



THE UNIVERSITY OF TEXAS AT ARLINGTON

Mechanical Testing and Evaluation of Braced Line Post Assemblies Composed of Non-Ceramic Insulators

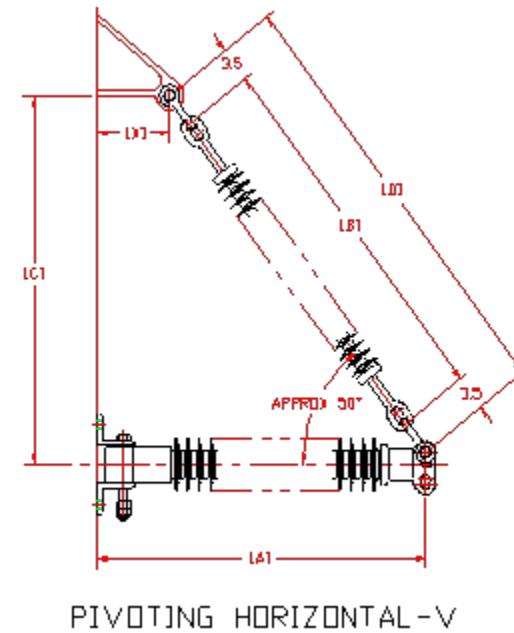
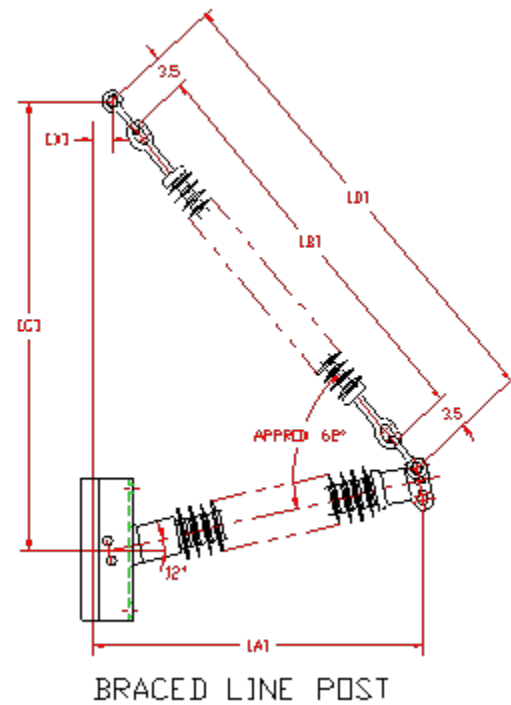
R. A. Bernstorf

Hubbell Power Systems

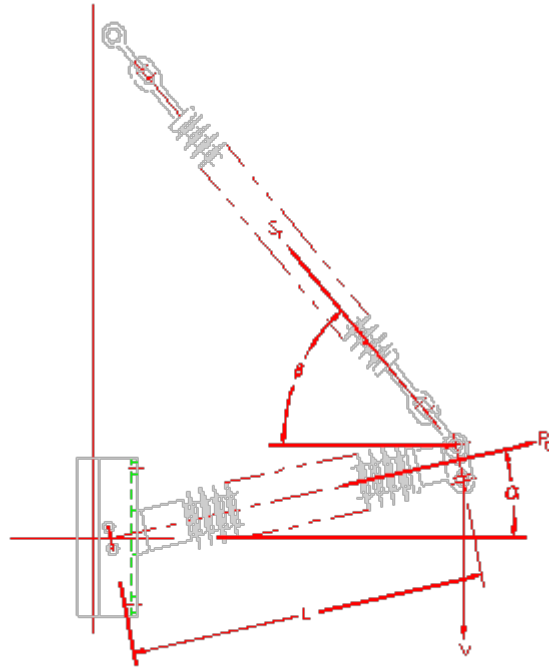


SEPTEMBER 5 - 7, 2018

Braced Line Post Family



Calculation Template



Buckling Loads and Equations

- $\Sigma F_x = P_c \cdot \cos(\alpha) - S_T \cdot \cos(\beta) = 0$
- $\Sigma F_y = P_c \cdot \sin(\alpha) + S_T \cdot \sin(\beta) - V = 0$
- Pivoting Horizontal V:
 - Buckling Load = $\pi^2 \cdot E \cdot I / (1.03 \cdot L^2)$
- Fixed Base Horizontal V:
 - Buckling Load = $\pi^2 \cdot E \cdot I / (1.02 \cdot L^2)$
- Braced Line Post:
 - Buckling Load = $\pi^2 \cdot E \cdot I / (1.33 \cdot L^2)$





