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## **APPENDICES**

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## Appendix 1 Correspondence

<b>date/month/year</b>	<b>Subject</b>	<b>Attention</b>	<b>Sender</b>
22/12/2010	Navigation clearance	Ukrainian Waterways	JICA Survey Team
28/12/2010	Ditto	JICA Survey Team	Ukrainian Waterways
23/12/2010	Record for Number of ships	JICA Survey Team	Ukrainian Waterways
24/12/2010	Restriction for construction of Mykolaiv bridge due to aerial navigation.	JICA Survey Team	International Airport Mykolaiv
18/12/2010	Inception Report Explanation	State Road Administration	JICA Survey Team
05/05/2011	Explanation of Bridge Type Selection	State Road Administration	JICA Survey Team
19/05/2011	Agreement on the Result of Bridge Type Selection	JICA Survey Team	State Road Administration



The Preparatory Survey on  
the Project of Construction of Mykolaiv Bridge in Ukraine  
The Consortium of Oriental Consultants Co., Ltd. and  
Chodai Co., Ltd.

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December 22, 2010  
Our Ref.No.705R3349-04

To: STATE ENTERPRISE  
UKRAINIAN WATER WAYS  
Attn: Mr. Grygoriy MEDVEDEV  
Deputy of the Chief  
12, P Sagaidachnogo Str.,  
Kiev, Ukraine

RE: NAVIGATION CLEARANCE FOR MYKOLAIV BRIDGE

Pursuant to “Navigation Clearance under Bridges on Inland waterways (GOST26775-97)”, the minimum navigation clearance at the crossing point of the Yuzhnyi Bug River for two navigable spans is 120 m width and 13.5 m high for each span.

As the JICA Survey Team for “THE PREPARATORY SURVEY ON THE PROJECT OF CONSTRUCTION OF MYKOLAIV BRIDGE IN UKRAINE”, we would like to propose to apply one navigable span for the Project instead of the two navigable spans because of the following reasons.

- Proposed bridge location is on a curved point of the river where the velocity of river stream varies depending on the position (inside or outside of the corner).
- Visibility at the bridge site is sometimes reduced by foggy weather
- The pier between two navigable spans is NOT preferable considering accidental collision of vessels into the pier with above mentioned conditions.

Therefore please kindly approve the application of one navigable span for the captioned bridge.

Yours faithfully,

---

Hideki Yoneyama  
Team Leader of JICA Survey Team  
Oriental Consultants Co., Ltd.

cc Deputy Chairman - UKRAVTODOR



МІНІСТЕРСТВО ТРАНСПОРТУ ТА ЗВ'ЯЗКУ УКРАЇНИ  
УКРМОРРІЧФЛОТ  
ДЕРЖАВНЕ ПІДПРИЄМСТВО ВОДНИХ ШЛЯХІВ  
УКРВОДШЛЯХ

04070, м.Київ-70 вул.П.Сагайдачного,12  
Код ЄДРПУ 03150102, р/р №26005301301  
в ПАТ Промінвестбанку м. Києва, МФО 300012

тел. (044) 417-57-54  
тел./факс (044) 425-45-13  
E-mai: [office@ukrvodshliah.org.ua](mailto:office@ukrvodshliah.org.ua)

28.12.2010р. № 2-12/350

Керівнику групи  
JICA Survey Oriental Consultants Co., Ltd  
Хідекі Енеяма

На № 705R3349-04  
від 22.12.2010р.

ДП "Укрводшлях" розглянуло лист щодо проектування одного судноплавного прогону мостового переходу на р. Південний Буг в м. Миколаєві та погоджує це проектне рішення при умові, що ширина судноплавного прогону повинна бути не меншою 240 м.

Перший заступник начальника

Г.М. Медведєв

Вик. Гусейнов Ю.Г.  
☎ 428-86-63



СИСТЕМА УПРАВЛІННЯ ЯКІСТЮ  
СЕРТИФІКОВАНА НА  
ВІДПОВІДНІСТЬ ДСТУ ISO 9001-2009  
Регістром судноплавства України

**[Emblem of Ukraine]**  
**MINISTRY OF TRANSPORT AND COMMUNICATIONS OF UKRAINE**  
**UKRAINIAN MARINE AND RIVER FLEET**  
**STATE ENTERPRISE ON WATER WAYS**  
**UKRVODSHLYAH**

04070, Kyiv-70, P.Sagajdachnogo Str., 12  
Code acc. to Uniform State Registry  
of Enterprises and Organizations of Ukraine 03150102, c/a No 26005301301  
in Private JS Company of Prominvestbank in Kyiv city, MFO 300012

tel. (044) 417-57-54  
tel./fax (044) 425-45-13  
E-mail: [office@ukrvodshlyah.org.ua](mailto:office@ukrvodshlyah.org.ua)

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Ref.No 2-12/350 dated 28.12.2010

To Team Leader  
JICA Survey Oriental Consultants Co., Ltd  
Hideki Yoneyama

to Ref.No 705R3349-04  
dated 22.12.2010

State Enterprise “Ukrvodshlyah” have considered the letter on the designing of one navigation span of the bridge pass on the River Pivdennyi Bug in Mykolaiv city and agree this design solution provided that the navigation span width is to be not less than 240 m.

First Deputy Head

[signature]

G.M.Medvedev

Executed Guseynov Y.G.  
Tel. 428-86-63

QUALITY CONTROL SYSTEM CERTIFICATED ON THE CORRESPONDANCE with System of Standardization of Ukraine ISO 9001-2009 Navigation Registry of Ukraine
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Міністерство транспорту та зв'язку України  
ДЕРЖАВНА АДМІНІСТРАЦІЯ  
МОРСЬКОГО І РІЧКОВОГО ТРАНСПОРТУ

01135, м. Київ, просп. Перемоги, 14

Тел. (044) 481-51-86  
Факс (044) 461-51-89  
E-mail: office@morflot.kiev.ua

№ 4378-02/06/31-10

23 12 2010 р.

Державна служба автомобільних доріг України (Укравтодор)

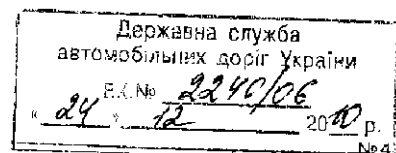
У відповідь на ваш лист від 15.12.2010 № 4/7.2-7-3818 Державна адміністрація морського і річкового транспорту надає інформацію стосовно кількості суден, які проходили Варварівський міст у м. Миколаїв, в тому числі таких, що потребували розведення зазначеного мосту.

Додаток: на 1 арк.

Г.в.о. Голови

І. Горобець

Користувач: 11  
271-14-09



**Кількість суден, що проходили під  
Варварівським мостом і потребували його  
розведення**

№ з/п	Рік	2008	2009	2010
	Місяць			
1	Січень		1	1
2	Лютий	1	1	
3	Березень	2	4	
4	Квітень	4	3	1
5	Травень	1	2	4
6	Червень	2	3	2
7	Липень	5	9	
8	Серпень	1	1	2
9	Вересень	5	1	
10	Жовтень	2	1	
11	Листопад	7	3	1
12	Грудень	1	4	
ВСЬОГО		31	33	11

**Кількість суден, що проходили під  
Варварівським мостом без його  
розведення**

№ з/п	Рік	2008	2009	2010
	Місяць			
1	Січень		8	
2	Лютий	3	10	
3	Березень		2	
4	Квітень	1		
5	Травень	1		
6	Червень	1		
7	Липень			
8	Серпень			
9	Вересень		1	2
10	Жовтень	1		1
11	Листопад			2
12	Грудень	4		
ВСЬОГО		11	21	5

(レターの英訳)

Dear Hideki san,

As I promised sending you the additional information to the questionnaire which we still receiving from the Ministries. Sending you attached pdf. letter from the Ukrainian Waterway Administration regarding the number of ships passing under the Mykolaiv Bridge and its translation.

**Number of ships passing under the Mykolaiv Bridge separation required**

#	Year/Month	2008	2009	2010
1	January		1	1
2	February	1	1	
3	March	2	4	
4	April	4	3	1
5	May	1	2	4
6	June	2	3	2
7	July	5	9	
8	August	1	1	2
9	September	5	1	
10	October	2	1	
11	November	7	3	1
12	December	1	4	
<b>Total</b>		<b>31</b>	<b>33</b>	<b>11</b>

**Number of ships passing under the Mykolaiv Bridge NO separation required**

#	Year/Month	2008	2009	2010
1	January		8	
2	February	3	10	
3	March		2	
4	April	1		
5	May	1		
6	June	1		
7	July			
8	August			
9	September		1	2
10	October	1		1
11	November			2
12	December	4		
<b>Total</b>		<b>11</b>	<b>21</b>	<b>5</b>



ЗАТВЕРДЖУЮ

Генеральний директор

КП «Міжнародний аеропорт Миколаїв»

А.Є.КЕЙЯН

« 24 » 12 2010р.

### ЗАКЛЮЧЕННЯ

По узгодженню будівництва мостового переходу через р. Південний Буг у місті Миколаєві.

Замовник: Державна служба автомобільних доріг України.(Служба автомобільних доріг у Миколаївській області.

Комісія по узгодженню висотних перешкод на при аеродромній території аеропорту «Миколаїв» в складі:

Голова комісії: головний інженер аеропорту О.В. Луговий

Члени комісії: заступник головного інженера аеропорту Васьков С.Г.  
начальник служби ЕА і НС Таточенко А.М.  
старший штурман аеропорту Карастоянов М.М.  
інженер-інспектор по безпеці польотів Смірнов В.В.

розглянула матеріали по узгодженню будівництва мостового переходу через р. Південний Буг у місті Миколаєві встановила:


- 1.Опори мосту розташовані поза полоси повітряних підходів (ППП), по відношенню до порогу ШЗПС 05 п 47030272 с 031542291.
2. Відносна відмітка висоти опори моста становить 112 метрів, відносно рівня ШЗПС становить 56 метрів.
3. Згідно Інструкції по виконанню польотів і таблиці розрахунків мінімальної безпеки виконання прольоту перешкод під час заходу на посадку (ОСА/ОСН) порогу ШЗПС 05, висота опори мосту не являється перешкодою для безпеки польотів.

### ВИСНОВОК:


1. Згідно нормативним документам споруда мостового переходу через р. Південний Буг по своїм показникам не являється перешкодою для безпеки польотів в при-аеродромній території.
2. Споруда мосту через р. Південний Буг підлягає обов'язковому денному та нічному маркуванню згідно Повітряному кодексу України.

3. Після закінчення будівництва мостового переходу через р. Південний Буг на адресу КП «МАМ» необхідно вислати виконавчу документацію з вказаними абсолютними відмітками споруди.


Голова комісії: головний інженер аеропорту

 Луговий О.В.

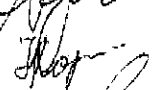
Члени комісії: заступник головного інженера аеропорту

 Васюков С.Г.

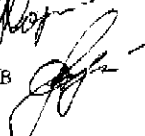
начальник служби ЕА і НС

 Таточенко А.М.

старший штурман аеропорту

 Карастоянов М.М.

інженер-інспектор по безпеці польотів

 Смірнов В.В.



Tel: (+38 0512) 47-86-50    Fax: (+38 0512) 47-74-17    AFTN : UKONAPDU

54017, Україна, м. Миколаїв, а/с 310 Аеропорт ЦА    e-mail: airportnikolaev@yandex.ua  
54017, Ukraine, Mykolaiv, a/b 310 Airport

Вих. № 1058 від 24 12 2010 року

*Чоусенко І. І.*  
*[Signature]*

**Начальнику Служби автодоріг  
у Миколаївській області  
Гетун В.М.**

Направляємо Вам заключення по узгодженню будівництва мостового переходу через річку Південний Буг у місті Миколаєві.

/ Генеральний директор КП „МАМ”



А.С. Кейян

Виконавець:  
Базаренко В.І.  
050 9630422

[Logo: International Airport Mykolaiv]

Tel. (+380512) 47-86-50, Fax (+380512) 47-74-17 AFTN: UKONAPDU

54017, Ukraine, Mykolaiv, post box 310, Airport email: [airportnikolaev@yandex.ua](mailto:airportnikolaev@yandex.ua)

---

Ref.No 1058 dated 24.12.2010

To Head of Road Service  
in Mykolaiv Region  
Mr. Getun V.M.

We would like to submit you the conclusion regarding the agreement on bridge pass construction over the Pivdenniy Bug River in Mykolaiv city.

Director General

Communal Enterprise "International Airpot Mykolaiv" [signature, stamp] A.E. Keyan

APPROVED  
Director General  
Communal Enterprise  
“International Airport Mykolaiv”  
[signature] A.E.KEYAN  
24.12.2010

### CONCLUSION

Regarding Agreement on the construction of the Bridge pass over the Pivdenniy Bug River in Mykolaiv city.

Customer: State Road Service of Ukraine (Road Service in Mykolaiv Region)

Commission on the height restriction agreement on the near-by airfield zone of Mykolaiv airport consisting of:

Head of commission: Chief Airport Engineer O.V. Lugovy

Commission members: Deputy Chief Airport Engineer Vaskov S.G.

Chief of Ground and Security Service

Chief Navigating Officer of the Airport Karastoyanov M.M.

Engineer-Inspector on the flights safety Smirnov V.V.

considered the materials on the construction of the Bridge pass over the Pivdenniy Bug River in Mykolaiv city and determined:

1. Bridge abutment is located beyond the air approach zone against the runway threshold 05 п 47030272 с 031542291.
2. Height reference mark of bridge abutment makes 112 m, relating to the runway level it makes 56 m.
3. According to the Regulations on Flight Operations and the Table of Estimation of the min passing safety while landing (OCA/OCH) on the runway level 05, the bridge abutment height is not considered as an obstacle for flight safety.

### CONCLUSION:

1. According to the regulatory documents structure of bridge pass over the Pivdenniy Bug River on its key rates is not an obstacle for flight safety within the near-by airfield zone.
2. The Structure of bridge pass over the Pivdenniy Bug is to be marked during day and night time according to the Air Code of Ukraine.
3. After construction completion it is necessary to submit the engineering documentation, where the absolute structure marks are specified, to the address of the Communal Enterprise “International Airport Mykolaiv”.

Head of commission: Chief Airport Engineer [signature]

O.V. Lugovy

Commission members: Deputy Chief Airport Engineer

[signature] Vaskov S.G.

Chief of Ground and Security Service

[signature] Tatochenko A.V.

Chief Navigating Officer of the Airport

[signature] Karastoyanov M.M.

Engineer-Inspector on the flights safety

[signature] Smirnov V.V

**MINUTES OF MEETING**  
**ON**  
**INCEPTION REPORT EXPLANATION**  
**FOR**  
**“PREPARATORY SURVEY ON THE PROJECT OF CONSTRUCTION OF**  
**MYKOLAIV BRIDGE IN UKRAINE”**

**AGREED UPON BETWEEN**  
**STATE ROAD ADMINISTRATION (UKRAVTODOR)**  
**AND**  
**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**

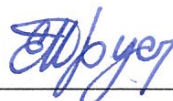
Kiev, November 18, 2010

In line with the Scope of Works for Preparatory Survey on the Project of Construction of Mykolaiv Bridge in Ukraine (hereinafter referred to as “the Project”), Japan International Cooperation Agency (JICA) has dispatched a JICA Survey Team (hereinafter referred to as “the Survey Team”) headed by Dr. Hideki YONEYAMA to Ukraine in order to commence the Project.

As a result of a series of discussions on the Inception Report, both parties agreed to the matter referred to in the document attached hereto.



\_\_\_\_\_  
Dr. Hideki YONEYAMA  
Team Leader/ Transport Planning  
JICA Survey Team



\_\_\_\_\_  
Dr. Yevgen PRUSENKO  
Deputy Chairman  
State Road Administration (UKRAVTODOR)

## THE ATTACHED DOCUMENT

### 1. Acceptance of the IC/R

The Survey Team has submitted Inception Reports (IC/R) to the State Road Administration (UKRAVTODOR), which is the responsible agency for the Project. IC/R explanation meeting was held on the 18<sup>th</sup> of November 2010 in order to discuss the contents of IC/R between the Survey Team and UKRAVTODOR. The list of participants is shown in ANNEX-1.

UKRAVTODOR, in principle, agreed to the contents of the IC/R including the following items;

- ✓ Objectives of the Survey
- ✓ Undertakings by UKRAVTODOR
- ✓ Outputs of the Survey
- ✓ Basic Approach of the Survey
- ✓ Survey Schedule
- ✓ Survey Organization & Staffing

### 2. Objective of the Survey

Common understandings have been made among the participants on the following points.

- The objective of the Survey is to confirm the profile of the Project through analyzing the economic and technical aspects along with socio-environmental considerations.
- The outcome of the Survey will be referred to appraise the feasibility of the Project as a Japanese ODA Loan Project.
- No commitment has yet been made concerning the realization of the Project at the stage of the Survey.

### 3. Question, Answers and Comments

After presenting an overview of the Inception Report, following points are discussed and confirmed between the parties.

(1) UKRAVTODOR will assign a proper person for handling "Questionnaire and Request" by the time of the next meeting on the following day.

(2) It is difficult for UKRAVTODOR to translate all related Standards (Russian and Ukrainian) into English because the volumes of those are huge amounts.

(3) Navigation width and/or height for a bridge must be defined by the appropriate state standard DSTU BV.2.3-1-95 (GOST 26775-97) "Navigation width and height standards for internal water ways" depending on the class of the segment of the river where the bridge construction is planned.

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The class of the river segment is defined by the State company "Ukrainian Water Ways" under the Ministry of Transport of Ukraine. For Mykolaiv Bridge, the minimum requirements are 120m wide and 13.5m high. If the proposed navigation clearance for Mykolaiv Bridge is larger than the requirement, appropriateness of the clearance and the bridge type will be evaluated based on its feasibility.

(4) Other than 1998 F/S and 2003 F/S by Japanese fund, there are two other F/S reports for Mykolaiv Bridge by local funds (Mykolaiv Regional State Administration) in 1992 and 2004. However the latest F/S in 2004 has not yet proceeded to the central government because of lack of documents and funds.

(5) Answer for the Questionnaire will be provided by UKRAVTODOR to JICA Survey Team by December 15, 2010.

(6) If towers (pylons) shall be built for a cable stay or a suspension bridge, it is necessary to get approval regarding clearance of aviation limit through Mikolaiv Airport Authority.

(7) Prior to the implementation of the Project, it is necessary to get approval from Ministry of Regional Construction, Ministry of Foreign Affairs, Ministry of Transport, Ministry of Economic, Ministry of Justice, Ministry of Finance and Ministry of Environment. Usually, it takes 6 months to get approval from all the relevant agencies (or 3 to 4 months in the earliest case).

(8) Regarding the verge requested by JICA for geological investigation on the river, UKRAVTODOR has been requesting Ministry of Transport and Ministry of Foreign Affairs in order to provide it to JICA Survey Team with free of charge because UKRAVTODOR does not have his own verge. UKRAVTODOR has not got any answers yet from those agencies.

(9) In the "Questionnaire and Requests", some requested standards (SNIP) are already invalid to apply a new project. Therefore UKRAVTODOR will provide the latest standards for JICA Survey Team.

(10) Some questionnaire may need more time to answer because UKRAVTODOR has to ask other agencies to provide those answers.





## ANNEX-1 The List of Participants

<u>NAME</u>	<u>TITLE</u>
<b>State Road Administration (UKRAVTOADOR)</b>	
1 Dr. Yevan PRUSENKO	Deputy Chairman
2 Ms. Irina SHAPOUALOVA	Finance Department
3 Mrs. Terezia BABYCH	Head of Foreign Economic Activity Department
4 Mr. Vitaliy PROKOPENKO	Head of Construction and Investment Policy Department
5 Mr. Maxim KRAVCHUK	Main Specialist of the Foreign Economic Activity Department
<b>Kyivsoyuzshlyaproekt</b>	
1 Mr. Vasyl KULIK	Main Engineer
2 Mr. Alexander SHTEINBERG	Main Engineer
<b>JICA Survey Team</b>	
1 Dr Hideki Yoneyama	Team Leader/Transport Planning
2 Mr. Hitoshi Nakamura	Bridge Design (superstructure)
3 Mr. Yasunori KAWAGUCHI	Road Engineer
4 Mr. Jun MORISHITA	Natural Condition Survey (Topography/ Geology)
5 Ms. Anya KOZMINA	Interpritor



**MINUTES OF MEETING  
ON  
EXPLANATION OF BRIDGE TYPE SELECTION  
FOR  
“PREPARATORY SURVEY ON THE PROJECT OF CONSTRUCTION OF MYKOLAIV  
BRIDGE IN UKRAINE”**

**AGREED UPON BETWEEN  
STATE ROAD ADMINISTRATION (UKRAVTODOR)  
AND  
JICA SURVEY TEAM**

Kiev, May 05, 2011

In line with the Scope of Works for Preparatory Survey on the Project of Construction of Mykolaiv Bridge in Ukraine (hereinafter referred to as “the Project”), Japan International Cooperation Agency (JICA) has dispatched a JICA Survey Team (hereinafter referred to as “the Survey Team”) headed by Dr. Hideki YONEYAMA to Ukraine in order to commence the Project.

