ENVIRONMENTAL ACTION PLAN

INTERCONNECTING ROADS

SHANDONG-ANHUI EXPRESSWAY

June 1996
Beijing, China
The Ministry of Communications
Research Institute of Highway

Received 4/7-MAR-19  AM 10:45
SHIJIAZHUANG-ANYANG EXPRESSWAY
INTERCONNECTING ROADS

ENVIRONMENTAL ACTION PLAN

RESEARCH INSTITUTE OF HIGHWAY
THE MINISTRY OF COMMUNICATIONS
BEIJING, CHINA
JUNE, 1996
TABLE OF CONTENT

1. MAIN ITEMS OF THE ENVIRONMENTAL PROTECTION
2. PREPARATION, EXECUTION AND MONITORING OF THE ENVIRONMENTAL PROTECTION PLAN
3. ENVIRONMENTAL PROTECTION PERFORMANCES
4. INVESTMENT IN PROTECTION MEASURES
5. ORGANIZATIONS EXECUTING THE ENVIRONMENTAL ADMINISTRATION AND THEIR RESPONSIBILITIES
6. ENVIRONMENTAL MONITORING PLAN
SHIJIAZHUANG—ANYANG EXPRESSWAY
HEBEI SECTION
ENVIRONMENTAL ACTION PLAN FOR
THE INTERCONNECTING ROADS

The Interconnecting Road works of Shi-An Expressway Project includes totally six Interconnecting Roads of the ones from Gaoyi County, Baixiang County to Ningjin County, from Neiqiu County to Beizhangma, from the crossing of the power plant at Xingtai South Interchange to Nandoucun Village, from Shahe Interchange to Nanhe, from Cixian Interchange to Lingzhang and the one from North Shijiazhuang Interchange to Gaocheng.

This Environmental Action Plan of this Project, based on the “Shi-An Expressway Project Interconnecting Road Works Environmental Influence Report” and in correspondence with the environmental protection target of this Project, is prepared in such a manner that its feasibility and operability are taken as significant so as to assure that the adverse effect resulting from the design, construction and service of this Project can be managed to be controlled, reduced or compensated and that the environment and the physical health of the human being be under protection and that the development of the communication and transportation enterprise can be accelerated. The principles and mitigation measures in the EIA and EAP for Shi-An Expressway and applicable to the interconnecting roads.

I. Main Items of the Environmental Protection

1. Noise: Non-continual noises made by the machinery during the construction period and the non-stable noise made by the motor vehicles, during the operation period.

2. Atmosphere: During the construction period, the main substances that cause pollution to the atmosphere are the dust, second dust emission by the transporting vehicles, dust pollution by the lime soil mixing plant, and the dust and bitumen smoke pollution by the asphalt mixing plant in the construction of the connecting lines. Pollution to the atmosphere by the CO and NOx substances exhausted by the motor vehicles during the service period.

3. Utilization of the value of the land: to reduce the area of the permanent and temporary land occupation, to shorten the occupation period of the temporary land and to restore in time the vegetation and return the land for cultivation.

II. Preparation, Execution and Monitoring of the Environmental Protection Action Plan

This plan aims at the determination of the specific execution method of the protection measures and the presentation of the requirements on the environmental administration activities such as the supervision during the execution of the Project (designing and construction) and the monitoring and surveying during the service period.
2.1. Basis for Preparation

1) “Environmental Protection Law of the People’s Republic of China”

2) “Administration Regulation on the Environmental Protection of the Communication Construction Projects” of Ministry of Communications

2.2. Responsible Organizations for the Execution

The Environmental Protection Action Plan for the 6 Nos. Interconnecting Road Works of Shi-An Expressway is going to be executed during the construction period by the International Financial Institutions Loan Project Office of Hebei Provincial Communications Department.

Hebei Provincial Expressways Administration Bureau shall be responsible for the execution of the Environmental Protection Action Plan during the service period of this Project.

2.3. Monitoring Plan

Hebei Provincial Environmental Protection Bureau is the environmental protection administration department of the Hebei Provincial Government and it is responsible for the comprehensive supervision and management of the environmental protection within the Province.

