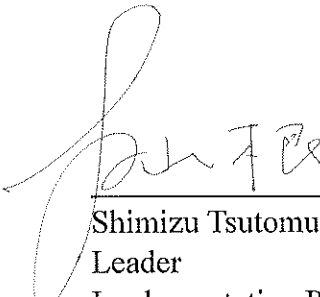
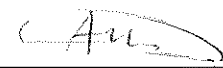


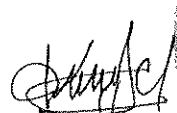
**Minutes of Discussions**  
**on the Implementation Review Study**  
**for the Project for Construcrion of the bridges in Juba**  
**in the Republic of South Sudan**  
**(Explanation on Draft Implementation Review Study Report)**

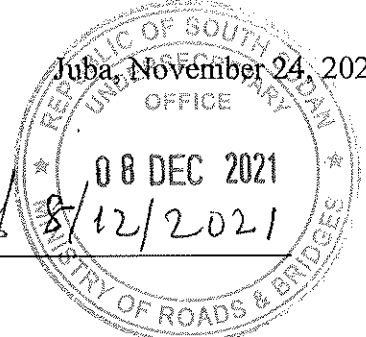
With reference to the minutes of discussions signed between Ministry of Roads and Bridges, Ministry of Roads and Bridges of the Central Equatoria State and the Japan International Cooperation Agency (hereinafter referred to as "JICA") on August 20, 2021 and in response to the request from the Government of the Republic of South Sudan (hereinafter referred to as "South Sudan"), JICA dispatched the Implementation Review Study Team (hereinafter referred to as "the Team") for the explanation of Draft Implementation Review Study Report (hereinafter referred to as "the Draft Report") for the Project for Construction of the bridges in Juba (hereinafter referred to as "the Project").


As a result of the discussions, both sides agreed on the main items described in the attached sheets.

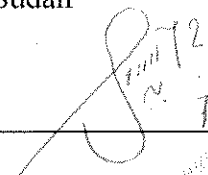
  
Shimizu Tsutomu  
Leader  
Implementation Review Study Team  
Japan International Cooperation Agency

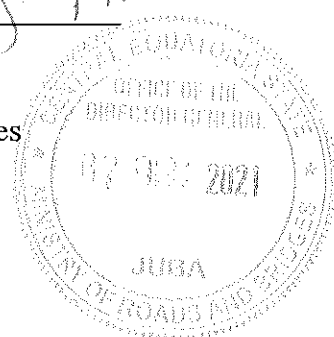
  
Angelo Deng Rehan  
Undersecretary for Planning  
Ministry of Finance and Planning  
Republic of South Sudan

Juba, November 24, 2021  
  
Peter Kuot Jel  
Undersecretary  
Ministry of Roads and Bridges  
Republic of South Sudan



  
George Agrey Duku  
Director of Bridges and Structures  
(Project Manager)  
Ministry of Roads and Bridges  
Republic of South Sudan

  
Samuel Taban Laki  
Director General  
Ministry of Roads and Bridges  
Central Equatoria State  
Republic of South Sudan



## ATTACHEMENT

1. Objective of the Project

The objective of the Project is to mitigate congestions and facilitate urban passenger and goods transportation in Juba, thereby contributing to economic and social development of South Sudan.

2. Title of the implementation review study

Both sides confirmed the title of the implementation review study as “the Implementation Review Study for the Project for Construcion of the Bridges in Juba”.

3. Project site

Both sides confirmed that the Project sites are located in Juba city as shown in Annex-1.

4. Responsible authority for the Project

Both sides confirmed the Ministry of Roads and Bridges (hereinafter referred to as “MRB”) is the responsible and executing agency for the Project. MRB shall coordinate with all the relevant authorities to ensure smooth implementation of the Project and ensure that the relevant authorities shall manage the undertakings for the Project properly and on time. The organization chart of MRB is as shown in Annex 2.

5. Contents of the Draft Report

After the explanation of the contents of the Draft Report by the Team, the South Sudan side agreed to its contents. JICA will finalize the Implementation Review Study Report based on the confirmed items. The report will be sent to the South Sudan side around January 2022.

6. Cost estimate

Both sides confirmed that the cost estimate including the contingency explained by the Team is provisional and will be examined further through the Detailed Design. The contingency would cover the additional cost against natural disaster, unexpected natural conditions, etc.

7. Confidentiality of the cost estimate and technical specifications

Both sides confirmed that the cost estimate and technical specifications of the Project should never be disclosed to any third parties until all the contracts under the Project are concluded.

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8. Procedures and Basic Principles of Japanese Grant

The South Sudan side agreed that the procedures and basic principles of Japanese Grant (hereinafter referred to as “the Grant”) as described in Annex 3 shall be applied to the Project. In addition, the South Sudan side agreed to take necessary measures according to the procedures.

9. Timeline for the project implementation

The Team explained to the South Sudan side that the expected timeline for the project implementation is as attached in Annex 4.

10. Expected outcomes and indicators

Both sides agreed that key indicators for expected outcomes are as attached in Annex 5. The South Sudan side will be responsible for the achievement of agreed key indicators targeted in year 2028 and shall monitor the progress for Ex-Post Evaluation based on those indicators.

11. Ex-Post Evaluation

JICA will conduct ex-post evaluation after three (3) years from the project completion, in principle, with respect to five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact, Sustainability). The result of the evaluation will be publicized. The South Sudan side is required to provide necessary support for the data collection.

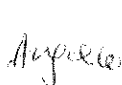
12. Undertakings of the Project

Both sides confirmed the undertakings of the Project as described in Annex 6. With regard to exemption of customs duties, internal taxes and other fiscal levies as stipulated in 1. (2) No.5 of Annex 6, both sides confirmed that such customs duties, internal taxes and other fiscal levies, which shall be clarified in the bid documents by MRB during the implementation stage of the Project.

The South Sudan side assured to take the necessary measures and coordination including allocation of the necessary budget which are preconditions of implementation of the Project. It is further agreed that the costs are indicative, i.e. at Outline Design level. More accurate costs will be calculated at the Detailed Design stage.

Both sides also confirmed that the Annex 6 will be used as an attachment of G/A.

Both sides confirmed that MRB shall take necessary measures to ensure and maintain the security of the Project site and the persons related to the implementation of the Project, in cooperation with relevant authorities during the Project period. Such security measures shall reasonably reflect needs of the Consultant/the Contractor engaging in the Project, as



shown in Annex 6.

Both sides agreed that in case the additional security cost would be necessary for the implementation of the Project, such cost shall be borne by the Recipient without using the Grant.

13. Monitoring during the implementation

The Project will be monitored by the Executing Agency and reported to JICA by using the form of Project Monitoring Report (PMR) attached as Annex 7. The timing of submission of the PMR is described in Annex 6.

14. Project completion

Both sides confirmed that the project completes when all the facilities constructed and equipment procured by the Grant are in operation. The completion of the Project will be reported to JICA promptly by the Executing Agency, but in any event not later than six months after completion of the Project.

15. Environmental and Social Considerations

15-1 General Issues

15-1-1 Environmental Guidelines and Environmental Category

The Team explained that ‘JICA Guidelines for Environmental and Social Considerations (April 2010)’ (hereinafter referred to as “the Guidelines”) is applicable for the Project. The Project is categorized as B because the Project is not considered to be a large-scale roads and bridges project, is not located in a sensitive area, and has none of the sensitive characteristics under the JICA guidelines for environmental and social considerations(April 2010), it is not likely to have a significant adverse impact on the environment.

15-1-2 Environmental Checklist

The environmental and social considerations including major impacts and mitigation measures for the Project are summarized in the Environmental Checklist attached as Annex 8. Both sides confirmed that in case of major modification of the content of the Environmental Checklist, the South Sudan side shall submit the modified version to JICA in a timely manner.

15-2 Environmental Issues

15-2-1 Environmental Impact Assessment (EIA)

Both sides confirmed the EIA report will be approved by the Ministry of Environment in February 2022.

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## 15-2-2 Environmental Management Plan and Environmental Monitoring Plan

Both sides confirmed Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP) of the Project is as Annex 9, respectively. Both side agreed that environmental mitigation measures and monitoring shall be conducted based on the EMP and EMoP, which may be updated during the detailed design stage.

## 15-3 Environmental and Social Monitoring

### 15-3-1 Environmental Monitoring

Both sides agreed that the South Sudan side will submit results of environmental monitoring to JICA with PMR by using the monitoring form attached as Annex 10. The timing of submission of the monitoring form is described in Annex 6.

### 15-3-2 Information Disclosure of Monitoring Results

Both sides confirmed that the South Sudan side will disclose results of environmental and social monitoring to local stakeholders through their website / in their field offices.

The South Sudan side agreed JICA will disclose results of environmental and social monitoring submitted by the South Sudan side as the monitoring forms attached as Annex 10 on its website.

## 16. Other Relevant Issues

### 16-1. Relocation and/or removal of utilities and obstructions

With regard to relocation and/or removal of utilities and obstructions as stipulated in 1. (1) No.9 of Annex 6, both sides confirmed that MRB shall coordinate with MRB-CES for securing budget, human resources and machineries.

### 16-2. Temporary construction yard

The South Sudan side agreed to secure the temporary construction yard of the following conditions and report to JICA through JICA South Sudan Office before the end of February 2022.

Area: Minimum 1.2 ha

Average distance to the Target Bridges: Maximum 4.0km

### 16-3. Disclosure of Information

Both sides confirmed that the Implementation Review Study Report from which project cost is excluded will be disclosed to the public after completion of the Implementation Review Study. The comprehensive report including the project cost will be disclosed to the public after all the contracts under the Project are concluded.

- Annex 1 Project Site
- Annex 2 Organization Chart
- Annex 3 Japanese Grant
- Annex 4 Project Implementation Schedule
- Annex 5 Expected outcomes and indicators
- Annex 6 Major Undertakings to be taken by the Government of South Sudan
- Annex 7 Project Monitoring Report (template)
- Annex 8 Environmental Check List
- Annex 9 Environmental Management Plan/Environmental Monitoring Plan
- Annex 10 Environmental and Social Monitoring Form

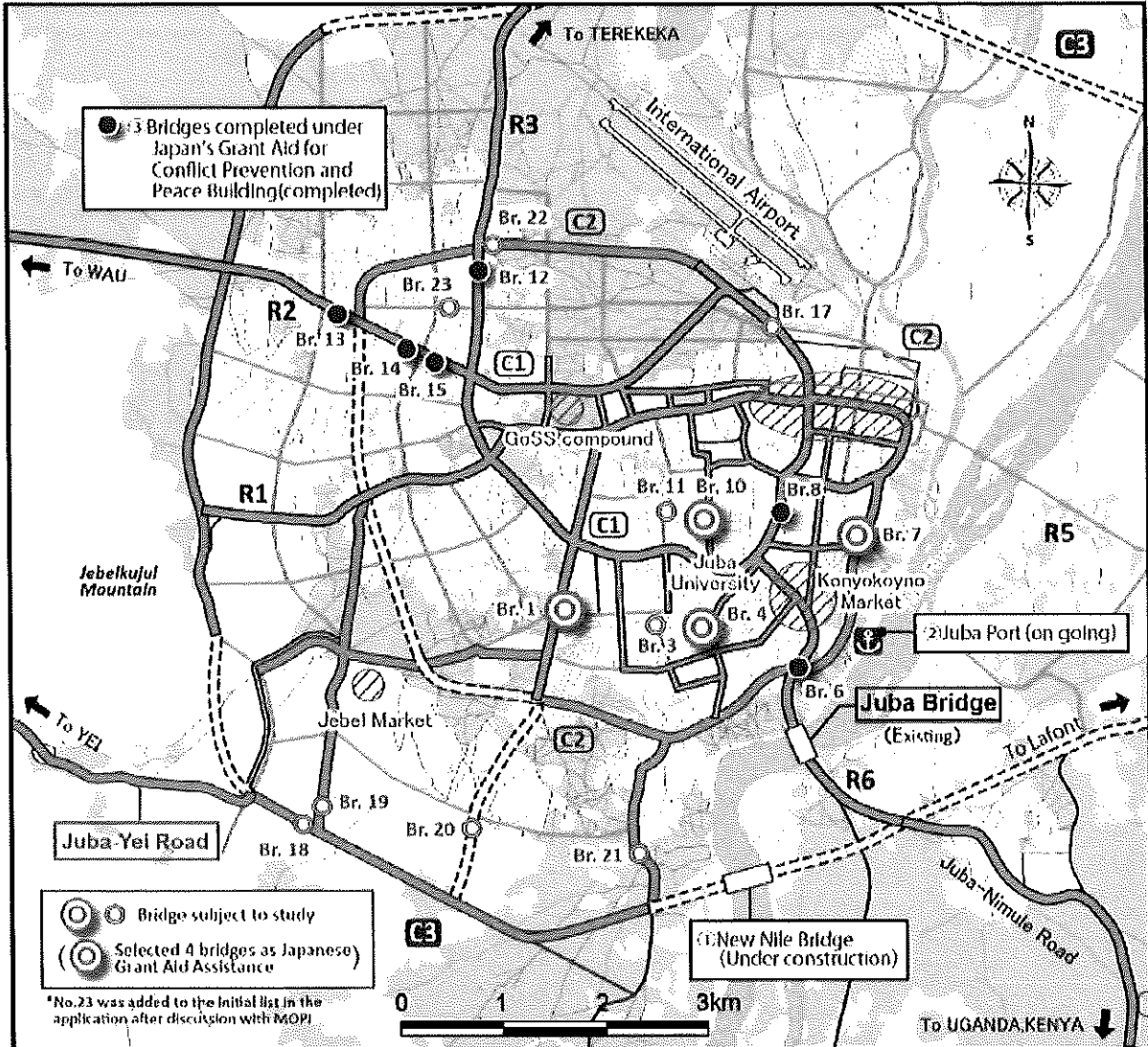
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Project Site



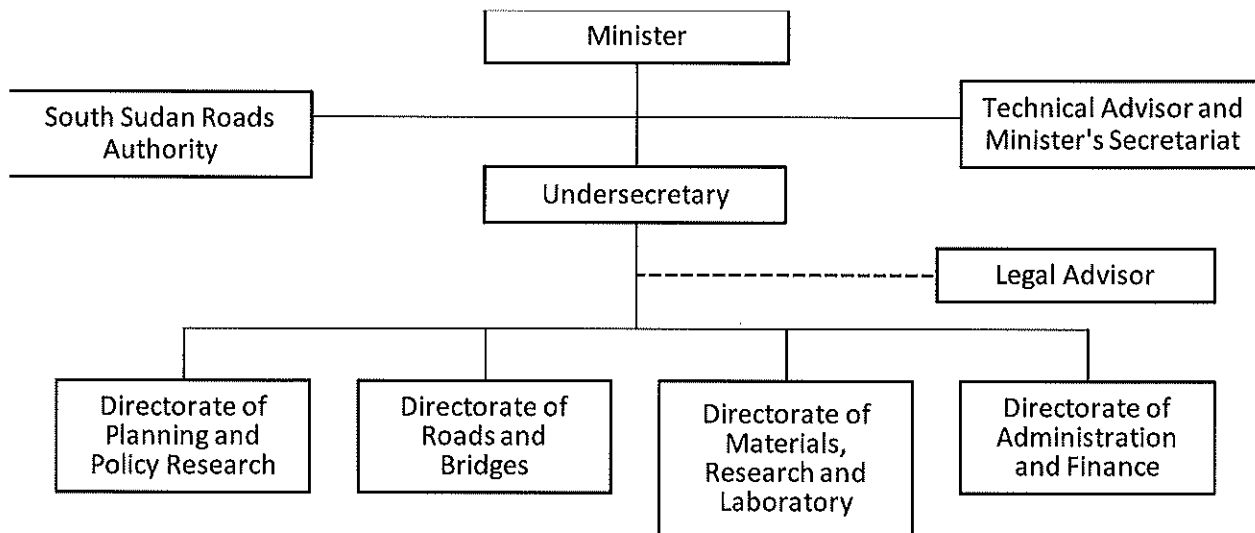
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Organization Chart



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## JAPANESE GRANT

The Japanese Grant is non-reimbursable fund provided to a recipient country (hereinafter referred to as "the Recipient") to purchase the products and/or 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. Followings are the basic features of the project grants operated by JICA (hereinafter referred to as "Project Grants").

## 1. Procedures of Project Grants

Project Grants are conducted through following procedures (See "PROCEDURES OF JAPANESE GRANT" for details):

## (1) Preparation

- The Preparatory Survey (hereinafter referred to as "the Survey") conducted by JICA

## (2) Appraisal

- Appraisal by the government of Japan (hereinafter referred to as "GOJ") and JICA, and Approval by the Japanese Cabinet

## (3) Implementation

## Exchange of Notes

- The Notes exchanged between the GOJ and the government of the Recipient Grant Agreement (hereinafter referred to as "the G/A")

- Agreement concluded between JICA and the Recipient

## Banking Arrangement (hereinafter referred to as "the B/A")

- Opening of bank account by the Recipient in a bank in Japan (hereinafter referred to as "the Bank") to receive the grant

## Construction works/procurement

- Implementation of the project (hereinafter referred to as "the Project") on the basis of the G/A

## (4) Ex-post Monitoring and Evaluation

- Monitoring and evaluation at post-implementation stage

## 2. Preparatory Survey

## (1) Contents of the Survey

The aim of the Survey is to provide basic documents necessary for the appraisal of the the Project made by the GOJ 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 necessary for the

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implementation of the Project.

- Evaluation of the feasibility of the Project to be implemented under the Japanese Grant 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.
- Confirmation of Environmental and Social Considerations

The contents of the original request by the Recipient are not necessarily approved in their initial form. The Outline Design of the Project is confirmed based on the guidelines of the Japanese Grant.

JICA requests the Recipient to take 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 executing agency of the Project. Therefore, the contents of the Project are confirmed by all relevant organizations of the Recipient based on the Minutes of Discussions.

## (2) Selection of Consultants

For smooth implementation of the Survey, JICA contracts with (a) 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 GOJ to appraise the implementation of the Project after confirming the feasibility of the Project.

## 3. Basic Principles of Project Grants

### (1) Implementation Stage

#### 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 GOJ and the Government of the Recipient to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Recipient to define the necessary articles, in accordance with the E/N, to implement the Project, such as conditions of disbursement, responsibilities of the Recipient, and procurement conditions. The terms and conditions generally applicable to the Japanese Grant are stipulated in the "General Terms and Conditions for Japanese Grant (January 2016)."

