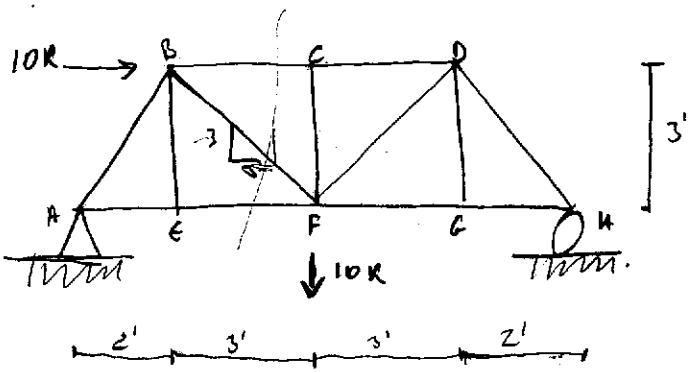
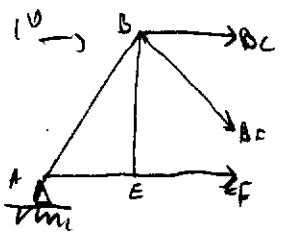
Dayenna Simon





$\uparrow_{1R}$

$\Sigma F_x = 0$

$A_x - 10K = 0$

$\boxed{A_x = 10K}$

$\Sigma F_y = 0$

$A_y + H_y - 10K = 0$

$\Sigma M @ A = 0$

$-10(5) - 10(3) + H_y(10) = 0$

$\underline{H_y = 8K}$

Let solve for
BC, BF and EF

$\Sigma M @ F$

$-10(3) - BC(3) + 8(3) = 0$

$\boxed{BC = 23.33K (C)}$

$\Sigma M @ B$

$-8(2) + EF(3) - 10(5) = 0$

$\boxed{EF = 15.3 (T)}$

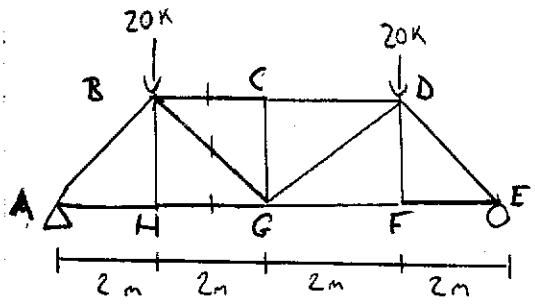
$\Sigma M @ A$

$-10(3) + 23.3(3) + BF_y(5) = 0$

$\boxed{BF_y = -7.98}$

$BF = \left(\frac{4.24}{3}\right) F_{Ry} \Rightarrow \boxed{BR = 11.27 (C)}$

Anthony Zuccaro

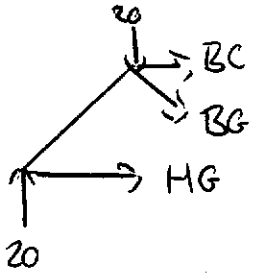


Solve for BC, BG, HG

$\Sigma M_A = 0$ (+)

$= -20(2) - 20(6) + E_y(8)$

$E_y = 20K$ $A_y = 20K$ $A_x = 0$

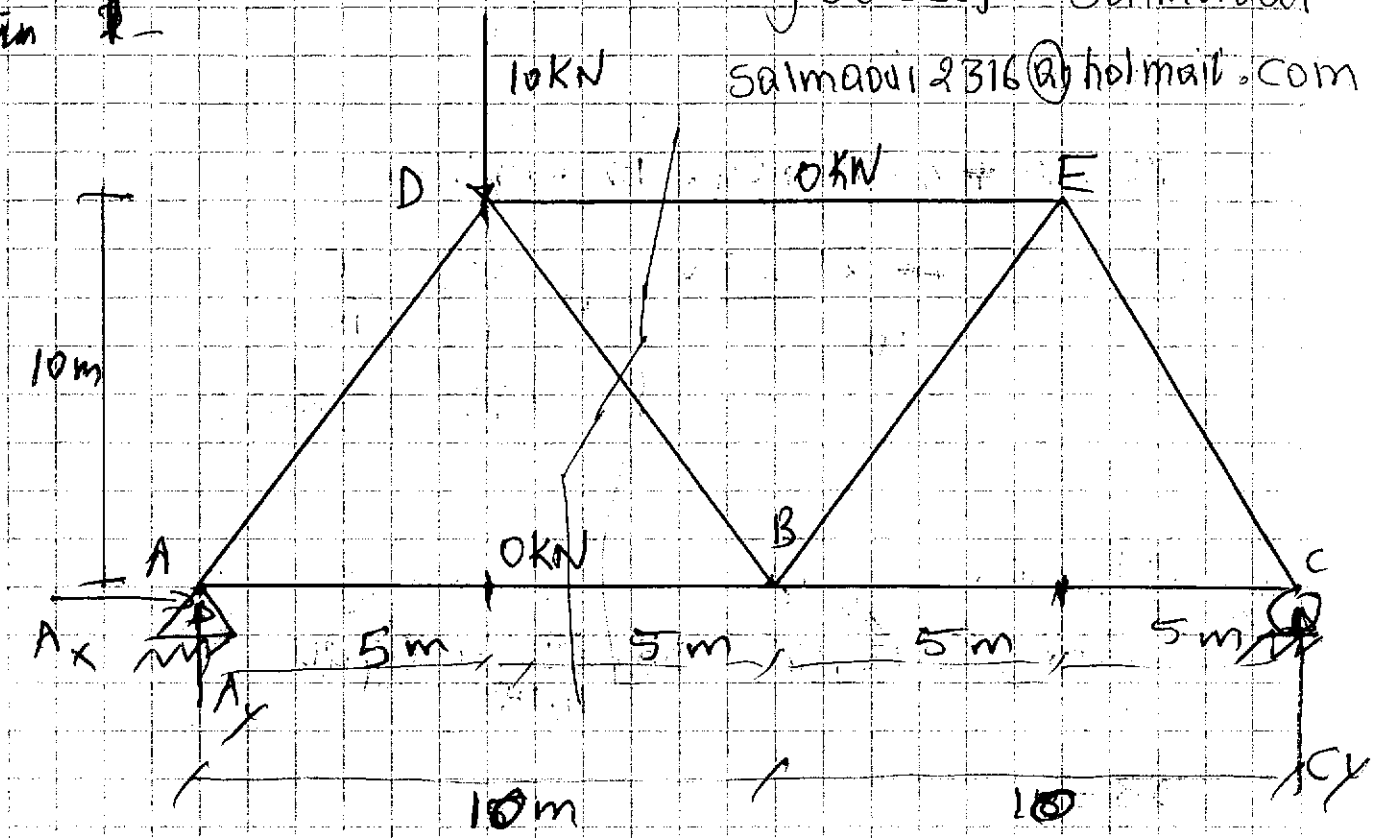


$BC = 0$ $BG = 0$

$HG = 0$

Youssef Salmaoui
salmaoui2316@hotmail.com

Exercice 1 :



2/ Solve DE and DB and AB.

