

Border Environment Cooperation Commission

Air Quality and Street Paving Project for Naco, Sonora

1. General

1.a Project Type

The City of Naco, Sonora is proposing a public sector project aimed at reducing air pollution, specifically Particulate Matter less than 10 Microns (PM₁₀) through the paving of multiple streets, hence improving the air quality in Naco, Sonora.

This project belongs to the new sectors area, particularly, Air Quality, included in the priorities of the Border Environment Cooperation Commission (BECC).

1.b Project Category

The project belongs to the category of *Environmental Infrastructure Community Projects—Community-wide Impact* and will improve the air quality in the city because of the paved streets, thus creating a positive impact in this community.

1.c Project Location and Community Profile

The project is for the City of Naco, which is the municipal seat for the Municipality of Naco. The City of Naco is bounded by Naco, Arizona (United States). The figure 1 below depicts the location of Naco, Sonora.



Figure 1: Naco location

Demographics

According to the 2005 Second Population and Housing Count carried out by the National Institute for Statistics, Geography, and Information [*Instituto Nacional de Estadística, Geografía e Informática*, INEGI for its initials in Spanish) the City of Naco has a 2005 population estimated at 5,608 people. The economically active population (EAP) is 3,372 people. The population of Naco is distributed into three socioeconomic levels: 37.09% is low-income; 38.12% is middle-income, and 24.79% is high-income. Just over one-third of the population falls into the low-income level, which means that the majority of the population's income is considered adequate.

Services

According to the Naco water utilities department [*Organismo Operador Municipal de Agua Potable, Alcantarillado y Saneamiento*, OOMAPAS for its initials in Spanish), the system provides drinking water to 95.6% of the population, and 89.65% of the population receives sanitary sewage collection and treatment. Existing street paving coverage is 30%.

Solid Waste Collection

According to information provided by the Municipality of Naco, the solid waste department covers almost 100% of its needs of the population in Naco. The collected solid waste is disposed at a landfill located outside the city.

Power (Electricity)

In 2000, according to the INEGI electricity coverage in the city of Naco is 95.83% and just over 90% in the rural areas. The utility providing this service is the Federal Electricity Commission.

1.d Legal Authority

The Municipality of Naco, Sonora, is the project sponsor. The legal attributes of the municipality are governed through Title VIII of the current Government and Municipal Administration Code. The municipality has the responsibility of regulating public services as established in Article 115 of the Constitution of the United Mexican States.

The project is included in the agreements for environmental and quality of life improvement for the border residents, signed by Mexico and the United States. There are four bilateral agreements between Mexico and U.S. related to air, water, land protection and pollution control. The agreements include the following:

- 1983 La Paz Agreement, or Border Environment Agreement
- 1990 Integrated Border Environmental Plan (IBEP)
- 1994 North American Free Trade Agreement (NAFTA)
- Border 2012 Program

The project is in compliance with the spirit of all these agreements and all of them have been taken into account since the beginning of the project.

1.e Project Summary

Project Description

Paving the streets of Naco is necessary to reduce the concentration of PM₁₀ particulates, which may be responsible for causing respiratory ailments in the community. Hence with the objective of finding a solution to the aforementioned problem, the municipality proposes paving 678,120 ft² along a 3.46-Mi stretch, with an average width of 40 ft. The street paving program will be executed by the Public Works Department of the City of Naco.

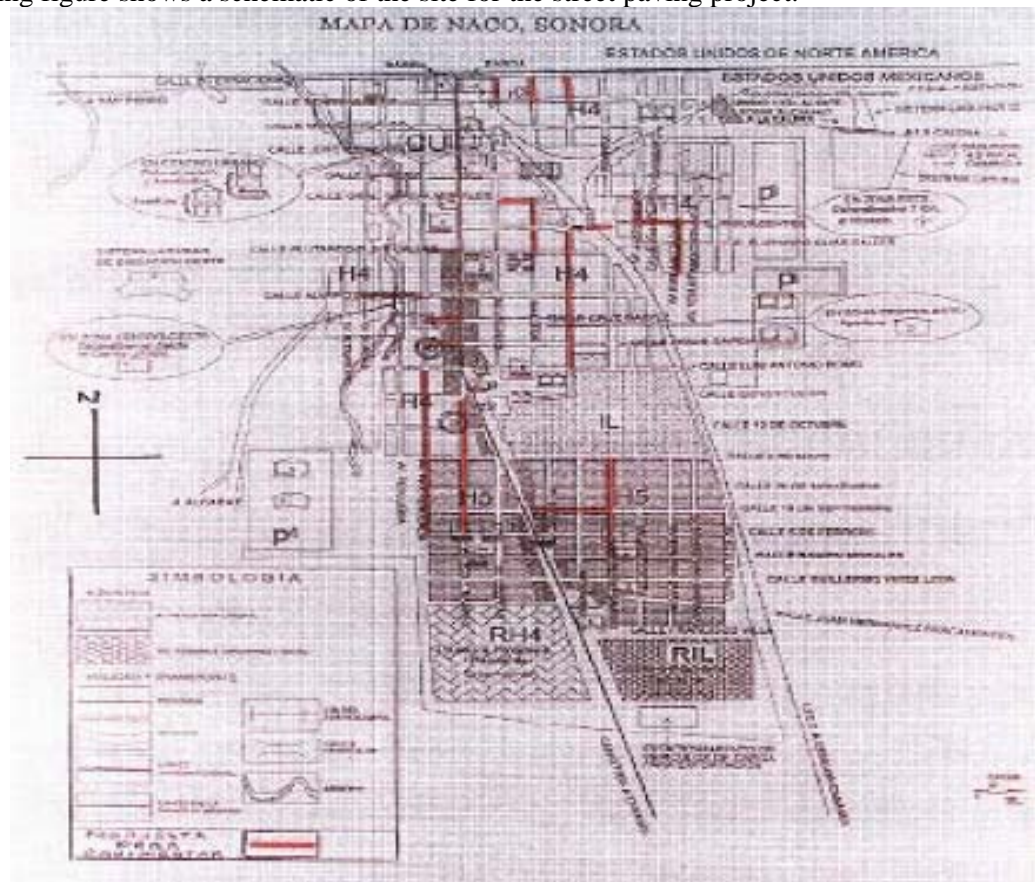
The scope of the project is as follows.

