



National Economic Development Authority
(NEDA)



Japan International Cooperation Agency
(JICA)



Department of Public Works and Highways
(DPWH)

Business Case / Feasibility Study

Yoichi SAKURADA Ph.D

Road PPP Planning expert

October 21st, 2010

Manila, Philippines

PREPARATORY SURVEY FOR
PUBLIC PRIVATE PARTNERSHIP (PPP)
INFRASTRUCTURE DEVELOPMENT PROJECT
IN THE PHILIPPINES



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PREPARATORY SURVEY FOR
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1. Outline of Business Case / Feasibility Study



1.1 General Flow of Business Case/Feasibility Study

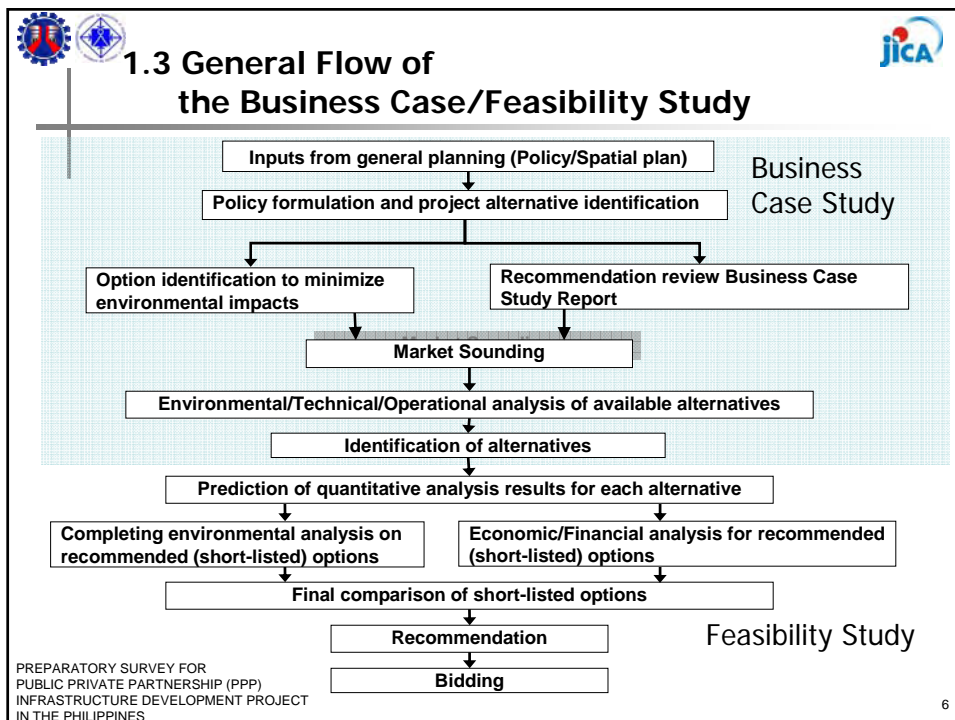
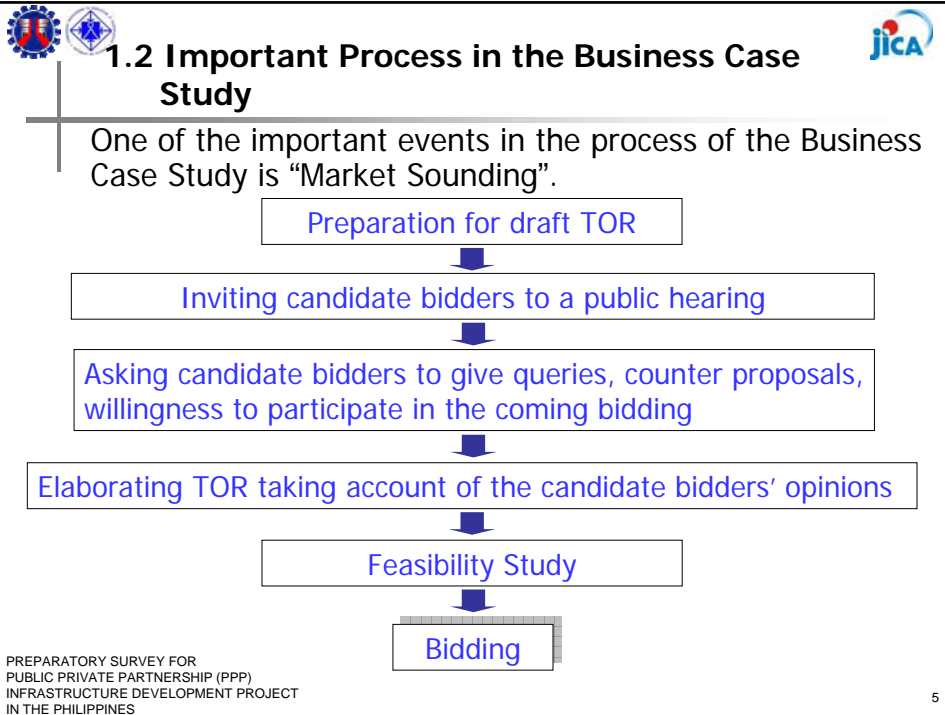
■ Business Case Study

