風工学実験室
Wind Engineering Laboratory

強風シミュレーション風洞
Boundary Layer Wind Tunnel

橋桁部分模型実験
Section Model Test of Bridge Girder

明石海峡大橋箱桁案全橋模型実験
Aeroelastic Full Model Test of Akashi Kaikyo Bridge - Box Girder
Alternative

風車後流の模型実験
Model Test for the Wake Flow of Wind Turbine

複雑地形上の乱流場の計測
Measurement of the Turbulent Flow over
Complex Terrain

塔状円柱弾性模型実験
Elastic Model Test of Circular Cylinder
Tower

風工学実験室
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全径間風洞製作：株式会社日立製作所
煙風洞製作：株式会社サンテクノロジー
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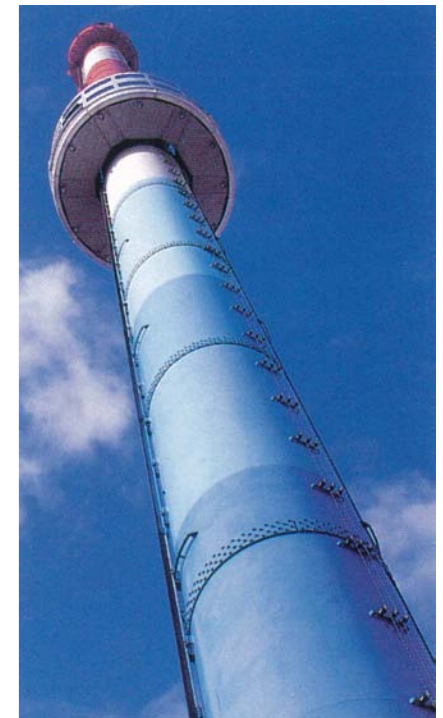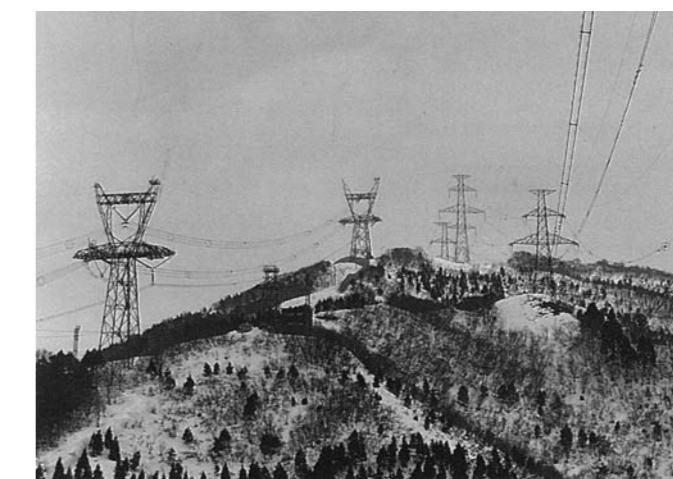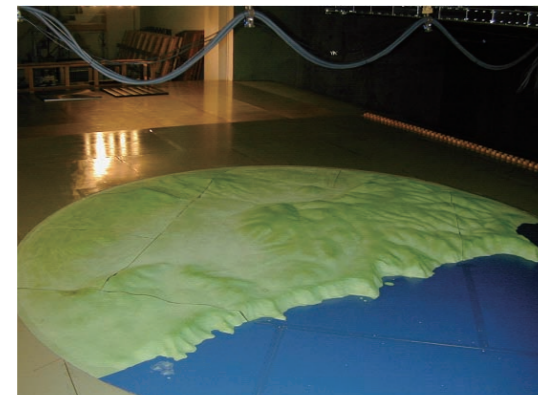
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レインボー・ブリッジ　Rainbow Bridge, Tokyo

