Basic information of the project

<table>
<tr><td>Project name</td><td colspan="6">Project of Energy conservation Reconstruction of Existing Public Buildings in Urumqi</td></tr>
<tr><td>Project Owner</td><td colspan="6">Urumqi Wall Materials Innovation Office for Building Energy Conservation</td></tr>
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<tr><td>Construction sites</td><td colspan="6">Main Urban District of Urumqi</td></tr>
<tr><td colspan="2">Examination and Approval Department</td><td colspan="2">—</td><td>Registered Number of Approval</td><td colspan="2">—</td></tr>
<tr><td>Type of Construction</td><td>Reconstruction</td><td colspan="2">Classification and Code</td><td colspan="3">Other Civil Engineering Construction[4729]</td></tr>
<tr><td>Covering Area（m^2）</td><td></td><td colspan="2">Green Area（m^2）</td><td colspan="3"></td></tr>
<tr><td>Total Investment (10,000 yuan)</td><td>64513</td><td>Investment in Environmental Protection (10,000 yuan)</td><td>64513</td><td>Percentage</td><td colspan="2">100％</td></tr>
<tr><td>Evaluation Funds (10,000 yuan)</td><td></td><td colspan="2">Expected Completion Date</td><td colspan="3">2019</td></tr>
</table>

The Project and its Scale：

I. Background of the project

Since 2005, Urumqi Municipal Committee and government have attached great importance to the work of building energy conservation, taking it as an important task that need unremitting effort for implementing energy conservation and emission reduction and controlling air pollution so as to bring back blue sky for the city. While carrying out the energy conservation measures for the new buildings, the municipal committee and government have also focused on the energy conservation reconstruction for existing buildings. By the end of 2010, public buildings of 5.45 million m^2 in Urumqi have been reconstructed for energy conservation, which, as part of people's livelihood project, got thumbs-up from citizens of Urumqi for its good energy conservation and environmental protection effects. The excellent effects of energy conservation and emission reduction of the reconstruction have also aroused the initiative of governments at all levels and social forces in Urumqi to participate in the reconstruction. Now it has become a common goal for governments and citizens to scale up the energy conservation reconstruction of existing public buildings. According to the assessment of the Medium-and-Long Term Heating and Building Energy Conservation Planning of Urumqi, there are 35.94 million m^2 of existing buildings with reconstruction value in centralized heating system, of which only 5.45 million m^2 of reconstruction has been completed during the 11th five-year（2006-2010）plan, accounting for only 15% of the total area.

In order to carry out the energy conservation reconstruction of existing buildings on a larger scale, this project will raise construction funds of 645 million yuan of 1.26 million m^2 existing public buildings. The implementation of this project will greatly push forward the work of energy conservation, emission reduction and air pollution control in Urumqi, so as to form a virtuous circle mechanism, realize the goal of saving energy, protecting environment, increasing efficiency and improving people's living environment, and promote the sustainable development of economy and environment.

In line with the relevant regulations of the Law of People's Republic of China on Environmental Impact Assessment and Regulations on Administration of Construction Project Environmental Protection promulgated with the Decree No. 253 of the State Council of the PRC, we, Urumqi City Environmental Research Institute, are entrusted by the Urumqi Wall Materials Innovation Office for Building Energy conservation and the Urumqi International Technical Cooperation Project Office for Heating Reform and Building Energy Conservation in August of 2013 to draw up the environmental impact assessment report on "Project of Energy conservation Reconstruction of Existing Public Buildings in Urumqi". In accordance with the working procedure of construction project environmental impact assessment and in the light of the relevant national laws and regulations, and assessment guidelines, we have drawn up the environmental assessment report on this project based on the field survey, which will be submitted by the project owner to the for examination and approval by the environmental management department. This report, once approved, will function as the basis for the project owner to do better the environmental protection work during the project construction and operation, as well as the basis of environmental management for the competent authorities.

II. The Necessity of the project

By the end of 2010, the area of public buildings in Urumqi is 32 million m^2, of which ordinary buildings (non-energy-conservation buildings) occupy the area of 18 million m^2. These ordinary buildings were mostly constructed during the 90s of last century, most of which are of frame or frame-shear structure. These buildings are characterized by poor thermal insulation property of building envelop, high energy consumption and low comfort degree, along with the various problems of facilities. Statistics show that coal consumption for building heating in Urumqi reached 3.5 million tons in 2010, about 20% of the total energy consumption of the city. Single public buildings in Urumqi are in large stock and with high energy consumption, causing serious waste of energy, which also means huge potential for energy conservation reconstruction.

According to the Annual Report of China Building Energy Conservation Development (2007), while the energy consumption of public buildings is usually 1-2 times as much as that of residences, the energy consumption of large scale public buildings is 5～15 times that of residences. Therefore, the coal consumption of public buildings is much more than that of residential buildings of same gross area.

The single public buildings of 1.26 million m^2 that need energy conservation reconstruction in this project are all built after 1990 with average 15 years of age and superior locations. It is unpractical to demolish these old buildings and reconstruct the energy conservation ones under the present social-economic conditions and living standard in Urumqi. Therefore, it is the only effective way to carry out the energy conservation

Continued

reconstruction for these buildings. With reference to the requirements of Technical Specification for External Thermal Insulation on Walls (JGJ144-2004), the service life of external thermal insulation system is 25 years on the premise of reasonable use and regular maintenance. The design working life of buildings needing energy conservation reconstruction is 50 years. Therefore, when the energy conservation reconstruction is implemented for these buildings, the service life of the external thermal insulation will be within the total life cycle of these buildings, which means that composite economic results, social benefits and environmental benefits will all be maximized.

III. Conformance to the national industrial policy

In order to achieve the long-term rapid and sustainable development of national economy, the Twelfth Five-Year Plan （2011-2015） for national economic and social development has established the guiding ideology of building a conservation-oriented society, which clearly states that energy conservation in building is an important step of implementing the Scientific Outlook on Development and ensuring national energy security.

Since China central government and the State Council made the strategic decision of building a conservation-oriented society, governments at all levels have put forward the policy of economizing on land, energy, water and materials in the field of construction. The Party Committee and Government of Xinjiang Autonomous Region also made the decision of expanding investment and promoting consumption to benefit people. The project of energy conservation reconstruction of existing public buildings is of special significance as a specific project of implementing these policies and decisions. The goal of building energy conservation are presented in the Twelfth Five-Year Special Plan for Building Energy Conservation drawn up by the Ministry of Housing and Urban-Rural Development that by the end of "12th Five-Year Plan" the energy-saving capacity of building energy conservation will be an equivalent of 116 million tons of standard coal. Therefore, this project conforms to the national industrial policy.