- Paving of 18 city streets.
- 60% of the project area is located within the downtown area and the remaining 40% is located within residential subdivisions.
- 6,000 people will benefit from the project.
- Increase the percentage of paved streets in a first phase from 30% up to 60%.

The project estimated cost is \$10 million pesos.

Project Map

The following figure shows a schematic of the site for the street paving project.



Project Justification

This project is very much needed to reduce the concentration of PM₁₀ in the Naco air-shed. The no-action means that the problem associated with dispersion of PM₁₀ into the atmosphere will be aggravated, a situation that may pose respiratory health problems to the residents of Naco. This is due to the fact that sustained exposure to particulate matter that originates from vehicular fuel combustion and vehicular traffic circulating on unpaved roadways may cause eye and nose irritation and an increase in respiratory problems. Street paving is the only proven and viable alternative to reduce particulate matter produced by vehicle traffic.

The proposed improvements will immediately reduce the amount of suspended particles released due to vehicular traffic circulating on unpaved surfaces as well as the gusty winds that affect the city. These improvements, without a doubt, will be conducive to reduce respiratory system illnesses and allergies, which are rather common in the region.

Currently, 70% of the city lacks paved streets. This situation poses a serious human health problem, particularly in the hot summer months when road surfaces are rather dry due to lack of rain, and the problem is exacerbated when vehicles travel on unpaved roads which coupled with frequent winds, cause fine grained soils to remain suspended, and these particles become in a source of potential respiratory illnesses and source, affecting children and senior citizens.

During the monsoon season, because of the lack of paved roads, surface water ponding becomes a source of disease, particularly for skin-related illnesses whenever people come in direct contact with polluted water.

During this season a third important factor comes into play. Because of the unpaved roads, water surface runoff carries soil particles into the sanitary sewer system causing silting and clogging up of the system, reducing the capacity of the pipes and overflowing manholes, forcing the implementation of activities to remove silted-up sewer lines.

The project will also have a secondary effect, beyond the direct benefit of reducing total suspended particles, by reducing the emissions of burned fuel particulates as a result of reducing the travel time in daily urban commutes.

Important Issues for Certification:

The project falls within the BECC's priority sectors and complies with general criteria.

Pending Issues:

None.

2. Human Health and Environment

2.a Compliance with Applicable Environmental Laws and Regulations

The objective of the project is to improve the air quality pursuant to the Mexican Official Norm NOM-025-SSA1-1993, which establishes the maximum concentration limits for PM₁₀ in the environment.

The project construction will be executed in accordance with Naco's municipal construction codes and ordinances, as well as with the Municipal Urban Development Plan. Additionally, it is expected that the project will not affect protected zones or ecologically sensitive areas, nor there will be changes to the zoning or land use in the areas to be part of the project. During the project implementation, the City of Naco, through its Public Works Department, will oversee that the work is performed in accordance with their construction codes.

Since the improvements will be conducted within existing right-of-ways, it will not be necessary to conduct consultations with the National Institute of Anthropology and History (INAH for its initial in Spanish). Based on the foregoing, it is not anticipated that historic or cultural resources will be encountered during construction or affected by the project, that otherwise would halt the project until the INAH had evaluated any resource found at the site.

2.b Human Health and Environmental Impacts

Human Health Impacts

The community of Naco experiences air pollution problems because of vehicular traffic circulating on unpaved roadways; it is estimated that only 30% of the streets are paved. The fugitive dust identified as particulate matter and specifically that denominated as PM₁₀ can be defined as solid or liquid particles, such as dust, ashes, soot, metal shavings, cement or pollen, that are dispersed in the environment, and that have diameters equal or smaller than 10 µm (1 micrometer is a one thousandth of 1 millimeter).

The determining factor in terms on health is the size of the particles, due to the degree of penetration and residence that they have on the respiratory system. The majority of the particles with diameters greater than 5 µm are deposited in the upper respiratory airways (nose), trachea, and bronchi. Those particles of smaller diameter, have a greater probability of being deposited in the bronchi and alveoli, and as their size is smaller are more harmful.

The human health effects linked to prolonged exposure to particulate matter (particle diameter of 10 µm or smaller) are: eye and nose irritation, increase in respiratory illnesses, aggravation of asthmatic problems, reduction of lung functions, and an increase in symptoms of respiratory problems.

In 1996, the United States Environmental Protection Agency (EPA) published the document entitled "*Air Quality Criteria for Particulate Matter*" (PM AQC), in which among other aspects relative to air pollution due to suspended particles, makes a recount of a series of studies on the effects of those contaminants on human health. This document concludes that the majority of the epidemiological evidence shows an increase in human mortality as a consequence of exposure to particulate matter (PM) present in the atmosphere in both the short and long term.