$\sum F_x = 0 \quad A_x = 0$

$\sum F_y = 0 \quad A_y + C_y - 10 = 0 \Rightarrow A_y + C_y = 10KN$

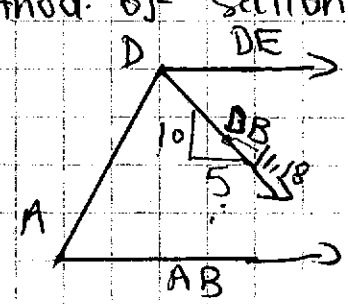
$\overset{+}{\circlearrowleft} \sum M_A = 0 \quad -10 \cdot 5 + C_y \cdot 20 = 0$

$C_y = \frac{50}{20} = 2,5KN$ $\boxed{C_y = 2,5KN}$

$A_y = 10 - 2,5KN$

$\boxed{A_y = 7,5KN}$

Method of section :



$\overset{+}{\circlearrowleft} \sum M_D = 0$

$A_x \cdot 10 + AB \cdot 10 - A_y \cdot 5 + C_y \cdot 15 = 0$

$AB = \frac{7,5 \times 5 - 2,5 \cdot 15}{10} = \frac{0}{10}$

$\boxed{AB = 0KN}$

$\circlearrowleft^{+} \quad \Sigma M_B = 0$

$-DE \cdot 10 + 7,5 \cdot 10 + Cy \cdot 10 + 10,5 = 0$

$-DE = \dfrac{75 + 25 - 50}{10} \Rightarrow DE = -\dfrac{0}{10}$

$\boxed{DE = 0\ KN}$

$\circlearrowleft^{+} \quad \Sigma M_A = 0$

$-10 \cdot 5 - DE \cdot 10 - DB \cdot \dfrac{10}{11,18} + Cy \cdot 20$

$DB =$

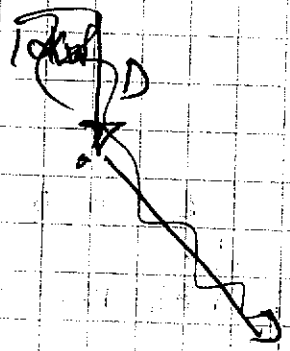
$\Sigma M_C = 0$

$-Ay \cdot 20 + 10 \cdot 15 + DE \cdot \dfrac{10}{11,18} \cdot 20 - DE \cdot 10 = 0$

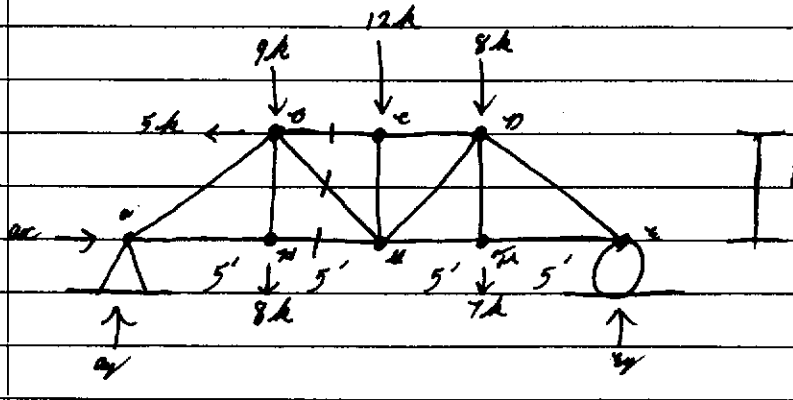
$DE = \dfrac{150 + 150 \cdot 11,18}{10}$

