BAB IV

ANALISIS DISAIN BALOK KOMPOSIT

4.1. Pendahuluan

Pada bab ini dibahas mengenai batasan analisis, contoh hitungan analisis disain dengan metode ASD dan LRFD, pemrograman komputer yang meliputi *flowchart* dan program komputer dengan bahasa BASIC. Adapun pemrograman komputer yang digunakan dalam menganalisis balok komposit dengan menggunakan metode ASD AISC dan LRFD AISC ini bertujuan untuk mempermudah dalam mendapatkan hasil disain balok komposit yang efisien. Jika analisis dilakukan dengan cara manual akan memerlukan ketelitian dan waktu yang sangat lama, karena sampel variabel yang cukup banyak.

4.2. Batasan Analisis Disain

Dalam analisis disain balok komposit ini diperlukan batasan-batasan yang lebih spesifik agar bisa diperoleh hasil yang sesuai dengan tujuan penulisan. Adapun batasan-batasan tersebut antara lain :

~ Mutu baja Fy = Fyr = 36 Ksi

~ Variasi mutu beton (f'c) = 3.0, 3.5, 4.0, 4.5 dan 5.0 Ksi

~ γ b = 2320 kg/m^3 (berat beton normal)

~ Jarak antar balok yang bersebelahan (b0) = 2.5, 3.0, 3.5, 4.0 dan 4.5 m

~ Pemilihan profil dilakukan dengan cara trial and error dan dipilih mulai profil W yang terkecil sampai pada profil yang aman jika didisain oleh kedua metode. Adapun pemilihan profilnya mulai dari W10 sampai W40.

~ Beban mati setelah beton mengeras (qdc) hanya meliputi :

- Berat penggantung dan langit-langit = 18 kg/m^2
- Tegel (3 cm) = 3 x 24 = 72 kg/m^2
- Spesi (2 cm) = 2 x 21 = 42 kg/m^2
- Pasir (5 cm) = 5 x 16 = 80 kg/m^2
- Finishing (2 cm) = 2 x 24 = 48 kg/m^2

= 250 kg/m^2

~ Tebal *slab* dicari dengan menggunakan rumus SK-SNI 1991:

1/24 x b0 (4 + Fy / (700 x 145))

~ Variabel panjang bentang antara 8 s/d 24 m dengan kelipatan 2 (8 m, 10 m, 12 m, 14 m, 16 m, 18 m, 20 m, 24 m).

Didalam analisis pemakaian variable panjang bentang (l), jarak antar balok (b0) dan mutu beton (f'c) dilakukan dengan cara bergantian. Jika digunakan variabel panjang bentang berubah maka untuk variabel jarak antar balok (b0) dan mutu beton (f'c) tetap, jika jarak antar balok berubah maka variabel panjang bentang (l) dan mutu beton tetap dan jika variabel mutu beton berubah maka panjang bentang (l) dan jarak antar balok (b0) tetap.

Berikut ini untuk mempermudah dalam menganalisis maka dibuat bagan alir yang merupakan proses perencanaan balok komposit.

Bagan Alir Perencanaan Balok Komposit Metode LRFD

Data Perencanaan

Beban struktur

ts = 1/24 b0 (0.4+Fy / 700 x 0.145)

M_{DC} = 1/8 qdc x L^2

M_{LL} = 1/8 qll x L^2

M_{DS} = 1/8 qds x L^2

Vu =(1.2 (qds + qdc)+1.6 qll) x L/2

M_U = 1.2 (M_{DC} + M_{DS}) + 1.6 M_{LL}

Daya tahan struktur

b_E = nilai terkecil dari L/4 atau b0

$$a = \frac{As \times Fy}{0.85\ f'c\ b_E}$$

Jika a ≤ ts, maka :

Mn = As Fy (d/2 + ts - a/2)

Jika a > ts, maka :

Cc = 0.85 f'c b_E ts

Cs = (As x Fy - 0.85 f'c b_E ts) / 2

df = Cs / (bf x Fy)

- Jika df ≤ tf maka :

$$Yb = \frac{(tf - df)(bf)(d - 1.5tf + df/2) + (d - 2\,tf)(tw)(1/2\,d) + (bf)(tf)(1/2\,tf)}{(tf - df)(bf) + (d - 2\,tf)(tw) + (bf)(tf)}$$

d1 = d - yb + 1/2 ts

d2 = d - yb - 1/2 df

Mn = Cc . d1 + Cs . d2

- Jika df > tf, maka :

Cf = bf . tf . Fy

Cw = Cs – Cf

dw = Cw / (tf . Fy)

$$Yb = \frac{(d - 2tf - dw)\,tw\,(tf + (d - 2tf - dw)/2) + bf \times tf \times 1/2\,tf}{(d - 2tf - dw)\,tw + bf \times tf}$$

d1 = d - Yb + ts/2

d2 = d -Yb - tf/2

d3 = d - Yb - tf - dw/2

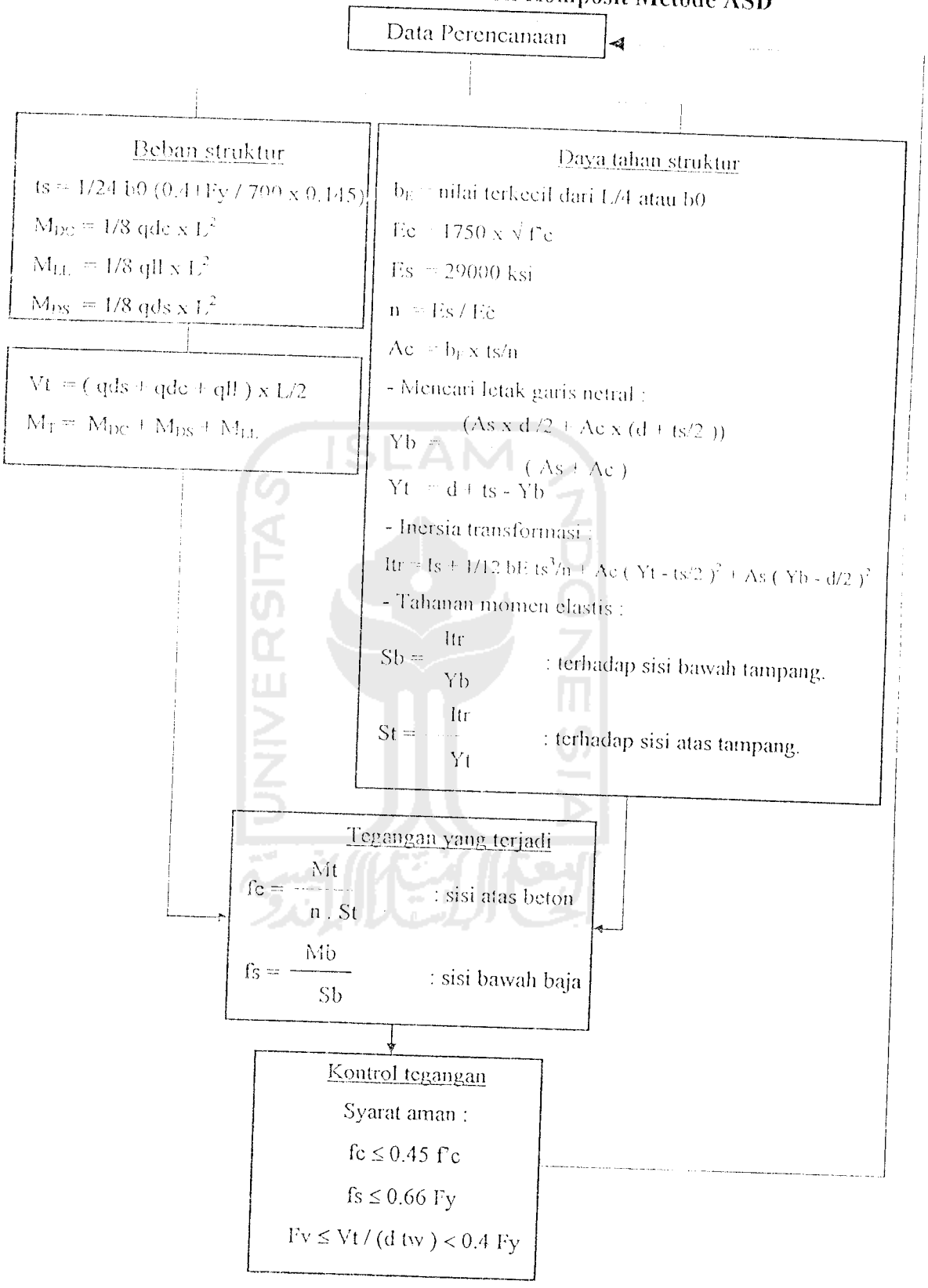
Mn = Cc . d1 + Cf . d2 + Cw . d3

Kapasitas momen nominal = 0.85 Mn

Kapasitas geser nominal: = 0.9 (0.6 Fy d tw)

Syarat aman : 0.85 Mn ≥ M_U

Bagan Alir Perencanaan Balok Komposit Metode ASD



4.3. Analisis Disain Balok Komposit

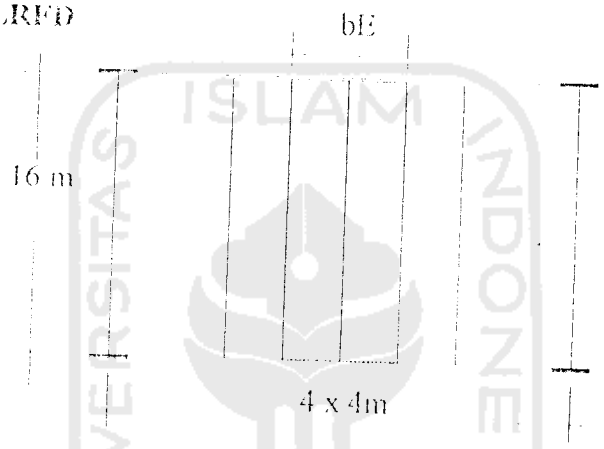
Rancanglah suatu balok komposit interior untuk lantai yang di rencanakan untuk perpustakaan seperti terlihat pada gambar 4.1. Jika balok dirancang menggunakan perancah atau penyangga sementara (*shoring*).

Gunakan Fy = Fyr = 36 Ksi; f'c = 3.5 Ksi; $\gamma b = 2320$ kg/cm^3; bo = 4 m; L = 16 m.

Rencanakan dengan metode : a. LRFD

b. ASD

a. Metode LRFD



Gambar 4.1. Denah perangkaan balok

Penyelesaian:

$\gamma b = 2320$ kg / m^3

$= 2320 \times 3.6127 . 10^{-8} = 8.381 . 10^{-6}$ k / in^3

L = 16 m = 16 / 0.0254 = 629.9213 in

b0 = 4 m = 4 / 0.0254 = 157.480 in

ts = 1/24 b0 (0.4 + Fy / (700 x 0.145))

= 1/24 x 4 x (0.4 + 36 / (700 x 0.145))

= 0.12577997 m = 12.57997 cm ≈ 13 cm ≈ 4.1181 in

a. Hitungan pembebanan

* Beban mati sebelum beton mengeras (qds)

~ Berat *slab* beton = (0.13)(2320)(4) = 1113.6 kg/m

~ Berat profil yang digunakan

* Beban mati setelah beton mengeras (qdc) = 250 kg/m^2

~ qdc = 250 x 4 = 1000 kg/m

* Beban hidup setelah beton mengeras (qll) = 400 kg/m^2

~ Beban hidup perpustakaan = 400 x 4 = 1600 kg/m

- Dicoba dengan profil W12 x 152

Data-data profil:

- As = 44.7 in^2 - bf = 12.48 in - Ix = 1430 in^4
- d = 13.71 in - tf = 1.40 in - Ss = 209 in^3
- tw = 87 in - qs = 152 lb/ft - Z = 243 in^3

qds = berat *slab* + berat profil

= 1113.6 +152 (1.4698) = 1337.0096 kg/m

b. Hitungan Momen

$$- M_{DS} = \frac{1}{8} (qds) (L)^2 = \frac{1}{8} (1337.0096)(16)^2 = 427878.072 \text{ kg-m}$$

$$= 3787.1693 \text{ k-in}$$

$$- M_{DC} = \frac{1}{8} (qdc) (L)^2 = \frac{1}{8} (1000)(16)^2 = 32000 \text{ kg-m}$$

$$= 2832.384 \text{ k-in}$$

$$- M_{LL} = \frac{1}{8} (qll) (L)^2 = \frac{1}{8} (1600)(16)^2 = 51200 \text{ kg-m}$$

$$= 4531.8144 \text{ k-in}$$

Mu = (1.2 (MDS + MPS) + 1.6 MLL))

= (1.2 (3787.1693 + 2832.384) + (1.6 x 4531.8144))

= 15194.367 k-in

- Mencari lebar efektif :

bE = L / 4 = (629.9213) / 4 = 157.4803 in

bE = b0 = 157.480 in

$$a = \frac{As \times Fy}{0.85 \; f'c \; bE}$$

$$a = \frac{44.7 \times 36}{0.85 \times 3.5 \times 157.480} = 3.4348 \text{ in} < ts = 4.1181 \text{ in}$$

$$Mn = As \; Fy \left(\frac{d}{2} + ts - \frac{a}{2} \right)$$

$$Mn = (44.7) (36) \left(\frac{13.71}{2} + 4.1181 - \frac{3.435}{2} \right)$$

= 16503.4724 k - in

$\Phi b \; Mn = 0.85 \times 16503.4724$

= 14027.9515 k-in < M_U = 15194.367 k-in (NG)

- Dicoba dengan profil W12 x 170

Data-data profil :

- As = 50 in^2 - tw = 96 in - qs = 170 lb
- d = 14.03 in - tf = 1.56 in - Sx = 235 in^3
- bf = 12.57 in - Ix = 1650 in^4 - Z = 275 in^3

qds = berat *slab* + berat profil

= 1113.6 + 170 (1.4698) = 1363.4660 kg/m

b. Hitungan Momen

$- M_{DS} = \frac{1}{8} (qds) (L)^2 = \frac{1}{8} (1363.4660)(16)^2 = 4363912$ kg-m

$= 3861.8593$ k-in

$- M_{DC} = \frac{1}{8} (qdc) (L)^2 = \frac{1}{8} (1000)(16)^2 = 32000$ kg-m

$= 2832.384$ k-in

$- M_{LL} = \frac{1}{8} (qll) (L)^2 = \frac{1}{8} (1600)(16)^2 = 51200$ kg-m

$= 4531.8144$ k-in

$- M_U = (1.2 (M_{DS} + M_{DC}) + (1.6 M_{LL}))$

$= (1.2 (3861.8593 + 2832.384) + (1.6 \times 4531.8144))$

$= 15194.367$ k-in

- Mencari lebar efektif :

$bE = L / 4 = (629.9213) / 4 = 157.4803$ in

$bE = b0 = 157.480$ in

$$a = \frac{As \times Fy}{0.85 \ f'c \ bE}$$

$$a = \frac{50 \times 36}{0.85 \times 3.5 \times 157.480} = 3.8420 \text{ in} < ts = 4.1181 \text{ in}$$

$$Mn = As \ Fy \left(\frac{d}{2} + ts - \frac{a}{2} \right)$$

$$Mn = (50) (36) \left(\frac{14.03}{2} + 4.1181 - \frac{3.8420}{2} \right)$$

$= 18381.78$ k - in

$\varnothing b \ Mn = 0.85 \times 18381.78$

$= 15624.513$ k-in $> M_U = 15194.367$ k-in (OKE)

