着手会議-II: 会議関連資料及び議事録

確認 事業部長	確認 主管部(室)長	作成 開発事務所長、 主管部(室)	原本は主管部(室)保管、 Copy : ~~JK~~、KA, KZ, KN JJ,
2015/11/8	2015/11/7	2015/11/7	
氏名を記入	氏名を記入	氏名を記入 前田哲治	

I. 確認事項

着手会議日時・場所	2015/7/7, 6F	主管部及び議事録作成者	KR 前田
CS の Title	ベトナム国ハノイ環状 3 号線マイジック～南タンロン区間実施設計業務		
作業科目コード	JA15R1003	契約期間	2015/7/15-2016/9/14
リスク危険度	□危険度 4、□危険度 3、□危険度 2、■危険度 1 (添付 RM 評価表、RM 計画書 (危険度 4、3 の案件に適用)参照)		
案件概要 (案件の概要を 5 行以内程度で記述すること。)	ハノイ市西部のマイジック～南タンロン区間の既存街路上に連続高架橋(約 5.4km)を建設する事業である。 KR にとってはタンジュン・プリオク港アクセス道路以来の本格的な都市内道路案件である。 今般は実施設計と入札支援業務のみの受注であり、後続の施工監理業務は現在 EOI の最中である。 事業が都市内に位置するため、既存埋設物の移設計画、既存交通・住民に配慮した施工計画が重要になる。 今後道路分野の主流となる都市内高架道路、狭小箱桁橋、鋼管回転杭の実績が得られる。		
資金源	□JICA 調査、■円借款、□無償、□その他 ODA、□国際機関、□相手国政府、□non ODA、□民間		
内容	□調査(M/P、FS 等)、□技プロ、□B/D、■D/D、□設計・監理、□監理、□役務、□その他		
形態	□単独、■JV メイン、□JV サブ、□補強、□下請け		
配布資料	■実行予算総括表、■RM 評価表、□RM 計画書(RM 評価表で危険度が 3 又は 4 の案件)		

※□については、該当する項目を☑に置き換えること

II. 収益管理事項

No.	項 目	全 体	今年度(201*年度)
1)	契約額(百万円)	98.8 百万円	
2)	限界利益(百万円)	56.2 百万円	
3)	限界利益率(%)	56.9%	
4)	直接利益(百万円)	24.8 百万円	
5)	直接利益率(%) *(基準 30%以上)*	25.1%	
6)	契約 MM	40.0M/M	
7)	契約 MM 当たり直利(百万円) *(基準 100 万円/月以上)*	75.0 万円	
8)	契約 MM 当たり報酬 *(基準 230 万円/月以上)*	185.5 万円	
9)	持出 MM	9.06M/M	
10)	持出比率(%) *(原則としてリエゾン MM のみ)*	22.7%	

III.特筆すべきリスクと対応策

(添付 RM 計画書に記載以外の項目で本着手会議で指摘・追加されたリスク項目)

番号	リスク項目	リスクの内容	対応法*	対応計画

*: 原則として回避、転嫁、軽減、受容の何れかを記入

IV. その他特記事項

リスクマネジメント評価表

案件概要	国名/顧客名	ベトナム国/PMU Thang Long		
	案件名	ハノイ環状3号線マイジック～南タンロン区間建設事業実施設計業務		
	作業実施Code	JA15R1003		
	業務内容	ハノイ環状3号線（約5.4kmの連続高架橋）の実施設計		
	業務形態	実施設計		
	PM/TL氏名	石本一鶴		
	リスク危険度	危険度１	RM計画書の要不要*	

*：リスク危険度が危険度1又は2の場合で、主管部長がリスクマネジメント計画書の作成が必要と判断した場合は要とする。

承認	レビュー	作成
（事業部長）	（主管部(室)長）	（主管部(室)）
日付	日付	日付
15/7/8	15/6/18	2015/7/17
氏名	氏名	氏名
受領(KN)		

リスク発生確率、影響度及びリスク危険度評価点配点表

識別項目 No.	リスク項目	評価点	低い	普通	高い	非常に高い	判定	評価点	RM計画書作成
1	資金源	3	JICA, ODA,国際機関	相手国政府	民間（日本）	民間（海外）	低い	0.8	
2	業務内容	4	役務、調査	技プロ、監理	詳細設計、設計・監理、無償基本設計	左記の内、大量、広範な成果品が求められる場合や作業工程が非常に厳しいと判断される案件	高い	3.0	
3	業務形態	3	下請、補強	JV-sub	単独、JV-main	JV-mainで業務が複雑、多岐に亘り且つ高度な判断やJV間の業務調整が必要とされる案件	高い	2.3	
4	業務経験	20					小計	5.0	
4-1	当該国での過去10年間の案件実績	(4)	5件以上	2-4件	1-2件	実績なし	低い	(1.0)	
4-2	Team Leader	(8)	類似案件3件以上	類似案件2件	類似案件1件	類似案件0件	低い	(2.0)	
4-3	Team Member	(8)	要員の80%以上が十分な経験を有す。借上げ+外人比率が30%以下	借上げ+外人比率が30%以下	要員の40%以上が経験1年以内	殆どの要員が類似案件の実施が未経験若しくはそれに近い	低い	(2.0)	
5	技術的難易度	10					小計	2.5	
5-1	基礎地盤処理（軟弱地盤、断層、特殊土等の存在）	(5)	低い	中程度	高い	極めて高い	低い	(1.3)	
5-2	最新且つ高度な要素技術の要求（解析技術、複合技術、当該国最大級）	(5)	低い（既存技術で十分対応可能）	中程度（専門家の参加が必要）	高い（複数の専門家及び専門家間の調整が必要）	極めて高い（最大級規模、新規技術開発が必要）	低い	(1.3)	
6	Consulting/Service スケジュール予想	5	軽微な遅延が予想される（5%未満）	遅延が予想される（5-10%）	やや大きな遅延が予想される（10-20%）	大きな遅延が予想されRe-scheduling が必要（20%以上）	低い	1.25	
7	Consulting/Service 契約内容	30					小計	15.0	
7-1	Counterpart 機関（顧客）	(5)	組織、職員とも十分な類似経験がある。	組織、職員とも類似経験者がある程度ある。	組織、職員とも類似経験が不十分。	組織、職員とも類似経験が殆ど無い。	低い	(1.3)	
7-2	単年度契約稼働MM	(5)	10MM未満	10-20MM	20-30MM	30MM以上	非常に高い	(5.0)	○
7-3	単年度予想非契約MMの7-2に対する割合(%)	(10)	10%未満	10-30%	31-50%	50%以上	普通	(5.0)	
7-4	直接利益率(%)	(5)	30%以上	25-30%	15-25%	15%未満	普通	(2.5)	
7-5	再委託業務比率(%)	(5)	10%未満	10-20%	20-30%	30%以上	低い	(1.3)	
	1-7:計	75						29.8	
施工監理を含まない場合の評価点		100						39.67	
8	施工時事業実施環境*	25					小計		
8-1	用地取用率(%)	(5)	90%以上	80-90%	70-80%	70%未満			
8-2	工事請負業者	(5)	能力、技術、資金力、実績にほぼ問題無し	能力、技術、資金力、実績の何れかに問題あり	能力、技術、資金力、実績に複数の問題あり	能力、技術、資金力、実績ともに大きな問題あり			
8-3	工事進捗率予想（対計画）	(5)	遅延：5%未満	遅延：5-10%	遅延:10-20%	遅延: 20%以上			
8-4	請負業者の責任遂守度	(5)	ほぼ問題なし	やや問題あり	相当問題あり	非常に問題あり			
8-5	Loan Amount （総額）	(5)	30億円未満	30-60億円	60-100億円	100億円以上			
合計(1-8)：		100							

*: 工事 package が複数の場合は総合的に判断願います。

リスク危険度の区分

リスク危険度	評価点
危険度1	40未満
危険度2	40以上、60未満
危険度3	60以上、80未満
危険度4	80以上

評価点計算の重み係数

ランク	重み係数
低い	0.25
普通	0.5
高い	0.75
非常に高い	1

Appendix A – Description of Services

TERMS OF REFERENCE
CONSULTING SERVICES OF DETAILED DESIGN

1. INTRODUCTION

In recent years, Vietnam economy has made a significant change with average GDP growth rate of 6 to 8% per year and become the 6th largest economy of the Southeast Asia region. Hanoi city is the capital of Vietnam and also the core of Vietnam's northern key economic zone which comprises of 7 provinces and cities: Hai Phong, Ha Noi, Quang Ninh, Hai Duong, Bac Ninh, Hung Yen and Vinh Phuc. This is a dynamic economic center and an economic locomotive of the North and Vietnam. The greatest advantage of this economic zone is well-trained human resources, the highest score entrance-exam achievers in universities and rate of students per capita in the country.

With the location in the important geo-economic zone, Hanoi's urban infrastructure has been increasingly invested in improvement and expansion. However, for an important role of transport hub in the region, the investment in improvement has been lagging behind the growth rate and rising of traffic vehicles.

The Ring Road No. 3 of Hanoi has the length of about 65km, connecting Thang Long bridge-Mai Dich - ThanhXuan - BacLinh Dam - Phap Van - Thanh Tri Bridge - Sai Dong - Phu Dong Bridge - NinhHiep - Dong Anh - Nam Hong – North Thang Long-NoiBai - Thang Long Bridge. This route plays an important role in Hanoi's traffic system and its surrounding areas, which serves inner city traffic, inter-regional traffic and links arterial roads such as NH 1A, NH5, NH18, Phap Van – NinhBinh expressway, Lang – Hoa Lac expressway, Thang Long – NoiBai expressway and future Hanoi – HaiPhong expressway, Hanoi – QuangNinh expressway with the City's Capital.

