

NEW RIVER PROJECT: FROM A VE LEARNING EXERCISE TO REAL LIFE

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ABSTRACT

In a Value Engineering training class at El Paso, TX, we took with us the New River Project just as material to work with it. Our Value Engineering training team (with people of Texas DOT, Mexican Federal DOT and Department of Public Works of Baja California) proposed some changes to rise project's value. Back in México, project process had to follow its traditional way without any application of VE methodology, ending at the same conceptual solution. Now we know the importance of this methodology and the urgency of learning and promoting it to be included in our project process.

INTRODUCTION

Mexicali is located at Baja California, Mexico at the south border of California (see Fig. 1). This area has had an accelerated development, specially after North America Free Trade Agreement (NAFTA), for that reason its infrastructure must be improved. In the nineties, preventing this situation, urban infrastructure planning has been emphasized. This was taken to define roads on short, medium and long terms; after "Road and Urban Transportation Integral Study of Mexicali City" (Ref. 1), where it was noticed the necessity of constructing a road crossing the city north-south and south-north bound

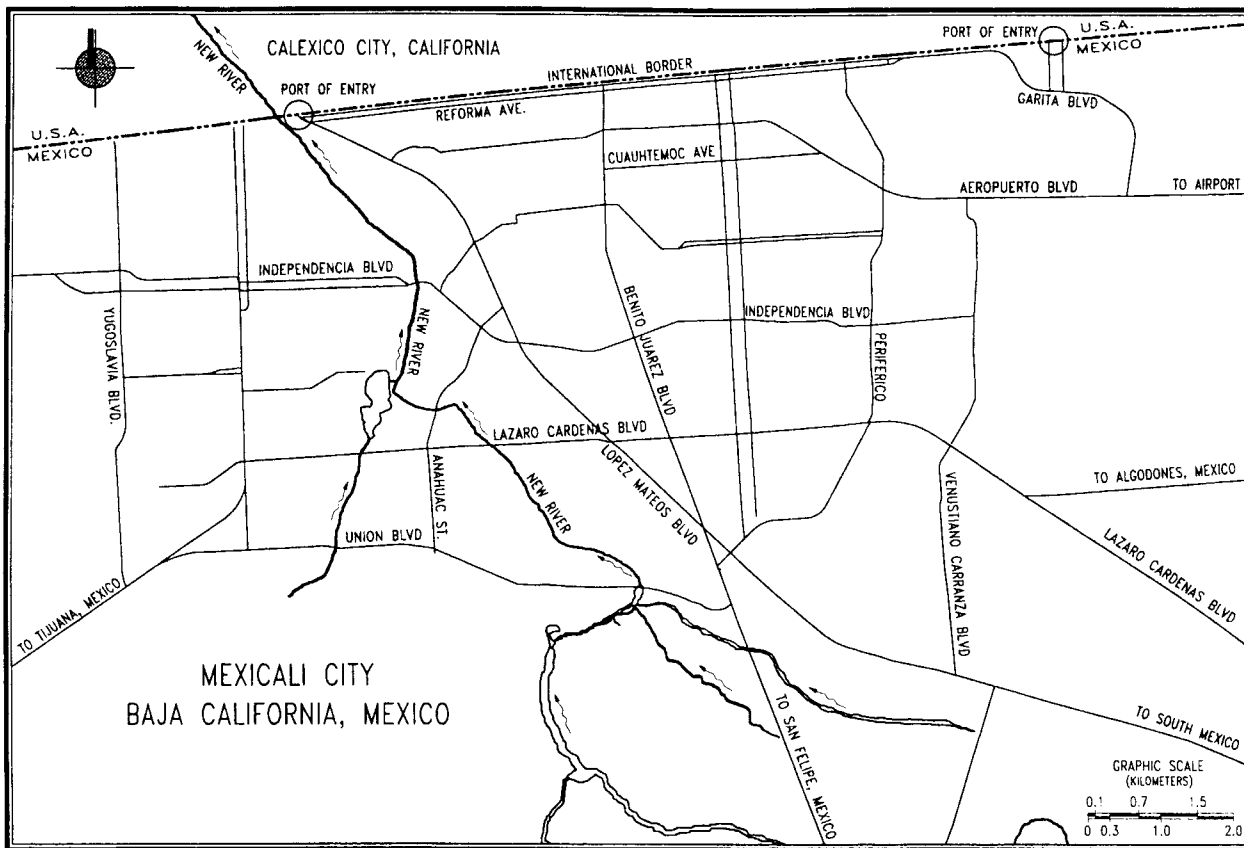


FIGURE 1: MAIN ROADS AND NEW RIVER

along the New River, beginning at Port of Entry of Calexico, CA. For that reason, the New River Boulevard project was done.

LOCAL URBAN PLANNING

In the early nineties, based on planning studies of urban development, the local authorities redefined the named "Urban Development Plan of Mexicali City" (Ref. 2), in order to conduct the city growth toward a rational development on short and median terms; providing the elements to make decisions on defining of strategies and investments to cover urgent needs of community.