The EPA document recognizes the complexity of the synergetic effects (linkage with other contaminants, particle size, PM origin, age and susceptibility of exposed population, etc.). That generate significant variations among the diverse studies on human exposure to atmospheric contaminants such as PM. Nonetheless, it concludes that the referenced studies give ample reason to be concerned for the existence of detectable effects on human health that can be attributed to exposure to PM₁₀ in the environment, even at levels below the official norm thresholds.

The Mexican Official Norm **NOM-025-SSA1-1993** determines the maximum concentration limits to protect public health, these being: a) 50 µg/m³ - annual average for chronic exposure; and b) 150 µg/m³ in 24 hours once per years for acute exposure.

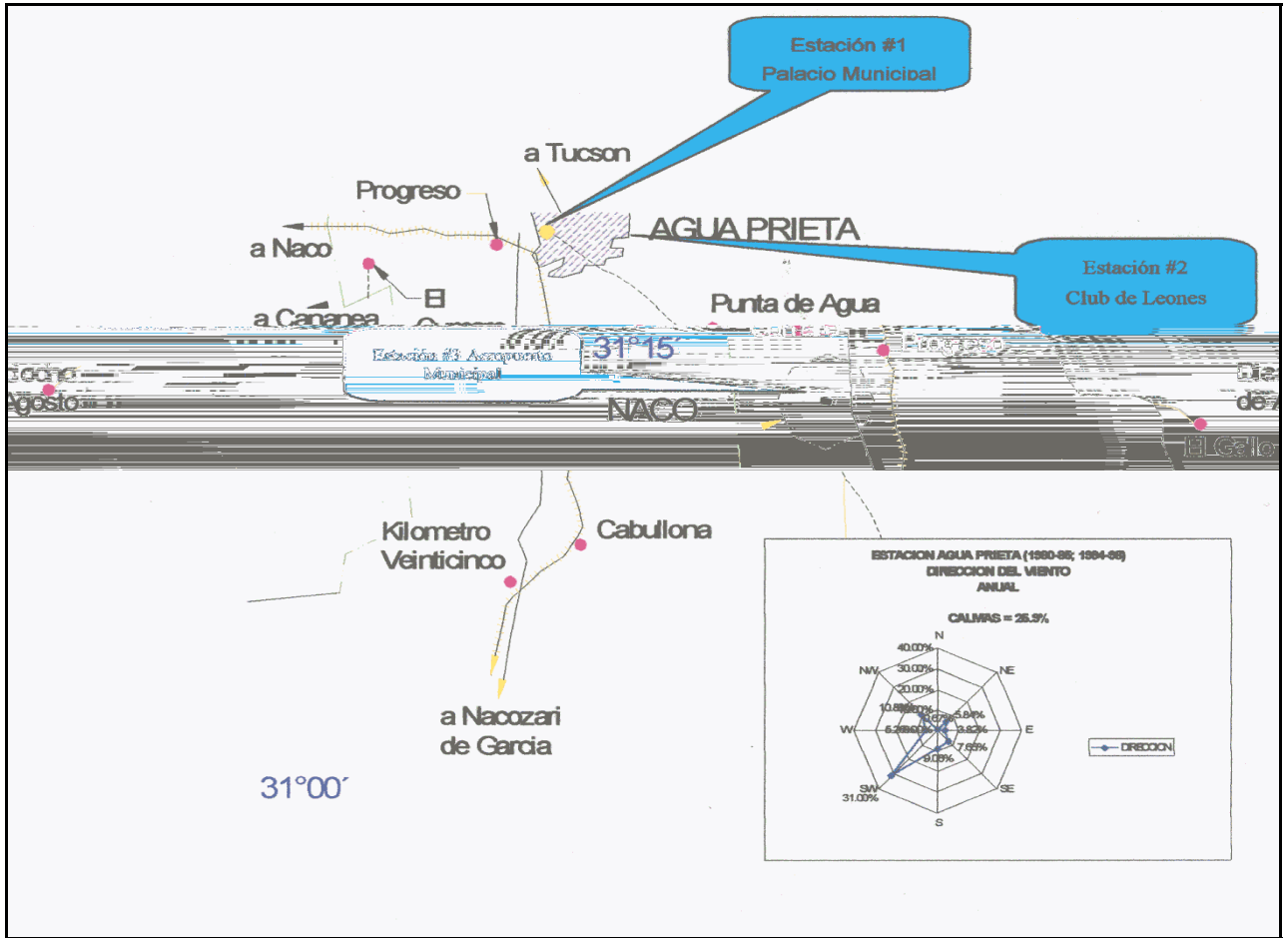
Presently, the City of Naco does not have specific studies on air quality, however, it considers that the particle emissions to the atmosphere will be significantly reduced as in the case of Agua Prieta, which is located about 22 miles to the east of Naco, since they have similar conditions.

In June 2000, the Arizona Department of Environmental Quality (ADEQ) presented a study on the Air Quality of Agua Prieta to the Planning and Social Development Department of Agua Prieta. This study reports the findings of air quality in Agua Prieta, which identify that the main source of air pollution is the lack of paved streets and with street paving the generation of dust would be reduced by 99%.