As soon as recognizing the critical role of this route, an implementation plan for Hanoi Ring Road No. 3 Construction Project was launched in 1998. Accordingly, its sub-projects will be appropriately formulated in consideration of urgency of each section as stated in Correspondence No. 945/CP-KTN dated August 13, 1998 by the Prime Minister on approving the Pre- Feasibility Study Report of the Project. Additionally, on July 9, 2008, the Prime Minister issued Decision No. 90/2008/QĐ-TTg on approving Transport Development Plan of Hanoi Capital up to 2020, herein Hanoi Ring Road No. 3 is adjusted with a perimeter of approximate 65km, which mainly adjusts the unconstructed section NinhHiep – North Thang Long – NoiBai (Nam Hong).

The viaduct construction project, Mai Dich – South Thang Long Section, is a component project of the total plan for construction of the Hanoi Ring Road No. 3, which is aimed at connecting with the expressway from Mai Dich to North Linh Dam Lake.

On February 21, 2012 the Ministry of Transport issued Decision No. 353/QĐ-BGTVT permitting the preparation of Investment Project for Construction of Viaduct on MaiDich – South Thang Long Section.

Currently, Pham Van Dong Street has an average width of 24.7 m, providing 4 motorized lanes and 2 mixed lanes. This is a focal route which plays an important role not only as a part

of Hanoi's inner ring road but as the unique axis linking Hanoi city center with Noi Bai airport. Therefore, traffic congestion occurs very often on the route, particularly during peak hours.

On the same Ring Road No. 3, the Hanoi City Ring Road No.3 Construction Project, Phase 2, Mai Dich – North Linh Dam Lake Section, was constructed and open to traffic at the end of 2012. Since its traffic opening, a large number of vehicles then from Northern provinces passing through Thanh Tri Bridge and the viaduct system has been concentrated into Mai Dich interchange. Therefore, the next construction of the Mai Dich – South Thang Long viaduct section becomes more urgent.

According to Correspondence No. 945/CP-KTN dated August 13, 1998 by the Prime Minister on approving Pre-feasibility Study of the Project and Submittal No. 1276/KHDT by the Ministry of Transport, it is planned to build an expressway viaduct in the center of Mai Dich – South Thang Long section on Hanoi Ring Road No. 3.

According to the Transport Development Plan of Hanoi City, the important axes of Hanoi will be completed by 2030, including Hoang Quoc Viet extended road (West Lake – Ba Vi axis) and West Thang Long axis which cross the project section. Therefore, large traffic volume will be concentrated at intersections requiring grade-separated interchange type there.

As such, it is very necessary to construct the viaduct on Mai Dich – South Thang Long Section in order to meet the rising traffic demand in the near future as well as to be in line with the plans and to contribute to improvement of the efficiency of urban traffic network in Hanoi city.

2. OBJECTIVES

The Ministry of Transport of the Government of the Socialist Republic of Vietnam (hereinafter referred to as "the MOT") has decided to employ an international consulting firm (hereinafter referred to as "the Consultant") selected in compliance with Guidelines for the Employment of Consultants under Japanese ODA Loans, April 2012 for execution of consulting services for smooth implementation of the Project and transfer of advanced technology.

2.1 The consulting services for the Project (hereinafter referred to as "the Services") to be rendered by the Consultant shall cover:

(1) Step I Services: Review of preliminary design conducted in "Formulation of Investment Project for Construction of Works (Feasibility Study)", execution of detailed investigations and detailed design, and preparation of tender documents and cost estimates (Detailed Design Stage)

(2) Step II Services: Assistance for tendering procedures (Tender Assistance Stage)

2.2 The Consultant shall conduct technical transfer to Vietnamese engineers through the Services and on-the-job training and general training.

2.3 The Services will be carried out in the following two (2) modes:

(1)Task Concept: an arrangement in which the Consultant manages the work with a full responsibility to the Project Management Unit Thang Long (hereinafter referred to as "PMU Thang Long") of the MOT for adequacy and quality of the final products within the scope of the Services specified in this Terms of Reference.

(2) Assistance Concept: an arrangement in which the Consultant will be required to give technical advice and assistance in carrying out works to be accomplished by PMU Thang Long through the Consultant's professional ability, but not be responsible for the final products.

3. EXTENT OF THE PROJECT

The Project site is situated in the urban area in the western Hanoi city including Tu Liem District, Cau Giay District. The topography is favorable for the construction throughout the entire Project site, since flat land is spread out with elevation at less than 10m.

The Project consists of the construction of viaduct on median of Pham Van Dong street for an effective operation of the Ring Road including the Red River Bridge (Thanh Tri Bridge).

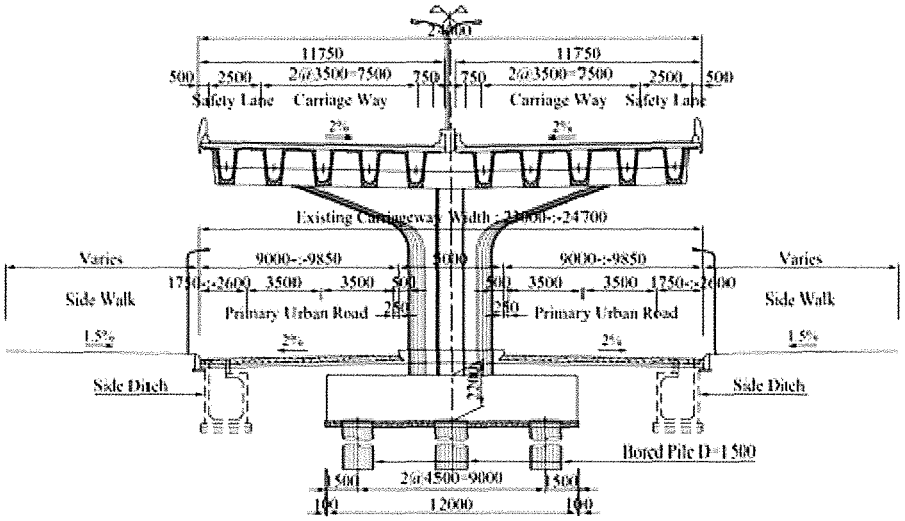
Main features of the construction of the Contract works will include:

(1) Project scale

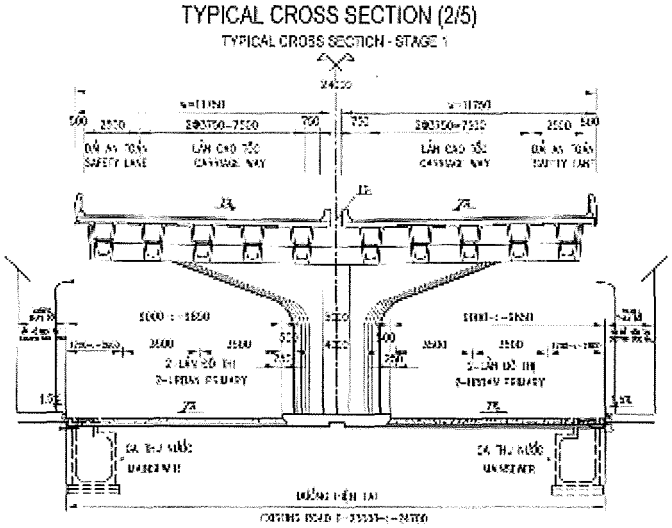
- Starting point: Km0+130, north side of the existing Mai Dich flyover
- Ending point: Km 5+493.7, south side of the existing Thang Long Bridge

(2) Expressway viaduct:

- Class: Expressway class A, grade 100.
- Design speed: 100km/h
- Number of lanes: 4 lanes
- Total length of the expressway viaduct: 4.80km
- Typical cross section of the expressway comprises of following elements:
  + Carriageway: 4 x 3.75 = 15.00m;
  + Outer safe line: 2 x 2.50 = 5.00m;
  + Median: 1 x 1.50 = 1.50m;
  + Inner safe line: 2 x 0.75 = 1.50m;
  + Concrete barrier: 2 x 0.50 = 1.00m;
  Total width: ***= 24.00m***



(Standard Section)



(Narrow Section)

Figure 3.3.1 –Typical cross-section of the urban road and expressway

(3) Pavement structure:

- Pavement structure is designed in accordance with 22TCN 211-06 using A1 high-grade asphalt concrete pavement.
- Pavement structure of the urban road's carriageway has Eyc≥196 MPa;
- Ultra-thin bonded wearing course (thickness = 2cm) is applied for Expressway.
- Porous course (thickness = 4cm) is applied for urban road.

(4) Intersection & Interchange:

- There is one interchange in Project Section, namely South Thang Long interchange. The interchange is half-diamond shape with a set of off ramps.
- Total width of ramp is 7.0m including one lane and safe line.

(5) Viaduct

- Type of Superstructure is "Super-T Girder"
- Span length is applied 30-40m basically.
- Type of substructure is "One Column RC Pier" with 'Bored Pile" foundation in Standard Section and 'Rotation Steel Pile' in narrow sections.
- Due to large span required at intersection, "Steel Box Girder" bridge is applied at intersections.

(6) Auxiliary works

- Auxiliary works including retaining wall, drainage system, lighting system, plants, ditch, etc. shall be designed synchronously and completely.

- Noise barrier shall be installed.
- The pavement of existing road shall be improved after construction of the viaduct as an urban road.
- Preparation for future installation of ITS equipment

4. PROJECT EXECUTING AGENCY

4.1 The MOT of the Government is "the Line Agency" and concurrently "the Employer" of the Project. PMU Thang Long is "the Employer's Representative" and concurrently "the Project Management Agency" managing total implementation of the Project.

4.2 Role and responsibility of the Line Agency /the Employer, the Project Management Agency/ the Employer's Representative and the Consultant for each work component are as listed below;

#	Review of FS	TOR for Survey	Detailed Design	PQ Document (construction packages)	Tender Document (construction packages)
MOT	Approval	Approval	Approval	Approval	Approval
PMU-TL	Review and submission	Review and submission	Review and submission	Review and submission	Review
Consultant	Prime Work	Prime Work	Prime Work	Prime Work	Prime Work
JICA	-	-	-	Concurrence	Concurrence

5. SCOPE OF CONSULTING SERVICES

5.1 General

The Consultant shall perform all the works necessary to attain the objectives set out in Section 2 of this Terms of Reference.