Explanation meeting for bridge type selection was held on the 05<sup>th</sup> of May 2011 in order to determine the bridge type which is studied in the next stage of this feasibility study (preliminary design stage). The Survey Team has submitted papers concerning bridge type selection to the State Road Administration (UKRAVTODOR), which is the responsible agency for the Project.

UKRAVTODOR, in principle, agreed to the contents of the Selection of Bridge Type including the following items;

- ✓ Second Survey Schedule
- ✓ Requests of Approval
- ✓ Evaluation Method (AHP)
- ✓ Selection of Bridge Type

**1. Requests of Approval**

After explanation of second survey schedule and the reason of request letters submission, following points are discussed and confirmed between the parties:

- (1) Mr. Yevgen PRUSENKO said that UKRAVTODOR will have discussion about Selection of Bridge Type till 19, May 2011.
- (2) Dr. Hideki YONEYAMA said that JICA Survey Team will submit UKRAVTODOR the list of items to be necessary for cost estimation (labor cost, land acquisition compensation, price escalation...etc). Mr. Yevgen PRUSENKO said that UKRAVTODOR will assign someone to support this data collection after they get the list.

**2. Selection of Bridge Type**

Common understandings have been made among the participants on the following points.

- Dr. YONEYAMA said, “Selection of Bridge Type” has 3 options (suspension bridge, cable-stayed bridge and steel truss bridge) based on feasibility study implemented Japanese side in 2003, and 1 additional

*Wjy*

*ED/pjy*

option (steel box girder bridge) which was requested by SRA on the last time meeting (22,December 2010).

- Dr.YONEYAMA said, Suspension bridge is proposed as the optimum for main bridge, according to AHP (Analytic Hierarchy Process) evaluation method.

- Mr. Mykola PARUBETS required JICA Survey Team to submit the breakdown of approximate construction cost for each type of bridge, and said that UKRAVTODOR side will also confirm the construction cost based on their data.

### The List of Participants

<u>NAME</u>	<u>TITLE</u>
<b>State Road Administration (UKRAVTOADOR)</b>	
1 Dr. Yevgen PRUSENKO	Deputy Chairman
2 Mrs. Tereziya BABYCH	Head of Foreign Economic Activity Department
3 Ms. Mariia CHUMAK	Main Specialist of the Foreign Economic Activity Department
4 Mr. Mykola PARUBETS	Deputy Engineer, Ukrdorinvest
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5 Mr. Hitoshi OKITA	Procurement Planning and Cost Estimation
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Team Leader/ Transport Planning  
JICA Survey Team



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Deputy Chairman  
State Road Administration of Ukraine  
(UKRAVTODOR)

ДЕРЖАВНА СЛУЖБА  
АВТОМОБІЛЬНИХ ДОРІГ  
УКРАЇНИ  
(УКРАВТОДОР)



THE STATE ROAD  
ADMINISTRATION OF  
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(UKRAVTODOR)

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19.05.2011 № 4/16-8.2-1626

На № \_\_\_\_\_ від \_\_\_\_\_

Japanese International Cooperation Agency

The State Road Administration of Ukraine (Ukravtodor) would like to express you its respect and appreciation for the work you'd carried out during the Study Mission SAPROF in the city of Mykolayiv.

Specialists of the Ukravtodor carefully studied all documents submitted by experts of SAPROF, including an Interim Report and evaluation of the different types of bridge, made by the method offered by JICA for the future bridge over the South Bug River in Mykolayiv.

Ukravtodor agreed with the assessment of SAPROF Mission according the feasibility of construction of suspension bridge with a central span 510 meters and 2x150 spans with beam, and for construction of approach to the bridge – a steel I-beam bridge with a span of 45 m and a length of 1240 m.

Your faithfully

Yevgen Prusenko  
Deputy Chairman

083101

## Appendix 2

### Study for Waterway

#### 1. Summary

The width of the waterway at the river is stipulated in the norm of Ukraine “DSTU B V.2.3-1-95(GOST26775-97)”. Dimension of target ships indicated in the norm is defined as 180m in length, 21m in width and the waterway with 120m-width for each directions are stipulated.

In this study, the width of waterway is compared with the one of the other standard in order to confirm its adequateness.

#### 2. Norm of Ukraine for waterway

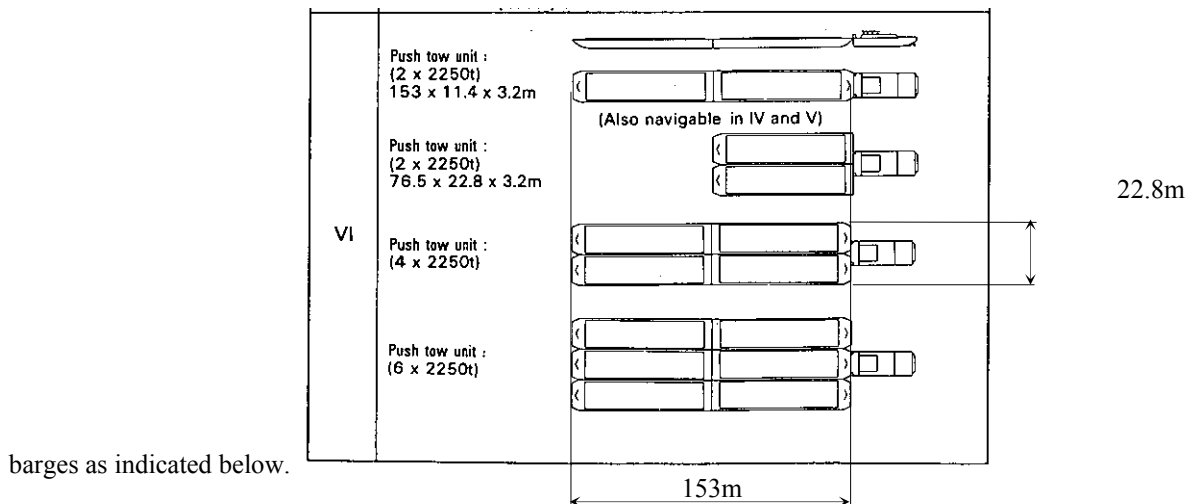
Target ships and dimension of waterway is shown in Table-1

Table-1 dimension of waterway in Ukraineian norm.

Item	Contents	Remarks
Target ship	Ship: 180m (L) × 21m (W) × 12.8m(H) Raft: 680m (L) × 75m (W) × 12.8m(H)	
Width	120m (in case of bascule bridge: 50m) 2×120m for upstream and downstream	Waterway class 3 -Trunk
Height	13.5m	
Draft	Mean: 2.3m ~ 2.9m (min. 1.9 ~ 2.5m)	

#### 3. Target ships

Based on the above dimension of ship, i.e. L=180m, loaded draft=2.0m, it is considered that ships may be



barges as indicated below.

出典 : SHIP COLLISION WITH BRIDGES, The International between Vessel Traffic and Bridge Structures,  
IABSE, AIPC, IVBH

---

#### 4. Waterway width in the standards of Japan

Standard of waterway is stipulated in “Technical Standards and Commentaries for Port and Harbor Facilities in Japan” (hereinafter referred to as Japanese Port Standards).

According to Japanese Port Standard, in case that target ships and navigation environment are unidentified, following dimensions should be recommended.

There is possibility of passing each other of ships:

- Length of waterway is comparably long (long waterway) ;  $1.5L_{oa}$
- Ships are passing each other frequently. :  $1.5L_{oa}$
- Both situations occur simultaneously. :  $2.0L_{oa}$

Based on the above situation of “Long waterway”, required width of waterway should be.....

Width of waterway  $B = 1.5L_{oa} = 1.5 \times 180 \text{ m} = 270 \text{ m}$

In addition, according to Japanese port standard, the waterway at curved point should be corner cutoff in case of intersection with more than 30 degree.

For instance, if radius of waterway’s centerline is  $4 \times 180 = 720 \text{ m}$  and intersection angle is 30 degree, dimension of cutoff is 20m.

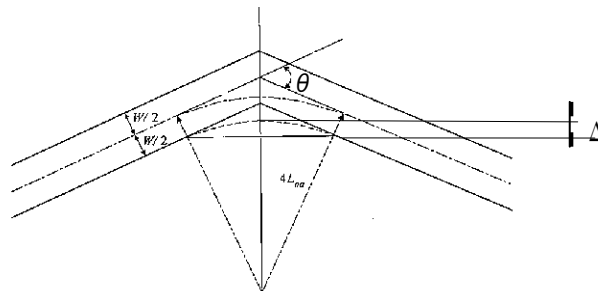


Figure-1 corner cutoff of waterway

#### 5. Evaluation for width of waterway

Comparison between Ukrainian standard and Japanese one is as follows.

Ukrainian:  $B = 2 \times 120 \text{ m} = 240 \text{ m} < \text{Japanese ; } B = 270 \text{ m} + 20 \text{ m} (\text{corner cutoff})$

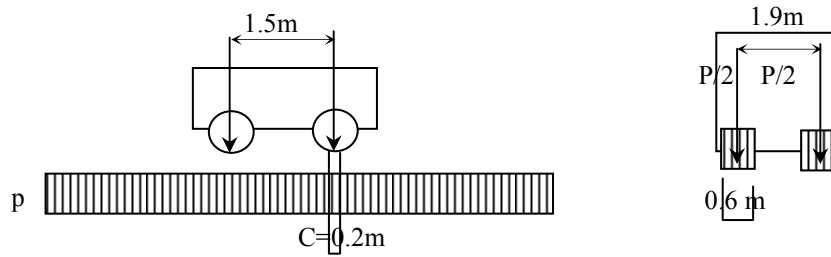
## Appendix 3

### Live Loads based on DBN Specifications

#### 1. Live Loads

##### 1.1 AK-loading (model-1)

- Application : Distributed load and Tandem load applied simultaneously.
- Distributed load :  $p=0.98K=0.98 \times 15=14.7 \text{ kN/m}$
- Tandem load :  $P=9.81K=9.81 \times 15=147.15\text{kN}$



- Number of notional lane is not always equal to the number of carriageway
- Center of lane (vehicle) shall be apart more than 1.5m from face of curb (or guard rail), and interval of lanes (vehicles) shall be 3.0m in terms of application of AK-loading.
- Number of notional lanes equal to the width of the carriageway in meters divided by 3.5m.
- The difference of the width between notional lanes and carriageway is called as additional lane.
- Multiple presence factor (S1) can be referred to below table;

Number of Carriageway	distributed load	Tandem load
1	1.0	1.0
2	0.6	1.0
3	0.6	0.75
4	0.6	0.5
5 or more	0.6	0.0
Add lane 3	0.25	0.25
Add lane 4	0.25	0.25
Other add. lanes	0.25	0.0

- When some loads, such as Sidewalk live load and Railway tracks, are simultaneously applied, additional factor “S2” should be applied.

→ For the combination of Rail tracks and AK-loading

$$S2= 1 - 0.01 \cdot \lambda \geq 0.75$$

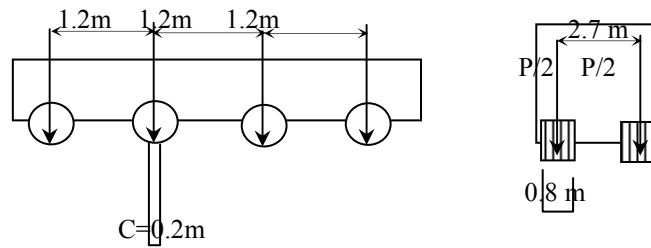
→ For the combination of Subway tracks / Street car and AK-loading

$$S2=1 - 0.002 \cdot \lambda \geq 0.75$$

---

Here,  $\lambda$  is the length of superstructure on which loads are applied.

1.2 NK cart (Model-2) loading : not necessary to be applied together with Earthquake load



NK-100:  $P=245$  kN (axis load)

1.3 Sidewalk load

1) Distributed load

- a) For pedestrian bridge and sidewalk for city br. :  $q= 3.92\text{kN/m}^2$
- b) When traffic loads are applied simultaneously :  $q= 1.96\text{kN/m}^2$

2) When Distributed load is applied without other loads

This case is specified for the combination with Railway tracks

3) When Concentrated load is applied without other loads

- a) City bridges :  $P= 9.8$  kN (applied at the area of  $0.15\text{m} \times 0.10\text{m}$ )
- b) Other bridges :  $P= 1.27$  kN



2. Comparison of DBN live load and B-load (specified in Japanese standards)

A comparison study of live loads specified in DBN and Japanese standards was carried out. The comparison is focused in terms of magnitude of bending moment at span-center of simple beam.

$$M(\text{DBN}) = R_y \cdot x \cdot W_n \cdot m$$

Where,  $x$  : a ratio of plastic section module to elastic section module

$R_y$  : Yield strength of steel material

$W_n$  : elastic section module

$m$  : service coefficient (coefficient for reduction of resisting strength)

$$M(\text{B-load}) = R_y \cdot W_n \cdot \nu$$

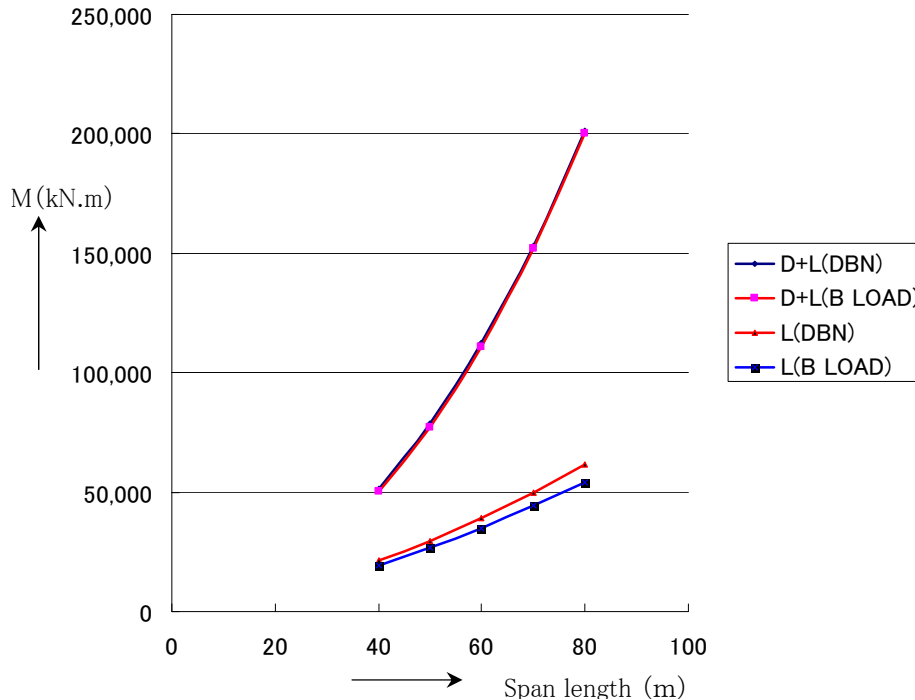
$R_y$  : Yield strength of steel material

$W_n$  : elastic section module

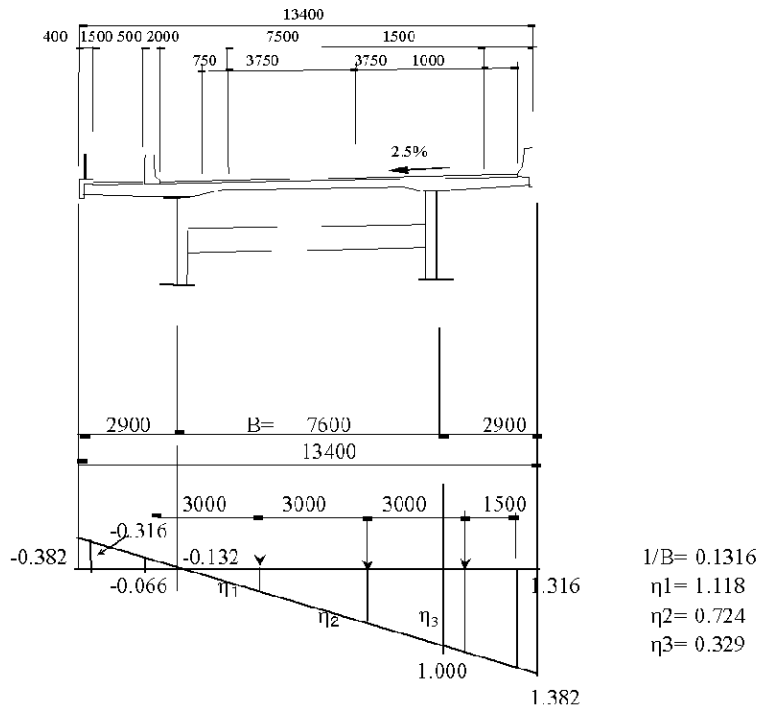
$\nu$  : safety ratio = 1.7

The comparison result is shown in below figure;

The magnitude of the bending moments generated by the DBN live load and B-live load are almost same for the span length around 40m to 80m, according to the diagram.



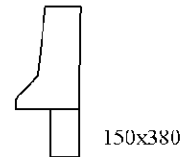
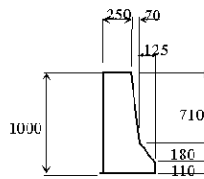
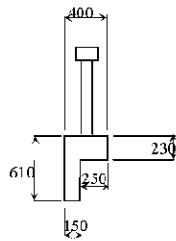
(1) Calculation of Bending Moment based on DBN Specification  
 1) LOAD INTENSITY



a) Dead Load

	$\gamma$ kN/m <sup>3</sup>	H m	$\Lambda$ m <sup>2</sup>	w kN/m	w kN/m <sup>2</sup>	$\eta$ -	$\Lambda$ -	W kN/m
Handrail				1.000		-0.355		-0.355
Curb	24.5		0.149	3.651		-0.355		-1.297
Surfacing (walk)	22.5	0.08					-0.336	-0.604
Barrier	24.5		0.308	7.546		-0.099		-0.745
Surfacing (Road)	22.5	0.08					6.563	11.813
Barrier(CL)	24.5		0.365	8.943		1.349		12.061
<b>Total(wearing)</b>								<b>20.872</b>
Slab	24.5	0.28		6.860			6.700	45.962
Haunch (G1)	24.5		0.323	7.901		0.000		0.000
Haunch (G2)	24.5		0.323	7.901		1.000		7.901
Girder (G1)				0.41L		0.000		0.0
Girder (G2)				0.41L		1.000		0.41L
<b>Total</b>						( 53.863	+	0.41L)

Where:



B	H	A
0.61	0.15	0.092
0.25	0.23	0.058
<b>Total</b>		<b>0.149</b>

B	H	K	A
0.250	1.000	1.00	0.250
0.070	0.710	0.50	0.025
0.125	0.180	0.50	0.011
0.195	0.110	1.00	0.021
<b>Total</b>			<b>0.308</b>

B	H	K	A
0.250	1.000	1.00	0.250
0.070	0.710	0.50	0.025
0.125	0.180	0.50	0.011
0.195	0.110	1.00	0.021
0.150	0.380	1.00	0.057
Total			0.365

b) Live Load

i) AK-Loading

\* Distributed load  $p=0.98 K = 0.98 \times 15 = 14.7$  (kN/m)

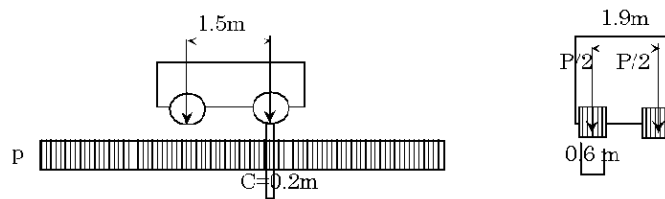
$p' = \sum s_l \cdot \eta \cdot p$

No.	$s_l$	$\eta$	$p$	$P'$
1	1	1.118	14.7	16.441
2	0.6	0.724	14.7	6.383
3	0.25	0.329	14.7	1.209
Total				24.033 (kN/m)

\* Tandem load  $P = 9.81.K = 9.81 \times 15 = 147.15$  (kN)

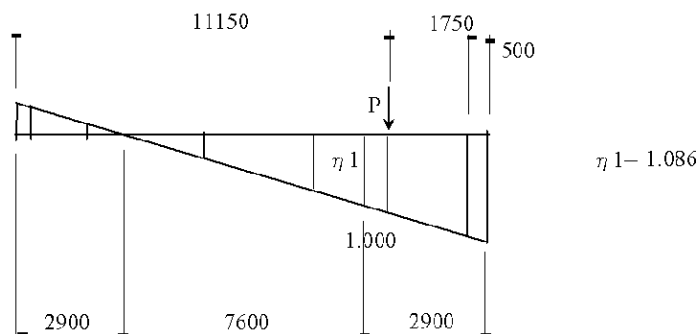
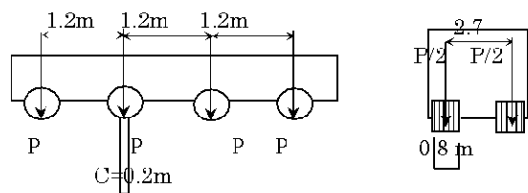
$P' = \sum s_l \cdot \eta \cdot p$

