# AIIB FINANCED CHINA FLOOD EMERGENCY REHABILITATION AND RECOVERY PROJECT

# Xinxiang subprojects of X3-Rehabilitaition of National and Provincial Highways and X4-Xinxiang Rehabilitation of Public Transport Infrastructure and Purchase EV Buses

# Environmental and Social Impact Assessment and Management Plan

**Construction Unit: Xinxiang Transportation Bureau of Henan Province**

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## 1. Preface

In the middle and late July of 2021, Henan Province was continuously hit by large-scale heavy rainfall rarely seen in history. The rainfall lasted for a long time, the accumulated rainfall was large, the heavy precipitation range was wide, and the heavy precipitation period was concentrated. Many rainfall data all exceeded the extreme values since had the local hydrological records. In this flood disaster, Zhengzhou, Xinxiang and Jiaozuo were seriously affected, and the transportation, municipal administration and water conservancy of each district/county suffered serious losses, and the infrastructure needed to be restored as soon as possible. In order to help people in disaster-hit areas carry out post-disaster recovery and reconstruction, the Chinese government has agreed to use the Asian Infrastructure Investment Bank (AIIB) emergency concessional loans to support post-flood recovery and reconstruction projects in Henan Province. The AIIB project will focus on supporting post-flood recovery in Zhengzhou, Xinxiang and Jiaozuo in Henan Province in terms of water conservancy facilities, municipal facilities, transportation facilities, comprehensive flood disaster warning and emergency response system and institutional capacity building. The total investment of the project is 9.106 billion yuan, of which 1 billion US dollars is borrowed from AIIB, including 600 million US dollars from Zhengzhou and 200 million US dollars for Xinxiang and Jiaozuo $200 million.

This report is an environmental and social impact assessment report, including environmental and social management plan, for the Xinxiang subprojects of X3-Rehabilitaition of National and Provincial Highways and X4-Xinxiang Rehabilitation of Public Transport Infrastructure and Purchase EV Buses. Due to being washed and soaked by heavy rain from July 16 to 23, many roadbed and road surface in Xinxiang city were seriously damaged. It is urgent to carry out disaster recovery and reconstruction projects to restore the use of the road function.The disaster recovery and reconstruction of national and provincial trunk roads in Xinxiang city mainly includes: 15 roads in 9 counties and districts of Xinxiang, Huixian, Weihui, Fengquan, Muye, Xinxiang, Huojia, Yanjin, Yuanyang and Fengqiu, with a total length of 168.515km.Public transport infrastructure reconstruction includes new one bus terminal (willow blue road and new street southeast corner), high-speed rail transit depot, Baixiaotun bus depot, Taitou bus depot.

According to the investment bank's environmental requirements and social policy, environmental and social management planning framework, Xinxiang provincial trunk highway disaster restoration and reconstruction and public transport infrastructure reconstruction subproject environmental and social risk screening, book project is divided into the environment and the social class B, required by briefly the environmental and social risk assessment report, including environmental and social management plan.According to the Classification List of Environmental Impact Assessment for Construction Projects (2021), this sub-project is restored at the original site and does not need to compile environmental impact assessment documents. This report is compiled by Beijing Hailixin Information Consulting Co., LTD., and is based on: 1) Implementation Plan of Disaster Recovery and Reconstruction Project of National and Provincial Trunk Highways in Xinxiang City compiled by Henan Provincial Transportation Planning and Design Institute Co., LTD. And Xinxiang Highway Survey and Design Institute Co., LTD.; 2) Implementation Plan of Post-disaster Reconstruction of Public Transportation Infrastructure and Purchase of Pure Electric Buses in Xinxiang prepared by Xinxiang Planning and Design Institute;3) Site inspection conducted by environmental and social consultants

of Beijing Helision Information Consulting Co., Ltd. accompanied by Xinxiang Transport Bureau in February 2022; 4) interviews and questionnaires with key stakeholders conducted by environmental and social consultants of Beijing Helision Information Consulting Co., Ltd. and from February to March 2022. 5) Collected environmental and social status data released by relevant government departments.

## 2. Policy, legal and regulatory frameworks

This report has been prepared in accordance with existing applicable environmental and social laws and regulations, local and departmental regulations, technical guidelines and norms in the People's Republic of China, as well as the requirements of AIIB's Environmental and Social Framework (revised in 2021).

### 2.1 Laws and regulations

- Environmental Protection Law of the People's Republic of China (implemented on January 1, 2015);
- Environmental Impact Assessment Law of the People's Republic of China (amended on December 29, 2018);
- Clean Production Promotion Law of the People's Republic of China (effective July 1, 2012);
- Air Pollution Prevention and Control Law of the People's Republic of China (amended on October 26, 2018);
- Law of the People's Republic of China on the Prevention and Control of Water Pollution (amended on June 27, 2017 and implemented on January 1, 2018);Law of the People's Republic of China on the Prevention and Control of Environmental Noise Pollution (amended on December 29, 2018);
- Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste (amended on 29 April 2020);
- Soil Pollution Prevention and Control Law of the People's Republic of China (31 August 2018);
- Law of the People's Republic of China on Soil and Water Conservation (implemented on March 1, 2011);
- Forest Law of the People's Republic of China (amended on December 28, 2019);
- Wildlife Protection Law of the People's Republic of China (October 26, 2018);
- Land Administration Law of the People's Republic of China (effective January 1, 2020);
- Regulations on Expropriation, Compensation and Resettlement of Houses on State-owned Land (2011)
- Cultural Relics Protection Law of the People's Republic of China (amended on November 5, 2017);
- Work Safety Law of the People's Republic of China (2014);
- Law of the People's Republic of China on Prevention and Control of Occupational Diseases (2011);
- Labor Law of the People's Republic of China (1995)
- Law of the People's Republic of China on The Protection of Minors (revised in 2020);
- Law of the People's Republic of China on the Protection of Persons with Disabilities (revised in 2018);
- Social Insurance Law of the People's Republic of China (revised in 2018);
- Labor Contract Law of the People's Republic of China (revised in 2012);
- Law of the People's Republic of China on the Protection of Women's Rights and Interests (amended in 2018).

### 2.2 Departmental rules and policies

- Regulations on the Administration of Environmental Protection for Construction Projects (State Council Order No. 682, revised on July 16, 2017);
- Classified Management Directory of Environmental Impact Assessment of Construction Projects (2021);
- Opinions on Further Strengthening ecological Protection work (Huanfa [2007] No. 37);
- Notice on Printing and Issuing Interim Measures for Examination and Management of Total Emission Index of Major Pollutants of Construction Projects (Huanfa [2014] No. 197);
- Notice on Further Strengthening environmental Impact Assessment Management to Prevent Environmental Risks (Huanfa [2012] No.77, Ministry of Environmental Protection);
- Notice on the Issuance of the Guide to Delimit The Red Line for Ecological Protection (No. [2017] 48 of the Environmental Protection Office);
- Guidance Catalogue for Industrial Structure Adjustment (2019 edition);
- Measures for Public Participation in Environmental Impact Assessment (Order No. 4 of the Ministry of Ecology and Environment);
- Regulations on Labour Protection in Workplaces of Toxic and Harmful Substances (2002);
- Interim Provisions on Wage Payment (1995);
- Regulations on the Implementation of Labor Law (2018)
- Regulations of Henan Province on Environmental Protection of Construction Projects (2016.3.29);
- Regulations of Henan Province on Prevention and Control of Water Pollution (2019.10.1);
- Regulations of Henan Province on Prevention and Control of Air Pollution (2018.3.1);
- Regulations of Henan Province on The Prevention and Control of Environmental Pollution by Solid Waste (2012.1.1);
- Notice on Printing and Distributing The Implementation Plan of Air, Water and Soil Pollution Prevention and Control and Agricultural and Rural Pollution Control in 2021 of Henan Province (Henan Environment Pollution Control Office [2021] No. 20)
- Notice issued by General Office of henan Provincial Party Committee and General Office of Henan Provincial People's Government (Yuban [2013] No. 1)
- Interim Regulations on Major Administrative Decision-making Procedures (2019)

### 2.3 Guidelines and technical specifications

- Technical Guidelines for Environmental Impact Assessment -- General Outline (HJ2.1-2016);
- Technical Guidelines for Environmental Impact Assessment -- Atmospheric Environment (HJ2.2-2018);
- Technical Guidelines for Environmental Impact Assessment -- Surface Water Environment (HJ2.3-2018);
- Technical Guidelines for Environmental Impact Assessment -- Acoustic Environment (HJ2.4-2009)
- Technical Guidelines for Environmental Impact Assessment -- Groundwater Environment (HJ 610-2016);
- Technical Guidelines for Environmental Impact Assessment -- Ecological Impact (HJ19-2011);
- Technical Guidelines for Environmental Impact Assessment -- Soil Environment (Trial) (HJ964-2018);

- Technical Guidelines for Environmental Risk Assessment of Construction Projects (HJ/T169-2018);
- Circular of the General Office of the National Development and Reform Commission on Printing and Distributing outline of Compilation of Risk Analysis Chapter and Evaluation Report on Social Stability of Major Fixed Asset Investment Projects (Trial) (Investment Of the Development and Reform Office [2013] No. 428).

**2.4 AIIB's environmental and social requirements**

As the project receives investment from AIIB, aiib's Environmental and Social Framework (ESF) will apply to the project. Its key elements are as follows:

- Environmental and Social Policy (ESP), Environmental and Social Standard (ESS) and environmental and Social Exclusion Checklist.The ESP sets out mandatory requirements for banks and their clients to identify, assess and manage environmental, social risks and impacts associated with AIIB supported projects.

- Environmental and Social Standard 1 (ESS 1) : Aims to ensure the environmental and social robustness and sustainability of the project and to integrate environmental and social factors into the project decision-making process and implementation.ESS 1 applies if the project is likely to have adverse environmental risks and impacts or social risks and impacts (or both).The scope of environmental and social assessment and management measures is proportional to the risks and impacts of the project. ESS1 provides high-quality environmental and social assessments and risk and impact management through effective mitigation and monitoring measures during project implementation. ESS1 sets out detailed requirements for environmental and social assessments to be carried out on any project the AIIB invests in.

- Environmental and Social Standard 2 (ESS 2) : If the screening process of the project indicates that the project involves involuntary migration (including recent or foreseeable involuntary migration directly related to the project), ESS 2 applies.Involuntary resettlement includes physical displacement (relocation, loss of residential land or loss of housing) and economic displacement (loss of land or access to land and natural resources) as a result of;Assets or acquired assets, loss of sources of income or livelihood) (a) Involuntary acquisition of land; (b) Involuntary restriction of land use or access to legally designated parks and protected areas.It covers such displacement, whether such losses and involuntary restrictions are total or partial, permanent or temporary.ESS2 establishes detailed requirements for project migration schemes involving involuntary migration.

- Environmental and Social Standard 3 (ESS 3). ESS3 applies if there are indigenous people (ethnic minorities) in or with where the project is proposed and they are likely to be affected by the project.

**2.5 Applicable evaluation and emission standards**

（1） Air quality

Ambient Air Quality Standard (GB 3095-2012) divides air quality into two categories.Category 1 standards apply to special areas such as nature reserves and environmentally sensitive areas, and Category 2 standards apply to all other areas, including urban and industrial areas.The location of this sub-project belongs to class 2 environmental air quality functional zone.The WHO Global Air Quality Guidelines provide global guidance on thresholds and limits for key air pollutants that pose health risks. In addition to the guideline values, the WHO Global Air Quality Guidelines provide transitional targets designed to facilitate a gradual transition from high to low concentrations.Table II-1 compares the Ambient Air Quality Standard (GB 3095-2012) Category 2 standards with the WHO standards.[1] 24 hours $SO_2$(0.15 mg/$m^3$) is higher than the upper limit of the World Bank Group provisional standard (0.125 mg/m)$^3$);And 24 hours $PM_{10}$(0.15 mg/$m^3$) and $PM_{2.5}$(0.075 mg/$m^3$), annual average $NO_2$(0.04 mg/$m^3$) and $PM_{2.5}$(0.035 mg/$m^3$) are the same as the upper limit of WHO's transitional standard. In general, the Chinese standards are highly equivalent to the WHO guidelines or transitional target values, so the ambient Air Quality Standard (GB3095-2012) category 2 standards are used in this sub-project.

Table II1: Comparison of China GB 3095-2012 with who Global Air Quality Guidelines (mg/$m^3$)2121

| | Item | Average period | GB 3095-2012 Class 2 | Who Global Air Quality Guidelines | |
|---|---|---|---|---|---|
| | | | | Interm Target | Long term target |
| 1 | $SO_2$ | 1 year | 0.06 | NA | NA |
| | | 24 hours | 0.15 | 0.05-0.125 | 0.04 |
| | | 1 hour | 0.50 | NA | NA |
| 2 | $PM_{10}$ | 1 year | 0.07 | 0.02-0.07 | 0.015 |
| | | 24 hours | 0.15 | 0.05-0.15 | 0.045 |
| 3 | $PM_{2.5}$ | 1 year | 0.035 | 0.01-0.035 | 0.005 |
| | | 24 hours | 0.075 | 0.025-0.075 | 0.015 |
| | | 1 hour | / | / | / |
| 4 | $NO_2$ | 1 year | 0.04 | 0.02-0.04 | 0.010 |
| | | 24 hours | 0.08 | 0.05-0.12 | 0.025 |
| | | 1 hour | 0.20 | NA | NA |
| 5 | Carbon monoxide | 24 hours | 4.0 | 7.0 | 4.0 |
| | | 1 hour | 10.0 | NA | NA |
| 6 | $O_3$ | The maximum daily average is 8 hours | 0.16 | 0.12-0.16 | 0.10 |
| | | 1 hour | 0.20 | NA | NA |

Source: WHO Global Air Quality Guidelines (2021) and People's Republic of China GB 3095-2012.

Asphalt smoke and dust discharge during construction shall be subject to the second-level standard

1World Health Organization. Who Global Air Quality Guidelines (Particulate matter, ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide), 2021.

in the Comprehensive Emission Standard of Air Pollutants (GB16297-1996).

Table II2: Integrated Emission Standards for Air Pollutants2-2

| pollutants | No organization discharge monitoring concentration limit mg/$m^3$ |
|---|---|
| Particulate matter | 1.0 |
| Nitrogen oxides | 0.12 |
| The asphalt smoke | There shall be no obvious discharges from the production equipment |

(2) Acoustic environment

The Acoustic Environment Standard (GB 3096-2008) classifies five functional areas according to their tolerance to noise pollution: level 0 to level 4.Category 0 is suitable for areas such as convalescent areas where there is a special need for quiet and therefore has the strictest day and night noise standards.Category 1 applies to areas dominated by residential areas, hospitals and clinics, educational institutions and research centres.Category 2 applies to areas with mixed residential and commercial functions.Category 3 applies to areas with industrial production, warehousing and logistics as the main functions.Category 4 applies to areas adjacent to traffic noise sources such as major roads and motorways and is subdivided into 4A and 4B, the former for road traffic noise and the latter for railway noise.According to the Technical Specification for The Division of Acoustic Environment Functional Zones (GB/T15190-2014) and The Acoustic Environment Quality Standard (GB3096-2008), the acoustic Environment Quality Standard (GB3096-2008) shall be implemented within the scope of 35m on both sides of the highway red line within the evaluation area, and the acoustic Environment Quality Standard (GB3096-2008) shall be implemented within the scope of CLASS 4A, and the acoustic environment Quality Standard (GB3096-2008) shall be implemented in the area beyond 35m.