Method of joints

$DE = 0\ KN$



Michael Bogle 11/6/14 [redacted]
mbogle86@gmail.com

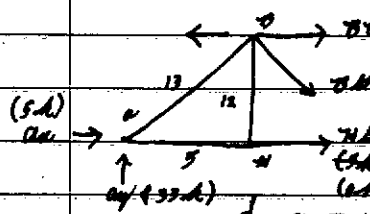


BC $\sum M @ A = 0 = -17(5) - 12(10) - 15(15) + 5(12) + E_y(20)$

BG $E_y = \frac{220}{20} = \underline{11\ k}$

HG $\sum F_y = 0 = -17 - 12 - 15 + 11 + a_y$

$a_y = \underline{33\ k}$



$\sum F_x = 0 = a_x - 5$

$a_x = \underline{5\ k}$

$\sum M @ B = 0 = 5(12) + HG(12)$

~~$HG = \frac{60}{12} = 5k$~~

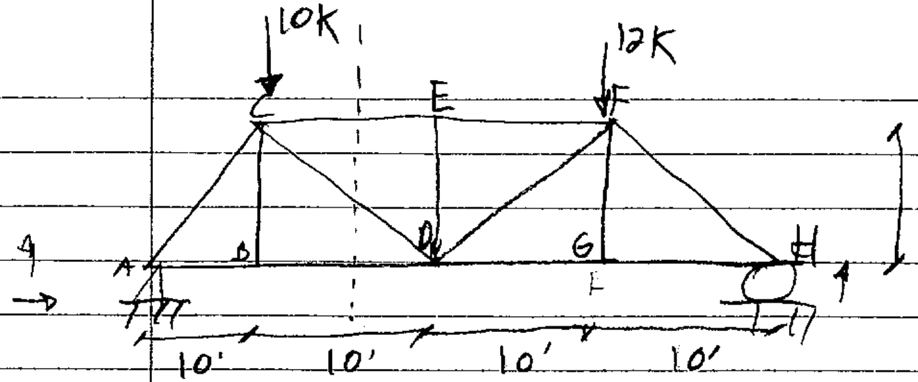
~~$\sum M @$~~

$\sum M @ B = 0 = HG(12)$

$HG = 0$

AlanJz@hotmail.com Alan Jimenez

10-6-14



CE = 11 Ⓒ K
CD =
BD = 10.5 Ⓣ K

ΣF@A

$-10(10)-12(30)+Hy(40)=0$

$40Hy = 460$

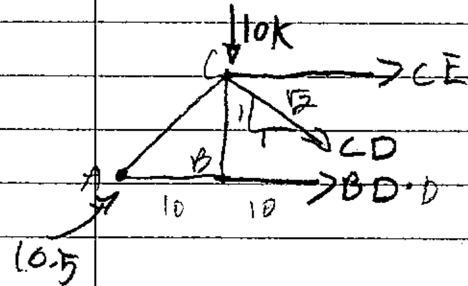
$Ax = 0$

Hy = 11.5K

ΣF@y

$Ay-10-12+11.5=0$

Ay = 10.5K



M@C

$-10.5(10)+BD(10)=0$

BD = 10.5 Ⓣ

$CD_x = \frac{1}{\sqrt{2}}$

$CD_y = \frac{1}{\sqrt{2}}$

M@D

$-10.5(20)+10(10)-CE(10)=0$

$-110 = CE(10)$

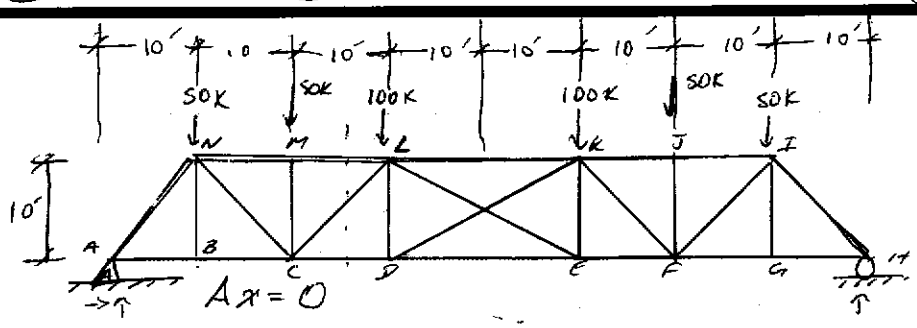
CE = 11 Ⓒ

ΣF@y

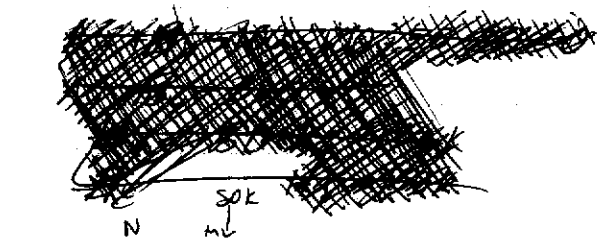
$CD\left(\frac{1}{\sqrt{2}}\right)-10+10.5=0$

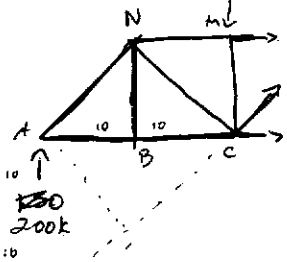
CD = 3.6 K Ⓣ

PROJECT:	PROJECT #:	PAGE #:
DESCRIPTION: Method of Sections		AUTHOR / DATE: 11/6/14
Darien Charlton DarienCharlton@gmail.com		CHECKED BY / DATE:



Solve for members ML, CL & CD using method of sections.





$A_y + H_y - 100 - 100 - 50 - 50 - 50 - 50 = 0$

$A_y + H_y - 400 = 0$

$\therefore A_y = 200K$

$H_y = 200K$

$ML = 400K\ (C)$

$CD = 550K\ (T)$

$CL = 176.8K\ (T)$

$M_C = (-200 \cdot 20) + (ML \cdot 10) = 0$

$-4000 - ML(10) = 0$

$ML = -400K$

$\sqrt{20^2 + 20^2} = d$

$\sqrt{400 + 400}$

$d = 28.28$

$M_L = (-200 \cdot 30) + (50 \cdot 10) + (CD(10)) = 0$

$-6000 + 500 + CD(10) = 0$

$-5500 + CD(10) = 0$

$CD(10) = 5500$

$CD = 550K$

$M_A = (-50 \cdot 20) + (-400 \cdot 10) + (CL \cdot 28.28) = 0$

$-1000 - 4000 + CL(28.28) = 0$

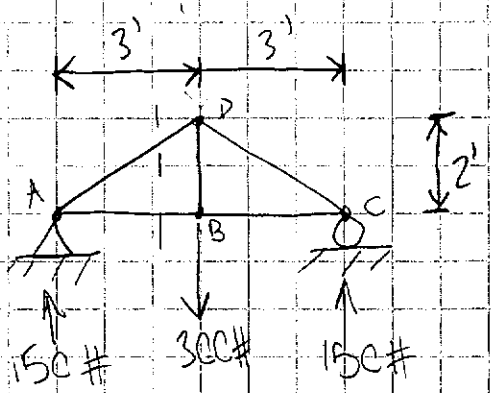
$-5000 + CL(28.28) = 0$

$CL(28.28) = 5000$

$\therefore \boxed{CL = 176.8K}$

Jonathan Akujobi

Akujobi's Truss

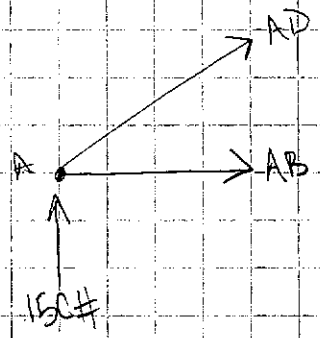


Solve for segment AB using the method of sections.

$M_{@D} = 0$

$AB(2') - 150\#(3') = 0$

$\boxed{AB = 225\# (T)}$



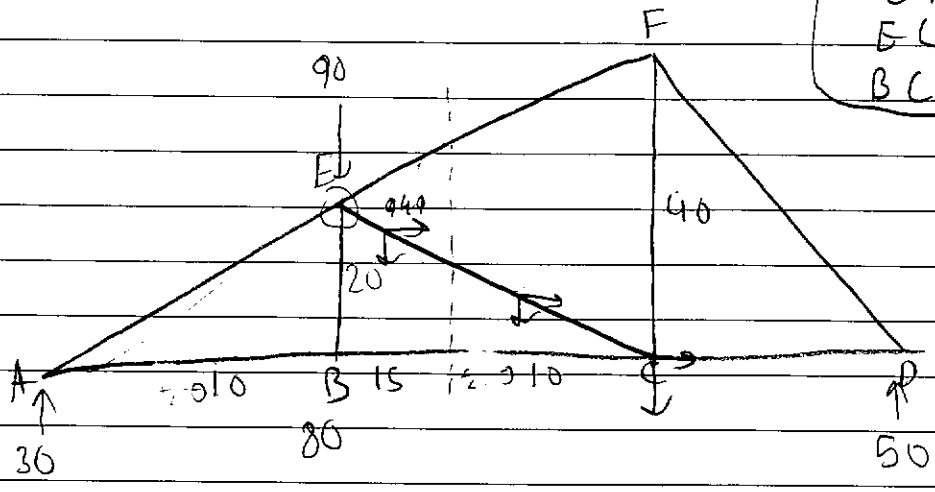
Quiz

11/7/14

Jarren Sanderson

jarren.sanderson@adl.com

Solve for
EF
EC
BC



44.7

$\sum M_E = 0$

$20BC - 10(30) = 0$

$20BC - 300 = 0$

$20BC = 300$

$BC = 15$

BC = 15 (T)
EC = 94.9 C
EF = 60.345 T

$\sum M_A = -170(10) - EC\left(\frac{40}{44.7}\right)(20) = 0$

$-1700 - EC(17.89709172) = 0$

$EC = 94.9$

Sum moments $\sum_x$

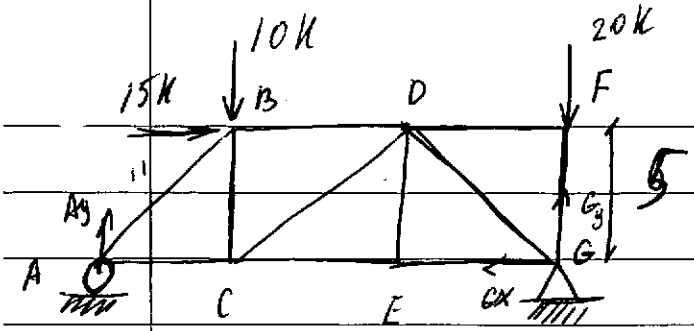
$15 - 94.9\left(\frac{20}{44.7}\right) + EF\left(\frac{20}{44.7}\right) = 0$

