

The Republic of Tajikistan
Ministry of Health and Social Protection

PREPARATORY SURVEY REPORT
ON
THE PROJECT FOR IMPROVEMENT OF
MEDICAL EQUIPMENT AND FACILITIES
FOR CHILD HEALTH CARE
IN HAMADONI DISTRICT
IN
THE REPUBLIC OF TAJIKISTAN

September 2016

JAPAN INTERNATIONAL COOPERATION AGENCY

DAIKEN SEKKEI, INC.
FUJITA PLANNING CO., LTD.

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Summary

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1. Outline of the Target Country

(1) Country and nature

The Republic of Tajikistan (hereinafter referred to as “Tajikistan”) is a landlocked country located in the southern part of Central Asia, bordering with the People’s Republic of China to the east, Kyrgyz to the north, Uzbekistan to the west, and Afghanistan to the south. Gained its independence when the Soviet Union was dissolved in December 1991, the relatively new country comprises three regions (the District of Republican Subordination including the capital city, Khatlon Region in the south, and Sughd Region in the north) and one autonomous region (Gorno-Badakhshan Autonomous Region in the eastern Pamir Mountains). The national territory extends roughly 143,000 km², equivalent to 40% of Japan’s land area. The population is approximately 8.5 million, and about 26.8% of the total population reside in urban areas, whereas about 73.2% live in local areas.

(2) Socio-economic situations

Tajikistan is one of the poorest countries among the former Soviet republics. Its socio-economic situation has worsened by the civil war broken out after its independence in 1991, which undermined social infrastructure and accelerated labor emigration. Subsequent to a peace agreement reached in 1997, the country has gradually recovered from the civil war with support from international organizations. Tajik migrant workers in neighboring countries have also contributed to economic improvement in their country of origin. Nonetheless, poor in energy resources such as petroleum and natural gas, Tajikistan falls behind its economic growth because of its import-oriented and war-depleted economy, and high and chronic unemployment rate. Underdeveloped delivery systems of essential public services, including health care, and aging economic infrastructure have severely impeded the economic development of Tajikistan. Its GDP in 2014 was 9.24 billion USD (IMF), which was made up 21.1% of the primary industry, 23.2% of the secondary industry, and 55.7% of the tertiary industry. The major industries are agriculture, including groundnut plantation, fisheries, and services. The agricultural sector underpins employment for 77.5% of the population, while the fisheries sector, followed by the tourism, is a source of earning foreign currencies. The chief secondary industry includes processing of agricultural crops, the mining industry, textiles, and chemicals.

Affected by these socio-economic circumstances Tajikistan is still dependent on the assistance by International Monetary Fund (IMF), the World Bank (WB), and other aid agencies, the country needs international supports for the time being to develop its economy.

2. Background and outline of the Project

(1) Overall goal

In 2006, Tajikistan formulated the National Development Strategy of the Republic of Tajikistan for the Period to 2015 (NDS). In align with this strategy, the Ministry of Health and Social Protection (hereinafter referred to as the “MoH”) set out the National Health Strategy of the Republic of

Tajikistan for the Period of 2011 to 2020 (hereinafter referred to as “NHS”) in 2010, more specifically targeting the healthcare sector.

NHS focuses on a broader delivery of maternal and child health services that should be provided consistently in pre- and post-natal stages. It addresses priority needs such as modernization of hospital systems and reforms of healthcare services in medical institutions. Coping with these challenges, NHS specifically aims at (1) reforming healthcare systems, (2) increasing access to and quality of healthcare services, (3) reducing a maternal death rate, neonatal mortality rate, and under-five mortality rate, while also increasing a participation rate of prenatal checkups achieved through allocation of health-sector resources. NHS also reveals policy initiatives to improve and provide facilities and equipment in core hospitals located in the capital city of Dushanbe and densely populated Khatlon Region, which serve as the local healthcare hubs.

(2) Current situations and problems, and a linkage with the Project

Tajikistan’s maternal and child health indices, such as an under-five mortality rate and infant mortality rate, show relatively poor performances compared with its neighboring countries. Targeting the healthcare sector, the Government of Tajikistan set out NHS in 2010 to broadly deliver maternal and child health services across the country, consistent in pre- and post-natal stages that require integrated care for pregnant women, nursing mothers and newborn infants, including treatment of pediatric diseases. NHS reveals policy initiatives to modernize healthcare systems and reform services, while also highlighting the primary needs for improving and providing facilities and equipment in core hospitals located in the capital city of Dushanbe and densely populated Khatlon Region, which serve as the local healthcare hubs.

In Khatlon Region where Hamadoni District Central Hospital, the Project’s target, is located, healthcare services have been substantially undermined by the “brain drain” of healthcare workers as a result of the civil war in 1990s as well as aging infrastructure. In this region, the under-five mortality rate and infant mortality rate are highest in Tajikistan. The target hospital is an only central medical institution in Hamadoni District that should be providing appropriate medical examinations and treatments for the entire population thereof (roughly 135,000 people in 2015). Furthermore, medical cares in a District Hospital subordinating to a Central District Hospital are in decline, because of insufficient medical equipment and personnel. As a consequence, the latter institution must assume a greater role in accepting patients referred from the former. In fact, however, most of the facilities are inherited from the former Soviet Union period, except for a section renovated by KfW’s funding. Built more than 50 years ago, these facilities are severely deteriorated, in particular the building equipment. Heating systems are not working, although the temperature in the coldest period of winter falls below zero. Water supply and sewerage systems are not also working due to pipe degradation and breaks, which indicates substantially poor conditions of the hospital. Under these circumstances, the Government of Tajikistan requested Japan to reconstruct a Pediatric Ward in Hamadoni District Central Hospital in Khatlon Region and provide it with medical equipment.

It should be noted that Japan had implemented technical cooperation for four years from March 2012, titled the Project for Improving Maternal Health Care System in Khatlon Oblast. This targeted

four districts covering Jomi, Rumi, Vakhsh, and Shahrtuz in the region, providing medical equipment to improve maternal and child health services, developing capacities of healthcare workers, and raising public awareness on maternal and child health issues. In April 2012, furthermore, the Information Collection and Verification Survey on the Medical Water Supply Systems was conducted in Khatlon Region. Using schemes of various kinds, Japan has been supporting to raise the local healthcare standards, and the Project is intended to generate synergies in align with the preceding efforts.

3. Highlights of the survey findings and the project components

(1) Schedule of sending the survey team

The survey team was sent to Tajikistan twice, from April 12 through May 10, 2015 to conduct a field study, and from February 23 through March 4, 2016 for the purpose of an additional field study. To give a briefing on the draft survey report for the Government of Tajikistan, another mission will be planned in consideration to security conditions in the target site and the surrounding area.

(2) Requested components and additionally reviewed matters

Components initially requested by Tajikistan are as follows.

Table 1: Content of Initial Request

Facility	Equipment
Operating room (For pediatric surgery)	Infant warmer, incubator, pulse oxymeter, autoclave, hot air sterilizer, anesthesia apparatus
ICU	Infant warmer, incubator, phototherapy unit, pulse oxymeter, oxygenator, infusion pump, instrument trolley, neonatal monitor, aspirator, ventilator, bilirubin meter
Pathology laboratory	Ultrasound system, ECG monitor, endoscope, X-ray apparatus
Examination room	Instrument trolley, aspirator, bilirubin meter, IV pole stand, weighing scale (for child), weighing scale (for adult), sphygmomanometer (for adult), height scale (for child), height scale (for adult), hemoglobinometer, electronic hemoglobinometer, clinical thermometer, stethoscope, examination light, fetal Doppler, medical cabinet, pipette, centrifuge, microscope, pharmaceutical refrigerator, blood storage refrigerator, laryngoscope, medical couch for child
Treatment room	Instrument trolley, humidifier, IV pole stand, autoclave, emergency kit (for neonate), emergency kit (for child), hot air sterilizer, examination light, medical cabinet
Sickroom (50 beds)	Bed (for child and adult), multipurpose bed, cot (for nenate), bedside table, infant warmer, incubator, phototherapy unit, pulse oxymeter, oxygenator, infusion pump, instrument trolley, neonatal monitor, aspirator, suction unit, bilirubin meter, IV pole stand
Kids room	
Nurse station	
Physicians office	
Administration office	
Kitchen	
WC, bath, washstand	
	Generator

Source: Official Letter of Request

The revisions made to the initial request, as confirmed by the surveys, are as follows.

The pediatric ward to be reconstructed is an inpatient facility of pediatric internal medicine. Operations and postoperative care are provided in the Surgery Department in the target hospital, while

medical examinations are conducted in a polyclinic (an organization operating separately from the target hospital).

Given the severely deteriorating surgery facility, it was mutually agreed in the minutes of discussion (M/D) that the scope of the Project would include provision of a surgical operating space (an operating room) dedicated for the Pediatric Unit, as initially requested by the Surgery Department. However, the Minister of Health delivered a letter to inform that a KfW-funded operating room (which was unused when initially surveyed, and the hospital noted then that it would be used exclusively by the Obstetric and Gynecological Units) would be utilized as a central operating unit of the hospital, and that an operating facility intended by the Project could be as simple as a treatment room used for circumcision and bandage change. Accordingly, the additional field study confirmed that the KfW-funded operating unit was adequately utilized as a central operating room, satisfying the need of the hospital. Also, it verified that an additional pediatric emergency operation unit would not be much required, for which the pediatric operations account for roughly one thirds of the operations performed in the hospital. As a consequence, the Project has decided to exclude the operating room from its plan, and mutually agreed with the Ministry of Health.

As for the request from Pathological Diagnosis Department, KfW has provided an X-ray apparatus, ultrasound system, and electrocardiogram, as in the Surgery Department. Similarly, these units of equipment, except for the X-ray apparatus, were unused when the Project's initial survey was conducted. Our interview survey at the hospital confirmed that these devices were for the OB/GYN departments only and that a separate set of testing equipment was needed for the Pediatric Unit. These items, along with those concerning the operating room, were also written in the M/D as equipment to be provided by this project. Upon the receipt of the above-mentioned letter from the Minister of Health, however, the KfW-funded X-ray examination room and ultrasound diagnosis room were practically part of the central examination department. The Ministry of Health once again requested provision of a portable X-ray unit, ultrasound system, and electrocardiogram. The additional field survey confirmed that the hospital, including the Pediatric Unit, was undertaking medical examinations using the existing equipment mentioned above. Accordingly, the Project decided to cancel supply of the nonessential equipment, and mutually agreed with the Ministry of Health.

As a result of discussion with Tajikistan over the above details in the field survey, the Project intends to provide the following facilities and equipment.

1) Facilities

Table 2: Floor Area of Each Facility

Area	Room	Floor	Floor area (m ²)	Subtotal	Area total	Ward total
Ward	Sickroom (4-bed x 10 + 2-bed x 5)	1	460.35 × 1	460.35	875.28	1555.71
	Follow-up room no. 1 & no. 2	1	123.17 × 1	123.17		
	Nurse station	1	74.07 × 1	74.07		
	Treatment room	1	14.00 × 1	14.00		
	Dining hall	1	53.51 × 1	53.51		
	Kids room	1	27.00 × 1	27.00		
	Line room no. 1 & no. 2	1	19.82 × 1	19.82		
	Pharmaceutical storage	1	9.00 × 1	9.00		
	Equipment storage	1	25.78 × 1	25.78		
	WC for patients	1	31.25 × 1	31.25		
	Shower room for patients	1	14.54 × 1	14.54		
	Dirty utility room	1	8.36 × 1	8.36		
	Consultation room	1	10.03 × 1	10.03		
	WC for staff	1	2.20 × 2	4.40		
Staff	Director's office	2	23.27 × 1	23.27	189.41	
	Conference room	2	33.07 × 1	33.07		
	Physician's room no. 1	2	21.76 × 1	21.76		
	Physician's room no. 2	2	20.24 × 1	20.24		
	Physician's room no. 3	2	19.51 × 1	19.51		
	Staff lounge	2	28.31 × 1	28.31		
	Staff locker room	1	16.92 × 1	16.92		
	Warehouse	1	11.04 × 1	11.04		
	Corridor		15.29 × 1	15.29		
Corridors and stairs	Corridor-1 (ward)	1	304.39 × 1	304.39	401.33	
	Hall	1	23.53 × 1	23.53		
	Corridor-2	2	37.53 × 1	37.53		
	Stairs	1,2	35.88 × 1	35.88		
Building facility	Electric room, Fire pump room	1	16.69 × 1	16.69	89.69	
	Machine room no. 1 and no. 2, PS, EPS, etc.	1,2	31.63 × 1	31.63		
	Elevated water tank room	R	41.37 × 1	41.37		
Accessory buildings	Bldg. no. 1: Water tank room	1	43.74 × 1	43.74	87.48	87.48
	Bldg. no.2: Substation room	1	43.74 × 1	43.74		
Grand Total					1643.19	

2) Equipment

Table 3: Specification and Intended Use of Equipment

No	Equipment	Qty.	Specification/configuration		Intended use
1	Patient monitor (for child, adult, neonate)	4	Measurement parameters:	ECG, respiration, SpO2, temperature, non-invasive blood pressure, etc.	For continuously monitoring vital signs of neonatal patients.
			Display :	Color LCD, 4 inch or larger	
			Waveform chart:	5 or more waveform indexes	
			Other:	Attached with stand, accessories for neonate, built-in battery	
2	Incubator	2	Temperature range :	34 – 37.5°C or wider range	For warming neonates until they reach normal body weight.
			Access window :	2 each on front & back, 1 or more on each side	
			Oxygen concentration adjustment range:	Min. range: 21-75%	
			Humidity range:	50 – 90% or higher	
3	Infant warmer	2	Control mode:	Automatic and servo-controlled	For warming or giving oxygen therapy to sick neonates, premature babies.
			Oxygen flow meter	Installed	
			Bed inclination:	±5°	
			Alarm:	Installed	
4	Hot air sterilizer	1	Effective capacity:	90 liters or more	For sterilizing medical and glass instruments.
			Boiler :	Built-in	
			Sterilization process:	Automatic control	
5	Oxygenator (for sick ward)	8	Configuration:	Oxygen concentrator (PSA), compressor, oxygen cylinder	For concentrating oxygen.
			Oxygen concentration:	88 – 90% or higher	
			Oxygen production:	32SCF/h (Standard Cubic Foot)	
6	Vacuum truck	1	Tank capacity:	10m ³ or so	For suctioning, storing in a built-in tank, and transporting waste materials discharged from medical facilities to an appropriate disposal site.
			Suction pump	60m ³ /h or so	

(3) Importance of the project

Facilities in Hamadoni District Central Hospital are severely deteriorated, except for those renovated by KfW (Obstetrics and Gynecological Units, Surgery and Clinical Laboratory Departments), and they have an urgent need for reconstruction. In this situation, NHS 2010-2020 assigns a high priority to improve maternal and child health services, and thus an effort to enhance pediatric care (internal medicine), is consistent with the intention of NHS, preceding potential needs in other clinical departments. Notably, in align with KfW's support for the Obstetric Unit, the Project will contribute to further improve maternal and child health by renewing pediatric facilities and medical equipment.

4. Construction period and cost estimate of the Project

Japanese assistance under this Project consists of detail design and tender by the consultant, facility construction and medical equipment procurement by the contractors after the tender, and supervisory work

by the consultant; and it will be implemented as a single fiscal year project. The implementation schedule after the signing of E/N and G/A between the two governments is shown in Fig. 2-21. After the signing of E/N and G/A between the two governments Project work term will take about 24 months in total: 4.75 months for detail design, 2.25 months for tender procedure, and 17 months for construction and procurement.

The total cost for implementing this Project on the Tajik side is estimated at approximately 0.004 billion yen.

5. Evaluation of the Project

(1) Relevance

It is relevant that the Project is implemented with a Japanese grant aid scheme for the reasons below.

1) Target beneficiaries

Immediate beneficiaries are the population of Hamadoni District, which is 56,000 people aged under 18. Provision of the target facilities and equipment will also increase the number of hospital users arriving from neighboring districts, and therefore the Project will ultimately help improve child health in the southern part of Khatlon Region.

2) Objective of the Project

The Project's objective is to improve the hospital environment through provision of facilities and medical equipment for a Pediatric Ward in Hamadoni District Central Hospital, and thereby contributing to ameliorate local maternal and child health services. This will ultimately make people's essential living foundation (basic human needs: BHN) and livelihoods stable and better.

3) Consistency with Tajikistan's national health strategy

Tajikistan's NHS recognizes importance of broadly delivering maternal and child health services that consistently cover pre- and post-natal stages requiring integrated care for pregnant women, nursing mothers and newborn infants, including treatment of pediatric diseases. In modernizing hospital systems, Tajikistan has launched rehabilitation of medical institutions serving as local healthcare hubs, in particular those core hospitals located in the capital city of Dushanbe and Khatlon Region. The Project, which will provide medical equipment, facilities, and infrastructure for the target hospital, is a coherent effort with the above-mentioned priority policy of Tajikistan.

4) Consistency with Japan's assistance policy and strategy

Developed by the Ministry of Foreign Affairs of Japan, the Country-specific Aid Policy for Tajikistan in 2014 states that the country's stability has importance for secure Central Asia and the Eurasian Continent as a whole. It further articulates that such solidity is essential for an international community to help Afghanistan, Tajikistan's neighboring country, achieve more autonomy and stability. The said policy recognizes that essential social services are not developed adequately, including water-supply and healthcare systems. Accordingly, the priority sectors (medium-term goals) targeted therein include water supply in local areas that enables people to access to safe and clean

drinking water, as well as medical and healthcare systems, particularly in the maternal and child health domain. The Project is thus consistent with Japan’s aid policy for Tajikistan.

(2) Effectiveness

The Project will bring about the following effects, when implemented.

1) Quantitative effects

Expected quantitative effects are indicated below. When the Project is completed in June 2018, the evaluation will be carried out in 2021 (after three years from the project completion).

Table 4: Performance Indicators of the Overall Project Achievement

Title of indicator	Baseline (2014)	Target (2021) (3 years after the project completion)
Number of pediatric inpatients (persons)	1,876	2,790
Bed occupancy rate (%)	51.4	76.5

2) Qualitative effects

- Increased work efficiency of healthcare workers: Relocation of the Pediatric Ward to the site adjacent to the Obstetric and Surgery Wards will reduce a distance of transfer for healthcare workers in the hospital, which will rationalize their routine work. Also, currently unavailable in the existing hospital, a nurse station will be provided to improve a working environment, leading to better quality of the patient medical care.
- With water supply and drainage systems provided by the Project, safe water available throughout the year will improve the hospital environment as well as the working environment for healthcare workers. This will achieve the better quality of healthcare services for patients.
- A ventilation system provided by the Project will lower risks of hospital inspection, leading to improved quality of healthcare services for inpatients.
- Hamadoni District is featured by a sharp seasonal difference in temperatures, which is marked by 35°C in summer and -15 °C in winter. Air conditioning systems, when provided, will allow hospitalization of children to be more comfortable during a severe winter time. The hospital facilities will be utilized all around the year in an efficient manner.

Table of Contents

Summary	
Table of Contents	
Location Map/A Drawing of the Proposed Facility	
List of Figures and Tables/Abbreviations	
Chapter 1 Background and Details of the Project	
1-1 Rationale and Overview of the Grant Aid Project	1
1-2 Conditions of the Natural Environment	2
1-3 Environmental and Social Consideration	2
Chapter 2 Contents of the Project	
2-1 Basic Concept of the Project	4
2-2 Basic Design of the Requested Japanese Assistance	5
2-2-1 Design Policy	5
2-2-2 Basic Plan (Facility Plan/Equipment Plan)	15
2-2-3 Basic Design Drawings	36
2-2-4 Construction Plan / Procurement Plan	45
2-2-4-1 Construction Policy / Procurement Policy	45
2-2-4-2 Points to Note in Construction and Procurement	46
2-2-4-3 Division of Construction/Procurement/Installation Works	47
2-2-4-4 Construction Supervision Plan / Procurement Supervision Plan	49
2-2-4-5 Quality Control Plan	50
2-2-4-6 Procurement Plan of Equipment and Materials	50
2-2-4-7 Guidance on Initial and On-going Operation	52
2-2-4-8 Implementation Schedule	52
2-3. Outline of Tajikistan's Responsibilities	54
2-4 Operation and Maintenance of the Project	54
2-5 Approximate Cost of the Project	56
2-5-1 Approximate Cost of Japanese Assistance	56
2-5-2 Operation and Maintenance Cost	56
Chapter 3 Evaluation of the Project	
3-1 Prerequisites for the Project Implementation	58
3-2 Input of Tajikistan (Shared Responsibilities) to Achieve the Project	58
3-3 External conditions	58
3-4 Evaluation of the Project	58
3-4-1 Relevance	58

3-4-2 Effectiveness	59
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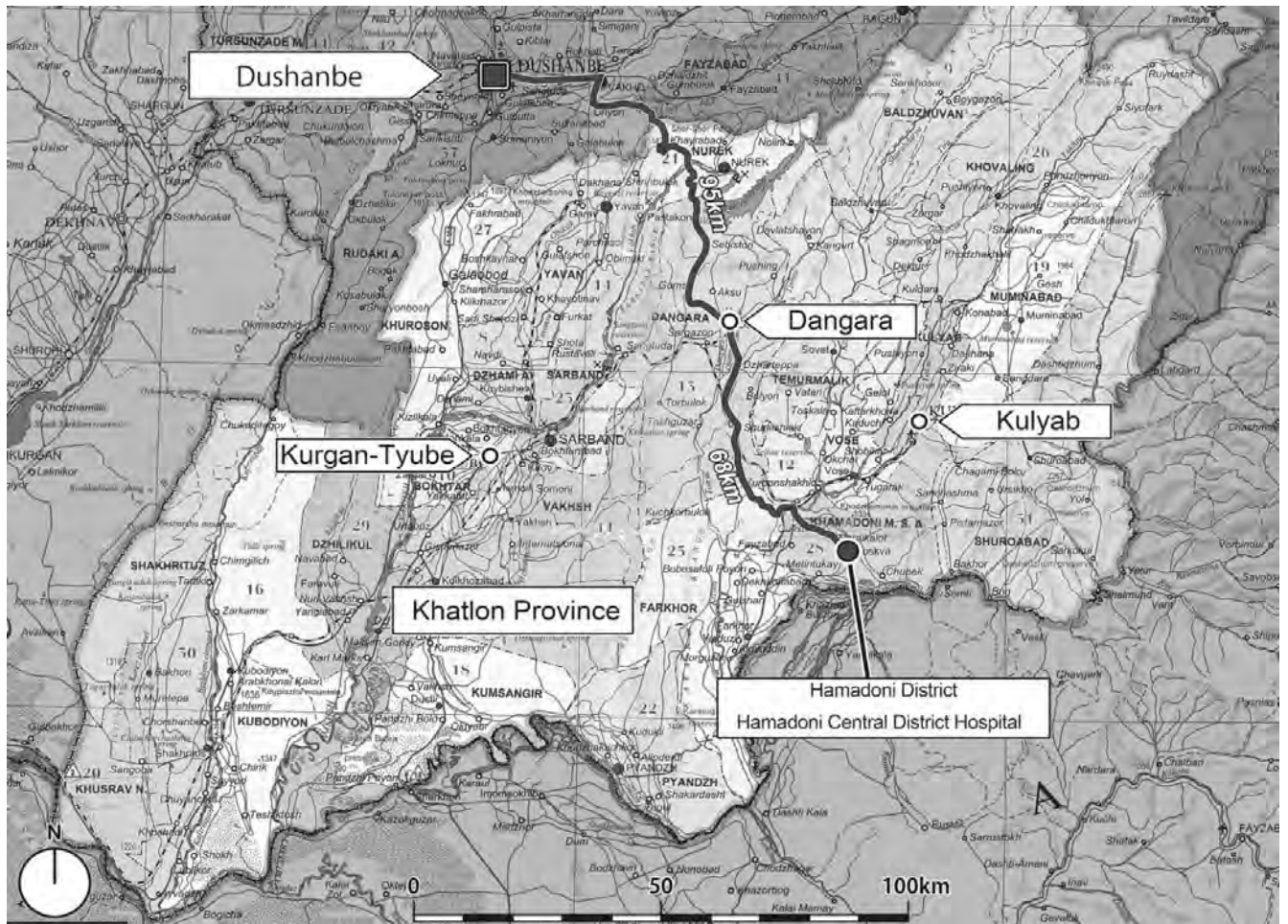
[Attachments]

1. List of Team Member for the Preparatory Survey	64
2. Survey Schedule	65
3. List of Persons Related to the Project (Persons Contacted)	67
4. Minutes of Discussion (M/D)	69
5. Letters Exchanged between Ministry of Health and Social Protection and JICA	84
6. Technical Notes	103
7. Soil Survey Report	106

Location Map



Republic of Tajikistan





Perspective

List of Figures and Tables

Chapter 1 Background and Details of the Project

Figure1-1: Seismic Location Map	2
---------------------------------------	---

Chapter 2 Contents of the Project

Table 2-1: Outline of the Requested Assistance	4
Table 2-2: Content of Initial Request	5
Table 2-3: Age definition of neonate	7
Table 2-4: No. of sickbeds as perceived by different entities	8
Table 2-5: No. of Beds Needed for Internal Medicine Dept.	9
Table 2-6: Rationalization Plan of KfW (excerpt).....	9
Table 2-7: Yearly Trend of the Numbers of Inpatients, Surgeries, and Pediatric Surgeries of Surgical Ward	11
Table 2-8: Requested Facilities vs. Planned Facilities	11
Table 2-9: Structural Materials and Methods	22
Table 2-10: Dead load	23
Table 2-11: Live load	23
Table 2-12: Materials to be Used	23
Table 2-13: Sanitary equipment	26
Table 2-14: Fire-fighting equipment	26
Table 2-15: Illuminance Setting of Each Room	27
Table 2-16: Finishing Materials and Methods	29
Table 2-17: Floor Area of Each Facility	30
Table 2-18: No. of Tests Conducted for (0 – 18 years old) at Each Test Room; Hospital’s Total and Pediatric Patients Only	31
Table 2-19: Sickbeds Currently Used at the Pediatric Unit of Hamadoni District Central Hospital	32
Table 2-20: No. of Inpatients of Pediatric Ward by Age Group (total of internal medicine and surgery depts.)	32
Table 2-21: List of Planned Equipment	33
Table 2-22: Specification and Intended Use of Equipment	36
Table 2-23: List of Drawings	36
Table 2-24: Types and Numbers of Fulltime Japanese Engineers	47
Table 2-25: Transport Route	47
Table 2-26: Division of Works	48
Table 2-27: Quality Control Plan	50
Table 2-28: Procurement Plan of Main Construction Equipment and Materials	51
Table 2-29: Obligations of the Tajikistan Side and Timing thereof	54

Table 2-30: No. of Health Workers of the Pediatric Unit	55
Table 2-31: Breakdown of Expenditures of Hamadoni District Central Hospital within District Budget (in TJS)	55
Table 2-32: Expenses to be borne by the Tajikistan side	56
Table 2-33: Main O&M Cost Items	56
Figure 2-1: No. of Inpatients by Month (2013/14 average)	8
Figure 2-2: Layout Plan and Utility Service Lines	16
Figure 2-3: Flow Diagram	18
Figure 2-4: Sickroom Plan	19
Figure 2-5: Follow-up Room Plan	19
Figure 2-6: Nurse Station and Adjacent Rooms	20
Figure 2-7: Kids Room / Dining Hall Plan	20
Figure 2-8: Staff Area Plan	21
Figure 2-9: Cross Section	22
Figure 2-10: Water Supply System	24
Figure 2-11: Schematic of Wastewater System	25
Figure 2-12: Layout Plan	37
Figure 2-13: Pediatric Ward 1 st Floor Plan	38
Figure 2-14: Pediatric Ward 2 nd Floor/Roof Plan	39
Figure 2-15: Pediatric Ward, Elevation – 1	40
Figure 2-16: Pediatric Ward, Elevation – 2	41
Figure 2-17: Pediatric Ward, Cross section – 1	42
Figure 2-18: Pediatric Ward, Cross section – 2	43
Figure 2-19: Water Receiving Tank Room/Incoming Transformer Room	44
Figure 2-20: Supervisory System	48
Figure 2-21: Project Implementation Schedule	53

Chapter 3 Evaluation of the Project

Table 3-1: Performance Indicators of the Overall Project Achievement	60
Table 3-2: Change in the Population in Hamadoni District and the Number of Inpatients	61
Table 3-3: Detailed Number of Pediatric Inpatients in Hamadoni District Central Hospital	61
Table 3-4: Number of Inpatients by Month, Monthly Average of Minimum Temperature, and Bed Occupancy Rate	62
Table 3-5: Admission Capacity Anticipated in 2021	63
Figure 3-1: Monthly Average Temperature and Bed Occupancy Rate	62

Abbreviation

A/P	Authorization to Pay
AVR	Automatic Voltage Regulator
AVS	Automatic Voltage Switcher
B/A	Banking Arrangement
BHN	Basic Human Needs
CIS	Commonwealth of Independent States
DAC	Development Assistance Committee
E/N	Exchange of Notes
EU	European Union
G/A	Grant Agreement
GDP	Gross Domestic Product
GNI	Gross National Income
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
ICU	Intensive Care Unit
IMF	International Monetary Fund
JICA	Japan International Cooperation Agency
JV	Joint Venture
KfW	Kreditanstalt für Wiederaufbau
NDS	National Development Strategy
NICU	Neonatal Intensive Care Unit
NHS	National Health Strategy
PHC	Primary Health Care
PPM	Planned Preventive Maintenance
SWAp	Sector Wide Approach
TJS	Tajikistan Somoni
UNICEF	United Nations Children Fund
UPS	Uninterruptible Power Supply
USAID	United States Agency for International Development
WB	World Bank
WFP	World Food Program
WHO	World Health Organization

Chapter 1 Background and Details of the Project

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1-1 Rationale and Overview of the Grant Aid Project

Tajikistan's maternal and child health indices, such as an under-five mortality rate and infant mortality rate, show relatively poor performances compared with its neighboring countries. Targeting the healthcare sector, the Government of Tajikistan set out the National Health Strategy of the Republic Tajikistan for the Period of 2011 to 2020 (hereinafter referred to as "NHS") in 2010 in order to broadly deliver maternal and child health services across the country, which should be consistent in pre- and post-natal stages requiring integrated care for pregnant women, nursing mothers, and newborn infants, including treatment of pediatric diseases. NHS reveals policy initiatives to modernize healthcare systems and reform services, while also highlighting the primary needs for improving and providing facilities and equipment in core hospitals located in the capital city of Dushanbe and densely populated Khatlon Region.

In Khatlon Region where Hamadoni District Central Hospital, the Project's target, is located, quality of healthcare services has been substantially undermined by the "brain drain" of healthcare workers as a result of the civil war in 1990s as well as aging infrastructure. In this region, the under-five mortality rate and infant mortality rate are highest in Tajikistan. The target hospital is an only central medical institution in Hamadoni District that should be providing appropriate medical examinations and treatments across the population (roughly 135,000 people in 2015). Furthermore, medical cares in a District Hospital subordinating to a Central District Hospital are in decline, because of insufficient medical equipment and personnel. As a consequence, the latter institution must assume a greater role in accepting patients referred from the former. In fact, however, most of the facilities are inherited from the former Soviet Union period, except for a section renovated by KfW's funding. Built more than 50 years ago, these facilities are severely deteriorated, in particular the building equipment. Heating systems are not working, although the temperature in the coldest period of winter falls below zero. Water supply and sewerage systems are not also working due to pipe degradation and breaks, which indicates substantially poor conditions of the hospital. Under these circumstances, the Government of Tajikistan requested Japan to reconstruct a Pediatric Ward in Hamadoni District Central Hospital in Khatlon Region and provide it with medical equipment.

It should be noted that Japan had implemented technical cooperation for four years from March 2012, titled the Project for Improving Maternal Health Care System in Khatlon Oblast. This targeted four districts covering Jomi, Rumi, Vakhsh, and Shahrtuz in the region, providing medical equipment to improve maternal and child health services, developing capacities of healthcare workers, and raising public awareness on maternal and child health issues. In April 2012, furthermore, the Information Collection and Verification Survey on the Medical Water Supply Systems" was conducted in Khatlon Region. Using schemes of various kinds, Japan has been supporting to raise the local healthcare standards, and the Project is intended to generate synergies in align with the preceding efforts.

1-2 Conditions of the Natural Environment

(1) Climate conditions

In Tajikistan, 93% of its territory is mountainous, featured by rugged terrains ranging from several hundred meters to 6,000 and 7,000 meters above the sea level. The country shares a border with China along the Pamir Mountains to the east, and Uzbekistan and Kyrgyz along the Fergana Valley to the north.

Khatlon Region in the southern part of Tajikistan, where Hamadoni District Central Hospital is located, has a continental climate. In plains, a hot and dry climate lasts from June through September, reaching over 35°C, whereas the minimum temperature from December through February falls below zero, with snowfall.

(2) Earthquake

Tajikistan is located in a border of the Eurasian Plate and the Indian Plate where there are probabilities of a relatively large-scale earthquake. According to the International Institute of Seismology and Earthquake Engineering, the record since 1990 shows seven earthquakes with a magnitude of more than 6.5, which were centered inside Tajikistan. Occurrence of earthquakes indicated in the seismic location map of Figure 1-1 is primarily on the border with Afghanistan in the southern Tajikistan. Khatlon Region targeted by the Project is adjacent to Afghanistan, which is subject to seismic hazard.

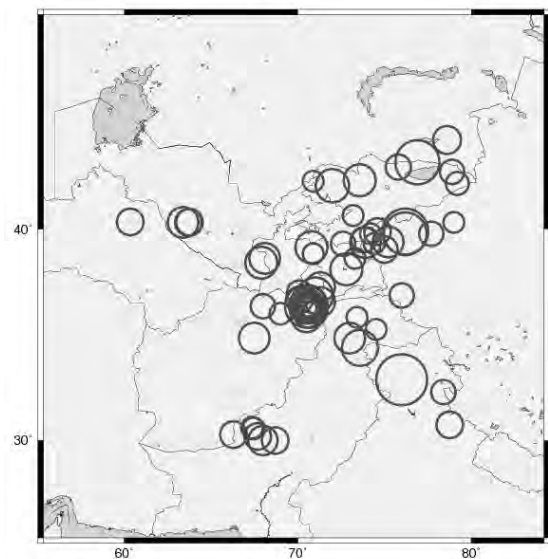


Figure1-1:Seismic Location Map
Source: International Institute of Seismology and Earthquake Engineering

1-3 Environmental and Social Consideration

The Project intends to reconstruct medical facilities of currently operating Hamadoni District Central Hospital and provide there with medical equipment. Environmental impact is expected to the extent of which the existing facilities are generally affecting the surrounding area, which will be further generated by the proposed reconstruction. Other impact on the surround area, albeit limited, is likely to be resulted from construction work and equipment installation. Thus, the probable environmental impact falls under Category C.

(1) Environmental Impact Assessment

In Tajikistan, the Law on the Ecological Expertise provides for environmental and social considerations preceding a new construction project pursued by the private sector. An Environmental Approval (EA) must be obtained from the Committee for Environmental Protection (CEP) under the Government of Tajikistan to implement such project. However, a project carried out under the Ministry of Health and Social Protection (hereinafter referred to as the “MoH”) is not subject to this requirement, and therefore needs no approval procedure.

(2) Impact on the surrounding area

1) Air, noise, and vibration

Although an emergency power generator is installed for a planned outage and emergency response, it is unlikely to exert notable effects, as the device will be used only for a given time period.

2) Water quality

A public sewer is not provided for drain water (excrement and various waste water) discharged from the Project's construction object. Therefore, a soak pit will be used for wastewater disposal, which allows supernatant fluid treated in a septic tank to infiltrate into the ground. The septic tank will be equipped with a sterilization chamber, considering potential effects of infiltrating water on the groundwater and the existing water pipes.

3) Medical wastes

Medical sharps such as used needles and syringes are discarded in a disposal box and incinerated on the hospital premise, which will pose no environmental impact.

(3) Trees

The hospital premise is planted with a number of trees to provide the shade to patients. While construction of the proposed facilities involves cutting of some trees^{*1}, the Project will attempt to avoid the cutting and conserve them as long as they do not interfere construction of the new facilities.

*1: The cutting of trees requires a municipal authorization. The Project will inform the hospital of the target trees in advance, and the statutory authorization will be obtained by the hospital.

(4) Impact on the surrounding area during construction work

1) Effects on the hospital and patients

The following measures will be taken to minimize potential effects on the hospital and patients.

- An access route dedicated for construction vehicles and workers will be provided with a temporary opening of the boundary wall on the hospital premise adjacent to the construction site. This helps minimize a cross-flow with the hospital workers and patients.
- The construction site, including a storage yard, will be partitioned with a temporary enclosure.

2) Effects of work noise and vibration

Construction work entails noise and vibration. Iron plates will be used for a temporary enclosure to suppress noise disturbing the hospital. Also, the Project will schedule hours of construction work in consultation with the hospital to minimize potential effects.

3) Disposal of construction wastes

Hamadoni District has no regulations regarding disposal of construction wastes. A construction contractor and equipment suppliers will dispose them in specified sites.

Chapter 2 Contents of the Project

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

(1) Overall Goal and Project Objective

In 2010, the Government of Tajikistan, with the assistance from international aid organizations, established the National Health Strategy of the Republic of Tajikistan for the Period of 2010 – 2020, according to which the government is endeavoring to strengthen and modernize the country's maternal and child health services by strengthening its health and medical systems, and upgrading hospitals as the main provider of community health services, and tackling other priority areas. However, due to financial constraints, modernization and renewal of aging medical facilities and equipment has not progressed as initially envisioned.

Under these circumstances, this Project aims to assist the improvement of child health services in the communities near the Afghan border, where the living conditions need much improvement, by upgrading the facilities and equipment of the Pediatric Unit of the Hamadoni District Central Hospital, which especially suffers poor conditions in comparison with other hospitals in the neighboring Districts of Khatlon Region.

(2) Outline of the Project

In order to achieve the above-mentioned overall goal, this Project plans to reconstruct the buildings of, and, upgrade and renewal medical equipment for the Pediatric Unit of the Hamadoni District Central Hospital in Khatlon Region, thereby assisting the improvement of child health services of the target hospital.

Table 2-1: Outline of the Requested Assistance

	Description
Overall goal	Improve the child health services in Hamadoni District, Khatlon Region by rebuilding the Pediatric Ward of the Hamadoni District Central Hospital and providing basic medical equipment.
Objective of Japanese assistance	Improve the medical environment to provide higher quality child health services by rebuilding the Pediatric Unit of the Hamadoni District Central Hospital and providing basic medical equipment.
Outcome of assistance	Pediatric Unit of the Hamadoni District Central Hospital is rebuilt and provided with basic medical equipment.
Activity / input	Construction: Pediatric Ward of the Hamadoni District Central Hospital (total floor area: 1,643.19m ² (including accessory buildings)) Procurement: medical equipment for the Pediatric Ward of the Hamadoni District Central Hospital
Input by recipient country	<ul style="list-style-type: none"> • Securing/preparation of construction site, installation of utility service lines • Appropriation of budget (for salaries and wages, O&M, etc.) • Allocation of personnel • Tax exemption
Target area	Hamadoni District, Khatlon Region
Beneficiary	<ol style="list-style-type: none"> 1) Direct beneficiary: pediatric patients and medical staff of the Hamadoni District Central Hospital 2) Indirect beneficiary: residents of Hamadoni District, Khatlon Region

2-2 Basic Design of the Requested Japanese Assistance

2-2-1 Design Policy

The Japanese assistance for this Project will comprise the upgrading and renewal of the facilities and equipment of the Pediatric Unit of the Hamadoni District Central Hospital to assist the Tajik Government in its effort toward improving maternal and child health services. Based on the request from the Tajik Government, as well as the results of field surveys and discussions, it was decided to reconstruct the facilities and procure medical equipment in accordance with the following policies.

2-2-1-1 Policy for Facility Design

(1) Basic Policy

All the facilities of the Hamadoni District Central Hospital, except those (Obstetrics and Gynecological Units, Surgery and Clinical Laboratory Departments) that have been upgraded with the assistance from KfW, are severely deteriorated and in serious need of reconstruction. Upgrading the Pediatric (internal medicine) Unit in priority to other Units is highly relevant, as it conforms to the National Health Strategy of the Republic of Tajikistan for the Period of 2010 – 2020 that places emphasis on the improvement of maternal and child health services. In addition, improving the facilities and equipment of the Pediatric Unit in conjunction with KfW's assistance for the Obstetrics Unit will have a synergetic effect in improving the maternal and child health services.

1) Change in the Contents of Request

The initial request consisted of the relocation/reconstruction of the Pediatric Ward within the site of the Hamadoni District Central Hospital and the procurement of necessary equipment for the Unit. The details of the request are shown in Table 2-2 below.

Table 2-2: Content of Initial Request

Facility	Equipment
Operating room (For pediatric surgery)	Infant warmer, incubator, pulse oxymeter, autoclave, hot air sterilizer, anesthesia apparatus
ICU	Infant warmer, incubator, phototherapy unit, pulse oxymeter, oxygenator, infusion pump, instrument trolley, neonatal monitor, aspirator, ventilator, bilirubin meter
Pathology laboratory	Ultrasound system, ECG monitor, endoscope, X-ray apparatus
Examination room	Instrument trolley, aspirator, bilirubin meter, IV pole stand, weighing scale (for child), weighing scale (for adult), sphygmomanometer (for adult), height scale (for child), height scale (for adult), hemoglobinometer, electronic hemoglobinometer, clinical thermometer, stethoscope, examination light, fetal Doppler, medical cabinet, pipette, centrifuge, microscope, pharmaceutical refrigerator, blood storage refrigerator, laryngoscope, medical couch for child
Treatment room	Instrument trolley, humidifier, IV pole stand, autoclave, emergency kit (for neonate), emergency kit (for child), hot air sterilizer, examination light, medical cabinet
Sickroom (50 beds)	Bed (for child and adult), multipurpose bed, cot (for neonate), bedside table, infant warmer, incubator, phototherapy unit, pulse oxymeter, oxygenator, infusion pump, instrument trolley, neonatal monitor, aspirator, suction unit, bilirubin meter, IV pole stand
Kids room	
Nurse station	
Physicians office	
Administration office	
Kitchen	
WC, bath, washstand	
	Generator

Source: Official Letter of Request

The revisions made to the initial request, as confirmed by the surveys, are as follows.

