Bus Vibration Test Data

Table 1 and Figures 1 thru 3 provide information on test conducted on an outdoor test span on 4,5 and 6 inch NPS.

Figure 1 illustrates the effect of conventional support vs. wire supports on the vibration amplitude of 4 inch tubular bus in a 50 foot span. The supporting arrangement does have some effect on the vibration amplitudes.

The test conducted on the 4 and 5 inch schedule 40 aluminum bus (ref. figures 2 and 3) were conducted on the spans supported by steel wires to eliminate the support "variable" and to provide the severest condition for the bus damper tests. These tests indicate that one Cat. 1706 external bus dampers reduced the vibration amplitude to a level considered safe for the bus.

Tests were conducted at the outdoor vibration lab at Massena and represent values which eliminate such variations such as bus support type, insulator type and structure type. The spans are supported by wire loops at each end and therefore the test conducted on the dampers are extremely severe in relationship to that which would actually be encountered by any substation where there would be structural damping through the insulator supports, etc.

Table 1

NPS Size	Span Length (feet)	Frequency in Cycles Per Second	Amplitude (inches)	
			Undamped	Damped
One Loop				
4" Sched 80	46	1.5	4.1	0.660
6" Sched 40	68	1.1	6.5	2.100
Two Loop				
4" Sched 80	46	6.1	2.0	0.045
6" Sched 40	68	4.0	2.2	0.050
Three Loop				
4" Sched 80	46	—	—	—
6" Sched 40	68	10.0	0.25	0.020

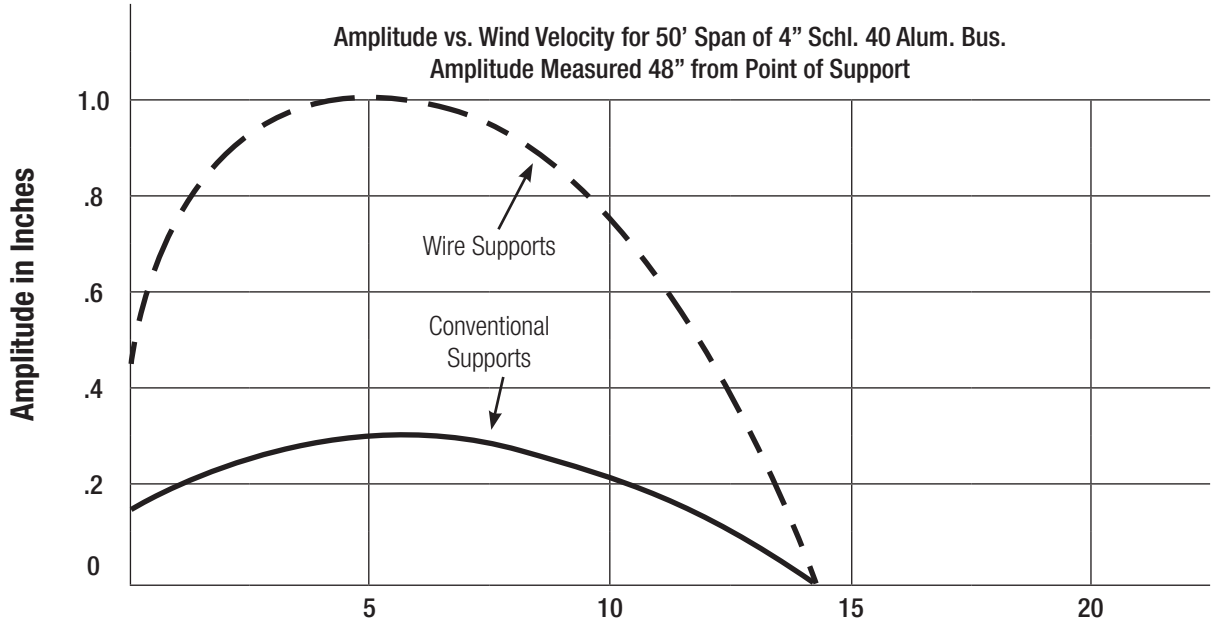

Figure 1 — Effective Wind Velocity - MPH

Bus Vibration Test Data (cont.)

