

Lötschberg Base Tunnel

Mounting cable conduits in tunnel sides

Egli, Fischer has designed a revolutionary new solution for concreting conduit blocks at the side of road and railway tunnels. Conventional cable conduits are positioned by means of fibre cement slabs and secured against the buoyant force of liquid concrete. This solution is inflexible, it involves complex work processes and it leaves unsightly, visible shrinkage joints after the concrete has cured. The revolutionary new mounting system from Egli, Fischer relegates these disadvantages to the past. In fact, it allows precise alignment and the benefit of time saving.

Cable conduits of various diameters are mounted at either sides of the Lötschberg base tunnel. Before concreting, the conduits must be exactly positioned. The temporary mounting must also secure the conduits against the buoyant force during the concreting process. Precise tolerances must be kept to allow the pulling in of power, communication and control cables at a later date. The metal of the conduit support system may not contact the cable conduits to prevent electromagnetic radiation.

The revolutionary system solution

The new concept was developed in best time. Prototypes were tested on site, adapted to the local conditions and serial production was realized. Egli, Fischer & Co. Ltd. totally revolutionized the fixing task in close collaboration with practical experience and technology – building contractors, customer consultants, development engineers and plastics specialists. With a precise aligned combination of plastic pipe brackets as well as rails and metal fixing elements the complex buoyant force can be controlled. Prefabricated modules allow a simple, economic work flow.

Simple and secure

The positioning of each mounting point is simple and secure even under the toughest working conditions and in poor visibility. The design of the support system in layers allows the conduits to be placed onto the brackets from the top. "Threading" the conduits into the supports is awkward and is now relegated to the past.

The base element – here with two conduit brackets – is prefabricated and anchored using only two concrete screws.



The formwork platform in the Lötschberg tunnel; at the bottom on the left and on the right side of the rails, the conduit blocks ready to concrete-cast.



Improvements in quality and economy

The savings achieved in erection time and simpler handling were the reasons why the customer decided in favour of the new system from Egli, Fischer. In addition the construction quality is increased thanks to the high-precision and flexible positioning of the conduits and the avoidance of shrinkage joints.

Benefits

- Electromagnetically neutral
- Most accurate positioning
- Easiest mounting due to modular conception
- Level differences at site can be compensated anytime
- Prefabricated modules allow rational mounting
- Design can be extended or adapted to structural conditions
- No visible shrinkage joints
- Concreting stages up to 12 m
- No contact with the formwork

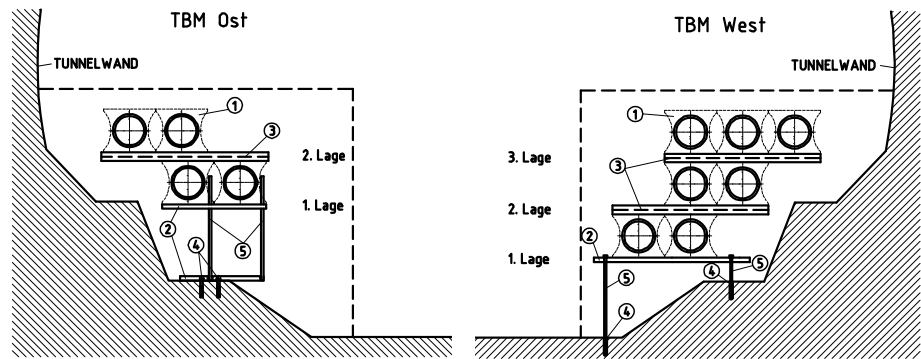
Practical work flow

Since spring 2004, Marti enterprise is mounting the cable conduits in the Lötschberg base tunnel using the new conduit support system.

- Egli, Fischer supplies three different prefabricated modules per block with three conduit levels together with the severy elements for closing off the top layer.
- The lowest level of the support system is anchored to the tunnel floor by two TILCA concrete screws.
- The height and position of the cable conduits are adaptable to the nearest millimetre anytime.
- The cable conduits in the bottom layer are placed in the supports.
- The prefabricated modules for the other layers are placed on top of the bottom layer and fixed by two metal bolts per pipe.

Other applications

Due to its concept, the system is also suitable with minor modifications for the permanent mounting of conduit blocks e.g. below bridges or in industrial or chemical plants.



The main system components

- 1 Conduit clamp
- 2 Single rail profile
- 3 Double rail profile
- 4 TILCA concrete screw
- 5 M12 threaded bar

On the right, the complete conduit block west before mounting.



The proven TILCA concrete screws are mounted with special impact screw drivers to anchor the structure in the concrete.

We will be glad to advise you on customized solutions to your fixing requirements.

Egli, Fischer & Co. Ltd.

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