レインボー・タワー
Rainbow Tower, Niigata

送電線
Transmission Lines

苫前グリーンヒルウィンドファーム
Tomamae Green Wind Farm

強風シミュレーション風洞
Boundary Layer Wind Tunnel

旧空力弾性試験用風洞に替えて平成8年に新設された、縦置き回流型の境界層風洞です。特に低騒音化に配慮し、測定部を開放型としても使えるようにしており、空力騒音などの研究にも対応しています。

This Boundary Layer Wind Tunnel of vertical closed-circuit type was newly built in 1996 to replace the Old Wind Tunnel for Aeroelastic Study. It is specially designed for low noise level, and can be used in open test section in a room with noise absorption, so aeroacoustics study can also be accomplished.
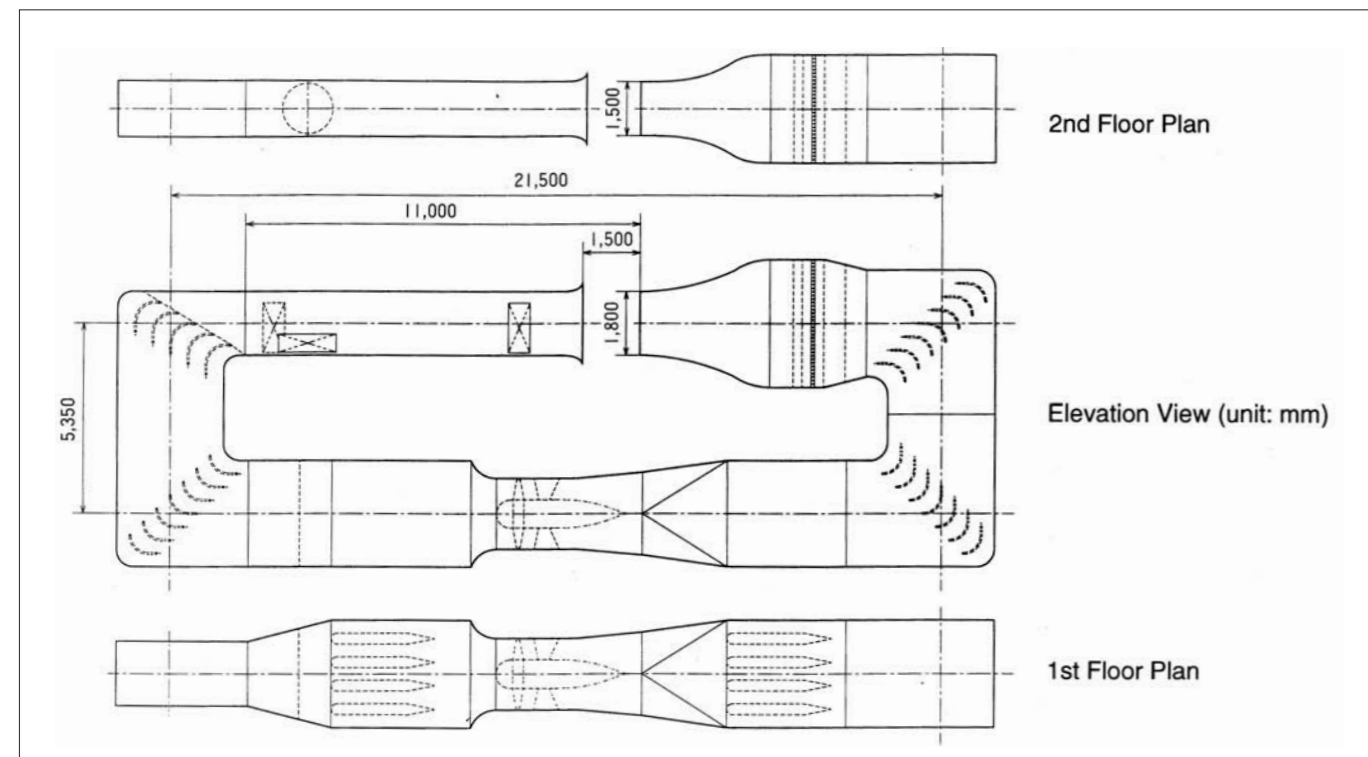
諸元
Performance Characteristics