$15 - 42.4 + EF\left(\frac{20}{44.7}\right) = 0$

$-27.4 + EF\left(\frac{20}{44.7}\right) = 0$

$EF\left(\frac{20}{44.7}\right) = 27.4$

$EF = 60.345$



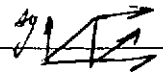
Find BD, DC, CE, use method of sections

Solution:

$\Sigma F_y = Ay - 10k - 20k + Gy = 0$

$\Sigma M_G = -Ay \cdot 30 + 10k \cdot 20 - 15k \cdot 5 = 0$

$Ay = 9,1k$



$\Sigma F_y = Ay + [redacted] + 10k + CD\frac{5}{11} = 0$

$\Sigma F_x = [redacted] + 15k + BD + CE + CD\frac{10}{11} = 0$

$\Sigma M_C = Ay \cdot 10 - [redacted] - 15k \cdot 5 - BD \cdot 5 = 0$

$CD = (-9,1 + 10k) : 5/11 = 1,98k$

$BD = (-9,1 \cdot 10 - 15 \cdot 5)/5 = -33,2k$

$CE = -1,98 \cdot \frac{10}{11} + 33,2 - 15k = 16,4k$

VOLHA ASADCHAYA

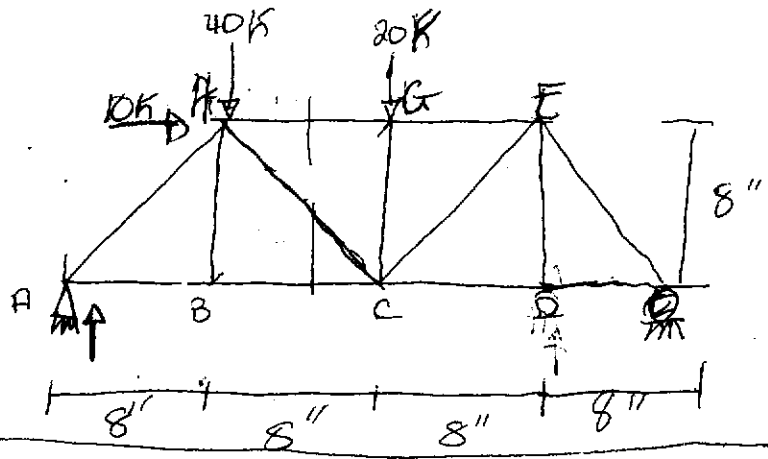
volha.asadchaya@gmail.com

Name & email

↓

(1) Deirdra.Williams@mail.citytech.cuny.edu

11/6/14



Find HG
BE
BC

$\Sigma x = HA + 10 = 0$

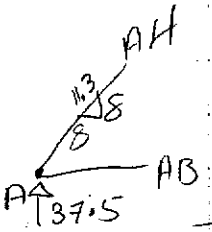
$HA = -10$ ← $HA = 10$

$\Sigma y = VA + VD = 60$ $VA = 37.5k$

$\Sigma M_{@A} = (40 \cdot 8) + (-20 \cdot 16) + (VD \cdot 32) + (-10 \cdot 8) = 0$

$32VD = 320 + 320 + 80 = 720$

$VD = \frac{720}{32} = 22.5k$

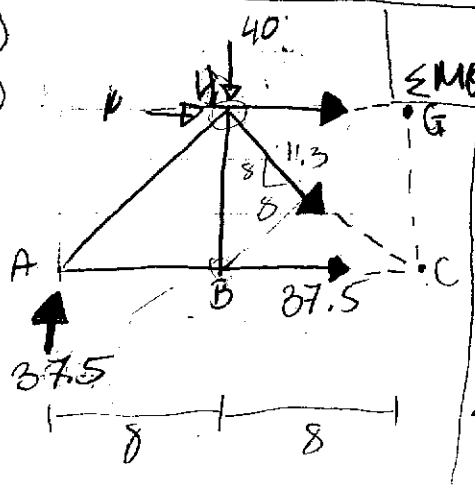


$x = AB + AH\left(\frac{8}{11.3}\right)$

37.5

$y = 37.5 + AH\left(\frac{8}{11.3}\right)$

$= 53$



$\Sigma M_{@H} = (37.5 \cdot 8) + (BC \cdot 8) = 0$

$BC = 37.5$

$\Sigma x = HG + HC\left(\frac{8}{11.3}\right) + 10 + 37.5 = 0$

$HG + HC\left(\frac{8}{11.3}\right) + 47.5 = 0$

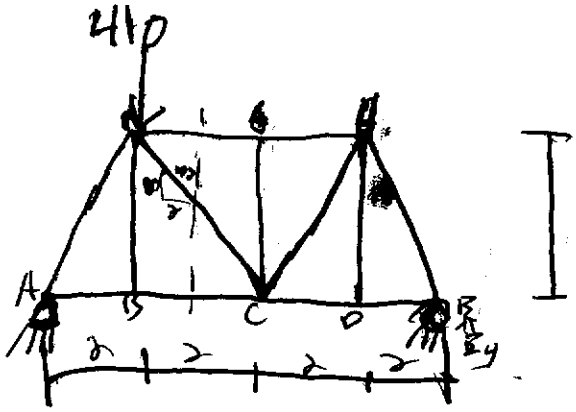
$HG = 50k$

$\Sigma y = 37.5 - 40 - HC\left(\frac{8}{11.3}\right) = 0$

$HC\left(\frac{8}{11.3}\right) = -40 + 37.5$ $HC = 3.5k$

Mark Barclay

Using Method of Sections Find the Forces At the Joints and in the members FG, BC and FC



$M_A = 0$

$-410(2) + R_y(8) = 0$

$-820 + R_y(8) = 0$

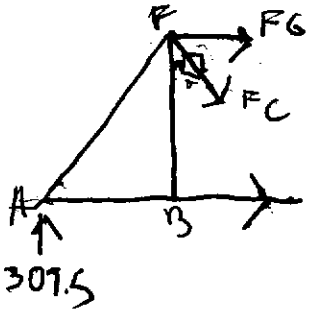
$\frac{R_{Ey}}{8} = \frac{820}{8}$

$R_y = 102.5$

$\Sigma F_Y = -410 + A_y + 102.5 = 0$

$A_y = 307.5$

Section Cut



$M_F = 0$

$= -307.5 \times 2 + BC(10) = 0$

$BC = 61.5$

[redacted]

$\Sigma F_X = 0$

$F_G + BC + \frac{(1.5)}{10.2} F_C = 0$ (104.55)

