CODING è una società di ingegneria costituita nel 1984, che ha una consolidata esperienza derivante da un pluridecennale esercizio della professione; oggi è una solida realtà operativa in ambito nazionale ed internazionale, alavanguardia nel campo dell’ingegneria e dell’architettura.

Le competenze della CODING possono essere così di seguito sintetizzate:

- Ingegneria Strutturale ed Infrastrutturale
- Ingegneria Civile/Edile e Industriale
- Architettura
- Ingegneria del Territorio.

CODING si avvale dei più avanzati strumenti hardware e software utilizzati per la modellazione e il calcolo strutturale, per la rappresentazione tridimensionale, per la composizione e contabilizzazione delle opere.
Bari high-speed railway line  
Napoli-Cancello section

CATEGORIE: Railways  
SERVICES PROVIDED: Detailed design, Engineering services during construction  
LOCATION: Napoli, Italy  
PROJECT DURATION: 2018 - 2019  
CLIENT: Italferr S.p.A.  
PROJECT VALUE: € 110,600,000.00

Commissioned by ITALFERR S.p.A., the project is scheduled for completion by 2022 and comprises the first section of the Naples - Bari line, a key part of the upgrading of the railway lines throughout the country. The section between Naples and Cancello will bring rail service to the new Napoli Afragola station, which will act as the point of transfer between regional and high-speed services, improving access to rail service in Naples. The section will extend for about 15.5 km across the Casoria, Casalnuovo, Afragola, Casavisano and Acerra areas. CODING was in charge of the planning, carried out largely in BIM, of the alignment, of the station Plan and of the realizations phases of the Afragola and Acerra Stations, of the 4 viaducts, of the structural works of the Commercial Center Stop and of the Acerra Station, of the structural works of the 6 technological buildings of the line and of the 7 STI exits present on the roof of the Casalnuovo Station. The on-site assistance is still in progress during construction.

Engineering service for the feasibility and functionality of the new Central Railway Station of Algiers in Dar El Beida. The project includes the development of two track solutions of about 34 km and the positioning of the new Central Interchange Station. First solution consists of a four-track update railway of the Banlieue line, instead the second one is a design variation of the Grande Ligne project of Pafra.

Servizi di ingegneria volti alla fattibilità e funzionalità della nuova Stazione ferroviaria Centrale di Algeri a Dar El Beida. Il progetto comprende lo sviluppo di due soluzioni di tracciato di circa 34 km ed il posizionamento della nuova Stazione Centrale di interscambio. La prima soluzione consiste nel quadruplicamento della linea Banlieue, mentre la seconda è una variante al progetto della Grande Ligne di Pafra.
The Saudi Landbridge Railway Project consists of a circa 1300 km railway line linking Jeddah with the existing Riyadh and Dammam railway networks. It is intended to be a mixed freight and passenger non-electrified railway line. Design speed is 350km/h for passenger trains and 160km/h for freight trains. During the Concept phase, Coding provided engineering services for the study of the corridor, for the design of the alignment and of all civil works along the “Blue Corridor”, from km 271 to km 1300. During the Preliminary Phase Coding performed the engineering services for preparation of design of the section, 640 km long, from km 271 to junction for Riyadh city.

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Saudi Landbridge Railway Project Section 2 – 271-1260 km
The Saudi Landbridge Railway Project consists of a circa 1300 km railway line linking Jeddah with the existing Riyadh and Dammam railway networks. It is intended to be a mixed freight and passenger non-electrified railway line. Design speed is 350km/h for passenger trains and 160km/h for freight trains. During the Detailed Phase, Coding performed the engineering services for preparation of the design from km 558 to km 1051: the design includes the alignment, 102 viaducts, 5 cut and covers, 24 overpasses, 40 interfering roads and a huge area for railway facilities.
Engineering services for preparation of concept design on behalf of AGENCE NATIONALE D'ÉTUDES ET DE SUVI DE LA RÉALISATION DES INVESTISSEMENTS FERROVIAIRES. Identification of the optimal technical and economical solution for the junction (for freight trains) between Senia/Arzew via Hassi Mefoukh railway line and Bethioua industrial zone. The project is 12km long and is divided into two sections: the first one is parallel to the Hassi Mefoukh – Mostaganem railway line and the second one will be made by a single track to the industrial zone. Coding performed the engineering services for preparation of the design of the alignment and all related primary and secondary civil works.
Engineering services for preparation of concept design on behalf of AGENCE NATIONALE D’ÉTUDES ET DE SUIVI DE LA RÉALISATION DES INVESTISSEMENTS FERROVIAIRES. Identification of the alignment after railway speed upgrading to 100km/h. The existing single track, circa 300km long, connects Annaba Port to the mines located in the south part of Oued Kebrit. Due to the fact that the alignment runs in a mountain area, there are several viaducts and tunnels. 3 passing loops have been foreseen to facilitate the railway traffic. Railway tracks have been re-designed.
In this concept design commissioned by Italferr S.p.A., two alternatives have been considered to connect the Petro-Baraka industrial site with the Biskra-Touggourt existing railway line. The several surrounding industrial plants with various facilities and storage areas, in addition to the local road network, have conditioned a lot the definition of these two alternatives.