  1. Type : Vertial Closed-Circuit, Closed or Open Test Section
  2. Dimensions
      Test-section Width : 1.5 ~ 1.566 m
      Test-section Height : 1.8 m
      Test-Section Length : 11 m
      Contraction Ratio : 1/4
  3. Win Tunnel Drive
      Drive : AC 150 kW
      Fan : φ2 m Axial Fan
      Total Pressure Rise : 140 mmAq
  4. Velocities
      Maximum Wind Speed : 30 m/s
      Wind Speed Distribution : less than ±1 %
      Turbulence Intensity : less than 0.5 %
  5. Noise Level : less than 60 dBA (at 15 m/s)

付属装置
Supplemental Apparatus

  ・Elastic Support System for Rigid Section Model Test (with excitation and damping device)
  ・Turn Table (φ1.4 m)
  ・Traverse System (three axes)
  ・Three-Component Balance for Rigid Section Model
  ・Six-Component Balance

2nd Floor Plan

Elevation View (unit: mm)

1st Floor Plan

全径間風洞
Wind Tunnel for Full Bridge Models

昭和39年に作られ、平成8年に改装されました。幅が16mもあり、長大橋梁の全橋弾性模型の実験が行える唯一の風洞として我が国の長大橋梁の耐風性研究に多大の貢献をしました。送電・通信ケーブルの実験にも使われてきました。

This Wind Tunnel was originally built in 1964 and has been modified since then. Having a test section width of 16m, it was the only wind tunnel with which a full aeroelastic long-span bridge model test could be performed. It has contributed a lot to the study of the wind resistant design of long-span bridges in Japan. It has also been used for tests on transmission or telecommunication lines.

諸元
Performance Characteristics

  1. Type : Vertial Closed-Circuit, Semi-Open Test Section
  2. Dimensions
      Test-section Width : 16 m
      Test-section Height : 1.9 m
      Test-Section Length : 5.8 m
      Contraction Ratio : 1/4.2
  3. Win Tunnel Drive
      Drive : DC 55 kW×4
      Fan : φ3 m Axial Fan×4
      Total Pressure Rise : 38.5 mmAq
  4. Maximum Wind Speed : 17 m/s

Side Elevation View (unit: mm)

