



Fiber Optics Accompany Highway A1

In the future, a beacon project of the Swiss Federal Roads Office (FEDRO) is to free the A1 Highway north of Zurich (Zurich northern bypass) from traffic jams. The Federal Roads Office (FEDRO) is investing in expanding the section over a period of several years. Additional lanes and extra tunnel tubes alone cannot optimize traffic flow sufficiently. The flow of information is crucial.

On workdays, up to 120,000 vehicles are to be found on the section of around seven miles between Weiningen and the Zurich-Nord intersection of the Zurich northern bypass. This section is one of the busiest roads in Switzerland. There are traffic jams here virtually every day. And the volume in traffic will continue to rise in the coming years.

This is something the Swiss Federal Roads Office (FEDRO) wants to change. It is extending the Zurich northern bypass continuously to have at least three lanes in each direction by 2025. The project also includes the following tunnel construction measures: Complete redevelopment of the first and second tubes of Gubrist, new build of a third tube for Gubrist, a new underpass at Katzenssee as well as the redevelopment of the Stelzen Tunnel. The work also includes an increase in the number of lanes, a complete renewal of the operational and security systems, as well as an efficient communication infrastructure for video, voice and data signals.

Cablex AG has been commissioned by FEDRO to ensure on-schedule completion of the physical fiber optic communication infrastructure. R. Brüniger AG is responsible for the planning. Both companies have decades of experience in this area.

Efficient traffic management

However, expanding the existing infrastructure is only one means of optimizing traffic flow. With an efficient traffic management infrastructure, road space is to be used even more efficiently and intelligently. «Smart Road» is the name traffic planners have given their vision. Cameras and other sensors will be used to collect information on traffic conditions directly along the route; this will then be displayed in the traffic control center in Letten and the traffic management center in Emmenbrücke.

With the help of this traffic data, the traffic control system will set operating conditions, such as speed limits or, in the event of an accident, lane closures. For the motorist,

some of this data can be seen on the Internet or will be used in navigation applications to find the perfect route.

The FEDRO relies on such scenarios and thus ensures an efficient flow of information in transportation. Proprietary fiber optic data and communication networks for transit, object and field level accompany the national road network.



Zurich northern bypass



«The network on the Zurich northern bypass will still be fulfilling the specified technical and capacity requirements in 20 years' time.»

Enos Pizio, Project Manager, Cablex AG

The FEDRO has been creating the networks with singlemode cabling for a long time now and is internationally considered a pioneer in this field. Several hundred thousand miles of fiber optic cable are located in the cable conduit systems along the roads and in the works management tunnels. This is complemented by access, distribution and connectivity technology in underground and above-ground cabinets, electrical rooms and operations control centers. The infrastructure must be able to withstand harsh environmental conditions, such as vibrations and high temperature differences.

In the case of the Zurich northern bypass, R&M is providing an FO range specially designed for traffic projects. The requirements of FO components specified in the FEDRO specialist manual as well as in the standards of territorial unit VII are fulfilled by the R&M products and are proving themselves in various Swiss tunnels and traffic systems.

Specific R&M range

«The R&M range for tunnel and road construction offers a number of advantages. In this case, too, the program was precisely tailored to the requirements and standards defined by FEDRO and the Zurich Cantonal Civil Engineering Office for the northern bypass,» says Armin Pramstaller, former Cablex site manager, explaining the preference.

Enos Pizio, project manager at Cablex AG, has the following to say on the quality, sturdiness and the level of development of the solution: «The network on the Zurich northern bypass will still be fulfilling the

specified technical and capacity requirements in 20 years' time.»

Smooth-running logistics

Along with the product quality and specific range, the service quality also plays an important role in the expansion of the Zurich northern bypass. Armin Pramstaller explains: «Logistics also plays an important role for site managers and assemblers. The material must be available at the right place at the right time in order to keep the slots.»

To guarantee a smooth-running delivery service, R&M also provides unconventional solutions. In this case, whenever necessary, an employee had the goods ready at six o'clock in the morning so that the site manager could pick them up directly on his way to work. This shortened transportation routes and delivery times. Armin Pramstaller: «I can phone R&M whenever I have to if it is urgent. There's always someone there to help me. The communication and collaboration are excellent.»

Information on the project:



cablex

R. Brüniger AG
Engineering & Consulting



The R&M range for tunnel and road construction

R&M provides a specific cabling range for FO data and communication networks in transportation. The range includes:

- Splice closures which can be permanently situated under water (protection class IP68)
- Strengthened sub-racks for splice distributors
- Patch panels and patch cord trays made of aluminum plate
- Slim-line metal fiber divider boxes
- Fiber modules, splice trays with metal front panel
- Pre-terminated Varioline and breakout cables
- Patch cord organizers with rubber clips for tension relief (instead of cable ties which could negatively affect the performance)

R&M has also developed pull-out shelves, deflection rollers and cabinet mounting kits for application-specific FEDRO network cabinets.



Peter Meier | R&M Switzerland
peter.meier@rdm.com