



Wiesbaden

Friedrich-Ebert-Schule

Data and facts

Company	PORR Spezialtiefbau GmbH
Type	Underpinning
Runtime	03.2021 - 05.2021
Principal	Bickhardt-Bau AG, Kirchheim

[Project report online](#)

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DSV underpinning for the construction of a new school building

Underpinning for structures with foundations at different depths

The Friedrich-Ebert School on Balthasar-Neumann-Straße is being replaced by a new building. The new school building adjoins an existing workshop building and has deeper foundations than the adjacent existing structure. Before excavation work could begin, the existing foundations of the neighbouring building therefore had to be stabilised. To this end, PORR special civil engineering produced DSV bodies using the jet grouting method (DSV) and supplemented these with back-anchoring.

DSV structures for securing the existing building

A total of around 370 m³ of DSV structures were produced for the underpinning. The method serves to stabilise the subsoil and create load-bearing ground structures to secure existing buildings. The work was carried out taking into account the structural requirements of the existing building as well as the planned construction pit for the new building.

Use of a Portland composite cement

Around 570 t of Portland composite cement CEM II/C-M (S-LL) 42.5 N-NA was used to produce the DSV underpinning. Compared with a Class CEM I Portland cement, the cement used contains a lower proportion of clinker and utilises additional main constituents such as granulated blast furnace slag and limestone powder. According to the manufacturer, the production of this type of cement can result in lower CO₂ emissions compared with Class CEM I Portland cements. Reductions of up to 39 per cent are reported for the cement used. The supplying plant was located in Wiesbaden, approximately six kilometres from the construction site. The cement used was employed in the production of the DSV elements and was tailored to the project-specific requirements.

Verification of technical requirements

To verify the technical requirements, compressive strength tests were carried out in accordance with DIN EN 12390-3. The compressive strengths determined ranged between 6.2 and 6.8 N/mm². This met the project-specific minimum requirements of 3.5 N/mm². The test results confirmed the technical properties of the manufactured DSV elements required for the underpinning.

Foundation for the new construction of the Friedrich-Ebert-Schule

The construction of the DSV underpinning and the rear anchoring created the conditions necessary for the subsequent construction pits and structural works. These measures served to secure the existing building and facilitate the construction of the new Friedrich-Ebert-Schule in Wiesbaden.

Impressions



Image notes

1

DSV underpinning with sustainable cement for the Friedrich Ebert School, Wiesbaden, Germany

379 m³ of DSV bodies were made with CO₂-reduced cement

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2

DSV underpinning with sustainable cement for the Friedrich Ebert School, Wiesbaden, Germany

As the cement plant was only 6 kilometres away from the construction site, the location also had a significant impact on the CO₂ balance.

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3

DSV underpinning with sustainable cement for the Friedrich Ebert School, Wiesbaden, Germany

For the production of sustainable CEDUR cements, up to 35% of Portland cement clinker is replaced by alternative raw materials containing calcium and already deacidified.

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Do you have questions about the project or would you like to learn more? Feel free to contact us for further information.

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