1. Country and Sector Background

China has experienced significant improvements in economic growth, poverty reduction and increased access of the poorest populations to public services in the last ten years. From the early 1990s to 2001, the poverty rate decreased almost by half to 16.6%, while the GDP growth has remained around 8% per annum since the mid-1990s. By the beginning of the new millennium life expectancy at 70 was higher than income-comparable countries. However, despite the economic growth there have been increasing disparities among regions, with higher incidence of poverty and slower economic growth in the Western provinces.

Shaanxi Province, with per capita GDP at around 70% of the national average, ranks among the bottom fifth of the 31 provinces and regions of China, in terms of economic development. Fifty of its 107 counties have been officially designated poor by the national standard. A significant portion of the poor population in Shaanxi lives in the two northern and three southern counties, the latter located in the Ankang region. Lack of transport infrastructure has contributed to the depressed economic conditions in these counties.

Ankang City/Prefecture, with 11.5% (23,500 km²) of the total area of Shaanxi Province, has 8% (almost 3 million) of its population. Located in the southern mountainous territory of the province, Ankang has a strong potential for expansion of agricultural (e.g., tea), mineral (e.g., flagstone), and hydropower industries, and development of tourism. Lack of adequate transport accessibility and a road network of poor quality are major constraints on the social and economic
development of the Ankang region. As of 2004, 8 out of 10 counties in Ankang have been officially designated poor by the national standard.

As part of the 11th Five-Year Plan, Chinese government is committed to promote a “harmonized society”, and to “balance and coordinate” development between the advanced regions along the coast and the economically lagging middle, west and northeast regions. To achieve this goal, China has laid out the strategy to “develop the west, revitalize the northeast, renew the middle, and keep the leading position of the east” through interaction, supplementation, and integration among regions. Supporting this strategy, recent research shows that investments that can facilitate the growth of the non-coastal regional hubs, such as Sichuan, Hubei and Shaanxi, would promote forward and backward linkages with the inland/western regions and reduce the regional development gaps without sacrificing the aggregate growth.¹

The Government of China—at both the central and provincial levels—seeks to address the transport needs of Shaanxi through two main investment interventions:

- construction of the links that are part of the Aronqi-Xi’an-Chongqing-Beihai Highway of the Western Region Corridor, being built to facilitate North-South transport communications in the country and, particularly, of the China’s Western regions to the more developed South Eastern coastal regions; and,
- improvement of the interconnecting provincial, country and local road network linking the rural areas in the area of influence of the main expressways to maximize the development impact of those highways.

These interventions, carried out in the transport sector, are of unprecedented level in China during the last 15 years. Roads, railways, and navigable inland waterways have seen their networks increase by about 76%, 26% and 14% respectively between 1990 and 2003. In the road sector, those investments are starting to mature and strategies need to rebalance the emphasis given across road classes and between new construction and maintenance. The proper management of road networks requires adjustments to the management framework, putting in place adequate decision support systems with up-to-date data on road condition and use and developing alternative mechanisms for the maintenance of road networks. Attention to road safety, tolling strategies, and vehicle operations (e.g., truck overloading) must continue to be emphasized. Monitoring and evaluation can help decision making process, towards the optimization of the allocation and use of resources. A comprehensive treatment of these issues will allow the road institutions to make their gradual transformation from effectively building highways to efficiently managing transport assets. The proposed project seeks to contribute in this respect.

These interventions and strategies are in line with the Bank’s FY03-05 Country Assistance Strategy (CAS) and the FY06-10 Country Partnership Strategy (CPS), and those set under the Eleventh Five-Year Plan for the period 2006-2010, approved by the State Council at the end of 2005, in particular in their aim at improving the investment climate and addressing the needs of disadvantaged groups and underdeveloped regions. A recent World Bank working paper further

supports this type of initiatives. Ultimately, these interventions would lead to improved productivity in rural areas, enhanced competitiveness, and inter- and intra-provincial trade, fostering the development of lagging Central and Western regions.

