16793.903	8554.394	7.6	29.877	8299.133	3118.104	2.024	OK	2.743	OK
9	W14X176	W18X40	W16x40	545.773	16465.804	8387.269	7.6	29.972	8299.855	3118.104	1.984	OK	2.690	OK
8	W14X193	W18X40	W16x40	572.761	17348.673	8815.519	7.75	29.916	8303.916	3118.104	2.089	OK	2.827	OK
7	W14X193	W18X40	W16x40	599.080	18235.994	9246.419	7.75	29.894	8303.746	3118.104	2.196	OK	2.965	OK
6	W14X193	W18X40	W16x40	624.642	17911.738	9082.008	7.75	29.860	8303.482	3118.104	2.157	OK	2.913	OK
5	W14X193	W18X40	W16x40	649.360	17597.488	8922.670	7.75	29.821	8303.180	3118.104	2.119	OK	2.862	OK
4	W14X193	W18X40	W16x40	673.142	17294.363	8768.973	7.75	29.770	8302.785	3118.104	2.083	OK	2.812	OK
3	W14X193	W18X40	W16x40	696.099	17002.244	8620.856	7.75	29.714	8302.351	3118.104	2.048	OK	2.765	OK
2	W14X193	W18X40	W16x40	718.035	16721.663	8478.589	7.75	29.675	8302.049	3118.104	2.014	OK	2.719	OK
1	W14X193	W18X40	W16x40	739.045	16453.250	8342.493	7.75	25.670	8271.007	3118.104	1.989	OK	2.676	OK

Cek Strong Kolom Weak Beam Kolom 4 (K4)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)		Xi	Vu pakai	ΣMpb (K-in)		Rasio			
		B3	B2	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X120	W12X16	W14X22	7.264	7588.375	7588.375	7.25	2.987	3461.584	903.989	2.192	OK	8.394	OK
29	W14X132	W14X30	W14X22	282.583	14308.137	6896.024	7.35	10.800	3577.032	903.989	4.000	OK	7.628	OK
28	W14X132	W14X30	W14X22	273.607	13493.658	6516.168	7.35	18.154	3685.136	903.989	3.662	OK	7.208	OK
27	W14X132	W14X30	W14X22	285.327	13477.109	6508.177	7.35	18.439	3689.329	903.989	3.653	OK	7.199	OK
26	W14X132	W14X30	W14X22	290.480	13375.350	6459.036	7.35	18.439	3689.329	903.989	3.625	OK	7.145	OK
25	W14X132	W14X30	W14X22	287.457	13362.504	6452.833	7.35	18.475	3689.852	903.989	3.621	OK	7.138	OK
24	W14X132	W14X30	W14X22	276.903	13444.386	6492.374	7.35	18.475	3689.852	903.989	3.644	OK	7.182	OK
23	W14X132	W14X30	W14X22	259.186	13614.886	6574.710	7.35	18.487	3690.029	903.989	3.690	OK	7.273	OK
22	W14X159	W14X30	W14X22	234.729	15750.315	7835.312	7.5	18.475	3695.395	903.989	4.262	OK	8.667	OK
21	W14X159	W14X30	W14X22	255.496	17651.268	8979.391	7.5	18.470	3695.320	903.989	4.777	OK	9.933	OK
20	W14X159	W14X30	W14X22	350.520	16939.662	8617.389	7.5	18.461	3695.182	903.989	4.584	OK	9.533	OK
19	W14X159	W14X30	W14X22	451.676	15734.016	8004.064	7.5	18.512	3695.947	903.989	4.257	OK	8.854	OK
18	W14X159	W14X30	W14X22	556.189	14470.054	7361.073	7.5	18.495	3695.692	903.989	3.915	OK	8.143	OK
17	W14X159	W14X30	W14X22	664.425	13162.582	6695.948	7.5	18.478	3695.437	903.989	3.562	OK	7.407	OK
16	W14X159	W14X30	W14X22	781.681	11776.796	5990.983	7.5	18.456	3695.107	903.989	3.187	OK	6.627	OK
15	W14X193	W14X30	W14X22	847.053	13014.012	6607.878	7.75	16.164	3668.814	903.989	3.547	OK	7.310	OK
14	W14X193	W14X30	W14X22	529.616	16955.819	8597.317	7.75	14.343	3640.589	903.989	4.657	OK	9.510	OK

13	W14X193	W14X30	W16X26	615.987	18399.981	9329.568	7.75	18.408	4836.156	1128.442	3.805	OK	8.268	OK
12	W14X193	W14X30	W16X26	749.003	17028.813	8634.327	7.75	18.391	4835.893	1128.442	3.521	OK	7.652	OK
11	W14X193	W14X30	W16X26	881.798	15367.494	7791.969	7.75	18.374	4835.629	1128.442	3.178	OK	6.905	OK
10	W14X193	W14X30	W16X26	1014.499	13708.144	6950.608	7.75	18.352	4835.288	1128.442	2.835	OK	6.159	OK
9	W14X193	W14X30	W16X26	1150.151	12030.938	6100.194	7.75	18.430	4836.497	1128.442	2.488	OK	5.406	OK
8	W14X342	W14X30	W16X26	1283.874	21241.345	10706.626	8.75	18.391	4872.675	1128.442	4.359	OK	9.488	OK
7	W14X342	W14X30	W16X26	1420.939	30387.620	15284.250	8.75	18.357	4872.080	1128.442	6.237	OK	13.545	OK
6	W14X342	W14X30	W16X26	1562.827	28531.616	14350.724	8.75	18.335	4871.695	1128.442	5.857	OK	12.717	OK
5	W14X342	W14X30	W16X26	1708.863	26615.924	13387.176	8.75	18.296	4871.012	1128.442	5.464	OK	11.863	OK
4	W14X342	W14X30	W16X26	1859.046	24645.041	12395.869	8.75	18.245	4870.120	1128.442	5.060	OK	10.985	OK
3	W14X342	W14X30	W16X26	2014.733	22609.946	11372.264	8.75	18.206	4869.437	1128.442	4.643	OK	10.078	OK
2	W14X342	W14X30	W16X26	2173.027	20520.884	10321.516	8.75	18.172	4868.842	1128.442	4.215	OK	9.147	OK
1	W14X342	W14X30	W16X26	2338.328	18367.856	9238.594	8.75	16.263	4835.435	1128.442	3.799	OK	8.187	OK

Cek Strong Kolom Weak Beam Kolom 5 (K5)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)		Xl	Vu pakai	ΣMpb (K-in)		Rasio			
		B2	B3	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X132	W14X22	W12X16	4.579	8396.384	8396.384	7.35	3.350	5834.013	393.782	1.439	OK	21.322	OK
29	W14X145	W14X22	W16X36	19.113	17640.005	8783.132	7.4	17.367	6041.800	1881.792	2.920	OK	4.667	OK
28	W14X145	W14X22	W16X36	51.204	18291.840	9356.980	7.4	26.241	6173.135	1881.792	2.963	OK	4.972	OK
27	W14X145	W14X22	W16X36	83.468	17899.983	9156.530	7.4	27.152	6186.612	1881.792	2.893	OK	4.866	OK
26	W14X145	W14X22	W16X36	115.744	17507.000	8955.504	7.4	27.157	6186.686	1881.792	2.830	OK	4.759	OK
25	W14X145	W14X22	W16X36	148.071	17113.632	8754.281	7.4	27.202	6187.356	1881.792	2.766	OK	4.652	OK
24	W14X145	W14X22	W16X36	180.442	16719.687	8552.763	7.4	27.202	6187.356	1881.792	2.702	OK	4.545	OK
23	W14X145	W14X22	W16X36	212.886	16325.029	8350.880	7.4	27.202	6187.356	1881.792	2.638	OK	4.438	OK
22	W14X176	W14X22	W16X36	245.364	18067.976	9220.821	7.6	27.202	6198.237	1881.792	2.915	OK	4.900	OK
21	W14X176	W14X22	W16X36	277.949	19807.178	10089.281	7.6	27.197	6198.161	1881.792	3.196	OK	5.362	OK
20	W14X176	W14X22	W16X36	310.376	19405.560	9884.707	7.6	27.189	6198.036	1881.792	3.131	OK	5.253	OK
19	W14X176	W14X22	W16x40	341.727	19011.564	9684.016	7.6	30.049	6241.520	2212.848	3.046	OK	4.376	OK
18	W14X176	W14X22	W16x40	373.560	18621.239	9485.193	7.6	30.032	6241.262	2212.848	2.984	OK	4.286	OK
17	W14X176	W14X22	W16x40	405.449	18227.589	9284.678	7.6	30.015	6241.003	2212.848	2.921	OK	4.196	OK
16	W14X176	W14X22	W16x40	438.000	17829.504	9081.904	7.6	29.993	6240.669	2212.848	2.857	OK	4.104	OK
15	W14X193	W14X22	W16x40	453.224	18761.558	9533.464	7.75	25.311	6177.095	2212.848	3.037	OK	4.308	OK
14	W14X193	W14X22	W16x40	487.435	19680.881	9979.038	7.75	25.366	6177.941	2212.848	3.186	OK	4.510	OK
13	W14X193	W16X26	W16x40	520.750	19258.844	9765.048	7.75	29.950	8165.640	2212.848	2.359	OK	4.413	OK
12	W14X193	W16X26	W16x40	554.720	18838.313	9551.820	7.75	29.933	8165.376	2212.848	2.307	OK	4.317	OK
11	W14X193	W16X26	W16x40	589.223	18410.356	9334.829	7.75	29.899	8164.849	2212.848	2.255	OK	4.218	OK
10	W14X193	W16X26	W16x40	623.911	17977.913	9115.561	7.75	29.877	8164.508	2212.848	2.202	OK	4.119	OK
9	W14X193	W16X26	W16x40	658.229	17546.625	8896.880	7.75	29.972	8165.981	2212.848	2.149	OK	4.021	OK
8	W14X211	W16X26	W16x40	694.545	18337.157	9304.000	7.85	29.916	8171.096	2212.848	2.244	OK	4.205	OK
7	W14X211	W16X26	W16x40	730.411	19116.567	9705.334	7.85	29.894	8170.751	2212.848	2.340	OK	4.386	OK

6	W14X211	W16X26	W16x40	766.591	18663.375	9475.252	7.85	29.860	8170.217	2212.848	2.284	OK	4.282	OK
5	W14X211	W16X26	W16x40	803.148	18205.835	9242.963	7.85	29.821	8169.605	2212.848	2.228	OK	4.177	OK
4	W14X211	W16X26	W16x40	840.248	17742.509	9007.735	7.85	29.770	8168.804	2212.848	2.172	OK	4.071	OK
3	W14X211	W16X26	W16x40	878.375	17269.307	8767.494	7.85	29.714	8167.925	2212.848	2.114	OK	3.962	OK
2	W14X211	W16X26	W16x40	916.906	16787.103	8522.683	7.85	29.675	8167.312	2212.848	2.055	OK	3.851	OK
1	W14X211	W16X26	W16x40	956.637	16294.810	8272.750	7.85	25.670	8104.427	2212.848	2.011	OK	3.739	OK