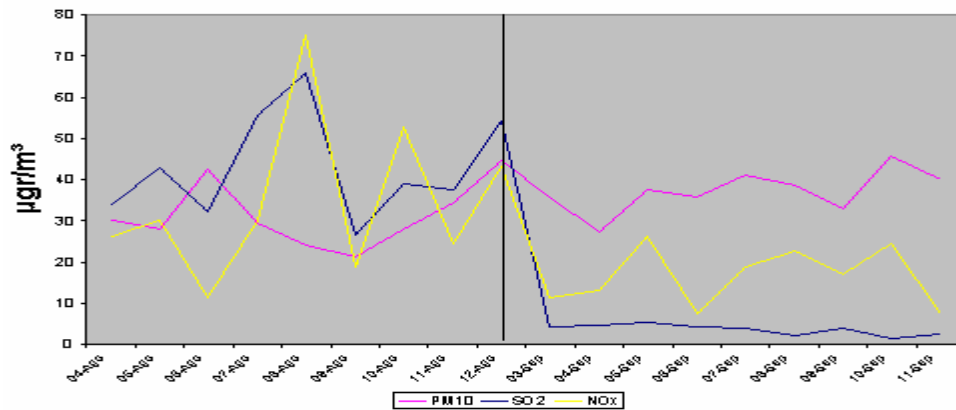
The following criteria were taken into consideration to position pollution measuring stations: wind rose in the zone, safety, access availability and electricity and permits to install the stations with the purpose of insuring that the measurement results were representative of the project's zone of influence. The final monitoring results are the following: maximum concentrations measured during the first monitoring period were 125,76 µg/m³, 75,2 µg/m³ and 66.0 µg/m³ for SO₂, NO_x, and PM₁₀ respectively for monitoring stations 2, 1 and 1; while the maximum concentrations for the second period were 10,48 µg/m³, 26,3 µg/m³ and 75.1 µg/m³ for SO₂, NO_x, and PM₁₀ respectively, determined for monitoring stations 3, 1 and 2. These values are below the corresponding maximum permissible limits established in the Mexican norms for air quality.

The following tables and charts show the results of the study.

Location of monitoring stations



Average concentrations of SO₂, PM₁₀ and maximums for NO_x



Air quality study results in the project's area of influence

Date	Measured Concentrations (µg/m ³)											
	SO ₂				NO _x				PM ₁₀			
	1	2	3	Avg	1	2	3	Max	1	2	3	Avg
4-Aug	69,65	31,44	1,31	34,13	24,4	26,32	1,88	26,3	36,7	34,2	19,8	30,24
5-Aug	79,26	45,85	3,93	43,01	30,1	5,64	1,88	30,1	35,2	nf	20,9	28,07
6-Aug	40,61	56,33	0,00	32,31	11,3	5,64	0,00	11,3	60,2	40,0	27,0	42,40
7-Aug	78,93	86,46	1,31	55,57	30,1	3,76	1,88	30,1	25,5	42,9	19,7	29,37
8-Aug	71,18	125,76	1,31	66,08	75,2	5,64	1,88	75,2	37,4	22,0	13,4	24,25
9-Aug	79,04	1,31	0,00	26,78	18,8	1,88	3,76	18,8	23,5	20,9	19,4	21,24
10-Aug	79,58	32,75	5,24	39,19	52,6	1,88	16,92	52,6	34,1	33,4	16,4	27,98
11-Aug	81,22	30,13	1,31	37,55	24,4	3,76	13,16	24,4	52,5	29,5	21,5	34,54
12-Aug	82,42	65,50	14,41	54,11	43,2	5,64	13,16	43,2	66,0	59,5	8,6	44,73
1st Camp,	73,54	52,84	3,20	43,19	75,20	26,32	16,92	75,20	41,24	35,30	18,54	31,43
	Average				Maximum				Average			
3-Sept	5,13	1,31	6,55	4,33	9,4	11,28	5,64	11,3	40,3	58,6	8,4	35,77
4-Sept	5,13	1,31	7,86	4,77	7,5	13,16	5,64	13,2	29,1	46,7	6,2	27,33
5-Sept	5,24	0,00	10,48	5,24	26,3	9,40	1,88	26,3	44,5	58,0	10,7	37,76
6-Sept	2,40	1,31	9,17	4,29	5,6	7,52	1,88	7,5	44,8	43,9	18,4	35,68
7-Sept	7,53	1,31	2,62	3,82	18,8	5,64	1,88	18,8	44,0	75,1	4,2	41,12
8-Sept	2,62	2,62	1,31	2,18	9,4	22,56	3,76	22,6	54,7	42,2	19,7	38,84
9-Sept	2,62	1,31	7,86	3,93	16,9	5,64	5,64	16,9	45,1	44,3	9,8	33,08
10-Sept	2,62	1,31	0,00	1,31	24,4	1,88	1,88	24,4	55,4	63,8	17,6	45,58
11-Sept	5,02	1,31	1,31	2,55	7,5	1,88	1,88	7,5	45,3	53,6	21,9	40,23
2nd Camp	4,26	1,31	5,24	3,60	26,32	22,56	5,64	26,32	44,80	54,01	12,98	37,26
	Average				Maximum				Average			
Both	38,90	27,07	4,22	23,40	75,2	26,3	16,9	75,2	43,02	44,66	15,76	34,35

Note: The NO_x concentrations were measured as NO₂.

At the request of the municipal authorities of Agua Prieta, Sonora, the Arizona Department of Environmental Quality (ADEQ) carried out a PM₁₀ emissions analysis for the streets that have been proposed for the paving project in said city. The purpose of this study was to determine the benefits related to the paving of several routes in different points in the city, expressed in terms of air emissions reduction. In addition, consideration was given to determine if there are other routes that by being paved, could represent a major benefit than that originally proposed by the municipal authorities.

