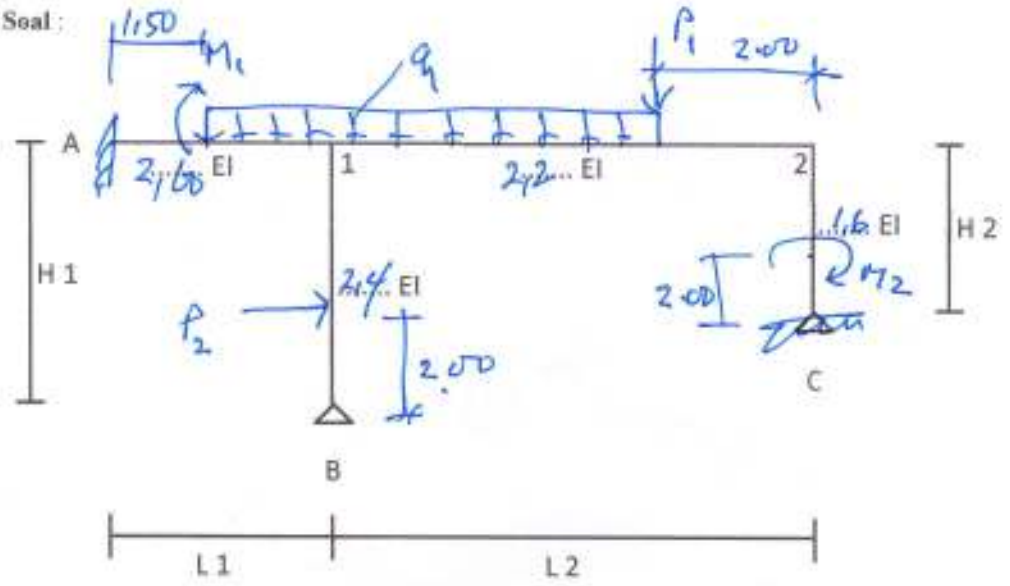
FAKULTAS TEKNIK PRODI TEKNIK SIPIL
UNIVERSITAS MUHAMMADIYAH METRO
Alamat : Jl Ki. Hajar Dewantara No.116 Iring Mulyo, Kota Metro Telpon (0725) 42445 Kode Pos 34111

TUGAS MEKANIKA REKAYASA IV

Diberikan Kepada :

Nama	:	HANIFA SHABIRA	Diberikan Tanggal	:	21 Maret 2019
NPM	:	17510047	Selesai Tanggal	:	26 April 2019
Semester	:	4 (EMPAT)	Dosen	:	Ir. Hi. Masykur, M.M.

Soal :



Diketahui : Struktur Seperti Tergambar.

L1	=	7,4 M ;	P1	=	3,80 Ton ;	a	=	/ M
L2	=	6,00 M ;	P2	=	4,20 Ton ;	b	=	/ M
			H1	=	6,00 M ;	H2	=	5,00 M
q1	=	4,20 Ton/M ;	M1	=	2,80 Ton.M			
q2	=	/ Ton/M ;	M2	=	3,40 Ton.M			
q3	=	/ Ton/M ;						

Perletakan : A jepit ; B sendi ; C jepit

Ditanya :

1. Hitunglah Gaya Momen Ujung Batang/ Distribusi Momen
2. Hitunglah Gaya-gaya Luar (Perletakan A, B, dan C)
3. Hitung dan Gambar Gaya-gaya Dalam (M, D, dan N)

Metro, 21 Maret 2019
Dosen Mata Kuliah

Ir. Hi. MASYKUR, M.M.
NBM. 760 541

UNIVERSITAS MUHAMMADIYAH METRO
FAKULTAS TEKNIK
JURUSAN TEKNIK SIPIL

KARTU ASISTENSI

NAMA : HANIFA SHABIRA
NPM : 17510047
SEMESTER : 4
MATA KULIAH : MR IV
DOSEN : IR. Masykur, MM.

NO.	TANGGAL	KETERANGAN	PARAF
1	1-04-2019	- Faktor distribusi oke - perbaiki Momen primer batang A-1 - perbaiki distribusi momen	
2.	9-04-2019	- Momen primer oke - Tabel distribusi momen oke - Free body Momen ujung batang oke - Cek perhitungan gaya luar batang 1-B, 2-C, A-1 - Lengkapi perhitungan Free body gaya^2 Luar - Lengkapi gambar diagram batang A-1	
3	15-04-2019	- Cek perhitungan gaya dalam batang batang 2-C - Cek gambar diagram total (M)(N)	
4	22-04-2019	- Serahkan kepada bapak ir.H. Masykur.MM	
5	25-04-2019	- Diterangin - Dijilid	

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Mencari Faktor Distribusi

Titik 1 : $M_{1-A} : M_{1-B} : M_{1-2}$

$$\frac{4(2,6EI)}{L_1} : \frac{3(2,4EI)}{H_1} : \frac{4(2,2EI)}{L_2}$$

$$\frac{10,4}{7,4} : \frac{7,2}{6} : \frac{8,8}{6}$$

$$1,4 : 1,2 : 1,47 \quad \checkmark$$

$$M_{1-A} = \frac{1,4}{4,07} = 0,344 \quad \checkmark$$

$$M_{1-B} = \frac{1,2}{4,07} = 0,295 \quad \checkmark$$

$$M_{1-2} = \frac{1,47}{4,07} = 0,361 \quad \checkmark$$

Titik 2 : $M_{2-1} : M_{2-C}$

$$\frac{4(2,2EI)}{L_2} : \frac{4(1,6EI)}{H_2}$$

$$\frac{8,8}{6} : \frac{6,4}{5}$$

$$1,47 : 1,28 \quad \checkmark$$

$$M_{2-1} = \frac{1,47}{2,75} = 0,535 \quad \checkmark$$

$$M_{2-C} = \frac{1,28}{2,75} = 0,465 \quad \checkmark$$

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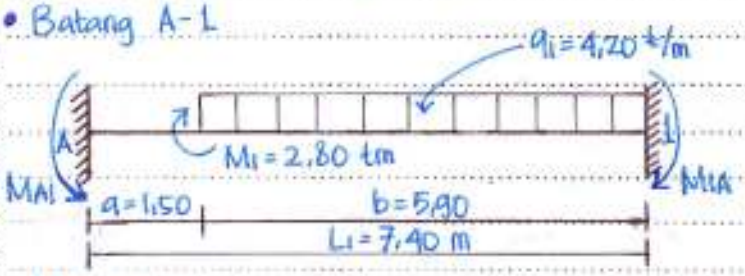
MENGHITUNG MOMEN PRIMER

• Batang A-L



$$\alpha = \frac{b}{L_1} = \frac{5{,}9}{7{,}4} = 0{,}8 \checkmark$$

$$M_{AI} = \frac{q_1 \cdot b \cdot L_1}{12} \cdot \alpha^2 \cdot (4 - 3\alpha) - M_1 \cdot \frac{b}{L_1^2} \cdot (3a - L_1)$$

$$= \frac{4{,}2 \cdot 5{,}9 \cdot 7{,}4}{12} \cdot (0{,}8)^2 \cdot (4 - 3 \cdot 0{,}8) - 2{,}8 \cdot \frac{5{,}9}{(7{,}4)^2} \cdot (3 \cdot 1{,}5 - 7{,}4)$$

$$= 9{,}78 \cdot (4 - 2{,}4) - 0{,}302 \cdot (4{,}5 - 7{,}4)$$

$$= 9{,}78 \cdot (1{,}6) - 0{,}302 \cdot (-2{,}9)$$

$$= 15{,}648 + 0{,}876$$

$$= 16{,}52 \checkmark \text{ ton.m}$$

$$M_{IA} = -\frac{q_1 \cdot b \cdot L_1}{12} \cdot \alpha \cdot (3\alpha^2 - 8\alpha + 6) - M_1 \cdot \frac{a}{(L_1)^2} (3b - L_1)$$

$$= -\frac{4{,}2 \cdot 5{,}9 \cdot 7{,}4}{12} \cdot 0{,}8 \cdot (3 \cdot 0{,}8^2 - 8 \cdot 0{,}8 + 6) - 2{,}8 \cdot \frac{1{,}5}{(7{,}4)^2} \cdot (3 \cdot 5{,}9 - 7{,}4)$$

$$= -12{,}225 \cdot (1{,}92 - 6{,}4 + 6) - 0{,}077 \cdot (17{,}7 - 7{,}4)$$

$$= -12{,}225 \cdot (1{,}52) - 0{,}077 \cdot (10{,}3)$$

$$= -18{,}58 - 0{,}79$$

$$= -19{,}37 \checkmark \text{ ton.m}$$

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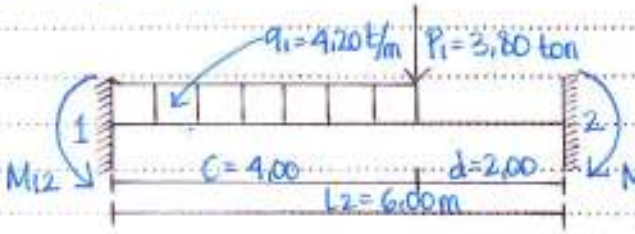
LEMBAR JAWABAN

