

Topic 7- Answers to Height Problems

I. Single Photo

1. $dh/10,500 = 0.80/3.75$; $dh=2,240$ ft.
- 2a. $dh/18000 = 0.1800/(3.06 + 0.1800)$; $dh=1,000$ ft.
b. $dh/18000 = 0.3825/(3.06 + 0.3825)$; $dh=2,000$ ft.
c. $dh/18000 = 1.1770/(3.06 + 1.1770)$; $dh=5,000$ ft.
3. $1"=400'$ >>> $1:4,800$ >>> $1/4800 = (6/12)/(H-350)$ >>> $H=2,750$
 $dh/(2750-350)=20/165$ >>> $dh = 291$ ft.
4. $950/12,000 = d/54.67$ >>> $d=4.33$ mm
- 5a. shadow = $0.1(660) = 66$ ft.
b. $\tan(50.47)=dh/66$ >>> $dh=79.98$ or 80 ft.
- 6a. $1/12,000=(6/12)/(H-1000)$ >>> $H = 7,000$ ft.
b. $dh/(7000-500) = (3.566 - 3.500)/3.566$ >>> $dh = 120.3$ ft.

II. Stereo Pairs

7. $dp = \text{absolute}(0.75 - 0.70) = 0.05$ mm
 $AP_b = \text{absolute}(28.00 - 31.55) = 3.55$ mm
 $1/12,000 = (6/12)/(H-175)$ >>> $H=6,175$ ft.
 - a. $dh/(6,175-175) = 0.05/(3.55 + 0.05)$ >>> $dh = 83.33$ ft.
 - b. $dh/(6,175-500) = 0.05/(3.55 + 0.05)$ >>> $dh = 78.82$ ft.
8. $dp = 12.76 - 10.00 = 2.76$ mm
 $dh/3,000 = 2.76/(80.00 + 2.76)$ >>> $dh = 100.05$ or 100 ft.
9. Either find dp for control point, then $dp = 12.15 - R_2$
or find R_2 and solve for dp .
 - b. $250/3,000 = dp/(3.2*25.4 + dp)$ >>> $dp = 7.39$ mm
 - a. $dp = R_1 - R_2$ >>> $7.39 = 12.15 - R_2$ >>> $R_2 = 4.76$ mm
or
 - a. $250/3,000 = (12.15 - R_2)/[3.2*25.4 + (12.15 - R_2)]$
 $R_2 = 4.76$ mm
 - b. $dp = R_1 - R_2$ >>> $dp = 12.15 - 4.76 = 7.39$ mm

c. $dp=13.75-4.76=8.99$
 $dh/3000=8.99/(81.28+8.99)$
 $dh = 298.77 \text{ ft.}$

d. $dp=9.75-4.76= 4.95$
 $dh/3000=4.95/(81.28+4.95)$
 $dh = 172.21 \text{ ft.}$

e. $dp=10.55-4.76= 5.79$
 $dh/3000=5.79/(81.28+5.79)$
 $dh = 199.49 \text{ ft.}$

III. Bearing Determination

10a. $N65^{\circ}15'E - 63^{\circ}00' = N2^{\circ}15'E$
b. $N2^{\circ}15'E + N5^{\circ}15'W = N7^{\circ}30'E$
c. $N65^{\circ}15'E + N5^{\circ}15'W = N70^{\circ}30'E$