IV. Content and scale of the project

1. Project name

Project of Energy Conservation Reconstruction of Existing Public Buildings in Urumqi

2. Project owner

Urumqi Wall Materials Innovation Office for Building Energy conservation

3. Reconstruction scale of public building energy conservation

Continued

The existing public buildings that need reconstruction in this project consist of 160 individual buildings covering 1.26 million m^2. Built after 1990, these buildings are either in frame or frame-shear structure, or in brick-concrete structure, with three or three-plus storeys.

The single buildings in the project are all existing public buildings, such as office buildings of governments and social organizations, and school, hospital public activity buildings of institutions in Urumqi. Conditioned by such factors as ownership, purpose and capital, these single buildings selected in this project are scattered in different urban districts of Urumqi. See appendix for project list.

4. Content and scale of reconstruction

The energy conservation reconstruction in this project will be carried out based on the specific conditions of each single building from the flowing aspects: building envelop, heating system, ventilation and air conditioning system.

A. Reconstruction of envelop structure, which includes the reconstruction of exterior walls, roofs, external doors and windows, grounds, top of non-heating basement, external walls of heating basement, contact surfaces of Cantilever slab with outside air. In order to achieve overall energy efficiency goals.

B. Reconstruction of heating metering and heating system, mainly by adding thermostatic valves to every room and installing pressure-gradient control valves and heat metering devices in the main heating entrance of every building, and by changing the old heating system into the horizontal single-pipe cross-over heating system.

C. Reconstruction of electrical system, by replacing the old lighting installation, the control devices of power system, and power factor compensation devices of low voltage power distribution system.

5. Goal of energy conservation

Design Standard for Energy Efficiency of Public Buildings-GB50189-2005 provides that the energy saved by reconstruction of a public building should be no less than 50% of the energy consumed by the building before reconstruction. The reconstruction of public buildings in this project will take 65% as the reference goal and at least no less than 50%. The thermal property of building envelop structure should meet the provisions of Design Standard for Energy Efficiency of Public Buildings-GB50189-2005 and the Regulation on the Implementation of Design Standard for Energy Efficiency of Public Buildings in Xinjiang Uygur Autonomous Region-XJJ034-2006. Since Urumqi belongs to the severely cold region II in climate region of building, the limit value of overall heat transfer coefficient of each parts in building envelop structure should meet the requirements of Table 1.

6. Quantity of energy saving

According to the project feasibility study, the total energy saved after the reconstruction of 1.26 million m^2 public buildings will be equivalent of 15209 tons of standard coal, with energy efficiency rate being 56.77%.

Continued

Table 1 Severely cold region (II)

The limit value of heat-transfer coefficient in envelop structure of public buildings

Parts of envelop structure		shape coefficient≤0.3 heat-transfer coefficient kw/(m² • k)	0.3＜shape coefficient≤0.4 heat-transfer coefficient kw/(m² • k)
Roof		≤0.45	≤0.35
Exterior wall (including non-transparent curtain wall)		≤0.50	≤0.45
The underside of Cantilever slab that contacts with outside air		≤0.50	≤0.45
Partition wall or floorslab between heating and non-heating rooms		≤0.8	≤0.8
External window with single direction (including transparent curtain wall)	area ratio of window to wall ≤0.2	≤3.2	≤2.8
	0.2＜area ratio of window to wall≤0.3	≤2.9	≤2.5
	0.3＜area ratio of window to wall≤0.4	≤2.6	≤2.2
	0.4＜area ratio of window to wall≤0.5	≤2.1	≤1.8
	0.5＜area ratio of window to wall≤0.7	≤1.8	≤1.6
Transparent part of the roof		≤2.6	

7. Technical proposal of envelop reconstruction of existing public buildings

A. eliminates hidden troubles of energy consumption: including air-tightness of buildings, thermal bridge parts, etc.

B. The range of energy-saving reconstruction: external wall thermal insulation, roof thermal insulation, energy conservation of doors and windows, ground and basement insulation, heating and electrical reconstruction, etc.

8. Total investment of the project

The total investment of the project is 645 million yuan, of which 40 million euro (about 320 million yuan) being a loan applied from European Investment Bank, the rest of 325 million yuan being domestic funds. The project investment will be regarded as environmental protection investment.

9. Equipment and materials

The bid will be divided according to the specialty of different parts of the reconstruction. Professional subcontractors are encouraged to participate in the bidding to ensure that experienced professional subcontractors will have opportunity to win the bid, so as to guarantee the quality of the reconstruction.

Three kinds of materials are included in the purchasing list: thermal insulation material, door and window, and waterproof material. See Table 2.

By the end of 2010, the thermal insulation materials produced in Urumqi that meet the requirements of flame-retardant performance can be graded into A level (incombustible material), B_1 level (semi-combustible material), and B_2 level (combustible material). They are:

Molded expanded polystyrene (EPS) board, which can be produced in 70-plus enterprises, with annual supply of 1.2 million m^3;

Extruded polystyrene (XPS) board, which can be produced in 30-plus enterprises, with

Continued

annual supply of 0.6 million m^3;

Rigid polyurethane foam (PUR) board, which can be produced in 6 enterprises in Xinjiang, with annual supply of 0.2 million m^3;

Rigid phenolic (PF) plate, which can be produced in 20-plus enterprises in Xinjiang, with annual supply of 0.3 million m^3;

Hard rock wool board, which hasn't been in large-scale production in Xinjiang for its high price, and only be purchased from other places outside of Xinjiang, thus will not be widely used in this project. From above mentioned, the supply of thermal insulation materials needed in this project can be guaranteed.

10、Reconstruction schedule

December, 2011- May, 2014: preliminary work of the project;

June, 2014 – October, 2015: implementation of the project.

The reconstruction period for each individual public buildings is 60 to 90 days.

Continued

The original pollution and key environmental problems related to the project:

Since the 160 single buildings in this project have been completed, there are no original environmental problems. The key issues of energy efficiency in these existing public buildings are as follows:

I. Main problems in envelop structure

1. The thermal insulation materials on roof are mostly poor thermal insulation ones of dry slag, cement perlite, aerated concrete, etc.

2. The outer walls are composed of clay solid bricks, ceramic concrete block bearing weight walls, aerated concrete bearing weight walls, etc.

