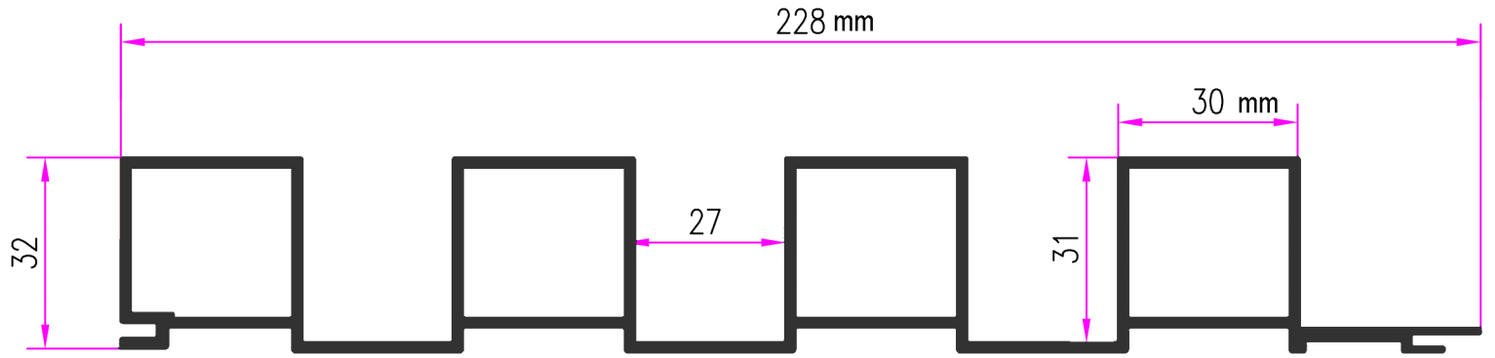
Aluminum Fluted

Thermal Expansion Report for Aluminum Profile (19 ft length, -20°C to +60°C)



Assumptions:
- Material: Aluminum alloy (extruded profile per attached section
- Coefficient of linear thermal expansion: $\alpha = 23\times10^{-6}$ 1/°C
- Reference temperature: 20°C
- Nominal length at 20°C: 19 ft = 5791.2 mm

Table 1 – Expected Length vs. Temperature (along the profile length):

Temp (°C)	ΔT (°C)	19 ft length (mm)	ΔL 19 ft (mm)	ΔL 19 ft (in)
-20	-40	5785.9	-5.3	-0.21
0	-20	5788.5	-2.7	-0.1
20	0	5791.2	0.0	0.0
40	20	5793.9	2.7	0.1
60	40	5796.5	5.3	0.21

Notes:
- Values are approximate and based on a typical aluminum thermal expansion coefficient.
- Over the full range −20°C to +60°C (ΔT = 80°C), total movement is about 10.7 mm (~0.42 in).
- Provide at least this much free space for expansion/contraction at fixed points and end connections, plus a safety margin depending on your design and connection details.