SEPTEMBER 5 - 7, 2018

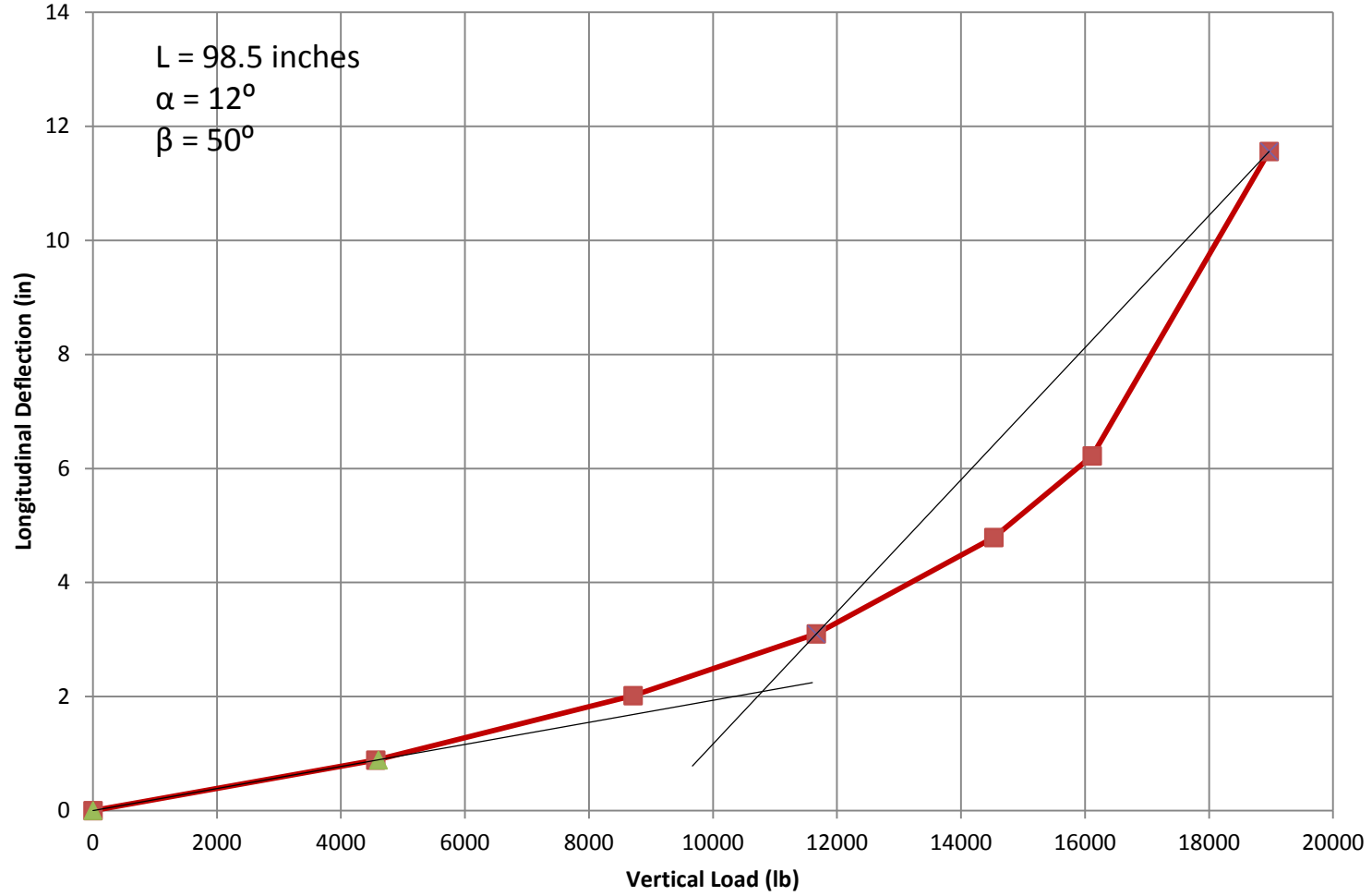


SEPTEMBER 5 - 7, 2018