In order to carry out the Services smoothly, the Consultant shall cooperate fully with the concerned agencies of the Government and the JICA for the purpose of smooth implementation of the Project.

Step-I: Review of preliminary design conducted in "Formulation of Investment Projects for Construction of Works" (Feasibility Study), execution of detailed investigation and detailed design, and preparation of tender documents and cost estimates.

Step I Services of the Project shall be divided into the following three (3) stages

Step-I A : Review of preliminary design conducted in "Formulation of Investment Projects for Construction of Works" (Feasibility Study)

Step-I B : Execution of detailed investigation and detailed design

Step-I C : Preparation of tender documents and cost estimates

Engineering study in the Project shall cover the following subjects:

5.1.1 Step-I A: Review of Preliminary design

- Review of the alignment (route) to suit the Project section of the Ring Road No. 3 and physical conditions;
- Review of right-of-way acquisition situation with due discussion with agencies and authorities concerned;
- Study on comments raised by the Government agencies and establishment of design concept to meet the satisfaction of the MOT;
- Review of structure types of Viaducts and Bridges;
- Review of the construction quantity elements and unit prices required for the construction cost estimates.

5.1.2 Step-I B: Execution of Detailed Investigation and Detailed Design

Based on the result of the above engineering study of the Project, detailed engineering design shall be finalized. The engineering design is to be documented and shall include all such investigations, surveys, studies as well as structural design. Cost estimates and finalization of all documents required for bidding and contract shall be included in the detailed engineering design.

The Consultant shall undertake the finalization of detailed design presenting their findings and recommendations on the following subjects and shall be dealt with separately:

(1) Execution of Additional / Supplementary Detailed Investigations

1) Topographical Survey
- Centerline survey of Viaducts, Bridges and Approach Roads
- Detailed survey of the construction site necessary for the construction work

2) Geological Survey
- Geological investigation for foundation design of Viaducts and Bridges
- Soil investigation for treatment of embankment foundation on Approach Roads

3) Material Sources Survey
- Identification of sources of sands, aggregates and other materials necessary for the construction of the Package, as well as their quality and quantity

4) Existing Utilities Survey
- Investigation and identification of existing utilities in the Project Area.

5) Hydrological Analysis (if necessary)
- Review of hydrological survey data for road surface and road side drainage
- Determination of the maximum flood water level on the construction site

(2) Execution of Detailed Designs

1) Structural Analysis
- Frame analysis
- Three-dimensional analysis (if necessary)
- Dynamic analysis (if necessary)

2) Detailed Design of Viaducts and Bridges
- Review of bridge design criteria
- Design of bridges
- Study on detours during construction
- Review of drawings
- Review of the design of viaducts, bridges and their facilities in the operation and maintenance perspective

3) Detailed Design of Approach Roads
- Review of highway design criteria
- Design of highway
- Review of drawings
- Study on the safety measures of Mai Dich at grade intersection (beginning point of the Project)

- Review of the design of approach roads and their facilities in the operation and maintenance perspective

4) Detailed Design of Traffic Management System
- Design of Traffic Monitoring System
- Design of Traffic Safety Facilities

5) Study and Proposal on Construction Execution
- Study on construction schedules
- Study on packaging
- Study on the use of the materials and equipment
- Study on construction methods
- Study on Traffic Control during construction at intersections and interchanges
- Study on safety construction management
- Study on over-turning stability of the temporary bridge for girder erection
- Study on safety measures to prevent the girders dropped from the temporary bridge

6) Study on Environmental Impact
- Review the EIA report in detail and compliance with prevailing Vietnamese regulations as well as JICA Guidelines for environmental and social considerations (April 2010), with rough estimation of increase/decrease in CO2 emission due to the project, using the existing data.
- Establish the Environment Management Plan (EMP) including environmental monitoring plan in detail following the rules and regulations, detailed design based on the EIA report and the Minutes of Discussion with the JICA Appraisal Mission (M/D).
- Propose the mitigation measures against negative impact of environmental issues during the construction and in the operation stage.
- Give requirements in EMP and environmental observe plan into technical instruction of Tender Document.
- Incorporate the requirements of the EMP and environmental monitoring plan into the specifications of the tender documents.-Provide training plan for the staff of PMU Thang Long, site engineers, the Contractors, construction supervision Consultant in order to help them to be familiar with the requirements of EMP, responsibility and authority of the relevant parties with regard to the implementation of EMP, forms, internal and external reports to JICA and HANOI City DONRE.

5.1.3 Step-I C : Preparation for Tender Documents and Cost Estimates

(1) Cost estimates and Project Cost Estimates

1) Price analysis classified on the basis of labor, materials, equipment, tax, over head, profit, etc. in accordance with Vietnamese regulations
2) Breakdown of foreign and local currency portion, if necessary

(2) Preparation of Tender Documents

1) Define technical and financial requirements, capacity and/or experience for PQ criteria taking into consideration technical feature of the Project.
2) Prepare Pre-qualification documents in accordance with the latest version of Standard Prequalification Documents under Japanese ODA Loan.
3) Prepare bidding documents in accordance with the latest version of Standard Bidding Documents under Japanese ODA Loans for Procurement of Works together with all relevant specifications, drawings and other documents.

5.2 Step II – Assistance for Tendering Procedures and Awarding of the Contracts

5.2.1 Tendering Stage

During the tendering stage, the Consultant's work shall include but not necessarily limited to the following tasks (Assistant Concept except item (5) to which a task concept shall be applied):

1) Assist PMU Thang Long to conduct pre-bid conference and pre-bid site inspection for interested contractors and furnish any additional information when needed.
2) Assist PMU Thang Long in the contract negotiations with contractors.
3) Prepare standard forms and reporting format to be used during the construction supervision.

5.3 Technical Training

(1) General

Through the implementation of the Services, the Consultant shall instruct and introduce advanced technology and management systems to the Vietnamese engineers.

(2) Domestic Training

In addition to the routine on-the-job training on technical matters, which will be executed by the Consultant in various stages of the Services, the Consultant will provide lectures for the Vietnamese engineers on modern technology of the highway and bridge development and management, project management, planning, bid evaluation, payment procedure, reporting works, etc. as general training.

5.4 Others

The Consultants shall propose necessary equipment and tools to be newly purchased or rented under the JICA financing in order to carry out the Services in Vietnam. The Consultant shall return the purchased equipment and tools to the Employer after the completion of the Services.

6. STAFFING

6.1 It is estimated that following types and numbers of personnel will be required for the Step I (Step I-A, Step I-B and Step I-C) Services and Step II services;

(1) Step-I Services: Review of preliminary design conducted in Project Formation Program, execution of detailed investigation and detailed design, and preparation of tender documents and cost estimates;

1) Professional - a (Expatriates)

Symbol	Position	Nos.	Man-month
TL	Team Leader	(1)	7
BE 1&2	Bridge Engineer	(2)	10
FE	Bridge Foundation Engineer	(1)	2
EE/OME	Expressway Engineer / O/M Engineer	(1)	1
RSS	Road Safety Specialist	(1)	1
HE	Highway/ Pavement Engineer	(1)	3
CS	Contract Specialist	(1)	3
ES	Environmental Specialist	(1)	3
ME	Material Engineer	(1)	4
LD	Landscape Engineer	(1)	1
UE	Utility Engineer	(1)	3
CE	Cost Estimator	(1)	3
CP/SE	Construction Planner / Safety Engineer	(1)	3
	Total Man-Month	**14**	**44**

2) Professional - b (Vietnamese Staff)

Symbol	Position	Nos.	Man-month
DTL	Deputy Team Leader	(1)	7
H1&2	Highway /Pavement Engineer	(2)	12
B1(1;2;3&4)	Bridge Superstructure Engineer	(4)	18
B2(1;2;3&4)	Bridge Substructure Engineer	(4)	13
F1&2	Bridge Foundation Engineer	(2)	6
D1&2	Document Specialist	(2)	8
C1&2	Cost Estimator	(2)	8
M	Material Engineer	(1)	3
E1&2	Environmental Specialist	(2)	10
G1&2	Geological Engineer	(2)	7
T	Topographical Engineer	(1)	3
EE	Electrical Engineer	(1)	4
U	Utility Engineer	(1)	6
C/S	Construction Planner / Safety Engineer	(1)	3
	Total Man-Month	**(26)**	**108**

(2) Step II Services: Assistance for Tendering Procedures of the Contracts

1) Professional - a (Expatriates)

Symbol	Position	Nos.	Man-month
TL	Team Leader	(1)	5
CS	Contract Specialist	(1)	2
CE	Cost Estimator	(1)	1
	Total Man-month	**3**	**8**

2) Professional - b (Vietnamese Staff)

Symbol	Position	Nos.	Man-month
DTL	Deputy Team Leader	(1)	5
CS	Document Specialist	(2)	12
CE	Cost Estimator	(2)	12
	Total Man-month	**5**	**29**

6.2 The qualification of key International Team Members is shown in Table below:

Designation	Qualification
Team Leader	Education: • Graduate in Civil Engineering. Experience: • Experience in bridge related field: 20 years or more; • Experience in detailed design for 3 bridge and/or viaduct projects), the consulting contract price of each project shall be more than 5 million or construction contract price of each project shall be more than USD 75 million; • Experience as Team Leader (Project Manager) of detailed design for 2 bridge and/or viaduct construction projects, the consulting contract price of each project shall be more than 5 million or construction contract price of each project shall be more than USD 75 million; • Experience in tender assistance of 3 civil work contracts in JICA ODA loan projects.
Bridge Engineer	Education: • Graduate in Civil Engineering. Experience: • Experience in bridge related field: 10 years or more; • Experience of detailed design for 2 bridge and/or viaduct construction projects, the consulting contract price of each project shall be more than 5 million or construction contract price of each project shall be more than USD 75 million. • Experience of detailed design for viaduct which length is more than 3,000m.
Bridge Foundation Engineer	Education: • Graduate in Civil Engineering. Experience: • Experience in bridge related field: 10 years or more; • Experience of detailed design for 2 bridge and/or viaduct construction projects, the consulting contract price of each project shall be more than 5 million or construction contract price of each project shall be more than USD 75 million; • Experience of detailed design for pile foundations of bridges and/or viaduct; • Experience of detailed design for "Steel Rotation Pile" for the foundations of bridges and/or viaduct.
Expressway Engineer (O/M	Education: • Graduate in Civil Engineering.