Cek Strong Kolom Weak Beam Kolom 6 (K6)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)		XI	Vu pakai	ΣMpb (K-in)		Rasio			
		B2	B3	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X132	W14X22	W12X16	6.610	8384.136	8384.136	7.35	3.350	2941.629	393.782	2.850	OK	21.291	OK
29	W14X145	W14X22	W16X36	2.616	17728.207	8828.601	7.4	17.367	3149.416	1881.792	5.629	OK	4.692	OK
28	W14X145	W14X22	W16X36	41.315	18452.504	9439.166	7.4	26.241	3280.751	1881.792	5.624	OK	5.016	OK
27	W14X145	W14X22	W16X36	79.992	17981.363	9198.159	7.4	27.152	3294.228	1881.792	5.458	OK	4.888	OK
26	W14X145	W14X22	W16X36	118.662	17510.397	8957.242	7.4	27.157	3294.302	1881.792	5.315	OK	4.760	OK
25	W14X145	W14X22	W16X36	157.339	17039.432	8716.325	7.4	27.202	3294.972	1881.792	5.171	OK	4.632	OK
24	W14X145	W14X22	W16X36	196.038	16568.290	8475.318	7.4	27.202	3294.972	1881.792	5.028	OK	4.504	OK
23	W14X145	W14X22	W16X36	234.703	16097.221	8234.348	7.4	27.202	3294.972	1881.792	4.885	OK	4.376	OK
22	W14X176	W14X22	W16X36	273.414	17761.851	9064.601	7.6	27.202	3305.853	1881.792	5.373	OK	4.817	OK
21	W14X176	W14X22	W16X36	312.174	19422.468	9893.320	7.6	27.197	3305.777	1881.792	5.875	OK	5.257	OK
20	W14X176	W14X22	W16X36	351.002	18943.160	9649.172	7.6	27.189	3305.652	1881.792	5.731	OK	5.128	OK
19	W14X176	W14X22	W16x40	389.679	18464.364	9405.286	7.6	30.049	3349.136	2212.848	5.513	OK	4.250	OK
18	W14X176	W14X22	W16x40	428.271	17987.027	9162.142	7.6	30.032	3348.878	2212.848	5.371	OK	4.140	OK
17	W14X176	W14X22	W16x40	505.815	17269.585	8796.695	7.6	30.015	3348.619	2212.848	5.157	OK	3.975	OK
16	W14X176	W14X22	W16x40	521.044	16696.469	8504.764	7.6	29.993	3348.285	2212.848	4.987	OK	3.843	OK
15	W14X193	W14X22	W16x40	521.044	17824.670	9057.226	7.75	25.311	3284.711	2212.848	5.427	OK	4.093	OK
14	W14X193	W14X22	W16x40	544.300	18901.600	9583.910	7.75	25.366	3285.557	2212.848	5.753	OK	4.331	OK
13	W14X193	W16X26	W16x40	583.313	18512.419	9386.579	7.75	29.950	4314.936	2212.848	4.290	OK	4.242	OK
12	W14X193	W16X26	W16x40	622.489	18023.738	9138.796	7.75	29.933	4314.672	2212.848	4.177	OK	4.130	OK
11	W14X193	W16X26	W16x40	661.833	17532.988	8889.965	7.75	29.899	4314.145	2212.848	4.064	OK	4.017	OK
10	W14X193	W16X26	W16x40	701.345	17040.138	8640.070	7.75	29.877	4313.804	2212.848	3.950	OK	3.905	OK
9	W14X193	W16X26	W16x40	740.830	16546.406	8389.727	7.75	29.972	4315.277	2212.848	3.834	OK	3.791	OK
8	W14X233	W16X26	W16x40	780.393	18878.640	9570.535	8	29.916	4329.367	2212.848	4.361	OK	4.325	OK
7	W14X233	W16X26	W16x40	820.107	21204.876	10748.343	8	29.894	4329.015	2212.848	4.898	OK	4.857	OK
6	W14X233	W16X26	W16x40	860.057	20697.817	10491.325	8	29.860	4328.471	2212.848	4.782	OK	4.741	OK
5	W14X233	W16X26	W16x40	900.226	20187.863	10232.839	8	29.821	4327.847	2212.848	4.665	OK	4.624	OK
4	W14X233	W16X26	W16x40	940.624	19675.057	9972.907	8	29.770	4327.031	2212.848	4.547	OK	4.507	OK
3	W14X233	W16X26	W16x40	981.231	19159.463	9711.563	8	29.714	4326.135	2212.848	4.429	OK	4.389	OK
2	W14X233	W16X26	W16x40	1022.033	18641.298	9448.915	8	29.675	4325.511	2212.848	4.310	OK	4.270	OK
1	W14X233	W16X26	W16x40	1063.195	18119.600	9184.476	8	25.670	4261.424	2212.848	4.252	OK	4.151	OK

Tabel Strong Kolom Weak Beam Struktur Outrigger & Belttruss/ Core Brace (CB)

Cek Strong Kolom Weak Beam Kolom 1 (K1)

Lantai	Profil Kolom	Profil Balok	Profil Balok	Pu, k	ΣMpc (K-in)		Xi	Vu pakai	ΣMpb (K-in)		Rasio			
		B1	B3	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X120	W14x22	W12X19	31.348	7443.734	3581.419	7.25	3.612	1735.323	1271.556	4.290	OK	2.817	OK
29	W14X132	W16x36	W14X38	72.570	15430.070	7438.069	7.35	7.357	3348.794	3166.020	4.608	OK	2.349	OK
28	W14X132	W16x36	W14X38	85.221	15896.374	7676.454	7.35	14.063	3398.083	3166.020	4.678	OK	2.425	OK
27	W14X132	W16x36	W14X38	98.479	15740.119	7600.997	7.35	17.028	3419.876	3166.020	4.603	OK	2.401	OK
26	W14X132	W16x36	W14X38	112.302	15576.795	7522.128	7.35	19.548	3438.398	3166.020	4.530	OK	2.376	OK
25	W14X132	W16x36	W14X38	126.635	15406.988	7440.127	7.35	21.868	3455.450	3166.020	4.459	OK	2.350	OK
24	W14X132	W16x36	W14X38	141.423	15231.362	7355.316	7.35	23.908	3470.444	3166.020	4.389	OK	2.323	OK
23	W14X132	W18x40	W14X38	158.438	15039.560	7262.693	7.35	29.765	4254.807	3166.020	3.535	OK	2.294	OK
22	W14X145	W18x40	W14X38	175.985	15756.900	7846.420	7.4	29.753	4256.206	3166.020	3.702	OK	2.478	OK
21	W14X145	W18x40	W14X38	193.928	16467.602	8423.812	7.4	29.748	4256.169	3166.020	3.869	OK	2.661	OK
20	W14X145	W18x40	W14X38	211.854	16249.196	8312.089	7.4	29.731	4256.044	3166.020	3.818	OK	2.625	OK
19	W14X145	W18x46	W14X38	229.760	16031.015	8200.481	7.4	29.714	4255.918	3166.020	3.767	OK	2.590	OK
18	W14X145	W18x46	W14X38	249.264	15803.226	8083.958	7.4	33.595	4917.836	3166.020	3.213	OK	2.553	OK
17	W14X145	W18x46	W14X38	268.707	15566.078	7962.648	7.4	33.578	4917.710	3166.020	3.165	OK	2.515	OK
16	W14X145	W18x46	W14X38	287.308	15334.429	7844.150	7.4	33.556	4917.547	3166.020	3.118	OK	2.478	OK
15	W14X176	W18x46	W14X38	344.968	16999.507	8675.589	7.6	15.495	4786.998	3166.020	3.551	OK	2.740	OK
14	W14X176	W18x46	W14X38	422.179	18300.868	9322.005	7.6	16.439	4794.172	3166.020	3.817	OK	2.944	OK
13	W14X176	W21X55	W14X38	444.494	17686.036	9008.824	7.6	44.509	6824.752	3166.020	2.591	OK	2.845	OK
12	W14X176	W21X55	W14X38	468.640	17399.018	8862.625	7.6	44.475	6824.494	3166.020	2.549	OK	2.799	OK
11	W14X176	W21X55	W14X38	493.252	17097.810	8709.197	7.6	44.448	6824.289	3166.020	2.505	OK	2.751	OK
10	W14X176	W21X55	W14X38	517.028	16798.888	8556.934	7.6	15.459	6603.968	3166.020	2.544	OK	2.703	OK
9	W14X176	W21X55	W14X38	539.874	16510.876	8410.227	7.6	44.363	6823.643	3166.020	2.420	OK	2.656	OK
8	W14X211	W21X55	W14X38	563.996	18677.154	9496.020	7.85	44.434	6835.289	3166.020	2.732	OK	2.999	OK
7	W14X211	W21X55	W14X38	588.087	20833.026	10576.767	7.85	44.395	6834.982	3166.020	3.048	OK	3.341	OK
6	W14X211	W21X55	W14X38	612.157	20530.078	10422.963	7.85	44.344	6834.582	3166.020	3.004	OK	3.292	OK
5	W14X211	W21X55	W14X38	636.139	20227.815	10269.506	7.85	44.288	6834.142	3166.020	2.960	OK	3.244	OK
4	W14X211	W21X55	W14X38	659.891	19927.553	10117.065	7.85	44.232	6833.703	3166.020	2.916	OK	3.196	OK
3	W14X211	W21X55	W14X38	686.027	19613.742	9957.746	7.85	44.267	6833.973	3166.020	2.870	OK	3.145	OK
2	W14X211	W21X55	W14X38	711.225	19290.834	9793.808	7.85	44.211	6833.533	3166.020	2.823	OK	3.093	OK
1	W14X211	W21X55	W14X38	733.366	18993.057	9642.629	7.85	44.133	6832.921	3166.020	2.780	OK	3.046	OK

Cek Strong Kolom Weak Beam Kolom 2 (K2)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)		Xi	Vu pakai	ΣMpb (K-in)		Rasio			
		B1	B4	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X120	W14x22	W12x22	11.189	7564.803	7564.803	7.25	3.612	3470.646	3016.728	2.180	OK	2.508	OK