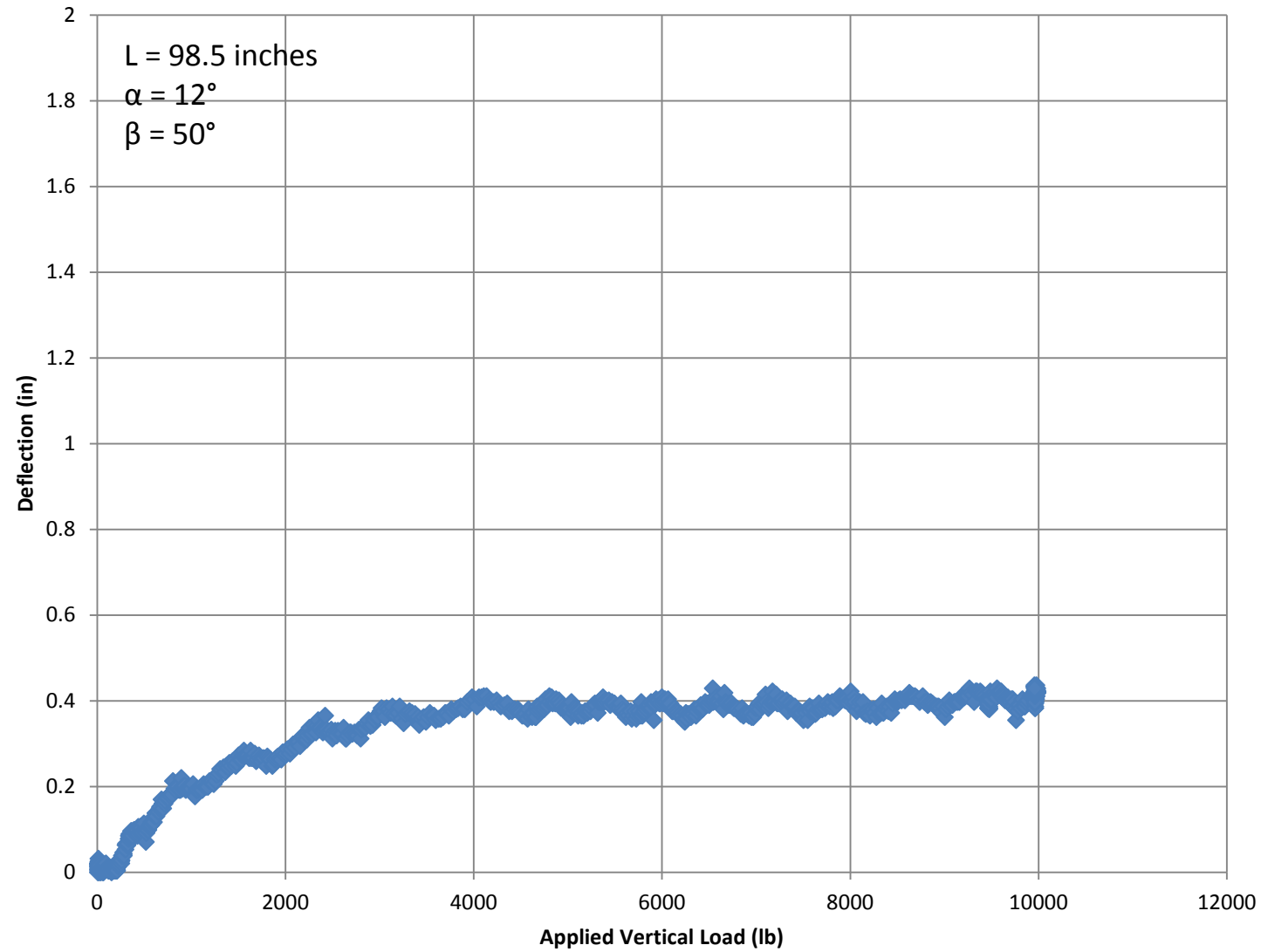


SEPTEMBER 5 - 7, 2018