Advisor)	Experience: • Experience in road or bridge related field: 10 years or more; • Experience in operation and maintenance of existing expressway / highway: 5 years or more.
Highway / Pavement Engineer	Education: • Graduate in Civil Engineering. Experience: • Experience in road related field: 10 years or more • Experience of detailed design for 2 highway construction projects, the consulting contract price of the project shall be more than 5 million or construction contract price shall be more than USD 75 million.
Contract Specialist	Education: • Graduate in Civil Engineering/Construction management. Experience: • Experience in bridge and road related field: 15 years or more • Experience in procurement of civil works and/or contract administration in highway, bridge and/or viaduct construction projects in ICB contract: 5 years or more • Experience as Contract Specialist in 2 highway, bridge and/or viaduct construction projects in ICB contract, the consulting contract price of each project shall be more than 5 million or construction contract price of each project shall be more than USD 75 million.
Environmental Specialist	Education: •Graduate in Environmental Management and/or Social Development Experience: • Experience in environmental and social management: 5 years or more; • Experience in land acquisition monitoring.

6.3 The qualification of key National Team Members is shown in Table below.

Designation	Qualification
Deputy Team Leader	Education: • Graduate in Civil Engineering. Experience: • Experience in bridge related field: 15 years or more • Experience of detailed design for 3 highway and/or bridge / viaduct projects, the consulting contract price of each project shall be more than 5 million USD or construction contract price of each project

	shall be more than USD 75 million. • Experience as Team Leader or the Deputy Project Manager of detailed design for 1 highway, bridge and/or viaduct project, the consulting contract price of the project shall be more than 5 million USD or construction contract price of the project shall be more than USD 75 million.
Highway / Pavement Engineer	Education: • Graduate in Civil Engineering. Experience: • Experience in road related field: 10 years or more; • Experience in detailed design for 1 highway construction project, the consulting contract price of the project shall be more than 5 million USD or construction contract price of the project shall be more than USD 75 million.
Bridge Engineer	Education: • Graduate in Civil Engineering. Experience: • Experience in bridge related field: 10 years or more • Experience of detailed design for 2 bridge or viaduct construction projects, the consulting contract price of each project shall be more than 5 million or construction contract price of each project shall be more than USD 75 million. • Experience of detailed design for viaduct which length is more than 3,000 m
Document Specialist	Education: • Graduate in Civil Engineering / Construction management Experience: • Experience in procurement of civil works and/or contract administration in highway and/or bridge / viaduct construction projects related field: 5 years or more; • Experience as Document Specialist in 1 highway, bridge and/or viaduct construction projects; the consulting contract price of the project shall be more than 5 million USD or construction contract price of the project shall be more than USD 75 million.
Cost Estimator	Education: • Graduate in Civil Engineering Experience: • Experience in road or bridge related field: 5 years or more • Experience as a cost estimator in 2 highway, bridge and/or viaduct construction projects; the consulting contract price of each project shall be more than 5 million or construction contract price of each

	project shall be more than USD 75 million.
Material Engineer	Education: • Graduate in Civil Engineering Experience: • Experiences as Material Engineer for highway, bridge and/or viaduct construction projects: 5 years or more
Environmental Specialist	Education: Graduate in Environmental Management Experience: • Experience in environmental and social management: 5 years or more; • Experience in land acquisition monitoring.

7. TIME SCHEDULE, REPORTS AND DOCUMENTS

7.1 The Consultant shall commence the Services in the Socialist Republic of Vietnam (hereafter referred to as "Vietnam") within the period specified in the Contract after receiving the Notice of Proceed from the Employer.

The Consultant shall execute the Services in the territory of Vietnam.

7.2 In accordance with the works requirements, the total duration of consulting services will be fourteen (14) months. The implementation schedule expected is as shown in Table below.

Key Activities		Date	Duration in Months
Step I	Commencement of Consulting Services	15 July, 2015	07
	Completion of detail design, preparation of drawings and tender documents	15 February, 2016	
Step II	Tender assistance for civil works packages including pre-qualification	15 July, 2015	14
	Negotiate and Sign Construction Contract	15 September, 2016	

7.3 The Consultant shall submit the following reports and all documents in English and Vietnamese:

7.3.1 Detailed Design (Step-I Services)

(1) Monthly Report

The Consultant shall submit five (5) copies of a Monthly Progress Report briefly and concisely describing all activities and the progress of works including Detailed Design, the problems encountered, remedial measures/solutions and other significant outstanding matters.

(2) Final Design Report

Within one (1) month after completion of Step-I Work, a Final Design Report summarizing the Consultant's activities and progress of work, design criteria and design calculations shall be submitted. The number of copies of this report will be agreed before preparation but shall not exceed ten (10).

(3) Bill of Quantities and Cost Estimation

Quantity calculations and Bill of Quantities as well as Cost Estimation shall be submitted in ten (10) copies. The detailed cost estimations will be derived from a

detailed bill of quantities taken from the detailed design drawings and specifications, and relevant conditions.

1) price analysis for the ICB package, classified on the basis of labor, materials, equipment, tax, overhead, profit, etc. and breakdown of foreign and local currency portions.
2) financing schedule (annual fund requirement according to the construction schedule) shall be prepared.

(4) Tender Documents

In accordance with the implementation schedule agreed by PMU Thang Long and the Consultant, Tender Documents shall be submitted for each contract package.

The Consultant shall prepare the following documents to procure a construction firm(s).

- Instructions to Bidders, including relevant forms
- Conditions of Contract, Part I - General Conditions
- Conditions of Contract, Part II – Conditions of Particular Application
- Technical Specifications
- Special Specifications (if necessary)
- Bid, Bid Schedule and Schedule of Rates and Prices
- Drawings
- Detailed Works Schedule, Plant and Contractors Personnel List

7.3.2 Information to the JICA

The Consultant shall assist PMU Thang Long to compile reports or documents, which will be submitted to the JICA by the MOT. The following reports may be expected to submit.

- Progress Report describing status of the Package and Land Acquisition and Resettlement etc.
- Pre-Qualification Documents
- Tender Documents

TERMS OF REFERENCE
FOR SURVEY AND DESIGN DETAILED DESIGN STAGE

In consideration of the scale and characteristics of the project, survey consists of the following major works:

- Topographic survey
- Existing road survey
- Hydrological survey
- Geological survey
- Infrastructure works survey

1.1. TOPOGRAPHIC SURVEY:

1.1.1. Contents of Topographic Survey

Topographic survey consists of the following major items:

- Vertical and horizontal control network grade IV.
- Secondary Control Point and Vertical Control Network.
- Alignment Survey.

1.1.2. Vertical and horizontal control network grade IV

To use the available vertical and horizontal control network grade IV obtained in the basic design stage (assessment and checking of the possibility to use these benchmarks are necessary to be conducted prior to topographic surveying and mapping).

Re-usable quantities:

- Horizontal control network grade IV;
- Vertical control network.

1.1.3. Secondary Control Point and Vertical Control Network

1.1.3.1. Secondary Control Point

To re-use the Secondary Control Point established in the basic design stage.

Reusable quantities:

1.1.3.2. Vertical Control Network

To re-use Vertical Control Network established in the basic design stage.

Reusable quantities:

1.1.4. Alignment Topographic Survey

The Alignment Survey shall be conducted in accordance with Highway Survey Standard 22TCN263-2000 as follows:

1.1.4.1. Plan Survey, scale 1/500

To re-use alignment plan scaled 1/500 made in the basic design stage.

Reusable quantities

1.1.4.2. Alignment Survey

Based on the topographic map, to conduct the setting-out including: determining peak point, angular measurement, putting pegs.

- Angular measurement by using total station (or equipment with equivalent accuracy), each angle is measured once (normal reading and reverse reading data), tolerance between two measurement half times shall not exceed 1' (sketch of measurement direction is to be made to avoid mistakes), fitting with GPS points or secondary control points is required.

- Pegs of peaks shall be made of concrete with equilateral triangle shape of 12cm-sides and 40cm-length. Pegs on the existing roads shall be made of headed-iron pins Φ15mm, 10cm in length.

- Other detailed pegs shall reflect accurately the topography along the alignment and its two sides (attention shall be paid to topographical pegs, location of crossing infrastructure and existing drainage culverts and the topographical pegs should be located at the piers location). The maximum interval between detailed pegs is 20m (for urban area).

- Detailed pegs shall be made of square-shaped wood with 5cm-sides, 40cm in length. Pegs on the existing roads shall be made of headed-iron pins Φ15mm, 10cm in length.

Profile and cross-section survey and mapping with the following contents:

- To measure by steel tape (or asbestos fiber tape). To combine overall measurement and detailed measurement once to determine main pegs (Km, Hm pegs and the main stakes of curve TS, SC, P, CS, ST).

- To measure levels of detailed pegs once only and fit them to GPS points or secondary control points in the area.

- Based on results of horizontal and vertical measurements, making profile with horizontal scale of 1/500 and vertical scale of 1/50.

- Cross-section scaled 1/200 is made at representative locations of topography and main stakes of curve and to ensure that cross-sections are made with interval of 20m at maximum. In average, 50 cross-sections per 1 km are made. Cross-sectional measurement is made towards each side 30m from the centerline.

- On the cross-section, topographical conditions and special facilities, if any, must be shown. As for the existing road(s), the existing centerline(s), two edges of asphalt pavement, two edges of soil shoulders, two slope toes and counter-weight (if any) must be shown.

Estimated survey quantities:

- Profile: 5.5 km.

- Cross-section: 16.5km.