29	W14X145	W16x36	W16x40	97.843	16329.037	8122.912	7.4	7.357	6698.324	7516.080	2.438	OK	1.081	OK
28	W14X145	W16x36	W16x40	118.044	17405.466	8903.565	7.4	14.063	6797.572	7516.080	2.561	OK	1.185	OK
27	W14X145	W16x36	W16x40	138.255	17159.397	8777.692	7.4	17.028	6841.454	7516.080	2.508	OK	1.168	OK
26	W14X145	W16x36	W16x40	158.543	16912.799	8651.547	7.4	19.548	6878.750	7516.080	2.459	OK	1.151	OK
25	W14X145	W16x36	W16x40	178.879	16665.440	8525.013	7.4	21.868	6913.086	7516.080	2.411	OK	1.134	OK
24	W14X145	W16x36	W16x40	199.312	16417.198	8398.028	7.4	23.908	6943.278	7516.080	2.364	OK	1.117	OK
23	W14X145	W18x40	W16x40	219.669	16168.828	8270.977	7.4	29.765	8512.590	7516.080	1.899	OK	1.100	OK
22	W14X176	W18x40	W16x40	240.088	18059.268	9216.296	7.6	29.753	8524.314	7516.080	2.119	OK	1.226	OK
21	W14X176	W18x40	W16x40	260.550	19947.256	10160.633	7.6	29.748	8524.238	7516.080	2.340	OK	1.352	OK
20	W14X176	W18x40	W16x40	280.950	19694.826	10032.052	7.6	29.731	8523.980	7516.080	2.311	OK	1.335	OK
19	W14X176	W18x40	W16x40	302.285	19437.004	9900.724	7.6	29.714	8523.721	7516.080	2.280	OK	1.317	OK
18	W14X176	W18x46	W16x40	323.586	19173.615	9766.560	7.6	33.595	9849.109	7516.080	1.947	OK	1.299	OK
17	W14X176	W18x46	W16x40	344.967	18909.943	9632.252	7.6	33.578	9848.851	7516.080	1.920	OK	1.282	OK
16	W14X176	W18x46	W16x40	366.597	18644.238	9496.909	7.6	33.556	9848.516	7516.080	1.893	OK	1.264	OK
15	W14X211	W18x46	W16x40	364.545	21002.202	10678.230	7.85	15.495	9581.744	7516.080	2.192	OK	1.421	OK
14	W14X211	W18x46	W16x40	527.921	22466.101	11405.867	7.85	16.439	9596.564	7516.080	2.341	OK	1.518	OK
13	W14X211	W21X55	W16x40	549.267	21304.140	10815.948	7.85	44.509	13671.759	7516.080	1.558	OK	1.439	OK
12	W14X211	W21X55	W16x40	570.225	21038.034	10680.848	7.85	44.475	13671.225	7516.080	1.539	OK	1.421	OK
11	W14X211	W21X55	W16x40	591.098	20774.904	10547.259	7.85	44.448	13670.801	7516.080	1.520	OK	1.403	OK
10	W14X211	W21X55	W16x40	611.746	20513.723	10414.659	7.85	15.459	13215.666	7516.080	1.552	OK	1.386	OK
9	W14X211	W21X55	W16x40	633.439	20247.385	10279.441	7.85	44.363	13669.467	7516.080	1.481	OK	1.368	OK
8	W14X233	W21X55	W16x40	655.002	21582.401	10947.864	8	44.434	13683.907	7516.080	1.577	OK	1.457	OK
7	W14X233	W21X55	W16x40	676.422	22917.535	11616.457	8	44.395	13683.283	7516.080	1.675	OK	1.546	OK
6	W14X233	W21X55	W16x40	697.537	22646.801	11479.227	8	44.344	13682.467	7516.080	1.655	OK	1.527	OK
5	W14X233	W21X55	W16x40	718.287	22380.332	11344.159	8	44.288	13681.571	7516.080	1.636	OK	1.509	OK
4	W14X233	W21X55	W16x40	738.675	22118.490	11211.436	8	44.232	13680.675	7516.080	1.617	OK	1.492	OK
3	W14X233	W21X55	W16x40	758.664	21861.492	11081.169	8	44.267	13681.226	7516.080	1.598	OK	1.474	OK
2	W14X233	W21X55	W16x40	778.440	21608.389	10952.876	8	44.211	13680.330	7516.080	1.580	OK	1.457	OK
1	W14X233	W21X55	W16x40	798.259	21356.368	10825.132	8	44.133	13679.082	7516.080	1.561	OK	1.440	OK

Cek Strong Kolom Weak Beam Kolom 3 (K3)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)		Xi	Vu pakai	ΣMpb (K-in)		Rasio			
		B1	B4	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X120	W14x22	W12x22	23.175	7492.819	7492.819	7.25	2.987	3444.459	898.603	2.175	OK	8.338	OK
29	W14X145	W16x36	W16x40	58.775	16494.938	8209.966	7.4	10.800	6643.882	3118.104	2.483	OK	2.633	OK
28	W14X145	W16x36	W16x40	80.383	17872.668	9142.557	7.4	18.154	6693.506	3118.104	2.670	OK	2.932	OK
27	W14X145	W16x36	W16x40	102.184	17608.351	9007.349	7.4	18.439	6715.447	3118.104	2.622	OK	2.889	OK
26	W14X145	W16x36	W16x40	124.175	17341.702	8870.947	7.4	18.439	6734.095	3118.104	2.575	OK	2.845	OK
25	W14X145	W16x36	W16x40	146.359	17072.720	8733.353	7.4	18.475	6751.263	3118.104	2.529	OK	2.801	OK
24	W14X145	W16x36	W16x40	168.716	16801.511	8594.619	7.4	18.475	6766.359	3118.104	2.483	OK	2.756	OK
23	W14X145	W18x40	W16x40	191.362	16527.488	8454.446	7.4	18.487	8292.327	3118.104	1.993	OK	2.711	OK

22	W14X176	W18x40	W16x40	214.144	18391.901	9386.104	7.6	18.475	8298.189	3118.104	2.216	OK	3.010	OK
21	W14X176	W18x40	W16x40	237.044	20252.738	10316.239	7.6	18.470	8298.151	3118.104	2.441	OK	3.308	OK
20	W14X176	W18x40	W16x40	259.892	19970.125	10172.282	7.6	18.461	8298.022	3118.104	2.407	OK	3.262	OK
19	W14X176	W18x40	W16x40	284.101	19679.425	10024.207	7.6	18.512	8297.893	3118.104	2.372	OK	3.215	OK
18	W14X176	W18x46	W16x40	308.483	19379.249	9871.305	7.6	18.495	9593.791	3118.104	2.020	OK	3.166	OK
17	W14X176	W18x46	W16x40	332.881	19077.906	9717.808	7.6	18.478	9593.661	3118.104	1.989	OK	3.117	OK
16	W14X176	W18x46	W16x40	357.296	18776.358	9564.208	7.6	18.456	9593.494	3118.104	1.957	OK	3.067	OK
15	W14X211	W18x46	W16x40	390.024	20899.389	10626.130	7.85	16.164	9460.108	3118.104	2.209	OK	3.408	OK
14	W14X211	W18x46	W16x40	440.289	22857.063	11604.355	7.85	14.343	9467.518	3118.104	2.414	OK	3.722	OK
13	W14X211	W21X55	W16x40	464.864	22386.296	11365.350	7.85	18.408	13322.359	3118.104	1.680	OK	3.645	OK
12	W14X211	W21X55	W16x40	489.274	22078.164	11208.914	7.85	18.391	13322.093	3118.104	1.657	OK	3.595	OK
11	W14X211	W21X55	W16x40	513.564	21771.825	11053.388	7.85	18.374	13321.881	3118.104	1.634	OK	3.545	OK
10	W14X211	W21X55	W16x40	537.389	21469.167	10899.731	7.85	18.352	13094.313	3118.104	1.640	OK	3.496	OK
9	W14X211	W21X55	W16x40	562.942	21158.563	10742.040	7.85	18.430	13321.213	3118.104	1.588	OK	3.445	OK
8	W14X257	W21X55	W16x40	588.319	24241.081	12271.846	8.2	18.391	13337.321	3118.104	1.818	OK	3.936	OK
7	W14X257	W21X55	W16x40	613.463	27322.362	13801.440	8.2	18.357	13337.001	3118.104	2.049	OK	4.426	OK
6	W14X257	W21X55	W16x40	638.233	27000.826	13639.021	8.2	18.335	13336.583	3118.104	2.025	OK	4.374	OK
5	W14X257	W21X55	W16x40	662.601	26684.289	13479.127	8.2	18.296	13336.123	3118.104	2.001	OK	4.323	OK
4	W14X257	W21X55	W16x40	686.490	26373.427	13322.101	8.2	18.245	13335.664	3118.104	1.978	OK	4.273	OK
3	W14X257	W21X55	W16x40	709.954	26068.389	13168.016	8.2	18.206	13335.946	3118.104	1.955	OK	4.223	OK
2	W14X257	W21X55	W16x40	732.894	25769.463	13017.018	8.2	18.172	13335.487	3118.104	1.932	OK	4.175	OK
1	W14X257	W21X55	W16x40	755.273	25477.527	12869.552	8.2	16.263	13334.847	3118.104	1.911	OK	4.127	OK

Cek Strong Kolom Weak Beam Kolom 4 (K4)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)		Xi	Vu pakai	ΣMpb (K-in)		Rasio			
		B3	B2	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X120	W12X19	W18X35	10.053	7571.625	7571.625	7.25	3.350	7031.034	1659.715	1.077	OK	4.562	OK
29	W14X145	W14X38	W21X55	35.284	16716.781	8321.051	7.4	17.367	13262.034	3788.928	1.260	OK	2.196	OK
28	W14X145	W14X38	W21X55	62.103	18127.011	9272.663	7.4	26.241	13306.670	3788.928	1.362	OK	2.447	OK
27	W14X145	W14X38	W21X55	90.127	17793.073	9101.841	7.4	27.152	13381.514	3788.928	1.330	OK	2.402	OK
26	W14X145	W14X38	W21X55	119.141	17445.769	8924.182	7.4	27.157	13443.674	3788.928	1.298	OK	2.355	OK
25	W14X145	W14X38	W21X55	149.036	17087.072	8740.695	7.4	27.202	13500.846	3788.928	1.266	OK	2.307	OK
24	W14X145	W14X38	W21X55	179.724	16718.183	8551.993	7.4	27.202	13550.915	3788.928	1.234	OK	2.257	OK
23	W14X145	W14X38	W21X55	211.334	16338.851	8357.950	7.4	27.202	13603.780	3788.928	1.201	OK	2.206	OK
22	W14X193	W14X38	W21X55	243.570	19330.876	9837.870	7.75	27.202	13676.490	3788.928	1.413	OK	2.596	OK
21	W14X193	W14X38	W21X57	276.320	22310.688	11312.461	7.75	27.197	14021.345	3047.616	1.591	OK	3.712	OK
20	W14X193	W14X38	W21X57	309.088	21901.200	11104.834	7.75	27.189	14026.755	3047.616	1.561	OK	3.644	OK
19	W14X193	W14X38	W21X57	341.721	21492.444	10897.577	7.75	30.049	14022.167	3047.616	1.533	OK	3.576	OK
18	W14X193	W14X38	W24X62	376.066	21073.831	10685.323	7.75	30.032	16673.977	3253.536	1.264	OK	3.284	OK
17	W14X193	W14X38	W24X62	410.355	20644.869	10467.821	7.75	30.015	16673.729	3253.536	1.238	OK	3.217	OK
16	W14X193	W14X38	W24X62	443.101	20225.900	10255.386	7.75	29.993	16583.054	3253.536	1.220	OK	3.152	OK
15	W14X211	W14X38	W24X62	461.611	21146.937	10729.630	7.85	25.311	16188.978	3253.536	1.306	OK	3.298	OK