The results obtained by the modeling carried out by the ADEQ show that the total PM₁₀ emissions, which, currently originate in the streets proposed by the Agua Prieta municipal authorities are approximately 125 tons/year. It is estimated that by the end of the first year of having executed the project, the total PM₁₀ emissions for the same streets would be reduced 54% to 68 tons/year. At the end of the second year of the project, it is estimated that the PM₁₀ particles will add up to a total of 29 tons/year; and it is estimated that at the end of the project when the 34 kilometers of proposed streets have been paved, the total PM₁₀ emissions will be 0.08 tons/year. As part of this project, just over 3.4 mi of roadway that be paved in Naco, hence the reduction of emission of PM₁₀ is expected to be proportional to the PM₁₀ reduction figure that was calculated for Agua Prieta. It is believed that when 100% of the streets are paved, there will be a 99% reduction of PM₁₀ similar to the situation in Agua Prieta.

Environmental Impacts

Overall, the environmental impact resulted from the implementation of the project will be positive since it will improve the air quality in the area.

During the construction phases, minor impacts to the environment will be generated by the excavation activities tasks related to the construction of the highway. These impacts include particulate matter emissions, gases generated by the construction equipment, temporary obstruction of streets, and presence of workers in hazardous areas that could result in falls of people and/or vehicles.

To reduce the environmental impacts during the construction phase, mitigation measurements will be taken such as watering roads to reduce dust, tuning vehicles to reduce emissions, setting up prevention signs to avoid hazardous situations, installing portable restrooms, etc.

In relation to the phase of operation activities, negative impacts are not anticipated as long as the proposed activities are carried out as described in the final design.

Transboundary Impacts

Negative impacts are not anticipated due to the development of this work. As a matter of fact, it is anticipated that the project will have a beneficial impact, as a result of the foreseen improvement in air quality in the Naco, Sonora - Naco, Arizona air basin.

Formal Environmental Clearance

According to Sonora's Secretariat of Urban Infrastructure and Ecology (SIUE for its initials in Spanish) and in consonance with that stipulated in the Law for Ecological Equilibrium and Environment Protection, it is the municipality that is assigned to evaluate the environmental impact of the works and activities that will be conducted. Based on the foregoing, the Civil and Ecology Protection Department of Naco ruled in decree no. P/639/07 dated August 26, 2007, that the paving Project in Naco is environmentally viable.

Important Issues for Certification:

The project addresses a major human health and environmental issues.
Applicable environmental clearances have been obtained from Mexico and the U.S.

Pending Issues:

None

3. Technical Feasibility

3.a Technical Aspects

Project Development Requirements

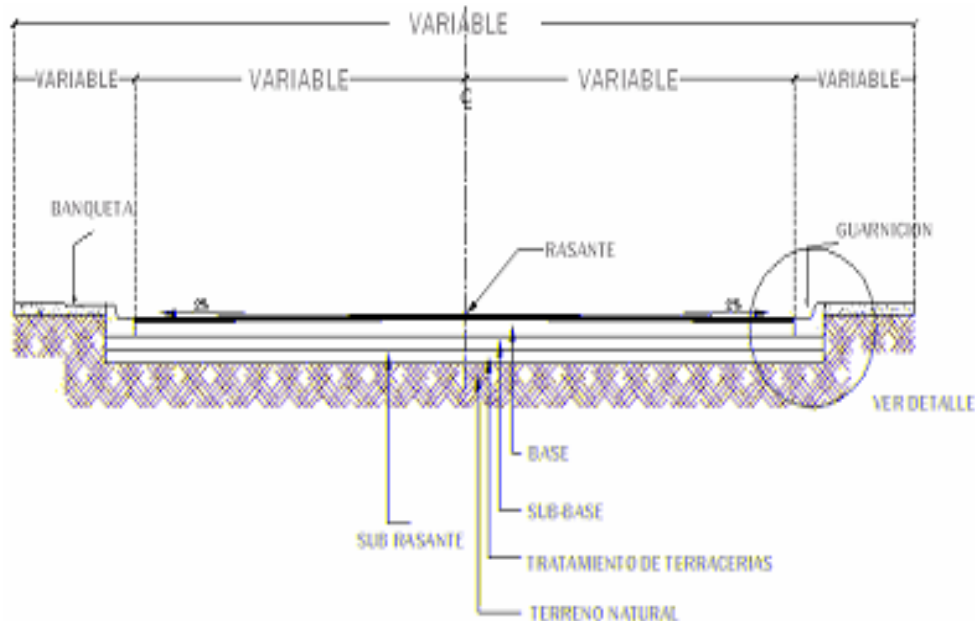
The project was designed following standard engineering practices and complies with Naco's municipal code. There are typical designs for street paving, which serve as the basis for developing the design documents for the selected streets. Both hot-mix asphaltic concrete and cement concrete will be utilized in the pavement structures.

Appropriate Technology

As part of the prioritization process for streets to be paved, a study performed by the City of Naco was considered. This study mentions 18 streets that ranked high because of one or more of the following factors: dust generation, interconnecting subdivisions, truck routes, existing infrastructure, and seniority.

Hot-Mix Asphaltic Concrete (HMAC):

The pavement subgrade will consist of subgrade soils compacted to 95% (Proctor test) of the maximum dry density, processed to achieve the specified grade elevations. A 20-cm thick granular base will be placed on the subgrade and will be compacted to 100% (Proctor test) of its maximum dry density. Emulsion MC-70 will be sprayed on the base course at a rate of 1.3 L/m². Prior to laying the HMAC course, an MC-800 tack coat will be sprayed on the base course at a rate of 0.5 L/m² to depth of 5 mm. The HMAC will be compacted to 100% of the Marshall, a minimum stability of 800 Kg and a flow of not more than 4 mm (Marshall). The mix design should meet the specifications of the Secretariat of Communications and Transportation, and should contain the minimum amount of fines that meets the air void specifications. The project also contemplates the installation of curb & gutters, which should be of the Type "S". The curb & gutter should be of Portland cement concrete with a compressive strength of 180 Kg/cm², and should be cast-in-place prior to laying the HMAC course on top of the compacted base course, as shown on the next figure.