- Formulate the project targets
- Select more than two feasible alternatives to be reviewed in feasibility study



■ Feasibility Study

- Technical / Economic / Environmental assessment for selected alternatives
- Select technically/economically / environmentally feasible alternatives
- Financial analysis, Risk analysis
- Identify optimum financial scheme for PPP





1.3 Technical / Economic / Financial Assessment in the Feasibility Study



■ Technical Assessment

- Identify basic design of the infrastructure through “**Demand Forecast**” (identify scale of the facility and basic structure to ensure the sufficient capacity of the planned infrastructure)

■ Economic Assessment

- Identify “**Project Costs**”
- Estimate “**User Benefits**”
- Verify economic feasibility through “**EIRR**”, “**CBR**”, “**NPV**” etc.

■ Financial Assessment

- Confirm “**Financial Viability**”
- Identify optimum “**Financial Scheme/PPP Modality**”



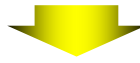
2. Technical Assessment



2.1 Aim and Outputs of Technical Assessment

■ Technical Assessment will be done through “Demand Forecast”

- To obtain the numerical basis for selecting prioritized projects from the view point of **expected number of users**
- To assess the appropriateness of the **scale, capacity** of the planned infrastructure and necessary **facility layout**
- To obtain the basic numerical data regarding **economic impact** of the specific projects



■ Major Outputs

- ✓ Number of expected users
- ✓ Appropriate scale and facility layout for planned infrastructure



3. Economic Assessment



3.1 Aim and Outputs

■ Aim of the Economic Assessment

- To obtain the outline of the **user benefit** and **project cost**
- To obtain the numerical basis for **economic feasibility** of the alternative infrastructure development plans



■ Major Outputs

- ✓ Project Costs
- ✓ User Benefit
- ✓ Economic Appraisal Results



3.2 Economic Appraisal Indices

■ User Benefit

- Typical user benefit can be obtained in terms of **reduction of: (1) travel time, (2) vehicle operation cost and (3) traffic accident**
- User benefit is estimated through total project period. The time span is equivalent to the durable years e.g., 20 to 30 years.

■ Project Cost

- Construction Cost
- Operation & Management Cost
- Financing Cost (debt repayment cost etc.)
- Project cost is estimated through total project period.

Both user benefit and project cost through the total project period is converted to the net present value (**NPV**) by using of "**Discount Rate**".



4. Financial Assessment



4.1 Terminologies

In general, the following terminologies are adopted in conversation among PPP financial specialists.

Conventional Expressions	PPP Expressions (Sophisticated)
Feasibility	Viability
Users	Off Takers
Sub-contractor	EPC Contractor
Financial Feasibility Test	Due Diligence (D/D)
Sensitivity Analysis	Stress Test
SPC (Special Purpose Company)	SPV (Special Purpose Vehicle)



4.1 Terminologies

Conventional expressions:

The project is financially **feasible** for toll road **users** as well as **sub-Contractors** according to the results of **financial feasibility tests** and **sensitivity analysis** conducted by the **SPC**.



Sophisticated PPP expressions:

The project is financially **Viable** for toll road **Off Takers** as well as **EPC Contractors** according to the results of the **Due Diligence** and **Stress Tests** conducted by the **SPV**.



4.2 Aim and Outputs

■ Aim of the Financial Assessment

➤ To confirm the financial viability for the target projects in terms of **overall costs (initial investment cost & O&M cost)** and **business revenue (toll revenue)**



■ Major Outputs

- ✓ Project Internal Rate of Return (PIRR or FIRR)
- ✓ Total Cash in-flow and out-flow
- ✓ Business profitability



4.3 Financial Viability Indices

- FIRR or PIRR (Financial or Project Internal rate of Return)
- LLCR (Loan Life Coverage Ratio)
=[Total Cash In-flow (post-tax) within total Project Period]
/ [Total Amount of Debt Service within total Project Period]
※LLCR must be larger than 1.0
- DSCR (Debt Service Coverage ratio)
=[Total Cash In-flow (post-tax) in a certain year]
/ [Total Amount of Debt Service in a certain year]
※DSCR must be larger than 1.0 in every year
- ROE (Return On Equity) =[Profit per Equity] / [unit amount of Equity]
- EIRR (Equity Internal Rate of Return)



4.3 Financial Viability Indices

- **Example of FIRR as a major criteria for deciding PPP scheme**

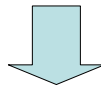
Indonesian Case

- 1) FIRR \leq 5% : The Government does the job
- 2) 5% < FIRR \leq 15% : PPP
- 3) 15% < FIRR : Private Company does the job

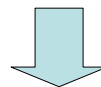


4.3 Financial Viability Indices

Is FIRR the only index for selection of project or deciding PPP scheme?



Definitely "NO". FIRR should be the one of referential indices



MCA (Multi Criteria Analysis) should be adopted.