No.	$s_l$	$\eta$	$p$	$P'$
1	1	1.118	147.15	164.514
2	1	0.724	147.15	106.537
3	0.25	0.329	147.15	12.103
Total				283.153 (kN)



ii) NK-loading

\* NK-100  $P = 245$  kN



$$P = P \cdot \Sigma \eta = 265.9 \text{ kN}$$

iii) Loading of sidewalk

$$Q = q \cdot \Sigma A = 1.96 \times (-0.2865) = -0.562 \text{ (kN/m}^2\text{)}$$

$$\Delta 1 - (0.316 + 0.066) \times 1.5 / 2 = -0.2865$$

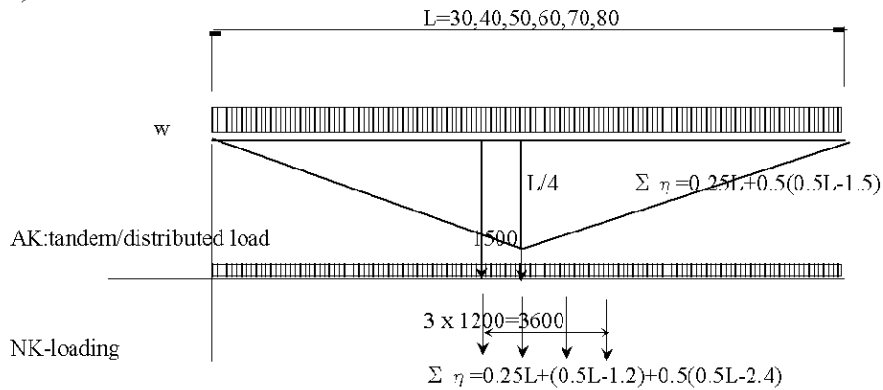
c) Coefficient of Reliability :  $\gamma f$

Ak-loading :	$\gamma f = 1.50$	
NK-loading :	$\gamma f = 1.00$	
Crowd loading :	$\gamma f = 1.20$	with other loads

d) Dynamic factor:  $1 + \mu$

AK- tandem :	$1 + \mu = 1.3$
Ak- distribution :	$1 + \mu = 1.0$
Nk-loading :	$1 + \mu = 1.0$
Crowd :	$1 + \mu = 1.0$

## 2). SECTIONAL FORCE



Calculation of Bending Moment

$$M_{dc} = 1/8 \cdot w \cdot L^2 = 1/8 \times 20.872 \times L^2$$

$$M_{dw} = 1/8 \cdot w \cdot L^2 = 1/8 \times (53.863 + 0.41L) \times L^2$$

$$M(\text{AK-D}) = 1/8 \cdot p \cdot L^2 = 1/8 \times 24.033 \times L^2$$

$$M(\text{AK-Tandem}) = \Sigma \eta \cdot P = 283.153 \Sigma \eta$$

$$M(\text{NK}) = \Sigma \eta \cdot P = 265.9 \Sigma \eta$$

	L	40	50	60	70	80	$\gamma f$	$1 + \mu$
①	M <sub>dw</sub>	4,174	6,523	9,393	12,784	16,698	2.00	-
②	M <sub>dc</sub>	14,053	23,239	35,308	50,570	69,331	1.25	-
③	M(AK-D)	5,145	8,039	11,576	15,757	20,580	1.50	1.0
④	M(AK-Tandem)	5,451	6,866	8,282	9,698	11,114	1.50	1.3
⑤	M(AK-NK)	9,998	12,657	15,316	17,975	20,634	1.00	1.0
combination coefficient								
Combination-1	$\gamma_p(\eta \textcircled{1} + \eta \textcircled{2} + \eta(\gamma_{f \textcircled{3}} + \gamma_{f \textcircled{4}}(1 + \mu))) = 1.05(2.0 \textcircled{1} + 1.25 \textcircled{2} + 1.0(1.5 \textcircled{3} + 1.5 \textcircled{4} \cdot 1.3))$							
	46,474	70,919	101,257	137,893	181,231			
Combination-2	$\gamma_p(\eta \textcircled{1} + \eta \textcircled{2} + \eta \gamma_{f \textcircled{5}}) = 1.05(1.0 \textcircled{1} + 1.0 \textcircled{2} + 1.0 \cdot 1.0 \textcircled{5})$							
	37,708	57,488	82,148	112,094	147,727			

3). CALCULATION FOR STRESS

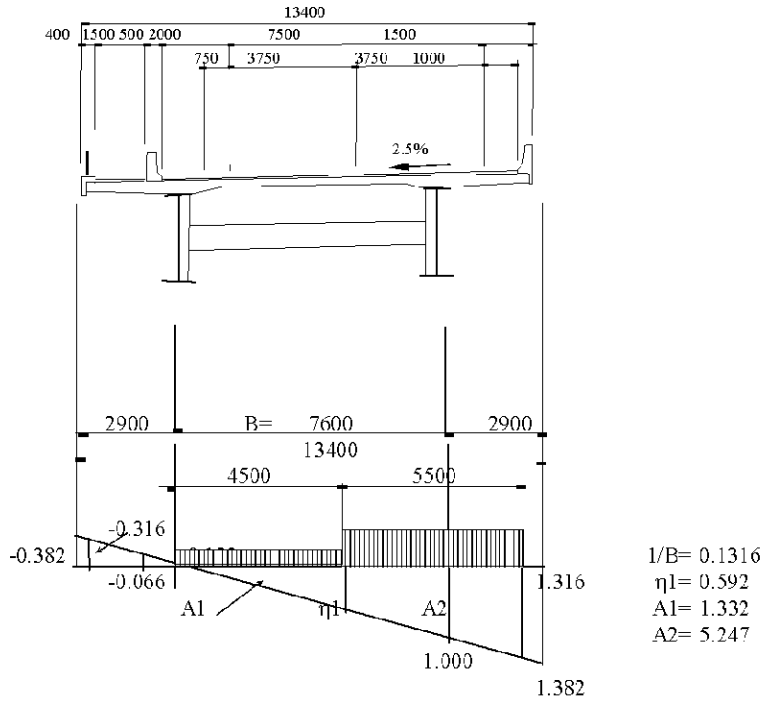
$$\frac{M}{x \cdot W_n m} \leq R_y$$

Ry: yield stress  
 m= 0.9

$$\frac{\nu M}{W_n} \leq R_y$$

L	40	50	60	70	80
M	46,474	70,919	101,257	137,893	181,231
x	1	1	1	1	1
m	0.9	0.9	0.9	0.9	0.9
M/(x.m)	51,638	78,798	112,508	153,215	201,368
M(Live)/x/m	21,404	29,690	39,100	49,637	61,299

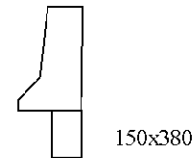
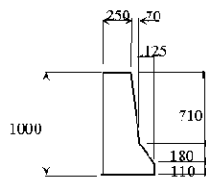
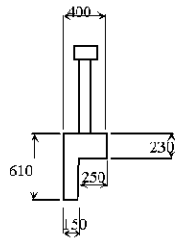
(2) Calculation of Bending Moment based on Japanese B-loading Method  
 1).LOAD INTENSITY



a) Dead Load

	$\gamma$ kN/m <sup>3</sup>	II m	A m <sup>2</sup>	w kN/m	w kN/m <sup>2</sup>	$\eta$ -	A -	W kN/m
Handrail				1.000		-0.355		-0.355
Curb	24.5		0.149	3.651		-0.355		-1.297
Surfacing (walk)	22.5	0.08					-0.336	-0.604
Barrier	24.5		0.308	7.546		-0.099		-0.745
Surfacing (Road)	22.5	0.08					6.563	11.813
Barrier(CL)	24.5		0.365	8.943		1.349		12.061
Slab	24.5	0.28		6.860			6.700	45.962
Haunch (G1)	24.5		0.323	7.901		0.000		0.000
Haunch (G2)	24.5		0.323	7.901		1.000		7.901
Girder (G1)				0.41L		0.000		0.0
Girder (G2)				0.41L		1.000		0.41L
<b>Total</b>						( 74.736	+	0.41L)

Where:



B	H	A
0.61	0.15	0.092
0.25	0.23	0.058
<b>Total</b>		0.149

B	H	K	A
0.250	1.000	1.00	0.250
0.070	0.710	0.50	0.025
0.125	0.180	0.50	0.011
0.195	0.110	1.00	0.021
<b>Total</b>			0.308

B	H	K	A
0.250	1.000	1.00	0.250
0.070	0.710	0.50	0.025
0.125	0.180	0.50	0.011
0.195	0.110	1.00	0.021
0.150	0.380	1.00	0.057
Total			0.365

b) Live Load

i) Distributed load p2

$$\begin{aligned} * \text{ Distributed load } p1 &= 3.5 \text{ (kN/m}^2\text{)} \\ A1 &= 1.332 \\ A2 &= 5.247 \end{aligned}$$

$$p1 = p1 \times (A1/2 + A2) = 20.69 \text{ kN/m}$$

ii) Distributed load p1

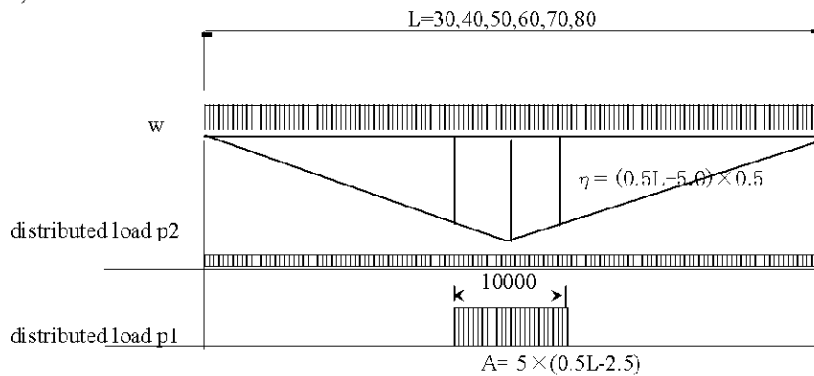
$$\begin{aligned} * \text{ Distributed load } p1 &= 10 \text{ (kN/m}^2\text{)} \\ A1 &= 1.332 \\ A2 &= 5.247 \end{aligned}$$

$$p2 = p2 \times (A1/2 + A2) = 59.13 \text{ kN/m}$$

iii) Loading of sidewalk

$$\begin{aligned} Q = q \cdot \Sigma A &= 3.5 \times (-0.2865) = -1.003 \\ &\text{(kN/m}^2\text{)} \\ A &= -(0.316 + 0.066) \times 1.5/2 = -0.2865 \end{aligned}$$

2). SECTIONAL FORCE



Calculation of Bending Moment

$$\begin{aligned} M_d &= 1/8 \cdot w \cdot L^2 &= 1/8 \times (74.736 + 0.41L) \times L^2 \\ M(p1) &= 1/8 \cdot p1 \cdot L^2 &= 1/8 \times 20.69 \times L^2 \\ M(p2) &= \Sigma A \cdot P &= \Sigma A \times 59.13 \end{aligned}$$

	L	40	50	60	70	80	Remarks
①	Md	18,227	29,761	44,701	63,355	86,029	
②	Mp2	4,138	6,466	9,311	12,673	16,552	
③	Mp1	5,174	6,652	8,130	9,609	11,087	
④	M(1+i)	2,069	2,624	3,171	3,714	4,252	$i=20/(50+L)$
	Total	29,608	45,503	65,313	89,349	117,920	
	i	0.222	0.200	0.182	0.167	0.154	

---

3.)CALCULATION FOR STRESS

$$\frac{M}{x \cdot W_n m} \leq R_y$$

Ry: yield stress  
m= 0.9

$$\frac{\nu M}{W_n} \leq R_y$$

L	40	50	60	70	80
M	29,608	45,503	65,313	89,349	117,920
$\nu$	1.7	1.7	1.7	1.7	1.7
$\nu M(x.m)$	50,334	77,354	111,032	151,894	200,464
$\nu M(\text{Live})$	19,348	26,760	35,040	44,191	54,215



## Appendix 4

### Reference for Alignment Setting

#### 1. Horizontal alignment

Horizontal alignment of M14 bypass is same to feasibility study in 2004 as a result of review (refer chapter 5.1.1 and 5.7.1). And elements of alignment is shown in Report Vo.2 “approach road design”.

#### 2. Longitudinal alignment of bridge section ( bridge selection stage)

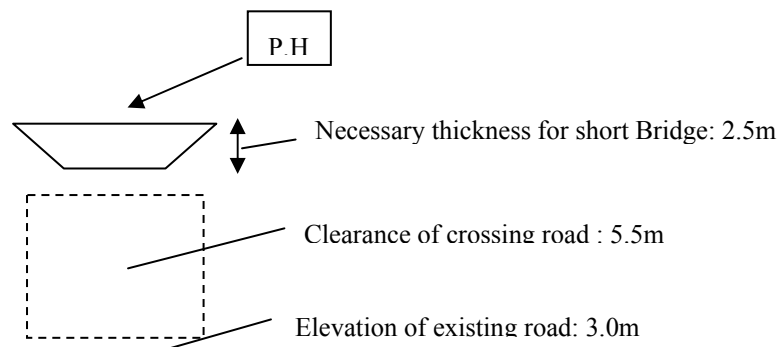
##### (1) Design policy

Optimum longitudinal alignment was considered between location of A1 abutment and right bank of Bug River for bridge selection. Main design policy is as follows.

- Follow the DBN V 2.3-4-2007(vertical gradient and vertical curve)
- Keep clearance against crossing roads and navigation clearance of southern Bug river.
- Cut depth of right bank should be kept less than 12m. (If it is more than 12m, land acquisition area will be so much wider.)

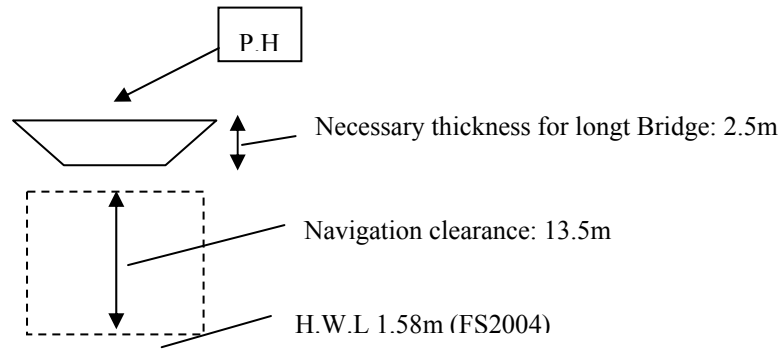
##### (2) Control Point

###### C.P.1 Crossing Road (PK8+810)



$3.0+5.5+2.5=11.0\text{m}$  & considered cross fall affection -- PH should be higher than 11.5m

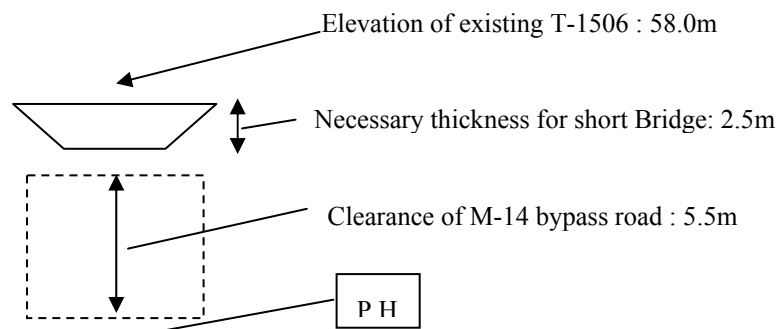
C.P.2 Navigation Clearance (PK11+00)



Width for navigation: 280m                      Center of navigation PK11+00 →  
 Navigation area PK10+860-PK11+140

$1.58+13.5+5.0=20.08\text{m}$  --- PH should be higher than 20.08m

C.P.3 Crossing Road T-1506 (PK11+867)



$58.0-2.5-5.5=50.0\text{m}$  --- PH should be lower than 50.0m, but it should be tried to keep cut depth less than 12m from ground level.

(3) Outline of alternatives

Alternative 1 : Vertical gradient of long bridge section is 2.0% (F/S 2004 is also 2.0%). But total longitudinal design was modified because of longitudinal planning of F/S 2004 dose not match DBNV2.3-4 2007.

Alternative 2 : Vertical gradient of long bridge section is 2.5%

Alternative 3 : Vertical gradient of long bridge section is 2.7%, this is limit to keep navigation clearance.

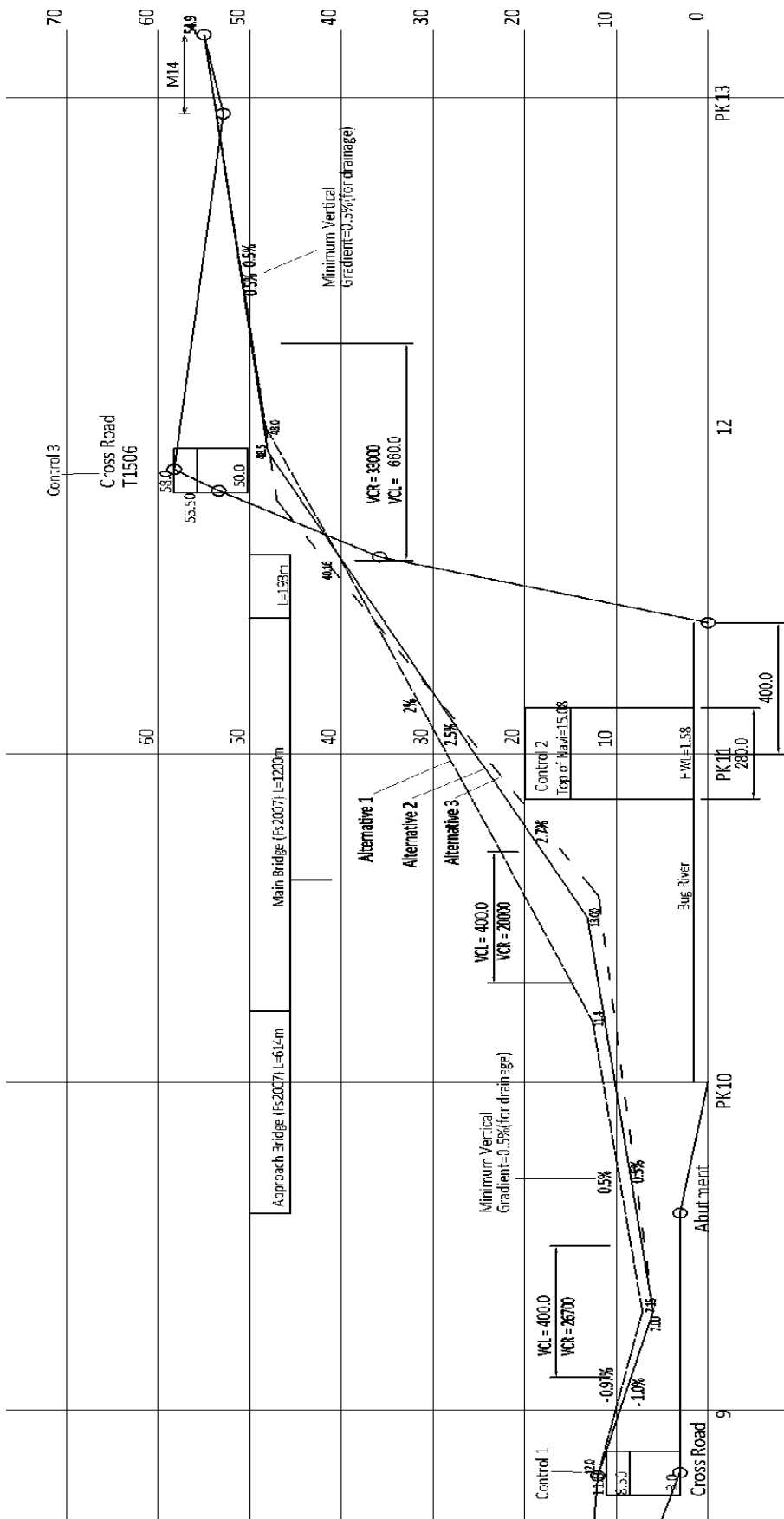


Figure. 1: Three-alternatives of longitudinal planning

(4) Conclusion

Table. 1 Geometric parameters

	From DBN	Alternative-1	Alternative-2	Alternative-3
Maximum vertical gradient	3.5%	2.0%	2.5%	2.7%
Minimum vertical gradient	0.5%	0.5%	0.5%	0.5%
Minimum Vertical curve R (convex)	25000m	35000m	33000m	<u>21800m(OUT)</u>
Vertical curve section length (convex)	Recommendation :more than 300m	500m	660m	300m
Minimum Vertical curve R (concave)	7000m	26700m	20000m	18200m
Vertical curve section length (concave)	Recommendation :more than 100m	400m	400m	400m

Alternative-3 is not available because of minimum vertical curve radius is less than 25000m.