2. Objectives

The objective of the Project is to assist the Borrower in improving passenger and freight traffic flows in an efficient and safe manner along the corridor from Ankang to Maoba in Shaanxi Province by: (i) enhancing road infrastructure capacity and network integration along the corridor Ankang-Maoba; (ii) increasing accessibility to markets and social services for the lower-income families in rural areas of Ankang; and (iii) strengthening Shaanxi Provincial Transportation Department’s capacity in managing the increasing number of kilometers of roads under its responsibility in the Shaanxi province and, in particular, within the Ankang region.

These objectives respond to a territorial perspective of the interventions that attempt to address the transport needs of the Ankang region in the context of the construction of the Xian-Ankang-Sichuan Boundary expressway. This expressway will lead to one of China’s most industrial and populated cities, Chongqing. Shaanxi is a strategic land transport hub--surrounded by seven other provinces--where North-South corridors intersect East-West corridors that link coastal areas with the Western provinces. The project would meet both the provincial government objective to improve the transport network to support the social and economic development of the province (especially in the lagging counties, such as Ankang), and the central government objective to facilitate trade between the Western Region and the coastal areas.

The assessment of the achievement of the project development objective will be carried out through the measurement of outcome indicators, including: reduction in average freight rates, travel times, and accident rates along the corridor to be constructed, as well as increases in transport flows and reduction in passenger and freight services along the rehabilitated local roads, and higher percentage of the national/provincial road network with updated information on its condition, and enhanced knowledge and application of updated road management approaches.

3. Rationale for Bank Involvement

To address the strategic priorities set in the Eleventh Five-Year-Plan and as reflected in the Country Partnership Strategy (CPS) for 2006-2010, as part of the efforts to promote more balanced development among the Chinese regions and expand economic opportunities for the rural poor, the Government of China has requested the World Bank to support the development of the so-called “7918” China National Expressway Network (CNEN) Plan. This plan is to build 7 radial links to Beijing, 9 North-South corridors, and 18 East-West corridors totaling 85,000 km of high-grade highways. The 7918 CNEN has been designed to reach more than 1 billion people by connecting all provincial capitals and large urban centers of more than half-a-million inhabitants with cities of more than 200,000 people (See Map 1 in Annex 15).

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2 “The Role of Infrastructure Investment Location in China’s Western Development,” by Xubei Luo, World Bank Working Paper 3345, June 2004. This paper recommends the need to focus transport investments in the central (hub) provinces, including Shaanxi, as a way to achieve both equity and efficiency objectives.
The project, in particular, will contribute to develop the North-South highway corridor within the Shaanxi Province and attaining the full benefits of the CNEN network connectivity in a landlocked province, fostering its integration with its neighboring provinces and its competitiveness with external markets, as well as following the recommendation of the CPS to provide support in the financing of infrastructure in key corridors serving poorer regions and communities. The mountainous terrain of the project area makes the cost of road construction comparatively high, an added burden to its development. Added to the cost considerations are the technical difficulties associated with the difficult terrain and the need to attend to the social and environmental safeguards that must accompany the proposed investments. The Bank is technically and financially in a good position to contribute to such a challenging investment. As a result of the previous three highway operations in Shaanxi, the Provincial Transport Department (SPTD) has come to value the Bank’s guidance in projects that require complex technological solution and support to specific institutional reforms, and wishes to continue this relationship.

Over the past 20 years, the Bank has provided support to transport projects in more than 65 investment projects to several Chinese provinces and cities on railways, waterways, ports, urban transport and primarily roads and highways on issues including: highway capacity enhancement, bottleneck removal, highway safety, highway operation and maintenance, rural roads and poverty alleviation, institutional strengthening, etc. The Bank can provide to SPTD the opportunity to gain from the Bank’s extensive experience with institutional development in the road sector and with alternative management mechanisms of road assets, for all classes of roads (rural, secondary, and primary roads).