3. The windows of these buildings are mostly single frame single glass double solid web steel window, single frame double glass aluminum alloy window, and single frame double glass and plastic steel frame window, with large heat transfer coefficient, large window area, poor airtight property and great cold air infiltration.

4. There are no thermal insulation treatment on floor, roof of non-heating basement and outer wall of heating basement in these public buildings.

II. Thermodynamic defects

1. Due to poor thermal insulation property of building envelop, the temperature is low on the ground floor, and even lower in entrance hall in winter, thus thermal comfort is poor. There are hollowing and cracking on decorative finishes, and water leakage on building roof. There are mouldiness and moisture condensation on the inner corner of gable in some buildings. The heat transfer coefficient of every parts of envelop structure cannot meet the requirements of Design Standard for Energy Efficiency of Public Buildings-GB50189-2005 and the Regulation on the Implementation of Design Standard for Energy Efficiency of Public Buildings in Xinjiang Uygur Autonomous Region-XJJ034-2006.

2. Heat consumption of these buildings is too large. According to the analysis of energy consumption of the project, the consumption of standard coal before reconstruction reaches up to74.65kgce/m^2 each year. The indoor heating temperature in winter cannot meet the design standard.

III. Heating system defects

The single pipe system is used in indoor heating system, with no heat metering device and room temperature control device.

IV. Electrical system defects

Lighting installation used in these buildings are obsolete products with large energy consumption and low luminous efficiency. Metallic reflector with its surface covered with paint is used in lighting installation. T10 light source is applied, whose luminous efficiency is low, only 501m/W. electric fittings are electromagnetic ballasts, and capacitor compensators are not equipped in some of the lighting installation, which result in low power factor being at 0.6-0.8.

Continued

The existing control devices of power equipment are obsolete, in which there is no frequency converting control in heat transfer power equipment, causing large energy consumption.

In some of these public buildings the equipment in low-voltage distribution system is outdated in that there are no power factor compensation devices, resulting in low power factor and large energy consumption.

Brief introduction of natural and social environment in which the project is located

Brief introduction of natural environment (topography, physiognomy, geology, climate, meteorology, hydrology, vegetation, biodiversity, etc.)

I. Geographical position

Located in the hinterland of Eurasia continent, Urumqi, the capital city of Xinjiang Uygur Autonomous Region, is the inland city with the farthest distance from sea in the word. It lies in south margin of Junggar basin on the northern slope of the Tianshan Mountains. The city area borders on Turpan City to the east, Changji City to the west, Toksun County to the south. It is adjacent to Hoxud County to the south of Xiageze Mountain ridge line, and Hejing County to the southwest. To the north it is demarcated by Bogurda mountain ridge with Fukang City and Jimsar County. Its geographical coordinates: east longitude 86°37′–88°58′, north altitude 42°45′–44°08′. It is about 153km from north to south, 190km from east to west. The city covers 14.2 thousand km^2, with built-up urban area being 365.88km^2. it is ringed on three sides by mountains, with high terrain in southeast and low in northwest, natural slope of 12‰-15‰, and an elevation of 480-920 meters.

II. Hydrogeology

There are five river systems in Urumqi region, namely, Urumqi river system, Toutun river system, Chaiwopu water system, Dabancheng river system and Dongshan river system, which all belong to the inland river system with water sources from atmospheric precipitation and glacial melting. The surface water are mainly from spring and melting snow from Tianshan Mountains. Urumqi River and Shuimo River of Dongshan river system cut across the city proper. Urumqi River, a seasonal stream, runs through the whole city with a distance of 160km, annual runoff of 1.802-2.906 $\times 10^8 m^3$, and catchment area of 924 km^3. Shuimo River is about 60km, with annual runoff of $0.46\times 10^8 m^3$ and catchment area of 66km^3. Groundwater is the primary resource of municipal water in Urumqi, which includes Tianshan snowmelt water seepage, the undercurrent water system and recharge of Urumqi River. The second resource is infiltration recharge of irrigation water and precipitation.

In the drainage basin of Urumqi River, groundwater and surface water are in interconverted and interrelated into to one water resource. The formation and supply of groundwater depend mainly on vertical seepage of streams flowing out of mountain pass and undercurrent of rock fissures. The runoff of groundwater is undercurrent from south to north along Urumqi River.

II. Climatic features

As Urumqi is located in north piedmont of Tianshan Mountains and south margin of Junggar basin, its climatic type is temperate continental arid climate.

Continued

According to the meteorological data provided by Urumqi Meteorological Station, the annual average temperature of Urumqi is 6.3℃, the maximum temperature in July and August 35.7℃, the minimum temperature in January and February -19.1℃, annual average frost-free period 172 days, annual average rainfall 266.9mm, and evaporation capacity 2730mm. It is humid in spring and autumn while dry in summer. The annual mean wind speed is 2.7m/s, mostly north wind and northwest wind. The temperature inversion may appear in each season, with high inversion frequency and great inversion intensity in winter.

In Urumqi the yearly predominant wind direction is northwest wind with frequency of 11.9%, and secondary prevailing wind direction is north wind with frequency of 9.3%. In spring the predominant and secondary predominant wind directions with their respective frequencies are north northwest wind of 13.3%, and north wind of 12.9%; in summer, they are northwest wind of 19.9%, and north northwest wind of 10.5% respectively; in autumn, northwest wind of 11.0% and south southeast wind of 8.9%, and in winter, northeast wind of 10.7% and west northwest wind of 7.6%.

Calm wind: in Urumqi the annual mean frequency of calm is 15.8%, with highest frequency of 26.8% in winter, 18.8% in autumn, and lowest of 9.2% in summer.

Brief introduction of social environment (social economy, education, culture and preservation of cultural relics, etc.)

As the capital city of Xinjiang Uygur Autonomous Region, Urumqi is the center of politics, economy, culture, and science and technology, termed as one of the four major gateways for opening up along with Beijing, Shanghai and Guangzhou, an important window to the outside world in northwest region of China, as well as the bridgehead of China to the second Eurasian Continental Bridge in the world. The city covers an area of 365.88km^2 with inhabitant of 3.35 million at the end of 2012, an increase of 137.9 thousand compared to 2011, according to the sixth population census and data of the Public Security Population Annual Report of 2012.

According to the Statistical Communiqué of Urumqi on the 2012 National Economic and Social Development, Urumqi's GDP was 206 billion yuan, and the radio of three industry structure was 1.2 : 42.6 : 56.2. The annual urban per capita disposable income was 18385 yuan, and rural per capita net income as 10356 yuan.