The final solution takes advantage of the presence of the existing railway connection from the main line to the near Naftal industrial site; by using this connection, the track line passes alongside the Enicab industrial site by using part of the existing road platform, and than it reaches the Petro-Baraka plant.

In questo studio di fattibilità, commissionato da Italferr S.p.A, sono state ipotizzate due possibili alternative progettuali per collegare il sito industriale di Petro-Baraka alla linea ferroviaria esistente Biskra-Touggourt. La presenza di numerosi impianti industriali nella zona circostante, oltre alla rete di viabilità locali, hanno vincolato molto la definizione di queste due alternative. La soluzione finale scelta sfrutta il raccordo ferroviario esistente del sito di Naftal, utilizzando parte della piattaforma stradale esistente costeggia i confini del sito Enicab, e raggiunge quindi il sito di Petro-Baraka. Tale soluzione è stata redatta con un grado di approfondimento tipico di un preliminare.
Biskria

CATEGORIE
- Railways

SERVICES PROVIDED
- Preliminary design

LOCATION
- Biskria - Algeria

PROJECT DURATION
- 2019

CLIENT
- Italferr S.p.A.

PROJECT VALUE
- 

Commissioned by ITALFER S.p.A., this preliminary design concerns both the study of a railway connection between the Biskria cement plant and the existing Biskra-Batna railway line and the project of a marshalling yard alongside the existing railway line. One of the most complex factors of the design phase is due to the morphology of the area and in particular to the presence of various rivers and channels; this interferences have been managed by providing various culverts and channels alongside the railway connection and the marshalling yard area.

Qom-Arak High Speed Railway Line

CATEGORY  Railway Infrastructures
SERVICES PROVIDED  Preliminary design
LOCATION  Iran
PROJECT DURATION  2016
CLIENT  Astaldi S.p.A.
PROJECT VALUE  € 788 500 000.00

The Qom – Arak Railway project is part of the comprehensive program of launching high-speed lines promoted by the Islamic Republic of Iran Railways. This new High Speed Line, part of the Iran National Railway Network, will be a double track passenger railway line and will have an operational speed of 300 km/h. Qom – Arak High Speed Line is connected with Esfahan – Teheran railway line through a junction.

Coding performed the preliminary design of the line (117 km). The project includes 6 railway viaducts, crossing infrastructures, Arak station and a facility area.

Il progetto ferroviario Qom – Arak rientra nel programma di sviluppo delle linee Alta Velocità promosso dall'ente per lo sviluppo delle ferrovie della Repubblica Islamica iraniana (R.A.I.). La nuova linea Alta Velocità prevede un doppio binario con una velocità di progetto di 300 km/h e si connette alla linea Esfahan–Teheran tramite un insieme ferroviario. Coding ha predisposto il progetto definitivo di tutto il tracciato, esteso per 117 km circa. L'opera comprende 6 viadotti ferroviari, infrastrutture di attraversamento, stazione passeggeri di Arak ed aree di manutenzione.
The National Railway Project in the Sultanate of Oman consists of about 2135 km. It is divided into 9 segments linking Oman’s borders with the UAE to Muscat and also to the southern parts of the country - Port of Al Duqm, the Port of Salalah and the Yemeni border. The railway is double track, non-electrified and it is designed to serve mixed freight and passenger traffic. Coding performed the engineering services for preparation of the preliminary design of Segment 3 (350km), which connects the central area of Oman with the Ports of Duqm. This segment starts near Fahud area and ends near Haima area and it also guarantees the connection with the port of Al Duqm. It is considered a high priority segment for the connection between the Port of Duqm and GCC. The project include route planning, superstructures, bridges, 3 stations, systems for loading/unloading trains and handling containers.
Turin railway Stations  
Upgrading of the Railway Line

CATEGORY  Railway Infrastructures
SERVICES PROVIDED: Preliminary design
LOCATION  Turin – Italy
PROJECT DURATION  2013-2016
CLIENT   RFI Rete Ferroviaria Italiana
PROJECT VALUE   €  4 000 000.00

Preliminary design of pedestrian underpass under the Vercelli station and extension of two pedestrian underpasses under Chivasso and Torino Lingotto Stations.

Progettazione Definitiva degli interventi per la realizzazione di un nuovo sottopassaggio viaggiatori della Stazione di Vercelli ed il prolungamento dei sottopassaggi viaggiatori delle Stazioni di Chivasso e Torino Lingotto.

PROJECTDAGG/

Preliminary design of pedestrian underpass under the
Vercelli station and extension of two pedestrian underpasses
under Chivasso and Torino Lingotto Stations.
Briga Novarese-Gozzano
Upgrading of the Railway Line

CATEGORY  Railway Infrastructures
SERVICES PROVIDED  Preliminary design
LOCATION  Novara – Italy
PROJECT DURATION  2013-2016
CLIENT  RFI Rete Ferroviaria Italiana
PROJECT VALUE  € 3,500,000.00

Preliminary design on behalf of RFI: Removal of three railway level crossings in Briga Novarese and Gozzano cities. Two of them at km 33+548 and 34+002 are solved by the construction of a new connection road, whereas the last one at km 34+002 is solved by an underpass.