Each of the Municipal Environmental Protection Bureau is the environmental protection department of the local authorities, is responsible for the environmental quality of its jurisdiction area, and takes measures to improve the quality of environment. The Environmental Protection Office of the Hebei Provincial Communication Scientific Research Institute is responsible for the environmental monitoring and surveying of the communication units.

The Environmental Protection Supervision System and the Monitoring and Surveying System for the area where this Project is located are as detailed in the following map:
<table>
<thead>
<tr>
<th>Province</th>
<th>City</th>
<th>District</th>
<th>Bureau</th>
<th>Monitoring Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEBEI PROVINCIAL</td>
<td>XINGTAI CITY</td>
<td>NEIQIU COUNTY</td>
<td>ENVIRONMENTAL PROTECTION BUREAU</td>
<td>XINGTAI CITY ENVIRONMENTAL PROTECTION MONITORING STATION</td>
</tr>
<tr>
<td></td>
<td>ENVIRONMENTAL</td>
<td></td>
<td>PROTECTION BUREAU</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PROTECTION BUREAU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHIJIAZHUANG CITY</td>
<td>GAOCHENG (COUNTY) CITY</td>
<td>ENVIRONMENTAL PROTECTION BUREAU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROTECTION BUREAU</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHIJIAZHUANG CITY</td>
<td>SHAHE CITY</td>
<td></td>
<td>ENVIRONMENTAL PROTECTION BUREAU</td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROTECTION</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MONITORING STATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHIJIAZHUANG CITY</td>
<td></td>
<td></td>
<td>ENVIRONMENTAL PROTECTION BUREAU</td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROTECTION</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MONITORING STATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HANDAN CITY</td>
<td>NANHE COUNTY</td>
<td></td>
<td>ENVIRONMENTAL PROTECTION BUREAU</td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROTECTION BUREAU</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HANDAN CITY</td>
<td>LINGZHANG COUNTY</td>
<td></td>
<td>ENVIRONMENTAL PROTECTION BUREAU</td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROTECTION</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MONITORING STATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure No. 1
Environmental Protection Supervision System and Monitoring System
### Environmental Monitoring Plan

<table>
<thead>
<tr>
<th>PERIOD</th>
<th>SYSTEM</th>
<th>Monitoring ITEMS</th>
<th>TARGETS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROVINCIAL ENVIRONMENTAL PROTECTION BUREAU</td>
<td>1. review the environmental protection measures and the EAP (Environmental Action Plan)</td>
<td>1. strictly execute the EAP simultaneously and the EAP</td>
<td></td>
</tr>
<tr>
<td>DESIGNING</td>
<td>PROVINCIAL ENVIRONMENTAL PROTECTION BUREAU &amp; MUNICIPAL ENVIRONMENTAL PROTECTION BUREAUS</td>
<td>2. inspect whether the stockpiles and the asphalt mixing plants are appropriate</td>
<td>2. to assure these places are in compliance with the environmental protection requirements</td>
</tr>
<tr>
<td>COUNTY LEVEL CONSTRUCTION ENVIRONMENTAL PROTECTION BUREAUS</td>
<td>3. inspect the control over the noise and dust pollution and determine the construction time</td>
<td>3. reduce the effect on the surrounding environment by the construction and to execute the relative environmental protection regulations and standards</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. inspect the administration of the loading, unloading and stocking of the poisonous and detrimental substances and to inspect the emission of pollution to the atmosphere</td>
<td>4. reduce the effect on the surrounding environment by the construction and execute the relative environmental protection regulations and standards</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. inspect the emission and treatment of the waste water and the waste engine oil in the construction places</td>
<td>5. assure the ground surface water does not suffer from pollution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. restoration and treatment of the borrow area and the deposit area</td>
<td>6. to assure the scenery and the land resources not to be seriously damaged</td>
<td></td>
</tr>
<tr>
<td>PROVINCIAL ENVIRONMENTAL SERVICE PROTECTION BUREAU</td>
<td>1. inspect the execution of the environmental protection action plant during the service period</td>
<td>1. execute EAP</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td>2. check the execution of the monitoring plan</td>
<td>2. execute the monitoring plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. check the necessity of further measures to be taken for environmental protection (perhaps environmental problems which were not predicted shall occur)</td>
<td>3. actually protect the environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. inspect whether the environmental quality of the sensitive areas meets the corresponding quality standards</td>
<td>4. strengthen the environmental management and to actually protect the public health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. inspect whether the pavement drainage is drained into the drinkable water source</td>
<td>5. assure the drinkable water source not to suffer pollution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. strengthen the supervision to prevent sudden occurrence of accidents and to remove the potential danger and to prepare the proposals for treatment of emergencies so that, once such accidents occur, leakage of dangerous and poisonous materials can be eliminated</td>
<td>6. remove the potential danger and avoid the occurrence of serious environmental pollution accidents</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
III. ENVIRONMENTAL PROTECTION PERFORMANCES