Comparing the standards for each function zone with the World Bank Group EHS guidelines listed in Table II3, the World Bank Group has lower noise limits for residential, commercial and industrial mixed zones, but higher nighttime noise limits for industrial zones and near main roads.For this sub-project, category 2 is the Chinese standard applicable to rural areas and residential communities;But for example, the world Bank Group EHS has stricter standards for living areas.Therefore, the sub-project is subject to the stricter standards of both the domestic standard and the World Bank Group EHS standard, namely 4a standard (70 dB day, 55 dB night) within 35m, and WORLD Bank EHS standard (55 dB day, 45 dB night) within the living area.

**Table II3: Acoustic environmental quality standards (Equivalent Sound Level: LAeq: dB)2322**

| **Noise functional area category** | **Applicable area** | **GB 3096-2008** | **World Bank Group Environmental,** |
|---|---|---|---|

| | | | | health and Safety standards | |
|---|---|---|---|---|---|
| | | day | The night | day | The night |
| 0 | An area requiring extreme quiet, such as a health resort | 50 | 40 | 55 | 45 |
| 1 | Mainly used for residential, cultural and educational institutions | 55 | 45 | | |
| 2 | A mixed residential, commercial and industrial area | 60 | 50 | | |
| 3 | Industrial zone | 65 | 55 | 70 | 70 |
| 4a | An area on either side of a main urban road | 70 | 55 | | |

EHS = Environment, Health and Safety.

Sources: WHO Noise Quality Guidelines (1999) in IFC Environmental Health Safety Guidelines (2007) and China GB3096-2008.

Operational noise during construction shall comply with environmental Noise Emission Standard for Construction Site Boundary (GB 12523-2011).In addition, the World Bank EHS guidelines require that the increase in background noise outside the site from the nearest receiving point be no more than 3 dB.**错误!未找到引用源。**

Form II4: Noise limits for construction activities (unit: Leq [dB (A)])2-423

| period | Major noise sources | Noise limit | |
|---|---|---|---|
| | | day | The night |
| construction | Bulldozers, excavators and loaders;Driver;Concrete mixers, vibrators and chainsaws;elevator | 70 | 55 |

Source: GB 12348-2008.

(3) Sewage discharge

Sewage discharge from construction sites is regulated by the Comprehensive Sewage Discharge Standard (GB 8978-1996).The level 1 standard applies to the discharges of GB 3838-2002 discharged into three types of water bodies.Class II standards apply to bodies of water discharged into classes IV and V.The level 3 standard applies to municipal sewer discharges entering municipal sewage treatment plants for secondary treatment. The sub-project will not set up a construction camp, but will rent local residents' houses. The domestic sewage during the construction period will rely on the existing municipal sewage treatment facilities, and the sewage discharge on the construction site

will follow the level 3 standard.

**Form II4: Comprehensive sewage discharge standard2-524**

| parameter | Level 1<br>Used for discharging into three types of water bodies | Level 2<br>Used for discharging into category FOUR and five water bodies | Level 3<br>For discharge into municipal sewers |
|---|---|---|---|
| pH | 6-9 | | |
| SS mg/l | 70 | 150 | 400 |
| BOD5 mg/l | 20 | 30 | 300 |
| COD mg/l | 100 | 150 | 500 |
| Volatile phenol mg/l | 0.5 | 0.5 | 2.0 |
| NH3-N mg/l | 15 | 25 | --- |
| LAS (= anionic surfactant) mg/l | 5.0 | 10 | |

Source: GB 8978-1996.

## 3. Project Description

### 3.1 Disaster recovery and reconstruction of Xinxiang National and provincial main Highway

#### (1) Construction scope

The main contents of the disaster recovery and reconstruction project of national and provincial trunk highways in Xinxiang city include: huixian City, Weihui City, Fengquan District, Muye District, Xinxiang County, Huojia County, Yanjin County, Yuanyang County and Fengqiu County, the total length of road reconstruction and repair is 168.515 km.This project is the original site restoration and reconstruction, no new land.No temporary occupation during construction.For details about the project, see Table III-1 and Figure III-1 below.

**Table III1: Main construction contents of disaster recovery and reconstruction of National and provincial trunk Highways in Xinxiang City31**

| The serial number | County (city, District) | Route number | Sections | Disaster type | Construction scale | Disaster reconstruction (km/m) | | | Repair | Investment (10,000 yuan) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Total | subtotal | bridge | culvert | subtotal | |
| **Total** | | | | | **168.515** | **116.265** | | | **52.250** | |
| 1 | Makino area | S309 | S309 National Highway 107 to Huanyu Overpass section disaster recovery and reconstruction | larger | 10.318 | 5.24 | 126 | | 5.078 | 3393.42 |
| 2 | Hui xian | G342 | G342 Rifeng Line from Linzhou Boundary of Huixian county to Lingchuan Boundary of Huixian County | major | 16.697 | 6.19 | 517.82 | 1923.8 | 10.507 | 7256.26 |
| 3 | Huixian City, Fengquan district, | G234 | G234 Huixian Gaozhuang to S309 | larger | 15.625 | 12 | 303.8 | | 3.625 | 5259.3 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Muye district | | | | | | | | | |
| 4 | Xinxiang county, Harvest County | G234 | G234 Xingyang line S229 intersection to Huajia County West ring interchange section | larger | 9.000 | 9 | 268.45 | | | 3516.60 |
| 5 | huojia | S231 | S231 Bouguan Line gufeng Xiaoqiao to S228 intersection section | larger | 6.000 | 6 | 124.34 | | | 2402.26 |
| 6 | Weihui city, Muye District, Red Flag District, Xinxiang County | G107 | G107 Beijing-Hong Kong line Weihui Xiayuan to Gujun | larger | 30.359 | 13.8 | 3308.68 | | 16.559 | 13946.0 |
| 7 | YanJin County | S309 | S309 Changji line Jijinpu village to Fanzhuang village section | larger | 7.654 | 6.654 | 47 | | 1 | 2637.04 |
| 8 | Yuanyang country | S101 | S101 Zhengtai Line Yellow River Bridge north to G327 intersection section | larger | 4.738 | 3.237 | 194.7 | | 1.501 | 5599.11 |
| 9 | Hui xian city | S231 | S231 Baoyuan line from Baobi to Dabei | larger | 4.252 | 4.252 | 16.8 | | | 1540.7 |
| 10 | YanJin County | S309 | S309 Changji Line Yanjin Bangan village to S225 intersection section | larger | 5.393 | 2.949 | 46 | | 2.444 | 1475.2 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 11 | YanJin County | S224 | S224 Neiluo county Yanjin Mazhuang south to G230 section | larger | 9.000 | 4.301 | 0 | | 4.699 | 2239.88 |
| 12 | YanJin County | S225 | S225 Anping line S309 intersection to S311 intersection section | larger | 19.157 | 12.32 | 450.32 | | 6.837 | 11973.2 |
| 13 | Yuanyang country | S225 | S225 Anping line Yanga to Jintang section | larger | 8.462 | 8.462 | 0 | | | 3549.13 |
| 14 | Yuanyang country | S227 | S227 Lintong Line G327 intersection to Handongzhuang section | larger | 6.499 | 6.499 | 51.6 | | | 2470.63 |
| 15 | Weihui municipal | S101 | S101 Zheng-Tai Line S225 intersection to Xinxiang Hebi boundary section | larger | 15.361 | 15.361 | 10.9 | | | 5599.11 |

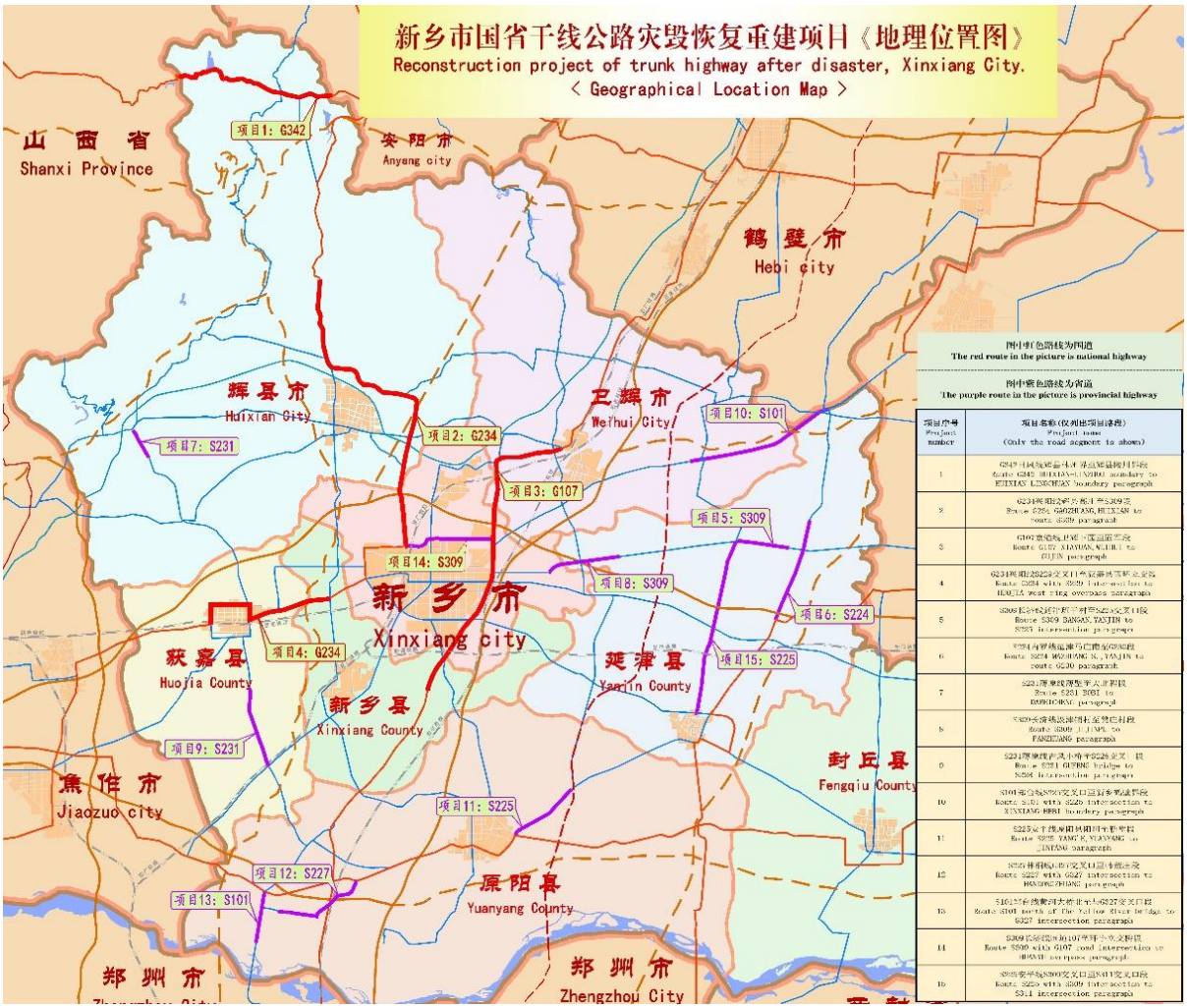



**Figure III1: Geographical location of the disaster recovery and reconstruction of national and provincial trunk highways in Xinxiang City3-1**

The implementation plan of disaster recovery and reconstruction maintains the status quo of roadbed and pavement width, cross-sectional layout, plane design and other technical indicators, and the construction period of each section is about 90 days.

(1) S309 Disaster recovery and reconstruction project from Changji National Road 107 to Huanyu Overpass

S309 Changji Line from National Highway 107 to Huanyu Overpass is a section of The North Ring Road in Xinxiang City. The starting point is located on National Highway 107, and the starting point is K99+637. It extends westward along the North Ring Road, crosses Xinzhong Avenue, Heping Avenue and Beijing-Guangzhou Railway, and terminates at Huanyu Interchange with the terminal number of pile K109+955.The total length of the route is 10.318km, and the whole line is the treatment of road diseases and reconstruction of water damage.




(2) Disaster recovery and reconstruction project of G342 Rifeng Line from Linzhou Boundary of Huixian county to Lingchuan Boundary of Huixian County

The starting point is located at the junction of Huixian and Linzhou of G342 Rifeng line (starting pile number K687+813). The route is from east to west, passing Nanzhai Town, at the boundary between Huixian and Lingchuan, and arrives at the project terminus (terminal pile number K707+243). The total length of the route is about 19.43 km, and the cumulative recovery and reconstruction mileage is 15.102 km (the section from the intersection of the project with S230 to Dongguanqiao is not included in the design scope).



(3) G234 Xingyang Line Huixian Gaozhuang to S309 section of disaster recovery and reconstruction project

The starting point is located at Liutai Mountain, Gaozhuang county, Huixian County, starting pile K1094+330, the route southward, through jinzhang village and other villages, the route along the southeast through Nanguancun, Xialijiazhuang and other villages to Changdong Village, southward through Guzhang village and other villages to reach the end of the route, the end point through huanyu interchange is located in Xinxiang City north ring Road.This project is a disaster recovery and reconstruction project, with a total length of 33.862 kilometers and the terminal pile number K1128+192.The whole line is for the treatment of road diseases and reconstruction of flooded sections, the route is 33.862km long.

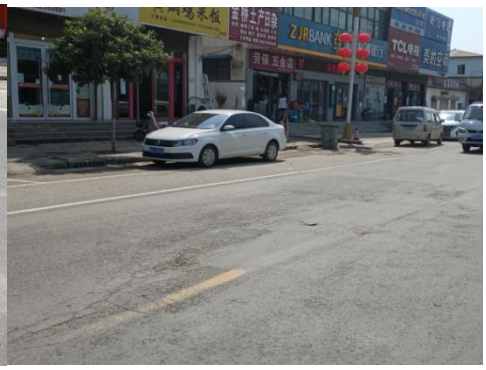


(4) Disaster recovery and reconstruction project from G234 Xingyang Line S229 intersection to Huajia County Xihuan Interchange section

G234 Xingyang Line S229 intersection to Huajia County Xihuan overpass section of the disaster recovery and reconstruction project route length of about 17.082 km (pile number range: K1140+236-K1157+318), including the first road 11.005 km (pile number range: K1140+236-K1151+241), 6.077 km of secondary highway (pile number range: K1151+241-K1157+318).A total of 9 kilometers have been rebuilt, including 7 kilometers of first-level roads and 2 kilometers of second-level roads.Two-way six-lane first class highway/two-way eight-lane second class highway/two-way two-lane second class highway design standard, design speed 80km/h.


(5) Disaster recovery and reconstruction project of the section from Gufeng Xiaoqiao of S231 Boyuan Line to intersection of S228

The starting point is located at gufeng Small Bridge of S231 Boyuan Line (starting pile number K67+702). The route runs from north to south, passing Beizhangzhuang Village, Beixiaozhuang Village and Kangcun Town, crossing S228 Weixin Line and reaching the end point of the project (terminal pile number K76+402). The total length of the route is about 8.7 km, and the cumulative recovery and reconstruction mileage is 6 km (the section from the south of Lizhuang Xiaoqiao to the north zhangzhuang Village of this project is not included in the design scope).

(6) G107 Beijing-Hongkong Line Weihui Xiayuan to Gujun section disaster recovery and reconstruction project

The starting point of the project is located at Xiayuan Village, Weihui City (intersection with S307) (starting pile number K702+763). The route runs from north to south, passing Kishui Town, Tangzhuang Town, Muye District, Xinxiang City, Hongqi District, Xinxiang County, and arrives at Gujun Village, Xinxiang County (terminal pile number K737+669). The total length of the route is about 34.906 km, and the total recovery and reconstruction mileage is 30.143 km.