District environmental quality and key environmental problems

I. Water environmental quality and evaluation

1. Introduction

Since the reconstruction in this project is in such main urban areas as Tianshan District, Shayibak District, Xinshi District (High-Tech Zone), Shuimogou District, Midong District, and Toutunhe District (Economic and Technical Development Zone), the 2011 groundwater monitoring results of Urumqi conducted by Urumqi Environmental Monitoring Center are used for the environmental quality evaluation of groundwater.

2. Evaluation standard

GB/T14848-93 "The Quality Standard for Ground Water", Category Ⅲ.

3. Evaluation method

Single factor pollution index method is used. The formula is:

$$Pi = Ci / C_{。}$$

In which: Pi——single factor pollution index

Ci——the measured pollutant concentration (mg/m^3)

$C_{。}$ ——evaluation standard value (mg/m^3)

The evaluation method of pH is a little different. The formula is:

When $pH_j \leq 7.0$, $S_{pHij} = (7.0 - pH_j) / (7.0 - pH_{sd})$, and

When $pH_j \geq 7.0$, $S_{pHij} = (pH_j - 7.0) / (pH_{su} - 7.0)$,

in which: S_{pHij} —— pollution index of a pollutant;

pH_j —— pH value measured at j point;

pH_{sd} —— the lower limit of pH value is 6.5;

pH_{su} —— the higher limit pH value is 8.5.

4. Evaluation results

See Table 2 for monitoring and evaluation results of ground water quality in Urumqi done by Urumqi Environmental Monitoring Center in 2011.

Continued

Table 2 Ground water monitoring and evaluation results of Urumqi (unit：mg/l, except for PH)

No.	index	Mean value	Standard value	Single factor index
1	pH value	7.41	6.5～8.5	0.27
2	Total hardness	755	450	1.68
3	Ammonia nitrogen	0.025	0.2	0.13
4	Nitrite nitrogen	0.004	0.02	0.20
5	Nitrate nitrogen	16.3	20	0.81
6	Volatile phenol	0.0008	0.002	0.40
7	Cyanide	0.020	0.05	0.39
8	Arsenic	0.0005	0.05	0.01
9	Mercury	0.00001	0.001	0.01
10	Hexavalent chromium	0.003	0.05	0.06
11	Anionic surfactant	0.05	0.3	0.17
12	Lead	0.001	0.05	0.02
13	Cadmium	0.0001	0.01	0.01
14	Total coliform（A/L）	3	3.0	1.00
15	Fluoride	0.67	1.0	0.67
16	Copper	0.05	1.0	0.05
17	Zinc	0.02	1.0	0.02
18	Sulfate	686	250	2.74
19	chloride	206	250	0.82
20	Manganese	0.01	0.1	0.10
21	Ferrum	0.03	0.3	0.10
22	Selenium	0.0005	0.01	0.05
23	Permanganate index	1.34	3.0	0.45
24	Total dissolved solids	1071	1000	1.07

It can be seen from the monitoring results that in the 24 monitoring indexes of ground water in Urumqi, three indexes of total hardness, sulfate and total dissolved solids exceed the standard value by 0.68, 1.74 and 0.07 times respectively. The single factor indexes of the other monitoring indexes are less than 1. The fact that the indexes of total hardness, sulfate and total dissolved solids exceed the standard value is caused by environmental geological factors, which belong to the primitive environmental problems.

Continued

II. Atmospheric environmental quality and evaluation

1. Monitoring items and analytical method

In order to show the current situation of atmospheric environmental quality, the results of atmospheric quality monitoring of Urumqi done by Urumqi Environmental Monitoring Center on 10 to 16 of February and 20 to 26 of May, 2012 are adopted for the evaluation. The monitoring items are SO_2, NO_2 and PM_{10}.

Monitoring method is based on the requirements of Technical Specifications for Environmental Monitoring and Ambient Air Quality Standard (GB3095-2012). See Table 3 for monitoring and analytical methods of items.

Table 3 Atmospheric monitoring items and analytical method

No.	Item	Sampling and absorbing	Analytical method	Minimum detectable concentration (mg/m^3)
1	SO_2	24-hour automatic continuous monitoring	Ultraviolet fluorescence method	0.003
2	NO_2	24-hour automatic continuous monitoring	Chemi-luminescence	0.002
3	PM_{10}	24-hour automatic continuous monitoring	B-ray method	±0.002

2. Evaluation standard and method

According to the regulation of Urumqi Ambient Air Quality Function Area Division, Ambient Air Quality Standard (GB3095-2012) secondary standard is adopted in this evaluation. See Table4 for detail.

Table 4 Ambient Air Quality Standard (GB3095-2012) secondary standard□ unit: ug/m^3

Pollutant	Sample time	Concentration limits (mg/Nm^3)	
		Primary standard	Secondary standard
Sulfur dioxide SO_2	Annual mean 24-hour mean 1-hour mean	0.02 0.05 0.15	0.06 0.15 0.50
Inhalable particles PM_{10}	Annual mean 24-hour mean	0.04 0.05	0.07 0.15
Nitrogen dioxid NO_2	Annual mean 24-hour mean 1-hour mean	0.04 0.08 0.20	0.04 0.08 0.20

The single factor pollution index method is used as the evaluation method. The formula is:

$$Pi = Ci / C_{。}$$

Continued

in which: Pi —— single factor pollution index

Ci —— measured pollutant conentration（mg/m^3）

C。—— evaluation standard value（mg/m^3）

3. Monitoring results and evaluation analysis

See Table 5 for the main air pollutants monitoring and evaluation results on 10 to 16 of February and 20 to 26 of May, 2012 in Urumqi.

Table 5 Air pollution monitoring and evaluation results of Urumqi unit: mg/m^3

time \ item		SO_2	NO_2	PM_{10}
	Secondary standard	**0.15**	**0.08**	**0.15**
heating season	February 10, 2012	0.230	0.089	0.204
	February 11, 2012	0.203	0.099	0.300
	February 12, 2012	0.226	0.117	0.415
	February 13, 2012	0.191	0.104	0.307
	February 14, 2012	0.091	0.087	0.341
	February 15, 2012	0.122	0.088	0.347
	February 16, 2012	0.189	0.085	0.164
Non-heating season	May 20, 2012	0.007	0.031	0.064
	May 21, 2012	0.007	0.047	0.098
	May 22, 2012	0.012	0.053	0.136
	May 23, 2012	0.013	0.055	0.099
	May 24, 2012	0.010	0.057	0.103
	May 25, 2012	0.013	0.057	0.139
	May 26, 2012	0.015	0.051	0.132
results	Exceeding days	5	7	7
	Exceeding rate	35.7%	50%	50%
	Highest exceeded multiples	0.53	0.46	1.77

It can be seen from Table 6, the main air pollutants in Urumqi are PM_{10} and NO_2, SO_2 being the secondary. The mean concentrations of PM_{10}, NO_2 and SO_2 in some days are above the secondary standard of Ambient Air Quality Standard (GB3095-2012), exceeding rates being 50%, 50% and 35.7% respectively, and maximum exceeding multiples being 1.77, 0.46 and 0.53 respectively. It is obvious that the air quality in non-heating seasons is much better than that in heating seasons. This is mainly caused by coal burning in winter, small atmospheric environment capacity and foggy weather.