Progetto definitivo per RFI: Suppressione dei passaggi a livello nel Comune di Briga Novarese e Gozzano:
Suppressione dei P.L. al km 33+548, 34+002, 34+004 della linea ferroviaria Vignale-Domodossola mediante la realizzazione di una strada di collegamento tra P.L. al km 33+548 e 34+004 e di un sottovia al km 34+172 della linea Vignale-Domodossola.
Borgomanero – Modernization and Upgrading of the Railway Line

CATEGORY: Railway Infrastructures
SERVICES PROVIDED: Detailed design
LOCATION: Novara – Italy
PROJECT DURATION: 2013-2016
CLIENT: RFI Rete Ferroviaria Italiana
PROJECT VALUE: € 6,000,000.00

Detailed design on behalf of RFI: Removal of four railway level crossings in Borgomanero city.

All level crossings are solved by the construction of four underpasses at km 30+870 and 48+820 of the Vignale-Domodossola railway line, at km 31+751 of the Vignale-Domodossola and Santhià-Arona railway line and at km 32+950 of the Vignale-Domodossola railway line.

Progetto esecutivo per RFI: Soppressione dei passaggi a livello nel Comune di Borgomanero. I passaggi a livello esistenti sono stati soppressi e sostituiti mediante realizzazione dei seguenti sottovia: al km 30+870 e al km 48+820 della linea Vignale-Domodossola, al km 31+751 della linea Vignale-Domodossola e della linea Santhià-Arona, al km 32+950 della linea Vignale-Domodossola.
The preliminary design of the project consists in the upgrading of the second track between Hrvatski Leskovac and Karlovac stations, for a total length of circa 45km. The railway line will be double-tracked and electrified on the whole section with a design speed of 160 km/h for passenger trains. The project is part of the corridor V-b that connects Rijeka Port to Zagabria and Budapest. Coding performed the design of the railway alignment, of minor works and of the architectural and structural of all the 6 stations.
Polonia

CATEGORI

Railways

SERVICES PROVIDED

Detailed design

LOCATION

Polonia

PROJECT DURATION

2012 – 2013

CLIENT

Systra Sotecni s.p.a.

PROJECT VALUE

-

Detailed design of 3 TBM shafts, 1 viaduct and 1 work operating on 3 levels and a cut&cover tunnel for the revamping of the intermodal Central Station of Fabryczna in the city of Lodz, Poland, on the Koluszki line for Systra-Sotecni. The type of construction has taken a top-down method for deep excavation using concrete diaphragm walls, perimeter and central. The construction was completed and has been operating since 2016.
SS192 Laurenzana

**CATEGORY**
Roads and Highways

**SERVICES PROVIDED**
Preliminary design

**LOCATION**
Potenza - Italy

**PROJECT DURATION**
2019

**CLIENT**
Anas S.p.A.

**PROJECT VALUE**
-

Preliminary design of about 5 km of road in Laurenzana, Potenza. All structures are included, among which two tunnels. The project was developed according BIM approach. A detailed survey was carried out through to return the orthophotos projected onto the three-dimensional surface, in this way all structures was studied in 3D. The result is an high level precision project making it possible to optimize costs of the executive project and the future construction too.
The 4ème Rocade d’Alger is a highway which passes about 80 km south of the Algerian capital and crosses the country from west to east. This highway is part of the main structural axes of the Algerian road and motorway scheme. The final route is 262 km long with 15 interchanges and a basic section consisting of three lanes dual carriageway plus an emergency lane in each direction.

Coding performed the engineering services for preparation of designing section 1.2, from pk 33+800 to pk 67+000, a 33.2 kilometre alignment with interchanges. The project includes structures, roadways, hydraulic works and retaining walls.
Detailed design and engineering services during the construction of the last section of the national road S.S. 655 “Bradanica” which links Matera city with Foggia city. The alignment is approximately 11.5 kilometer long and the basic section is compliant with type C1 of D.M. 5.11.2001 requirements, with two 3.75m wide lanes and two 1.5m wide shoulders, for a total width of 10.5m. The project includes the design of access roads, as well as the intersections with existing surrounding road networks. The main structures are a steel arch bridge 144m long "Torrente Gravina Bridge" and three pre-stressed concrete viaducts: Santo Stefano Viaduct (6 spans, 176m long), Lama di Pepe II Viaduct (2 spans, 56m long) and Lama di Pepe I Viaduct (3 spans, 86m long).
Detailed design and engineering services during construction for the Road Upgrading Project of the Connection Road between Cosenza and Silber – Section from the interchange with A3 at Tarsia exit to the S.S. 106 bis National Road. The engineers’ design included segments of new road to replace the old ones in order to improve mobility. These segments were rehabilitated and widened. The design for the project includes roadway, pavement and signage design, tunnels, steel and pre-stressed concrete bridges and other minor works. The road crosses an environmentally sensitive area and the most important river of the region, river Crati. Several environmental protection measures have been implemented to meet the environmental and social commitments made during project development.
National Road S.S.32 “Ticinese” Novara-Castelletto Ticino