(7) Disaster recovery and reconstruction project of S309 Changji Line from Jijinpu Village to Fanzhuang Village

The starting point is located in S309 Changji line Jijinpu village (starting pile number K82+100), the route from east to west, via Shuihuabao village, Zhaojingzhuang village, Xiaoyangzhuang Village, in the northwest of xiaoyangzhuang village and S227 Lintong line plane cross and wear G3511 Hebao high-speed, continue to the west via Zhengzhuang village to Fan Village, the total length of the route is about 7.654 kilometers. The whole line is road surface disease treatment and reconstruction.

(8) Disaster recovery and reconstruction project of S101 Zheng-Tai Line Yellow River Bridge from north to intersection with G327

The starting point is located at S101 zheng-Tai Line Yellow River Bridge north (starting pile number K6+997), the route is roughly north-south, passing west of Liu 'an Village and Qiaobei Township to the north and reaching the end point of the project and the intersection of National Road 327 (pile number K11+735). The total length of the route is 4.738 kilometers.



(9) Disaster recovery and reconstruction of S231 Boyuan from Baobi to Dabei Section

The starting point of the project is Located in Bobi Town of S231 Boyuan Line (starting pile number K25+748). The route is from northwest to southeast, passing through Meng Village and Xiaobicheng Village and arriving at the west side of Dabicheng Village (ending pile number K30+000). The total length of the route is 4.252km, and the total mileage of the disaster recovery and reconstruction section is 4.252km.



(10) Disaster recovery and reconstruction project of S309 Changji Line Yanjin Bangan Village to S225 intersection section

The starting point is 2km west to the intersection of S309 and S224, and the end point of the project is from east to west along S309 line until the intersection with S225.The total length of the route is 5.393km.




(11) Disaster recovery and reconstruction project of S224 Neiluo county from Yanjin Mazhuang South to G230

Design speed 80km/h, asphalt concrete pavement, general road subgrade width 20m, pavement width 12m; the width of roadbed is 12/18m and the width of pavement is 12m.The total length of the

project route is 11.716km, of which the total mileage of the reconstructed sections is 9km.

(12) S225 Anping Line S309 intersection to S311 intersection section

The section of S225 Anping line K137+670 ~ K157+127 will be reconstructed according to the technical standards of secondary highway. The design speed is 80km/h, asphalt concrete pavement, roadbed width 40/13.5/48.5m, road width 29/12/20.5m, the total length of the project route is 19.457km, of which the total mileage of reconstruction sections is 19.157km.

(13) S225 Anping Line Yanga to Jintang section of Yuanyang County disaster recovery and reconstruction project

The section of S225 Anping line K176+868 ~ K185+330 shall be reconstructed according to the technical standards of secondary highway. The design speed is 80km/h, asphalt concrete pavement, roadbed width is 22m, road width is 12m, the total length of the project route is 8.462km, of which the total mileage of reconstruction sections is 8.462km.

(14) Disaster recovery and reconstruction project from intersection G327 of LINtong Line S227 to Handongzhuang Section

The starting point is located at the terminal point of S227 Lintong Line and G327 connecting fixed line

in Yuanwu Town. After crossing Yuanwuzhen Street southwest along S227 highway, the project will pass through G5512 Jinxin Expressway, Beijing-Guangzhou Expressway and G107 double line in turn, pass Through Li Cun and Mengzhuang, and reach the bending point of East S227 route in Handong Zhuang as the end point. The total length of the route is 6.499km.

(15) S101 Zheng-Tai Line intersection of S225 to Xinxiang Hebi Boundary Section

Starting point is located in the west of Liyuantun Town (K83+000), the route to the northeast way Of Liyuantun town, Han Zhuang, East Paper village, Liyuan Sancun, Pangzhai Township, West Jiadi village, East Jiadi village, West Liu Village, East Liu Village, in K93+800 under the construction of Puwei high-speed after continuing to east through Yinzhuang, Fengzhuang town and other villages, The terminus is located at the junction of Yanjin County, Xinxiang City and Junxian County, Hebi City (K98+361), with a total length of 15.361km.

**(2) Recovery and reconstruction plan**

A. Pavement works

In view of the current situation of road surface water, the centralized drainage scheme is adopted to remove road surface water. After removing the water on the road surface, according to the water damage on the road surface, According to the highway Engineering Technical Standard (JTG B01-2014) and Highway Asphalt Pavement Design Code (JTG D50-2017) issued by the Ministry of Communications of the People's Republic of China, combined with the natural conditions, climatic conditions, subgrade characteristics and cumulative equivalent axial results of predicted traffic volume in the project area, On the premise of meeting the technical requirements of the specification, reasonable selection of materials, the nearest materials, as far as possible to reduce the cost of the project. To achieve the purpose of safe and comfortable driving, investment saving and convenient construction and maintenance.

Referring to the completed and effective highway pavement structure, the recovery and treatment plan for this time is as follows: 1) For the road surface potholes and cracks, serious lane ruts, and loose road surface structure with long-term water soaking: For the position of full-width lane and hard shoulder: After milling the original 12cm asphalt surface and 18cm cement-stabilized macadam on the base, the current base was carried out with 18cm full-depth cold regeneration, 18cm new cement-stabilized macadam base, 8cm coarse grained asphalt concrete (AC-25C) and 4cm fine grained modified asphalt concrete (AC-13C).2) Continuous mild pavement disease section: mainly for the road section with mild pavement cracks, slight ruts and other mild diseases: in the position of full-

width carriageway and hard shoulder, the original 4cm asphalt top layer is milling and then 4cm fine grained modified asphalt concrete (AC-13C) is paved back. 3) For the diseases of spot pits and grooves, local cracks and small area, 12cm raw asphalt surface, step excavation of the disease range of base. According to the depth of disease treatment, backfill 18cm-36cm C20 cast-in-place concrete +8cm coarse grained asphalt concrete (AC-25C) +4cm fine grained modified asphalt concrete (AC-13C) treatment measures.

B. Roadbed engineering

The roadbed damaged by flood will be replaced. The material and form of roadbed are consistent with the status quo. Pay attention to the connection between roadbed and pavement structure and soil shoulder to avoid water damage. Other parts of the roadbed are in good condition and are expected to be fully utilized.

C. Drainage works

Strengthen the investigation of the current drainage system and according to the actual situation of the serious damage to the water, add drainage facilities such as side ditch, jet groove, strengthen the guidance of water flow, optimize and perfect the subgrade pavement drainage system function.

D. Bridge culvert

According to the current situation investigation and test report to determine the safety of the bridge to determine the restoration and maintenance plan.

E. Route crossing

This restoration maintenance plane intersection remains unchanged in the original design and is not raised by the crossing road. It is planned to adopt the milling groove alignment treatment and the main line lap smooth and comfortable, and the pavement structure is consistent with the main line.

F. Traffic safety facilities

Traffic signs: restore and rebuild traffic signs on damaged sections.

Waveform beam guardrail: combined with the requirements of the new code "Highway Traffic Safety Facilities Design Code", comprehensive consideration of the site environment, it is planned to restore and rebuild the damaged section guardrail, so that it meets the requirements of the current code.

Marking: restore road marking, add vibration marking in village section, add crosswalk warning line, crosswalk line and stop line at plane intersection.

### 3.2 post-disaster reconstruction of public transportation infrastructure and purchase of pure electric buses

This part includes Xinyi Middle School bus station (southeast corner of Liuqing Road and Xiner Street), High-speed railway bus station (south side of Shiwu High-speed railway Station square), Baixiaotun bus station (north heping Avenue), Taitou bus station (south Heping Avenue), Qiaoxie bus station (southeast Dongming Avenue and Xiangyang Road).New one middle bus station, Taitou bus station, Baixiaotun bus station in the water soaked for several days, resulting in loose roadbed, cement pavement cracking serious. Xinyi middle school bus station office for color board room, the flood has been completely damaged, beyond repair.The bus station of high-speed railway was seriously damaged, with road subgrade collapsing, charging piles and power supply facilities of the station also seriously damaged. A total of 204 buses were scrapped after big blisters. These problems seriously affected the normal traffic operation of the bus station.

Considering the damage of the existing bus station in Xinxiang city, this project will repair the damaged charging pile power distribution facilities of high-speed railway, Xinyi Middle School and Qiaoxie station, update the scrapped charging pile infrastructure, and strengthen the rain prevention measures of intelligent charging equipment in parking lots. This part of the equipment should be selected in a safe location above the historical flood water level. 204 pure electric buses will be purchased to replace the buses destroyed by the flood, and 2 floors of production rooms will be built at the site of the original office building. The restoration and reconstruction of the four bus stations are all in the existing station, without new land, no temporary occupation.

**Figure III1: Damage of the original office building of Xinyi Middle Station-2**

The total investment of bus infrastructure reconstruction and purchase of pure electric buses is 19,744.7 million yuan, of which the purchase cost of pure electric buses is 150 million yuan and the direct project cost is 34 million RMB. The project has applied for a loan of RMB 184 million yuan from AIIB, with the local government supporting RMB 13.446 million yuan.

**Table III2: Reconstruction content of public transport infrastructure after disaster32**

| No. | Subproject name | Project Construction Content | Project investment (10,000 Yuan) |
|---|---|---|---|
| 1 | Ground repair works at 4 bus yards | The ground engineering of Taitou bus station covers 11,000 square meters, the ground engineering of Baixiaotun bus station covers 3,000 square meters, the ground collapse engineering of high-speed railway bus station covers 16,380 square meters, and the ground hardening engineering of Xinyi Middle School covers 3,333 square meters. | 1647.88 |
| 2 | Xinyi Middle School production room reconstruction project | In the bus station of Xinyi Middle School, the original site of the original office building was rebuilt. The construction area of the production room of 2 floors was 531.66 square meters. | 239.25 |
| 3 | Reconstruction of 80 double-gun charging piles and power distribution supporting facilities | In the high-speed railway bus station, Qiao Xie bus station, Xinyi middle school bus station construction of a double gun charging pile 80 and supporting power distribution facilities. Among them, 38 charging piles with one tow and two terminals are built in the high-speed railway bus station, with a total of 76 charging terminals. In Qiao Xie bus station, 22 charging piles with one tow and two, a total of 44 charging terminals; The bus station of Xinyi Middle School will build 20 charging piles with one tow and two, with a total of 40 charging terminals. Power distribution facilities include power distribution room equipment, lighting, cable trench, cable, monitoring facilities, etc. | 1513 |
| 4 | Purchase 204 pure electric buses | Purchase 20 11m-class pure electric buses, 100 10m class pure electric buses, 59 8m class pure electric buses and 25 6m class pure electric buses to replace bus vehicles damaged by flood. | 15000 |

# 4. Environmental and social baselines

## 4.1 Environment Baseline

1. Regional location

The whole project is located in Xinxiang City. Xinxiang city is located in the hinterland of the Central Plains, the north of Henan Province, 35°18 'north latitude, 113°54' East longitude, south of the Yellow River, and Zhengzhou, Kaifeng across the river; North according to Taihang, and Hebi City, Anyang city adjacent west Jjiaozuo city, and southeast Jin border; East oil city Puyang city and west connected. It is an important national comprehensive transportation hub and one of the central Plains urban agglomeration cities.

2. Climate

Xinxiang has a warm temperate continental monsoon climate with distinct four seasons, cold in winter and hot in summer, cool in autumn and early in spring. The annual average temperature is 14℃.The hottest month in July is 27.3°C on average. The coldest month is January, averaging 0.2°C;The highest temperature was 42.7℃ (June 20, 1951) and the lowest temperature was -21.3℃ (January 13, 1951).The annual humidity is 68%, and the maximum frozen soil depth is 280mm.The annual average rainfall is 656.3mm, the maximum rainfall is 1168.4mm (1963), the minimum rainfall is 241.8mm (1997), the maximum snow thickness is 395mm (2009), and the annual evaporation is 1748.4mm. From June to September, the precipitation is the most, 409.7mm, accounting for 72% of the annual precipitation, and there are many rainstorms. The monsoon characteristics are obvious, prevailing northeast wind in winter, prevailing southwest wind in summer.Under the comprehensive cooperation of geographical environment, atmospheric circulation, topography, terrain and other factors, a warm continental monsoon climate is formed. Throughout the year, the maximum wind direction is northeast easterly wind with a frequency of 17.49%, and the sub-multiple wind direction is northeast wind with a frequency of 12.3%. The annual average wind speed is 2.45 m/s.

3. Topography

The hilly area in Xinxiang covers an area of 1560 $km^2$, accounting for 18.9% of the total area of the jurisdiction, plain area 6689 km2, accounting for 81.1% of the total area of the jurisdiction. Implementation plan of Xinxiang Bus Infrastructure post-disaster reconstruction and pure electric bus purchase Project 38 There are many landforms such as Zhongshan, low mountain, hill, intermountain basin and plain. The distribution pattern and extension direction of the landforms are mainly controlled by the Neocaysian active structures, except the southern area along the Yellow River which is controlled by the East-west Qinling system. Since the Cenozoic, the crust in the northwestern corner has been uplifted and uplifted to form mountains, and the rest of the area has been subsiding to form the Yellow River alluvial plain.

4. River system

Xinxiang city spans the Yellow River and Haihe river basins. The plain covers a total area of 78%, with fertile land and abundant heat. The Yellow River flows 170 kilometers through Xinxiang, covering 4,558 square kilometers. Xinxiang urban area is a River basin. The main rivers in the area are wei River, communist canal, West Meng Jiang Nu river, East Meng Jiang Nu river and the People's victory channel. Weihe river is one of the main tributaries of the Haihe River system. It flows northeast through Shandong and Hebei to Tianjin and enters haihe River. The Wei River, which flows through the city for 25 kilometers, is the main drainage channel in the city

5. Ambient air quality

According to the outline of Xinxiang 2020 Environmental Quality released by Xinxiang Ecological environment Bureau, the ambient air PM of Xinxiang city in $2020_{10}$, PM $-_{2.5}$, the average concentrations of sulfur dioxide and nitrogen dioxide were 89 μ g/m3, 51 μ g/m3, 13 μ g/m3 and 35 μ g/m3, respectively. The 95th percentile concentration of CO was 1.675 mg/m3, $O_3$The 90th percentile concentration was 173 μ g/m3.

In 2020, there were 366 days of air quality monitoring in Xinxiang city, and 236 days (64.5%) had excellent or good ambient air quality. Mild pollution 103 days (28.1%), moderate pollution 18 days (4.9%), severe pollution or above weather 9 days (2.5%).

In 2020, the primary pollutant in xinxiang's air quality is $PM_{2.5}$, the over-standard rate was 19.9%; Ozone (14.2%) and PM were the other pollutants in descending order$_{10}$(10.1%) and nitrogen dioxide (0.8%).

6. Surface water environmental quality

The rivers in Xinxiang are divided into Yellow River and Haihe river. The Yellow River basin includes natural canal, Wenyan Canal, natural Wenyan Canal, Huangzhuang River and Xiliuqing River. The Haihe River basin includes the People's Victory canal, the Great Sand River, the Wei River and the Communist canal.

In 2020, the water quality of the Yellow River basin in Xinxiang city was good, and the water quality of the Haihe River Basin was mildly polluted. The main pollutants were ammonia nitrogen, fluoride, volatile phenol and biochemical oxygen demand. Among the 14 monitoring sections under state and provincial control, 8 sections were classified as I-III, accounting for 57.1%; There were 6 sections of class IV water quality, accounting for 42.9%. As shown in figure 5. Among the 9 rivers, the water quality level is excellent, good 7 (natural canal, wenyan canal, natural Wenyan canal, Huangzhuang River, people's victory canal, communist canal, Wei River); Two mildly polluted rivers (Dasha River and Xiliuqing River). Compared with last year, the water quality of the Yellow River basin in Xinxiang city changed from mild pollution to good, and the water quality of the Haihe River basin remained mild pollution. The proportion of Class I to III sections increased by 28.5%, there was no inferior V section.

