



Q: Why does the value obtained in 2014 for the architectural height of the Washington Monument (554 feet, 7 11/32 inches) disagree with the 1884 value of 555 feet, 5 1/8 inches?

(A difference of 9 25/32 inches)



A: Three reasons:

Reason	Inches
1) A different starting point	8 43/64
2) Rounding of the pyramidion	3/8
3) Measurement Error in 1884 and 2014	47/64
Combined	9 25/32

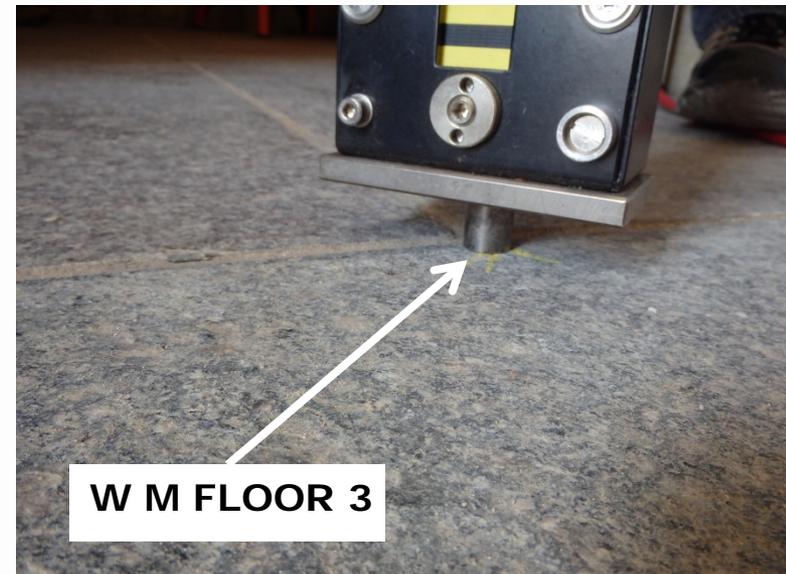
A Different Starting Point

- **The definitive point to which Lt. Col. Thomas Casey refers his 1884 height of 555 feet 5 1/8 inches is unknown**
- **In 1999, four marks were found at the corners and dubbed “the Casey marks”**
- **Circumstantial evidence indicates one or more of these may have been Casey’s reference level**
- **Modern international standards for measuring a building height are set by the Council on Tall Buildings and Urban Habitat**

According to the Council on Tall Buildings and Urban Habitat (CTBUH):

Height is measured from the level of the lowest, significant, open-air, pedestrian entrance to the architectural top of the building

The level of point **“W M FLOOR 3”** was chosen by CTBUH as fulfilling that definition.



Top line is the level of "W M FLOOR 3" extended to the exterior of the WM NOAA measured from here in 2014 to comply with CTBUH standards

Lt. Col. Casey likely measured from this level in 1884

22 cm (8 43/64 inches)



Possible Casey measurement point -
(1 of 4 such marks, one offset at each corner, re-discovered in 1999)



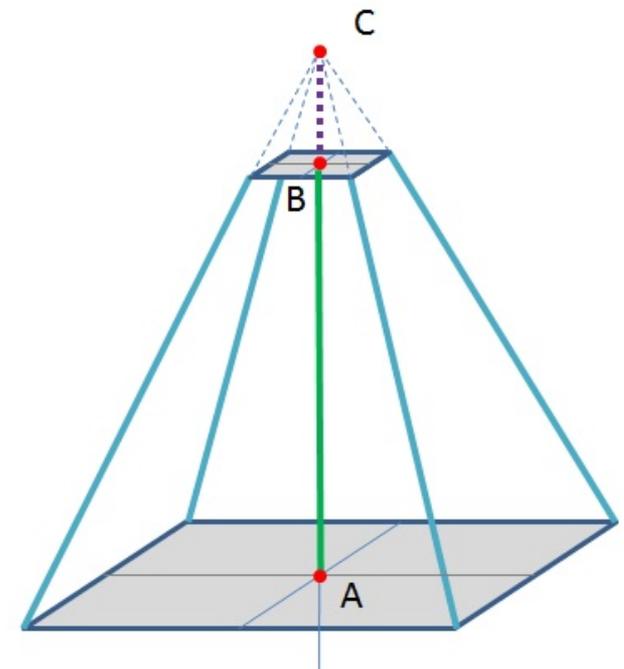
Rounding of the Pyramidion

- **As early as 1934, evidence of rounding of the aluminum tip of the monument (the pyramidion) was mentioned in the reconnaissance notes of the Coast and Geodetic Survey (during their first survey from atop the monument):**
 - *“THIS TIP HAS APPARENTLY BEEN BURNED BY LIGHTNING, AS THE TOP IS ABOUT 1/2 INCH SQUARE.”*
- **In 2014, careful measurements of the size and shape of the pyramidion indicated how much height had been lost.**

Actual height loss



The only observed source of any structural loss of architectural height is from rounding of the tip of the monument, amounting to $\frac{3}{8}$ of an inch.



Measurement Error

- **All measurements have error, often expressed by a standard deviation**
- **No standard deviation of the 1884 height is available**
- **The standard deviation of the 2014 height is ± 1 mm (about $2/64$ inch)**
- **It is theorized that the remaining $45/64$ (~ $3/4$) inch disagreement is measurement error from 1884, provided the hypothesis that Casey used the so-called “Casey marks” is true**

Final Architectural Heights

By Casey's method:

- **1884: 555' 5 1/8 inches (to a pointed peak)**
- **1999: 555' 3 5/8 inches* (to a rounded peak)**
- **2014: 555' 4 1/64 inches* (to a rounded peak)**

By CTBUH standards in 2014:

554' 7 11/32 inches (to a rounded peak)

*** Both use the average level of the four "Casey marks" as a starting point.**