• Batang 1-2



$\alpha = \frac{c}{L_2} = \frac{4}{6} = 0{,}67$ ✓

$$M_{12} = \frac{q_1 \cdot c \cdot L_2}{12} \cdot \alpha \cdot (3\alpha^2 - 8\alpha + 6) + \frac{P_1 \cdot c \cdot d^2}{(L_2)^2}$$

$$= \frac{4{,}2 \cdot 4 \cdot 6}{12} \cdot 0{,}67\,(3(0{,}67)^2 - 8 \cdot 0{,}67 + 6) + \frac{3{,}8 \cdot 4 \cdot 2^2}{6^2}$$

$$= 5{,}628\,(1{,}347 - 5{,}36 + 6) + \frac{60{,}8}{36}$$

$$= 5{,}628\,(1{,}987) + 1{,}69$$

$$= 11{,}18 + 1{,}69$$

$$= 12{,}87 \text{ ton.m}$$ ✓

$$M_{21} = -\frac{q_1 \cdot c \cdot L_2}{12} (\alpha)^2 \cdot (4 - 3\alpha) - \frac{P_1 \cdot c^2 \cdot d}{(L_2)^2}$$

$$= -\frac{4{,}2 \cdot 4 \cdot 6}{12} \cdot (0{,}67)^2 \cdot (4 - 3(0{,}67)) - \frac{3{,}8 \cdot 4^2 \cdot 2}{6^2}$$

$$= -(8{,}4) \cdot (0{,}449) \cdot (4 - 2{,}01) - \frac{121{,}6}{36}$$

$$= -(8{,}4) \cdot (0{,}449) \cdot (1{,}99) - 3{,}38$$

$$= -7{,}50 - 3{,}38$$

$$= -10{,}88 \text{ ton.m}$$ ✓

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• Batang 1 - B

$$M_{1-B} = -\frac{P_2 \cdot a}{2 \cdot H_1^2} \cdot (H_1^2 - a^2) \quad \checkmark$$

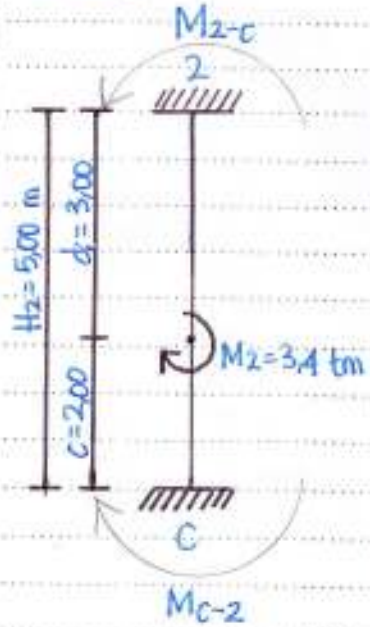
$$= -\frac{4,2 \cdot 2}{2 \cdot 6^2} \cdot (6^2 - 2^2) \quad \checkmark$$

$$= -\frac{8,4}{72} \cdot (36 - 4)$$

$$= -0,117 \cdot (32)$$

$$= -3,74 \text{ ton.m} \quad \checkmark$$

• Batang 2 - C



$$M_{2-C} = -M_2 \cdot \frac{c}{H_2^2} \cdot (3d - H_2) \quad \checkmark$$

$$= -3,4 \cdot \frac{2}{5^2} (3.3 - 5)$$

$$= -\frac{6,8}{25} \cdot (9 - 5)$$

$$= -0,272 \cdot (4)$$

$$= -1,09 \text{ ton.m} \quad \checkmark$$

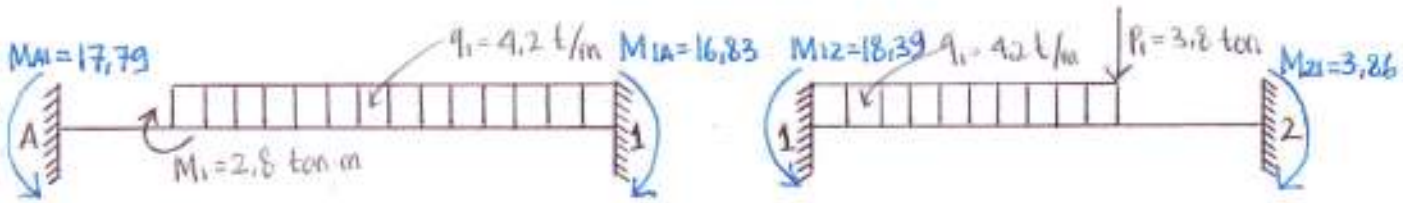
$$M_{C-2} = -M_2 \cdot \frac{d}{H_2^2} (3c - H_2)$$

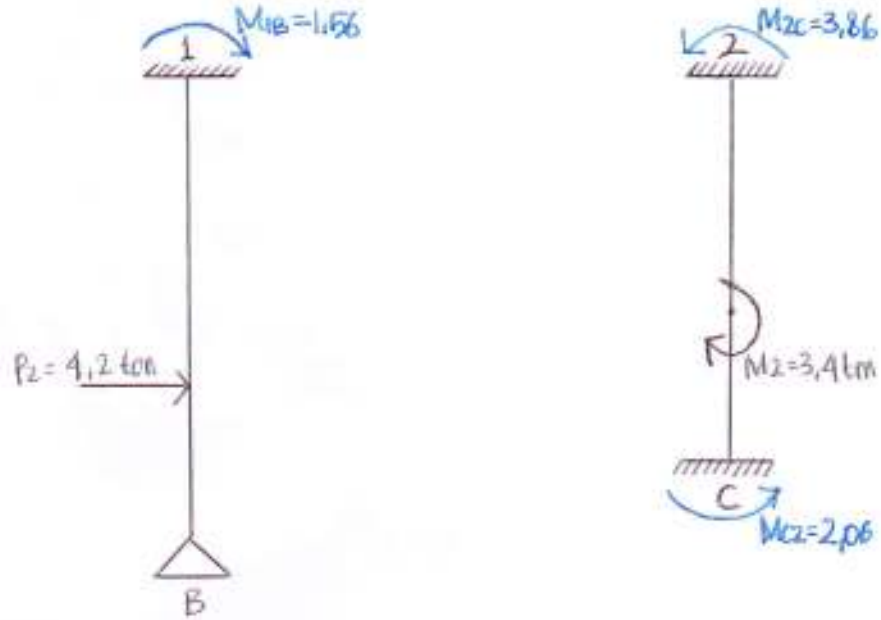
$$= -3,4 \cdot \frac{3}{5^2} (3.2 - 5)$$

$$= -0,41 \cdot (1)$$

$$= -0,41 \text{ ton.m} \quad \checkmark$$

ANALISA GAYA-GAYA MOMEN.





TABEL DISTRIBUSI MOMEN

TITIK 1 = 12,87 - 19,37 - 3,74 = -10,24 ✓

TITIK 2 = 1,8483 - 10,88 - 1,09 = -10,1217 ✓

	TITIK	A	1			2		C
	BATANG	A-1	1-A	1-B	1-2	2-1	2-C	C-2
✓	FAKTOR DISTRIBUSI	0	-0,344	-0,295	-0,361	-0,535	-0,465	0
✓	MOMEN PRIMER	16,52	-19,37	-3,74	12,87	-10,88	-1,09	-0,41
	TAHAP 1	← 1,7613	3,5226	3,0208	3,6966	→ 1,8483		
	TAHAP 2				← 2,7075	5,4151	→ 4,7066	2,3533
	TAHAP 3	← -0,4657	-0,9314	-0,7987	-0,9774	→ -0,4887		
	TAHAP 4				← 0,1307	0,2615	→ 0,2273	0,1136
	TAHAP 5	← -0,0225	-0,0450	-0,0386	-0,0472	→ -0,0236		
	TAHAP 6				← 0,0063	0,0126	→ 0,0110	0,0055
	TAHAP 7	← -0,0011	-0,0022	-0,0019	-0,0023	→ -0,0011		
	TAHAP 8				← 0,0003	0,0006	→ 0,0005	0,0003
	TAHAP 9	← -0,0001	-0,0001	-0,0001	-0,0001	→ -0,0001		
	TOTAL	17,7920	-16,8261	-1,5584	18,3846	-3,8554	3,8554	2,0627
			0,0000000000			0		✓

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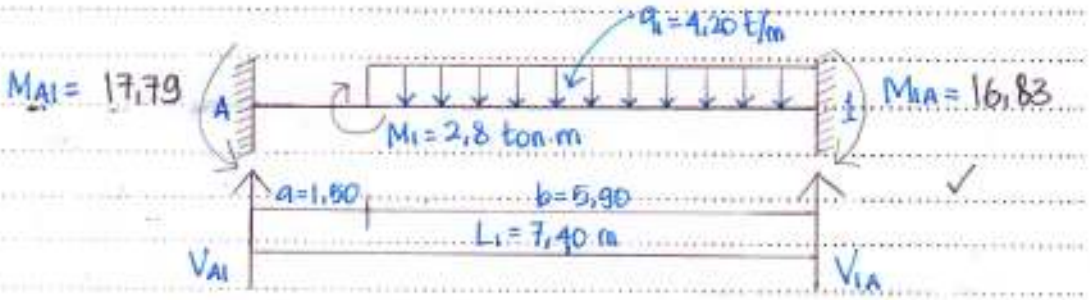
GAYA LUAR BATANG A-1



$\Sigma M_1 = 0$

$V_{A1} \cdot L_1 - q_1 \cdot b\,(1/2\,b) + M_1 - M_{A1} + M_{1A} = 0$ ✓

$V_{A1} \cdot 7,4 - 4,2 \cdot 5,9\,(1/2 \cdot 5,9) + 2,8 - 17,79 + 16,83 = 0$

$V_{A1} \cdot 7,4 - 24,78\,(2,95) + 2,8 - 17,79 + 16,83 = 0$

$V_{A1} \cdot 7,4 - 73,101 + 2,8 - 17,79 + 16,83 = 0$

$V_{A1} \cdot 7,4 - 71,261 = 0$

$V_{A1} = \frac{71,261}{7,4}$

$V_{A1} = 9,63$ ton (↑) ✓

$\Sigma M_A = 0$

$-V_{1A} \cdot L_1 + q_1 \cdot b\,(1/2\,b + a) + M_1 - M_{A1} + M_{1A} = 0$ ✓

$-V_{1A} \cdot 7,4 + 4,2 \cdot 5,9\,(1/2 \cdot 5,9 + 1,5) + 2,8 - 17,79 + 16,83 = 0$

$-V_{1A} \cdot 7,4 + 24,78\,(4,45) + 2,8 - 17,79 + 16,83 = 0$

$-V_{1A} \cdot 7,4 + 110,271 + 2,8 - 17,79 + 16,83 = 0$

$-V_{1A} \cdot 7,4 + 112,111 = 0$

$-V_{1A} \cdot 7,4 = -112,111$?