7. Acoustic environmental quality

（1） Urban area noise

In 2020, Xinxiang conducted daytime noise monitoring at 215 regional environmental noise monitoring points in the city. The average daytime equivalent sound level of ambient noise in urban area is 54.0 dB (A), and the grade is good.

（2） Road traffic noise

In 2020, 26 road traffic monitoring points in Xinxiang city were monitored during the day. The total length of the monitored section is 67.5 km, and the average equivalent sound level is 68.5dB (A).The evaluation level of road sound environmental quality is better.

8. Ecological environment

The sub-project rehabilitates the existing road and bus depot, flanked by shelterbelts and farmland.

**Figure IV1: Photo of the current situation of the project site (February 2022)4-1**

### 4.2 Social Baseline

Xinxiang, located in the north of Henan Province, is one of the important cities in central Plains urban agglomeration and "Cross" core area, and its comprehensive competitiveness ranks the third in Henan Province.Xinxiang has jurisdiction over 12 county-level administrative districts, including 4 municipal districts, 3 county-level cities, 5 counties, which are Weibin District, Hongqi District, Muye District, Fengquan District, Huixian City, Weihui City, Changyuan City, Xinxiang County, Huojia County, Yuanyang County, Yanjin County and Fengqiu County.Xinxiang covers an urban area of 422 km2 and an urban built-up area of 110km2, with a permanent population of 1.1265 million. The city's urbanization rate reached 51.96 percent. In 2020, the city's GDP reached 301.451 billion yuan, ranking the sixth in the province, with a year-on-year growth of 3.2%, 1.9 percentage points higher than the provincial level, and ranking the fourth in the province's growth rate. By industry, the added value of primary industry was 29.336 billion yuan, up 1.8%;The added value of the secondary industry was 135.245 billion yuan, up 4.2%;The added value of the tertiary industry was 136.87 billion yuan, up 2.2%.The ratio of the three industries was 9.7:44.9:45.4.

The massive flood disaster in July 2021 caused severe losses to Xinxiang, and all the towns and villages in xinxiang were affected to varying degrees. The affected population was 2,637,000, accounting for 42.2% of the total population of Xinxiang. Agriculture, transportation, water conservancy, municipal infrastructure and other serious damage, the city's direct economic loss of nearly 42.1 billion yuan.

According to the seventh census, the permanent population of the city is 6251,929.Compared with the population of 5,707,801 in the sixth national census in 2010, the permanent population of The city increased by 544,128 in ten years, increasing by 9.53%, with an average annual growth rate of 0.91%.In the permanent population of the city, the male population is 3140,169, accounting for 50.23%;The female population is 3,111,760, accounting for 49.77%.The sex ratio of permanent residents (male to female ratio of 100 females) was 100.91, down 0.46 from 101.37 in the sixth National census in 2010.

There are 44 ethnic minorities in Xinxiang with a population of 64,418, accounting for 1.07% of the total population of the city. Among the population of ethnic minorities, the Hui account for 56,353, accounting for 87 percent of the population of ethnic minorities, while the Mongolian (2,947) and Manchu (2,029) have the largest populations of other ethnic minorities. There is no minority gathering area along the highway and near the bus station.

According to the statistical yearbook of Xinxiang city in 2020, 12,100 urban residents enjoyed the minimum living security in 2019, and the minimum living security fund for urban residents was 50,479 million yuan. A total of 255.376 million yuan of subsistence allowances were granted to 108,800 people in rural areas.

Form IV1: Subsistence allowance for urban residents-

## 城市居民低保情况

单位:人、户、万元、人次

| | 城市居民最低生活保障人数 | 女性 | 残疾人 | 城市居民最低生活保障户数 |
|---|---|---|---|---|
| 新乡市 | 12131 | 4864 | 2726 | 7147 |
| 市本级 | 0 | 0 | 0 | 0 |
| 红旗区 | 1023 | 444 | 443 | 693 |
| 卫滨区 | 1768 | 787 | 430 | 1023 |
| 凤泉区 | 449 | 221 | 150 | 272 |
| 牧野区 | 1029 | 412 | 619 | 778 |
| 新乡县 | 246 | 79 | 46 | 177 |
| 获嘉县 | 574 | 319 | 193 | 398 |
| 原阳县 | 1102 | 253 | 55 | 531 |
| 延津县 | 1608 | 420 | 124 | 847 |
| 封丘县 | 1391 | 524 | 69 | 785 |
| 长垣市 | | | | |
| 卫辉市 | 2322 | 1117 | 268 | 1221 |
| 辉县市 | 433 | 218 | 251 | 298 |
| 开发区 | 121 | 44 | 39 | 81 |
| 西工区 | 10 | 5 | 6 | 8 |
| 工业园区 | 0 | 0 | 0 | 0 |
| 平原示范区 | 55 | 21 | 33 | 35 |

Form IV2: Rural subsistence allowance relief-

## 农村低保、救济情况

单位:人、户、万元、人次

| | 农村居民最低生活保障人数 | 农村居民最低生活保障户数 | 农村特困人员集中供养 | 农村特困人员分散供养 |
|---|---|---|---|---|
| 新乡市 | 108789 | 61049 | 1404 | 11963 |
| 市本级 | 0 | 0 | 0 | 0 |
| 红旗区 | 727 | 426 | 11 | 42 |
| 卫滨区 | 725 | 396 | 14 | 19 |
| 凤泉区 | 1253 | 705 | 31 | 139 |
| 牧野区 | 825 | 477 | 2 | 2 |
| 新乡县 | 5076 | 2633 | 76 | 260 |
| 获嘉县 | 8246 | 5234 | 170 | 747 |
| 原阳县 | 17641 | 8241 | 189 | 1996 |
| 延津县 | 16562 | 9295 | 335 | 1677 |
| 封丘县 | 28990 | 17679 | 248 | 3446 |
| 长垣市 | | | | |
| 卫辉市 | 8833 | 5366 | 243 | 848 |
| 辉县市 | 15281 | 8631 | 48 | 2211 |
| 开发区 | 800 | 396 | 6 | 28 |
| 西工区 | 79 | 34 | 0 | 23 |
| 工业园区 | 469 | 257 | 4 | 77 |
| 平原示范区 | 3282 | 1279 | 27 | 448 |

As of February 25, 2022, a total of 19,163,972 COVID-19 cases have been confirmed, 132.807 have been cured, and 5,913 have died. In Xinxiang, 57 cases have been confirmed, 54 have been cured and 3 have died. There are currently 0 confirmed cases.

# 5. Anticipated Environmental and Social Impacts

## 5.1 Environmental and social protection objectives

There is no new land and temporary land occupation in this project. According to the site inspection of the route and the nature of the project, the environmental and social protection targets are determined to be the residential areas and construction workers on both sides of the Central Line of the highway and within a range of 200 m outside the temporary construction land and 200 m outside the red line of the bus station. The survey found no ethnic minority communities along the project.

**Table V1: Environmental and social sensitive points5-1**

| Project Section Name | Environmental and social protection objectives |
|---|---|
| S309 Changji Line National Highway 107 to Huanyu overpass section | East Campus of Xinxiang No. 1 Middle School (20 meters), Henan Polytechnic Institute (40 meters), Xinhong Community (30 meters)<br><br>Dongfang community (170 meters), Hua'en community (40 meters), Fazhang Hongxing Square (50 meters) |
| S309 Changji line Jijinpu village to Fan Village section | Fanzhuang Village (25 meters), Liu Jingtun Village (20 meters) |
| S309 Changji line Yanjin Bangan village to S225 intersection section | Yanglin Village (200m), Li Zhuang Village (30m) |
| G342 Rifeng line Huixian Linzhou boundary to Huixian Lingchuan boundary section | Nanzhao Village (40 meters), Liaochi Village (35 meters), Yetou Village (30 meters), Shijiabo Village (30 meters), Liuquan Village (30 meters), Shachang Village (40 meters) |
| G242 xingyang line Huixian Gaozhuang to S309 section | High-chuang village (30 meters), high-chuang hospital (105 meters), the fine village (35 meters), Naguan Village (30 meters), Qin Jiazhuang (40 meters), Wang Jiazhuang (30 meters), Lijiazhuang (30 meters), Changcun town (25 meters), Zhaoningtun village (30 meters), Fengchun village (30 meters), Huangli village (35 meters) , Meng Zhuang (30 meters). Zhongligu Village (32m), Fantun School of Mengzhuang Town (200m), Fantun Community |

| | |
|---|---|
| | (30m) |
| G234 Xingyang line S229 intersection to Huojia County West ring overpass section | Xu Zhuang village (30 meters), Xincun village(30 meters), Huojia county first middle school (40 meters), Yufu MingJun community (40 meters), waterside pavilion huadu (60 m), Chen zhuang village (40 meters), Huojia third primary school (32 meters), Jinding international community (35 meters), Xiangfu community(40 meters), Dongruishihefu community (70 meters), Lixiang city community (30 meters), Yangguang Jiayuan (60 meters), Fuzhong Garden community (25 meters), Dongcheng Yivable (100 meters), Huojia County Vocational Secondary Vocational School (50 meters), Yantang Village (30 meters), Qianli Village (30 meters) |
| S231 Boyuan county Gufeng bridge to S228 intersection section | Fumin Guanzhuang Village (35 meters), Beizhangzhuang Village (40 meters), Ningnan Community (30 meters), Jinxiu New Town (30 meters), Aojia No. 2 Middle School (90 meters) |
| S231 Boyuan line Baobi to Dabeicheng section | Mengcun Primary School (120 meters), Xiaobicheng Village (40 meters), Dabicheng Village (40 meters) |
| G107 Beijing-Hong Kong line Weihui xiyuan to Gujun section | Renlitun village (40 meters), Weihui municipal TangZhuang Town the second middle school (120 meters), Tianzhuang village (32 meters), Shuanglan Village (30 meters), WenKang community (40 meters), the first middle school of TangZhuang Town (140 meters), LiuGou Village (32 meters), SuoTun village (30 meters), harmonious home (40 meters), Han Guangtun village (35 meters), BuQiTun village (35 meters), Xijiaozhuang Village (40 m), Qinzhuang Village (30 m), Sunzhuang Village (30 m), Meicheng (50 m), Shihefu (50 m), Nangujun Village (35 m), Xijinglou Village (30 m), Ximaotan Village (30 m), Miaozhuang Village (30 m) |
| S101 Zhengtai Line Yellow River Bridge north to | Mengzhang village (35m), Liwu village (30m) |

| | |
|---|---|
| G327 intersection section | |
| S101 Zhengtai line S225 intersection to Xinxiang Hebi boundary | Xiliuwei Village (30m), Fengzhuang Town (25m), Maxing Village (30m), Wangzhuang Town (25m), Mozhuang Village (30m), Douzhuang Village (30m) |
| S224 Yanjin Mazhuang, Neiluo County, South to S230 section | Shenggu Village (30 meters), Li En Village (35 meters), Zhuzhai Village (35 meters) |
| S227 Lintong line G327 intersection to Han Dong Zhuang section | Yuan Wuzhen (25 meters), Han Dongzhuang (30 meters), Sanquan College of Xinxiang Medical College (174 meters) |
| S225 Anping line Yang'A to JinTang section | Xinxiang Lu Orthopaedic Hospital (110 meters), Yuanyang County Teachers' Further Education School (120 meters), Wolifeng Cooperative Soil and Fertilizer Research Institute (25 meters), Lizhuang Village (40 meters), Niangniangmiao Village (30 meters), Liangzhai Village (30 meters), Yangdong Village (35 meters) |
| S225 anping line S309 intersection to S311 intersection | Xinxiang Yanjin Chengbei School (60 meters), Daetan Village (35 meters), Chengguan Town Yingbin School (30 meters), Duanzhuang Village (30 meters), Liyuan Village (30 meters), Shipogu Town (25 meters), Zhuxinzhuang (30 meters), Dahan Village (40 meters) |
| No.1 Middle School bus depot | Big Data Reception Center Hotel (170 meters) |
| Baixiaotun bus depot | Xiaoyangzhuang village (100m) |
| Taitou bus depot | Bus company community (60m), Gold Coast Spa Hotel (50m) |
| High-speed rail bus depot | Runhua Jindi Plaza (80m) |

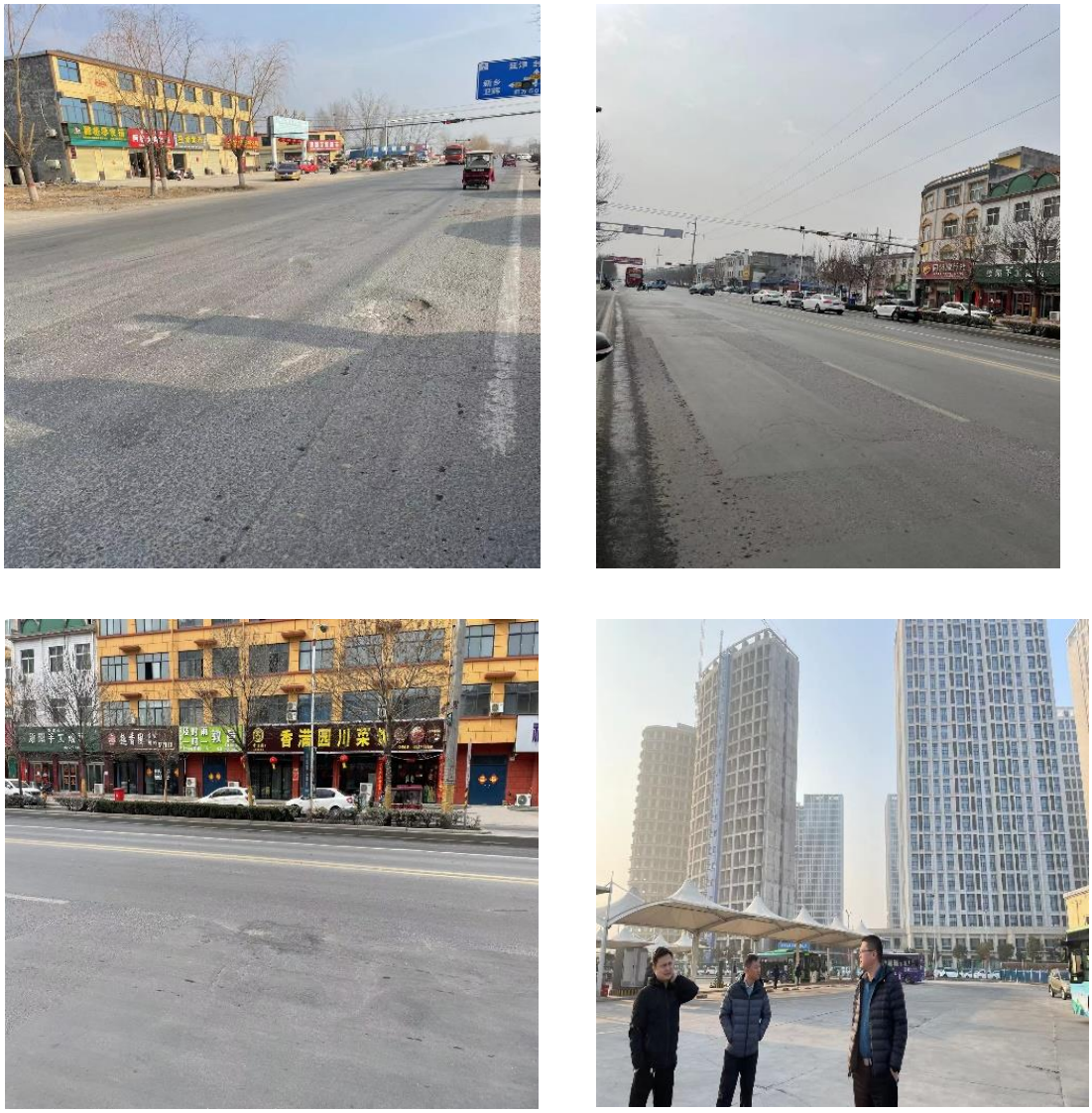


**Figure V1: Example of environmental sensitive points along the route (Taken in February 2022)51**

## 5.2 Projected environmental and social impacts

Potential environmental and social impacts are identified and assessed in this section and corresponding environmental and social mitigation measures refer to Section VII: Environmental and Social Management Plan.