3.1. DESIGNING PERIOD

1. REASONABLE SELECTION OF ROUTE LINE: In the selection of the program of the project route, at the same time of pursuing reasonable alignment and low cost, sufficient consideration of the various environmental factors such as the occupation of the cultivable field and the farm lands, the protection of the residential areas, the development design of the towns and cities, the removal amount, of the source of the construction materials and the selection of the material source should be taken. In the mean while, opinions of the local authorities along the route should be widely and comprehensively collected. Large portion of the six connecting lines are to be expanded on the basis of the original existing roads. Since there is a large population but small amount of field in this area, occupation of land should be reduced as much as possible and the direction of the original existing roads and the original occupied land should be best utilized so as to reduce the removal amount and the occupation of good fields to the minimum. The principle that the route should be “close to the towns but does not go through the towns” should be sufficiently taken into consideration and the densely populated residential areas should avoided.

2. Air-borne Dust Pollution to the Atmosphere: At the designing of the road, consideration should be taken of the selection of quarry, borrow and deposit area, treatment of waste substances, and the selection of the sites of lime soil and asphalt mixing plants which may be likely to bring adverse effect on the sensitive environmental spots and the aforesaid sites and stations should be positioned in distance from the residential areas.

3. Flood-proof: The main line of this Project is in a north-south direction and its flood-proof and flood-drainage capacity has been sufficiently considered in the Design Report. The connecting lines works are all in the direction of east-west and in terms of topography it is high on the west side while low in the east. Therefore, there exists no problem of flood-proof and flood-drainage with these connecting lines which naturally have the function of leading the water flow and draining the flood.

3.2. Construction Period

1. Noise Pollution: Noise in the construction period of the road mainly comes from the construction plant and the transportation vehicles, which, if strongly affect the human body for a long duration, might introduce many kinds of diseases and result in deafening due to noise effect. Such deafening is related to the variation of the degrees of the noises as well as the time of being exposed to the noises. In order to protect the health of the construction workers, in accordance with the “Hygienic Standard for Industrial Enterprises Noises”, the workers should be reasonably arranged for shifts of the operation of the construction plant so as to reduce to the time of being exposed to noises or to arrange the alternative operations of high noise and low noise. At the same time, attention should be paid to the maintenance and correct operation of the machinery so as to keep the noise degree of the
construction plant to its minimum. Workers who are close to the noise source should be provided with labour protection measures such as the earplugs or helmets and, in addition, be permitted to enjoy shortened work time.

Since the human bodies are very sensitive to the noise, in order to guarantee the night rest of the residents around the construction sites, the construction plants of high noises located in the sites which is within the distance of 150 meters from the residential area should be stopped operating from 22:00 p.m. to 6:00 am during the night time.

Noises of the road construction plant has the characteristic of suddenness, irregularity, discontinuity, and high strength, and investigations show that sometimes the noise of the construction site exceeds the Grade IV noise standard which normally is alleviated by variations of the construction methods. For instance, operations which have powerful noise sources may be arranged in day time (6:00 a.m. to 22:00 p.m.) or the operation time of the various kind of equipment may be adjusted. Transportation of materials, knocking, human screaming are regarded as the noise sources of the construction activities which the contractors should alleviate through proper construction and strong administration.

2. Air Pollution: Pollution to the atmosphere during the construction period is mainly that by the dust which mainly results from dust emission from continuous operations such as lime soil mixing, construction vehicles and construction equipment. In addition, small amount of powder dust also arises in the course of loading and unloading of the road construction materials and at the asphalt concrete mixing plant. In order to degrade the air pollution at the construction site and to protect the health of the construction staff and the adjacent residents, the following measures should be carried out:

(1) The mixing plant should have proper sealing facilities and the mixing stations should have Grade II Dust Removal Accessories. There should be no villages or sensitive units within an area of 200 meters in the downward wind direction. The access roads are selected at the places 100 meters from the inhabitant sensitive points.