4. Description

To achieve the above-mentioned objective the project will include three components as an integral part of the overall sector strategy of the SPTD for the development of the road network in the Shaanxi Province. This strategy currently focuses on expanding the capacity of the road network through additional construction, leading to a target of 60,000 km of roads from a current length of about 54,500 km (of which 3,000 km would be expressways) by 2010, and proceeding with a series of studies—to be financed with their own resources—to strengthen, among others, the information base for enhancing the decision making and planning process to attend the deterioration of pavements. The institutional development component builds upon the strategies and actions advanced under previous World Bank projects in Shaanxi.

Component A. Ankang – Maoba Expressway (AME)³
[estimated cost US$684.4 million – 93.1% of the total project cost - of which US$257.3 million will be financed by the Bank Loan]

The AME component includes the construction of an expressway of about 87 km connecting Ankang and Maoba, close to the border with the Sichuan Province. The AME would consist of four lanes designed for a speed of 80 km/h, taking into account the mountainous terrain of the corridor. This component includes the construction of the relevant ancillary buildings and the

³ The cost and percentage of total for AME Component includes Land Acquisition and Resettlement (US$19.2 million), and Physical and Price Contingencies (US$103.9 million).
acquisition of the relevant electrical and mechanical (E&M) facilities. It will also require the acquisition of land and the resettlement of people. The design of the AME has paid adequate consideration to road safety features and has minimized the social and environmental impacts, based on the analysis undertaken at the feasibility stage and further adjustments required upon completion of the preliminary engineering designs. A joint local-foreign consulting firm will supervise the construction of the AME, in a manner similar to the one implemented under the AME component of the Second Shaanxi Provincial Highway Project.

Component B. Local Roads Improvement Program (LRIP).
[estimated cost US$47.2 million – 6.4% of the total project cost - of which US$40.0 million will be financed by the Bank Loan]

The LRIP aims at improving interconnections between provincial, county and village roads in the rural areas surrounding the AME corridor. The intervention will consist of rehabilitation of existing roadways, with adjustments to its width when necessary or upgrading existing non-motorized tracks to motorized substandard roadways when warranted by the number of beneficiaries with due consideration given to environmental impacts. This program aims at improving conditions of the lower class roads that interconnect rural townships and villages in the Ankang City along the AME corridor to the higher-class road network and to the AME. A set of 28 roads have been identified for the first year of the program (See LRIP Map). The total number of kilometers estimated to be financed under this component is 1,480. The supervision of these works will be carried out by a local consulting firm that will be contracted by the Ankang Traffic Bureau, and will work under the monitoring and direction of the Shaanxi Provincial Highway Bureau (SPHB).

Component C. Institutional Strengthening Program (ISP).
[estimated cost US$2.6 million – 0.4% of the total project cost - of which US$2.0 million will be financed by the Bank Loan]

The following activities are included in the institutional strengthening program:

- Impact evaluation and monitoring studies to measure the impacts of the road rehabilitation under the LRIP on the socio-economic and transport conditions in the relevant areas of the Ankang City, establishing a complementary knowledge base for future interventions on those types of roads across the Shaanxi Province. The study will include the definition of the impact evaluation methodology and sample up to three surveys over the project implementation period towards providing a comprehensive assessment of the impacts of the road improvement program on the livelihood of the population in the areas of influence of the rehabilitated local interconnecting roads.

- Acquisition of road-condition data collection (auscultation) equipment for strengthening the information base of SPTD that is necessary to make informed decisions about the allocation of maintenance resources and the correct prevention of the deterioration of the provincial and national roads under its responsibility.

- Technical assistance will be provided for the use of the road-condition data collection equipment and the incorporation of the information into the pavement management system (PMS) currently installed at SPTD.
• The training for staff from the SPTD and the Ankang Traffic Bureau. The training activities, built on training carried out under previous Bank-financed projects, will focus primarily on: highway management, planning, and evaluation, mechanisms for contracting-out maintenance, pavement design and technologies, and safety in highways and tunnels.