Continued

III. Acoustic environmental quality and evaluation

1. Introduction

As most areas in Urumqi are involved in this project, the statistical report on acoustic environmental quality in 2012 Report on the State of the Environment in Urumqi done by Urumqi Environmental Protection Agency is used here to know the current situation of acoustic environmental quality in Urumqi and to evaluate the situation of acoustic environmental quality in this project.

2. Evaluation results

(1) Regional environmental noise

The average equivalent sound level of regional environmental noise in 2012 is 54.3 [dB (A)], so the acoustic environmental quality is at "good" rating.

(2) Traffic noise

The average equivalent sound level of traffic noise in 2012 is 67.4 dB (A), which meet the national standard, rating "good".

(3) Noise of functional areas

In Functional area class 1 (residential, cultural and education area), the annual average equivalent sound level at daytime is 49.5 dB, which meet the standard, and that at night is 42.4 dB, within the standard limit. In Functional area class 2 (residential, commercial confounding area), the annual average equivalent sound level at daytime is 53.8dB, which meets the standard, and that at night is 46.0 dB, within the standard limit. In Functional area class 3 (industrial area), the annual average equivalent sound level at daytime is 54.4 dB, which meets the standard, and that at night is 46.3 dB, within the standard limit. In Functional area class 4 (on both sides of arterial traffic), the annual average equivalent sound level at daytime is 67.1 dB, which meets the standard, and that at night is 60.0 dB, which exceeds the standard by 5.0 dB.

In conclusion, the acoustic environmental quality in Urumqi is in good condition.

Continued

Key environmental protection goals

There are such sensitive targets as resident quarters, hospitals, schools, office buildings near some of the existing public buildings needing reconstruction in this project, and the single buildings in this project are also environment-sensitive targets, so the key environmental protection goals are:

1. Strict measures will be taken to control construction noise, so as to ensure that the construction noise meet the required standard and to protect the acoustic environmental quality of the construction regions;

2. Strict measures will be taken to reduce the construction dust pollution to ensure that the atmospheric environmental quality may maintain the current level;

3. Ensure that various solid wastes produced by construction will be disposed properly, so as not to have harmful effects on the environment of construction area.

Standards adopted in evaluation

Environmental quality standards	I. Acoustic Environmental Quality Standard（GB3096-2008）standard for areas of 1, 2, 4a grades II. Ambient Air Quality Standard (GB3095-2012), Class II standard III. The Quality Standard for Ground Water (GB/T14848-93), Category Ⅲ.
Pollutant discharge and emission standards	I. Emission Standard of Environmental Noise for Boundary of Construction Site (GB12523-2011); II. Integrated Wastewater Discharge Standard (GB8978-1996), Class III standard.
total volume control quotas for pollutants	As the project is energy efficiency reconstruction project, which will no cause environmental pollution problems after reconstruction, this environmental evaluation report does not set the target for gross control of pollutants.

Engineering analysis of the reconstruction project

Brief description of the technological process (see diagrams)

Technological process:

1. Treatment of thermal bridge parts

A. The insulation measures should be strengthened at such major structure pasts of exterior wall as beam, column, ring beam, opening for windows and doors, and lintel, etc.

B. The measures of partition heat bridge and insulation should be taken at cantilever of exterior wall and wall-attached parts such as parapet, balcony, canopy, non-heating projecting balcony, shelf for outdoor unit of air conditioner, pilaster and decorative rib, etc.

C. The insulation measures should be strengthened in some parts of the top flue, air passage and various pipes out of the roof.

D. Remove the heating covers and choose heating radiator with big radiating surface.

2. External thermal insulation on walls

External thermal insulation on walls is to attach the thermal insulation materials on the outer surface of wall, which has many advantages, such as good insulation effect, avoidance of thermal bridge, no occupying indoor area and no interference to people's study and work inside of the building due to outdoor construction. The reconstruction in this project will be done in this way.

3. Thermal insulation on roof

Reconstruction plan will be determined based on the load that the roof framework can bear, combined with roof function and requirements of construction shape.

Solid material layer is preferred to be chosen as the roof thermal insulation material. According to relative position of insulation layer and waterproof layer, two types of roof insulation can be adopted: Upright type(removing the original aged and leaky waterproof layer, leveling layer and insulation layer, and making new layers) and Inverted type (if the original waterproof layer is reliable and the insulation materials are in good condition, add a 4mm layer of SBS modified bitumen membrane before doing the insulation layer).

4. Energy saving at windows and doors

Compared with wall and roof, doors and windows have the poorest thermal insulation performance. Since external windows are more than external doors, the reconstruction of external windows is of particular importance. In this reconstruction project, except those windows that recently have been changed into single frame double hollow glass windows or single frame hollow glass aluminum alloy windows, all the other windows will be replaced by four cavity three sealed double hollow glass plastic steel windows or single frame double hollow glass aluminum alloy windows.

5.Thermal insulation in basement

The thermal insulation treatment should be carried out at the external wall contacting with soil of heating basement. The same to the structural ceiling slab of non-heating basement.

6. Reconstruction of heating system

The existing horizontal series system will be replaced by two-pipe system or horizontal single pipe cross-over series system. Manifold will be installed in the basement of high-rise public buildings, setting up the system according to the level of district. Static balance valves will be installed at all horizontal and vertical pipes. It is required that the flow of each loop should be given and be debugged in place.

7. Reconstruction of radiator

Replace the sand cast iron radiator by steel radiator. Change the concealed radiator into open radiator.

8. Temperature controller and adjust and control

Add a thermostatic radiator valves to each set of radiators that the user can adjust and control. Add temperature control device for different periods to the consumer heat inlet of such public buildings as school and office buildings, so as to reduce the overall indoor heating temperature of the buildings in holidays and vacations.