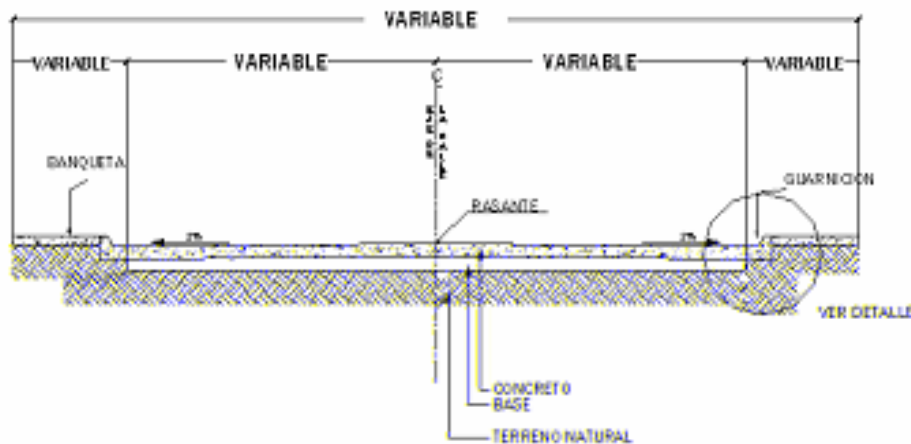


Portland Cement Concrete (PCC):

The excavation for cut will be using a motor-grader to achieve the proposed grades. At the intersections, an 80-cm wider shoulder section should be allowed for the approaches. The surplus volume resulting from cut will be hauled off site and disposed at a pre-designated site selected by Public Works Department or at another site off site.

The base material should come from a quarry and should include aggregate as approved by Public Works Department, and it should be crushed, blended, laid, graded, processed and moisture-conditioned so as to achieve compacted to 100% of its maximum dry density.

The supply and installation of black HDPE liner for PCC includes: overlaps, cuts, splicing, tools and workmanship. The ready-mix concrete should have a strength of MR = 36 Kg/cm²; F'c = 300 Kg/cm², maximum aggregate size of 19 mm; and nominal radius of 15 cm, with a slump ranging between 8 and 10 cm. The concrete slabs will be poured for areas not greater than 22 m² to prevent temperature cracking, sealant/caulking will be applied at the joints and concrete will be vibrated, and a curing compound will be applied. The project includes the curbs previously indicated.



The streets will be paved with either PCC or HMAC. The design documents will have calculations, schedule, cost estimates and drawings for each street.

The project sponsor has coordinated with OOMAPAS-Naco to ensure that streets that will be paved have water and sewer lines. There is a drawing with the construction program.

Property and Utilities Requisites

Since the paving project will be conducted within the urban area and there are ROW there will be no need to acquire ROW or land, since these two items are within the purview of the municipality, and there will be no need to apply to land use changes. During the project construction the City of Naco will supervise the project through the Public Works Department.

Work Tasks and Schedule

The project consists of paving 18 streets of the City of Naco using either hot-mix asphaltic concrete or Portland cement concrete. The municipality expects to execute this project in the next three years, having started the operation in 2007.

The street paving process should include all the necessary components by employing the traditional construction processes to ensure the proper flow of vehicular traffic in accordance with current and applicable federal, state, and local norms and specifications.

3.b Management and Operation

Project Management

The project administration will be the responsibility of the Municipality of Naco through the Public Works Department of Naco.

Each project component will be delivered under the design-bid-build method for each as prescribed in the State of Sonora Procurement Code of Public Works.

Operation and Maintenance

According to the Internal Code of Public Municipal Administration, and other agreements and provisions, the Municipality of Naco is empowered to providing maintenance of the roadways by patching up potholes, and other projects requiring engineering design for the proper operation of the traffic infrastructure. The Municipality of Naco will be the agency responsible for implementing preventive and corrective maintenance and absorbing the O&M cost, which will be part of the operations budget..

Organization

The Public Works Department of Naco has a general manager, a deputy general manager, unit managers, treasurer, and skilled personnel, which have been trained for operating and maintaining the system. In addition, the Municipality has the support of SIUE, which has personnel specialized in technical support.

Operation

State law for Services and Public Works requires the Department of Public Works to have an O&M for paved streets, either existing or to be paved. A specific O&M Plan will be developed prior to completing the paving operations.

Permits, Licensees, and other Regulatory Licenses

The project was designed in accordance with standard engineering practices and the project complies with the municipal code. There are typical design details and these have served as the basis for its design.

Important Issues for Certification:

Information provided by the project sponsor has been reviewed (drawings, catalogs and construction specifications).

Pending Issues:

None

4. Financial Feasibility

4.a Financial Feasibility

The North American Development Bank (NADB), after reviewing the financial information submitted by the project sponsor, determined that the financial capacity and structure are adequate. The information submitted and the financial analysis includes but it is not limited to:

- i) Historic and pro-forma financial statements
- ii) Project financial structure
- iii) Improvement plan / budget
- iv) Historic and pro-forma operation and maintenance budget
- v) Sensitivity and break-even analysis, and
- vi) Economic and demographic information on the project area

A detailed analysis of the project's financial information is contained in the loan proposal that will be submitted to the NADB Financial Committee for authorization. Following is a summary of the financial analysis.