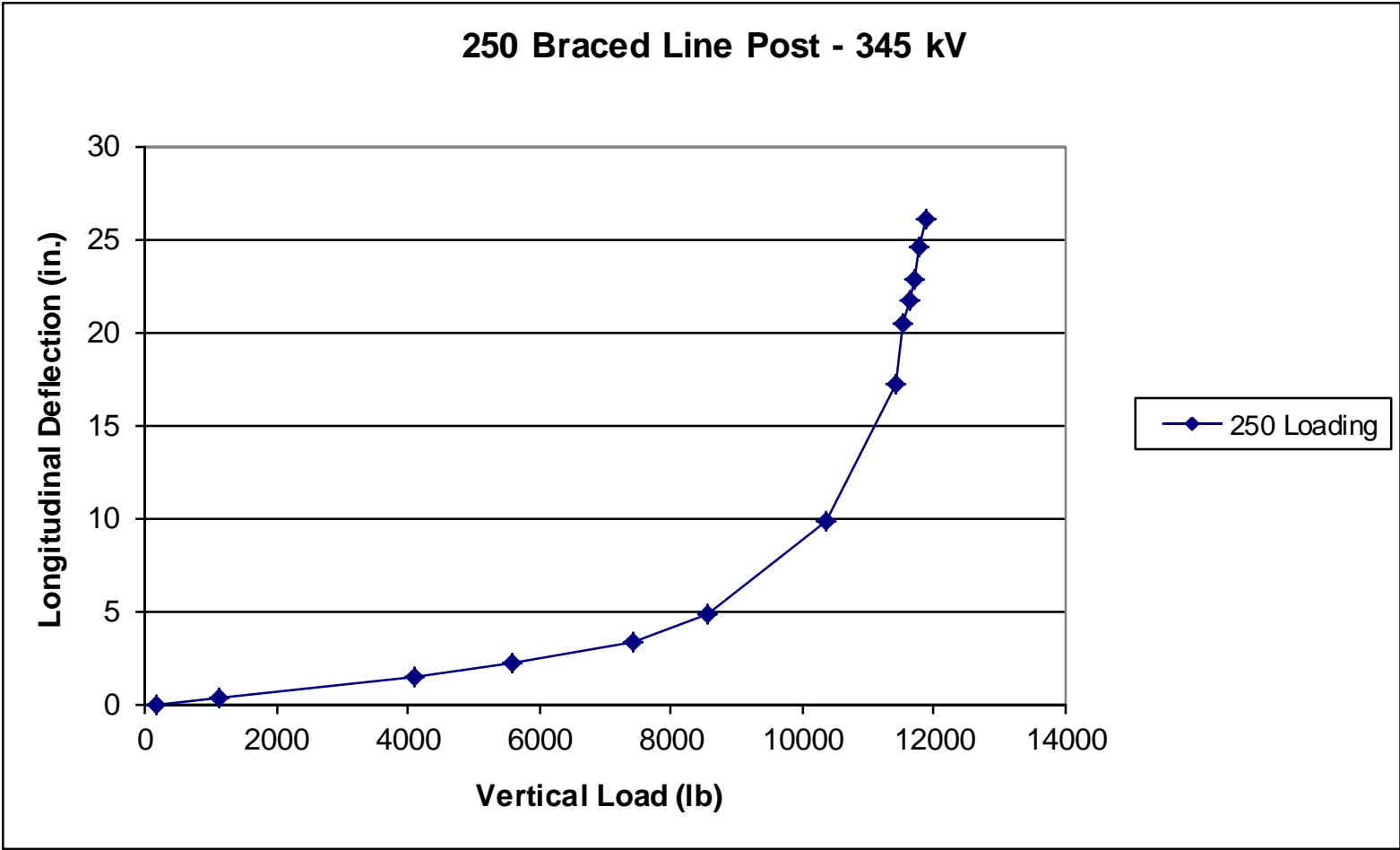
Braced Line Post - 230 kV



