

MILLAU VIADUCT, MILLAU, FRANCE

OVERVIEW

LOCATION: SOUTHWEST FRANCE
SCOPE: INTER-REGIONAL
TRANSPORT MODE: ROAD
PRINCIPAL CONSTRUCTION: BRIDGE
NEW LINK: YES

PRINCIPAL OBJECTIVES

LOCAL ECONOMIC DEVELOPMENT
(INTER)NATIONAL LINK
ACCESSIBILITY
EMERGENT OBJECTIVES:
LOCAL TRANSPORT LINK
NO COST TO PUBLIC SECTOR

PRINCIPAL STAKEHOLDERS

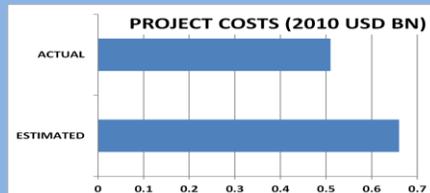
CLIENT: AIOA (STATE ROAD AGENCY)
DESIGNERS: VIRLOGEUX/FOSTER & PTNRS
CONCESSIONAIRE:
EIFFAGE (CEVM/EIFFAGE TP/SETEC)

PLANNING AND IMPLEMENTATION

APPROX. PLANNING START DATE: 1987
CONSTRUCTION START DATE: 10/2001
OPERATION START DATE: 12/2004
MONTHS IN PLANNING: 84
MONTHS IN CONSTRUCTION: 38
PROJECT COMPLETED: THREE MONTHS
AHEAD OF SCHEDULE

COST (IN 2010 USD)

PREDICTED COST: 0.66BN
ACTUAL COST: 0.51BN
PROJECT COMPLETED:
22% UNDER BUDGET
FUNDING: 22% PUBLIC: 78% PRIVATE



INFRASTRUCTURE QUANTITIES

LENGTH: 2.46KM
COST PER KM (IN 2010 USD): 0.21BN

PATRONAGE

FORECAST TRAFFIC
10,046 VPD
ACTUAL TRAFFIC
12,055 VPD



INTRODUCTION

The Millau Viaduct is part of the A75 motorway, a 2.46km tolled bridge across the Tarn River valley in southern France. It opened in 2004 and is the world's longest cable-stayed bridge.

BACKGROUND

The main objectives of the project were to provide a link in the national and international road network, and to promote economic development and tourism locally by improving access to the area. It was also intended to relieve local bottlenecks in the town of Millau.

Crossing the valley presented a technical challenge and the state roads directorate, *Arrondissement Interdepartemental des Ouvrages d'Art (AIOA)*, was involved in preparatory research, feasibility studies and evaluation of options over a period of ten years. In 1989, a route providing access to the town of Millau found local public support and was chosen over three alternatives. Technical solutions were developed, with new concepts and detailed designs invited through two design competitions in 1993 and 1994/96). The decision to supplement the state's expertise with external design inputs was unprecedented at that time.

Planning approval was given (in 1994) through the *déclaration d'utilite publique (DUP)* mechanism, preceded by a public inquiry. In 1998, a change in government and shortage of public sector funding led to a decision to adopt a private sector 'build-finance-operate-transfer' scheme. Although this decision reflected the national and European context, the introduction of a toll payment caused some political concern and so led to a second public inquiry and *DUP*.

The project was the first motorway scheme to benefit from two government policies, requiring 1% of the project budget to be allocated to regional economic development and encouraging motorway drivers to stop at nearby *villages étapes*. The viaduct has become a tourist attraction in its own right, and industrial development in the area has benefited from the 1% policy.

CHARACTERISTICS

The cost was estimated at EUR 0.4bn in 1998 (USD 0.66bn in 2010 pricesⁱ). The final project cost was substantially less: EUR 0.345bn in 2004 (USD 0.51bn in 2010 prices), including EUR 0.025bn in state-funded preliminary design and site works.

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TIMELINE

CONCEPTION: 1987: FEASIBILITY STUDIES BEGIN

CONCEPTION: 1988: EXPERT COMMITTEE ESTABLISHED

CONTEXT: 1989: AIOA ESTABLISHED

INCEPTION: 1990: FOUR ROUTE OPTIONS EVALUATED. ROUTE SELECTED

INCEPTION: 1991: DETAILED ROUTE SELECTION

INCEPTION: 1993: CALL FOR DESIGN PROPOSALS, ADVISED BY INTERNATIONAL COMMITTEE OF ARCHITECTS AND ENGINEERS. DESIGN APPROVED

INCEPTION: 1994: DETAILED DESIGN COMPETITION ANNOUNCED. FIRST DÉCLARATION D'UTILITE PUBLIQUE

INCEPTION: 1994-96: FIVE ARCHITECT/ENGINEER GROUPS PREPARE DETAILED DESIGN PROPOSALS

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INCEPTION: 1996: FOSTER/SEGELERG-EEG-SERF DESIGN CHOSEN

CONTEXT: 1998: CHANGE IN GOVERNMENT, PUBLIC SECTOR FUNDING CONSTRAINTS

CONCEPTION: 1998: BFOT ROUTE ADOPTED

INCEPTION: 1999: SECOND DÉCLARATION D'UTILITE PUBLIQUE ALLOWS FOR TOLL SYSTEM AND CONCESSION CONDITIONS

INCEPTION: 1999-2000: TENDERS INVITED FOR BFOT CONCESSION

INCEPTION: 2001: EIFFAGE WIN CONTRACT

CONCEPTION: 2001: EIFFAGE DECIDE TO BUILD IN STEEL NOT CONCRETE

CONSTRUCTION: 2001 (OCT): CONSTRUCTION BEGINS

CONSTRUCTION: 2002: EXPERT COMMITTEE ESTABLISHED TO CONTROL CONSTRUCTION

DELIVERY: 2004 (DEC): CONSTRUCTION COMPLETED. VIADUCT OPENED TO TRAFFIC

The Viaduct is a multiple cable-stayed span bridge, based on the competition-winning design by Norman Foster & Partners and Segelerg-EEG-SERF, which itself derives from an initial concept by French engineer Michel Virlogeux.

Compagnie Eiffage du Viaduc Millau is the concessionaire: the concession period is 78 years (including 36 months construction and three months without penalties), although the structure is guaranteed to last 120 years. Fosters and Segelerg were retained as architect and engineer respectively.

The concession contract required the concessionaire to structure its organisation along the traditional French MOA/MOE lines, with the 'client' or *maitrise d'ouvrage* (the body operating the completed infrastructure) separate from the 'contractor' or *maitrise d'oeuvre*; the role of the state was reduced to that of overall control, with advice provided by an expert committee.

Environmental mitigation measures included landscape design, restitution and reforestation of access roads and restoration of traditional farmhouses.

TIMELINE ISSUES

The concessionaire's decision to use prefabricated steel construction rather than concrete helped to improve the speed, and also the safety, of the construction process by reducing the amount of time spent in high-altitude work on-site. The project was completed three months ahead of schedule.

FUNDING

The main funding source was Eiffage's equity contribution of EUR 270m, with a loan of EUR 50m from the European Investment Bank providing the balance of the EUR 320m construction costs. The state funded preparatory works to the value of EUR 25m and the remaining works on the A75.

There are no data on forecast and actual revenue available in the public domain. However, toll charges (the main source of income for Eiffage) are regulated by the concession agreement and linked to inflation. The concession period can be reduced to a minimum of 44 years if the revenue generated exceeds EUR 375m during that time.

Eiffage refinanced the project once construction was complete.

ⁱ Costs have been converted to USD at 2010 prices, using historic inflation rates and current exchange rates, to allow comparison between projects.