5. Financing

Source: ($m.)

BORROWER 435
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT 300

Total 735

6. Implementation

The overall responsibility for project execution and coordination will rest with SPTD, which has established on October 31, 1989, under a provincial decree, the Foreign Fund Financed Project Office (FFFPO) to coordinate project implementation, process and authorize disbursements, manage procurement, and monitor implementation progress. SPTD has assigned a high-level professional to head the FFFPO. The organizational chart of SPTD (including the location of FFFPO) is provided in Annex 6.

SPTD, through the FFFPO, will be directly responsible for the implementation of the AME construction as well as for the contracting of the agreed supervision. In order to overcome the management challenges imposed by the engineering and contractual complexities of the project, SPTD will distribute its managerial, technical, and administrative expertise of the staff between the FFFPO and the field staff located along the AME corridor in field offices established in Ankang and Ziyang (a town located in the middle of the AME).

In addition, SPTD will be responsible for the acquisition of the road-condition data collection equipment and the technical assistance related to this acquisition and for the impact evaluation. SPTD, through the FFFPO, will further be responsible for the implementation of the training program, and will ensure the participation of key professionals from the Ankang City Government.

The Ankang City, through a sub-PMO established by its Traffic Bureau, will be in charge of the implementation of LRIP in accordance with Chinese legal framework, including the procurement and contracting of the works and of the related supervision. For this purpose, Ankang Municipal Traffic Bureau will have the support of the SPTD, through the FFFPO and the Shaanxi Provincial Highway Bureau (SPHB), to apply the safeguards requirements and the procurement and financial management procedures and reporting mechanisms established for the project as specified in the Loan and Project Agreements. SPTD—through its Local Road Management Division under the SPHB—will be responsible for monitoring compliance with the provisions established in the Loan and Project Agreements. Ankang City Government signed an agreement.

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4 When the unit was created on October 31, 1989, to manage the preparation and implementation of the first World Bank highway project in Shaanxi, it was given the name of World Bank Fund Financed Project Office. The name was later renamed Foreign Fund Financed Project Office on November 19, 2002.
with SPTD (dated March 29, 2006) expressing its agreement with the objectives of the project and its commitment to contribute with the counterpart resources for the LRIP component in line with the implementation progress of this component.

Funding sources for the project include Bank loan and counterpart funds. The Bank loan proceeds will flow from the Bank into the project designated account (DA) to be set up at and managed by the Shaanxi Provincial Finance Bureau (SPFB), to the project implementing agencies, and finally to contractors or suppliers. The Bank loan will be signed between the Bank and the People’s Republic of China through its Ministry of Finance (MOF), and on-lending agreements for the Bank loan will be signed between the MOF and Shaanxi Provincial Government through its SPFB, and then between SPFB and SPTD. Counterpart funds will be appropriations from central, provincial and prefecture governments and commercial debt, in the following approximate percentages: 65% from central government, 13% from provincial/city governments, and 22% from commercial loans. The Ankang City issued a letter, dated June 24, 2006, with its commitment to allocate the necessary counterpart resources and to comply with the safeguards and fiduciary provisions under the project.

7. Sustainability

Based on the Bank’s experience with the transport sector in China the physical assets are expected to be constructed to high quality standards and completed on schedule. Moreover, detailed designs and construction implementation will be closely supervised. Long-term sustainability, particularly of the road assets, will depend on effective and timely maintenance. The support provided under the project to better undertake the collection of data on the condition of road assets and the mechanisms to incorporate the data obtained into the management systems of the SPTD seeks to enhance the knowledge base to improve the maintenance planning decisions. This effort shall lead to maximize the use of the maintenance resources and increase the sustainability of the road investments.