### (1) Environmental and social impact during construction

### A. noise

In the process of construction, the noise of various construction machinery and transportation vehicles will affect the daily life of nearby residents, especially schools and hospitals, which require higher acoustic environment. The attenuation of device noise with distance is shown in Table V-2.

**Table V2: Noise distance attenuation results of construction equipment (dB (A))5-2**

| Device name | Distance from construction machinery (m) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 20 | 30 | 50 | 60 | 100 | 150 | 300 |
| A bulldozer | 86 | 80 | 74 | 70.5 | 66.1 | 64.5 | 60.1 | 56.6 | 50.6 |
| excavator | 84 | 78 | 72 | 68.5 | 64.1 | 62.5 | 58.1 | 54.6 | 48.6 |
| loader | 90 | 84 | 78 | 74.5 | 70.1 | 68.5 | 64.1 | 60.6 | 54.6 |
| roller | 86 | 80 | 74 | 70.5 | 66.1 | 64.5 | 60.1 | 56.6 | 50.6 |
| grader | 90 | 84 | 78 | 74.5 | 70.1 | 68.5 | 64.1 | 60.6 | 54.6 |
| paver | 87 | 81 | 75 | 71.5 | 67.1 | 65.5 | 61.1 | 57.6 | 51.6 |

According to the prediction model of point sound source, the influence range of noise in construction process is calculated. According to the calculation results in Table V-2, the noise of a single construction machine can meet the standard limit if the noise is more than 51m away from the sound source in the day. If the construction is carried out at night, the maximum value at night is 285m.In the actual construction process, there may be several machines working in one place at the same time, and the construction noise has a larger impact range. The construction noise interference is the most serious period of roadbed construction earthwork construction and pavement construction stage.The construction unit shall take the measures specified in Table VII-1 of Section VII during the construction process to reduce the noise impact of construction activities, especially the sections that pass through the urban area with relatively dense sensitive points (S234 Xingyang Line S229 intersection to Xihuan Interchange in Huojia County) and the sections with schools and hospitals nearby (see Table V-1).

**Table V3: Impact range of construction equipment noise5-3**

| Noise source | Limit value (dB) | | Area of influence (M) | |
|---|---|---|---|---|
| | day | The night | day | The night |
| A bulldozer | 70 | 55 | 32 | 181 |
| excavator | | | 26 | 143 |
| loader | | | 51 | 285 |
| roller | | | 32 | 181 |
| grader | | | 51 | 285 |
| paver | | | 33 | 182 |

**B. Solid waste**

The solid waste during the construction period is mainly the living garbage of the construction personnel and the asphalt concrete generated by the milling of the pavement surface.

Domestic garbage is calculated as 0.5kg per person per day. There are about 30-90 workers in each section of highway project construction, and the output of domestic garbage in each section of

construction is about 15-45 kg/d during construction. Each bus station has about 20 construction staff, and the output of household garbage during construction is about 8 kg/d. After classified collection, it relies on the local garbage collection and transfer system, and is uniformly disposed by the municipal sanitation department.

A total of 116.25 km of road section will be reconstructed in this sub-project. About 837,108 m will be generated by removing the original asphalt surface and cement stabilized gravel base$^3$Asphalt concrete can be recycled as building materials. Except S225 Anping line Yanga to Jintang section and S227 Lintong Line G327 intersection to Handongzhuang section, the rest of the road repair section without earthwork excavation. About 1402 square meters of abandoned soil will be produced from Yanga to Jintang section of Yuanyang County of ANping line S225, which will be used for shoulder repair of nearby sections. S227 Lintong Line G327 intersection to Handongzhuang section of 6,461 square meters of land filling, planned to be taken from the wasteland near Handongzhuang Shuangjing Village, to be implemented to determine the final location in coordination. The amount of abandoned soil generated by the construction of the station is small, of which about 5711 square meters are generated by the high-speed railway station, which is used for road construction and filling of the new high-speed railway area near the station. The abandoned soil of Baisiu Tun station and Sun Yizhong Station should be entrusted to a qualified muck removal company for disposal.

Table V4: Earthwork balance5-4

| Section/bus stop | Excavation ($m^3$) | Fill ($m^3$) | Discard ($m^3$) |
|---|---|---|---|
| S225 Anping line Yanga to Jintang section of the disaster recovery and reconstruction project | 6185 | 4123 | 1402 |
| S227 Lintong Line G327 intersection to Handongzhuang section of disaster recovery and reconstruction project | 10323 | 16784 | 0 |
| Baixiaotun depot | 2100 | 1050 | 1050 |
| High-speed rail depot | 11466 | 5755 | 5711 |
| Xinyizhong depot | 2333 | 1166 | 1167 |
| Taitou depot | 0 | 0 | 0 |

**C. Waste water during construction**

During the construction period of the highway project, the number of people per road section is about 30-90 people/day, the average water consumption per person per day is 100L, the domestic sewage

discharge coefficient is 0.8, and the domestic sewage volume is 24-72 $m^3$/ d;The amount of domestic sewage in the bus station project is about 1.6$m^3$/ d.The main pollutants of domestic sewage are SS, COD and $BOD_5$And $NH_3$-n, the concentrations of pollutants are about 300mg/L, 200mg/L, and 25mg/L, respectively.The domestic wastewater of the construction personnel of the project will be treated based on the domestic sewage treatment measures of the surrounding residents.

The construction waste water mainly comes from the dirty oil of the machinery running, emitting, dripping and leaking and the oily sewage of the open-pit machinery after being washed by rain.For the waste water containing sediment produced in the construction process, the sedimentation tank is used to settle and then the supernatant is returned to the construction site.During construction, set to maintenance of mechanical equipment in the far away from the surrounding water area, can prevent water, oily wastewater pollution of construction machinery in the process of repair and maintenance process most washing wastewater by gully construction waste water into the pit, to drain the precipitation after processing, back to the process used for construction equipment washing and suppress dust sprinkler etc., not outside.

**d. Waste gas**

There will be no construction camp, precast yard and concrete mixing station during construction of this project. The main pollution sources are construction dust, exhaust gas of construction machinery and transport vehicles and asphalt smoke generated in the process of road laying.

In the process of road construction, foundation excavation, backfilling and base filling will produce a lot of dust, especially in the wind and dry climate conditions, its pollution effect is more prominent.

The pavement is paved with asphalt concrete pavement, and commercial asphalt concrete is used in construction. There is no asphalt mixing station on site. Asphalt smoke mainly comes from asphalt volatilization in the pavement laying process.

Excavators, loaders, bulldozers, graders and other machinery used in the construction process use diesel as fuel, which will produce a certain amount of exhaust gas, mainly CO, NOx, THC three pollutants. The number of construction machinery is small and scattered, the pollution degree is relatively light, the influence time is short-term, the scope is local.The impact of fuel exhaust can be minimized by selecting equipment models and maintaining equipment regularly.

**e. Ecological environment**

The project covers an area of land for the restoration of existing roads, and the surrounding environment is farmland ecosystem and town, with a small ecological impact.

**f. Physical and cultural resources**

There are no known cultural or archaeological sites on the project site. However, construction activities may interfere with unknown underground cultural relics. In order to solve this problem,

establish corresponding processing procedures for the discovery of material and cultural resources in the construction phase, and immediately start the procedures once the material and cultural resources are found.

**g. Labour and occupational health and safety**

The construction phase will involve about 829 contractor workers, 80% of whom will be local workers. There are 207 women, or about 25%.The workers were spread over 15 highway construction sections and four bus stops, with only 20 to 90 workers per section and bus stop. Female staff are mainly in information management, finance, human resources and logistics. China has established a sound legal and regulatory system to prevent sexual harassment, including the Civil Code, Criminal Law and Law on the Protection of Women's Rights and Interests, which is consistent with the requirements of ESS2 of AIIB. Overall, the risk of sexual harassment was "low." In order to prevent sexual harassment incidents, the Contractor will provide adequate facilities for both men and women at the site according to the number of female staff; Formulate rules and regulations to prevent sexual harassment and assign special personnel to take charge of them, and clearly inform all staff of relevant requirements; Prevention of sexual harassment will be included in the contractor's daily management training; A complaint mechanism has been established to protect individuals' privacy in accordance with the law when handling complaints of sexual harassment.

The construction of the project is mainly carried out by mechanical construction, and the amount of labor for each section is not large, between 30 and 90 people.

Table V5: Statistics on number of workers during construction period5-5

| Section/bus depot | The total number of choose and employ persons | Among them, local workers | Migrant workers | women |
|---|---|---|---|---|
| S231 Boyuan line from Baobi to Dabei | 34 | 30 | 4 | 10 |
| S309 Changji Line Yanjin Bangan village to S225 intersection section | 38 | 28 | 10 | 12 |
| S224 Neiluo county Yanjin Mazhuang south to G230 section | 42 | 32 | 10 | 12 |
| S225 Anping line S309 intersection to S311 intersection section | 75 | 60 | 15 | 17 |
| S225 Anping line Yanga to Jintang section | 44 | 37 | 7 | 8 |
| S227 Lintong Line G327 intersection to Handongzhuang | 43 | 34 | 9 | 6 |

| Section/bus depot | The total number of choose and employ persons | Among them, local workers | Migrant workers | women |
|---|---|---|---|---|
| section | | | | |
| S101 Zheng-Tai Line S225 intersection to Xinxiang Hebi boundary section | 79 | 64 | 15 | 16 |
| G234 Xingyang line Huixian Gaozhuang to S309 section | 43 | 34 | 9 | 13 |
| G234 Xingyang line S229 intersection to Huajia County West ring interchange section | 45 | 36 | 9 | 13 |
| G107 Beijing-Hong Kong line Weihui Xiayuan to Gujun section | 86 | 69 | 17 | 26 |
| S101 Zhengtai Line Yellow River Bridge north to G327 intersection section | 53 | 42 | 11 | 16 |
| S231 Bouguan Line gufeng Xiaoqiao to S228 intersection section | 23 | 18 | 5 | 7 |
| G342 Linzhou boundary of Huixian county to Lingchuan boundary of Huixian County on Rifeng Line | 74 | 60 | 14 | 22 |
| S309 National Highway 107 to Huanyu Overpass section | 43 | 35 | 8 | 13 |
| S309 Changji line Jijinpu village to Fanzhuang village section | 27 | 22 | 5 | 8 |
| Four bus depots | 80 | 60 | 20 | 8 |
| subtotal | 829 | 661 | 168 | 207 |

Health and safety risks faced by construction workers mainly come from dust, exhaust gas, noise and other health impacts, traffic and road safety risks, high temperature operation risks, and other safety risks caused by construction.

**h. Social Impacts**

There will be no construction camp during the construction period, and the sub-project will not involve new permanent land occupation, permanent expropriation of collective land and permanent occupation of state-owned land. After confirmation with the design unit and the construction unit, according to the current implementation plan, the construction of the project does not involve

temporary occupation: 1) The project is a restoration project, the road level and vertical will not change, does not involve road expansion;2) Site construction personnel should choose nearby villagers as far as possible. There is no construction camp on the site, and workers should rent nearby dwellings.The project management staff will work in the existing office of the Highway Bureau, and there will be no temporary project department;3) Commercial concrete is used in construction, and there is no material opposing party and mixing station setting;4) The construction protection method adopts half construction, and the construction machinery is temporarily parked on the road of half construction.Therefore, the construction of this project does not involve temporary occupation. During the implementation of the project, if temporary occupation of land is involved, the following measures shall be taken: 1) Each district/county highway bureau and construction unit of the project shall apply to the natural resources management department for approval;2) Fully communicate and negotiate with the affected villages and film households, and provide compensation according to relevant laws and regulations;3) Compensation for temporary land use shall include compensation for temporary land use and compensation for green plants (if any);4) The contractor shall be responsible for the restoration of the temporary site, which shall be approved by the affected village and the affected households.

The social influence during construction mainly includes road traffic, traffic safety and the influence on the surrounding sensitive points (see Table V-1). The increase in the number of vehicles transporting building materials has increased the volume of traffic on the roads. The transportation of soil and gravel materials will affect traffic safety and damage the road surface. Construction should be carried out according to the construction progress, sections of the section or section of passage, do a good job of construction shielding, traffic diversion. During the construction process, it will inevitably affect the living and rest of the surrounding residents, such as noise and dust pollution is more prominent. During the construction, the construction unit and the urban planning department should keep close contact, try to arrange reasonable construction time and strictly implement the construction specifications, so as not to affect the normal life of the surrounding residents. Project construction site should be well separated between the construction area and the lane to ensure construction safety and driving safety; Coordinate the traffic department to divert the traffic in the transit construction area, arrange special personnel to direct the traffic to avoid the traffic interruption caused by the construction; Reduce the impact on sensitive point traffic travel.

**1) Operational environmental and social impacts and mitigation measures**

The main environmental impacts of the project are traffic noise and vehicle exhaust emission. After the completion of the sub-project, there will be no new traffic flow, and traffic noise and vehicle exhaust emissions will remain at the current level. The vehicles purchased for the public transportation sub-project are pure electric buses, which have low noise and no exhaust emissions during driving.

During the operation period, the workers are mainly highway maintenance workers. There are no new maintenance workers in this sub-project. Currently, about 40% of the maintenance workers are women.

The social risks during operation are traffic safety and community safety. The project should set up

corresponding facilities (such as traffic lights, speed bumps) and traffic signs (such as speed limit signs) on sensitive road sections (villages/densely populated communities) to ensure traffic safety and community safety; At the same time, transportation authorities should strengthen traffic safety awareness education, especially along sections with schools nearby (Table V-1).

**2) Environmental and social benefits**

The subproject has benefited 142 towns and townships in 9 counties and cities of Xinxiang City, with a population of 2.1527 million, including 88,000 low-income people. The social benefits of the sub-projects include:

- Flood damaged sections of roadbed hollowing, collapse, road subsidence, destruction, culvert and bridge collapse and partial damage, along the guardrail was washed off, seriously affecting the normal travel of residents after the disaster; The implementation of the project will help repair the road subgrade, improve the road conditions, ensure the normal production, life and travel of residents along the road;

- Open flood-damaged roads and Bridges, restore road capacity, remove existing safety hazards, and facilitate the daily travel of residents;

- Repair the collapsed road surface and reinforce the earth on both sides of the mountain, to ensure the driving safety of this section, to protect the life and property safety of residents in the project area;

- Residents along the line are eager to implement the project as soon as possible and solve the road traffic problems as soon as possible.

- Repairing the bus infrastructure destroyed by the flood, bus stations, charging piles, and purchasing bus vehicles will help to restore the city's post-disaster traffic as soon as possible, speed up the resumption of public transport production, improve the utilization of public resources, and meet the normal travel needs of residents along the line.