Kontrol geser badan profil (Vu)

Vu = (1.2 (qds + qdc) + 1.6 qll) x L / 2

= (1.2 (1363.4660 + 1000) + 1.6 x 1600) x 16 / 2

= 43169.2736 kg = 97.0445 kips

Vn = 0.6 x Fy x d x tw

= 0.6 x 36 x 14.03 x 0.96

= 29926 kips

Øs Vn = 0.9 x 29926 = 261.833 kips > Vu = 97.0445 kips (OKE)

b. Metode ASD

a. Hitungan pembebanan

* Beban mati sebelum beton mengeras (qds)

~ Berat *slab* beton = (0.13)(2320)(4) = 1113.6 kg/m

~ Berat profil yang digunakan

* Beban mati setelah beton mengeras (qdc) = 250 kg/m^2

~ qdc = 250 x 4 = 1000 kg/m

* Beban hidup setelah beton mengeras (qll) = 400 kg/m^2

~ Beban hidup perpustakaan = 400 x 4 = 1600 kg/m

- Dicoba dengan profil W12 x 210

Data-data profil:

- As = 61.8 in^2 - bf = 12.79 in - Ix = 2140 in^4
- d = 14.71 in - tf = 1.9 in - Ss = 292 in^3
- tw = 1.18 in - qs = 210 lb/ft - Z = 348 in^3

qds = berat *slab* + berat profil

= 1113.6 + 210 (1.4698) = 1422.2580 kg/m

b. Hitungan Momen

- $M_{DS} = \frac{1}{8} (qds) (L)^2 = \frac{1}{8} (1422.2580)(16)^2$ = 45512.2560 kg-m

= 4028.38 k-in

- $M_{DC} = \frac{1}{8} (qdc) (L)^2 = \frac{1}{8} (1000)(16)^2$ = 32000 kg-m

= 2832.384 k-in

- $M_{LL} = \frac{1}{8} (qll) (L)^2 = \frac{1}{8} (1600)(16)^2$ = 51200 kg-m

= 4531.8144 k-in

Momen Total (Mt) = $M_{DS} + M_{DC} + M_{LL}$

= 4028.38 + 2832.384 + 4531.8144

= 11392.5784 k-in

- Mencari lebar efektif :

bE = L / 4 = (629.9213) / 4 = 157.4803 in

bE = b0 = 157.480 in

- Ec = 1750 x $\sqrt{f'c}$

= 1750 x $\sqrt{3.5}$ = 3273.95 ksi

- Es = 29000 ksi

- n = Es / Ec

= 29000 / 3273.95 = 8.86

- Ac = bE x ts/n

= 157.48 x 4.1181 / 8.86 = 997 in^2

~ Mencari letak garis netral :

$$Yb = \frac{(As \times d/2 + Ac \times (d + ts/2))}{(As + Ac)}$$

$$Yb = \frac{(61.8 \times 14.71/2 + 997 \times (14.71 + 4.1181/2))}{(61.8 + 997)}$$

$= 13.2585$ in

$Yt = d + ts - Yb$

$= 14.71 + 4.1181 - 13.2585 = 6.5696$ in

~ Inersia transformasi :

- $Itr = Is + 1/12\ bE\ ts^3/n + Ac\ (Yt - ts/2)^2 + As\ (Yb - d/2)^2$

$= 2140 + 1/12 \times 157.48 \times (4.1181)^3 / 8.86$

$+ 997 \times (6.5696 - 4.1181/2)^2 + 61.8 \times (13.2585 - 4.71/2)^2$

$= 5957.0265\ in^4$

~ Kontrol tegangan :

- Beton :

$$fc = \frac{Mt \times Yt}{n \times Itr}$$

$$fc = \frac{11392.5784 \times 6.5696}{8.86 \times 5957.0265}$$

$= 1.4180$ ksi $< 0.45\ f'c = 0.45 \times 3.5 = 1.575$ ksi (OKE)

- Baja :

$$fs = \frac{Mt \times Yb}{Itr}$$

$$fs = \frac{11392.5784 \times 13.2585}{5957.0265}$$

$= 24.356$ ksi $> 0.66\ Fy = 0.66 \times 36 = 23.76$ ksi (NG)

- Dicoba dengan profil W12 x 230

Data-data profil:

- As = 67.7 in^2 - bf = 12.895 in - Ix = 2420 in^4
- d = 15.05 in - tf = 2.07 in - Ss = 321 in^3
- tw = 1.285 in - qs = 230 lb/ft - Z = 386 in^3

qds = berat *slab* + berat profil

= 1113.6 + 230 (1.4698) = 1451.654 kg/m

b. Hitungan Momen

- $M_{DS} = \frac{1}{8}(qds)(L)^2 = \frac{1}{8}(1451.654)(16)^2 = 46452.928$ kg-m
  $= 4111.640$ k-in
- $M_{DC} = \frac{1}{8}(qdc)(L)^2 = \frac{1}{8}(1000)(16)^2 = 32000$ kg-m
  $= 2832.384$ k-in
- $M_{LL} = \frac{1}{8}(qll)(L)^2 = \frac{1}{8}(1600)(16)^2 = 51200$ kg-m
  $= 4531.8144$ k-in

Momen Total (Mt) = $M_{DS} + M_{DC} + M_{LL}$

= 4111.640 + 2832.384 + 4531.8144

= 11392.5784 k-in

- Mencari lebar efektif :

bE = L / 4 = (629.9213) / 4 = 157.4803 in

bE = b0 = 157.480 in

- Ec = 1750 x $\sqrt{f'c}$

= 1750 x $\sqrt{3.5}$ = 3273.95 ksi

- Es = 29000 ksi

- n = Es / Ec

= 29000 / 3273.95 = 8.86

Ac = bE x ts/n

= 157.48 x 4.1181 / 8.86 = 997 in^2

$$Yb = \frac{(As \times d/2 + Ac \times (d + ts/2))}{(As + Ac)}$$

$$Yb = \frac{(67.7 \times 15.05/2 + 997 \times (15.05 + 4.1181/2))}{(67.7 + 997)}$$

= 13.306 in

Yt = d + ts - Yb

= 15.05 + 4.1181 - 13.306 = 6.8621 in

~ Inersia transformasi :

- Itr = Is + 1/12 bE ts^3/n + Ac (Yt - ts/2)^2 + As (Yb - d/2)^2

= 2420 + 1/12 x 157.48 x (4.1181)^3 / 8.86

+ 997 x (6.8621 - 4.1181/2)^2 + 67.7 x (13.306 - 15.05/2)^2

= 6564.534 in^4

~ Kontrol tegangan :

- Beton :

$$fc = \frac{Mt \times Yt}{n \times Itr}$$

$$fc = \frac{11392.5784 \times 6.8621}{8.86 \times 6564.534}$$

= 1.354 ksi < 0.45 f'c = 0.45 x 3.5 = 1.575 ksi (OKE)

- Baja :

$$fs = \frac{Mt \times Yb}{Itr}$$

$$fs = \frac{11392.5784 \times 13.306}{6564.534}$$

$= 23.257 \text{ ksi} < 0.66 \text{ Fy} = 0.66 \times 36 = 23.76 \text{ ksi}$ (OKE)

- Kontrol tegangan geser :

$$fv = \frac{(qds + qdc + qll) \times L}{2 \times d \times tw}$$

$$fv = \frac{(1451.654 + 1000 + 1600) \times 16 \times 0.002248}{2 \times 15.05 \times 1.285}$$

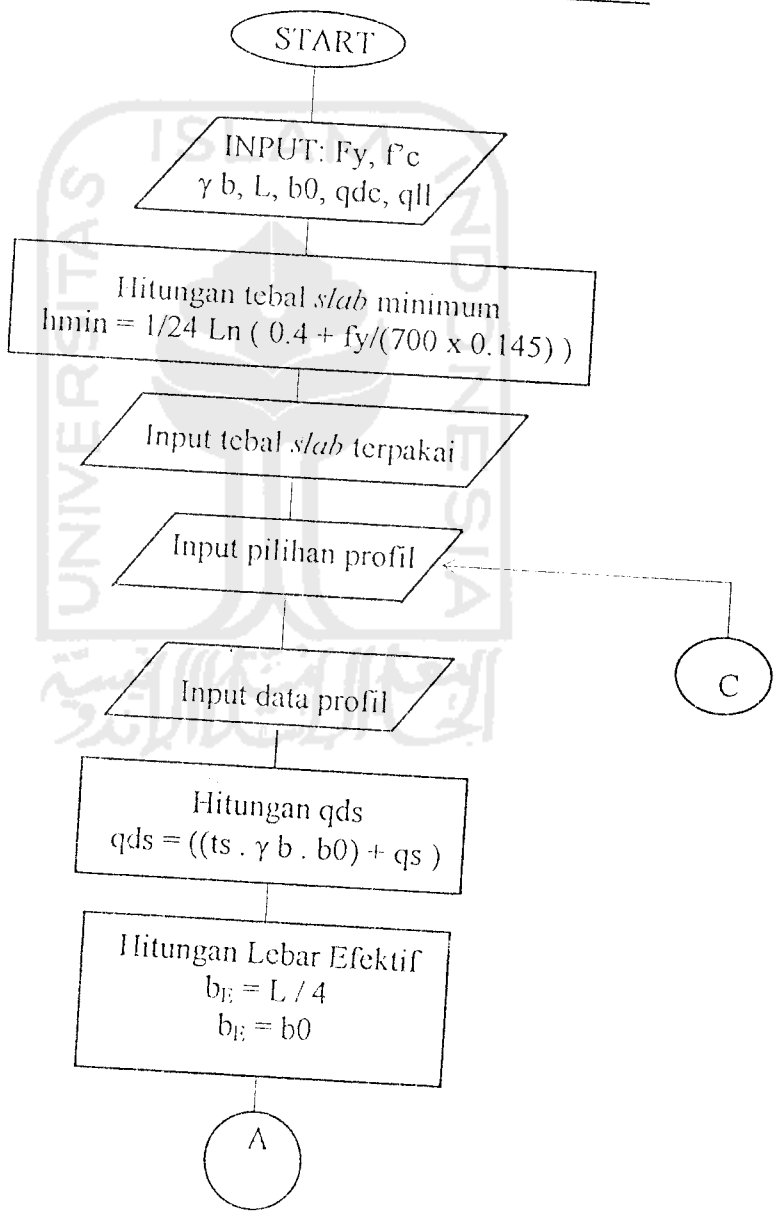
$= 3.7677 \text{ ksi} < 0.4 \text{ Fy} = 0.4 \times 36 = 14.4 \text{ ksi}$ (OKE)

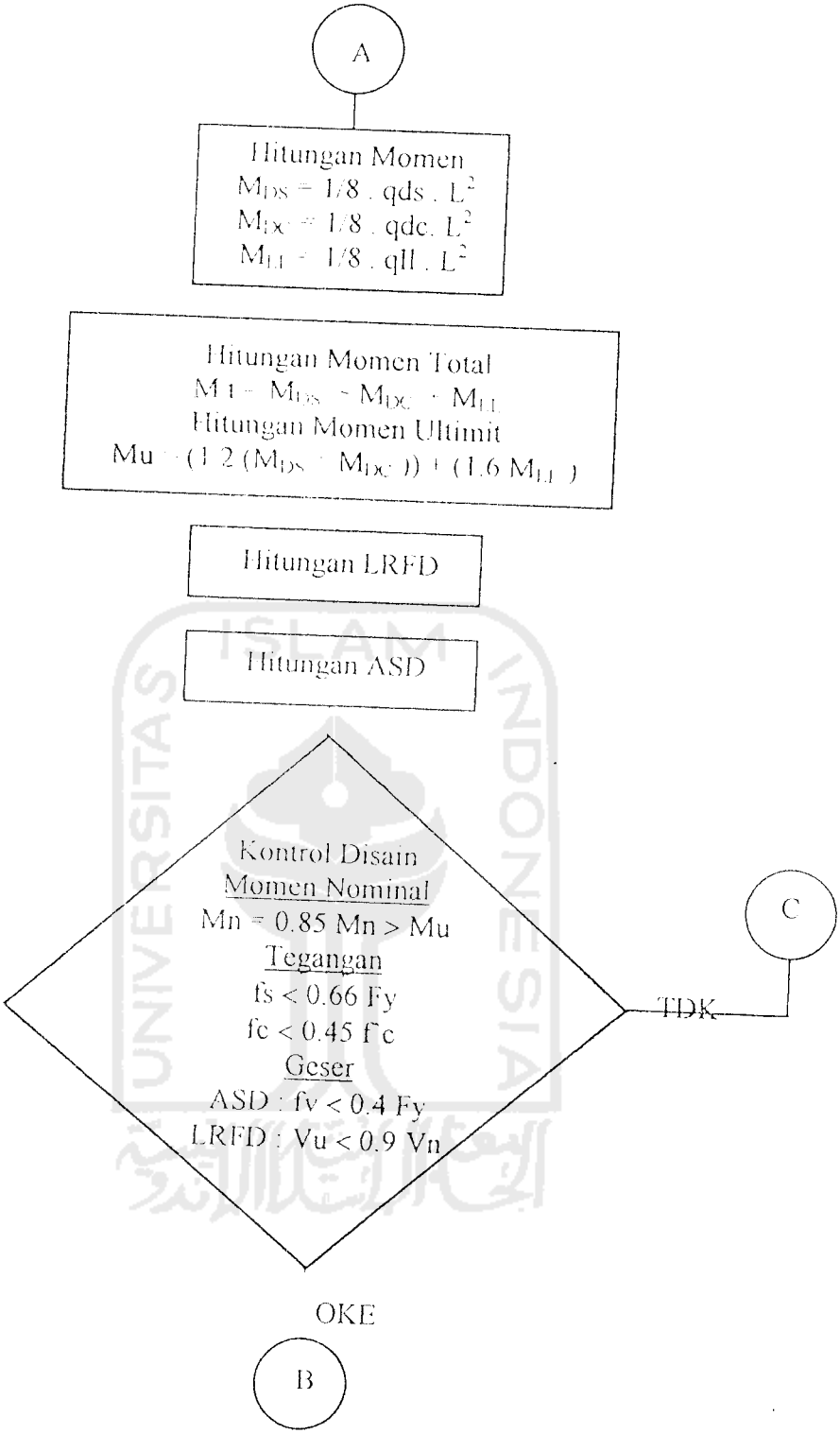
4.4. Bagan Alir (*Flowchart*)

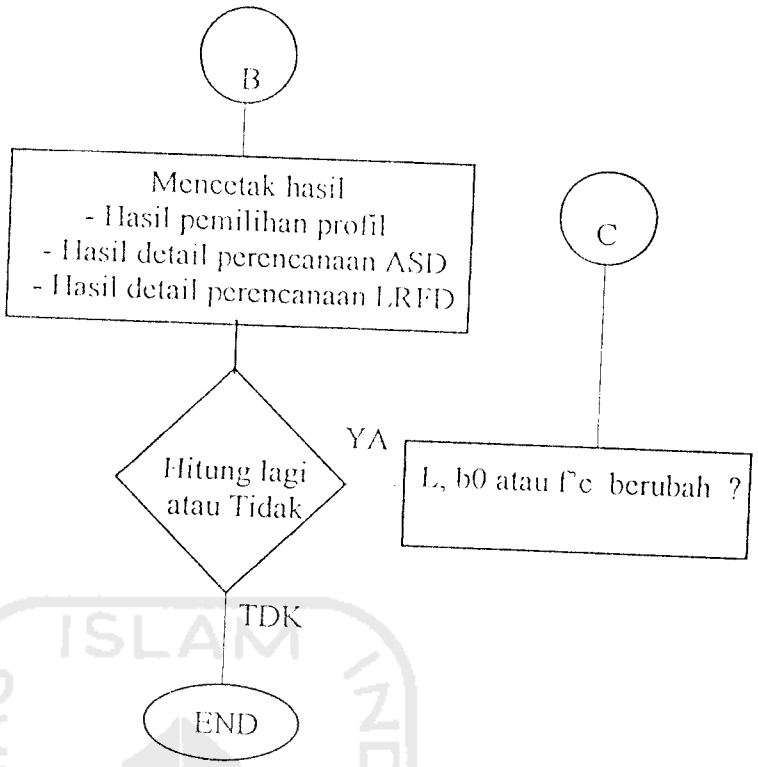
Bagan alir ini dibuat untuk memudahkan dalam pembuatan program dan juga memudahkan dalam melihat tahap-tahap penyelesaian atau tahap eksekusi program. Bagan alir ini memuat analisis komparasi analisis disain balok komposit dengan metode ASD AISC dan LRFD AISC.