14	W14X211	W14X38	W24X62	501.226	22023.445	11181.133	7.85	25.366	16210.582	3253.536	1.359	OK	3.437	OK
13	W14X211	W14X38	W24X62	536.663	21551.343	10941.451	7.85	29.950	16750.442	3253.536	1.287	OK	3.363	OK
12	W14X211	W14X38	W24X62	574.383	21091.162	10707.821	7.85	29.933	16833.301	3253.536	1.253	OK	3.291	OK
11	W14X211	W14X38	W24X62	612.479	20614.255	10465.699	7.85	29.899	16831.276	3253.536	1.225	OK	3.217	OK
10	W14X211	W14X38	W24X62	649.604	20141.091	10225.477	7.85	29.877	16829.062	3253.536	1.197	OK	3.143	OK
9	W14X257	W14X38	W24X62	685.541	19681.507	9992.150	7.85	29.972	16826.691	3253.536	1.170	OK	3.071	OK
8	W14X257	W14X38	W24X62	722.988	22602.383	11442.112	8.2	29.916	16872.602	3253.536	1.340	OK	3.517	OK
7	W14X257	W14X38	W24X62	760.470	25507.862	12884.875	8.2	29.894	16870.848	3253.536	1.512	OK	3.960	OK
6	W14X257	W14X38	W24X62	797.941	25025.030	12640.980	8.2	29.860	16868.650	3253.536	1.484	OK	3.885	OK
5	W14X257	W14X38	W24X62	835.388	24542.423	12397.199	8.2	29.821	16866.256	3253.536	1.455	OK	3.810	OK
4	W14X257	W14X38	W24X62	872.626	24061.317	12154.177	8.2	29.770	16863.582	3253.536	1.427	OK	3.736	OK
3	W14X257	W14X38	W24X62	911.544	23570.736	11906.367	8.2	29.714	16864.024	3253.536	1.398	OK	3.660	OK
2	W14X257	W14X38	W24X62	949.406	23076.134	11656.528	8.2	29.675	16861.351	3253.536	1.369	OK	3.583	OK
1	W14X257	W14X38	W24X62	983.521	22612.473	11422.317	8.2	25.670	16857.398	3253.536	1.341	OK	3.511	OK

Cek Strong Kolom Weak Beam Kolom 5 (K5)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)		Xi	Vu pakai	ΣMpb (K-in)		Rasio			
		B2	B4	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X193	W18X35	W12x22	11.688	12706.950	12706.950	7.75	12.703	11783.857	637.718	1.078	OK	19.926	OK
29	W14X211	W21X55	W16x40	4.035	26721.569	13558.075	7.85	19.532	22260.892	2212.848	1.200	OK	6.127	OK
28	W14X211	W21X55	W16x40	43.177	27783.021	14105.226	7.85	22.548	22308.244	2212.848	1.245	OK	6.374	OK
27	W14X211	W21X55	W16x40	82.263	27290.942	13855.401	7.85	27.605	22387.639	2212.848	1.219	OK	6.261	OK
26	W14X211	W21X55	W16x40	121.315	26799.429	13605.864	7.85	31.805	22453.579	2212.848	1.194	OK	6.149	OK
25	W14X211	W21X55	W16x40	160.362	26308.161	13356.451	7.85	35.668	22514.228	2212.848	1.169	OK	6.036	OK
24	W14X211	W21X55	W16x40	199.414	25816.893	13107.038	7.85	39.051	22567.341	2212.848	1.144	OK	5.923	OK
23	W14X211	W21X55	W16x40	238.422	25325.870	12857.750	7.85	42.623	22623.421	2212.848	1.119	OK	5.810	OK
22	W14X257	W21X55	W16x40	277.452	28284.959	14319.768	8.2	45.389	22698.620	2212.848	1.246	OK	6.471	OK
21	W14X257	W21X57	W16x40	316.521	31237.745	15779.231	8.2	47.710	23259.404	2212.848	1.343	OK	7.131	OK
20	W14X257	W21X57	W16x40	355.629	30734.145	15524.845	8.2	48.059	23265.128	2212.848	1.321	OK	7.016	OK
19	W14X257	W21X57	W16x40	394.654	30230.828	15270.603	8.2	47.763	23260.273	2212.848	1.300	OK	6.901	OK
18	W14X257	W24X62	W16x40	433.628	29728.374	15016.797	8.2	52.783	27698.601	2212.848	1.073	OK	6.786	OK
17	W14X257	W24X62	W16x40	472.658	29225.888	14762.974	8.2	52.767	27698.339	2212.848	1.055	OK	6.671	OK
16	W14X257	W24X62	W16x40	511.873	28721.849	14508.367	8.2	46.917	27602.399	2212.848	1.041	OK	6.556	OK
15	W14X283	W24X62	W16x40	538.960	30239.818	15281.572	8.35	21.219	27187.317	2212.848	1.112	OK	6.906	OK
14	W14X283	W24X62	W16x40	523.466	32111.216	16233.345	8.35	22.595	27210.297	2212.848	1.180	OK	7.336	OK
13	W14X283	W24X62	W16x40	562.861	31955.702	16154.728	8.35	56.981	27784.543	2212.848	1.150	OK	7.300	OK
12	W14X283	W24X62	W16x40	602.356	31442.396	15895.233	8.35	62.259	27872.680	2212.848	1.128	OK	7.183	OK
11	W14X283	W24X62	W16x40	641.941	30927.854	15635.114	8.35	62.130	27870.525	2212.848	1.110	OK	7.066	OK
10	W14X283	W24X62	W16x40	681.650	30411.919	15374.291	8.35	61.989	27868.171	2212.848	1.091	OK	6.948	OK
9	W14X283	W24X62	W16x40	721.376	29895.067	15113.005	8.35	61.838	27865.649	2212.848	1.073	OK	6.830	OK
8	W14X311	W24X62	W16x40	761.180	31504.504	15903.452	8.55	61.998	27893.121	2212.848	1.129	OK	7.187	OK

7	W14X311	W24X62	W16x40	801.091	33109.114	16691.825	8.55	61.891	27891.291	2212.848	1.187	OK	7.543	OK
6	W14X311	W24X62	W16x40	841.153	32581.502	16425.832	8.55	61.757	27889.000	2212.848	1.168	OK	7.423	OK
5	W14X311	W24X62	W16x40	881.361	32051.931	16158.851	8.55	61.611	27886.503	2212.848	1.149	OK	7.302	OK
4	W14X311	W24X62	W16x40	921.754	31520.176	15890.768	8.55	61.448	27883.716	2212.848	1.130	OK	7.181	OK
3	W14X311	W24X62	W16x40	962.298	30986.204	15621.569	8.55	61.475	27884.176	2212.848	1.111	OK	7.059	OK
2	W14X311	W24X62	W16x40	1003.017	30450.082	15351.285	8.55	61.312	27881.389	2212.848	1.092	OK	6.937	OK
1	W14X311	W24X62	W16x40	1044.033	29910.845	15079.431	8.55	61.071	27877.268	2212.848	1.073	OK	6.814	OK

Cek Strong Kolom Weak Beam Kolom 6 (K6)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)		Xi	Vu pakai	ΣMpb (K-in)		Rasio			
		B2	B4	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X193	W18X35	W12x22	14.790	12687.563	12687.563	7.75	12.703	5990.377	637.718	2.118	OK	19.895	OK
29	W14X211	W21X55	W16x40	52.440	26397.698	13393.661	7.85	19.532	11283.772	2212.848	2.339	OK	6.053	OK
28	W14X211	W21X55	W16x40	90.051	27183.686	13800.948	7.85	22.548	11331.124	2212.848	2.399	OK	6.237	OK
27	W14X211	W21X55	W16x40	127.696	26710.301	13560.614	7.85	27.605	11410.519	2212.848	2.341	OK	6.128	OK
26	W14X211	W21X55	W16x40	165.402	26236.319	13319.977	7.85	31.805	11476.459	2212.848	2.286	OK	6.019	OK
25	W14X211	W21X55	W16x40	203.169	25761.570	13078.951	7.85	35.668	11537.108	2212.848	2.233	OK	5.910	OK
24	W14X211	W21X55	W16x40	241.016	25285.933	12837.474	7.85	39.051	11590.221	2212.848	2.182	OK	5.801	OK
23	W14X257	W21X55	W16x40	278.868	24809.762	12595.725	7.85	42.623	11646.301	2212.848	2.130	OK	5.692	OK
22	W14X257	W21X57	W16x40	316.781	27777.191	14062.626	8.2	45.389	11721.500	2212.848	2.370	OK	6.355	OK
21	W14X257	W21X57	W16x40	354.779	30737.946	15526.765	8.2	47.710	12020.924	2212.848	2.557	OK	7.017	OK
20	W14X257	W21X57	W16x40	392.850	30247.924	15279.239	8.2	48.059	12026.648	2212.848	2.515	OK	6.905	OK
19	W14X257	W24X62	W16x40	430.663	29759.095	15032.315	8.2	47.763	12021.793	2212.848	2.475	OK	6.793	OK
18	W14X257	W24X62	W16x40	468.430	29272.224	14786.380	8.2	52.783	14282.121	2212.848	2.050	OK	6.682	OK
17	W14X257	W24X62	W16x40	544.241	28540.577	14416.801	8.2	52.767	14281.859	2212.848	1.998	OK	6.515	OK
16	W14X257	W24X62	W16x40	582.300	27807.049	14046.271	8.2	46.917	14185.919	2212.848	1.960	OK	6.348	OK
15	W14X283	W24X62	W16x40	582.300	29504.146	14909.846	8.35	21.219	13770.837	2212.848	2.143	OK	6.738	OK
14	W14X283	W24X62	W16x40	620.478	31198.001	15771.683	8.35	22.595	13793.817	2212.848	2.262	OK	7.127	OK
13	W14X283	W24X62	W16x40	658.683	30701.008	15520.436	8.35	56.981	14368.063	2212.848	2.137	OK	7.014	OK
12	W14X283	W24X62	W16x40	697.102	30202.446	15268.395	8.35	62.259	14456.200	2212.848	2.089	OK	6.900	OK
11	W14X283	W24X62	W16x40	735.728	29701.145	15014.970	8.35	62.130	14454.045	2212.848	2.055	OK	6.785	OK
10	W14X283	W24X62	W16x40	774.561	29197.150	14760.183	8.35	61.989	14451.691	2212.848	2.020	OK	6.670	OK
9	W14X311	W24X62	W16x40	813.311	28692.348	14504.988	8.35	61.838	14449.169	2212.848	1.986	OK	6.555	OK
8	W14X311	W24X62	W16x40	852.251	30305.490	15298.143	8.55	61.998	14476.641	2212.848	2.093	OK	6.913	OK
7	W14X311	W24X62	W16x40	891.410	31912.416	16088.515	8.55	61.891	14474.811	2212.848	2.205	OK	7.271	OK
6	W14X311	W24X62	W16x40	930.805	31394.166	15827.241	8.55	61.757	14472.520	2212.848	2.169	OK	7.152	OK
5	W14X311	W24X62	W16x40	970.424	30872.881	15564.437	8.55	61.611	14470.023	2212.848	2.134	OK	7.034	OK
4	W14X311	W24X62	W16x40	1010.289	30348.495	15300.071	8.55	61.448	14467.236	2212.848	2.098	OK	6.914	OK
3	W14X311	W24X62	W16x40	1050.385	29820.963	15034.117	8.55	61.475	14467.696	2212.848	2.061	OK	6.794	OK
2	W14X311	W24X62	W16x40	1090.717	29290.349	14766.610	8.55	61.312	14464.909	2212.848	2.025	OK	6.673	OK
1	W14X311	W24X62	W16x40	1131.317	28756.410	14497.427	8.55	61.071	14460.788	2212.848	1.989	OK	6.551	OK