- Heavy rain and flooding lead to leaking of buildings and ground collapse of bus stations, causing serious damage to bus infrastructure, and bus operators and passengers face office and travel safety hazards. The implementation of the project will help to improve the office conditions of bus infrastructure, maintain the safety of passengers and property, and remove the existing security risks.

- Repair the collapsed road surface and reinforce the wall of the station, to ensure the safety of the station operator and passenger entering, to protect the life and property safety of residents in the project area.

- Seriously affect the normal operation of bus lines. Residents along the bus routes in Xinxiang city are eager to implement the project as soon as possible, restore the operation of the line as soon as possible, and solve the travel difficulties and road traffic problems.

- Purchasing green buses to replace blisters, scrapped and old buses can not only ensure the normal operation of buses, but also improve residents' ride experience and the quality of the city, so as to improve the quality of bus service and the image of the city.

# 6. Public consultation and disclosure

## 6.1 Purpose of public participation

Meaningful public participation and consultation are important guarantees in project design and implementation. Through public participation in the environmental and social impact assessment process, it can:

- Share information with stakeholders on the key findings of the project and the environmental and social impact assessment;
- To obtain feedback on projects, expected impacts and preferred mitigation measures, and to gather information on the environmental, ecological and socio-economic baselines of the project area;
- Understand stakeholder concerns about all aspects of the project, including the current status, potential impact of construction and construction-related activities;
- Establish and maintain communication links between project supporters and stakeholders;
- Ensure that stakeholder perspectives and concerns are incorporated into project design and implementation as much as possible, with the goal of reducing or offsetting negative impacts and increasing the profitability of the project;
- Manage expectations and misunderstandings related to the project;
- Interact with project affected populations and other stakeholders to collect primary and secondary data related to project activities to work with stakeholders to maximize project environmental and social benefits.

## 6.2 Identification of stakeholders

Initially identified stakeholders include residents (Table V-1) who may be affected by construction activities in the vicinity of the highway, road users, public transport users in xinxiang urban area and road management units.

## 6.3 Public Participation

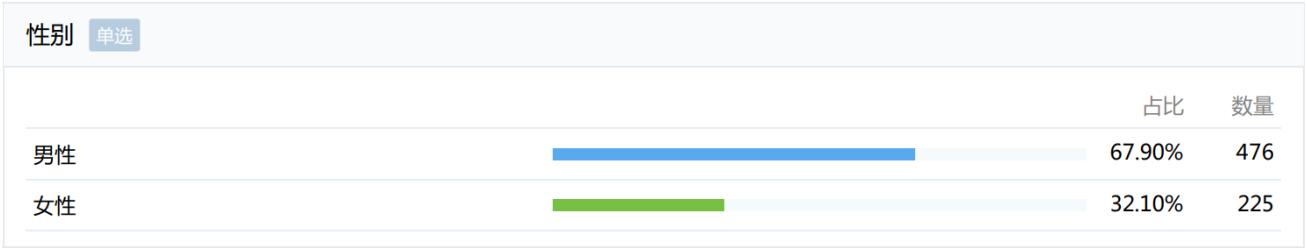
During the design phase of the subproject, the completed public engagement activities included a questionnaire survey and a symposium held in February 2022.The survey targets are residents around the project site that may be affected by the project construction activities identified during the initial identification of environmental and social impacts, including women, the elderly and low-income people.

（1） Questionnaire survey

From January to February 2022, an extensive questionnaire survey was conducted on the benefit areas of the sub-project and the villages and communities likely to be affected. A total of 712 effective responses were received, including 67.9 percent of men and 32.1 percent of women, and 6.68 percent of people over 60 years old. Of the 638 respondents, 59.83 percent (426) suffered little damage and 29.78 percent (212) suffered a lot due to floods this year. More than half of the respondents (58.13%)

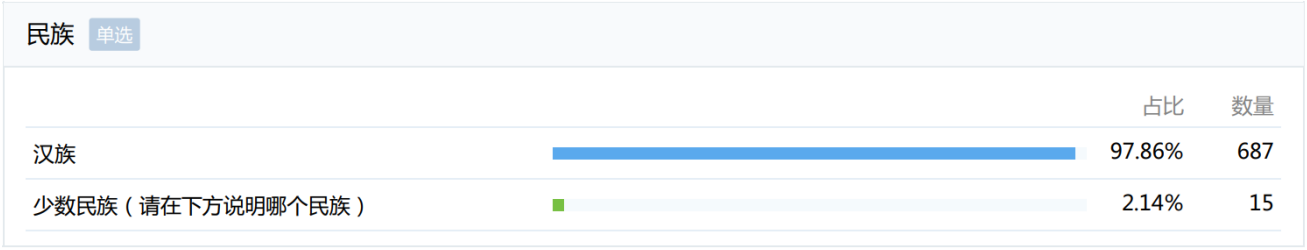
had known about the book sub-project before this survey. During the implementation of sub-projects, the respondents paid the most attention to transportation (34.14%) and environmental impact caused by construction activities (23.41%), especially dust (34.27%) and construction waste (29.70%).Most respondents (62.92%) believe that the increased traffic flow during construction will affect their work and life.94.80% of the respondents believed that the sub-project was necessary, and 96.91% supported the sub-project.

According to the result of a questionnaire survey of residents concerned about the project during construction period of dust, construction waste and transportation problems, and in the environmental and social management plan (table VII - 1) has been considered in the dust control measures, waste collection management and traffic management measures, implementation of framing by road construction, the half range, forbidden at night in a residential area road construction, Even if equipped with sprinkler equipment sprinkler, reduce dust and other measures, as far as possible to reduce the impact on residents' work and life.



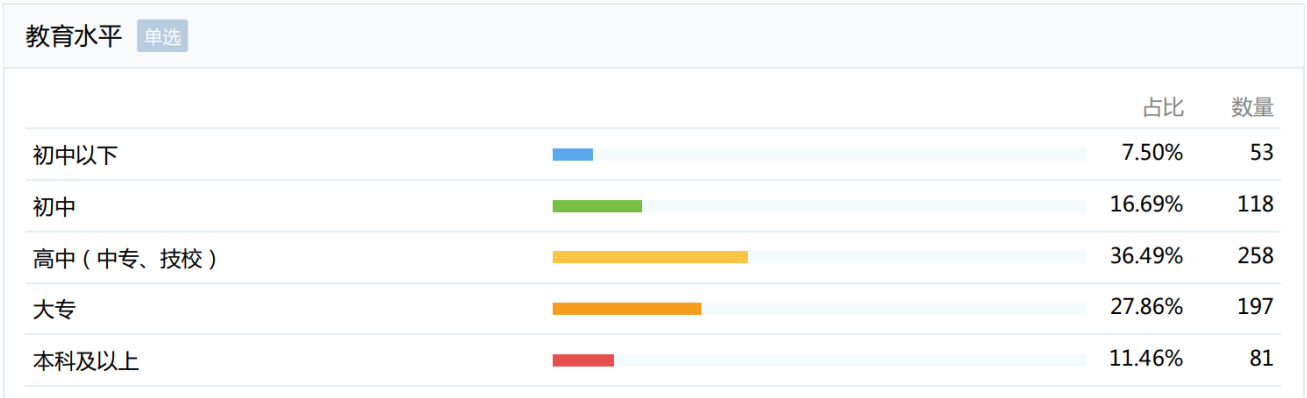
性别 单选

| | 占比 | 数量 |
|---|---|---|
| 男性 | 67.90% | 476 |
| 女性 | 32.10% | 225 |



民族 单选

| | 占比 | 数量 |
|---|---|---|
| 汉族 | 97.86% | 687 |
| 少数民族（请在下方说明哪个民族） | 2.14% | 15 |



教育水平 单选

| | 占比 | 数量 |
|---|---|---|
| 初中以下 | 7.50% | 53 |
| 初中 | 16.69% | 118 |
| 高中（中专、技校） | 36.49% | 258 |
| 大专 | 27.86% | 197 |
| 本科及以上 | 11.46% | 81 |

您的家庭收入来源主要是： 单选

| | 占比 | 数量 |
|---|---|---|
| 外出务工 | 19.80% | 141 |
| 农业种植 | 15.17% | 108 |
| 事业单位工资收入 | 62.36% | 444 |
| 低保 | 0.14% | 1 |
| 生意 | 2.53% | 18 |

近年是否因洪涝灾害遭受经济损失？ 单选

| | 占比 | 数量 |
|---|---|---|
| 有，但损失不大 | 59.83% | 426 |
| 有，损失较大 | 29.78% | 212 |
| 无影响 | 10.39% | 74 |

在本次调查之前，您是否了解过本项目？ 单选

| | 占比 | 数量 |
|---|---|---|
| 是 | 58.15% | 414 |
| 否 | 41.85% | 298 |

本项目实施您最关注的问题是？（可多选） 多选

| | 占比 | 数量 |
|---|---|---|
| 征拆补偿 | 14.98% | 240 |
| 环境影响 | 23.41% | 375 |
| 社区安全 | 14.36% | 230 |
| 交通出行 | 34.14% | 547 |
| 影响耕作 | 13.11% | 210 |

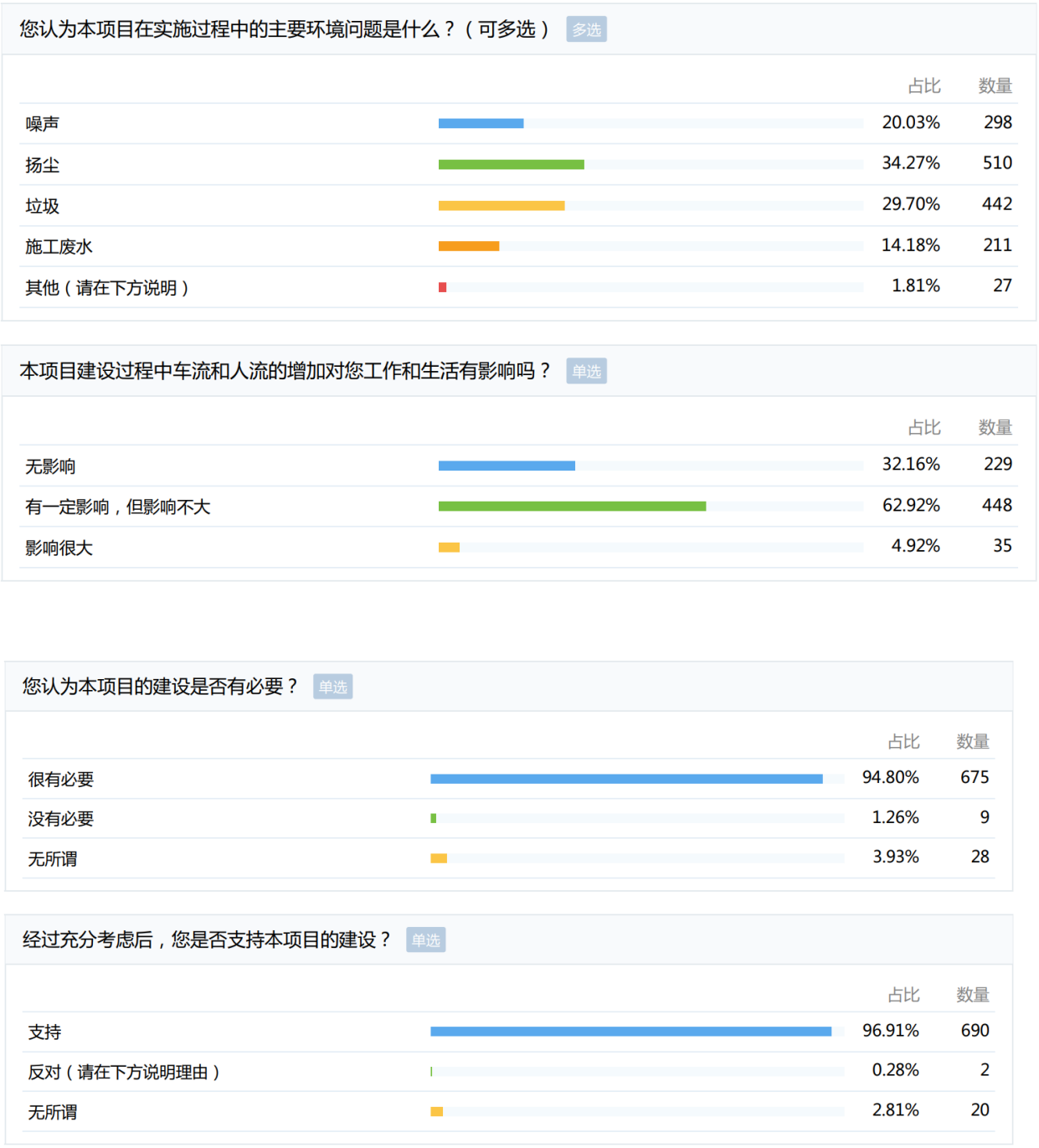



**Figure VI1: Questionnaire survey results6-1**

(2) Workshop

From February 9 to 10, 2022, a public participation symposium was organized in the project area and county. A total of 79 people participated in the interviews, including 24 female representatives, 21 elderly people over 60 years old and 5 low-income people. The project implementation unit presented the project content, potential environmental and social impact and established appeal mechanism. Participants generally expressed that: 1) The current road potholes increase the noise and wear of

vehicles;2) Potholes seriously affect traffic safety, especially in rainy days, potholes on the road can not be seen clearly;3) During the Spring Festival, there are a lot of traffic, and the traffic is not smooth, resulting in congestion.For the adverse impact of construction period, participants expressed understanding, hope to start as soon as possible, to ensure traffic safety.

According to the highway management department of the project area and county, although emergency repair was carried out after the disaster, some sections of the road were soon deformed and collapsed because the foundation was soaked by rain, and the problem was not completely cured. Residents have repeatedly called the mayor's hotline to report road damage, especially on rainy days.

| | |
|---|---|
|  |  |
| Huixian, 25 people | Huojia, 19 people |
|  |  |
| Yanjin County (16 people) | Yuanyang County (19 people) |

**Figure VI2: Public consultation session on the Environmental and Social Impact Survey6-2**






**Figure VI3: Interview with highway administration and bus company6-3**

### 6.4 Information Disclosure

The information publicity of this sub-project was made by Xinxiang Transportation Bureau in the process of carrying out environmental and social impact assessment (Figure V-3).The disclosed information includes: 1) information related to the project, including the location, scope and content of the project; 2) Potential environmental and social risks and impacts during construction and operation;3) Major environmental and social impact mitigation measures;4) Ways and contact channels of public feedback. The project owner unit has not received any public feedback since it was made public in the affected communities in February 2022.

### 6.5 Public participation and information Disclosure plan

Information dissemination and public participation will continue throughout the project cycle.

Prior to the commencement of the project, the environmental and social impact assessment report and management plan, including the appeal mechanism, will be published on the website of Xinxiang Transport Bureau prior to the commencement of the project.

The entrance to the construction site set up bulletin boards, specify engineering contractors and construction supervision units, time limit for a project, and the local environmental protection bureau hotline telephone number and the name of the contact person, for the affected people temporarily due to project construction interference of understanding and consideration, at the same time convenient affected people found irregularities, the construction unit to contact with relevant departments.

At the request of the project owner, the contractor shall attend regular public participation meetings held by the Owner in villages and societies in the affected area of the project. At the meetings, the construction unit shall send personnel to explain construction activities and environmental protection measures taken or to be taken, and listen to environmental and social issues of public concern and make responses to them.