- ◇ Request for pediatric surgery department: The initial request included an operating theater (for pediatric surgery). However, the Pediatric Ward is not for surgical patients but for internal medicine inpatients and does not have a department dedicated to pediatric surgery. Child and adult patients needing surgeries and postoperative care handled together at the existing Surgical Unit, which is in an extremely poor condition with aged and unusable water and drainage facilities, etc. There is another operating room newly constructed with the assistance of KfW^{*1}, which, however, is for OB/GYN departments only as verified by our interview survey at the hospital. As it was confirmed that the operating room dedicated to pediatric surgeries was highly necessary for improving child health care, the request for the facilities and equipment for pediatric surgery department was officially accepted on the Minutes of Discussion (M/D) dated April 29, 2015.

*1: The newly constructed operating theater was in the process of rework and not being used at the time of survey in April 2015.

After the study team's return to Japan, the Minister of Health and Social Protection of the Population (hereinafter, "the Health Minister") issued a letter (dated May 22, 2015) to the Resident Representative of JICA Tajikistan Office, stating that the KfW-financed operating theater is the central operating room, and the operating theater for the Pediatric Unit to be provided by this Project can be as simple as a treatment room for performing circumcision, changing bandages, and other basic procedures. In response to the letter, a meeting has held between the Health Minister and the Representative of JICA Tajikistan Office, which resulted in the issuance of another letter by the Health Minister (dated June 26, 2015) requesting a department for emergency pediatric surgery.

During the subsequent site survey (February – March, 2016), the study team confirmed that the KfW-financed new operating theater was operating as the central operating room, sufficiently meeting the current demand. It was also confirmed that about 1/3 of surgeries performed there was for pediatric patients and that there was not much need for newly establishing a department for emergency pediatric surgery, as they were considering using the old operating theater as a backup for the new one. Consequently, it was decided not to include the emergency pediatric surgery department, to which the Ministry of Health and Social Protection of the Population (hereinafter, "MoH") agreed.

- ◇ Request for diagnostic imaging and physiological test departments: Although X-ray apparatus and other equipment for physiological testing were included in the original request, X-ray, ultrasound, and ECG devices had been provided by the KfW-financed project, as was the case with the operating theater. Our interview survey at the hospital confirmed that these devices were for the OB/GYN departments only and that a separate set of testing equipment was needed for the Pediatric Unit. These items, along with those concerning the operating room, were also written in the M/D as equipment to be provided by this project.

As part of our response to the letter from the Health Minister (dated May 22, 2015), we

asked whether or not they intend to use the X-ray examination room, ultrasound examination room, and other facilities constructed under the assistance of KfW as the central clinical laboratory for the whole hospital. As a result, a revised request was made for portable X-ray apparatus, ultrasound system, and ECG monitor for the exclusive use of the Pediatric Unit on June 26,

In response to this request, we verified during the follow-up survey that the hospital was using the existing X-ray, ultrasound, and ECG apparatus to examine patients including pediatric patients and thus determined not to procure these items under this Project because of low urgency, to which the Health Ministry consented.

- ◇ Request for solar power system: Although not included in the request, the solar power system was high on the wish list of the hospital, as it constantly experiences voltage fluctuations despite receiving electricity from the so-called “red line,” which, in principle, is available free of outages. However, we explained to them the infeasibility of procuring such equipment because Tajikistan has yet to establish a system for properly disposing storage batteries, which, in any case, need to be replaced frequently because of short service life.

2) Definition (Age) of Neonates

The age definition of pediatric patients varies from organization to organization. In this Project, we will follow the classification of Hamadoni District Central Hospital and design the facilities and equipment for the Pediatric Unit, which handles children ages eight or more days after birth.

Table 2-3: Age definition of neonate

Organizations/Hospitals Surveyed	Neonates (Obstetrics)	Children (Pediatrics)
MoH	0 – 14 days	15 days – 18 yrs.
KfW-assisted hospitals	0 – 28 days	29 days – 18 yrs.
Khalton Region Health Bureau, Hamadoni District Central Hospital, Jomi District Central Hospital	0 – 7 days	8 days – 18 yrs.

Source: Interview survey at MoH, Hamadoni District Central Hospital, etc.

3) Number of Beds

□ Verification of request

The table below summarizes the requested quantity of sickbeds, the actual number at present, the opinion of MoH, and KfW’s rationalization plan. 50 sickbeds were requested, which correspond to the present number of beds for internal medicine patients in the Pediatric Ward, which also has 25 beds for surgical patients. KfW’s rationalization plan recommends 33 beds for internal medicine, 10 for neonatal care, and 11 for surgical patients. 50 beds (35 for internal medicine and 15 for surgical) indicated by MoH in response to our interview survey is likely based on the requested quantity, which were allocated to the two departments according to the current situation of the hospital.

Table 2-4: No. of sickbeds as perceived by different entities

	Pediatric internal medicine + neonate	Pediatric surgery	Total	Remarks
Request			50	Whether the beds are for internal medicine or surgical patients is not specified*1
Current	50	25	75	8 beds for follow-up room not included.
Rationalization plan of KfW	33+10=43	11	54	
Interview survey with MoH	35	15	50	Requested 50 beds allocated to two departments.

Note: *1: The requested number of sickbeds was for the whole of Pediatric Ward with no distinction between internal medicine and surgical patients.

Source: Official Letter of Request, Detail Planning for Central District Hospital of Hamadoni District, interview survey with MoH

□ Setting the number of sickbeds

- Number of sickbeds needed during peak times

As shown in Figure 2-1 and Table 2-5, pediatric inpatients tend to increase during summer (June – August) peaking in July with 323 inpatients on monthly average. Assuming that the average number of stay at the hospital is 5 days (based on the result of the interview survey at Hamadoni District Central Hospital), the number of beds needed per day in July will be 52.1 beds (= 323 patients x 5 days ÷ 31 days), which exceeds the requested number of beds of 50. Likewise, June and August will need 39.5 beds (= 237 patients x 5 days ÷ 30 days) and 40.6 beds (=252 patients x 5 days ÷ 31 days), respectively, which means that about 80% of the requested 50 beds will be occupied, indicating that 50 is an appropriate quantity.

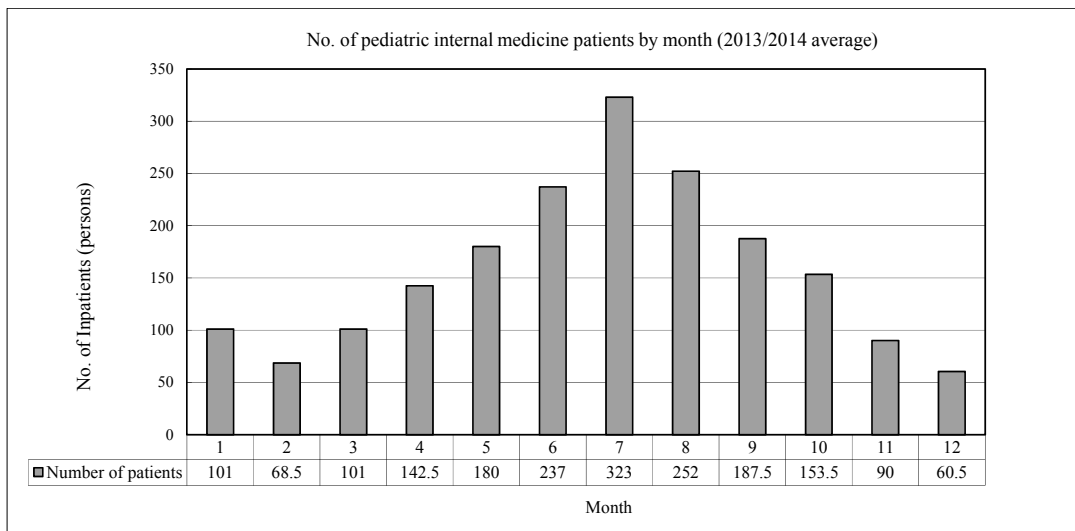


Figure 2-1: No. of Inpatients by Month (2013/14 average)

Source: created based on the result of interview survey at Hamadoni District Central Hospital

Table 2-5: No. of Beds Needed for Internal Medicine Dept.

Month	No. of inpatients									No. of beds needed	Bed occupancy rate (%)
	2013			2014			2013/14 average				
	Other than early neonate	Early neonate	Total	Other than early neonate	Early neonate	Total	Other than early neonate	Early neonate	Total		
1	105	2	107	91	4	95	98	3	101	16.3	32.6
2	60	1	61	73	3	76	66.5	2	68.5	12.2	24.5
3	80	3	83	118	1	119	99	2	101	16.3	32.6
4	133	0	133	150	2	152	141.5	1	142.5	23.8	47.5
5	178	1	179	181	0	181	179.5	0.5	180	29.0	58.1
6	255	4	259	212	3	215	233.5	3.5	237	39.5	79.0
7	327	2	329	315	2	317	321	2	323	52.1	104.2
8	233	5	238	262	4	266	247.5	4.5	252	40.6	81.3
9	189	1	190	183	2	185	186	1.5	187.5	31.3	62.5
10	175	4	179	127	1	128	151	2.5	153.5	24.8	49.5
11	92	3	95	84	1	85	88	2	90	15.0	30.0
12	60	4	64	55	2	57	57.5	3	60.5	9.8	19.5
Total	1,887	30	1917	1,851	25	1876	1869	27.5	1896.5	26.0	52.0

Source: the number of inpatients is based on the result of the interview survey at Hamadoni District Central Hospital

• Comparison with KfW's Hospital Rationalization Plan

The table below shows the number of patients derived from the number of beds to be reduced under KfW's hospital rationalization plan.

Table 2-6: Rationalization Plan of KfW (excerpt)

Year	2009			2015			2020			
	Department (No. of patents)	No. of beds	Ave. length of hospital stays	Bed occupancy rate	No. of beds	Ave. length of hospital stays	Bed occupancy rate	No. of beds	Ave. length of hospital stays	Bed occupancy rate
Pediatric internal medicine (estimate)	40	17.1	68.8%	36	15.4	73%	33	13.9	78%	
	(0.688×40×320**÷17.7= 497)			(0.730×36×320÷15.4= 546)			(0.78×33×320÷13.9= 592)			
Neonatal*	10	0.1	0	10	0.1	0	10	0.1	0	
Pediatric surgery (estimate)	25	13.2	33.7%	11	11.9	85%	11	10.7	85%	
	(0.337×25×320÷13.2= 204)			(0.850×11×320÷11.9= 251)			(0.850×11×320÷10.7= 280)			

* We recommend keeping these 10 beds, as they are being used at the pediatric internal medicine department and the actual number of patients is unknown. (KfW)

** The number of operating days under the KfW Plan is 320 days per year.

Source: Detail Planning for Central District Hospital of Hamadoni District

KfW's estimate of the number of inpatients (= bed occupancy rate x no. of beds x no. of operating days per year ÷ average length of hospital stays) of the pediatric internal medicine department was 546 in 2015, whereas the actual number confirmed by the field survey was 1,851 (excluding early neonates) in 2014. The average number of stay in the hospital estimated by KfW was 15.4 days (2015) while that confirmed by the field survey was 5 days. There are wide discrepancies both in the number of patients and the average length of hospital stays between KfW's estimates and the results of the field survey. Although the exact factors of these discrepancies are unknown, this study will calculate the appropriate number of beds by taking

into account the seasonal fluctuations in the number of patients, as well as other findings of the field survey.

4) Follow-up Room

In the existing Pediatric Ward, there are two follow-up rooms (locally referred to as ICUs*¹) (one is for children up to around 3 years of age, and the other for older children) directly adjacent to the nurse station for seriously ill patients mainly requiring respiratory care, such as oxygen administration and close monitoring. Likewise, this Project will also provide two follow-up rooms, as they are highly necessary for treating patients in serious conditions intensively with respiratory care (oxygen therapy), etc. while monitoring their vital signs in isolated rooms away from other patients to protect their compromised immune systems from infection.

*1: Facilities and equipment of what they call “ICUs and resuscitation rooms” in Tajikistan correspond to those in the follow-up rooms and ICUs in Japan.

5) Physicians Room / Nurse Station

As the existing Pediatric Ward has a well-utilized physicians office and medical office, this Project will construct similar facilities. The existing nurse room adjacent to the follow-up rooms is not designed to handle work for general sickrooms, and the nurses are coping with the situation by putting a desk and chair in the corner of the corridor. To improve their work environment, this Project will set up the nurse station between the follow-up rooms and general sickrooms so that nurses can keep an eye on and easily access to both seriously ill patients and general patients.

6) Kids Room / Dining Hall

The existing Pediatric Ward has a playroom to provide indoor space for children to play. Playing during childhood, especially during infancy, provides important and necessary foundation for children’s physical, intellectual, social, and psychological growth and development, and helps reduce the physical pain, stress, and fear of children staying in the hospital. For these reasons, this Project will provide a kids’ room. The original request included a “kitchen” as space for eating meals. In the existing Pediatric Ward, one dining room is shared by both the patients’ family members and the hospital staff. In this Project, two separate rooms will be provided, one for the patients and families and the other for the hospital staff (also used as staff lounge).

7) Treatment Room

Treatment room will be set up near the nurse station so that medical treatment can be given discreetly away from other patients in sickrooms and directly to night-time or emergency patients.

8) Surgical Department

The initial plan was to create an “operating room for emergency pediatric surgery,” which, however, was later excluded from this Project, as it was found out during the subsequent field survey that the newly-established operating room with KfW’s assistance has a sufficient capacity to handle the current number of surgeries, 1/3 of which is for pediatric patients. The trend in the number of surgeries is shown in Table 2-7 for reference.

Table 2-7: Yearly Trend of the Numbers of Inpatients, Surgeries, and Pediatric Surgeries of Surgical Ward

Year	Surgical Ward		No. of pediatric surgeries					
	No. of inpatients	Total no. of surgeries	No. of pediatric surgeries	% of pediatric surgeries in total no. of surgeries	No. of scheduled surgeries	% of scheduled surgeries in total no. of surgeries	No. of emergency surgeries	% of emergency surgeries in total no. of surgeries
2008	218	573	—	—	—	—	—	—
2009	255	548	—	—	—	—	—	—
2010	335	675	—	—	—	—	—	—
2011	366	770	—	—	—	—	—	—
2012	427	846	—	—	—	—	—	—
2013	625	986	233	24%	92	(40%)	141	(60%)
2014	—	885	225	25%	104	(46%)	122	(54%)

Source: created based on the result of interview survey at Hamadoni District Central Hospital (“—” means no data available at the hospital.)

9) Image Laboratory, Physiological Laboratory, etc.

This Project will not provide a physiological laboratory, as the X-ray apparatus, ultrasound system, and ECG equipment provided by KfW are sufficient for handling tests for the whole hospital, including the Pediatric Unit.

10) Inoculation Room / Vaccine Storage

The inoculation room and vaccine storage in the existing Pediatric Ward belong to the vaccine center of the polyclinic. Therefore, it will not be included in this Project.

11) List of Facilities

Based on the above, the facilities to be provided by this Project in comparison with the original request are shown below.

Table 2-8: Requested Facilities vs. Planned Facilities

Original Request		Confirmed Request		Included in the Project (Yes/No)
Surgical Unit (dedicated to pediatrics)		Surgical Unit (for emergency pediatric surgery)		No
ICU		Follow-up room		Yes
Diagnostic Pathology	X-ray room	Diagnostic Pathology	X-ray room	No
	Endoscopy room		Endoscopy room	No
	Ultrasound room		Ultrasound room	No
	ECG room		ECG room	No
Laboratory		Pathological/bacteriological lab		No
Examination room		Examination room		No
Treatment room		Treatment room		Yes
Sickroom (50 beds)		Sickroom (internal medicine)		Yes
Kids room		Kids room		Yes
Nurse station		Nurse station		Yes
Physicians office		Physicians room, conference room		Yes
General affairs office		Reception		Yes: Included in the nurse station
Kitchen		Dining hall		Yes
WC, bath, washstand, etc.		WC, shower room		Yes
		Warehouse		Yes
		Electricity room		Yes
		Power generator room		Yes: Only the foundation of outdoor room.
		Oxygen generator room		No

(2) Policy for Nature (Geographical) Conditions

Hamadoni District, where the target site of this Project is situated, has a continental climate with dry summers followed by falls and winters with some precipitation, amounting to 100mm or so in annual total. The weather in the lowland area is hot and dry with the highest temperature exceeding 40°C from June to September and the lowest temperature falling below 0°C with snow from December to February.

Tajikistan often experiences earthquakes caused by the collision of the Eurasian Plate and the Indian Plate. Under the building standards of Tajikistan, buildings in Hamadoni District must be designed to withstand level-VII earthquakes on the Mercalli Intensity Scale (50 – 100gal ground acceleration).

To cope with these geographic conditions, the facilities will be designed based on the following policies.

□ Policy for climatic conditions

- ① All buildings shall be sufficiently insulated from heat and installed with an air-conditioning system.
- ② Building foundation and underground pipes shall be buried deeper than the frost line (GL-1.0m), and the water facilities shall be insulated.

□ Policy for seismic conditions

- ① The structural design shall conform to the Japanese seismic design standards with some modifications where necessary while taking into account the Tajiki load standards.

(3) Policy for Socioeconomic Conditions

The target hospital receives electricity from the red line, which is generally free from outages except during planned outages of substations, which occur four to eight times a year, lasting up to eight hours each time. To secure power supply during such outages, power generator units will be procured along with energy-efficient equipment.

The hospital receives water supply from the Hamadoni District Water and Sewerage Corporation (Vodokanal) through a water pipe installed during the former Soviet Era. However, because the water pressure of the supply pipe is low, this Project will draw water from the water main installed by Japanese assistance (on the project site side) and treat the water with sterilizing equipment to be newly introduced (water coming from the water main installed by Japan may be contaminated with coliform bacteria, as it is partially connected to the existing water pipe). Since water supply to the hospital is restricted to certain hours, the water supply system will be designed to allow continuous water supply even during nighttime when water supply is stopped.

(4) Policy for Construction/Procurement Situation

Such structural materials as cement, aggregates, and bricks are available in Tajikistan. Since cement made in Tajikistan has certain quality issues, such as inconsistent volume per bag and absence of labeling on package indicating the cement standard classification, this Project will use Pakistan-made cement, which has stable quality and is easily obtainable in Tajikistan. No problem is anticipated in procuring aggregates, as raw materials can be harvested along the rivers in Hamadoni

District, and several crushing plants are in operation to produce stable-quality aggregates. Most of the steel materials (frames and rebars) sold on the market come from Russia, Iran, and China, as they are not produced in Tajikistan. However, commercially-available steel materials are sold in small lots and are not attached with Mill Test Certificate (MTC), meaning that their traceability is not supported. For this reason, this Project will import Russian-made steel materials attached with MTC via a trading company.

(5) Policy for Employing Local Contractors (construction company, consultant)

While there are numerous construction companies in Tajikistan, those that can serve as general contractors are mostly foreign-owned companies. Domestic firms are small-sized and providing construction services by hiring technicians and workers according to the scale of each contract. Despite the small size, however, Tajikistan construction companies possess high technical expertise and are testing steel, concrete, and other materials at specialized testing institutions. Because of the remote location of the Project site away from the capital city Dushanbe, this Project will employ local building contractors, which will be carrying out the construction work under proper supervision of Japanese construction companies in order to ensure certain quality levels appropriate for medical institutions constructed by Japan's Grant Aid.

(6) Policy for Operation and Maintenance

Simple maintenance work is being carried out by the hospital staff with some assistance from the Barki Tajik and Vodokanal for the maintenance of the power and water supply facilities. This Project will assume a similar O&M system for the facilities to be newly constructed.

(7) Policy for Grade Setting of Facilities

The grade of each facility shall be set to ensure sufficient quality appropriate for Japan's assistance while allowing easy maintenance by using locally available materials and supplies.

(8) Policy for Construction Schedule/Procurement Method

1) Policy for Construction Methods

The Japanese construction company will subcontract the construction work to local building contractors. The framework, which takes up about a half of the entire construction process, will be carried out using local materials and methods to expedite the process.

2) Policy for Construction Period

The target site of this Project is located in Hamadoni District near the Afghan border, which belongs to a level-3 travel caution region according to the classification of the Japanese Ministry of Foreign Affairs. For the safety of the Japanese builders, equipment suppliers, and construction supervisors, they will be staying in a level-2 area, such as Dangara situated some 40km away from the site, and working about 6 hours a day (plus 1 hour of commuting each way), based on which the construction schedule will be worked out. In addition, possible influence of low temperature and freezing on the foundation and framing works during severe winter, as well as ample drying time of framework in waterproofing work, should also be taken into account in scheduling.

2-2-1-2 Design Policy Concerning Equipment Plan

(1) Policy for Setting the Scope and Grade of Equipment

The equipment plan aims to improve overall health services for children at Hamadoni District Central Hospital as a whole by providing medical equipment necessary for upgrading the internal medicine department of the Pediatric Unit while keeping balance and consistency with the functions of the existing pediatric services and OB/GYN services (including surgeries) supported by KfW. The obstetrics department of this hospital has been renovated and supplied with medical equipment with the assistance from KfW while other health institutions¹ in Khatlon Region have been provided with medical equipment for mother and child health services as part of Japan's technical cooperation project(s). By referring to the grades of these equipment items and taking into account the hospital's capacity for operation and maintenance, the grade and quantity of the equipment items, which are essential for the health service of the hospital's pediatric internal medicine department, will be determined.

(2) Policy for Utility Infrastructure

Although electric supply from the red line is generally free from outages, except for planned ones, its voltage fluctuates widely. To mitigate damage caused by voltage fluctuations (high voltage, low voltage) and cope with outages, the planned equipment should be attached with an uninterruptible power supply (UPS), automatic voltage switcher (AVS), or other protective devices.

(3) Policy for Utilizing Operation Manuals Written in Russian or Tajik

As it would be difficult for most of the health workers, including physicians, to understand English, each of the medical equipment items to be procured by this Project needs to be attached with an operation manual translated into Russian or Tajik so long as such equipment items generally come with manuals. Operating instructions, maintenance procedures, trouble-shooting, and other sections of the manuals, which are necessary for the local medical staff and engineers to properly operate and maintain the equipment, should be translated.

(4) Policy for Using Equipment/Materials made in Tajikistan and Neighboring Countries (Russia, Kazakhstan, Kyrgyzstan)

Although most of the planned equipment items are available from Japanese manufacturers, it is necessary to expand the scope of eligible source countries in order to secure after-sales services by local agents and secure a sufficient level of competition in the bidding process. Such non-Japanese made items include the patient monitor (for child, adult, neonate), oxygenator (for hospital), sterilizer, and incubator.

Since no medical equipment is produced in Tajikistan, the eligible source countries should be DAC member countries. Manufacturers' agents capable of providing appropriate after-sales services should be limited to those in Russia, Kazakhstan, Kyrgyzstan, and other neighboring countries.

(5) Policy for O&M Capability of the Implementing Organization

The most effective approach to fully utilizing the medical equipment is to establish and reinforce

¹ Jomi and Shartuz District Central Hospitals, which are the same level medical institutions as Hamadoni District Central Hospital, have been provided with such medical equipment.

a system for properly conducting preventative inspections, such as cleaning of equipment before and after use, on a daily basis. However, for broader or more comprehensive maintenance, including remedy of failures, the O&M system needs to be fortified by considering adopting such measures as follows.

1) Independent O&M

Standard O&M for the medical equipment to be provided by this Project shall be carried out by the hospital staff in accordance with the operation/service manuals, etc. attached to the equipment.

2) Repair services by the agents of equipment manufacturers

The equipment items to be procured should preferably be of model types that can be maintained through daily inspections by the hospital staff. However, such electronically-controlled devices as the patient monitor and incubator need to be serviced or repaired by the agents of the equipment manufacturers for periodic maintenance or when they experience trouble or failure. It has been agreed upon during this study that the cost necessary for such repair and maintenance services will be borne by the Tajikistan side.

3) Establishing an O&M system for each facility

Checking of medical equipment before and after use is essential to maintaining its performance, and it is preferable that daily inspections are conducted by the health workers who use the equipment. Accordingly, guidance on daily inspections, etc. for the health workers of each target facility will be provided by the equipment supplier at the time of installation and operational guidance.

(6) Policy for the Timing of Delivery

Installation of the medical equipment needs to be completed within about eight months after the selection of the suppliers through tender prior to the completion of the construction work. For this reason, the timing of delivery should be planned according to the progress of the construction work.

(7) Policy for Spare Parts and Expendable Supplies

Taking into account such factors as the time required for the hospital's internal procedures, lead time from order receipt to delivery, and appropriation of budget for the purchase thereof, expendable items will be supplied in quantities that will last for about six months after the installation of the equipment. However, recording paper and other constantly consumed items, as well as spare parts that require disassembly, replacement, and reassembly using tools, will not be included in the expendable items.

2-2-2 Basic Plan (Facility Plan/Equipment Plan)

2-2-2-1 Facility Plan

(1) Plot / Facility Layout Plan

The land plot presented by the Tajikistan side is located where an internal street (Bobojon Ghafurov street), which extends straight from the front gate, intersects with the outdoor wall fence. There is a polyclinic across the internal street, on the opposite side of which lies the existing Surgery Ward. The plot is about 38m×55m but not a perfect rectangle, as a section of the solar water heater,

which was installed with KfW's assistance, is protruding into the plot. The land is mostly flat and currently being used partially as cropland planted with trees.

The facilities of this Project will be laid out in ways to maximize the use of the limited land area. The main entrance will be positioned to face the internal road stretching from the front gate thereby creating easy access. In addition, the facilities will be so designed to enable connection to the Surgery Ward when it is renovated at some point in future (the connecting pathway with the Surgery Ward will not be built in this Project). Passing space for construction workers and vehicles will be created along the fence on the northwest side of the plot so that the flow lines of construction workers and those of patients and hospital staff will not intersect, and the construction schedule can be drafted based on this arrangement.

Utility Service Lines

A water main pipe is installed along the street on the front gate side (Z Rozi Street), as well as along the street outside the fence wall near the project site (old Z Rozi Street). This Project will draw water from the water main on the old Z Rozi Street side, which was installed with Japanese assistance. Similarly, electricity is supplied via cables along the old Z Rozi Street and Z Rozi Street, but only the one along Z Rozi Street is on the red line. Accordingly, this Project will install an underground cable from the reception point on the Z Rozi Street side to the construction site to receive electric power.

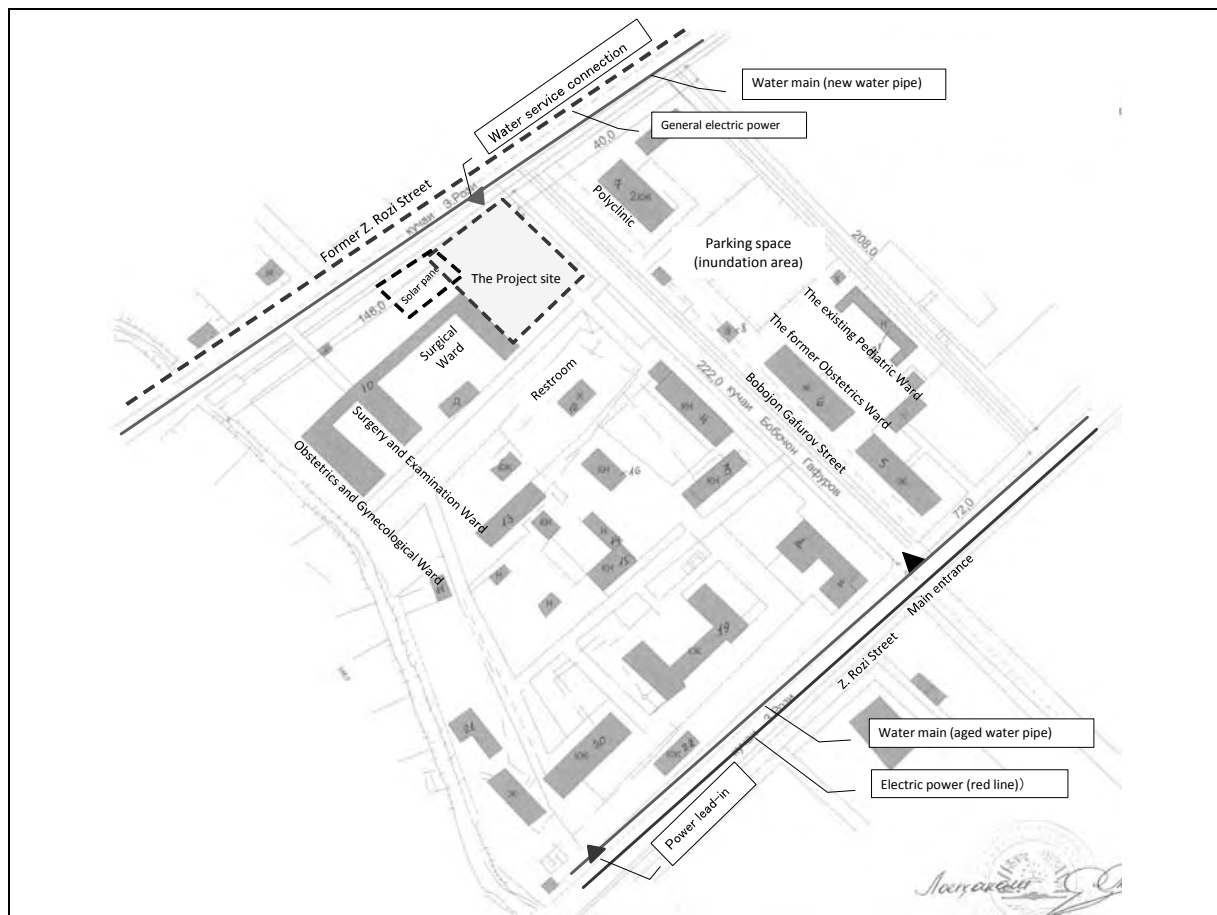


Figure 2-2: Layout Plan and Utility Service Lines
 Source: Hamadoni District Central Hospital (with some information added by the Study Team)

(2) Architectural Design

1) Floor plan

The facilities to be constructed by this Project are for pediatric inpatients and thus will not have facilities for general outpatients. The floor plan consists of two sections: (i) inpatient ward (including the nurse department) and (ii) administrative unit. Because of the limited land space, the building will be partially 2-storied with the administrative unit situated on the 2nd floor and the inpatient ward on the 1st floor so that the patients will not have to climb up and down the stairs (there will be an elevated water tank room on the 3rd floor, which, however, will not be used as a living space).

The shape of the building will follow the contour of the site for its maximum use. The nurse station will be situated at the center of the 1st floor surrounded by sickrooms. The rooms are connected by a looped corridor to expedite the movement of staff and patients. The nurse station will be right across the entrance hall from the main entrance so that the hospital staff can easily see people entering and exiting the building. The nurse station will be also be facing the kids room and the dining hall for patients and attending family members to enable the nurses to respond quickly if patients in those rooms experience sudden changes in their conditions, etc. The follow-up room will be situated adjacent to the nurse station so that the nurses can keep an eye on patients. To minimize the travel distance for the hospital staff, the treatment room, consultation room, equipment room, etc. will also be positioned near the nurse station, and the linen rooms will be situated in two different locations. WC, shower room, dirty utility room, and other sanitary facilities will be put together in one location to concentrate the plumbing. The locker room for nurses will be placed immediately next to the entrance hall on the 1st floor, and the physicians' rooms, conference room, and staff lounge will be situated on the 2nd floor to minimize unnecessary entry of medical workers into the inpatient ward to prevent infections. The place on the 2nd floor for the staff to have meetings and rest will also improve their working environment. There will be a courtyard and a large opening at the ends of the corridor to allow natural light and ventilation into the building to save electricity by turning off the corridor lighting during the day and using natural ventilation in spring and fall. On sunny days, patients and families will be able to enter the courtyard to feel the air without going out of the building.

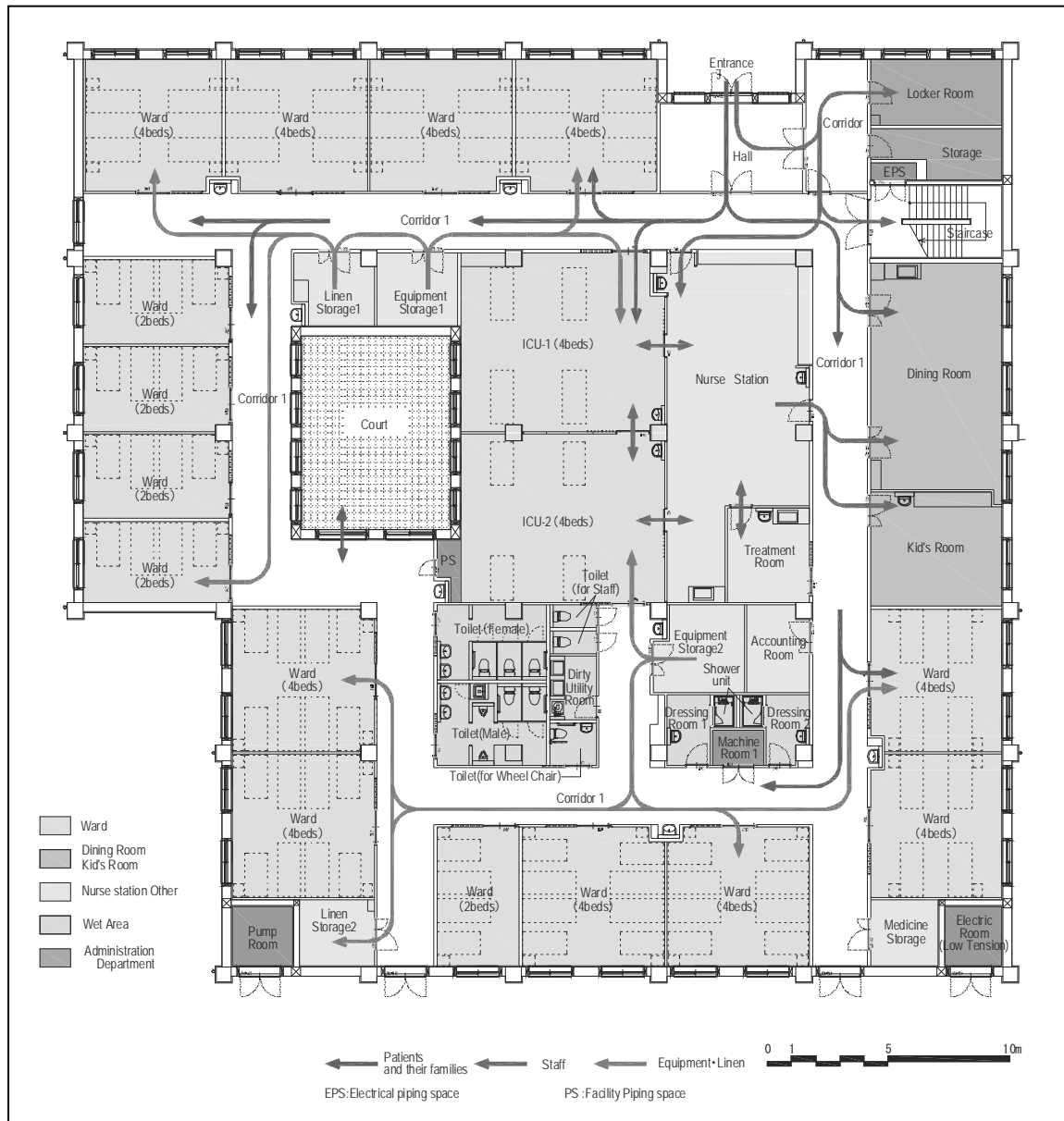


Figure 2-3: Flow Diagram

① Sickroom

A total 15 sickrooms with a total of 50 sickbeds (five 2-bed rooms and ten 4-bed rooms) will be situated along the circumference of the building surrounding the nurse station, and there will be no private room. 6 m² or larger floor space for each bed has been requested by the Director of the Pediatric Unit, as children aged 2 to 3 or younger are usually accompanied by a family caregiver in Tajikistan. Of the total number of pediatric internal medicine patients, children under 1 year of age account for 20 – 45% and children aged between 1 and 5 account for about 50%. Accordingly, a floor area of at least 33.81 – 36.91 m² (8.45 – 9.22m²/bed) and 21.22 – 22.6 m² (10.61 – 11.3 m²/bed) will be needed for a 4-bed sickroom (4 for adult and 4 for child) and a 2-bed sickroom (2 for adult and 2 for child), respectively. Universal-design sliding doors will be used for the entrance with an effective width of 1.2m to allow passage of beds.

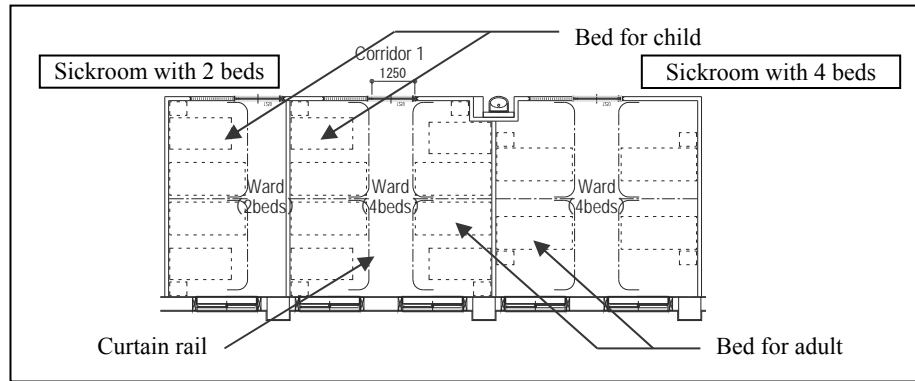


Figure 2-4: Sickroom Plan

② Follow-up room

Similarly to the existing Pediatric Ward, two follow-up rooms will be provided each having four beds (eight beds in total). The floor area of each room will be approximately 61.5m² (15.3 m²/bed) to allow enough space for the oxygenator, patient monitor, and other medical instruments, as well as for the medical staff to do their jobs. The follow-up rooms will be situated adjacent to the nurse station so that nurses and other medical workers can constantly monitor the patients and respond swiftly to sudden changes in their conditions. The follow-up rooms will be facing the courtyard to let natural light in.

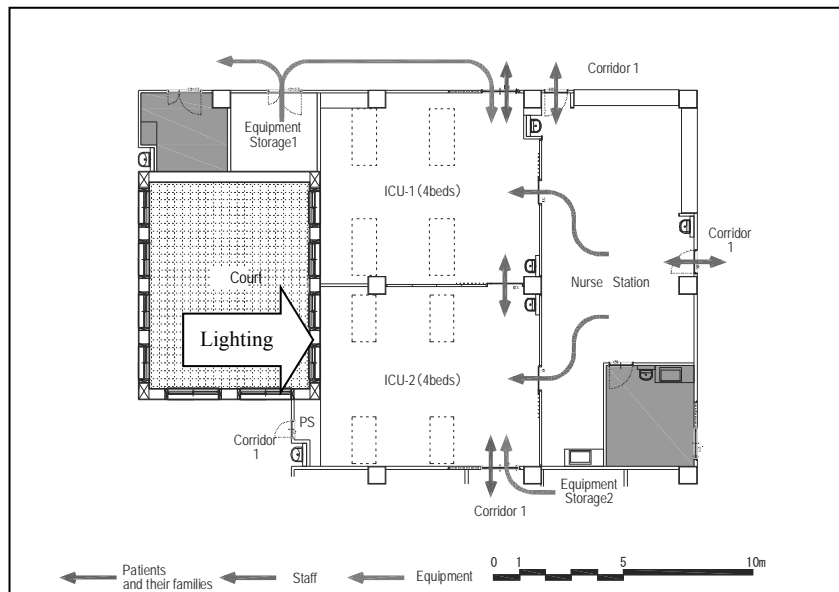


Figure 2-5: Follow-up Room Plan

③ Nurse station

Nurse station will be facing the front entrance to serve also as the reception counter to prevent the entry of suspicious persons and give guidance to legitimate visitors. It will be surrounded by sickrooms, dining hall, and kids room and abutted by the follow-up rooms. Consultation room, equipment room, dirty utility room, and staff WC will also be put together in the nearby quarters to reduce the travel distance for nurses and physicians.

