This illustrates that scattered action on vortex of passing flow around the body in longitudinal section. So the pedestrian distribution can mitigate the vibration of deck. However, when high density pedestrian is distributed on the deck and it has little spacing among people, the pedestrian would completely block the wind flow around the plane. In this case, the vortex shedding will not be broken and when the shedding frequency is close to the base frequency structure, the vortex-induced vibration appears.

## 4. Conclusion

(1) Pedestrian load and its distribution have enormous influence on the dynamic characteristic of long-span suspension footbridge. The critical pedestrian density, which influences the dynamic property that long-span suspension footbridge.

(2) The longitudinal correlation for long-span suspension foot bridge, not meet “the strip assumption”, that is, the vortexes get balanced one another in the longitudinal direction, and then vortex-induced vibration never occurs.

(3) For long-span suspension footbridge, pedestrian changes the shape of cross-section a lot, and forms the main part of bridge cross-section.

(4) Handrail with high porous ratio makes the thin structure with high ventilation ratio (such as long-span suspension footbridge) avoid the occurrence of vortex-induced vibration.

(5) Vortex-induced vibration is sensitive to the type of handrail. For the truss beam of long-span suspension footbridge, handrail of grid type is preferred, but fully-closed handrail is proscribed.

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