



NOI BAI-LAO CAI EXPRESSWAY, THE LONGEST HIGHWAY IN VIETNAM

On Sunday, September 21st, 2014, with the attendance of the Prime Minister of the Socialist Republic of Vietnam and the Ambassador of Spain, NoiBai-Lao Cai Expressway was officially completely opened to traffic. For the purpose of this project, Getinsa-Payma, S.L. has participated as Engineer in accordance with FIDIC Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer. Multilateral Development Bank Harmonized Edition. March 2006.

With a total length of 244 km, NoiBai-Lao Cai Expressway is the longest highway in Vietnam. It is expected to promote the development of the northwestern provinces of the country, which are among the poorest in Vietnam, and, at a regional level, of southwestern China. The new route allows shortening travel time between Hanoi, the capital of the country, and the city of Lao Cai, at the Chinese border, from eight to three hours in a comfortable and safe way, in contrast with the previous route, more than 8 hours with serious safety risks. Additionally, it will facilitate closer than actual, sea access through Haiphong Port to products manufactured in Chinese provinces of Yunnan and Sichuan.

The total investment for the civil works has reached 1.030 billion dollars, mostly financed with two loans from the Asian Development Bank (ADB) to the Vietnamese Government. Noi Bai-Lao Cai Expressway is the largest highway project ever financed by ADB.

The works were divided into 8 sections that were awarded to 5 different Contractor companies of Korean (3), Chinese and Vietnamese nationality, while Getinsa-Payma, S.L. provided Project Supervision Services. The works for the Section A1 started on the 1st July 2009 and the first package enter in operation on December 2013. During 2014 the rest of the Packages were opened to traffic.

Technically, the greatest challenges of the project have been related to the geotechnical conditions, as the first half of the expressway runs across the Red River Delta and traverses soft soil areas, which required soil improvement measures as soil replacement, prefabricated vertical drains and sand columns and deep foundations of structures, with more than 90 km of bored piles, with a diameter ranging from 1 to 1.5 m. The northern section of the highway runs parallel to the Red River Fault, one of the largest faults in the world, in a hilly topography. For this reason, many slope stabilization and protection measures were implemented, along with the construction of cuts of more than 100 m, mechanically Stabilized earth walls, mass and reinforced concrete walls, anchoring and shotcrete protections. The project also included the construction of a 530 m tunnel in very complex geotechnical conditions due to secondary faults associated to the Red river fault.

The works comprised more than 45,000,000 m³ of excavation and 50,000,000 m³ of embankment, 120 bridges, including two big bridges, more than 800 m long, over Red and Lo rivers, built using the progressive cantilever method, a 680-m underpass under National Road II, 368 drainage and underpass box culverts, 865 drainage pipe culverts, 4,200,000 m³ of base and sub-base aggregates, 1,600,000 tons of asphalt concrete, 550,000 m of guardrail and 525,000 m of perimeter fencing.



The area affected by the construction covered 2,062 Ha, with an impact on the livelihood and housing of 25,031 families. 99 resettlement areas have been built for affected householders, investing more than 6,000,000 dollars in income restoration Programs targeted to those families who lost 10% of their total productive land or productive assets in order to maintain, and even increase, their income.

Getinsa-Payma, S.L has mobilized more than 250 professionals, including Vietnamese and expatriate experts in different areas: quality control, environment, geology and geotechnical engineering, structures, alignment, drainage, land acquisition, social development, ethnic minorities, gender equity, etc. The company's services have successfully met the Client's requirements. As a result of these efforts, the Ministry of Transportation recognized its merit with three distinctions for the provided services.

INNOVATION, QUALITY, AND PROFESSIONAL EXCELLENCE

The most important feature of the Noi Bai - Lao Cai Highway is its magnitude. The simultaneous construction of 245 kilometers of highway in an area of complicated geotechnical conditions and communications has required an extraordinary effort of all involved parties: the Ministry of Transport of Vietnam and Vietnamese Expressway Corporation (VEC) as the Client, local authorities, as representatives of the affected householders, the Asian Development Bank as financing bank, Getinsa-Payma, SL, responsible for works supervision, and the five main contractors. Despite the difficulties encountered, the Noi Bai Lao Cai highway is a reality that has dramatically changed communications in North Western Vietnam, promoting social development of the, till then, remote provinces and boosting international trade with Chinese southwestern provinces of Yunnan and Sichuan.

Technical difficulties

The project is, in its first 120 km on the Red River Delta, characterized by a flat terrain but with soils of low bearing capacity. The main **technical difficulty** in this area has been the treatment of soft soil areas: 22.5 km of embankments, all of them located within 90 km, have been raised on areas treated by different methods.



From km 79, the road runs parallel and very close in its right bank to the Red River, which runs embedded in a fault more than 1000 km long with straight alignment NW-SE. From km 120 to the end, the terrain becomes very rough and with very complicated geotechnical characteristics due to the tectonic condition of the area. In addition to the stabilization measures, all cuts are protected against erosion caused by the torrential rains, common in the subtropical climate areas.