#### 2) Banking Arrangements (B/A) (See "Financial Flow of Japanese Grant (A/P Type)" for

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details)

- a) The Recipient shall open an account or shall cause its designated authority to open an account under the name of the Recipient in the Bank, in principle. JICA will disburse the Japanese Grant in Japanese yen for the Recipient to cover the obligations incurred by the Recipient under the verified contracts.
- b) The Japanese Grant will be disbursed when payment requests are submitted by the Bank to JICA under an Authorization to Pay (A/P) issued by the Recipient.

### 3) Procurement Procedure

The products and/or services necessary for the implementation of the Project shall be procured in accordance with JICA's procurement guidelines as stipulated in the G/A.

### 4) 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 to continue to work on the Project's implementation after the E/N and G/A.

### 5) Eligible source country

In using the Japanese Grant disbursed by JICA for the purchase of products and/or services, the eligible source countries of such products and/or services shall be Japan and/or the Recipient. The Japanese Grant may be used for the purchase of the products and/or services of a third country as eligible, if necessary, taking into account the quality, competitiveness and economic rationality of products and/or services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm, which enter into contracts with the Recipient, are limited to "Japanese nationals", in principle.

### 6) Contracts and Concurrence by JICA

The Recipient will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be concurred by JICA in order to be verified as eligible for using the Japanese Grant.

### 7) Monitoring

The Recipient is required to take their initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and to regularly report to JICA about its status by using the Project Monitoring Report (PMR).

### 8) Safety Measures

The Recipient must ensure that the safety is highly observed during the implementation of the Project.

### 9) Construction Quality Control Meeting

Construction Quality Control Meeting (hereinafter referred to as the "Meeting") will be held

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for quality assurance and smooth implementation of the Works at each stage of the Works. The member of the Meeting will be composed by the Recipient (or executing agency), the Consultant, the Contractor and JICA. The functions of the Meeting are as followings:

- a) Sharing information on the objective, concept and conditions of design from the Contractor, before start of construction.
- b) Discussing the issues affecting the Works such as modification of the design, test, inspection, safety control and the Client's obligation, during of construction.

## (2) Ex-post Monitoring and Evaluation Stage

- 1) After the project completion, JICA will continue to keep in close contact with the Recipient in order to monitor that the outputs of the Project is used and maintained properly to attain its expected outcomes.
- 2) In principle, JICA will conduct ex-post evaluation of the Project after three years from the completion. It is required for the Recipient to furnish any necessary information as JICA may reasonably request.

## (3) Others

### 1) Environmental and Social Considerations

The Recipient shall carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the Recipient and JICA Guidelines for Environmental and Social Considerations (April, 2010).

### 2) Major undertakings to be taken by the Government of the Recipient

For the smooth and proper implementation of the Project, the Recipient is required to undertake necessary measures including land acquisition, and bear an advising commission of the A/P and payment commissions paid to the Bank as agreed with the GOJ and/or JICA. The Government of the Recipient shall ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the Recipient with respect to the purchase of the Products and/or the Services be exempted or be borne by its designated authority without using the Grant and its accrued interest, since the grant fund comes from the Japanese taxpayers.

### 3) Proper Use

The Recipient is required to maintain and use properly and effectively the products and/or services under the Project (including the facilities constructed and the equipment purchased), to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Japanese Grant.

### 4) Export and Re-export

The products purchased under the Japanese Grant should not be exported or re-exported from the Recipient.

Approved





## PROCEDURES OF JAPANESE GRANT

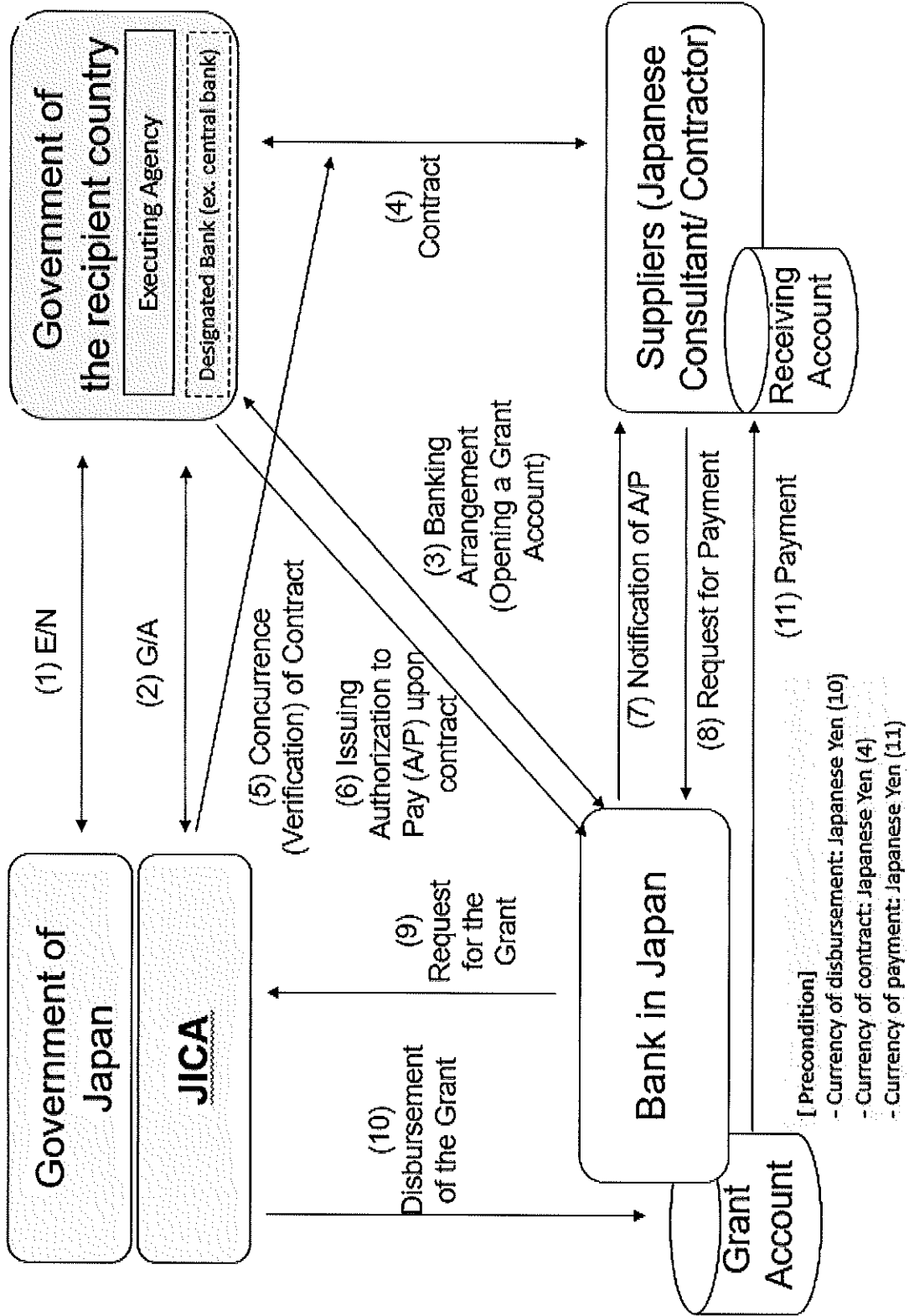
Stage	Procedures	Remarks	Recipient Government	Japanese Government	JICA	Consultants	Contractors	Agent Bank
Official Request	Request for grants through diplomatic channel	Request shall be submitted before appraisal stage.	x	x				
1. Preparation	(1) Preparatory Survey Preparation of outline design and cost estimate		x		x	x		
2. Appraisal	(2) Preparatory Survey Explanation of draft outline design, including cost estimate, undertakings, etc.		x		x	x		
	(3) Agreement on conditions for implementation	Conditions will be explained with the draft notes (E/N) and Grant Agreement (G/A) which will be signed before approval by Japanese government.	x	x (E/N)	x (G/A)			
	(4) Approval by the Japanese cabinet			x				
3. Implementation	(5) Exchange of Notes (E/N)		x	x				
	(6) Signing of Grant Agreement (G/A)		x		x			
	(7) Banking Arrangement (B/A)	Need to be informed to JICA	x					x
	(8) Contracting with consultant and issuance of Authorization to Pay (A/P)	Concurrence by JICA is required	x			x		x
	(9) Detail design (D/D)		x			x		
	(10) Preparation of bidding documents	Concurrence by JICA is required	x			x		
	(11) Bidding	Concurrence by JICA is required	x			x	x	
	(12) Contracting with contractor/supplier and issuance of A/P	Concurrence by JICA is required	x				x	x
	(13) Construction works/procurement	Concurrence by JICA is required for major modification of design and amendment of contracts.	x			x	x	
	(14) Completion certificate		x			x	x	
4. Ex-post monitoring & evaluation	(15) Ex-post monitoring	To be implemented generally after 1, 3, 10 years of completion, subject to change	x		x			
	(16) Ex-post evaluation	To be implemented basically after 3 years of completion	x		x			

notes:

1. Project Monitoring Report and Report for Project Completion shall be submitted to JICA as agreed in the G/A.
2. Concurrence by JICA is required for allocation of grant for remaining amount and/or contingencies as agreed in the G/A.



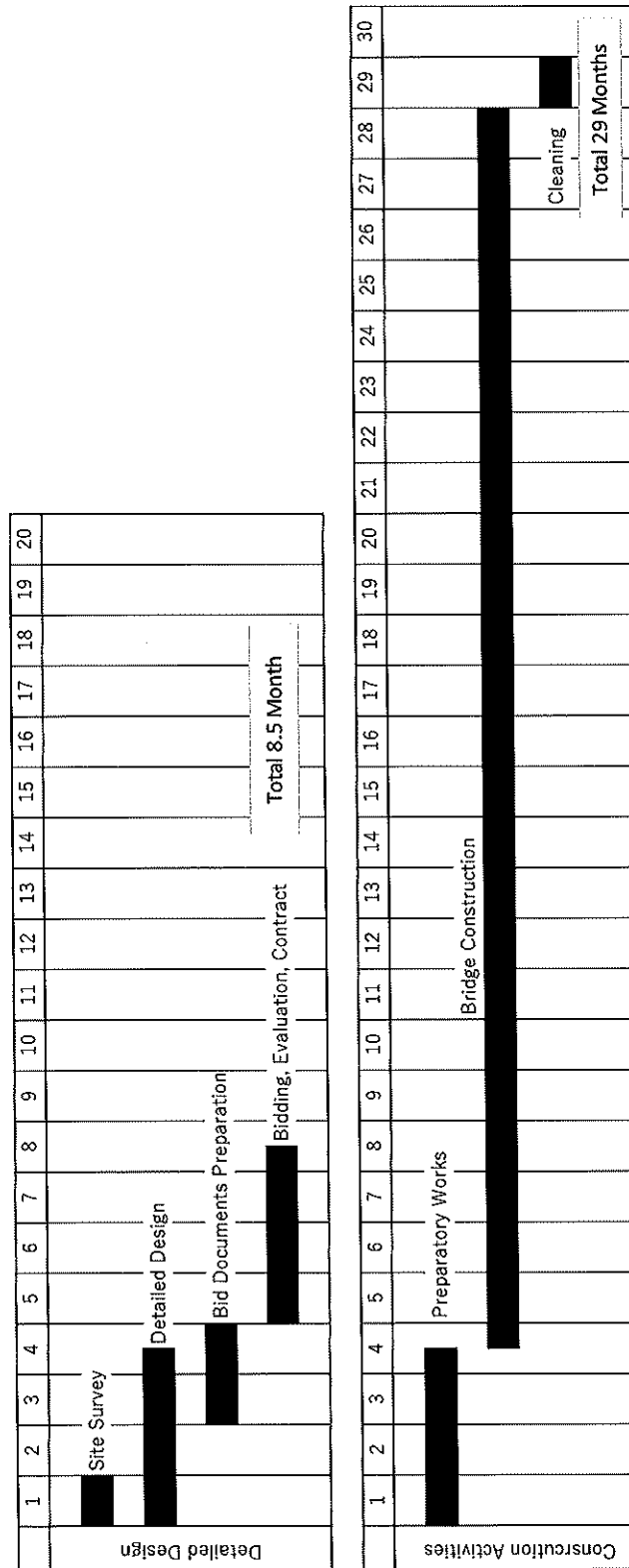
# Financial Flow of Japanese Grant (A/P Type)



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Project Implementation Schedule



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## Expected outcomes and indicators

## [Quantitative indicators]

Bridge Number.	Actual Traffic Volume(pcu/day)*	Predicted Traffic Volume (pcu/day)**	Predicted Traffic Volume (pcu/day)***
	Current Situation	Start of Service	3 years after start of service
	2021	2025	2028
No.1	21,742	27,970	30,787
No.4	20,085	25,839	28,441
No.7	19,582	25,192	27,729
No.10	22,672	29,167	32,104
Average Speed(km/h)	10	50	50
Passable Vehicle Weight	10 ton (one bridge 20 ton)	25 ton	25 ton

\*Actual Traffic Volume Counted on August 2021

\*\*Predicted Traffic Volume calculated by JICA Strada

\*\*\* Predicted Traffic Volume calculated 6.5% as increasing ratio from 2025 and 3.25% from 2031

## [Qualitative indicators]

View Point	Effectiveness/Qualitative Effect
Urgency	<ul style="list-style-type: none"> <li>• The slab floor of the bridge No.1 partly collapsed under the existing traffic load and it was repaired in 2011 by the GOSS. However, since the quality of the construction was poor, deterioration of concrete or the exposure of rebars were already found and there is a possibility to recurrent collapse very soon. Reconstruction of the bridges is able to avoid this risk at an earlier stage.</li> <li>• The structural strengths of other bridges have been greatly reduced due to ageing. All requested bridges become traffic bottlenecks due to narrower widths to approach roads. In addition, accidents such as vehicles falling off a bridge have occurred at the bottlenecked location. Reconstruction of the bridges is able to avoid this risk at an earlier stage.</li> </ul>
Benefit	<ul style="list-style-type: none"> <li>• Bridges No.1, 4, 7 and 10 are located on the main roads of Juba city, has become a bottleneck of the traffic flow in the city center. Since the road of Juba city has been developed prior to the radiation road and the city center place, the city traffic suffers the congestion without dispersion of traffic flow.</li> </ul>

View Point	Effectiveness/Qualitative Effect
	<p>By widening the bridge width from a two-lane or single lane to a four-lane, improvement of traffic flow is anticipated contributing to mitigation of traffic congestion in Juba city.</p> <ul style="list-style-type: none"> <li>• Bridges promote the ring road network development and also contribute to reduce the exhaust gas and noise and to improve the environment.</li> <li>• In the 2020, the population of Juba city was 400 thousand people according to World Bank. The population growth expected by the World Population Prospects assumes that it may be about 567 thousand in 2028. The entire population is able to be benefited.</li> <li>• The cargo is transported to various places through the Juba city where is located in the node of the international corridor and the major domestic trunk lines. The mitigation of the congestion in Juba city will serve benefits not only to Juba city traffic flow but also for facilitation of international and domestic logistics.</li> <li>• The traffic to Juba city from neighboring community residents is promoted after the bridge reconstruction.</li> <li>• This project is intended to continue to the city development following the development of 6 bridges under the peace-building program and the Nile bridges construction under the Japan's Grant Aid. Implementation of this project will contribute to the trust -building between the two countries.</li> </ul>

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## Major Undertakings to be taken by the Government of South Sudan

## 1. Specific obligations of the Government of South Sudan which will not be funded with the Grant

## (1) Before the Bidding

No.	Items	Deadline	In charge	Cost (US\$)	Ref.
1	To approve IEE/EIA (Conditions of approval should be fulfilled, if any) and secure the necessary budget for implementation of countermeasures obligated in the IEE/EIA.	before signing of the G/A	MRB/MoE	1,000	
2	To open Bank Account (Banking Arrangement (B/A))	within 1 month after signing of the G/A	MOFP/MRB		
3	To issue the Authorization to Pay (A/P) to a bank in Japan (the Agent Bank) for the payment to the Consultant	within 1 month after signing of the contract with the consultant	MOFP/MRB	3,000	
4	To approve Abbreviated Resettlement Action Plan	before signing of the G/A	N/A		
5	To secure the necessary budget and implement land acquisition and resettlement (including preparation of resettlement sites), and compensation with full replacement cost in accordance with RAP	before notice of the bidding document(s)	N/A		
6	To implement social monitoring, and to submit the monitoring results to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	till land acquisition and resettlement complete	N/A		
7	To secure and clear the following lands 1) right of way for the Project 2) temporary construction yard and stock yard near the Project area 3) diversion route for the existing road 4) borrow pit and disposal site near the Project area	before notice of the bidding document(s)	MRB/MRB-CES and related agencies		
8	To obtain the planning, zoning, building permit	before notice of the bidding document(s)	N/A		
9	To clear, level and reclaim the sites, which will be confirmed in the draft final report (All costs for relocation of utilities and demolition of obstacles etc. are included)	before notice of the bidding document(s)	MRB and related agencies	30,000	
10	To submit Project Monitoring Report (with the result of Detailed Design (DD))	before preparation of bidding document(s)	MRB	1,000	

Note : MRB – Ministry of Roads and Bridges  
MOFP - Ministry of Finance and Planning  
MOE-Ministry of Environment  
MRB-CES – Ministry of Roads and Bridges-Central Equatoria State  
MOL - Ministry of Labor  
MOIA – Ministry of Interior Affairs  
SSUWC – South Sudan Urban Water Corporation  
SSEC – South Sudan Electricity Corporation

## (2) During the Project Implementation

No.	Items	Deadline	In charge	Cost (US\$)	Ref.
1	To issue A/P(s) to the Agent Bank in Japan for the payment(s) to the Supplier(s)	within 1 month after signing of the contract(s)	MOFP/MRB	1,000	
2	To bear the following commissions to the Agent Bank in Japan for the banking services based upon the B/A	during the Project	MOFP/MRB		
	1) Advising commission of A/P	within 1 month after signing of the contract(s)	MOFP/MRB	20,000	
	2) Payment commission for A/P		MOFP/MRB	33,000	
3	To ensure prompt customs clearance and to assist the Supplier(s) with internal transportation in the country of the Recipient	During the Project	MOFP/MRB and related agencies		
4	To accord Japanese physical persons and/or physical persons of third countries 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 country of the Recipient and stay therein for the performance of their work	during the Project	MOL/MOIA/MRB and related agencies		
5	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the products and/or the services be exempted	during the Project	MOFP/MRB and related agencies		
6	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	MRB		
7	1) To submit Project Monitoring Report	every month	MRB		
	2) To submit Project Monitoring Report (Final)	within one month after signing of Certificate of Completion of the Work under the contract(s)	MRB		
8	To submit a report concerning completion of the Project	within six months after completion of the Project	MRB		
9	To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities necessary for the implementation of the Project outside the site(s)				
	1) Electricity The distributing line to the temporary site	before start of the construction	MRB/SSEC and related agencies		
	2) Water Supply The city water distribution main to the temporary site	before start of the construction	MRB/SSUWC and related agencies		
	3) Primary Electric Power Source Primary electrical power source up to the distribution boards.		MRB/SSEC	40,000	
10	To take necessary measure for safety construction - traffic control - public notifications - Securing safety for personnel involved in the Project	during the construction	MRB/MoIA and related agencies	50,000	
11	To implement Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP)	during the construction	MRB/MoE	2,000	
12	To submit results of environmental monitoring to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	during the construction	MRB	N/A	

No.	Items	Deadline	In charge	Cost (US\$)	Ref.
13	To implement RAP (livelihood restoration program, if needed)	for a period based on livelihood restoration program	MRB/MoE and related agencies	N/A	
14	To implement social monitoring, and to submit the monitoring results to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report - Period of the monitoring may be extended if affected persons' livelihoods are not sufficiently restored. Extension of the monitoring will be decided based on agreement between MRB and JICA.	until the end of livelihood restoration program (In case that livelihood restoration program is provided)	MRB	N/A	

### (3) After the Project

No.	Items	Deadline	In charge	Cost	Ref.
1	To implement EMP and EMoP	for a period based on EMP and EMoP	MRB /MoE		
2	To submit results of environmental monitoring to JICA, by using the monitoring form, semi-annually - The period of environmental monitoring may be extended if any significant negative impacts on the environment are found. The extension of environmental monitoring will be decided based on the agreement between MIPU and JICA.	for three years after the Project	MRB /MoE		
3	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance of structure 3) Routine check/Periodic inspection	After completion of the construction	MRB	30,000 (Annual)	

## 2. Other obligations of the Government of South Sudan funded with the Grant

No.	Items	Deadline	Amount (Million Japanese Yen)*
1	To construct bridges		
2	To implement detailed design, tender support and construction supervision		
	Total		2,655

\*The Amount is provisional. This is subject to the approval of the Government of Japan.