1.2. EXISTING ROAD SURVEY

- To survey and determine the general elastic modulus of the pavement structure by using Benkelman beam in accordance with TCVN8867:2011.

Estimated quantities: 20 points.

1.3. HYDROLOGICAL SURVEY

To re-use the investigation data obtained in the basic design stage.

1.4. GEOLOGICAL SURVEY AND CONSTRUCTION MATERIAL SURVEY

1.4.1. Geological Survey

1.4.1.1. Geological Survey for Bridge Works

As mentioned hereinabove, 4 boreholes with depth of 47.0 – 50.0m were conducted in the basic design stage which ensures the calculation depth. In the detailed design stage, borehole depth is estimated at 45.0m.

Since 4 boreholes were conducted in the basic design stage, it is required to re-use these borehole data and additionally conduct 115 boreholes to investigate geological conditions of bridge works to ensure that one borehole is conducted at each location of substructure.

Geological survey shall be conducted only after reaching agreement on locations of abutments and piers. The estimated number of geological boreholes is as follows:

- To drill totally 115 boreholes on land, locations of which are provided by the Project Manager after obtaining plan drawing of bridge.

- According to results of geological survey for bridge works conducted in the basic design stage, borehole length is 50m which ensures requirements for design of foundation. Based on the soil profile and pile length of bridge foundation proposed in the basic design stage, the estimated length of boreholes in the detailed design stage is 45m.

- To take samples for testings: 2m/sample, sample for documentation: 1m/sample.

- To conduct Standard Penetration Test (SPT) in the borehole with interval of 2m /point.

- To determine underground water level in the borehole on land.

Estimated quantities:

- boreholes:	115 boreholes.
- drilling meters:	5,175m
- SPT test:	2,588 points.
- laboratory samples:	1,812 samples
+ Undisturbed sample (9 ordinary criteria):	1,268 samples
+ Disturbed sample (7 ordinary criteria):	543 samples
+ Unconfined compression test:	190 samples
- Water samples in boreholes and testing:	04 samples
- Determination of water level in borehole:	115 samples

1.4.1.2. Geological Survey for Retaining Wall

According to the approved investment project, the type of retaining wall at bridge end is MSE wall. In the basic design stage, there were not geological survey data for the retaining wall. Therefore, in the detailed design stage, one borehole is conducted at each location of retaining wall:

- To drill 02 boreholes on land, locations of which are provided by the Project Manager.

- The estimated depth of each borehole is 30m.

- To take samples for testings: 2m/sample, sample for documentation: 1m/sample.

- To conduct Standard Penetration Test (SPT) in the borehole with interval of 2m /point.

- To determine underground water level in the borehole.

Estimated quantities:

- boreholes: 02 boreholes.
- drilling meters (30m/borehole): 60m
- SPT test: 30 samples
- Determination of water level in borehole: 02 samples
- Laboratory samples: 21 samples
  + Undisturbed sample (9 ordinary criteria): 15 samples
  + Disturbed sample (7 ordinary criteria): 06 samples
  + Unconfined compression test: 08 samples
  + Triaxial Compression Test (consolidated, undrained) CU: 02 samples
  + Triaxial Compression Test (consolidated, undrained) UU: 02 samples
  + Consolidated Compression Test CV: 02 samples

1.4.1.3. Technical Requirements for Drilling:

- Drilling work shall strictly comply with technical requirements stated in Specifications for Geological Exploration 22TCN 259-2000.

- In addition to samples selected for testing for normal mechanical and physical properties, soil samples should be stored for additional testing or other special testing.

- To determine stable underground water level in all boreholes.

1.4.1.4. Conditions for Completion of Borehole Drilling

- Boreholes for bridge works

  + In case where drilling has not reached the estimated depth but encountered the layer of cohesive soil in the status from half hard to hard or N≥30; compacted granular soil or N≥50, then the drilling depth should be 10-12m into this layer; the minimum drilling depth should be from 6m to 8m in the layer of gravel with SPT>50.

  + In case where the above requirements cannot be met even after reaching the estimated depth, decision by the Project Manager and the Employer is required for the ending depth of drilling.

- Boreholes for retaining wall

  + In case where drilling has not reached the estimated depth but encountered the layer of cohesive soil N≥15; granular soil N≥30, the drilling will be completed upon reaching the depth of 6÷8m in this layer.

  + In case where the above requirements cannot be met even after reaching the estimated depth, decision by the Project Manager and the Employer is required for the ending depth of drilling.

1.4.1.5. Requirements for Borehole Sample Testings:

- All samples are tested in accordance with the prevailing regulations of Vietnam, in cases where the relevant Vietnamese standards are not available, international standards are applicable.

- The number of sample tests shall be selected to ensure the design requirements, testing criteria shall be proposed by Chief of Geological Survey Team and approved by the Project Manager.

Undisturbed samples:

- To determine: particle-size analysis (P%), natural moisture content (W), bulk density (γ), specific gravity (Δ), liquid limit (WL), plastic limit (WP), compressibility coefficient (a), shear strength (C, Φ – according to direct shear test method); organic matter content (soft soil layer), unconfined compression test q_u (cohesive soil SPT>8); consolidated compression (minimum pressure level 8kG/cm2), taking consolidated – undrained triaxial compression test (CU), unconsolidated – undrained triaxial compression test (UU), organic matter content test for soft soil.

- For samples taken from boreholes for bridge works, it is required to carry out unconfined compression test q_u (only for cohesive soil SPT >8).

Disturbed samples:

- Cohesive soil: P(%), Δ, WL, WP, W.

- Granular soil: P(%), Δ, angle of repose for sand – dry (αd), angle of repose for sand – saturated (αw), maximum void ratio (εmax), minimum void ratio (εmin).

Water sample from borehole

- Water: chemical analysis by reduction method to evaluate the abrasive erosion of concrete structures and RC structures by water.

1.4.1.6. Requirements for labor safety

During the works of drilling or excavating, absolute safety measures for people and equipment shall be taken in accordance with the prevailing regulations, especially during drilling on Pham Van Dong road.

1.4.1.7. Reinstatement of Drilling Holes

All drilling holes shall be reinstated according to the Employer's requirements after completion of drilling work.

Estimated quantities: 117 holes

1.4.2. Material Quarry Survey

To conduct survey, investigation and collection of data related to quarries of stone, soil and sand of projects adjacent to the study area.

- To investigate quarries of materials such as filling soil, construction sand, drainage sand, red gravel, stone ... on the route in terms of capacity, quality, exploitation and transportation.

- To take samples for testing to determine mechanical and physical properties of materials.

- To investigate sources and suppliers of semi-products such as asphalt concrete, ready-mixed concrete, pre-cast members in terms of productivity, costs, transportation distances.

Estimated quantities of samples for testing:

#	Item	Quantity (quarry/sample)	Testing Contents

1	Filling soil	1/3	Mechanical and physical properties, particle analysis, compaction, production of specimens at compaction degree K95 and K98, cutting samples at production moisture and saturated moisture, CBR.
2	Filling sand	1/3	Particle analysis P%, Δ, standard compaction, CBR, angle of repose for sand – dry (αd), angle of repose for sand – wet (αw)
3	Construction sand	2/5	Particle analysis P%, contamination, fineness modulus.
4	Construction stone	1/8	Dry and saturated axial compression, Los Angeles abrasion, bonding with asphalt.

1.4.3. Survey of Disposal Areas:

To investigate locations of disposal of wastes during the construction stage, to determine these locations on map scaled 1/50,000, distance to the Site, area, possible volume of disposed wastes, agreement with local authority.

Estimated quantities: 2 places.

1.5. URBAN INFRASTRUCTURE SURVEY

In the Study Area, there are many urban infrastructure facilities. Some are under operation, some are under construction, and some are no more in use.

Urban infrastructure survey shall be included but not limited to the following items:

- Drainage system (drainage ditch, current status, etc.)
- Water supply system including potable water and raw water.
- Electric system including power transmission and power supply system.
- Communication system including communication cables and television cables.
- Other types of pipes and lines: fuel pipes, gas pipes, etc.
- Urban infrastructure survey shall be included but not limited to the followings:
- Name and type of facilities / works, operation and management agency
- Location of works / facilities on plan, locations of poles, man-holes, etc. determined by respective coordinates and stations;
- Dimension of facilities: diameter of pipe, size of man-hole, tank
- Elevations of facilities / works, heights of poles, wires, depths of tanks, man-holes, catch-basins, sums.
- Major design capacity or technical parameters of the facilities.
- Objectives of facilities.
- Current status of facilities.
- Other information, if any.
- All information of urban infrastructure shall be showed on interchange plan 1/500.

Estimated quantities: 40 works.

2. REGULATIONS OF CHANGES AND QUANTITY CERTIFICATION

The quantity writing in the survey is base on survey standard to determine and estimate. In performance process, the quantity basing on identify tophography, area trawl, etc...can change (added or minused). The variation quantity exceeding 10% must be agreed by major architech and survey chiefs. The requirements shall be summarized into report documents for reporting to major architech and survey chiefs. After that, a report shall be reported to the Client.

2.1. SUBMITTED SURVEY DOSSIERS

Collected and investigated documents, documents of checking machinery and equipment before delivering shall be checked on site and delivery for designer.

2.1.1. Topographic Investigation Dossiers

- Measurement survey report.
- Topographic plan and altitude plan of all route (including drawing and computer file).
- Axial section and cross section including drawings as required ratio and storage files in disks.
- Bridge cross-sections (including drawings and computer files). Measurement and survey notebooks.

2.1.2. Geological Survey Dossiers

- Plan of layout borehole.
- cylindrical borehole
- SPT testing results
- Geological profile along alignment and bridge centerline.
- Summarized results of physical indicators of soil and water layers after adjustment.
- Geological reports.

2.1.3. Signaling information Survey Dossiers

2.1.4. Submitted Dossiers Quantity

Each types of dossiers: 08 sets+02 sets that are archived in design agencies. Total: 10 sets.