$F_G = -82$

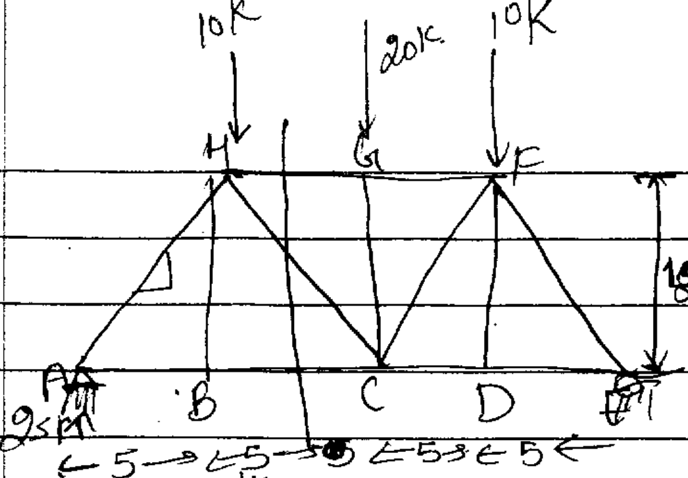
$\Sigma F_Y = A_y - 410 + \frac{10}{10.2} F_L = 0$

$-$ [redacted] $\frac{10}{10.2} F_L = 102.5$

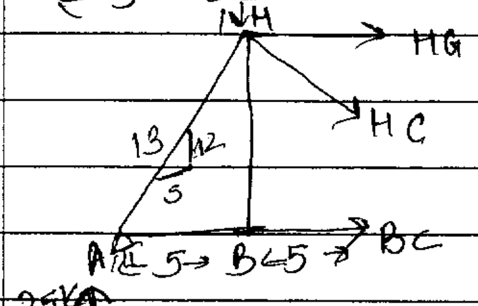
$F_L = 104.55$

RAJVINDER KAUR

#



12 Find member forces HG, HC, BC



$\Sigma F_y = 0$ → +

$+ 25K - 10K - HC\left(\frac{12}{13}\right) = 0$

$15K - HC\left(\frac{12}{13}\right) = 0$

$HC\left(\frac{12}{13}\right) = 15K \Rightarrow HC = \frac{15 \times 13}{12}$

$\Rightarrow HC = 16.25K\,(T)$

$\Sigma M_H = 0$

$-25K(5) + BC(5) = 0$

$-125 + BC(5) = 0$

$BC = 25K\,(T)$

$\Sigma M_C = 0$

$-25K(10) + 10(5) + HG(5) = 0$

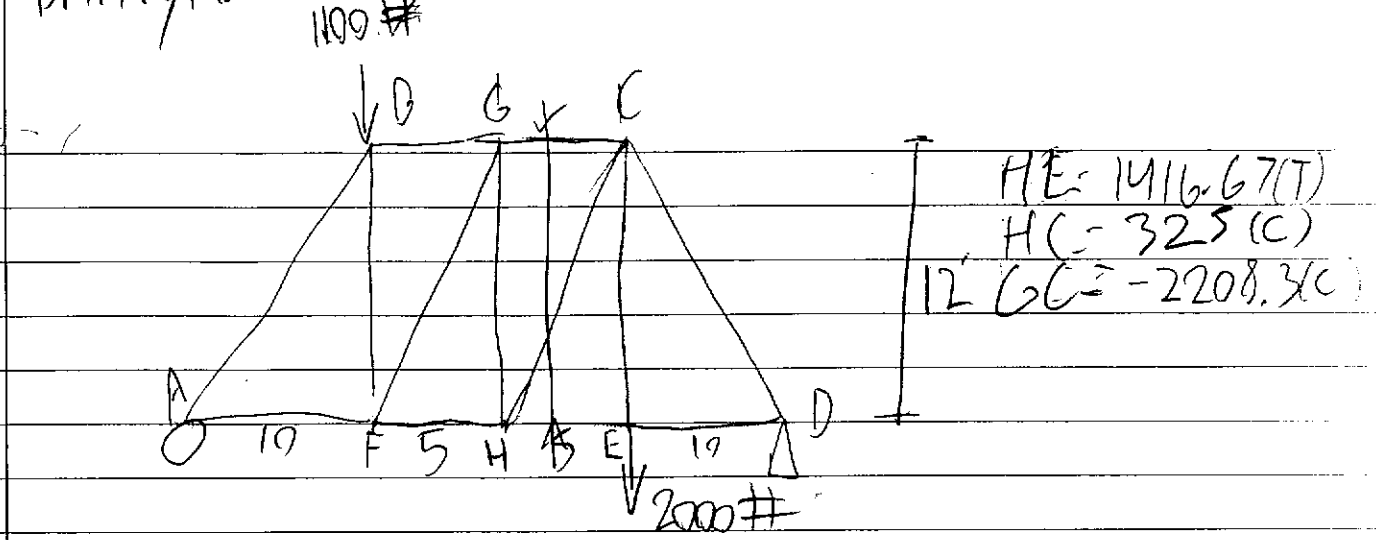
$-250 + 50 + 5HG = 0$

$-200 + 5HG = 0$

$200 = 5HG$

$40K = HG\,(T)$

Dmitry Romanovsky



$D_x = 0$

$A_y \cdot 30 + 1100 \cdot 20 + 2000 \cdot 10 = 0$

$A_y = 1400$

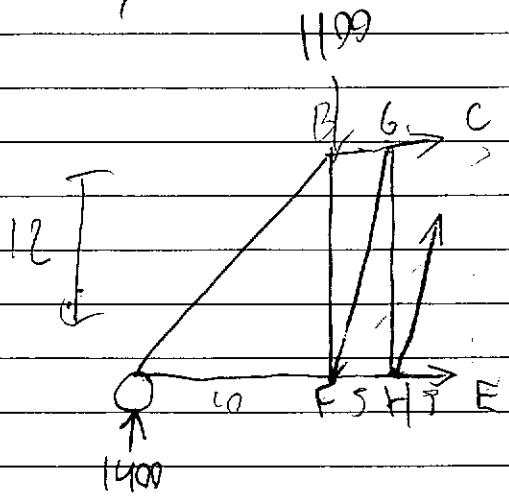
$A_y + D_y - 1100 - 2000 = 0$

$1400 + D_y - 1100 - 2000 = 0$

$D_y = 1700$

$0 = 1400 - 1100 + HC\left(\frac{12}{\sqrt{13}}\right)$

$HC = 325\ (C)$



$O_C = -1400 \cdot 20 + 1100 \cdot 10 + H \cdot$

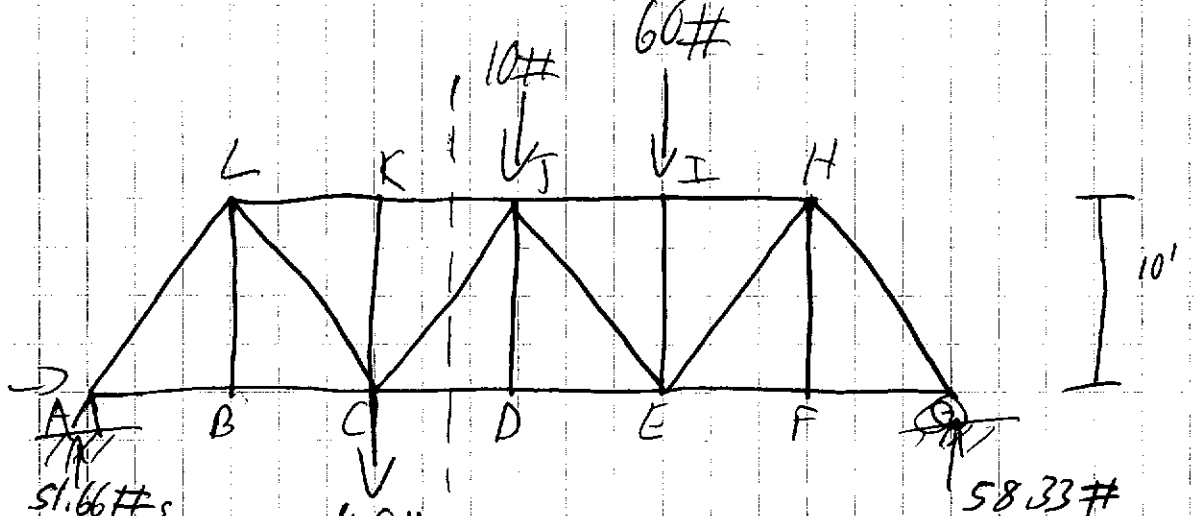
$HE = 1416.67$

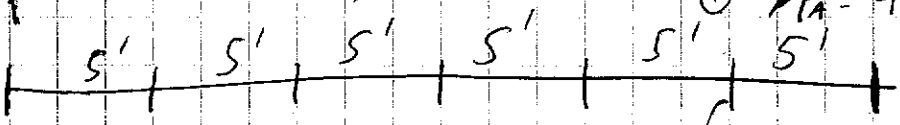
$O_H = GC \cdot 12 + 1100 \cdot 5 + 1400 \cdot 15$

$GC = -2208.3$