**Project Monitoring Report**  
**on**  
**Project Name**  
 Grant Agreement No. XXXXXXXX  
 20XX, Month

**Organizational Information**

<b>Signer of the G/A (Recipient)</b>	_____ Person in Charge (Designation) _____  Contacts _____ Address: _____ Phone/FAX: _____ Email: _____
<b>Executing Agency</b>	_____ Person in Charge (Designation) _____  Contacts _____ Address: _____ Phone/FAX: _____ Email: _____
<b>Line Ministry</b>	_____ Person in Charge (Designation) _____  Contacts _____ Address: _____ Phone/FAX: _____ Email: _____

**General Information:**

<b>Project Title</b>	
<b>E/N</b>	Signed date: Duration:
<b>G/A</b>	Signed date: Duration:
<b>Source of Finance</b>	Government of Japan: Not exceeding JPY _____ mil. Government of (_____): _____

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**1: Project Description**

**1-1 Project Objective**

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**1-2 Project Rationale**

- Higher-level objectives to which the project contributes (national/regional/sectoral policies and strategies)
- Situation of the target groups to which the project addresses

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**1-3 Indicators for measurement of "Effectiveness"**

Quantitative indicators to measure the attainment of project objectives		
Indicators	Original (Yr )	Target (Yr )
Qualitative indicators to measure the attainment of project objectives		

**2: Details of the Project**

**2-1 Location**

Components	Original <i>(proposed in the outline design)</i>	Actual
1.		

**2-2 Scope of the work**

Components	Original* <i>(proposed in the outline design)</i>	Actual*
1.		

Reasons for modification of scope (if any).

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**2-3 Implementation Schedule**

Items	Original		Actual
	<i>(proposed in the outline design)</i>	<i>(at the time of signing the Grant Agreement)</i>	

Reasons for any changes of the schedule, and their effects on the project (if any)

**2-4 Obligations by the Recipient**

**2-4-1 Progress of Specific Obligations**

See Attachment 2.

**2-4-2 Activities**

See Attachment 3.

**2-4-3 Report on RD**

See Attachment 11.

**2-5 Project Cost**

**2-5-1 Cost borne by the Grant(Confidential until the Bidding)**

Components	Cost (Million Yen)			
	Original <i>(proposed in the outline design)</i>	Actual <i>(in case of any modification)</i>	Original <sup>1),2)</sup> <i>(proposed in the outline design)</i>	Actual
1.				
Total				

Note: 1) Date of estimation:

2) Exchange rate: 1 US Dollar = Yen

**2-5-2 Cost borne by the Recipient**

Components	Cost (1,000 Taka)			
	Original <i>(proposed in the outline design)</i>	Actual <i>(in case of any modification)</i>	Original <sup>1),2)</sup> <i>(proposed in the outline design)</i>	Actual
1.				

Note: 1) Date of estimation:

2) Exchange rate: 1 US Dollar =

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Reasons for the remarkable gaps between the original and actual cost, and the countermeasures (if any)

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**2-6 Executing Agency**

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

<b>Original</b> (at the time of outline design) name: role: financial situation: institutional and organizational arrangement (organogram): human resources (number and ability of staff):
<b>Actual</b> (PMR)

**2-7 Environmental and Social Impacts**

- The results of environmental monitoring based on Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- The results of social monitoring based on in Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- Disclosed information related to results of environmental and social monitoring to local stakeholders (whenever applicable).

**3: Operation and Maintenance (O&M)**

**3-1 Physical Arrangement**

- Plan for O&M (number and skills of the staff in the responsible division or section, availability of manuals and guidelines, availability of spareparts, etc.)

<b>Original</b> (at the time of outline design)
<b>Actual</b> (PMR)

**3-2 Budgetary Arrangement**

- Required O&M cost and actual budget allocation for O&M

<b>Original</b> (at the time of outline design)
<b>Actual</b> (PMR)

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**4: Potential Risks and Mitigation Measures**

- Potential risks which may affect the project implementation, attainment of objectives, sustainability
- Mitigation measures corresponding to the potential risks

**Assessment of Potential Risks (at the time of outline design)**

Potential Risks	Assessment
1. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
2. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
3. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):

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**Actual Situation and Countermeasures**

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**5: Evaluation and Monitoring Plan (after the work completion)**

**5-1 Overall evaluation**

Please describe your overall evaluation on the project.

**5-2 Lessons Learnt and Recommendations**

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

**5-3 Monitoring Plan of the Indicators for Post-Evaluation**

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

**Attachment**

1. Project Location Map
2. Specific obligations of the Recipient which will not be funded with the Grant
3. Monthly Report submitted by the Consultant  
Appendix - Photocopy of Contractor's Progress Report (if any)
  - Consultant Member List
  - Contractor's Main Staff List
4. Check list for the Contract (including Record of Amendment of the Contract/Agreement and Schedule of Payment)
5. Environmental Monitoring Form / Social Monitoring Form
6. Monitoring sheet on price of specified materials (Quarterly)
7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (PMR (final) only)
8. Pictures (by JPEG style by CD-R) (PMR (final) only)
9. Equipment List (PMR (final) only)
10. Drawing (PMR (final) only)
11. Report on RD (After project)

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Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment	
					Price (Decreased) E=C-D	Price (Increased) F=C+D
1 Item 1	●●t	●	●●	●	●	●
2 Item 2	●●t	●	●●	●		
3 Item 3						
4 Item 4						
5 Item 5						

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

Items of Specified Materials	1st month, 2015		2nd month, 2015		3rd month, 2015		4th		5th		6th	
1 Item 1	●		●		●							
2 Item 2												
3 Item 3												
4 Item 4												
5 Item 5												

(3) Summary of Discussion with Contractor (if necessary)

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Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)  
 (Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	

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## The Project for Construction of the Bridges in Juba City in the Republic of South Sudan

## Environmental Checklist

Category	Environmental Item	Major Items to be checked	Yes: Y No: N	Confirmation of Environmental Consideration
1. Permit and Explanation	(1)EIA and Environmental Permit	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports have been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) Y (b) Y (c) Y (d) N	(a) ESIA reports have been already prepared in official process. (b) ESIA reports was approved in October 2013 by authorities of the host country's government, MOE. (c) ESIA reports been unconditionally approved . (d) Nothing.
	(2)Explanation to the Local Stakeholders	(a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) Y (b) N	(a) Stake Holder Meetings were held on 28 <sup>th</sup> March, 2013, 5 <sup>th</sup> April, 2013 and 27 <sup>th</sup> June, 2013. (b) The stakeholders have no comment on proceeding the project.
	(3) Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) One alternative plan without the project was examined. Without the project, sufficient width of the bridge will not be obtained and the bridge will always be a bottleneck. Hence, heavy traffic jam is expected at each bridge. In addition, it is expected that there will be increase in traffic accidents/road crashes, and air pollution and serious soil erosion in rainy season.
2. Pollution Control	(1)Air Quality	(a) Is there observation that air pollution emitted from traveling vehicles affects ambient air quality? Does ambient air quality comply with the country's air quality standards? Are any mitigating measures taken? (b) Will project make air quality worsen in case the existing air quality exceeds the air quality standard? Are any mitigating measures taken?	(a) Y (b) N	(a) The urban network will be improved and traffic congestion will be relieved with less emission. (b) Current air quality which is the monitoring data at Juba downtown near Juba port is less than the reference values in Japanese air quality standards.
	(2) Water Quality	(a) Is there a possibility that soil runoff from the bare lands resulting from earthmoving activities, such as cutting and filling will cause water quality degradation in downstream water areas? (b) Is there a possibility that surface runoff from roads will contaminate water sources, such as groundwater?	(a) Y (b) N (c) Y	(a) River banks near the bridges are to be protected from erosion. (b) There is no well near the project area. (c) Liquid waste from workers, camp is dumped at the official dumping site.

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Category	Environmental Item	Major Items to be checked	Yes: Y No: N	Confirmation of Environmental Consideration
		(c) Do effluents from various facilities, such as parking areas/service areas comply with the country's effluent standards and ambient water quality standards? Is there a possibility that the effluents will cause areas not to comply with the country's ambient water quality standards?		
	(3) Waste	(a) Are wastes generated from the project facilities, such as parking areas/service areas, properly treated and disposed of in accordance with the country's regulations?	(a) Y	(a) Solid waste generated from the workers camp is properly dumped at the official dumping site
	(4) Noise and Vibration	(a) Do noise and vibrations from the vehicle and train traffic comply with the country's standards?	(a) Y	(a) It could become greater than standard during construction in the area facing the road. Monitoring will be implemented and noise prevention sheet is installed if necessary.
3. Natural Environment	(1) Protected Areas	(a) Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) N	(a) Nature of project site is city area
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)?	(a) N	(a) Nature of project site is city area. Ecosystem is far from this area.
	(3) Hydrology	(a) Is there a possibility that alteration of topographic features and installation of structures, such as tunnels will adversely affect surface water and groundwater flows?	(a) N	(a) The project does not requires land modification due to reconstruction of bridges and roads.
4. Social Environment	(1) Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement?	(a) N	(a) No involuntary resettlement is expected
	(2) Living and livelihood	(a) Where roads are newly installed, is there a possibility that the project will affect the existing means of transportation and the associated workers? Is there a possibility that the project will cause significant impacts, such as extensive alteration of existing land uses, changes in sources of livelihood, or unemployment? Are adequate measures considered for preventing these impacts? (b) Is there any possibility that the project will adversely affect the living conditions of the inhabitants other than the target population? Are adequate measures considered to reduce the impacts, if necessary? (c) Is there any possibility that diseases, including infectious diseases, such as HIV will be brought due to immigration of workers associated with the project? Are adequate considerations given to public health, if necessary? (d) Is there any possibility that the project will adversely affect road traffic in the surrounding	(a) N (b) Y (c) Y (d) Y (e) N (f) N	(a) Contents of the project is the bridge reconstruction and improvement of existing roads of both sides of bridge will be given within existing ROW which does not make significant environment change. (b) Special consideration and arrangement such as diversion is required for the pedestrian during the project as the number of pedestrian is large. (c) Provision of safety measures and prevention campaigns are planned. (d) In order to mitigate the traffic congestion, simultaneous construction of four bridges is planned to be avoided. (e) Due to the widening the road to 4 lanes and installation of sidewalks

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Category	Environmental Item	Major Items to be checked	Yes: Y No: N	Confirmation of Environmental Consideration
		<p>areas (e.g., increase of traffic congestion and traffic accidents)?</p> <p>(e) Is there any possibility that roads will impede the movement of inhabitants?</p> <p>(f) Is there any possibility that structures associated with roads (such as bridges) will cause a sun shading and radio interference?</p>		<p>the movement of inhabitants will be more free.</p> <p>(f) There will be hardly radio interference during the project due to small size of bridge construction area which will be very limited and momentary.</p>
	(3)Heritage	(a) Is there a possibility that the project will damage the local archaeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) N	(a) No cultural heritage exists within the project site.
	(4)Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N	(a) There will be negative impact on landscape which will however be limited and momentary during the project.
	(5) Ethnic Minorities and Indigenous People	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples?	(a) N	(a) There are no ethnic minorities and indigenous peoples within the project site.
5. Working Environment	(6) Working Environment	<p>(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project?</p> <p>(b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials?</p> <p>(c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.?</p> <p>(d) Are appropriate measures being taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?</p>	<p>(a) Y</p> <p>(b) Y</p> <p>(c) Y</p> <p>(d) Y</p>	<p>(a) Compliance with the law is first prioritized policy in Environmental Monitoring Plan.</p> <p>(b) Health and safety for employees and residents are planned properly and secured. Safety Board for workers and pedestrians should be installed to keep safety. Provision of adequate sanitary facilities e.g. washroom and clean water should be installed</p> <p>(c) Safety education, including how to use safety accessories and how to behave in emergency case, are to be implemented..</p> <p>(d) The safety control person should employed to supervise the safety control and safety guideline.</p>
6. Others	(1) Impacts during construction	<p>(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)?</p> <p>(b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts?</p> <p>(c) If construction activities adversely affect the social environment, are adequate measures</p>	<p>(a) Y</p> <p>(b) N</p> <p>(c) N</p>	<p>The following appropriate countermeasures are expected to reduce impacts during construction:</p> <ul style="list-style-type: none"> <li>- Air pollution: to apply sprinkle water for dust prevention.</li> <li>- Water pollution: to treat a turbid water.</li> <li>- Waste: to dispose construction wastes at the specified disposal site.</li> </ul>

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Category	Environmental Item	Major Items to be checked	Yes: Y No: N	Confirmation of Environmental Consideration
		considered to reduce impacts?		<p>- Noise: to prevent noise using sound-proof construction equipment. Monthly meeting will be held to monitor the complaints about construction. Based on the meeting, mitigation measures are taken when necessary.</p> <p>(a) Impact to ecosystem is negligible due to the bridge reconstruction and reconstruction of approach roads.</p> <p>(b) Impact can be considered to be mitigated and public meeting is continued.</p>
	(2) Monitoring	<p>(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts?</p> <p>(b) What are the items, methods and frequencies of the monitoring program?</p> <p>(c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)?</p> <p>(d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?</p>	<p>(a) Y (b) Y (c) N (d) Y</p>	<p>(a) The contractor implements monitoring under the supervision of the proponent.</p> <p>(b) Scheduled before, during and after construction for air pollution, noise and vibration, water pollution and social conditions of affected people as indicated in the Environmental Monitoring Plan.</p> <p>(c) Only one specialist is available but without any equipment. However proponent is going to request enough budget to fulfil the requirement of JICA Environmental and Social Considerations Guidelines as much as possible.</p> <p>(d) The contractor shall report the results of monitoring to Ministry of Environment and the Ministry will manage them. Every month the monitoring report is submitted to JICA.</p>

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## The Project for Construction of the Bridges in Juba City in the Republic of South Sudan

## Environmental Management Plan (EMP)/ Environmental Monitoring Plan (EMoP)

## 1. Environmental Management Plan (EMP)

Environmental Issues	Anticipated impact	Management and Mitigation measure	Actors	Estimated Cost (SSP)
Vegetation loss due to clearance of site	Impact on ecology and vegetation	The extent of clearing within the project area should be clearly marked	Contractor	—
		The clearance of the site for construction purposes should be kept to a minimum		
		Instruct all construction workers to restrict clearing to the marked areas and not to work outside defined work areas.		
		Rehabilitate all disturbed areas by planting vegetation cover and reforestation		
Trench excavation	Disturbance, soil erosion and siltation in rivers	Earthworks should be carried out during the dry season to prevent the highly erosive soils from being washed away by rain.	Contractor	No additional cost from that of construction
		Control of earthworks so that land not required for construction works		
		Excavated materials should be kept / stockpiled at appropriate sites for possible reuse		
		Protect areas susceptible to erosion by installing necessary temporally and permanent drainage works. Also minimize the need for cut and fill		
	Open trenches hazardous to individuals	Backfilling trenches as soon as works are completed	Contractor	48 for warning signs
		Warning signs at both deep and shallow trenches		
		Provide protection rails when constructing sections of the bridge		
Dumping of collapsed culverts and surplus excavated material	Dump at designated sites			
Construction activities	Soil, water and groundwater contamination	Construct oil- water interceptors to capture discharge of oils, fuels and other polluting liquids	Contractor	No additional cost
		Ensure proper handling of lubricants, fuels and solvents while maintaining the equipment		
		Surface runoff to be controlled by provision of detention works		
		A safety and emergency response plan to be developed for all operations with emphasis on the protection of the environment		
Contractor's campsite & Construction Site	Solid waste generation which pollutes the environment may cause water borne diseases	Bins should be strategically placed within the campsite and construction site. They should also be covered to prevent access by vermin and minimize odor.	Contractor	50 waste bins 8 times / month for waste collection and disposal
		The bins at both the campsite and construction site should be emptied regularly to prevent overflowing		
		Use of cleaner technologies / generation to minimize on generation of solid wastes		
		A waste management plan to be developed to handle temporary storage, transport and disposal of hazardous waste		
		Solid waste should be recycled, reused and utilized in an environmentally acceptable manner		
Pollution	Gaseous emissions which pollutes air causing respiratory problems (SO <sub>2</sub> , CO, NO)	Maintaining machines at manufacturers specifications	Contractor	Routine Construction Machine maintenance Routine Construction Machine maintenance
		Site roads should be dampened within reasonable time to prevent dust nuisance.		
		Cover or wet construction materials such as sand to prevent dust nuisance. Also minimize cleared areas to those that are needed for construction		
		Limit removal of vegetation and a rehabilitation program of the site and associated infrastructure following construction		
	Noise pollution and vibrations which are nuisance and may cause health complications	Use equipment that have low noise emissions as stated by the manufacturers		
		Use equipment that is properly fitted with noise reduction devices such as mufflers		
		Operate noise generating equipment during regular working hours so as to reduce the potential of producing noise during night hours		