(2) The site roads must be sprayed with water, especially the sites and the entrance and exit roads of the lime soil mixing plant, asphalt concrete mixing plant. Water trucks must be provided.

(3) Sealing facilities must be adopted in the course of transportation and covering measures must be taken in long duration constructions.

(4) The contractor must strengthen his control over the materials which are easy to scatter and lose and these kinds of materials must not be stocked in an exposed way. The top cultivable soil removed from the borrow pits is required to be stockpiled in a concentrated way and after the works is completed shall be backfield and returned for cultivation. Hygienic administration must be strengthened and waste substances must be deposited in a concentrated area for further treatment.
(5) Aggregates required for the works are mainly purchased and the local authorities have special administration systems responsible for the installation and management of the quarry. In particular, strict regulations on the location of the quarry and the explosion materials are available. Therefore, exploration and obtaining of the road construction materials for this Project do not have strong impact on the environment.

3. Biological Resources Protection

During the construction period of this Project, cultivable lands shall be excluded from the selection for borrow areas as much as possible and, if as shown necessary for the need of the works, the (30 cm) top soil shall be maintained and be backfield upon the completion of the works so as to reduce the affect on the biological system and the agriculture to the minimum.

The contractor should take measures to shorten the occupation time of the temporary land and restore the vegetation or return the land for cultivation as soon as the works finishes. Education of the workers should be strengthened with regard to the protection of natural resources and no cutting of trees and fruit trees is permitted.

The construction vehicles should travel on the fixed transportation roads to avoid the damage to the farming land and the vegetation.

Grass and trees should be planted in time on both sides of the roads and on the side slopes and appropriate remedial or reconstruction of the damaged irrigation or drainage system or manual ponds should be managed in time. The contractor should frequently clean and pay attention to the smooth flow of the drainage system. Road construction materials are required to be stocked in a concentrated manner and be fenced with soil. The stocking locations must be far away from the water area to prevent the material from being washed into and affecting the water body.

3.3. Service Period

1. Control of Traffic Noises

(1) administration of the public security communication, highway transportation and road maintenance should be strengthened and vehicles in excess of the standards should be forbidden to travel on the roads in accordance with the “Regulations on Prevention and Resolution on the Noise Pollution to Environment of the People’s Republic of China”.

(2) Based on the evaluation results concluded in the Connecting Lines Works Environmental Affect Evaluation Report, the sound environment of most of the sensitive spots on both sides of the connecting lines complies with the evaluation standard as of that “on both sides of trunk roads”. It is not necessary to take noise reducing and sound separation measures.
Considering that the predicted traffic amount might change and partial adjustment was made to the route line in the design drawing, it is necessary to strengthen the noise monitoring during the service period. Feasible environmental protection measures should be taken to the sensitive spots depending on the monitoring results. Landscaping or partial noise reducing measures should be taken to the individual sensitive spots which have exceeded the standard.

2. Control over the Pollution of the Tail Gas of the Vehicles

In accordance with the preliminary testing result, the CO pollution on both sides of the connecting roads is very slight and the Grade II standards can be met at locations 10 meters away from the road side. The pollution of NOx is also relatively light. Under Type D stability, only individual points possibly have higher density of NOx at locations 10 meters away from the road side, but do not exceed the standard. Therefore, the atmosphere pollution in the service period has very small effect on each of the sensitive spots. Through prediction and evaluation on the atmosphere pollution on the connecting lines, it is noted that the atmosphere pollution on the connecting lines has very small impact on each of the sensitive spots. Thus it is unnecessary to take any environmental measures. Some individual sensitive spots shall be monitored.

3. Maintenance of the Drainage System

The drainage system in the service period may suffer depositing or blocking because of the rain scour to the side slope of the subgrade or the washing of the road dust or sand and thus needs regular cleaning treatment, especially to the side ditch along the whole route so as to assure smooth and free drainage system.