Untuk lebih jelasnya dapat dilihat di bawah ini :

***FLOWCHART* DISAIN BALOK KOMPOSIT**




A
Hitungan Momen
$M_{DS} = 1/8 . qds . L^2$
$M_{DC} = 1/8 . qdc . L^2$
$M_{LL} = 1/8 . qll . L^2$
Hitungan Momen Total
$M t = M_{DS} + M_{DC} + M_{LL}$
Hitungan Momen Ultimit
$Mu = (1.2 (M_{DS} + M_{DC})) + (1.6 M_{LL})$
Hitungan LRFD
Hitungan ASD
Kontrol Disain
Momen Nominal
$Mn = 0.85 Mn > Mu$
Tegangan
$fs < 0.66 Fy$
$fc < 0.45 f'c$
Geser
ASD : $fv < 0.4 Fy$
LRFD : $Vu < 0.9 Vn$
TDK
C
OKE
B



Dalam pemilihan profil yang paling efisien terlebih dahulu dilakukan analisis disain dengan mencoba beberapa profil yang aman digunakan. Pemilihan profil yang paling efisien berarti efisien dari segi berat profil, karena semakin ringan suatu profil maka dari segi biaya akan semakin murah. Dengan biaya yang murah dan keamanan yang terjamin, maka syarat-syarat perencanaan sudah terpenuhi. Dengan adanya hal tersebut, maka setelah diadakan beberapa kali analisis dengan mencoba beberapa profil, dapat ditentukan profil yang paling efisien.

4.5. Tabel Hasil Disain Balok Komposit

4.5.1. Panjang Bentang (L) Berubah dan Mutu Beton (f'c) Tetap.

1. Jarak antar balok (b0) = 2.5 m

Tabel 4.1. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 3 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W14X26 ASD = W14X34	8	23.5
L = 10	LRFD = W18X35 ASD = W18X46	11	20.0
L = 12	LRFD = W21X44 ASD = W21X57	13	22.8
L = 14	LRFD = W24X55 ASD = W24X68	13	19.1
L = 16	LRFD = W24X68 ASD = W24X94	26	27.7
L = 18	LRFD = W27X84 ASD = W27X114	30	26.3
L = 20	LRFD = W30X99 ASD = W30X124	25	20.1
L = 22	LRFD = W33X118 ASD = W33X141	23	16.3
L = 24	LRFD = W33X130 ASD = W33X169	39	23.1
Persentase (%) rata-rata :			22.1

Tabel 4.2. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 3.5 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W14X26 ASD = W14X34	8	23.5
L = 10	LRFD = W18X35 ASD = W18X46	11	23.9
L = 12	LRFD = W21X44 ASD = W21X57	13	22.8
L = 14	LRFD = W24X55 ASD = W24X68	13	19.1
L = 16	LRFD = W24X68 ASD = W24X94	26	27.7
L = 18	LRFD = W27X84 ASD = W27X102	18	17.7
L = 20	LRFD = W30X99 ASD = W30X124	25	20.1
L = 22	LRFD = W33X118 ASD = W33X141	23	16.3
L = 24	LRFD = W33X130 ASD = W33X169	39	23.1
Persentase (%) rata-rata :			21.58

Tabel 4.3. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 4 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W14X26 ASD = W14X34	8	23.5
L = 10	LRFD = W18X35 ASD = W18X46	11	23.9
L = 12	LRFD = W21X44 ASD = W21X57	13	22.8
L = 14	LRFD = W24X55 ASD = W24X68	13	19.1
L = 16	LRFD = W24X68 ASD = W24X94	26	27.7
L = 18	LRFD = W27X84 ASD = W27X102	18	17.6
L = 20	LRFD = W30X90 ASD = W30X124	34	27.4
L = 22	LRFD = W33X118 ASD = W33X141	23	16.3
L = 24	LRFD = W33X130 ASD = W33X169	39	23.1
Persentase (%) rata-rata :			22.38

Tabel 4.4. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 4.5 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W14X26 ASD = W14X34	8	23.5
L = 10	LRFD = W18X35 ASD = W18X46	11	23.9
L = 12	LRFD = W21X44 ASD = W21X57	13	22.8
L = 14	LRFD = W24X55 ASD = W24X68	13	19.1
L = 16	LRFD = W24X68 ASD = W24X94	26	27.7
L = 18	LRFD = W27X84 ASD = W27X102	18	17.7
L = 20	LRFD = W30X90 ASD = W30X124	34	27.4
L = 22	LRFD = W33X118 ASD = W33X114	23	16.3
L = 24	LRFD = W33X130 ASD = W33X169	39	23.1
Persentase (%) rata-rata :			22.39

Tabel 4.5. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 5 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W14X26 ASD = W14X34	8	23.5
L = 10	LRFD = W18X35 ASD = W18X46	11	23.9
L = 12	LRFD = W21X44 ASD = W21X57	13	22.8
L = 14	LRFD = W24X55 ASD = W24X68	13	19.1
L = 16	LRFD = W24X68 ASD = W24X94	26	27.7
L = 18	LRFD = W27X84 ASD = W27X102	18	17.7
L = 20	LRFD = W30X90 ASD = W30X124	34	27.4
L = 22	LRFD = W33X118 ASD = W33X141	23	16.3
L = 24	LRFD = W33X130 ASD = W33X169	39	23.1
Persentase (%) rata-rata :			22.39

2. Jarak antar balok (B0) = 3.0 m

Tabel 4.6. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 3 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W14X30 ASD = W14X38	8	21.0
L = 10	LRFD = W18X40 ASD = W18X50	10	20.0
L = 12	LRFD = W21X50 ASD = W21X68	18	26.5
L = 14	LRFD = W24X62 ASD = W24X84	22	26.2
L = 16	LRFD = W27X84 ASD = W27X102	18	17.6
L = 18	LRFD = W30X90 ASD = W30X116	26	22.4
L = 20	LRFD = W30X116 ASD = W30X148	32	21.6
L = 22	LRFD = W33X130 ASD = W33X169	39	23.1
L = 24	LRFD = W36X150 ASD = W36X182	32	17.6
Persentase (%) rata-rata :			21.78

Tabel 4.7. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 3.5 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W14X30 ASD = W14X38	8	21.0
L = 10	LRFD = W18X40 ASD = W18X50	10	20.0
L = 12	LRFD = W21X50 ASD = W21X68	18	26.5
L = 14	LRFD = W24X62 ASD = W24X84	22	26.2
L = 16	LRFD = W27X84 ASD = W27X102	18	17.6
L = 18	LRFD = W30X90 ASD = W30X116	26	22.4
L = 20	LRFD = W30X108 ASD = W30X148	40	27.0
L = 22	LRFD = W33X130 ASD = W33X169	39	23.1
L = 24	LRFD = W36X150 ASD = W36X182	32	17.6
Persentase (%) rata-rata :			22.38

Tabel 4.8. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 4.0 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W14X30 ASD = W14X38	8	21.0
L = 10	LRFD = W18X40 ASD = W18X50	10	20.0
L = 12	LRFD = W21X50 ASD = W21X68	18	26.5
L = 14	LRFD = W24X62 ASD = W24X84	22	26.2
L = 16	LRFD = W27X84 ASD = W27X94	10	10.6
L = 18	LRFD = W30X90 ASD = W30X116	26	22.4
L = 20	LRFD = W30X108 ASD = W30X148	40	27.0
L = 22	LRFD = W33X130 ASD = W33X169	39	23.1
L = 24	LRFD = W36X150 ASD = W36X182	32	17.6
Persentase (%) rata-rata :			21.59

Tabel 4.9. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 4.5 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W14X30 ASD = W14X38	8	21.0
L = 10	LRFD = W18X40 ASD = W18X50	10	20.0
L = 12	LRFD = W21X50 ASD = W21X68	18	26.5
L = 14	LRFD = W24X62 ASD = W24X84	22	26.2
L = 16	LRFD = W27X84 ASD = W27X94	10	10.6
L = 18	LRFD = W30X90 ASD = W30X116	26	22.4
L = 20	LRFD = W30X108 ASD = W30X148	40	27.0
L = 22	LRFD = W33X130 ASD = W33X169	39	23.1
L = 24	LRFD = W36X135 ASD = W36X182	47	25.8
Persentase (%) rata-rata :			22.50

Tabel 4.1 Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 5.0 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W14X30 ASD = W14X38	8	21.0
L = 10	LRFD = W18X40 ASD = W18X50	10	20.0
L = 12	LRFD = W21X50 ASD = W21X68	18	26.5
L = 14	LRFD = W24X62 ASD = W24X84	22	26.2
L = 16	LRFD = W27X84 ASD = W27X94	10	10.6
L = 18	LRFD = W30X90 ASD = W30X116	26	22.4
L = 20	LRFD = W30X108 ASD = W30X148	40	27.0
L = 22	LRFD = W33X118 ASD = W33X169	39	23.1
L = 24	LRFD = W36X135 ASD = W36X182	47	25.8
Persentase (%) rata-rata :			22.50

3. Jarak antar balok (B0) = 3.5 m

Tabel 4.11. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 3 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W16X31 ASD = W16X40	9	22.5
L = 10	LRFD = W21X44 ASD = W21X57	13	22.8
L = 12	LRFD = W24X55 ASD = W24X68	13	19.1
L = 14	LRFD = W24X76 ASD = W24X94	18	19.1
L = 16	LRFD = W27X84 ASD = W27X114	30	26.3
L = 18	LRFD = W30X108 ASD = W30X132	24	18.2
L = 20	LRFD = W33X118 ASD = W33X152	34	22.4
L = 22	LRFD = W36X135 ASD = W36X182	47	25.8
L = 24	LRFD = W40X167 ASD = W40X199	32	16.1
Persentase (%) rata-rata :			22.47

Tabel 4.12. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 3.5 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W16X31 ASD = W16X40	9	22.5
L = 10	LRFD = W21X44 ASD = W21X57	13	22.8
L = 12	LRFD = W24X55 ASD = W24X68	13	19.1
L = 14	LRFD = W24X76 ASD = W24X94	18	19.1
L = 16	LRFD = W30X84 ASD = W30X114	30	26.3
L = 18	LRFD = W30X108 ASD = W30X132	24	18.2
L = 20	LRFD = W33X118 ASD = W33X152	34	22.4
L = 22	LRFD = W36X135 ASD = W36X182	47	25.8
L = 24	LRFD = W40X167 ASD = W40X199	32	16.1
Persentase (%) rata-rata :			22.47

Tabel 4.13. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 4 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W16X31 ASD = W16X40	9	22.5
L = 10	LRFD = W21X44 ASD = W21X57	13	22.8
L = 12	LRFD = W24X55 ASD = W24X68	13	19.1
L = 14	LRFD = W24X76 ASD = W24X94	18	19.1
L = 16	LRFD = W27X84 ASD = W27X114	30	26.3
L = 18	LRFD = W30X99 ASD = W30X132	33	25.0
L = 20	LRFD = W33X118 ASD = W33X152	34	22.4
L = 22	LRFD = W36X135 ASD = W36X182	47	25.8
L = 24	LRFD = W40X149 ASD = W40X199	50	25.1
Persentase (%) rata-rata :			23.12

Tabel 4.14. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 4.5 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W16X31 ASD = W16X40	9	22.5
L = 10	LRFD = W21X44 ASD = W21X57	13	22.8
L = 12	LRFD = W24X55 ASD = W24X68	13	19.1
L = 14	LRFD = W24X68 ASD = W24X94	26	27.7
L = 16	LRFD = W27X84 ASD = W27X114	30	26.3
L = 18	LRFD = W30X99 ASD = W30X132	33	25.0
L = 20	LRFD = W33X118 ASD = W33X152	34	22.4
L = 22	LRFD = W36X135 ASD = W36X182	47	25.8
L = 24	LRFD = W40X149 ASD = W40X199	50	25.1
Persentase (%) rata-rata :			24.08

Tabel 4.15. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 5 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W16X31 ASD = W16X40	9	22.5
L = 10	LRFD = W21X44 ASD = W21X57	13	22.8
L = 12	LRFD = W24X55 ASD = W24X68	13	19.1
L = 14	LRFD = W24X68 ASD = W24X94	26	27.7
L = 16	LRFD = W27X84 ASD = W27X114	30	26.3
L = 18	LRFD = W30X99 ASD = W30X132	33	25.0
L = 20	LRFD = W33X118 ASD = W33X152	34	22.4
L = 22	LRFD = W36X135 ASD = W36X182	47	25.8
L = 24	LRFD = W40X149 ASD = W40X199	50	25.1
Persentase (%) rata-rata :			24.08

4. Jarak antar balok (B0) = 4.0 m

Tabel 4.16. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 3 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W18X35 ASD = W18X46	11	23.9
L = 10	LRFD = W21X44 ASD = W21X62	18	29.0
L = 12	LRFD = W24X62 ASD = W24X84	22	26.2
L = 14	LRFD = W27X84 ASD = W27X102	18	17.7
L = 16	LRFD = W30X90 ASD = W30X124	34	27.4
L = 18	LRFD = W30X116 ASD = W30X173	57	32.9
L = 20	LRFD = W36X141 ASD = W36X201	60	29.8
L = 22	LRFD = W36X160 ASD = W36X210	50	24.9
L = 24	LRFD = W40X183 ASD = W40X244	61	25.0
Persentase (%) rata-rata :			26.31