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Environmental Issues	Anticipated impact	Management and Mitigation measure	Actors	Estimated Cost (SSP)
		Heavy equipment should be transported early morning with proper pilotage Construction workers operating equipment that generates noise greater than 80 dB should be equipped with noise protection devices Access roads for haulage trucks used during road construction should not be located near schools, hospitals and residential areas. Provide warning to shop owners and other commercial businesses close to the road at least two weeks before use of such equipment near their premises.		
Occupational health and safety	Impacts on health of workers	Training of all workers in Safety Health and Environment (SHE)	Contractor	12 per head per year for training
		Provision of adequate sanitary facilities e.g. washrooms and clean water		
	Health Control	Rehabilitate excavated sites as soon as construction is complete		The rest included in contractors fee
		Ensure workers health and safety through awareness campaign and provision of protective personal equipment (PPE)		
		Construction workers should be informed about diseases that are prevalent in the project area, and how they can minimize their transmissions.		
		The company should consider hiring a permanent nurse to attend to emergencies and to mount awareness campaigns amongst the workers.		
		The contractor should regularly consult those providing health services to determine any changes in disease patterns that may be associated with road construction.		
	Handling of combustible materials	Training the workers on the emergency Control and Deposit for combustible material and Installation of fire extinguishers		
	Sanitation	Supply drinkable water		
		Supply sanitary material		
	To be available to use first-aid kit			
Safety Board	Safety Boards for workers and pedestrians should be installed to keep safety.			
Safety Control	The safety person should be employed to supervise the safety control and safety guideline.	No additional cost		
Disincentive	Temporarily relocation causing inconveniences	Need to develop traffic management plan to provide for safe and efficient movement of traffic during construction.	Contractor	Routine activities
		Providing alternative access to dwellings and roadside businesses and feeder roads.		
		Warn residents and businesses within trading centers of possible generation of dust beyond normal levels.		
Land acquisition and resettlement		Landscaping to blend with existing environment	MRB	To be determined of necessary
		Adequately compensate the project affected persons		
Commercial activities	Changes in the local economy Unplanned settlements Employment opportunities	The contractor should wherever possible obtain various types of goods from the local area	Local Authority	No additional cost
		Local entrepreneurs should be given first priority when subcontracting road construction related activities e.g. provision of food and accommodation		
		Preference should be given to the locals when recruiting labor force so as to minimize development of unplanned settlements		

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## 2. Environmental Monitoring Plan (EMoP)

Environmental Items		Impact	Measures	Implementing Body	Monitoring Contents and Frequency
1	Resettlement	Relocation Target : 0 Households	—	MRB	—
2	Land Use and Planning and Construction	Use of Temporary Yard	Plan the Implementation method and Construction Supervision to minimize the modification of the use of land	Consultant Contractor	Confirmation of the land use situation as a temporary construction yard / monthly
3	Existing Social Infrastructure and Service	Influence to the Existing Road	<ul style="list-style-type: none"> <li>• Prior meeting with the police and person in charge</li> <li>• Installation of speed limits, signs and protection facilities</li> </ul>	Contractor	Confirmation of complaint / Acceptance of the complaint content due to traffic congestion in the detour, facilities, etc.
4	Cultural Heritage	—	Appropriate of removal, storage and re-installation planning and implementation	MRB	—
5	Accident	Accident during the construction	<ul style="list-style-type: none"> <li>• Safety equipment for high-place work, the development of emergency medicines, placement of traffic controllers, emergency measures, safety training, every morning meeting, the implementation of risk prediction activities</li> <li>• By safety administrator of environmental health and safety recording and reporting</li> </ul>	Contractor	<ul style="list-style-type: none"> <li>• Check on the health and safety plan/monthly</li> <li>• Accident reporting/each time of accident</li> </ul>
6	Infectious disease, such as HIV/AIDS	HIV holder inflow to the construction camp	<ul style="list-style-type: none"> <li>• Strict enforcement of drug use check of the situation of work</li> <li>• By experts and police unprotected sexual activity prevention campaign</li> </ul>	Contractor	Crackdown implementation status check and campaign implementation status check / monthly
7	Work Condition	Worker injuries and accidents	<ul style="list-style-type: none"> <li>• Obligated use of work cloths and helmet</li> <li>• Implementation of educational activities related to occupational health, accident occurred at the time of emergency response</li> <li>• Established the emergency response system at the time of accident occurrence</li> </ul>	Contractor	<ul style="list-style-type: none"> <li>• Confirmation of the use of work cloths and helmet/monthly</li> <li>• Implementation status check of enlightenment activities / monthly</li> <li>• Accident reporting / each time of the accident</li> </ul>
8	Gender	Wage discrimination	Regular monitoring of wage payment ledger of	Consultant Contractor	Contractors wage payment ledger check / monthly

ingeco

 7

添付資料4-59





Environmental Items	Impact	Measures	Implementing Body	Monitoring Contents and Frequency
	between men and women	prime contractor, subcontractor		
9	Biodiversity	—	—	—
10	Hydronic Situation	Change of water flow	Planning and appropriate implementation of drainage	Consultant Contractor Confirmation of the water flow by visual inspection / daily
11	Air Pollution	Diffusion by construction machinery	<ul style="list-style-type: none"> <li>Thorough maintenance of construction machinery and suppression of unnecessary running.</li> <li>Watering and use of over sheets</li> <li>Air quality monitoring in quarter of the year each</li> </ul>	Consultant Contractor <ul style="list-style-type: none"> <li>Monitoring of air situation by visual / daily</li> <li>Watering at dust to the occurrence location/necessary depending on the situation.</li> <li>Air quality monitoring(SO<sub>2</sub>,CO,SPM) (each bridge 1 point)/quarter of the year each</li> </ul>
12	Water	Water pollution according to the drainage	<ul style="list-style-type: none"> <li>Use of turbidity water treatment device</li> <li>Monthly water quality monitoring</li> </ul>	Consultant Contractor <ul style="list-style-type: none"> <li>Water quality monitoring (pH, SS, DO) (each bridge 1 point) / monthly</li> </ul>
13	Soil Pollution	Leakage of light oil and gasoline from the construction machinery	Thorough daily check	Consultant Contractor Monitoring of leakage situation / daily
14	Waste	Construction waste and workers' garbage	<ul style="list-style-type: none"> <li>Appropriate treatment of specified disposal sites</li> <li>Reuse of Planting</li> </ul>	Contractor Check of waste hauling record / daily
15	Noise and Vibration	The noise and vibration from the construction machinery	<ul style="list-style-type: none"> <li>Sound proof cover due to the noise and vibration</li> <li>Adoption of low noise equipment and low noise method</li> </ul>	Consultant Contractor Noise and vibration monitoring (equivalent noise level) (each bridge 1 point) / quarter of the year
16	Odor	Odor exhaust gas and waste	<ul style="list-style-type: none"> <li>Thorough implementation of construction machinery maintenance</li> <li>suppression of unnecessary running</li> <li>Proper treatment of life waste</li> <li>Monthly waste management monitoring</li> </ul>	Contractor Check of the waste environmental management record / monthly

Aspects



## The Project for Construction of the Bridges in Juba City in the Republic of South Sudan

## Environmental and Social Monitoring Form

## (1) Permit and Explanation

Monitoring Items	Actions to be taken
<ul style="list-style-type: none"> <li>ESIA and proposed monitoring plan need to be submitted: Approval from MOE</li> <li>Monitoring shall be carried out according to approved plan</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring result: The result needs to be reported to MOE.</li> </ul>

## (2) Pollution Control

## Air Quality

Items	Sampled Value (Average)	Sampled Value (Maximum)	Standard Value	Referred Standard	Sampling Point, Time, Method
Sulphur Dioxides : SO <sub>2</sub>			20-125 (daily)	WHO WHO Japan	<ul style="list-style-type: none"> <li>Nos. of Sampling: 1 point per bridge</li> <li>Sampling Items: SO<sub>2</sub>, NO<sub>2</sub>, CO, SPM,</li> <li>Sampling Times: 2 times per year</li> <li>Others: Traffic Volume, Metrological Data</li> </ul>
Nitrogen dioxides : NO <sub>2</sub>			40 (yearly)		
Carbon monoxide: CO			200 (8 hours)		
Ozone : O <sub>3</sub>			-		
Suspended Particulate Matter : SPM			100 (daily) 200 (hourly)	Japan	
Dust			600	Japan	Physical Observation

## Water Quality

Items	Sampled Value (Average)	Sampled Value (Maximum)	Standard Value	Referred Standard	Sampling Point, Time, Method
pH			6.5-8.5	Japan	During & After Construction <ul style="list-style-type: none"> <li>Sampling Point: 4</li> <li>Sampling Times: 2 times per year</li> <li>Sampling Items: PH, EC, SS,</li> </ul>
Electric Conductivity : EC			<2000mS/m	Environmental Protection Agency, USA	
Turbidity			<5 NTU	Japan	
Dissolved Oxygen : DO			>2	Japan	
Coliform				Not detected	
Oil			<0.50mg/L	Japan	
SS			50mg/m <sup>3</sup>	Japan	

## Waste Material

Monitoring Items	Monitoring Point, Time, Method
<ul style="list-style-type: none"> <li>Physical observation of waste materials during the construction: Construction waste material, Deleterious material, Garbage</li> <li>Physical observation of waste materials after the construction</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring of treatment of waste material and report: 1 time per month</li> </ul>

## Noise and Vibration

Items	Sampled Value (Average)	Sampled Value (Maximum)	Standard Value	Referred Standard	Monitoring Point, Time, Method
Noise			Day: 70dB Night: 65 dB	Japan	<ul style="list-style-type: none"> <li>During and After Construction</li> <li>Monitoring Points: 2</li> <li>Monitoring Items: Noise and Vibration : 3 times per monitoring day</li> <li>Monitoring Times: 4 times per year</li> </ul>
Vibration			Day: 70dB Night: 65dB	Japan	

H2220

Juba

(3) Natural Environment

Ecosystem

Monitoring Items	Monitoring Point, Time, Method
1) Hydrometeor • Physical observation to storm water during rain • Condition of storm water discharge	• Monitoring of discharge condition at drainage system: 1 time per month

(4) Social Environment

Living and Livelihood

Monitoring Items	Monitoring Point, Time, Method
1) During Construction: Pollution status by Air quality, Noise, Waste material to residents 2) During Construction: Monitoring of Road Users and Residents	• During the construction: 1 time per month

Existing Social Infrastructure

Monitoring Items	Monitoring Point, Time, Method
1) During Construction: Pollution status by Air quality, Noise, Waste material to residents 2) During Construction: Monitoring of Road Users and Residents	• During the construction: 1 time per month

Road Safety

Monitoring Items	Monitoring Point, Time, Method
1) Grasping situation of intersection crossing by school children	• During the construction: 1 time per month

Working Environment

Monitoring Items	Monitoring Point, Time, Method
1) Grasping situation of EHS during the construction	• During the construction: 1 time per week

Traffic Accident

Monitoring Items	Monitoring Point, Time, Method
1) Grasping situation of traffic congestion during the construction 2) Grasping situation of traffic accident during the construction	• During the construction: 1 time per week

Hydro

*[Handwritten signatures]*

## 【添付資料5】 テクニカルノート

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Ministry of Roads and Bridges  
Republic of South Sudan

Ministry of Roads and Bridges, Central Equatoria State  
Republic of South Sudan

**IMPLEMENTATION REVIEW STUDY  
ON  
THE PROJECT FOR CONSTRUCTION  
OF  
THE BRIDGES IN JUBA CITY  
IN THE REPUBLIC OF SOUTH SUDAN  
TECHNICAL NOTES**

**AUGUST 2021**

  
**JAPAN INTERNATIONAL COOPERATION AGENCY**  

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**CTI ENGINEERING INTERNATIONAL CO., LTD.**




Implementation Review Study on the Project for Construction of the Bridges in Juba  
City  
in the Republic of South Sudan


Technical Notes


JICA Survey Team for the Implementation Review Study (the Survey Team) has confirmed the items described in the attached Technical Notes concluded by the representative of the Ministry of Roads and Bridges (MRB) which is the responsible and implementing organization on the Project for Construction of the Bridges in Juba City in the Republic of South Sudan (the Project). Based on the Technical Notes, the Survey Team plans to conduct the implementation review study for the Project including the project cost estimate through analysis of the site survey findings after obtaining the approval from Japan International Cooperation Agency (JICA).

Juba City, Republic of South Sudan  
August, 2021

  
Yoshihisa NODA  
Chief Consultant  
JICA Survey Team

  
Samuel Taban Laki  
Director General  
Ministry of Roads and Bridges  
Central Equatoria State

  
Peter Kuot Jel  
Undersecretary  
Ministry of Roads and Bridges  
Republic of South Sudan

  
George Agrey Duku  
Director of Bridges and Structures  
(Project Manager)  
Ministry of Roads and Bridges  
Republic of South Sudan

## 1. Priority of Bridges

The priority of six (6) bridges to be constructed is divided into following two (2) groups due to the traffic volume and city activity convenience:

Priority of Bridge Construction	Bridge Number	Remarks
First Priority	Bridge No.1, Bridge No.4, Bridge No.7, Bridge No.10	High traffic volume and convenience in the city center
Second Priority	Bridge No.18, Bridge No.19	Low traffic volume along/near outer ring road

First Priority Bridges are targeted to be constructed under the Project.

Second Priority Bridges are not included under the Project.

The traffic volume is as follows.

12hours Traffic Volume (PCU)

Bri. No	2013	2021
No.1	8,983	16,715
No.4	4,216	15,450
No.7	4,961	15,063
No.10	8,041	17,440
No.19	-	3,048

## 2. Plan and Design

### 2.1. Design Standard to Apply

**These are no changes** from 1.1 Bridge Standard to apply of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

### 2.2. Bridge Plan

**These are no changes** from 1.2 (2) and (3) Bridge Plan of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

### 2.3. Road Design

**These are no changes** from 2. Road Design of Technical Note concluded for “the Project for construction of the Bridge in JUBA city” in November 2015.

### 2.4. Bridge Design

**These are no changes** from 1.4 Road Design of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

**There are no changes from** 3. Bridge Design of Technical Note concluded for “the Project



for construction of the Bridge in JUBA city in October and November 2015.

## 2.5. Footpath Design

These are no changes from Technical Note concluded for “the Project for construction of the Bridge in JUBA city in March 2016.

## 3. Construction Plan

### 3.1. Construction Yard

There are no changes from 2.1 Size and Location of Construction Yard of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013. MRB shall coordinate with the Central Equatoria State authorities to confirm the allocation of stockyard as previously agreed.

### 3.2. Borrow Pit, Quarry Sites and Disposal Sites

There are no changes from 2.2 Borrow Pit, Quarry Sites and Disposal Sites of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

### 3.3. Traffic Control

These four (4) bridges shall be in the center of Juba City on the busy road. It has been agreed to divert the traffic to the existing road during the construction as shown in ANNEX 7 of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013. Based on this diversion plan, the construction schedule of two bridges, one bridge and then one bridge has been prepared in order to avoid the traffic congestion and approved by MRB in the previous survey. However, based on the request from MRB to shorten the construction schedule, CTII will study to shorten the construction schedule of two bridges, then two bridges at the same time.

Temporary diversion for pedestrians shall be considered in the design in order to mitigate traffic congestion and pedestrian inconvenience as per the Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

## 4. Environmental and Social Considerations

MRB agreed to renew the ESIA (Environmental and Social Impact Assessment) since it was expired in October 2014 and there is no changes on the land acquisition and resettlement issue.

## 5. Underground Utilities

### 5.1. Relocation Required

The list of the underground utilities that require relocation is shown in Table 5.1.1.

Table 5.1.1 Utility condition of each bridge

Bridge	Water Supply	Electricity	Communication
No.1	No	Overhead	There is an abandoned line.
No.4	No	Overhead	None
No.7	φ300 Ductile Pipe	Overhead	There is an abandoned line.
No.10	Φ50 PVC Pipe	None	None

5.2. Coordination for utility relocation

There are no changes from 4.2 Coordination for utility relocation of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

6. Undertakings by the Republic of South Sudan

6.1. Major Tasks to be undertaken by Each Government.

There are no changes from 5.1 Major Tasks to be undertaken by Each Government of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

6.2. Tax Exemption Related to Construction

There are no changes from 5.2 Tax Exemption Related to Construction of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

6.3. Secure of the Land and Relocation of Utilities

The Republic of South Sudan (RSS) side shall secure the land and the relocation of the utilities required for the construction. The Table 1 shows Requirements of the RSS for the Construction of the Bridges in Juba City to be taken. These are the remarkable obstruction at this moment. The details are shown in Annex-1. All obstructions inside the required area shown in Annex-2 shall be cleared before commencement of the work.