CATEGORY  Roads and Highways
SERVICES PROVIDED  Detailed design
LOCATION  Novara – Italy
PROJECT DURATION  2011-2013
CLIENT  Ativa S.r.l.
PROJECT VALUE  €  18 000 000

Coding provided the Detailed design for the upgrading and widening of the S.S. “Ticinese” National Road, section Novara-Castelletto Ticino. The road is upgraded to section type C3 with a 3.75m wide lane and a 1.50m wide shoulder in each direction from pk 23+300 to pk 27+000, while a new alignment is provided from pk 27+000 to pk 31+000. The project includes the design of roadway, intersections with the surrounding roads, pavement, drainage, signages and lighting.

Coding si è occupato della progettazione esecutiva e dei relativi servizi di supporto alla costruzione per l’ampliamento e il miglioramento della Strada Statale S.S. “Ticinese” sotto Novara-Castelletto Ticino. Per il tratto compreso tra il km 23+300 e il km 27+000, il progetto prevede il miglioramento delle caratteristiche tecniche della sezione stradale per rispondere ai requisiti del tipo C3 con due corsie di larghezza pari a 3.75m e una banchina di larghezza pari a 1.50m in entrambi i sensi. Per il tratto successivo, compreso tra il km 27+000 e il km 31+000, il progetto prevede un nuovo percorso. Il lavoro include 1 ponte in acciaio, 2 gallerie artificiali, oltre le studi della strada e delle relative intersezioni, della pavimentazione, del drenaggio, della segnaletica e dell’illuminazione.
Plurimodal Adriatic Corridor
National Road S.S. 275

The project involves the upgrading and modernization of the 40 kilometers national road S.S. 275-section Maglie – S. Maria di Leuca. The basic section is composed of two lanes in each direction and a central reservation, in compliance with section B of D.M. 5.11.2001 requirements. The existing road from Maglie to Montemarano Salentino (approximately 18 kilometers) is upgraded to two lanes, while a new corridor is designed for the alignment until Leuca. The project includes 16 interchanges, 2 cut and cover, 20 flyovers, 14 underpasses, upgrading of 3 existing structures and a wooden pedestrian bridge.
The Lazio Region is implementing a program to alleviate congestion and accommodate increased traffic volumes in the “Castelli Romani”, a group of municipalities in Rome Province. The program includes the Bypass Albano – Genzano to S.S. 7 “Appia”, which consists of three sections. The new road will enhance regional connectivity, will reduce travel time and improve traffic safety in the area. Coding provided preliminary design for the 3° section, approximately 4 kilometers alignment. The project includes 1 cut and cover for a length of 75m, 1 cut and cover for a length of 430m, 2 tunnels for a length of 480m and 712m, 4 viaducts for a total of 25 precast concrete and composite steel-concrete spans. The project also includes access roads design, as well as the upgraded of the interconnections with the local road network.

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The project for the Intermodal Corridor Rome – Latina involved the construction of a highway link between highway A12 “Roma – Civitavecchia” and Latina city. Coding, as a partner of the design joint venture, was responsible for the design of the motorway link Cisterna-Valmontone, about 35 km long, which links the main corridor Rome-Latina with highway A1 Rome-Naples. The new motorway links two new interchanges. The basic section consists of two lanes in each direction plus an emergency lane. Coding performed overall design for the project, which included structures, roadway, pavement, signage, drainage, environmental study, geotechnical Engineering.

**caratteristiche principali**

- **Estensione della nuova Autostrada:** dal km 0+000 al km 129+000
- **Velocità di progetto:** 90/140 Km/h
- **Pendenza massima longitudinale:** 5% (4% in galleria)
- **Larghezza dello spartitraffico:** 4.80 m
- **Larghezza delle corsie di marcia (per carreggiata):** 7.50 m
- **Larghezza margine di sinistra:** 2.00 m
- **Larghezza corsie di emergenza:** 300 cm
- **Raggio di curvatura minimo planimetrico:** 1000 m
- **Raggio di curvatura altimetrico convesso minimo:** 10000 m

Il progetto di collegamento stradale fra il Corridoio Intermodale Roma – Latina consiste nella costruzione di una connessione autostradale fra l’A12 “Roma-Civitavecchia” e Latina. Coding, come partner della joint venture di progettazione, è responsabile del progetto per il tratto Cisterna-Valmontone, esteso per circa 35 km, che collega il corridoio Roma-Latina con l’autostrada A1 Roma-Napoli, con quattro nuovi scambi e due intersezioni. La sezione tipologica è composta da due carreggiate e da due corsie di emergenza per un totale di cinque corsie. Il progetto include tutte le strutture, lo spartitraffico, le segnaletica, l’idraulica e gli studi geotecnici e ambientali del terreno.
Connection road between “Due Mari” and “Medio Savuto” national roads is a 30-kilometer alignment and the most important infrastructure of the Calabria region. It is an alternative transportation solution to highway A3 with the aim to encourage economic growth of the area. Coding provided detailed design and construction support services for the first section, a 9 kilometer alignment. The project consists of 5 bridges, one steel bridge and four prestressed concrete bridges, one tunnel, 40 underpasses, 4 flyovers and the hydraulic and roadway studies.