4.3 Financial Viability Indices

MCA (Multi Criteria Analysis) indices

General Category	MCA category
Necessity	-Social Economic Benefit -Priority of Local Authority -Importance within Sectoral Plan -Contribution to Regional Vitalization
Profitability	-Financial Viability (FIRR) -Demand Generation Prospects -Demand Risks
Implementability	-Uncertainty of Construction -Readiness for ROW Acquisition -Environmental Impact



5. PPP Modalities



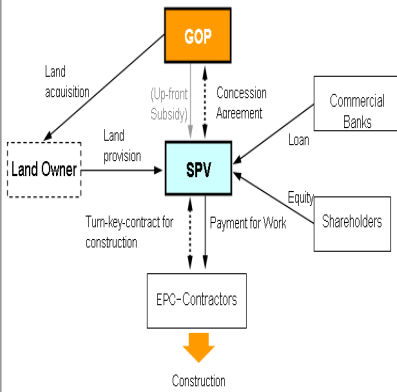
5.1 Considerable PPP Modalities

- BOT (pure one and subsidized one)
- Section Dividing Scheme
- Service Payment Scheme
- Lease Scheme

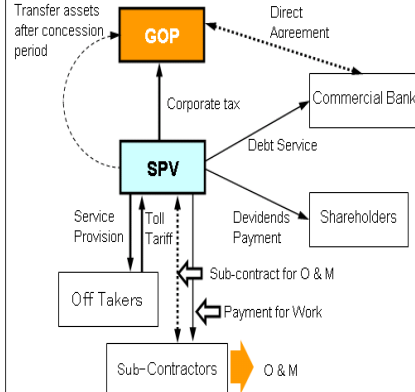


5.2 BOT

Construction Phase

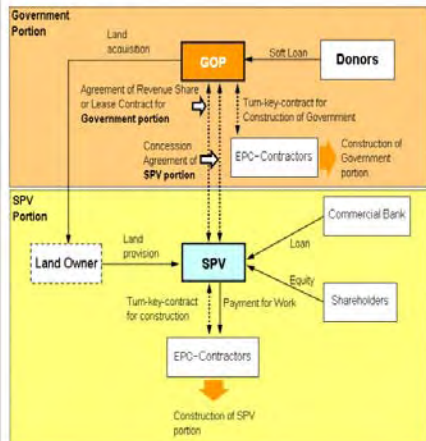


O & M Phase

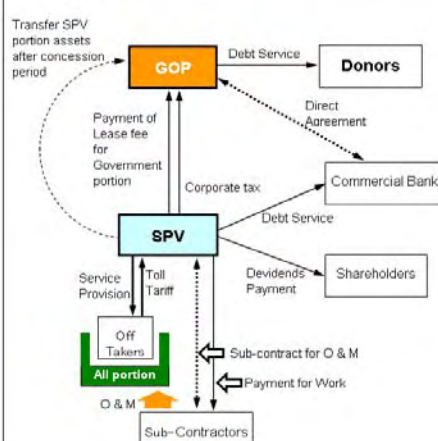


5.3 Section Dividing Scheme

Construction Phase

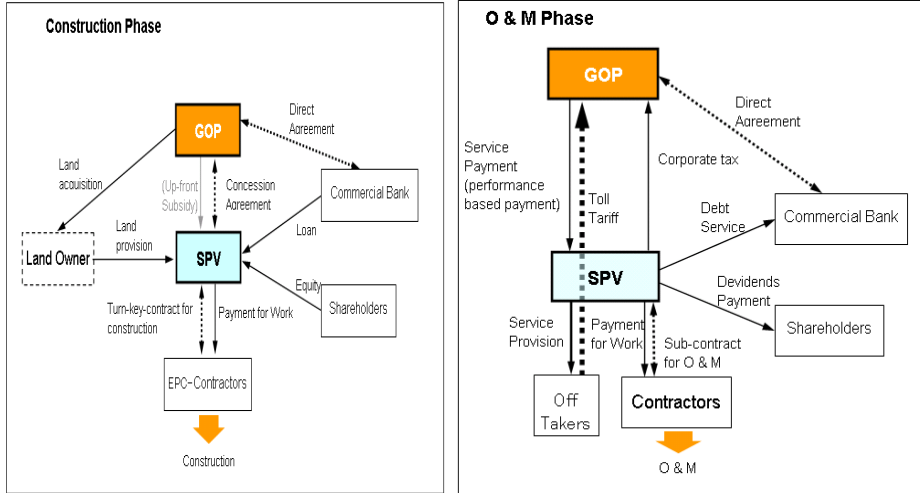


O & M Phase

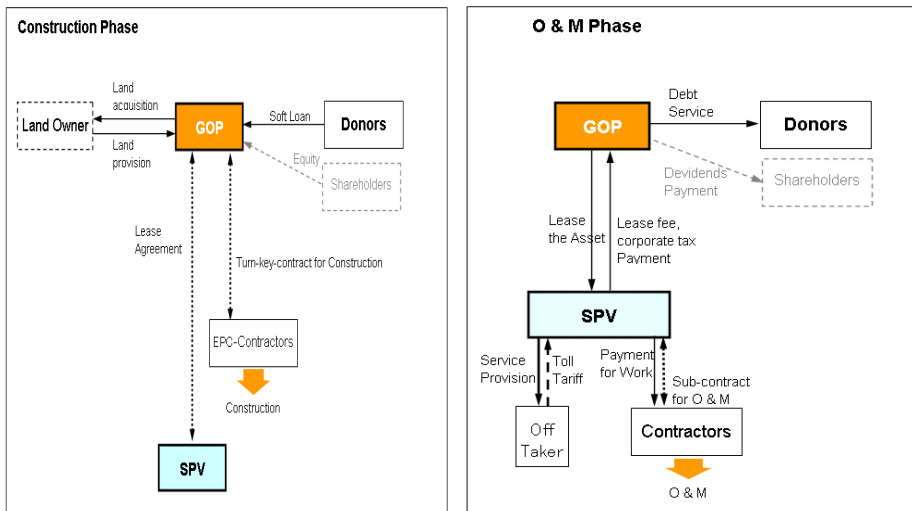




5.4 Service Payment Scheme



5.5 Lease Scheme





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Day 4: October 22