**Table-1 Requirements of the RSS for the Construction of the Bridges in Juba City**

Bridge Name	Items	Obstructions (Land, Fence, Masonry Wall, e.t.c.)	Quantity of Obstruction
No.1	①	Removal of existing Barbed Wire Fence	16m
	②	Removal of existing Scrapped Cars	6 cars
	③	Relocation of existing Electric Wire and Poles	110m
	④	Removal of existing Billboard 1.3mx2.4m	1 unit
	⑤	Removal of existing Barbed Wire Fence	15m
No.4	①	Relocation of existing Electric Wire and Pole	40m (3 poles)
	③	Removal of a Container	1 unit
No.7	①	Removal of existing Masonry Wall (Bedwin Hotel)	16m
	②	Removal of existing Iron Fence (Bedwin Hotel)	20m
	③	Removal of Sign Board 3.0m × 2.0m	1 unit
	④	Removal of Cyclone wire fence	10m
	⑤	Removal of Garbage Room (Pyramid Hotel)	10m <sup>2</sup>
	⑥	Removal of Parking Area (5m × 100m)	500m <sup>2</sup>
	⑦	Removal of Electric Post and Wire	4 Poles
	⑧	Removal of Street Light	3 Poles
No.10	①	Removal of Brick and Masonry Wall	8m
	②	Demolition of existing Concrete Box (1.9mx4.8m)	9.2m <sup>2</sup>

6.4. Permission for Aggregate/Soil Borrow Site

There are no changes from 5.4 Permission for Aggregate/Soil Borrow Site of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

6.5. Permission for Dumping Discarded Soil

There are no changes from 5.5 Permission for Dumping Discarded Soil of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

6.6. Acquisition of Construction Yard

There are no changes from 5.6 Acquisition of Construction Yard of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

6.7. River Water Usage



There are no changes from 5.7 River Water Usage of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

6.8. Coordination with Traffic Control Concerned Authorities

There are no changes from 5.8 Coordination with Traffic Control Concerned Authorities of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

6.9. Environmental License

There are no changes from 5.9 Environmental License of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

6.10. Coordination with Other Related Project

There are no changes from 5.10 Coordination with Other Related Project of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

6.11. Coordination on underground utilities

There are no changes from 5.11 Coordination with Other Related Project of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

6.12. Coordination on Underground Utilities

There are no changes from 5.11 Coordination on Underground Utilities of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

6.13. Others

There are no changes from 5.12 Others of Technical Note concluded for “the Project for Construction of Lologo Bypass and Bridges in JUBA City” in June 2013.

6.14. Pavement of Approach Roads to the Bridges

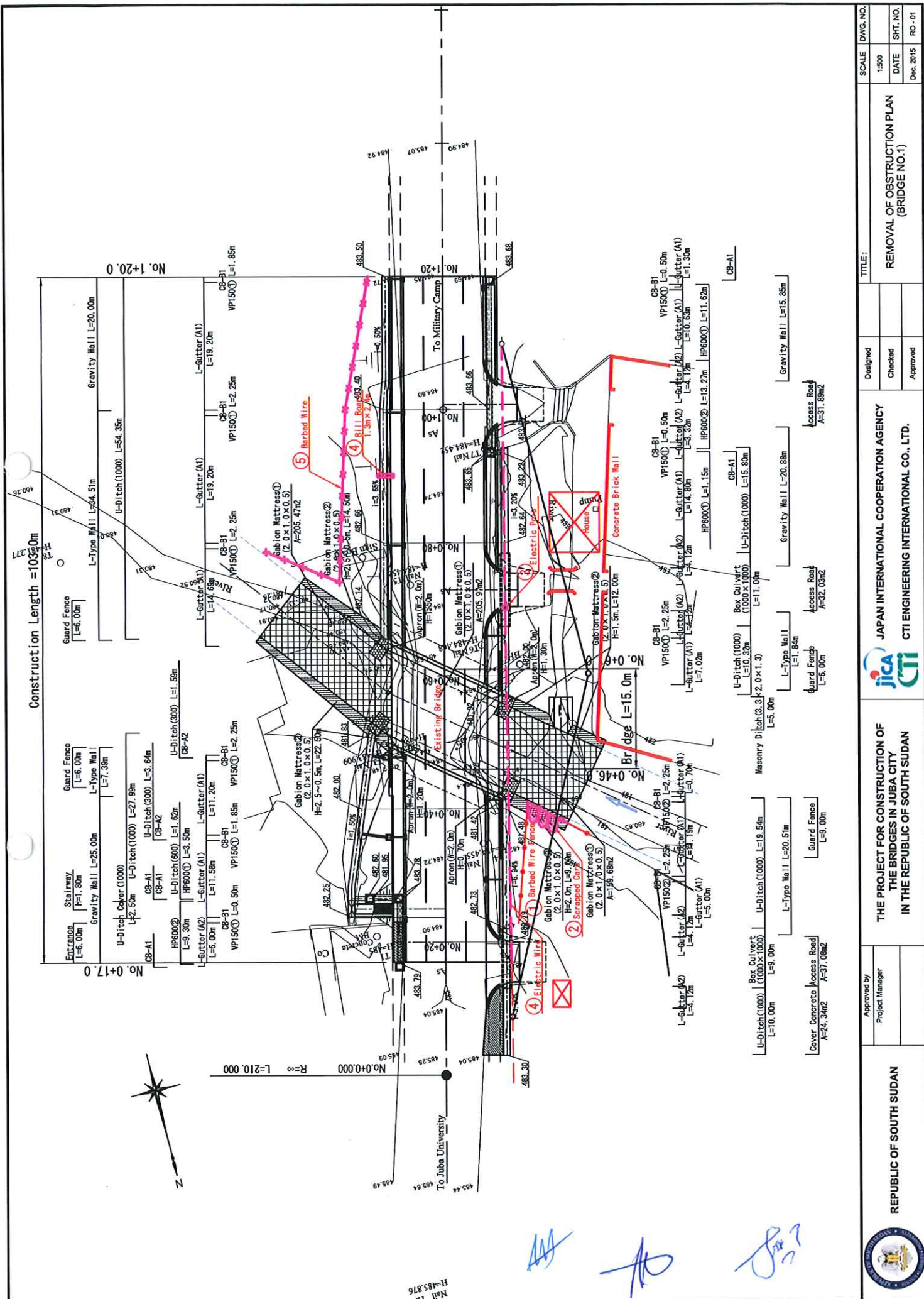
There are no changes from 3.(1) Pavement of Approach Roads to the Bridges of Technical Note concluded for “the Project for Construction of the Bridges in JUBA City” in October 2015.

ANNEX-1

Drawings for Removal of the Obstructions as of Aug 2021







Approved by  
Project Manager

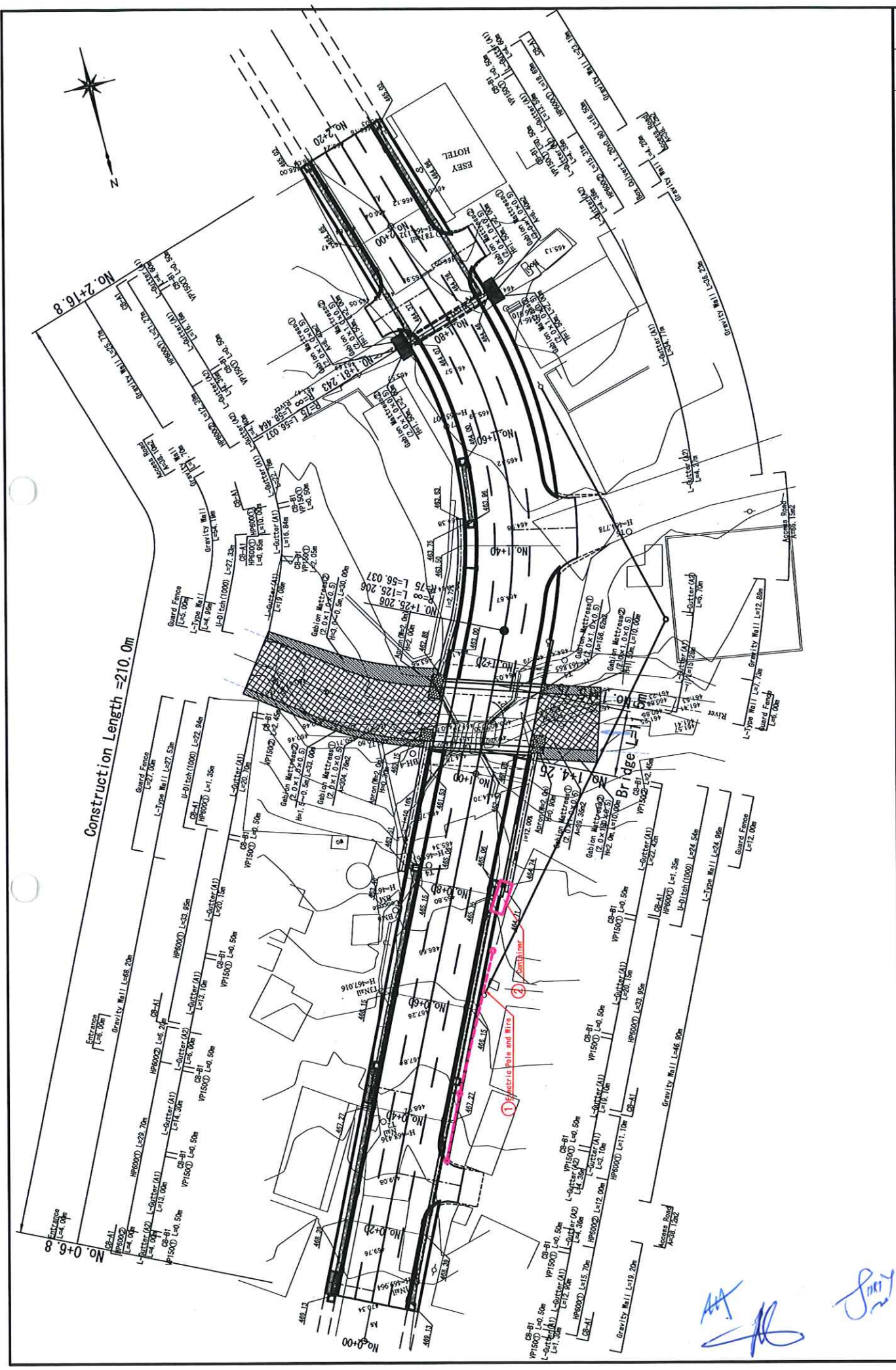
THE PROJECT FOR CONSTRUCTION OF THE BRIDGES IN JUBA CITY IN THE REPUBLIC OF SOUTH SUDAN

JAPAN INTERNATIONAL COOPERATION AGENCY  
CTI ENGINEERING INTERNATIONAL CO., LTD.

DESIGNED  
CHECKED  
APPROVED

SCALE: 1:500  
DATE: Dec. 2015  
SHEET NO. RO-01





Construction Length = 210.0m

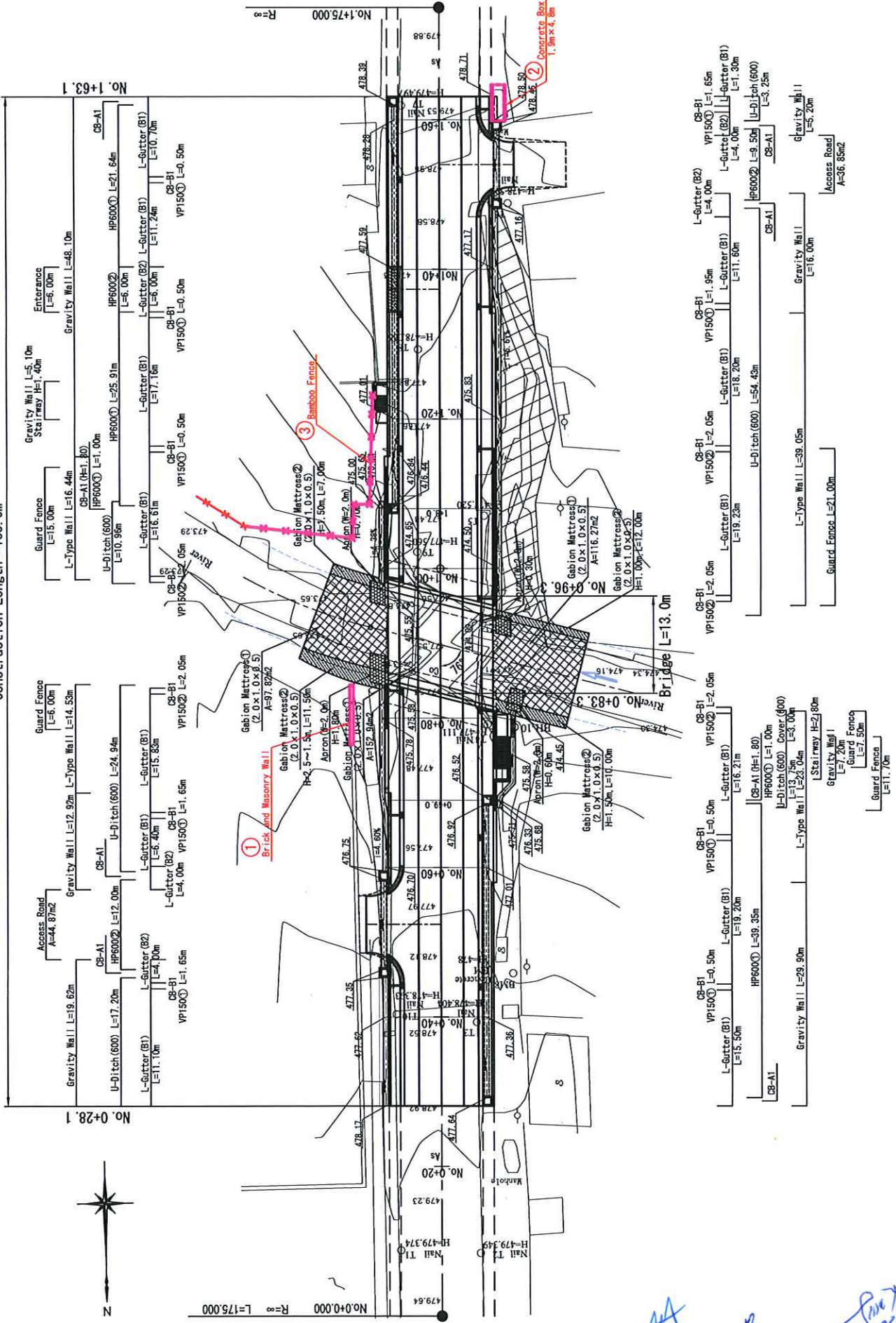
Approved by Project Manager	 REPUBLIC OF SUDAN	THE PROJECT FOR CONSTRUCTION OF THE BRIDGES IN JUBA CITY IN THE REPUBLIC OF SUDAN	 JAPAN INTERNATIONAL COOPERATION AGENCY CTI ENGINEERING INTERNATIONAL CO., LTD.	Designed	Checked	Approved	TITLE: REMOVAL OF OBSTRUCTION PLAN (BRIDGE NO.4)	SCALE 1:800	DWG. NO.
				DATE Dec. 2015	SH. NO.	RO - 02			







Construction Length = 135.0m



No. 0+28.1

No. 0+93.1



No. 0+0.000 R=8 L=175.000

No. 0+75.000 R=8

No. 0+175.000 R=8

*Handwritten signatures and initials in blue ink.*

Approved by Project Manager	TITLE: REMOVAL OF OBSTRUCTION PLAN (BRIDGE NO.10)	SCALE 1:500 DATE Dec. 2015 RO-04
JAPAN INTERNATIONAL COOPERATION AGENCY CTI ENGINEERING INTERNATIONAL CO., LTD.		
THE PROJECT FOR CONSTRUCTION OF THE BRIDGES IN JUBA CITY IN THE REPUBLIC OF SOUTH SUDAN		
REPUBLIC OF SOUTH SUDAN		