Table. 2: Planning Height at control points

	Target of PH	Alternative-1	Alternative-2
(CP1)PK8+810C crossing road	Higher than 11.50	11.90	11.90
(CP2)PK10+860 Edge of navigation	Higher than 20.08m	25.60	<u>22.00</u>
(CP3)PK11+867 T-1506	Lower than 50.0m	45.47	46.01
(CP3)PK11+800-12+200 cut section	(Cut depth 12m)		
	PK11+800:53-12 > 41	44.33	44.83
	PK12+00: 59-12 > 47	47.36	47.96
	PK12+200: 58-12 > 46	49.24	49.86

Above table shows the difference of planning height at CP2 is 3.6m. This is big difference for construction cost.

And vertical gradient 2.0% and 2.5 % are no difference, focusing the road service (safety for traffic vehicles, provision high speed motorway)

Therefore alternative 2 is best alignment for bridge selection stage. But this longitudinal alignment has been considered with old topographic data ( F/S in 2004), thus the time of preliminary design, information all control points will be updated ( topographic survey will be completed in May 2011).

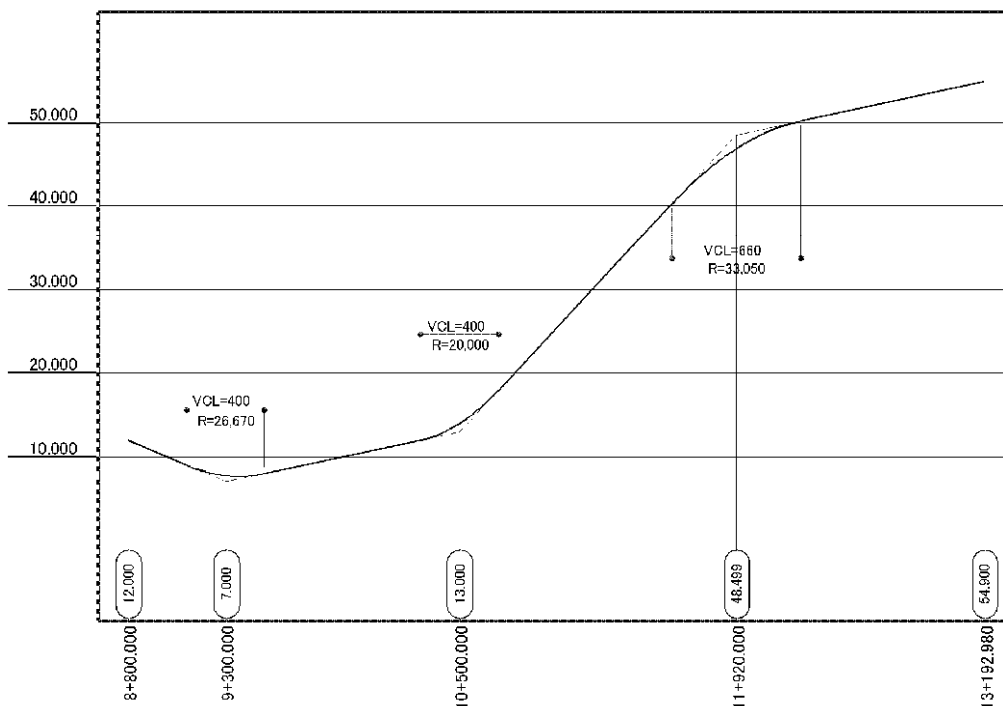


Figure. 2: Longitudinal alignment for bridge selection

### 3. Longitudinal alignment at junction (connection to P-06)

This junction was planned as underpass road at intersection of P-06 by F/S in 2004. JICA survey team reviewed existing F/S and studied feasibility of overpass style at this point before preliminary design with new topographic survey result. Because if it is possible to design overpass of M-14 bypass, it will be not cared P-06 relocation and railway bridge construction. And it can make reduce to disturb economic activity (not to stop traffic flow) in construction stage.

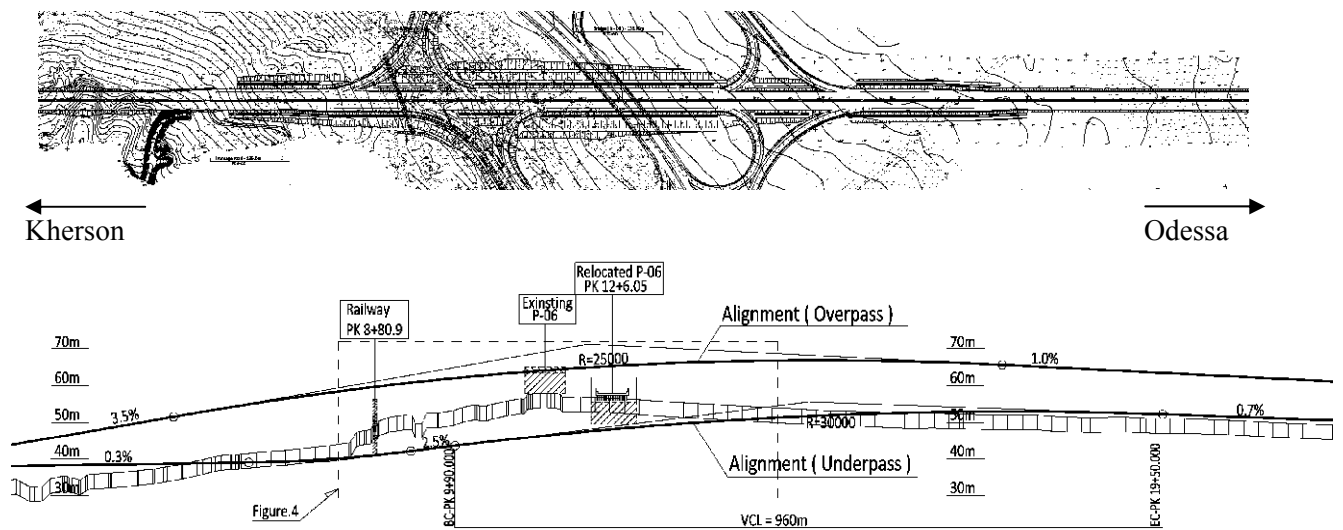


Figure 3: Trial section (upper plan, bottom profile)

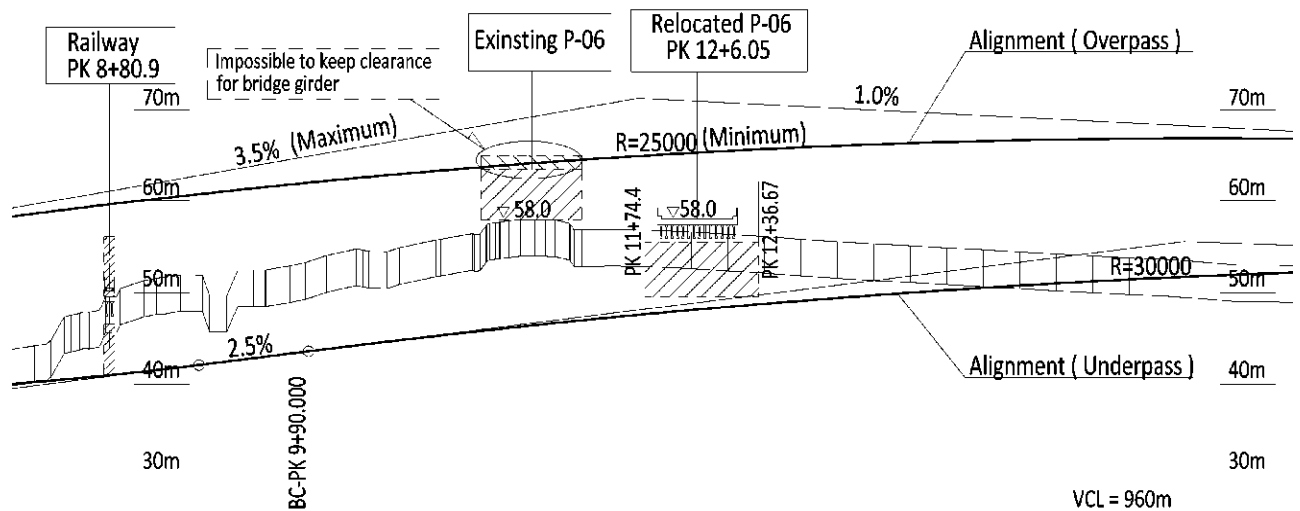


Figure 4: Result of M-14 bypass profile trial at junction

## Conclusion

As a result of trial, overpass alignment is not available to design, the reasons below.

- If it makes to be possible over bridge, beginning point of project must be changed toward eastern direction. (= This trial was not able to keep clearance for thickness of bridge girder)
- High embankment section continued at least 2 km (until PK35).

Thus, M-14 bypass road will be designed as underpass at this junction in preliminary design.

## Appendix 5 Priority Ordering Method for Bridge Type Selection (AHP)

<b>Программа встречи в УКРАВТОДОРЕ 5 мая 2011 г.</b>	<b>Agenda for the meeting at UKRAVTODOR on May 5, 2011</b>
<ul style="list-style-type: none"><li>• Начало 10:00 AM</li><li>• Окончание 11:30 AM</li></ul>	<ul style="list-style-type: none"><li>• Start Time 10:00 AM</li><li>• End Time 11:30 AM</li></ul>
<ol style="list-style-type: none"><li>1. График изысканий</li><li>2. Запрос о разрешении</li><li>3. Метод оценки</li><li>4. Выбор типа моста</li></ol>	<ol style="list-style-type: none"><li>1. Survey Schedule</li><li>2. Request of Approval</li><li>3. Evaluation Method (AHP)</li><li>4. Selection of Bridge Type</li></ol>

1

<b>ПРЕДВАРИТЕЛЬНОЕ ИССЛЕДОВАНИЕ ПО ПРОЕКТУ СТРОИТЕЛЬСТВА МОСТА В Г. НИКОЛАЕВ, УКРАИНА</b>	<b>PREPARATORY SURVEY ON THE PROJECT OF CONSTRUCTION OF MYKOLAIV BRIDGE IN UKRAINE</b>
<b>МЕТОД ОЦЕНКИ</b>	<b>EVALUATION METHOD</b>
<b>ORIENTAL CONSULTANTS CHODAI CO., LTD</b>	<b>ORIENTAL CONSULTANTS CHODAI CO., LTD</b>

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## **МЕТОД ОЦЕНКИ**

## **EVALUATION METHOD**

**Аналитический Иерархический  
Процесс (АНП):**

**Analytic Hierarchy Process  
(АНП):**

**Приоритетный метод  
ранжирования вариантов для  
принятия решений**

**A Priority Ordering Method  
for Decision Making**

3

### **1. Критерии для выбора типа конструкции**

**Стоимость строительства; Стоимость техобслуживания;  
Безопасность судоходства; Эстетический аспект;  
Сложность строительства; Экологический аспект и  
приобретение нового технического опыта.**

**(Меньше недостатков и больше преимуществ для Украины)**

### **1. Attributes for Bridge Selection**

**Construction Cost, Maintenance Cost, Navigation Safety**

**Aesthetic Feature, Construction Difficulty**

**Environmental Effect and Technical Transfer**

**(Less Demerits and More Merits for Ukrainian side)**

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## 1. Критерии для выбора типа конструкции

Стоимость строительства > Безопасность судоходства >  
Преимущества для Украины > Эстетический аспект >  
Сложность строительства > Стоимость техобслуживания.

Что наиболее важно для осуществления проекта? Стоимость,  
безопасность транспорта (дорожного и водного),  
долговечность (ресурс прочности 50-100 лет)

### 1. Attributes for Bridge Selection

Construction Cost Navigation Safety > Merits for Ukrainian  
> Aesthetic Feature > Construction Difficulty > Maintenance Cost

What is essential to be feasible? → Cost, Traffic Safety (both for road and  
river), Durability (50 to 100 years)

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## 2. Сравнительная шкала значимости

- 1: A равнозначно B
- 3, 5, 7, 9: A имеет (несколько; существенно; бесспорно; абсолютно) большую значимость, чем B
- 2, 4, 6, 8: промежуточные значения
- ☆ Ранжирование субъективно, но поддаётся обсуждению

### 2. Scale of Relative Importance

- 1: A is equal to B.
- 3, 5, 7, 9: A is (slightly, considerably, strongly, extremely) more important or favorable than B.
- 2,4,6,8: Intermediate intensity of the above numbers.
- ☆ Scoring is subjective but discussible

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### 3. Удельный вес критериев

### 3. Weight for Attributes

	Стоимость строительства Construction Cost	Безопасность судоходства Navigation safety	Преимущество для Украины Merit for Ukraine	Эстетический аспект Aesthetic Feature	Сложность строительства Construction Difficulty	Стоимость техобслуж. Maintenance Cost	Среднее геометр. значение Multiply Mean
Стоимость строительства Construction Cost	1.00	2.00	3.00	4.00	5.00	6.00	2.994
Безопасность судоходства Navigation safety	0.50	1.00	2.00	3.00	4.00	5.00	1.979
Преимущество для Украины Merit for Ukraine	0.33	0.50	1.00	2.00	3.00	4.00	1.258
Эстетические качества Aesthetic Feature	0.25	0.33	0.50	1.00	2.00	3.00	0.792
Сложность строительства Construction Difficulty	0.20	0.25	0.33	0.50	1.00	2.00	0.505
Стоимость техобслуж. Maintenance Cost	0.17	0.20	0.25	0.33	0.50	1.00	0.335
<b>Всего Total</b>	<b>2.45</b>	<b>4.28</b>	<b>7.08</b>	<b>10.83</b>	<b>15.50</b>	<b>21.00</b>	<b>7.862</b>
<b>Удельный вес Weight</b>	<b>0.38</b>	<b>0.25</b>	<b>0.16</b>	<b>0.10</b>	<b>0.06</b>	<b>0.04</b>	

Удельный вес: Сред. Геометр. значение каждого критерия/Сумма средних геометр. значений  
Weight: Multiple mean of each attribute/Total of Multiple Means

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### 4. Матрица попарного ранжирования

#### Соотношение: тип конструкции моста - критерий

(1) Стоимость строительства

Подвесной мост : Вантовый мост : Мост с фермами :

Мост со стальной балкой коробчатого сечения (пролёт 120 м) =

1.071 : 1.000 : 1.305 : 0.668

➤ Баллы: 5 (существенно больше) : 4 : 7 (бесспорно больше) : 1

#### 4. Pair Wise Matrix between Bridge Type and Attribute

(1) Construction Cost

Suspension : Cable Stay : Truss : Steel-box (120m span) =

1.071 : 1.000 : 1.305 : 0.668

➤ Score 5 (considerably) : 4 : 7 (Strongly) : 1

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**(1) Стоимость строительства**

**(1). Construction Cost**

Таблица сравнения стоимости строительства  
**Construction Cost Comparison Table**

Ед. измерения: сто млн иен  
 Unit : hundred million YEN

	Стоимость Cost	Соотношение Ratio	Примечания Remarks
Подвесной мост <b>Suspension</b>		1.071	
Вантовый мост <b>Cable stayed</b>		1.000	
Мост с фермами <b>Truss</b>		1.305	
Стальная коробчатая балка (пролёт 120 м) <b>Steel-box (120m span)</b>		0.668	( Референтный вариант ) ( Referential alternative )

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**(1) Стоимость строительства**

**(1) Construction Cost**

(1) Матрица попарного ранжирования для категории «Стоимость строительства»

(1) Pair Wise Comparison Matrix for the "Construction Cost".

	Подвесной мост Suspension	Вантовый мост Cable stayed	Мост с фермами Truss	Стальная коробчатая балка Steel-box	Среднее геомтр. значение Multiply Mean
Подвесной мост <b>Suspension</b>	1.00	0.50	3.00	0.20	0.740
Вантовый мост <b>Cable stayed</b>	2.00	1.00	4.00	0.25	1.189
Мост с фермами <b>Truss</b>	0.33	0.25	1.00	0.14	0.328
Стальная коробчатая балка (пролёт 120 м) <b>Steel-box (120m span)</b>	5.00	4.00	7.00	1.00	3.440
<b>Всего Total</b>	8.33	5.75	15.00	1.59	5.697
<b>Приоритет Priority</b>	0.13	0.21	0.06	<b>0.60</b>	

Приоритет:  
 Сред.геометр.знач. каждого типа моста/Сумма ср. геом знач.  
 Priority: Multiple Mean of Each Bridge Type/Total of Multiple Means

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**(2) Безопасность судоходства**

**(в зависимости от длины основного пролёта)**

Подвесной мост : Вантовый мост : Мост с фермами :  
Мост со стальной балкой коробчатого сечения (пролёт 120 м) =

510 м : 480 м : 400 м : 120 м

➤ Баллы 1 : 2 : 3 (несколько больше) : 7 (бесспорно больше)

**(2) Navigation Safety (depending on main span length)**

**Suspension : Cable Stay : Truss : Steel-box (120m span)**

**510m : 480m : 400m : 120m**

➤ **Score 1 : 2 : 3 (Slightly) : 7 (Strongly)**

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Какая ширина достаточна для данной реки (согласно украинским нормам, должно проходить судно длиной 180 м)?

Из соображений безопасности:

➤ Согласно рекомендации «Укрводшлях»:

по 120 м в обе стороны (без устоя) = 240 м

➤ Согласно японскому стандарту  $180 \text{ м} \times 1.5 = 270 \text{ м}$  (Референтный вариант)

Меньший судоходный пролёт может уменьшить пропускную способность для речного транспорта

**How wide is enough for the river (180m long ship shall pass by Ukrainian Norm)?**

**For Safety Reason :**

➤ **From Ukrainian Waterway Recommendation**

**120m for both way (without pier)= 240 m**

➤ **From Japanese Standard  $180 \text{ m} \times 1.5 = 270 \text{ m}$  (Reference)**

**Smaller Span (120m) may depress the capacity of river transportation.**

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**(2) Безопасность судоходства**

**(2) Navigation Safety**

( 2 ) Матрица попарного ранжирования для категории «Безопасность судоходства»

( 2 ) Pair Wise Comparison Matrix for the "Navigation safety"

	Подвесной мост Suspension	Вантовый мост Cable stayed	Мост с фермами Truss	Стальная коробчатая балка Steel-box	Среднее геомтр. значение Multiply Mean
Подвесной мост Suspension	1.00	2.00	3.00	7.00	2.546
Вантовый мост Cable stayed	0.50	1.00	2.00	6.00	1.565
Мост с фермами Truss	0.33	0.50	1.00	5.00	0.953
Стальная коробчатая балка (пролёт 120 м) Steel-box (120m span)	0.14	0.17	0.20	1.00	0.263
Всего Total	1.97	3.67	6.20	19.00	5.327
Приоритет Priority	0.48	0.29	0.18	0.05	

Приоритет:  
Сред. геомтр. знач. каждого типа моста/Сумма ср. геом. знач.  
Priority: Multiple Mean of Each Bridge Type/Total of Multiple Means

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**(3) Преимущества для Украины**

**(Экологический аспект и приобретение нового технического опыта)**

С точки зрения экологии, мост с длинными пролётами является предпочтительным (чем меньше внедрение в русло реки, тем меньше поднимается токсичных газов и ила).