2.2. Design Dossiers

Detailed design is estimated organize as follows:

- Volume I: General Report.
- Volume II: Drawing.
- Volume III: Appendix including calculated quantities; cost estimate; structural calculation (if applicable);

Total dossier sets submitted to the Client: as signed contract.

2.3. Safety Conditions

All survey works shall be complied with current safety process. In addition, safety assurance works are considered strictly in conducting measurements; however, these works shall not hinder traffic.

2.4. Work Quantity

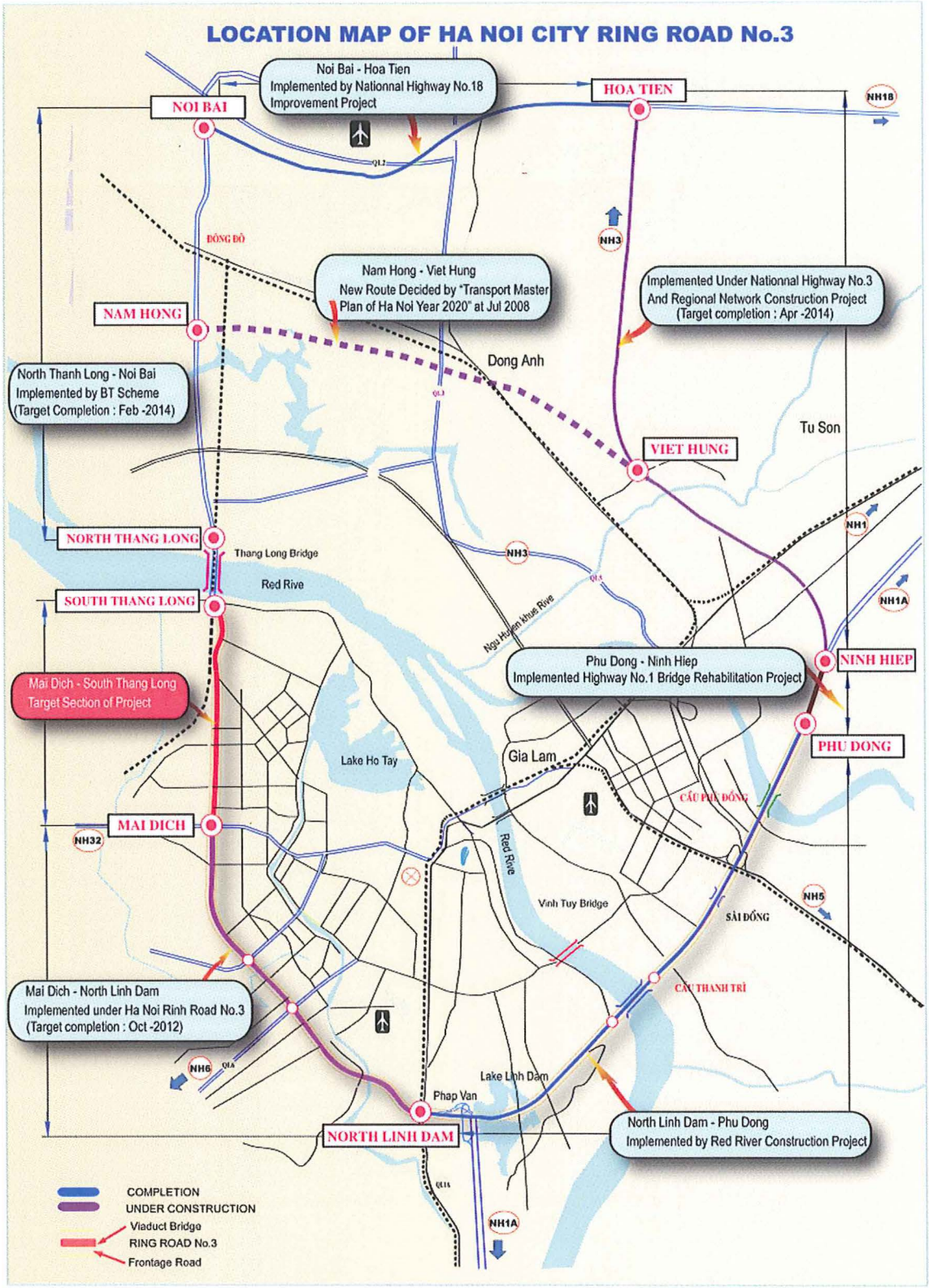
No.	Item	Unit	Currency	Quantity
I. Topographic Survey				
1	Measurement and drawing of vertical profile of alignment with rate 1/50; 1/500	100m	VND	55.00
2	Measurement and drawing of cross section of TL alignment with rate TL 1/200	100m	VND	165.00
3	Measurement of Elastic Modulus of Existing pavement	point	VND	20.00
4	Preparation of documents of topographic report (= 4% x ((1)+(2)+(3)))	%	VND	4%
5	Temporary accommodation (excluding cost of survey report) (= 3% of ((1)+(2)+(3)))	%	VND	3%
6	Translation report document from Vietnamese into English	page	VND	500.00
II. Geological survey				
1	***Geological drilling of viaduct***			
1.1	On-land drilling , depth from 0m to 60m	Borehole/m	VND	115/5175
	- Rock class I-III (estimate 70%)	m	VND	3,622.50
	- Rock class IV-VI (estimate 30%)	m	VND	1,552.50
1.2	Water pumping for rotary drilling, washing by on-land sample tube, depth of 60m, class I-III			
	Rock class I-III	m	VND	3,622.50
	Rock class IV-VI	m	VND	1,552.50

No.	Item	Unit	Currency	Quantity
1.3	SPT Test			
	Rock class I-III	times	VND	1,811.00
	Rock class IV-VI	times	VND	776.00
1.4	+ Determining water level in bore hole	hole	VND	115.00
1.5	Laboratory test			
	+ Undisturbed sample (9 ordinary criteria)	sample	VND	1,268.00
	+ Disturbed sample (7 ordinary criteria)	sample	VND	543.00
	+ Unconfined compression test	sample	VNDD	190.00
	+ Water sample in borehole test	sample	VND	4.00
2	***Geological drilling of retaining wall***			
2.1	On-land drilling , depth from 0m to 30m	Lk/m	VND	2/60
	- Rock class I-III (estimate 80%)	m	VND	48.00
	- Cấp đất đá IV-VI (dự kiến 20%)	m	VND	12.00
2.2	Water pumping for rotary drilling, washing by on-land sample tube, depth of 30m			
	- Rock class I - III	m	VND	48.00
	- Rock class IV - VI	m	VND	12.00
2.3	SPT Test			
	-Rock class I-III	point	VND	24.00
	-Rock class IV-VI	point	VND	6.00
2.4	+ Determining water level in bore hole	hole	VND	

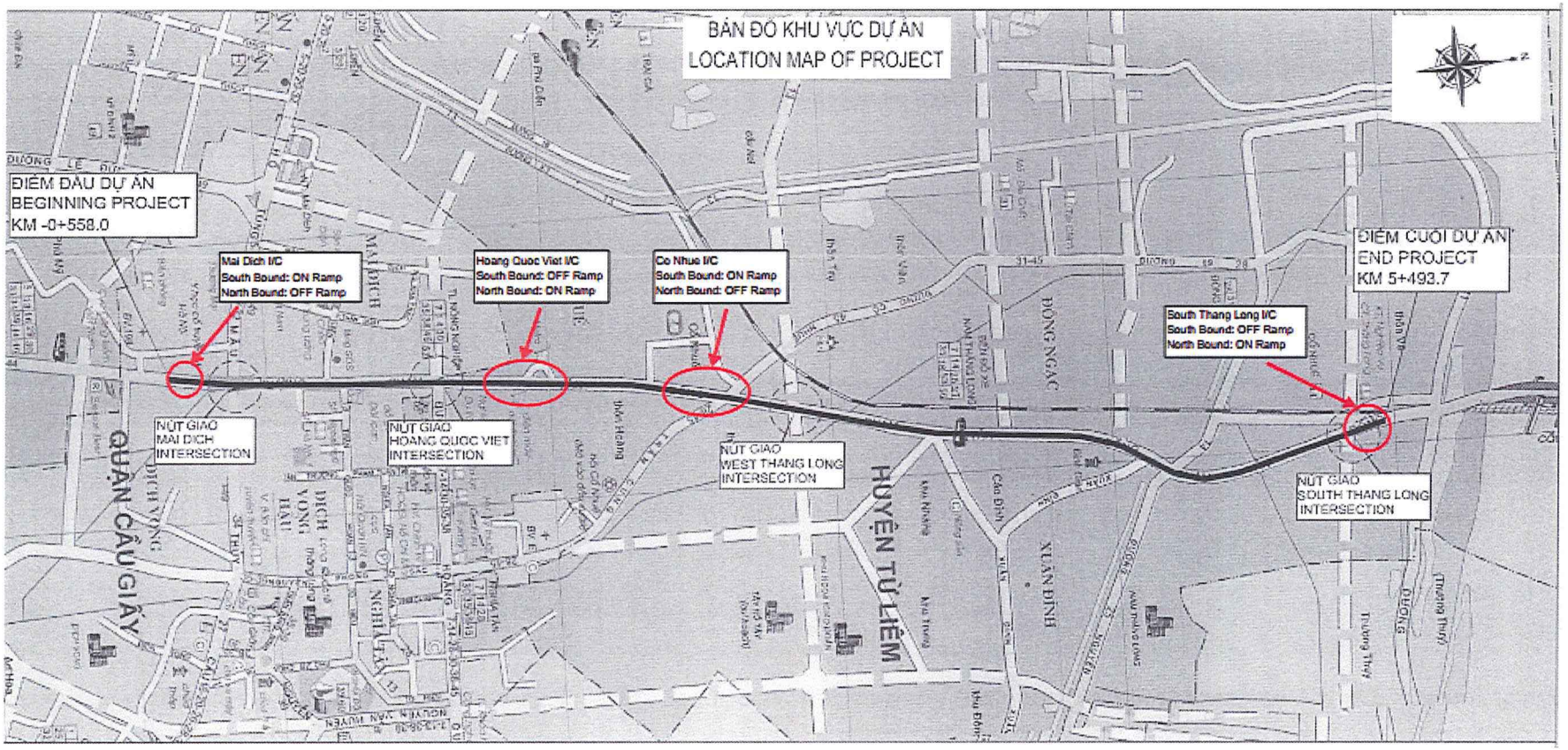
No.	Item	Unit	Currency	Quantity
				2.00
2.5	Laboratory test			
	+ Undisturbed sample (9 ordinary criteria)	sample	VND	15.00
	+ Disturbed sample (7 ordinary criteria)	sample	VND	6.00
	+ Unconfined compression test	sample	VND	8.00
	+ Triaxial Compression Test (consolidated, undrained) CU	sample	VND	2.00
	+ Triaxial Compression Test (consolidated, undrained) UU	sample	VND	2.00
	+ Consolidated Compression Test CV (application)	sample	VND	2.00
3	***Survey of material investigation***			
3.1	- On-site investigation into construction material 5 quarries x 5 working days/quarry (Factor 1.7x1.06)	work	VND	25.00
3.2	Backfilling soil Sample			
	- Determining physical criteria (7 ordinary criteria of undisturbed soil sample)	sample	VND	3.00
	- Compaction Standard	sample	VND	3.00
	- CBR	sample	VND	3.00
3.3	Sand Sample			
	- physical criteria	sample	VND	3.00
	- Compaction Standard	sample	VND	3.00
	- CBR	sample	VND	3.00
3.4	Construction Sand Sample			
	- Granular composition, Large modulus	sample	VND	