Tabel Disain Tekan dan Tarik Bresing Struktur Frame Truss (FT) 30 LT

Rencana Bresing Tekan

Lantai	Profil	Cek Profil		K	L		λc	Fcr	ΦcPn	Pu Tekan	Cek	Rasio
		Sayap	Badan		m	In		(Ksi)	(Kips)	(Kips)		
30	W10X33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	135.39	Aman	0.75
29	W10X33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	12.27	Aman	0.07
28	W10X33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	40.67	Aman	0.23
27	W10X33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	51.93	Aman	0.29
26	W10X33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	62.5	Aman	0.35
25	W10X33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	72.32	Aman	0.40
24	W10X33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	80.58	Aman	0.45
23	W10X33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	87.84	Aman	0.49
22	W10X33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	95.64	Aman	0.53
21	W10X33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	101.26	Aman	0.56
20	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	110.67	Aman	0.51
19	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	113.85	Aman	0.52
18	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	117.75	Aman	0.54
17	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	122.13	Aman	0.56
16	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	86.13	Aman	0.40
15	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	53.61	Aman	0.25
14	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	96.32	Aman	0.44
13	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	144.14	Aman	0.66
12	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	153.02	Aman	0.70
11	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	156.97	Aman	0.72
10	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	110.67	Aman	0.51
9	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	113.85	Aman	0.52
8	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	117.75	Aman	0.54
7	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	122.13	Aman	0.56
6	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	86.13	Aman	0.40
5	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	53.61	Aman	0.25
4	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	96.32	Aman	0.44
3	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	144.14	Aman	0.66
2	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	153.02	Aman	0.70
1	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	156.97	Aman	0.72

29	W14X132	W16x36	W16X36	106.053	15381.791	7414.482	7.35	17.367	6844.735	6589.440	2.247	OK	1.125	OK
28	W14X132	W16x36	W16X36	126.995	15442.504	7457.278	7.35	26.241	6975.183	6589.440	2.214	OK	1.132	OK
27	W14X132	W16x36	W16X36	147.997	15189.543	7335.121	7.35	27.152	6988.569	6589.440	2.173	OK	1.113	OK
26	W14X132	W16x36	W16X36	169.168	14935.201	7212.298	7.35	27.157	6988.642	6589.440	2.137	OK	1.095	OK
25	W14X132	W16x36	W16X36	190.464	14679.085	7088.618	7.35	27.202	6989.308	6589.440	2.100	OK	1.076	OK
24	W14X132	W16x36	W16X36	211.887	14421.450	6964.205	7.35	27.202	6989.308	6589.440	2.063	OK	1.057	OK
23	W14X132	W16x36	W16X36	233.424	14162.361	6839.089	7.35	27.202	6989.308	6589.440	2.026	OK	1.038	OK
22	W14X159	W16x36	W16X36	255.031	15780.916	7846.869	7.5	27.202	6997.468	6589.440	2.255	OK	1.191	OK
21	W14X159	W16x36	W16X36	276.678	17396.324	8849.698	7.5	27.197	6997.393	6589.440	2.486	OK	1.343	OK
20	W14X159	W16x36	W16X36	298.307	17130.366	8714.402	7.5	27.189	6997.270	6589.440	2.448	OK	1.322	OK
19	W14X159	W16x36	W16x40	320.973	16858.146	8575.921	7.5	30.049	7040.182	7516.080	2.395	OK	1.141	OK
18	W14X159	W16x36	W16x40	343.622	16579.658	8434.251	7.5	30.032	7039.927	7516.080	2.355	OK	1.122	OK
17	W14X159	W16x36	W16x40	366.223	16301.569	8292.784	7.5	30.015	7039.672	7516.080	2.316	OK	1.103	OK
16	W14X159	W16x36	W16x40	388.947	16023.019	8151.083	7.5	29.993	7039.342	7516.080	2.276	OK	1.084	OK
15	W14X176	W16x36	W16x40	404.418	16963.348	8635.431	7.6	25.311	6974.174	7516.080	2.432	OK	1.149	OK
14	W14X176	W16x36	W16x40	520.387	17326.919	8825.899	7.6	25.366	6975.003	7516.080	2.484	OK	1.174	OK
13	W14X176	W18X40	W16x40	542.883	16471.537	8390.189	7.6	29.950	8527.311	7516.080	1.932	OK	1.116	OK
12	W14X176	W18X40	W16x40	565.078	16195.453	8249.559	7.6	29.933	8527.052	7516.080	1.899	OK	1.098	OK
11	W14X176	W18X40	W16x40	587.207	15921.637	8110.084	7.6	29.899	8526.536	7516.080	1.867	OK	1.079	OK
10	W14X176	W18X40	W16x40	609.068	15649.884	7971.660	7.6	29.877	8526.201	7516.080	1.836	OK	1.061	OK
9	W14X176	W18X40	W16x40	632.222	15371.799	7830.010	7.6	29.972	8527.645	7516.080	1.803	OK	1.042	OK
8	W14X193	W18X40	W16x40	655.120	16299.881	8282.491	7.75	29.916	8535.769	7516.080	1.910	OK	1.102	OK
7	W14X193	W18X40	W16x40	677.720	17229.750	8736.211	7.75	29.894	8535.428	7516.080	2.019	OK	1.162	OK
6	W14X193	W18X40	W16x40	699.931	16949.681	8594.205	7.75	29.860	8534.901	7516.080	1.986	OK	1.143	OK
5	W14X193	W18X40	W16x40	721.674	16674.969	8454.914	7.75	29.821	8534.296	7516.080	1.954	OK	1.125	OK
4	W14X193	W18X40	W16x40	742.911	16406.344	8318.710	7.75	29.770	8533.506	7516.080	1.923	OK	1.107	OK
3	W14X193	W18X40	W16x40	763.596	16144.331	8185.858	7.75	29.714	8532.638	7516.080	1.892	OK	1.089	OK
2	W14X193	W18X40	W16x40	783.747	15889.106	8056.448	7.75	29.675	8532.033	7516.080	1.862	OK	1.072	OK
1	W14X193	W18X40	W16x40	803.405	15640.300	7930.293	7.75	25.670	8469.949	7516.080	1.847	OK	1.055	OK

Cek Strong Kolom Weak Beam Kolom 3 (K3)

Lantai	Profil Kolom	Profil Balok		Pu, k	ΣMpc (K-in)		Xi	Vu pakai	ΣMpb (K-in)		Rasio			
		B1	B2	Kips	Arah X	Arah Y	in	Kips	Arah X	Arah Y	Arah X	Cek	Arah Y	Cek
30	W14X132	W12x19	W12X16	9.161	8368.751	8368.751	7.35	3.350	2567.735	554.875	3.259	OK	15.082	OK
29	W14X145	W16x36	W16X36	31.339	17537.928	8731.706	7.4	17.367	6717.956	2651.616	2.611	OK	3.293	OK
28	W14X145	W16x36	W16X36	55.746	18189.740	9304.752	7.4	26.241	6783.623	2651.616	2.681	OK	3.509	OK
27	W14X145	W16x36	W16X36	80.196	17892.250	9152.574	7.4	27.152	6790.362	2651.616	2.635	OK	3.452	OK
26	W14X145	W16x36	W16X36	104.784	17593.658	8999.833	7.4	27.157	6790.399	2651.616	2.591	OK	3.394	OK
25	W14X145	W16x36	W16X36	129.473	17293.611	8846.347	7.4	27.202	6790.734	2651.616	2.547	OK	3.336	OK
24	W14X145	W16x36	W16X36	154.267	16992.309	8692.220	7.4	27.202	6790.734	2651.616	2.502	OK	3.278	OK
23	W14X145	W16x36	W16X36	179.736	16686.258	8535.663	7.4	27.202	6790.734	2651.616	2.457	OK	3.219	OK
22	W14X159	W16x36	W16X36	205.243	17336.245	8842.507	7.5	27.202	6793.454	2651.616	2.552	OK	3.335	OK

Rencana Bresing Tarik

Lantai	Profil	Kondisi leleh Pada Ag			Kondisi Patah Pada Ae									
		ΦtPn	Pu Tarik	Cek	Rasio	Jumlah Baut	D Baut	L Sambungan (In)	An	U	Ae	ΦtPn	Cek	Rasio
	WF	(Kips)	(Kips)				(In)		(In^2)		(In^2)	(Kips)		
30	W10X33	314.604	-189.85	aman	-1.66	2	0.750	6	4.870	0.850	4.140	180.075	aman	-1.05
29	W10X33	314.604	-63.74	aman	-4.94	2	0.750	6	4.870	0.850	4.140	180.075	aman	-0.35
28	W10X33	314.604	-29.27	aman	-10.75	2	0.750	6	4.870	0.850	4.140	180.075	aman	-0.16
27	W10X33	314.604	-16.32	aman	-19.28	2	0.750	6	4.870	0.850	4.140	180.075	aman	-0.09
26	W10X33	314.604	-4.27	aman	-73.68	2	0.750	6	4.870	0.850	4.140	180.075	aman	-0.02
25	W10X33	314.604	6.97	aman	45.14	2	0.750	6	4.870	0.850	4.140	180.075	aman	0.04
24	W10X33	314.604	16.29	aman	19.31	2	0.750	6	4.870	0.850	4.140	180.075	aman	0.09
23	W10X33	314.604	24.69	aman	12.74	2	0.750	6	4.870	0.850	4.140	180.075	aman	0.14
22	W10X33	314.604	33.63	aman	9.35	2	0.750	6	4.870	0.850	4.140	180.075	aman	0.19
21	W10X33	314.604	-39.8	aman	-7.90	2	0.750	6	4.870	0.850	4.140	180.075	aman	-0.22
20	W12X40	379.08	-50.67	aman	-7.48	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.31
19	W12X40	379.08	53.84	aman	7.04	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.33
18	W12X40	379.08	58.97	aman	6.43	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.36
17	W12X40	379.08	63.49	aman	5.97	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.39
16	W12X40	379.08	15.96	aman	23.75	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.10
15	W12X40	379.08	-168.81	aman	-2.25	2	0.750	6	4.437	0.850	3.771	164.040	aman	-1.03
14	W12X40	379.08	25.19	aman	15.05	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.15
13	W12X40	379.08	83.53	aman	4.54	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.51
12	W12X40	379.08	93.58	aman	4.05	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.57
11	W12X40	379.08	96.89	aman	3.91	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.59
10	W12X40	379.08	116.86	aman	3.24	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.71
9	W12X40	379.08	118.24	aman	3.21	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.72
8	W12X40	379.08	118.97	aman	3.19	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.73
7	W12X40	379.08	122.76	aman	3.09	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.75
6	W12X40	379.08	125.78	aman	3.01	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.77
5	W12X40	379.08	128.61	aman	2.95	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.78
4	W12X40	379.08	130.1	aman	2.91	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.79
3	W12X40	379.08	130.24	aman	2.91	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.79
2	W12X40	379.08	132.02	aman	2.87	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.80
1	W12X40	379.08	84.39	aman	4.49	2	0.750	6	4.437	0.850	3.771	164.040	aman	0.51