Edoardo Russo

ERuss1993@yahoo.com





$M_A = -40(10) - 60(20) - 10(15) + G_y(30) = 0$

$M_A = -1750 + G_y(30) = 0$

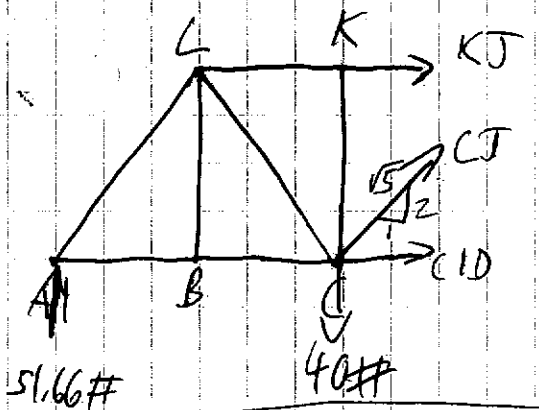
$G_y(30) = 1750$

$G_y = 58.33\#$

$\Sigma F_y = A_y - 10 - 40 - 60 + 58.33$

$A_y = 51.66\#$

$A_x = 0$



$\Sigma F_y = 51.66 - 40 + CJ(2/\sqrt{5}) = 0$

$11.66 + CJ(2/\sqrt{5}) = 0$

$CJ(2/\sqrt{5}) = -11.66$

$CJ = -13\#s$ (C) ☆

$M_A = -40(10) + 13(4/\sqrt{5})(10) - KJ(10) = 0$

$-283.7 - KJ(10) = 0$

$-KJ(10) = 283.7$

$KJ = -28.37\#$ (C)

☆

$\Sigma F_x = 0 \rightarrow +$

$-28.37 - 13(1/\sqrt{5}) + CD = 0$

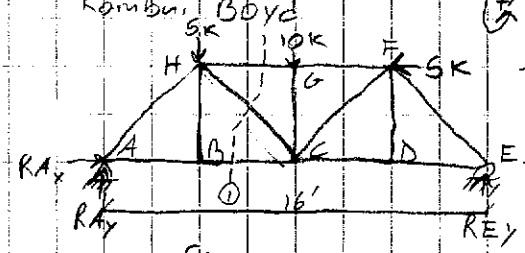
$-34.18 + CD = 0$

$CD = 34.18\#$ (T)

☆

asoc.boyd@gmail.com
Kambui Boyd

Find HG, HC, BC

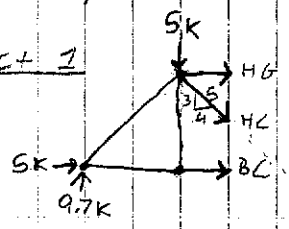


$\overset{+\rightarrow}{\Sigma F_x} = -5K + RA_x \rightarrow RA_x = 5\ K$

$M@A = (-5K \cdot 4') - (10K \cdot 8') + (5K \cdot 3') + 16\ RE_y \rightarrow RE_y = 5.3\ K$

$M@E = (5K \cdot 3') + (10K \cdot 8') + (5K \cdot 12') - 16\ RA_y \rightarrow RA_y = 9.7\ K$

Sect 1



$M@C = (-9.7K \cdot 8') + (5K \cdot 4') - 4\ HG \rightarrow HG = -14.4\ K$

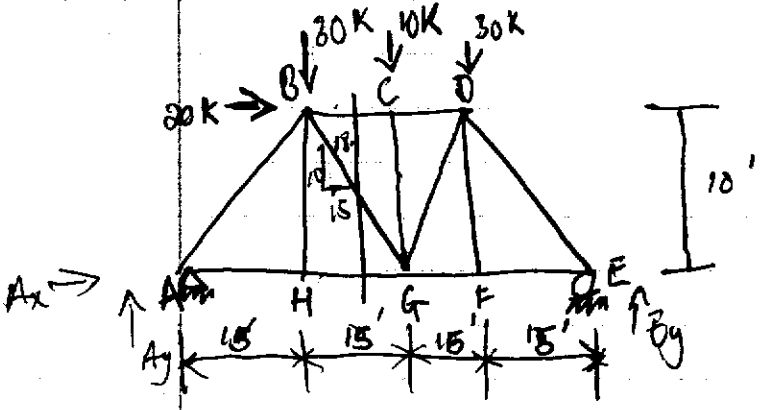
$M@B = (-9.7K \cdot 4') - (-14.4K \cdot 3') - (\frac{4}{5}\ HC \cdot 3') \rightarrow HC = 1.8\ K$