The drainage outlets and the side ditches should be paved with mortar masonry stone to avoid scouring which in turn shall result in the effect of small water falls. Administration over the vehicles transporting easily scattered and loose materials.

4. Through methods of propaganda or formulation of regulations, the passengers shall be prohibited from random casting rubbish such as drinks sacks, easy-to-open cans etc. so as to keep clean on both sides of the road.

5. Bulk materials transported through highways such as coal, cement, sand and aggregates or simple-packing chemical fertilizers or agrochemical tend to scatter around without well protection measures and the canned materials are also likely to leak to thus pollute the environment on the road and on both sides of the road. Therefore, inspection over the transportation vehicles coming through the entrance of the expressways must be strengthened and this problem shall be resolved with the assistance of the legislation of highway communication administration laws.
IV. INVESTMENT IN THE PROTECTION MEASURES

SUMMARY FORM FOR THE ENVIRONMENTAL PROTECTION INVESTMENT

Table No. 2

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit Rate</th>
<th>Amount 10,000 Y</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>greening &amp; landscaping</td>
<td>Taixi Village on the Shijiazhuang North Interchang Interconnecting Road</td>
<td>500 m long with two rows</td>
<td>10 / km</td>
<td>5</td>
<td>between the road side and the village; planted with bushes and arbors</td>
</tr>
<tr>
<td>2</td>
<td>monitoring fee</td>
<td>Provincial Communication Scientific Research Institute</td>
<td></td>
<td></td>
<td>10</td>
<td>To be considered in association with the Expressway</td>
</tr>
<tr>
<td>3</td>
<td>water trucks</td>
<td>the contractor should be responsible for the execution during the construction period</td>
<td>Construction Period</td>
<td></td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>training fees</td>
<td>(1) environmental Management; (2) environmental monitoring</td>
<td>domestic</td>
<td></td>
<td>6</td>
<td>To be implemented together with that of the Expressway</td>
</tr>
<tr>
<td>5</td>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>51</td>
<td></td>
</tr>
</tbody>
</table>

V. Organizations and their Responsibilities for the Execution of the Environmental Administration

Due to the simultaneous construction of the connecting lines and the main line, the same organizations shall execute the environmental administrations with the same responsibilities as that for the main line. The responsible person for the main line shall be also in charge of the connecting line. Please refer to Table No. 3 for the Project Environmental Administration Plan.
### ANNEX I ENVIRONMENTAL MITIGATION MEASURES PLAN

<table>
<thead>
<tr>
<th>The Potential Negative Impact</th>
<th>Elimination Measures</th>
<th>Executive Organization</th>
<th>Responsible Organization</th>
<th>Supervision Organization</th>
</tr>
</thead>
</table>
| I Plan and Design Stage      | 1. Carefully design and rationally select the alignment  
2. Proper resettlement plan is made and executed with suitable compensation  
3. Farmland acquisition should be possibly reduced in design  
4. The project and the geographical feature of landscape  
5. Increase the number of waterpoints and avoid the waterfall effect by adjusting the position of waterpoints. The surface of scouring should be paved with stone or concrete | Design Unit, IFILPO, Local Government |  | PEB |
| II Construction Stage        | 1. The sensitive topsoil should be protected and covered by green plant.  
2. Collect and recycle lubricants, urgent and avoid the spill and leakage  
3. Install and tune the equipment to control the air pollution and change the suitable site. Asphalt mixing plant should be located at least 300 metres on the down wind side from the nearest village.  
4. Regularly spray the temporary road with water, install and maintain sound insulator. Contractors | Contractor | Construction Supervision Corp. |  |
| 1. The increased residue in the river caused by litter and erosion in the construction site and new road  
2. Water and soil pollution caused by oil, gas, fuel or paint in equipment stations and asphalt mixing stations  
3. Air pollution caused by asphalt mixing stations  
4. Dust and noise pollution around construction sites  
5. Interfering the public facilities such as electricity power lines and communication lines  
6. The present transportation condition is interfered by construction  
7. The bad drainage condition and processing litter ability in construction sites and working sites  
8. Producing the surroundings in which mosquitoes, the bacteria carriers, are reproduced. such as still water ponds | | | |
| 1. Air and noise pollution caused by transportation  
2. Constant soil erosion  
3. Road runoff water pollution  
4. Disorder at the sides of road  
5. The danger such as injury and death caused by spill or leakage of toxic goods is produced by transportation | 1. Install sound barriers and take other measures to control noise pollution and reduce the air pollution by control the vehicle running condition.  
2. Restrict construction of new sensitive spots within 100 metres on both sides of the south Xingjiang Interchange and north Shijiazhuang interchange interconnecting roads, and 50 metres on both sides of the other four interconnecting roads. Monitoring should be strengthened. see monitoring plan.  
3. Take good care of the maintenance/greening/protection work  
4. Avoid off-road water drainage into irrigation systems and water sources  
5. Provide litter processing equipments and enact corresponding bills to prohibit litter-throwing  
6. Make and execute a plan to cope with the urgent affair in accident and establish organization and management program to reduce the damage | Provincial Expressway Administration Bureau (PELAB)  
Local Government | Highway Administration Bureau, Local Government Agencies | NEPA, Public Security, Fire Brigade, Planning Agency |
VI. Environmental Monitoring Plan