В аспекте приобретения нового технического опыта, вариант «Подвесной Мост» является предпочтительным, т.к. проекты мостов с большими пролётами могут быть востребованы в Украине (Киевская кольцевая дорога: Северный мост)

Подвесной мост : Вантовый мост : Мост с фермами :  
Мост со стальной балкой коробчатого сечения (пролёт 120 м)

Баллы 1 : 2 : 3 (несколько больше) : 5 (существенно больше)

**(3) Merit for Ukrainian Side (Environmental Issue and Technical Transfer)**

**As for Environmental Issue, long span bridge is preferable because of less disturbance of river bed (prevent from rising toxic gas and silt)**

**As for Technical Transfer, "Suspension Bridge" is preferable because long span bridge may be required in Ukraine (Kiev Ring Road: Northern Bridge)**

**Suspension : Cable Stay : Truss : Steel-box (120m span)**

**➤ Score 1 : 2 : 3 (Slightly) : 5 (Considerably)**

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### (3) Преимущества для Украины

### (3) Merit for Ukrainian Side

( 3 ) Матрица попарного ранжирования для категории «Преимущества для Украины: Экологический аспект и Приобретение технического опыта»  
( 3 ) Pair Wise Comparison Matrix for the "Merit for Ukrainian Side-Environmental Issue and Technical Transfer"

	Подвесной мост Suspension	Вантовый мост Cable stayed	Мост с фермами Truss	Стальная коробчатая балка Steel-box	Среднее геометр. значение Multiply Mean
Подвесной мост Suspension	1.00	2.00	3.00	5.00	2.340
Вантовый мост Cable stayed	0.50	1.00	2.00	3.00	1.316
Мост с фермами Truss	0.33	0.50	1.00	2.00	0.758
Стальная коробчатая балка (пролёт 120 м) Steel-box (120m span)	0.20	0.33	0.50	1.00	0.426
Всего Total	2.03	3.83	6.50	11.00	4.841
Приоритет Priority	0.48	0.27	0.16	0.09	

Приоритет:  
Сред.геометр.знач. каждого типа моста/Сумма ср. геом знач.  
Priority: Multiple Mean of Each Bridge Type/Total of Multiple Means

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### (4) Эстетический аспект

Подвесной мост – монументальный, визуально хорошо сбалансирован

Вантовый мост – монументальный, но визуально слишком «тяжёлый» (из-за небольшой высоты нижнего строения)

Мост со стальными фермами – замысловатая форма (каркас в форме закрытой клетки)

Мост со стальной коробчатой балкой – форма простая, но широко используемая

Подвесной : Вантовый : Мост с фермами : Стальная балка (пролёт 120 м)

➤ Баллы 1 : 3 (несколько больше) : 7 (бесспорно больше) : 5 (существенно больше)

### (4) Aesthetic Feature

**Suspension : Monumental and Good Balance,**

**Cable Stay : Monumental but Top Heavy (because of small substructure height)**

**Steel Truss : Intricate Form (Closed cage), Steel-box : Simple but Common use**

**Suspension : Cable Stay : Truss : Steel-box (120m span)**

➤ **Score 1 : 3 (Slightly) : 7 (Strongly) : 5 (Considerably)**

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#### (4) Эстетический аспект

#### (4) Aesthetic Feature

( 4 ) Матрица попарного ранжирования для категории «Эстетический аспект»

( 4 ) Pair Wise Comparison Matrix for the "Aesthetic Feature"

	Подвесной мост Suspension	Вантовый мост Cable stayed	Мост с фермами Truss	Стальная коробчатая балка Steel-box	Среднее геометр. значение Multiply Mean
Подвесной мост Suspension	1.00	3.00	7.00	5.00	3.201
Вантовый мост Cable stayed	0.33	1.00	5.00	3.00	1.492
Мост с фермами Truss	0.14	0.20	1.00	0.33	0.310
Стальная коробчатая балка (пролёт 120 м) Steel-box (120m span)	0.20	0.33	3.00	1.00	0.667
Всего Total	1.67	4.53	16.00	9.33	5.670
Приоритет Priority	0.56	0.26	0.05	0.12	

Приоритет:  
Сред. геометр. знач. каждого типа моста/Сумма ср. геом знач.

Priority: Multiple Mean of Each Bridge Type/Total of Multiple Means

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#### (5) Сложность строительства

(в зависимости от длины основного пролёта)

Подвесной, вантовый – использование тросов и вант; сооружение опор между устоями не потребуется. Сборные конструкции удобные в сборке.

Фермовый, стальная коробчатая балка – требуются временные опоры между устоями. Небольшие элементы конструкции придётся собирать на площадке, если не будет большого плавучего крана.

Подвесной : Вантовый : Мост с фермами : Стальная балка (пролёт 120 м)

➤ Баллы 1 : 1 : 3 (несколько больше) : 2

#### (5) Construction Difficulty (depending on main span length)

Suspension , Cable Stay : Utilizing cables and wires, no support will be required between piers. Prefabricated segments are easily assemble.

Truss, Steel-box (120m span): temporary supports between piers are required. Small members must be assembled at the site if the large floating crane is not available.

Suspension : Cable Stay : Truss : Steel-box (120m span)

➤ Score 1 : 1 : 3 (Slightly) : 2

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## (5) Сложность строительства

## (5) Construction Difficulty

( 5 ) Матрица попарного ранжирования для категории «Сложность строительства»

( 5 ) Pair Wise Comparison Matrix for the "Construction Difficulty"

	Подвесной мост Suspension	Вантовый мост Cable stayed	Мост с фермами Truss	Стальная коробчатая балка Steel-box	Среднее геометрич. значение Multiply Mean
Подвесной мост Suspension	1.00	1.00	5.00	3.00	1.968
Вантовый мост Cable stayed	1.00	1.00	5.00	3.00	1.968
Мост с фермами Truss	0.20	0.20	1.00	0.33	0.339
Стальная коробчатая балка (пролёт 120 м) Steel-box (120m span)	0.33	0.33	3.00	1.00	0.756
Всего Total	2.53	2.53	14.00	7.33	5.031
Приоритет Priority	0.39	0.39	0.07	0.15	

Приоритет:  
Сред.геометр.знач. каждого типа моста/Сумма ср. геом. знач.  
Priority: Multiple Mean of Each Bridge Type/Total of Multiple Means

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## (6) Стоимость техобслуживания

(в зависимости от площади окрашиваемых поверхностей)

Стальная коробч < балка Подвесной = Вантовый < Мост с фермами

Подвесной : Вантовый : Мост с фермами : Стальная балка (пролёт 120 м)

➤ Баллы 2 : 2 : 3 (несколько больше) : 1

(6) Maintenance Cost (mainly depending on the painted area)

Steel-box (120m span) < Suspension = Cable Stay < Steel Truss

Suspension : Cable Stay : Truss : Steel-box (120m span)

➤ Score 2 : 2 : 3 (Slightly) : 1

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**(6) Стоимость техобслуживания**

**(6) Maintenance Cost**

( 6 ) Матрица попарного ранжирования для категории «Стоимость техобслуживания»  
( 6 ) Pair Wise Comparison Matrix for the "Maintenance Cost".

	Подвесной мост Suspension	Вантовый мост Cable stayed	Мост с фермами Truss	Стальная коробчатая балка Steel-box	Среднее геометр. значение Multiply Mean
Подвесной мост Suspension	1.00	1.00	2.00	0.50	1.000
Вантовый мост Cable stayed	1.00	1.00	2.00	0.50	1.000
Мост с фермами Truss	0.50	0.50	1.00	0.33	0.536
Стальная коробчатая балка (пролёт 120 м) Steel-box (120m span)	2.00	2.00	3.00	1.00	1.861
<b>Всего Total</b>	4.50	4.50	8.00	2.33	4.397
<b>Приоритет Priority</b>	0.23	0.23	0.12	<b>0.42</b>	

Приоритет:  
Сред.геометр.знач. каждого типа моста/Сумма ср. геом. знач.

Priority: Multiple Mean of Each Bridge Type/Total of Multiple Means

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**5. Заключение анализа АНР**

**5. Conclusion of ANP**

Тип конструкции Bridge Type	Приоритетные факторы до «взвешивания» Priority factors before weighting						Взвешенный приоритет Weighted Priority	
	Стоимость строительства Construction Cost	Безопасность судоходства Navigation safety	Преимущества для Украины Merit for Ukraine	Эстетический аспект Aesthetic Feature	Сложность строительства Construction Difficulty	Стоимость техобслуживания Maintenance Cost	Суммарный приоритет Priority in total	Ранг Rank
Удельный вес Weight	0.38	0.25	0.16	0.10	0.06	0.04		
Подвесной мост Suspension	0.13	<b>0.48</b>	<b>0.48</b>	<b>0.56</b>	<b>0.39</b>	0.23	<b>0.34</b>	①
Вантовый мост Cable stayed	0.21	0.29	0.27	0.26	<b>0.39</b>	0.23	0.26	②
Мост с фермами Truss	0.06	0.18	0.16	0.05	0.07	0.12	0.11	③
Референтный вариант (пролёт 120 м) Referential alternative (120m span)								
Стальная коробч. балка Steel-box	<b>0.60</b>	0.05	0.09	0.12	0.15	<b>0.42</b>	0.30	-

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**Appendix 6  
 Environmental Checklist: 15. Roads and Railways**

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
1 Permits and Explanation	(1) EIA and Environmental Permits	① Have EIA reports been officially completed? ② Have EIA reports been approved by authorities of the government? ③ Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? ④ In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the government?	① EIA Report had completed once time - in 2004. However, neither EIA Report, nor the Feasibility Study in general had not been sent for the state expertise and, therefore, have not obtained approval of the supervisory bodies of Ukraine. ② New EIA Report itself in Ukraine shall not be considered by the state ecological expertise. Therefore, for EIA Report approval it is required to prepare the whole project (the previous project (the Feasibility Study) is outdated and does not reflect the gist of the planned activity, because it considers only one version of the bridge structure- the girder bridge). ③ In Ukraine an EIA Report cannot be approved partially. EIA Report gets either positive conclusion of the state ecological expertise or it shall be rejected. If in the process of the expertise there arise some remarks which can be corrected then they shall be corrected. If the remarks are of the principal character and cannot be corrected then the project realization shall be prohibited. (Up to now no "road" or "bridge" project were rejected). ④ Apart from the ecological expertise it is also required to perform the sanitary expertise. Terms and conditions of its performance are the same-availability of the project.
	(2) Explanation to the Public	① Did implementing agency explain contents of the project and the potential impacts adequately to the public based on appropriate procedures concerning information disclosure? Did participants understand what to be explained? ② Are proper responses made to comments from the public and regulatory authorities?	① At this stage all the procedures stipulated by Ukrainian legislation as to informing of the interested public: publication of "Declaration of Intent" and "Declaration of Ecological Consequences" in mass-media are performed. Up to now there are neither applications from the interested persons with the request to provide additional information nor remarks. To enhance positive image of the Customer and to better transparency of the planned activity it is reasonable to hold the public hearing at the early stage of the project (there is no mandatory requirement on that in the legislation but the public consultations are desirable). Such public hearings shall be held by the local authorities and they are planning to hold such public hearing. ② In case the public hearings are held, then legislation obligates the proponent of the public hearings to give grounded public answers to all the mentioned questions and remarks.

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
2 Mitigation Measures	(1) Air Quality	<p>① Is there any possibility that air pollutants emitted from various sources, such as vehicle traffic, may affect ambient air quality? Does ambient air quality comply with the country's ambient air quality standards?</p> <p>② Where industrial areas already exist near the route, is there a possibility that the project make air pollution worse?</p>	<p>① During operation of the bridge crossing the negative impact on the open air quality will be caused by motor vehicle emissions (their estimated amount in 2035 will be of 41 000 units). The performed in EIA Report calculations under the method adopted in Ukraine show that on the border of residential area the concentration of pollutants in the air will not exceed marginal data allowed by sanitary standards of Ukraine (these standards are more strict than in majority of other countries), even considering the existing air pollution by different stationary emission sources. It is accounted for the road runs away from these sources. In the future the territory near the road will very likely be largely build up with new buildings, including, likely, production facilities and the air quality will get worse. However, if this happens, then not because of the transport vehicles, because of sanitary area will be kept, distance till the road of 100 m.</p> <p>It is important to consider that currently the air quality in the residential areas of Nikolayev on many indexes do not correspond to Ukrainian sanitary standards. The key factor influencing on that is congestion of city streets by transit transport vehicles, which have no alternative place to cross Bug estuary except the existing Varvarovskiy bridge. Therefore, after construction of the new bridge crossing it is expected the air quality in residential area of Nikolayev will be significantly better.</p> <p>② The bridge crossing alignment is located away from industrial areas. At the same time stationary emission sources (industrial ones) will comprise on the whole less than 30% of the total ones on the city. Therefore, influence of transport vehicles which will use the bridge crossing will not exceed the air sanitary standards in the existing residential and industrial areas.</p>

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
	(2) Water Quality	<p>① Is there any possibility that soil runoff from the bare lands resulting from landslide, such as cutting and filling works, may cause water quality degradation in downstream water areas?</p> <p>② Is there a possibility that surface runoff from roads may contaminate water sources such as groundwater?</p> <p>③ Do effluents from various facilities, such as stations and parking areas/service areas, comply with the country's effluent standards and ambient water quality standards? Is there a possibility that the effluents may cause areas that do not satisfy with the country's ambient water quality standards?</p>	<p>① Earthworks, including cut-outs, imbankments, flattening of the slope on the right bank of the river will certainly lead to deterioration of the estuary water quality (increase of turbidity, mineralization) upstream and downstream of the river (dimensions of the plume will be of about 1 km). But this impact is limited by period of the work performance. After the earthworks completion all the open area of the soil will be grass-covered (sowing of grass) and the influence of flowing from them will be minimum amount.</p> <p>② Underground water first horizon (bedding rock) are close to the surface (2-3 m) and can be polluted in case of violation of the construction rules when making cut-outs. After completion of the construction the underground water pollution will be eliminated, because all the flowing from the road surface will be arranged by water discharge outlet.</p> <p>③ There is the possibility of temporary pollution in case of emergency situations. Ukrainian legislation (Water code) prohibits discharge of the insufficiently untreated water into natural objects (channels, gulchs, lower areas of ground features).</p>
	(3) Noise and Vibration	<p>① Do noise and vibrations from vehicle traffic satisfy with the country's standards?</p>	<p>① Noise and vibrations in accordance with the forecast of up to 2035, will not exceed levels allowed by sanitary standards on the border of the existing residential area. If the new development will get closer to the road at the distance of less than 38 m and protective accommodations (baffles) are not mounted, then ultimate levels will be exceeded.</p>
3 Natural Environment	(1) Protected Areas	<p>① 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 may affect the protected areas?</p>	<p>① No. The Project site is not in protected area. In the area of influence by the object (3 km) there are no territories and objects, protected by environmental legislation.</p>

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
		<p>① Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)?</p> <p>② Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions?</p> <p>③ If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem?</p> <p>④ Are adequate protection measures taken to prevent impacts, such as disruption of migration routes, habitat fragmentation, and traffic accident of wildlife and livestock?</p> <p>⑤ Is there a possibility that installation of roads will cause impacts such as destruction of forest, poaching, desertification, reduction in wetland areas, and disturbance of ecosystems due to introduction of exotic (non-native invasive) species and pests? Are adequate measures taken in order to prevent such impacts considered?</p> <p>⑥ In cases where the project site is located at undeveloped areas, is there a possibility that the new development will result in extensive loss of natural environments?</p>	<p>① There is no primeval, tropical forest, nor ecological valuable habitat in the project area or nearby.</p> <p>② No</p> <p>③ No significant ecological impacts are anticipated during the bridge use. During the construction it is expected potentially significant but limited by the work performance period impact on aquatic medium (because of the breaking of the bottom sediments), geologic environment (impact on the slope on the right bank of the river) and the vegetable world (deforestation). The first two objects of influence shall be protected by technological solutions and the latter - by way of compensatory payments.</p> <p>④ Disruption of migration routes, habitat fragmentation and so on are not anticipated. The project area is mostly agricultural area. Prevention of road traffic accidents is supposed to be performed by installation of the protection fence on all the length of the road way.</p> <p>⑤ It is required to perform deforestation, but on account of the compensatory payments (on the basis of UAH 250 000 per 1 ha) it is supposed to arrange new planted lands in other place. Areas of periodically under-flooded (waterlogged) land on the left bank of the river what leads to reduction of area of a certain habitat. It is impossible to compensate this impact but this land is neither precious nor unique one. After reduction of the under-flooded and waterlogged land there the breeding area of the blood-sucking insects will be less.</p> <p>⑥ The object will be located in the territories which previously have been actively used.</p>
	(3) Hydrology	<p>① Is there a possibility that change of topographic features and installation of structures such as tunnels may adversely affect surface water and groundwater flows?</p>	<p>① Drainage and protective facilities will significantly influence on underground water and less influence on surface water. However, this influence cannot be treated as negative one, because stableness of the foreshore slope will be increased.</p>

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
	(4) Topography and Geology	<p>① Is there a soft ground on the route that may cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides if needed?</p> <p>② Is there any possibility that civil works such as cutting and filling will cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides?</p> <p>③ Is there any possibility that soil runoff will result from cutting and filling areas, waste soil disposal sites, and borrow sites? Are adequate measures taken to prevent soil runoff?</p>	<p>① Cross-section of the bridge on the right bank of the river runs in close vicinity to some landslides, one of them is in active stage. Unless some preventive measures during the construction are made, then there appears a great risk of its movement. Protective facilities can be insufficient to restrain land-sliding process; therefore it is required to consider possibility to flatten the slope with simultaneous arrangement of the drainage facilities.</p> <p>② There is such the danger on the right bank of the river. To reduce risk it is required to prepare the slope as described above. In the rest areas there no such necessity to arrange deep earth cuts and high embankments.</p> <p>③ Rainfall run-offs and snowmelt runoffs will happen during the construction period only. They will be contained (isolated) in lower parts of the ground features. Measures to prevent them against pollution are taken.</p>
4 Social Environment	(1) Resettlement	<p>① Is involuntary resettlement caused by project implementation? If yes, are adequate efforts made to minimize the impacts?</p> <p>② Is adequate explanation on relocation and compensation given to affected persons prior to resettlement by responsible agency?</p> <p>③ Is the resettlement plan, including proper compensation, restoration of livelihoods and living standards developed based on socioeconomic studies?</p> <p>④ Does the resettlement plan pay particular attention to vulnerable groups or persons, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples?</p> <p>⑤ Are agreements with the affected persons obtained prior to resettlement?</p> <p>⑥ Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan?</p> <p>⑦ Is a plan developed to monitor the impacts of resettlement?</p>	<p>① Any involuntary resettlement is not caused by the project implementation except for land acquisition. Compensatory payments are stipulated.</p> <p>② Local authority, which will make the resettlement together with Ukravtodor will start procedure 1 year before the land acquisition as stipulated by legislation of Ukraine.</p> <p>③ Resettlement action plan will be performed by local authorities which have already performed the preliminary research of the cost of the compensatory payments. After the resettlement procedure commencement the said issue will be defined with consideration of balance of interest of all the concerned persons and the state.</p> <p>④ No specific vulnerable persons is there.</p> <p>⑤ Obtainment of agreement /disagreement of the persons to be resettled after commencement of the resettlement procedure, namely- after they are officially informed of the necessity of the resettlement, which shall be started 1 year before the land acquisition and delivery of it into use of the proponent (customer) of the construction (Ukravtodor).</p> <p>⑥ It is not required to establish new organizational framework. The budget shall be accepted by government of Ukraine after the resettlement procedure commencement and final agreement of amounts of the compensatory payments.</p> <p>⑦ Monitoring plan project is developed.</p>

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
	(2) Living and Livelihood	<p>① In a place where roads are newly installed, is there any possibility that the project may affect the existing means of transportation and the associated workers? Is there any possibility that the project may 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?</p> <p>② Is there any possibility that the project may adversely affect the living conditions of inhabitants other than the affected inhabitants? Are adequate measures considered to reduce the impacts if necessary?</p> <p>③ Is there any possibility that diseases, including communicable diseases, such as HIV may be introduced due to immigration of workers associated with the project? Are adequate considerations given to public health if necessary?</p> <p>④ Is there any possibility that the project may adversely affect road traffic in the surrounding areas (e.g., by causing increases in traffic congestion and traffic accidents)?</p> <p>⑤ Is there any possibility that roads and may cause impede the movement of inhabitants?</p> <p>⑥ Is there any possibility that structures associated with bridge may cause a sun shading and radio interference?</p>	<p>① The Project impact on these aspects of activity will have positive effect.</p> <p>② It is not expected the Project will cause negative impact on the living conditions of the residents.</p> <p>③ Yes. There is a possibility to be brought communicable diseases. Matters on sanitation and health care of workers are controlled with consideration of requirements of Ukrainian sanitary, medical and labour legislation. The Contractor bears responsibility for observance of these matters.</p> <p>④ No. The Project will bring about positive impacts to road and transport infrastructure.</p> <p>⑤ Same as above.</p> <p>⑥ Not significant impact by the bridge construction.</p>
(3) Heritage		<p>① Is there a possibility that the project may damage the local archeological, historical, cultural, and religious heritage sites? Are adequate measures considered to protect these sites in accordance with the country's laws and JICA Guidelines for Environmental and Social Considerations?</p>	<p>① To prevent negative impact on archeological heritage it is stipulated the performance of the relevant research works before commencement of the work and the earthwork shall be performed under archeological authority control.</p>
(4) Landscape		<p>① Is there a possibility that the project may adversely affect the local landscape? Are necessary measures taken?</p>	<p>① Landscape of the slope on the right bank of the river can be significantly influenced, however this influence will be positive. If due to some reason the construction will not be performed then this landscape which previously had been damaged by incorrect construction anyway will require to be changed.</p>
(5) Ethnic Minorities and Indigenous Peoples		<p>① Where ethnic minorities and indigenous peoples are living in the rights-of-way, are considerations given to reduce the impacts on culture and lifestyle of ethnic minorities and indigenous peoples?</p> <p>② Does the project comply with the country's laws for rights of ethnic minorities and indigenous peoples?</p>	<p>① There is no minorities and indigenous people in the area.</p>

Category	Environmental Item	Main Check Items	Confirmation of Environmental Considerations
	(1) Impacts during Construction	<ol style="list-style-type: none"> <li>① Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)?</li> <li>② If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts?</li> <li>③ If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?</li> <li>④ If necessary, is health and safety education (e.g., traffic safety, public health) provided for project personnel, including workers?</li> </ol>	<ol style="list-style-type: none"> <li>① Adequate measures are considered.</li> <li>② No significant impact might be anticipated.</li> <li>③ Adequate measures have been considered to reduce impact on social environment.</li> <li>④ The construction contractor will establish sanitary system in the construction site, construction office and construction camp.</li> </ol>
5 Others	(2) Monitoring	<ol style="list-style-type: none"> <li>① Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts?</li> <li>② Are the items, methods and frequencies included in the monitoring program, judged to be appropriate?</li> <li>③ Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)?</li> <li>④ 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?</li> </ol>	<ol style="list-style-type: none"> <li>① Yes. Environmental monitoring programs consist of air quality, noise level vibration, water quality, traffic and Socio-economic conditions. It will be performed with participation of the relevant state authorities.</li> <li>② Yes. Appropriate program will be made.</li> <li>③ Yes. Adequate framework will be established.</li> <li>④ Regulatory requirements require that form and frequency of the reports submission shall be proposed and agreed with authorized state authorities.</li> </ol>
6 Note	Reference to Checklist of Other Sectors	<ol style="list-style-type: none"> <li>① Where necessary, pertinent items described in the Forestry Projects checklist should also be checked (e.g., projects including large areas of deforestation).</li> <li>② Where necessary, pertinent items described in the Power Transmission and Distribution Lines checklist should also be checked (e.g., projects including installation of power transmission lines and/or electric distribution facilities).</li> </ol>	No relation with forestry, power transmission project.
	Note on Using Environmental Checklist	<ol style="list-style-type: none"> <li>① If necessary, the impacts to trans-boundary or global issues should be confirmed (e.g., the project includes factors that may cause problems, such as trans-boundary waste treatment, acid rain, destruction of the ozone layer, or global warming).</li> </ol>	No concern.