Tabel 4.17. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 3.5 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W18X35 ASD = W18X46	11	23.9
L = 10	LRFD = W21X44 ASD = W21X62	18	29.0
L = 12	LRFD = W24X62 ASD = W24X84	22	26.2
L = 14	LRFD = W27X84 ASD = W27X102	18	17.7
L = 16	LRFD = W30X90 ASD = W30X124	34	27.4
L = 18	LRFD = W30X116 ASD = W30X173	57	32.9
L = 20	LRFD = W33X130 ASD = W33X201	71	35.3
L = 22	LRFD = W40X149 ASD = W40X192	43	22.4
L = 24	LRFD = W40X183 ASD = W40X221	38	17.2
Persentase (%) rata-rata :			25.78

Tabel 4.18. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 4 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W18X35 ASD = W18X46	11	23.9
L = 10	LRFD = W21X44 ASD = W21X62	18	29.0
L = 12	LRFD = W24X62 ASD = W24X84	22	26.2
L = 14	LRFD = W27X84 ASD = W27X102	18	17.7
L = 16	LRFD = W30X90 ASD = W30X124	34	27.4
L = 18	LRFD = W30X116 ASD = W30X148	32	21.6
L = 20	LRFD = W33X130 ASD = W33X201	71	35.3
L = 22	LRFD = W40X149 ASD = W40X192	43	22.4
L = 24	LRFD = W40X183 ASD = W40X221	38	17.2
Persentase (%) rata-rata :			24.52

Tabel 4.19. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 4.5 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W18X35 ASD = W18X46	11	23.9
L = 10	LRFD = W21X44 ASD = W21X62	18	29.0
L = 12	LRFD = W24X62 ASD = W24X84	22	26.2
L = 14	LRFD = W27X84 ASD = W27X102	18	17.7
L = 16	LRFD = W30X90 ASD = W30X124	34	27.4
L = 18	LRFD = W30X116 ASD = W30X148	32	21.6
L = 20	LRFD = W33X130 ASD = W33X201	71	35.3
L = 22	LRFD = W40X149 ASD = W40X183	34	18.6
L = 24	LRFD = W40X167 ASD = W40X215	48	22.3
Persentase (%) rata-rata :			24.67

Tabel 4.2 Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 5 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W18X35 ASD = W18X46	11	23.9
L = 10	LRFD = W21X44 ASD = W21X62	18	29.0
L = 12	LRFD = W24X62 ASD = W24X84	22	26.2
L = 14	LRFD = W27X84 ASD = W27X102	18	17.7
L = 16	LRFD = W30X90 ASD = W30X124	34	27.4
L = 18	LRFD = W30X116 ASD = W30X148	32	21.6
L = 20	LRFD = W33X130 ASD = W33X201	71	35.3
L = 22	LRFD = W40X149 ASD = W40X183	34	18.6
L = 24	LRFD = W40X167 ASD = W40X215	48	22.3
Persentase (%) rata-rata :			24.67

5. Jarak antar balok (B0) = 4.5 m

Tabel 4.21. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 3 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W18X40 ASD = W18X50	10	20.0
L = 10	LRFD = W21X50 ASD = W21X68	18	26.5
L = 12	LRFD = W24X68 ASD = W24X94	26	27.7
L = 14	LRFD = W27X84 ASD = W27X114	30	263
L = 16	LRFD = W30X108 ASD = W30X148	40	27.0
L = 18	LRFD = W33X118 ASD = W33X169	51	302
L = 20	LRFD = W40X149 ASD = W40X183	34	18.6
L = 22	LRFD = W40X167 ASD = W40X215	48	22.3
L = 24	LRFD = W40X199 ASD = W40X268	69	25.7
Persentase (%) rata-rata :			24.9

Tabel 4.22. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 3.5 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W18X40 ASD = W18X50	10	20.0
L = 10	LRFD = W21X50 ASD = W21X68	18	26.5
L = 12	LRFD = W24X68 ASD = W24X94	26	27.7
L = 14	LRFD = W27X84 ASD = W27X114	30	26.3
L = 16	LRFD = W30X99 ASD = W30X148	49	33.1
L = 18	LRFD = W33X118 ASD = W33X169	51	30.2
L = 20	LRFD = W40X149 ASD = W40X183	34	18.6
L = 22	LRFD = W40X167 ASD = W40X215	48	22.3
L = 24	LRFD = W40X199 ASD = W40X268	69	25.7
Persentase (%) rata-rata :			25.6

Tabel 4.23. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 4 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W18X40 ASD = W18X50	10	20.0
L = 10	LRFD = W21X50 ASD = W21X68	18	26.5
L = 12	LRFD = W24X68 ASD = W24X94	26	27.7
L = 14	LRFD = W27X84 ASD = W27X114	30	26.3
L = 16	LRFD = W30X99 ASD = W30X148	49	33.1
L = 18	LRFD = W33X118 ASD = W33X169	51	30.2
L = 20	LRFD = W40X149 ASD = W40X183	34	18.6
L = 22	LRFD = W40X167 ASD = W40X215	48	22.3
L = 24	LRFD = W40X199 ASD = W40X249	50	20.1
Persentase (%) rata-rata :			24.58

Tabel 4.24. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 4.5 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W18X40 ASD = W18X50	10	20.0
L = 10	LRFD = W21X50 ASD = W21X68	18	26.5
L = 12	LRFD = W24X68 ASD = W24X94	26	27.7
L = 14	LRFD = W27X84 ASD = W27X114	30	26.3
L = 16	LRFD = W30X99 ASD = W30X148	49	33.1
L = 18	LRFD = W33X118 ASD = W33X169	51	30.2
L = 20	LRFD = W40X149 ASD = W40X183	34	18.6
L = 22	LRFD = W40X167 ASD = W40X215	48	22.3
L = 24	LRFD = W40X192 ASD = W40X249	57	22.9
Persentase (%) rata-rata :			25.29

Tabel 4.25. Panjang Bentang (L) Berubah dan Mutu beton (f'c) = 5 Ksi

PANJANG BENTANG (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
L = 8	LRFD = W16X36 ASD = W16X50	14	28.0
L = 10	LRFD = W21X50 ASD = W21X68	18	26.5
L = 12	LRFD = W24X68 ASD = W24X94	26	27.7
L = 14	LRFD = W27X84 ASD = W27X114	30	26.3
L = 16	LRFD = W30X99 ASD = W30X148	49	33.1
L = 18	LRFD = W33X118 ASD = W33X169	51	30.2
L = 20	LRFD = W36X135 ASD = W36X194	59	30.4
L = 22	LRFD = W40X167 ASD = W40X215	48	22.3
L = 24	LRFD = W40X192 ASD = W40X249	57	22.9
Persentase (%) rata-rata :			27.49

4.5.2. Panjang Bentang Tetap, Jarak Balok Tetap dan Mutu Beton Berubah

1. Jarak antar balok (B9) = 2.5 m

Tabel 4.26. Panjang Bentang (L) 8 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W14X26 ASD = W14X34	8	23.5
f'c = 3.5	LRFD = W14X26 ASD = W14X34	8	23.5
f'c = 4	LRFD = W14X26 ASD = W14X34	8	23.5
f'c = 4.5	LRFD = W14X26 ASD = W14X34	8	23.5
f'c = 5	LRFD = W14X26 ASD = W14X34	8	23.5
Persentase (%) rata-rata :			23.5

Tabel 4.27. Panjang Bentang (L) 10 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
F'c = 3	LRFD = W18X35 ASD = W18X46	11	23.9
f'c = 3.5	LRFD = W18X35 ASD = W18X46	11	23.9
F'c = 4	LRFD = W18X35 ASD = W18X46	11	23.9
f'c = 4.5	LRFD = W18X35 ASD = W18X46	11	23.9
F'c = 5	LRFD = W18X35 ASD = W18X46	11	23.9
Persentase (%) rata-rata :			23.9

Tabel 4.28. Panjang Bentang (L) 12 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
F'c = 3	LRFD = W21X44 ASD = W21X57	13	22.8
f'c = 3.5	LRFD = W21X44 ASD = W21X57	13	22.8
f'c = 4	LRFD = W21X44 ASD = W21X57	13	22.8
f'c = 4.5	LRFD = W21X44 ASD = W21X57	13	22.8
f'c = 5	LRFD = W21X44 ASD = W21X57	13	22.8
Persentase (%) rata-rata :			22.8

Tabel 4.29. Panjang Bentang (L) 14 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
F'c = 3	LRFD = W24X55 ASD = W24X68	13	19.1
f'c = 3.5	LRFD = W24X55 ASD = W24X68	13	19.1
F'c = 4	LRFD = W24X55 ASD = W24X68	13	19.1
f'c = 4.5	LRFD = W24X55 ASD = W24X68	13	19.1
F'c = 5	LRFD = W24X55 ASD = W24X68	13	19.1
Persentase (%) rata-rata :			19.1

Tabel 4.3 Panjang Bentang (L) 16 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W24X68 ASD = W24X94	26	27.7
f'c = 3.5	LRFD = W24X68 ASD = W24X94	26	27.7
f'c = 4	LRFD = W24X68 ASD = W24X94	26	27.7
f'c = 4.5	LRFD = W24X68 ASD = W24X94	26	27.7
f'c = 5	LRFD = W24X68 ASD = W24X94	26	27.7
Persentase (%) rata-rata :			27.7

Tabel 4.31. Panjang Bentang (L) 18 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
F'c = 3	LRFD = W27X84 ASD = W27X114	30	26.3
f'c = 3.5	LRFD = W27X84 ASD = W27X102	18	17.7
F'c = 4	LRFD = W27X84 ASD = W27X102	18	17.7
f'c = 4.5	LRFD = W27X84 ASD = W27X102	18	17.7
F'c = 5	LRFD = W27X84 ASD = W27X102	18	17.7
Persentase (%) rata-rata :			19.42

Tabel 4.32. Panjang Bentang (L) 20 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
F'c = 3	LRFD = W30X99 ASD = W30X124	25	20.2
f'c = 3.5	LRFD = W30X99 ASD = W30X124	25	20.2
F'c = 4	LRFD = W30X90 ASD = W30X124	34	27.4
f'c = 4.5	LRFD = W30X90 ASD = W30X124	34	27.4
f'c = 5	LRFD = W30X90 ASD = W30X124	34	27.4
Persentase (%) rata-rata :			24.52

Tabel 4.33. Panjang Bentang (L) 22 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W33X118 ASD = W33X141	23	16.3
f'c = 3.5	LRFD = W33X118 ASD = W33X141	23	16.3
f'c = 4	LRFD = W33X118 ASD = W33X141	23	16.3
f'c = 4.5	LRFD = W33X118 ASD = W33X141	23	16.3
f'c = 5	LRFD = W33X118 ASD = W33X141	23	16.3
Persentase (%) rata-rata :			16.3

Tabel 4.34. Panjang Bentang (L) 24 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W33X130 ASD = W33X169	39	23.1
f'c = 3.5	LRFD = W33X130 ASD = W33X169	39	23.1
f'c = 4	LRFD = W33X130 ASD = W33X169	39	23.1
f'c = 4.5	LRFD = W33X130 ASD = W33X169	39	23.1
f'c = 5	LRFD = W33X130 ASD = W33X169	39	23.1
Persentase (%) rata-rata :			23.1

2. Jarak antar balok (B0) = 3.0 m

Tabel 4.35. Panjang Bentang (L) 8 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W14X30 ASD = W14X38	8	21.1
f'c = 3.5	LRFD = W14X30 ASD = W14X38	8	21.1
f'c = 4	LRFD = W14X30 ASD = W14X38	8	21.1
f'c = 4.5	LRFD = W14X30 ASD = W14X38	8	21.1
f'c = 5	LRFD = W14X30 ASD = W14X38	8	21.1
Persentase (%) rata-rata :			21.1

Tabel 4.36. Panjang Bentang (L) 10 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W18X40 ASD = W18X50	10	20.0
f'c = 3.5	LRFD = W18X40 ASD = W18X50	10	20.0
f'c = 4	LRFD = W18X40 ASD = W18X50	10	20.0
f'c = 4.5	LRFD = W18X40 ASD = W18X50	10	20.0
f'c = 5	LRFD = W18X40 ASD = W18X50	10	20.0
Persentase (%) rata-rata :			20.0

Tabel 4.37. Panjang Bentang (L) 12 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W21X50 ASD = W21X68	18	26.5
f'c = 3.5	LRFD = W21X50 ASD = W21X68	18	26.5
f'c = 4	LRFD = W21X50 ASD = W21X68	18	26.5
f'c = 4.5	LRFD = W21X50 ASD = W21X68	18	26.5
f'c = 5	LRFD = W21X50 ASD = W21X68	18	26.5
Persentase (%) rata-rata :			26.5

Tabel 4.38. Panjang Bentang (L) 14 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W24X62 ASD = W24X84	22	26.2
f'c = 3.5	LRFD = W24X62 ASD = W24X84	22	26.2
f'c = 4	LRFD = W24X62 ASD = W24X84	22	26.2
f'c = 4.5	LRFD = W24X62 ASD = W24X84	22	26.2
f'c = 5	LRFD = W24X62 ASD = W24X84	22	26.2
Persentase (%) rata-rata :			26.2

Tabel 4.39. Panjang Bentang (L) 16 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W27X84 ASD = W27X102	18	17.7
f'c = 3.5	LRFD = W27X84 ASD = W27X102	18	17.7
f'c = 4	LRFD = W27X84 ASD = W27X94	10	11.9
f'c = 4.5	LRFD = W27X84 ASD = W27X94	10	11.9
f'c = 5	LRFD = W27X84 ASD = W27X94	10	11.9
Persentase (%) rata-rata :			14.22

Tabel 4.4 Panjang Bentang (L) 18 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W30X90 ASD = W30X116	26	22.4
f'c = 3.5	LRFD = W30X90 ASD = W30X116	26	22.4
f'c = 4	LRFD = W30X90 ASD = W30X116	26	22.4
f'c = 4.5	LRFD = W30X90 ASD = W30X116	26	22.4
f'c = 5	LRFD = W30X90 ASD = W30X116	26	22.4
Persentase (%) rata-rata :			22.4

Tabel 4.41. Panjang Bentang (L) 20 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W30X116 ASD = W30X148	32	21.6
f'c = 3.5	LRFD = W30X108 ASD = W30X148	40	27.0
f'c = 4	LRFD = W30X108 ASD = W30X148	40	27.0
f'c = 4.5	LRFD = W30X108 ASD = W30X148	40	27.0
f'c = 5	LRFD = W30X108 ASD = W30X148	40	27.0
Persentase (%) rata-rata :			22.4

Tabel 4.42. Panjang Bentang (L) 22 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W33X130 ASD = W33X169	39	23.1
f'c = 3.5	LRFD = W33X130 ASD = W33X169	39	23.1
f'c = 4	LRFD = W33X130 ASD = W33X169	39	23.1
f'c = 4.5	LRFD = W33X130 ASD = W33X169	39	23.1
f'c = 5	LRFD = W33X118 ASD = W33X169	39	23.1
Persentase (%) rata-rata :			23.1

Tabel 4.43. Panjang Bentang (L) 24 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W36X150 ASD = W36X182	32	17.6
f'c = 3.5	LRFD = W36X150 ASD = W36X182	32	17.6
f'c = 4	LRFD = W36X150 ASD = W36X182	32	17.6
f'c = 4.5	LRFD = W36X135 ASD = W36X182	47	25.8
f'c = 5	LRFD = W36X135 ASD = W36X182	47	25.8
Persentase (%) rata-rata :			20.88