The absence of a road network on the right bank of the Red River from the city of Yen Bai, at km 120, has greatly conditioned the construction, due to the difficulty to access the work site for equipment and staff. During the first three years of work, the inspection of the 8 sections in which the work was divided, took three days of work.



Management and Communication

To address the simultaneous construction of 245 km, the project was divided into eight sections, A1 to A8, from Noi Bai (Hanoi) to Lao Cai. Works supervision was organized by arranging work four offices located in the capitals of the provinces, Vinh Phuc, PhuTho, Yen Bai and Lao Cai plus an administrative office in Hanoi.

250 professionals were mobilized simultaneously, and located in the four major offices and 5 sub offices along the 245 Km. A total of 427 professionals have participated in the supervision works over the five-year project.

The official language of the project is English, although all reports and correspondence should also be translated into Vietnamese. This has been a great challenge to maintain quality and excellence: besides the skilled translators, engineers responsible for each area have had to supervise the translations to maintain the quality and reliability of reports.

Effective communication has been a major challenge, as, at a meeting, at least three languages were spoken: English (official language), Vietnamese (spoken by the Client and the contractor of the section A8 Vinaconex), the primary language of main Contractor (Korean or Chinese).

TRANSPARENCY AND INTEGRITY IN THE MANAGEMENT AND PROJECT IMPLEMENTATION

In order to minimize the adverse effects of the project in terms of loss of private and communal property and income means, two programs have been carried out:

- i) Resettlement, dedicated to compensate all those affected by the expropriation of their homes
- ii) Income Restoration Program, aimed at all those households that lost, due to the project settled, more than 10% of their usual income, due to the expropriation of agricultural land or other livelihoods.

These two programs have paid special attention to improve the status of the most vulnerable groups: ethnic minorities, present in the provinces of Yen Bai and Lao Cai, female households, pensioners, war invalids and people with low incomes.

In addition, all public facilities affected have been rebuilt to improve its characteristics. So, new schools, markets and social and community centers have been built within the project.

In all the 74 affected districts, grievance mechanisms were established for affected households to address if they considered that their rights were not being respected. All claims have been registered and resolved according to the ADB policy on involuntary resettlement.

The total investment in land acquisition, construction of resettlement areas and IRP for the affected households has been 140 million euros.

The income restoration programs have included training and donation of goods or materials needed for activities such as breeding cattle, pigs, rabbits, pigeons, fish, chickens, ducks, repair of motorcycles and bicycles, workshops sewing, carpentry, etc. The repair program includes a monitoring phase to ensure that the objectives are being achieved.

Getinsa-Payma, S.L. has contributed to this process, together with two international and five local specialists in relocation and social development, a specialist in gender equality and a specialist in ethnic minorities, dedicated exclusively to safeguard the rights and improve the conditions of affected householders.

All activities related with Resettlement and Income Restoration Programs have been closely monitored by ADB through its Vietnam Resident Mission and a safeguard specialist in order to assure the fulfillment of ADB policy on involuntary resettlement.

In order to keep the transparency and integrity, Getinsa-Payma, S.L. has done continuously audits to the whole laboratories, batching plants, and other facilities along the project. The Vietnamese Government has sent also, different organisms to check and verify the quality of the materials and the construction works on site.

SUSTAINABILITY AND RESPECT FOR THE ENVIRONMENT

Getinsa-Payma during the development of the NoiBai-Lao Cai Highway Project in Vietnam, has had permanently in consideration the environmental and social aspects in all our activities, constituting basic principles, placed in the highest level of our concerns.

These principles, included in some tasks derived from the specifications of the contract, are an inherent part of Getinsa-Payma staff's principles and belong to the spirit with which the company undertakes the projects in less favored countries. This social and environmental raising awareness has been revealed in our whole work and it also could have been demonstrated in several specific parallel activities, as follows.

- Just since the beginning of the contract, Vietnamese environmental specialists were trained by senior specialist from GETINSA, who was in charge of environmental concernings during the whole period of contract.
- There have been kept during the whole period of consultancy the environmental teams and social specialists, so that the technical and constructive aspects were always related to the environmental and social items, being feasible in this way to give solutions to the affections that in every moment could arise.
- Environmental specialists, under Getinsa-Payma specialist direction, developed a complete procedure to assure the environmental protection and the right implementation of the mitigation measures, according to the previous environmental studies and documents, the terms of reference for the contractors, national laws and regulations and Asian Development Bank environmental policy and specifications.
- The company has given seminars and workshops to involved parts in the project. For example, there were developed seminars directed to all construction workers and responsables on site in which they were instructed on basic measures and behaviours for environmental protection, healthy and sanitary measures in the workers' camps and measures to guarantee their own safety on site.
- Getinsa-Payma has paid particular attention to the small affections that the project was exercising on the local population, requesting contractors for solutions, working as intermediaries between all involved parts, in order to favor that these solutions were applied to the major possible briefness and in the most profitable conditions for the affected persons.
- International environmental specialist from Getinsa-Payma prepared and imparted several seminars to the pupils in an important school in Hanoi, about environmental topics and concernings. This activity was developed with pupils from 12 up to 17 years age.