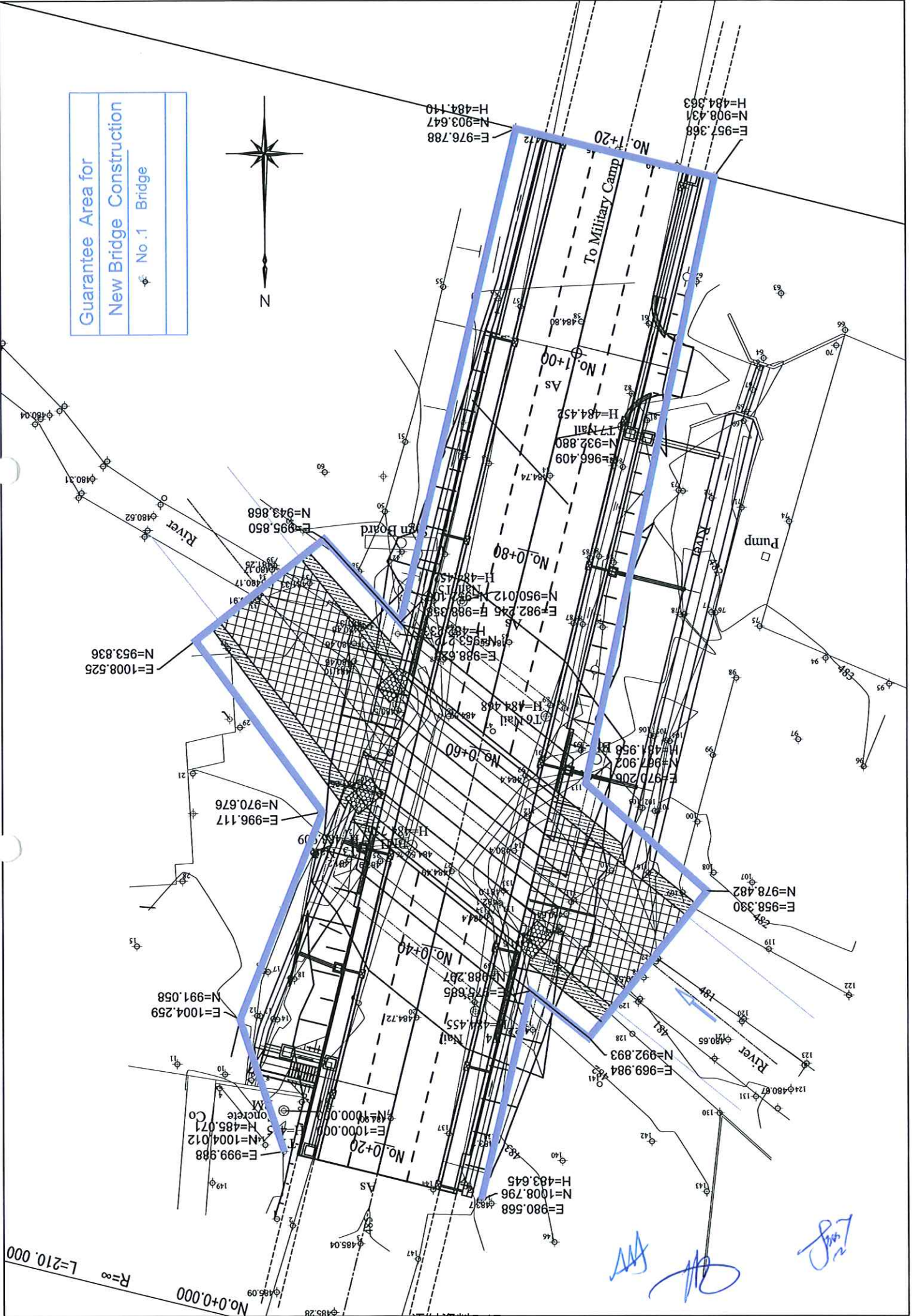
ANNEX-2  
Guarantee Area







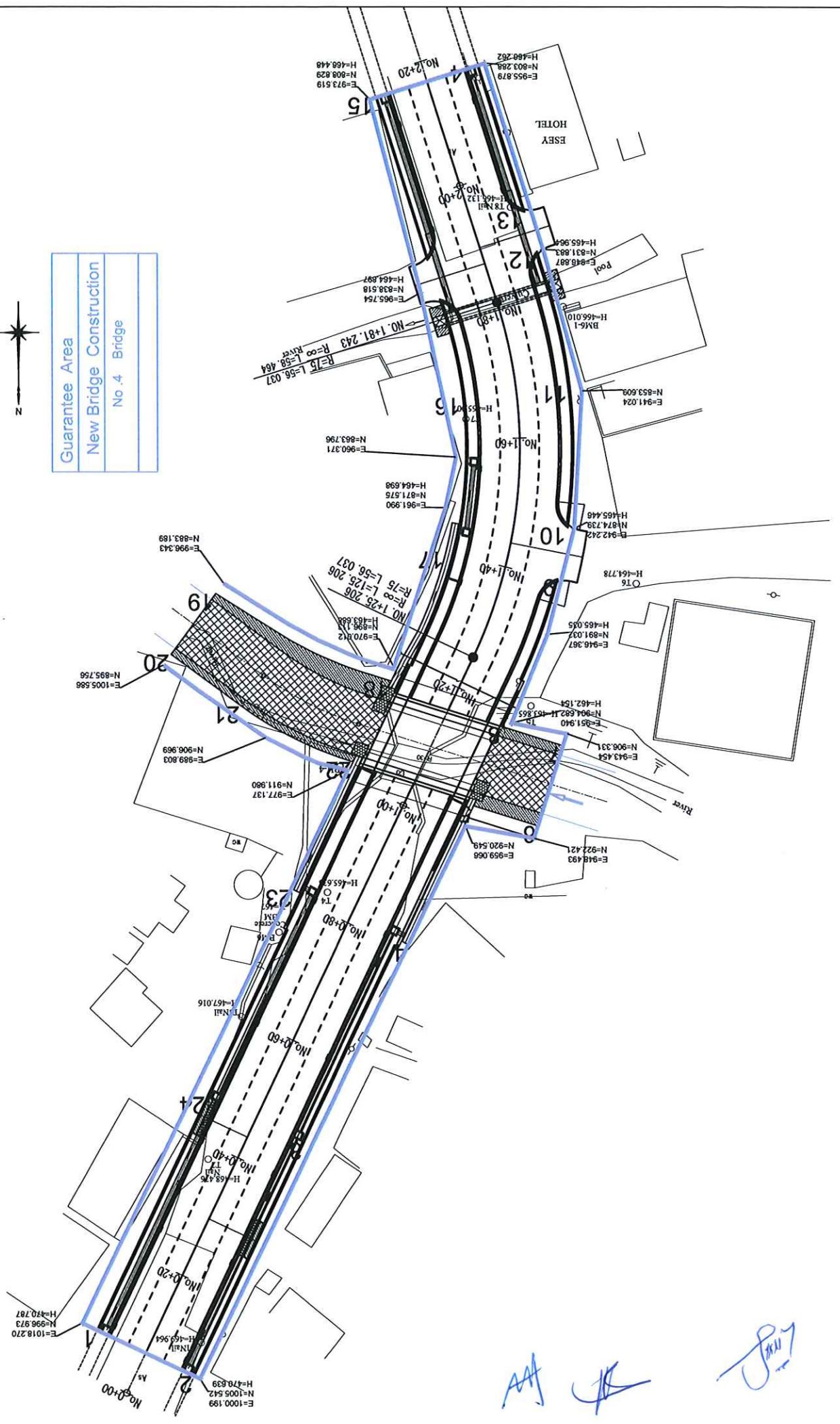
Guarantee Area for  
New Bridge Construction  
No. 1 Bridge



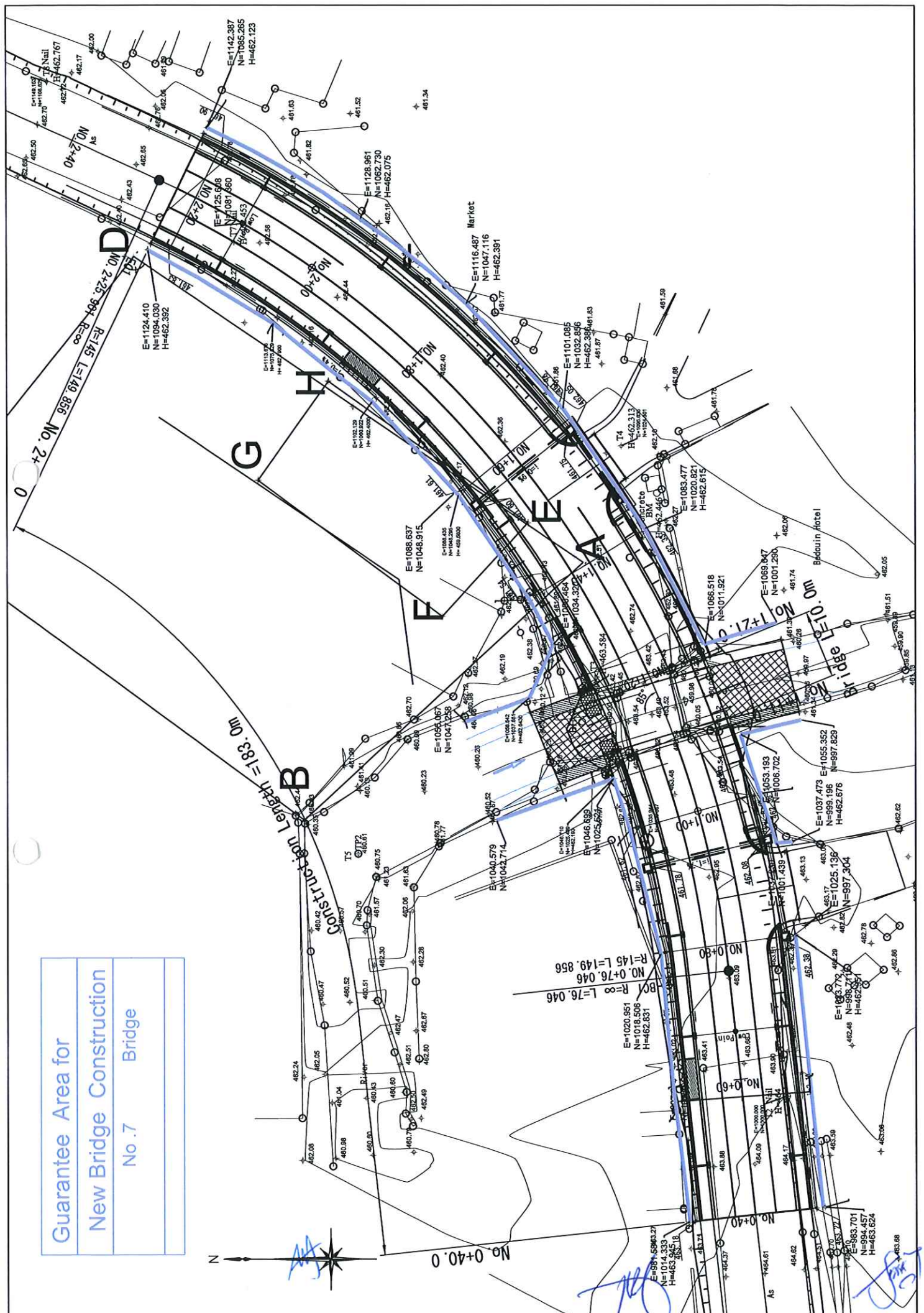




Guarantee Area
New Bridge Construction
No. 4 Bridge



Guarantee Area for  
New Bridge Construction  
No. 7 Bridge



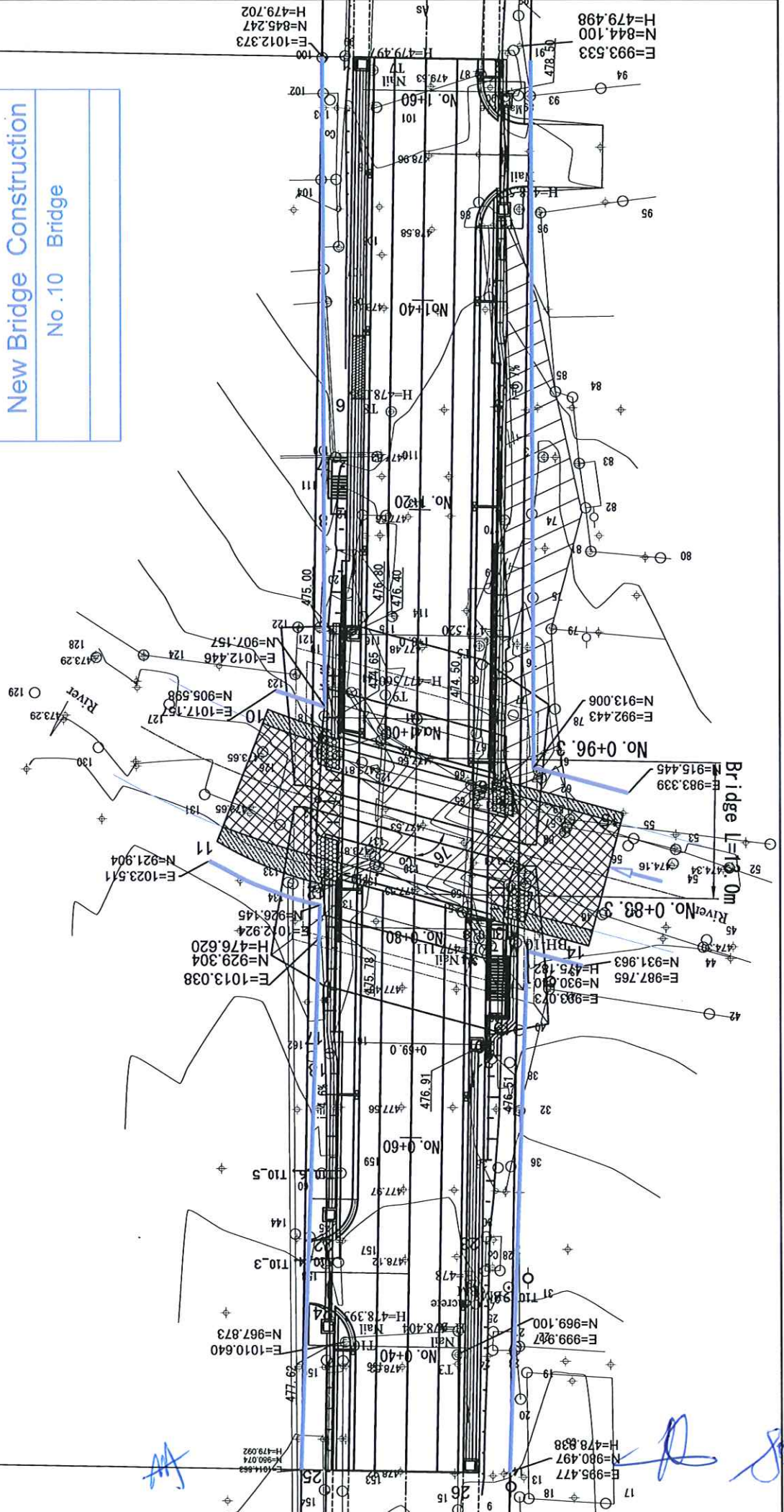


No. 0+28.1



Construction Length = 135.0m

Guarantee Area
New Bridge Construction
No.10 Bridge



No. 1+63.1

E=993.533 N=844.100 H=479.498  
E=1012.373 N=845.247 H=479.702

Bridge L=110.0m  
River No. 0+83.3  
E=983.339 N=915.445  
E=992.443 N=913.006  
E=987.765 N=930.610 H=475.182  
E=983.073 N=931.963 H=475.182

No. 0+80  
E=1013.038 N=929.304 H=476.620  
E=1017.152 N=905.598 H=477.564  
E=1012.446 N=907.157 H=473.29

No. 0+60  
E=1010.640 N=967.873 H=478.394  
E=999.977 N=969.100 H=478.404

E=985.477 N=880.497 H=478.838  
E=980.497 N=880.497 H=478.838



Attachment

Summary of Previous Technical Notes

Title	Date	Contents
The Lologo Bypass and Bridges in JUBA City in the Republic of South Sudan	June 2013	<ol style="list-style-type: none"> <li>1. Plan and Design                             <ol style="list-style-type: none"> <li>1.1 Design Standard to Apply</li> <li>1.2 Bridge Plan</li> <li>1.3 Road Design</li> <li>1.4 Bridge Design</li> <li>1.5 Crossing Road</li> <li>1.6 Road Facilities</li> </ol> </li> <li>2. Construction Plan                             <ol style="list-style-type: none"> <li>2.1 Size and Location of Construction Yard</li> <li>2.2 Borrow Pit, Quality Sites and Disposal Sites</li> <li>2.3 Traffic Control</li> </ol> </li> <li>3. Environmental and Social Condition                             <ol style="list-style-type: none"> <li>3.1 ESLA</li> </ol> </li> <li>4. Under Utilities                             <ol style="list-style-type: none"> <li>4.1 Relocation required</li> <li>4.2 Condition for utilities relocation</li> </ol> </li> <li>5. Undertakings by Republic of South Sudan</li> </ol>
The Project for Construction of the Bridges in JUBA City in the Republic of South Sudan	October 2015	<ol style="list-style-type: none"> <li>1. Priority of Bridges</li> <li>2. Bridge Design</li> <li>3. Undertaken by Republic of South Sudan (Additional)</li> </ol>
	November 2015	<ol style="list-style-type: none"> <li>1. Priority of Bridges</li> <li>2. Road Design</li> <li>3. Bridge Design</li> <li>4. Undertaken by Republic of South Sudan (Additional) / Anseba Hotel, etc</li> </ol>
	March 2016	Footpath design (Concrete and Ramp type)



Ministry of Roads and Bridges  
Republic of South Sudan

Ministry of Physical Infrastructure, Central Equatoria  
Republic of South Sudan

PREPARATORY SURVEY  
ON  
THE PROJECT FOR CONSTRUCTION  
OF  
THE LOLOGO BYPASS AND BRIDGES IN JUBA CITY  
IN THE REPUBLIC OF SOUTH SUDAN

TECHNICAL NOTES

JUNE 2013

JAPAN INTERNATIONAL COOPERATION AGENCY

CTI ENGINEERING INTERNATIONAL CO., LTD.

بيل



Att-1

Preparatory Survey on the Project for Construction of  
the Lologo Bypass and Bridges in Juba City  
in the Republic of South Sudan

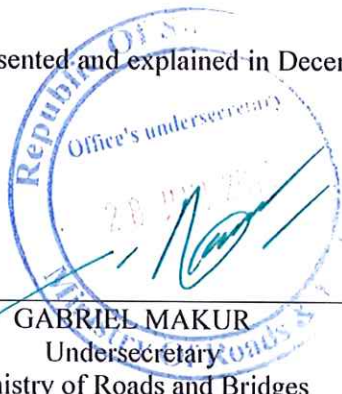

**Technical Notes**

JICA Survey Team for the Preparatory Survey (the Survey Team) has confirmed the items described in the attached Technical Notes concluded by the representative of the Ministry of Roads and Bridges (MRB) which is the responsible and implementing organization on the Project for Construction of the Lologo Bypass (as PART I) and Bridges (as PART II) in Juba City in the Republic of South Sudan (the Project), with representatives of concerned Ministries as the witnesses. Based on the Technical Notes, the Survey Team plans to conduct the basic design for the Project including the project cost estimate through analysis of the site survey findings after obtaining the approval from Japan International Cooperation Agency (JICA).

The results of the analysis and basic design are planned to be presented and explained in December, 2013.

Juba City, Republic of South Sudan  
June, 2013

For   
  
YUZO MIZOTA  
Chief Consultant  
JICA Survey Team  
Sign.....  
  
JOHN BULLEN  
Director General  
Ministry of Physical Infrastructure  
Central Equatoria State  
(Witness)

  
GABRIEL MAKUR  
Undersecretary  
Ministry of Roads and Bridges  
Republic of South Sudan  
  
OTIM BONG MIKE  
Acting Director  
Ministry of Roads and Bridges  
Republic of South Sudan  
(Witness)

## PART II BRIDGES

### 1. Plan and Design

#### 1.1 Design Standard to Apply

Reference shall be made to following manuals and standard specifications for the basic design requirement of roads and bridges;

- 1) Geometric Design Manual, Ministry of Transport and Roads, GOSS, 2006.
- 2) Bridge Design Manual, Ministry of Transport and Roads, GOSS, 2006.
- 3) Drainage Design Manual, Ministry of Transport and Roads, GOSS, 2006

In addition to the above guidelines when other aspects of design are not covered or when a safer and more efficient requirement is indicated, the design shall refer to other standards including;

- 4) AASHTO Policy on Geometric Design Highway and Streets, 2004
- 5) AASHTO LRFD Bridge Design Specifications, 4th Ed., 2007
- 6) AASHTO Standard Specifications for Highway Bridges, 17th Ed., 2002
- 7) Road Design Ordinances, Japan, 2004
- 8) Specifications for Highway Bridges, Japan Road Association, 2002
- 9) Specification for River Facilities, Japan River Association, 1998.

