# Double-row bridge piers

## Overview

The flow modes and the length of the recirculation zone behind P1 (KP1) and P2 (KP2) in different cases are shown in Table2. The recirculation zone is the complete negative flow velocity zone generated after the upstream flo. The flow modes and the length of the recirculation zone behind P1 (KP1) and P2 (KP2) in different cases are shown in Table2. The recirculation zone is the complete negative flow velocity zone generated after the upstream flow bypasses the bridge pier, after the acceleration, boundary layer separation, vortex formation, alternating off the pier, and. In SM ((0le L/D<2)), (L/D) is extremely small, and the velocity is completely negative between P1 and P2. The flow velocity distribution behind P2 can be viewed as that behind a single pier. The distribution of ({v}_{x}) of three same sections behind P1 and P2 are shown in Fig. 4. The three sections are selected at the same position: 0D, 0.5. In AM ((2le L/D<6)), a backflow is generated throughout the gap between the piers. The free shear layer of P1 attached to P2 develops initially at low inflow velocity (1 m/s) but not completely due to the obstruction of P2. Differences in flow velocity start to appear behind P1 and P2at 1 m/s inflow velocity. The distribution of ({v}_{x}) is s. In TVDM ((6le L/D<12)), it is the transitional stage between the AM and the IVDM. The difference in flow velocity performance behind the two piers is the largest of the four modes, and the effect of inflow velocity is significant. In SM and AM, the three sections behind the pier are near the piers, and in TVDM and IVDM, the three sections are fa. In IVDM ((L/Dge 12)), the mutual influence between the piers is small, the independent recirculation zone and the Carmen vortex street appear behind both piers. The flow can be regarded as two single-body, and the reason of the flow velocity difference behind P1 and P2is mainly the inflow velocity. In Fig. 13, ({v}_{x}) of each section under t.

## Article Content

Jul 30, 2025

HOW TO SELECT SUITABLE TYPE OF PIER FOR A

This post describes different type of pier foundations used for bridge structure and how to select a suitable type of pier for a bridge.

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Analysis of the performance of flow field modes around double round ...

This paper numerically investigates the flow velocity performance around tandem double round-ended piers by performing a flow field model and moving ship model.

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The piers supporting a bridge which spans a river are constructed in the following way. Oversize screws, arranged in a row at right angles to the direction of the flow of the river, are screwed...

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Experimental Study on an Innovative Double-Limb-Thin

This paper proposes an innovative double-limb-thin-wall (DLTW) bridge pier, which consists of two thin-limb-wall columns in the longitudinal

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5_34_43_. Mechanical Response Analysis of Double-Column High

Bridges with double-column high piers are mostly used in mountain areas. This kind of bridge can adapt to complex landform. But the double-column high piers have weak anti-impact capability, which are

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Multi-objective optimization design method of RC double-column bridge ...

Recently, the authors introduced a parameter-adjustable cable-pulley based self-centering energy dissipation (CP-SCED) brace to mitigate seismic induced damage of reinforced

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Bridge Pier Design and Reinforcement Guide

This document provides guidance on designing bridge piers supported by pile foundations according to AASHTO-LRFD specifications. It describes calculating

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Analysis of Dynamic Response on Double-Column

To mitigate the rockfall hazard to the bridge, a new flexible, energy-dissipating crashworthy device for bridge piers is developed to withstand the

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What is Bridge Pier? Types of Bridge Piers –

A bridge pier is a type of structure that extend to the ground below or into the water. It is used to support bridge superstructure and transfer the loads to the

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Seismic performance of reinforced concrete double-column piers in

To investigate the seismic performance of reinforced concrete (RC) double-column piers, particularly unequal-height double-column piers under the combination of compression, bending,

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Bridge Pier | Types of Bridge Piers | Requirements of a

Substructure consists of bridge pier, abutments, wing walls, piles etc. while the superstructure consists of deck, girders or any part on which the traffic

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Seismic performance of fibre-reinforced polymer and steel double ...

The re-centring ability and durability of important bridges have been the main objectives in recent provisions of seismic design codes. To achieve better recoverability and durability for piers,

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Seismic performance of reinforced concrete double-column piers in

The stiffness center and mass center of the unequal-height double-column piers do not coincide in the longitudinal direction of the bridge. Furthermore, curved bridges, skewed bridges and

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Investigation into the Finite Soil Failure Mode and Earth Pressure of ...

ree-line ship lock on the Xiangjiang River as an example. Model tests and numerical simulations were conducted. The results indicate the following: The morphology of the active sliding fracture surface

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Dynamic Behaviors and CFRP Strengthening of Double-Column RC Bridge Piers

Finally, the effectiveness of CFRP shear-strengthening of double-column RC bridge piers to resist the lateral consecutive impact is studied. The present work can provide the benchmark test data for

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STATE OF THE ART FOR LONG SPAN PRESTRESSED

The superstructures of the bridges are generally supported by means of rigid attachment to the piers, roller or sliding bearings, or neoprene pads. Neoprene pads, as used in Pont Aval, are a very simple

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Seismic performance of reinforced concrete double-column piers in

Unlike single-column piers, double-column piers exhibit different seismic performance characteristics in the transversal and longitudinal directions, especially irregular double-column

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Piers for Kato double track truss bridge

If we were going to span a "deep canyon" with a series of Kato (n-scale) double track truss bridges, what would folks recommend for us to use for piers to get sufficient height?.... The

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Pier Design Example

Pier Design Example Obtain Design Criteria Design Step 8.1 Commentary for 1: Includes: Concrete strength, Concrete density, Reinforcing steel strength, Superstructure information, Span

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Seismic Performance and Damage Mechanism of RC Double-Column Pier ...

Coupling beams are used in double-column high-pier bridges to improve the integrity of the two piers. The stiffness of coupling beams has a significant effect on the seismic performance of

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Numerical Simulation of Double-Row Retaining System with Different

Numerical simulations are employed to model the foundation pit and analyze the stress distribution and deformation of double-row retaining systems with T-shaped, cross-shaped, or square

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Numerical simulation for local scour around double-row bridge piers in ...

To improve the local scour protection of the pier using solid sacrificial piles, a kind of permeable sacrificial pile filled with stones is put forward in this study.

## Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: https://elagage-lorrain.fr
Email: sales@elagage-lorrain.fr
Phone: +33 6 47 82 19 35
Address: 15 Rue de la République, 69002 Lyon, France

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