1) Regarding the term "Country's Standards" mentioned in the above table, in the event that environmental standards in the country where the project is located diverge significantly from international standards, appropriate environmental considerations are made, if necessary.  
 In cases where local environmental regulations are yet to be established in some areas, considerations should be made based on comparisons with appropriate standards of other countries (including Japan' experience).

2) Environmental checklist provides general environmental items to be checked. It may be necessary to add or delete an item taking into account the characteristics of the project and the particular circumstances of the country and locality in which it is located.



**Appendix 7**  
**Minutes of the Meeting on Construction of the Bridge over the State Land Resources Administration**

**MINUTES**

**of the meeting on construction of the bridge over the State Land Resources Administration, Nikolayev, Ukraine**

City of Nikolayev

Date: 01.12.2010

Opening time: 15:30

The following persons participated in the meeting:

<b>No</b>	<b>Surname</b>	<b>Position, Organization</b>
1	Mr.Nikolenko G.B.	First Deputy Head of Nikolayev Regional Administration, Nikolayev regional administration
2	Mr.Chayka V.D.	Head of Nikolayev municipal council
3	Mr.Rakova A.A.	Head of Oktyabrskiy regional state administration
4	Mr.Tkachenko V.V.	Deputy head of regional state administration of Nikolaevskaya regional state administration
5	Mr.Zla L.S.	First deputy head of Novoodesskaya regional state administration
6	Mr.Yanchuk V.P.	Head of administration of the State Administration on Land Resources in Nikolayev region
7	Mr.Moroz O.I.	Head of Administration, Municipal administration on land resources
8	Mr.Atanasov O.P.	Head of Administration, Regional administration of municipal construction and architecture
9	Mr.Bondar`O.V.	Head of Administration, Municipal administration of municipal construction and architecture
10	Mr.Kubrak I.V.	Deputy Head of Administration of Environment Protection in Nikolayev region
11	Mr.Raevskiy V.A.	Deputy chief physician, Regional sanitary-epidemiological station
12	Mr.Ganusovskiy V.T.	Chief physician, Municipal sanitary-epidemiological station
13	Mr.Tonkantsov O.G.	Deputy head of Administration, Regional Administration of Inner Affairs in Nikolayev region
14	Mr.Getyun V.N.	Head of the state road administration in Nikolayev region
21	Mr.Gurko A.A.	First Deputy Head, Nikolayev state forestry husbandry
26	Mr.Harada K.	JICA Survey Team, Social and Environmental Issues
27	Mr.Hitoshi Nakamura	JICA Survey Team, Bridge Design

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The meeting was held in the conference-room of Nikolayev State Regional Administration. The meeting was called to order at 15:30 Ukrainian time and chaired by Mr.Nikolenko G.B., the First Deputy Head of Nikolayev State Regional Administration.

The meeting agenda was as follows:

1. Opening remarks and the meeting objects.
2. Speech of Nikolenko G.B., the First Deputy Head of Nikolayev State Regional Administration on the Project.
3. Speech of Mr.Getun B.M., Head of the State Road Administration on the Bridge Construction Project.
4. Discussions and questions.
5. Closing remarks.

### **1. Opening remarks and the meeting objects.**

In his opening remarks Mr.Nikolenko G.B. greeted all the stakeholder meeting participants and declared the meeting agenda and the meeting objects.

### **2. Speech of Nikolenko G.B., the First Deputy Head of Nikolayev State Regional Administration on the Project.**

Then Mr.Nikolenko G.B. addressed to the audience with the background to the Bridge Construction Project in question. He, as well, informed that after negotiations were held between Ukrainian and Japanese sides in summer 2010, there was taken a decision on of performance of pre-project preparation work.

Hence, in mid-November 2010 the Survey Team of JICA Company arrived to Nikolayev with the view to Survey and collect all the relevant technical documentation, environmental and sociological issues, etc. to have a clear and precise understanding of the existing conditions and situation.

In connection with that, Mr.Nikolenko G.B. mentioned, that Nikolayev regional state administration issued the letter to all interested relevant administrations and authorities to provide the said information and data to the Survey Team as well as the former research work results and emphasized the importance of the bridge for Nikolayev region and that it is under personal control of Mr.Kruglov N.P., Head of Nikolayev Regional Administration, and Mr.Nikolenko G.B. himself is the supervisor of the Project from the side of Nikolayev regional administration. Considering the importance of the Project the chairman applied to all the participants to render all appropriate assistance within framework of the current legislation of Ukraine.

Mr.Nikolenko G.B. mentioned that at the present stage of the Project, it is very important to complete all the documentary work, approvals and the like, since no further work can be done unless this stage is successfully completed.

Then Mr.Nikolenko G.B. gave the floor to Mr.Getun V.N., Head of the state road administration in Nikolayev region who supervises the Project.

### **3. Speech of Mr.Getun B.M., Head of the State Road Administration on the Bridge Construction Project.**

Mr.Getun B.M. informed that the stakeholder meeting participants represent organizations which in 2004 signed the protocol on preliminary land acquisition within framework of the feasibility study of 2004 for the bridge construction.

Upon request of the Survey Team the said protocol shall be renewed and signed, thus confirming the terms of 2004 remain unchanged and if they changed it also shall be reflected in the updated protocol. Mr. Getun B.M. asked the participants to consider the Survey Team questionnaire and give the written answers to questions stated in it within the given dates.

#### **4. Discussions and questions**

**Question:** Mr. Yanchuk V.P., Head of administration of the State Administration on Land Resources in Nikolayev region asked if there is a topological mapping of the area of the acquisition? He also added that there is no entire cadastral map of the site, the Land Resources Administration has breakdown of plow land, forest area are indicated on uncoordinated material, so it shall be more precise.

**Answer:** Mr. Getun V.N. informed that the said data can be found in the feasibility Study of 2004.

**Question:** Mr. Kubrak I.V., Deputy Head of Administration of Environment Protection in Nikolayev region mentioned asked the question on powers of the new protocol to be signed, since there are about 4 ha of forest influenced by land acquisition and the Ecological Department must agree that issue with the Ministry?

**Answer:** Mr. Getyun V.N. answered the protocol to be re-signed has a status of preliminary acquisition of the land for the bridge construction.

To the point, Mr. Kubrak I.V. also mentioned that after negotiations with the Ministry he was told the Ecological Administration in Nikolayev region may as the basis use the EIA report of 2004, so the Ecological Administration will approve the new EIA report.

**Question:** Mr. Yanchuk V.P., Head of administration of the State Administration on Land Resources in Nikolayev region mentioned that it must be considered that there was the order of Nikolayev State Regional Administration to Local Region Administrations and to the Municipal Authorities to select the plots of land for the construction of the bridge and now the legislation on that changed and in case two or more regions are involved in a project, then the regional administration itself makes the selection of the plots of land, therefore in this order the relevant modifications shall be implemented.

**Answer:** Answering the remark Mr. Nikolenko G.B. asked to present an offer to modify the order.

**Question:** Mr. Harada K., JICA Survey Team, Social and Environmental Issues asked if the list of the land holders of 2004 influenced by the Project has changed.

**Answer:** Mr. Yanchuk V.P., Head of administration of the State Administration on Land Resources in Nikolayev region answered that land ownership is a live process and that during the land acquisition the land ownership shall be fixed and the physical or legal bodies holding these plots of land shall then either sell the plots of land or the land shall be withdrawn in accordance with the legislation of Ukraine, because these plots of land are required for social needs. Mr. Nikolenko G.B. added that current Ukrainian legislation enables the state to buy back the plots of land.

Mr. Nikolenko G.B. added that current legislation of Ukraine enables to re-purchase and acquire these plots of land without difficulties.

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Mr. Getun B.M. informed the participants on the timing of the Survey Team work and said the Survey Team work period will last for 6-8 months and the present visit will last till 23<sup>rd</sup> December 2010. Then they will process the obtained information and will come back in April 2011, then the Survey Team will prepare the Technical Report to the Government of Japan in August 2011 and in case the positive answer is given, then a group of 4 persons will arrive in October-December 2011 and will prepare the Final Proposal to the Government of Japan and then in February-March 2012 will be taken the Final Decision to grant the credit or not and in case the answer is possible then JICA Company will receive the order to commence procedures on credit arrangement.

**Question:** Mr. Yanchuk V.P., Head of administration of the State Administration on Land Resources in Nikolayev region asked if the land acquisition issue will be settled only after the credit are granted. And if so then probably it is too early to discuss the land acquisition matter?

**Answer:** Mr. Getun B.M. answered that most likely this issue will be settled after the decision of granting the credit is given. And this question is mentioned in the questionnaire and the questions stated in it relates to the present moment.

Mr. Chayka V.D., Head of Nikolayev municipal council and major of the City summarized that the City has not got problems on the land acquisition.

Mr. Nikolenko G.B. mentioned that as far as he knows the budget of Japan is approved in April. And Mr. Getyun V.N. commented that it was told the Project is not connected with the budget of Japan and summarized that provided all procedures go well the Final Decision will be taken in the first half of 2012.

Mr. Harada K., JICA Survey Team, Social and Environmental issues commented that in March 2012 the Japanese side will be ready to take the decision to grant the credit or not.

##### **5. Closing remarks.**

When asked whether they had any questions and since no further questions were raised Mr. Nikolenko G.B. declared the meeting closed.

«APPROVE»

Head of regional state administration

\_\_\_\_\_ N.P.Kruglov

« \_\_\_\_ » \_\_\_\_\_ 2011.

## MINUTES

### **of meeting with representatives of «Japan International Cooperation Agency» on the subject of land plots allocation for implementation of the Project of the bridge crossing construction over River of Yuzhniy Bug**

City of Nikolayev  
Conference-room of Nikolayev regional state administration

Date: 09.09.2011  
Opening time: 10:00

**The following persons have attended the meeting:** Kruglov N.P., Nikolenko G.B., Katvalyuk I.A., Maksimchyuk M.M., Andrienko Yu.G., Savchenko G.V., Litvak S.M., Machko O.V., Konyukhov D.V., Satusheva S.V., Yanchyuk V.P., Keyan A.E., Palamaryuk P.M., Tarabrin V.E., Zabolotniy M.M., Nefedov O.A., Moroz O.I., Maximishin A.V., Hideki Yoneyama, Yasunori Kawaguchi, Hitoshi Nakamura, Kunihiko Harada, Tetsumi Masui, Marmazinskaya N.V., Nazina V.A., Tsegelniy D.A.

## AGENDA:

1. The current state and formation of general plan of actions in relation to further implementation of the Project of the bridge crossing construction over River of Yuzhniy Bug in city of Nikolayev.

**Spokesman:** Hideki Yoneyama, leader of «Japan International Cooperation Agency» Survey Team.

2. Observance of legislation on land allocation rules as well as norms and standards of environmental management at the stage of construction and operation of the bridge crossing as the main criteria of environmental impact.

**Spokesman:** Kunihiko Harada, engineer on EIA, «Japan International Cooperation Agency» Survey Team.

3. Miscellaneous.

**Heard:** N.P.Kruglov, head of Nikolayev regional state administration has called the meeting to order and mentioned that at present time there is the mutual interest of Ukrainian and Japanese sides on further implementation of the Project of the bridge crossing construction over River of Yuzhniy Bug in city of Nikolayev, which is under personal control of the Government and President of Ukraine.

In order to ensure proper and timely implementation of the plan of joint actions on the matter, mentioned by both sides, there is urgent need to openly discuss problematic issues arising during the joint work.

**On the first subject:** Hideki Yoneyama, leader of «Japan International Cooperation Agency» Survey Team expressed gratitude to the management of Nikolayev regional state administration for arrangement of cooperation and introduced members of «Japan International Cooperation Agency» Survey Team to the persons attending the meeting. At present Japanese side has prepared the report-summary on general description of the

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project, aiming at creating of effective conditions of European-Asian corridor development with principal trunk motor-road M-14 Odessa-Melitopol'-Novoazovsk (towards Taganrog) as part of it, confirmation of maintenance and strengthening of economic and ecological conditions of the bridge crossing operation at different stages of its operation, improvement of city of Nikolayev development.

The stated schedule of developments will be considered by «JICA», which representatives will arrive to Ukraine in November 2011 for confirmation of decision on commencement of the work financing.

**Mr.Hideki Yoneyama** has also drawn attention of the meeting participants to the subject of land resources allocation, engineering features of the selected bridge crossing design, by determining its principal technical features and also on direct participation of "Ukravtodor" as the main performer of the project from Ukrainian side at all stages of the preliminary work of «JICA» agency, which shall be completed in 2014.

On the second subject: **Mr. Kunihiro Harada** has informed the meeting participants on the existing requirements of EIA report and the world bank on principal criteria of the project impact on environment development and necessity to take preventive environmental measures to maintain the existing landscape ecological system in the area of the construction. Following the results of his speech the meeting participants have been offered to thoroughly learn with the given criteria, because in order to take decision from «JICA» side, it is required to obtain estimation of all the sides.

**N.P.Kruglov**, head of Nikolayev regional state administration has drawn attention of the meeting participants that at present time in the state on legislative level there are the procedures on land resources allocation for road construction, including plots of land which are of private ownership. To prevent possible negative impact of the bridge crossing construction on the territories adjacent to river of Yuzhniy Bug, it is planned to establish fish factory, which capacity will be sufficient enough to compensate possible damage to fish resources and in order to do this, Nikolayev regional state administration will take relevant measures.

All the meeting participants have taken part in discussion of the agenda subjects.

Following the results of the agenda subjects discussion the have been taken decisions as follows:

1. To deliver into charge the main economic affairs department of the regional state administration (Mr.Tyulskiy) with the task to draw up the letter to «Ukravtodor» with the relevant proposals to enter changes to order of Cabinet of Ministers of Ukraine dated 17.06.10 № 684-p «On establishment of working group on the matters of designing and construction of the bridge crossing with approaches over river of Yuzhniy Bug in city of Nikolayev» regarding replacement of the working group staff.

Deadline: 28.09.11

2. To deliver into charge the chairmen of Nikolayev district state administration (Mr.Serebryakov), Novoodesskaya district state administration (Mr.Zabolotniy), Otyabr'skaya district state administration (Mrs.Rakova) together with Chief Administration of the State Committee on Land Resources in Nikolayev region (Mr.Yanchyuk) to work out measures and arrange work on land resources allocation which are covered by the bridge crossing construction project implementation area.

Deadline: prior to 01.11.11

3. To recommend the Chief Administration on protection of ecological environment in Nikolayev region (Mr.Litvak) to provide performance of study and system analysis of occurrence of possible risks of negative impact on environment at the stage of construction and operation of the bridge crossing over river of Yuzhniy Bug of criteria specified in the

report-summary of «Japan International Cooperation Agency» Survey Team and provide the relevant conclusions and proposals to the regional state administration.

Deadline: 01.11.11

The minutes has been kept by  
head of industry and infrastructure  
development department  
of the regional state administration

M.M.Maksimchyuk

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**MINUTES OF  
STAKEHOLDERS MEETING  
FOR  
“PREPARATORY SURVEY ON THE PROJECT OF CONSTRUCTION OF  
MYKOLAIV BRIDGE IN UKRAINE”**

Mykolaiv, September 09, 2011

The meeting was held in the conference-room of the State Regional Administration of Mykolaiv. The meeting was called to order at 10:00 Ukrainian time and chaired by Mr. Kruglov N.P., Governor of Mykolaiv region.

The following persons participated in the meeting:

**State Regional Administration of Mykolaiv region**

- |   |                    |   |
|---|--------------------|---|
| 1 | Mr. Kruglov N.P.   | Head of the State Regional Administration of Mykolaiv region              |
| 2 | Mr. Nikolenko G.B. | First Deputy Head of the State Regional Administration of Mykolaiv region |

**State Road Administration in Mykolaiv region**

- |   |                    |  |
|---|--------------------|--|
| 3 | Mr. Savchenko G.V. | Head of the state road administration in Mykolaiv region |
|---|--------------------|--|

**JICA Survey Team**

- |   |                        |        |                                 |
|---|------------------------|--------|---------------------------------|
| 4 | Dr. YONEYAMA           | Hideki | Team Leader/ Transport Planning |
| 5 | Mr. Hitoshi NAKAMURA   |        | Bridge design (Superstructure)  |
| 6 | Mr. Yasunori KAWAGUCHI |        | Road design                     |
| 7 | Mr. Kunihiko Harada    |        | Social Environmental Assessment |
| 8 | Mr. Tetsumi Masui      |        | Construction Planning           |

**Other stakeholders**

- |    |                   |  |
|----|-------------------|--|
| 9  | Mr. Keyan A.E.    | Director of Mykolayiv Airport  |
| 10 | Mr. Yanchuk V.P.  | Head of administration of the State Administration on Land Resources in Mykolayiv region |
| 11 | Mr. Polyakov A.P. | Mayor of Nova Odesa town   |
| 12 | Mr. Litvak S.M.   | Head of administration of the State Administration on Environment Protection             |
| 13 | Representative    | Representative of private land owners of Nova Odesa district of Mykolayiv region         |



Mr. Kruglov N.P. greeted all the stakeholder meeting participants, expressed his opinion that both Ukrainian and Japanese sides are deeply interested in realization of the Project and informed that the Project is under control of Primer Minister and President of Ukraine. He asked to discuss all requirements and issues frankly.

Dr. Yoneyama, Team Leader of the JICA Survey Team (hereinafter referred to as “the Team”) thanked and greeted stakeholders and briefly introduced project outline and offered for consideration the list of affected items.

Mr. Harada informed that the Team started preliminary EIA study by contracted Company from Kiev “Ukrpromindustriya” and by that information the Team judged about environmental impact. Mr. Harada explained that in the list of affected items the Team proposed impact and risk assessment during construction and after work completion. He emphasized that this assessment based on judgment of the Team and landowners should express their own opinion about these results.

Mr. Kruglov N.P. said that 3 years ago Ukrainian Law on compulsory resettlement was accepted, so this issue can be settled in legislative way and private land will be buying out, in any case the governor mentioned that he doesn’t expect any difficulties. He also stated that there is a list of land users of approximately 51 Ha due to allocation and informed that preliminary expert evaluation of the total compensation cost for this land makes app. 331 thousand UAH, the governor specified that this cost may be doubled, but still it is not large amount.

Mr. Kruglov informed that the work group which deals with allocation of land plots for construction was established in 2007.

Dr. Yoneyama asked if this work group deals with compensation procedure.

Mr. Kruglov replied that at the stage of basic design area of lands due to allocation and compensation cost will be considered and all legislated issues and disputes between land owners and Ukravtodor will be solved.

Mr. Kruglov mentioned that if information about implementation will be published in mass media, the price of land plots will be increased and the task of State Regional Administration is to prevent speculation.

The Representative of private land owners of Nova Odesa said that there are private land plots which will be divided half-and-half by the new road and asked if such land plots will be buying out in full or partly.

Mr. Kruglov answered that in such case the land plots will be buying out partly, but it’s difficult to answer to this question for sure at the present moment.

Mr. Harada asked if there are industrial facilities at the territory of lands due to allocation.

Mr. Yanchuk replied that project route passes only through private agricultural land plots and mentioned that among total 50 Ha, 28 Ha are lands owned by the state (airport area, Mykolanшш forestry, recreation area Lazurnoe, etc.) and the rest 22 Ha are private land plots. Mr. Yanchuk mentioned that in the course of allocation of land plots owned by the state and rented by the private companies, some losses might be arisen.

Mr. Kruglov said that there will be no problems on this matter.