- Traffic Demand Forecast
- Risks and Risk Allocation



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Traffic Demand Forecast

Yoichi SAKURADA Ph.D

Expert on Road PPP Scheme Planning

October 22nd, 2010

Manila, the Philippines

PREPARATORY SURVEY FOR
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1. Outline of the Demand Forecast

2. Detailed Procedure



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1. Outline of the Demand Forecast


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1.1 Aim and Outputs of Demand Forecast

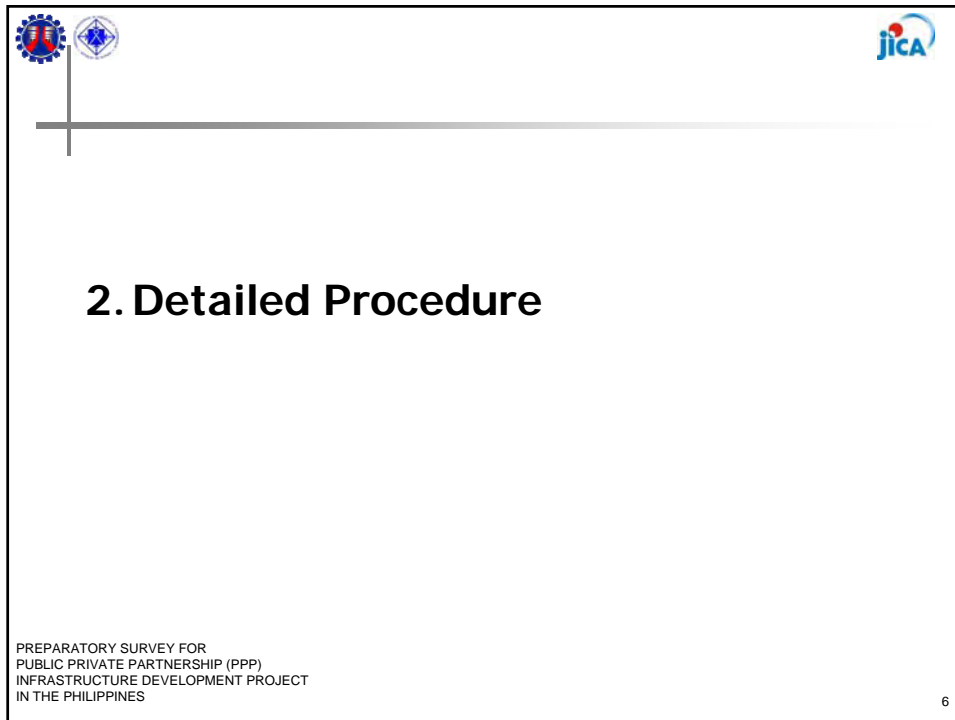
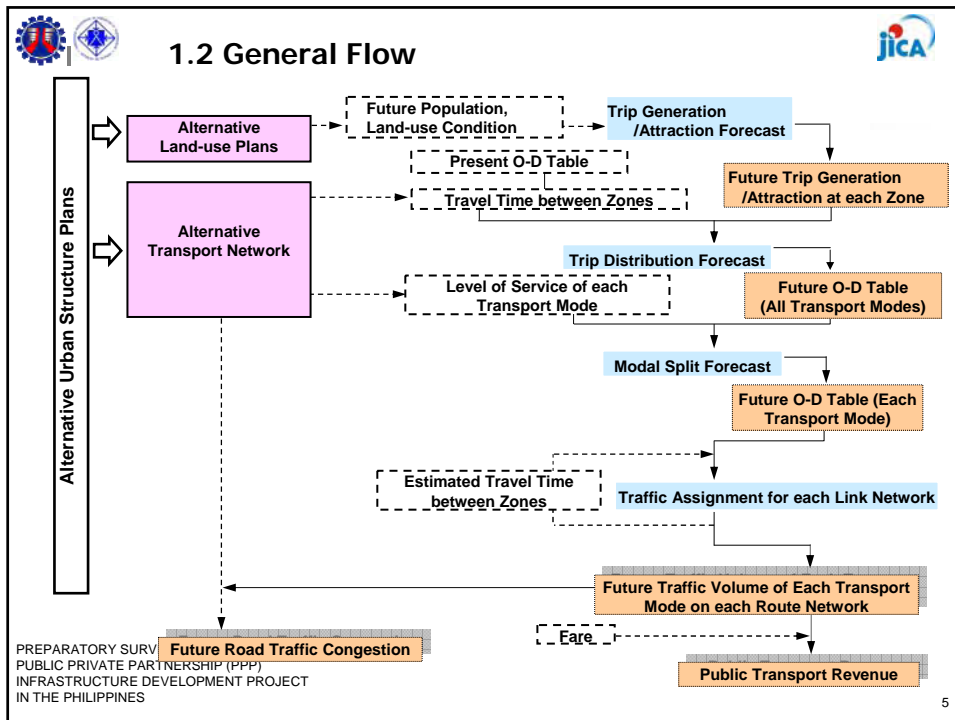
- **Aim of the Demand Forecast**
 - To obtain the numerical basis for selecting **prioritized projects** from the view point of **expected number of users**
 - To assess the appropriateness of the **scale, capacity** of the planned infrastructure and necessary **facility layout**
 - To obtain the basic numerical data regarding **economic impact** of the specific projects

