

Group's commitment to modernizing its network continues

Completed a new step in the demolition and reconstruction of the Gravagna Viaduct on the A15 Parma - La Spezia: 3 metal arches in the northbound carriageway removed

The works, carried out by the subsidiary ITINERA, involved more than 60 people and required the use of 400kg of explosives

Parma, 24 June 2024 - Successfully completed the spectacular explosive demolition **of the three metal arches** supporting the decks of the northbound carriageway, which had already been partially demolished, of the **Gravagna Viaduct** on the **A15 Parma - La Spezia**. The operation, which took place starting June 19 and involved more than 60 people under the direction of ITINERA, the company responsible for carrying out the works, is part of the demolition and reconstruction of the viaduct as part of the broader modernisation plan for the section managed by **SALT**, the ASTM Group's motorway concessionaire, to bring the infrastructure up to the highest standards of quality and safety.

In fact, the A15 motorway is characterised by a high number of viaducts (177), flyovers (38) and tunnels (36) built with different design approaches and logics from those of today and on the basis of traffic loads that are significantly lower than those of today, in terms of magnitude and frequency. An iconic work built in the early 1970s between the Pontremoli and Berceto toll booths, the Gravagna Viaduct has undergone numerous maintenance and adaptation activities over the years. The 6 metal arches, known as crutches, were installed in 1993 to completely restore the efficiency of the work by permanently supporting the spans thanks to **6 large steel portals** whose piers, as they spread apart, come to rest on the pier bases. Made of steel and weighing around 400 tonnes each, they range in length from 45 to 62 metres.

The works started in autumn 2023. A particularly delicate phase was the demolition of the three portals supporting the northbound carriageway. The explosive charges were detonated during the night on 19 and 20 June, ensuring safe conditions for operators and users, with closed traffic. The charges were placed at five locations inside the metal boxes. The cuts were made in the centreline of the portal's rampant arches in the horizontal and vertical directions to allow them to fall to the ground by gravity. The part of the arch most in direct contact with the roadway deck was weakened to prevent the involvement of the homologous portal on the opposite carriageway, as well as minimising the stresses transmitted to the portal hinges and, consequently, to the piers. Outside the cutting area, protection was provided by alternating sandbags and water.

A monitoring system consisting of about 90 inclinometers and about 90 accelerometers positioned on the piers and decks of both the northbound and the southbound ways was installed to monitor the effects of the demolition on both the piers and the southbound way decks, to verify that the shock wave did not create excessive stresses towards the structural parts still to be demolished. After the demolition was completed, load tests were carried out. Given the high weight of the demolished arch portions (about 160 t each), technical estimates were made of the effects of the portals falling after demolition with explosives. As portions of the arch fall to the ground, they generate vibrations that could affect the pier foundations or other structural elements. To dampen the effect of the fall, dunes of inert material were used to absorb the vibrations induced by the impact on the ground.

KEY NUMBERS:

- **60 workers involved** in the preparatory, execution and support phase
- **3000 m³ of inert material** to create the dunes to dampen the effects of falling arches
- **400 kg of C4** (the explosive for cutting steel crutches/arches)
- **Various kg of gelatine** for blasting hinges
- **90 inclinometers**
- **90 accelerometers**

ASTM Group is among the leading global infrastructure players in the management of motorway concession networks, EPC design and construction projects and technology for infrastructures. Operating in more than 15 countries, with about 16,500 employees and associates, the Group adopts a “one-company” business model incorporating integrated skills that cover the entire value chain of the infrastructure sector. ASTM Group is the second largest operator in the world in the management of motorway infrastructure with a network of approximately 6,200 km, with more than 1,400 km of this in Italy, 4,700 km in Brazil – through the company EcoRodovias – and 84 km in the United Kingdom, through its subsidiary Road Link.

ASTM S.p.A.

Corso Regina Margherita, 165 - 10144 Turin - Italy
Tel. (+39) 011 4392111 - Fax: (+39) 011 4392218
www.astm.it - PEC: astm@legalmail.it - E-mail: astm@astm.it

For further information:

Communication

Giovanni Frante
Tel. (+39) 0131 879309
E-mail: gfrante@astm.it

Caterina Parenti
Tel. (+39) 3458677007
E-mail: cparenti@astm.it

Media Relations

Barabino & Partners
Alice Brambilla
Tel. (+39) 328 2668196
E-mail: a.brambilla@barabino.it

Agota Dozsa
Tel. (+39) 338 7424061
E-mail: a.dozsa@barabino.it