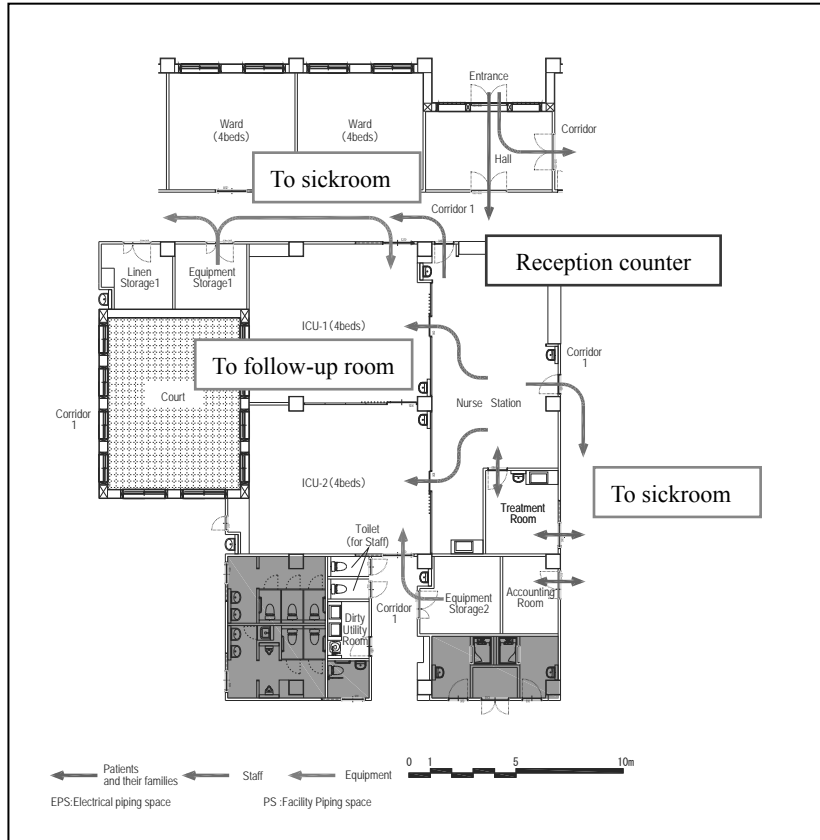


Figure 2-6: Nurse Station and Adjacent Rooms

④ Kids room & dining hall

Kids room and dining hall (for patients and accompanying families) with floor area of 27.0m² and 53.51 m², respectively, will be directly facing the nurse station. Kids room will be furnished with storage shelves and hand-wash stand. Dining hall will have enough space for 28 people to eat meals at the same time and be equipped with a sink for washing dishes and utensils and an electrical outlet for a hot water heater.

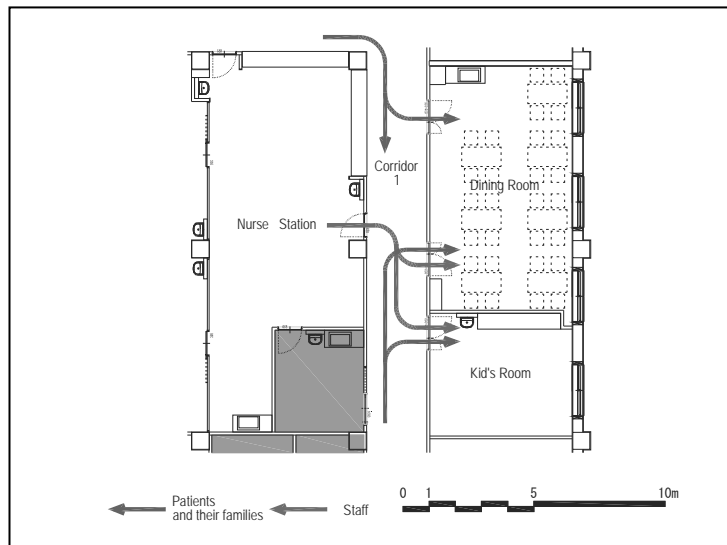


Figure 2-7: Kids Room / Dining Hall Plan

⑤ Corridors & stairs

The corridor width will be at least 2.1m (inner size) to allow passage of a bed, stretcher, or two wheelchairs passing each other, and installed with handrails on both sides. The sickroom doors will be at least 1.2m wide as required by the Tajik building standards to allow easy passage of beds. In addition, 1 washstand for every 8 beds will be provided on the corridor side for patients, as well as for their family caregivers and the hospital staff (to prevent infection). There will be one stairway near the entrance hall leading to the administrative department on the 2nd floor, having a width of 1.35m (inner size) or larger pursuant to the provisions of the Building Standards Act of Tajikistan.

⑥ Courtyard

A courtyard will be created at the center of the sick ward to let in ample natural light and ventilation and provide a space for patients to feel the outdoor air on sunny days.

⑦ Staff area

The administrative unit, including physician's rooms but excluding the nurses' locker room, will be situated on the 2nd floor. It will consist of the following rooms:

- 4 physician's rooms: for fulltime physicians, including the Director of the Pediatric Unit.
- Conference room: for physicians and nurses to discuss treatment options for patients, and for conducting lectures and training sessions for nurses, etc.
- Staff lounge: for nurses, etc. to have meals and rest (to improve their work environment, as nurses are currently sharing the same dining room with the patients and their family caregivers and have no space to take a break).
- Nurse locker room: a room for nurses to change clothes when they come to and leave from work (1st floor).

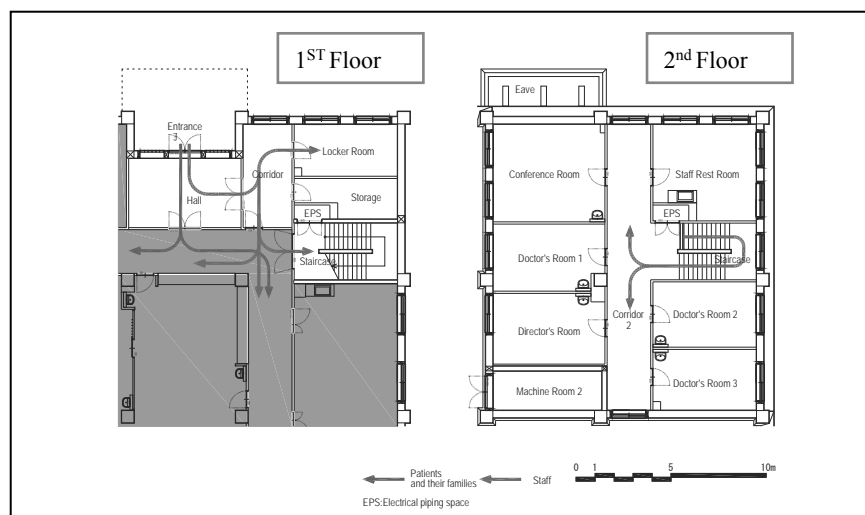


Figure 2-8: Staff Area Plan

⑧ Elevated water tank room

Elevated water tank room will be set up on the 3rd floor as part of the water supply system to supply water during the outage at night to be explained later, and to prevent freezing of water inside the tank during severe winter cold.

2) Cross Section

The building will be partially 2-storied with the inpatient ward situated on the 1st floor to eliminate the need to climb up and down the stairs. The administrative department, including the physician's rooms, will be situated on the 2nd floor. The 1st floor will have a floor height of 4.25m and a ceiling height of 2.65m to give enough space for routing electrical cables and plumbing pipes. The floor height and ceiling height of the 2nd floor will be 3.35m and 2.5m, respectively. The elevated water tank on the 3rd floor will be set up at 1FL+9.0m on the bottom (to secure enough water pressure for the shower room on the 1st floor by providing a 7.0m pumping distance from the bottom level to showerhead). The 3rd floor will have a floor height of 4.6m to enable 6-sided water-tank inspection.

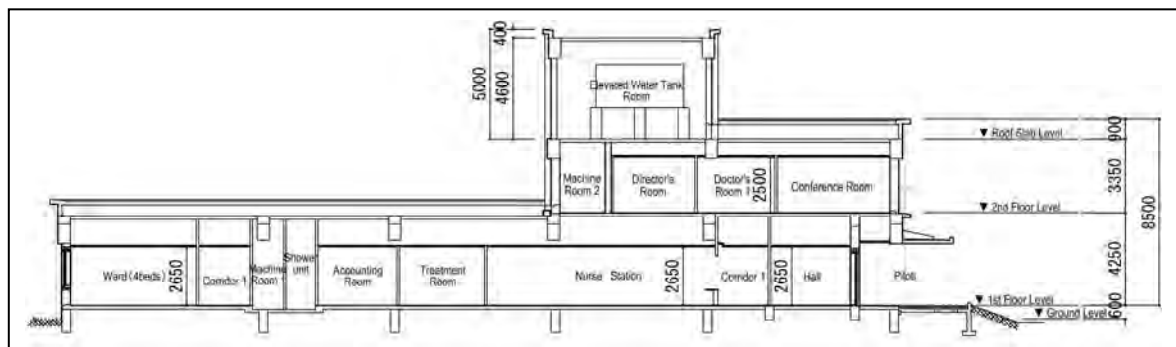


Figure 2-9: Cross Section

3) Structural Plan

The superstructure of the Pediatric Ward will consist of framework (posts, beams, floors) made of reinforced concrete plus brick walls. A soil-bearing foundation will be embedded in a supporting layer consisting of sand and gravel that starts at 481.2 – 481.7m elevation (design GL – 1.65 to 2.15m).

Design GL = 483.35m elevation

Supporting GL = Design GL – 2.20m (= 481.15m elevation)

① Structural Materials and Methods

Structural materials and methods to be used in main facilities are outlined in Table 2-9 below. The superstructure will have a reinforced-concrete rigid-frame structure combined with brick masonry walls for their heat-insulating properties. The foundation will have a spread foundation structure.

Table 2-9: Structural Materials and Methods

Building	Section	Structural material	Structural method	Remarks
Pediatric Ward	Foundation	Reinforced concrete	Spread foundation	Independent footing
	Main frame	Reinforced concrete	Rigid frame	
Accessory building	1 st , 2 nd , R floor	Reinforced concrete	Slab structure	
	Roof	Reinforced concrete	Slab structure	
	Wall	Brick	Masonry structure	

② Load

a) Dead load

Basic dead loads are outlined in the table below.

Table 2-10: Dead load

Load term	Load intensity	Remarks
Fixed load	Specific gravity of concrete	23.5 kN/m ³
	Specific gravity of reinforced concrete	24.5 kN/m ³
	Specific gravity of rebar and steel frame	78.5 kN/m ³
	Specific gravity of brick	20.0 kN/m ³

b) Live load

Basic live loads are outlined in the table below.

Table 2-11: Live load

Room	Load intensity (N/m ²)			
	Floor	Joist	Frame	Seismic force
Sickroom, follow-up room (corridor, stairs, WC)	1800	1800	1300	600
Treatment room, locker room, lounge, physicians room, consultation room	2900	2900	1800	800
Dining hall, nurse station, kids room, waiting room	5000	5000	1800	800
Chemical storage, linen room	3900	3900	2900	2000
Roof (limited access), eave	700	700	700	350

c) Snow load

We will adopt a design snow load of 50kg/m² (equivalent to 0.49kN/m² at 25cm snow depth under the Building Standards Act of Japan), which is applicable to buildings in Hamadoni District pursuant to SNiP (Russian Building Standards Act).

d) Seismic load

A seismic load of Mercalli intensity scale VII (50 – 100gal PGA, which is 1/4 to 1/2 of PGA (200gal) assumed under the Building Standards Act of Japan) and a base shear (Co) = 0.10 (1/2 of Japanese standard) will be assumed pursuant to the building standards of Tajikistan. (PGA: Peak Ground Acceleration)

e) Wind load

Wind load will not be considered, as the area does not experience stormy weather.

③ Materials to be used

Main materials to be used are listed in the table below.

Table 2-12: Materials to be Used

Material	Standard, etc.
Cement	Regular Portland cement
Sand	Local river sand
Gravel	Locally-produced crushed stone
Concrete*1	Design strength standard: Fc21 (cylinder strength)
Rebar (deformed bar)	D16 ≥ : JIS G3112 SD295 or GOST 5781-82 A-II (A300) equivalent: fy=295N/mm ² D18 ≤ : JIS G3112 SD395 or GOST 5781-82 A-II (A400) equivalent: fy=395N/mm ²

Note *1: In Tajikistan, concrete strength is measured using concrete cubes. The cylinder strength is converted to equivalent cube strength by a factor of 1.25 (Cube strength = 1.25 x cylinder strength).

④ Calculation of design bearing capacity

According to the soil exploration report, the project site sits on a river terrace of the Pyanji River, consisting of a backfill surface layer at 0.3 – 0.6m depth, a loam layer at 0.30 – 1.85m depth, and a sand and gravel layer up to 20m depth. As a risk of subsidence in the loam layer is indicated by the report, the building will use the sand and gravel layer as bearing ground, into which foundation piles will be embedded. The design bearing capacity of the sand and gravel layer will be calculated based on the following soil constants obtained by the soil test:

Angle of internal friction: $39^{\circ}11'$

Cohesion of soil (C): 0 kN/m^2

Unit weight of soil: 1.80 ton/m^3

Long-term allowable bearing capacity: 500 kN/m^2

Short-term allowable bearing capacity: 600 kN/m^2

4) Facility Plan (mechanical)

① Water supply system

A 25 ϕ water service line will be installed by branching the water main (200 ϕ PVC pipe constructed by Japan's grant aid) on Old Z Rozi Street to draw water into the project site *1. To enable continuous water supply even during outages, as water supply from Vodokanal is limited to certain hours of the day, water from the main will be temporarily stored in the water tank (16-ton capacity) and then pumped up to the elevated water tank (16 ton) on the 3rd floor, from which water will be sent to various parts of the building using the force of gravity. The elevated water tank will be situated at a height to create enough water pressure (7m hydraulic head) in the shower room on the 1st floor. The pump will be connected to the generator circuit to enable continuous operation during power outages.

To prevent freezing of water inside the elevated water tank, it will be encased in a structure. As coliform bacteria have been detected in the water, the elevated water tank will be connected to a chlorine-sterilizing device (in the machine room on the 2nd floor).

*1: Installation of the service line from the water main to the shut-off valve will be the responsibility of Tajikistan.

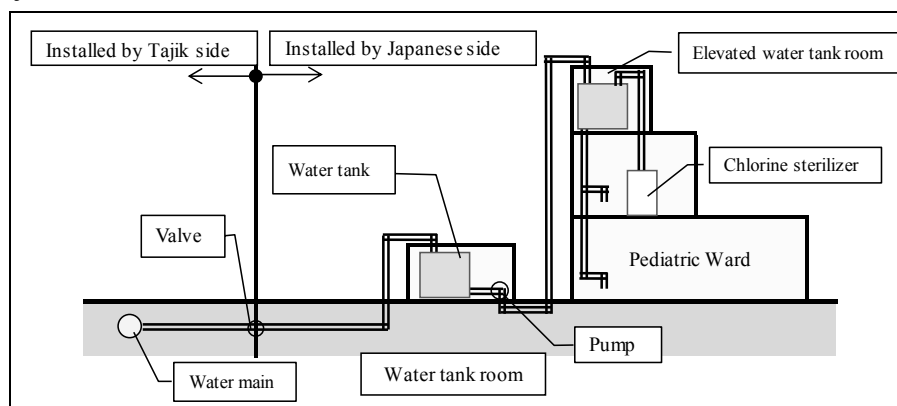


Figure 2-10: Water Supply System

② Hot water supply

A POU (point of use) type electric water heater will be installed in the shower room.

- Storage-type (300L or so) electric hot water heater
- Hot water supplied to shower room

③ Sewage treatment

Wastewater from the Pediatric Ward will be treated similarly to general wastewater on the assumption that there will be no laboratory using chemicals or discharge of infectious wastewater. As the area, where the hospital is located, does not have a public sewerage system, an on-site wastewater system combining septic tank treatment and underground discharge will be adopted. This system treats sewage in a septic tank and discharges liquid effluent into the ground. Near the seepage area there lies a water pipe constructed during the former Soviet era, which may have some cracks due to aging that could allow contamination with coliform and other pathogens contained in sewage discharged from the seepage area. To avoid contamination, a sterilization chamber will be built in a septic tank.

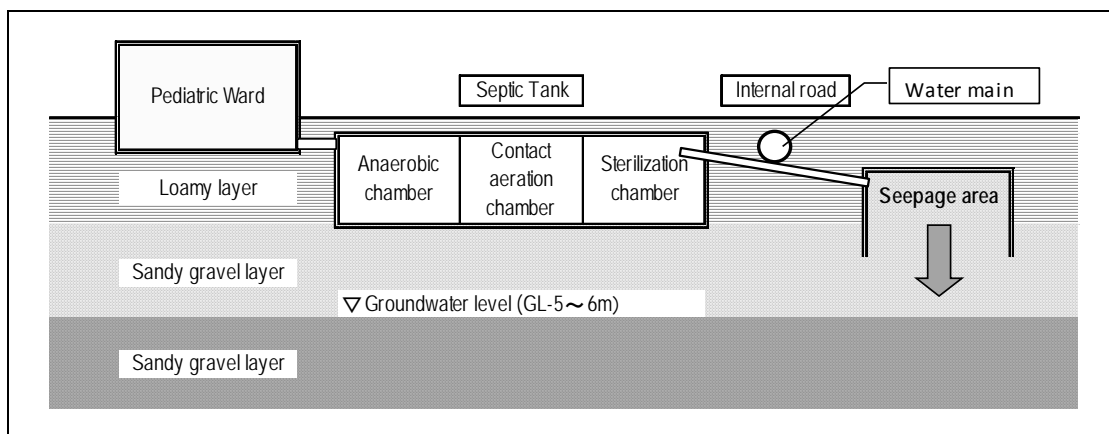


Figure 2-11: Schematic of Wastewater System

Provision of Vacuum Truck

The septic tank will require emptying of sludge once every three months or so. However, Moscow Town, where the hospital is located, has only two old vacuum trucks, which are not sufficient to remove sludge at proper intervals. To counter the situation, this Project will provide one vacuum truck for the hospital, which is staffed with a technician capable of maintaining the truck.

④ Sanitary equipment

The table below lists the sanitary fixtures to be installed in the hospital.

Table 2-13: Sanitary equipment

Room	Main sanitary equipment
WC	Western-style toilet seat, urinal, hand-wash basin, service sink
Sickroom (corridor side)	Hand-wash basin
Dirty utility room	Sink, sluice for disposing wastewater
Nurse station	Hand-wash basin, sink
Dining hall, staff lounge	Sink
Shower room	Shower unit, hand-wash basin
Treatment room	Sink, hand-wash basin
Follow-up room, kids room, physician's room, office of Pediatric Department Director	Hand-wash basin

⑤ Fire-fighting equipment

As a result of discussion with the Hamadoni Fire Department, the following fire-fighting equipment will be installed.

Table 2-14: Fire-fighting equipment

Equipment	Specification, etc.
Fire extinguisher	Installed at every 20-meter interval.
Indoor fire hydrant	Cautionary area: within a 20-meter radius
Automatic fire alarm	(Electrical equipment)
Evacuation sign	
Emergency lighting	(Electrical equipment)
Fire-fighting tools	200-litre bucket for sand and water, axe
Cistern	Capacity: 25~30m ³ , installed in the underground pit

⑥ Ventilation system

To prevent nosocomial infection, each room will be installed with a mechanical ventilation unit designed to meet the following specifications.

- Ventilation flow rate of living space shall be determined based on the number of occupants (20m³/h per person).
- Ventilation rate of contaminated area such as WC shall be [room volume] x [5 – 10 times/hour].
- Design internal pressure of each room shall be determined according to the use of the room.

⑦ Air-conditioning system

There are roughly two types of air-conditioning systems: centralized and decentralized types. The centralized system serves the whole building from a central heat source, which means that if the central heat source breaks, the whole building will be cut off from the air-conditioning service. To avoid this, this Project will use decentralized units, which are easier to operate and maintain. There also are two types of refrigeration methods using different refrigerants: water

and gas. Gas refrigerant type will be adopted for this Project because using water as a refrigerant can cause leakage from pipes as they deteriorate with time, which could lead to secondary damage to medical equipment, etc.

Based on the above considerations, this Project will use the air-cooled heat pump type air-conditioning units designed for cold climate, as the outdoor temperature of the project area could drop as low as -15°C in winter.

5) Utility Equipment Plan (electrical)

① Power distribution wiring

- Electricity will be drawn from the 3-phase 4-line 11,000V red line to the substation (transformer) to be newly built for the Pediatric Ward (the service lines from the red line to the substation will be installed by the Tajikistan side).
- Power from the on-site substation will be fed to the distribution board in the electrical room on the 1st floor of the Pediatric Ward that branches out to 3-phase 380V and single-phase 220V circuits to supply power to the switchboard on each floor.
- To cope with voltage fluctuations of the red line, a voltage stabilizer will be installed in the substation room.

② Motive power

- Electricity for air-conditioning units and other motor equipment will be supplied via 3-phase 3-line 380V transmission.

③ Lighting fixtures and outlets

- LED lights, which are energy efficient and long lasting, will be used for general lighting.
- A switchboard will be installed on each floor, from where power is supplied to the lighting fixtures and outlets via single-phase 2-line 200V transmission.
- Illuminance of each room will be set by referring to the JIS requirements as shown in the table below.

Table 2-15: Illuminance Setting of Each Room

Illuminance	Room
500LX	Nurse station, treatment room, follow-up room, physician's room, consultation room
300LX	Kids room, staff lounge, dining hall
200LX	Sickroom, waiting room
100LX	Communal corridor, WC

- Lighting fixtures with covers shall be used appropriately to reduce glare.
- On/off switch shall be installed in each room in principle. Lights of corridors and other communal areas shall be wired to enable turning off/on from the nurse station.
- A nightlight shall be installed in front of each sickroom to provide illuminance during lights-out hours at night.
- Emergency lights shall have enough illuminance necessary for evacuation.
- There shall be two outlet circuits, one for general electrical equipment, and one for the

emergency generator. The follow-up room, treatment room, etc. shall be installed with outlets connected to the emergency circuit.

④ Telecommunication equipment

- Procurement of telephone equipment, such as switchboard, telephone devices, and PHS antenna, as well as associated wiring work, shall be done by the Tajikistan side.
- Telephone equipment shall be connected to power supply. Terminal boards and connector boxes, as well as pipes for electrical and telecommunication (TV, Internet, telephone) cables, shall be installed.

⑤ PA system

- As part of the PA system, a broadcasting amplifier for making normal and emergency announcements inside the hospital shall be installed in the nurse station, and speakers shall be installed at necessary locations, excluding warehouse, etc.

⑥ Intercom system

- Intercoms will be installed to connect the nurse station with the entrance hall as a hot-line communication link within the hospital.

⑦ Automatic fire alarm

- As part of the fire alarm system, a P-type wall-mounted receiver will be installed in the nurse station.
- Fire detectors shall be installed in necessary locations.

⑧ Power generator

- The power generator will supply power for the disaster-fighting equipment and building facilities at the time of emergency, as well as for security lighting and medical equipment during outages.
- The generator shall use diesel as fuel.
- Considering that the hospital is receiving power from the red line that seldom experiences outages, the maximum operating time will be set at 12 hours.

⑨ Security camera

- Security cameras will be installed at the entrances of rooms to prevent illegal access.
- A display monitor will be installed in the nurse station.

The display monitor will have an external output function, but wiring downstream thereof shall be done by the Tajik side.

- The cameras shall be connected to a hard disk recorder (and the recorded data shall be kept for one week).

6) Construction Materials

Construction methods and materials that are commonly used or easily available in Tajikistan will be used to expedite the work process. However, finishing materials that are basically maintenance free

will be procured from Japan, as locally made products are not reliable in terms of precision, quality, and durability.

① Exterior finish

- Roof : To cope with winter's cold and summer's heat, the roofing of the Pediatric Ward will have a locally-common concrete slab structure with a thermal insulator underneath and polyurethane waterproof coating on the outer surface. The roofing of the water tank room and other accessory buildings will be coated with the same waterproofing material, but will not be thermally insulated.
- Exterior wall : Similarly to the roofing, exterior walls will adopt a locally-common brick masonry structure for its thermal performance, which will be covered with mortar and finished with acrylic paint.

② Interior finish

- Floor : Ceramic and wooden tiles will be used as floor finish.
- Wall : Interior side of the (brick masonry) walls will be applied with mortar reinforced with fiberglass mesh and finished with paint. Partition walls will use lightweight steel frames and gypsum boards finished with paint (walls of sickrooms and corridors will be attached with calcium silicate boards finished with paint at the waist level).
- Ceiling : Lightweight steel framing and gypsum boards finished with paint will be used to allow the fitting of air-conditioning equipment, ceiling-mounted curtail rails, IV hangers, etc.
- Doors & windows : Double-pane aluminum sashes with thermal insulation properties will be used for exterior windows.
Sickrooms will be fitted with lightweight sliding doors. Swing-open doors will be basically used in other locations.

The above materials and associated construction methods are summarized in Table 2-16 below.

Table 2-16: Finishing Materials and Methods

Section	Local method	Adopted method	Reason for adopting the method
Roof	Wooden roofing on top of concrete slab	Concrete slabs will be attached with an insulator on the bottom side and waterproofed with polyurethane membrane coating on the outer surface.	To ensure waterproof integrity.
External wall	Paint finish on mortar base over brick masonry walls	Acrylic paint finish on mortar base over brick masonry walls	Commonly used method in Tajikistan.
Floor	Mortar finish	Ceramic and wooden tiles	Commonly used method in Tajikistan.
Interior wall	Paint finish on mortar base over brick masonry walls or light-weight steel walls	light-weight steel walls	Commonly used method in Tajikistan. To reduce seismic load on structure.
Ceiling	Prefabricated ceiling panel	Lightweight steel frame + gypsum board	To allow fitting of HVAC equipment, etc.
Exterior doors & windows	Plastic sash	Aluminum doors and windows	Better thermal insulation performance.
Interior doors & windows	Steel	Lightweight steel doors and windows	Easy opening and closing

7) Floor Area of Each Facility

Floor area of each section/room of the Pediatric Unit is listed in the table below.

Table 2-17: Floor Area of Each Facility

Area	Room	Floor	Floor area (m ²)	Subtotal	Area total	Ward total
Ward	Sickroom (4-bed x 10 + 2-bed x 5)	1	460.35 × 1	460.35	875.28	1555.71
	Follow-up room no. 1 & no. 2	1	123.17 × 1	123.17		
	Nurse station	1	74.07 × 1	74.07		
	Treatment room	1	14.00 × 1	14.00		
	Dining hall	1	53.51 × 1	53.51		
	Kids room	1	27.00 × 1	27.00		
	Line room no. 1 & no. 2	1	19.82 × 1	19.82		
	Pharmaceutical storage	1	9.00 × 1	9.00		
	Equipment storage	1	25.78 × 1	25.78		
	WC for patients	1	31.25 × 1	31.25		
	Shower room for patients	1	14.54 × 1	14.54		
	Dirty utility room	1	8.36 × 1	8.36		
	Consultation room	1	10.03 × 1	10.03		
	WC for staff	1	2.20 × 2	4.40		
Staff	Director's office	2	23.27 × 1	23.27	189.41	
	Conference room	2	33.07 × 1	33.07		
	Physician's room no. 1	2	21.76 × 1	21.76		
	Physician's room no. 2	2	20.24 × 1	20.24		
	Physician's room no. 3	2	19.51 × 1	19.51		
	Staff lounge	2	28.31 × 1	28.31		
	Staff locker room	1	16.92 × 1	16.92		
	Warehouse	1	11.04 × 1	11.04		
	Corridor		15.29 × 1	15.29		
Corridors and stairs	Corridor-1 (ward)	1	304.39 × 1	304.39	401.33	
	Hall	1	23.53 × 1	23.53		
	Corridor-2	2	37.53 × 1	37.53		
	Stairs	1,2	35.88 × 1	35.88		
Building facility	Electric room, Fire pump room	1	16.69 × 1	16.69	89.69	
	Machine room no. 1 and no. 2, PS, EPS, etc.	1,2	31.63 × 1	31.63		
	Elevated water tank room	R	41.37 × 1	41.37		
Accessory buildings	Bldg. no. 1: Water tank room	1	43.74 × 1	43.74	87.48	87.48
	Bldg. no.2: Substation room	1	43.74 × 1	43.74		
Grand Total						1643.19

2-2-2-2 Equipment Plan

The outline of the equipment plan is as follows.

(1) Overall Plan

Medical equipment necessary for improving pediatric health services will be procured by taking into account the technical capability and scale of the existing pediatric services.

(2) Equipment Plan

Equipment types and quantities necessary for the facilities designed for this Project (excluding the operating theater and certain laboratory functions that were deleted from the original plan) will be selected based on the results of the field surveys, communications between the Tajik Ministry of Health and JICA, and subsequent analysis in Japan. The details are shown as an equipment list in Table 2-21.

- Consideration of testing equipment

Table 2-18 shows the numbers of physiological and clinical tests that have been conducted at the Pediatric Unit and the Hamadoni District Central Hospital as a whole. Of the physiological function tests, pediatric patients account for 40% to a little less than 50% of the total numbers of x-ray and ultrasound tests and around 15% of total ECG tests. All of these tests are on the increase and they are in high demand. However, the following instruments will be excluded from this Project to avoid redundancy, as they have already been provided by a KfW-funded project.

- X-ray apparatus
- Ultrasound equipment
- ECG
- Clinical examination equipment

The requested pediatric endoscope will also be excluded, as it is the kind of instrument that should be introduced after the hospital acquires general skills and experience in endoscopy for adults, which remains a new technique for the hospital, and its needs are unknown.

Table 2-18: No. of Tests Conducted for (0 – 18 years old) at Each Test Room; Hospital’s Total and Pediatric Patients Only*¹

Type of Test	2012		2013		2014	
	Hospital total	Pediatric patients	Hospital total	Pediatric patients	Hospital total	Pediatric patients
Physiological function test						
X-ray	2,615	1,240	2,904	1,270	2,818	1,306
Ultrasound	—	405	1,262	570	1,482	610
ECG * ²	450	73	624	81	678	94
Clinical laboratory* ³						
Total no. of clinical tests* ⁴	15,561	6,224	13,439	5,375	19,741	7,915

Source: created based on the result of interview survey at Hamadoni District Central Hospital

Note 1: The figures include patients, as well as patients referred from the polyclinic and other hospitals, many of whom, as a result of tests, were found to have no need of hospitalization and returned home as a result of tests.

Note 2: General medical laboratory technologists usually perform tests only on people aged 10 or older and refer younger patients to specialized laboratories.

Note 3: In the clinical laboratory, hematological, biochemical, and bacteriological analyses are performed. Each patient takes 3 to 6 tests on average.

Note 4: Breakdown of clinical tests was not obtainable.

Note 5: “—” indicates no data available at the hospital.

- Consideration of the Number of Beds of Each Type

The number of beds necessary for the Pediatric Ward and the appropriate size of each type of bed are being considered.

As shown in Table 2-19, Hamadoni District Central Hospital is currently using four types of beds, two of which are cribs in two different sizes for different age groups. However, as it would not be practical to define the age distribution of patients, this Project will procure cribs in one size (1,400 – 1,600 × 700 – 900 mm) that should fit almost all children less than five years of age.

As shown in Table 2-20, over 90% of inpatients are infants and toddlers aged one month to less than five years, not all of whom are necessarily accommodated in cribs. In fact, about a half of them are accommodated in beds for adult. Considering this situation, this Project will provide cribs, which will account for 60% of the total (50 beds). The same number of beds for adult will also be procured for the accompanying caregivers of child inpatients to be accommodated in the cribs.

Table 2-19: Sickbeds Currently Used at the Pediatric Unit of Hamadoni District Central Hospital

Type of sickbed	Dimension of existing bed	Applicable age group (assumption)	Dimension (general type)
Cot (for neonate)	700 x 400 mm	Less than 1 month after birth	650 x 300 mm
Crib (small size)	860 x 510 mm	1 month to less than 1 year	1,400-1,600 x 700-900 mm
Crib (medium size)	1,240 x 680 mm	1 year to less than 5 years	
Sickbed (for adult)	1,950 x 710 mm	5 years or older	2,000-2,100 x 900-1,000 mm

Source: created based on the result of interview survey at Hamadoni District Central Hospital

Table 2-20: No. of Inpatients* of Pediatric Ward by Age Group (total of internal medicine and surgery depts.)

Age group	2013		2014	
	No. of patients	Ratio (%)	No. of patients	Ratio (%)
Less than 1 month old (neonates)	24	1.15	21	0.84
1 month to less than 1 year	947	45.33	983	39.18
1 year to less than 5 years	1,058	50.65	1,234	49.18
5 years or older	60	2.87	270	10.80
Total	2,089	100	2,509	100

* The figure is a total of pediatric internal medicine and surgical patients and differs from the number of pediatric inpatients shown in Table 2-5.

Source: created based on the result of interview survey at Hamadoni District Central Hospital

In addition to the above considerations, the following points were taken into account. The results were summarized into the list of planned equipment list as shown in Table 2-21.

- Items that are marked “C” in the equipment list attached to the Minutes of Discussion (M/D) were deleted, as they can be purchased by the Tajikistan side.
- A set of equipment planned for the ICU of the existing Surgery Ward was deleted because of the plan to relocate the existing resuscitation room.
- Medical equipment and furniture necessary for each room under the facility plan will be procured by the Japanese side, whereas book storage, desks, chairs, and other general furniture items will be procured by the Tajik side.

Table 2-21: List of Planned Equipment

Department	Name of equipment	Priority		Qty.	Remarks
		M/D	Final		
I. Pediatrics (internal medicine)					
Ward	Sickbed (for adult)	A	A	50	Some are fitted with crank
	Sickbed (for child)	A	A	31	Bed for child
	Cot (for neonate)	A	A	5	
	Bedside table	A	A	50	
	Suction unit (for hospital)	A	C ^{*1}		Moved to warehouse
Follow-up room	Sickbed (for child)	A	A	3	Bed for child
	Multi-purpose bed	A	A	4	Crank bed for adult
	Cot (for neonate)	A	C		
	Infant warmer	A	A	2	
	Incubator	A	A	2	
	Phototherapy unit	A	A	2	
	Pulse oxymeter	A	A	2	
	Oxygenator (for hospital)	A	A	4	
	Infusion pump	A	A	2	
	Patient monitor (for neonate)	A	A	2	
Follow-up room	Patient monitor (for child / adult)	-	A ^{*2}	2	Moved from ICU.
	Suction unit (for hospital ward)	A	A	2	
	Aspirator	A	A	2	
	Resuscitation kit (for neonate)	A	A	2	
	Resuscitation kit (for child)	A	A	2	
	Patient monitor (for child / adult)	A	C		
	Instrument cupboard	-	A ^{*3}	2	Moved from Examination Room.
Examination room	Weighing scale (for infant)	A	C ^{*4}		Moved to Treatment Room.
	Weighing scale (for adult)	A	C ^{*5}		Moved to Treatment Room
	Sphygmomanometer (for child)	A	C ^{*6}		Moved to Nurse Station.
	Sphygmomanometer (for adult)	A	C ^{*7}		Moved to Nurse Station.
	Height scale (for child)	A	C ^{*8}		Moved to Treatment Room
	Height scale (for adult)	A	C ^{*9}		Moved to Treatment Room
	Stethoscope	C	C		
	Instrument cupboard	A	C ^{*3}		Moved to Treatment/Follow-up Rooms
	Examination table	A	C		
	Desk	A	C		
	Chair for physician	A	C		
	Chair for patient	A	C		
Treatment room	Infusion pump	A	A	2	
	Instrument trolley	A	A	1	
	Suction unit (for hospital ward)	A	A	2	
	IV pole stand	A	A	2	
	Hot air sterilizer	A	C ^{*10}		Moved to Nurse Station.
	Examination light	A	A	1	
	Examination table	A	A	1	
	Instrument cupboard	-	A ^{*3}	1	Moved from Examination Room.
	Weighing scale (for infant)	-	A ^{*4}	1	Moved from Examination Room.
	Weighing scale (for adult)	-	A ^{*5}	1	Moved from Examination Room.
	Height scale (for child)	-	A ^{*8}	1	Moved from Examination Room.
Height scale (for adult)	-	A ^{*9}	1	Moved from Examination Room.	

Table 2-21: List of Planned Equipment

Department	Name of equipment	Priority		Qty.	Remarks
		M/D	Final		
Dirty utility room	Bedpan rack	-	A	1	
Equipment storage	Infusion pump	A	A	2	
	Instrument trolley	A	A	2	
	Suction unit (for hospital ward)	A	A*1	2	Moved from Ward.
	Aspirator	A	A	4	
	IV pole stand	A	A	8	
	Examination light	A	A	1	
	Medical cabinet	A	C		
	Instrument cupboard	-	A	2	
	Refrigerator	A	C		
	Wheelchair (for child)	A	A	2	
	Wheelchair (for adult)	A	A	2	
	IV bag hanger	-	A	20	
	Oxygenator (for hospital ward)	-	A	4	
Linen room / pharmaceutical storage	Medical cabinet	A	A	11	
Nurse station	Instrument trolley	A	A	2	
	Transcutaneous bilirubin meter	A	A	2	
	Clinical thermometer	C	C		
	Fetal Doppler	C	C		
	Instrument cupboard	A	A	2	
	Refrigerator	A	A	1	
	Book storage	A	C		
	Work table (for nurse station)	A	A	1	
	Chair (for nurse)	A	A	10	
	Hot air sterilizer	-	A*10	1	Moved from Treatment Room.
	X-ray film illuminator	A	C		
	Laser imager	A	C		
	Sphygmomanometer (for child)	-	A*6	2	Moved from Examination Room.
Sphygmomanometer (for adult)	-	A*7	2	Moved from Examination Room.	
Physicians room	Instrument cupboard	A	A	4	
	Bookshelf	A	C		
	Desk	A	C		
Physicians room	Chair	A	C		
	Locker	A	C		
Kids room	Table for child	-	A	2	
	Chair for child	-	A	6	
	Urethane mat for child	-	A	9	
Locker room for nurse	Locker (for 6 persons)	-	A	8	
2. Examination Unit					
X-room	Portable X-ray apparatus	A	C		
	X-ray protection apron	A	C		
	X-ray film illuminator	A	C		
Endoscopy room	Endoscope	C	C		
Ultrasound room	Ultrasound equipment	A	C		
	Examination table	A	C		
	Medical storage	-	C		
ECG room	ECG	A	C		
	Examination table	A	C		
	Medical storage	-	C		

Table 2-21: List of Planned Equipment

Department	Name of equipment	Priority		Qty.	Remarks
		M/D	Final		
Laboratory	Hot air sterilizer	B	C	/	
	Hemoglobinometer,	C	C	/	
	Electronic hemoglobinometer	B	C	/	
	Glass pipette	C	C	/	
	Centrifuge	B	C	/	
	Microscope	B	C	/	
	Pharmaceutical refrigerator	A	C	/	
	pH meter	B	C	/	
3. Surgery Department					
Operating theater	Pulse oxymeter	C	C	/	
	Oxygenator (for operating theater)	A	C	/	
	Aspirator (for operating theater)	A	C	/	
	IV pole stand	A	C	/	
	Resuscitation kit (for neonate)	A	C	/	
	Resuscitation kit (for child)	A	C	/	
	Medical cabinet	A	C	/	
	Anesthesia apparatus	A	C	/	
	Laryngoscope,	A	C	/	
	Operating table	A	C	/	
	Operating light	A	C	/	
	Patient monitor	A	C	/	
	Electric scalpel	A	C	/	
	Stretcher	A	C	/	
	Instrument kit (A)	A	C	/	
	Instrument kit (B)	A	C	/	
	Instrument trolley	-	C	/	
Sterilization room	Autoclave	A	C	/	
	Hot air sterilizer	A	C	/	
	Instrument cupboard	A	C	/	
	Refrigerator	A	C	/	
	Blood storage refrigerator	B	C	/	
	Instrument cupboard	A	C	/	
	Work table (for washing / sterilization room)	A	C	/	
Recovery room	Multi-purpose bed	A	C	/	
	Stretcher	A	C	/	
	Wheelchair (for child)	A	C	/	
	Wheelchair (for adult)	A	C	/	
4. Pediatric Unit (surgery)					
ICU	Multi-purpose bed	B	C	/	
	Bedside table	B	C	/	
	Infusion pump	B	C	/	
	Aspirator	B	C	/	
	Ventilator (for child)	B	C	/	
	IV pole stand	B	C	/	
	Patient monitor	B	C*2	/	Moved to Follow-up Room.
5. Other					
	Generator	A	A	1	To be considered by the hospital side.
	Vacuum truck	-	A	1	

Priority A: essential, C: not essential

4) Specifications of Main Equipment Items

Specifications and intended use of the main equipment items being planned are shown in Table 2-22 below.