#### 1.2 Bridge Plan

##### (1) Bridges Under Japan's Grant Aid

The bridges selected for the Japan's Grant Aid are six (6) as evaluated as "A rank" in total as shown in Table 2.1-1.

The location is shown in Annex-1.

Table 2.1-1 Evaluation Result

No.	Bridge Name	River	Payam	Evaluation Rank
1	Shuhada	Lobuliet	Kator	A
3	Salam	Lobuliet	Kator	C
4	Albino	Lobuliet	Kator	A
7	Salakana	Korbou	Juba	A
10	Kokora	Korbou	Juba	A
11	Lukabadi	Korbou	Juba	C
17	Lodoro	Lodoro	Juba	C
18	Korweliang 1	Weliang	Rajaf	A
19	Korweliang 2	Weliang	Rajaf	A
20	Korweliang 3	Weliang	Kator	C
21	Korweliang 4	Weliang	Kator	C
22	Saledo	Saledo	Juba	B
23	Lantor	Saledo	Munuki	B

A: High Urgency (the current problem is due to the bridge (missing link, traffic congestion, flood, structural soundness etc..))

B: Middle Urgency (the problem is partly due to the bridge but requires other actions to take before construction of the bridge (ROW, road rehabilitation, flood mitigation etc..))

C: Low Urgency (no existing road to the proposed bridge, very small traffic volume, existing of alternate road etc..)

25

Att-3



PART II BRIDGES

(2) Road Typical Cross Section

The road typical cross section shall follow the existing road plan in principal.  
The typical road cross section is shown in Annex-2.

(3) Bridge Design Condition

The bridge design condition is shown in Annex-3.

1.3 Road Design

(1) Design Speed

The project bridge and approach roads are located in the center of Juba City. The design speed shall selected 50km/hr of Urban/Peri-Urban from South Sudan’s design guideline.  
However, in order to accommodate the road and bridges within present ROW the design speed might be reduced in order to avoid increase of affected structure and compensation.

(2) Road Alignment (Horizontal and Profile)

The design of the road alignment shall be followed by the South Sudan’s design standard, AASHTO or Japan’s Road Design Ordinances according the design speed.

(3) Pavement Design

The Asphalt Pavement shall be applied. The design axle load shall be ten (10) ton which is agreed as EAC(Eastern African Community) standard. Pavement Design Life shall be ten (10) years in consideration of availability of existing reliable data by the design method of AASHTO Guideline. Pavement configuration and design specification shall be as shown in Table 1.3-1.

Table 1.3-1 Pavement configuration and design specification

Location	Pavement	Design Specification
Carriage Way	Sub-base Course	More than CBR30
	Base Course	More than CBR80
	Wearing Course	Asphalt Concrete
Walk Way	Sub-base Course	More than CBR30
	Base Course	More than CBR80
	Wearing Course	Block Type

(4) Road Drainage Design

The design of road drainage facilities shall be referred to the design return period shown in Table 1.4-1.

Table 1.4-1 Return Period for the Road Drainage Design

Structure Type	Return Period (Yrs)	Remark
Gutter and Inlets	2	
Bridge and Culverts	50	

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Att-4

PART II BRIDGES

(5) Crossing Roads

1) Maximum Slope and Pavement

The crossing road shall be smoothly adjusted to the Lologo Bypass at maximum slope of 7%. The crossing road shall be paved approximately 3m from the Lologo Bypass.

2) Pavement Structure of Crossing Road

Pavement structure of the crossing road shall be;  
Base Course 15cm, Asphalt Pavement 3cm

1.4 Bridge Design

(1) Superstructure

RC girder type shall be applied due to economical efficiency. The comparative study result is shown in Annex-4.

(2) Substructure (Foundation Type)

The Substructure type is selected according to the soil investigation result as shown in Table 1.4-1.

Table 1.4-1 Selection of Foundation Type

Bridge No	Type
Bridge No.1	Pile Foundation
Bridge No.4	Spread Foundation
Bridge No.7	Pile Foundation
Bridge No.10	Spread Foundation
Bridge No.18	Pile Foundation
Bridge No.19	Pile Foundation

(3) Bridge Pavement

Bridge shall be designed with the asphalt pavement of 5cm thickness. The walkway shall be block type.

(4) Bridge Railing Type

The concrete type shall be applied for the advantage of maintenance and cost. The comparative study result is shown in Annex-5.

(5) Joint

Expansion Joint type will be applied steel type joint, because of excellence for durability, maintenance, and economic efficiency.

(6) Approach Cushion Slab

Approach cushion slab will be installed behind abutment to prevent subsidence of embankment behind abutment.

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Att-5

## PART II BRIDGES

### 1.5 Crossing Road

#### (7) Maximum Slope and Pavement

The crossing road shall be smoothly adjusted to the Lologo Bypass at maximum slope of 7%. The crossing road shall be paved approximately 3m from the Lologo Bypass.

#### (8) Pavement Structure of Crossing Road

Pavement structure of the crossing road shall be;  
Base Course 15cm, Asphalt Pavement 3cm

### 1.6 Road Facilities

#### (1) Lane Marking

Center Line : To be included  
Carriageway Line : To be included  
Shoulder Line : Not applied (no shoulder)

#### (2) Street Lighting

The project is for rehabilitation of bridge and approach road only. The street lighting shall not be included.

#### (3) Guard Rail

Guard rail shall be installed at the portion where embankment or wall height is more than 2m.

## 2. Construction Plan

### 2.1 Size and Location of Construction Yard

The construction requires the temporary construction yard of 2ha(200m x 100m). (The construction yard is supposed to be the same as Lologo Bypass.) The possible construction yard location is shown in Annex-6.

### 2.2 Borrow Pit, Quarry Sites and Disposal Sites

The possible location of borrow pit, quarry sites and disposal sites are shown in Annex-6.

### 2.3 Traffic Control

#### (1) Bridge No.1,4,7,10

These four (4) bridges shall be in the center of Juba City on the busy road. It is agreed to divert the traffic to the existing road during the construction. Temporary diversion for the pedestrians shall be considered in the design. The traffic diversion plan is shown in Annex-7.  
The stage construction of the bridges shall be considered in the design in order to mitigate traffic safety, congestion and pedestrians inconveniences.

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Att-6



## PART II BRIDGES

### (2) Bridge No.18,19

The major traffic is trucks and trailers from the factory along C3 at present condition. The No.18 shall be constructed earlier than No.19 so that Bridge No.18 can be used as diversion of the traffic. In this way it is not required any specific diversion to other road. Traffic diversion plan is shown in Annex-8.

## 3. Environmental and Social Consideration

### 3.1 ESIA

The environmental and social impact is limited because the project shall be on the existing ROW. It is confirmed the ESIA (Environmental and Social Impact Assessment) is sufficient to obtain required license.

## 4. Underground Utilities

### 4.1 Relocation required

The list of the underground utilities that require relocation is shown in Table 4.1-1.

Table 4.1-1 Utility Condition of each bridges

Bridge	Name	Water Supply	Electricity	Communication
Br.1	Shuhada	No	Overhead	There is communication line but it is already abandoned.
Br.4	Albino	No	Overhead	No
Br.7	Salakana	No	No	There is communication line but it is already abandoned.
Br.10	Kokora	There are $\phi$ 6inch pipe on the approach road. It is not passing the existing river.	No	No
Br.18	Weliang 1	No	No	No
Br.19	Weliang 2	No	No	No

### 4.2 Coordination for utility relocation

Based on the above mentioned facilities, MRB will coordinate with relevant authorities for relocation.

29



Att-7

PART II BRIDGES

5. Undertakings by Republic of South Sudan

5.1 Major Tasks to be Undertaken by Each Government

The major tasks to be undertaken by each government has been confirmed in the Minutes of Discussions dated on 26, March 2013 (Annex-9).

5.2 Tax Exemption Related to Construction

The RSS side shall issue exemption certificates for all concerned members working for the Project from Customs duties, internal taxes and other fiscal levies that may be imposed in Southern Sudan with respect to the supply of products and services, including the exemption certificate from the Central Equatoria State.

5.3 Secure of the Land

The RSS sides shall secure the land required for the construction.

The Table 5.3-1 shows required actions to be taken.

Table 5.3-1 Required actions to be taken for the bridge construction

Bridge	Land etc.,	Remark
No.1	Removal of excising bill board	The existing bill board is very close to the exaction of the foundation.
No.4	Part of existing restaurant	Only affected during the foundation excavation
No.7	Part of Concrete Block Wall	Only affected during the foundation excavation
No.10	Part of masonry wall (under construction)	Only affected during the foundation excavation
No.18	Justification of the wire fence installed at the site by law. To secure the land required for the bridge and future river improvement.	The existing fence might be illegal.
No.19		

5.4 Permission for Aggregate/Soil Borrow Site

The RSS side shall obtain permissions for mining of aggregate/soil from the concerned authority and/or the private firm concerned for the possible locations of borrow site. The possible location is shown in 2.1.

5.5 Permission for Dumping Discarded Soil

The RSS side shall obtain permission of use of disposal area including discarded soil from the concerned authority and/or the private firm concerned for the possible locations for dumping discarded soil. The possible location is shown in 2.1.

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Att-8

## PART II BRIDGES

### 5.6 Acquisition of Construction Yard

The RSS side shall procure the construction yard to be used during the construction period through negotiation with the community and to execute an agreement of lease prior to the approval of tender documents. The possible location is shown in 2.1.

### 5.7 River Water Usage

The RSS side shall obtain exemption from the Nile River abstraction and permission for construction usage during the entire construction period from the Ministry of Water Resource Management and Irrigation.

### 5.8 Coordination with Traffic Control Concerned Authorities

The RSS shall take required coordination with traffic control concerned authorities to facilitate the construction work and ensure traffic safety near the project area.

### 5.9 Environmental License

The RSS shall apply for the environmental license required for implementation of the project in accordance with the environmental and social impact study result and resettlement plan.

### 5.10 Coordination with other project and authorities

The RSS shall take required monitoring and coordination with other project and authorities along the road to prevent any encroachment and increase of the compensation. Especially, the road where Bridge No.18 and No.19 are located might be rehabilitated by RSS budget. The horizontal alignment, profile, typical cross section etc., need to be adjust the plan of Japan's Grant Aid.

### 5.11 Coordination on Underground Utilities

The MRB shall coordinate with SSUWC in regards to underground water pipe at Bridge No.10. The result of the coordination shall be informed to Japan side by 31 July 2013.

### 5.12 Others

MRB shall obtain required license or official approval for implementation of the project. MRB shall support for the engineers involved in the project for travel and stay in Republic of South Sudan.

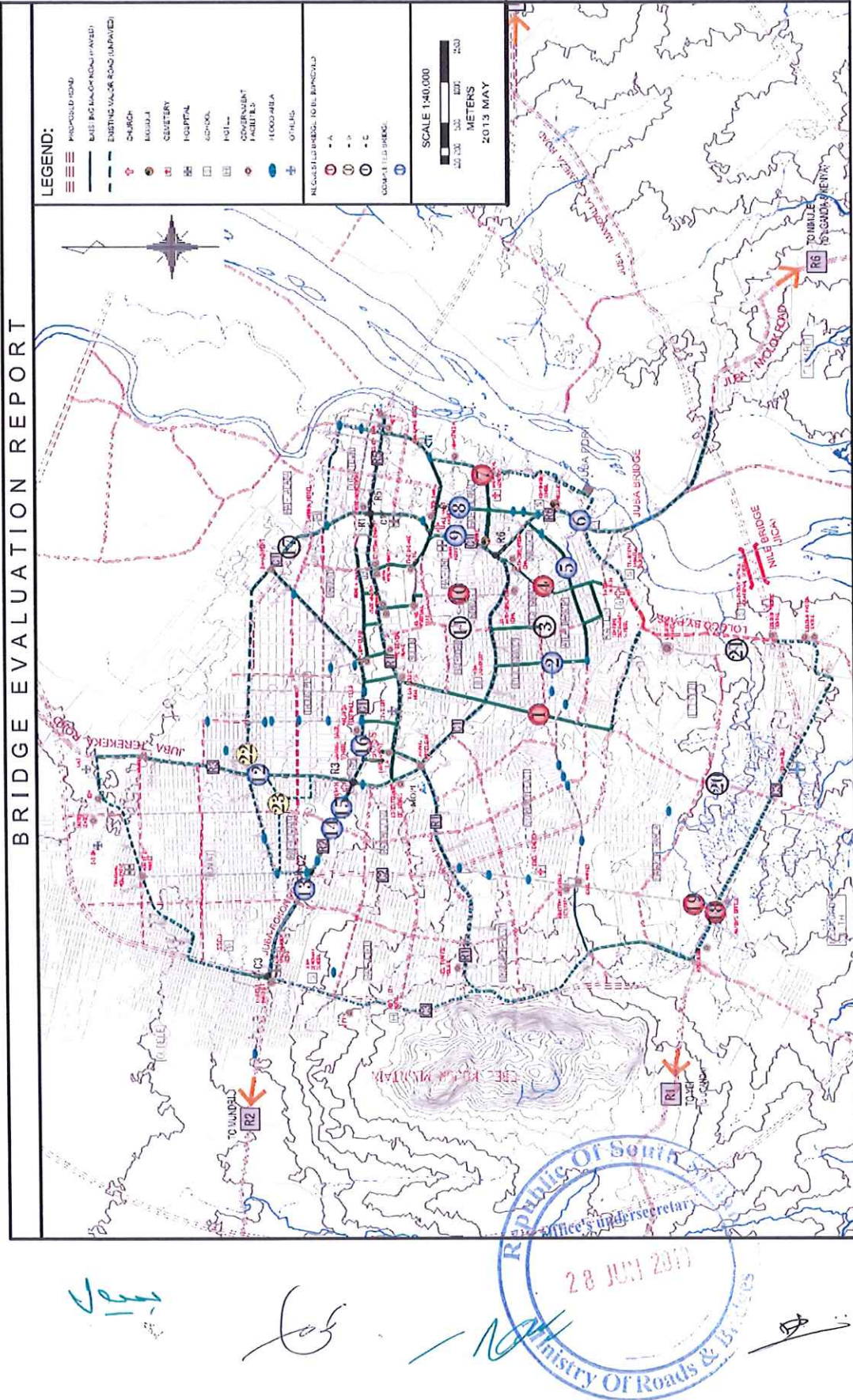
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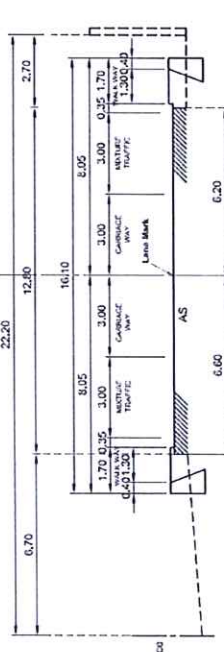
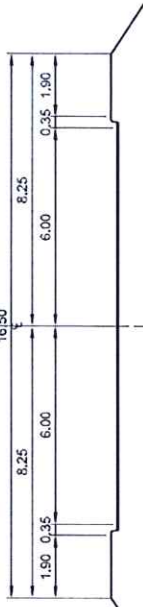
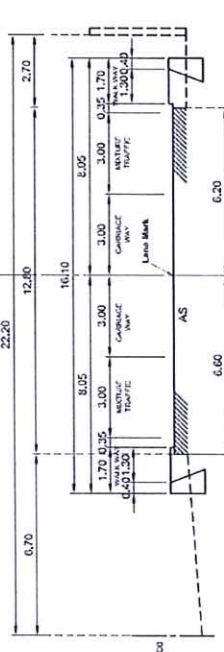
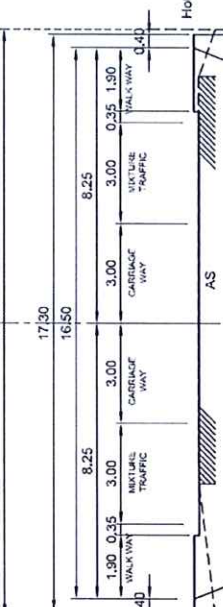
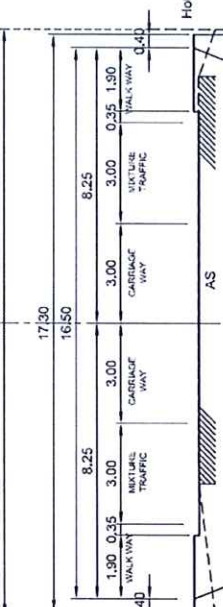
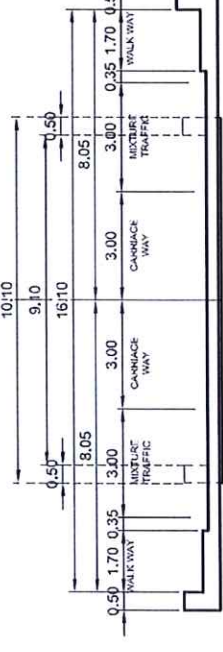
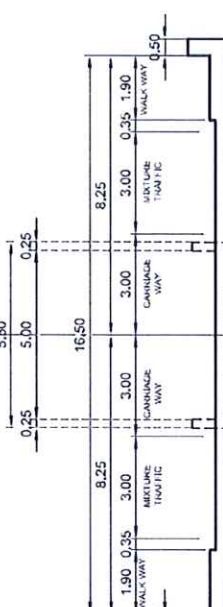
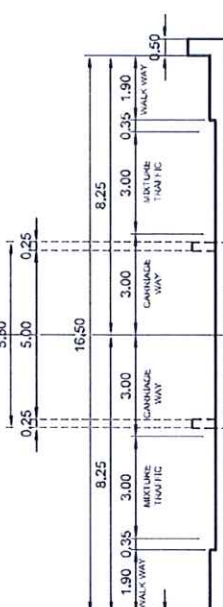