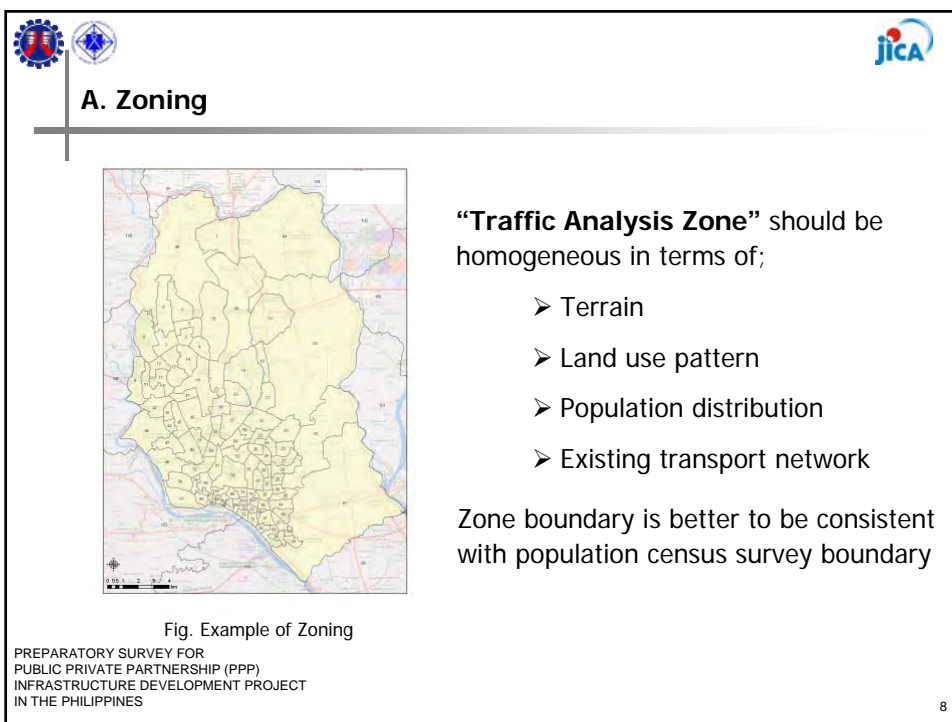
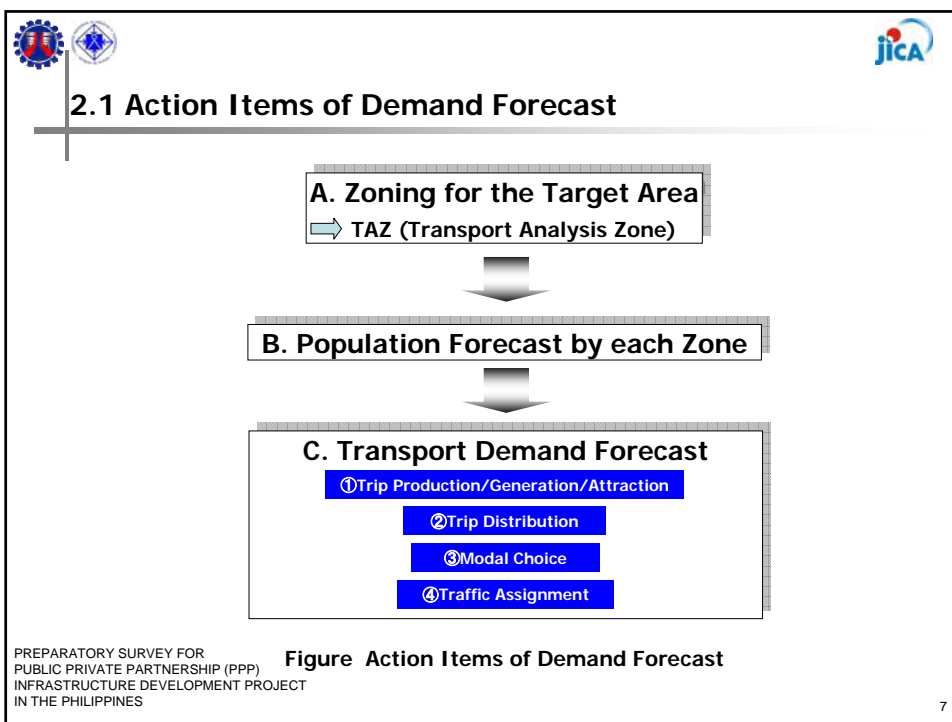