Besides that, in 1994, the University of Baja California made the Road and Urban Transportation Integral Study of Mexicali City, which was required by federal and state governments. This study indicated proposals regarding how to improve the existing levels of service of road system and urban transportation of Mexicali City, as a fundamental element of the city development according to existing and future regional growth and modernization needs.

This Study reviewed several alternatives of road system improvement and simulated traffic behavior on median and long terms. After the alternative evaluation, the construction of a primary road crossing all the city north-south and south-north bound along the New River, beginning at Port of Entry of Calexico, CA was economically, aesthetically and technically feasible; for that reason local government accepted the New River Boulevard as a high priority project.

In 1996, as a product of previous planning and taking in account development plans and the Road and Urban Transportation Integral Study of Mexicali City, "New River Development Program" (Ref. 3) became a reality, this program includes lands located in areas nearby the New River stream bed which collects industrial, sewer and storm drainage discharges on its path across the city, and it runs north bound flowing in the Salton Sea (California). The philosophy of this program is to rescue adjacent lands and develop them, and to treat New River development as an opportunity to eliminate an existing urban barrier, integrating this land to the rest of the city, giving recreational spaces and

support to nearby areas, improving its infrastructure and proposing solutions to new intersections and interchanges with streets crossing the New River.

TECHNOLOGY EXCHANGE PROGRAM

The road system planning of the northwest areas of México is not an isolated problem because there are multiple interactions with road system planning of southern California due to the large volume of vehicles crossing the international border while they do their daily activities. Very related with this, comes the U. S.-Mexico Border Technology Exchange Program (BTEP) which has been brought about by a number of national, regional and local initiatives. All of the initiatives have demanded the creation of new working relationships, better coordination of transportation infrastructure projects, and a heightened appreciation of the cultural differences between the U. S. and Mexico.

VE LEARNING EXERCISE

In 1995, as a result of the BTEP, we received an invitation from the Department of Transportation of California (Caltrans) to assist to a Value Engineering training class at El Paso, TX; it was organized by the Texas DOT. The VE trainer on this class suggested to take a local, interesting and current project to exercise VE with real data, thus, learning process would be much more efficient; therefore we took the New River Project just as a material to work with it.

The reason why we took this training class was the necessity to learn a type of optimization methodology to be applied in México to our project process; therefore, expecting to be able to design higher quality projects.

First we learned all those basics concepts of Value Engineering methodology, after that, we proceeded to make workteams to apply theoretical knowledge. Our VE training team included engineers from Texas Department of Transportation, Federal DOT of México (SCT) and Department of Public Works of Baja California (SAHOPE). This team worked with plans, study reports, traffic data and quantities of New River Project.

After applying the Function Analysis System Technique, the proposed basic functions in this project were to have a north-south primary road, and to relief nearest streets and boulevards. The proposed

secondary functions in this project were to improve aesthetics and to promote use of adjacent areas along the New River.

In speculation phase, our team developed several alternatives for this project, after that, we proceeded to evaluate them by consensus. As a result, our team proposed some changes to the New River Project in order to rise the value of the project (see Fig. 2), such as:

- Divide the New River Boulevard in two sections of approximately equal length, the north section remains as a primary road. Delay construction of the south section and change its hierarchy as a secondary road.
- Change the route of the New River Boulevard, adding a south-east segment to the remaining north section to continue along the river to the southern areas of the Mexicali City.
- Decrease the number of lanes at the south end of this new segment.

These recommendations represented a reduction to construction costs, in addition, they raised many functions of the original project; these recommendations offered major benefits to the community hence now it will be possible to construct 1.7 Kilometers more of road, serving more area, improving New River stream bed in its whole length at urban areas and promoting development of lands nearby the river. Summarizing, with these recommendations the value of the project was greatly increased.

After our team presented this recommendations, Mr. Clyde Slemmer (our trainer) asked if it could be feasible that those changes would be applied to New River Project, and we answered that it seemed very possible.

Back in Baja California, México, project process had to follow its traditional way, with meetings and deliberations without any application of Value Engineering methodology, resulting at the same conceptual solution that our VE training team had obtained.

Nowadays, this project is being constructed conceptually as our VE training team recommended. Therefore, we can say that the New River Project came from a VE learning exercise to real life, and it shows this lack of application of Value Engineering methodology to our project process in our country,