3. Jarak antar balok (B0) = 3.5 m

Tabel 4.44. Panjang Bentang (L) 8 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W16X31 ASD = W16X40	9	22.5
f'c = 3.5	LRFD = W16X31 ASD = W16X40	9	22.5
f'c = 4	LRFD = W16X31 ASD = W16X40	9	22.5
f'c = 4.5	LRFD = W16X31 ASD = W16X40	9	22.5
f'c = 5	LRFD = W16X31 ASD = W16X40	9	22.5
Persentase (%) rata-rata :			22.5

Tabel 4.45. Panjang Bentang (L) 10 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W21X44 ASD = W21X57	13	22.8
f'c = 3.5	LRFD = W21X44 ASD = W21X57	13	22.8
f'c = 4	LRFD = W16X50 ASD = W16X67	17	25.4
f'c = 4.5	LRFD = W16X45 ASD = W16X67	22	32.8
f'c = 5	LRFD = W16X45 ASD = W16X67	22	32.8
Persentase (%) rata-rata :			27.32

Tabel 4.46. Panjang Bentang (L) 12 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W24X55 ASD = W24X68	13	19.1
f'c = 3.5	LRFD = W24X55 ASD = W24X68	13	19.1
f'c = 4	LRFD = W24X55 ASD = W24X68	13	19.1
f'c = 4.5	LRFD = W24X55 ASD = W24X68	13	19.1
f'c = 5	LRFD = W24X55 ASD = W24X68	13	19.1
Persentase (%) rata-rata :			19.1

Tabel 4.47. Panjang Bentang (L) 14 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W24X76 ASD = W24X94	18	19.2
f'c = 3.5	LRFD = W24X76 ASD = W24X94	18	19.2
f'c = 4	LRFD = W24X76 ASD = W24X94	18	19.2
f'c = 4.5	LRFD = W24X68 ASD = W24X94	26	27.7
f'c = 5	LRFD = W24X68 ASD = W24X94	26	27.7
Persentase (%) rata-rata :			22.60

Tabel 4.48. Panjang Bentang (L) 16 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W27X84 ASD = W27X114	30	26.3
f'c = 3.5	LRFD = W27X84 ASD = W27X114	30	26.3
f'c = 4	LRFD = W27X84 ASD = W27X114	30	26.3
f'c = 4.5	LRFD = W27X84 ASD = W27X114	30	26.3
f'c = 5	LRFD = W27X84 ASD = W27X114	30	26.3
Persentase (%) rata-rata :			26.3

Tabel 4.49. Panjang Bentang (L) 18 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W30X108 ASD = W30X132	24	18.2
f'c = 3.5	LRFD = W30X108 ASD = W30X132	24	18.2
f'c = 4	LRFD = W30X99 ASD = W30X132	33	25.0
f'c = 4.5	LRFD = W30X99 ASD = W30X132	33	25.0
f'c = 5	LRFD = W30X99 ASD = W30X132	33	25.0
Persentase (%) rata-rata :			22.28

Tabel 4.5 Panjang Bentang (L) 20 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W33X118 ASD = W33X152	34	22.4
f'c = 3.5	LRFD = W33X118 ASD = W33X152	34	22.4
f'c = 4	LRFD = W33X118 ASD = W33X152	34	22.4
f'c = 4.5	LRFD = W33X118 ASD = W33X152	34	22.4
f'c = 5	LRFD = W33X118 ASD = W33X152	34	22.4
Persentase (%) rata-rata :			22.4

Tabel 4.51. Panjang Bentang (L) 22 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W36X135 ASD = W36X182	47	25.8
f'c = 3.5	LRFD = W36X135 ASD = W36X170	35	20.6
f'c = 4	LRFD = W36X135 ASD = W36X170	35	20.6
f'c = 4.5	LRFD = W36X135 ASD = W36X170	35	20.6
f'c = 5	LRFD = W36X135 ASD = W36X170	35	20.6
Persentase (%) rata-rata :			21.64

Tabel 4.52. Panjang Bentang (L) 24 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W40X167 ASD = W40X199	32	16.1
f'c = 3.5	LRFD = W40X167 ASD = W40X199	32	16.1
f'c = 4	LRFD = W40X149 ASD = W40X199	50	26.0
f'c = 4.5	LRFD = W40X149 ASD = W40X199	50	26.0
f'c = 5	LRFD = W40X149 ASD = W40X192	50	26.0
Persentase (%) rata-rata :			22.04

4. Jarak antar balok (B0) = 4.0 m

Tabel 4.53. Panjang Bentang (L) 8 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W18X35 ASD = W18X46	11	23.9
f'c = 3.5	LRFD = W18X35 ASD = W18X46	11	23.9
f'c = 4	LRFD = W18X35 ASD = W18X46	11	23.9
f'c = 4.5	LRFD = W18X35 ASD = W18X46	11	23.9
f'c = 5	LRFD = W18X35 ASD = W18X46	11	23.9
Persentase (%) rata-rata :			23.9

Tabel 4.54. Panjang Bentang (L) 10 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W21X44 ASD = W21X62	18	29.0
f'c = 3.5	LRFD = W21X44 ASD = W21X62	18	29.0
f'c = 4	LRFD = W21X44 ASD = W21X62	18	29.0
f'c = 4.5	LRFD = W21X44 ASD = W21X62	18	29.0
f'c = 5	LRFD = W21X44 ASD = W21X62	18	29.0
Persentase (%) rata-rata :			29.0

Tabel 4.55. Panjang Bentang (L) 12 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W24X62 ASD = W24X84	22	28.6
f'c = 3.5	LRFD = W24X62 ASD = W24X84	22	28.6
f'c = 4	LRFD = W24X62 ASD = W24X84	22	28.6
f'c = 4.5	LRFD = W24X62 ASD = W24X84	22	28.6
f'c = 5	LRFD = W24X62 ASD = W24X84	22	28.6
Persentase (%) rata-rata :			28.6

Tabel 4.56. Panjang Bentang (L) 14 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W27X84 ASD = W27X102	18	17.7
f'c = 3.5	LRFD = W27X84 ASD = W27X102	18	17.7
f'c = 4	LRFD = W27X84 ASD = W27X102	18	17.7
f'c = 4.5	LRFD = W27X84 ASD = W27X102	18	17.7
f'c = 5	LRFD = W27X84 ASD = W27X102	18	17.7
Persentase (%) rata-rata :			17.7

Tabel 4.57. Panjang Bentang (L) 16 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W30X90 ASD = W30X124	34	27.4
f'c = 3.5	LRFD = W30X90 ASD = W30X124	34	27.4
f'c = 4	LRFD = W30X90 ASD = W30X124	34	27.4
f'c = 4.5	LRFD = W30X90 ASD = W30X124	34	27.4
f'c = 5	LRFD = W30X90 ASD = W30X124	34	27.4
Persentase (%) rata-rata :			27.4

Tabel 4.58. Panjang Bentang (L) 18 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W30X116 ASD = W30X173	57	32.9
f'c = 3.5	LRFD = W30X116 ASD = W30X173	57	32.9
f'c = 4	LRFD = W30X116 ASD = W30X148	32	21.6
f'c = 4.5	LRFD = W30X116 ASD = W30X148	32	21.6
f'c = 5	LRFD = W30X116 ASD = W30X148	32	21.6
Persentase (%) rata-rata :			26.12

Tabel 4.59. Panjang Bentang (L) 20 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W33X141 ASD = W33X201	60	29.8
f'c = 3.5	LRFD = W33X130 ASD = W33X201	71	35.3
f'c = 4	LRFD = W33X130 ASD = W33X201	71	35.3
f'c = 4.5	LRFD = W33X130 ASD = W33X201	71	35.3
f'c = 5	LRFD = W33X130 ASD = W33X201	71	35.3
Persentase (%) rata-rata :			34.20

Tabel 4.60 Panjang Bentang (L) 22 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W40X149 ASD = W40X192	43	22.4
f'c = 3.5	LRFD = W40X149 ASD = W40X192	43	22.4
f'c = 4	LRFD = W40X149 ASD = W40X192	43	22.4
f'c = 4.5	LRFD = W40X149 ASD = W40X183	34	18.6
f'c = 5	LRFD = W40X149 ASD = W40X183	34	18.6
Persentase (%) rata-rata :			20.88

Tabel 4.61. Panjang Bentang (L) 24 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W40X183 ASD = W40X244	61	12.5
f'c = 3.5	LRFD = W40X183 ASD = W40X221	38	17.2
f'c = 4	LRFD = W40X183 ASD = W40X221	38	17.2
f'c = 4.5	LRFD = W40X167 ASD = W40X215	48	22.3
f'c = 5	LRFD = W40X167 ASD = W40X215	48	22.3
Persentase (%) rata-rata :			18.30

5. Jarak antar balok (B0) = 4.5 m

Tabel 4.62. Panjang Bentang (L) 8 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W16X40 ASD = W16X50	10	20.0
f'c = 3.5	LRFD = W16X40 ASD = W16X50	10	20.0
f'c = 4	LRFD = W16X40 ASD = W16X50	10	20.0
f'c = 4.5	LRFD = W16X40 ASD = W16X50	10	20.0
f'c = 5	LRFD = W16X40 ASD = W16X50	10	20.0
Persentase (%) rata-rata :			20.0

Tabel 4.63. Panjang Bentang (L) 10 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W21X50 ASD = W21X68	8	11.8
f'c = 3.5	LRFD = W21X50 ASD = W21X68	8	11.8
f'c = 4	LRFD = W21X50 ASD = W21X68	8	11.8
f'c = 4.5	LRFD = W21X50 ASD = W21X68	8	11.8
f'c = 5	LRFD = W21X50 ASD = W21X68	8	11.8
Persentase (%) rata-rata :			11.8

Tabel 4.64. Panjang Bentang (L) 12 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W24X68 ASD = W24X94	26	27.7
f'c = 3.5	LRFD = W24X68 ASD = W24X94	26	27.7
f'c = 4	LRFD = W24X68 ASD = W24X94	26	27.7
f'c = 4.5	LRFD = W24X68 ASD = W24X94	26	27.7
f'c = 5	LRFD = W24X68 ASD = W24X94	26	27.7
Persentase (%) rata-rata :			27.7

Tabel 4.65. Panjang Bentang (L) 14 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W27X84 ASD = W27X114	30	26.3
f'c = 3.5	LRFD = W27X84 ASD = W27X114	30	26.3
f'c = 4	LRFD = W27X84 ASD = W27X114	30	26.3
f'c = 4.5	LRFD = W27X84 ASD = W27X114	30	26.3
f'c = 5	LRFD = W27X84 ASD = W27X114	30	26.3
Persentase (%) rata-rata :			26.3

Tabel 4.66. Panjang Bentang (L) 16 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W30X108 ASD = W30X148	40	27.0
f'c = 3.5	LRFD = W30X99 ASD = W30X148	49	33.1
f'c = 4	LRFD = W30X99 ASD = W30X148	49	33.1
f'c = 4.5	LRFD = W30X99 ASD = W30X148	49	33.1
f'c = 5	LRFD = W30X99 ASD = W30X148	49	33.1
Persentase (%) rata-rata :			31.88

Tabel 4.67. Panjang Bentang (L) 18 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W33X118 ASD = W33X169	51	30.2
f'c = 3.5	LRFD = W33X118 ASD = W33X169	51	30.2
f'c = 4	LRFD = W33X118 ASD = W33X169	51	30.2
f'c = 4.5	LRFD = W33X118 ASD = W33X169	51	30.2
f'c = 5	LRFD = W33X118 ASD = W33X169	51	30.2
Persentase (%) rata-rata :			30.2

Tabel 4.68. Panjang Bentang (L) 20 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W40X149 ASD = W40X183	34	18.6
f'c = 3.5	LRFD = W40X149 ASD = W40X183	34	18.6
f'c = 4	LRFD = W40X149 ASD = W40X183	34	18.6
f'c = 4.5	LRFD = W40X149 ASD = W40X183	34	18.6
f'c = 5	LRFD = W40X149 ASD = W40X183	34	18.6
Persentase (%) rata-rata :			18.6

Tabel 4.69. Panjang Bentang (L) 22 m dan Mutu beton (f'c) Berubah

MUTU BETON (ksi)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
f'c = 3	LRFD = W40X167 ASD = W40X215	48	22.3
f'c = 3.5	LRFD = W40X167 ASD = W40X215	48	22.3
f'c = 4	LRFD = W40X167 ASD = W40X215	48	22.3
f'c = 4.5	LRFD = W40X167 ASD = W40X215	48	22.3
f'c = 5	LRFD = W40X167 ASD = W40X215	48	22.3
Persentase (%) rata-rata :			22.3

Tabel 4.70. Panjang Bentang (L) 24 m dan Mutu beton (f'c) Berubah

MUTU BETON (f'c)	PROFIL	SELISIH BERAT	PERSENTASE (%)
f'c = 3	LRFD = W40X199 ASD = W40X268	69	25.7
f'c = 3.5	LRFD = W40X199 ASD = W40X268	69	25.7
f'c = 4	LRFD = W40X199 ASD = W40X249	50	20.1
f'c = 4.5	LRFD = W40X192 ASD = W40X249	57	22.9
f'c = 5	LRFD = W40X192 ASD = W40X249	57	22.9
Persentase (%) rata-rata :			23.46

4.5.3. Panjang Bentang Tetap, Mutu Beton Tetap dan Jarak Balok Berubah

1. Mutu Beton (f'c) = 3 Ksi

Tabel 4.71. Panjang Bentang (L) 8 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W14X26 ASD = W14X34	8	23.5
B0 = 3.0	LRFD = W14X30 ASD = W14X38	8	21.1
B0 = 3.5	LRFD = W16X31 ASD = W16X40	9	22.5
B0 = 4.0	LRFD = W18X35 ASD = W18X46	11	23.9
B0 = 4.5	LRFD = W18X40 ASD = W18X50	10	20.0
Persentase (%) rata-rata :			22.20

Tabel 4.72. Panjang Bentang (L) 10 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W16X36 ASD = W16X45	9	20.0
B0 = 3.0	LRFD = W18X40 ASD = W18X50	10	20.0
B0 = 3.5	LRFD = W21X44 ASD = W21X57	13	22.8
B0 = 4.0	LRFD = W21X44 ASD = W21X62	18	29.0
B0 = 4.5	LRFD = W21X50 ASD = W21X68	18	16.5
Persentase (%) rata-rata :			21.66

Tabel 4.73. Panjang Bentang (L) 12 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W21X44 ASD = W21X57	13	22.8
B0 = 3.0	LRFD = W21X50 ASD = W21X68	18	26.5
B0 = 3.5	LRFD = W24X55 ASD = W24X68	13	19.1
B0 = 4,0	LRFD = W24X62 ASD = W24X84	22	26.2
B0 = 4.5	LRFD = W24X68 ASD = W24X94	26	27.7
Persentase (%) rata-rata :			24.46

Tabel 4.74. Panjang Bentang (L) 14 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W24X55 ASD = W24X68	13	19.1
B0 = 3.0	LRFD = W24X62 ASD = W24X84	22	26.2
B0 = 3.5	LRFD = W24X76 ASD = W24X94	18	19.2
B0 = 4.0	LRFD = W27X84 ASD = W27X102	18	17.7
B0 = 4.5	LRFD = W27X84 ASD = W27X114	30	26.3
Persentase (%) rata-rata :			21.7