9. Heating metering and the consumer heat inlet

Add ultrasonic heat meter and pressure differential controller to the consumer heat inlet of basement. If the building is equipped with heat-exchange station, check the heat exchanger, the size of the pump, and add compensator、pressure control loop pump frequency control device..

10. Other thermal insulation

Damaged or incomplete thermal insulation in staircase, tube well, basement will be reconstructed and completed according to the design.

11. Reconstruction of ventilation system

Carry out organized ventilation reconstruction. The practice of retrieving the heat in exhaust air by using fresh air heat recycling technology is actively promoted in China. When the heat recovery efficiency reaches 80%, it means only 30 to 40 percent of the original heat is consumed, which can meet the ventilation requirement.

12. Reconstruction of air conditioning system

No air conditioning should be equipped in offices except meeting room. It is suggested to adopt high temperature cold water cooling in buildings equipped with central air conditioning and to reduce air conditioning open time, and to remove all the partial air conditioning in offices in this construction.

13. Electrical reconstruction

Replace the high energy-consuming equipment, use mirror aluminum grille lamp panel in rooms with suspended ceiling, and equip electronic ballasts and T528W straight tube fluorescent lamps. According to the requirement for power and control, exchange entirely the control devices of power equipment, use inverter controller and add automatic regulating system. Based on the actual load change of heating system, adjust the power output of power equipment to meet the energy saving standard. Replace the low-voltage controller switching equipment and reduce reactive power to increase the operating efficiency of low-voltage distribution system.

Continued

Main pollution processes :

This is an energy efficiency reconstruction project of existing public buildings, so the impacts on environment are mainly from the construction period. The pollution factors are as follows:

I. Construction period:

1. Dust pollution during the reconstruction of thermal insulation on exterior wall, roof and the exterior wall of basement;

2. Noises caused by transport vehicles, construction machinery and vibration;

3. Sanitary sewage produced by workers, main pollution factors being COD, BOD_5, SS, etc.;

4. Construction wastes, waste of dismantled doors and windows, etc. as well as household refuse produced by workers.

II. Operation period:

There will be no pollutant discharge and emission during the operation period in this project, hence no impact on environment. The completion of the project will be of significance for the decrease of building energy consumption, the reduction of centralized heating and air pollutant emission, and the improvement of work and dwelling environment.

Main pollutants and projected emission and discharge

content / type	Emission source（number）	Pollutant name	Concentration and quantity before treatment (unit)	Concentration and quantity of discharge or emission (unit)
Air pollutants	Construction dust	TSP、PM_{10} polyfoam particles	Small in quantity	Small in quantity
Water pollutants	sanitary sewage	Small in quantity	Small in quantity	Small in quantity
Solid waste	Reconstruction wastes (dismantled old building materials, doors and windows, etc.)		Hard to quantify due to different reconstruction plans for each of these single buildings	
	household refuse		Small in quantity	Small in quantity
noise	The strength of noise source of construction machinery is between70～90dB(A), and that of transport vehicles is between 80～85 dB(A). During the reconstruction period, there will be certain degree of impact on the acoustic environment of the buildings being reconstructed and the sensitive targets nearby.			

Mainly ecological effects:

Since the public buildings in this project are all completed ones, and the reconstruction will not occupy new land, basically no ecological environmental problems will be caused.

Environmental impact analysis

Environmental impact analysis during the reconstruction

The reconstruction period of this project is from June, 2014 to October, 2019. As the whole project consists of 160 individual projects with each built in different years and in different conditions, the reconstruction plans and contents are also different, which means different environmental impacts reflected from the following aspects；

I. the influence of construction dust on environment

For the whole construction period, air pollution is mainly in period of the reconstruction of thermal insulation on exterior wall, roof and exterior wall of basement. Construction dust is mainly caused by base layer cleanup and processing before the insulation layer construction, and by cleanup of roof waterproof, leveling and insulation. Dust pollution will be caused during the construction process of removing mortar, dirt and dust on old wall, and removing waterproof layer, leveling layer and insulation layer of old roof. These dust is in fugitive emission, and will have certain degree of impact on the air environment of 50-100 meters around the construction site.

According to relevant professional data, generally the insulation construction of 18,000 m^2 exterior wall of a 17-storey building will last for about one month, excluding preparation time. There are no clear regulations on the time limit for thermal insulation construction of wall and roof in national and local standards. The common practice is within two month but no less than one month. Since the insulation area of exterior wall of most buildings in this project is less than 18,000m^2, the construction period is comparatively short. The dust pollution prevention and control measures are presented here to for construction companies to reduce the impact on air environment during construction period.

1. A person should be designated by the construction unit to be responsible for the implementation of dust prevent and control measures and supervision in construction site. The notice board of environmental protection supervision should be set up at accesses to the construction site. The following information should be indicated on board: project name, project owner, construction company, name and telephone number of supervisor in charge of dust pollution control, time limit for the project, environmental protection measures, complaint telephone number, etc.;

2. Complete enclosure around the construction site. Rigid wall or hoarding above 1.8 meters should be set up around the construction site. Open construction is prohibited. Block should be set in enclosure section. There should be no gap between hoardings or between hoarding and block. Enclosure should be cleaned regularly to ensure a tidy environment around the site;

3. Pile-up site of Materials and supplies should be covered completely. Materials and supplies that easily cause dust should be kept or covered in confined space. Dense mesh or safety net should be used in the construction;

Continued

4. Complete wash of vehicles. Wheels and body of vehicles should be washed thoroughly;

5. Hard ground in site. Bituminous pavement Main road in construction site should be paved with concrete or bitumen. Other ground in site should be hardened or greened;

6. During the reconstruction, measures like water spray should be taken to reduce dust during the removal of old wall layers and roof layers;

7. Materials, brickrubbish or castoff that easily cause dust should be bagged before delivered to ground. Casting in open air is prohibited;

8. Commercial ready-mixed concrete should be first choice. Mortar concrete should be mixed in closed work shed. Insulation materials should be shear cut before use to reduce cutting on site and avoid the dissipation of polyfoam particles;

9. The construction company should level the site and remove soil piles and other useless materials within 30 days after the completion;

10. No work of dismantlement and demolition should be done in days with force 5 wind;

Measures of dust pollution prevention and control should be written into the contract of construction supervision. Administrative penalty will be imposed on the construction companies who do not follow the above-mentioned requirements to implement the measures of dust control and there will be no acceptance check for the construction done by them.