Mr. Kawaguchi explained connections between the project route and existing road.

Mr. Litvak S.M. asked why the Team assessed water and air pollution as “B”.

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Mr. Harada replied that expected air pollution caused by traffic is not above industrial emissions. As for water pollution, Mr. Harada said that the Team considers protective measures and the EIA report will be published based on local regulations.

Mr. Kruglov asked if there is a possibility to lay engineering facilities such as pipelines, electric cables under the bridge as the city is split and connection providing electricity from the one river bank to another is needed.

Mr. Nakamura assured to consider this.

Dr. Yoneyama asked about compensation cost to the fishery and stated that on construction stage there should not be such long staying due to spawning or winter navigation close. Dr. Yoneyama asked who will calculate compensation cost.

Mr. Kruglov explained that construction of the fishery plant is planned together with bridge construction, for this project State Regional Administration has funds and fish product amount produced by the fishery plant will exceed the fish losses, so there will be no need in compensation cost. Mr. Kruglov also mentioned that designed fishery plant will be located 80 km upstream from the designed bridge alignment.

:by JICA Survey Team

**Appendix 8**  
**Environmental Monitoring Plan**

**Monitoring Form, Framework and Monitoring cost**

**1. Responses/Reactions to Comments and Guidance from Government Authorities and the Public**

Monitoring Item	Monitoring Results during Report Period
(1) Air quality (2) Noise level (3) Water quality (4) Land acquisition and Resettlement	Monitoring and reports shall be submitted to JICA annually during construction and for 2 years after operation.

**2. Natural Environment**

- **Air Quality (Ambient Air Quality)**

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Sampling time	*Standards for monitoring (reference of WHO)	Remarks			
						Detail of location	No. of monitoring points	Frequency	
During construction									
Dust (Soot)	mg/m <sup>3</sup>			1 hr	0.15 (0.20)	1. Ternivka 2. Cemetery 3. recreation base Rondniki	3	Baseline once prior to construction. During construction every three months except during frozen season.	5 years
CO	mg/m <sup>3</sup>			1 hr	5 (30)				
NO <sub>2</sub>	mg/m <sup>3</sup>			1 hr	0.2 (0.2)				
Operation period									
Dust (Soot)	mg/m <sup>3</sup>			24 hr	0.05 (0.05)	1. Ternivka 2. Cemetery 3. recreation base Rondniki	3	Once a year	Two years after completion of works
CO	mg/m <sup>3</sup>			8 hr	3 (10)				
NO <sub>2</sub>	mg/m <sup>3</sup>			24 hr	0.04				

\* "State sanitary rules of the atmospheric air protection (against contamination by chemical and biological agents) in residential areas", No.201 dated 09.07.1997

**Water Quality (Effluent/Wastewater/Ambient Water Quality)**

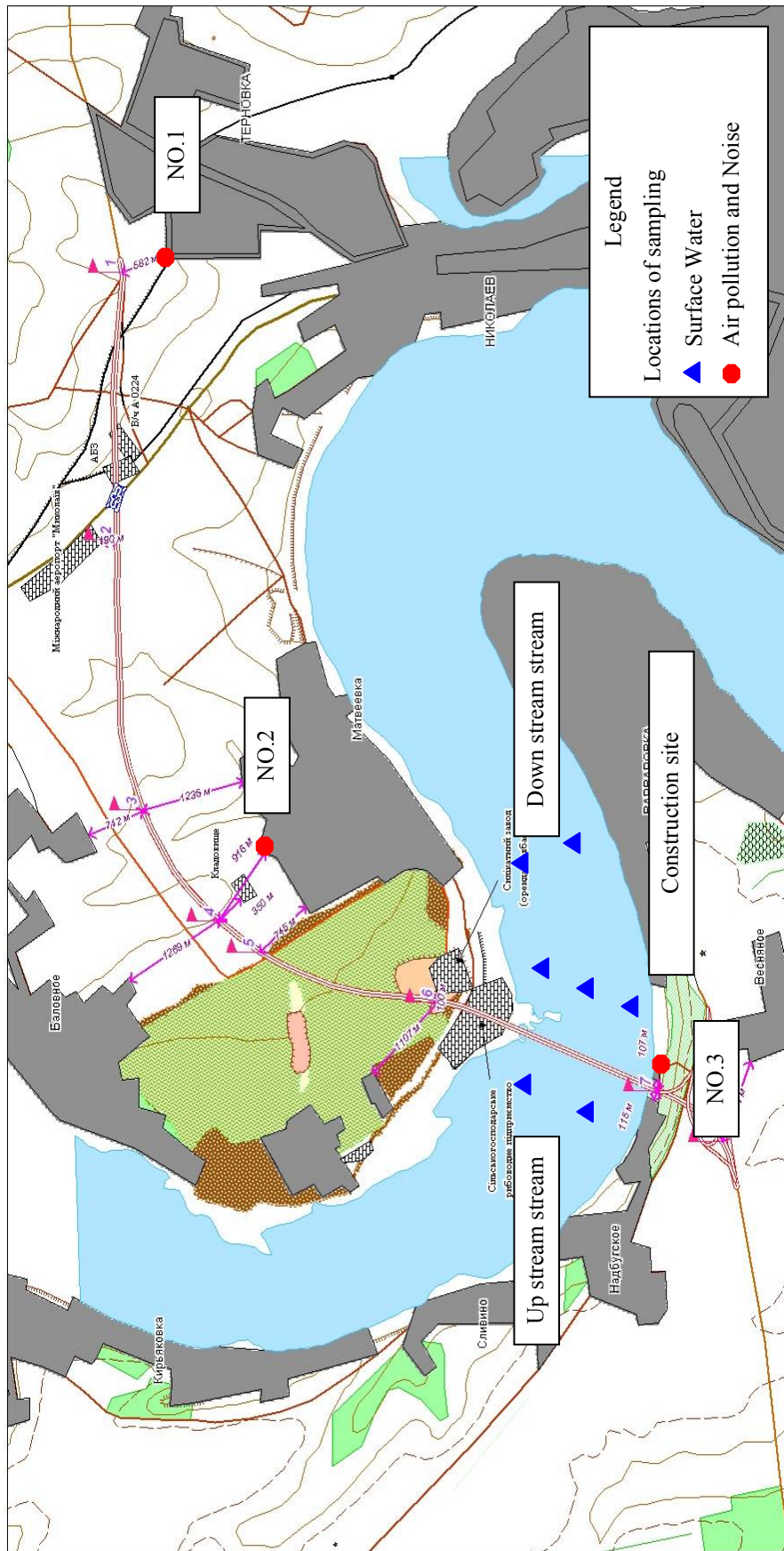
Item	Unit	Measured Value (Mean)	Measured Value (Max.)	*Standards for monitoring	Sampling location	Frequency	duration
During construction							
Temperature							
pH							
Conductivity							
Suspended solids (SS)	mg/L			With in +0.75 to background	500m upstream of bridge construction site (two points)	Baseline once prior to construction. During construction every three months except during frozen season.	5 years
Grease and oil	mg/L			0.5	500m downstream of bridge construction site (three points)		
Dissolved oxygen (DO)	mg/L			4.0	2000m downstream of bridge construction site (two points).		
BOD	mg/L			6.0			
During operation							
Temperature							
pH							
Conductivity							
Suspended solids (SS)	mg/L			With in +0.75 to background	500m upstream of bridge construction site (two points)	Every three months except during frozen season.	Two years after completion of works
Grease and oil	mg/L			0.5	500m downstream of bridge construction site (three points)		
Dissolved oxygen (DO)	mg/L			4.0	2000m downstream of bridge construction site (two points).		
BOD	mg/L			6.0			

\* "Sanitary rules and regulations of the surface water protection against pollution", No.4630-88 dated 04.07.1988

**Noise**

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Sampling time	*Standards for monitoring (national standard)	Detail of location	Frequency	duration
During construction								
Noise Levels (L <sub>eq</sub> , L <sub>max</sub> , L <sub>90</sub> )	dB(A)			24 hr	65 (daytime) 55 (night time)	1. Ternivka 2. Cemetery 3. recreation base Rondniki	Once at each station when the construction is carried out near the particular station.	5 years
During operation								
Noise Levels (L <sub>eq</sub> , L <sub>max</sub> , L <sub>90</sub> )	dB(A)			24 hr	65 (daytime) 55 (night time)	1. Ternivka 2. Cemetery 3. recreation base Rondniki	Once a year	Two years after completion of works

\* "Sanitary norms of acceptable noise rate in premises of residential and public building and in resident area", no.3077-84 03.08.1984



**Figure Locations Map of Environmental Monitoring**

### 3. Social Environment

Monitoring Form for Social Environment is shown following table, but detailed schedule is not decided yet.

Table Schedule of Preparation of Resettlement sites (where necessary)

No.	Explanation of the site (e.g. Area, no. of resettlement HH, etc.)	Status (Completed (date) / not complete)	Details (e.g. Site selection, identification of candidate site, discussion with PAPs, Development of the site. Etc.)	Expected date of completion

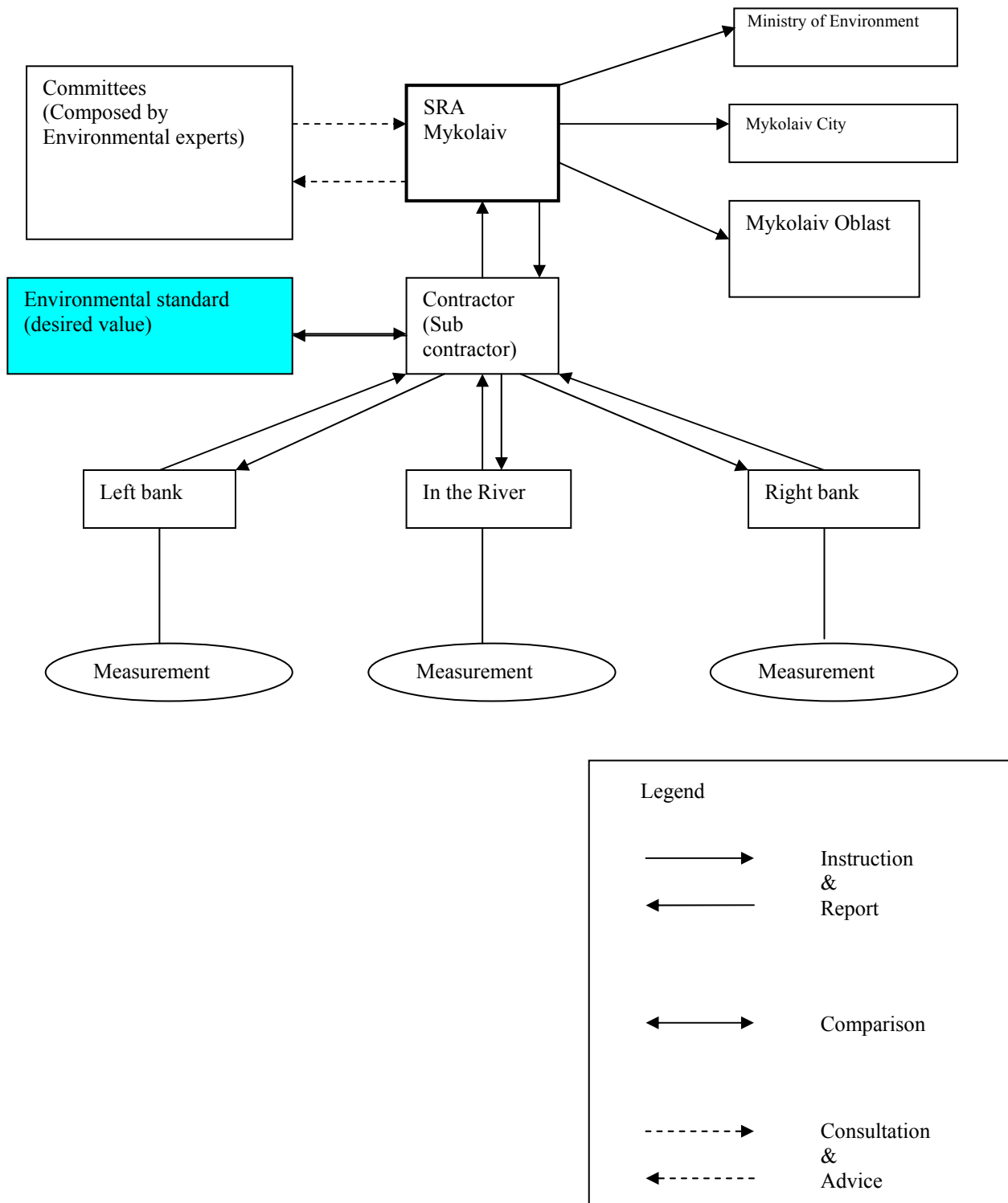
Table Monitoring Form for Social Environment

Resettlement activity	Planned Total	Unit	Progress in Quantity			Progress in %		Responsible organization
			During the Quarter	Till the last Quarter	Up to the Quarter	Till the last Quarter	Up to the Quarter	
Preparation of RAP		Man-month						
Implementation of Census survey (including Socio-economic survey)								
Approval of RAP			Date of approval					
Finalization of PAPs List		No. of PAPs						
Progress of compensation payment		No. of HHs						
Lot 1		No. of HHs						
Lot 2		No. of HHs						
Lot 3		No. of HHs						
Lot 4		No. of HHs						
Progress of Land Acquisition (all lots)		ha						
Lot 1		ha						
Lot 2		ha						
Lot 3		ha						
Lot 4		ha						
Progress of Asset Replacement (all lots)		No. of HHs						
Lot 1		No. of HHs						
Lot 2		No. of HHs						
Lot 3		No. of HHs						
Lot 4		ha						
Progress of Relocation of People (all lots)		No. of HHs						
Lot 1		No. of HHs						
Lot 2		No. of HHs						
Lot 3		No. of HHs						
Lot 4		ha						

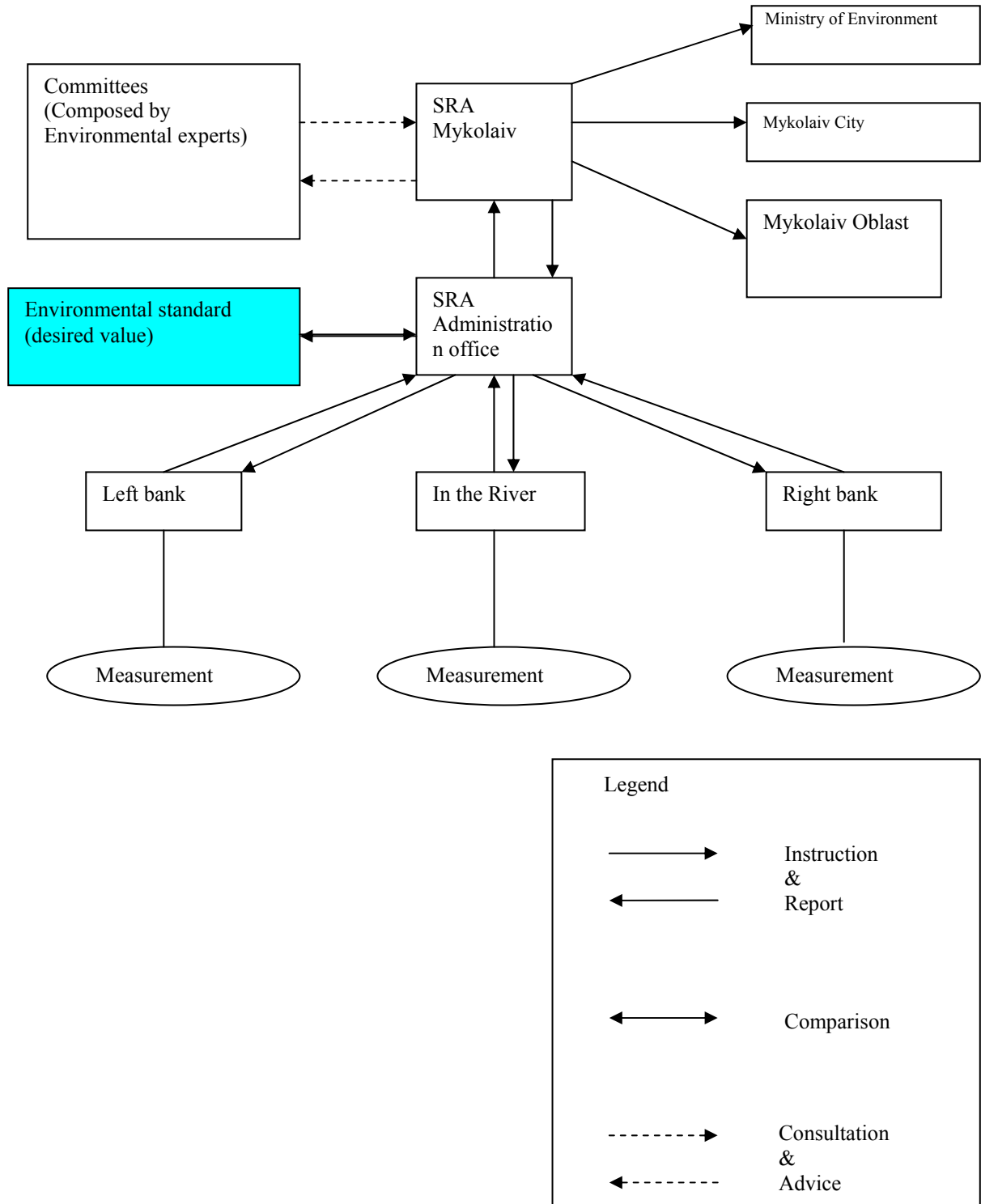
#### 4. Monitoring Framework and Reporting

Monitoring framework is shown in the following Figures.

Monitoring will be conducted by environmental surveyor hired by the consultant and result of monitoring will be reported to competent authority through SRA. Monitoring report shall be issued quarterly during construction phase, and one time per six months during operation phase from two years after start of the operation



**Monitoring Framework during construction stage**  
 (In pre-construction and Construction)



**Monitoring Framework during operation stage**



**Table**  
**Environmental Monitoring Cost Estimation of Mykolaiv Bridge Construction Project**

(Duration from year 2013 to 2019 for seven(7) years)

Natural Environment									
1. air quality					before construction	during construction	during operation	total times	cost, USD
item	unit of measure	unit cost (sampling analysis reporting US\$)	sampling times	number of location	one time	four(4) times per year for five(5) years	one time for two(2) years for surface water four(4) times per year for two(2) years		
Dust(soot)	mg/m <sup>3</sup>	85	24	3	1	20	2	23	US\$140,760.00
CO	mg/m <sup>3</sup>	85	24	3	1	20	2	23	US\$140,760.00
NO2	mg/m <sup>3</sup>	85	24	3	1	20	2	23	US\$140,760.00
2. water quality									
temperature	°C	12	1	7	1	20	8	29	US\$2,436.00
pH		12	1	7	1	20	8	29	US\$2,436.00
conductivity		12	1	7	1	20	8	29	US\$2,436.00
suspended solid (SS)	mg/L	26	1	7	1	20	8	29	US\$5,278.00
Grease and oil	mg/L	50	1	7	1	20	8	29	US\$10,150.00
Disolved Oxyzen (DO)	mg/L	15	1	7	1	20	8	29	US\$3,045.00
BOD	mg/L	60	1	7	1	20	8	29	US\$12,180.00
Fetcal Coliform Bacteria	MNP/100m	60	1	7	1	20	8	29	US\$12,180.00
Total Coliform Bacteria	MNP/100m	60	1	7	1	20	8	29	US\$12,180.00
3. Noise									
Noise Level (Leg, Lmax)	dB(A)	160	24	3	1	20	2	23	US\$264,960.00
		722							US\$749,561.00
							total		
							methodological support_maintenance	0.1	US\$74,956.10
							Transport	0.2	US\$149,912.20
							assignment(business trip)	0.33	US\$247,355.13
							Taxes	0.2	US\$149,912.20
							Total		US\$1,371,696.63

Social Environment		daily allowance (US\$)	number of days						
1.Preparation of RAP		100	10					US\$1,000.00	
2.Approval of RAP		100	5					US\$500.00	
3. Detailed Measurement Survey		100	20					US\$2,000.00	
4. Appraisal and Finalization of PAPs List		100	10					US\$1,000.00	
5. Progress of compensation payment		100	90					US\$9,000.00	
6. Progress of Land Acquisition		100	180					US\$18,000.00	
7. Progress of Asset Replacement		100	90					US\$9,000.00	
8. Progress of Relocaton of People		100	60					US\$6,000.00	
9. Reporting		100	30					US\$3,000.00	
total			495					US\$49,500.00	
							methodological support_maintenance	0.1	US\$4,950.00
							Transport	0.2	US\$9,900.00
							assignment(business trip)	0.33	US\$16,335.00
							Taxes	0.2	US\$9,900.00
							Total		US\$90,585.00