$V_{1A} = \frac{-112,111}{-7,4}$

$V_{1A} = 15,15$ ton (↑) ✓

kontrol: $\Sigma V = 0$

$(V_{A1} + V_{1A}) - (q_1 \cdot b) = 0$

$(9,63 + 15,15) - (4,2 \cdot 5,9) = 0$

$(24,78) - (24,78) = 0$ OK ✓

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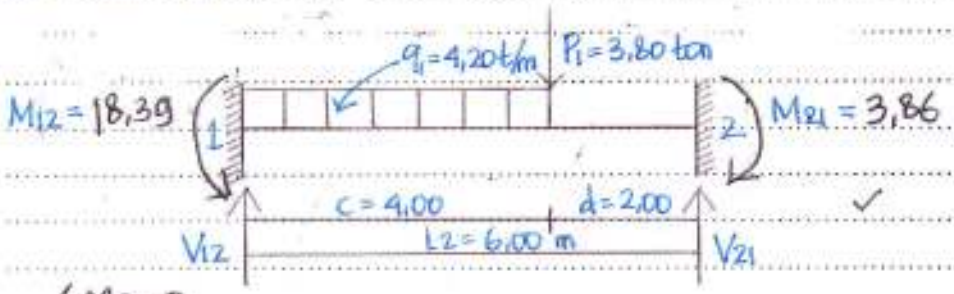
GAYA LUAR BATANG 1–2



$\Sigma M_2 = 0$

$V_{12} \cdot L_2 - q_1 \cdot c(\frac{1}{2}c + d) - P_1 \cdot d - M_{12} + M_{21} = 0$ ✓

$V_{12} \cdot 6 - 4,2 \cdot 4(\frac{1}{2} \cdot 4 + 2) - 3,8 \cdot 2 - 18,39 + 3,86 = 0$

$V_{12} \cdot 6 - 16,8\,(4) - 7,6 - 18,39 + 3,86 = 0$

$V_{12} \cdot 6 - 67,2 - 7,6 - 18,39 + 3,86 = 0$

$V_{12} \cdot 6 - 89,33 = 0$

$V_{12}\,6 = 89,33$

$V_{12} = \frac{89,33}{6}$

$V_{12} = 14,89$ ton (↑) ✓

$\Sigma M_1 = 0$

$-V_{21} \cdot L_2 + q_1 \cdot c(\frac{1}{2}c) + P_1 \cdot c - M_{12} + M_{21} = 0$ ✓

$-V_{21} \cdot 6 + 4,2 \cdot 4(\frac{1}{2}4) + 3,8 \cdot 4 - 18,39 + 3,86 = 0$

$-V_{21} \cdot 6 + 16,8\,(2) + 15,2 - 18,39 + 3,86 = 0$

$-V_{21} \cdot 6 + 33,6 + 15,2 - 18,39 + 3,86 = 0$

$-V_{21} \cdot 6 + 34,27 = 0$

$V_{21} \cdot 6 = 34,27$

$V_{21} = \frac{34,27}{6}$

$V_{21} = 5,71$ ton (↑) ✓

Kontrol:

$\Sigma V = 0$

$(V_{12} + V_{21}) - (q_1 \cdot c + P_1) = 0$

$(14,89 + 5,71) - (4,2 \cdot 4 + 3,8) = 0$

$20,6 - 20,6 = 0$ ∴ OK ✓

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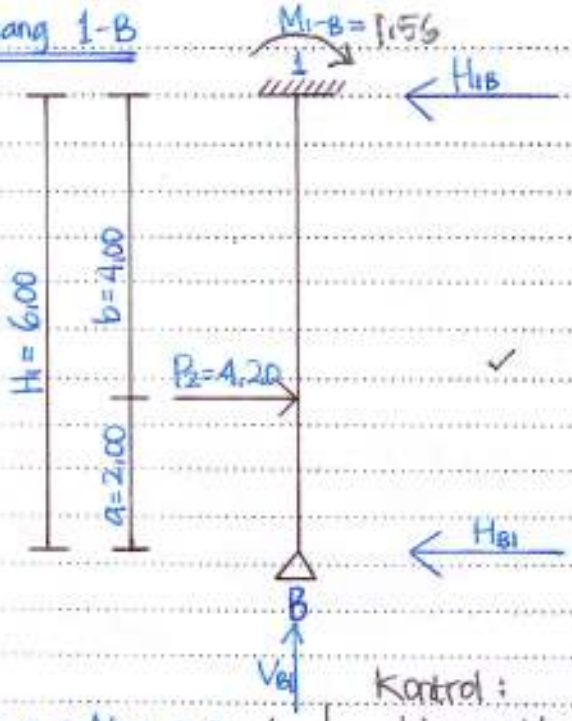
Gaya Luar Batang 1-B



$\Sigma M_B = 0$

$-H_{1B} \cdot H_1 + P_2 \cdot a + M_{1-B} = 0$ ✓

$-H_{1B} \cdot 6 + 4,2 \cdot 2 + 1,56 = 0$

$-H_{1B} \cdot 6 + 8,4 + 1,56 = 0$

$-H_{1B} \cdot 6 + 9,96 = 0$

$-H_{1B} \cdot 6 = -9,96$

$H_{1B} = \frac{-9,96}{-6}$

$H_{1B} = 1,66$ ton (←) ✓

$\Sigma M_1 = 0$

$H_{B1} \cdot H_1 - P_2 \cdot b + M_{1-B} = 0$ ✓

$H_{B1} \cdot 6 - 4,2 \cdot 4 + 1,56 = 0$

$H_{B1} \cdot 6 - 16,8 + 1,56 = 0$

$H_{B1} \cdot 6 - 15,24 = 0$

$H_{B1} \cdot 6 = 15,24$

$H_{B1} = \frac{15,24}{6}$

$H_{B1} = 2,54$ ton (←) ✓

Kontrol :

$H_{1B} + H_{B1} = P_2$

$1,66 + 2,54 = 4,2$

$4,2 = 4,2 \longrightarrow$ (Ok) ✓

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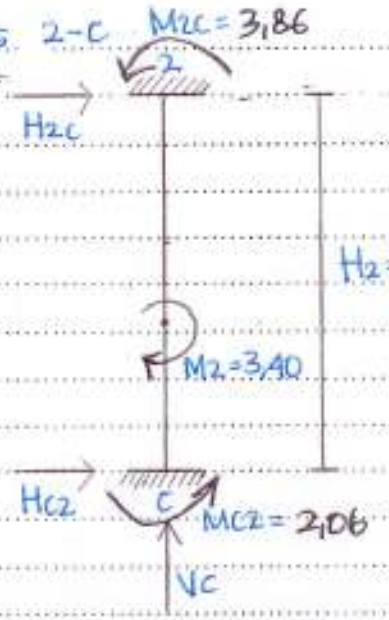
GAYA LUAR BATANG 2-C



$\Sigma MC = 0$

$H2C \cdot H2 - M2C - MC2 + M2 = 0$ ✓

$H2C \cdot 5 - 3,86 - 2,06 + 3,4 = 0$

$H2C \cdot 5 - 2,52 = 0$

$H2C \cdot 5 = 2,52$

$H2C = \frac{2,52}{5}$

$H2C = 0,50$ ton.m $(\rightarrow)$ ✓

$\Sigma M2 = 0$

$-HC2 \cdot H2 - M2C - MC2 + M2 = 0$

$-HC2 \cdot 5 - 3,86 - 2,06 + 3,4 = 0$

$-HC2 \cdot 5 - 2,52 = 0$

$-HC2 \cdot 5 = 2,52$

$HC2 = \frac{2,52}{-5}$?