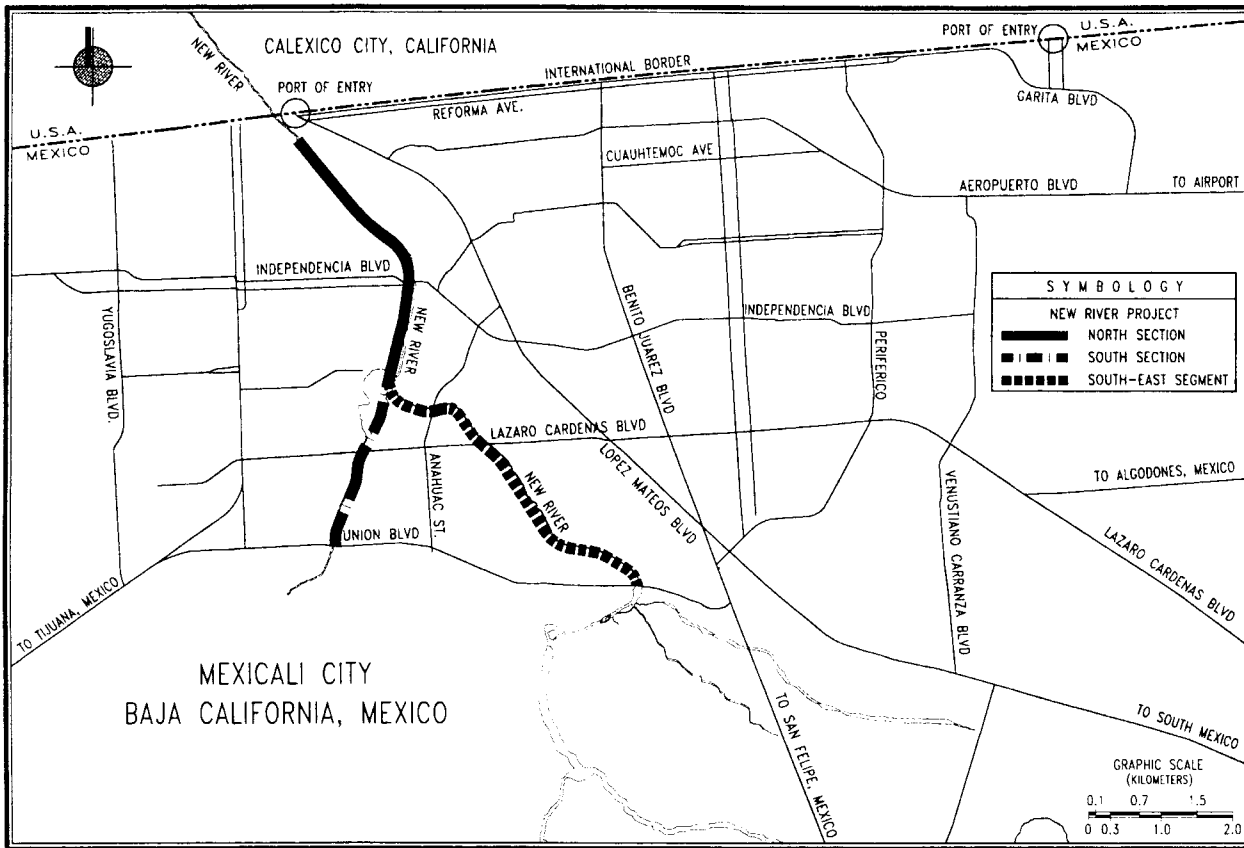


FIGURE 2: NEW RIVER PROJECT ALTERNATIVES

nevertheless, at the same time, it shows great opportunities to promote and introduce the feasibility and advantages of application of this methodology in México.

RELEVANCE OF APPLYING VE

We think it will be a great opportunity to show how VE methodology can be promoted on different levels of Baja California's Government, educational organizations and private corporations, in México and other countries.

Baja California, México has a high potential for application of the Value Engineering methodology, nevertheless, this must be initiated promoting all the benefits of its application to our project process and after that it could be possible to start teaching this methodology.

In México, it will be necessary to agree that a consensus elaborated by expertises on different areas regarding to a specific project, will provide recommendations that may offer a benefit to a particular project, for instance, reducing construction

and maintenance costs or improving project functions or both. Therefore, Value Engineering will have more opportunities to be considered as a methodology that can be satisfactorily included in our project process, as an intrinsic and fundamental element of itself.

Once benefits from VE have been known, it would be possible that, having the necessity of assuring the application of VE, this methodology could have great opportunities of being included as a mandatory standard also, like it has been done in some states of the United States.

It is very important to notice all the benefits, such as time and money savings that can be obtained adopting and applying the Value Engineering Methodology to Transportation projects, to other engineering areas, or in general, to any other discipline that uses the optimization of human and material resources.

One way of promoting the use of the Value Engineering methodology in México is to identify all those organisms with feasibility to receive benefits

from VE and those interested to initiate training programs of this methodology to their personnel. To achieve this, it would be very important to consider the role that Mexican and American educational organisms could take, which could contribute with their infrastructure and academic personnel.

The BTEP advances must be reinforced because in this way the U. S. and México will both received benefits. Expected results include the development of professional relationships, ongoing planning and programming processes, and a heightened appreciation of the cultural differences between the U. S. and Mexico. Ultimately, the efforts in these areas will lead to better, more efficient land transportation systems in the border region, in addition, it could be an open gate to exchange experiences.

CONCLUSIONS

It is very important to stablish all those necessary mechanisms to impulse the application of value Engineering in México, not only on transportation areas, but in all different activities that need resources optimization, such as social and commercial. This application must be slow, because we have to prepare technicians with a mentality according to the value discipline and with a great ability to participate beneficially in multidisciplinary groups. A helpful support to achieve this would be reinforcing the intentions of the Binational Technology Exchange Program to continue with training and exchange programs, which could introduce the Value Engineering methodology.

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