Tabel Disain Tekan dan Tarik Outrigger Untuk Stuktur Frame Truss 30 Lt

Rencana Bresing Tekan

Lantai	Profil	Cek Profil		K	L	L	λc	Fcr	ΦcPn	Pu Tekan	Cek	Rasio
		Sayap	Badan		m	In		(Ksi)	(Kips)	(Kips)		
30	W12X40	Kompak	Kompak	1	4.8	188.976	1.092	21.851	217.309	98.33	Aman	0.45
15	W14X43	Kompak	Kompak	1	4.8	188.976	1.120	21.304	228.166	34.09	Aman	0.15

Rencana Bresing Tarik

Lantai	Profil	Kondisi leleh Pada Ag			Kondisi Patah Pada Ae									
		ΦtPn	Pu Tarik	Cek	Rasio	Jumlah Baut	D Baut	L Sambungan	An	U	Ae	ΦtPn	Cek	Rasio
	WF	(Kips)	(Kips)				(In)	(In)	(In^2)		(In^2)	(Kips)		
30	W12X40	379.08	162.23	aman	2.34	2	0.750	6	4.437	0.850	3.771	166.868	aman	0.97
15	W14X43	408.24	159.48	aman	2.56	2	0.750	6	4.407	0.850	3.746	165.754	aman	0.96

Tabel Tekan dan Tarik Bresing Struktur Outrigger & Belttruss/ Core Brace (CB) 30 Lt

Rencana Bresing Tekan

Lantai	Profil	Cek Profil		K	L		λc	Fcr	ΦcPn	Pu Tekan	Cek	Rasio
		Sayap	Badan		m	In		(Ksi)	(Kips)	(Kips)		
30	W10x33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	31.66	Aman	0.18
29	W10x33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	71.51	Aman	0.40
28	W10x33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	88.4	Aman	0.49
27	W10x33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	98.79	Aman	0.55
26	W10x33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	107.92	Aman	0.60
25	W10x33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	116.23	Aman	0.64
24	W10x33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	123.16	Aman	0.68
23	W10x33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	129.25	Aman	0.72
22	W10x33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	135.49	Aman	0.75
21	W10x33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	138.96	Aman	0.77
20	W10x39	Kompak	Kompak	1	4.8	188.976	1.072	22.255	217.540	172.89	Aman	0.79
19	W10x39	Kompak	Kompak	1	4.8	188.976	1.072	22.255	217.540	173.67	Aman	0.80
18	W10x39	Kompak	Kompak	1	4.8	188.976	1.072	22.255	217.540	173.91	Aman	0.80
17	W10x39	Kompak	Kompak	1	4.8	188.976	1.072	22.255	217.540	168.11	Aman	0.77
16	W10x39	Kompak	Kompak	1	4.8	188.976	1.072	22.255	217.540	124.72	Aman	0.57
15	W10x39	Kompak	Kompak	1	4.8	188.976	1.072	22.255	217.540	42.8	Aman	0.20
14	W10x39	Kompak	Kompak	1	4.8	188.976	1.072	22.255	217.540	132.21	Aman	0.61
13	W10x39	Kompak	Kompak	1	4.8	188.976	1.072	22.255	217.540	181.5	Aman	0.83
12	W10x39	Kompak	Kompak	1	4.8	188.976	1.072	22.255	217.540	193.46	Aman	0.89
11	W10x39	Kompak	Kompak	1	4.8	188.976	1.072	22.255	217.540	191.23	Aman	0.88
10	W10x49	Kompak	Kompak	1	4.8	188.976	0.833	26.934	329.666	172.89	Aman	0.52
9	W10x49	Kompak	Kompak	1	4.8	188.976	0.833	26.934	329.666	173.67	Aman	0.53
8	W10x49	Kompak	Kompak	1	4.8	188.976	0.833	26.934	329.666	173.91	Aman	0.53
7	W10x49	Kompak	Kompak	1	4.8	188.976	0.833	26.934	329.666	168.11	Aman	0.51
6	W10x49	Kompak	Kompak	1	4.8	188.976	0.833	26.934	329.666	124.72	Aman	0.38
5	W10x49	Kompak	Kompak	1	4.8	188.976	0.833	26.934	329.666	42.8	Aman	0.13
4	W10x49	Kompak	Kompak	1	4.8	188.976	0.833	26.934	329.666	132.21	Aman	0.40
3	W10x49	Kompak	Kompak	1	4.8	188.976	0.833	26.934	329.666	181.5	Aman	0.55
2	W10x49	Kompak	Kompak	1	4.8	188.976	0.833	26.934	329.666	193.46	Aman	0.59
1	W10x49	Kompak	Kompak	1	4.8	188.976	0.833	26.934	329.666	191.23	Aman	0.58

Tabel Disain Tekan dan Tarik Outrigger Untuk Sruktur Core Brace (CB) 30 Lt

Rencana Bresing Tekan

Lantai	Profil	Cek Profil		K	L		λc	Fcr	ΦcPn	Pu Tekan	Cek	Rasio
		Sayap	Badan		m	In		(Ksi)	(Kips)	(Kips)		
30	W10X33	Kompak	Kompak	1	4.8	188.976	1.092	21.851	180.348	4.13	Aman	0.02
15	W12X65	Kompak	Kompak	1	4.8	188.976	0.703	29.281	475.378	119.4	Aman	0.25

Rencana Bresing Tarik

Lantai	Profil	Kondisi leleh Pada Ag			Kondisi Patah Pada Ae									
		ΦtPn	Pu Tarik	Cek	Rasio	Jumlah Baut	D Baut	L Sambungan (In)	An	U	Ae	ΦtPn	Cek	Rasio
	WF	(Kips)	(Kips)				(In)		(In^2)		(In^2)	(Kips)		
30	W10X33	314.604	-54.24	aman	-5.80	2	0.750	6	4.870175	0.850	4.140	183.1795	aman	-0.296
15	W12X65	618.84	29.65	aman	20.87	2	0.750	6	11.87013	0.850	10.090	446.4651	aman	0.066

Tabel Disain Tekan dan Tarik Belttruss Untuk Sruktur Core Brace (CB) 30 Lt

Rencana Bresing Tekan

Lantai	Profil	Cek Profil		K	L		λc	Fcr	ΦcPn	Pu Tekan	Cek	Rasio
		Sayap	Badan		m	In		(Ksi)	(Kips)	(Kips)		
30	W12x30	Kompak	Kompak	1	7.07	278.346	2.05518	7.47482828	55.84818	17.82	Aman	0.319
15	W12X50	Kompak	Kompak	1	7.07	278.346	1.5905	12.4806089	154.8844	122.72	Aman	0.792

Rencana Bresing Tarik

Lantai	Profil	Kondisi leleh Pada Ag				Kondisi Patah Pada Ae								
		ΦtPn	Pu Tarik	Cek	Rasio	Jumlah Baut	D Baut	L Sambungan (In)	An	U	Ae	ΦtPn	Cek	Rasio
	WF	(Kips)	(Kips)				(In)		(In^2)		(In^2)	(Kips)		
30	W12x30	284.796	15.94	aman	17.8668	2	0.75	6	2.3395	0.85	1.98858	87.99444	aman	0.181
15	W12X50	473.04	66.76	aman	7.08568	2	0.75	6	5.97825	0.85	5.08151	224.8569	aman	0.297

Rasio Simpangan akibat parkfield terhadap OF				Rasio *Inter Story Drift* akibat Parkfield Terhadap OF			Rasio Momen Balok akibat Parkfield Terhadap OF			Rasio Geser Balok akibat Parkfield Terhadap OF		
Lantai	4 FT thd OF	3 FT thd OF	2 FT thd OF	4 FT thd OF	3 FT thd OF	2 FT thd OF	4 FT thd OF	3 FT thd OF	2 FT thd OF	4 FT thd OF	3 FT thd OF	2 FT thd OF
20	0.6237	0.6775	0.6885	0.3812	0.3706	0.3129	0.3322	0.3487	0.2263	0.5869	0.5955	0.5852
19	0.6214	0.6767	0.6911	0.8324	0.8828	0.9317	0.5223	0.5247	0.5128	0.7263	0.7276	0.7202
18	0.5789	0.6325	0.6517	0.8898	0.9464	1.0134	0.5990	0.6100	0.5580	0.7625	0.7691	0.7366
17	0.5297	0.5765	0.6051	0.8715	0.9235	0.9947	0.6175	0.6274	0.5741	0.7670	0.7734	0.7392
16	0.4940	0.5294	0.5692	0.8112	0.9430	1.0153	0.6779	0.6720	0.6369	0.8072	0.8025	0.7798
15	0.4687	0.5000	0.5504	0.3414	0.8943	1.0575	0.5030	0.6736	0.6685	0.6886	0.8014	0.7974
14	0.4760	0.5015	0.5512	0.8599	0.2847	1.0023	0.4865	0.4489	0.6674	0.6734	0.6482	0.7939
13	0.4854	0.5338	0.5708	0.7755	0.7175	0.7785	0.6257	0.4171	0.6330	0.7623	0.6195	0.7665
12	0.5164	0.5680	0.6059	0.6299	0.6667	0.6107	0.5306	0.5181	0.5359	0.6805	0.6720	0.6841
11	0.5563	0.6105	0.6516	0.4795	0.5691	0.4559	0.5064	0.4958	0.4959	0.6587	0.6504	0.6510
10	0.6013	0.6536	0.7046	0.1519	0.4764	0.1259	0.3314	0.4716	0.3189	0.5309	0.6320	0.5219
9	0.6644	0.6807	0.7822	0.4627	0.4779	0.4091	0.3523	0.4771	0.3529	0.5506	0.6398	0.5511
8	0.6789	0.6889	0.8048	0.6129	0.5000	0.5524	0.5614	0.5537	0.5711	0.7027	0.6969	0.7096
7	0.6596	0.6818	0.7894	0.6903	0.1951	0.6513	0.6629	0.5020	0.6705	0.7781	0.6677	0.7832
6	0.6381	0.7505	0.7752	0.6450	0.6120	0.7160	0.6768	0.5133	0.6747	0.7846	0.6702	0.7827
5	0.6341	0.7682	0.7682	0.2455	0.7265	0.7649	0.5091	0.6432	0.6460	0.6607	0.7562	0.7578
4	0.7563	0.7766	0.7648	0.6446	0.7343	0.7517	0.5524	0.6901	0.6700	0.6845	0.7856	0.7714
3	0.8083	0.7961	0.7694	0.7194	0.7270	0.7232	0.6823	0.6891	0.6454	0.7775	0.7816	0.7502
2	0.8723	0.8468	0.8043	0.7869	0.7709	0.7430	0.6839	0.6901	0.6251	0.7801	0.7845	0.7382
1	1.0375	1.0000	0.9250	1.0460	0.9972	0.9333	0.7942	0.7957	0.7008	0.8679	0.8688	0.8052
Rata-rata	**0.6351**	**0.6725**	**0.7012**	**0.6439**	**0.6708**	**0.7272**	**0.5604**	**0.5681**	**0.5692**	**0.7115**	**0.7172**	**0.7213**