Road maintenance budgets in Shaanxi are comparable to those of other provinces with similar networks. These budgets have increased by 53% overall and 42% on a per-km basis in the last three years, in response to the increase in the size and in the maintenance needs of the network, respectively. The Bank’s assessment is that while overall budget figures appear reasonable albeit limited in the context of the likely upcoming needs of a maturing network, a fundamental issue remains in that budget estimates are based on coarse standardized estimates of cost and not based on any real estimate of the state and needs of the system. The SPTD has started to adopt a maintenance management system which, if properly used, would allow the maintenance agency to build more credible transparent budget estimates. Such estimates could be a basis for discussions among various SPTD field units to ensure that resources are used in a more optimal manner for the actual maintenance needs of the different segments of the road network. A Loan covenant requiring an annual review of SPTD’s road maintenance budget and plan has been agreed upon. The goal of the review will be to identify ways in which road maintenance needs can be better forecast and provided for.
8. Lessons Learned from Past Operations in the Country/Sector

Most highway projects in China have had a combination of an expressway component with a relatively smaller local roads component. In most cases, the attention and effort has been concentrated on the expressway component which is typically the largest component, and the one that requires most of the financial resources. Under the proposed project, SPTD has agreed to provide a more balanced attention and resources among the main project components, seeking to contribute, simultaneously, in a more proactive manner to the growth and poverty agendas of the Shaanxi. Specific design issues, which incorporate lessons learnt from past operations include:

- **Added efforts to review the feasibility of the proposed investments and the quality of engineering designs.** The project preparation process has stressed the need to ensure the good quality of designs. This was started by the review of the feasibility study and then followed with several independent reviews of the expressway designs. SPTD has entrusted the review of the preliminary design to the First Highway Survey Design Institute of MOC; in addition, a foreign expert team (Spanish Consultants) has been commissioned by the Bank to conduct a thorough design review, including a road safety audit. Furthermore, given that major variations often occur in projects whose design are not based on sufficient soil testing, supplemental geological investigation will be carried out during the detailed design stage, especially on road sections where large bridges, tunnels, deep cuts, and high fills are located.

- **Refocusing the sector agenda.** During project identification and preparation a dialogue on a broader set of issues related to the management of the road infrastructure in the Shaanxi Province was undertaken. The idea was to aim at initiating the capacity building process by refocusing the provincial strategies from one that stresses the construction of highways, to one that emphasizes the management of the road network and its traffic.

- **Complementing high-class roads with a complementary component of lower-class roads.** Often the selection of investment of lower-class roads respond to a dispersed distribution of road segments without a coherent plan that can help achieve greater benefits to all components of the project. In this case, upon the selection of the main investment component—the AME—it was agreed to locate the local roads along the corridor of the expressway within the territory of the Ankang City. In this manner, it is expected that the benefits from the main AME component will also lead to added benefits to the local roads, and therefore reaching a greater area of influence for the project along the territory traversed by the expressway corridor. SPTD agreed to increase the percentage of the loan allocated to the LRIP component from an initial 10.0% to about 13.5%.

- **The definition and design of the institutional strengthening subcomponents** build upon the studies and subsequent actions carried forward under previous World Bank projects (see box below). By focusing on those critical activities that complement previous actions and in addition have a potential to create a demonstration effect and further enhance key capacities of the SPTD in managing highway assets (and in providing technical leadership to county and local highway entities), the scope of these subcomponents seeks to ensure a stronger ownership and commitment of SPTD in carrying out the studies on time and with the expected application of their results.
9. Safeguard Policies (including public consultation)

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OP 4.01 and 4.12 apply to the project and are complied with as discussed in Sections D 5 & 6 above.

10. List of Factual Technical Documents

- Feasibility Study for the Ankang Local Roads Improvement Program, May 2006.
- Social Assessment for the Ankang-Sichuan Border Expressway, by Chang’an University (supported by group of experts from Houhai University), January 5, 2006.

* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas.

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