Front Elevation View
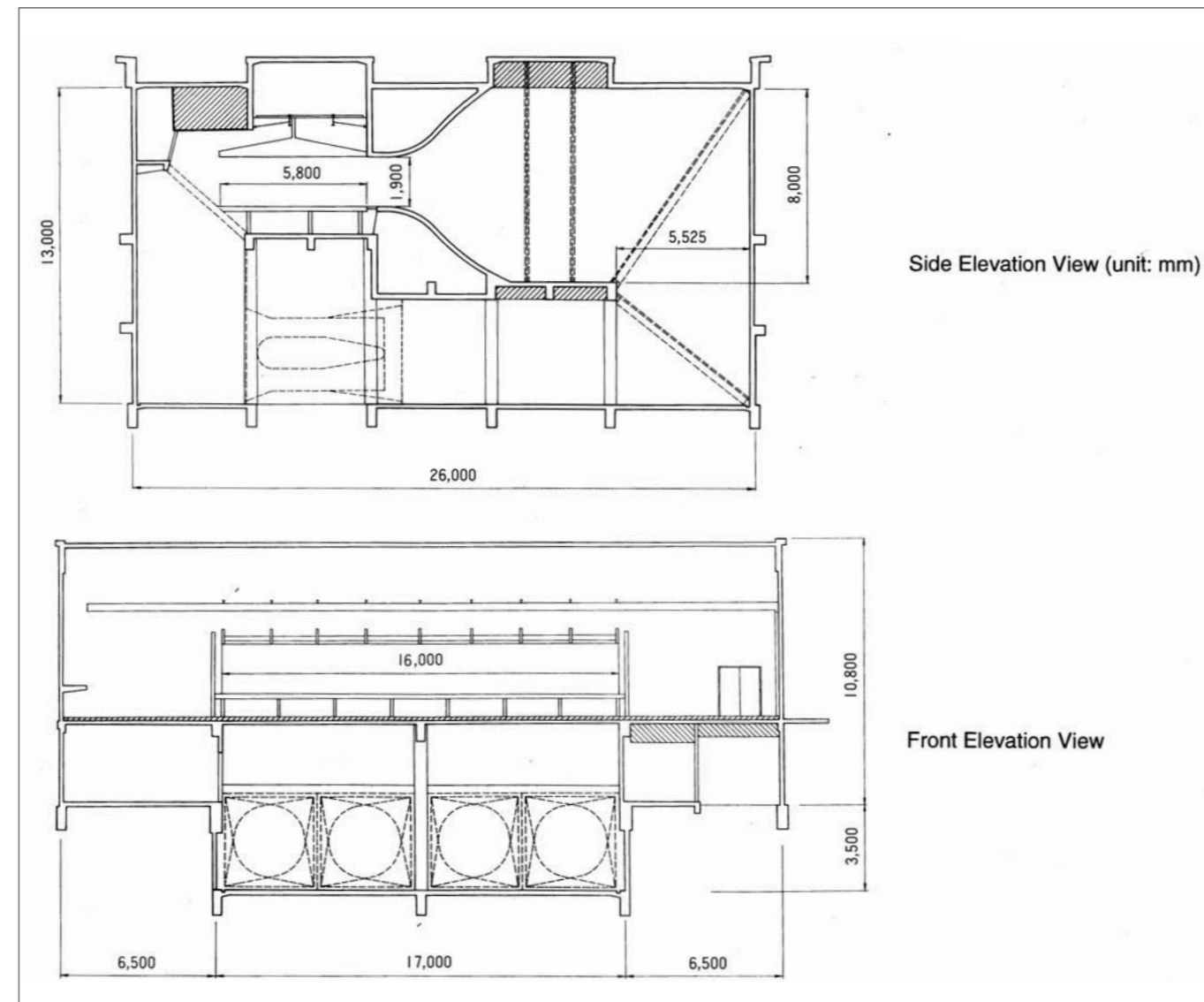
煙風洞
Flow Visualization Wind Tunnel