Rasio Momen Kolom akibat parkfield terhadap Open frame				Rasio Geser Kolom akibat Parkfield Terhadap OF			Rasio Aksial Kolom akibat Parkfield Terhadap OF		
Tingkat	4 FT thd OF	3 FT thd OF	2 FT thd OF	4 FT thd OF	3 FT thd OF	2 FT thd OF	4 FT thd OF	3 FT thd OF	2 FT thd OF
20	1.726	1.840	1.726	1.315	1.341	0.797	0.700	0.71	0.70
19	1.644	1.665	1.644	0.830	0.848	0.778	3.125	3.20	3.18
18	0.501	0.514	0.501	0.611	0.622	0.562	2.205	2.25	2.23
17	0.474	0.484	0.474	0.641	0.682	0.622	1.837	1.87	1.85
16	0.473	0.534	0.473	1.094	0.718	0.722	1.646	1.67	1.66
15	1.163	0.593	1.163	0.998	1.051	0.717	1.479	1.55	1.54
14	0.873	1.184	0.873	0.972	1.115	0.678	1.857	1.42	1.46
13	0.628	0.952	0.628	0.549	0.847	0.587	1.745	1.82	1.41
12	0.527	0.536	0.527	0.539	0.518	0.544	1.653	1.71	1.36
11	0.554	0.532	0.554	0.818	0.514	0.751	1.581	1.63	1.32
10	1.207	0.612	1.207	0.943	0.514	0.964	1.488	1.56	1.26
9	0.784	0.444	0.784	0.776	0.460	0.768	1.683	1.50	1.54
8	0.444	0.390	0.444	0.598	0.911	0.596	1.613	1.45	1.48
7	0.453	0.897	0.453	0.645	0.898	0.668	1.554	1.38	1.43
6	0.464	0.769	0.464	0.899	0.845	0.591	1.507	1.41	1.39
5	1.094	0.549	1.094	0.710	0.571	0.580	1.449	1.37	1.36
4	0.898	0.613	0.898	0.911	0.629	0.593	1.447	1.35	1.33
3	0.669	0.638	0.669	0.542	0.559	0.507	1.423	1.33	1.32
2	0.540	0.543	0.540	0.479	0.481	0.424	1.402	1.31	1.30
1	0.370	0.371	0.370	0.655	0.648	0.506	1.381	1.29	1.28
Rata-rata	**0.774**	**0.733**	**0.774**	**0.776**	**0.739**	**0.648**	**1.55**	**1.63**	**1.47**

LAMPIRAN E – 2 & 3

Lantai	Rasio Simpangan *Frame Truss* Terhadap Core Brace					Rasio *Inter Story Drift Frame truss* Terhadap Core Brace				
	Angin	Statik	Koyna	Elcentro	Parkfield	Angin	Statik	Koyna	Elcentro	Parkfield
20	0.627	0.762	0.779	0.800	0.882	0.61	0.88	0.79	0.45	1.18
19	0.628	0.770	0.777	0.790	0.879	0.72	0.99	0.78	0.53	1.34
18	0.626	0.759	0.772	0.780	0.860	0.70	0.96	0.73	0.49	1.23
17	0.622	0.743	0.764	0.770	0.843	0.69	0.95	0.73	0.48	1.17
16	0.618	0.725	0.770	0.750	0.828	0.69	0.95	0.76	0.46	1.14
15	0.613	0.705	0.718	0.740	0.812	0.72	1.01	0.90	0.48	1.20
14	0.606	0.685	0.672	0.710	0.805	0.72	1.00	0.97	0.48	1.18
13	0.596	0.664	0.665	0.680	0.809	0.70	0.97	0.91	0.47	1.14
12	0.589	0.641	0.674	0.620	0.821	0.68	0.94	0.87	0.46	1.07
11	0.580	0.617	0.681	0.580	0.837	0.67	0.94	0.89	0.48	1.04
10	0.571	0.603	0.682	0.570	0.851	0.65	0.92	0.88	0.49	0.97
9	0.567	0.651	0.681	0.650	0.856	0.61	0.84	0.74	0.45	0.76
8	0.562	0.649	0.674	0.630	0.871	0.59	0.80	0.70	0.44	0.75
7	0.558	0.634	0.670	0.600	0.891	0.58	0.78	0.67	0.44	0.77
6	0.554	0.620	0.672	0.570	0.912	0.57	0.77	0.67	0.42	0.81
5	0.551	0.606	0.688	0.560	0.938	0.59	0.79	0.71	0.43	0.90
4	0.535	0.594	0.704	0.570	0.950	0.58	0.77	0.68	0.43	0.93
3	0.525	0.585	0.714	0.600	0.958	0.55	0.73	0.68	0.43	0.94
2	0.508	0.593	0.707	0.630	0.969	0.52	0.67	0.72	0.43	0.91
1	0.480	0.660	0.676	0.750	0.987	0.49	0.64	0.69	0.43	0.87
Rata-rata	**0.576**	**0.663**	**0.707**	**0.668**	**0.878**	**0.63**	**0.87**	**0.77**	**0.46**	**1.02**

Lantai	Rasio Momen Balok *Frame Truss* Terhadap Core Brace					Rasio Geser Balok *Frame Truss* Terhadap Core Brace				
	Angin	**Statik**	**Koyna**	**Elcentro**	**Parkfield**	**Angin**	**Statik**	**Koyna**	**Elcentro**	**Parkfield**
20	0.622	0.388	0.768	0.786	0.801	0.844	0.749	0.626	0.811	0.751
19	0.862	0.774	0.933	0.836	0.834	0.937	0.899	0.964	0.919	0.917
18	0.875	0.824	0.876	0.786	0.761	0.952	0.926	0.951	0.898	0.883
17	0.869	0.832	0.871	0.792	0.758	0.953	0.932	0.952	0.898	0.878
16	0.837	0.811	0.852	0.774	0.745	0.949	0.930	0.954	0.891	0.873
15	0.846	0.831	0.863	0.807	0.794	0.956	0.943	0.962	0.912	0.905
14	0.870	0.862	0.879	0.841	0.853	0.963	0.955	0.966	0.932	0.940
13	0.885	0.877	0.886	0.836	0.875	0.963	0.957	0.962	0.924	0.949
12	0.891	0.886	0.871	0.824	0.887	0.961	0.957	0.950	0.912	0.952
11	0.902	0.895	0.885	0.838	0.882	0.961	0.957	0.952	0.917	0.946
10	0.913	0.863	0.923	0.818	0.841	0.955	0.932	0.958	0.906	0.920
9	0.921	0.867	0.961	0.849	0.913	0.947	0.923	0.963	0.912	0.943
8	0.944	0.932	0.989	0.865	0.956	0.944	0.941	0.966	0.904	0.956
7	0.960	0.962	0.998	0.880	1.007	0.944	0.947	0.962	0.905	0.977
6	0.984	0.994	1.026	0.872	1.006	0.946	0.954	0.967	0.893	0.971
5	1.027	1.046	1.069	0.887	1.025	0.954	0.967	0.975	0.894	0.973
4	1.081	1.115	1.099	0.914	1.048	0.958	0.977	0.969	0.895	0.970
3	1.048	1.099	1.077	0.884	0.998	0.954	0.979	0.969	0.882	0.948
2	1.003	1.067	1.042	0.836	0.932	0.947	0.976	0.965	0.862	0.919
1	0.987	1.048	1.004	0.810	0.895	0.944	0.971	0.952	0.850	0.901
Rata-rata	**0.916**	**0.899**	**0.944**	**0.837**	**0.891**	**0.9466**	**0.9385**	**0.9444**	**0.8958**	**0.9235**