No.	Item	Unit	Currency	Quantity
				5.00
	- Fouling factor	sample	VND	5.00
	- Organic content	sample	VND	5.00
3.5	Building Stone			
	- dry axial and water saturation index	sample	VND	8.00
	- los Angeles abrasivity	sample	VND	6.00
3.6	spoil area survey ; labour 4,0/7	work	VND	10.00
4	Survey of underground and upper construction; labour 4,0/7	work	VND	40.00
5	Drafting and Vietnamese report (= 4% x ((1)+(2)+(3)+(4)))	%	VND	4%
6	Transalation of Vietnamese Report into English	page	VND	1,000.00
7	Temporary camp cost (= 3% x ((1)+(2)+(3)+(4)))	%	VND	3%
8	approval of authorized agencies, traffic safety (estimate)	ls	VND	1.00
III. Moving machinery and equipment and labours for serving topographical and geological survey				
1	Cars moving machinery and equipment in service for one(01) topographical survey group and three(03) geological survey groups/ (4 cars x 1 shift x 2 times turning back), car 5 tons	shift	VND	8.00
2	Labours moving back (4 groups x 8 people x 2 lv); labour 4,0/7	work	VND	64.00
	Sub-Total of Cost Survey			

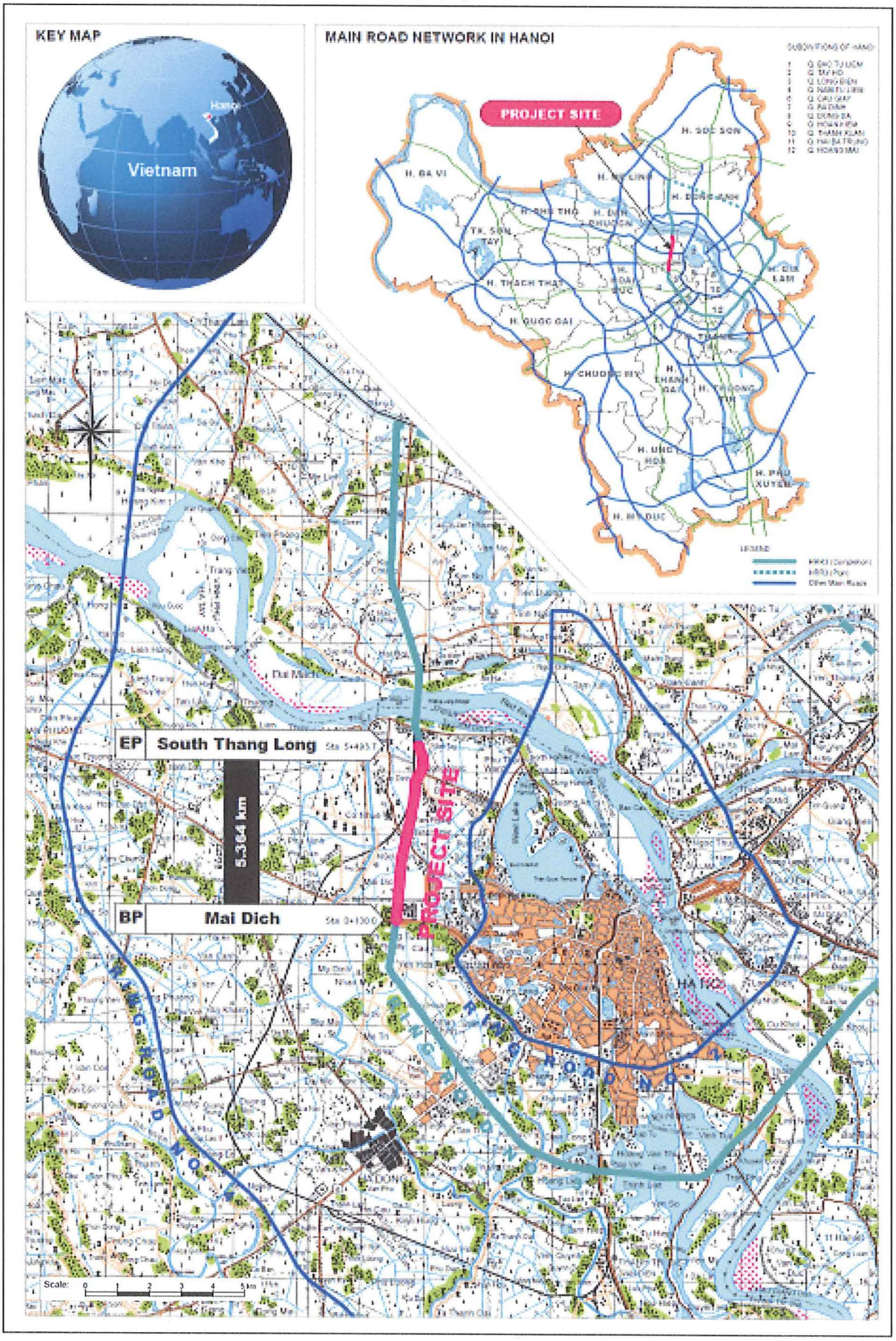
Attachment 1a: Project Location Map (Hanoi Ring Road No.3)



Attachment 1b: Project Location Map (Mai Dich – South Thang Long Section)



位置図


KEY MAP
Hanoi
Vietnam
MAIN ROAD NETWORK IN HANOI
PROJECT SITE
EP South Thang Long
5.364 km
BP Mai Dich
PROJECT SITE
Scale: 0 1 2 3 4 5 km

実行予算稟議書

基準日：2015/07/07　　部署　全体

予算区分	当初予算
売上計上区分	出来高基準

【稟議書】

プロジェクト番号	JA15R1003P	作業科目	全体	年度	総括
件名	ベトナム国ハノイ市環状3号線整備事業(マイジック-南タンロン区間)				
主管部	JN0100 開発事業部 道路橋梁部			担当者	A5414 前田　哲哉
分担部				業種	設計
受注先	ベトナム政府			資金源	独立行政法人国際協力機構円借款
作業国	ベトナム			形態	3　JVメイン
実工期	2015/07/01～2016/08/31	契約工期	2015/07/01～2016/08/31	円換算受注額	98,648,421

円貨/現地貨	通貨	受注金額	円換算受注金額
円貨	JPY	98,648,421	98,648,421

利益種目		今回 予算金額	今回 %	前回 予算金額	前回 %	差異
a.売上高		98,794,211		0		98,794,211
(円貨売上高)		98,794,211		0		98,794,211
(円、報酬・経費売上)		98,794,211		0		98,794,211
(内、分担調整額)		0		0		0
(内、持出)		0		0		0
(現地貨売上高)		0		0		0
b.変動費		41,567,725		0		41,567,725
(円貨変動費)		41,567,725		0		41,567,725
(現地貨変動費)		0		0		0
c.限界利益 (a-b)		57,226,486	57.9 %	0	0.0 %	57,226,486
(円貨限界利益)		(57,226,486)	(57.9 %)	(0)	(0.0 %)	(57,226,486)
(現地貨限界利益)		(0)	(0.0 %)	(0)	(0.0 %)	(0)
d.直接人件費		31,410,255		0		31,410,255
e.直接原価合計 (b+d)		72,977,980		0		72,977,980
f.直接作業利益 (30.0%) (c-d)	↓	25,816,231	26.1 %	0	0.0 %	25,816,231
g.生産性指数 ((c/d)*1000)		1,821		0		

プロジェクト概要

ハノイ市マイジック～南タンロン区間の既存街路上に約5.4kmの連続高架橋を建設する事業である。
今般は実施施設・入札支援業務のみの受注であり、後続の施工監理業務は別入札・現在EOIの最中である。
受注体制はNK-NE-NKVの3社JVであり、現地貨ポーションは全てNKVの受注となる。
従って、NKの受注分は報酬・旅費のみとなるため、生産性指数は基準値を下回る。