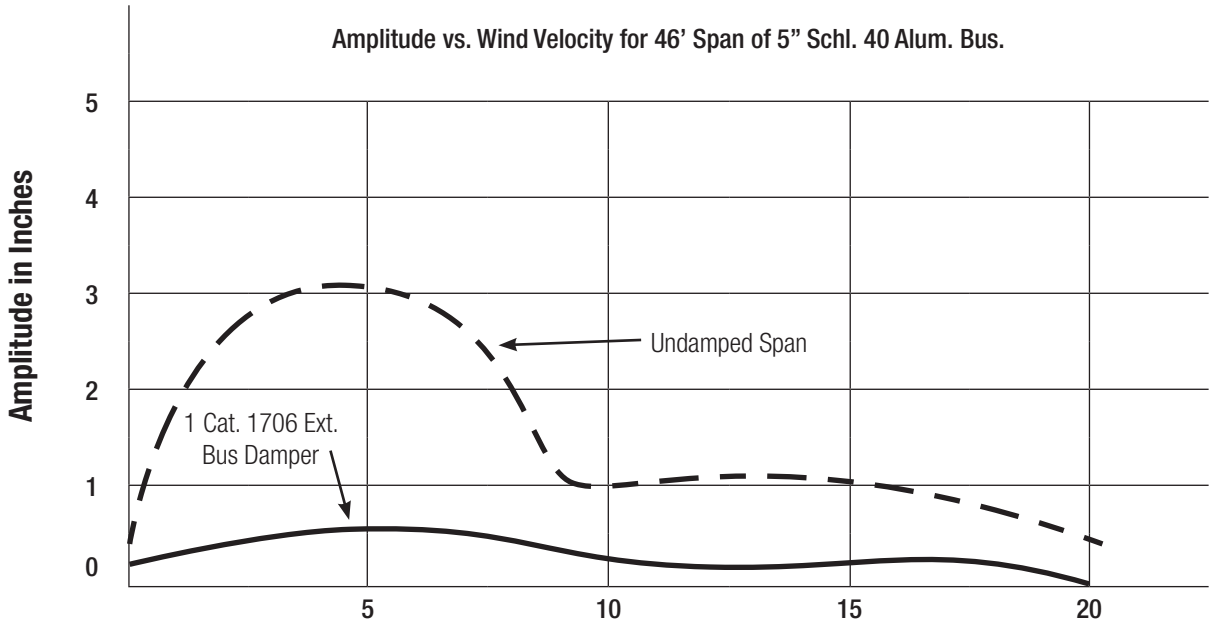

Figure 2 — Effective Wind Velocity - MPH

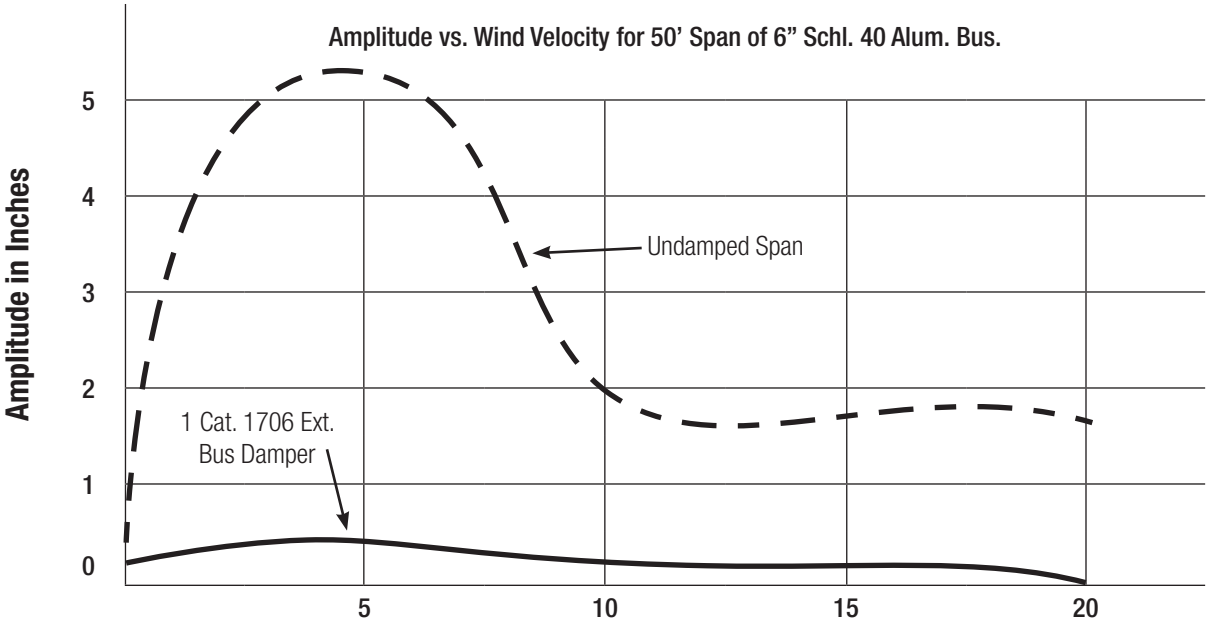

Figure 3 — Effective Wind Velocity - MPH