$M@H = (-9.7K \cdot 3') + (5K \cdot 4') + 3\ BC \rightarrow BC = 3.03\ K$

Keron Adams Hamilton

email: keronhamilton@gmail.com

Solve for H_G, [illegible], & BC



$\sum M_A = 0 \circlearrowleft +$

$0 = -30K(15') - 10K(30') - 30K(45') - 20K(10') + Ey(60')$

$0 = -450K\cdot ft - 300K\cdot ft - 1350K\cdot ft - 200K\cdot ft + Ey(60')$

$0 = -2300K\cdot ft + Ey(60')$

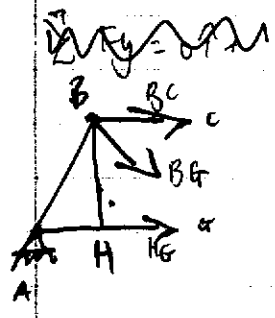
$Ey = 38.3\,K$

$\sum F_y = 0 \uparrow +$

$0 = 88.3K - 30K - 10K - 30K + Ay$

$0 = -31.6K + Ay$

$Ay = 31.6K$



$\sum M_B = 0$

$0 = -31.6K(15') + HG(10')$

$HG = 47.4K$

$\sum M_G = 0$

$0 = -31.6K(30') + 30K(15') - 20K(10') + BC$

$0 = -948K\cdot ft + 450K\cdot ft - 200K\cdot ft + BC(10')$

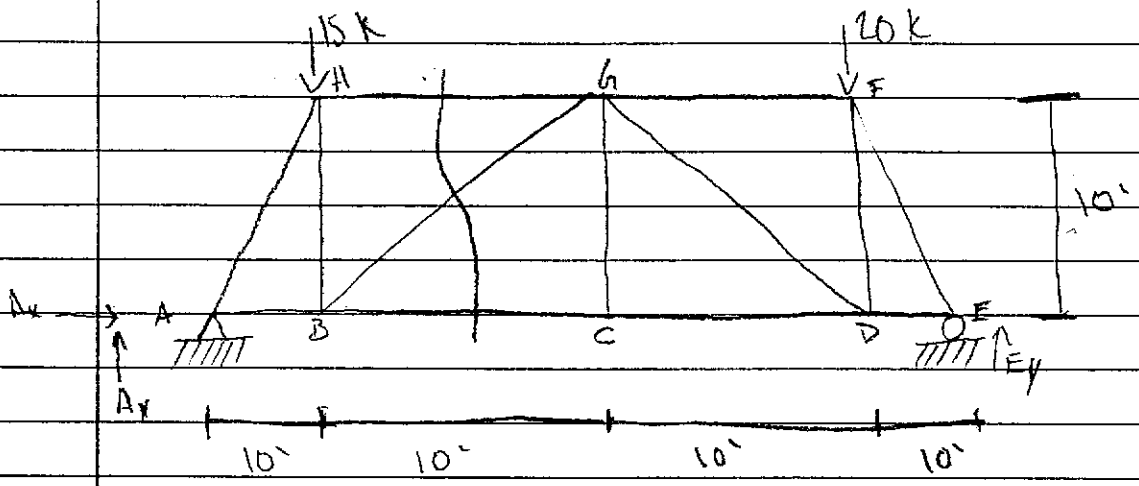
$0 = -698K\cdot ft + BC(10')$

$BC = 69.8\,K$

Stephen Tripodi
Stripodi3@gmail.com

11/6/14

Develop own truss: Method of sections



Reactions

$\Sigma M_A = 0$ (+↻)

$A(40') + 15^k(10') + 20^k(30') = 0$

$-A(40') + 150^{k'} + 600^{k'} = 0$

$\frac{750}{40} = \frac{A(40')}{40}$

$A_y = 18.75$

$\Sigma F_y = 0$

$-18.75 + 15 + 20 + E_y = 0$

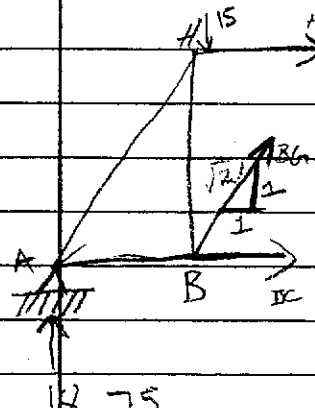
$16.25 - E_y = 0$

$E_y = 16.25$

$\Sigma F_x = 0$

$A_x = 0$

Solve For Member BC



$\Sigma M_G = 0$

$18.75(20') - 15(20) - BC(10)$

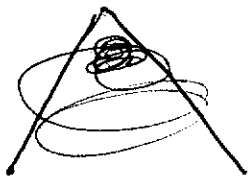
$375 - 300 - BC(10)$

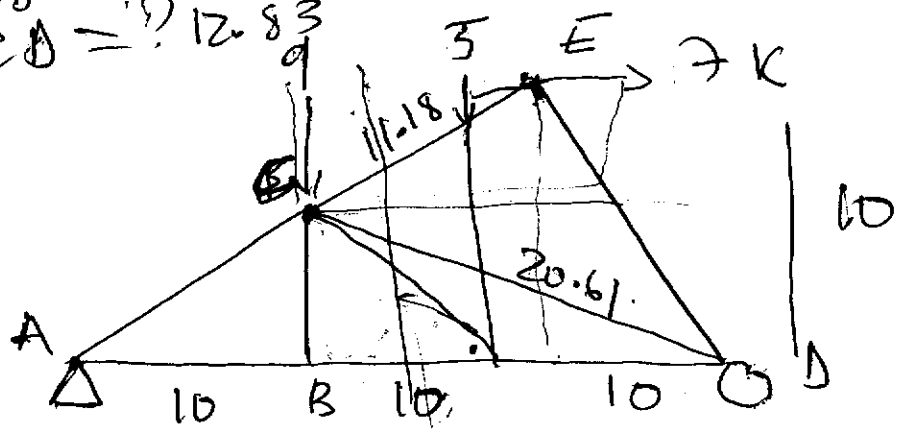
$\frac{75}{10} = \frac{+BC(10)}{10}$

$BC = 7.5^k$

Alpha Bah
ACANTO85@gmail.com

CE = ? 13.86 (C)
BD = ? 10.66 K
CD = ? 12.83





$\Sigma M_A = 0 \quad -9 \times 10 - 20 \times 5 - 7 \times 10 + 30 D_y = 0$

$30 D_y = 260 \Rightarrow D_y = 8.66 K$

$\Sigma F_x = 0$

$A_x + 7 = 0 \Rightarrow A_x = -7 K.$

$\Sigma F_y = 0$

$A_y + D_y - 9 - 5 = 0$

$A_y = 5.33 K.$

$\Sigma M_C = 0 \qquad M_{CD} > 0 \quad M_{CE} >$

$-A_y \times 10 + B_D \times 5 = 0 \qquad \underline{BD = 10.66 K}$

CD | $CD_x = \frac{20}{20.61} CD$

$CD_y = \frac{5}{20.61} CD$

CE | $CE_y = \frac{5}{11.18} CE$

$CE_x = \frac{10}{11.18} CE$

$\Sigma F_x = 0$

$$\begin{cases} \frac{10}{11.18} CE + \frac{20}{20.61} CD = 0 \\ -9 + \frac{5}{20.61} CD - \frac{5}{11.80} CE = 0 \end{cases}$$

$\frac{10}{11.18} CE = \frac{20}{20.61}$

$$\begin{cases} 0.89\, CE + 0.97\, CD = 0 \\ 0.24\, CD + 0.423\, CE = 9 \end{cases}$$