II. Influence of noise during reconstruction

Noises in reconstruction of this project can be divided into machinery noise, construction noise and vehicle noise. Machinery noise is caused in part of the construction process by dismantling old waterproof layer, demolishing dust and old layers on wall; by cutting temporarily small part of irregular insulation sheet materials; by removing and exchanging doors and windows, and heating pipe covers, which is mainly point acoustic source. Construction noise refers to some knocking sound, saw-cutting sound, crash sound of removing shuttering, doors and windows, which is mainly transient noise. Vehicle noise belongs to traffic noise. Noise in construction period should meet the requirements of Emission Standard of Environmental Noise for Boundary of Construction Site (GB12523-2011). See Table 6.

Table 6 Emission Standard of Environmental Noise for Boundary of Construction Site

unit: Leq[dB(A)]

daytime	nighttime
70	55

Continued

The strength of noise source of main equipment is between70～90dB(A) during construction period, and the worksite is small. The operation of high noise equipment may result in the noise in the boundary of construction site out of required limits. Compared with similar construction site, various noise sources will reduce to background level (about 50 dB) at 40 meters. Since noises of construction machinery and vehicles will have certain impact on the acoustic environment around the site, the constructors should choose low noise equipment. Transport vehicles should be in low speed and no honking when going in and out of the site.

Since the reconstruction scope is rather large in this project, and such sensitive targets as residential and office buildings are near these construction sites, construction time should be strictly controlled, namely, any construction activity that may product noise should be prohibited during 13:30～16:00 daytime and at night, so that people in these sensitive targets will not be influenced at their time for rest. These influences are temporary and will not last long with the completion of construction. When measures of pollution prevention and control proposed by this environmental evaluation report are strictly implemented, the impact of construction noises to the environment is acceptable.

III. Influence of sanitary sewage during reconstruction

Construction workers do not live in the construction sites. Sanitary sewage is mainly wastewater of workers' cleaning and washing and flushing wastewater. The water used will be supplied by the buildings being reconstructed, and sanitary sewage will be discharged into the sewer networks. Therefore, the influence of sanitary sewage to the environment is small.

IV. Influence of solid wastes during reconstruction

Solid wastes are of two types, one being construction and demolition wastes, one being household refuse.

Construction wastes are mainly waste clay, sand, rocks and brickbats, and redundant insulation layer and waterproof layer in the reconstruction of walls and roofs. Constructors are required to timely clean up these waste, which can be delivered to construction waste landfill. Demolition wastes are wastes of old removed windows and doors, pipe valves that can be recycled by recycling center.

In addition, it is required in this environmental evaluation report that thermal insulation material used in the project be processed products. But still a small amount needs cutting on site. These insulation materials such as EPS board, XPS board will produce in the process of cutting a portion of particles scattering around the site, which will cause certain pollution in a small area, and which should be cleaned timely by constructors to avoid dissipation with wind.

Household refuse is in small amount and should be gathered for sanitation workers to deliver to refuse landfill.

Continued

In conclusion, if all types of solid wastes are classified and disposed, the solid wastes produced by this project will have rather little impact on the environment of construction sites.

V. Influence on landscape during construction period

The reconstruction, especially that of walls and roofs, due to removing and demolition, pile-up of materials and machinery, may cause the disharmony with surroundings and have an influence on landscape. The constructors should properly deal with the stocking area by covering with tarpaulin and reasonably arrange for the construction time to complete the reconstruction of outer parts of these buildings as soon as possible. The constructors should also clean up the site timely after the completion of construction. Therefore, the influence on landscape is temporary and reversible. After the completion, the influence will disappear.

Continued

Environmental impact analysis in operation period

As an energy conservation reconstruction project, no pollutants will be discharged or emitted in operation period. The completion of reconstruction will produce good social, economic and environmental benefits.

1. Social benefit analysis

At present 50% energy conservation standard is implemented in the energy conservation reconstruction of existing public building by the sate and Urumqi. The standard of 65% will be implemented in this project, which conforms to the policy orientation of energy conservation, and which may set example and be popularized for the development of building energy conservation in Urumqi, in Xinjiang and even in China, and for the reconstruction of existing public buildings in a higher standard. The completion of the project will increase greatly the energy saving level of the existing buildings in Urumqi, improve people's living environment, and help strengthen people's awareness of promoting building energy efficiency. Therefore, it is of great significance for the sustainable development of energy in China and the achievement of energy conservation and emission reduction targets.

2. Energy conservation benefit

According to the data provided by the project owner, 9 out of 160 individual buildings are chosen as samples. Their respective original energy consumption, energy consumption after reconstruction, and mean value of energy saved per building area are taken as references for the calculation of average energy-saving efficiency. The result is 56.77%. Therefore, it is estimated that the completion of the project will save 15,209 tons of standard coal or 14.49 million m^3 of natural gas.

3. Environmental benefit analysis

According to the emission coefficient of per unit fuel combustion presented in Practical Data Manual of Environmental Protection, if standard coal of 15,209 tons saved per year and natural gas of 14.49 million m^3 saved per year are converted respectively into different pollutants emission, the pollutant emission that can be reduced in this project can be seen in Table 7, which also shows the significance of the project to the improvement of atmospheric environment in heating seasons in Urumqi.

Table 7 pollutant emission that can be reduced by coal or natural gas combustion after the reconstruction

fuel	Emission coefficient	Smoke dust	CO	SO_2	Oxynitride
Coal	1 ton of coal combustion (kg/t)	12	22.7	16	3.62
	Emission reduced by this project(t)	182.5	345.2	243.3	55.1
Natural gas	1000m^3 of natural gas combustion（g/1000 m^3）	200	272	20.9	1920
	Emission reduced by this project (t)	2.9	3.9	0.3	27.8

Continued

4. Economic benefit analysis:

Calculated on coal, the energy saved per year in this project can reach 15,209 tons of standard coal, which means capital of 3.19 million yuan can be saved; Calculated on natural gas, the energy saved per year can be 14.49 million m^3 of natural gas, which means capital of 19.85 million yuan can be saved. Therefore, the energy efficiency reconstruction of existing public buildings can bring significant economic benefits. The prophase investment of the project is 0.645 billion yuan. The static payoff period is 18 years, while the dynamic capital payback period is over 25 year.

In order to curb the air pollution in winter and reduce pollutant emission, Urumqi municipal government has carried out the natural gas reformation to coal-burning central heating stations in the city since 2011, which has achieved some results but also caused large increase in the cost of heating in winter. It is the effective way to reduce heating cost by increase the standard of energy efficiency reconstruction of existing public buildings and reduce natural gas consumption.