Table 2-22: Specification and Intended Use of Equipment

No.	Equipment	Qty.	Specification/configuration		Intended use
1	Patient monitor (for child, adult, neonate)	4	Measurement parameters:	ECG, respiration, SpO2, temperature, non-invasive blood pressure, etc.	For continuously monitoring vital signs of neonatal patients.
			Display:	Color LCD, 4 inch or larger	
			Waveform chart:	5 or more waveform indexes	
			Other:	Attached with stand, accessories for neonate, built-in battery	
2	Incubator	2	Temperature range:	34 – 37.5°C or wider range	For warming neonates until they reach normal body weight.
			Access window:	2 each on front & back, 1 or more on each side	
			Oxygen concentration adjustment range:	Min. range: 21-75%	
			Humidity range:	50 – 90% or higher	
3	Infant warmer	2	Control mode:	Automatic and servo-controlled	For warming or giving oxygen therapy to sick neonates, premature babies.
			Oxygen flow meter	Installed	
			Bed inclination:	±5°	
			Alarm:	Installed	
4	Hot air sterilizer	1	Effective capacity:	90 liters or more	For sterilizing medical and glass instruments.
			Boiler:	Built-in	
			Sterilization process:	Automatic control	
5	Oxygenator (A: for sick ward)	8	Configuration:	Oxygen concentrator (PSA), compressor, oxygen cylinder	For concentrating oxygen.
			Oxygen concentration:	88 – 90% or higher	
			Oxygen production:	32SCF/h (Standard Cubic Foot)	
6	Vacuum truck	1	Tank capacity:	10m ³ or so	For suctioning, storing in a built-in tank, and transporting waste materials discharged from medical facilities to an appropriate disposal site.
			Suction pump	60m ³ /h or so	

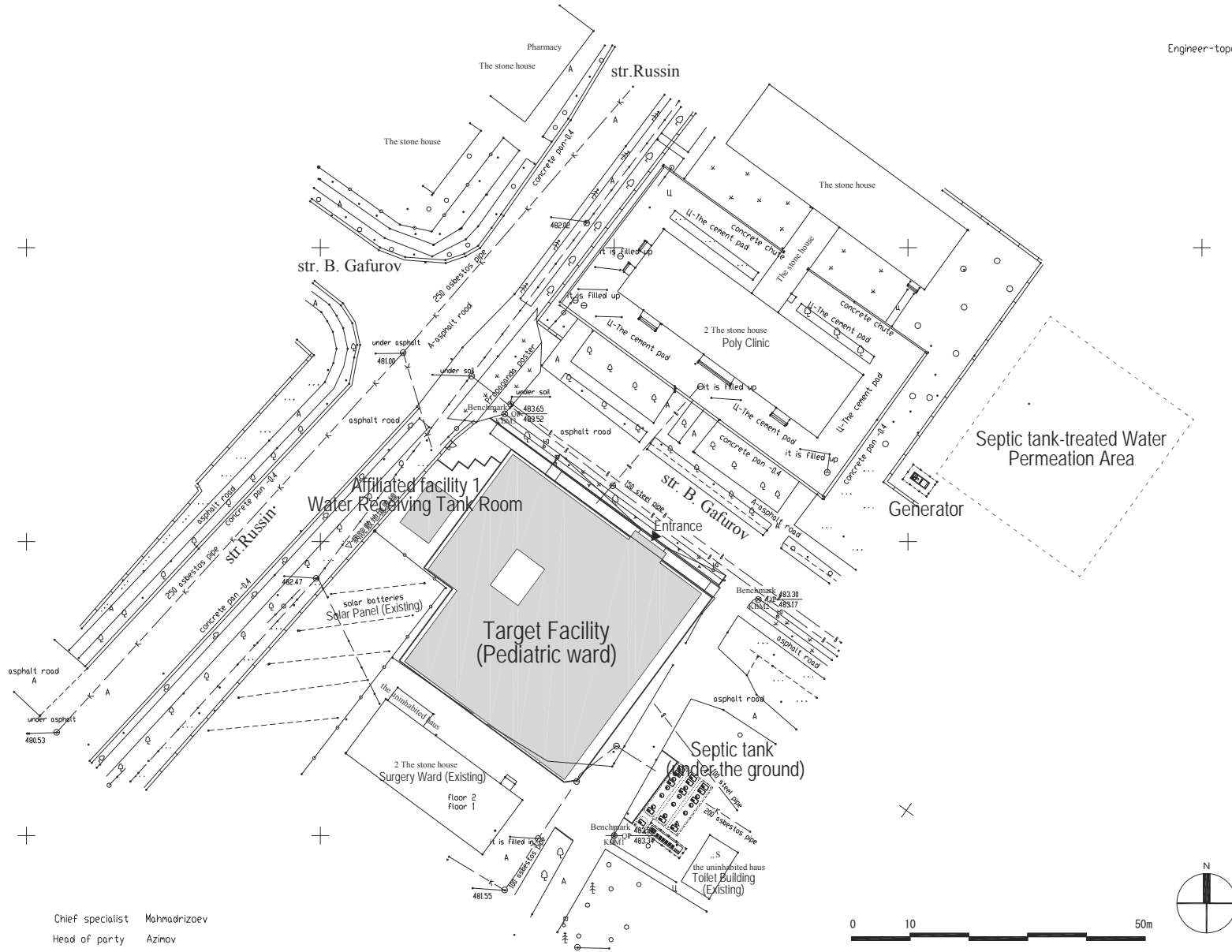
2-2-3 Basic Design Drawings

Basic design drawings are provided in the following pages.

Table 2-23: List of Drawings

Figure No.	Name of drawing	Scale
Figure 2-12	Layout Plan	1/1000
Figure 2-13	Pediatric Ward 1 st Floor Plan	1/300
Figure 2-14	Pediatric Ward 2 nd Floor/Roof Plan	1/300
Figure 2-15	Pediatric Ward Elevation-1	1/300
Figure 2-16	Pediatric Ward Elevation-2	1/300
Figure 2-17	Pediatric Ward Cross Section-1	1/300
Figure 2-18	Pediatric Ward Cross Section-2	1/300
Figure 2-19	Substation Room / Water Tank Room	1/300

Figure 2-12: Layout Plan, 1/1000



Chief specialist Mahmadrizoev
 Head of party Azinov

0 10 50m



Figure 2-13: Pediatric Ward 1st Floor Plan, 1/300

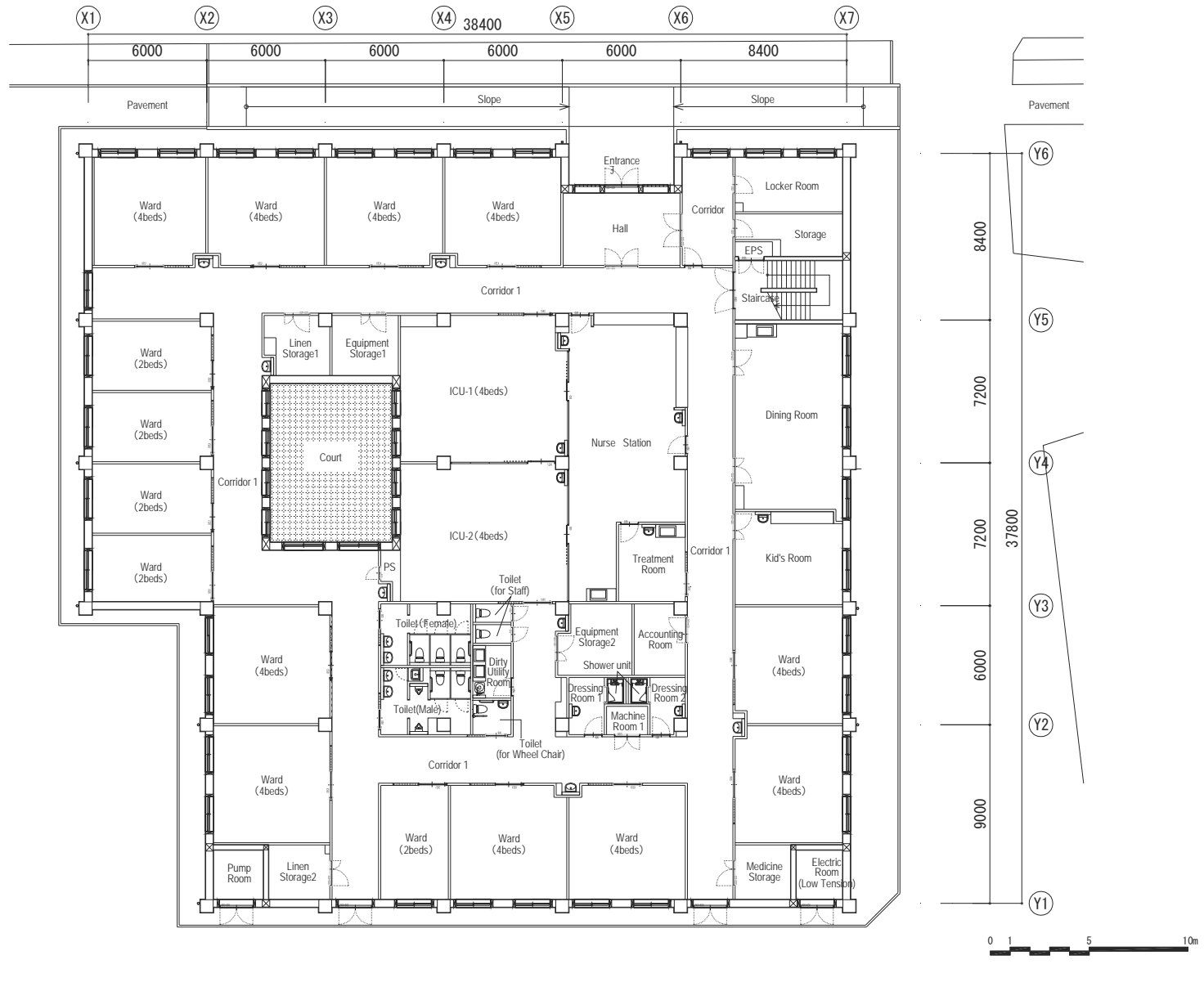


Figure 2-1-4: Pediatric Ward 2nd Floor/Roof Plan, 1/300

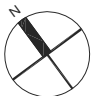
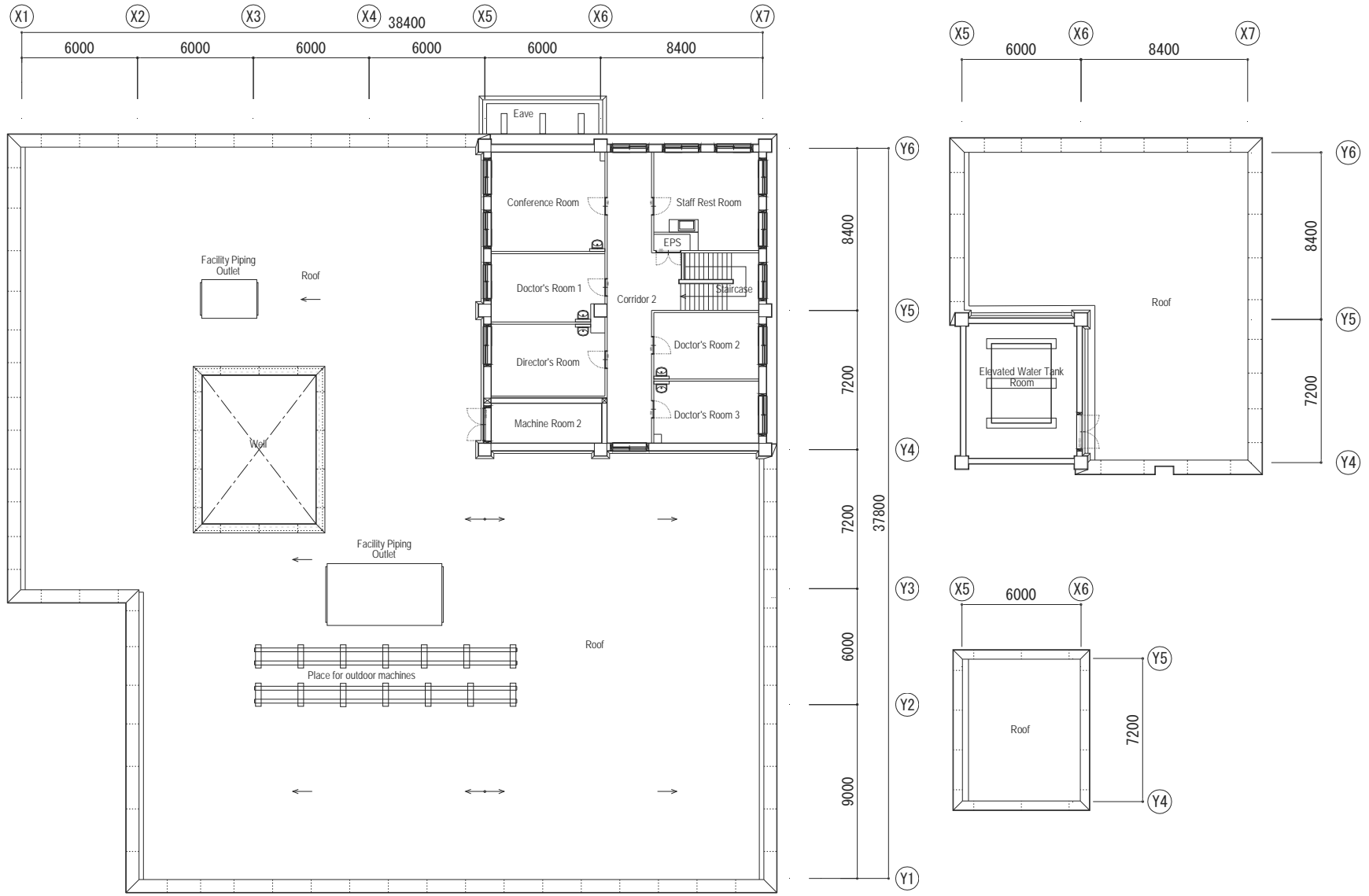


Figure 2-15: Pediatric Ward, Elevation – 1, 1/300

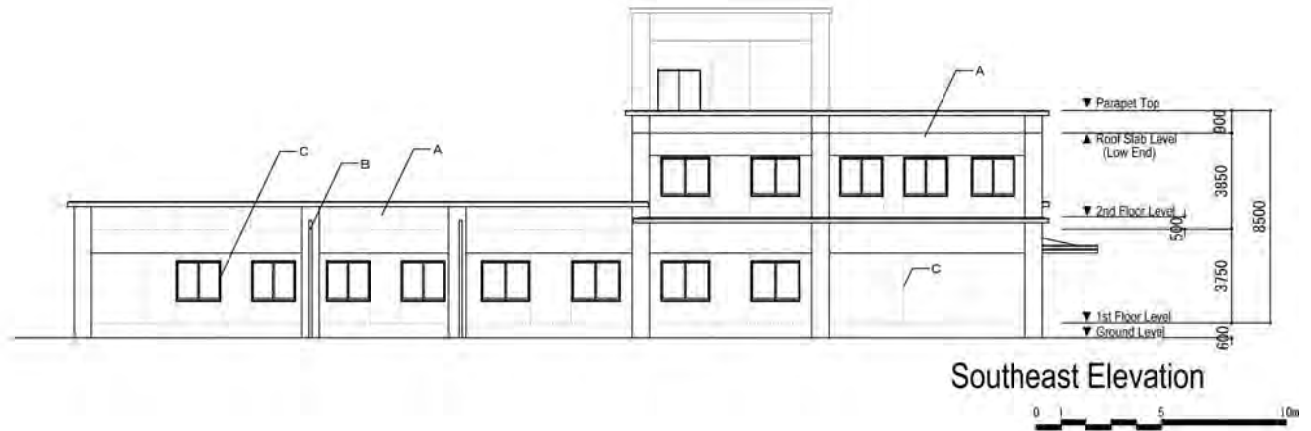
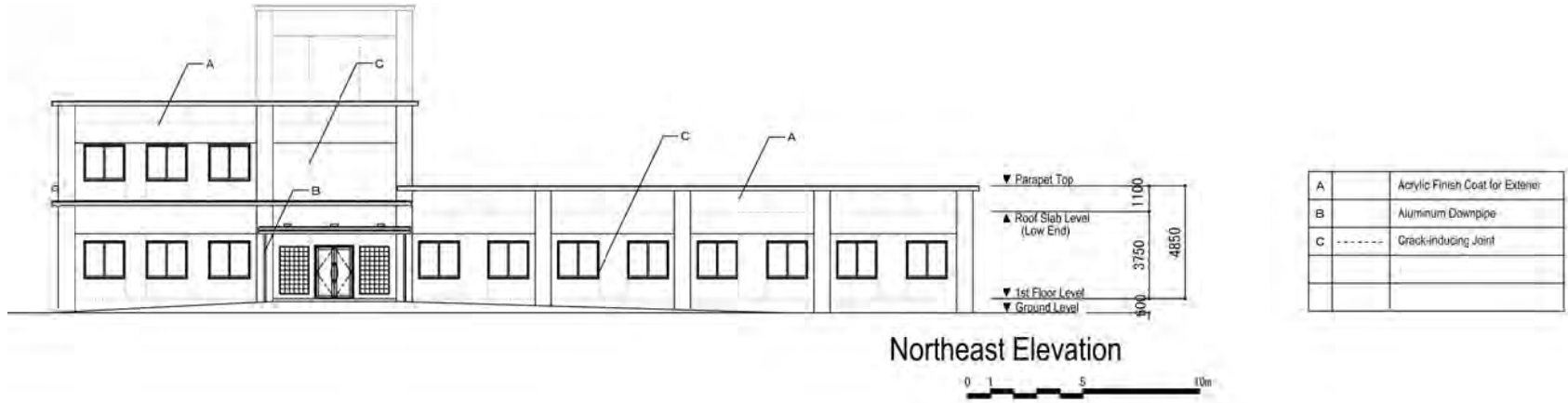
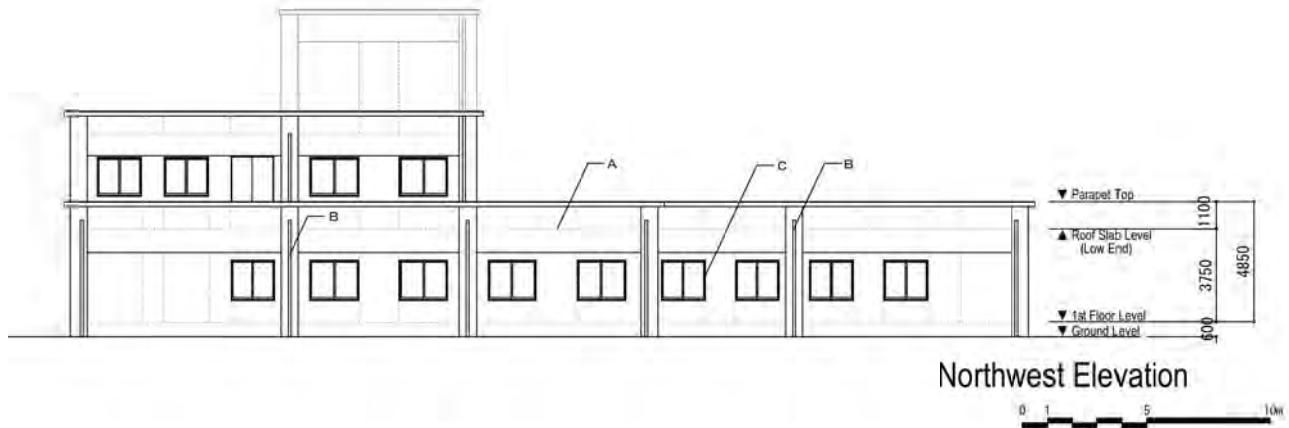
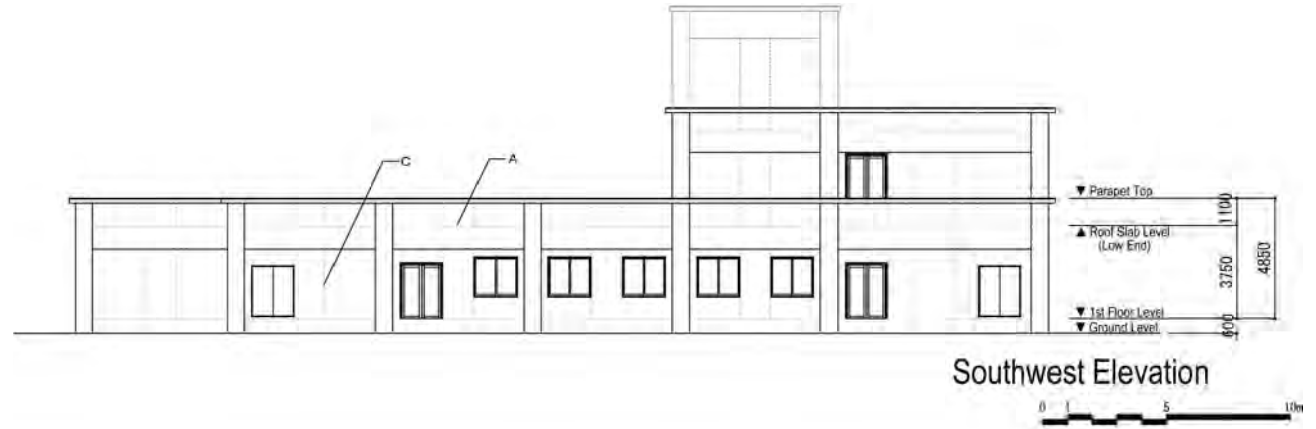


Figure 2-16: Pediatric Ward, Elevation - 2, 1/300



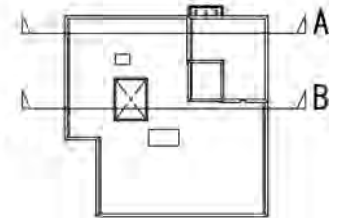
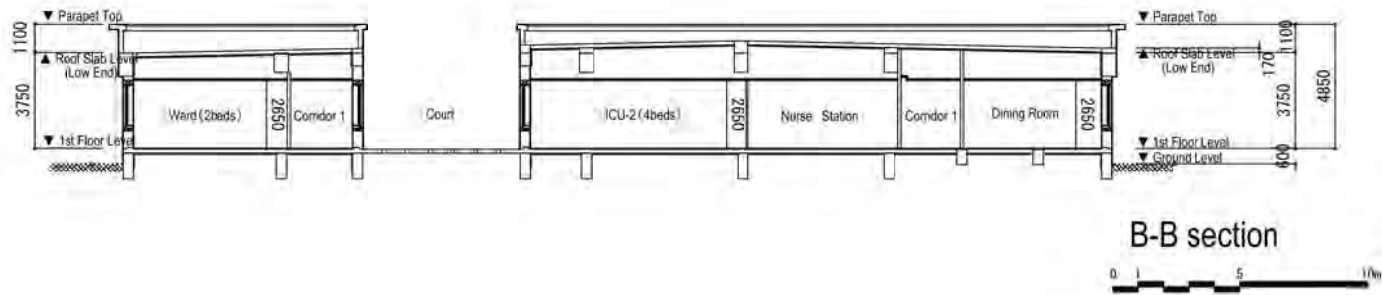
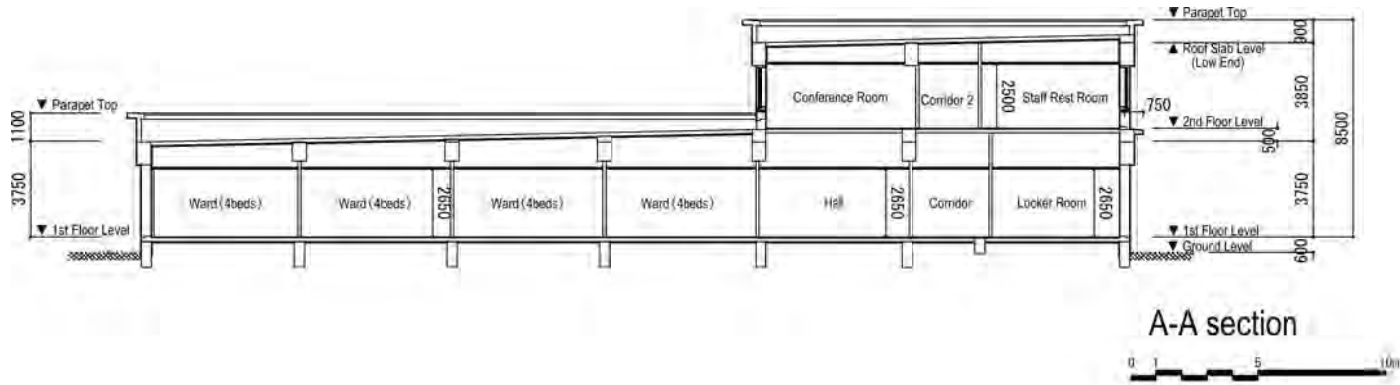
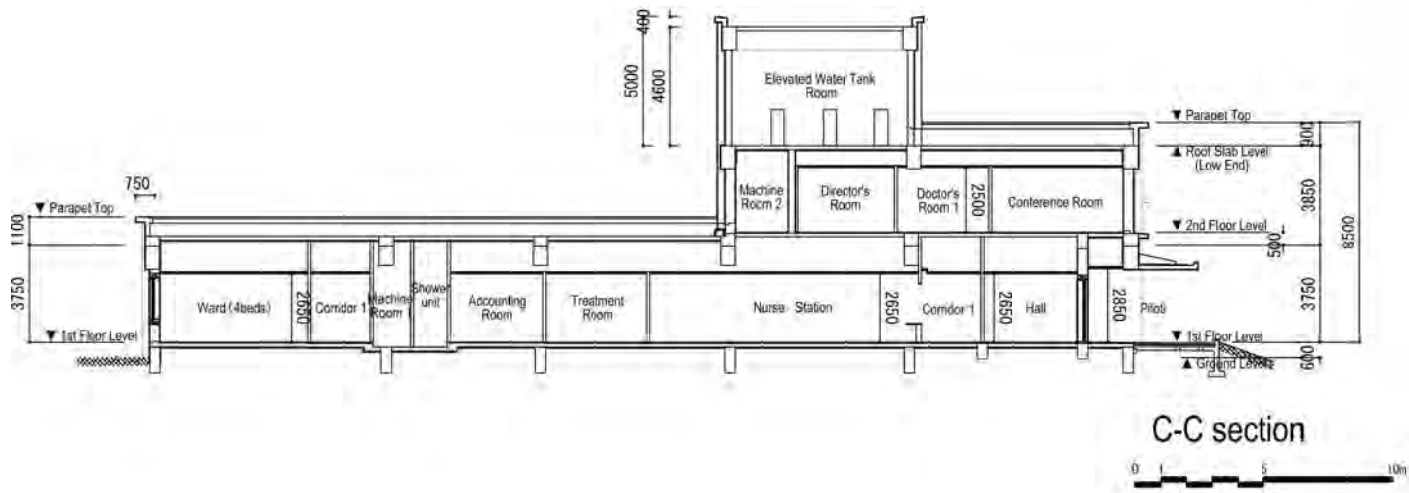
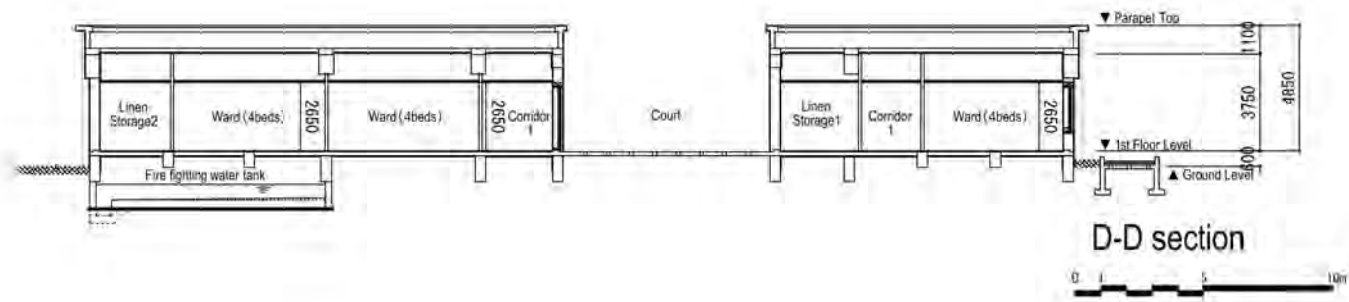


Figure 2-17: Pediatric Ward, Cross section – 1, 1/300



C-C section



D-D section

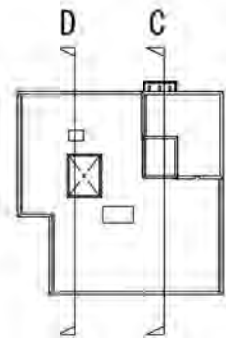
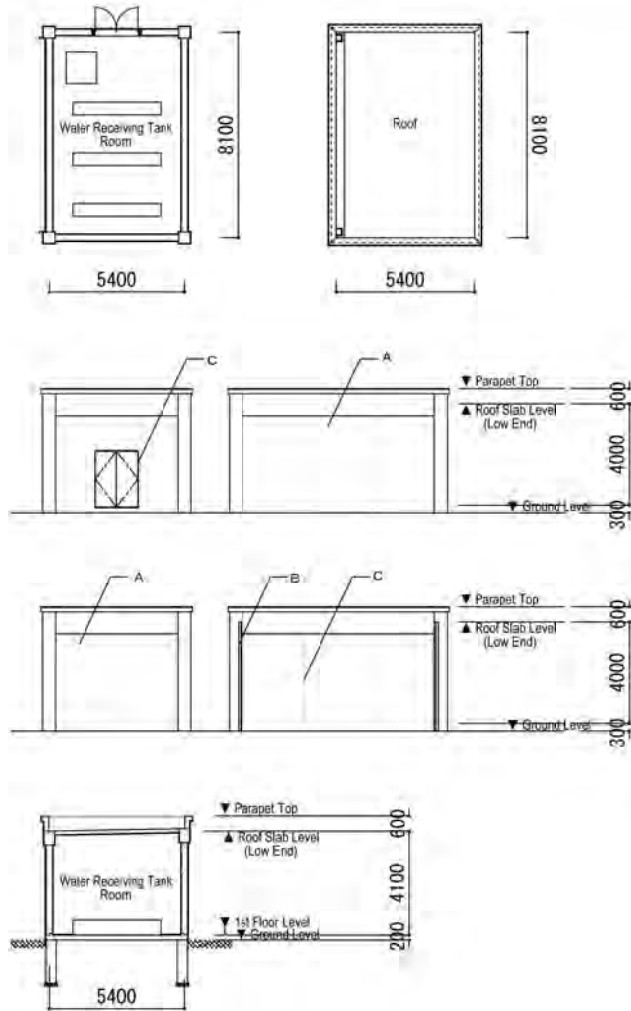
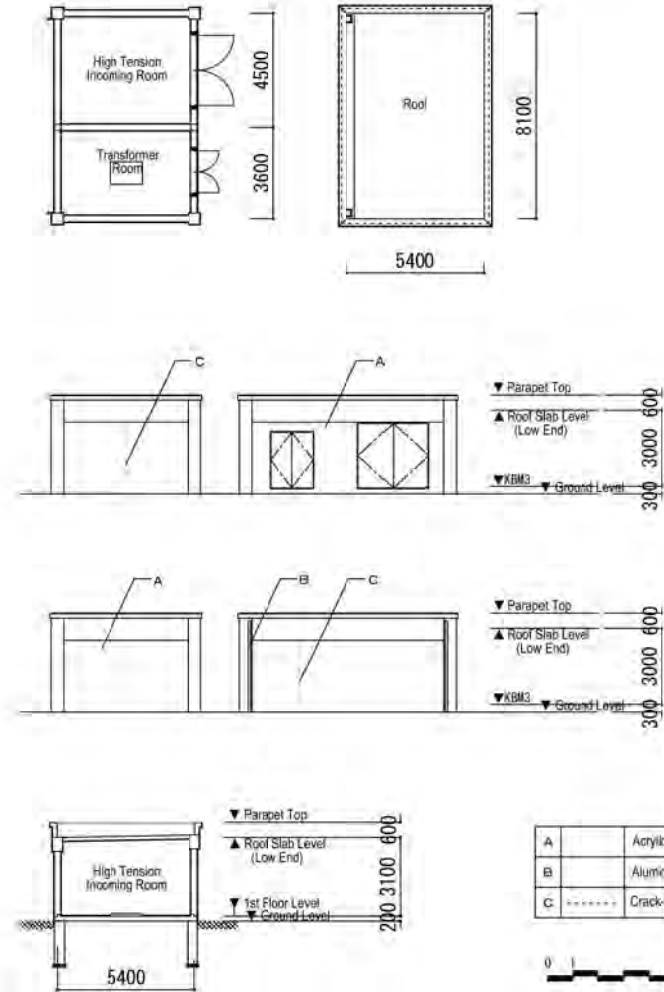


Figure 2-18: Pediatric Ward, Cross section – 2, 1/300

Affiliated facility 1 Water Receiving Tank Room



Affiliated facility 2 Incoming Transformer Room



A	Acrylic Finish Coat for Exterior
B	Aluminum Downpipe
C	Crack-inducing Joint



Figure 2-19: Water Receiving Tank Room/Incoming Transformer Room, 1/300

2-2-4 Construction Plan / Procurement Plan

2-2-4-1 Construction Policy / Procurement Policy

Implementation of Japanese assistance under this Project will be finalized upon approval thereof by the Japanese Cabinet after examination of the plans proposed in the preparatory study report by the Japanese Ministry of Foreign Affairs and other agencies. It will then become official upon the signing of the Exchange of Notes (E/N) and Grant Agreement (G/A) with respect to the implementation of the Project between the Governments of Japan and Tajikistan.

Implementation of the Project will be supervised and managed by a Japanese consulting firm, which will act as the consultant for the Tajikistan side after concluding a consultant agreement with the Government of Tajikistan within the framework of Japan's grant aid system. Japanese assistance for this Project consists of facility construction and equipment procurement, the contractors that will provide the respective services will be chosen from qualified Japanese corporations through general competitive bidding with preliminary screening. The agreements to be concluded between the Government of Tajikistan and the Japanese consultant and contractors will become effective upon approval by Japan International Cooperation Agency (hereinafter, "JICA").

(1) Executing Agency

The Tajik agency in charge with respect to the signing of the Exchange of Notes (E/N) and Grant Agreement (G/A) between the Governments of Japan and Tajikistan is the Ministry of Foreign Affairs of Tajikistan. While the executing agency of the Project on the Tajik side is MoH, the Maternal and Child Health Bureau of the Ministry will take charge of devising plans, signing the consultant agreement, attending the tender, signing contractor agreements, etc., as well as approval, management, etc. of matters related to design, construction, and procurement.

(2) Consultant

After the signing of the E/N and G/A between the Governments of Japan and Tajikistan, MoH will conclude a consultant agreement with a Japanese consulting firm concerning the detailed design and construction/procurement supervision for this Project. Upon approval of the agreement by JICA, the Japanese consultant will prepare tender documents based on the preparatory study report and in consultation with MoH with respect to the detail design of the facilities and equipment to be constructed and procured. After approval of the tender documents by MoH, the Japanese consultant will carry out supervisory work, including assistance for the bidding procedure, until the completion of the Project.

(3) Contractors

Contractors selected through bidding will conclude a construction/procurement-service agreement with MoH and, upon approval thereof by JICA, construct the facilities and procure medical equipment in accordance with the detail design drawings and equipment specifications under the supervision of the consultant. The contractors are required to control their work processes, safety, and quality, which should be appropriate for Japan's grant aid project.

2-2-4-2 Points to Note in Construction and Procurement

(1) Points to Note in Carrying Out Construction Work

The construction portion of this Project is to build a new pediatric ward within the land plot of the hospital. The construction schedule and safety management plans should be worked out by taking into account that the construction work will need to be carried out while maintaining the other functions of the hospital.

1) Safety Management (lodging)

The project site is located in Hamadoni District about 7 – 8 km away in straight distance from the Afghan border, which is a Leve-3 travel warning area (deferral of travel to the area is recommended) according to the classification of the Japanese Ministry of Foreign Affairs. For this reason, lodging for Japanese managers, supervisors, etc. should be situated outside Hamadoni District (probably in Danghara, which is 1-hour drive from the project site). In addition, they should avoid travelling before dawn and after sunset and take ample safety precautions whenever moving from one location to another.

2) Safety Management (construction site)

Temporary fences should be built around the construction site to prevent the entry of patients and hospital staff. Ample caution should be exercised with construction vehicles passing in and out of the hospital site. It will be necessary to create safe passageways for patients and hospital staff within the construction area, establish a sound safety control system for the delivery of construction equipment and materials and the hauling of old equipment and waste materials, and implement measures to reduce or mitigate dust, noise, and vibration to protect the comfort of inpatients, etc.

3) Process Control

In drafting a construction schedule, climatic conditions of the project area, especially those during severe winter cold, should be taken into account. In winter, temperature can drop below the freezing point with snow and sometimes rain, which means that earth-moving, concrete-pouring, and other structural works cannot be carried out in such weather conditions. Constraints on working hours due to the location of lodging, which will be 1-hour drive from the project site, should also be incorporated in scheduling. To facilitate the construction process under these circumstances, monthly meetings shall be held among the representatives of MoH, the hospital, and the Japanese contractors and consultant to report and discuss closely the progress, safety, quality, and other pertinent issues so that necessary measures can be taken without fail.

4) Assignment of Contractors' Engineers

In order to complete the facilities in accordance with the design documents before the scheduled completion date, Japanese contractors will be required provide appropriate technical guidance and process/quality/safety management by maintaining cooperative relationships with local builders. To carry out such responsibilities, a team of Japanese engineers comprised of the manager, architectural engineers, facility engineers, administrative staff will be assigned to work fulltime at the project. The types and numbers of such Japanese engineers are shown in the table below.

Table 2-24: Types and Numbers of Fulltime Japanese Engineers

Position	No. of persons	Job description
Manager	1	Overall management, safety management
Architectural engineer	2 (Overall: 1, Finishing work: 1)	Architectural guidance, process/quality control, guidance based on working drawings
Building facility engineer	2 (Overall: 1, Electrical: 1)	Facility installation, quality control, technical guidance
Administrative staff	1	Clerical work, labor management, procurement management

(2) Points to Note in Procuring Medical Equipment

1) Dispatch of Appropriate Medical Equipment Installation Engineers

In order to ensure that the medical equipment to be procured by this Project will be operated, used, and maintained properly, it will be necessary to provide sufficient guidance for the local health workers and medical technicians at the time of equipment installation. Engineers of equipment suppliers to provide such guidance should be selected from among those with extensive experience in relevant fields. The consultant will supervise the whole process to ensure that such engineers are giving guidance on equipment operation and simple inspection procedures in an easy to understand manner for the local medical workers and technicians.

2) Transport/Delivery Route

The procurement supervision plan including transport/delivery schedule will be drafted based on the following main routes. It will take one day to transport equipment from Dushanbe to Hamadini District Central Hospital by truck.

Table 2-25: Transport Route

Country of departure	Route	Travel time
Japan (Main route)	Japan (ocean) → Lianyungang, China (rail) → Osh, Kyrgyzstan → Uzbekistan → Dushanbe	45 – 60 days
Europe, Russia	Europe (land) (equipment shipped from Europe will go through Russia) → Moscow, Russia → Almaty, Kazakhstan → Kyrgyzstan → Dushanbe	20 – 30 days

2-2-4-3 Division of Construction/Procurement/Installation Works

Works to be undertaken respectively by the Japanese and Tajikistan sides are as follows.

(1) Division of Works

Works to be carried out by the Japanese and Tajikistan sides, respectively, are summarized in Table 2-26 below.

Table 2-26: Division of Works

	Works to be carried out by the Japanese side	Works to be carried out by the Tajikistan side
Site	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Securing of land for planned construction site. Clearing of trees and other obstacles. Leveling of ground prior to the start of construction work.
Landscaping and exterior work	<ul style="list-style-type: none"> Installation of drainage pipes. Installation of underground cables from the substation room to inside the buildings Pediatric Ward, etc. Installation of water tank and water supply pipes from the water tank Partial rerouting of internal road 	<ul style="list-style-type: none"> Planting of trees and bushes within the site. Construction of passageways within the site other than those to be constructed by the Japanese side.
Building construction	<ul style="list-style-type: none"> Pediatric Ward Accessory buildings (water tank room, substation room) 	<ul style="list-style-type: none"> None
Electricity	<ul style="list-style-type: none"> Installation of underground cables from substation room to the inside of Pediatric Ward, etc. Supply of electricity to Pediatric Ward, etc. 	<ul style="list-style-type: none"> Installation of service line from main (red line) to substation room.
Water supply	<ul style="list-style-type: none"> Installation of water supply pipes from water tank to various rooms. 	<ul style="list-style-type: none"> Installation of service pipe from water main on Old Z Rozi Street to water tank.
Sewerage	<ul style="list-style-type: none"> Installation of a sewerage system for the whole Pediatric Ward 	<ul style="list-style-type: none"> None
Telephone	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Installation of telephone cables and equipment inside the project site.
Furniture	<ul style="list-style-type: none"> Ceiling-mounted curtain rail 	<ul style="list-style-type: none"> Desks, chairs, and other furniture for physician's rooms, etc. General furniture items, such as ceiling-mounted curtains, window shades.
Equipment	<ul style="list-style-type: none"> Procurement and setting up of medical equipment 	<ul style="list-style-type: none"> Procurement of equipment not provided by the Japanese side

(2) Division of Procurement/Installation Works (medical equipment)

This Project will be implemented by cooperation between the Governments of Japan and Tajikistan in accordance with Japan's Grant Aid system. Respective responsibilities to be shouldered by the two countries are as follows.

1) Assistance of the Japanese Government by grant aid

- Expenses associated with the procurement of planned equipment
- Expenses associated with the ocean freight and inland transportation to the target hospital in Tajikistan.
- Expenses associated with the installation of the equipment.
- Expenses associated with the provision of technical guidance on test run, operation, maintenance, and inspection of procured medical equipment.

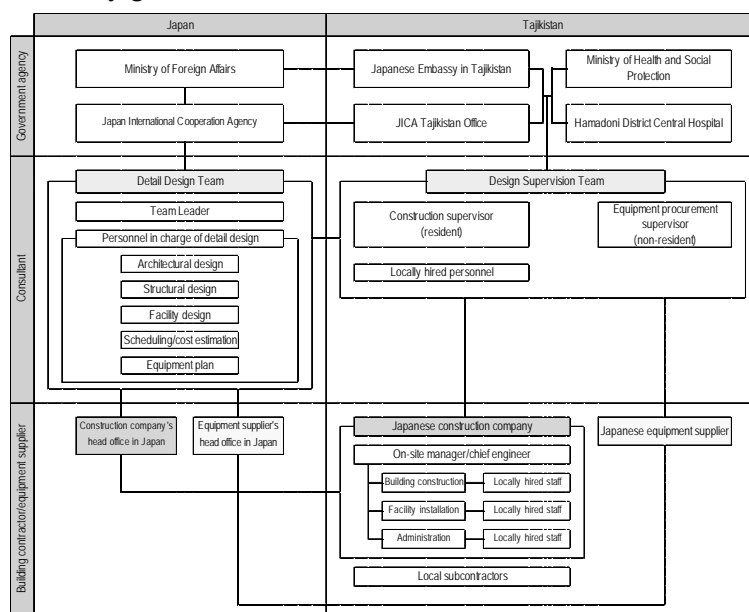


Figure 2-20: Supervisory System

2) Obligations of the Tajikistan Government

- Presentation of information and documents necessary for the installation.
- Removal and disposal of existing equipment to be replaced by this Project.
- Securing of space for unloading the equipment.
- Securing of space for temporarily storing the equipment prior to installation.