契約変更概要

予算変更概要

費目	実績額	今回 予算金額	今回 売上比	前回 予算金額	前回 売上比	差異
01.材料費	0	0	0.0 %	0	0.0 %	0
02.外注費・委託費	0	12,792,000	12.9 %	0	0.0 %	12,792,000
03.人件費	0	31,410,255	31.8 %	0	0.0 %	31,410,255
04.労務費	0	1,000,000	1.0 %	0	0.0 %	1,000,000
05.通信交通費	12,038	26,520,725	26.8 %	0	0.0 %	26,520,725
06.事務用品・複写費	0	100,000	0.1 %	0	0.0 %	100,000
07.福利厚生費	0	0	0.0 %	0	0.0 %	0
08.会議費	0	150,000	0.2 %	0	0.0 %	150,000
09.交際費	0	320,000	0.3 %	0	0.0 %	320,000
10.修繕維持費	0	0	0.0 %	0	0.0 %	0
11.動力用水光熱費	0	0	0.0 %	0	0.0 %	0
12.広告宣伝費	0	0	0.0 %	0	0.0 %	0
13.諸貸借料	0	0	0.0 %	0	0.0 %	0
14.保険料	0	400,000	0.4 %	0	0.0 %	400,000
15.減価償却費	0	0	0.0 %	0	0.0 %	0
16.地代家賃	0	0	0.0 %	0	0.0 %	0
17.租税公課	0	0	0.0 %	0	0.0 %	0
18.退職金	0	0	0.0 %	0	0.0 %	0
19.法定福利費	0	0	0.0 %	0	0.0 %	0
20.雑費	0	285,000	0.3 %	0	0.0 %	285,000
円貨合計	12,038	72,977,980	73.9 %	0	0.0 %	72,977,980
51.材料費	0	0	0.0 %	0	0.0 %	0
52.外注費・委託費	0	0	0.0 %	0	0.0 %	0
54.労務費	0	0	0.0 %	0	0.0 %	0
55.通信交通費	0	0	0.0 %	0	0.0 %	0
56.事務用品複写費	0	0	0.0 %	0	0.0 %	0
57.福利厚生費	0	0	0.0 %	0	0.0 %	0
58.会議費	0	0	0.0 %	0	0.0 %	0
59.交際費	0	0	0.0 %	0	0.0 %	0
60.修繕維持費	0	0	0.0 %	0	0.0 %	0
63.諸貸借料	0	0	0.0 %	0	0.0 %	0
66.地代家賃	0	0	0.0 %	0	0.0 %	0
67.租税公課	0	0	0.0 %	0	0.0 %	0
70.雑費	0	0	0.0 %	0	0.0 %	0
現地貨合計	0	0	0.0 %	0	0.0 %	0
直接原価合計	12,038	72,977,980	73.9 %	0	0.0 %	72,977,980
業務部記入欄	国外法人税	0		0		0

利益率低下理由(利益率低下の場合のみ)	
基準利益低下理由	特に無し(営業的理由を選択すること)
特記事項	総括・分担実行予算の直接作業利益が基準値を下回っているが、これは、①本邦他社が先行区間を継続受注していた案件に対してQCBSの価格競争下で受注したこと、②主管部の方針に基づき円借款事業において若手を育成するために橋梁技師1名を持ち出しで張り付けていること、が主因である。

プロジェクトチェックシート(全体)

プロジェクトコード	JA15R1003P		作成日	2015/07/07
件　名	ハノイ環状3号線マイジック～南タンロン区間実施設計			
記入者	社員番号	a5414	氏名	前田哲哉

契約額	計	社員分	借上分	備考
(1) 契約額(報酬分)	74,200,000	53,200,000	21,000,000	日当・宿泊費は(2)で計上
(2) 契約額(経費分)	24,594,211			
(3) 契約額　計	98,794,211	53,200,000	21,000,000	(3)=(1)+(2)

MM	計	社員	借上	備考
(4) 契約MM	40.0	28.0	12.0	
(5) 非契約MM(持出分MM)	9.1	9.06	0.0	前田:2.83M/M, 徳丸:6.23M/M
(6) MM　計	49.1	37.1	12.0	(6)=(4)+(5)

報酬分　見込み	金額	社員分	借上分	備考
(7) 契約額(報酬分)	74,200,000	53,200,000	21,000,000	
(8) 予算　人件費及び借上外注費	44,202,255	31,410,255	12,792,000	
(9) 予算　PIT	0	0	0	免除
(10) 報酬分利益	29,997,745	21,789,745	8,208,000	(10)=(7)-(8)-(9)
(11) 同利益率	40.4%	41.0%	39.1%	(11)=(10)/(1)

経費分　見込み	金額	率		備考
(12) 契約額(経費分)	24,594,211	100.0%		
(13) 経費分予算(除,借上外注費)	30,830,725	125.4%		
(14) 経費分利益	-6,236,514	-25.4%		(14)=(12)+(13)

利益　見込み	金額	利益率		備考
(15) 直接利益(事務手数料除く)	23,761,231	24.1%		
(16) 事務手数料(入金＋、支払－)	1,055,000			
(17) 直接利益(事務手数料含む)	24,816,231	25.1%		(17)=(15)+(16)

従来型予算指標	金額	率		備考
(a) 契約金額	98,794,211			
(b) 変動費	42,567,725	43.1%		
(c) 限界利益	56,226,486	56.9%		(c)=(a)+(c)
(d) 人件費	31,410,255	31.8%		
(e) 直接利益	24,816,231	25.1%		(e)=(c)+(d)
(f) 生産性	1,790			(f)=(c)/(d)x1000

指　標	計	社員分	借上分	備考(数値は目安)
(a) 報酬分利益	29,997,745	21,789,745	8,208,000	
(b) 報酬分利益率	40.4%	41.0%	39.1%	計＞55%、社員分＞60%、借上分＞50%
(c) 経費分利益	-6,236,514			
(d) 経費分利益率	-25.4%			＞▲5%
(e) 売上報酬比率	75.1%			＞60%
(f) 契約MMあたり報酬額	1,855,000	1,900,000	1,750,000	B/R
(g) 契約MMあたり報酬利益額	749,944	778,205	684,000	＞120万円
(h) 契約MMあたり直接利益額(除,事務手)	594,031			事務手数料除く、＞100万円
(i) 契約MMあたり直接利益額(含,事務手)	620,406			事務手数料含む、＞100万円
(j) 平均人件費・外注費	900,984	847,551	1,066,000	
(k) 持出MM	9.1	9.1	0.0	
(l) 持出比率	22.7%	32.4%	0.0%	(5)/(4)、＜10%
(m) 稼働MMあたり報酬額	1,512,434	1,435,510	1,750,000	実質B/R
(n) 稼働MMあたり報酬利益額	611,450	587,959	684,000	＞100万円
(o) 稼働MMあたり直接利益額(除,事務手)	484,330			事務手数料除く、＞100万円
(p) 稼働MMあたり直接利益額(含,事務手)	505,834			事務手数料含む、＞100万円

プロジェクトチェックシート(KR)

プロジェクトコード	JA15R1003P		作成日	2015/07/07
件　名	ハノイ環状3号線マイジック～南タンロン区間実施設計			
記入者	社員番号	a5414	氏名	前田哲哉

契約額	計	社員分	借上分	備考
(1) 契約額(報酬分)	42,175,000	21,175,000	21,000,000	日当・宿泊費は(2)で計上
(2) 契約額(経費分)	15,882,211			
(3) 契約額　計	58,057,211	21,175,000	21,000,000	(3)=(1)+(2)

MM	計	社員	借上	備考
(4) 契約MM	22.0	10.0	12.0	
(5) 非契約MM(持出分MM)	9.1	9.06	0.0	前田:2.83M/M, 徳丸:6.23M/M
(6) MM　計	31.1	19.1	12.0	(6)=(4)+(5)

報酬分　見込み	金額	社員分	借上分	備考
(7) 契約額(報酬分)	42,175,000	21,175,000	21,000,000	
(8) 予算　人件費及び借上外注費	26,057,269	13,265,269	12,792,000	
(9) 予算　PIT	0	0	0	免除
(10) 報酬分利益	16,117,731	7,909,731	8,208,000	(10)=(7)-(8)-(9)
(11) 同利益率	38.2%	37.4%	39.1%	(11)=(10)/(1)

経費分　見込み	金額	率		備考
(12) 契約額(経費分)	15,882,211	100.0%		
(13) 経費分予算(除,借上外注費)	21,320,236	134.2%		
(14) 経費分利益	-5,438,025	-34.2%		(14)=(12)+(13)

利益　見込み	金額	利益率		備考
(15) 直接利益(事務手数料除く)	10,679,706	18.4%		
(16) 事務手数料(入金＋、支払－)	1,055,000			
(17) 直接利益(事務手数料含む)	11,734,706	20.2%		(17)=(15)+(16)

従来型予算指標	金額	率		備考
(a) 契約金額	58,057,211			
(b) 変動費	33,057,236	56.9%		
(c) 限界利益	24,999,975	43.1%		(c)=(a)+(c)
(d) 人件費	13,265,269	22.8%		
(e) 直接利益	11,734,706	20.2%		(e)=(c)+(d)
(f) 生産性	1,885			(f)=(c)/(d)x1000

指　標	計	社員分	借上分	備考(数値は目安)
(a) 報酬分利益	16,117,731	7,909,731	8,208,000	
(b) 報酬分利益率	38.2%	37.4%	39.1%	計＞55%、社員分＞60%、借上分＞50%
(c) 経費分利益	-5,438,025			
(d) 経費分利益率	-34.2%			＞▲5%
(e) 売上報酬比率	72.6%			＞60%
(f) 契約MMあたり報酬額	1,917,045	2,117,500	1,750,000	B/R
(g) 契約MMあたり報酬利益額	732,624	790,973	684,000	＞120万円
(h) 契約MMあたり直接利益額(除,事務手)	485,441			事務手数料除く、＞100万円
(i) 契約MMあたり直接利益額(含,事務手)	533,396			事務手数料含む、＞100万円
(j) 平均人件費・外注費	838,933	695,974	1,066,000	
(k) 持出MM	9.1	9.1	0.0	
(l) 持出比率	41.2%	90.6%	0.0%	(5)/(4)、＜10%
(m) 稼働MMあたり報酬額	1,357,856	1,110,965	1,750,000	実質B/R
(n) 稼働MMあたり報酬利益額	518,922	414,991	684,000	＞100万円
(o) 稼働MMあたり直接利益額(除,事務手)	343,841			事務手数料除く、＞100万円
(p) 稼働MMあたり直接利益額(含,事務手)	377,808			事務手数料含む、＞100万円