Project Cost, financial structure, and other capital investments plans

The total cost for the Paving and Air Quality Project is estimated to be MX\$10M, including design, construction management, fees and commissions, contingencies, and taxes. The direct and indirect paving costs are estimated to be MX\$8.2M and MX\$1.80M, respectively.

TABLE 1: Paving Project for Naco, Sonora
TOTAL COST
(Millions of pesos)

CONCEPT	MX\$	%
Direct costs	8.20	82.00%
Indirect costs	<u>1.80</u>	<u>18.00%</u>
TOTAL	10.00	100.00%

Source: Municipality of Naco 2007

The Municipality has requested from NADB credit to supplement the non-refundable MX\$4.45M that will be contributed by the Municipality, State of Sonora and the Federal Government.

Table 2 presents the use and sources of the financial resources

Source of Income

**TABLE 2: Paving Project for Naco Sonora
USE AND SOURCES OF FUNDS**
(Millions of pesos)

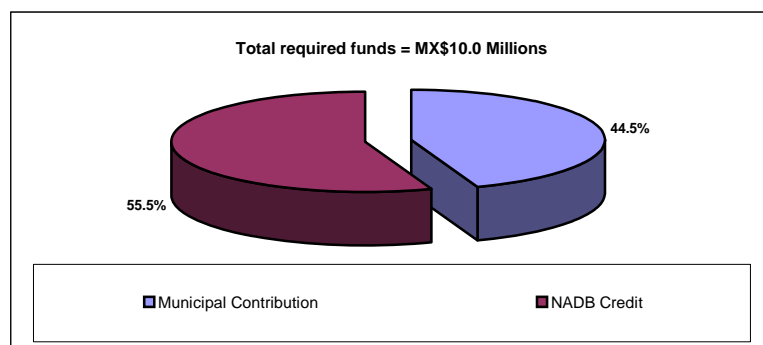
USOS DE FONDOS		
Paving direct costs	8.20	82.0%
Development and supervision costs	1.78	17.8%
Finance and fee costs	<u>0.02</u>	<u>0.2%</u>
TOTAL	10.0	100.0%
SOURCES		
Federal, State and Municipal contributions	4.45	44.5%
NABD credit	<u>5.55</u>	<u>55.5%</u>
TOTAL	10.0	100.0%

Source: Municipality of Naco 2007

1/ The maximum credit amount will be defined in function of the credit analysis of the NADB.

Figure 1 presents the funding sources for the Project.

**FIGURE 1: Paving Project for Naco, Sonora
FUNDING SOURCES**



In general terms, it can be concluded that the financial performance of Naco has been satisfactory and consists of a conservative budget policy. The municipality of Naco observes an adequate financial administration, with solid indicators within the national mean. The correct application of its resources has afforded Naco obtain positive operating balances and it is estimated that the projected revenue during the project life span will be sufficient to FACE the commitments derived from the debt service and to continue with the routine activities of the Municipality.

4.b Rate/Fee Model

The Municipality of Naco does not have contemplated the implementation of rates to cover the cost of the project.

4.c Project Management

The project will be managed by the Department of Public Works. This department has the right qualified staff to manage the contracting phase, and the construction management and supervision of the Works, as well as to provide maintenance once the paved streets have entered into service.

The project sponsor has informed the NADB that the necessary authorizations to access the credit sources are in progress. At the appropriate time, the NADB will verify the pertinent authorizations.

Important Issues for Certification:

The project was analyzed and determined to be financial viable.

Pending Issues:

None.

5. Public Participation

5.a Local Steering Committee

To fulfill the objectives of public participation, a comprehensive public participation plan was developed, which was submitted to and approved by BECC on May 4 and May 15, 2007, respectively. This plan includes information regarding the local citizen steering committee, a schedule of meetings with various local organizations to disseminate project information and obtain project support, guarantee public access to project information and to carry out general public meetings.

The steering committee was installed on May 2, 2007. The members of the committee are the following:

- C. Filiberto Quilihua Ruiz, President
- C. Antonieta Miranda Verdugo, Secretary
- C. Rosario Montaña Lares, Treasure
- C. Arturo Vásquez Grijalva, Facilitator

Citizen Committee



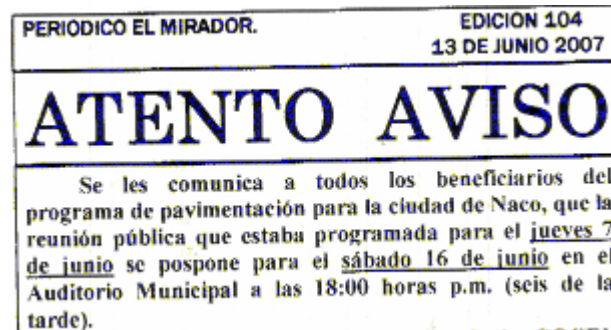
The project sponsor and members of the steering committee met with various local organizations including business groups, civic and community organizations and academia that will be impacted directly or indirectly by the improvements, to inform them about the project and seek their support. Ten committees were formed to facilitate the transmission and diffusion of information, and to facilitate the organization of fundraising activities for the entities that would benefit from the paving program. The committees were comprised of a president, a secretary and a treasurer, the other beneficiaries served as members at large and actively participated in all the activities that fomented the steering committee.

Additionally, messages were posted in Cable TV Channel 12 to invite the beneficiaries to the first public meeting. Radio station 106.9 FM was also used to invite the beneficiaries to the public meetings and to disseminate project information, and the radio host was invited to participate in the Naco paving program outreach and project characteristics dissemination committee.