Tabel 4.75. Panjang Bentang (L) 16 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W24X68 ASD = W24X94	26	27.7
B0 = 3.0	LRFD = W27X84 ASD = W27X102	18	17.6
B0 = 3.5	LRFD = W27X84 ASD = W27X114	18	16.7
B0 = 4.0	LRFD = W30X90 ASD = W30X124	34	27.4
B0 = 4.5	LRFD = W30X108 ASD = W30X148	40	27.0
Persentase (%) rata-rata :			23.28

Tabel 4.76. Panjang Bentang (L) 18 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W27X84 ASD = W27X114	30	26.3
B0 = 3.0	LRFD = W30X90 ASD = W30X116	26	22.4
B0 = 3.5	LRFD = W30X108 ASD = W30X132	24	18.2
B0 = 4.0	LRFD = W30X116 ASD = W30X173	57	32.9
B0 = 4.5	LRFD = W33X118 ASD = W33X169	51	30.2
Persentase (%) rata-rata :			26.0

Tabel 4.77. Panjang Bentang (L) 20 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W30X99 ASD = W30X124	25	20.2
B0 = 3.0	LRFD = W30X116 ASD = W30X148	32	21.6
B0 = 3.5	LRFD = W33X118 ASD = W33X152	34	22.4
B0 = 4.0	LRFD = W36X135 ASD = W36X170	35	20.6
B0 = 4.5	LRFD = W40X149 ASD = W40X183	34	18.6
Persentase (%) rata-rata :			20.68

Tabel 4.78. Panjang Bentang (L) 22 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W33X118 ASD = W33X141	23	16.3
B0 = 3.0	LRFD = W33X130 ASD = W33X169	39	23.1
B0 = 3.5	LRFD = W36X135 ASD = W36X182	47	25.8
B0 = 4.0	LRFD = W36X160 ASD = W36X210	50	23.8
B0 = 4.5	LRFD = W40X167 ASD = W40X215	48	22.3
Persentase (%) rata-rata :			22.22

Tabel 4.79. Panjang Bentang (L) 24 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W33X130 ASD = W33X169	39	23.1
B0 = 3.0	LRFD = W40X149 ASD = W40X183	34	18.5
B0 = 3.5	LRFD = W40X167 ASD = W40X199	32	16.1
B0 = 4.0	LRFD = W40X183 ASD = W40X244	61	25.0
B0 = 4.5	LRFD = W40X199 ASD = W40X268	69	25.7
Persentase (%) rata-rata :			21.68

2. Mutu Beton (f'c) = 3.5 Ksi

Tabel 4.80. Panjang Bentang (L) 8 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W14X26 ASD = W14X34	8	23.5
B0 = 3.0	LRFD = W14X30 ASD = W14X38	8	21.1
B0 = 3.5	LRFD = W16X31 ASD = W16X40	9	22.5
B0 = 4.0	LRFD = W18X35 ASD = W18X46	11	23.9
B0 = 4.5	LRFD = W18X40 ASD = W18X50	10	20.0
Persentase (%) rata-rata :			22.20

Tabel 4.81. Panjang Bentang (L) 10 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W18X35 ASD = W18X46	9	20.0
B0 = 3.0	LRFD = W18X40 ASD = W18X50	10	20.0
B0 = 3.5	LRFD = W21X44 ASD = W21X57	13	22.8
B0 = 4.0	LRFD = W21X44 ASD = W21X62	18	29.0
B0 = 4.5	LRFD = W21X50 ASD = W21X68	18	26.5
Persentase (%) rata-rata :			23.66

Tabel 4.82. Panjang Bentang (L) 12 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W21X44 ASD = W21X57	13	22.8
B0 = 3.0	LRFD = W21X50 ASD = W21X62	12	19.4
B0 = 3.5	LRFD = W24X55 ASD = W24X68	13	19.1
B0 = 4.0	LRFD = W24X62 ASD = W24X84	22	26.2
B0 = 4.5	LRFD = W24X68 ASD = W24X94	26	27.7
Persentase (%) rata-rata :			23.04

Tabel 4.83. Panjang Bentang (L) 14 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W24X55 ASD = W24X68	13	19.1
B0 = 3.0	LRFD = W24X62 ASD = W24X84	22	26.2
B0 = 3.5	LRFD = W24X76 ASD = W24X94	18	19.2
B0 = 4.0	LRFD = W27X84 ASD = W27X102	18	17.7
B0 = 4.5	LRFD = W27X84 ASD = W27X114	30	26.3
Persentase (%) rata-rata :			21.70

Tabel 4.84. Panjang Bentang (L) 16 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W24X68 ASD = W24X94	26	27.7
B0 = 3.0	LRFD = W27X84 ASD = W27X102	18	17.6
B0 = 3.5	LRFD = W27X84 ASD = W27X114	30	26.3
B0 = 4.0	LRFD = W30X90 ASD = W30X124	34	27.4
B0 = 4.5	LRFD = W30X99 ASD = W30X148	49	33.1
Persentase (%) rata-rata :			26.42

Tabel 4.85. Panjang Bentang (L) 18 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W27X84 ASD = W27X102	18	17.7
B0 = 3.0	LRFD = W30X90 ASD = W30X116	26	22.4
B0 = 3.5	LRFD = W30X108 ASD = W30X132	24	18.2
B0 = 4.0	LRFD = W30X116 ASD = W30X173	57	32.9
B0 = 4.5	LRFD = W33X118 ASD = W33X169	51	30.2
Persentase (%) rata-rata :			24.28

Tabel 4.86. Panjang Bentang (L) 20 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W30X99 ASD = W30X124	25	20.1
B0 = 3.0	LRFD = W30X108 ASD = W30X148	40	27.0
B0 = 3.5	LRFD = W33X118 ASD = W33X152	34	22.4
B0 = 4.0	LRFD = W33X130 ASD = W33X201	71	35.3
B0 = 4.5	LRFD = W40X149 ASD = W40X183	34	18.6
Persentase (%) rata-rata :			24.68

Tabel 4.87. Panjang Bentang (L) 22 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W33X118 ASD = W33X141	23	16.3
B0 = 3.0	LRFD = W33X130 ASD = W33X169	39	23.1
B0 = 3.5	LRFD = W36X135 ASD = W36X182	47	25.8
B0 = 4.0	LRFD = W40X149 ASD = W40X192	43	22.4
B0 = 4.5	LRFD = W40X167 ASD = W40X215	48	22.3
Persentase (%) rata-rata :			21.98

Tabel 4.88. Panjang Bentang (L) 24 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W33X130 ASD = W33X169	39	23.1
B0 = 3.0	LRFD = W40X149 ASD = W40X167	18	10.8
B0 = 3.5	LRFD = W40X167 ASD = W40X199	32	16.1
B0 = 4.0	LRFD = W40X183 ASD = W40X221	38	17.2
B0 = 4.5	LRFD = W40X199 ASD = W40X268	69	25.7
Persentase (%) rata-rata :			18.58

3. Mutu Beton (f'c) = 4.0 Ksi

Tabel 4.89. Panjang Bentang (L) 8 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W14X26 ASD = W14X34	8	23.5
B0 = 3.0	LRFD = W14X30 ASD = W14X38	8	21.1
B0 = 3.5	LRFD = W16X31 ASD = W16X40	9	22.5
B0 = 4.0	LRFD = W18X35 ASD = W18X46	11	23.9
B0 = 4.5	LRFD = W18X40 ASD = W18X50	10	20.0
Persentase (%) rata-rata :			22.2

Tabel 4.90 Panjang Bentang (L) 10 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W16X36 ASD = W16X45	9	20.0
B0 = 3.0	LRFD = W18X40 ASD = W18X50	10	20.0
B0 = 3.5	LRFD = W21X44 ASD = W21X57	13	22.8
B0 = 4.0	LRFD = W21X44 ASD = W21X62	18	29.0
B0 = 4.5	LRFD = W21X50 ASD = W21X68	18	26.5
Persentase (%) rata-rata :			23.66

Tabel 4.91. Panjang Bentang (L) 12 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W21X44 ASD = W21X57	13	22.8
B0 = 3.0	LRFD = W21X50 ASD = W21X68	18	26.5
B0 = 3.5	LRFD = W24X55 ASD = W24X68	13	19.1
B0 = 4.0	LRFD = W24X62 ASD = W24X84	22	26..2
B0 = 4.5	LRFD = W24X68 ASD = W24X94	26	27.7
Persentase (%) rata-rata :			24.46

Tabel 4.92. Panjang Bentang (L) 14 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W24X55 ASD = W24X68	13	19.1
B0 = 3.0	LRFD = W24X62 ASD = W24X84	22	26.2
B0 = 3.5	LRFD = W24X76 ASD = W24X94	18	19.2
B0 = 4.0	LRFD = W27X84 ASD = W27X102	18	17.7
B0 = 4.5	LRFD = W27X84 ASD = W27X114	30	26.3
Persentase (%) rata-rata :			21.70

Tabel 4.93. Panjang Bentang (L) 16 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W24X68 ASD = W24X94	26	27.7
B0 = 3.0	LRFD = W27X84 ASD = W27X94	10	10.6
B0 = 3.5	LRFD = W27X84 ASD = W27X114	30	26.3
B0 = 4.0	LRFD = W30X90 ASD = W30X124	34	27.4
B0 = 4.5	LRFD = W30X99 ASD = W30X148	49	33.1
Persentase (%) rata-rata :			25.02

Tabel 4.94. Panjang Bentang (L) 18 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W27X84 ASD = W27X102	18	17.7
B0 = 3.0	LRFD = W30X90 ASD = W30X116	26	22.4
B0 = 3.5	LRFD = W30X99 ASD = W30X132	33	25.0
B0 = 4.0	LRFD = W30X116 ASD = W30X148	32	21.6
B0 = 4.5	LRFD = W33X118 ASD = W33X169	51	30.2
Persentase (%) rata-rata :			23.38

Tabel 4.95. Panjang Bentang (L) 20 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W30X90 ASD = W30X124	34	27.4
B0 = 3.0	LRFD = W30X108 ASD = W30X148	40	27.0
B0 = 3.5	LRFD = W33X118 ASD = W33X152	34	22.4
B0 = 4.0	LRFD = W33X130 ASD = W33X201	71	35.3
B0 = 4.5	LRFD = W40X149 ASD = W40X183	34	18.6
Persentase (%) rata-rata :			26.14

Tabel 4.96. Panjang Bentang (L) 22 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W30X116 ASD = W30X148	32	21.6
B0 = 3.0	LRFD = W33X130 ASD = W33X169	39	23.1
B0 = 3.5	LRFD = W36X135 ASD = W36X182	47	25.8
B0 = 4.0	LRFD = W40X149 ASD = W40X192	43	22.4
B0 = 4.5	LRFD = W40X167 ASD = W40X215	48	22.3
Persentase (%) rata-rata :			23.04

Tabel 4.97. Panjang Bentang (L) 24 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W33X130 ASD = W33X169	39	23.1
B0 = 3.0	LRFD = W40X149 ASD = W40X167	18	10.8
B0 = 3.5	LRFD = W40X149 ASD = W40X199	50	25.1
B0 = 4.0	LRFD = W40X183 ASD = W40X221	38	17.2
B0 = 4.5	LRFD = W40X199 ASD = W40X2[illegible]	50	20.1
Persentase (%) rata-rata :			19.26

4. Mutu Beton (f'c) = 4.5 Ksi

Tabel 4.98. Panjang Bentang (L) 8 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W14X26 ASD = W14X34	8	23.5
B0 = 3.0	LRFD = W14X30 ASD = W14X38	8	21.1
B0 = 3.5	LRFD = W16X31 ASD = W16X40	9	22.5
B0 = 4.0	LRFD = W18X35 ASD = W18X46	11	23.9
B0 = 4.5	LRFD = W18X40 ASD = W18X50	10	20.0
Persentase (%) rata-rata :			22.20

Tabel 4.99. Panjang Bentang (L) 10 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W18X35 ASD = W18X46	11	23.9
B0 = 3.0	LRFD = W18X40 ASD = W18X50	10	20.0
B0 = 3.5	LRFD = W21X44 ASD = W21X57	13	22.8
B0 = 4.0	LRFD = W21X44 ASD = W21X62	18	29.0
B0 = 4.5	LRFD = W21X50 ASD = W21X68	18	26.5
Persentase (%) rata-rata :			24.44

Tabel 4.100. Panjang Bentang (L) 12 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W21X44 ASD = W21X57	13	22.8
B0 = 3.0	LRFD = W21X50 ASD = W21X68	18	26.5
B0 = 3.5	LRFD = W24X55 ASD = W24X68	13	19.1
B0 = 4.0	LRFD = W24X62 ASD = W24X84	22	26.2
B0 = 4.5	LRFD = W24X68 ASD = W24X94	26	27.7
Persentase (%) rata-rata :			24.46

Tabel 4.101. Panjang Bentang (L) 14 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W24X55 ASD = W24X68	13	19.1
B0 = 3.0	LRFD = W24X62 ASD = W24X84	22	26.2
B0 = 3.5	LRFD = W24X68 ASD = W24X94	26	27.7
B0 = 4.0	LRFD = W27X84 ASD = W27X102	18	17.7
B0 = 4.5	LRFD = W27X84 ASD = W27X114	30	26.3
Persentase (%) rata-rata :			23.40

Tabel 4.102. Panjang Bentang (L) 16 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W24X68 ASD = W24X94	26	27.7
B0 = 3.0	LRFD = W27X84 ASD = W27X94	10	10.6
B0 = 3.5	LRFD = W27X84 ASD = W27X114	30	26.3
B0 = 4.0	LRFD = W30X90 ASD = W30X124	34	27.4
B0 = 4.5	LRFD = W30X99 ASD = W30X148	49	33.1
Persentase (%) rata-rata :			25.72

Tabel 4.103. Panjang Bentang (L) 18 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W27X84 ASD = W27X102	18	17.7
B0 = 3.0	LRFD = W30X90 ASD = W30X116	26	22.4
B0 = 3.5	LRFD = W30X99 ASD = W30X132	33	25.0
B0 = 4.0	LRFD = W30X116 ASD = W30X148	32	21.6
B0 = 4.5	LRFD = W33X118 ASD = W33X169	51	30.2
Persentase (%) rata-rata :			23.38

Tabel 4.104. Panjang Bentang (L) 20 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W30X90 ASD = W30X116	26	22.4
B0 = 3.0	LRFD = W30X108 ASD = W30X148	40	27.0
B0 = 3.5	LRFD = W33X118 ASD = W33X152	34	22.4
B0 = 4.0	LRFD = W33X130 ASD = W33X201	71	35.3
B0 = 4.5	LRFD = W40X149 ASD = W40X183	34	18.6
Persentase (%) rata-rata :			25.14

Tabel 4.105. Panjang Bentang (L) 22 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W30X116 ASD = W30X148	32	21.6
B0 = 3.0	LRFD = W33X130 ASD = W33X169	39	23.1
B0 = 3.5	LRFD = W36X135 ASD = W36X182	47	25.8
B0 = 4.0	LRFD = W40X149 ASD = W40X183	34	18.6
B0 = 4.5	LRFD = W40X167 ASD = W40X215	48	22.3
Persentase (%) rata-rata :			22.28