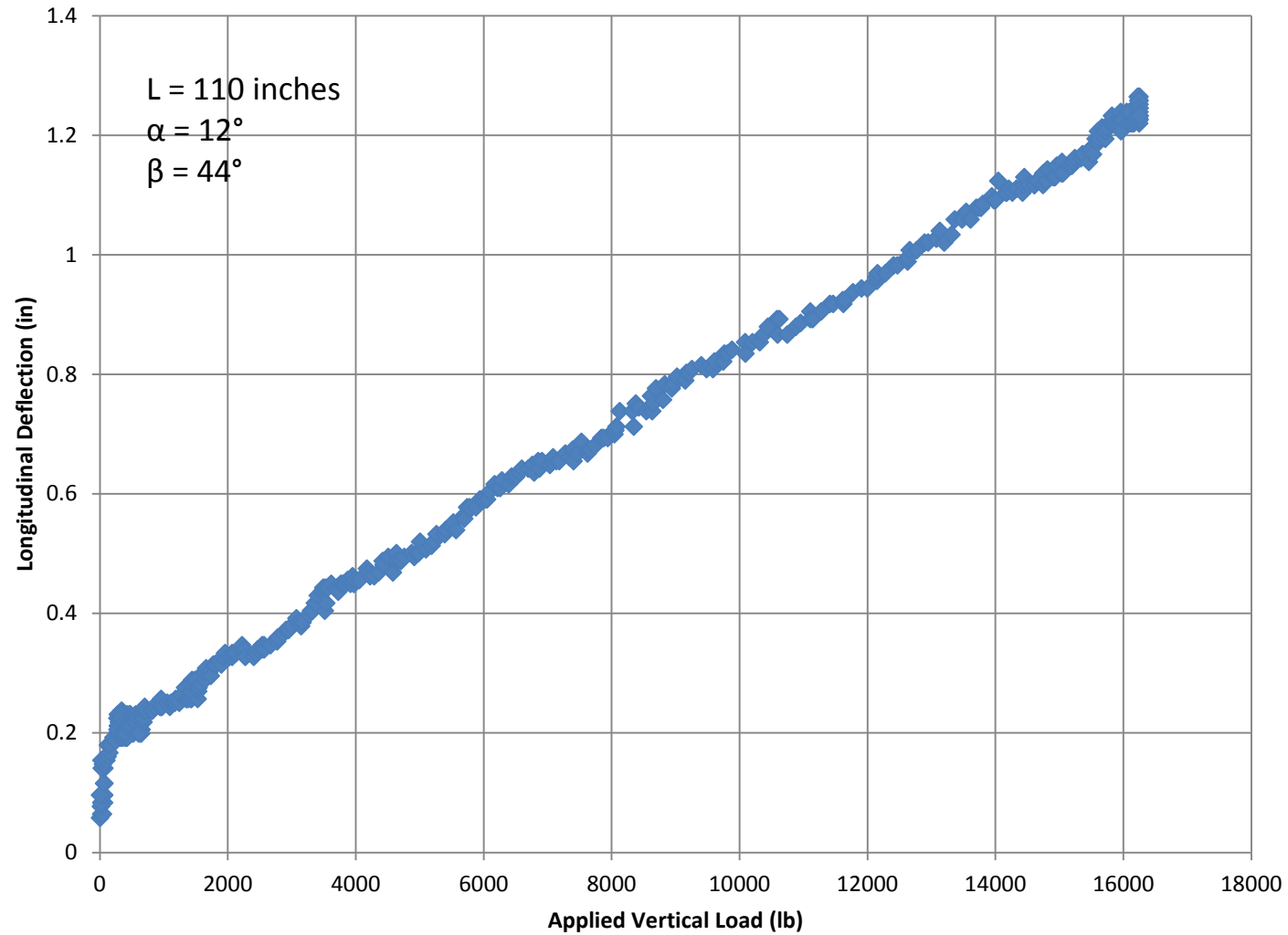
230 kV Braced Line Post - Fixed Point Loading