## Appendix 9 List of Parties Concerned in the Recipient Country

Name	Position	Note	Date of Meeting
<b>Kiev</b>			
<b>Embassy of Japan</b>			<b>12-Nov-10</b>
IZAWA Tadashi	Ambassador		
OKAMOTO Yoshiko	First Secretary (Dr.)		
<b>Kiev (Public)</b>			
<b>SRA Head Office (Ukravtodor)</b>			<b>18-Nov-10 05-May-11</b>
Vitaliy PROKOPENKO	Head of the Construction and Investment policy department	Vitaliy PROKOPENKO	
Mikola Grigorovich Parubets	Deputy director, head of the artificial constructions department	Mikola Grigorovich Parubets	
Maxim		Maxim	
Yevgen Prusenko	Deputy Chairman	Yevgen Prusenko	
(Mrs.)Tereziya Babvch	Head of the Foreign Economic Activity Department	(Mrs.)Tereziya Babvch	
(Mrs.)Irina SHAPOUALOVA	Fiance Department		
(Ms.)Mariia CHUMAK	Main Specialist of the Foreign Economic Activity Department	Contact person (Successor of Maxim)	
State Enterprise Ukrainian Water ways			12-Nov-10
Grygoriy MEDVEDEV	Deputy of the chief		
<b>Ukrdiprodor (State Road Department of Ukraine)</b>			<b>6-May-11</b>
Shcherbachenko Victor	Chief Engineer		
<b>Kiev (Private)</b>			
<b>Kievsoyuzdorproekt</b>			<b>11-Nov-10</b>
Limonov Evgeniy Grigoryevich	Chairman, Director of the Institute		12-Nov-10
Kulik Vasily Ivanovich	Deputy Chief Engineer	(Chief engineer)	18-Nov-10
Gerasimenko Alexander Alexandrovich	Head of engineering and geodesy department	(Topo Survey)	19-Nov-10
Repeta Boris Alexandrovich		(Geo Survey)	11-Nov-10
Alexander Shevchenko	Head of the geo surveys and transport department	(Geological Engineer)	
<b>Kyivdiprotrans</b>			<b>19-Nov-10</b>
Volodymyr MONASHCHENKO	Director		
Victor Verko	Deputy Chief Engineer		
<b>Ukrspetstunelproject</b>			<b>20-Nov-10</b>
Vadim Volynsky		General director	
Anatoly ANAOLYEV		First Vice President of the Board	
Sergiy OSYZPOV		Chief Engineer	
<b>Soyuztransproject</b>			<b>19-Nov-10</b>
Tulenev Igor Efgenebich	Chief Engineer		
<b>Mostobud (Bridges construction company)</b>			<b>19-May-11</b>
Bobrovytskyi Anatoliy	Vice Chairman of Supervisory Board		
Volodymyr Snisar	Head of Foreign Economic Activity		

Name	Position	Note	Date of Meeting
<b>Mykolaiv (Public)</b>			
<b>SRA (Ukravtodor) Mykolayiv Branch</b>			<b>15-Nov-10</b>
Vyacheslov Getun	The Head of SRA Mykolaiv		
Valeriy Bloshenko	Deputy Head		
Ivan Chausenko	Chief of roads and bridges department		
<b>Mykolaiv Regional State Administration of Ukraine</b>			<b>15-Nov-10</b>
Mykola KRUGLOV	The Head		
Gennadiy B.NIKOLENKO	The 1-st Deputy Head		
Igor A. KATVALYUK	Deputy Head		
<b>Ukrainian River Port Authority</b>			<b>16-Nov-10</b>
Vladimir Petrovich Serbinov	The Head of the river port Mykolayiv		
<b>Mykolaiv Aviation Authority</b>			<b>17-Nov-10</b>
Andrey E.KEYAN	Director of the Mykolayiv airport		
<b>Mykolaiv Regional State Administration of Ukraine on Protection of Environment</b>			<b>23-Nov-10</b>
Litvak Sergey Mikhaylovych	Head of the Administration		
Kubrak Ivan Vadimovych	Deputy Head of the Administration		
Efimov Vladimir Igorevych	First Deputy Head of the Administration		
<b>City of Mykolaiv</b>			<b>25-Nov-10</b>
Valeriy Bloshenko	Deputy Head of the State Road Administration "Ukravtodor"		
<b>Land Resources Administration</b>			<b>2-Dec-10</b>
Yanchuk V.P.	Head of administration of the State Administration on Land Resources in Mykolaiv Region		
<b>Sanitary- Epidemiological Administration of Mykolaiv Region, Ukraine</b>			<b>6-Dec-10</b>
V. Kiochko	Chief State Sanitary Physician of Mykolaiv Region		
V. A. Raevskiy	Head of Sanitary-hygienic Department of Region Sanitary Administration		
I. V. Saganevych	Senior Specialist		
<b>Institute of Fishing Industry of National Academy of Agrarian Sciences of Ukraine, Kherson laboratory of aquaculture</b>			<b>29-Apr-11</b>
Konstantin Nikolayevich HEYNE	Candidate of Biological Sciences		
<b>Mykolaiv (Private)</b>			
<b>Daughter Company JC"Mostobud" Mostootryad</b>			<b>30-Nov-10</b>
Allahverdiev Novruz Iskenderovich	Head		
<b>MZZHBI (freshly mixed concrete product manufacturer)</b>			
Kislichenk Vikkor	Director		<b>10-April-11</b>
<b>Dyckerhoff Ukraine (Cement &amp; freshly mixed Concrete product manufacturer)</b>			
Paolo Zelano	Country Manager		<b>28-April-11</b>
Tatjana Kazakevich	Commercial director		
Anton isaev	Director		

<b>Name</b>	<b>Position</b>	<b>Note</b>	<b>Date of Meeting</b>
<b>Pribuzhsky Granit Ltd</b> (Manufacture and the dealer of aggregate and sand)			<b>30-April-11</b>
Sergey Zherihov	Director		
<b>Public JSC Nikitovskiy Granit Quarry</b> (Manufacture and the dealer of aggregate and sand)			<b>30-April-11</b>
Vasily Moroz	Owner		
Yuriy Kret	Director of sand		
<b>Rost Dorstroy</b> (Asphalt concrete manufacture and a construction contractor )			<b>13-May-11</b>
Konstantin Kiose	General Director		
Vladimir Marenich	Chief Engineer		

**Appendix 10**  
**List of Reference Materials**

(as of 9<sup>th</sup> September 2011)

No.	Title	Outline	Language	Supplier		Media	Date
				Organization,	Person		
1	Feasibility Study Report on construction Project of a new road bridge in Nikolaev City, Ukraine for March 2000, 136 pages	F/S 1999 Japan Consulting Institute	En	OC		Book PDF	
2	Project description for the construction of the bridge over the Yuzhny Bug river in Nikolaev for May 2003, 34 pages	F/S 2003 PCI	En	OC		Book Data	
3	Topographic map of Nikolaev region 1:200 000		Rus	OC		Paper	
4	Feasibility Study as amended in 2004, Kyiv 2004, Volume1 110 pages	Executive Summary	En	JICA, Ms.Takeda		Book	
5	Ukraine - Mykolaiv Bridge Project QA 200912.pdf		En	JICA, Ms.Takeda		PDF	05-Nov-10
6	Ukraine Mykolaiv Policy Doc CP02-10 .pdf		En	JICA, Ms.Takeda		PDF	09-Nov-10
7	Feasibility Study as amended in 2004, Kyiv 2004, Volume3 194 pages	Environmental Assessment Report	En	JICA, Ms.Takeda		PDF	10-Nov-10
8	Outline of Europe and CIS Countries (By JETRO)	General Info. of Ukraine	Jap	Itochu		Paper	11-Nov-10
9	A magazine "Transport development of Ukraine", 51 pages #1(15)/2009	Brochure of Kievsoyuz	Ukr	KyivSoiuzdorproekt		Brochure	12-Nov-10
10	A magazine of KyivSoiuzdorproekt from idea to embodiment 2008, 15 pages	Brochure of Kievsoyuz	Ukr	KyivSoiuzdorproekt		Brochure	12-Nov-10
11	A magazine "Transport development of Ukraine", 47 pages #1(16)/2010	Brochure of Kievsoyuz	Ukr	KyivSoiuzdorproekt		Brochure	12-Nov-10
12	Feasibility Study as amended in 2004, Kyiv 2004, Volume1 123 pages	Executive Summary	Ukr	Ukravitodor, Mr. Ivan		Book	19-Nov-10
13	Feasibility Study as amended in 2004, Kyiv 2004, Volume2 50 pages	Drawings	Ukr	Ukravitodor, Mr. Ivan		Book	19-Nov-10
14	Feasibility Study as amended in 2004, Kyiv 2004, Volume3 194 pages	EIA	Ukr	Ukravitodor, Mr. Ivan		Book	19-Nov-10
15	Feasibility Study as amended in 2004, Kyiv 2004, Volume4 9 pages	Cost Estimation	Ukr	Ukravitodor, Mr. Ivan		Book	19-Nov-10
16	Feasibility Study as amended in 2004, Kyiv 2004, Volume5 80 pages	Analysis of Investment Efficiency	Ukr	Ukravitodor, Mr. Ivan		Book	19-Nov-10

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No.	Title	Outline	Language	Supplier		Media	Date
				Organization,	Person		
17	(Supreme Council of Ukraine (BD), 2002, N 24, st.166)	Ukravtodor, Mr. Ivan	Ukr	Ukravtodor, Mr. Ivan	Ukravtodor, Mr. Ivan	Word	15-Nov-10
18	DBNV1.2-15:2009	Bridge and Pipes / Loads and Effect (without figures)	Ukr	Ukravtodor, Mr. Ivan	Ukravtodor, Mr. Ivan	Word	15-Nov-10
19	DBNV1.2-15:2009	Bridge and Pipes / Loads and Effect(From Internet)	Ukr	Internet	Internet	Word	15-Dec-10
20	DBNV2.3- 4:2007	ROADS / Part I. Design/ Part II. Construction (without figures)	Ukr	Ukravtodor, Mr. Ivan	Ukravtodor, Mr. Ivan	Word	15-Nov-10
21	DBNV2.3-4:2007	ROADS / Part I. Design/ Part II. Construction (From Internet )	Ukr	Internet	Internet		
22	DBNV2.3-14:2006	Bridge and Tubs /Design Rules (without figures)	Ukr	Ukravtodor, Mr. Ivan	Ukravtodor, Mr. Ivan	Word	15-Nov-10
23	DBNV2.3-14:2006	Bridge and Tubs /Design Rules	Ukr	Ukravtodor, Mr. Ivan	Ukravtodor, Mr. Ivan	Word	14-Dec-10
24	DBNV2.3-14:2006	Bridge and Tubs /Design Rules Appendix (without figures)	Ukr	Ukravtodor, Mr. Ivan	Ukravtodor, Mr. Ivan	Word	15-Nov-10
25	DBNV2.3-14:2006	Bridge and Tubs /Design Rules Appendix	Ukr	Ukravtodor, Mr. Ivan	Ukravtodor, Mr. Ivan	Word	15-Dec-10
26	DBNV2.3-22:2009	Bridge and Tubs/ Design Rules (few pages are missing)	Ukr	Ukravtodor, Mr. Ivan	Ukravtodor, Mr. Ivan	Word	15-Nov-10
27	DBNV2.3-22:2009	Bridge and Tubs /Design Rules	Ukr	Ukravtodor, Mr. Ivan	Ukravtodor, Mr. Ivan	PDF	13-Dec-10
28	DBNV2.3-22:2009	Bridge and Tubs /Design Rules	Ukr	Ukravtodor, Mr. Ivan	Ukravtodor, Mr. Ivan	Word	13-Dec-10
29	DBNV1.1-12:2006	Protection against dangerous geological processes, the harmful effects of maintenance of fire/ Construction/Earthquake in UKRAINE (without attachment)	Ukr	Ukravtodor, Mr. Ivan	Ukravtodor, Mr. Ivan	Word	15-Nov-10

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No.	Title	Outline	Language	Supplier		Media	Date
				Organization,	Person		
30	DBNV1.1-12:2006	Protection against dangerous geological processes that are harmful operational effects, from fire ISS "architect" (Kiev, st. MG Kryvonosa, 2a, tel / fax. 249-34-04) CONSTRUCTION In seismic areas UKRAINE	Ukr	Ukravtodor,	Mr. Ivan	Word	16-Dec-10
31	DBNV1.1-12:2006	Appendix in Ukraine	Ukr	Ukravtodor,	Mr. Ivan		
32	DBNV1.1-12:2006	Appendix in English		Ukravtodor,	Mr. Ivan		
33	DBNV1.1-4:2009	The system of urban planning/Composition, content, development, Coordination and approval Planning justification	Ukr	Ukravtodor,	Mr. Ivan	Word	15-Nov-10
34	DVNV2.3-20:2008	Execution and Acceptance of Work Coordination and approval	Ukr	Ukravtodor,	Mr. Ivan	Word	15-Nov-10
35	DSTUB.V2.3-1-95	Navigation Clearance under Bridges on Inland waterways Planning justification	Ukr	Ukravtodor,	Mr. Ivan	Word	15-Nov-10
36	Snip 2.02.01-83(2000)	Construction Standards and Rules /Foundation of Buildings And Structures	Ukr	Ukravtodor,	Mr. Ivan	Word	15-Nov-10
37	DBNV.1.2-2: 2006	System reliability and safety of construction projects /Loads and effects/Standards design	Ukr	Ukravtodor,	Mr. Ivan	Word	15-Dec-10
38	Wind Rose in Mykolaiv	Wind Rose in Mykolaiv	Rus	Ukravtodor,	Mr. Ivan	Paper PDF	15-Dec-10
39	Meteorological data from Mykolaiv Regional Hydro-meteorological Station	Meteorological data, temperature, wind, rainfall	Rus	Mykolaiv Regional Hydro-meteorological Station		Paper	10-Dec-10
40	Water level from Mykolaiv Regional Hydro-meteorological Station	Water level of Yujnii Bug river	Rus	Mykolaiv Regional Hydro-meteorological Station		Paper PDF	15-Dec-10

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No.	Title	Outline	Language	Supplier		Media	Date
				Organization,	Person		
41	Employer's information of "Mostootryad No. 73"	Occupational structure and experience level of technicians and engineers	Rus	"Mostootryad No. 73"		Paper	9-Dec-10
42	Attachment of DBN, seismic information	List of population centers of Ukraine, located in seismic danger areas	Rus	Ukravtodor, Mr. Ivan		Paper	16-Dec-10
43	Amendment of Decree of Ministry of Health of Ukraine	Amendment to Decree of Ministry of Health on approval of temporary procedure of State Sanitary Examination	Rus	Ministry of Health of Ukraine		Paper	14-Dec-10
44	Road Map of Mykolaiv	Road Map of Mykolaiv	Ukr			Map	25-Nov-10
45	Document for Cost Estimate	Industrial producers' price index Consumer price index	Eng	Internet		Paper	
46	Coordination of Road Center line	Road Center line		Ukravtodor		Paper	25-Nov-10
47	Mykolayiv Region	Mykolaiv Region information	Ukr	Ukravtodor		Book	
48	Natural Reserves in Mykolaiv Oblast	MYkolaiv City information	Ukr/ Eng	Ukravtodor		Book	10-Dec-10
49	Rekomendatsii po opredeleniyu nesushchei sposobnosti svai-obolochek i burov.pdf	Recommendations on determination of bearing capacity of piles	Rus	Ukravtodor		PDF	15-Dec-10
50	MetOIF Kormienko.pdf	Foundations and Bases	Rus	Ukravtodor		PDF	22-Dec-10
51	Sanitary Rules and Terms of Surface Water Protection Against Pollution	Protection Rule Against Water Pollution	Rus	Min. of Health Protection		Paper	10-Dec-10
52	State Sanitary Rules on Protection of Atmosphere air of Population Aggregate	Protection Rule Against Air Pollution	Rus	Min. of Health Protection		Paper	10-Dec-10
53	Sanitary Roles of Permitted Level of Noise in Residential Buildings and Commercial Buildings and other Territory of Residential Development	Protection Rule Against Noise	Rus	Min. of Health Protection		Paper	10-Dec-10
54	Climatological data, Ice regime and thickness of ice cover	Snow Fall and River Frozen Data	Rus	Mykolaiv Regional Hydro-meteorological Station		Paper	6-May-11
55	Social and economic development of Ukraine January-March 2011	Social and economic development index of Mykolaiv	Eng	Internet		PDF	10-May-11



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No.	Title	Outline	Language	Supplier		Media	Date
				Organization,	Person		
56	Додаток 5. Схема галуз .doc	Management scheme of Road authority of Ukraine	Ukr	Ukravtodor		Word	20-Dec-10
57	Про затвердження Державної програми розвитку автомобільних доріг загального користування на 2007-2011 роки	State Program for the Development of Public Highways for 2007-2011	Ukr	Parliament of Ukraine Website		Html	9-Dec-10
58	Короткі Підсумки Соціально-Економічного Становища М.Миколаєва За 2010 Рік Перелік міських програм розвитку, які діють в 2011 - 2014 роках	Economic and Social Development of Mykolaiv City in 2010 City Development Programs Running in 2011-2014	Ukr	Mykolaiv City Council Website		Html	9-Dec-10 21-Apr-11
59	Про затвердження Державно. програми розвитку м.ського електротранспорту на 2007-2015 роки	Approving the State of the City Electric in 2007-2015	Ukr	Parliament of Ukraine Website		Html	9-Dec-10
60	Outline of Ukraine (April 2011)	Outline of Ukrainian Diplomacy	Jap	Web Site of Japan Embassy in Ukraine		Html	10-Jun-11
61	Statistical publication Regions of Ukraine 2009	Statistics of Ukraine	Ukr/Eng	State Statistics Committee of Ukraine Website		PDF	9-Apr-11
62	Country Brief 2010-Ukraine	World Bank's Country Brief of Ukraine for 2010	Eng	World Bank Website		Html	16-Feb-11
63	Country Partnership Strategy for Ukraine for the Period FY08-FY11	World Bank's Assistance Policy for Ukraine	Eng	World Bank Website		PDF	16-Feb-11
64	ODA Data Book 2010	Outline of Ukraine	Jap	MoFA Web Site		PDF	16-Feb-11
65	Outline of Ukrainian Agriculture (July 2010)	Outline of Ukrainian Agriculture	Jap	MAFF Web Site		PDF	16-Feb-11
66	Trade Statistic of Agriculture (2009)	Agricultural Trade Statistics in Ukraine	Jap	MAFF Web Site		PDF/Excel	22-Mar-11
67	Study for Underground Resources in Ukraine	Outline of Ukrainian Mining and Industry	Jap	JOGMEC Web Site		PDF	30-Mar-11
68	State Statistic Service of Ukraine	Statistics of Ukraine	Ukr/Eng	State Statistic Service of Ukraine Website		Html	15-Nov-10
69	Land-use planning map for Mykolaiv city	Map with color illustrations	Ukr	Mykolaiv city		Paper	14-Dec-10
70	DBNV2.3-16:2007	Land Allotment for Construction of Motor Roads	Ukr	Internet		Word	09-May-11

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No.	Title	Outline	Language	Supplier		Media	Date
				Organization,	Person		
71	2007 Minerals Yearbook Ukraine 2009 Minerals Yearbook Ukraine (Advance Release)	The Mineral Industry of Ukraine in 2007, 2009	Eng	United States Geological Survey (Internet)		Word, Excel, PDF	09-May-11 10-Aug-11
72	Trade Statistics of Japan (JETRO)	Trade Statistic between Japan and Ukraine	Jap	JETRO Web Site		Excel	10-Aug-11
73	Production Project on Reconstruction of Automobile Principal Road Kiev-Kharkov-Dovzhanskiy km 204+965 Poltava Region Bridge over the Sula River Overall Bill of Quantities	Reference of Cost Estimation	Ukr	Joint-Stock Company "Kievsojuzdorproject"		Book	10-May-11
74	Working Documentation on Reconstruction of Automobile Principal Road Kiev- Kharkov- Dovzhanskiy km 202+000 – km 207+000 Poltava Region Cost Estimations Preparatory Works and Earthworks Covering of Roadway. Road Facilities Construction	Reference of Cost Estimation	Ukr	Joint-Stock Company "Kievsojuzdorproject"		Book	10-May-11
75	Price Formation in Construction	Reference of Cost Estimation	Ukr	Scientific-Company "Inproekt"		Book	10-May-11
76	Feasibility Study of the Bridge Crossing Construction over the River Pivdenniy Bug River Volume 3 Construction Cost Calculation	Reference of Cost Estimation	Ukr	CJSC "Kyivsoyuzshlyakhproekt"		Book	10-May-11
77	Correction of the Project of the Podilskiy Bridge Crossing Construction over the Dnipro River in Kyiv The Bridge over the Desenka River Cost Estimation Documentation	Reference of Cost Estimation	Ukr	CJSC "Kyivsoyuzshlyakhproekt"		Book	10-May-11
78	Correction of the Project of the Podilskiy Bridge Crossing over the River Dnipro in the City Kyiv Section 8 Cost Estimation Documentation Book 8.1	Reference of Cost Estimation	Ukr	CJSC "Kyivsoyuzshlyakhproekt"		Book	10-May-11