Tabel 4.106. Panjang Bentang (L) 24 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W33X130 ASD = W33X169	39	23.1
B0 = 3.0	LRFD = W36X135 ASD = W36X182	47	25.8
B0 = 3.5	LRFD = W40X149 ASD = W40X192	43	22.4
B0 = 4.0	LRFD = W40X167 ASD = W40X215	48	22.3
B0 = 4.5	LRFD = W40X192 ASD = W40X249	57	22.9
Persentase (%) rata-rata :			23.30

5. Mutu Beton (f'c) = 5 Ksi

Tabel 4.107. Panjang Bentang (L) 8 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W14X26 ASD = W14X34	8	23.5
B0 = 3.0	LRFD = W14X30 ASD = W14X38	8	21.1
B0 = 3.5	LRFD = W16X31 ASD = W16X40	9	22.5
B0 = 4.0	LRFD = W16X36 ASD = W16X45	11	23.9
B0 = 4.5	LRFD = W16X36 ASD = W16X50	14	28.0
Persentase (%) rata-rata :			23.8

Tabel 4.108. Panjang Bentang (L) 10 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W16X36 ASD = W16X45	9	20.0
B0 = 3.0	LRFD = W18X40 ASD = W18X50	10	20.0
B0 = 3.5	LRFD = W21X44 ASD = W21X57	13	22.8
B0 = 4.0	LRFD = W21X44 ASD = W21X62	18	29.0
B0 = 4.5	LRFD = W21X50 ASD = W21X68	18	26.5
Persentase (%) rata-rata :			23.66

Tabel 4.109. Panjang Bentang (L) 12 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W21X44 ASD = W21X57	13	22.8
B0 = 3.0	LRFD = W21X50 ASD = W21X68	18	26.5
B0 = 3.5	LRFD = W24X55 ASD = W24X68	13	19.1
B0 = 4.0	LRFD = W24X62 ASD = W24X84	22	26.2
B0 = 4.5	LRFD = W24X68 ASD = W24X94	26	27.7
Persentase (%) rata-rata :			24.46

Tabel 4.110. Panjang Bentang (L) 14 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W24X55 ASD = W24X68	13	19.1
B0 = 3.0	LRFD = W24X62 ASD = W24X84	22	26.2
B0 = 3.5	LRFD = W24X68 ASD = W24X94	26	27.7
B0 = 4.0	LRFD = W27X84 ASD = W27X102	18	17.7
B0 = 4.5	LRFD = W27X84 ASD = W27X114	30	26.3
Persentase (%) rata-rata :			23.40

Tabel 4.111. Panjang Bentang (L) 16 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W24X68 ASD = W24X94	26	27.7
B0 = 3.0	LRFD = W27X84 ASD = W27X94	10	10.6
B0 = 3.5	LRFD = W27X84 ASD = W27X114	30	26.3
B0 = 4.0	LRFD = W30X90 ASD = W30X124	34	27.4
B0 = 4.5	LRFD = W30X99 ASD = W30X148	49	33.1
Persentase (%) rata-rata :			25.02

Tabel 4.112. Panjang Bentang (L) 18 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W27X84 ASD = W27X102	18	17.7
B0 = 3.0	LRFD = W30X90 ASD = W30X116	26	22.4
B0 = 3.5	LRFD = W30X99 ASD = W30X132	33	25.0
B0 = 4.0	LRFD = W30X116 ASD = W30X148	32	21.6
B0 = 4.5	LRFD = W33X118 ASD = W33X169	51	30.2
Persentase (%) rata-rata :			23.38

Tabel 4.113. Panjang Bentang (L) 20 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W30X90 ASD = W30X116	26	22.4
B0 = 3.0	LRFD = W30X108 ASD = W30X148	40	27.0
B0 = 3.5	LRFD = W33X118 ASD = W33X152	34	22.4
B0 = 4.0	LRFD = W33X130 ASD = W33X201	71	35.3
B0 = 4.5	LRFD = W36X135 ASD = W36X194	59	30.4
Persentase (%) rata-rata :			27.50

Tabel 4.114. Panjang Bentang (L) 22 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W30X116 ASD = W30X148	32	21.6
B0 = 3.0	LRFD = W33X118 ASD = W33X169	51	30.2
B0 = 3.5	LRFD = W36X135 ASD = W36X182	47	25.8
B0 = 4.0	LRFD = W40X149 ASD = W40X183	34	18.6
B0 = 4.5	LRFD = W40X167 ASD = W40X215	48	22.3
Persentase (%) rata-rata :			23.70

Tabel 4.115. Panjang Bentang (L) 24 m dan Jarak Antar Balok Berubah

JARAK BALOK (m)	PROFIL	SELISIH BERAT (lb/ft)	PERSENTASE (%)
B0 = 2.5	LRFD = W33X130 ASD = W33X169	39	23.1
B0 = 3.0	LRFD = W36X135 ASD = W36X182	47	25.8
B0 = 3.5	LRFD = W40X149 ASD = W40X199	50	25.1
B0 = 4.0	LRFD = W40X167 ASD = W40X215	48	22.3
B0 = 4.5	LRFD = W40X192 ASD = W40X249	57	22.9
Persentase (%) rata-rata :			23.84

Tabel 4. 116. Detail hasil disain dengan metode LRFD dan ASD

- Jarak antar balok (b0) = 2.5 m
- mutu beton (f'c) = 3.5 ksi
- n = 8.857
- 0.66Fy = 23.76 ksi
- 0.45f'c = 1.575 ksi

Hasil disain dengan metode LRFD

L m	PROFIL	MU K.in 1000	a inch	L/4 inch	bE inch	df inch	tf inch	d1 inch	d2 inch	.85 Mn K. in 1000	Y1 inch
8	W14X26	2.147	1.18	78.7	78.7	0	0.42	0	0	2.424	0
10	W18X35	3.373	1.27	98.4	98.4	0	0.43	0	0	3.831	0
12	W21X44	4.882	1.60	118.5	98.4	0	0.45	0	0	5.358	0
14	W24X55	6.686	1.99	137.8	98.4	0	0.51	0	0	7.300	0
16	W24X68	8.797	2.47	157.5	98.4	0	0.59	0	0	8.959	0
18	W27X84	11.235	3.05	177.2	98.4	0	0.64	0	0	11.966	0
20	W30X99	13.986	3.58	196.9	98.4	0	0.67	0	0	15.114	0
22	W33X118	17.101	4.27	216.5	98.4	0.117	0.74	19.1	17.04	19.379	15.76
24	W33X130	20.486	4.71	236.2	98.4	0.273	0.86	20.0	17.89	21.312	15.06

Hasil disain dengan metode ASD

L m	PROFIL	MT K.in 1000	Ec Ksi 1000	Yt inch	L/4 inch	bE inch	Yb inch	f'c Ksi	fs Ksi	Icomp in^4 1000
8	W14X34	1.566	3.27	3.96	78.7	78.7	13.9	0.69	21.66	1.01
10	W18X46	2.467	3.27	4.56	98.4	98.4	17.43	0.63	21.33	2.02
12	W21X57	3.577	3.27	5.42	118.5	98.4	19.58	0.70	22.48	3.11
14	W24X68	4.904	3.27	6.32	137.8	98.4	21.34	0.77	23.15	4.52
16	W24X94	6.513	3.27	7.44	157.5	98.4	20.80	0.89	22.67	6.14
18	W27X102	8.285	3.27	8.82	177.2	98.4	22.75	0.97	23.68	7.96
20	W30X124	10.370	3.27	9.73	196.9	98.4	24.38	1.02	22.57	11.20
22	W33X141	12.680	3.27	11.04	216.5	98.4	26.19	1.06	22.29	14.90
24	W33X169	15.351	3.27	11.99	236.2	98.4	25.77	1.18	22.45	17.62

Tabel 4. 117. Detail hasil disain dengan metode LRFD dan ASD

Jarak antar balok (b0) = 2.5 m 0.66Fy = 23.76 ksi

mutu beton (f'c) = 5 ksi 0.45f'c = 2.25 ksi

n = 7.41

Hasil disain dengan metode LRFD

L m	PROFIL	MU K.in 1000	a inch	L/4 inch	bE inch	df inch	tf inch	d1 inch	d2 inch	.85 Mn K. in 1000	Y1 inch
8	W14X26	2.147	0.83	78.7	78.7	0	0.42	0	0	2.4657	0
10	W18X35	3.373	0.89	98.4	98.4	0	0.43	0	0	3.8905	0
12	W21X44	4.882	1.12	118.1	98.4	0	0.45	0	0	5.4529	0
14	W24X55	6.686	1.39	137.8	98.4	0	0.51	0	0	7.4481	0
16	W24X68	8.797	1.73	157.5	98.4	0	0.59	0	0	9.1872	0
18	W27X84	11.235	2.13	177.2	98.4	0	0.64	0	0	12.313	0
20	W30X90	13.916	2.27	196.9	98.4	0	0.61	0	0	14.191	0
22	W30X116	17.083	2.94	216.5	98.4	0	0.85	0	0	18.283	0
24	W33X130	20.486	3.30	236.2	98.4	0	0.86	0	0	22.073	0

Hasil disain dengan metode ASD

L m	PROFIL	MT K.in 1000	Ec Ksi 1000	Yt inch	L/4 inch	bE inch	Yb inch	f'c Ksi	fs Ksi	Icomp in^4 1000
8	W14X34	1.566	3.91	3.70	78.74	78.74	14.22	0.75	21.38	1.64
10	W18X46	2.467	3.91	4.23	98.43	98.43	17.77	0.68	21.10	2.08
12	W21X57	3.577	3.91	4.99	108.11	98.43	20.00	0.75	22.26	3.21
14	W24X68	4.904	3.91	5.81	137.80	98.43	21.86	0.82	22.92	4.68
16	W24X94	6.513	3.91	6.86	157.48	98.43	21.39	0.94	21.83	6.38
18	W27X102	8.285	3.91	7.62	177.17	98.43	23.40	1.63	23.43	8.28
20	W30X124	10.370	3.91	8.98	196.85	98.43	25.13	1.08	22.31	11.68
22	W30X148	12.735	3.91	9.83	216.54	98.43	24.78	1.22	22.77	13.86
24	W33X169	15.351	3.91	11.15	236.22	98.43	26.61	1.25	22.17	18.42

Tabel 4.118. Detail hasil disain dengan metode LRFD dan ASD

- Jarak antar balok (b0) = 4.5 m
- 0.66Fy = 23.76 ksi
- mutu beton (f'c) = 5 ksi
- 0.45f'c = 2.25 ksi
- n = 7.41

Hasil disain dengan metode LRFD

L m	PROFIL	MU K.in 1000	a inch	L/4 inch	bE inch	df inch	tf inch	d1 inch	d2 inch	.85 Mn K in 1000	Y1 inch
8	W16X40	3.857	1.27	78.7	78.7	0	0.51	0	0	4.0828	0
10	W21X50	6.725	1.27	98.4	98.4	0	0.54	0	0	7.0568	0
12	W24X68	9.734	1.44	118.1	118.1	0	0.59	0	0	10.487	0
14	W27X84	13.310	1.52	137.8	137.8	0	0.64	0	0	14.038	0
16	W30X99	17.459	1.57	157.5	157.5	0	0.67	0	0	17.763	0
18	W33X118	22.216	1.66	177.2	177.2	0	0.74	0	0	22.836	0
20	W36X135	27.559	1.90	196.9	177.2	0	0.79	0	0	27.615	0
22	W40X167	33.646	2.35	216.5	177.2	0	1.03	0	0	36.054	0
24	W40X192	40.320	2.70	236.2	177.2	0	0.83	0	0	40.897	0

Hasil disain dengan metode ASD

L m	PROFIL	MT K.in 1000	Ec Ksi 1000	Yt inch	L/4 inch	bE inch	Yb inch	f'c Ksi	fs Ksi	Icomp in^4 1000
8	W16X57	2.815	3.91	4.76	78.74	78.74	15.61	0.90	21.95	2.00
10	W21X68	4.982	3.91	5.70	98.43	98.43	21.54	0.83	23.01	4.62
12	W24X94	7.235	3.91	6.39	118.11	118.1	23.83	0.79	21.94	7.86
14	W27X114	9.911	3.91	6.83	137.80	137.8	26.36	0.80	22.76	11.48
16	W30X148	13.085	3.91	7.66	157.48	157.5	28.92	0.76	21.20	17.85
18	W33X169	16.671	3.91	8.11	177.17	177.2	31.62	0.76	21.82	24.16
20	W36X194	20.147	3.91	9.05	196.85	177.2	33.35	0.82	22.49	30.40
22	W40X215	25.263	3.91	9.90	216.54	177.2	34.94	0.86	22.59	39.12
24	W40X249	30.381	3.91	10.65	236.22	177.2	34.59	0.98	23.54	44.65

Tabel 4.119. Detail hasil disain dengan metode LRFD dan ASD

- Jarak antar balok (b0) = 4.5 m
- mutu beton (f'c) = 3 ksi
- n = 9.56
- 0.66Fy = 23.76 ksi
- 0.45f'c = 1.35 ksi

Hasil disain dengan metode LRFD

L m	PROFIL	MU K.in 1000	a inch	L/4 inch	bE inch	df inch	tf inch	d1 inch	d2 inch	.85 Mn K. in 1000	YI inch
8	W18X40	3.857	2.12	78.7	78.7	0	0.53	0	0	4.2713	0
10	W21X50	6.725	2.11	98.4	98.4	0	0.54	0	0	6.8671	0
12	W24X68	9.734	2.40	118.1	118.1	0	0.59	0	0	10.191	0
14	W27X84	13.310	2.54	137.8	137.8	0	0.64	0	0	13.652	0
16	W30X108	17.504	2.84	157.9	157.9	0	0.76	0	0	18.818	0
18	W33X118	22.216	2.77	177.2	177.2	0	0.74	0	0	22.248	0
20	W40X149	27.667	3.49	196.9	177.2	0	0.83	0	0	31.175	0
22	W40X167	33.646	3.91	216.5	177.2	0	1.03	0	0	34.878	0
24	W40X199	40.398	4.65	236.2	177.2	0	1.07	0	0	40.948	0

Hasil disain dengan metode ASD

L m	PROFIL	MT K.in 1000	Ec Ksi 1000	Yt inch	L/4 inch	bE inch	Yb inch	f'c Ksi	fs Ksi	Icomp in^4 1000
8	W18X50	2.808	3.03	5.39	78.74	78.74	16.54	0.77	22.57	2.06
10	W21X68	4.982	3.03	6.30	98.43	98.43	20.73	0.74	23.45	4.41
12	W24X94	7.235	3.03	7.11	118.11	118.1	23.10	0.72	22.31	7.49
14	W27X114	9.911	3.03	7.64	137.80	137.8	25.55	0.72	23.11	10.96
16	W30X148	13.085	3.03	8.61	157.48	157.5	27.97	0.63	21.51	17.01
18	W33X169	16.671	3.03	9.14	177.17	177.2	30.58	0.69	22.12	23.05
20	W40X183	20.672	3.03	10.34	196.85	177.2	34.54	0.70	22.48	31.76
22	W40X215	25.263	3.03	11.18	216.54	177.2	33.70	0.79	22.88	37.27
24	W40X268	30.558	3.03	12.43	236.22	177.2	32.84	0.88	22.16	45.29