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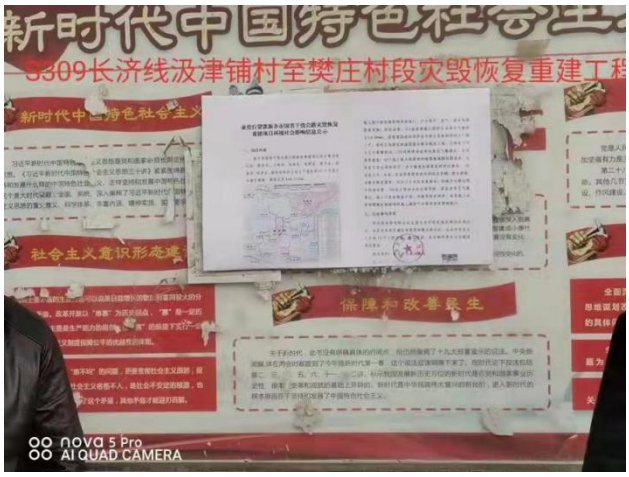
<td> 
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**Figure VI4: Community poster64**

# 7. Environmental and social management program

## 7.1 Institutional responsibilities for the implementation of environmental and social management plans

Xinxiang City establishes a project management Office (hereinafter referred to as "Xinxiang Project Office") under the municipal project leading Group. City project office is located in the city finance bureau, the municipal finance bureau chief of office director, respectively, set up the comprehensive coordination, bidding and purchasing group, financial statistics, project execution groups, such as four groups, from full-time personnel responsible for the coordination, consultation, bidding and purchasing loan project, financial statistics, environmental, and social security management, project supervision, such as daily work, Ensure smooth implementation of loan projects. Departments in charge of various industries have also set up industry project offices accordingly.

The main responsibilities of the Project Office are: responsible for the daily management of the project, organize and guide the project implementation unit to carry out the project preparation, mid-term implementation and late evaluation; To implement the management of project plans, funds, finance, procurement, training, monitoring and documentation; Be responsible for foreign affairs reception and undertake other work assigned by superior.

Xinxiang traffic transport is the objective of the implementing agencies, subordinate each project area county highway administration and Xinxiang public transportation group co., ltd. (hereinafter referred to as "Xinxiang bus company") is responsible for the specific implementation of each component, project area county highway administration and Xinxiang bus company appoints a staff need to (1) respectively as coordinator of the environment and society, To be responsible for the implementation and coordination of environmental and social management plans;(2) Ensure that environmental management plans, monitoring program and mitigation measures are included in tender documents and construction contracts;(3) Responsible for the operation of the appeal mechanism;(4) Handle unforeseeable adverse effects and report them to AIIB in a timely manner through Xinxiang Transport Bureau.

Contractor: 1) Ensure that adequate funding and manpower are available to implement mitigation measures and monitoring program in the Environmental and Social Management Plan throughout the construction phase;2) Be responsible for the operation of appeal mechanism in the construction stage.

Construction supervision: 1) Ensure that adequate financial and human resources are available to monitor and direct the contractor to implement mitigation measures and monitoring in a timely manner as required in the environmental management plan; 2) Supervise construction progress and quality;3) Appoint qualified staff responsible for occupational health and safety to conduct regular on-site supervision of the contractor; 4) Supervise the contractor's performance in implementing the Environmental and Social Management Plan; 5) Perform simple and cost-effective on-site quantitative measurements using basic hand-held equipment to periodically check compliance with project environmental monitoring standards and objectives, particularly in terms of noise and air quality.

### 7.2 Projected environmental and social impacts and mitigation measures

The potential environmental and social impact assessment of the sub-project is referred to in Chapter 5, where mitigation measures are developed based on identified environmental and social impacts.The designer and contractor will incorporate mitigation measures into the design, tender documents, construction contracts and implement them throughout the construction period under the supervision of the project implementing company and the supervision company. The effectiveness of these measures will be assessed on the basis of monitoring results from supervisory and external monitoring units to determine whether adjustments and improvements are needed.

**Table VII1: Projected environmental and social impacts and mitigation measures7-1**

| **Factors affecting the** | **Mitigation measures** | **Implemented by** | **Supervised by** |
|---|---|---|---|
| **During the construction** | | | |
| Exhaust gas/dust | 3) Subgrade in time stratified compaction, sprinkling dust;<br>4) In the construction of the road section with many residents (the road section with environmental and social sensitive points identified in Table V-1), baffle plates should be set up to reduce the impact of dust on the residents facing the street.<br>3) Within 50m from inside and outside the main entrances and exits of the construction site and around the walls, special personnel shall be assigned to clean and spray water regularly, and the cleaning rate shall be 100%;<br>4) Construction materials, such as cement and lime, which are easy to produce dust, should be stored in the storehouse and pool. The remaining soil and construction waste should be piled up centrally. Temporary storage yard should be arranged reasonably.<br>5) The use of commercial concrete asphalt, the construction site is not set up a temporary mixing station; Due to the need to carry out on-site mixing mortar, concrete, should try to do not | Contractor | Project District and county Highway Administration/Xinxiang Bus Company |

| Factors affecting the | Mitigation measures | Implemented by | Supervised by |
|---|---|---|---|
| **During the construction** | | | |
| | spill, not leak, not left, do not fall;<br>6) For construction machinery and vehicles, it is recommended to use low-sulfur gasoline or low-sulfur diesel, while strengthening daily maintenance to ensure their normal use and avoid excessive exhaust emissions.<br>7) The exposed ground/earth at the construction site shall be covered by a visual network, or cleared in time to restore vegetation; | | |
| Waste water | 1) Construction personnel should use surrounding facilities for washing and toilet as far as possible. Otherwise, temporary septic tanks, grease traps and other sewage treatment facilities should be set up.<br>2) The construction site shall be equipped with a special washing area, ground hardening and anti-seepage, and a collecting ditch and an oil separation sedimentation tank around it. After oil separation and precipitation treatment, the construction vehicles and mechanical washing wastewater can be recycled to the site for sprinkling water and dust suppression or discharge up to standard;<br>3) Construction materials, garbage and excavated earth must be stacked in places far away from water bodies, and anti-erosion measures should be taken to prevent the material yard from being lost, such as bag tillage and planting soil, and intercepting ditches should be set around the yard.<br>4) The construction unit should also avoid heavy rain season to carry out large-scale earthwork excavation, construction materials, abandoned | Contractor | Project District and county Highway Administration/Xinxiang Bus Company |

| Factors affecting the | Mitigation measures | Implemented by | Supervised by |
|---|---|---|---|
| **During the construction** | | | |
| | (slag) temporary pile site should take necessary water and soil conservation measures, the construction site to keep the drainage system unobstructed;<br>5) There should be a special warehouse for oil and chemical solvents stored on the construction site, and the ground should be treated with anti-seepage. Waste oil and chemical solvents should be centrally disposed of and not dumped at will.<br>6) for solid waste, construction waste, waste of maintenance, due to enter the water gets pollution, so for recycling, classification, storage and processing, the available material, should focus on using or submit a takeover, as most of the attributes of paper, wood, metal and glass, garbage collection available reuse of can't use, Should be handed over to the sanitation department for proper harmless treatment. | | |
| noise | 1) Reasonable arrangement of construction time and construction period, forbid night (22:00 ~ 6:00) construction; If it is necessary to work at night due to the construction technology, the Permit for Night Construction shall be applied for and the nearby residents shall be announced.<br>2) Optimize the construction scheme, adopt advanced construction technology and low noise equipment;<br>3) Strengthen regular equipment maintenance and strict operation procedures to avoid abnormal equipment noise;<br>4) Temporary construction | Contractor | Project District and county Highway Administration/Xinxiang Bus Company |

| Factors affecting the | Mitigation measures | Implemented by | Supervised by |
|---|---|---|---|
| **During the construction** | | | |
| | enclosure with noise reduction function (such as color steel plate, solid wall, etc.) shall be set up in the construction of adjacent sensitive targets; Control the running speed of bulldozers, excavators, road rollers and other mechanical equipment, and prohibit whistling;<br>5) Strengthen the management of transport vehicles and strictly control the honking of vehicles;<br>6) Transport vehicles entering and leaving the site shall be arranged on the side far away from sensitive points such as residential areas and schools. The equipment with strong noise in the construction site should be placed on the side far away from residential areas. Measures such as sealing the equipment with strong noise can be taken to reduce noise.<br>7) Strengthen noise monitoring. The construction site shall formulate noise reduction measures according to the requirements of the Environmental Noise Emission Standard for Construction Site Boundary (GB12523-2011), and detect and record the noise at the construction site boundary, and the noise emission shall not exceed the national standard. | | |
| Solid waste | 1) A small amount of slag is expected to be generated during the construction of Baixiaotun and Xinyi Middle Station, which should be entrusted to a qualified cleaning company for disposal in strict accordance with Xinxiang's Notice on Further Strict Management of Urban Construction Waste (Slag) Transport | Contractor | Project District and county Highway Administration/Xinxiang Bus Company |

| Factors affecting the | Mitigation measures | Implemented by | Supervised by |
|---|---|---|---|
| **During the construction** | | | |
| | Vehicles and Regulations on Urban Construction Waste Management;5711 square meters of dregs in the station of the new high-speed railway area are used for backfilling in the road construction of the nearby new high-speed railway area. Highway repair S225 Anping line Yang County Yang a to Jin Tang section of 1402 square muck, used for shoulder backfill.<br>2) Keep the construction site clean and tidy. Garbage classification (household garbage and construction garbage) collection, centralized storage, centralized disposal by the sanitation department.<br>3) During construction, the generation of construction solid waste should be reduced as far as possible, and the asphalt concrete removed should be recycled. | | |
| Soil and water conservation | 1) Strictly control the construction plant boundary to reduce the disturbance of surface vegetation;<br>2) For the exposed surface disturbed by construction, temporary covering measures should be taken to reduce soil erosion;<br>3) There are two sections of highway repair involving earth excavation. About 1402 square meters of abandoned soil will be generated in the section from Yanga to Jintang of Yuanyang County of S225 Anping line, which will be used for shoulder repair of nearby sections.S227 Lintong Line G327 intersection to Handongzhuang section of 6,461 square meters of land filling, planned to be taken from the wasteland near Handongzhuang Shuangjing | Contractor | Project District and county Highway Administration/Xinxiang Bus Company |

| Factors affecting the | Mitigation measures | Implemented by | Supervised by |
|---|---|---|---|
| **During the construction** | | | |
| | Village, to be implemented to determine the final location in coordination.The excavation of earthwork should avoid the rainy season, so as to avoid the exposed surface easily eroded or newly filled and excavated from the direct erosion of rain water. | | |
| The ecological environment | 1) Train workers and clarify the requirements of wildlife protection measures;<br>2) The construction scope is limited, and the destruction of vegetation outside the construction scope is prohibited;<br>3) It is forbidden to use herbicides and pesticides that are prohibited from being eliminated during construction;<br>4) In the process of construction, if the key protection plants are found, timely report to the competent authorities for ex-situ protection;<br>5) For places close to the habitat of wild animals, make a construction organization plan to avoid noisy construction at dawn, dusk and noon, and reduce the disturbance to wild animals;<br>6) Ecological restoration shall be carried out as soon as possible after the completion of the project to minimize the adverse effects of habitat destruction on animals.About 6960 trees are planted along the highway. | Contractor | Project District and county Highway Administration/Xinxiang Bus Company |
| Disclosure and appeal | 1) the construction site entrances, bulletin board, set forth the engineering contractors and construction supervision units, time limit for a project and the local environmental protection bureau hotline number and the name of the contact person, for the affected the | Contractor | Project District and county Highway Administration/Xinxiang Bus Company |

| Factors affecting the | Mitigation measures | Implemented by | Supervised by |
|---|---|---|---|
| **During the construction** | | | |
| | transient disturbance due to construction of understanding and consideration, at the same time convenient affected people found irregularities, the construction unit to contact with relevant departments.<br>2) Set clear traffic diversion signs, propose traffic diversion schemes to the owner during the peak period of busy road construction, and submit them to relevant departments for implementation;<br>3) Minimize the impact of construction on public services. If the impact is inevitable, report to the owner in advance, notify the residents by the owner, and shorten the affected time as far as possible;<br>4) Establish a complaint mechanism at the project level in accordance with the requirements of Section 7.6, and the contractor shall be received by special personnel;<br>5) At the request of the Owner, the Contractor shall attend regular public participation meetings held by the Owner in villages and societies in the affected area of the project. At the meetings, the construction unit shall send personnel to explain construction activities and environmental protection measures taken or to be taken, listen to environmental and social issues of public concern, and make responses to them. | | |
| The protection of cultural relics | 1) Make clear the distribution of surrounding cultural relics and requirements for protection measures before construction begins;<br>2) Construction involving existing | Contractor | Project District and county Highway Administration/Xinxiang Bus Company |

| Factors affecting the | Mitigation measures | Implemented by | Supervised by |
|---|---|---|---|
| **During the construction** | | | |
| | cultural relics protection units shall be approved in advance by the cultural relics protection administration department;<br>3) Strictly control the construction site boundary to avoid encroaching on the scope of cultural relics protection;<br>4) Carry out cultural relic protection training for construction personnel, strictly prohibit the destruction of cultural relics during construction;<br>5) Once the construction unit discovers cultural relics in the process of construction, it shall immediately stop the construction, protect the site and notify the cultural relics management department; | | |
| Temporary covers an area of | 1) District and county road bureaus and construction units of each project shall apply to the natural resources management department for approval;<br>2) Fully communicate and negotiate with the affected villages and film households, and provide compensation according to relevant laws and regulations;<br>3) Compensation for temporary land use shall include compensation for temporary land use and compensation for green plants (if any);<br>4) The contractor shall be responsible for the restoration of the temporary site, which shall be approved by the affected village and the affected households. | Contractor, project district and county Highway Administration | Xinxiang Transportation Bureau |
| Labour and worker safety and occupational health | 1) Abide by laws, regulations and policies on child labor, discrimination, forced labor, working hours, minimum wage, labor safety and health, and establish labor management | Contractor | Project District and county Highway Administration/Xinxiang Bus Company |

| Factors affecting the | Mitigation measures | Implemented by | Supervised by |
|---|---|---|---|
| **During the construction** | | | |
| | procedures. On the basis of full respect for their wishes, ensure that unskilled employment opportunities are given priority to women and vulnerable groups, and that equal pay for equal work is provided at no lower than the local minimum wage according to the actual situation of the work.<br>2) The contractor shall formulate safety and health management plans (including emergency plans for safety accidents) before commencement of construction and submit them to the supervision unit/owner for approval;<br>3) The contractor shall supervise the safety management organization and assign full-time safety management personnel to be responsible for construction safety management;<br>4) Train all construction personnel on occupational health and safety, introduce them to the basic work rules of the construction site, the rules of personal protection and how to prevent injuries to other employees;<br>5) Provide appropriate personal protective equipment (gloves, helmets, protective shoes, etc.) to fully protect workers, other workers and occasional visitors;<br>6) The construction site should be equipped with appropriate first-aid equipment;(a) Written emergency procedures should be available in remote locations until the patient can be transferred to an appropriate medical facility;<br>7) Dangerous areas, devices, materials, safety measures, emergency exits, etc., should be hung with correct | | |