La strada di connessione tra le Strade Statali “Due Mari” e “Medio Savuto”, estesa per 30 km, si considera come la più importante infrastruttura della regione Calabria: questa costituisce un'alternativa all'autostrada A3, favorendo lo sviluppo economico dell'area. Coding si è occupato della redazione del progetto definitivo, del progetto esecutivo e dei servizi di supporto tecnico in fase costruttiva dei primi 9 km di tracciato. Il progetto include 5 ponti, uno in acciaio e gli altri in calcestruzzo precompresso, 1 galleria naturale, 40 sottopassi e 4 cavalcavi, oltre al studio dell'idraulica e della parte stradale.
"Ponte della Scafa" crossing the Tevere river tender

**CATEGORY**: Roads and Highways

**SERVICES PROVIDED**: Preliminary design

**LOCATION**: Rome - Italy

**PROJECT DURATION**: 2010

**CLIENT**: Consorzio Cooperative Costruzioni Società Cooperativa CCC

**PROJECT VALUE**: -

Coding performed the preliminary design for the tender for the construction of the new Scafa Bridge close by the Leonardo da Vinci Fiumicino Airport. The design foresees the crossing of the Tevere river by an arch bridge with a total length of 175m, connected to the existing roadway network by two viaducts 230m long.
**Turin - Automatic Subway**

**CATEGORIE**
Underground Structures

**SERVICES PROVIDED**
Detailed design

**LOCATION**
Torino - Italy

**PROJECT DURATION**
2017 – 2019

**CLIENT**
Tecnimont S.p.A.

**PROJECT VALUE**
-

Detailed design of the 6 levels underground Parking, which measures 64x71 m, belonging to the Cascine Vica Station. The project was developed according BIM approach. Detailed traffic management design of the functional lot. Detailed design of 3 vent shaft and firefighters access points, of the cut&cover tunnels and of shaft connecting the natural tunnel with the cut&cover. The type of construction requires a top-down method for deep excavation using concrete diaphragm walls and micropiles. The project includes a first section of cut&cover and then continues in a natural tunnel. The tunnel consists of a first section made in cut&cover and then continues in natural tunnel.

**Linea 1 Prolungamento Ovest – Cascine Vica. Progetto esecutivo strutturale del Parcheggio sotterraneo a 4 livelli di dimensioni in pianta 64x71 m annesso alla Stazione Cascine Vica. La progettazione è stata sviluppata con metodologia BIM per garantire un alto livello di accuratezza. Progettazione esecutiva della viabilità interferente per l’intera lotte. Progettazione esecutiva di 3 Pozzi di ventilazione ed accesso VVFF, della galleria artificiale (cut&cover) e di un pozzo di intertratta di collegamento fra la galleria naturale e quella artificiale. La tipologia costruttiva richiede l’impiego della metodologia top-down con l’impianto di diaphragm wall e micropile. Il tunnel è composto da un primo tratto realizzato in cut&cover per poi proseguire in galleria naturale.**
Parco San Paolo Metro Station

**CATEGORY**
Underground Structures

**SERVICES PROVIDED**
Preliminary design

**LOCATION**
Naples - Italy

**PROJECT DURATION**
2019 – 2020

**CLIENT**
Astaldi S.p.A.

**PROJECT VALUE**

Rail link between Cumana Railway and Circumflegrea in service of Monte Sant’Angelo university campus - Alternative preliminary design of the Parco San Paolo Station, the underground Parking and of the sewage pipeline. The station is of 125 m length and 32 m width. There are 6 underground levels. The excavation has a maximum depth of 42 m. The type of construction requires a top-down method for deep excavation using concrete diaphragm walls perimeter and central. The working area is located in a highly urbanized context that required a very accurate design, obtained through the BIM approach.
Parco San Paolo Metro Station