2-2-4-4 Construction Supervision Plan / Procurement Supervision Plan

After the signing of the Exchange of Notes (E/N) and Grant Agreement (G/A) between the Governments of Japan and Tajikistan, this Project will be implemented in two phases: (i) detail design, including bidding, and (ii) facility construction and equipment procurement. To ensure the smooth implementation of the Project, the consultant will carry out a series of responsibilities, including the preparatory study, detailed design, and construction/procurement supervision, with integrity and consistency.

(1) Tender stage

The consultant will prepare tender documents, etc. necessary for selecting by tender the Japanese contractors that will undertake facility construction and equipment procurement works. Upon approval by the Tajik Government of such documents, etc., the consultant will publicly announce the tender, distribute the tender documents, accept and evaluate bid applications, and carry out other tender-related duties. Subsequent to the tender process, the consultant will give advice on the signing of a service agreement between the Government of Tajikistan and each contractor.

(2) Work execution stage

The consultant will commence the construction/procurement supervision work in time for the approval of the service agreement. During the supervision stage, the consultant will assign an architectural engineer to work fulltime at the project site to supervise the work and organize a support team comprised mostly of the preparatory study team members to assist the engineer from Japan. During the execution phase, the following duties will be performed.

• Construction supervision

The consultant will check the construction schedule, construction plan, working drawings, products, etc. and give appropriate instructions and guidance. The consultant will dispatch engineers of the support team in Japan to the construction site to supervise the work process according to its progress.

• Procurement supervision

The consultant will inspect, advice on, and approve the equipment procurement/installation schedule, personnel plan, technical documents related to the procurement of equipment, and other documents to be submitted by the equipment supplier. The consultant will also examine the equipment procurement/installation plan and give guidance and advice to the equipment supplier and coordinate the work.

• Progress report

The consultant will monitor the progress of the construction and equipment procurement work and report thereof to the relevant agencies of both countries as necessary.

- Completion inspection and trial operation

The consultant will also conduct completion inspections of the facilities and equipment, as well as trial operations thereof, to verify that they conform to the descriptions of the contracts, and submit the certificate of completion of inspections to the Tajikistan side.

2-2-4-5 Quality Control Plan

Items subject to quality control under this Project are shown in Table 2-27. The building to be constructed will have a reinforced concrete structure, the quality of which in earthquake-prone Tajikistan should be controlled in terms of concrete strength, including the concrete temperature at the time of pouring, concrete curing after pouring, as well as the strength and arrangement of rebars. Controlling the concrete temperature is especially important, as the temperature of the project site can exceed 35°C in summer and fall below 0°C in winter. Since there are no laboratories that can perform concrete/rebar strength tests in Hamadoni District, such tests will be entrusted to a testing institution in Dushanbe.

Table 2-27: Quality Control Plan

Type of work	Subdivision	Item to be controlled	Verification method
Structural work	Foundation	Supporting layer	Check the supporting layer.
	Concrete	Fresh concrete	Trial mix, slump, air volume, temperature, chloride content
		Concrete strength test	Compressive strength test
	Rebar	Rebar strength	Mil Test Certificate, tensile strength test
Rebar arrangement		Inspection (dimensions, positions)	
Finishing work	Roofing	Workmanship, leakage	Spray test
	Plastering	Workmanship	Visually check the appearance.
	Doors and windows	Product	Check the appearance and dimensions.
		Mounting accuracy	Check the appearance and dimensions.
	Painting	Workmanship	Visually check the appearance.
Interior walls	Workmanship	Visually check the appearance.	
Electrical work	Piping	Bending, support spacing	Check the appearance and dimensions.
	Wiring and cabling	Damaged sheaths	Inspection report, cleaning before installation
		Loosened joints	Mark the bolt after tightening.
Lighting	Performance, operation, installation condition	Inspection report, illuminance test, appearance	
Mechanical /plumbing work	Water service pipe	Support spacing, leakage	Appearance, leakage, water-pressure test
	Sewerage pipe	Inclination, support spacing, leakage	Appearance, leakage, flow test
	Sanitary fixtures	Operation, installation condition, leakage	Appearance, flow test
	HVAC equipment	Operation, installation condition	Appearance, air flow rate

2-2-4-6 Procurement Plan of Equipment and Materials

(1) Construction Equipment and Materials

As a general rule, construction materials to be used in this Project should be procured from local suppliers. However, all materials available in Tajikistan, except for sand, gravels, and cement, are imported products or locally-processed imported materials, some of which may have problems in stable supply, especially in remote areas like Hamadoni District. Accordingly, construction materials, including cement, will be procured in Dushanbe and stored at the construction site. Procurement plan of the main construction equipment and materials is shown in Table 2-28 below.

Table 2-28: Procurement Plan of Main Construction Equipment and Materials

Work	Material	Source country			Remarks	
		Tajiki stan	Japan	3 rd country		
Building	Rebar/concrete work, plastering work	Gravel, sand	○		Available from nearby quarry crusher plant.	
		Cement	○		Available in Dushanbe. Stable supply is possible in Tajikistan if the quantity is small.	
		Rebars	○		Procure rebars imported from Russia and Middle East.	
		Molds	○		Use plywood, etc. available in Tajikistan.	
	Brickwork	Bricks	○		Procure locally-available bricks.	
		Water-proofing	Waterproofing film coating		○	Not available in Tajikistan.
	Sealant		○		Procure imported products in Tajikistan.	
	Doors and windows	Wooden doors and sashes	○		Procure imported products in Tajikistan.	
		Aluminum/copper doors and sashes		○	Take into account the quality, performance, and durability.	
	Glass	Double-pane glass		○	Take into account the quality and durability.	
	Painting	Regular paint (EP, SOP, etc.)	○		Procure imported products in Tajikistan.	
		Exterior/interior walls	Acrylic finish paint for exterior	○		Procure imported products in Tajikistan.
			Boards	○		To be procured in Tajikistan.
			Insulation materials, wallpaper	○		Procure imported products in Tajikistan.
			Floor coating	○		Procure imported products in Tajikistan.
			Lightweight steel wall base	○		Procure imported products in Tajikistan.
			Lightweight steel ceiling base		○	Take into account the performance, quality, and durability.
			Ceramic/wooden tiles	○		Procure imported products in Tajikistan.
	Prefabricated unit/furniture		Toilet booth		○	Not available in Tajikistan. Take into account the quality and durability.
		Prefabricated furniture	○		To be procured in Tajikistan.	
Fence & driveway	Pavement materials	○		To be procured in Tajikistan.		
	Gate doors	○		To be procured in Tajikistan.		
Electrical	Electrical facilities	Panels (including terminal board and switch board)		○	Order-made products are not available in Tajikistan.	
		Pipes, cables, wiring equipment	○		Procure imported products in Tajikistan.	
		Emergency generator	○		Procure imported products in Tajikistan.	
		Lighting fixtures		○	Take into account the quality and durability.	
		Intercom system	○		Procure imported products in Tajikistan.	
		PA system		○	Take into account the performance and quality as a system.	
		ITV camera system		○	Take into account the performance and quality as a system.	
		Automatic fire alarm system		○	Take into account the performance and quality as a system.	
		Illuminated exit sign, emergency lighting		○	Take into account the performance and quality as a system.	
Mechanical/plumbing	Plumbing facilities	Piping (drain pipe, etc.)	○		Procure imported products in Tajikistan.	
		Piping (water pipe), valves		○	Take into account the, performance, quality and durability.	
		Stainless steel pipe for hot water supply		○	Not available in Tajikistan.	
		Sanitary fixtures		○	Not available in Tajikistan. Take into account the quality and durability.	
		Electric water heater		○	Take into account the quality and durability.	
		Fire pump equipment (including valves)		○	Not available as a system in Tajikistan.	
		Indoor hydrant		○	Not available as a system in Tajikistan.	
	HVAC	Air-conditioner, etc.			○	Not available in Tajikistan. Take into account the quality and durability.
		Air-exhaust ventilator		○		Take into account the performance, quality and durability as a system.
		Duct, chamber, etc.		○		Take into account the performance, quality and durability as a system.
	Diffuser, damper, etc.		○		Take into account the quality and performance.	

(1) Country of Origin of Planned Medical Equipment

Although many of the planned equipment items can be procured from Japanese manufacturers, it is necessary to expand the scope of eligible source countries to secure multiple local agents that can provide after-sales services and to guarantee a sufficient level of competition in the bidding process. For such items as sickbed, multipurpose bed, patient monitor (for child, adult, neonate), pulse oxymeter, oxygenator (for sick ward), aspirator, hot air sterilizer, infusion pump, infant warmer, and incubator; procurement from European and US manufacturers should also be considered in addition to those of Japan and Tajikistan.

Since no medical equipment is produced in Tajikistan, the eligible source countries should be DAC member countries. Manufacturers' agents capable of providing appropriate after-sales services should be limited to those in Russia, Kazakhstan, Kyrgyzstan, and other neighboring countries to secure locally-available after-sale services and a sufficient level of competition in tender.

2-2-4-7 Guidance on Initial and On-going Operation

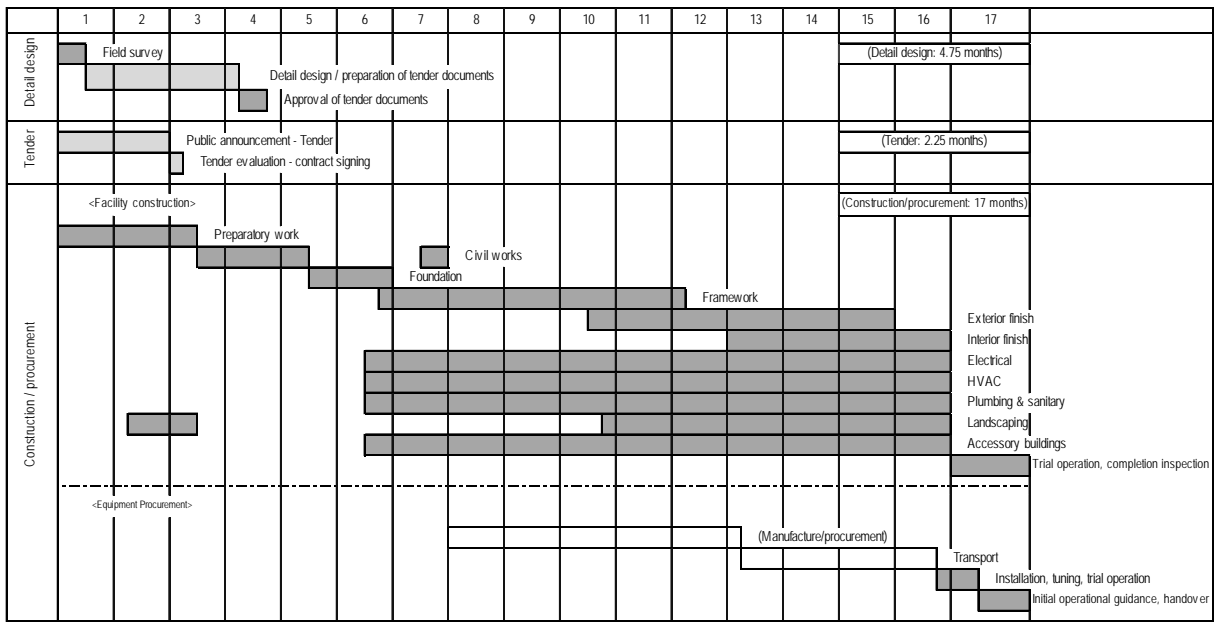
Some of the equipment items to be procured by this Project require basic knowledge on operation and maintenance, which needs to be transferred to the relevant Tajik personnel through on-site training during the installation/tuning/trial-operation phases. The consultant will give advice and instructions on such training to be conducted by the Japanese contractors.

Equipment items that require such training include patient monitor (for child and adult), oxygenator (for sick ward), incubator, and infant warmer.

2-2-4-8 Implementation Schedule

Japanese assistance under this Project consists of detail design and tender by the consultant, facility construction and medical equipment procurement by the contractors after the tender, and supervisory work by the consultant; and it will be implemented as a single fiscal year project. The implementation schedule after the signing of E/N and G/A between the two governments is shown in Figure 2-21. The entire process will take about 24 months in total: 4.75 months for detail design, 2.25 months for tender procedure, and 17 months for construction and procurement.

Figure 2-21: Project Implementation Schedule



Note: Work in Japan Work in Tajikistan

2-3. Outline of Tajikistan’s Responsibilities

The Tajikistan side shall carry out the following duties at the timing indicated below.

Table 2-29: Obligations of the Tajikistan Side and Timing thereof

Item	Timing
① Secular land necessary for the Project and guarantee the ownership thereof by the national or local government or MoH.	Before signing of E/N and G/A
② Prepare the land by clearing obstacles and leveling the ground before the commencement of construction work.	Before signing of E/N and G/A
③ Install service lines for electricity and water supply up to the terminal points inside the project site.	During project implementation
④ Expedite the landing, customs clearance, inland transportation, and other procedures concerning the products to be procured for this Project.	During project implementation
⑤ Exempt Japanese corporations and nationals from customs duties, internal taxes, and other financial levies which may be imposed in Tajikistan with respect to the products and services to be provided for this Project.	During project implementation
⑥ Provide necessary measures for the entry and stay in Tajikistan of the members of Japanese corporations with respect to the services to be provided in accordance with verified contracts.	During project implementation
⑦ Issue permits, licenses, etc. necessary for the implementation of the Project without delay.	Before signing of E/N and G/A, and during project implementation
⑧ Pay bank charges for issuance of the authorization to pay (A/P) in accordance with the banking arrangement (B/A).	A/P will be issued immediately after approval by JICA.
⑨ Bear all other expenses for items not covered by Japan’s Grant Aid but are necessary for the Project.	After completion of the Project

2-4 Operation and Maintenance of the Project

2-4-1 Operation and Maintenance of Facilities

Hamadoni District Central Hospital has only one person in charge of operation and maintenance, taking care of all building facilities (electrical and mechanical). While maintenance and major repair work of the building facilities are entrusted to outside contractors, this person is capable of handling simple repair work. Such basic facilities as the generator and water/septic-tank pumps to be installed by this Project can be sufficiently maintained by the hospital’s existing personnel. HVAC and other electrical facilities to be newly introduced will not require daily maintenance but will rely on outside repair services only in case of breakage, as has been the case in the past. Chlorine to be used for sterilizing the water supply and septic tank is available in Dushanbe, and feeding of chlorine will be automated by titillation devices, which means that the O&M person will only need to replenish chlorine at regular intervals. Thus, the new building facilities can be operated and maintained by the existing resources without requiring additional personnel.

2-4-2 Operation and Maintenance of Equipment

(1) Personnel Plan

Table 2-30 shows the types and numbers of health workers engaged in pediatric health services at Hamadoni District Central Hospital. Since the new Pediatric Ward will maintain a similar scale to that of the existing ward in terms of the number of sickbeds and the scope of medical services, no additional personnel will need to be employed.

Table 2-30: No. of Health Workers of the Pediatric Unit

No.	Job	Standard number	Actual number
1	Pediatrician	5	4
2	Neonatal physician	1	0
3	Nurse	16	16
4	Sanitarian (provides personal care for patients, cleaning services, etc.)	14	14
5	Pediatric Ward staff	34	32

Source: Hamadoni District Central Hospital

(2) Operation and Maintenance (O&M) Plan

1) O&M Budget

Funds necessary for the operation and maintenance, as well as purchase, of medical equipment are included in the budgetary plan of Hamadoni District every year. The hospital requested a budgetary increase to Hamadoni District in 2014 because of an increase in O&M cost as a result of concluding a yearly maintenance service contract for the newly procured equipment by KfW. The amount of the yearly maintenance service contract at Hamadoni District Central Hospital is around 1,300 TJS per year, and the contract is renewed every year.

Table 2-31: Breakdown of Expenditures of Hamadoni District Central Hospital within District Budget (in TJS)

Year	2010	2011	2012	2013	2014
Salaries and wages	1,171,323	1,706,970	2,349,707	3,104,367	3,573,135
Utilities and communications	42,404	54,621	51,246	45,060	61,553
O&M of facilities and vehicles	58,767	93,520	55,170	107,500	54,764
O&M of medical equipment	3,490	3,609	5,999	135,200	13,045
Purchase of medical equipment	26,824	9,789	93,188		340,851
Fittings and supplies	124,799	175,690	191,513	184,510	
Pharmaceuticals	42,345	58,566	45,170	71,372	
Other	3,036	1,788	2,311	3,200	0
Total	1,472,988	2,104,553	2,794,304	3,651,209	4,043,348

Source: Hamadoni District Central Hospital

2) Medical Equipment O&M System

At present, Hamadoni District Central Hospital is staffed with two engineers in charge of maintenance of medical equipment, both of whom can handle old-type equipment of the former Soviet era but are not quite capable of servicing electronically-controlled devices. In addition, they are not full-time employees (working 6 hours a day) and thus do not comprise a well-established O&M system. KfW, which has been assisting the improvement of obstetric services in the medical institutions in Khatlon Region, has conducted training for enhancing the skill levels of medical equipment O&M engineers at Hamadoni District Central Hospital in addition to renovating the Obstetric Ward and providing associated medical equipment. In addition, guidance on proper O&M of medical equipment is being provided under a maintenance service contract by the dealers of medical equipment manufacturers.

2-5 Approximate Cost of the Project

2-5-1 Approximate Cost of Japanese Assistance

The total cost for implementing this Project on the Tajik side is estimated as shown in the following table, based on the parameters outlined in section (2) below.

(1) Expenses to be borne by the Tajikistan side

Table 2-32: Expenses to be borne by the Tajikistan side

Item	Cost	
	TJS	JPY
Land preparation of construction site (including replacement of overhead electric cables)	117,000	-
Installation of electric service line	47,200	-
Installation of water service pipe	6,000	-
Bank charge (for the issuance of A/P)	900	-
Total	171,100	3,591,000

(2) Parameters of cost estimation

- Time of estimation : May 2015
: 1 USD = 120.55 JPY
- Exchange rate : 1 TJS = 20.99 JPY
- Construction / Procurement period : The period of detailed design, facility construction, and equipment procurement is as per the project implementation schedule.
- Other : Cost estimation shall be carried out in accordance with Japan's Grant Aid System.

2-5-2 Operation and Maintenance Cost

The expected increase in O&M cost for the facilities and equipment to be upgraded by this Project is discussed below. Since the annual budget of Hamadoni District Central Hospital comes from Hamadoni District, the hospital makes a budgetary request to the District every year. As the District Governor has already pledged to appropriate budget for this Project, securing of funding for O&M is deemed possible in this study.

(1) Facilities

Items, for which O&M cost is expected to increase because of this Project, are the electric charge, water charge, fuel cost for the generator, purchase cost of chlorine, repainting of exterior walls, and re-waterproofing of the roofs.

Table 2-33: Main O&M Cost Items

No.	Item	Cost (TJS)	Remarks
1	Electricity	101,000	• Estimated increase in electric charge by the operation of Pediatric Ward.
2	Water supply	18,000	• Estimated increase in water charge by the operation of Pediatric Ward.
3	Generator fuel	6,000	• Estimated increase in fuel cost by the operation of the Pediatric Ward.
4	Chlorine	7,350	• Purchase cost of chlorine for sterilizing the water tanks and septic tank of Pediatric Ward.
5	Facility maintenance	6,400 23,600	• Repainting of exterior walls (once every 10 years) • Re-waterproofing of roofs (once every 20 years)
Total		162,350	

Note: "5. Facility maintenance" is equalized as a yearly cost.

(2) Medical Equipment

Daily maintenance of medical equipment is carried out by the physicians, nurses, and other health workers, who use the equipment. At present, medical institutions in Tajikistan are not staffed with engineers specialized in the operation and maintenance of medical equipment. Each institution is concluding a maintenance service agreement with a local agent of medical equipment manufacturers to receive repair and inspection services when needed.

Of the items to be procured by this Project, infant warmer, incubator, phototherapy unit, and oxygenator (for sick ward) require the appropriation of annual budget for O&M in advance, which will amount approximately to 20,000 to 30,000 TJS (approx. 500,000 to 700,000 JPY). The Tajik side has pledged to secure the funds by allocating the next-year's budget on the municipal, District, and Regional levels, as well as medical fees collected from patients, which seems feasible judging from the expenditure of each hospital since 2014.

Chapter 3 Evaluation of the Project

Chapter 3 Evaluation of the Project

3-1 Prerequisites for the Project Implementation

Preceding implementation of the Project, the Government of Tajikistan must ensure to fulfill its responsibilities as assigned in “2-3 Outline of Tajikistan’s Responsibilities,” which includes delineating and clearing a construction site. It should also make necessary arrangements during the construction period, such as drawing service wires of electricity and water supply to the service delivery points on the hospital premise, promptly clearing customs, exempting taxes, and guaranteeing entries and stays of the Japanese project mission. It is essential to appropriate a scope of work on and off the site and separate hospital users securely from the construction area in order to sustain proper functions of medical institution and pursue the construction safely over the scheduled period. To do so, Tajikistan stakeholders must understand the intended construction work and cooperate with the Project, which is a key requisite for the smooth and timely completion.

3-2 Input of Tajikistan (Shared Responsibilities) to Achieve the Project

The Project is intended to reconstruct the existing Pediatric Ward. Routine maintenance work, when continued as it is pursued at present, will be sufficient for a renewed ward. Nonetheless, maintenance staff must be assigned to carry on such maintenance work. While the maintenance staff is already assigned in the target ward, it is desirable to train human resources on a long term vision who are knowledgeable with facility conditions and able to take over future maintenance operations.

Furthermore, although the Project plans to provide medical equipment of the similar kinds that have been used so far, the latest models manufactured in Japan, Europe and the United States will be supplied to replace the previous counterparts provided in the Soviet period. Accordingly, it is indispensable to undertake a sufficient training for handling and maintenance of medical equipment. It is also vital for the implementing agency to pursue trainings of currently serving healthcare workers, including physicians and nurses, to maintain and develop their skills.

It should be further noted that the Project is an investment that anticipates synergies with other aid projects such as Japan’s technical cooperation, the Project for Improving Maternal and Child Health Care System in Khatlon Oblast (March 2012 - March 2016) and KfW’s Project for Improving Quality of Health Services for Mothers and Newborns in the Khatlon Region. Effective inter-project coordination is envisioned under the leadership of MoH.

3-3 External conditions

To achieve and sustain the Project’s impact, the Pediatric Unit must ensure (1) assigning the qualified personnel as many healthcare workers as currently employed, and (2) allocating budget for the maintenance of the renewed facilities and equipment, which must be disbursed by the local government administrating the target hospital.

3-4 Evaluation of the Project

3-4-1 Relevance

It is relevant that the Project is implemented with a Japanese grant aid scheme for the reasons below.

(1) Target beneficiaries

Japan has undertaken technical cooperation projects in Khatlon Region which encompasses Hamadoni District targeted by the Project, with objectives to train local healthcare workers and improve maternal and child health. The Project is intended to achieve synergies with these efforts.

(2) Project objective

The Project's objective is to improve the hospital environment through provision of facilities and medical equipment for a Pediatric Ward in Hamadoni District Central Hospital, and thereby contributing to ameliorate maternal and child health services. This will ultimately make people's essential living foundation (basic human needs: BHN) and livelihoods stable and better.

(3) Consistency with Tajikistan's national health strategy

In 2006, Tajikistan formulated the National Development Strategy of the Republic of Tajikistan for the Period to 2015 (NDS). In align with this strategy, the National Health Strategy of the Republic of Tajikistan for the Period of 2011 to 2020 (NHS) was set out in 2010, more specifically targeting the healthcare sector.

Tajikistan's NHS recognizes importance of broadly delivering maternal and child health services that consistently cover pre- and post-natal stages requiring integrated care for pregnant women, nursing mothers and newborn infants, including treatment of pediatric diseases. In modernizing hospital systems, Tajikistan has launched rehabilitation of medical institutions serving as local healthcare hubs, in particular those core hospitals located in the capital city of Dushanbe and Khatlon Region. The Project, which will provide medical equipment, facilities, and infrastructure for the target hospital, is a coherent effort with the above-mentioned priority policy of Tajikistan.

(4) Consistency with Japan's assistance policy and strategy

Developed by the Ministry of Foreign Affairs of Japan, the Country-specific Aid Policy for Tajikistan in 2014 states that the country's stability has importance for secure Central Asia and the Eurasian Continent as a whole. It further articulates that such solidity is essential for an international community to help Afghanistan, Tajikistan's neighboring country, achieve more autonomy and stability. The said policy recognizes that essential social services are not developed adequately, including water-supply and healthcare systems. Accordingly, the priority sectors (medium-term goals) targeted therein include water supply in local areas that enables people to access to safe and clean drinking water, as well as medical and healthcare systems, particularly in the maternal and child health domain. The Project is thus consistent with Japan's aid policy for Tajikistan.

3-4-2 Effectiveness

The Project will bring about the following effects, when implemented.

(1) Quantitative effect

Expected quantitative effects are indicated below. When the Project is completed in June 2018, the evaluation will be carried out in 2021 (after three years from the project completion).

Table 3-1: Performance Indicators of the Overall Project Achievement

Title of indicator	Baseline (2014)	Target (2021) 【3 years after the project completion】
Number of pediatric inpatients (persons)	1,876	2,790
Bed occupancy rate (%)	51.4	76.5

• **An increase in the number of internal medicine and pediatric inpatients**

The proposed facility reconstruction provides the same number of hospital beds as the existing ward, and therefore is not intended to expand the maximum inpatient capacity. With the renewed hospital settings however, the Project expects a probable increase in the number of patients, considering the followings.

- (1) An increase in population and the number of internal medicine and pediatric inpatients
- (2) An increase in the number of patients during winter time
- (3) The inpatient capacity when 50 beds are available
- (4) A decrease in the number of referral patients sent to a higher-level medical institution

However, with respect to (4), the number of referral patients sent to a higher-level medical institution were reported roughly 20 cases in 2014. Furthermore, the major reasons of such cases are heart diseases that could not be treated in the secondary medical facility. Thus the said number of referral cases will not be included in the quantitative evaluation of the Project.

- ① An increase in the number of population and the number of internal medicine and pediatric inpatients

Table 3-2 shows a change in the population in Hamadoni District and the number of inpatients in the target hospital. Whereas the average rate of increase in its total population is 2.15%, the rate of increase in the number of hospital inpatients is 4.48%, slightly exceeding the said rate of population increase. On the other hand, the rate of increase in the pediatric population ranging from birth up to 17 years is 2.10%, whereas the rate of increase in the number of pediatric inpatients is 7.00%, much greater than the said rate of population increase. As indicated in Table 3-3, this is presumably because 98% of the pediatric internal medicine inpatients are aged under five years, and this age spectrum has a high rate of population increase (5.80% as shown in Table 3-2). Accordingly, the rate of population increase in terms of pediatric inpatients is estimated from increases in populations of age groups under five years and five-to-17 years in proportion to pediatric inpatients by these age groups:

$$\begin{aligned}
 \text{Rate of population increase estimated with inpatient proportions} &= \text{Rate of population increase aged under five years} \times \text{Proportion of under-five inpatients} + \text{Rate of population increase aged five to 17 years} \times \text{Proportion of inpatients aged five to 17 years} \\
 &= 5.80\% \times 0.98 + 0.18\% \times 0.02 = 5.69\%
 \end{aligned}$$

Given the rate of population increase above, the proportion of the 2021 population increase relative to the 2014 population is raised to the seventh power of the rate of population increase (2021-2014=7), and therefore the increase is estimated 47%, as expressed below.

$$\text{Proportion of population increase} = 1.0569^7 = 1.47 \text{ times}$$

Table 3-2: Change in the Population in Hamadoni District and the Number of Inpatients

		2010	2011	2012	2013	2014	Average rate of increase by year
Population	Total population	124,000	125,600	128,800	131,300	135,000	2.15%* ¹
	Population aged 0 to 17 years		52,786	52,923	54,413	56,184	2.10%* ²
	Population aged 0 to four years		17,418	18,343	19,676	20,629	5.80%* ²
	Population aged five to 17 years		35,368	34,580	34,737	35,555	0.18%* ²
No. of inpatients	Number of inpatients in the hospital	5,701	6,156	6,818	7,180	6,794	4.48%* ¹
	Number of pediatric inpatients			1,580	1,887	1,809	7.00%* ³

Note) *1: The average rate of increase by year for 2010-2014 is based on (the 2014 figure divided by the 2010 figure) ^(1/4).

*2: The average rate of increase by year for 2011-2014 is based on (the 2014 figure divided by the 2011 figure) ^(1/3).

*3: The average rate of increase by year for 2012-2014 is based on (the 2014 figure divided by the 2012 figure) ^(1/2).

Table 3-3: Detailed Number of Pediatric Inpatients in Hamadoni District Central Hospital

	2012	2013	2014	Average
Number of inpatients	1,580	1,887	1,809	1,759
Newborn infants	17	29	21	22
Infants	5	8	7	7
Under-five infants	1,518	1,876	1,801	1732
Proportion of under-five infants	96%	99%	100%	98%

② An increase in the number of patients during winter time

Heating systems in the target hospital are not working, and therefore patients are unwilling to be hospitalized, given the outside temperature falling below zero during winter time (according to an interview). Proposed provision of the heating systems will help increase the number of inpatients in the winter season.

As indicated in Table 3-4 and Figure 3-1, the average bed occupancy rates in 2013 and 2014 (the average length of hospital stays is 5 days) are as low as 19.5% to 32.6% (27.8% on average) in November through March (hereinafter referred to as the “winter time”) when the monthly average minimum temperature falls below 10°C. As the temperature rises, the bed occupancy rate increases to 47.5% to 62.5% in April through May, and September through October (hereinafter referred to as the “interim season”). A peak in patient arrival from June through August (hereinafter referred to as the “summer time”) reaches 79% to a full occupancy.

It is assumed that the bed occupancy rate during winter time, which is currently 32.6% at highest (January and March), will be increased at least to 47.5% that is the lowest rate during the interim season (April). In order to achieve 47.5% from 32.6% in January and March, the winter-time bed occupancy rate must be improved by 1.45 time the current rate, as calculated by $47.5 \div 32.6 = 1.45$.

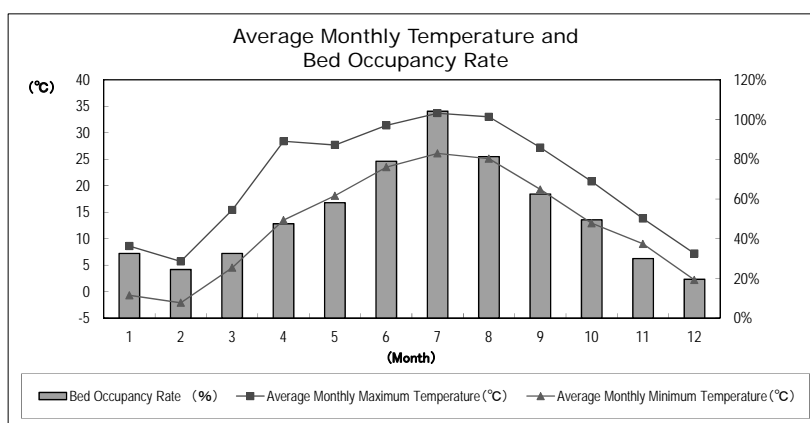


Figure 3-1: Monthly Average Temperature and Bed Occupancy Rate

Table 3-4: Number of Inpatients by Month, Monthly Average of Minimum Temperature, and Bed Occupancy Rate

Month	Number of inpatients			Average length of hospital stays	No. of days in a month	Monthly average minimum temperature (°C)	Bed occupancy rate*1		
	2013	2014	Average				Present		Post-reconstruction
1	107	95	101	5	31	-1	0.326	↗	0.475
2	61	76	68.5		28	-2	0.245	↗	0.356
3	83	119	101		31	5	0.326	↗	0.475
4	133	152	142.5		30	14	0.475	→	0.475
5	179	181	180		31	18	0.581	→	0.581
6	259	215	237		30	24	0.790	→	0.790
7	329	317	323		31	26	1.042	→	1.042
8	238	266	252		31	25	0.813	→	0.813
9	190	185	187.5		30	19	0.625	→	0.625
10	179	128	153.5		31	13	0.495	→	0.495
11	95	85	90		30	9	0.300	↗	0.437
12	64	57	60.5		31	2	0.195	↗	0.284
total	1917	1876	1896.5		365				

Note)*1: Bed occupancy rate = Number of patients × the average length of hospital stays ÷ number of days in a month ÷ number of available beds (50 beds)

③ The inpatient capacity when 50 beds are available

The number of inpatients in a renovated ward is estimated below, considering a 47% increase in inpatients from 2014 through 2021, as discussed in (1) above, and 1.45 times the number of winter-time patients based on (2). It should be noted, however, that the availability of bed is definite (50 beds) even with a probable increase in patients. Thus a monthly capacity of admission does not account for those patients exceeding the full bed occupancy rate. Also, the average length of hospital stays is five days.

In light of the above assumptions, the anticipated number of patients is calculated as below.

- Anticipated number of inpatients

Period other than winter time = Number of inpatients in 2014 × Rate of patient increase (=1.47)

Winter time = Number of inpatients in 2014 × Rate of patient increase (=1.47) × Rate of patient increase during winter time (=1.45)

- Number of beds required = Anticipated number of inpatients × Average length of hospital stays (=5^{days}) ÷ Number of days in a month

- Inpatient capacity:

Number of beds required less than 50 beds $\text{Inpatient capacity} = \text{Anticipated number of inpatients}$

Number of beds required more than 50 beds $\text{Inpatient capacity} = \text{Number of beds (=50 beds)} \times$

$\text{Number of days in a month} \div \text{Average length of hospital stays (=5[□])}$

- Bed occupancy rate = $\text{Inpatient capacity} \times \text{Average length of hospital stays (=5[□])} \div (\text{Number of days in a month} \times \text{Number of beds (=50 beds)})$

Table 3-5: Admission Capacity Anticipated in 2021

Month	No. of inpatients in 2014	Rate of patient increase	Increase in winter time patients	No. of inpatients anticipated in 2021	Average length of hospital stays	No. of days in a month	2021		
							No. of beds required	Inpatient capacity	Bed occupancy rate
1	95	1.47	1.45	202.5	5	31	32.7	202	0.653
2	76		1.45	162.0		28	28.9	162	0.579
3	119		1.45	253.6		31	40.9	254	0.818
4	152		1	223.4		30	37.2	223	0.745
5	181		1	266.1		31	42.9	266	0.858
6	215		1	316.1		30	52.7 > 50	300	1.000
7	317		1	466.0		31	75.2 > 50	310	1.000
8	266		1	391.0		31	63.1 > 50	310	1.000
9	185		1	272.0		30	45.3	272	0.907
10	128		1	188.2		31	30.3	188	0.607
11	85		1.45	181.2		30	30.2	181	0.604
12	57		1.45	121.5		31	19.6	121	0.392
Total	1,876			3043.5		365		2790	0.765

In light of the above estimation, the inpatient capacity for the year of 2021 is supposed to be 2,790 persons, which is 1.48 times 1,876 inpatients in 2014. Furthermore, the bed occupancy rate for this year is calculated as $2,790 \text{ persons} \times 5 \text{ days} \div 365 \text{ days} \div 50 \text{ beds} = 0.765 (76.5\%)$.

(2) Qualitative effects

- Increased work efficiency of healthcare workers: Relocation of the Pediatric Ward to the site adjacent to the Obstetric and Surgery Wards will reduce a distance of transfer for healthcare workers in the hospital, which will rationalize their routine work. Also, currently unavailable in the existing hospital, a nurse station will be provided to improve a working environment, leading to better patient care.
- With water supply and drainage systems provided by the Project, safe water available throughout the year will improve the hospital environment as well as the working environment for healthcare workers. This will achieve the better quality of healthcare services for patients.
- A ventilation system provided by the Project will lower risks of hospital inspection, leading to improved quality of healthcare services for inpatients.
- Hamadoni District is featured by a sharp seasonal difference in temperatures, which is marked by 35°C in summer and -15°C in winter. Air conditioning systems, when provided, will allow hospitalization of children to be more comfortable during a severe winter time. The hospital facilities will be utilized all around the year in an efficient manner.

Attachments

Attachment 1 List of Team Member for the Preparatory Survey

(1) The Field Survey

Name	Responsibility	Organization
Akiko TOMITA / Ms.	Leader	Senior Assistant Director Human Development Department Japan International Cooperation Agency (JICA)
Masami MIYAKAWA / Ms.	Technical Advisor	Division of Global Health Policy and Research Bureau of International Health Cooperation National Center for Global Health and Medicine
Toshihiko SUZUKI / Mr.	Chief Consultant / Architectural Planning	Daiken Sekkei, Inc.
Takesi SAKAMAKI / Mr.	Vice Chief Consultant / Architectural Equipment Planning	Daiken Sekkei, Inc.
Kiyosi UMEGAE / Mr.	Architectural Design / Natural Condition Survey / Environmental & Social Considerations	Daiken Sekkei, Inc.
Noriaki SHIMIZU / Mr.	Construction Planning / Estimation	Daiken Sekkei, Inc.
Terumasa SATO / Mr.	Construction Planning / Estimation 2 (Assistant Member assigned by Daiken Sekkei)	Daiken Sekkei, Inc.
Tamotsu NOZAKI / Mr.	Equipment Planning	Fujita Planning Co., Ltd.
Aki TAKAI / Ms.	Procurement Planning / Estimation	Fujita Planning Co., Ltd.
Kumiko ABE / Ms.	Health Planning	Fujita Planning Co., Ltd.
Yoshiyuki MURAI / Mr.	Interpreter (Russian)	Franchir Co., Ltd.

(2) The Additional Field Survey

Name	Responsibility	Organization
Taro KIKUCHI	Leader	Manager Health Team 4, Human Development Department
Tetstuma NISHIHARA / Mr.	Technical Adviser	Senior Adviser (Architecture) Financial Cooperation Department Japan International Cooperation Agency
Emi TERUYA / Ms.	Planning Management	Health Team 4, Human Development Department Japan International Cooperation Agency
Toshihiko SUZUKI / Mr.	Chief Consultant / Architectural Planning	Daiken Sekkei, Inc.
Takesi SAKAMAKI / Mr.	Vice Chief Consultant / Architectural Equipment Planning	Daiken Sekkei, Inc.
Hiromi WATANABE / Ms.	Interpreter (Russian)	Franchir Co., Ltd.