Tabel 4.120. Detail hasil disain dengan metode LRFD dan ASD

- Panjang bentang (L) = 8.0 m
- mutu beton (f'c) = 3 ksi
- 0.66Fy = 23.76 ksi
- n = 8.858

Hasil disain dengan metode LRFD

b0 inch	PROFIL	MU K.in 1000	a inch	L/4 inch	bE inch	df inch	tf inch	d1 inch	d2 inch	.85 Mn K. in 1000	Y1 inch
2.5	W14X26	2.147	1.38	78.7	78.7	0	0.420	0	.0	2.4008	0
3.0	W14X30	2.575	1.59	78.7	78.7	0	0.385	0	0	2.7253	0
3.5	W16X31	3.135	1.64	78.7	78.7	0	0.440	0	0	3.3061	0
4.0	W18X35	3.427	1.85	78.7	78.7	0	0.425	0	0	3.7392	0
4.5	W18X40	3.857	2.12	78.7	78.7	0	0.525	0	0	4.2713	0

Hasil disain dengan metode ASD

b0 inch	PROFIL	MT K.in 1000	Ec Ksi 1000	Yt inch	L/4 inch	bE inch	Yb inch	fc Ksi	fs Ksi	Icomp in^4 1000
2.5	W14X34	1.566	3.03	4.08	78.74	78.74	13.84	0.67	21.78	1.00
3.0	W14X38	1.870	3.03	4.29	78.74	78.74	13.75	0.76	23.38	1.10
3.5	W16X40	2.298	3.03	4.78	78.74	78.74	15.96	0.73	23.45	1.56
4.0	W18X46	2.497	3.03	5.20	78.74	78.74	16.79	0.71	22.00	1.91
4.5	W18X50	2.880	3.03	5.39	78.74	78.74	16.54	0.77	22.57	2.06

Tabel 4.121. Detail hasil disain dengan metode LRFD dan ASD

- Panjang bentang (L) = 24 m
- mutu beton (f'c) = 3 ksi
- 0.66Fy = 23.76 ksi
- n = 8.858

Hasil disain dengan metode LRFD

b0 inch	PROFIL	MU K.in 1000	a inch	L/4 inch	bE inch	df inch	tf inch	d1 inch	d2 inch	.85 Mn K. in 1000	Y1 inch
2.5	W33X130	20.486	5.49	236.2	98.4	0.47	0.855	21.24	19.04	21.000	13.8
3.0	W40X149	24.505	5.24	236.2	118.1	0.46	0.830	23.82	21.63	27.606	16.3
3.5	W40X167	29.731	5.03	236.2	137.8	0.13	1.025	22.24	19.82	32.295	18.7
4.0	W40X183	34.586	4.81	236.2	157.5	0.32	1.220	23.36	20.83	36.481	17.9
4.5	W40X199	40.398	4.65	236.2	177.2	0	1.065	0	0	40.948	0

Hasil disain dengan metode ASD

b0 inch	PROFIL	MT K.in 1000	Ec Ksi 1000	Yt inch	L/4 inch	bE inch	Yb inch	fc Ksi	fs Ksi	Icomp in^4 1000
2.5	W33X169	15.351	3.03	12.35	236.22	98.43	25.41	1.15	22.57	17.28
3.0	W40X183	18.237	3.03	13.23	236.22	118.11	29.68	1.00	21.56	25.11
3.5	W40X199	22.157	3.03	12.38	236.22	137.00	31.01	0.96	23.04	29.82
4.0	W40X244	26.056	3.03	12.72	236.22	157.48	31.46	0.90	21.41	38.28
4.5	W40X268	30.558	3.03	12.43	236.22	177.17	32.84	0.88	22.16	45.29

Tabel 4.122. Detail hasil disain dengan metode LRFD dan ASD

- Panjang bentang (L) = 8.0 m
- 0.66Fy = 23.76 ksi
- mutu beton (f'c) = 5 ksi
- n = 7.41

Hasil disain dengan metode LRFD

b0 inch	PROFIL	MU K.in 1000	a inch	L/4 inch	bE inch	dF inch	tf inch	dI inch	d2 inch	.85 Mn K. in 1000	YI inch
2.5	W14X26	2.147	0.83	78.7	78.7	0	0.420	0	0	2.4657	0
3.0	W14X30	2.575	0.95	78.7	78.7	0	0.385	0	0	2.8113	0
3.5	W16X31	3.135	0.98	78.7	78.7	0	0.440	0	0	3.3974	0
4.0	W18X35	3.427	1.11	78.7	78.7	0	0.425	0	0	3.8556	0
4.5	W18X35	3.805	1.11	78.7	78.7	0	0.425	0	0	3.8556	0

Hasil disain dengan metode ASD

b0 inch	PROFIL	MU K.in 1000	fc Ksi 1000	YI inch	L/4 inch	bE inch	Yb inch	fc Ksi	fs Ksi	Icomp in^4 1000
2.5	W14X34	1.566	3.91	3.70	78.74	78.74	14.22	0.75	21.38	1.04
3.0	W14X38	1.877	3.91	3.87	78.74	78.74	14.16	0.85	22.96	1.16
3.5	W16X40	2.298	3.91	4.34	78.74	78.74	14.60	0.82	23.00	1.64
4.0	W18X46	2.497	3.91	4.65	78.74	78.74	17.34	0.78	21.65	2.00
4.5	W18X50	2.808	3.91	4.82	78.74	78.74	17.11	0.84	22.22	2.16

Tabel 4.123. Detail hasil disain dengan metode LRFD dan ASD

- Panjang bentang (L) = 24 m
- mutu beton (f'c) = 5 ksi
- 0.66Fy = 23.76 ksi
- n = 8.858

Hasil disain dengan metode LRFD

b0 inch	PROFIL	MU K.in 1000	a inch	L/4 inch	bE inch	df inch	tf inch	d1 inch	d2 inch	.85 Mn K. in 1000	Y1 inch
2.5	W33X130	20.486	3.30	236.2	98.4	0	0.855	0	0	22.073	0
3.0	W36X135	24.349	2.85	236.2	118.1	0	0.790	0	0	24.647	0
3.5	W40X149	29.530	2.69	236.2	137.8	0	0.830	0	0	30.127	0
4.0	W40X167	34.408	2.64	236.2	157.5	0	1.025	0	0	34.651	0
4.5	W40X192	40.320	2.70	236.2	177.2	0	0.830	0	0	40.897	0

Hasil disain dengan metode ASD

b0 inch	PROFIL	MT K.in 1000	Ec Ksi 1000	Yt inch	L/4 inch	bE inch	Yb inch	fc Ksi	fs Ksi	Icomp in^4 1000
2.5	W33X169	15.351	3.91	11.15	236.22	98.43	26.61	1.25	22.17	18.42
3.0	W36X182	18.228	3.91	11.24	236.22	118.11	29.02	1.20	22.90	23.10
3.5	W40X199	22.157	3.91	11.03	236.22	137.80	32.97	1.40	22.71	31.58
4.0	W40X215	25.786	3.91	10.67	236.22	157.48	33.43	1.02	23.69	36.39
4.5	W40X249	30.381	3.91	10.69	236.22	177.17	34.59	0.98	23.54	44.65

Tabel 4.124. Detail hasil disain dengan metode LRFD dan ASD

- jarak antara balok (b0) = 2.5 m - 0.66Fy = 23.76 ksi
- panjang bentang (L) = 10 m

Hasil disain dengan metode LRFD

Fe Ksi	PROFIL	MU K.in 1000	a inch	L/4 inch	bE inch	df inch	tf inch	d1 inch	d2 inch	.85 Mn K. in 1000	Yt inch
3.0	W18X35	3.373	1.48	98.4	98.4	0	0.425	0	0	3.7974	0
3.5	W18X35	3.373	1.27	98.4	98.4	0	0.425	0	0	3.8306	0
4.0	W18X35	3.373	1.11	98.4	98.4	0	0.425	0	0	3.8556	0
4.5	W18X35	3.373	0.98	98.4	98.4	0	0.425	0	0	3.8750	0
5.0	W18X35	3.373	0.89	98.4	98.4	0	0.425	0	0	3.8905	0

Hasil disain dengan metode ASD

Fe Ksi	PROFIL	MT K.in 1000	Ec Ksi 1000	Yt inch	L/4 inch	bE inch	Yb inch	Fe Ksi	fs Ksi	N	Icomp in^4 1000
3.0	W18X46	2.467	3.03	4.72	98.43	98.43	17.26	0.61	21.43	8.858	1.99
3.5	W18X46	2.467	3.27	4.56	98.43	98.43	17.43	0.63	21.33	8.853	2.02
4.0	W18X46	2.467	3.50	4.43	98.43	98.43	17.56	0.65	23.76	8.286	2.04
4.5	W18X46	2.467	3.71	4.32	98.43	98.43	17.68	0.66	23.76	7.811	2.06
5.0	W18X46	2.467	3.91	4.23	98.43	98.43	17.77	0.68	23.76	7.410	2.08

Tabel 4.125. Detail hasil disain dengan metode LRFD dan ASD

- jarak antara balok (b0) = 2.5 m - 0.66Fy = 23.76 ksi
- panjang bentang (L) = 24 m

Hasil disain dengan metode LRFD

Fe Ksi	PROFIL	MU K.in 1000	a inch	L/4 inch	bE inch	dF inch	tf inch	d1 inch	d2 inch	.85 Mn K. in 1000	Y1 inch
3.0	W40X183	34.586	4.81	236.2	157.5	0	1.22	0	0	36.481	0
3.5	W40X183	34.586	4.13	236.2	157.5	0	1.22	0	0	37.046	0
4.0	W40X183	34.586	3.61	236.2	157.5	0	1.22	0	0	37.470	0
4.5	W40X183	34.586	2.93	236.2	157.5	0	1.025	0	0	34.430	0
5.0	W40X183	34.586	2.64	236.2	157.5	0	1.025	0	0	34.651	0

Hasil disain dengan metode ASD

Fe Ksi	PROFIL	MT K.in 1000	Fe Ksi 1000	Yt inch	L/4 inch	bE inch	Yb inch	Fe Ksi	fs Ksi	N	Icomp in^4 1000
3.0	W40X244	26.056	3.03	12.72	236.22	157.48	31.46	0.921	21.42	8.858	38.28
3.5-	W40X221	25.842	3.27	11.67	236.22	157.48	32.12	0.970	23.76	8.853	34.74
4.0	W40X221	25.842	3.50	11.31	236.22	157.48	32.48	1.000	23.67	8.286	35.46
4.5	W40X215	25.786	3.71	10.94	236.22	157.48	33.16	1.000	23.75	7.811	36.00
5.0	W40X215	25.786	3.91	10.67	236.22	157.48	33.43	1.000	23.69	7.410	36.39

Tabel 4.126. Detail hasil disain dengan metode LRFD dan ASD

- jarak antara balok (b0) = 4.0 m - 0.66Fy = 23.76 ksi
- panjang bentang (L) = 10 m

Hasil disain dengan metode LRFD

Fe Ksi	PROFIL	MU K.in 1000	a inch	L/4 inch	bE inch	df inch	tf inch	d1 inch	d2 inch	.85 Mn K. in 1000	Y1 inch
3.0	W21X44	5.735	1.86	98.4	98.4	0	0.45	0	0	5.7744	0
3.5	W21X44	5.735	1.60	98.4	98.4	0	0.45	0	0	5.8274	0
4.0	W21X44	5.735	1.40	98.4	98.4	0	0.45	0	0	5.8671	0
4.5	W21X44	5.735	1.24	98.4	98.4	0	0.45	0	0	5.8980	0
5.0	W21X44	5.735	1.12	98.4	98.4	0	0.45	0	0	5.9227	0

Hasil disain dengan metode ASD

Fe Ksi	PROFIL	MT K.in 1000	Fc Ksi 1000	Yt inch	L/4 inch	bE inch	Yb inch	Fc Ksi	fs Ksi	N	Icomp in⁴ 1000
3.0	W21X62	4.230	3.03	5.93	98.43	98.43	20.18	0.70	22.71	8.858	3.76
3.5	W21X62	4.230	3.27	5.74	98.43	98.43	20.37	0.72	22.60	8.853	3.81
4.0	W21X62	4.230	3.50	5.58	98.43	98.43	20.53	0.74	22.50	8.286	3.86
4.5	W21X62	4.230	3.71	5.44	98.43	98.43	20.66	0.76	22.41	7.811	3.90
5.0	W21X62	4.230	3.91	5.33	98.43	98.43	20.78	0.77	22.33	7.410	3.94

Tabel 4.127. Detail hasil disain dengan metode LRFD dan ASD

- jarak antara balok (b0) = 2.5 m - 0.66Fy = 23.76 ksi

- panjang bentang (L) = 24 m

Hasil disain dengan metode LRFD

Fy Ksi	PROFIL	MU K.m 1000	a inch	L/4 inch	bf inch	df inch	tf inch	d1 inch	d2 inch	85 Mn K.m 1000	Y1 inch
3.0	W33X130	20.486	4.71	236.2	98.4	0.27	0.855	20.0	17.89	21.312	15.1
3.5	W33X130	20.486	4.71	236.2	98.4	0.27	0.855	20	17.89	21.312	15.1
4.0	W33X130	20.486	4.12	236.2	98.4	0.07	0.855	18.89	16.89	21.592	16.2
4.5	W33X130	20.486	3.66	236.2	98.4	0.07	0.855	18.89	16.89	21.858	16.2
5.0	W33X130	20.486	3.30	236.2	98.4	0	0.855	0	0	22.073	0

Hasil disan dengan metode ASD

Fy Ksi	PROFIL	MU K.m 1000	Fc Ksi 1000	[illegible]	L/4 inch	bf inch	Yb inch	Fc Ksi	Fc Ksi	N	Icom m³ 1000
3.0	W33X169	15.351	3.27	11.99	236.22	98.43	25.77	1.18	22.45	8.858	17.62
3.5	W33X169	15.351	3.27	11.99	236.22	98.43	25.77	1.18	22.45	8.853	17.62
4.0	W33X169	15.351	3.56	11.68	236.22	98.43	26.08	1.21	22.34	8.286	17.92
4.5	W33X169	15.351	3.71	11.40	236.22	98.43	26.36	1.23	22.25	7.811	18.18
5.0	W33X169	15.351	3.91	11.15	236.22	98.43	26.61	1.25	22.17	7.410	18.42

Persentase selisih berat rata-rata :

b0 = 2.5 m Persentase = (22.10 + 21.58 + 22.38 + 22.39 + 22.39) / 5 = 22.368 %

49

b0 = 3.0 m Persentase = (21.78 + 22.38 + 21.59 + 22.50 + 22.50) / 5 = 22.150 %

52

b0 = 3.5 m Persentase = (22.47 + 22.47 + 23.12 + 24.08 + 24.08) / 5 = 23.244 %

b0 = 4.0 m Persentase = (26.31 + 25.78 + 24.52 + 24.67 + 24.67) / 5 = 25.190 %

b0 = 4.5 m Persentase = (24.90 + 25.60 + 24.58 + 25.29 + 27.49) / 5 = 25.572 %

Jadi persentase rata-rata = (22.368 + 22.150 + 23.244 + 25.190 + 25.572) / 5

= 23. 7048 %