**CATEGORY**
Underground Structures

**SERVICES PROVIDED**
Detailed design

**LOCATION**
Naples, Italy

**PROJECT DURATION**
2018 – 2019

**CLIENT**
Astaldi S.p.A.

**PROJECT VALUE**

Rail link between Cumana Railway and Circumflegrea in service of Monte Sant’Angelo university campus – Detailed design of the Parco San Paolo Station, the underground Parking and of the sewage pipeline. The station is 168 m length and 31.5 m width. There are 8 underground levels, of which 3 are used for Parking. The excavation has a maximum depth of 42 m. The type of construction requires a top-down method for deep excavation using concrete diaphragm walls, perimeter and central. The working area is located in a highly urbanized context that required a very accurate design, obtained through the BIM approach.
The new Metro Ankara-Esenboğa line will connect both Esenboğa Airport and Yıldırım Beyazıt University to the central rail system network in Ankara. The line will be a fully automated Metro System, running mostly underground, 27 km long. The line has been designed with the aim to satisfy the transport demand and to supply a faster connection from/to the airport. The project contains 7 underground stations, 4 crossovers, 1 turnback siding, an arrangement for a new line, 1 viaduct with a U shape prestressed concrete deck, a pedestrian bridge to link the new metro line with Esenboğa Airport etc. The stations will be built using open-cut and bottom-up method, with diaphragm wall as retaining structures. Coding performed the engineering services for preparation of overall design for the alignment and the stations, which included structures, architecture, bill of quantity and tender documents.
Ambla Aradam station is located between San Giovanni Station (Line A) and Fori Imperiali Station (Line B) along the Line C of the Rome Metro. The top down construction method was adopted with diaphragm walls as the retaining structure, 45m long and 1.2m thick and with the underground structure slabs as supporting structures. During excavation, a Roman barracks dating back to the 2nd century AD was unearthed 9 metres below street level.
Shaft 3.3 is located between “Amba Aradam station” and “San Giovanni station” of the C metro line of Rome. The shaft is made by three underground levels and it’s located in a garden very close to Via Sannio open market, on the same side of Appio square. The excavation is 25.65×64.4 square meter large. It will be supported by 1.2m thick concrete diaphragms having length of 45m. Coding performed the detailed design and engineering services during construction for all functional, structural and architectural aspects.
Line C is the third line of the Rome metro system, connecting the North-west with the South-East side of the city. The first section, comprising 21 new stations, were opened in 2015. A three further stations are currently under construction, from San Giovanni to Piazza Venezia. Piazza Venezia, is an additional station located in the historic city center. In 2009, during preliminary excavation works, remains of what has been identified as a Roman Hadrian's Athenaeum were found. The architectural point of view is causing several technical difficulties in the construction phase. The excavation is 110×41.7m² large, it will be supported by concrete diaphragms and internal horizontal support provided by nine slabs which will be cast in place during the top-down excavation in order to improve the stability and to limit the disturbance to the adjacent historical building. Moreover, the project includes two escalators, one on S. Apostoli Street and another one closeby Palazzo Venezia.
Spoleto tunnel in limestone quarry

Construction supervision and Engineering services during construction of the underground works for the upgrading of the “Santo Chiodo” quarry in Spoleto (PG). The activity consists in the improvement of the area to allocate the quarry crusher (36m long and 11.25m high), in the realization of the access tunnel (152m long) and of the vertical shaft.
Rome Metro Line B1
Annibaliano Parking

CATEGORY Underground Structures
SERVICES PROVIDED Detailed design Engineering services during construction
LOCATION Rome – Italy
PROJECT DURATION 2009-2011
CLIENT Tecnimont S.p.A.
PROJECT VALUE -

Preliminary, detailed design and engineering services during construction of the underground parking close to the Annibaliano Station of the new line B1 of the Metro in Rome. The parking of overall dimension in plan of about 110x40m, has three underground floors. Internal horizontal support is provided by a steel props during the execution. The structure has been completed using prefabricated column, beam, slab and concrete casts on site.
Preliminary, detailed design and engineering services during construction of the underground metro station “Gardenie” of the C metro line of Rome. The excavation is 160×45.0 square meter large. It will be supported by 1.0m thick concrete diaphragms. Internal horizontal support is provided by five slabs (up to 28m deep) which will be cast in place during the top-down excavation in order to improve the stability.
Engineering services during construction of the underground metro station “Giglioli-Torre Maura” of the C metro line of Rome. The excavation is 120×60 square meter large and 30m deep. Internal horizontal support is provided by six slabs (REP trusts) which will be cast in place during the top-down excavation.

Assistenza al cantiere per la realizzazione della stazione intervista di Giglioli-Torre Maura della nuova linea C della metropolitana di Roma. Lo scavo si estende per circa 120×60 mq, raggiungendo una profondità di 30m. Sono previsti 6 livelli di puntonamento con travi REP per il contrasto dei diaframmi perimetrali, realizzati con la tecnica del bottom-up.
**Rome Metro Line B1**  
**Conca D’oro Launching Shaft**