5.b Public Access to Project Information

Public Notice

An ample public information program was developed to disseminate project information. The project design and the Public Participation Comprehensive Plan were made available to the public for at least 30 days prior to the meetings, which were announced in the local El Mirador newspaper, as well as in the regional Certeza, Centenario and other newspapers. In these ads the meeting places, places where the project was available and the hours of consultation. The media also provided extensive coverage, as evidenced by a large number of newspaper articles.



Additional Communication Activities

A booklet containing basic technical, financial, health and public participation aspects was developed for its distribution by the committee and the project sponsor during presentations to the local committees and throughout the subdivisions. Said material was available at City Hall. Fliers containing key data about the pavement program were also prepared and hand-delivered to the beneficiaries; the municipality assisted in the distribution of these fliers to the committees promoting the program.

Public Meetings

First Public Meeting

The first meeting was of a technical content and was conducted on **June 16, 2007** in the municipal auditorium. More than 55 people attended this meeting, including the municipal president of Naco, Mr. José Lorenzo Villegas Vásquez, and members of the Citizens Committee, members of the city council, and representatives from the business, academia, civic and community sectors.

Second Public Meeting

The second meeting was of a technical-financial content and was conducted on **July 26, 2007**. This meeting was conducted by the municipal president of Naco and the steering committee. About 100 people attended this meeting, including a representative of the state government, BECC, NADB, chambers, grassroot organizations, the steering committee and city staff.



Support from the Public

Surveys were conducted during the public meetings and at the meetings with local organizations. The results of 57 surveys are presented below.

- 90% said that it was very much needed to pave the streets, while 7% said it was just necessary. 3% said it was not necessary.
- 80% of the surveyed people responded that indeed the lack of paved roadways contributed to a deteriorated air quality.
- 95% of the surveyed people support the Project while the other 5% is not in favor or is neutral.
- 97% of the citizens surveyed support the financial commitment for the development of this Project.

5.c Final Public Participation Report

The steering committee and the project sponsor submitted to the BECC the “*Reporte Final del Proceso de Participacion Pública*” (Public Participation Process Final Report). This report demonstrated that the proposed objectives were fully met to the BECC’s satisfaction.

The members of the steering committee consider that the public consultation process should be one that never ends, hence they propose to the BECC and the municipality of Naco to consider the possibility of continuing as a Citizens Advisory Group that supports the paving improvements and the future evaluation of the set goals.

Important Issues for Certification:

The project is strongly supported by the community and supportive documentation has been provided.

Pending Issues:

None.

6. Sustainable Development

6.a Institutional and Human Capacity Building

The project will strengthen the City of Naco by increasing its services and paved roadways coverage. Additionally, the NADB credit will not adversely affect the financial situation of the Municipality, conversely, it may increase its credit and debt capacity. The project will be operated by Municipality of Naco with personnel of the Public Works Department. This department has qualified personnel, a training program is in the works and an operations manual for maintaining the new paved roads will be produced.

6.b Conformance with Applicable Local, State, and Regional Laws and Regulations and Conservation and Development Plans

The Project complies with the premises presented in the Municipal Development Plan because it is congruent with the goals established with respect to strengthening the urban infrastructure by paving important roadways due to their geographical location, their vehicular traffic and their influence in the traffic patterns. The Municipality of Naco, through the Public Works Department, is charged with the coordination of all aspects that are incidental to the urban development via comprehensive planning, specifically via the Municipal Development Plan with the goal of reinforcing the basic services by taking into account the aspect of sustainable development.

The project adheres to the U.S.-Mexico Border 2012 Environmental Program by meeting Goal 2 (Reducing air pollution) and the Objective (Reduce air emissions). One of the program's guiding principles is reducing major risks to public health.

Decree No. P/639/07 dated August 26, issued by the Civil and Ecology Protection Department of Naco, indicates that the paving project in Naco, Sonora is environmentally viable.

6.c Natural Resource Conservation

The project objective is to improve air quality of the Naco airshed, and to benefit the health of the inhabitants of this border region, without compromising the environment's wellbeing. The project itself does not interfere with the local conservation of natural resources and will require any land use changes or rezoning

6.d Community Development

The project will promote community development as it reduces the incidence of respiratory illness at the region. Within this environment, a direct benefit can be foreseen for the community as it enhances the quality of life of the inhabitants, owing to the reduction in the levels of pollutants and commuting times, providing quick access to emergency and public safety, promoting economic development and increasing the value of property surrounding the works of the project.

The impact of the project over community development will be immediate and for the long term. Immediate effects on the community will translate into health benefits for the inhabitants, chiefly children and elderly adults, who maintain a direct contact with the surrounding environment. It will also promote community development as it reduces the incidence of respiratory conditions in the area.

Important issues for Certification:

The project complies with all sustainable development principles

Pendent issues:

None.

Project Documentation Available (only in Spanish):

- **Proyecto tipo de pavimentación elaborado por el Ayuntamiento de Naco, Son. Municipio de Naco, Naco, Sonora 2007**
- **Air Quality Criteria for Particulate Matter (PM AQC)** Prepared for: Environment Protection Agency (EPA), 2007.
- **Informe sobre la calidad el Aire en Agua Prieta**, Departamento de la Calidad del Aire (ADEQ, por sus siglas en inglés), Tucson, Arizona 2000
- **Dirección de Protección Civil y Ecología** del ayuntamiento de Naco, oficio P/639/07 del 26 de agosto del 2007 relativo a la autorización ambiental.
- **Reporte Final del Proceso de Participación Pública.** (Comité Ciudadano de Naco) Naco Sonora, Son, 2007
- La Norma Oficial Mexicana **NOM-025-SSA1-1993**, Secretaria de Salubridad y Asistencia (SSA), 1993