$CE = -1.08\, CD$

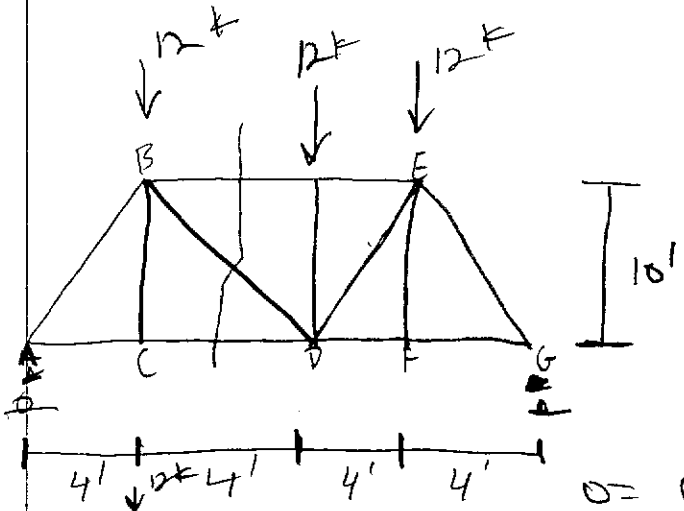
$CD = 12.83$ (tension)

$CE = -13.86$ (C)

SOH CAH TOA

Todd Point: Pu - SOH

Solve for BE, BD, CD using method of joints



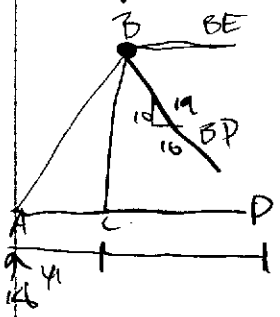
M_A ↺(+) ↻(−)

$0 = G_y(16) - 12^k(4') - 12^k(8') - 12^k(12') + B_y(16)$

$-48 \quad -96 \quad -144 \quad -288$

$\frac{G_y(16)}{16} = \frac{288}{16}$

$G_y = 18$



M_B ↺(+) ↻(−)

$18^k(4') - CD(10) = 0$

$CD(10') = 18(4)$

$\frac{CD(10)}{10} = \frac{72}{10}$

$\boxed{CD = 7.2}$

$0 = A_y - 12 - 12 - 12 + 18$

$A_y = +18$

$BD_x = \frac{16}{19}$

$BB_y = \frac{10}{19}$

ΣF_x

$-7.2 + 7.2 + BD\left(\frac{16}{19}\right) + BE = 0$

$BE = -7.2 + 11.4$

$\boxed{BE = 4.2}$

ΣF_y

$BD\left(\frac{10}{19}\right) + 18 - 12 = 0$

$BD\left(\frac{10}{19}\right) + 18 - 12 = -6$

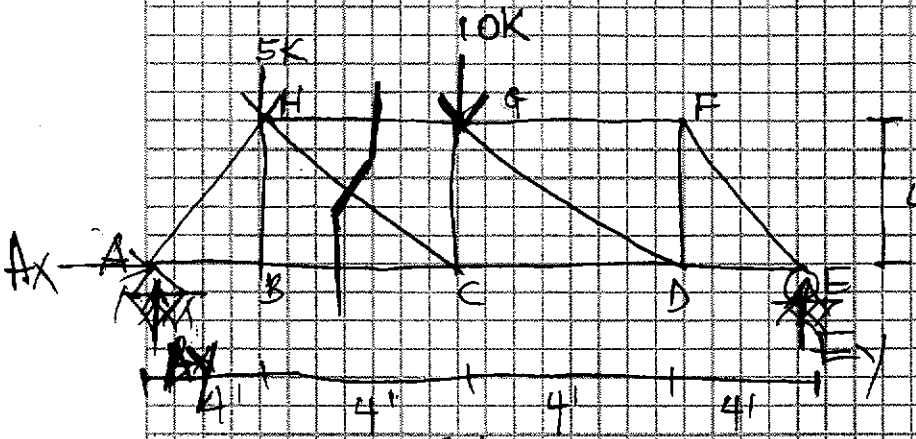
$\boxed{BD = -11.4}$

CMCE New York City College of Technology
Construction Management & Civil Engineering Technology

Computations for: Method of Section Sheet No. ___ of ___

Made by: Tibril Mohammed Bashiru Date: _____

Checked by: Jibrilcisse_2011@Yahoo.com Date: 11/06/2014



Solve for HG, HC, BC.

Solution

Solve for Reaction

$\Sigma F_x = 0 \rightarrow +$

$\boxed{R_{AX} = 0K}$

$\Sigma F_y = 0 \uparrow +$

$A_y - 5K - 10K + E_y = 0 \Rightarrow A_y - 5K - 10K + 6.5K = 0$

$A_y = 15K + 6.5K$

$\boxed{A_y = 8.75K}$

$\Sigma M_A = 0 \circlearrowleft +$

$A_y(0) - 5K(4') - 10K(8') + E_y(16) = 0$

$-20K - 80K + E_y(16) = 0$

$\frac{E_y 16}{16} = \frac{100}{16}$

$\boxed{E_y = 6.25K}$

Using the method of Section Solve for HG, HC and BC.

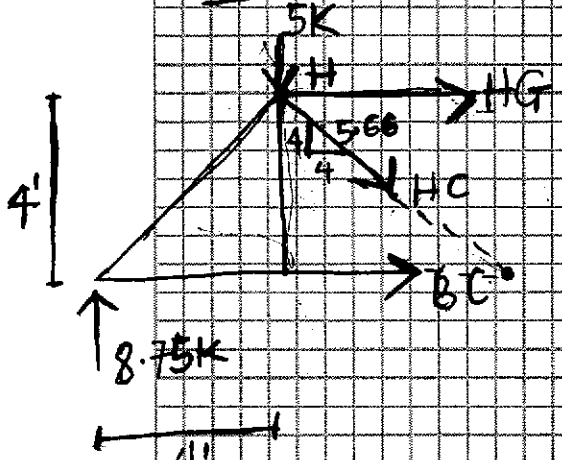
CMCE New York City College of Technology
Construction Management & Civil Engineering Technology

Computations for: _____ Sheet No. ____ of ____

Made by: _____ Date: _____

Checked by: _____ Date: _____

FBD



$\Sigma F_x = 0 \rightarrow +$

$HG + HC\left(\frac{4}{5.66}\right) + BC = 0$ ——①

$\Sigma M_H = 0$ CCW+

$BC(4') - 8.75K(4) = 0$

$\frac{BC(4)}{4} = \frac{35K'}{4}$

$BC = 8.75K\ T$

$\Sigma M_C = 0$ CCW+

$-8.75K(8) + 5K(4) + HG(4) = 0$

$-70 + 20 + HG(4) = 0$

$\frac{HG(4)}{4} = \frac{50}{4}$

$HG = 12.5K\ T$

∴ BC 8.75K T

HG 12.5K T

HC 30.06K C

$\Sigma F_x = 0 \rightarrow +$

$HG + HG\left(\frac{4}{5.66}\right) + BC = 0$

$12.5KT + HG\left(\frac{4}{5.66}\right) + 8.75KT = 0$

$HG\left(\frac{4}{5.66}\right) = 12.5K - 8.75KT +$

$HG\left(\frac{4}{5.66}\right) = 21.25K$

$HG = \frac{21.25}{4/5.66}$

$HG = -30.06K$

$HC = 30.06K\ C$