| Factors affecting the | Mitigation measures | Implemented by | Supervised by |
|---|---|---|---|
| **During the construction** | | | |
| | signs;<br>8) The access to the emergency exit should not be blocked by obstacles at any time. Exits should be clearly marked, even in complete darkness.<br>9) Place warning signs on all electrified electric devices and wires;<br>10) The construction site shall be equipped with sufficient fire fighting facilities to meet the requirements of relevant laws and regulations on fire safety;<br>11) Operators of special vehicles/machinery must be trained in safe operation, equipped with necessary protective equipment, and work with certificates;<br>12) The construction unit shall establish a safety log, which shall be recorded daily by the safety personnel;<br>13) The construction unit shall set up health records of workers and carry out physical examination of workers regularly;<br>(14) Health education for construction personnel, such as implementing information communication strategies, enhancing face-to-face counselling, addressing systemic issues affecting individual behaviour, and encouraging individuals to take protective measures to avoid transmission of disease to others through the use of condoms; In addition, mosquito repellents, clothing, bed nets and other blocking methods are encouraged to prevent mosquito bites from transmitting diseases;<br>15) Comply with national and local regulations and guidelines on COVID- | | |

| Factors affecting the | Mitigation measures | Implemented by | Supervised by |
|---|---|---|---|
| **During the construction** | | | |
| | 19 prevention and control, as well as successful international health safety practices;<br>16) Gender-specific health facilities shall be provided at the construction site;<br>17) Formulate relevant rules and regulations for preventing sexual harassment, assign special personnel to take charge, and clearly inform all staff of relevant requirements; Prevention of sexual harassment will be included in the contractor's daily management training; A complaint mechanism has been established to protect individuals' privacy in accordance with the law when handling complaints of sexual harassment. | | |
| Traffic management | 1) Construction contractor should be ready before the traffic organization and traffic safety facilities design and be submitted to the approval of transportation, to strengthen the propaganda work, the supervision of road operation, setting up reasonable traffic safety facilities, make full use of the traffic signs, marking, and induced traffic facilities, remind the vehicle go ahead, into the main crossing of the road to set up safety marks and construction, And by the road management personnel command traffic, avoid traffic accidents, reduce the phenomenon of traffic jam.<br>2) During the construction process, pay attention to timely adjustment according to the construction progress and traffic flow situation to ensure the safe passage of vehicles during the construction. | Contractor | Project district and county Highway Administration |

| Factors affecting the | Mitigation measures | Implemented by | Supervised by |
|---|---|---|---|
| **During the construction** | | | |
| | 3) The control area should be set up in the recovery operation area, and traffic commanding personnel must be equipped at both ends of the work area. The setting of traffic signs in the control area should be coordinated before and after, so as to guide the steady change of traffic flow.<br>4) When the upstream of the control area is caused by bad visual distance due to road alignment, construction signs should be added to the appropriate upstream position of the control area, and additional safety facilities can be added if necessary, such as anti-collision barrels, strobe lights, etc.<br>5) Necessary safety construction signs, such as reflective cones, signs, warning columns, etc. should be equipped for the construction of filling pits and grooves to ensure construction safety. During night construction, lighting facilities should be set up. Lighting must meet the requirements of the operation and cover the entire work area. Other safe operations shall be carried out in strict accordance with relevant regulations. In addition, in the process of road construction, but also regular safety inspection, so as to timely eliminate hidden dangers of construction, to ensure the safety of the road construction.<br>6) In order to ensure safe production and construction progress, the project Management Department contacted the highway operation management unit to do a good job in traffic dredging and reduce the traffic flow in this section by | | |

| Factors affecting the | Mitigation measures | Implemented by | Supervised by |
|---|---|---|---|
| **During the construction** | | | |
| | cooperating with management methods. Should communicate with the landlord, increasing personnel strength, cooperate with the county road administration, to ensure the safety of train operation safety and its construction, at the same time should also be positive and along the government and relevant departments do a good job of the coordination, along to the public security organs, the traffic police department's support, so as to guarantee the project smoothly.<br>7) Between the construction lot and the open road, the safety cone is separated and closed, the safety cone is affixed with reflective film, and the warning red light is set at night to ensure the normal passage of traffic and the normal and orderly construction.<br>8) The buffer zones at both ends of the construction section are set with "no traffic ahead", "slow", "speed limit 20", "No overtaking" and other signs.<br>9) In the construction period, the allocation of professional security personnel, the development of scientific and effective shift system. Additional personnel should be sent to key sections for key security, and traffic police departments can be requested to assist in security when the situation permits.<br>10) In strict accordance with the Road Traffic Safety Law of the People's Republic of China, Road Administration Regulations, Road Traffic Signs and Marking (GB 5768.2-2009), Road Traffic Signs and Marking (JTG D82-2009), Road Traffic Signs and Marking | | |

| Factors affecting the | Mitigation measures | Implemented by | Supervised by |
|---|---|---|---|
| **During the construction** | | | |
| | part 4: Operation area (GB 5768.4-2017) and other laws, regulations and norms, combined with the actual situation, do a good job in the protection work. | | |
| The run-time | Install corresponding facilities (such as traffic lights, speed bumps) and traffic signs (such as speed limit signs) on sensitive road sections (villages/densely populated community areas) to ensure traffic safety and community safety; At the same time, transportation authorities should strengthen traffic safety awareness education, especially along sections with schools nearby (Table V-1). | Project District and County Road Bureaus | Xinxiang Transportation Bureau |

### 7.3 Institutional strengthening and capacity building

The Transportation Bureau of Xinxiang city has no previous experience in AIIB projects, and there is no requirement for environmental impact assessment for such projects in China. Therefore, the implementation of this Environmental and Social Management Plan is a new task for the project implementation unit. Xinxiang PMO will organize external experts to provide training for Xinxiang Transportation bureau, contractor, construction supervision units, to provide the environmental and social management plan. Training content include the AIIB's environmental and social policy, the construction process of good management practice, the GRM, monitoring and reporting, etc.

### 7.4 Monitoring and reporting

Monitoring in the Environmental and Social Management Plan (1) Internal monitoring: monitoring carried out by the supervision company and the project implementation unit;(2) External monitoring Compliance monitoring carried out by a qualified third party. Detailed monitoring requirements are provided in Tables VII-2 and 3. The Transportation Bureau of Xinxiang city will report quarterly in the first year of implementation and submit the report to AIIB through Xinxiang Project Office. Based on the bank's assessment of the implementation of environmental and social related measures, the frequency of environmental and social reporting could be changed to semi-annual in the year thereafter. The report covers :(1) implementation of environmental and social management plans;(2) Overall effectiveness of environmental and social management plan implementation;(3) Results of environmental and social monitoring carried out;(4) Capacity building;(5) The development of public

participation and the operation of the appeal mechanism; And (6) problems encountered and actions taken during construction and operation.

**Table VII2: Environmental and social monitoring indicators (1)72**

| Item | parameter | location | Frequency | Implemented by |
|---|---|---|---|---|
| ***Internal monitoring*** | | | | |
| Ambient air quality | Implementation of mitigation measures | Site inspection of construction site | daily | Construction supervision |
| noise | Implementation of mitigation measures;<br>When receiving noise complaints from residents, they shall monitor the noise through hand-held noise monitoring equipment | The construction field | daily | Construction supervision |
| Solid waste | Construction waste and household waste | Site inspection of construction site | daily | Construction supervision |
| Soil and water loss | Soil erosion | Site inspection of construction site and dump site (if any) | daily | Construction supervision |
| Occupational health and safety | On-site sanitation, clean water supply, personal protective equipment | Site inspection of construction site | daily | Construction supervision |
| Measures to ensure traffic and road safety | Set up safety signs, traffic guidance and warning boards, and line marking at construction road site and approach | Site inspection of construction site | daily | Construction supervision |
| ***External monitoring*** | | | | |
| noise | Continuous | Construction point | Once a month for | Qualified |

| | | | | |
|---|---|---|---|---|
| | equivalent sound level Leq | field boundary and noise sensitive point | two consecutive days | environmental monitoring units |
| Air quality | TSP, $PM_{10}$ | Field boundary and sensitive point of construction point | Once a month, 24-hour average | Qualified environmental monitoring units |

**Table VII3: Environmental and social monitoring indicators (2)73**

| Total Number of Employed persons | Number of technical positions | | | | | | Number of unskilled jobs | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | men | women | Male daily wage level | Women's daily wage | Engaged in technical work | | men | women | Male daily wage level | Women's daily wage | Engage in unskilled work | |
| | | | | | male | female | | | | | male | female |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| A total of | | | | | | | | | | | | |

Filling in the form:

The employment provided by construction includes two types: one is the number of jobs and jobs generated by the project management and supervision of construction units; One is the workers employed during construction (including permanent positions and temporary positions during peak employment).

"Technical position" refers to the job with technical content, including those requiring certification, managerial posts and other technical jobs, such as welder, machine operator, etc.

"Unskilled position" refers to pure labor input, such as porter, cleaner, kitchen helper, doorman, storekeeper, etc.

"Engaged in technical work" and "engaged in non-technical work" should be filled in the specific job name, such as excavator driver, XXX engineer, cleaner, etc.

### 7.5 Cost Estimation

A total of 14.34 million yuan was spent on the implementation of the environmental and social management plan, including: 1) 13.6 million yuan for temporary measures for road restoration and 680,000 yuan for temporary measures at bus stations , which are used for fencing , watering, building material covering, sprinkler, building materials, drains, sound barriers, solid waste cleaning, security, traffic sign, soil conservation measures civilization construction and so on, a total of 14.28 million yuan, shall be borne by the contractor (as part of the construction contract);2) External monitoring cost 50,000 yuan;3) RMB 10,000 for capacity building and training. In the operation stage, the maintenance cost of the road and the daily operation cost of the bus station will be borne by Xinxiang Transportation Bureau.

### 7.6 Grievance Redress Mechanism

#### (1) GRM for affected persons

The grievances addressed by the grievance mechanism are mainly disturbances caused by the project, such as dust caused by the construction, construction noise, improper disposal of construction waste, safety measures to protect the public and construction workers, noise and waste generated by the operation. At present, residents along the highway mainly report their problems through the mayor's complaint hotline 0373-12345 and the environmental protection hotline 0373-12369, and then the highway administration is required by the regulatory authorities to verify and deal with them.In addition to the mayor's complaint hotline and environmental protection complaint hotline set up by government departments, the project also sets up a special appeal mechanism at the project level. Xinxiang Transport Bureau is responsible for the operation of the appeal mechanism at the project level, and an environmental and social commissioner is appointed within the project office of Transport Bureau to coordinate and record the appeal mechanism. If Xinxiang Transport Bureau receives a complaint, the person in charge of the corresponding implementing unit (road bureaus of each project district and county) shall first verify whether the complaint is related to the project. If the complaint is related to the project, regardless of whether the complaint is related to the environment and society, the responsible person should initiate coordination to resolve the complaint. If the complaint is not related to the project, the person in charge shall submit the complaint to the relevant competent authorities on behalf of the complainant. All appeals shall be recorded and the entire process of appeal notified to the relevant personnel. The basic steps and time frame of the appeal mechanism are as follows.

- Phase 1 (5 days) : If problems occur during construction or operation, the affected person can lodge a written or oral complaint to the contractor (construction phase) or the County Road Bureau/Xinxiang Public Transport Group Co., LTD. (Operation phase).The contractor or the county road bureau/Xinxiang public transport group co., ltd. will :(I) immediately stop the relevant activities after identifying the problem (e.g. noise impact on nearby residents caused by site construction);(2)

The relevant activities shall not be resumed until the complaint is resolved;(3) Inform Xinxiang Transport Bureau of the incident on the same day as the incident occurs, and provide the response or response to be made to Xinxiang Transport Bureau;(4) Provide a clear response to the affected persons within two days;(5) Try to resolve the problem within five days of receiving the complaint. The Xinxiang Transport Bureau will inform the local residents committee and the Ecology and Environment Bureau of the incident within one working day of being notified, and will continue to inform these units thereafter.

- Stage 2 (5 days) : If the contractor (construction) or county roads authority/Xinxiang public transportation group co., LTD. (operation phase) can not be sure solve the implementation plan, or the affected people are not satisfied, Xinxiang transport department will work with the main stakeholders (including the contractor, the affected people, the local ecological environment department and project implementation unit) to organize a meeting. Develop a solution acceptable to all parties, including key steps to resolve the issue. The contractor or the County Road Bureau/Xinxiang Public Transport Group Co., Ltd. shall immediately implement the resolution and resolve the problem within 15 days. All actions and results should be documented.

- Stage 3 (15 days) : If the Transport Bureau of Xinxiang is unable to determine a solution, or the complainant is not satisfied with the proposed solution, the Transport Bureau of Xinxiang will organize a consultation of stakeholders (including the complainant, contractor, local Ecology and Environment Bureau, and Xinxiang Transport Bureau) within seven days. The meeting should identify solutions acceptable to all, including clear steps. The contractor (construction phase) and the County Road Bureau/Xinxiang City Public Transport Group Co., LTD. (operation phase) will immediately implement the agreed solution and fully resolve the issue within 15 days. Actions and results at all stages will be documented. At the end of the third phase, the Xinxiang Transport Bureau will inform the AIIB of the results.

**(2) A grievance mechanism for workers**

The Xinxiang Transport bureau will set up a separate complaint handling center to handle complaints from workers on construction sites to contractors. These complaints include wages, overtime, timely payment of wages, problems with accommodation or facilities related to drinking water, sanitary conditions and medical services.

**(3) Bank's Project-Affected People's Mechanism (PPM)**

The PPM has been established by the Bank to provide an opportunity for the independent and impartial review of submissions from Project-affected people who believe they have been or are likely to be adversely affected by the AIIB's failure to implement its ESP in situations when their concerns cannot be addressed satisfactorily through the Project-level GRM or the processes of the Bank's Management. Information on the PPM is available at: https://www.aiib.org/en/policies-strategies/operational-policies/policy-on-the-project-affected-mechanism.html".

**(4) Record keeping**

The Transport Bureau of Xinxiang City shall clearly record all complaints received, including the contact information of the affected person, the date of receipt of the complaint, the content of the complaint, the agreed measures for handling the complaint and include them in the report submitted to AIIB.

**Form VII1: Complaint record form7-4**

| | | | |
|---|---|---|---|
| Complaint number | | Date/time | |
| Name of Complainant | | anonymous | |
| Email address | | The phone number | |
| Address | | | |
| Weather conditions at the time of the incident (Meteorological information) | | | |
| The time and date of the event | | | |
| Location of incident | | | |
| The report<br>• Nature of the event<br>• Reasons<br>• Corrective actions taken<br>• Remedial measures<br>• Changes to the environmental management plan to avoid recurrence of the accident | | | |
| Whether multiple consultations are required, and if so, record details | | | |
| Feedback to complainants | | | |
| Taker - Name and signature | | | |

Form VII2: Summary of complaints7-5

| **No.r** | **Date of receipt** | **Name of Complainant** | **complaint content** | **Complaint Status** | **Suggested solutions** |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |

### 7.7 Feedback and adjustment mechanism

Based on the results of environmental monitoring, Xinxiang transport bureau will decide :(1) to identify and implement additional mitigation measures as needed;(2) The environmental and social management plan needs some improvement. The effectiveness of mitigation measures and monitoring plans will be assessed through a feedback reporting system. If major deviations from the environmental and social management plan are found during compliance inspection and monitoring, AIIB shall consult with the Xinxiang Transport Bureau and make appropriate changes to the monitoring plan and mitigation measures of the environmental management plan.

If found in the process of inspection and supervision of the implementation of the environmental and social management plan there is a big discrepancy happened or project major adverse effects on the environment or changes, to increase the number of projects affected Xinxiang transport authorities shall immediately in consultation with the investment Banks, and establish environmental and social assessment team to carry out additional impact assessment. Further public consultations are needed if necessary. The revised environmental and social impact assessment report will be submitted to the AIIB for review. The revised Environmental and Social Management Plan will be provided to the contractor, supervision company and relevant personnel of Xinxiang Transport Bureau.