**CATEGORY**  
Underground Structures

**SERVICES PROVIDED**  
Detailed design engineering services during construction

**LOCATION**  
Rome – Italy

**PROJECT DURATION**  
2009-2011

**CLIENT**  
Tecnimont S.p.A.

**PROJECT VALUE**  
-

The structures, square shaped, 27m deep, with overall dimension in plan of about 21x21m.
Annibaliano station was designed in order to be integrated with the surrounding urban area, reducing the structures above the ground level. A large open space constitutes the architectural and urban center of the new station and represents an important measure for urban renewal as well. The construction system requires the creation of slabs during the excavation between concrete walls using the Top-Down technique. The choice of this method was dictated by the need to minimize the effects of deformation and the consequent subsidence, given the remarkable depth of excavation and the geological characteristics of the site. Coding performed engineering services during the construction of all structural works.
Progetto definitivo architettonico e funzionale per la realizzazione della stazione interrata di Pigneto della nuova linea C della metropolitana di Roma. Lo scavo, esteso per 115x25 mq, è sostenuto da una paratia di diaframmi multipuntonati di spessore 1.0m. Sono previsti 5 orizzontamenti interni realizzati con la tecnica del top-down fino a raggiungere la profondità di 25 m dal piano campagna.
Preliminary, detailed design and engineering services during construction of the underground metro station “Mirti” of the C metro line of Rome. The excavation is 67×52 square meter large. It will be supported by 1.0m thick concrete diaphragms. Internal horizontal support is provided by five slabs (up to 31m deep) which will be cast in place during the top-down excavation in order to improve the stability.
Preliminary, detailed design and engineering services during construction of the underground tunnel approach structure (for TBM) of the new line C of the Metro in Rome. The structures of overall length in plan of about 180m consist in open U-shaped and an underground approach structure which are all composed mainly by retaining piles wall, prefabricated props and RC casted in place. The project includes also the predisposition for the launching structures for the TBM machine and a 22m concrete bridge above Tor Sapienza trench.
Piacenza underground multistory parking

**CATEGORY** Underground Structures

**SERVICES PROVIDED** Detailed design Engineering services during construction

**LOCATION** Piacenza - Italy

**PROJECT DURATION** 2006-2007

**CLIENT** Ansaldi

**PROJECT VALUE** -

Detailed design of two underground parkings: the first one, known as “Ex Cantore”, is a 3 underground floors, 23,000 square meter with a capacity of 750 parkings; the second one, known as “Ex Macello” is 2 underground floors, 4,000 square meter with a capacity of 160 parkings.
Detailed design for static reinforcement of two floors – ground floor and basement floor – of the central building "Istituto Superiore di Sanità" of Rome (Building n.1). The building has masonry walls and the design consists in restoring the crack in the vertical walls to reset the structural continuity. Moreover, injection of different mixtures has been foreseen to repair the cracks.
Progettazione esecutiva e direzione dei lavori sulle strutture esistenti di c.a. dello stabilimento di produzione "Cementir" interessate dall'ammodernamento del sistema di filtrazione. Le modifiche impiantistiche hanno coinvolto in modo significativo gli aspetti strutturali, tecnici e di sicurezza.

L’indagine conoscitiva dell’edificio esistente, preliminare all’attività di progettazione e direzione lavori, è stata condotta tramite esame della documentazione del progetto originale, rilievo visivo della struttura (sopralluogo), prove in situ e in laboratorio.

Spoleto cement production plant

Cementir holding

2016

Field inspection and detailed design of the existing reinforced concrete buildings of the "Cementir" roof during the improvement and upgrading of the filtration system. The changes in the MEP system required several improvements of structural, technical and safety aspects.

Several studies on the existing plant and on the documentation have been provided before starting the activities. Moreover, additional inspections, in situ and laboratory tests have been provided to verify and evaluate the materials and the structural conditions.
“De Amicis” Schoolhouse, L’Aquila Retrofitting Design

The aim of the design consists in technological and structural solution to repair the damage on the masonry walls due to the 2009 earthquake. Moreover, the design consists in reinforcing and protecting the building against any new earthquake. To reinforce the elevated structures either different mixture injections and the use of steel fibers UHTSS, with high mechanical properties, have been foreseen. The masonry sealed walls were consolidated by extruded plating with basalt fiber and stainless steel mesh and by the insertion of steel rods in the perimeter walls.

In the internal hall a steel and glass structure has been foreseen. This particular architectural choice will permit to people to use the area during the whole year.

The intervention is characterized by structural solutions and technological choices that have been designed so as to repair the damages caused by the 2009 earthquake on the masonry structures, using injection procedures and the use of UHTSS steel with high mechanical properties. The vaulted masonry walls were consolidated by extruded plating with basalt fiber and stainless steel mesh and by the insertion of steel rods in the perimeter walls.

In the internal hall a steel and glass structure has been foreseen. This particular architectural choice will permit to people to use the area during the whole year.
New base isolation Firefighter Station in L’Aquila

**CATEGORY**  Civil and Industrial Buildings

**SERVICES PROVIDED**  Preliminary design

**LOCATION**  L’Aquila- Italy

**PROJECT DURATION**  2014

**CLIENT**  Argelato Immobiliare

**PROJECT VALUE**  -

Progetto definitivo per la gara dedicata alla realizzazione della Caserma dei V.V.F. de L'Aquila, demolita a seguito dei gravi danni provocati dal sisma del 06-04-2009. La proposta, realizzata completamente in ambito BIM, consiste nella realizzazione di un edificio prefabbricato ed isolato sismicamente alla base per mezzo di appositi dispositivi. L'opera che ne risulta è a “danno zero” building.

Preliminary project for the tender for the construction of the fire fighter station in L'Aquila. The old station was demolished after the 2009 earthquake. The proposal, fully designed using BIM process, consists in a prefabricated building. Moreover, the building has been isolated using specific seismic base isolation system. The building designed is also known as a "0 damage" building.
Regione Lazio Parliament building tender

Coding performed the preliminary design for the tender for the construction of the new Regional Parliament building of Lazio region called “La Pisana”. The design foresees two separate buildings linked by an atrium.

