Solution
186

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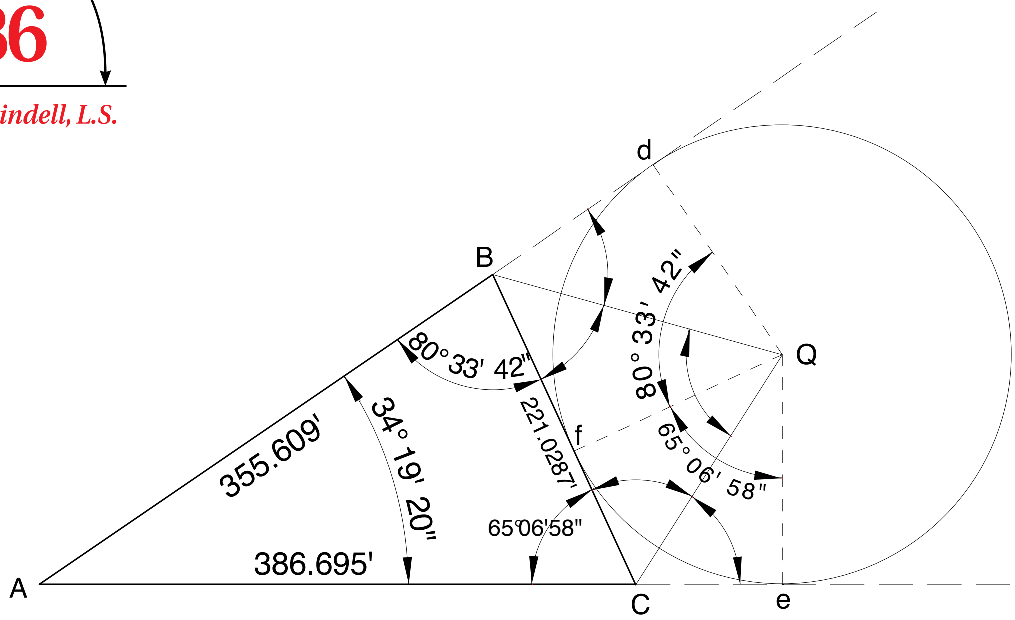

Side BC can be computed by the Law of Cosines:

$BC^2 = AB^2 + AC^2 - 2\ AB\ AC \cos 34°19'20"$,

$BC^2 = 355.609^2 + 386.695^2 - 2(355.609)(386.695)(0.825879668)$

so BC = 221.0287

The interior angles at B and C can be computed by the Law of Sines:

$$\frac{\sin B}{386.695} = \frac{\sin C}{355.609} = \frac{\sin 34°19'20"}{221.0287}$$

B = 80°33'42" and C = 65°06'58"

Angle d-B-f = 180° – B = 99°26'18" and its bisector is 49°43'09"

Angle e-C-f = 180° – C = 114°53'02" and its bisector is 57°26'31"

Letting A = North 0, East 0, C is then North 0, East 386.695

Line AB is N 55°40'40" E 355.609, so B is North 200.5089, East 293.6902

Line BQ is S 55°40'40" W – 80°33'42" – 49°43'09" = S 74°36'11" E

Line CQ is 90° – 57°26'31" = N 32°33'29" E

By bearing-bearing or azimuth-azimuth intersection,
point Q is North 148.7424, East 481.6664 and the
radius is 148.7424.

Alternatively,
Bd = R tan½B because angle dQf = angle B and Ce = R tan½C because angle eQf = angle C
BC = Bf + fC = Bd + Ce
BC = R(tan½B + tan½C)

R = BC/(tan½B + tan½C) = 221.0287 / (0.847486724 + 0.638495682)
= 148.7425