The purpose of formulating the environmental monitoring plan is to supervise the execution of each of the environmental protection measures, to promptly adjust the EAP according to the monitoring results so as to provide records of the execution time and execution procedure of the environmental protection. The main principle of the formulation is mainly in the areas where the environment is affected and the key points are the sensitive spots.

6.1. Monitoring Target and Monitoring Items

(i) During the construction period, the environment is mainly affected by dust and the noise of the construction equipment and the smoke and dust produced in the heating and refinery of the bitumen. Therefore, it is required that open type should be changed into close type construction and conforming asphalt mixing plant be equipped so as to reduce the damage from the pollution.

1. It is predicted that all the construction sites shall be able to meet the limit on noise of the construction site.

2. If the road dust emission affects more than 100 meters in the downward wind direction, water should be frequently sprayed to cut down the dust emission amount. In addition, "Passive Dust Collector" should be used to monitor the dust emission amount and in order to control the efficiency of the water spraying numbers of water spraying should be determined. Special monitor should be performed to the unpaved road (construction access road and roads under construction) which raises dust easily.

3. In addition to the requirement that the contractor must take restriction measures to the transportation which may result in dust emission and that of leaky materials, monitoring over the environment should be well performed and the environmental laws must be strictly carried out by the contractor who should keep touch with the District and County level environmental protection units.

4. The main substances in the asphalt mixing plant which pollute the atmosphere are dust and the bitumen smoke. Normally at locations 100 meters in the downward direction of the wind the bitumen smoke cam meet the Grade I standard (i.e. the permitted average density of emission within 8 hours is \(< 150 \text{ mg} / \text{NM}^3\)), the BAP can meet the reference standard of Beijing District (standard limit: \(1.0 \text{ ug} / 100 \text{ m}^3\)) and TSP can meet the Grade II standard of the national atmosphere environmental quality.

According to the expected environmental affect analysis and the evaluation results, the items to be monitored during the construction period are determined as TSP, bitumen smoke, BAP and noise.

(ii) During the service period the main affects on environment are made by the tail gas of
vehicles and the traffic noise. According to the expected environmental affect analysis and the evaluation results, the items to be monitored during the service period are determined as NO<sub>x</sub>, CO, and noise.

6.2. Environment Monitoring Plan

The Environment Monitoring Plan is detailed in Table No. 6 and the standards for noise shall refer to the Urban Area Environment Noise Standard as detailed in Table No. 4 that the standards set for both sides of the trunk roads shall be adopted. The standard for atmosphere shall take the Grade II standard set out in the Atmosphere Environment Quality Standards as detailed in Table No. 5.
### URBAN AREA ENVIRONMENTAL NOISE STANDARDS

(GB 3096-82)