Att-9





Annex-1 Location Map of the Bridges

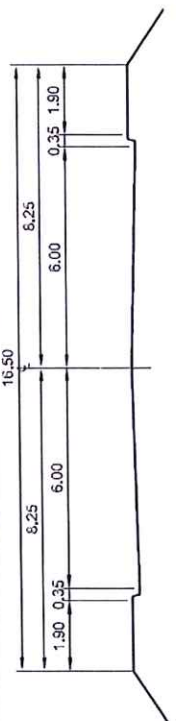
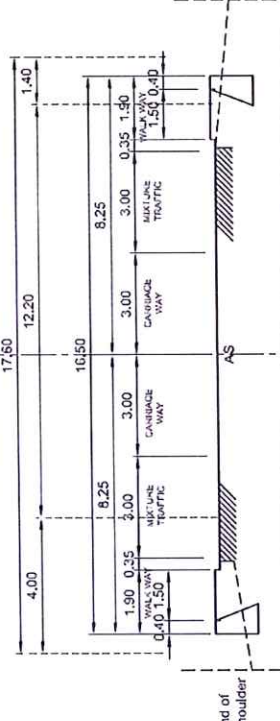
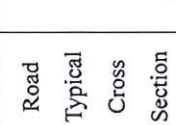
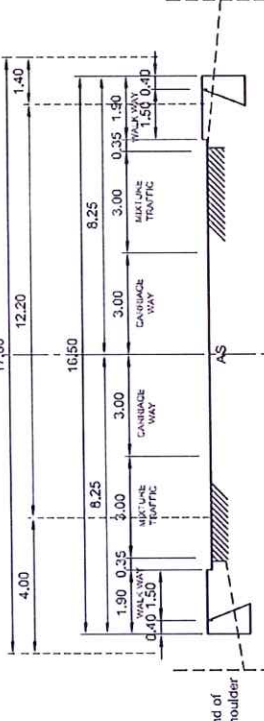
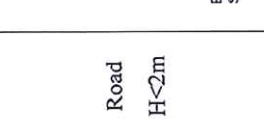
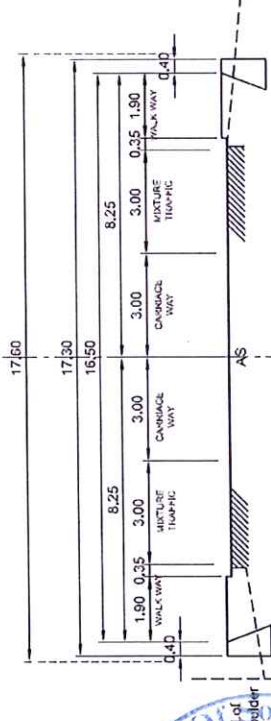

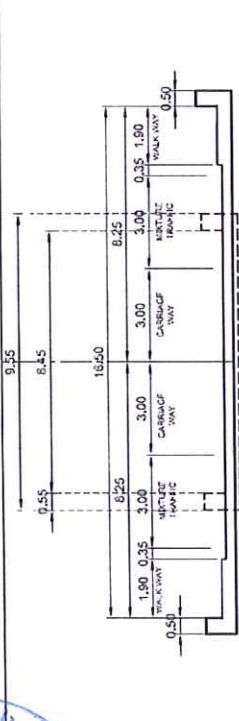
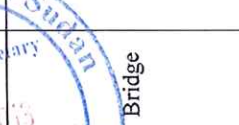
Bridge	Bridge No.1 (Road C1)	Bridge No.4 (Road Q)
Road Typical Cross Section 		
Road H<2m 		
Bridge 		

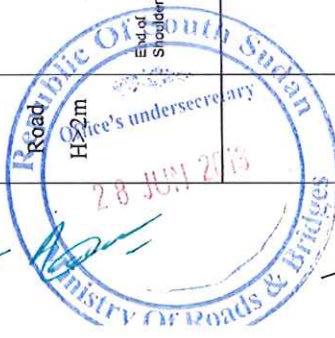
Annex 2.1(1/3) Bridge Typical Cross Section





PART II BRIDGES

Bridge	Bridge No. 7 (Road F1b)	Bridge No. 10 (Road J3)
<p>Road Typical Cross Section</p> 	 <p>End of Shoulder</p>	
<p>Road H &lt; 2m</p>	 <p>End of Shoulder</p>	
<p>Road H &lt; 2m</p>	 <p>End of Shoulder</p>	
<p>Bridge</p>		

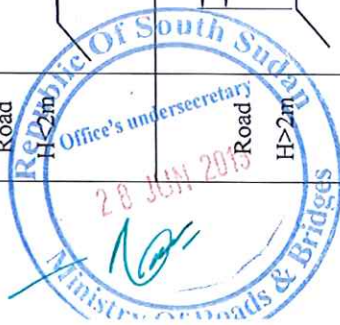


Annex 2.1(2/3) Bridge Typical Cross Section

PART II BRIDGES

Bridge	Bridge No. 18	Bridge No. 19 (Road 2)
Road Typical Cross Section		
Road H>2m		
Road H>2m		
Bridge		

Annex 2.1(3/3) Bridge Typical Cross Section



Att-13

Annex 3 Bridge Design Condition

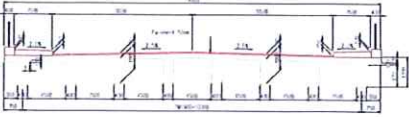

Design Item		Criteria / Value	
1.0 General	Design Reference	<ul style="list-style-type: none"> <li>• Bridge Design Manual, Ministry of Transport and Roads, GOSS, 2006</li> <li>• Geometric Design Manual, Ministry of Transport and Roads, GOSS, 2006</li> <li>• Drainage Design Manual, Ministry of Transport and Roads, GOSS, 2006</li> <li>• AASHTO LRFD Bridge Design Specifications, 5<sup>th</sup> Edition, 2012</li> <li>• Specifications for Highway Bridges, Part I-V, Japan Road Association, 2012</li> </ul>	
	Road/Bridge Class	• Interstate Trunk Road (DS1)/Primary Arterial	
	Bridge Section Length (m)	Refer Table-2	
	Span Configuration (m)	Refer Table-2	
	Design Speed (km/hr)	50	
2.0 Geometry	Min. Horizontal Curve Radius (m)	150 (2.5%)	
	Max. Gradient (%)	6	
	Travel Lane Width (m)	2.5 – 3.5	
	Sidewalk (m)	1.5 – 1.9	
	Pavement Crossfall (%)	2.5	
	Vertical Clearance on Roadway (m)	5.3 (GOSS BDM 2.4.5 for light structures)	
	Vertical Clearance on Design Flood Level (m)	0.9 (GOSS BDM, DDM)	
Elevation of Design Flood Level (m)	Riverbed Level + 2.0m		
3.0 Design Load	Live Load	HL-93 (AASHTO)	
	Pedestrian Load (kPa)	4.0 (GOSS BDM 3.12)	
	Flood Velocity (m/s)	1.8	
	Base Wind Velocity, $V_B$ (m/s)	45 (Open Country)	
	Peak Ground Acceleration Coefficient	0.2	
	Temperature	$T_{max}$ (°C) 50 $T_{min}$ (°C) 15	
4.0 Materials	Concrete Strength	Footing/Pile Cap (MPa)	24
		Bored Piles (MPa)	30
		Pier/Abutment/Retaining Wall (MPa)	24
		Slab/Railing (MPa)	24
		Slope Protection (MPa)	21
	Lean Concrete (MPa)	16	
	Reinforcing Bars	Yield Strength, $f_y$ (MPa)	415 (Over D16)
Yield Strength, $f_y$ (MPa)		276 (Less than D13)	
Others		BDM, AASHTO, JARA	

Table-2 List of Bridge Length and Span Length

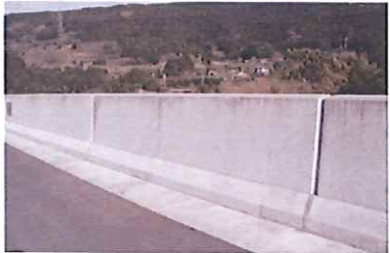

Bridge No.	Bridge Length (m)	Span Length(m)
1	15.0	14.0
4	11.5	10.5
7	9.0	8.0
10	13.0	12.0
18	11.0	10.0
19	11.0	10.0
A	15.0	14.0

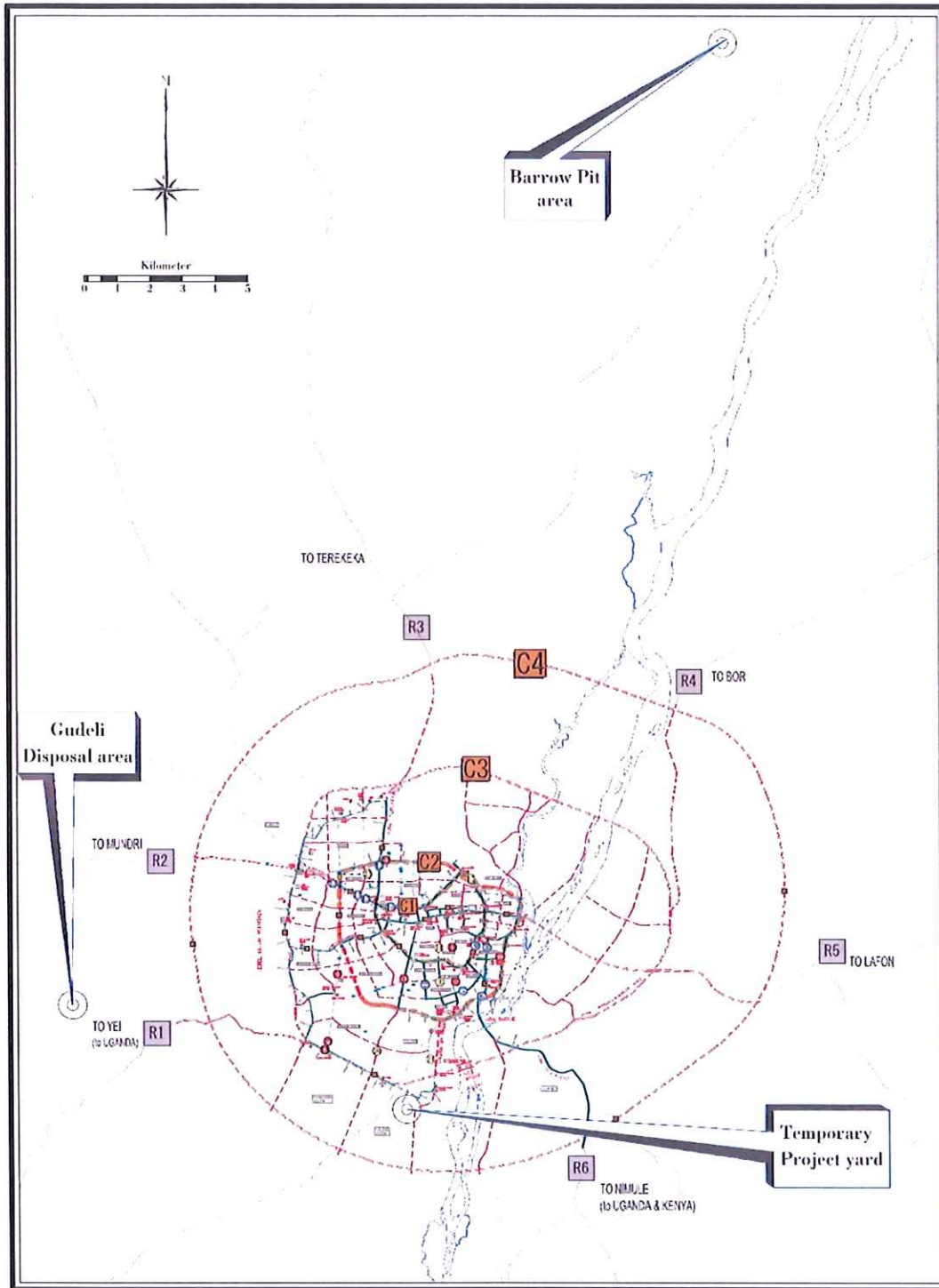


Annex-4 Comparative Study of Superstructure

	Option-1 RC Girder	Option-2 Steel Girder (H beam)
Typical Cross Section		
Structural feature	<ul style="list-style-type: none"> <li>• Dead load is heavier than steel girder. (△)</li> <li>• Low maintenance (◎)</li> </ul>	<ul style="list-style-type: none"> <li>• Dead load is lighter than RC girder (○)</li> <li>• Need periodical maintenance (Repaint) (△)</li> </ul>
Workability	<ul style="list-style-type: none"> <li>• Almost materials can be procured in Juba. (○)</li> <li>• All staging method is applied as construction method, so need to consider the period of flood season. (△)</li> </ul>	<ul style="list-style-type: none"> <li>• Need to procure of materials from other countries. (△)</li> <li>• Crane erection method can be applied as construction method, so it is possible to work the erection during flood season. (○)</li> </ul>
Construction Cost	1.0 (◎)	1.2 (△)
Construction Period	<ul style="list-style-type: none"> <li>• Need to avoid the flooded season. (△)</li> <li>• Construction period is almost as same as Steel girder. (○)</li> </ul>	<ul style="list-style-type: none"> <li>• Need to avoid the flooded season. (△)</li> <li>• Construction period is almost as same as RC girder. (○)</li> </ul>
Landscape and Environment	<ul style="list-style-type: none"> <li>• It looks heavy compared to the steel girder because the girder height becomes higher than steel girder. (△)</li> </ul>	<ul style="list-style-type: none"> <li>• It can be given the impression of stylish because it is possible to keep low girder height as compared RC girder. (○)</li> </ul>
Evaluation	○ RC girder is recommended since it is economic. And, it also is same as a request of the South Sudan government.	△

Annex-5 Bridge Railing Comparison

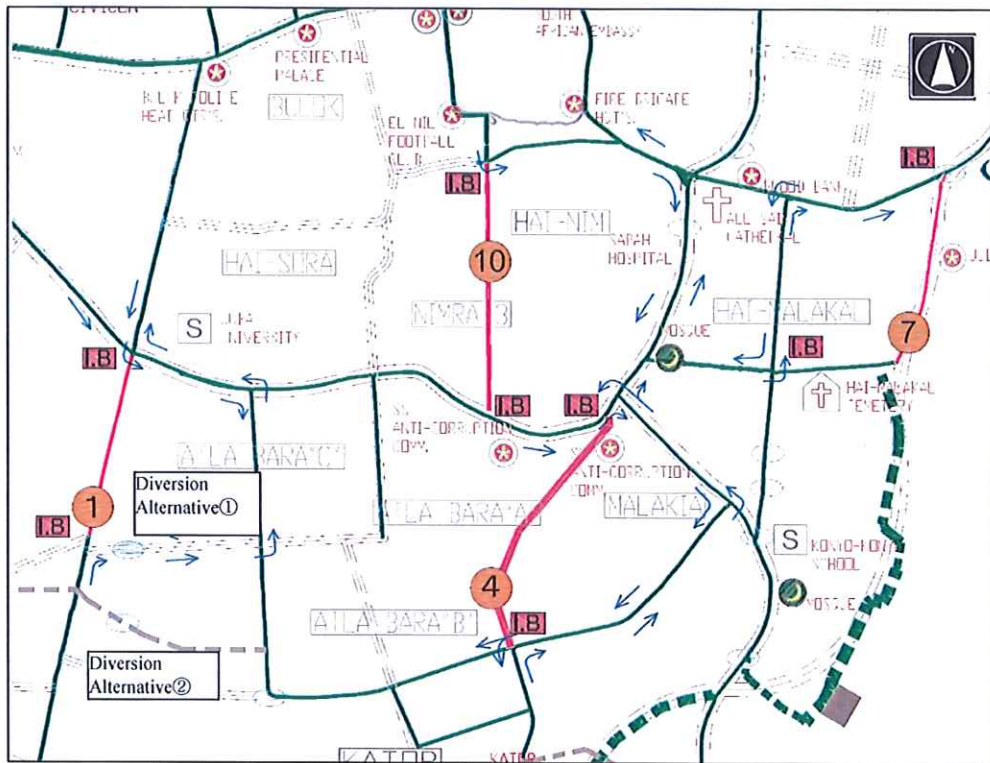
Option	(1) Concrete Wall Type	(2) Steel Post Type
Image View		
Characteristic	<ul style="list-style-type: none"> <li>• This railing is made of whole concrete.</li> <li>• Heavier than steel post type.</li> <li>• Pedestrian feel a feeling of pressure.</li> <li>• Dirt is conspicuous.</li> </ul>	<ul style="list-style-type: none"> <li>• This railing is made of steel.</li> <li>• Lighter than concrete wall type.</li> <li>• There is a feeling of opening compared with concrete.</li> <li>• Dirt is not conspicuous.</li> </ul>
Construction Cost	230 USD/m (23,000 JPY / m)	370USD/m (37,000 JPY / m)
Evaluation	○	△
Comment	The steel post type is not favorable in terms of maintenance including replacement in case any heavy accident occurs. The concrete type shall be selected for maintenance and cost.	



Annex-6 Location of Borrow Pit and Disposal Sites

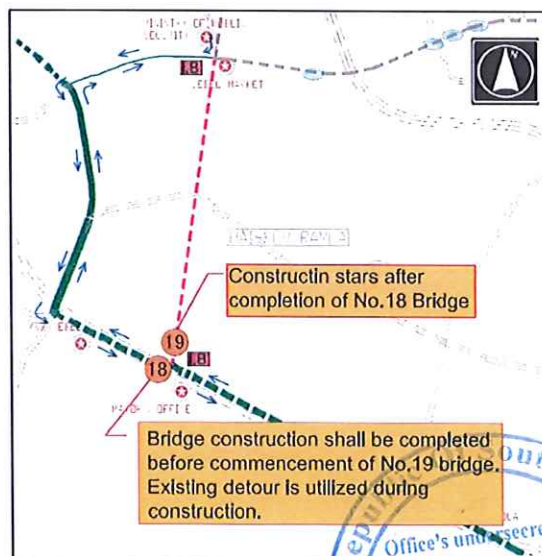
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- Legend
- : Diversion Route
  - : Limit of the Traffic During Construction
  - : Sign Board

Annex-7 Traffic Diversion Plan for No.1, No.4, No.7, No.10 Bridge



Annex-8 Traffic Diversion Plan for No.18, No.19 Bridge



## Major Tasks to be Undertaken by Each Government

No	Items	To be covered by Grant Aid	To be covered by the Recipient Side
1	To secure land		●
2	To clear, level and reclaim the site when needed		●
3	To construct gates and fences in and around the site		●
4	To bear the following commissions to the Japanese bank for banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
5	To ensure unloading and customs clearance at port of disembarkation in recipient country		
	1) Marine/Air/Land transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and customs clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
6	To accord Japanese nationals, whose service may be required in connection with the supply of the products and the services under the Verified Contract, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
7	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts		●
8	To maintain and use properly and effectively the facilities contracted and equipment provided under the Grant Aid		●
9	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment		●

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

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Att-18