幅の狭い2次元的な測定部を持ち、煙により35本の流脈を可視化できます。（昭和43年導入）

This Wind Tunnel has a virtually two-dimensional test section with narrow width, and can visualize 35 streaklines with smoke.
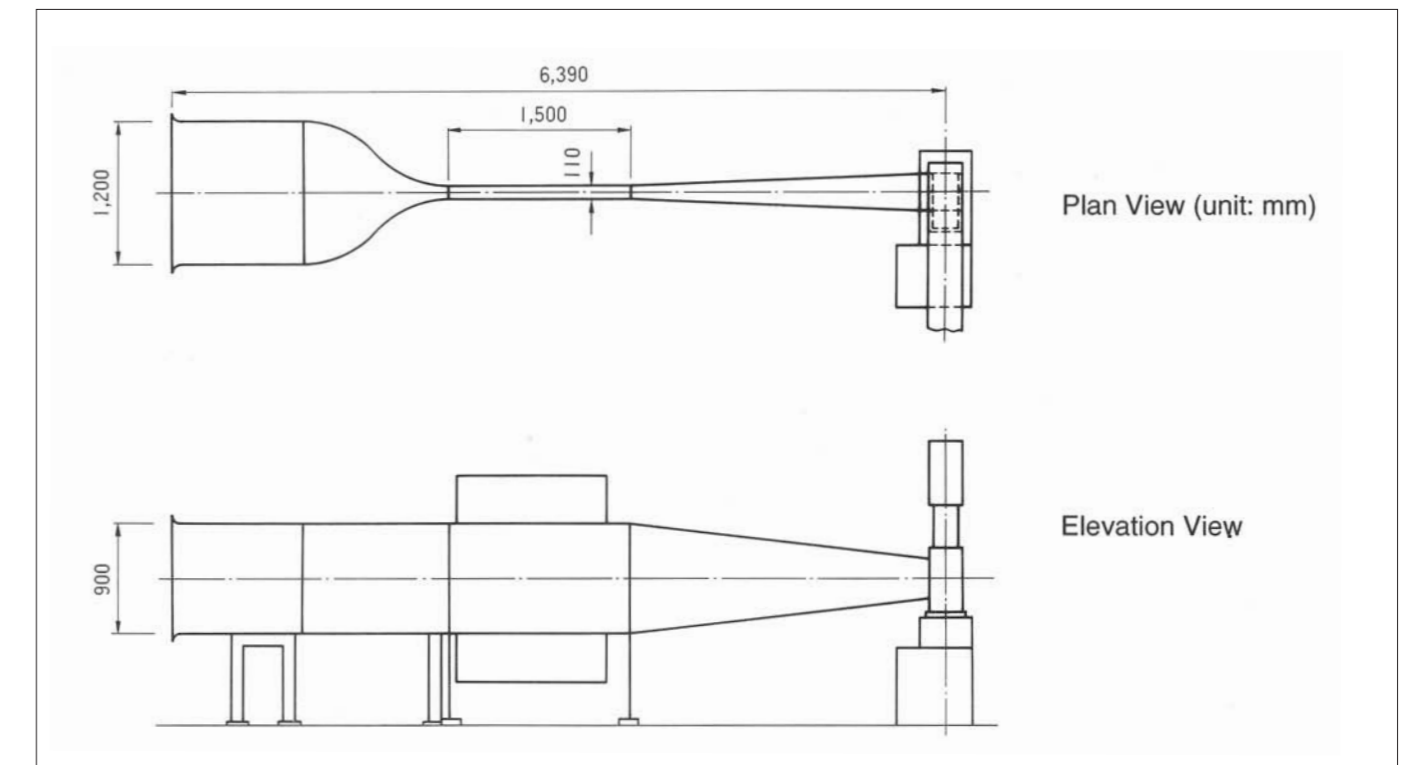
諸元
Performance Characteristics

  1. Type : Open-Circuit, Closed Test Section
  2. Dimensions
      Test-section Width : 0.11 m
      Test-section Height : 0.9 m
      Test-Section Length : 1.5 m
      Contraction Ratio : 1/10.9
  3. Win Tunnel Drive : DC 2.2 kW

煙風洞　Flow Visualization Wind Tunnel

Plan View (unit: mm)

Elevation View
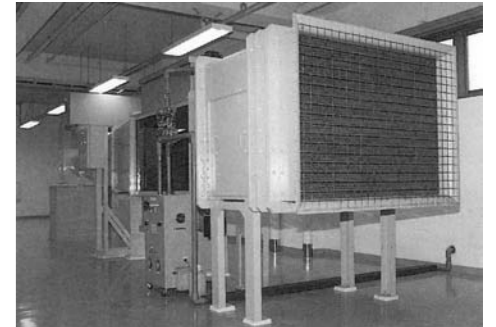
動的載荷装置
Dynamic Loading Apparatus

ダンパー、免震支承などの制振装置の動的特性を調べる目的で平成8年に導入されました。

This apparatus is used to examine the dynamic properties of energy dissipation devices such as steel damper, rubber and so on.

諸元
Performance Characteristics

  Maximum Displacement : ±100 mm
  Nominal Force : ±20 kN
  Maximum Velocity : ±60 cm/s
  Frequency Range : 0.01 ~ 100 Hz