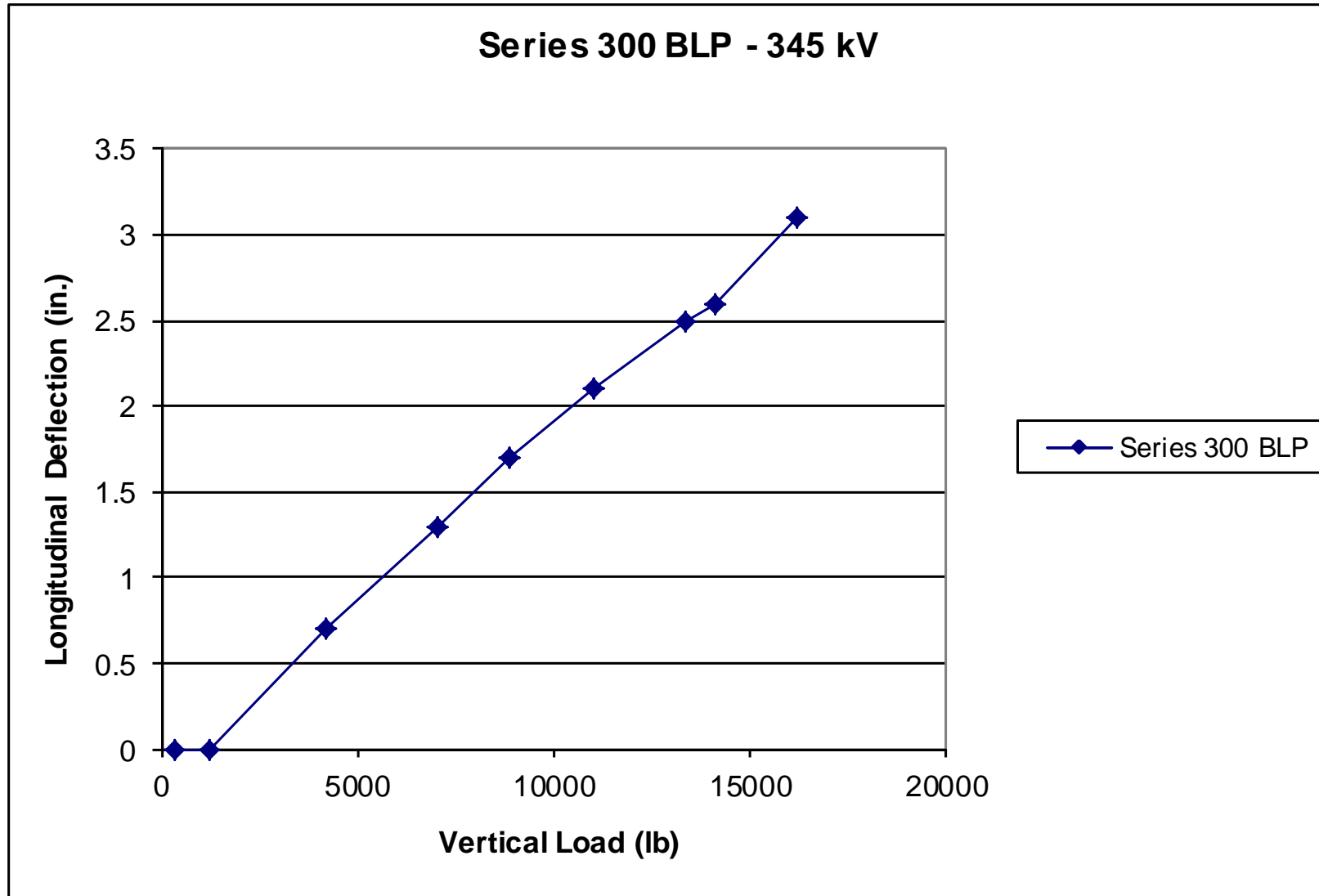


250 Braced Line Post - 345 kV



345 kV Braced Line Post - Fixed Point Loading







Conclusions

- There are no standards regarding BLP testing.
- Fixed point loading offers very high buckling strength.
- Free weight loading offers lower buckling strength.
- In the absence of standards, Utilities must assess their own requirements.