- **Major Outputs**
 - ✓ Number of expected users
 - ✓ Appropriate scale and facility layout for planned infrastructure

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B. Population Forecast

Legend

00000 - 10000	10000 - 20000
10000 - 30000	20000 - 40000
30000 - 50000	40000 - 60000
50000 - 70000	60000 - 80000
70000 - 90000	80000 - 100000
90000 - 110000	110000 - 120000
120000 - 130000	130000 - 140000
140000 - 150000	150000 - 160000
160000 - 170000	170000 - 180000
180000 - 190000	190000 - 200000
200000 - 210000	210000 - 220000
220000 - 230000	230000 - 240000
240000 - 250000	250000 - 260000
260000 - 270000	270000 - 280000
280000 - 290000	290000 - 300000
300000 - 310000	310000 - 320000
320000 - 330000	330000 - 340000
340000 - 350000	350000 - 360000
360000 - 370000	370000 - 380000
380000 - 390000	390000 - 400000
400000 - 410000	410000 - 420000
420000 - 430000	430000 - 440000
440000 - 450000	450000 - 460000
460000 - 470000	470000 - 480000
480000 - 490000	490000 - 500000
500000 - 510000	510000 - 520000
520000 - 530000	530000 - 540000
540000 - 550000	550000 - 560000
560000 - 570000	570000 - 580000
580000 - 590000	590000 - 600000
600000 - 610000	610000 - 620000
620000 - 630000	630000 - 640000
640000 - 650000	650000 - 660000
660000 - 670000	670000 - 680000
680000 - 690000	690000 - 700000
700000 - 710000	710000 - 720000
720000 - 730000	730000 - 740000
740000 - 750000	750000 - 760000
760000 - 770000	770000 - 780000
780000 - 790000	790000 - 800000
800000 - 810000	810000 - 820000
820000 - 830000	830000 - 840000
840000 - 850000	850000 - 860000
860000 - 870000	870000 - 880000
880000 - 890000	890000 - 900000
900000 - 910000	910000 - 920000
920000 - 930000	930000 - 940000
940000 - 950000	950000 - 960000
960000 - 970000	970000 - 980000
980000 - 990000	990000 - 1000000

- Population is forecasted by each **“Traffic Analysis Zone”**.
- Population is forecasted by using of the following orthodox formula:

$$[\text{future population}] = [\text{present population}] \times [\text{increase rate}]$$

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C. Transport Demand Forecast

- Conventional 4 step Procedure

STEP-1: Trip Production/Generation/Attraction

↓

STEP-2: Trip Distribution

↓

STEP-3: Modal Choice

↓



STEP-4: Traffic Assignment

↓

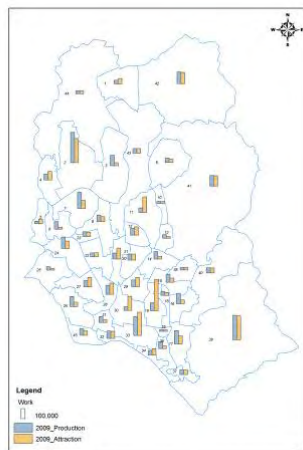
- Number of users on a specific route

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STEP-1: Trip Production/Generation/Attraction



➤ Trip production/generation/attraction is estimated corresponding to population distribution.



Basic Formula:

$$\sum[\text{Trip Generation}] = \sum[\text{Trip Attraction}]$$

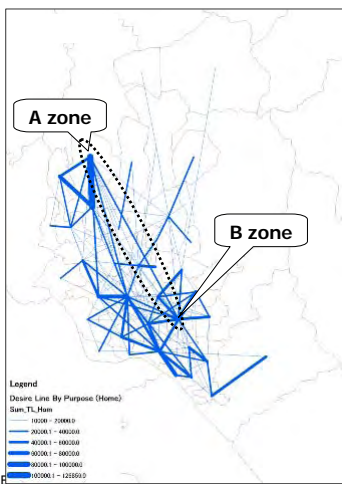
$$[\text{Trip Production}] = \sum[\text{Trip Generation}] + \sum[\text{Trip Attraction}]$$

PRE Fig. Example of Trip Generation/Attraction
PUBL
INFR. IN THE PHILIPPINES

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STEP-2: Trip Distribution



➤ Trip distribution is estimated in the form of “Origin-Destination” table or lines.

➤ The left figure shows the amount of trips from A zone to B zone.

➤ Thick bar means a large amount of trips.