Coding si è occupata della redazione del progetto definitivo in sede di gara per la realizzazione della nuova sede del Consiglio Regionale del Lazio presso il complesso detto “La Pisana”. Tale progetto prevede la costruzione di due corpi di fabbrica che si connettono attraverso un atrio centrale che svolgerà anche la funzione di ingresso principale.
Seismic retrofit project of a R.C. schoolhouse. It is a school complex composed by six buildings, built along the time one close to each other. The project foresaw the joining of three buildings together and the subsequent insertion at the base of seismic isolation devices, the joining and the seismic strengthening of the two buildings, which constitute the gym and the demolition and re-construction as steel structure of the interconnecting central building.
Seismic retrofit project for a tender of a Courthouse in L’Aquila, heavily damaged by the 2009 earthquake. The building structure is a R.C. frame of overall dimension in plan of 65x75m, which has one level underground and two stories above ground. The project foresaw mainly the demolition and the rebuilding of the second floor, too much damaged to be recovered, and throughout the building, base isolation devices have been installed by cutting all the columns at parking level.
Seismic retrofit project of the masonry building of Giosuè Carducci Schoolhouse in Rome. The portion of the building involved, of overall dimension in plan of 90x20m, has required heavy measures to strengthen the foundations through a special technique for the execution of the reinforcing piles. Further reinforcement works have been done in order to strengthen of the masonry walls and the floors.
"Sante Laria" Finance Police headquarter

CATEGORY: Civil and Industrial Buildings
SERVICES PROVIDED: Detailed design, Engineering services during construction
LOCATION: Parma – Italy
PROJECT DURATION: 2014-2017
CLIENT: MGM S.p.A.
PROJECT VALUE: € 2 000 000.00

The design consists in renovation works of the “Sante Laria” building. It foresees the construction of a new building nearby the existing one and other minor works. The new building will be a 4 floors building, 16.5 meter high, with a rectangular shape (28.45m x 11.00m) and a total covered area of 315.70 square meter.
Carabinieri headquarter in Bellaria Igea Marina

CATEGORY
Civil and Industrial Buildings

SERVICES PROVIDED
Detail design
Project Management
Detailed design Engineering services during construction

LOCATION
Rimini – Italy

PROJECT DURATION
2012-2013

CLIENT
MGM S.p.A.

PROJECT VALUE
€ 2 000 000.00

Detail design of a concrete multilevel building of 3 floors. The building is 30,70m long and 30,40 m large.
Coding si è occupata del progetto esecutivo degli interventi necessari all’adeguamento del nuovo molo di imbarco “ex Molo C” alle nuove esigenze di utilizzo come area “full non Schengen” dell’aeroporto di Fiumicino Leonardo Da Vinci. Le opere progettate consentono il completo segregazione dei flussi passeggeri non Schengen in partenza e in arrivo da tutti i 14 gate dotati di pontili di imbarco. L’intervento in oggetto consiste in particolare nella realizzazione di quattro corpi in acciaio di collegamento verticali esterni all’edificio ed adiacenti alle facciate longitudinali, contenenti scale mobili, fisse e ascensori, in grado di collegare la quota +8.20 e la quota +15.20 del molo.
Molo C - Leonardo Da Vinci
Fiumicino Airport

**CATEGORY**  Airports

**SERVICES PROVIDED**  Construction supervision

**LOCATION**  Fiumicino - Italy

**PROJECT DURATION**  2015

**CLIENT**  Cimolai S.p.A.

**PROJECT VALUE**  € 150 000 000.00

Coding performed the bill of quantities of the new C pier and of the new front building of Leonardo Da Vinci Fiumicino Airport.

People Mover (GRTS)
Leonardo Da Vinci Fiumicino Airport

CATEGORY: Airports
SERVICES PROVIDED: Concept design
LOCATION: Fiumicino - Italy
PROJECT DURATION: 2013-2015
CLIENT: ADR Engineering
PROJECT VALUE: -

Concept design of the new People Mover (GRTS) in the Leonardo da Vinci Airport Fiumicino. Different solutions have been studied to realize the decks and the connection stations.
"Runway End Safety Area" Pantelleria Airport

**CATEGORY**  Airports

**SERVICES PROVIDED** Detailed design Engineering services during construction

**LOCATION** Pantelleria – Italy

**PROJECT DURATION** 2013-2015

**CLIENT** Enac Ente Nazionale per l’Aviazione Civile

**PROJECT VALUE** € 500,000,000.00

Detailed design and Engineering services during construction of the new upgrading of the runway of the Pantelleria airport, Trapani (Runway End Safety Area). The safety area is located in the runway RWY 08/26.

For the underpass, in a curve position and with a huge clear internal width, a steel tubular structure has been used.
Transport Study
Leonardo Da Vinci Fiumicino Airport

Coding performed the concept study to improve traffic operations and efficiency in the heavily traveled area of Leonardo Da Vinci Airport. The services included transport and road signage study, access road improvements and parking lot expansions.