

MARTIGNANO TUNNEL – ITALY

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| Project Name | Martignano Tunnel |
| Purpose of the project | Variant of S.S.47 "Valsugana" |
| Project location | Italy - Trento |
| Client | TOTO Costruzioni Spa - Italy |
| Contractor | Provincia di Trento - Italy |
| Tunnel Type | Double highway tunnel |
| Excavation method | TBM machine |
| Total length | About 4200 meter |
| Tunnel diameter | 12 meter |
| End of construction | December 2006 |

GENERAL PICTURES OF THE TUNNEL





INSTRUMENTS INSTALLED

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| Instruments The installation started during january 2004 | |
| V.W. Pressure cells | No. 36 (Sisgeo models L111) |
| Anchor bolts with optical targets | No. 57 (Sisgeo model DN0CH and GCTR05) |
| V.W. strain gauges | No. 231 (Sisgeo model VK40) |
| Steel lining load cells | No. 12 (Sisgeo model L2CE) |
| DEX in-place extensometers | No. 52 (Sisgeo model DEX35) |
| Electric anchor load cells | No. 4 (Sisgeo model L207V) |
| Instrument status | On March 2006 100 % of the instruments have been instaled |
| Courtesy of TOTO Costruzioni Spa | |



Wiring procedures on the ADK-10 data acquisition system



Steel lining load cell installed between two section of linings



Vibrating wire strain gauges installed on steel lining

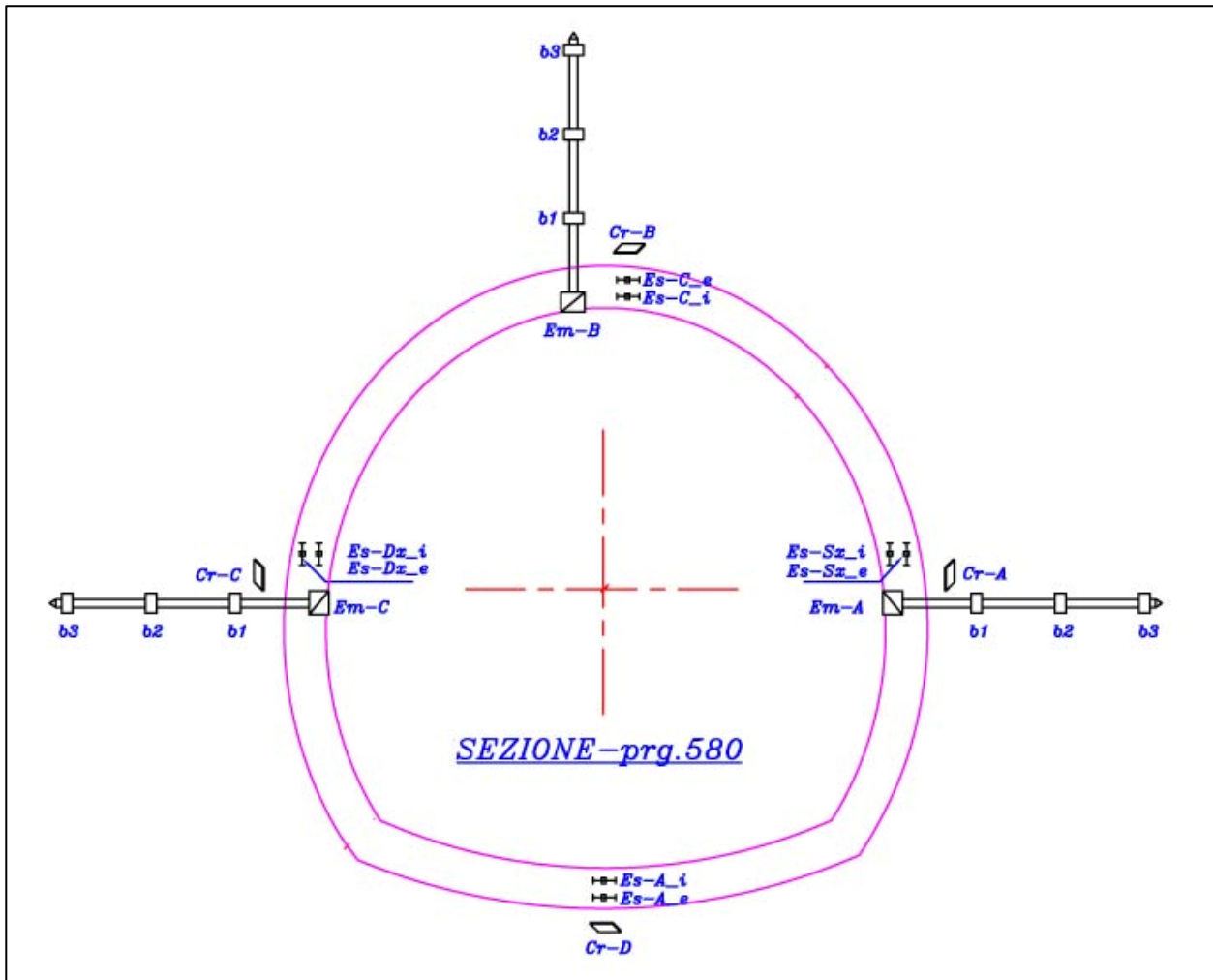


Installation of tangential pressure cell



ADK-10 automatic data acquisition system

MEASUREMENTS AND DATA PROCESSING



Instrumented section in "Cantanghel" tunnel

Em-x: In-Place DEX extensometers

b1=probe No.1

b2=probe No.2

b3=probe No.3