In conclusion, the implementation of this project will be of great importance for reducing energy consumption, increasing energy utilization rate, improving people's living environment, cutting down air pollution emission, increasing ambient air quality, improving energy saving efficiency of buildings in Urumqi and promoting technical progress of building industry.

Controlling measures that the project plans to take and the expected effects

content / type	Discharge or emission source（No.）	pollutant name	Controlling measures	Expected effects
Air pollutant		No		
Water pollutant		No		
Solid waste		No		
noise	no			
others				

Ecological protection measures and expected effects:

Conclusion and suggestion

I. Conclusion

1. Project overview

The project of energy conservation reconstruction of existing public buildings in Urumqi is undertaken by Urumqi Wall Materials Innovation Office for Building Energy Conservation with total investment of 0.645 billion yuan. Main urban districts involved in this project include Tianshan District, Shayibak District, Shuimogou District, Toutunhe District (Economic and Technical Development Zone), Xinshi District (High-Tech Zone), and Midong District. The existing public buildings that need reconstruction in this project consist of 160 individual buildings covering 1.26 million m^2. Built after 1990, these buildings are either in frame or frame-shear structure, or in brick-concrete structure, with three or three-plus storeys.

2. Conclusion of environmental quality evaluation

(1) Water environment: In the 24 monitoring indexes of ground water in Urumqi, three indexes of total hardness, sulfate and total dissolved solids exceed the standard values by 0.68, 1.74 and 0.07 times respectively. The single factor indexes of the other monitoring indexes are less than 1. The fact that the indexes of total hardness, sulfate and total dissolved solids exceed the standard value is caused by environmental geological factors, which belong to the primitive environmental problems.

(2) Air quality: The main air pollutants in Urumqi are PM_{10} and NO_2, SO_2 being the secondary. The mean concentrations of PM_{10}, NO_2 and SO_2 in some days exceed the secondary standard of Ambient Air Quality Standard (GB3095-2012), exceeding rates being 50%, 50% and 35.7% respectively, and maximum exceeding multiples being 1.77, 0.46 and 0.53 respectively. It is obvious that the air quality in non-heating seasons is much better than that in heating seasons. This is mainly caused by coal burning in winter, small atmospheric environment capacity and foggy weather.

(3) Acoustic environment: The average equivalent sound level of regional environmental noise in 2012 is 54.3 [dB(A)], so the acoustic environmental quality is at "good" rating. The average equivalent sound level of traffic noise in 2012 is 67.4 dB(A), which meets the national standard, rating "good". The equivalent sound levels at daytime in different functional areas all meet the standard. Only in Functional area class 4 (on both sides of arterial traffic), the equivalent sound level at night exceeds the standard by 5.0 dB. Therefore, the acoustic environmental quality in Urumqi is in good condition.

3. conclusion of environmental impact evaluation

(1) The reconstruction of outer parts of these buildings in this project will produce dust. The constructors should properly arrange the construction period and take strict control measures to reduce dust pollution in construction period according to relevant regulations of Implementation Plan for Prevention and Control of Dust Pollution in Urumqi.

Continued

(2) Noise sources in reconstruction of this project are mainly machinery noise and vehicle noise. Noise sources will be weakening to 50 dB at 40 meters. When measures of pollution prevention and control proposed by this environmental evaluation report are strictly implemented, the impact of construction noises to the environment is acceptable.

（3） Wastewater produced in this project is mainly workers' sanitary sewage which will be discharged into the sewer networks, thus having little influence on the water environment.

(4) Solid wastes produced in reconstruction are mainly construction and demolition wastes, and household refuse. Construction wastes should be cleaned up timely and delivered to construction waste landfill. Demolition wastes like old removed windows and doors can be recycled. Household refuse should be gathered for sanitation workers to deliver to refuse landfill. If all types of solid wastes are classified and disposed, they will have rather little impact on the environment of construction sites.

(5) This project will have little influence on landscape during reconstruction.

(6) This is an energy conservation reconstruction project which conforms to the national industrial policy and the total project investment is environmental protection investment. There will be no impact on environment during the operation period. The completion of reconstruction will produce good social, economic and environmental benefits.

4. Main pollution control measures

(1) Pile-up site of Materials and supplies should be covered completely. Materials and supplies that easily cause dust should be kept or covered in confined space. Dense mesh or safety net should be used in the construction;

（2） Measures like water spray should be taken to reduce dust during the removal of old wall layers and roof layers;

（3） During the reconstruction, materials, brickrubbish or castoff that easily cause dust should be bagged before delivered to ground. Casting in open air is prohibited;

(4) Low noise equipment should be chosen. Transport vehicles should be in low speed and no honking when going in and out of the site. Construction time should be strictly controlled, namely, any construction activity that use high noise equipment should be prohibited during 13:30～16:00 daytime and at night, so as to ensure that people's life and rest will not be influenced.

To sum up, the Project of Energy conservation Reconstruction of Existing Public Buildings in Urumqi meets the requirements of the Twelfth Five-Year Plan for national economic and social development, and Regulations on the Administration of Building Energy Efficiency in Urumqi. The implementation of this project will be of great importance for reducing energy consumption, increasing energy utilization rate, improving people's living environment, cutting down air pollution emission, increasing ambient air quality, improving energy saving efficiency of buildings in Urumqi and promoting technical progress of building industry. Therefore, this project is feasible from the perspective of environmental protection.

Impact on inhabitants!!! Some of the works are inside the buildings!!!

Preliminary examination comments:

Responsible person：　　Official seal

Date

Examination comments of competent administrative department for environmental protection at a higher level:

Responsible person: official seal

Date

Approval comments:

Responsible person: official seal

Date

Notes:

I. The appendixes and drawings of this project are as follows:

Appendix 1 Project approval documents

Appendix 2 Other administrative documents related to environmental evaluation

Attached Drawing 1 The geographical location map of the project (administrative division, hydrographic net, sewage outlet position, and topographic and geomorphic conditions should be reflected in the map)

Attached Drawing 2 Floor plans of the project

II. If this report cannot explain the pollution caused the project and its influence on environment, special evaluation should be carried out. One to two items from the following should be chosen for special evaluation according to the features of each construction project and the local characteristics.

1. Special evaluation of atmospheric environmental impact

2. Special evaluation of water environmental impact (including surface water and ground water)

3. Special evaluation of ecological impact

4. Special evaluation of noise impact

5. Special evaluation of impact on soil

6. Special evaluation of solid waste impact

Other items of special evaluation can be listed if not included in the above-mentioned. Special evaluation should be carried out according to the requirements of Technical Guidelines for Environmental Impact Assessment.