Attachment 2 Survey Schedule

(1) The Field Survey (from Apr. 12 to May 10, 2015)

Schedule	Government Members		Chief Consultant / Architectural Planning	Interpreter	Health Planning	Equipment Planning	Procurement Planning/Estimation	Architectural Design / Natural Condition Survey / Environmental & Social Considerations	Vice Chief Consultant / Architectural Equipment Planning	Construction Planning / Estimation	Construction Planning / Estimation 2 (Assistant member)			
	Leader	Technical Adviser												
No. of days	13 days		29 days	29 days	29 days	15 days	22 days	29 days	22 days	22 days	15 days			
1	4/12	Sun	10:25 Narita > 16:15 Istanbul 20:35 >					Same as Chief Consultant			Same as Chief Consultant			
2	4/13	Mon	> Dushanbe 04:30 Courtesy visit to JICA Office, Visit to Ministry of Health (MoH) for discussion			Narita > Istanbul >		Same as Chief Consultant			Same as Chief Consultant			
3	4/14	Tue	Discussion with Ministry of Health Department of Construction and Facilities, Division of Medical Supplies, Clothing and Equipment			> Dushanbe		Same as Chief Consultant			Construction materials & equipment survey, Appointing a soil test lab			
4	4/15	Wed	Move to Kurgan-Tyube, Visit to Regional Health Department and Hamadoni District Central Hospital (DCH)					Same as Chief Consultant			Construction materials & equipment survey Appointing a soil test lab			
5	4/16	Thu	Hamadoni DCH Survey on facilities, equipment, and healthcare					Same as Chief Consultant			Construction materials & equipment survey Appointing a soil test lab			
6	4/17	Fri	Hamadoni DCH Survey on facilities, equipment, and healthcare					Same as Chief Consultant			Construction materials & equipment survey			
7	4/18	Sat	Data filing	Survey on JICA's technical cooperation project	Hamadoni DCH Survey on facilities, equipment, and healthcare		Hamadoni DCH Survey on facilities, equipment, and healthcare				Construction materials & equipment survey			
8	4/19	Sun	Narita>Istanbul>		Move to Dushanbe Team meeting			Narita>Istanbul>		Move to Dushanbe Team meeting		10:25 Narita > 16:15 Istanbul 20:35 >	Team meeting	
9	4/20	Mon	> Dushanbe		Team meeting	Discussion with Ministry of Health			> Dushanbe		Team meeting	> Dushanbe 04:30		Construction materials & equipment survey
Team meeting with JICA rep., and Discussion with KfW														
10	4/21	Tue	Survey on Obstetrics Dept., No.3 Hospital, Pediatric Unit in Diakov Hospital								Construction materials & equipment survey			
Discussion with MoH														
11	4/22	Wed	Site visit to Jomi DCH & Khatlon Regional Hospital (RH), Discussion with Khatlon Region								Work planning survey, attendance in a soil survey in Hamadoni DCH			
12	4/23	Thu	Discussion and site visit to Kulyab RH & Hamadoni DCH	Confirmation of components requested by MoH, Discussion and site visit in Hamadoni DCH	Same as Leader	Collection of medical data of the target district	Confirmation of components requested by MoH, Discussion and site visit in Hamadoni DCH	Equipment planning survey in Hamadoni DCH	Hamadoni DCH facility planning survey		Work planning survey, attendance in a soil survey in Hamadoni DCH			
Changed to a survey in Dushanbe in accordance with a security alert by the Embassy of Japan														
13	4/24	Fri	Team meeting	Survey on local design firms Team meeting	Team meeting	Team meeting	Team meeting	Market survey in Dushanbe for medical equipment	Survey on local design firms Team meeting		Construction materials & equipment survey			
14	4/25	Sat	Team meeting			Dushanbe> Istanbul	Team meeting	Provisional equipment planning	Provisional facility planning			Dushanbe> Istanbul		
15	4/26	Sun	Drafting M/M			>Narita	Provisional equipment planning		Provisional facility planning			>Narita		
Changed to a survey in Dushanbe in accordance with a security alert by the Embassy of Japan														
16	4/27	Mon	Data filing	Discussion with MoH construction representative			Market survey in Dushanbe for medical equipment		Discussion with MoH construction representative		Construction materials & equipment survey in Dushanbe			
17	4/28	Tue	Discussion on M/D with Hamadoni DCH & Government Office of Hamadoni District			Same as Chief Consultant		Equipment planning survey in Hamadoni DCH	Facility planning survey for Hamadoni DCH		Temporary facility planning for Hamadoni DCH			
18	4/29	Wed	Discussion on M/D with Health Department of Khatlon Region & MoH, Sign on M/D, Report to JICA			Same as Chief Consultant		Facility planning survey for Hamadoni DCH		Construction materials & equipment survey in Hamadoni District				
19	4/30	Thu	Dushanbe > Istanbul	Discussion with Fire Department in Moscow Town Facility planning on Central District Hospital			Equipment planning survey for Hamadoni DCH		Discussion with Fire Department in Moscow Town, Vodokanal, and Valku Tajik		Construction materials & equipment survey in Dushanbe			
20	5/1	Fri	>Narita	Data filing			Market survey in Dushanbe for medical equipment		Market survey in Dushanbe for construction materials and equipment		Construction materials & equipment survey in Dushanbe			
21	5/2	Sat	Team meeting Data filing			Team meeting Examination of draft facility plan		Team meeting Facility planning		Team meeting Examination of draft work plan				
22	5/3	Sun	Data filing			Examination of draft facility plan		Facility planning		Examination of draft work plan				
23	5/4	Mon	Discussion on facility planning with KfW and local consultants, Discussion on technical notes with MoH			Dushanbe> Istanbul		Market survey in Dushanbe for medical equipment	Discussion on facility planning with KfW and local consultants, Discussion on technical notes with MoH		Construction materials & equipment survey in Dushanbe			
24	5/5	Tue	Discussion on technical notes in Hamadoni DCH			>Narita		Equipment planning survey in Hamadoni DCH	Hamadoni CDH facility planning survey		Construction materials & equipment survey in Dushanbe			
25	5/6	Wed	Data filing	Hamadoni DCH		Equipment planning survey in Hamadoni DCH		Hamadoni CDH facility planning survey		Cost estimate survey in Hamadoni District, Construction materials & equipment survey				
26	5/7	Thu	Data filing			Data filing		Data filing		Construction materials & equipment survey in Dushanbe				
27	5/8	Fri	Site visit to the capital medical complex, Report to the Embassy of Japan & JICA			Site visit to the capital medical complex, Report to the Embassy of Japan & JICA		Site visit to the capital medical complex, Report to the Embassy of Japan & JICA						
28	5/9	Sat	Dushanbe > Istanbul			06:30 Dushanbe > 08:55 Istanbul 14:15 >								
29	5/10	Sun	> 08:55 Narita			> 08:55 Narita								

(2) The Additional Field Survey (from Feb. 23 to Mar. 4, 2016)

Schedule	Government Members			Chief Consultant / Architectural Planning Toshihiko SUZUKI	Interpreter Hiromi WATANABE	Vice Chief Consultant / Architectural Equipment Planning Takeshi SAKAMAKI
	Leader	Technical Advisor	Planning Manager			
No. of days	4 days	4 days		11 days	11 days	11 days
1	2/23	Tue		22:25 Narita (TK053) > Istanbul		
2	2/24	Wed		> 4:20 Istanbul (TK254) 20:35 > Dushanbe		
3	2/25	Thu		> Dushanbe 04:30 Meeting with JICA Office / Meeting with Construction Department of Ministry of Health (MoH) Survey on Vodokanal and Valku Tajik		
4	2/26	Fri		Survey on Vodokanal and Valku Tajik		
5	2/27	Sat		Survey on Vodokanal and Valku Tajik		
6	2/28	Sun		Survey in Hamadoni District Hospital		
7	2/29	Mon		> Dushanbe 04:30 Meeting with JICA Office	Survey in Hamadoni District Hospital Survey team meeting	
8	3/1	Tue	Discussion with Hamadoni District Hospital			
9	3/2	Wed	Discussion with MoH, Discussion with KfW, Discussion with JICA Office, Report to Embassy of Japan			
10	3/3	Thu	10:30 Departure from Dushanbe	06:30 Dushanbe (TK255) > 08:55 Istanbul		
11	3/4	Fri		Istanbul (TK052) 01:10 > 19:55 Narita		

Attachment 3 List of Persons Related to the Project (Persons Contacted)

Name	Position
Ministry of Health and Social Protection	
Ms. BOBOKHOJIEVA Lola	First Deputy Minister (as of April 29, 2015)
Ms. UMARZODA Saida Gayrat	First Deputy Minister (as of March 2, 2016)
Mr. RAHMATULLOEV Sherali	Head of Maternal and Child Health Department
Ms. RAHIMOVA Rano	Director of International Cooperation
Ms. KHODZHAEVA Aziza	Director of Pediatrics
Mr. MARUFOV Ashurmad	Procurement Manager
Republican Center of Medical Statistics and Information	
Mr. SHERALIEV Ibodullo	Deputy Director
Republican Hospital No.3	
Ms. GULAHMADOVA Salomat	Director
Ms. TASHMATOVA Tashmatova	Deputy Director
National Medical Center (formerly Diakov Hospital)	
Mr. HAYOTZODA Nurkhon	Director
Health Department of Khatlon Region	
Mr. MALLAEV Saidullo	Director
Mr. IBRAGIMOV Sherafgan	Deputy Director
Ms. SHONAZAROVA Matluba	Deputy Director
Khatlon Regional Hospital (Kulyab)	
Mr. ATOEV Davlat	Director
M. SAFAROV Faizavi	Director of Pediatrics
Khatlon Regional Hospital (Kurgan Tube)	
Mr. NURALIEV Alikhon	Director
Hamadoni District Central Hospital	
Mr. MALIKOEV Jurakhon	Director
Mr. KARIMOV Olimkhon	Deputy Director of Medical Consultation (as of May 6, 2015)
Mr. Hakimor Mirzo	Manager of Pediatrics, Pediatric Unit
Ms. Saidova Zuhro	Head nurse, Pediatric Unit
Ms. Safarova Soliha	Obstetric doctor, Obstetric Unit
Ms. Rahmatulloeva Ozoda	Head treasurer, Obstetric Unit
Ms. Ghulomora Jamila	Nurse, Obstetric Unit
Ms. Madaliera Bozorgu	Nursing hygienist, Gynecological Unit
Mr. Jalilov S	Operation chief, Surgery Department
Ms. Abdurilloeva Gulsunbi	Operation nurse, Surgery Department
Ms. Azizova Maqsuda	Nurse in Resuscitation Unit, Emergency Department
Mr. Saifuddinor Abdurozik	Ultrasonic technician, Medical Diagnosis Department
Mr. Qurrator Bakhtiyor	Examination assistant, Laboratory
Mr. Rahimor Hasanali	X-ray doctor, X-ray Examination Department
Mr. Boboqulor Safarali	X-ray doctor, X-ray Examination Department
Mr. Abdulloer Taghoimurod	Manager of Surgery Department, Surgery Department
Mr. Karimor Safarali	Manager of Resuscitation Unit
Mr. Hisorier Safarari	Anesthetization (Anesthesiologist), Resuscitation Unit
Mr. RASULOV Kurbon	Facility engineer
Mr. MIRZOEV Vaisiddin	Deputy Director in charge of Medical Consultation

Name	Position
Hamadoni District Central Hospital	
Ms. KHALIFAEVA Saida	Deputy Director of Obstetric and Gynecological Units
Ms. ZAKHIDOVA Malika	Chief doctor in Gynecological Unit
Mr. MANIEZOV Mukhamodali	Chief doctor in Obstetric Unit
Mr. KARIMOV Safar	Chief doctor in ICU
Mr. RAKHIMOV Khasomoli	Chief doctor in X-ray Examination Unit
Mr. SAIFUDINOV Abduroldits	Chief doctor in Ultrasound Unit
Mr. MIRZOEV Amodkhon	Chief doctor in Blood Transfusion Unit
Mr. TUMANOV Sadullo	Chief doctor in Cardiovascular Unit
Ms. MIRZOEVA Shokhida	Nurse in Cardiovascular Unit
Mr. BOKHTROV Mirzoali	Pumper staff/driver
Polyclinic of Hamadoni District	
Mr. ABDULLAEV Badimali	Director of Family Health Center
Hamadoni District Hygiene and Disinfection Center	
Mr. INOMOV Saidakhmad	Director
Government of Hamadoni District	
Mr. VALIZODA Isuf	Governor
Jomi District Central Hospital	
Mr. SOLIEV Amriddin	Director
KfW	
Mr. BAKOEV Manuchehr	Sector Coordinator, Health and Social Sector, Climate Change at
Ms. BUERGER Urusula	Medical Institution and Services Consultant, Project Manager, EPOS Health Management
Mr. KHODJAMURODOV Gakhur	Project Coordinator
Mr. KHOROV Anvar	Facility Consultant, EPOS GOPA Group
Water Supply and Sewerage Authority of Hamadoni District	
Mr. SAFAROV Azizmad	Director
Mr. BOBOEV Niyozakhmad	Financing representative
GIINTIZ	
Mr. SAIDOV Rahmatullo	President
SANIOSP	
Mr. NAZAROV Komil	Engineering manager
Valku Tajik Hamadoni	
Mr. SAFAROV KhIkmatullo	Chief engineer
National Integration Corporation, Housing and Public Infrastructure Development, Hamadoni Office	
Mr. SHERALIEV Saudakhmad	Representative
Mr. ISROILOV Djurakhom	Chief engineer

**MINUTES OF DISCUSSIONS
ON
PREPARATORY SURVEY
ON
THE PROJECT FOR IMPROVEMENT OF MEDICAL EQUIPMENT AND
FACILITIES FOR CHILD HEALTH CARE IN KHAMADONI DISTRICT
IN THE REPUBLIC OF TAJIKISTAN**

In response to the request from the Government of the Republic of Tajikistan (hereinafter referred to as "Tajikistan"), the Government of Japan decided to conduct a Preparatory Survey on the Project for Improvement of Medical Equipment and Facilities for Child Health Care in Khamadoni District (hereinafter referred to as "the Project") and entrusted the survey to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Tajikistan the Preparatory Survey Team (hereinafter referred to as "the Team"), which is headed by Ms. Akiko Tomita, Senior Assistant Director, Human Development Department, and is scheduled to stay in the country from April 13th to May 9th, 2015.

The Team held discussions with the officials concerned of the Government of Tajikistan and conducted a field survey at the survey area.

In the course of discussions and field survey, both parties confirmed the items described in the ATTACHMENT.

Dushanbe, April 29th, 2015

高田 明子

Ms. Akiko Tomita
Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan



Dr. Lola Bobohojieva
First Deputy Minister
Ministry of Health and Social Protection of
the Republic of Tajikistan

ATTACHMENT

1. Objective of the Project

The objective of the project is to improve the pediatric medical service at Khamadoni District Central Hospital through relocation and construction of the pediatric unit and provision of medical equipment in order to contribute to reduction of child mortality in Khamadoni District.

2. Project Site

The site of the Project is located at Khamadoni District, Khatlon Region as shown in Annex 2.

3. Responsible and Implementing Agency

The Responsible and Implementing Agency is Ministry of Health and Social Protection, Tajikistan.

4. Items Requested by the Government of Tajikistan

Through discussions with the Team, the items described in Annex 4 and 5 were finally requested by the Tajikistan side. JICA will assess the appropriateness of the request and will recommend to the Government of Japan for its approval.

(1) Construction of pediatric ward: Details with priority are shown in Annex 4.

(2) Procurement of equipment: Details with priority are shown in Annex 5.

5. Japan's Grant Aid Scheme

5-1. Tajikistan side understood the Japan's Grant Aid Scheme explained by the Team as described in Annex 6.

5-2. Tajikistan side will take the necessary measures described in Annex 7 for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented.

6. Schedule of the Survey

6-1. The consultants of the Team will proceed with further survey in Tajikistan until May 9th, 2015.

6-2. The Team will prepare the draft report in Russian which describes the basic design of the Project and will dispatch a mission in order to explain its contents in December, 2015.

6-3. In case the basic design is accepted in principle by the Government of Tajikistan, JICA will submit the draft report to the Government of Japan for the Project appraisal. Through the appraisal, the Japanese Cabinet will make a final decision for the implementation of the Project. If the Project is approved by the Japanese Cabinet, the final report (the Preparatory Survey Report) will be sent to the Government of Tajikistan.

6-4. The above schedule is tentative and subject to change.



7. Other Relevant Issues

7-1. Selection of Construction Site of Pediatric Ward

Both sides agreed the construction site of pediatric ward in Khamadoni Central District Hospital at the site shown in Annex 2.

7-2. Selection of Facilities and Equipment

Both sides agreed the list of facilities and equipment with priority to be procured by Japan's Grant Aid. The list is made in consideration of following points.

- a) the role of Pediatric Ward of Khamadoni Central District Hospital in its cover area and within the hospital.
- b) feasibility of sustainable maintenance
- c) technical standard of medical personnel
- d) avoiding duplication with functions of other wards
- e) demarcation between Kreditanstalt für Wiederaufbau (hereinafter referred to as "KfW") and JICA
KfW support maternity and neonatal care (under 29days) and JICA supports child care (29days-18 years of age)

7-3. Allocation of Additional Budget and Manpower for maintenance

The Tajikistan side agreed to secure and allocate necessary budget and staff to properly operate and maintain the facilities and equipment provided by the Project. In addition, the Team requested local government to submit a letter which showed their commitment that they ensured the necessary budget of operation and maintenance for the facilities and equipment. The letter which the Team received from Khamadoni Government is attached as Annex-8.

7-4. Undertakings to be taken by the Tajikistan Side

The Tajikistan understood that if the Project will be implemented, the Tajikistan side is responsible for securing site for storing construction material and temporary site office as well as construction yard close to the Project site

E N D

Annex 1: Organization Chart

Annex 2: Site Map of Khamadoni District and Khatlon Oblast

Annex 3: Site Map of Khamadoni Central District Hospital

Annex 4: List of Facilities

Annex 5: List of Equipment

Annex 6: Japan's Grant Aid Scheme

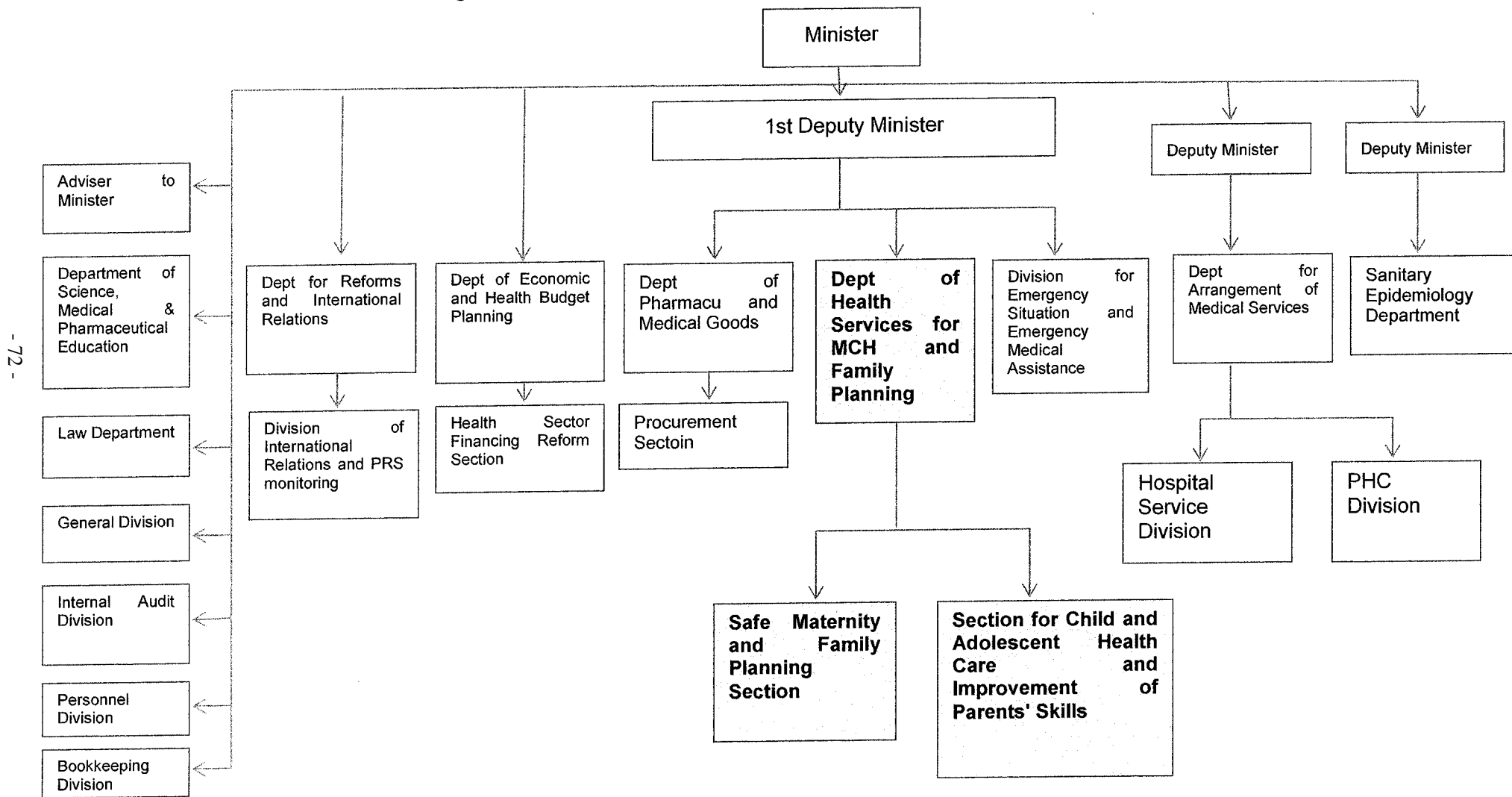
Annex 7: Major Undertakings to be taken by Each Government

Annex 8: Letter from Khamadoni Government



Annex 1: Organization Chart

Organization Structure of Ministry of Health and Social Protection

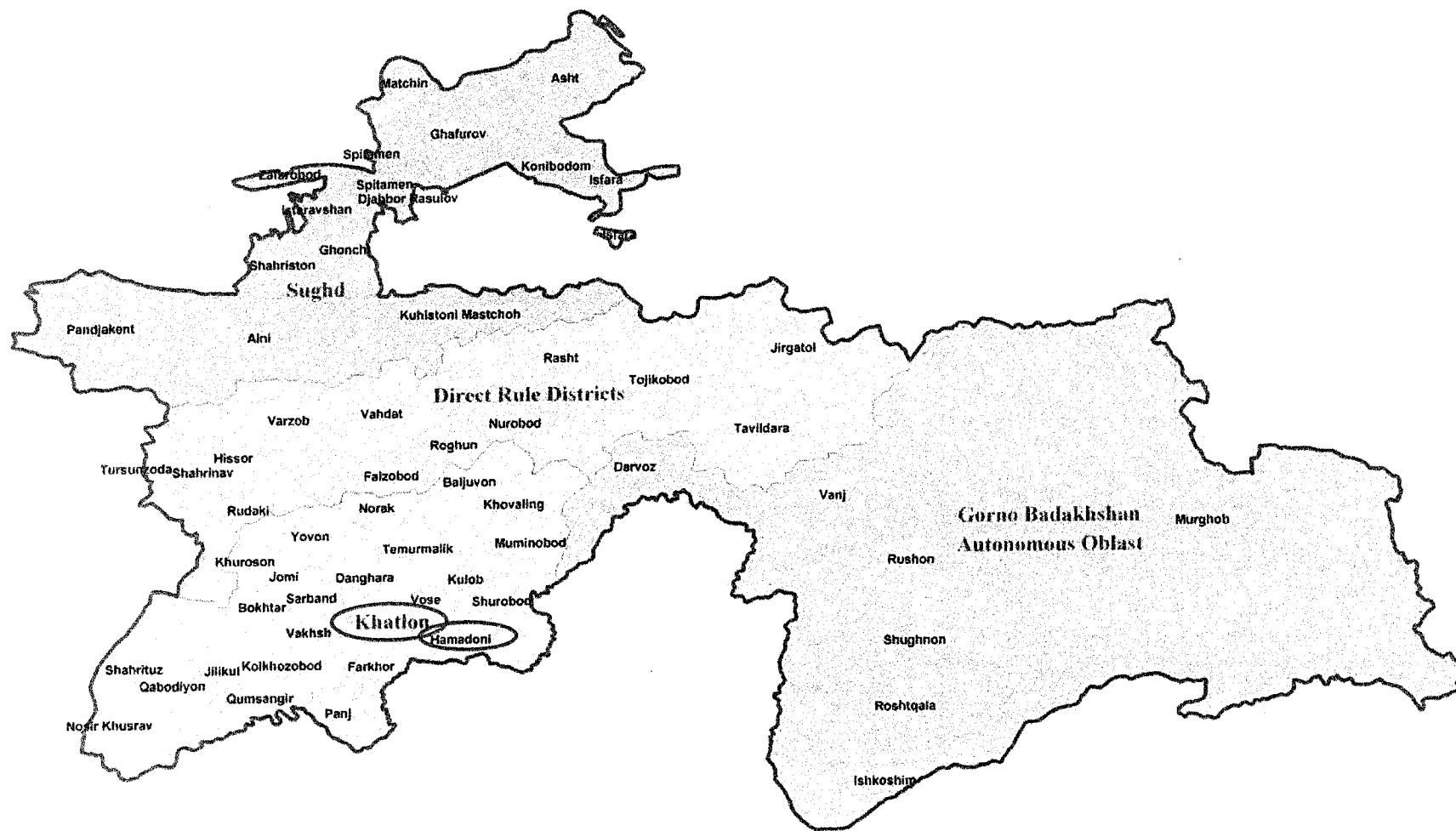


Total 85 staff is working at the Ministry of Health and Social Protection of Tajikistan

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Annex 2: Site Map of Khamadoni District and Khatlon Oblast



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Annex 3 : Site map of Khamadoni Central District Hospital

РУБАРДОРИ
 аз нақшаи Генералии ш.Москва,ҷамоати ш.Москваи
 н.Мир Сайид Али Ҳамадонӣ
 бо нишондоди ҷойгиршавии беморхонаи марказии ноҳия
 Мутаносиби 1:200



Номгуи биною - иншоотҳо

1. Бинои маъмурии беморхона
2. Дандонпизишк
3. Озмоишгоҳ
4. Анборҳо
5. Мухосибот
6. Бинои тавалуди
7. Бинои КАТС
8. Дорухона
9. Биноҳои ёрирасон
10. Шуъбаи ҷарроҳӣ ва тавалудхона
11. Мангхона
12. Хочатхона
13. Шуъбаи кабул
14. Нуктаи шустушӯ ва ошхона
15. Нуктаи шустушӯ
16. Анборҳо
17. Шуъбаи кудакона
18. Анборҳо
19. Шуъбаи терапия, кордиалогия, неврология
20. Шуъбаи беморҳои сироятӣ
21. Ошхона
- 22-23. Мачлиғгоҳ

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Маъмури Ҷ. Шайх Р. Мухоммадов
 А.Т.

Annex 4: List of Facilities

DEPARTMENT		NOTE	PRIORITY*
Intensive Care Unit			A
Physiological Examination	X ray Room		A
	Endoscope Room		C
	Ultrasound Room		A
	Cardiogram Room		A
Clinical Laboratory			B
Operation Theater			A
Consultation Room			A
Treatment Room			A
Pediatric Ward (Internal Medicine)		4 beds rooms and 2 beds rooms	A
Kids Room			B
Nurse Station			A
Doctor Room			A
Reception			A
Dining Room			A
Storage			A
Toilet & Shower Room			A
Electric Room			A
Generator Room			A
Medical Gas Manifold Room			A

PRIORITY* A: Essential room
 B: Need further examination
 C: Difficult to include in the list

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Annex 5: List of Medical Equipment

DEPARTMENT		EQUIPMENT	PRIORITY*
I. Pediatric Ward (Internal Medicine)	Ward	Patient Bed (for adult)	A
		Patient Bed (for child)	A
		Cot (for newborn)	A
		Bedside Table	A
		Suction Unit	A
	Intensive Care Unit	Patient Bed (for child)	A
		Functional Bed	A
		Cot	A
		Infant Warmer	A
		Incubator	A
		Phototherapy Unit	A
		Pulse Oximeter	A
		Oxygen Concentrator	A
		Infusion Pump	A
		Neonatal Monitor	A
		Suction Unit	A
		Nebulizer	A
		Emergency Kit for Newborn (Ambu-bag)	A
		Emergency Kit for Pediatric (Ambu-bag)	A
		ECG Monitor	A
	Consultation Room	Baby Scale	A
		Weighing Scale (for adult)	A
		Sphygmomanometer (for child)	A
		Sphygmomanometer (for adult)	A
		Height Scale (for child)	A
		Height Scale (for adult)	A
		Stethoscope	C
		Medical Cabinet	A
		Examination Couch (for child and adult)	A
		Desk	A
		Chair for Doctor	A
		Chair for Patient	A
	Treatment Room	Infusion Pump	A
		Instrument Trolley	A
		Suction Unit	A
		IV Pole Stand	A
		Hot Air Sterilizer	A
		Examination Light	A
		Examination Couch (for child and adult)	A
	Storage Room	Infusion Pump	A
		Instrument Trolley	A
		Suction Unit	A
		Nebulizer	A
		IV Pole Stand	A
		Examination Light	A
		Medical Cabinet	A
		Refrigerator for Medicine	A
		Wheel Chair (for child)	A
		Wheel Chair (for adult)	A
	Nurse Station	Instrument Trolley	A
Bilirubin Meter, Transcutaneous		A	
Clinical Thermometer		C	
Fetal Doppler		C	
Medical Cabinet		A	
Refrigerator for Medicine		A	
Filing Cabinet		A	
Work Table		A	
Chair	A		

PRIORITY*
 A: Essential equipment
 B: Need further examination
 C: Difficult to include in the list

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DEPARTMENT		EQUIPMENT	PRIORITY*
1. Pediatric Ward (Internal Medicine)	Doctor Room	Medical Cabinet	A
		Book Shelf	A
		Desk	A
		Chair	A
		Locker	A
2. Diagnostic Department	X-ray Diagnostic Room	X-ray Diagnostic Apparatus	A
		Laser Imager	A
		X-ray Film Viewer	A
	Ultrasound Diagnostic Room	Ultrasound Scanner	A
		Examination Couch (for adult)	A
	Physiological Examination Room	Electrocardiograph (ECG)	A
		Examination Couch (adult)	A
	Clinical Laboratory	Hot Air Sterilizer	B
		Hemoglobinometer	C
		Electric Hemoglobinometer	B
		Glass Pipette	C
		Centrifuge	B
		Microscope	B
		Refrigerator for Medicine	A
		pH Meter	B
	Endoscopic Examination Room	Endoscope	C
	3. Operation Theatre	Operation Room	Pulse Oximeter
Oxygen Concentrator			A
Suction Unit			A
IV Pole Stand			A
Emergency Kit for Newborn (Ambu-bag)			A
Emergency Kit for Pediatric (Ambu-bag)			A
Medical Cabinet			A
Anesthesia Apparatus			A
Laryngoscope			A
Operating Table			A
Operating Light (ceiling mounted)			A
Patient Monitor			A
Electrosurgical Unit			A
Stretcher			A
Instrument Set for Surgical Operation (A)			A
Instrument Set for Surgical Operation (B)		A	
Sterilization Room		Autoclave	A
		Hot Air Sterilizer	A
		Medical Cabinet	A
		Refrigerator for Medicine	A
		Blood Bank Refrigerator	B
		Instrument Cabinet	A
Recovery Room		Work Table	A
		Functional Bed	A
		Stretcher	A
		Wheel Chair (for child)	A
4. Pediatric Ward (Surgery)		Reanimation Unit	Wheel Chair (for adult)
	Functional Bed		B
	Bedside Table		B
	Infusion Pump		B
	Suction Unit		B
	Ventilator		B
	IV Pole Stand		B
Patient Monitor	B		
5. Other		Generator	A

PRIORITY*

A: Essential equipment
 B: Need further examination
 C: Difficult to include in the list

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Annex 6. EXPLANATION OF JAPAN'S GRANT AID SCHEME

The Government of Japan is implementing the organizational reforms to improve the quality of ODA operations, and as a part of this realignment, a new JICA law was entered into effect on October 1, 2008. Based on this law and the decision of the Government of Japan, JICA has become the executing agency of the Grant Aid for General Projects, for Fisheries and for Cultural Cooperation, etc.

The Grant Aid is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

The Japanese Grant Aid is supplied through following procedures:

- Preparatory Survey
 - The Survey conducted by JICA
- Appraisal & Approval
 - Appraisal by the Government of Japan and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
 - The Notes exchanged between the Government of Japan and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
 - Agreement concluded between JICA and a recipient country
- Implementation
 - Implementation of the Project on the basis of the G/A

2. Preparatory Survey

(1) Contents of the Survey

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the Government of Japan and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of an outline design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant Aid project. The Outline Design of the Project is confirmed based on the

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guidelines of the Japan's Grant Aid scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the Government of Japan to appraise the implementation of the Project after confirming the appropriateness of the Project.

3. Japan's Grant Aid Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes(hereinafter referred to as "the E/N") will be signed between the Government of Japan and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country

Under the Japanese Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals".

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by JICA. This "Verification" is



deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as Annex.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant Aid, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
- b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

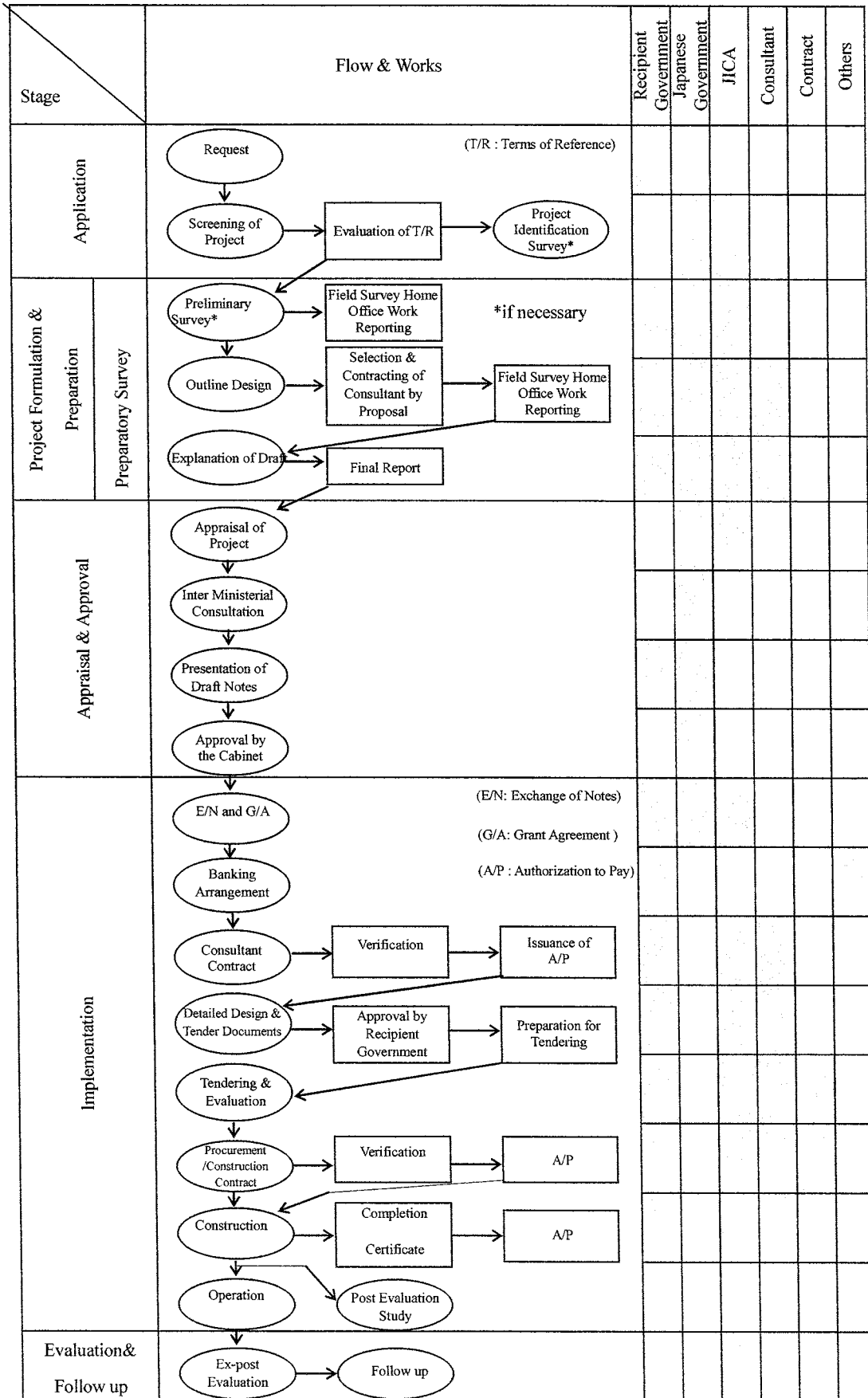
The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Social and Environmental Considerations

A recipient country must carefully consider social and environmental impacts by the Project and must comply with the environmental regulations of the recipient country and JICA socio-environmental guidelines.



FLOW CHART OF JAPAN'S GRANT AID PROCEDURES



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Annex 7 Major Undertakings to be taken by Each Government

Major Undertakings to be taken by Each Government

No.	Items	To be Covered by Grant Aid	To be Covered by Recipient	
			DMC	KG
1	To secure a lot of land necessary for the implementation of the Project and to clear the site;			●
2	To construct the following facilities			
	1) the building	●		
	2) the road within the site			●
3	To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities necessary for the implementation of the Project outside the site;			
	1) Electricity			
	a. The distributing power line to the site			●
	b. The drop wiring and internal wiring within the site	●		
	c. The main circuit breaker and transformer	●		
	2) Water supply			
	a. The city water distribution main to the site			●
	b. The supply system within the site (receiving and elevated tanks)	●		
	3) Drainage			
	a. The city drainage main (for storm, sewer and others to the site)			●
	b. The drainage system (for toilet sewer, common waste, storm drainage and others) within the site	●		
	4) Telephone System			
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building			●
	b. The MDF and the extension after the frame/panel	●		
5) Furniture and Equipment				
a. General furniture			●	
b. Project equipment	●			
4	To ensure prompt customs clearance of the products and to assist internal transportation of the products in the recipient country.			
	1) Marine (Air) transportation of the Products from Japan to the recipient country	●		
	2) Tax exemption and custom clearance of the Products at the port of disembarkation		●	
	3) Internal transportation from the port of disembarkation to the project site	●		
5	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the products and the services be exempted.		●	
6	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●	
7	To ensure that the Facilities and the products be maintained and used properly and effectively for the implementation of the Project		●	●
8	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project		●	
9	To bear the following commissions paid to the Japanese bank for the banking services based upon the B/A			
	1) Advising commission of A/P		●	
	2) Payment commission		●	
10	To give due environmental and social consideration in the implementation of the Project		●	

(B/A: Banking Arrangement, A/P: Authorization to pay)

(DMC: Department of Maternal and Child Health, Ministry of Health and Social Protection, KG:Khamadoni Government)

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ҶУМҲУРИИ ТОҶИКИСТОН
ВИЛОЯТИ ХАТЛОН
РАИСИ НОҲИЯИ
МИР САЙИД АЛИИ ХАМАДОНИ

Суроғаи мо : шаҳраки Москва, кӯчаи Исмоили Сомонӣ-18, тел.

аз 28.04. 2015, № 1/152

Членам группы исследования ЛСА

Настоящим гарантируем, что при реализации данного проекта безвозмездной помощи Правительством Японии, администрация района имени Мир Сайид Али Хамадони к началу реализации Проекта, завершив выравнивание грунта земельного участка под перенос корпуса детского отделения ЦРБ р. Хамадони и удаление препятствий, обеспечит бюджет для покрытия расходов на эксплуатацию и содержание построенных сооружений и объектов и закупленного оборудования в рамках проекта.

28.04. 2015

Председатель Хукумата района М.С.А. Хамадони
Вализода А. И.

(1) Letter from the Ministry of Health and Social Protection addressed to Japan International Cooperation Agency (May 22, 2015)



**ВАЗОРАТИ ТАНДУРУСТӢ ВА ҲИФЗИ ИЧТИМОИИ АҲОЛИИ
ҶУМҲУРИИ ТОҶИКИСТОН**

Ҷумҳурии Тоҷикистон, 734025, ш. Душанбе, к. Шевченко 69. Тел: (992 372) 21 18 35 факс: (992 372) 21 75 25

22.05 2015с., № 1-Б/2926-2406

Ба намояндаи расмӣ
Намояндагии JICA дар
Ҷумҳурии Тоҷикистон
ҷаноби Киоши Ишии
Нусха: ба сардори
кулли лоиҳаҳои Бонки олмонии рушд
хонум Олга Гефеле

Мавзӯ: Ҳамоҳангсозии фаъолияти донорӣ

Мӯхтарам ҷаноби Киоши Ишии!

Вазорати тандурустӣ ва ҳифзи иҷтимоии аҳолии Ҷумҳурии Тоҷикистон барои татбиқи фаъолонии лоиҳаи «Ҳифзи модару кӯдак ва кӯмаки бетаъхири тиббӣ дар вилояти Хатлон» миннатдории худро баён менамояд.

Дар доираи Ҳамоҳангсозии фаъолияти донорӣ дар натиҷаи гуфтушунидҳои якҷандкарата байни намояндагони Бонки олмонии рушд, JICA ва вазорат ба мувофиқа расида бо мақсади роҳ наодан ба такроршавии фаъолият, мо кушишҳои худро бояд ба муассисаҳои кӯдаконае, ки дар он ҷо кӯдакони аз 28 рӯза калон бистарӣ карда мешаванд, равона намоем.

Айни ҳол, бо дастгирии молиявии Бонки олмонии рушд Беморхонаи марказии ноҳияи Ҳамадонии вилояти Хатлон пас аз тақмили таркиби катӣ шӯъбаҳои қабул, ташхис, акушерия гинекологӣ, қисми ҷарроҳӣ, шӯъбаҳои терапияи интенсивӣ ва эҳё пурра таъмир ва мучаҳҳаз карда шудаанд.

Бинобар ин, вазорат аз ташкилоти JICA хоҳиш менамояд, ки сохтмони бинои нави дуошёнаи кӯдаконоро дар як қатор бо бинои асосии Беморхонаи марказии ноҳияи Ҳамадонӣ муайян намояд. Барои истисноӣ такроршавии фаъолият бо назардошти мутамарказ намудани сохторҳои асосии зикршуда тавсия менамоем, ки дар бинои кӯдакона қисми ҷарроҳӣ ба нақша гирифта нашавад ва аз қисми ҷарроҳии умумӣ, ки дар бинои асосии таъмиршуда ҷойгир аст, истифода карда шавад. Аз ин рӯ, бо назардошти гуфтаҳои боло хоҳиш менамоем, ки бинои нави кӯдаконоро бо бинои асосӣ

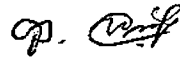
пайваст намуда, барои таъмини дастрасӣ ба қисми чарроҳӣ ошёнаи 2-юми бинои асосиро таъмир намоед.

Қисми чарроҳии аз ҷониби Шумо банақшагирифташударо дар бинои нави кӯдакона метавон барои иҷрои чарроҳӣҳои хурд ба сифати хучраи басту банд пешбинӣ намуд. Ҳамзамон хоҳиш менамоем, барои баррасӣ ва тасдиқ рӯйхати таҷҳизотҳои барои мучаҳҳазгардонӣ банақшагирифташударо пешниҳод намоед.

Вазорат барои маросими расмии кушодашавии Беморхонаи марказии ноҳияи Ҳамадонӣ омодагӣ дида истодааст ва пас аз муқаррар гардидани таърихи ифтитоҳи расмии он то охири моҳи июни соли ҷорӣ барои иштирок намояндагони ташкилоти ЈСА-ро расман даъват менамоем.

Бо эҳтиром,

Вазир



Н. Салимзода



22.05. 2015 № 1-6/2926-2406

Mr. Kioyoshi ISHII
Resident Representative
JICA, Tajikistan office

Copy: Mrs. Olga Hefele
Senior Project Manager, KfW

Copy: JICA office
Subject: Coordination of donor activity

Dear Mr. Kioyoshi ISHII,

Ministry is grateful for the active implementation of the Project for the improving the maternal and child health and emergency care in the Khatlon region. Within the framework of the coordination of donors activities and as a result of negotiations between representatives of the KfW and JICA in order to avoid the duplications it was agreed to focus the efforts in pediatrician departments for JICA, where children's hospitalized with ages older than 28 days old.