Lantai	Rasio Momen Kolom *Frame Truss* Terhadap Core Brace					Rasio Geser Kolom *Frame Truss* Terhadap Core Brace					Rasio Aksial Kolom *Frame Truss* Terhadap Core Brace				
	Angin	Statik	Koyna	Elcentro	Parkfield	Angin	Statik	Koyna	Elcentro	Parkfield	Angin	Statik	Koyna	Elcentro	Parkfield
20	0.06	0.78	0.19	0.36	0.795	0.405	0.791	1.126	1.156	0.740	0.245	0.194	0.264	0.237	0.228
19	0.90	1.10	1.23	1.38	1.012	0.955	0.992	0.990	0.918	0.994	0.990	1.096	1.051	1.357	1.294
18	0.89	0.97	0.91	0.91	0.937	0.890	0.930	0.831	0.796	0.943	0.993	1.071	1.037	1.266	1.215
17	0.90	0.95	0.87	0.83	0.952	0.917	0.943	0.868	0.817	0.951	0.995	1.056	1.031	1.210	1.167
16	0.86	0.93	0.87	0.82	0.944	0.891	0.921	0.813	0.780	0.927	0.996	1.047	1.027	1.171	1.133
15	0.96	0.92	0.78	0.72	1.012	0.989	0.987	0.994	0.991	0.996	0.998	1.041	1.025	1.146	1.113
14	0.97	0.99	0.96	0.91	0.963	0.960	0.978	0.920	0.945	0.972	1.000	1.038	1.023	1.128	1.100
13	0.97	0.95	0.96	0.94	0.952	0.958	0.961	0.893	0.955	0.966	1.001	1.036	1.021	1.115	1.091
12	0.96	0.98	0.94	0.96	0.941	0.946	0.921	0.854	0.947	0.945	1.002	1.033	1.019	1.103	1.084
11	1.05	0.97	0.86	0.97	0.965	1.011	0.989	0.965	0.940	0.986	1.002	1.031	1.016	1.093	1.078
10	1.43	0.97	0.98	0.99	1.321	0.926	0.953	0.928	1.008	0.883	1.070	1.067	1.088	1.104	1.117
9	0.94	0.94	0.87	0.91	0.919	0.959	0.951	0.880	0.901	0.933	1.061	1.123	1.051	1.168	1.132
8	0.92	0.94	0.90	0.90	0.856	0.893	0.946	0.831	0.938	0.887	1.057	1.114	1.046	1.155	1.122
7	0.95	0.98	0.81	0.85	0.887	0.930	0.948	0.861	0.992	0.910	1.053	1.107	1.043	1.145	1.112
6	0.90	0.96	0.89	0.95	0.870	0.895	0.927	0.769	0.901	0.872	1.049	1.101	1.040	1.137	1.103
5	1.00	0.92	0.81	0.91	0.965	1.003	0.998	0.893	1.038	0.961	1.046	1.096	1.038	1.130	1.095
4	1.01	1.02	0.91	1.06	0.883	0.971	0.934	0.836	0.954	0.927	1.044	1.092	1.036	1.123	1.087
3	1.02	0.99	0.90	1.05	0.846	0.967	0.940	0.803	0.899	0.906	1.041	1.088	1.035	1.118	1.080
2	1.02	0.95	0.88	1.01	0.817	0.956	0.896	0.736	0.813	0.869	1.038	1.084	1.034	1.112	1.073
1	0.85	0.95	0.80	0.89	0.833	0.838	0.782	0.629	0.737	0.757	1.036	1.080	1.032	1.106	1.068
Rata-rata	**0.928**	**0.958**	**0.865**	**0.917**	**0.933**	**0.913**	**0.934**	**0.871**	**0.921**	**0.916**	**0.986**	**1.030**	**0.998**	**1.106**	**1.075**

LAMPIRAN E – 6

Lantai	Rasio Simpangan *Frame truss* Terhadap OF					Rasio *Inter Story Drift Frame truss* Terhadap OF				
	Angin	Statik	Koyna	Elcentro	Parkfield	Angin	Statik	Koyna	Elcentro	Parkfield
20	0.672	0.762	0.570	0.800	0.689	0.56	0.35	0.24	0.29	0.31
19	0.676	0.770	0.573	0.790	0.691	1.32	1.04	0.76	0.90	0.93
18	0.663	0.759	0.560	0.780	0.652	1.25	1.09	0.94	0.83	1.01
17	0.647	0.743	0.535	0.770	0.605	1.14	1.04	0.90	0.75	0.99
16	0.631	0.725	0.504	0.750	0.569	1.05	1.00	0.82	0.74	1.02
15	0.614	0.705	0.479	0.740	0.550	0.97	0.94	0.80	0.70	1.06
14	0.596	0.685	0.453	0.710	0.551	0.90	0.89	0.81	0.67	1.00
13	0.578	0.664	0.453	0.680	0.571	0.85	0.86	0.84	0.66	0.78
12	0.561	0.641	0.464	0.620	0.606	0.81	0.82	0.70	0.59	0.61
11	0.541	0.617	0.472	0.580	0.652	0.67	0.69	0.56	0.48	0.46
10	0.530	0.603	0.475	0.570	0.705	0.19	0.18	0.16	0.14	0.13
9	0.566	0.651	0.505	0.650	0.782	0.59	0.61	0.44	0.38	0.41
8	0.563	0.649	0.497	0.630	0.805	0.65	0.68	0.49	0.39	0.55
7	0.550	0.634	0.471	0.600	0.789	0.62	0.66	0.53	0.38	0.65
6	0.538	0.620	0.443	0.570	0.775	0.59	0.63	0.50	0.40	0.72
5	0.528	0.606	0.426	0.560	0.768	0.55	0.59	0.45	0.42	0.76
4	0.517	0.594	0.427	0.570	0.765	0.53	0.57	0.42	0.43	0.75
3	0.520	0.585	0.436	0.600	0.769	0.49	0.53	0.39	0.43	0.72
2	0.525	0.593	0.453	0.630	0.804	0.49	0.53	0.42	0.46	0.74
1	0.620	0.660	0.523	0.750	0.925	0.60	0.63	0.53	0.59	0.93
Rata-rata	**0.582**	**0.663**	**0.486**	**0.668**	**0.701**	**0.741**	**0.717**	**0.584**	**0.530**	**0.727**

LAMPIRAN – 9

Lantai	Rasio Momen Balok *Frame Truss* Terhadap OF					Rasio Geser Balok *Frame Truss* Terhadap OF				
	Angin	Statik	Koyna	Elcentro	Parkfield	Angin	Statik	Koyna	Elcentro	Parkfield
20	0.398	0.191	0.362	0.161	0.226	0.680	0.523	0.756	0.628	0.585
19	0.656	0.520	0.569	0.498	0.513	0.837	0.750	0.769	0.708	0.720
18	0.700	0.617	0.606	0.564	0.558	0.856	0.797	0.790	0.739	0.737
17	0.694	0.617	0.600	0.552	0.574	0.850	0.792	0.783	0.718	0.739
16	0.696	0.631	0.611	0.593	0.637	0.852	0.800	0.788	0.742	0.780
15	0.695	0.631	0.605	0.617	0.668	0.848	0.794	0.780	0.754	0.797
14	0.696	0.627	0.602	0.605	0.667	0.846	0.789	0.776	0.742	0.794
13	0.698	0.623	0.619	0.588	0.633	0.846	0.784	0.788	0.729	0.767
12	0.661	0.579	0.565	0.523	0.536	0.816	0.746	0.745	0.671	0.684
11	0.665	0.581	0.535	0.493	0.496	0.817	0.744	0.719	0.643	0.651
10	0.533	0.420	0.435	0.302	0.319	0.739	0.640	0.654	0.497	0.522
9	0.534	0.416	0.445	0.307	0.353	0.739	0.636	0.657	0.501	0.551
8	0.671	0.574	0.560	0.467	0.571	0.815	0.734	0.725	0.614	0.710
7	0.686	0.591	0.597	0.495	0.671	0.821	0.744	0.751	0.633	0.783
6	0.698	0.602	0.622	0.528	0.675	0.828	0.751	0.767	0.660	0.783
5	0.709	0.613	0.605	0.560	0.646	0.834	0.759	0.753	0.688	0.758
4	0.754	0.659	0.625	0.607	0.670	0.862	0.791	0.766	0.722	0.771
3	0.751	0.660	0.608	0.607	0.645	0.860	0.792	0.752	0.721	0.750
2	0.748	0.657	0.599	0.604	0.625	0.860	0.795	0.750	0.725	0.738
1	0.822	0.726	0.656	0.659	0.701	0.909	0.848	0.799	0.777	0.805
Rata-rata	**0.673**	**0.577**	**0.571**	**0.517**	**0.569**	**0.826**	**0.750**	**0.753**	**0.681**	**0.721**

Lantai	Rasio Momen Kolom *Frame Truss* Terhadap OF					Rasio Geser Kolom *Frame Truss* Terhadap OF					Rasio Aksial Kolom *Frame Truss* Terhadap OF				
	Angin	Statik	Koyna	Elcentro	Parkfield	Angin	Statik	Koyna	Elcentro	Parkfield	Angin	Statik	Koyna	Elcentro	Parkfield
20	0.38	0.58	0.98	0.76	0.813	0.46089	0.157	0.617	0.754	0.797	0.667	0.582	0.675	0.726	0.704
19	0.72	0.97	1.12	1.97	1.115	0.87117	0.859	0.649	0.818	0.778	2.222	2.665	2.244	3.324	3.184
18	0.95	0.88	0.53	0.46	0.500	0.73609	0.648	0.577	0.530	0.562	1.741	1.973	1.741	2.323	2.233
17	0.88	0.82	0.52	0.52	0.443	0.76651	0.687	0.563	0.550	0.622	1.546	1.692	1.548	1.926	1.852
16	0.94	0.83	0.52	0.49	0.465	0.81265	0.742	0.661	0.645	0.722	1.442	1.540	1.444	1.701	1.656
15	1.02	0.96	0.57	0.56	0.564	0.78147	0.702	0.617	0.631	0.717	1.376	1.445	1.367	1.562	1.539
14	1.01	0.83	0.62	0.62	0.593	0.76695	0.679	0.638	0.577	0.678	1.331	1.378	1.313	1.471	1.462
13	0.98	0.78	0.58	0.60	0.590	0.72075	0.631	0.576	0.530	0.587	1.297	1.329	1.275	1.406	1.407
12	0.88	0.66	0.53	0.48	0.541	0.71712	0.632	0.522	0.512	0.544	1.268	1.285	1.245	1.352	1.360
11	0.88	0.69	0.56	0.48	0.561	1.0054	0.956	0.665	0.802	0.751	1.244	1.251	1.224	1.314	1.322
10	1.88	1.33	0.89	1.09	1.317	1.05274	0.971	0.726	1.036	0.964	1.196	1.194	1.184	1.254	1.257
9	0.43	0.25	0.60	0.91	0.848	0.9176	0.864	0.658	0.696	0.768	1.417	1.523	1.370	1.616	1.536
8	0.81	0.62	0.42	0.44	0.405	0.64358	0.561	0.528	0.432	0.596	1.383	1.472	1.335	1.542	1.478
7	0.79	0.65	0.45	0.40	0.434	0.65302	0.570	0.547	0.463	0.668	1.354	1.430	1.305	1.483	1.429
6	0.82	0.64	0.51	0.43	0.503	0.62714	0.545	0.525	0.478	0.591	1.330	1.394	1.277	1.435	1.390
5	0.79	0.65	0.53	0.44	0.561	0.62926	0.549	0.482	0.491	0.580	1.309	1.364	1.255	1.396	1.359
4	0.78	0.58	0.52	0.46	0.648	0.65258	0.589	0.504	0.526	0.593	1.289	1.336	1.237	1.365	1.334
3	0.79	0.60	0.52	0.50	0.641	0.60977	0.539	0.446	0.471	0.507	1.272	1.313	1.221	1.339	1.316
2	0.70	0.53	0.43	0.45	0.521	0.54929	0.480	0.406	0.385	0.424	1.258	1.294	1.203	1.315	1.300
1	0.51	0.40	0.34	0.33	0.344	0.54421	0.430	0.379	0.411	0.506	1.248	1.280	1.190	1.298	1.285
Rata-rata	**0.848**	**0.713**	**0.588**	**0.620**	**0.620**	**0.726**	**0.640**	**0.564**	**0.587**	**0.648**	**1.360**	**1.437**	**1.333**	**1.557**	**1.520**