$HC2 = -0,50$ ton.m $(\leftarrow)$ ✓

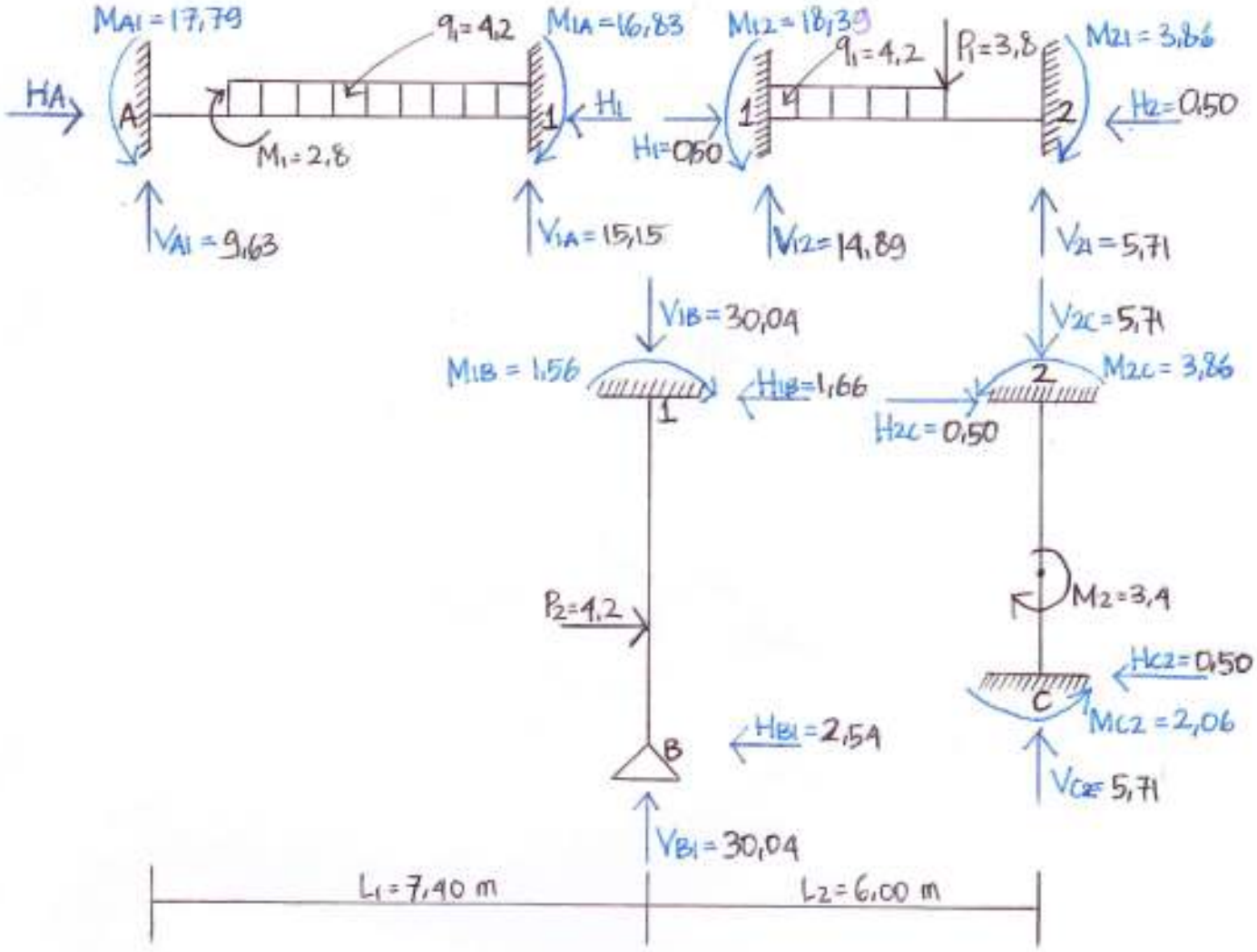
KONTROL

$\Sigma H = 0$

$H2C + HC2 = 0$

$0,50 + (0,50) = 0$ ... ok!

FREEBODY GAYA-GAYA LUAR



$\Sigma H = 0$

$H_A - H_{B1} - H_{C2} + P_2 = 0$ ✓

$H_A - 2,54 - 0,50 + 4,2 = 0$

$H_A + 1,16 = 0$

$H_A = -1,16$ ton ($\leftarrow$) ✓

$V_{B1} = V_{1A} + V_{12}$

$= 15,15 + 14,89$

$= 30,04$ ton ($\uparrow$)

$V_{C2} = V_{21}$

$= 5,71$ ton ($\uparrow$)

$V_{2C} = V_{C2}$

$V_{2C} = 5,71$ ton ($\downarrow$)

$V_{1B} = V_{B1}$

$= 30,04$ ton ($\downarrow$)

Kontrol V :

$\Sigma V = 0$

$(q_1 \cdot b + q_1 \cdot c + P_1) - (V_{A1} + V_{B1} + V_{C2}) = 0$ ✓

$(4,2 \cdot 5,9 + 4,2 \cdot 4 + 3,8) - (9,63 + 30,04 + 5,71) = 0$

$(24,78 + 16,8 + 3,8) - (45,38) = 0$

$45,38 - 45,38 = 0$ ... OK! ✓

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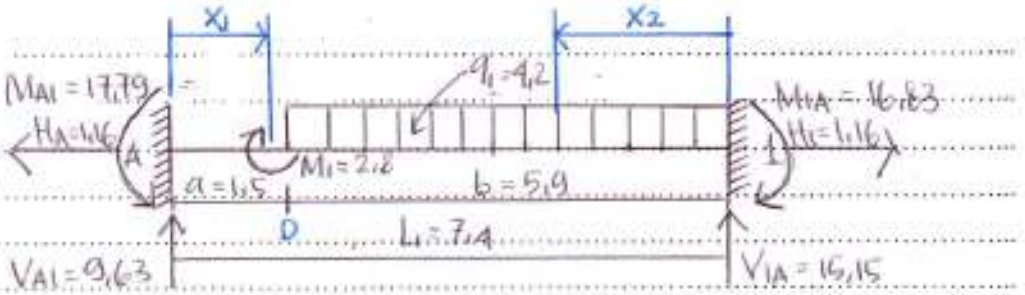
LEMBAR JAWABAN

GAYA DALAM A-1



$0 \leq X_1 \leq a$

$M_{X1} = V_{A1} \cdot x_1 - M_{A1}$ ✓
$D_{X1} = V_{A1}$ ✓
$N_{X1} = H_A$ ✓

$x_1 = 0$
$M_A = -17{,}79$ ton.m ✓
$D_A = 9{,}63$ ton ✓
$N_A = 1{,}16$ ton ✓

$x_1 = a = 1{,}5$
$M_D = 9{,}63 \cdot 1{,}5 - 17{,}79$
$= 14{,}445 - 17{,}79$
$= -3{,}35$ ton.m ✓
$D_D = 9{,}63$ ton ✓
$N_D = 1{,}16$ ton ✓

$0 \leq X_2 \leq b$

$M_{X2} = V_{1A} \cdot x_2 - q_1 \cdot x_2 (\frac{1}{2} x_2) - M_{1A}$ ✓
$D_{X2} = -V_{1A} + q_1 \cdot x_2$ ✓
$N_{X2} = H_1$ ✓

$x_2 = 0$
$M_1 = -16{,}83$ ton.m ✓
$D_1 = -15{,}15$ ton ✓
$N_1 = 1{,}16$ ton ✓

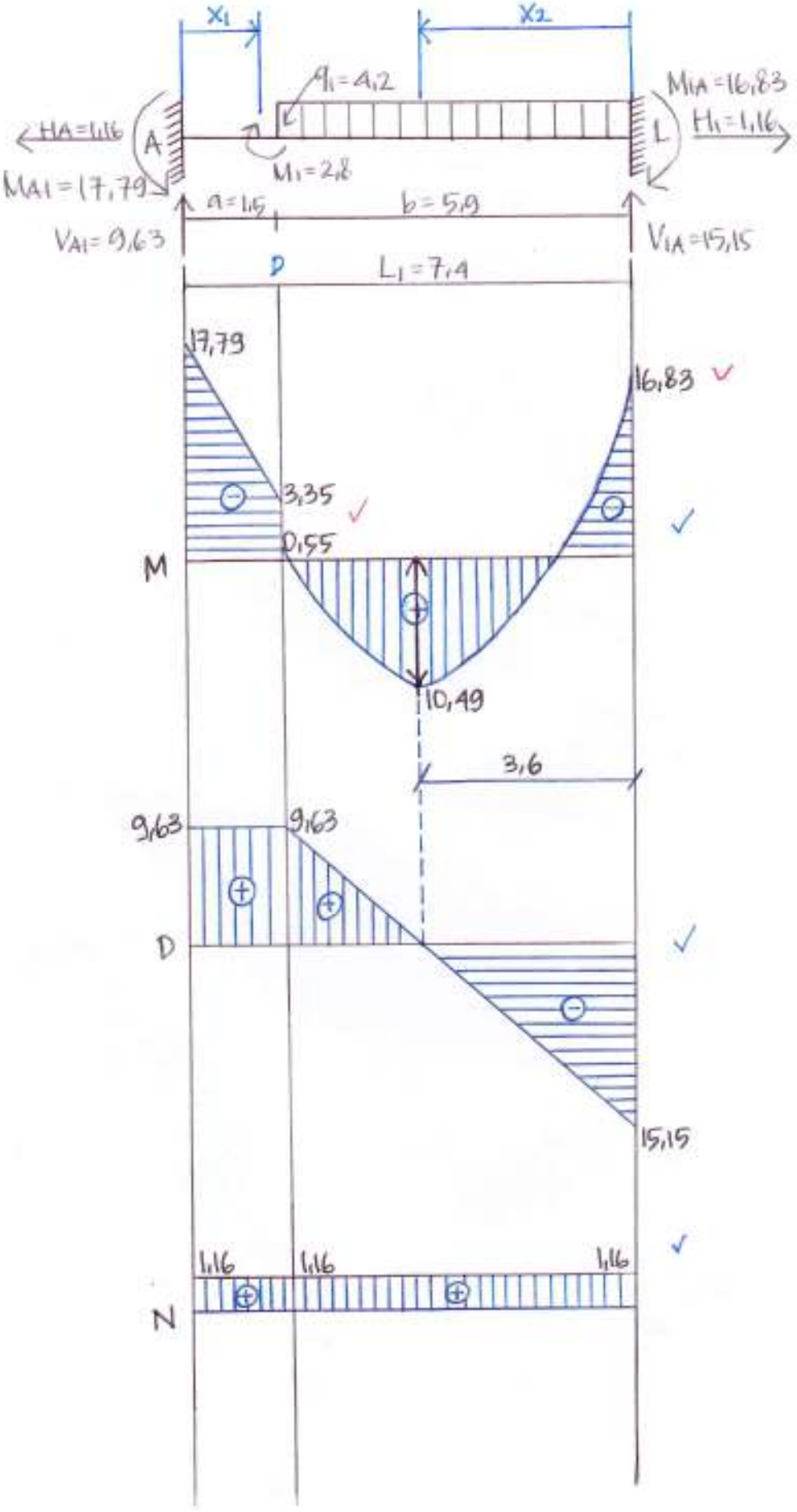
$x_2 = b = 5{,}9$
$M_D = 15{,}15 \cdot 5{,}9 - 4{,}2 \cdot 5{,}9 \cdot (\frac{1}{2} \cdot 5{,}9) - 16{,}83$ ✓
$= 89{,}385 - 73{,}101 - 16{,}83$
$= -0{,}55$ ton.m ✓
$D_D = -15{,}15 + 4{,}2 \cdot 5{,}9$
$= -15{,}15 + 24{,}78$
$= 9{,}63$ ton ✓
$N_D = 1{,}16$ ton ✓

Mencari Momen Max :

$D_{X2} = 0$
$-V_{1A} + q_1 \cdot x_2 = 0$ ✓
$q_1 \cdot x_2 = V_{1A}$
$x_2 = \frac{V_{1A}}{q_1}$
$x_2 = \frac{15{,}15}{4{,}2}$
$x_2 = 3{,}6$ m ✓

$M_{max} = V_{1A} \cdot x_2 - q_1 \cdot x_2 (\frac{1}{2} x_2) - M_{1A}$
$= 15{,}15 \cdot 3{,}6 - 4{,}2 \cdot 3{,}6 (\frac{1}{2} \cdot 3{,}6) - 16{,}83$
$= 54{,}54 - 27{,}216 - 16{,}83$
$= 10{,}49$ ton.m ✓