At the moment in central district hospital of Hamadoni under financial support of KfW after optimization of hospital services admission, diagnostic part, MCH dpt., operating theaters, postoperative care and ICU sections were rehabilitated and equipped.

In this regard the Ministry would like to ask JICA to identify the construction of 2 floor pediatric departments (somatic and surgical) near main building of Hamadoni CDH. In order to avoid duplication and considering that the most hospital structures were already centralized it is recommended not to plan operating theater inside of new pediatric building and use operating block in rehabilitated by KfW funds building. For this reason please construct the connection between two buildings and renovate the second floor of the main building in order to provide access to the common operating block.

The operating theater which you plan in the new pediatric building is possible but only for minor surgery (circumcision etc.) and to change bandages after big operations. Please also submit us an equipment list for the new pediatric building for our review and approval.

The Ministry of health and social protection is going to open Hamadoni CDH till end of June and will notify to take part on this ceremony.

Sincerely,

Minister

N. Salimzoda



8/June/2015

To: Ministry of Health and Social Protection

Subject: Coordination of donor activities

In reply to the above titled letter dated on 22 May 2015, I would like to notify the reply from the Head quarter office on the observations based on the result of the field survey implemented from 12 April to 10 May 2015 as followings. I kindly request you to understand JICA's consideration on the project for the improvement of the pediatric ward of the Khamadoni District Hospital, and the cooperation on Health sector will be smoothly implemented without serious problem.

1. Planning the Operation Theater in the Pediatric Ward

We, the Mission of the survey team of the project for the improvement of the pediatric ward of the Khamadoni District Hospital confirmed the urgent needs of the construction of the operation theatres in pediatric ward, on the ground that the existing operation theatres located in the surgery ward are severely deteriorated, as there is no availability of air condition in the small operation theater, medical gas outlet and hygiene equipment for medical personnel. We are also informed that the new theater constructed at the maternity ward is utilized especially for the maternal operation according to the interview at the hospital.

Statistics provided by the hospital in 2013 shows the one fourth of the total number of the operation are for pediatric operation and it is still gradually increasing in the number. In addition, more than a half of those pediatric operations are emergency cases, which is immediate intervention is essential to avoid increasing in severity.

In this context we concluded that it is difficult to cover all needs of the operation within the capacity of the existing theatres in the hospital and, therefore the new operation theatres in pediatric ward are in urgent needs.

We also confirmed that there are enough number of skilled surgeons including four licensed pediatric surgeons who are competent with cerebral and abdominal surgery and that they are capable of increasing the number of pediatric surgery covering not only children in Khamadoni district but also neighboring districts.

Through the survey, we conclude that the operation theatres are necessary for the new pediatric building to improve comprehensive child health care service

2. Diagnostic Department

In order to avoid the duplication and use in centralization, you pointed out that the operation theater should not be included in our project. In this context as the following equipment being procured by KfW, we would like you to examine the necessity of following equipment plan in our project, which is reflecting the needs of Khamadoni Central District Hospital.

- X-ray Diagnostic Room
- Ultrasound Diagnostic Room
- Cardiogram Room

3. Number of Patient bed

We finally found the necessity of 50 beds for the new pediatric building through analysis on following three points, on condition that the new building contains the operation theatres within two-storied building.

- The bed occupancy rate in peak season should be considered

Bed occupancy of pediatric ward (internal medicine) reaches the highest in summer dry season for respiratory diseases. We observed the total number of the bed in pediatric ward should be planned based on the estimation of the number of patients in the peak season.

- The beds should be shared with the surgery ward

Considering the severe condition of pediatric surgery ward, we confirmed the necessity of sharing the beds for postoperative patient in case of vacancy.

- Kfw Optimization of hospital services should be conformed

The number of bed is defined as 33 for pediatric ward (internal medicine) based on the Kfw guidance.

In case that the new pediatric ward does not have operation theatres, it might be considered to be better to plan one-storied building which enables more efficient administration of medical personnel

We would like to know your opinion upon the possibility of planning the one-storied building without the operation theater with the minimized number of the bed, which focusing on accepting children for internal medicine.

4. Construction of the connection between Two Buildings

We would like to confirm that we are not going to plan the connection structure requiring the renovation of the existing building in the viewpoint of avoiding

unclear liability for defects. Therefore, please note that it is difficult to plan the connection structure between maternity ward and surgery ward.

In addition, if the operation theater is not planned in new building for pediatric ward (internal medicine only), we think that there is no need for planning the connection structure between the new building and the existing building .

5. Equipment of Reanimation Unit

According to the field survey, we proposed installment of necessary equipment due to its severe condition even though the Reanimation Unit is located in the existing surgery building.

We would like to reconfirm the necessity and priority of the equipment for Reanimation Unit in existing surgery ward based on the list of the facility and equipment attached the Minutes of Discussions.

6. Validity of Minutes of Discussions

We kindly ask you to inform us of the overall status of Minutes of Discussions dated on 29 April 2015. We are ready for cost estimation of the Project based on the exchange of Minutes of Discussions in order to conduct the Project as the planned schedule.

The validity of the Minutes of Discussions signed between the leader of Preparatory Survey Team and First Deputy Minister of Ministry of Health and Social Protection is highly crucial for proceeding to the next step on our side. The otherwise ,there will be considerable delay of the project and the repeat of the survey or additional survey will be required if we need to change the plan of the project.

In closing, we would like to express the importance of formulating the project by reflecting the needs derived through the direct observation and interview during the field survey. And it is difficult to change the direction of the cooperation after the completion of the survey. Your understanding is highly crucial not only for us but improving the quality of future child health care service in Khamadoni District.

Sincerely yours,


Mr. Kiyoshi Ishii
Resident Representative, JICA Tajikistan Office

8 июня 2015г

Министерство здравоохранения и социальной защиты

Тема: Координация деятельности доноров

В ответ на Ваше письмо от 22 мая 2015 года, я хотел бы проинформировать Вас о видении Головного офиса JICA на основе полевого исследования, проведенного с 12 апреля по 10 мая 2015 года. Любезно просим Вас понять позицию JICA касательно Проекта по улучшению педиатрического отделения районной больницы Хамадони с целью беспрепятственного продолжения сотрудничества в сфере здравоохранения.

1. Планирование операционного блока в детском отделении

Исследовательская группа по проекту улучшения детского отделения районной больницы Хамадони подтвердила нужду в строительстве операционного блока в педиатрическом отделении. Существующий операционный блок в отделении хирургии находится в плохом состоянии, так как он не имеет системы кондиционирования воздуха, выхода медицинского газа и оборудования гигиены для медицинского персонала. Также, во время проведения интервью в больнице, нам сообщили, что новый операционный блок, построенный в родильном отделении, используется специально для проведения операций матерей.

Статистические данные, предоставленные со стороны больницы за 2013 года, показывают, что одна четвертая от общего количества операций приходится на детские операции и это число постепенно увеличивается. Кроме этого, более половины детских операций являются экстренным случаям, что требует немедленное вмешательство, чтобы избежать повышения степени тяжести.

Исходя из этого, мы пришли к выводу, что будет трудно удовлетворить все потребности в проведении операций в существующих операционных блоках больницы, и, следовательно, необходимо построить новый операционный блок в педиатрическом отделении.

Мы также подтвердили, что есть достаточное количество квалифицированных хирургов, в том числе 4 сертифицированных детских хирурга, которые работают в области церебральной и абдоминальной хирургии, и они способны увеличить количество детских операций, охватывая не только детей Хамадони, но и соседних районов.

В ходе проведения исследования мы пришли к выводу, что операционный

блок необходим для нового педиатрического здания с целью улучшения оказания сервиса в сфере детского здоровья.

2. Диагностическое отделение

Чтобы избежать дублирования и использовать централизованную систему, вы отметили, что операционный блок не должен быть включен в наш проект. В этом контексте, мы хотели, чтобы вы определили необходимость включения следующих оборудований в наш проект, так как похожие оборудования были закуплены KfW.

- Рентгеновская диагностическая комната
- Комната ультразвука
- Комната кардиограммы

3. Число коек

Мы определили, что новое детское отделение нуждается в 50 коек, при условии, что новое здание будет иметь два этажа и операционный блок. Следующие три основные моменты должны быть учтены:

- Занятость коек в пиковом сезоне должна быть рассмотрена

Занятость коек в детском отделении (внутренняя медицина) увеличивается летом (сухой сезон) для респираторных заболеваний. Мы думаем, что общее количество коек в детском отделении должно быть запланировано на основе оценки количества пациентов в пиковом сезоне.

- Койки могут быть использованы для хирургического отделения

Учитывая тяжелое состояние детского хирургического отделения, необходимо использовать койки для оперированных больных, в случае если есть свободные койки.

- План KfW по оптимизации больничных услуг должен быть согласован

В соответствии с руководством KfW количество коек должно быть 33 в педиатрическом отделении (внутренняя медицина).

В случае если новое педиатрическое отделение не имеет операционного блока, будет лучше планировать одноэтажное здание, которое позволяет более эффективное управление медицинского персонала.

Мы хотели бы знать ваше мнение о возможности планирования одноэтажного здания без операционного блока с уменьшенным количеством коек, которое будет принимать детей для внутренней медицины.

4. Строительство соединения между двумя зданиями

С целью избегания от ответственности за дефекты, мы хотели бы подтвердить, что мы не собираемся планировать структуру соединения, которая требует реконструкции существующего здания. Поэтому,

пожалуйста, принимайте во внимание, что трудно планировать структуру соединения между родильным и хирургическим отделениям.

Кроме того, если операционный блок не планируется в новом здании педиатрического отделения (только внутренняя медицина), тогда мы считаем, что нет необходимости в планировании структуры соединения между новым зданием и существующим зданием.

5. Оборудование для реанимационного отделения

На основе проведенных опросов на местах мы предложили установить необходимое оборудование из-за плохого состояния, хотя реанимационное отделение находится в существующем здании хирургии.

Мы хотели бы подтвердить необходимость и приоритетность предоставления оборудования для реанимационной комнаты существующего хирургического отделения, на основе списка сооружения и оборудования согласно протоколу обсуждения.

6. Действительность Протокола обсуждений

Мы просим Вас сообщить нам о состоянии Протокола обсуждений от 29 апреля 2015 года. На основе данного Протокола обсуждений, мы готовы к проведению оценки стоимости проекта и реализовать проект в соответствие с запланированным графиком.

Действительность Протокола обсуждений, подписанного между руководителем Подготовительной исследовательской группы и первым заместителем Министра здравоохранения и социальной защиты, очень важна, чтобы приступить к следующему шагу с нашей стороны. В противном случае, будет значительная задержка проекта и понадобится повторное исследование или требуется дополнительное исследование в случае изменения в плане проекта.

В заключение, мы хотели бы отметить важность разработки проекта, отражая потребности, полученные путем прямого наблюдения и интервьюирования во время полевых исследований. И будет трудно изменить направление сотрудничества после завершения исследования. Ваше понимание очень важно не только для нас, а также для улучшения качества сервиса для детского здоровья в Хамадони.

С уважением,

Ишии Киёши
Глава представительства
Представительство JICA в Таджикистане

ВАЗОРАТИ
ТАНДУРУСТӢ ВА ҲИФЗИ
ИҚТИМОИИ АҲОЛИИ
ҶУМҲУРИИ ТОҶИКИСТОН



MINISTRY OF HEALTH AND
SOCIAL PROTECTION OF THE
REPUBLIC
OF TAJIKISTAN

734025, ш. Душанбе, к. Шевченко, 69

Тел: (992 372) 21-18-35

Факс: (992 372) 21-75-25

26.06.15c

№ 1-6/3450-3123

г. Душанбе

на письмо от 08.06.2015 г.

Главе Постоянного представительства
Японского фонда по
международному сотрудничеству
г-ну Киоши Ишии

Тема: «Координация донорской активности и действительность Протокола
обсуждений, подписанного 29 апреля 2015 года»

Уважаемый г-н Киоши Ишии!

После детального обсуждения всех возможных рисков и Ваших доводов по поводу возможности и необходимости отмены действия Протокола обсуждений от 29 апреля 2015 года, Министерство здравоохранения и социальной защиты населения Республики Таджикистан ещё раз изучило все обстоятельства и находит, что критически важным является обсуждение необходимости планирования операционного блока в новом педиатрическом корпусе.

В действительности, после посещения сотрудниками министерства Центральной районной больницы района Хамадони и изучения состояния соединительного коридора на 2-м этаже старого корпуса было установлено, что неотремонтированная часть основного корпуса находится в крайне аварийном состоянии и нуждается в значительных инвестициях. К сожалению, Хукумат района и министерство на ближайший период не располагают этими средствами и даже частичный ремонт не может обеспечить решение данной проблемы.

В связи с этими обстоятельствами министерство считает целесообразным организацию операционного блока для выполнения только экстренных оперативных вмешательств вместе с палатой для послеоперационного ухода для детей. Для обслуживания детского контингента мы согласны с Вашими обоснованиями по оснащению нового детского корпуса мобильным рентгеновским аппаратом, аппаратом для ультразвукового исследования (УЗИ) и ЭКГ-диагностики. Все остальные диагностические услуги будут доступны для детей в средней части основного корпуса. С этими доводами министерство

подтверждает своё согласие на строительство детского отделения на 50 коек с включением экстренной операционной.

В связи с тем, что оптимизация структуры больницы уже завершена, все плановые операции у детей будут выполняться в общем операционном блоке больницы, где будут организованы все необходимые условия (в рамках проектной деятельности Немецкого банка развития).

На наш взгляд, наши предложения являются наиболее оптимальными в создавшейся ситуации.

Министерство считает целесообразным обсуждение нашего предложения в двустороннем формате между ответственными лицами Японского фонда по международному развитию и Немецким банком развития. Одновременно мы выражаем свою приверженность ранее достигнутым договорённостям как с Немецким банком развития, так и с Японским фондом по международному развитию.

Позвольте выразить свои заверения в весьма высоком уважении к Вам и надеется на дальнейшее взаимопонимание и продуктивное сотрудничество.

С уважением,

Министр

sp. Salimzoda

Н. Салимзода

**Ministry of Health and Social Protection
of the Population of the Republic of Tajikistan**

Out #1-6/3750/3123 from 26/06/2015

Response to JICA letter from 08/06/2015

Dushanbe city

To: Resident Representative of JICA

Mr. Ishii Kiyoshi

Subject: Coordination of donor activity and validity of Minute of Discussions signed on 29 April 2015.

Dear Mr. Ishii Kiyoshi,

After detail discussions of all possible risks and your arguments concerning possibility and necessity of annulling the validity of the Minute of Discussions from 29 April 2015, the Ministry of Health and Social Protection of the Population of the Republic of Tajikistan once again has examined all the situation and found that the discussion about the necessity of planning of operational theater in new pediatric department is very crucial matter.

In fact, after the visit of the Central Rayon Hospital of Hamadoni by the staff of the Ministry and examination of the condition of connecting corridor on the 2 floor of old building, it has been found that the unrepaired part of the main building is in a very bad emergency condition and it needs substantial amount of investment. Unfortunately, the Local Government and the Ministry will not have such kind of investment in near future and even partial repair cannot solve the given issue.

In connection with this situation, the Ministry considers it expedient to set up operational theater for conducting only emergency operations, with a bedroom for post-operational care for children. For servicing children contingent, we agree with your justification for equipping the new pediatric ward with mobile X-ray Equipment, Ultrasound Diagnostic Equipment and Cardiogram Equipment. All other diagnostic services will be available for the children in the middle part of the main building. Proceeding from these arguments, the Ministry confirms its agreements for construction of pediatric department for 50 beds, with inclusion of operational theater for emergency operations.

Since the optimization of the structure of the hospital has already been completed, all the planned operations of children will be fulfilled in general operational theater of the hospital, where all the necessary conditions will be created (within the project of KFW).

In our opinion, our proposal is more optimal in current situation.

The Ministry considers it expedient to discuss our proposal in two side format between the concerned representative of JICA and KFW. At the same time, we express our commitment in relation to the previously achieved agreements both with KFW and JICA.

Allow me to express my complements and respect to you and hope for having further understanding and fruitful cooperation.

Sincerely,

Minister

signed

N. Salimzoda



31 July 2015

Out. No. 24-07/15

Ministry of Health and Social Protection
of Population of the Republic of Tajikistan

Japan International Cooperation Agency (JICA) Office in Tajikistan presents its compliments to the Ministry of Health and Social Protection of Population of the Republic of Tajikistan and, in reply to the proposal from the First Deputy Minister for Health at the meeting dated on 20 July 2015, has honor to inform you that JICA would like to follow the Preparatory Survey result and construct new pediatric department next to the existing Surgery department in accordance with Minutes of Discussions dated on 29 April 2015.

Taking into account the above decision, JICA herewith would like to confirm the following issues in Minister' letter (Out#1-6/3750/3123) dated on 26, June 2015.

1. Number of the Operation Theatre

We are planning one operation theater for emergency case in new pediatric ward and we would like to confirm the number of the theater before we proceed to next step.

2. Installation place for Mobile X –Ray

We would like to confirm necessity of construction of a diagnostic room for a mobile x-ray.

3. Necessity of medical equipment for reanimation unit in existing surgery ward –
According to the field survey, we proposed installment of necessary equipment due to its severe condition even though the Reanimation Unit is located in the existing surgery building.



We would like to reconfirm the necessity of the equipment for Reanimation Unit in existing surgery ward based on the list of the facility and equipment the Minutes of Discussions.

It would be highly appreciate if you could send your reply by 21 August 2015.

JICA Tajikistan Office in the Republic of Tajikistan avails this opportunity to renew to the Ministry of Health and Social Protection of Population of the Republic of Tajikistan the assurances of its highest consideration.

A handwritten signature in black ink, appearing to read "石井 清" (Ishii Kiyoshi).

Kiyoshi ISHII

Resident Representative
JICA Tajikistan Office

(неофициальный перевод)

31 июля 2015г.

Исх. № 24-07/15

Министерство здравоохранения и социальной защиты
населения Республики Таджикистан

Представительство Японского Агентства международного сотрудничества (JICA) в Республике Таджикистан свидетельствует свое уважение Министерству здравоохранения и социальной защиты населения Республики Таджикистан, и в ответ на предложение Первого заместителя министра здравоохранения озвученное во время встречи, проходившей 20 июля 2015г, имеет честь сообщить Вам, что JICA хотело бы следовать результаты Подготовительного исследования, и построить новое педиатрическое отделение рядом с существующем отделом хирургии в соответствии с Протоколом обсуждения от 29 апреля 2015г.

Основываясь на вышеуказанное решение, JICA хотело бы подтвердить следующие вопросы, которые были указаны в письме Министерства (№ 1-6/3750/3123) от 26 июня 2015г.

1. Количество операционных залов

В новом детском отделении мы планируем построить один операционный зал для экстренных случаев, и мы бы хотели подтвердить количество операционных залов, прежде чем мы перейдем к следующему шагу.

2. Место установки мобильного рентгеновского оборудования

Мы хотели бы подтвердить необходимость в строительстве диагностической комнаты для мобильного рентгеновского оборудования.

3. Необходимость медицинского оборудования для реанимационного блока в существующем хирургическом отделении

Основываясь на результаты исследования, и учитывая плохое состояние оборудования, мы предложили установить необходимое оборудование, хотя реанимационное находится в существующем здании хирургии.

Мы хотели бы подтвердить необходимость оборудования для реанимационного блока в существующем хирургическом отделении на основе списка сооружения и оборудования, указанного в Протоколе обсуждения.

Будем весьма признательны, если вы ответите на данный письмо до 21 августа 2015г.

Представительство Японского Агентства международного сотрудничества в Республике Таджикистан пользуется этой возможностью, чтобы возобновить Министерству здравоохранения и социальной защиты населения Республики Таджикистан уверения в своем высоком уважении.

Киёши Ишии

Глава представительства

JICA в Республике Таджикистан



МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ И СОЦИАЛЬНОЙ ЗАЩИТЫ
НАСЕЛЕНИЯ РЕСПУБЛИКИ ТАДЖИКИСТАН

734025, г. Душанбе, у. Шевченко, 69, тел. (3772) 221-18-35, факс (3772) 221-75-25

от 26.08.2015 г.,

№ 1-6/5063-4319

г. Душанбе

Главе представительства
Японского Агентства
международного сотрудничества
г-у Киёши Ишии

Уважаемый г-н Киёши Ишии,

Министерство здравоохранения и социальной защиты населения Республики Таджикистан свидетельствует Вам своё уважение и выражает признательность за поддержку и помощь в сотрудничестве.

Рассмотрев Ваше письмо от 31 июля 2015 года, за № 24-07/15 сообщаем следующее. Министерство поддержит ваши предложения в строительстве нового педиатрического отделения рядом с существующим хирургическим отделением. Согласно нашей договорённости (письмо от 26 июня 2015 года, №1-6/3750/3123), мы предлагаем построить один операционный зал со всем необходимым оборудованием, а также построить место для содержания рентгеновского оборудования.

Касательно третьего вопроса по поводу оборудования реанимационного блока в существующем хирургическом отделении. Данное отделение оборудовано достаточно, в связи с этим мы предлагаем в место реанимационного блока хирургического отделения оборудовать отделение второго этапа выхаживания на 10 коек для детей от 0 до 28 дней жизни.

Министерство здравоохранения и социальной защиты пользуется возможностью, чтобы возобновить Представительству Японского Агентства международного сотрудничества и уверения в своём высоком уважении.

Первый заместитель министра

Л. Бобоходжиева

Ministry of Health and Social Protection of RT

To the Resident Representative of JICA
in Tajikistan Mr. Ishii Kiyoshi

Dear Mr. Ishii Kiyoshi,

The Ministry of Health and Social Protection of RT presents its compliments to you for support and assistance in establishing cooperation.

Having reviewed your letter from 31 July 2015 under #24-07/15, the Ministry informs you the following. The Ministry supports your proposal on construction of new pediatric department near the existing surgery department. Based on our agreement (letter from 26 June 2015 under #1-6/3750/3123), we propose to build one operational theatre with all necessary equipment, as well as to build a room for keeping x-ray equipment.

As regards to equipment in reanimation unit in existing surgery department (question #3), we would like to inform you that the given unit is enough equipped and instead of installing equipment in this unit, we propose to equip the second stage care unit for 10 beds for the children from 0 to 28 days.

The Ministry avails itself of this opportunity to renew to JICA the assurances of its highest consideration.

First Deputy Minister

L. Bobokhodjieva

Техническая записка по Подготовительному исследованию по Проекту улучшения
медицинского оборудования и учреждений педиатрической помощи в районе Хамадони
в Республике Таджикистан

В ходе обсуждений с представителями Министерства здравоохранения и социальной защиты населения Республики Таджикистан и ЦРБ района Хамадони и исследований на месте, проведенных в рамках Подготовительного исследования по Проекту улучшения медицинского оборудования и учреждений педиатрической помощи в районе Хамадони в Республике Таджикистан, консультанты ознакомились с намерениями таджикской стороны по нижеследующим позициям.

Стороны подтвердили, что содержание данной записки не является окончательным и подлежит дальнейшему рассмотрению японской стороной.

1. План помещений

- 1) Планировать площадь палат из расчета 6м² на койку.
- 2) В операционном блоке обеспечивать раздевалки с туалетом и душем (по 1 для муж. и жен.) и узел для обработки рук перед операционной.
- 3) Операционный блок и палаты интенсивной терапии снабжать кислородом.
- 4) Обычные палаты кислородом обеспечивать переносным оксиген генератором.
- 5) Применять оборудование для отсасывания.
- 6) Разместить туалет для персонала.
- 7) Разместить раздевалку для медсестер. С учетом того, что в детском соматическом отделении ЦРБ работают 46 медсестер и санитарок и на смену работает около 10 из них и считаем, что необходимо оснастить шкафами как минимум на их половину (на 23 чел.).

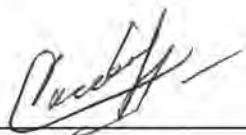
2. План временных работ

- 1) Воспользоваться имеющимся входом на стороне улицы З. Розы для доступа строителей, удалить забор и восстановить его.
- 2) Для доступа в поликлинику во время строительных работ, воспользоваться имеющимся входом, расположенном на восточной стороне улицы З. Розы.
(План 2)
- 3) Для четкого разделения траекторий посетителей и строителей, будет установлено временное ограждение, обведенное красной линией на плане 3. В связи с тем, что транспортные средства будут находиться и у служебных ворот, необходимо обеспечение пространства для них. Следует отметить,

что служебные ворота временно не могут быть непригодными при соединительных работ с переходом. И в связи с тем, что аптека вскоре будет закрыта, территория до нее будет охвачена временным ограждением. (План 6) С этим планом согласился главный врач ЦРБ.

- 4) Во время строительства имеющаяся автостоянка (План 5) будет освобождена для генподрядчика под офис, пост и место хранения стройматериалов. Больница должна переместить брошенные автомобили и др. со стоянки на другое место все вместе.
- 5) Выездная рентген машина для поликлиники будет использоваться за пределами автостоянки.
- 6) Во время строительства ворота на улице З. Розы будут использованы для постоянного доступа, а доступ через ворот на улице Бобождона Гафурова будет осуществлен только в ограниченных случаях, таких как ввоз крупных стройматериалов и др.
- 7) Удаление деревьев, находящихся у ворот на улице З. Розы (за пределами территории ЦРБ) должно будет произведено. (с этим согласился Председатель Хукумата)

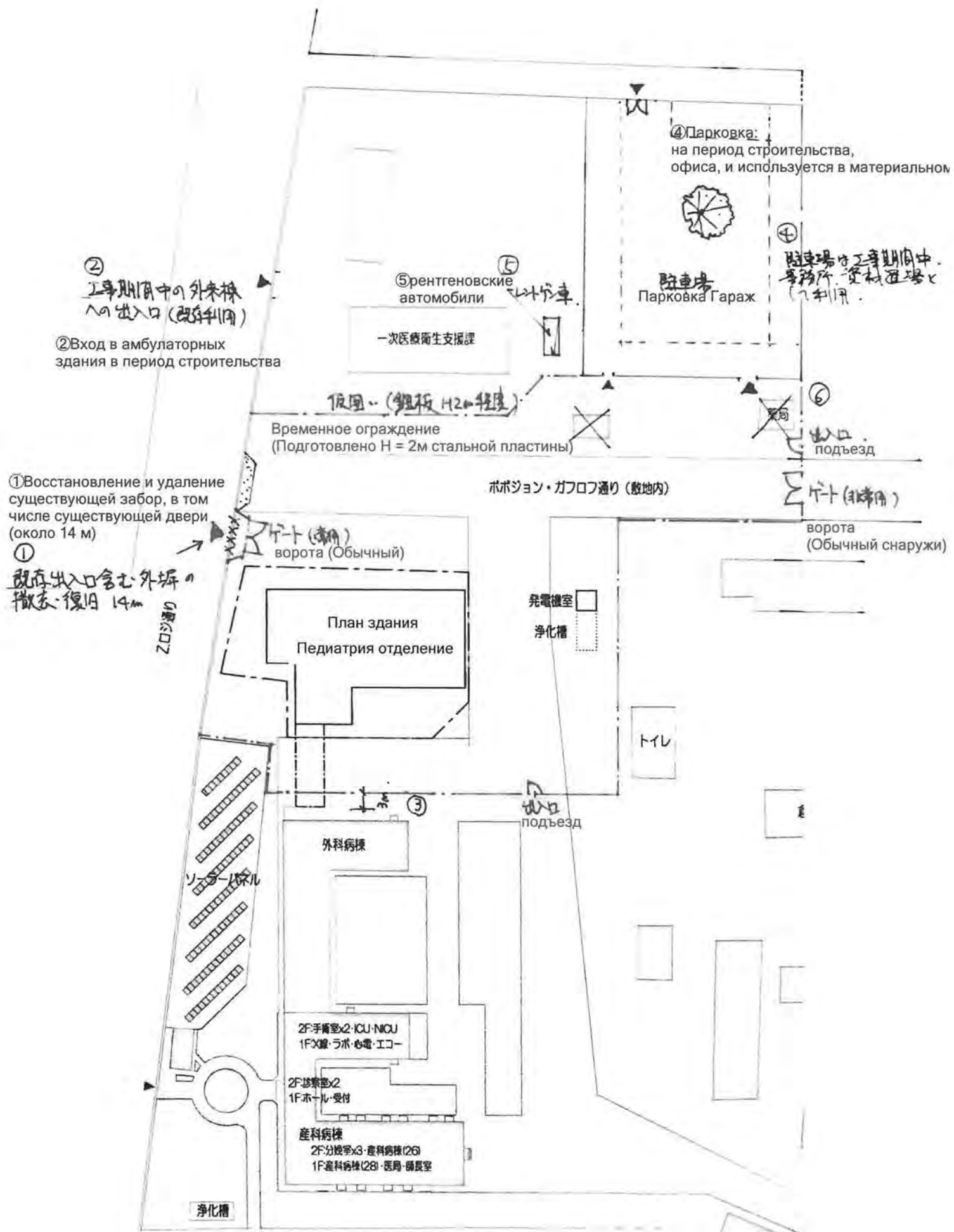
конец



Д-р. Рахматуллоев Шерали
Начальник Управления организации медицинских
услуг матерям, детям и планирования семьи
Министерство здравоохранения и социальной
защиты населения Республики Таджикистан



Г-н. Тошихико Судзуки
Главный консультант
Группа подготовительного исследования



COMMITTEE OF ARCHITECTURE AND CONSTRUCTION UNDER
THE GOVERNMENT OF THE REPUBLIC OF TAJIKISTAN
OPEN SOCIETY "GIINTIZ"

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TECHNICAL REPORT

ON ENGINEERING AND GEOLOGICAL SURVEY OF THE SITE:

“Project of improvement of the medical equipment and institutions of the pediatric care in the district Hamadoni, Republic of Tajikistan”.

(Stag-I- detailed design)

Saidov R. S.	Director of the Institute
Ismadiyorov. G.	Head of PTS
Shonazarov B. F.	Head of Section of geology department:

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Dushanbe 2015

TABLE OF CONTENTS

Sl. No.	Description of chapters and sections	Page	Q-ty	No. of drawings
	A. Explanatory note			
1.	Introduction.			
2.	Methodology of execution of works			
3.	Engineering-geological conditions of the Site			
	3.1. Location.			
	3.2. Geomorphology,			
	3.3. Geological structure, hydro-geological conditions, Physical and geological processes and the phenomena.			
	3.4. Physical and mechanical property of soils.			
4.	Forecast of change of engineering - geological conditions of the site in connection with engineering development of the territory.			
5.	Conclusions and recommendations.			
	B. Textual annex			
6.1	Terms of reference		1	
6.2	Catalogue of exploring excavations and litho logical description of soils		2	
6.3	Table of physicommechanical properties of soils		1	
6.4.	Results of static processing of soil characteristics			
6.5.	The table of the soil conditions		1	
6.6.	Results of the mechanical analysis by the method of screening of soils in %.		1	
6.7.	Results of field definition of density and angle of natural slope.		1	
6.8.	Results of the analysis of soil corrosion by the method of UES		1	
6.9.	Results of the analysis of soil corrosion activity against nonferrous metals		1	
6.10	Table of chemical compound of soils.			
6.11	Chemical analysis of water			
6.12	Register log Tests of soils by the method of dynamic sounding according to SPT data (in boreholes)			
6.13	Register Log For carrying out of PCR tests (Penetration Cone Resistance)			
	C. Graphical appendix			
7.1	Map of actual material scale 1:500.		1	Drwg. No. 5063
7.2	Engineering-geological sections on lines I-I,II-II, III-III. scale <u>Vertical 1:100 / Horizontal 1:500</u>		2	Drwg. No. 5064

A. EXPLANATORY NOTE

1. Introduction

Engineering-geological surveys on the Site: “Project of improvement of the medical equipment and institutions of the pediatric care in the district Hamadoni, Republic of Tajikistan“ have been executed by complex department of Open Society "GIINTIZ" on the basis of the Terms of Reference issued by the Client.

The purpose of surveys was studying of engineering-geological conditions of a platform of prospective construction along with studying of geological and litho logical structures, hydro-geological conditions, definition of physical and mechanical, subsidence and chemical properties of soils for development of the design and estimation documentation for the stage of working design.

All data, concerning execution of surveys are shown below in the works Certificate.

WORKS CERTIFICATE

Description of Site:	“Project of improvement of the medical equipment and institutions of the pediatric care in the district Hamadoni, Republic of Tajikistan “
The basis for performance of works:	Terms of Reference of the Client.
Location of the Site and its administrative subordination:	The site of surveys is located in territory of district hospital of M.S.A.Hamadoni on crossing of streets of B.Gafurov and Vose.
Structure of executors: For field works - For laboratory works - For office works -	The geologist - Shonazarov B. B. The laboratorian-geotechnician - Ziyadullaeva The laboratorian-chemist - Dadabaeva G. The geologist - Morkel N.V.
The period of performance of works: The field - The laboratory - The office -	22.04 – 29.04.2015 29.04 – 02.05.2015 29.04 - 05.05.2015
Tools and the equipment, used at carrying out of surveys :	Field - tunneling equipment, boring machine UGB-50M; Installation of dynamic sounding, the complete set of mobile device SRT. Laboratory - compression and shift devices, the chemical equipment.
The standard literature used at performance of works:	CNR of RT 50-01-2007; SNiP: 1.02.07-87; 2.03.11-85; GOST: 5180-84; 20522-96; 25100-2011,12248-96; 23740-79,22733-2002; 21.302-96.
Completeness of performance of the assignment:	Corresponds to requirements of standard documents.

2. Methodology of execution of works

Preparatory period

During the preparatory period the Terms of Reference of the Client for survey works, archival materials on the given region are studied thoroughly and in detail, field visits are arranged to the Site of works, preliminary survey and inspection of the area are conducted, places of drilling of boreholes, pits and venues of experimental works are outlined according to the scheme provided by the Client.

Drilling of 4 boreholes and heading of a pit-borehole, which have been intended both for selection of soil test and for field tests, have been planned on the Site of the designed structure.

Drilling operations

Drilling was carried out by self-propelled drilling Unit UGB-50M, using cable tool percussion drilling method, diameter 168 mm.

Drilling was accompanied by their description on litho logical section and in process of deepening, tests for laboratory surveys were selected, and tests for dynamic sounding (SPT) have been carried out.

The selected and picked tests were kept in special boxes and were sent to geotechnical laboratory.

At carrying out of SPT test, the bar pieces have been marked by a chalk across 10 cm, and at deepening of the tip of the bar by 10cm the number of blows were counted and registered in the field register and then in office conditions the conditional dynamic resistance of soil was calculated.

Key parameters of the installation for SPT test:

- Angle of top of the Cone	60°±2
- Diameter of the basis of the Cone	74±2 mm
- External diameter of bars	50 mm
- Length of bars	1 m
- Weight of the hammer	60 kg
- Height of falling	0.8 m



Shaft-sinking and tunneling works

Pit-borehole has been headed manually up to level of the underground waters with a view of the detailed description of litho logical structure of soils and carrying out of field and testing works.

Pit heading was accompanied by its description, and on certain depths experimental works for definition of granulometric structure of soil, the angle of natural slope and its density in natural state have been conducted. Below the level of Underground waters the pit was completed by drilling of a borehole with required depth. Also test samples of Underground waters with a view of definition of their chemical compound have been collected.



3. Engineering-geological conditions of the Site

3.1. Location

The site of designed construction is located in the territory of M.S.A.Hamadoni's district hospitals, on crossing of streets of B.Gafurov and Vose.

Site borders are: from the north - B.Gafurova street, from the East - the asphalted path, from the South – 2 storied building of resuscitation and from the West – Vose street.



3.2. Geomorphologic conditions

In terms of the geomorphologic definition the Site of works falls under the 1st right-bank terrace of the river Pyanj.

The Site relief in hospital territory is equal with minor fluctuations in a micro relief and the absolute elevation marks make 483.04 - 483.52m.

Presently the Site of surveys is free of buildings.

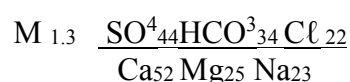
3.3. Geological structure, hydro-geological conditions, physical and geological processes and the phenomena

Geological structure of the Site is structured from the deposits of alluvial genesis of the modern age presented by thickness of pebble soils with thickness of over 22.0m. From the surface, the pebble soils are covered by clay soils with thickness 1.80-1.85 and with filled in soils with thickness of 0.30-0.70 m. The total opened thickness of the deposits 22.0m.

Conditions and positions of strata of litho logical and genetic versions of soils are shown on the drawing No.5064, Sheet 1-4, Annex No. 7.2.

Underground waters by prospecting developments during the period of surveys (April) have been revealed on depth of 5.70-6.11m, and the settled level of UWT made 5.50-5.90m. The revealed level of UWT is close to its maximum position, the minimum position occurs during the winter period. The amplitude of fluctuation of UW makes 1.0 m. Feeding source of the Underground waters are the infiltration waters of the atmospheric precipitation and water of irrigational systems.

In terms of chemical compound the Underground waters are of Sulfate and Hydro carbonic and Calcium-Magnesium type and the dry remaining sediments has made 1280 mg/l, PH = 6.74, which is characterized by the following formula of Kurlova:



(Annex No. 6.11)

Corrosion aggression rate of Underground waters in relation to the nonferrous metals is high (Annex No. 6.11).

In terms of chemical compound (content of SO₄), the Underground waters are of weak aggressive ones in relation to marks of concrete W4, W6 and are not aggressive to marks of concrete W8 on Portland cement in accordance with standards GOST 10178-85 at any rates of their water resistance capacities, (Annex No. 6.11).

Underground waters are not aggressive to Steel bars RCC structures at their constant submersion and periodic wetting.

Modern physical and geological processes directly on the Site and on the adjoining territory are not observed.

3.4 Physical and mechanical properties of Soils

Marking of engineering-geological elements within an active zone of soils in the bases of the foundations and all explored thickness has been executed on the basis of the analysis of spatial variability of specific indicators of soil properties, defined by laboratory methods, taking into account the data on geological and lithological structure and hydro-geological conditions, according to standards GOST 20522-96 and the documents of the internal using specifying and explaining the specified GOST standards.

As a result of the practiced calculations in the geological and lithological section, 3(three) Engineering-geological Elements (EGE) which description is shown below have been marked out:

Engineering-geological Element No. 1 is presented by a filled soil consisting of a mechanical mix of pebble, gravel and sand. The soil is dense, packed, low-moisture, thickness of the layer makes 0.40 - 0.50m.

Recommended value of density of the soil - 1.80 t/m^3 .

Engineering-geological element No. 2 on standard value of number of plasticity 0.094 is presented by loam of grey color, average density, pelitic structures, lump structures, with an impurity of sand and an individual pebble of firm consistence.

The basic characteristics of the physical and mechanical properties of EGE No. 2 are presented by the following indicators:

- Humidity ranges changes from 0.200 to 0.226 at standard value of 0.219 proportion unit;
- The porosity factor ranges from 0.775 to 0.799 proportion unit, at rated value 0.788;
- The soil density in natural state makes $1.80\text{-}1.85 \text{ t/m}^3$, at standard value 1.83t/m^3 ;
- The soil density in the water sated condition makes $1.82\text{-}1.94\text{t/m}^3$, at standard value 1.91t/m^3 ;

Deformation properties of the clay soil were defined in laboratory with the help of compression devices in the range of loadings of $R_{\text{byt}}+0.2\text{MPa}$ at its natural humidity and at water saturation.

The deformation module in natural state makes $4.6\text{-}6.6\text{MPa}$, at standard value 5.22MPa , in the water sated condition makes $1.5\text{-}2.9\text{MPa}$, at standard value 1.82MPa (Annex No. 6.3, 6.4).

Firmness characteristics of EGE No. 2 were defined in laboratory by a method of not consolidated cut at its water saturation in the range of loadings $0.1\text{-}0.3\text{MPa}$ and make:

- Adhesion - $0.0175\text{-}0.0225\text{MPa}$, at standard value 0.0186MPa , the rated value at confidential probability 0.95 makes 0.0183MPa , and at confidential probability 0.85 - 0.0184MPa .

- The angle of internal friction makes $22^{\circ}20' - 23^{\circ}50'$, at standard value $22^{\circ}18'$, rated value at confidential probability 0.95 makes $21^{\circ}45'$, and at confidential probability 0.85 - $21^{\circ}54'$ (Annex No. 6.3, 6.4).

According to results of tests on dynamic sounding in Boreholes No. 1, 2 3 and 4 conditional dynamic resistance of soil (SPT) to depth of 1.8-1.9m makes 1.4-1.6MPa, and on recalculation on the deformation module makes accordingly 6.5-14.0MPa, at standard values 9.5-10.3MPa (Annex No. 6.12).

According to conducted tests of PCR (Penetration Cone Resistance), the specific resistance of soil to depth 1.86m makes 94 - 452 kPa (Annex No. 6.13).

Clay soils of the Site possess subsidence properties, both at natural pressure and at additional loadings. Value of relative subsidence at Rbyt. makes 0.010-0.013MPa, at loadings of Rbyt. + load cone, they increase to 0.029. Subsidence properties of soils are shown in the range of depths of 0.30-1.80m. Value of the initial subsidence pressure makes 0.023-0.029 MPa. Value of subsidence at Rbyt. makes 1.32-1.76cm, on the explored thickness of the subsidence thicknesses of 1.20-1.50m. Type of soil conditions in terms of display of subsidence properties I (first) (Annex No. 6.5).

Engineering-geological element No. 3 is presented by big-sized fragments of deposits lying in the form of pro layers on the litho logical section.

Averaged granulometric structure of deposits are as follow:

Boulders	– 5.0 %	
Pebble	– 74.08 %	
Gravel	– 4.21 %	
Sand	– 16.71 %	(Annex No. 6.6)

According to the nomenclature of GOST 25100-2011, Table 2, these deposits Fall under the pebble soil with inclusion of boulders to 5 %. Fragments are of Good rounding, the roundish form, in the petrographic relation the soil is presented by metamorphic deposits. Aggregates are sand of grey color, average size, from low-moisture to water sated.