PRE Fig. Example of Trip Distribution
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STEP-3: Modal Choice

- Modal choice is a share of usage of each transport mode. Modal choice corresponds to the “**Level Of Service (LOS)**” of the specific transport corridor with the specific transport mode.

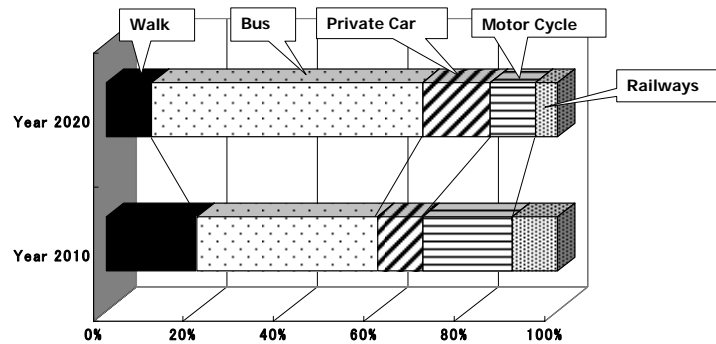
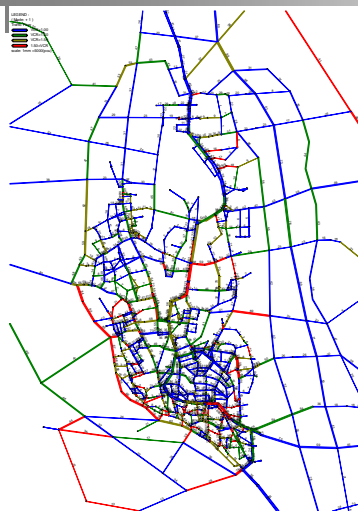


Fig. Example of Modal Choice




STEP-4: Traffic Assignment




- **Traffic assignment** is a traffic volume assigned on the specific transport route.
- On the basis of the results of the traffic assignment, number of users on specific transport route can be identified.
- Assigned traffic volume depends on not only the capacity of the transport corridor but also **toll level**. Such toll sensitivity should be carefully examined as to traffic assignment on toll roads.

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2.2 Basic Outputs of the Transport Demand Forecast

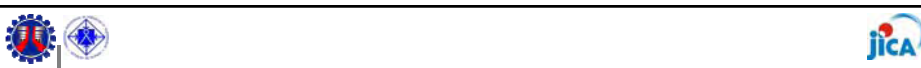
- **Forecasted Transport Demand**
 - **Number of users** of specific transport mode on specific corridor
 - **Number of vehicles** running on the specific transport corridor



- **Basic Design of the Planned Infrastructure**
 - **Scale** of the planned infrastructure to accommodate forecasted number of users
 - Scale is expressed in terms of e.g., number of lanes, width, routes, basic structure in case of road infrastructure

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Risk and Risk Analysis

Yoichi SAKURADA
Expert on PPP Scheme Planning

October 22nd, 2010
Manila, the Philippines

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Contents



1. What is "Risk" ?
2. What is "Risk Analysis"?
3. Principle of Risk Allocation
4. Methodology of "Risk Analysis"

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1. What is "Risk" ?

Definition:

- A risk is a fundamental feature of any public-private-partnership.
- It substantially influences the overall project cost.
- A risk comes from the uncertainty of the assumptions on which estimates of project future revenue and costs have been based.
- A risk can be characterized by its two main components, i.e. **the probability of its occurrence** and **its magnitude**.



2. What is "Risk Analysis"?

Clear and appropriate risk allocation in PPP contract is the most important factor for successful PPP Project

- ◆ **Unclear risk allocation in the PPP contract bring future dispute between Public and Private sector.**
 - ✓ E.g. If the compensation or guarantee by government and private sector in case of default is not clearly mentioned in the contract, each time default occurs, both party need to decide through negotiation. It might take tremendous amount of time and cost in order to reach an agreement.
- ◆ **Inappropriate risk allocation increase overall project cost.**
 - ✓ E.g. If government transfer the risk which private company cannot manage well, it cost a lot for a private company to deal with the risk and make the overall project cost extremely high.



Clear and appropriate risk allocation in the PPP contract need to be formulated through "Risk Analysis",



3. Principle of Risk Allocation

Risk should be allocated to the party who can manage the risk better.

◆ **Basically, the party who does the job should take the risks which are related to the job.**

✓E.g. Constructor should take the risk which is related to construction because they can control the risk better.

◆ **The risk which no one can manage might be shared.**

✓E.g. Force Majeure such as earthquake can be shared by government and private.



4. Methodology of "Risk Analysis"

Risk Analysis Process

Step 1: Risk Identification



Step 2: Risk Mitigation



Step 3: Risk Allocation



Step 4: Quantification of Risk



4. Methodology of "Risk Analysis"

Step 1: Risk Identification

- ◆ **Risk identification** is the task to list up all the risk which can occur during project
 - ✓ This task can be done by "Risk Workshop" (e.g. Public officers, engineers, financial advisors, lawyers, staff from insurance company etc.)
 - ✓ This task can be **repeated** as project goes forward.
- ◆ **Brain Storming**
 - ✓ In Risk Workshop, the members can do brain storming on a certain subject.
- ◆ **Statistical Data & Interview**
 - ✓ Risk can be identified by using statistical data such as the historical number of accident by types of construction.
 - ✓ Interview to specialist or risk manager who joined similar project before.