DIAGRAM BATANG A-1



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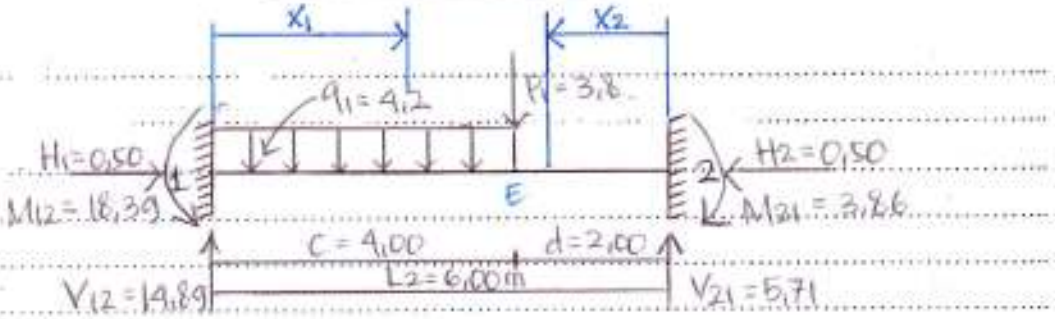
GAYA DALAM 1 - 2



$0 \le x_1 \le c$	$0 \le x_2 \le d$
$Mx_1 = V_{12} \cdot x_1 - M_{12} - q_1 \cdot x_1 (\frac{1}{2} x_1)$ ✓	$Mx_2 = V_{21} \cdot x_2 - M_{21}$
$Dx_1 = V_{12} - q_1 \cdot x_1$ ✓	$Dx_2 = -V_{21}$
$Nx_1 = -H_1$ ✓	$Nx_2 = -H_2$
$x_1 = 0$	$x_2 = 0$
$M_1 = -18,39$ ton.m ✓	$M_2 = 5,71 \cdot 0 - 3,86$
$D_1 = 14,89$ ton ✓	$= -3,86$ ton.m
$N_1 = -0,50$ ton ✓	$D_2 = -5,71$ ton
$x_1 = c = 4$	$N_2 = -0,50$ ton
$M_E = 14,89 \cdot 4 - 18,39 - 4,2 \cdot 4 \cdot (\frac{1}{2} \cdot 4)$	$x_2 = d = 2$
$= 59,56 - 18,39 - 33,6$	$M_E = 5,71 \cdot 2 - 3,86$
$= 7,6$ ton.m ✓	$= 11,42 - 3,86$
$D_E = 14,89 - 4,2 \cdot 4$	$= 7,6$ ton.m ✓
$= 14,89 - 16,8$	$D_E = -5,71$ ton ✓
$= -1,91$ ton ✓	$N_E = -0,50$ ton
$N_E = -0,50$ ton ✓	✓

Mencari Momen Maksimum

$D x_1 = 0$

$V_{12} - q_1 \cdot x_1 = 0$

$q_1 \cdot x_1 = V_{12}$

$x_1 = \frac{V_{12}}{q_1}$

$x_1 = \frac{14,89}{4,2}$ ✓

$x_1 = 3,55$ m ✓

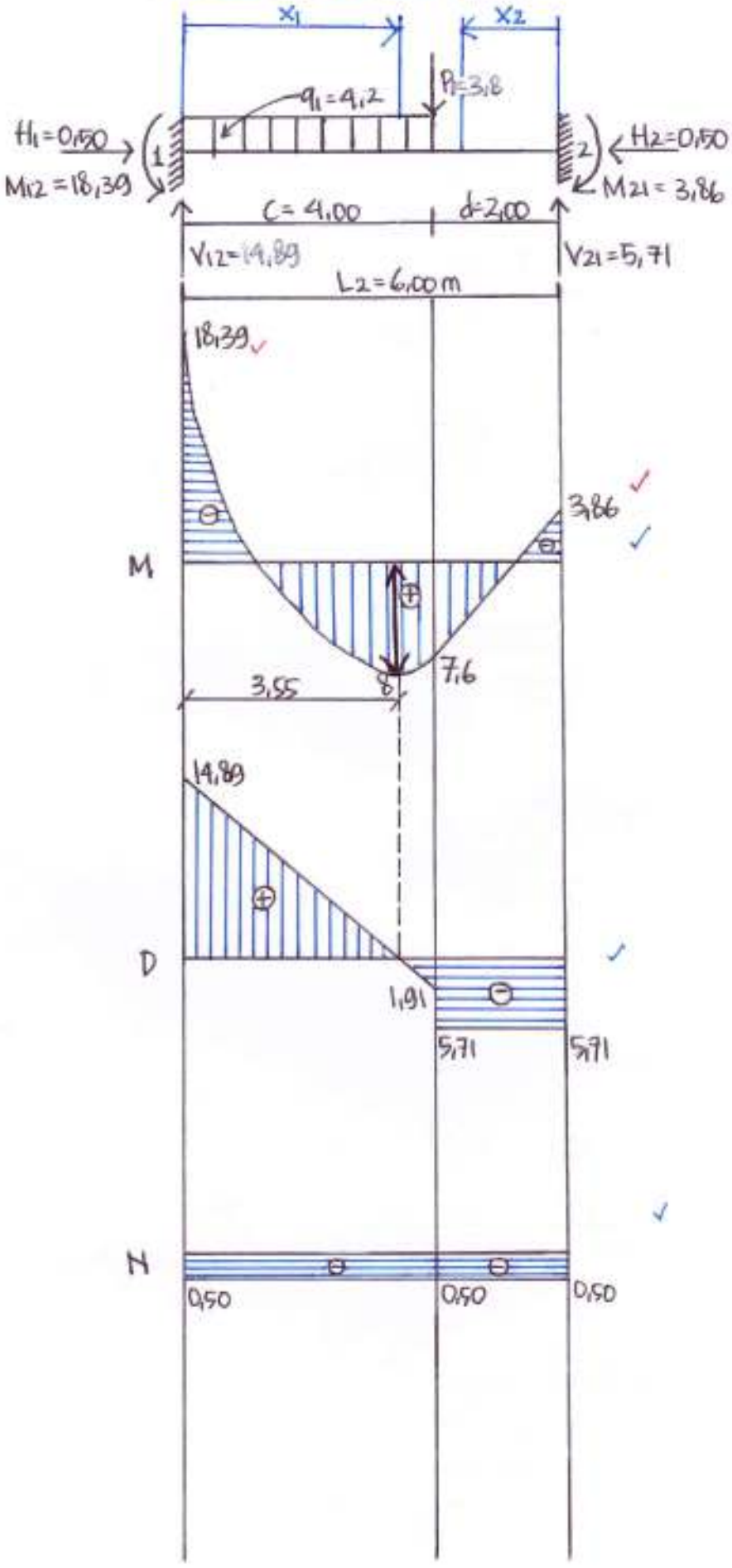
$M_{max} = V_{12} \cdot x_1 - M_{12} - q_1 x_1 (\frac{1}{2} x_1)$

$= 14,89 \cdot 3,55 - 18,39 - 4,2\ 3,55 (\frac{1}{2} \cdot 3,55)$

$= 52,86 - 18,39 - 26,465$

$= 8$ ton.m ✓

DIAGRAM BATANG 1-2



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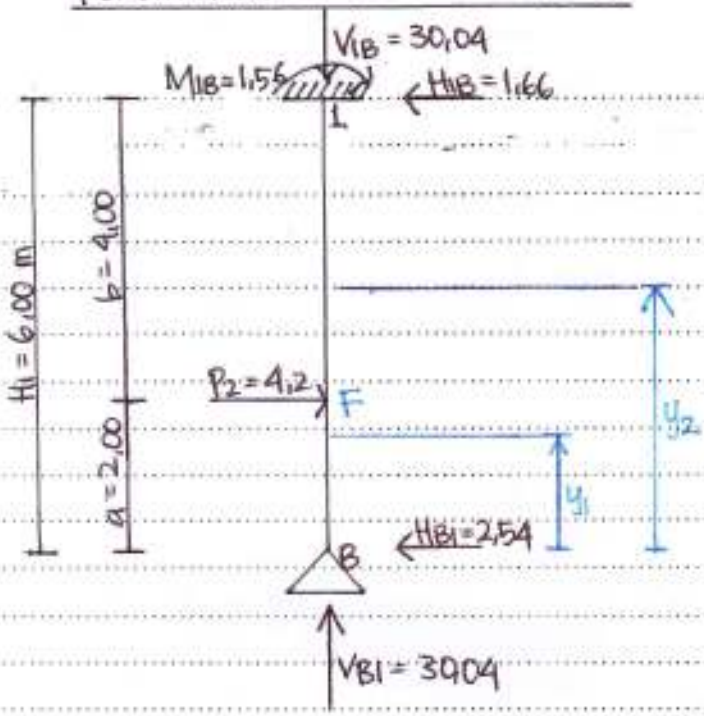
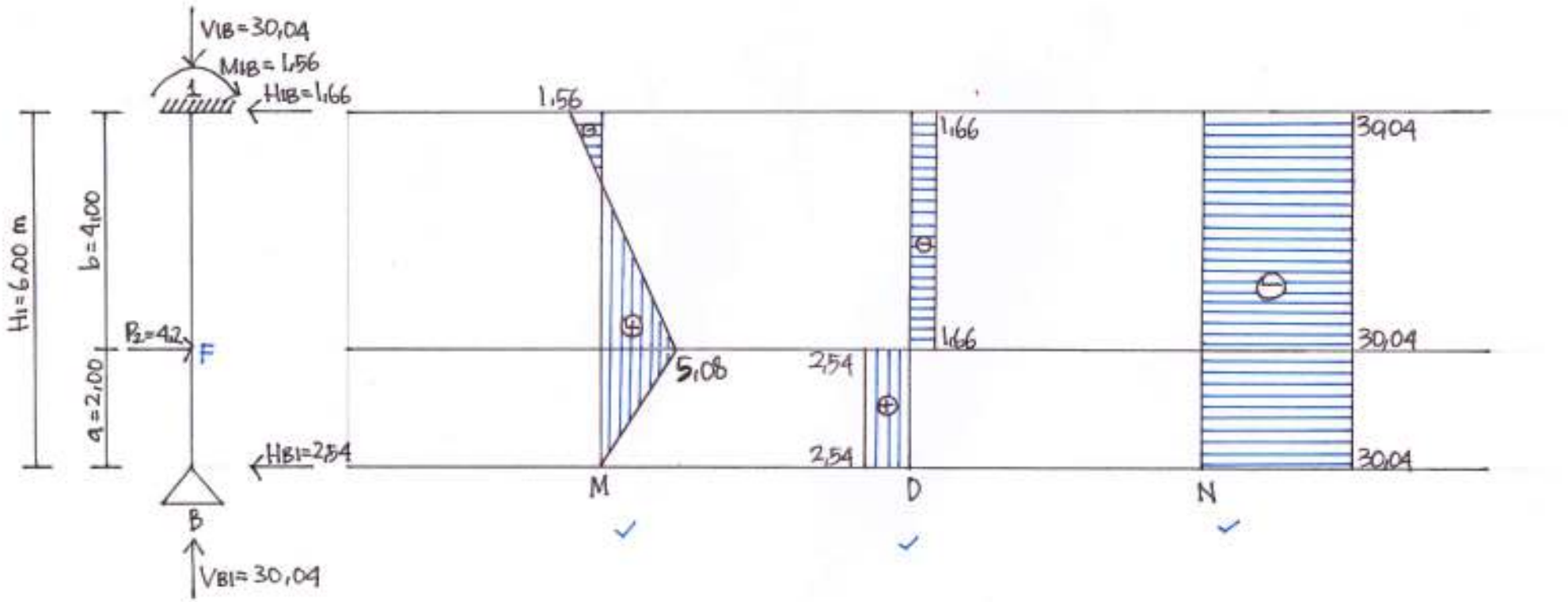
PERHITUNGAN GAYA DALAM 1-B