According to field definitions the soil density makes 1.86-2.02 t/m³, at standard value - 1.96 t/m³, rated value at confidential probability 0.85 makes 1.87 t/m³, and at confidential probability 0.95 makes 1.90 t/m³;

- The angle of an internal friction makes $38^{\circ}10' - 40^{\circ}48'$, at standard value $39^{\circ}11'$, rated value at confidential probability 0.85 makes $38^{\circ}40'$, and at confidential probability 0.95 makes $39^{\circ}56'$ (Annex No. 6.7).

According to standard norms of CNR of RT 50-01-2007, Annex 5, Table 5.1, rated resistance of pebble soils makes 600 kPa, the same, Annex 4, Table 4.1: Adhesion-0.001MPa, the deformation module - 40MPa.

According to results of tests under dynamic sounding in Boreholes No. 1, 2 3 and 4, the conditional dynamic resistance of soil (SPT) to depth of 1.8-2.2m makes 4.6-

24.3MPa, and on recalculation on the deformation module it makes accordingly 23.0-35.0MPa, at standard value 28.0-32.0MPa (Annex No. 6.12).

Corrosion aggression of soils in the Site in relation to carbonaceous and low-alloyed steels – average (Annex No.6.8).

Corrosion aggression of soils in relation to nonferrous metals: to the aluminum cover of cables - average, to lead - high, and in this connection when designing it is necessary to provide corrosion preventing actions to protection of engineering communications (Annex No.6.9).

In terms of chemical compound, in relation to content of SO₄, soils of the Site are of medium aggression in relation to concrete of mark W4, and low-aggressive to marks W6, W8, against Portland cement of water resistance in accordance with standards GOST 10178-85, the soils are nonaggressive in relation to concrete of all marks against slag-cement and sulfate resistant cements (Annex No. 6.10);

- On content of Cl taking into account SO₄, soils of the Site are nonaggressive to steel bar of RCC structures (Annex No.6.10).

Soils of the Site are nonsaline, and the content of the vegetative remaining does not exceed the admissible norms (Annex No. 6.10).

4. The forecast of change of engineering-geological conditions of the site in connection with the engineering development of the territory

The site of surveys is presented by thick cover of pebble soils with thickness more than 22.0 m. From the surface pebble soils are covered by clay soil of thickness 1.80-1.85 and by filled in soil with thickness of 0.30-0.70m. The total opened thickness of the deposits makes 22.0m.

Underground waters opened during the survey period (April) by prospecting developments are positioned in depth of 5.70-6.11 m, and the settled UWT makes 5.50-5.90m. The opened and revealed UWT is close to its maximum position and the minimum position occurs during the winter period. The amplitude of fluctuation of UW makes 1.0m. The feeding sources of the underground waters are infiltrated waters of atmospheric precipitation and water of irrigational systems.

In the course of engineering development of the territory and, especially, while in service buildings, change of properties of clay soils due to infiltration of atmospheric precipitation and, mainly, technogenic waters is possible.

Due to considerable humidifying of soils in the foundations non-uniform realization of subsidence properties, decrease deformation and bearing properties of soils is possible that can lead to deformations of the structures if they are erected on the subsidence prone clay soils.

Thereupon, it is necessary to provide cutting and removal of clay soils and placing of the base on homogeneous pebble soil which lies down in depth of 1.80-1.85m.

Modern physical and geological processes and the phenomena on the Site and on the adjoining territory are not noted.

Seismic activity of the Site, according to the seismic zoning map of the territory of the Republic of Tajikistan makes 7 points as per the scale MSK-64.

5. Conclusions and recommendations

5.1 Based on results of the executed engineering and geological surveys the thickness of soils in the bases of the designed structures up to the explored depth of 22.0m is homogeneous and within its limits 3 Engineering and Geological Elements have been marked out.

5.2 Standard and rated characteristics of soils which are recommended to use at calculations, are presented in Section 3.4 of the present Report.

5.3 Underground waters opened during the survey period (April) by prospecting developments are positioned in depth of 5.70-6.11 m, and the settled UWT makes 5.50-5.90 m. The opened and revealed UWT is close to its maximum position and the minimum position occurs during the winter period. The amplitude of fluctuation of UW makes 1.0 m. The feeding sources of the underground waters are infiltrated waters of atmospheric precipitation and water of irrigational systems.

In terms of chemical compound the underground waters are of Sulfate-hydro carbonic-calcium and magnesium type, the dry remaining substances have made 1280 mg/l, PH = 6.74.

Corrosion aggression of the underground waters in relation to the nonferrous metals is high.

On chemical compound (in terms of content of SO₄) the underground waters are low-aggressive in relation to marks of concrete W4, W6 and are not aggressive to marks of concrete W8 made of Portland cement in accordance with standards GOST 10178-85 at any rates of their water resistance.

Underground waters are not aggressive to Steel bars of RCC structures at their constant submersion and periodic wetting.

5.4 Clay soils of the Site possess subsidence properties, both under natural pressure and at additional loadings. Subsidence properties of soils are shown in the range of depths of 0.30-1.80 m. Value of initial subsidence pressure makes 0.023-0.029 MPa. Size of subsidence at Rbyt. makes 1.32-1.76cm, across the explored thickness of the subsidence thicknesses layer of 1.20-1.50m. Type of soil conditions in terms of emerging of subsidence properties is the 1st (first).

5.5 Corrosion aggression value of the soils on the Site in relation to carbonaceous and low-alloyed steels is average.

- 5.6 Corrosion aggression value of the soils in relation to nonferrous metals: to aluminum cover of cables -is average, to lead – high and in this connection, while designing, it is necessary to provide corrosion preventing actions for protection of the engineering communications.
- 5.7 In terms of chemical compound, in relation to content of SO₄, soils of the Site are of medium aggression in relation to concrete of mark W4, and low-aggressive to marks W6, W8, against Portland cement of water resistance in accordance with standards GOST 10178-85, the soils are nonaggressive in relation to concrete of all marks against slag-cement and sulfate resistant cements;
 - On content of Cl taking into account SO₄, soils of the Site are nonaggressive to steel bar of RCC structures.
- 5.8 Soils of the Site are nonsaline, and the content of the vegetative remaining does not exceed the admissible norms.
- 5.9 Construction category of soils in relation to their excavations should be accepted according to standard norms of SNiP IV-2-82, Table.-1, Items 24"a", 33"b",6"b" depending on type of excavation and type of used machinery.
- 5.10 The steepness of slopes of foundation ditches and tranches should be accepted according to standard norms of CNR of RT -50-01-2007, Table 13.1, page 156, and depending on depth of their fragments and nomenclatures of soils and they will have following values:

Soil description	At depth of excavation, m, up to		
	1.5	3.0	5.0
Filled-up soil	1: 0.67	1:1	1:1.25
Pebble soil	1:0.5	1:1	1:1

- 5.11 As a method of engineering preparation of the base of foundation it is recommended to use the actions provided according to standard norms of CNR of RT (MҚС Қ Т) -50-01-2007, Items 3.68-3.71, i.e. complete excavation of the filled-up and clay soils and placing of the foundation base on the pebble soil, and in this case engineering preparation of the basis is not required, as these soils possess good bearing ability.
- 5.12 Modern physical and geological processes and the phenomena on the Site and on the adjoining territory are not noted.
- 5.13 Seismic activity of the Site, according to the seismic zoning map of the territory of the Republic of Tajikistan makes 7 points as per the scale MSK-64.

Prepared by:

Morkel N.V.

TERMS OF REFERENCE
for execution of engineering-geological researches
OPEN COMPANY "GIINTIZ "

1. Name of Site: "Project of improvement of the medical equipment and institutions of the pediatric care in the district Hamadoni, Republic of Tajikistan".
2. Location and borders of the area (site) of the construction: The site of designed construction is located in the territory of M.S.A. Hamadoni's district hospitals, on crossing of streets of B. Gafurov and Vose.
3. The Client (Constructor) and its departmental subordination: Joint-Stock Company "Daiken Sekkei".
4. The design organization which has given out the assignment:
5. Surname, the initials and phone number of the Chief Engineer of the Project:
6. Data on availability of materials of the earlier performed researches: No
7. Technical characteristics of the designed Site.
8. Proposed area of the construction site, direction, length, initial and final points of the alignments of engineering communications: according to the attached Master Plan.
9. Stage (Phase) of designing: - working design
10. Design tasks, for which solution the availability of survey materials are required: - development of the design-estimation documentation in the stage of working design.
11. The list of reporting materials: technical report in 2 copies
12. Terms and sequence of submission of reporting materials: - according to the schedule of execution of survey performance.
13. Requirements to accuracy of surveys, reliability or security of the designed specifications: - according to effective normative documents, instructions, SNIIP and MKC of RT 50-01-2007, in the territory of the Republic of Tajikistan.
14. Special or additional requirements for execution of surveys or reporting materials: - No

Annexes:

1. Topographical plan of scale 1:500

The ToR is issued by: _____ /Kodirov S/ «» _____ 2015 Seal

OPEN SOCIETY «GIINTIZ»

**CATALOGUE OF EXPLORING EXCAVATIONS
 AND LITHO LOGICAL DESCRIPTION OF SOILS**

*Site: "Project of improvement of the medical equipment and institutions
 of the pediatric care in the district Hamadoni, Republic of Tajikistan"*

Sl. No.	Description of soils.	Type and number of excavations		Boreholes -1	Boreholes -2
		Elevation mark		483.13	483.10
		Mouth, m.			
		Section. m ² .			
		Diameter. mm		168	168
		Depth, m		11.7	12.4
		Geomorphology		1 st right-bank terrace of the river Pyanj	
SWL, m.		positioned of-5.7m settled of-5.5m		positioned of-5.7m settled of-5.5m	
Date of tunneling, Drilling.		18 - 12.04. 2015		23 - 25.04. 2015	
1.	Filled soil consisting of a mechanical mix of pebble, gravel and sand. The soil is dense, packed, low-moisture,	Category of soils in terms of complexity of their excavation according to standards SNiP IV-II – 82. Tab. 1-1.	24 «a»	0.0 - 0.60	0.0 - 0.50
2.	loam of grey color, average density, pelitic structures, lump structures, with an impurity of sand and an individual pebble of firm consistence		33 «v»	0.60 - 1.80	0.50 - 1.85
3.	Pebble soil - fragments are of good rounding, the roundish form, in the petrographic relation the soil is presented by metamorphic deposits. Aggregates are sand of grey color, average size, from low-moisture to water sated.		6 «v»	1.80-11.70	1.85-12.40

**CATALOGUE OF EXPLORING EXCAVATIONS
 AND LITHO LOGICAL DESCRIPTION OF SOILS**

*Site: "Project of improvement of the medical equipment and institutions
 of the pediatric care in the district Hamadoni, Republic of Tajikistan"*

Sl. No.	Description of soils.	Type and number of excavations		Boreholes -3	Boreholes -4
		Elevation mark Mouth, m.		483.40	483.50
		Section. m ² . Diameter. mm		168	168
		Depth, m		13.6	22.0
		Geomorphology		1 st right-bank terrace of the river Pyanj	
		SWL, m.		positioned of-6.1m settled of-5.8m	positioned of-6.11m settled of-5.9m
		Date of tunneling, Drilling.		25 - 27.04. 2015	27 - 29.04. 2015
1.	Filled soil consisting of a mechanical mix of pebble, gravel and sand. The soil is dense, packed, low-moisture,	Category of soils in terms of complexity of their excavation according to standards SNiP IV-II – 82. Tab. 1-1.	24 «a»	0.0 - 0.40	0.0 - 0.70
2.	loam of grey color, average density, pelitic structures, lump structures, with an impurity of sand and an individual pebble of firm consistence		33 «v»	0.40 - 1.80	0.70 - 1.80
3.	Pebble soil - fragments are of good rounding, the roundish form, in the petrographic relation the soil is presented by metamorphic deposits. Aggregates are sand of grey color, average size, from low-moisture to water sated.		6 «v»	1.80-13.60	1.80-22.0

**CATALOGUE OF EXPLORING EXCAVATIONS
 AND LITHO LOGICAL DESCRIPTION OF SOILS**

*Site: "Project of improvement of the medical equipment and institutions
 of the pediatric care in the district Hamadoni, Republic of Tajikistan"*

Sl. No.	Description of soils.	Type and number of excavations		Boreholes Bore pit -5	
		Elevation mark		483.0	
		Mouth, m.			
		Section. m ² .		1.25	
		Diameter. mm		168	
		Depth, m		19.0	
		Geomorphology		1 st right-bank terrace of the river Pyanj	
SWL, m.		positioned of-5.7m settled of-5.5m			
Date of tunneling, Drilling.		18 - 24.04. 2015			
1.	Filled soil consisting of a mechanical mix of pebble, gravel and sand. The soil is dense, packed, low-moisture,	Category of soils in terms of complexity of their excavation according to standards SNIIP IV-II – 82. Tab. 1-1.	24 «a»	0.0 - 0.30	
2.	loam of grey color, average density, pelitic structures, lump structures, with an impurity of sand and an individual pebble of firm consistence		33 «v»	0.30 - 1.80	
3.	Pebble soil - fragments are of good rounding, the roundish form, in the petrographic relation the soil is presented by metamorphic deposits. Aggregates are sand of grey color, average size, from low-moisture to water sated.		6 «v»	1.80-19.0	

Prepared by:

Morkel N.V.

TABLE OF PHYSICOMECHANICAL PROPERTIES OF SOILS

Site: "Project of improvement of the medical equipment and institutions of the pediatric care in the district Hamadoni, Republic of Tajikistan"

№	No. developments	Depth, m	Relative weight	Density t/m ³				Porosity of soil	Factor of Porosity		Humidity of soil in unit					Number of plasticity	Description of soil	No. IGE
				In natural condition	At full saturation	In suspension	Skeleton		At natural humidity	Humidity On border of fluidity	Natural	C At natural humidity	At full saturation	On border of fluidity	On border Of rolling			
			ρ_s	ρ	ρ_B	ρ_B	ρ_d	n	e	e_L	W	I _w	W _n	W _L	W _p	J _p		
1	Boreholes -1	1.5	2.68	1.82	1.93	0.93	1.49	0.444	0.799	0.951	0.220	0.74	0.298	0.355	0.260	0.095	Loam	2
2	Boreholes -2	1.5	2.68	1.80	1.94	0.94	1.50	0.440	0.787	0.895	0.200	0.68	0.293	0.334	0.250	0.084	Loam	2
3	Boreholes -3	1.5	2.68	1.83	1.94	0.94	1.50	0.440	0.787	0.683	0.223	0.76	0.293	0.340	0.255	0.085	Loam	2
4	Boreholes -4	1.5	2.68	1.85	1.92	0.92	1.51	0.436	0.775	0.919	0.226	0.78	0.289	0.343	0.260	0.083	Loam	2
5	Boreholes Bore pit -5	1.5	2.69	1.84	1.94	0.94	1.50	0.442	0.793	1.017	0.225	0.76	0.295	0.378	0.257	0.121	Loam	2

TABLE OF PHYSICOMECHANICAL PROPERTIES OF SOILS

Site: "Project of improvement of the medical equipment and institutions of the pediatric care in the district Hamadoni, Republic of Tajikistan"

№	Coefficient					Module of the deformation.		Value of everyday pressure with the complete phlegm MPa	solidity characteristics						initial soil settlement pressure MPa	The angle of internal friction		cohesion of soil		condition	
	Of the condensation in the natural state,	In the state of water saturation,	Dependent on the lateral expansion of the soil	Of the conditions of work in natural state	Of the conditions of work in the state of water saturation	In natural state, MPa	in the state of water saturation, MPa		at ordinary pressure P, MPa	with the increment pressure +0,05MPa	with the increment pressure +0.1 MPa	with the increment pressure +0.15 MPa	with the increment pressure +0.2 MPa	with the increment pressure +0.25 MPa		in the natural condition the degree	in the water-sated condition the degree	in the natural condition MPa	in the water-sated condition. MPa	in the natural condition	in the water-sated condition.
	a	a _w	β	m	m _w	E	E _w		P _n							P _{ps}	φ	φ _w	C	C _w	J _L
1	0.20	0.52	0.613	1.44	1.0	5.4	1.5	0.029	0.012	0.020	0.029	0.040	0.055		0.023		23°50'	0.0225	<0	1.45	
2	0.19	0.45	0.633	1.66	1.0	6.6	1.8	0.029	0.013	0.025	0.030	0.042	0.053		0.022				<0	1.23	
3	0.23	0.50	0.631	1.40	1.0	4.7	1.6	0.029	0.011	0.022	0.032	0.045	0.050		0.026				<0	1.09	
4	0.22	0.55	0.635	1.37	2.0	4.8	2.9	0.027	0.012	0.025	0.033	0.048	0.052		0.024				<0	0.24	
5	0.21	0.55	0.569	1.38	1.0	4.6	1.3	0.029	0.010	0.019	0.028	0.035	0.042		0.029		22°20'	0.0175	<0	0.31	

Составила

Камолова Р.Р.

RESULTS OF STATIC PROCESSING OF SOIL CHARACTERISTICS
(Standard and designed)

Engineering-geological element No. 1 - Filled in soil

$$P^{\text{H}}_{\text{natural}} = 1.80 \text{ t/m}^3$$

Engineering-geological element No. 2 - Loam soil

$W^s = 0.219$	$e^s = 0.788$	$P^{\text{s.nat.}} = 1.83 \text{ t/m}^3$	$P^{\text{s.w.}} = 1.91 \text{ t/m}^3$	$E^{\text{s.n}} = 5.22 \text{ MPa}$
				$E^{\text{s.w}} = 1.82 \text{ MPa}$
		$C^{\text{s.n}} = 0.0186$	$\varphi^{\text{s.n}} = 22^\circ 18'$	
		$v = 0.05$	$v = 0.08$	
		$C_{\text{I}} = 0.0183$	$\varphi_{\text{I}} = 21^\circ 45'$	
		$C_{\text{II}} = 0.0184$	$\varphi_{\text{II}} = 21^\circ 54'$	

According to results of tests on dynamic sounding in Boreholes No. 1, 2 3 and 4 conditional dynamic resistance of soil (SPT) to depth of 1.8-1.9 m makes 1.4-1.6 MPa, and on recalculation on the deformation module makes accordingly 6.5-14.0 MPa, at standard values 9.5-10.3 MPa (Annex No. 6.12).

According to conducted tests of PCR (Penetration Cone Resistance), the specific resistance of soil to depth 1.86 m makes 94 - 452 kPa (Annex No. 6.13).

Prepared by: Morkel N.

RESULTS OF STATIC PROCESSING OF SOIL CHARACTERISTICS
(Standard and designed)

Engineering-geological element No. 3- Pebble soil

$P_{nat.}^H = 1.96 \text{ t/m}^3$	$\varphi^H = 39^\circ 11'$
$v = 0.06$	$v = 0.03$
$p_I = 1.87 \text{ t/m}^3$	$\varphi_I = 38^\circ 40'$
$p_{II} = 1.90 \text{ t/m}^3$	$\varphi_{II} = 39^\circ 56'$

$C = 0.001 \text{ MPa}$	} MKC RT 50-01-2007, Annex.4. tabl.4.1 MKC RT 50-01-2007, Annex.5. tabl.5.1
$E = 40 \text{ MPa}$	
$R_o = 600 \text{ kPa}$	

According to results of tests under dynamic sounding in Boreholes No. 1, 2 3 and 4, the conditional dynamic resistance of soil (SPT) to depth of 1.8-2.2 m makes 4.6-24.3 MPa, and on recalculation on the deformation module it makes accordingly 23.0-35.0 MPa, at standard value 28.0-32.0 MPa (Annex No. 6.12).

Prepared by:

Morkel N.

THE TABLE OF THE SOIL CONDITIONS

Site: "Project of improvement of the medical equipment and institutions of the pediatric care in the district Hamadoni, Republic of Tajikistan"

№	№ output	Depth in m	the interval of the depth of the settlement	Solidity characteristics Sslg	Solidity characteristics. the increment load MPa.+0.2	Σ Characteristics sm	the thickness solidity Sslg, m	the thickness solidity the increment load MPa Sslg +0.2	the initial pressure MPa	Normative initial pressure MPa	Designation of the soil
1.	Boreholes -1	1.5	0.60 - 1.80	0.012	0.028	1.44	1.20	1.20	0.023	0.023	I
2.	Boreholes -2	1.5	0.50 - 1.85	0.013	0.029	1.76	1.35	1.35	0.022	0.022	
3.	Boreholes -3	1.5	0.40 - 1.80	0.011	0.029	1.54	1.40	1.40	0.026	0.026	
4	Boreholes -4	1.5	0.70 - 1.80	0.012	0.027	1.32	1.10	1.10	0.024	0.024	
5	Boreholes Bore pit -5	1.5	0.30 - 1.80	0.010	0.029	1.50	1.50	1.50	0.029	0.029	

Prepared by:

Kamolova R.

RESULTS OF MECHANICAL ANALYSIS BY SIEVING METHOD IN % OF SOILS

Site: "Project of improvement of the medical equipment and institutions of the pediatric care in the district Hamadoni, Republic of Tajikistan"

Sl. No.	Excavation development and its No.	Depth in m.	> 200	200-100	100-40	40-20	20-10	10-5.0	5.0-2.0	2.0-1.0	1.0-0.5	0.5-0.25	0.25-0.10	0.10	Description of soil
1.	Boreholes Bore pit -5	2.5	5.0		61.74	8.89	3.56	3.27	0.78	5.68	7.86	2.37	0.44	0.41	EGE No. 3 Pebble soil
2.	-//-	3.0	5.0		62.02	9.30	3.47	3.10	0.83	5.27	7.75	2.43	0.46	0.37	
3.	-//-	3.5	5.0		60.04	10.06	3.46	3.39	0.88	5.76	8.02	2.36	0.56	0.47	
4.	-//-	4.0	5.0		63.32	8.01	3.41	3.33	0.90	5.44	7.08	2.49	0.62	0.40	
5.	-//-	4.5	5.0		60.23	9.03	3.64	3.48	0.94	6.02	8.20	2.60	0.48	0.38	
6.	-//-	5.0	5.0		60.81	9.98	3.53	3.35	0.98	5.59	7.67	2.37	0.40	0.31	
Averaged value of granulometric content															
			5.0		61.36	9.21	3.51	3.32	0.89	5.63	7.76	2.44	0.49	0.39	
			boulders		pebble			gravel			sand				
			5.0 %		74.08%			4.21%			16.71%				

Prepared by:

Shohnazarov B.B.

**RESULTS
 OF DEFINITION OF DENSITY AND ANGLE OF NATURAL SLOPE**

*Site: "Project of improvement of the medical equipment and institutions of the pediatric care
 in the district Hamadoni, Republic of Tajikistan"*

Sl. No.	Development work and No.	Depth m	Weigh of soil ton	Volume of water m ³	Soil density t/m ³	Cone height m	D of cone basis m	Angle of natural slope degree	tgφ
1.	Boreholes Bore pit -5	2.5	0.0320	0.0172	1.86	0.44	102	40° 48'	0.863
2.	-//-	3.0	0.0296	0.0154	1.92	0.41	0.98	39° 55'	0.837
3.	-//-	3.5	0.0266	0.0136	1.96	0.36	0.92	38° 10'	0.783
4.	-//-	4.0	0.0314	0.0158	1.98	0.38	0.94	39° 00'	0.808
5.	-//-	4.5	0.0304	0.0151	2.01	0.40	0.99	38° 56'	0.808
6.	-//-	5.0	0.0262	0.0130	2.02	0.43	108	38° 32'	0.796
					$P^H = 1.96 \text{ t/m}^3$ $v = 0.02$ $P_I = 1.87 \text{ t/m}^3$ $p_{II} = 1.90 \text{ t/m}^3$			$tg\varphi^H = 39^\circ 11'$ $v = 0.03$ $tg\varphi_I = 38^\circ 40'$ $tg\varphi_{II} = 39^\circ 56'$	

Prepared by:

Shohnazarov B.B.

**RESULTS OF ANALYSIS
CORROSION OF SOILS
BY USE OF METHOD OF UES**

*Site: "Project of improvement of the medical equipment and institutions of the pediatric care
in the district Hamadoni, Republic of Tajikistan"*

No./No	No./No. Of development	Depth of intake, m.	UES in Om.m	Corrosion aggression of soils
1.	Boreholes - 1	1.0	26.92	average
2.	Boreholes - 2	1.5	25.20	average
3.	Boreholes - 3	1.5	23.12	average
4.	Boreholes - 4	1.0	26.25	average
5.	Boreholes Bore pit -5	1.0	23.71	average
6.	-//-	2.5	23.33	average

Analysis specialist:

Ziyadulloev G.

**RESULTS OF ANALYSIS
CORROSION ACTIVITY OF SOILS
TO NONFERROUS METALS**

*Site: "Project of improvement of the medical equipment and institutions of the pediatric care
in the district Hamadoni, Republic of Tajikistan"*

Sl. No.	No. Of work development	Depth of intake, m.	PH	Chlorine ions, % CL	Nitrate ions, % NO ₃	Ions –iron, % Fe	Organic substances, %
1.	Boreholes - 1	1.0	7.2	0.0013	0.0005	no	0.0083
2.	Boreholes - 2	1.5	7.3	0.0017	0.0008	no	0.0088
3.	Boreholes - 3	1.5	7.4	0.0013	0.0004	no	0.0081
4.	Boreholes - 4	1.0	7.5	0.0013	0.0012	no	0.0078
5.	Boreholes Bore pit -5	1.0	7.3	0.0014	0.0009	no	0.0072
6.	-//-	2.5	7.5	0.0018	0.0010	no	0.0080

Analysis specialist:

Dadabaev G.

**TABLE
 OF CHEMICAL COMPOUND OF SOILS
 WATER EXTRACT**

*Site: "Project of improvement of the medical equipment and institutions of the pediatric care
 in the district Hamadoni, Republic of Tajikistan"*

Sl. No.	No. of Excavation	Depth in m	Mg/kg of soil								PH
			Dry remaining	Alkalinity		Cl'	SO ₄ "	Ca"	Mg"	Na'+K'	
				CO ₃ "	HCO ₃ '						
1.	Boreholes - 1	1.0	2776.0	no	1460	38	528	120	71	554	7.0
2.	Boreholes - 2	1.5	3052.0	no	1830	51	360	200	61	550	7.1
3.	Boreholes - 3	1.5	4426.0	no	2440	38	720	120	48	1060	7.2
4.	Boreholes - 4	1.0	5087.0	no	2440	38	1200	160	97	1152	7.3
5.	Boreholes Bore pit -5	1.0	2804.0	no	1475	50	535	130	62	552	7.0
6.	-//-	2.5	3089.0	no	1720	49	500	200	70	550	7.2

Prepared by:

Dadabaeva G.

CHEMICAL ANALYSIS OF WATER

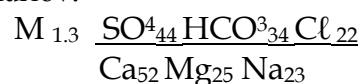
Site: "Project of improvement of the medical equipment and institutions of the pediatric care
 in the district Hamadoni, Republic of Tajikistan"

No. of working out: Bore hole, pit-5
 Depth of sample selection: 5.50 m

Water chemical compound

	Content in one liter				Other definitions
	Ions	Mg/l	Mg/equiv alent	% Mg/equival ent	
CATIONS	Ca	190	9.5	52	<u>CO mg/l</u>
	Mg	55	4.5	25	<u>CO₂</u>
	Na	95	4.15	23	atres express calculation <u>mg/l -3.52</u>
	K				Oxidability <u>O₂ mg/l -</u>
	NH ₄	no			Rigidity (mg-equiv) <u>14.0</u>
	Fe ⁺⁺	-/-			and degrees
	Fe ⁺⁺⁺	-/-			The dry remaining <u>1280 mg/l.</u>
					<u>PH 6.74.</u>
ANIONS	Total :	340	18.15	100	Physical properties
	CO ₃	no	-	-	Transparency
	HCO ₃	380	6.23	34	Taste
	Cl	139	3.92	22	Color
	SO ₄	384	8.0	44	Smell
	NO ₃	16			Sediment
	NO ₂				Change at standing
	Total:	903	18.15	100	

Formula of Kurlov:



Analyst:

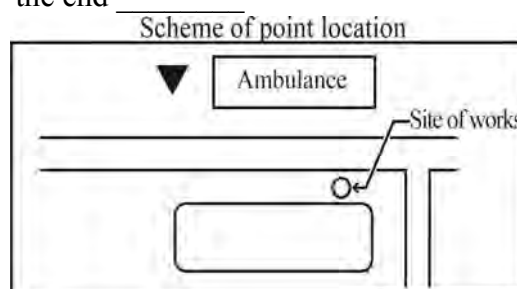
Dadabaeva G.

REGISTER LOG

Tests of soils by the method of dynamic sounding according to SPT data (in boreholes)

*Site: "Project of improvement of the medical equipment and institutions of the pediatric care
 in the district Hamadoni, Republic of Tajikistan"*

Sounding point: Borehole No. 1
 Date of carrying out of test: the beginning _____ the end _____
 Depth of sounding - 22.0 m
 Distance to the nearest excavation _____ m
 Absolute elevation mark of the point 483.13 m



Depth of probe submerging, cm	Number of blows in the pit	Depth of probe submerging beyond the pit, cm	Correction ratio		Corrected number of blows in the pit $N_{E_1 K_2}$	Specific energy of sounding And, N/cm	Conditiona l dynamic resistance of the soil pd, MPa	E MPa	No. of Layer
			K ₁	K ₂					
10	4	10	0.62	1.0	2.5	1120	2.8	11.0	2
20	4	10	0.62	1.0	2.5	1120	2.8	11.0	
30	3	10	0.62	1.0	1.9	1120	2.1	9.0	
40	4	10	0.62	1.0	2.5	1120	2.8	11.0	
50	4	10	0.62	1.0	2.5	1120	2.8	11.0	
60	3	10	0.62	1.0	1.9	1120	2.1	9.0	
70	4	10	0.62	1.0	2.5	1120	2.8	11.0	
80	4	10	0.62	1.0	2.5	1120	2.8	11.0	
90	3	10	0.62	1.0	1.9	1120	2.1	9.0	
100	2	10	0.62	1.0	1.3	1120	1.4	6.5	
110	2	10	0.62	1.0	1.3	1120	1.4	7.5	
120	2	10	0.62	1.0	1.3	1120	1.4	7.5	
130	3	10	0.62	1.0	1.9	1120	2.1	9.0	
140	3	10	0.62	1.0	1.9	1120	2.1	9.0	
150	3	10	0.62	1.0	1.9	1120	2.1	9.0	
160	3	10	0.56	0.92	1.5	1120	1.7	8.0	
170	5	10	0.56	0.92	2.6	1120	2.9	12.0	
								E ⁿ =9.5	
180	8	10	0.56	0.92	4.1	1120	4.6	14.0	3
190	21	10	0.56	0.92	10.8	1120	12.1	28.0	
200	28	10	0.56	0.92	14.4	1120	16.1	33.0	
210	30	10	0.56	0.92	15.4	1120	17.2	34.0	
220	34	10	0.56	0.92	17.5	1120	19.6	35.0	
								E ⁿ =28.8	

REGISTER LOG

Tests of soils by the method of dynamic sounding according to SPT data (in boreholes)

*Site: "Project of improvement of the medical equipment and institutions of the pediatric care
 in the district Hamadoni, Republic of Tajikistan"*

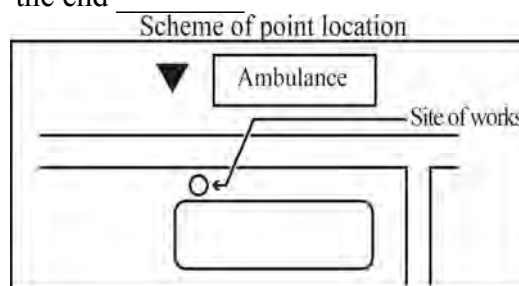
Sounding point: Borehole No. 2

Date of carrying out of test: the beginning _____ the end _____

Depth of sounding - 22.0 m

Distance to the nearest excavation _____ m

Absolute elevation mark of the point 483.10 m



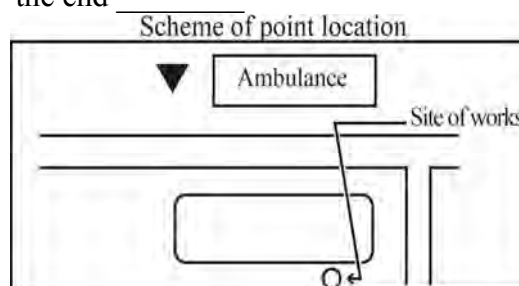
Depth of probe submerging, cm	Number of blows in the pit	Depth of probe submerging beyond the pit, cm	Correction ratio		Corrected number of blows in the pit $N\bar{E}_1 K_2$	Specific energy of sounding And, N/cm	Conditiona l dynamic resistance of the soil pd, MPa	E MPa	No. of Layer
			K ₁	K ₂					
10	3	10	0.62	1.0	1.9	1120	2.1	9.0	2
20	3	10	0.62	1.0	1.9	1120	2.1	9.0	
30	4	10	0.62	1.0	2.5	1120	2.8	11.0	
40	3	10	0.62	1.0	1.9	1120	2.1	9.0	
50	4	10	0.62	1.0	2.5	1120	2.8	11.0	
60	3	10	0.62	1.0	1.9	1120	2.1	9.0	
70	3	10	0.62	1.0	1.9	1120	2.8	9.0	
80	4	10	0.62	1.0	2.5	1120	2.1	11.0	
90	3	10	0.62	1.0	1.9	1120	2.1	9.0	
100	4	10	0.62	1.0	2.5	1120	2.8	11.0	
110	3	10	0.62	1.0	1.9	1120	2.1	9.0	
120	4	10	0.62	1.0	2.5	1120	2.8	11.0	
130	4	10	0.62	1.0	2.5	1120	2.8	11.0	
140	4	10	0.62	1.0	2.5	1120	2.8	11.0	
150	3	10	0.62	1.0	1.9	1120	2.1	9.0	
160	3	10	0.56	0.92	1.9	1120	2.1	9.0	
170	4	10	0.56	0.92	2.1	1120	2.4	10.5	
180	4	10	0.56	0.92	2.1	1120	2.4	10.5	
190	5	10	0.56	0.92	3.1	1120	3.5	13.0	
200	8	10	0.56	0.92	4.1	1120	4.6	14.0	
								E ⁿ =10.3	
210	22	10	0.56	0.92	11.3	1120	12.7	29.0	3
220	26	10	0.56	0.92	13.4	1120	15.0	32.0	
230	36	10	0.56	0.92	18.5	1120	20.7	35.0	
								E ⁿ =32.0	

REGISTER LOG

Tests of soils by the method of dynamic sounding according to SPT data (in boreholes)

*Site: "Project of improvement of the medical equipment and institutions of the pediatric care
 in the district Hamadoni, Republic of Tajikistan"*

Sounding point: Borehole No. 3
 Date of carrying out of test: the beginning _____ the end _____
 Depth of sounding - 22.0 m
 Distance to the nearest excavation _____ m
 Absolute elevation mark of the point 483.40 m



Depth of probe submerging, cm	Number of blows in the pit	Depth of probe submerging beyond the pit, cm	Correction ratio		Corrected number of blows in the pit $N_{E_1 K_2}$	Specific energy of sounding And, N/cm	Conditiona l dynamic resistance of the soil pd, MPa	E MPa	No. of Layer
			K ₁	K ₂					
10	4	10	0.62	1.0	2.5	1120	2.8	11.0	2
20	3	10	0.62	1.0	1.9	1120	2.1	9.0	
30	3	10	0.62	1.0	1.9	1120	2.1	9.0	
40	4	10	0.62	1.0	2.5	1120	2.8	11.0	
50	3	10	0.62	1.0	1.9	1120	2.1	9.0	
60	3	10	0.62	1.0	1.9	1120	2.1	9.0	
70	4	10	0.62	1.0	2.5	1120	2.8	11.0	
80	4	10	0.62	1.0	2.5	1120	2.8	11.0	
90	3	10	0.62	1.0	1.9	1120	2.1	9.0	
100	2	10	0.62	1.0	1.3	1120	1.4	7.5	
110	2	10	0.62	1.0	1.3	1120	1.4	7.5	
120	3	10	0.62	1.0	1.9	1120	2.1	9.0	
130	3	10	0.62	1.0	1.9	1120	2.1	9.0	
140	3	10	0.62	1.0	1.9	1120	2.1	9.0	
150	4	10	0.62	1.0	2.5	1120	2.8	11.0	
160	4	10	0.56	0.92	2.1	1120	2.4	10.5	
170	3	10	0.56	0.92	1.5	1120	1.7	8.0	
180	4	10	0.56	0.92	2.1	1120	2.4	10.5	
190	4	10	0.56	0.92	2.1	1120	2.4	10.5	
								E ⁿ =9.6	
200	13	10	0.56	0.92	6.7	1120	7.5	23.0	3
210	28	10	0.56	0.92	14.4	1120	16.1	34.5	
220	36	10	0.56	0.92	18.5	1120	20.7	35.0	
								E ⁿ =30.8	

REGISTER LOG

Tests of soils by the method of dynamic sounding according to SPT data (in boreholes)

*Site: "Project of improvement of the medical equipment and institutions of the pediatric care
 in the district Hamadoni, Republic of Tajikistan"*

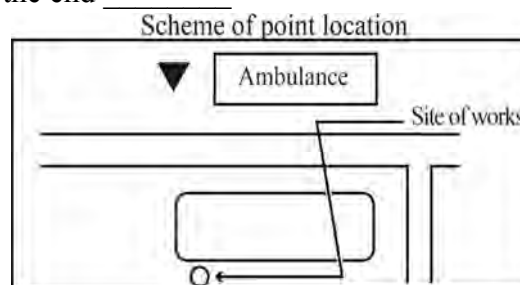
Sounding point: Borehole No. 4

Date of carrying out of test: the beginning _____ the end _____

Depth of sounding - 22.0 m

Distance to the nearest excavation _____ m

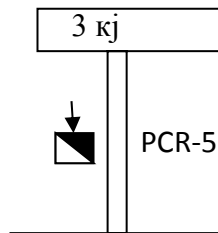
Absolute elevation mark of the point 483.50 m



Depth of probe submerging, cm	Number of blows in the pit	Depth of probe submerging beyond the pit, cm	Correction ratio		Corrected number of blows in the pit $N_{E_1 K_2}$	Specific energy of sounding And, N/cm	Conditiona l dynamic resistance of the soil pd, MPa	E MPa	No. of Layer
			K ₁	K ₂					
10	4	10	0.62	1.0	2.5	1120	2.8	11.0	2
20	4	10	0.62	1.0	2.5	1120	2.8	11.0	
30	3	10	0.62	1.0	1.9	1120	2.1	9.0	
40	3	10	0.62	1.0	1.9	1120	2.1	9.0	
50	3	10	0.62	1.0	1.9	1120	2.1	9.0	
60	4	10	0.62	1.0	2.5	1120	2.8	11.0	
70	3	10	0.62	1.0	1.9	1120	2.1	9.0	
80	3	10	0.62	1.0	1.9	1120	2.1	9.0	
90	4	10	0.62	1.0	2.5	1120	2.8	11.0	
100	3	10	0.62	1.0	1.9	1120	2.1	9.0	
110	3	10	0.62	1.0	1.9	1120	2.1	9.0	
120	3	10	0.62	1.0	1.9	1120	2.1	9.0	
130	4	10	0.62	1.0	2.5	1120	2.8	11.0	
140	3	10	0.62	1.0	1.9	1120	2.1	9.0	
150	4	10	0.62	1.0	2.5	1120	2.8	11.0	
160	4	10	0.56	0.92	2.1	1120	2.4	10.5	
170	4	10	0.56	0.92	2.1	1120	2.4	10.5	
180	4	10	0.56	0.92	2.1	1120	2.4	10.5	
								E ⁿ =9.9	3
190	10	10	0.56	0.92	6.2	1120	6.9	23.5	
200	22	10	0.56	0.92	11.3	1120	12.7	29.0	
210	35	10	0.56	0.92	21.7	1120	24.3	35.0	
								E ⁿ =29.2	

REGISTER LOG
For carrying out of PCR tests
(Penetration Cone Resistance) on the Site:

*Site: "Project of improvement of the medical equipment and institutions of the pediatric care
 in the district Hamadoni, Republic of Tajikistan"*



Weight of hammer - 8 kg
 Height of falling - 50 cm=0.5m
 Dia of cone - 20 mm=0.02m
 Area of cone - 0.0013 m²
 Weight of the Set - 2.1 kg

No. of test	Depth of carrying out	No. of Blows	Penetration of Cones cm	Penetration Interval, m	Soil Resistance кPa	Average Value кPa	Note
1	0.10	10	30	0.10-0.40	80	94	
		10	30	0.40-0.70	80		
		10	20	0.70-0.90	121		
		10	15	0.90-1.05	161	196	
		10	12	1.05-1.17	201		
		10	12	1.17-1.29	201		
		10	13	1.29-1.32	185		
		10	11	0.32-1.43	219		
		10	12	1.43-1.55	201		
		10	13	1.55-1.68	185		
		10	12	1.68-1.80	201		
		10	8	1.80-1.84	301	452	
		10	4	1.84-1.86	603		

Soil resistance:

$$q = \frac{E}{A \times H} - \frac{M}{(M + P)} \text{ Pa (паскаль) Pascal}$$

E-energy, joules,
 A- Cone area, m²
 N-depth of penetration, m,
 M-weight of Hammer, kg,
 P- weight of complete set, kg,

E = m x g x h in joules,
 h-height of falling of a hammer, m

Prepared by: R.Muinov