TRANSMIT WORLD
Mobility - Infrastructures - Transport - Tourism - Logistics - Energy - Telecommunications

Volume 6 Issue 1 May 2017

Summary/Sommario

Editorial/Editoriale

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Observations regarding the project of stable crossing of the Strait of Messina and its road and rail connections on the Calabria and Sicily slopes

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Keywords: the road crossing project, the railway crossing project, feasibility and economic viability

Abstract

The present article discusses the issue of the problems around the Strait of Messina as well as the history of the Company of the Strait of Messina ("SdM") which was established in 1981 in implementation of Law no. 1158/1971 to design, implement and manage the stable connection between Sicily and the Continent. This company was financially involved with Italstat and IRI with 51% and State Railways, ANAS, Sicilian Region and Calabria Region, with equal percentages of 12.25% each. From that moment on, the Company began to entrust specialized planning and specialist consultancy.
The main possibilities and numerous projects of stable connection between Sicily and the Continent, studied to date, and their advantages and disadvantages have been analyzed by the author of the article. The characteristics of the four most striking projects are revealed as follows:

1) Underwater submarine tunnels, which can be realized at the narrowest 1 km wide stretch between Ganzirri and Villa San Giovanni where the average depth of the sea is 81 m, reaching a maximum of 115 m. This threshold is also called "Strain Seat", where standard tunnels can be constructed using Tunnel Boring Machine as it is on the mainland. With this technique the tunnels could have been made at least 150-170 m below sea level, but this solution was discarded due to the excessive development of the junction ramps with respect to the length of the crossing and the construction costs judged extremely Elevated and valued at much higher value than any type of bridge;

2) Tunnels on the bottom of the sea and underwater have not been judged feasible in the "Sella dello Stretto" zone, as in this area the current and sea conditions would make the construction unworkable. They were judged as possible further south where the distance between the banks is about 6 km and the depth of the sea is about 300 meters. However, these solutions have been discarded for various reasons, including:
   a. Difficulties and risks associated with a long underwater construction in open sea waters, with technologies equal to or beyond current limits;
   b. Uncertainties in determining a reliable estimate of costs, which imply values multiple times higher than those of any type of deck;
   c. International Council statements: "The underwater tunnel has many unexplored and untested features and introduces unpredictable environmental difficulties that make costs and construction times unpredictable, and therefore feasibility can be questioned."
3) Multiple-deck bridges have been judged to be feasible but discarded to avoid the risk of collision of ships with pylons due to the particularly intense sea currents at the "Sella dello Stretto";
4) 3,300 m single bridge, judged between 1986 and 1987 as technically feasible and economically viable.

In 1992, the “SdM” presented the "Maximum Project" of the single deck suspended bridge of 3,300m, approved by the Superior Council of Public Works in 1997. After several technical and economic studies requested by CIPE and favorable opinion of a specially selected Advisor in 2002 was set up the "Preliminary Project", which has been regularly submitted to the "Environmental Impact Assessment (Law Objective 443/2001)" as of 16/01/2003. In 2003, the cost of this project was estimated at 3,079 million euros for the construction of the bridge and 1,431 for the construction of road and rail connections, plus 333 million for the preliminary works for a total of 4,843 million euros.

In the event that it was not possible, within a short and short time, to obtain from the competent authorities all the necessary approvals for the launch of the "Executive Planning" of the Bridge on the single strand and to find the funds needed to fund the project, the author suggests, as appropriate and reasonable solution, that the Italian Government consider the possibility of:

1. Separate road, rail and road crossing for economic, safety, caution and complementary reasons. This would avoid pointing to one single crossing that may not always be available and therefore be interrupted for unforeseeable times as a result of various events;
2. Financing and realization within the TEN-T corridors after verifying their feasibility and economic viability:
   a. The road crossing project (Tunnel subalveo) connected with the Sicilian and Calabrian highways; It is recalled that in the 80s of the last century several bridges have been discarded to avoid the risk of collision of ships with pylons due to the particularly intense sea currents at the "Sella dello Stretto";
   b. The railway crossing project (Tunnel subalveo) connected to both the existing rail lines and the future AV / AC line

The author underlines that the important thing is, however, to accelerate the start of the work for the crossing of the Strait of Messina, in order to create as many as thousands of jobs as possible in an area that is now too long suffering from the point of view of employment and territorial and social cohesion.