$(0 \le y_1 \le a)$	$(a \le y_2 \le H_1)$
$M_{y1} = H_{B1} \cdot y_1$ ✓	$M_{y2} = H_{B1} \cdot y_2 - P_2 \cdot (y_2 - a)$ ✓
$D_{y1} = H_{B1}$ ✓	$D_{y2} = H_{B1} - P_2$ ✓
$N_{y1} = -V_{B1}$ ✓	$N_{y2} = -V_{B1}$ ✓
$y_1 = 0$	$y_2 = a = 2$
$M_B = 0$ ✓	$M_F = 2,54 \cdot 2 - 4,2 \cdot (2-2)$
$D_B = 2,54$ ton ✓	$= 5,08$ ton.m ✓
$N_B = -30,04$ ton ✓	$D_F = 2,54 - 4,2$
$y_1 = a = 2$	$= -1,66$ ton ✓
$M_F = 2,54 \cdot 2$	$N_F = -30,04$ ton ✓
$= 5,08$ ton m ✓	$y_2 = H_1 = 6$
$D_F = 2,54$ ton ✓	$M_1 = 2,54 \cdot 6 - 4,2\,(6-2)$
$N_F = -30,04$ ton ✓	$= 15,24 - 16,8$
	$= -1,56$ ton.m ✓
	$D_1 = 2,54 - 4,2$
	$= -1,66$ ton ✓
	$N_1 = -30,04$ ton ✓

DIAGRAM BATANG 1-B



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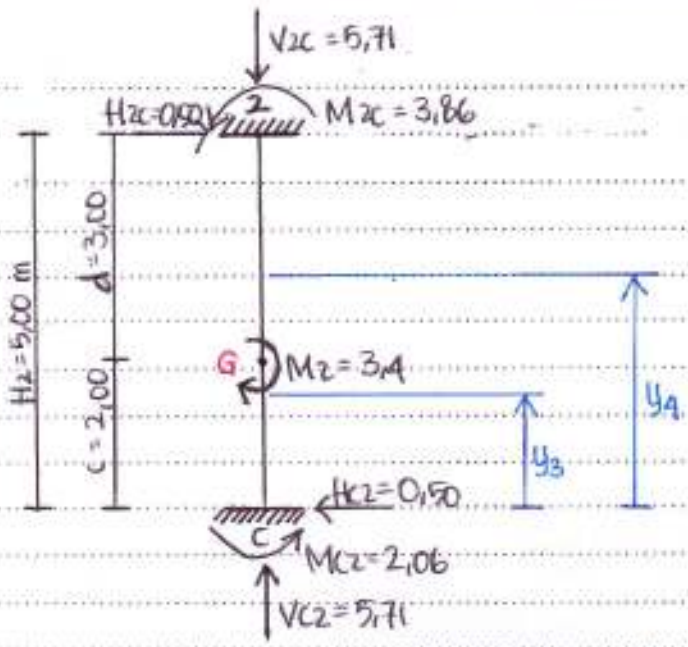
PERHITUNGAN GAYA DALAM 2-C



$(0 \leq y_3 \leq c)$ ✓

$My_3 = -HC2 \cdot y_3 + MC2$ ✓

$Dy_3 = HC2$ ✓

$Ny_3 = -VC2$ ✓

$y_3 = 0$

$M_C = -0,50 \cdot 0 + 2,06$

$= 2,06$ ton.m

$D_C = 0,50$ ton ✓

$N_C = -5,71$ ton ✓

$y_3 = c = 2$

$M_6 = -0,50 \cdot 2 + 2,06$

$= -1 + 2,06$

$= 1,06$ ton.m ✓

$D_6 = 0,50$ ton ✓

$N_6 = -5,71$ ton ✓

$(c \leq y_4 \leq H_2)$ ✓

$My_4 = -HC2 \cdot y_4 - M2 + MC2$ ✓

$Dy_4 = HC2$ ✓

$Ny_4 = -VC2$ ✓

$y_4 = c = 2$

$M_6 = -0,50 \cdot 2 - 3,4 + 2,06$

$= -1 - 3,4 + 2,06$

$= -2,34$ ton.m ✓

$D_6 = 0,50$ ton ✓

$N_6 = -5,71$ ton ✓

$y_4 = H_2 = 5$

$M_2 = -0,50 \cdot 5 - 3,4 + 2,06$

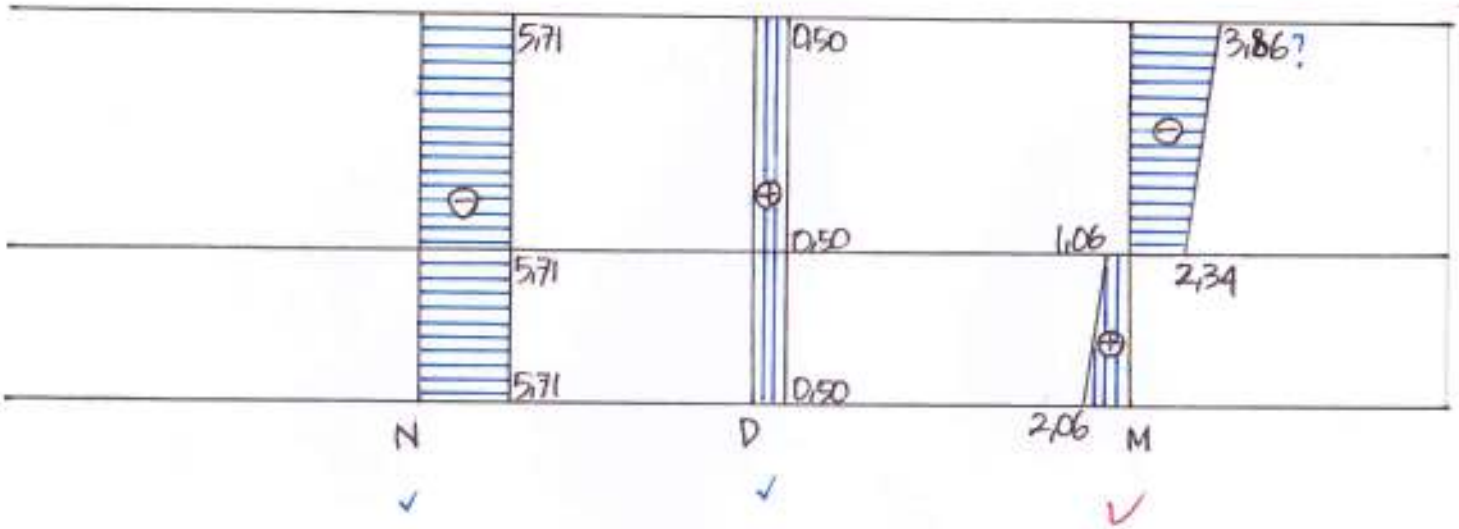
$= -2,5 - 3,4 + 2,06$

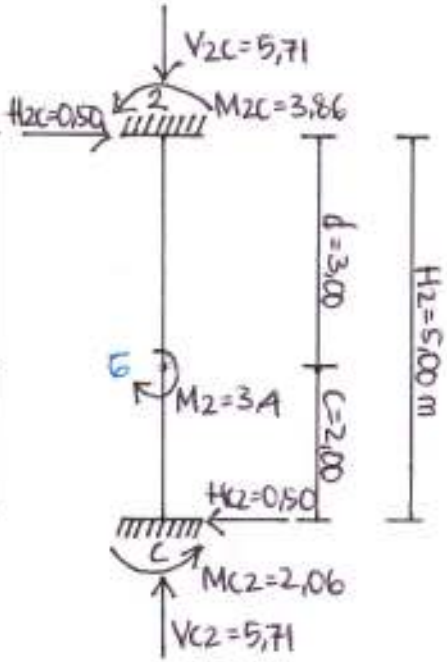
$= -3,86$ ton.m ?

