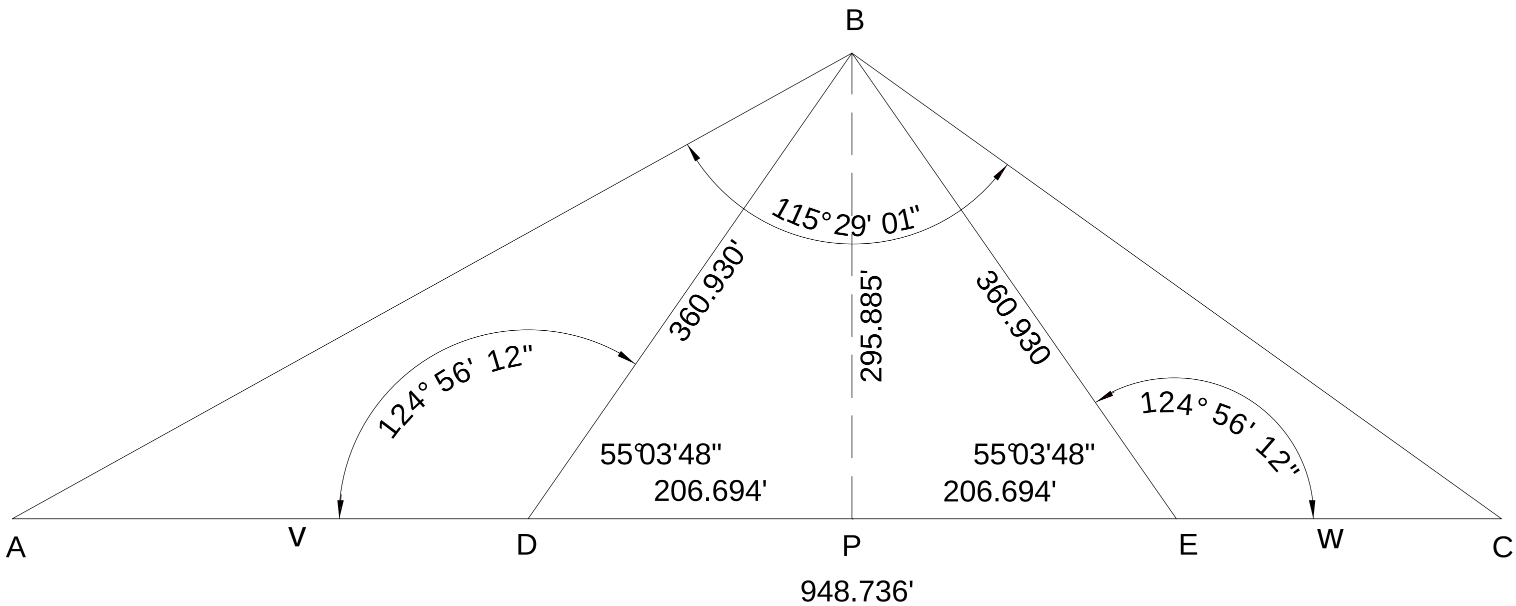

B
115° 29' 01"
360.930'
295.885'
360.930
124° 56' 12"
124° 56' 12"
55°03'48"
206.694'
55°03'48"
206.694'
A
V
D
P
E
W
C
948.736'

New 278 Solution

In this problem triangle DBE is isosceles. Constructing the perpendicular BP gives two 55°03'48"~34°56'12"~90° triangles with a short side of 206.694, a long side of 206.694·tan55°03'12"=295.885 and a hypotenuse of 360.930 for BD and BE.
Let AD = v and EC = w, then the tangent of angle A =295.885/(v+206.694) and the tangent of angle C = 295.885/(w+206.694).

In any triangle ABC, angle C = 180° – (angle A + angle B), therefore
tan C = tan[180° – (angle A + angle B)] and from the tangent of addition of angles $\tan C = \dfrac{\tan 180^\circ - \tan(A+B)}{1+\tan 180^\circ \cdot \tan(A+B)}$, or $\tan C = -\tan(A+B)$; $\tan C = -\dfrac{\tan A + \tan B}{1-\tan A \cdot \tan B}$.
Expanding, tanC–tanA·tanB·tanC= – tan –tanB and tanA·tanB·tanC= tanA+tanB+tanC
In this case,

$$\frac{295.885}{v+206.694}+\frac{295.885}{w+206.694}+\tan B=\frac{295.885}{v+206.694}\cdot\frac{295.885}{w+206.694}\cdot\tan B$$

$$\frac{(295.885)(w+206.694)+(295.885)(v+206.694)+(v+206.694)(w+206.694)\tan B}{(v+206.694)(w+206.694)}=$$
$$\frac{295.885^2\cdot\tan B}{(v+206.694)(w+260.694)}$$

295.885·w+(295.885)(206.694)+295.885·v+(295.885)(206.694)+[v·w+206.694·v+ 206.694·w+206.694²]·tanB=295.885²·tanB
and, -137.7772·w–137.772·v–2.098087853·v·w+216,363.195=0
Since v+w = 948.736 – 413.388 = 535.348, v = 535.348 – w, substituting

–137.7772·w–137.7772(535.348–w)–2.098087853(535.348–w)·w+216,363.195 = 0
which reduces to 2.098087853·w²–1123.2071·w+73,542.3853 = 0,
and yields w = 328.342 and v = 207.006

AB and BC are solved using the Law of Cosines:

$$AB=\sqrt{328.342^2+360.930^2-2\cdot 328.342\cdot 360.930\cdot\cos 124^\circ 56'12''}=611.401$$
$$BC=\sqrt{207.006^2+360.930^2-2\cdot 207.006\cdot 360.930\cdot\cos 124^\circ 56'12''}=508.621$$

Angles A and C are solved using the Law of Sines

$\dfrac{\sin A}{360.930}=\dfrac{\sin 124^\circ 56'12''}{611.401}$, from which angle A = 28°56'36"

$\dfrac{\sin C}{360.930}=\dfrac{\sin 124^\circ 56'12''}{508.621}$, from which angle B = 35°34'23"