**TABLE NO. 4**

<table>
<thead>
<tr>
<th>SUITABLE AREAS</th>
<th>DAYTIME</th>
<th>NIGHT</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>special residential areas</td>
<td>45</td>
<td>35</td>
<td>need to be specially quiet</td>
</tr>
<tr>
<td>residential, education areas</td>
<td>50</td>
<td>40</td>
<td>pure residential, educational or office areas</td>
</tr>
<tr>
<td>Type 1 mixed area</td>
<td>55</td>
<td>45</td>
<td>ordinary commercial and residential mixed area</td>
</tr>
<tr>
<td>commercial centers and Type 2 mixed area</td>
<td>60</td>
<td>50</td>
<td>area mixed with busy area with concentrated trading, commercial, industrial, light traffic and residential areas</td>
</tr>
<tr>
<td>concentrated industry areas</td>
<td>65</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>both sides of the trunk roads</td>
<td>70</td>
<td>55</td>
<td>traffic flow is &gt; 100 Nos. per hour</td>
</tr>
</tbody>
</table>

### ATMOSPHERE ENVIRONMENT QUALITY STANDARDS

(GB 3095-82)

**TABLE NO. 5**

<table>
<thead>
<tr>
<th>NAME OF THE POLLUTANT SUBSTANCES</th>
<th>LIMIT VALUE OF DENSITY (mg/standard m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value Taken</td>
</tr>
<tr>
<td></td>
<td>Time</td>
</tr>
<tr>
<td>TSP</td>
<td>average daily 0.15</td>
</tr>
<tr>
<td></td>
<td>any one time 0.30</td>
</tr>
<tr>
<td>IP</td>
<td>average daily 0.05</td>
</tr>
<tr>
<td></td>
<td>any one time 0.15</td>
</tr>
<tr>
<td>SO₂</td>
<td>annual &amp; daily average 0.02</td>
</tr>
<tr>
<td></td>
<td>average daily 0.05</td>
</tr>
<tr>
<td></td>
<td>any one time 0.15</td>
</tr>
<tr>
<td>CO</td>
<td>average daily 4.00</td>
</tr>
<tr>
<td></td>
<td>any one time 10.00</td>
</tr>
<tr>
<td>photochemical oxidizer(O₃)</td>
<td>0.12</td>
</tr>
<tr>
<td>Nox</td>
<td>average daily 0.05</td>
</tr>
<tr>
<td></td>
<td>any one time 0.10</td>
</tr>
</tbody>
</table>
### Summary Sheet of Atmosphere Noise Environment During Construction

<table>
<thead>
<tr>
<th>Monitoring Place</th>
<th>Monitoring Item</th>
<th>Monitoring Frequency</th>
<th>Sampling Time</th>
<th>Implementing Agency</th>
<th>Executing Agency</th>
<th>Supervision Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt Mixing Plant</td>
<td>TSP Asphalt Smoke</td>
<td>one/month</td>
<td>3 days during construction</td>
<td>SRI</td>
<td>IFILPO</td>
<td>Local EPB</td>
</tr>
<tr>
<td>Unpaved construction road</td>
<td>TSP</td>
<td>Random Sampling</td>
<td>Each time in the morning and afternoon during construction</td>
<td>SRI</td>
<td>IFILPO</td>
<td>Local EPB</td>
</tr>
<tr>
<td>Sensitive Points in residential areas within range of 150m around the site</td>
<td>Environment noise</td>
<td>one/week</td>
<td>Twice/day during construction</td>
<td>SRI</td>
<td>IFILPO</td>
<td>Local EPB</td>
</tr>
<tr>
<td>Fangbiao village, TaiXi village, Sansi village, Daliang village, Heqiu village</td>
<td>CO, NOx Environment Noise</td>
<td>Atmospheres: 2/year Noise: 4/year</td>
<td>During operation period: Atmosphere 5 days, Noise 2 days</td>
<td>SRI</td>
<td>IFILPO</td>
<td>Local EPB</td>
</tr>
</tbody>
</table>

#### 6.3 Environment monitoring agency

It will be carried out by the same environment monitoring agency as the expressway, namely: the Environment Protection office of Provincial Scientific Research Institute.
Shijiazhuang East Exit Connecting Line
Connecting Line from Xidaiyan Interchange, Guozi, Baixiang to Ningjin
Connecting Line from Beizhangmao Interchange, Neiqiu to Beizhangmao
Connecting Line from Xingtai South Interchange, Crossing at the Power Plant to Nandouwan Village
Connecting Line from Shahe Interchange to Nanhe
Connecting Line from Cixian Interchange to Linzhang

Fig. THE CONNECTIONG LINES OF SHI-AN EXPRESSWAY