$D_2 = 0,50$ ton ✓

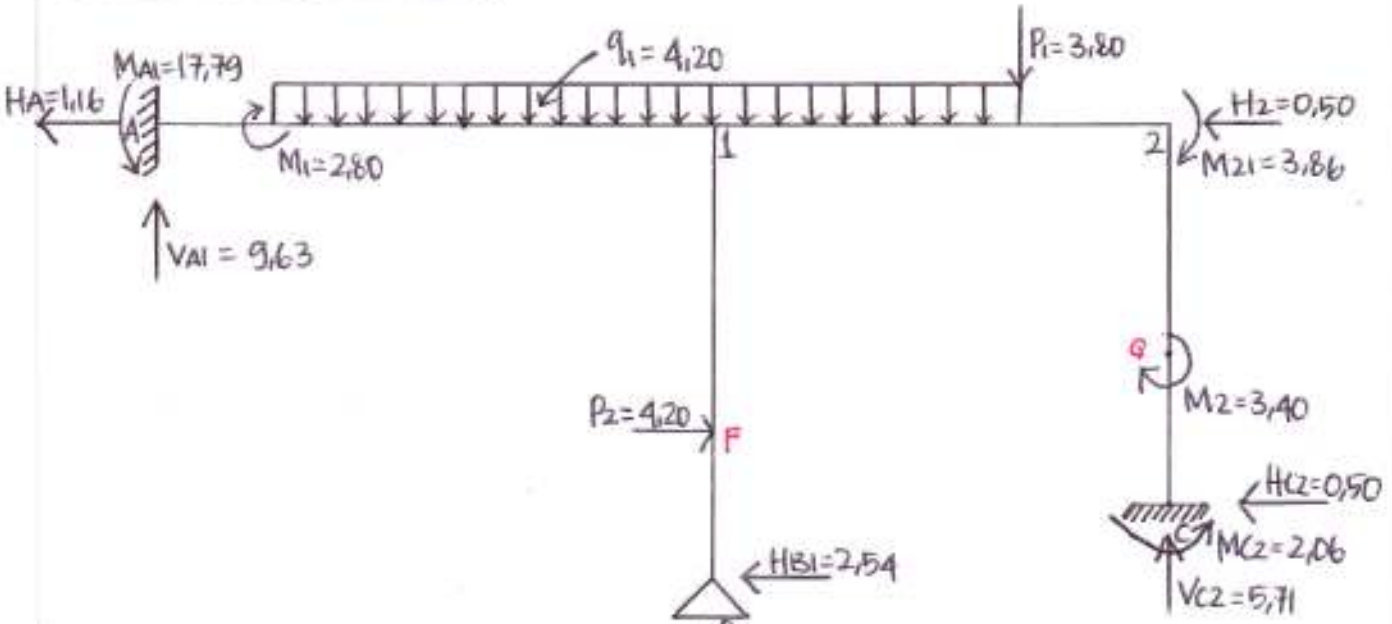
$N_2 = -5,71$ ton ✓

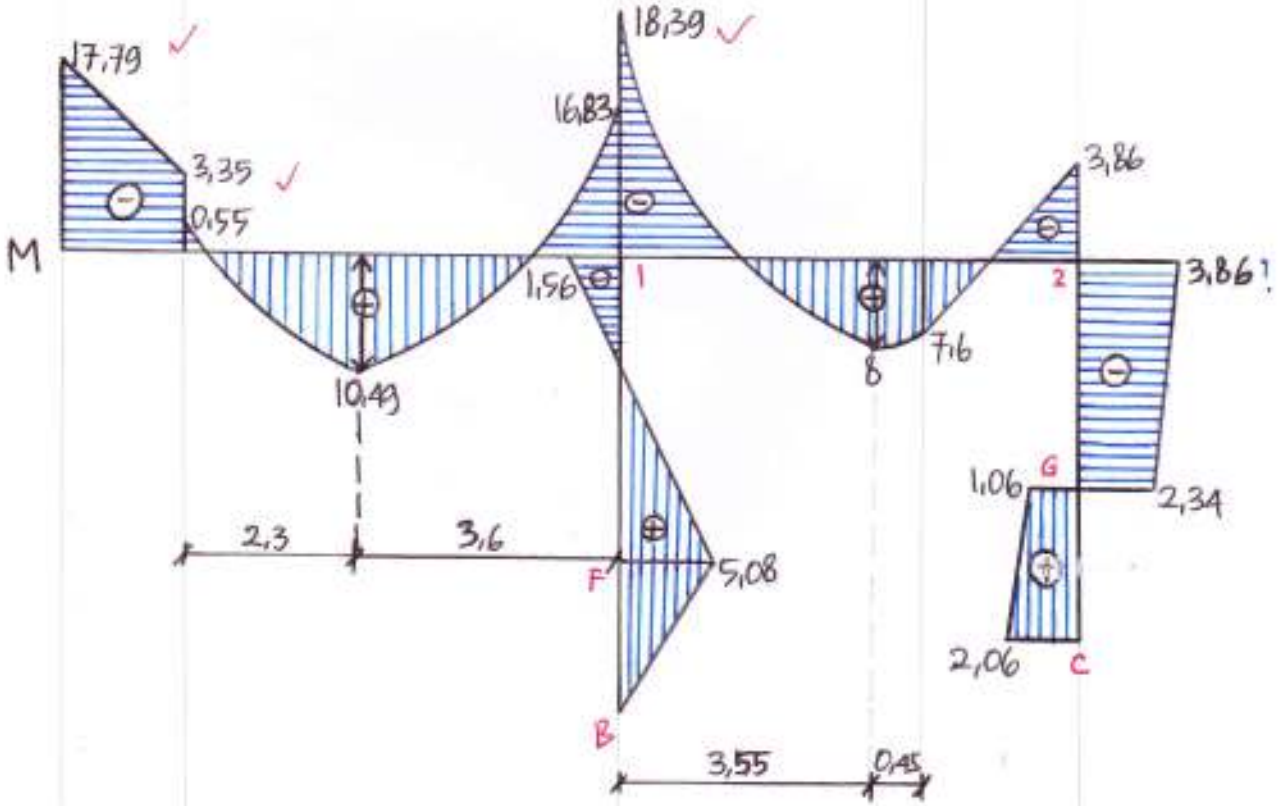
DIAGRAM BATANG 2-C



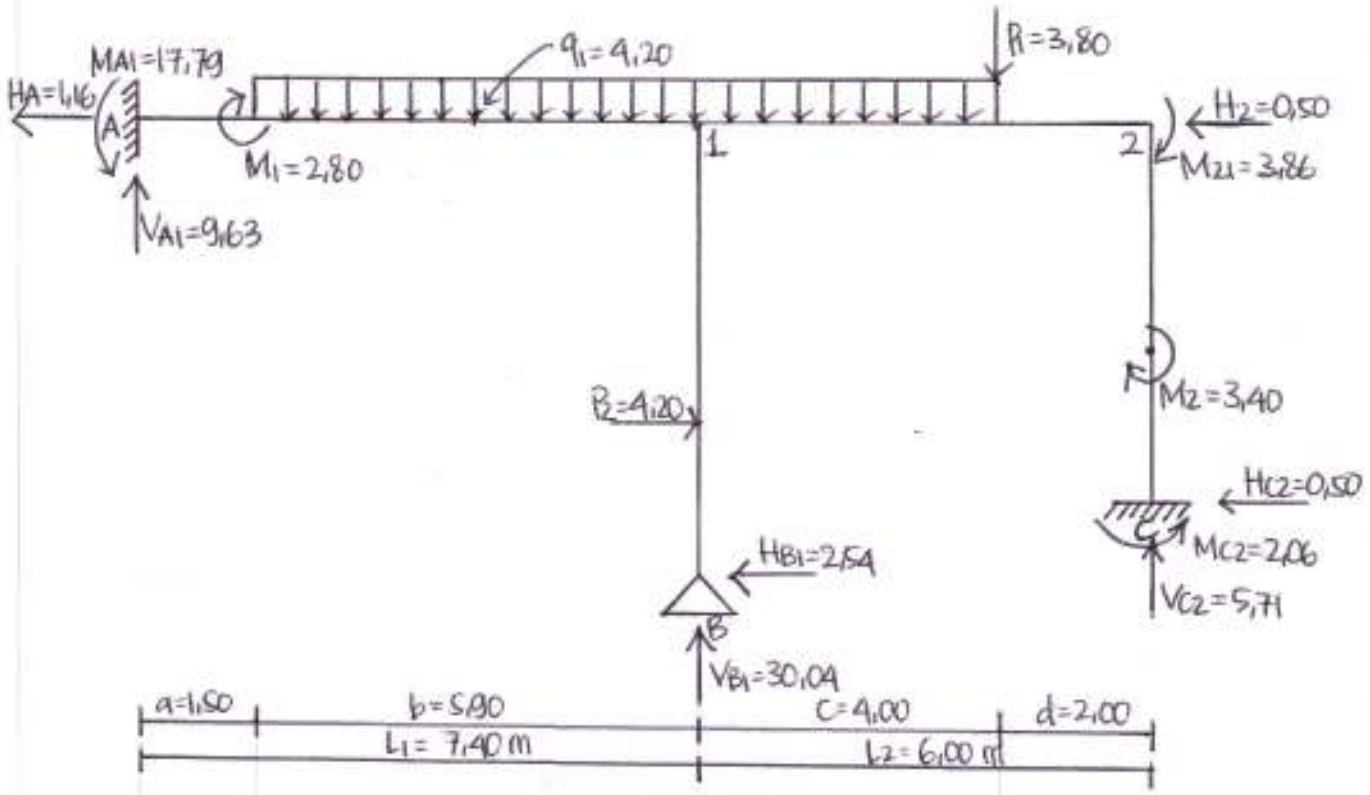


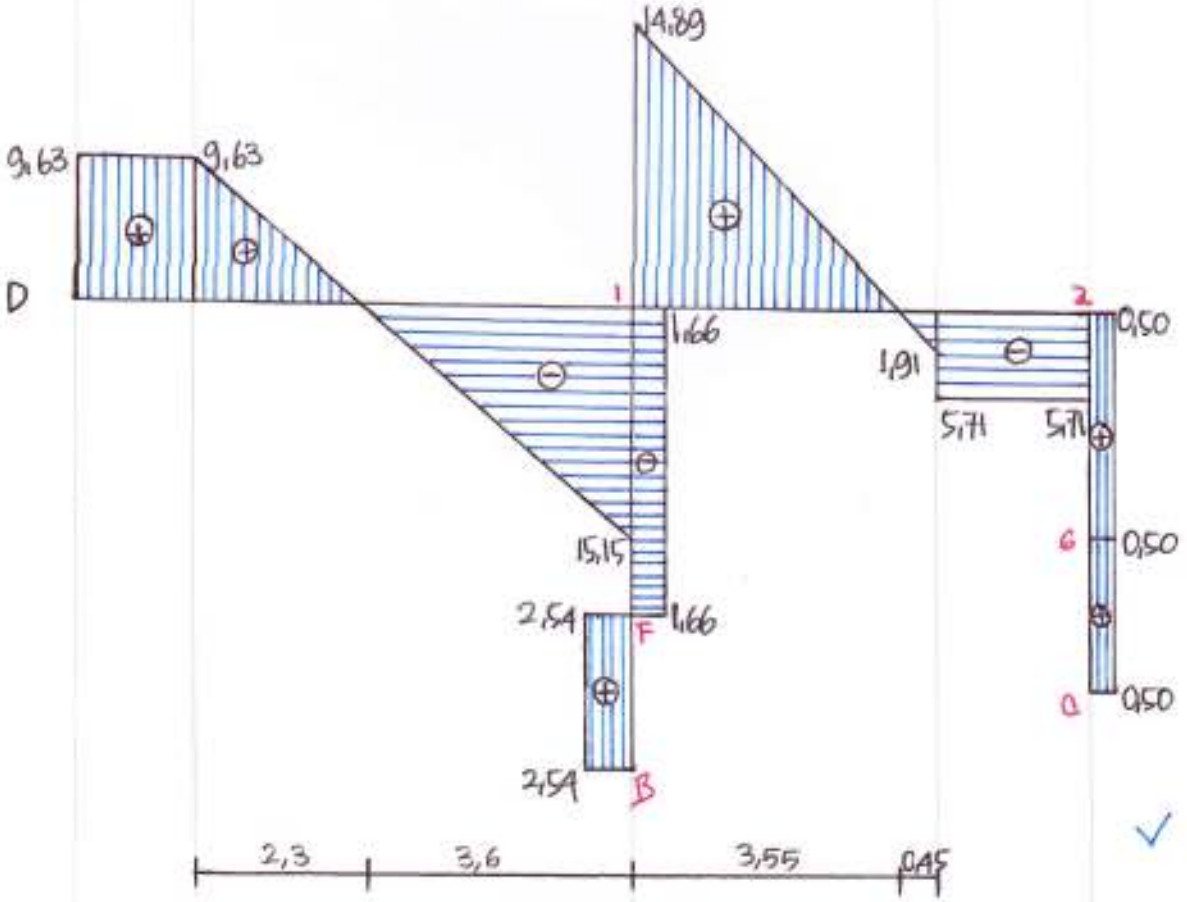
GAMBAR DIAGRAM (M)



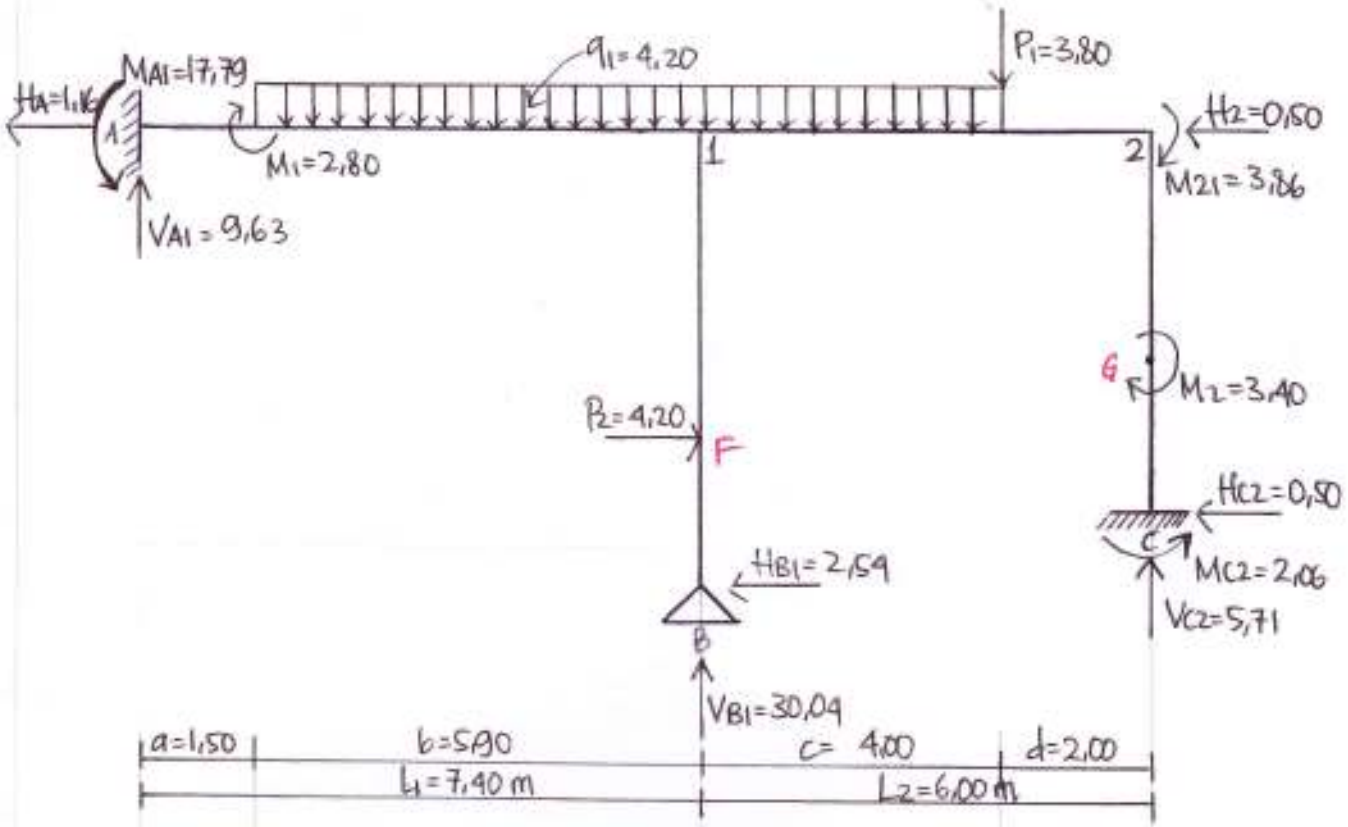


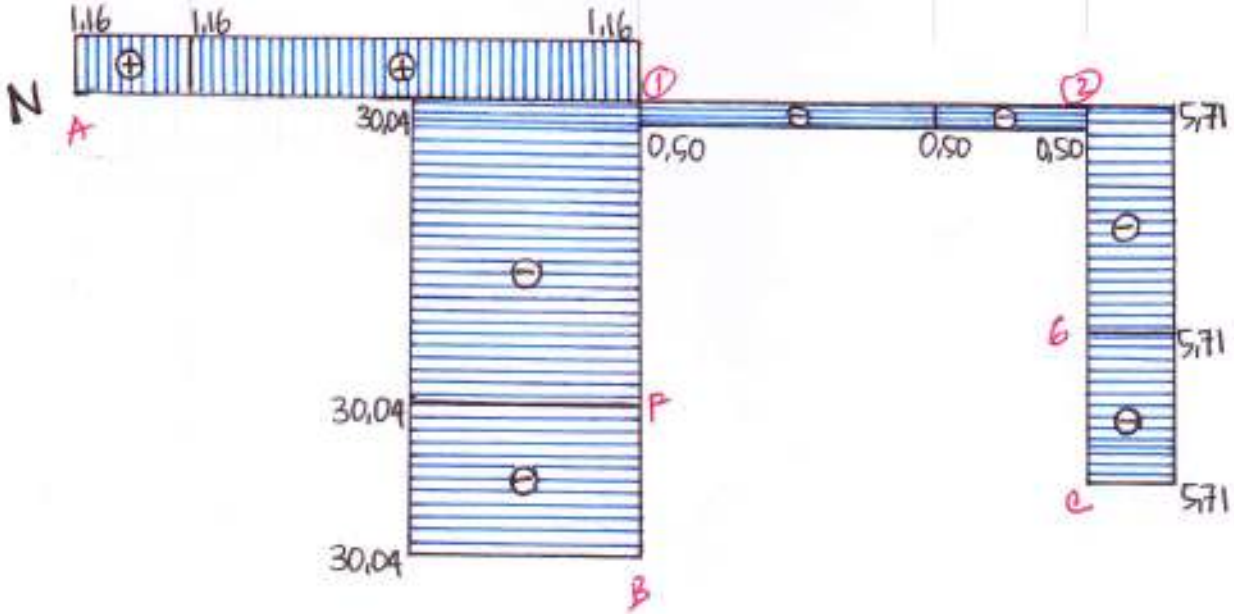
GAMBAR DIAGRAM (D)





GAMBAR DIAGRAM (N)





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JURUSAN TEKNIK SIPIL

Lembar ke : 1. Putih untuk Mahasiswa
2. Biru untuk Jurusan
3. Hijau untuk Dosen / Asisten

SURAT BUKTI TUGAS

Dosen / Asisten Dosen yang bertanda tangan di bawah ini menerangkan bahwa :

Nama : HANIFA SHABIRA
N P M : 1751010047
Jrsn. / Smt. : TEKNIK SIPIL / IV

Adalah benar telah menyelesaikan tugas ke : II (dua) (CROSS)
Untuk mata kuliah : MEKANIKA KEKAYASA
Dengan nilai :

Metro, 26 April 2019
Dosen / Asisten Dosen

NIP./NBM.