4. Methodology of "Risk Analysis"

Step 1: Risk Identification

- **Background Risks:** the risks which do not link to the project but rather to the target country
- **Project Cost Risks:** the risks which exceed initial cost estimates for the construction or operation and maintenance of the project
- **Commercial Risks:** the risks which come out depending on the traffic and toll rates applied



(1) Background Risks

Risk Categories	Types of the Risks
Political, Legal, Institutional and Regulatory Risk	Change of law
	Resort to legal action by the third parties
	Conflict between the central government and local authorities
	Breach of the contract due to change of political situation
	Cancelation of approval
Social Risk	Change of social acceptance
Economic Risk	Occurrence of macro economic crisis
	Financial crisis
	Currency devaluation
	Energy supply crisis
Force Majeure	Acts of God risks e.g. earthquake, flood, fire etc.
	Trade embargo
	Armed conflict/War
	Occurrence of riot



(2) Project Cost Risks

Risk Categories	Types of the Risks
Project Preparation Risk	Delay or failure of the project preparation
Land Acquisition Risk	Delay or failure of land acquisition
	Increase of land acquisition cost
	Obstruction of the moving inhabitants
Environmental Risk	Contamination of natural resources
Design Risk	Excessive design
	Design error
	Technology risks
Construction and Repair Risk	Cost overrun
	Delay of completion of the construction
	Poor quality of the construction
	Conflicts among sub-contractors
Financial Risk	Increase of the material price
	Increase of interest rates
	Increase of O&M cost



(3) Commercial Risks

Risk Categories	Types of the Risks
Traffic Demand Risk	Lower demand level than expected
Toll Risk	Lower level of the toll acceptance than expected
	Unpaid toll by road users
	Un-approval of toll adjustment
Road Network Risk	Decreasing traffic volume due to change of road network



4. Methodology of "Risk Analysis"

Step 2: Risk Mitigation

- ◆ Discuss about the possibility of **risk mitigation**
 - ✓ **Mitigating the occurrence** of accidents (e.g. Training on safely for construction workers in order to reduce the accidents during construction)
 - ✓ **Mitigating the impact** of incidents (e.g. Insure construction workers)
- ◆ Change the Importance of Risk regarding to the result of risk mitigation
- ◆ Risk Mitigation by itself **increase VFM (Value For Money)**
 - ✓ Cost for risk mitigation and expected reduction of risk cost need to be compared carefully.



4. Methodology of "Risk Analysis"

Step 3: Risk Allocation

- ◆ Risk should be allocated to the party who can manage the risk better
- ◆ Basically the party who does the job should take the risks which are related to the job.



Step 3: Risk Allocation

Risk Categories	Risk Allocation	
	Public Entity	Private Entity
Background Risks		
Political, Legal, Institutional and Regulatory Risk	●	-
Social Risk	●	-
Economic Risk	●	-
Force Majeure	●	-
Project Cost Risks		
Project Preparation Risk	●	-
Land Acquisition Risk	●	-
Environmental Risk	●	●
Design Risk	-	●
Construction and Repair Risk	-	●
Financial Risk	-	●
Commercial Risks		
Traffic Demand Risk	●	●
Toll Risk	●	●
Road Network Risk	●	-



4. Methodology of "Risk Analysis"

Step 4: Quantification of Risk

- ◆ Only the important risk can be the target of quantification
 - ✓ It is not effective to quantify all the risks which we have identified.
 - ✓ Some important risks cannot be quantified, however these risks should be considered in qualitative analysis

- ◆ Typical methods of quantification of risk are the followings:
 - Simple probability Impact Analysis
 - Scenario Analysis
 - Monte Carlo Simulation



4. Methodology of "Risk Analysis"

Step 4: Quantification of Risk

Simple Probability Impact Analysis

$$\text{Risk Cost} = \text{Probability} \times \text{Impact}$$

◆ Case Study

The probability of delay of construction is 10% and impact is 50 billion Peso

$$10\% \times 50 \text{ billion Peso} = 5 \text{ billion Peso} = \text{Risk Cost}$$



4. Methodology of "Risk Analysis"

Step 4: Quantification of Risk

Scenario Analysis

- ◆ In order to simulate the "impact" of risk more accurately, scenario analysis can be utilized. Typically the following 3 scenarios can be made.

Best Case : Impact is small

Most typical Case : Impact is the most typical amount

Worst Case : Impact become the biggest



4. Methodology of "Risk Analysis"

Step 4: Quantification of Risk

Monte Carlo Simulation

- ◆ Monte Carlo Simulation is **statistical method** which adopt random variables. Application Software such as "Crystal Ball" or "@Risk" need to be used.



4. Methodology of "Risk Analysis"

Step 4: Quantification of Risk

Present Value of Risk Cost

- ◆ Since the risk cost occur during a project period, risk cost need to be converted into **present value**.
- ◆ **Present value is calculated by the following formula.**

$$x/(1+i)^t \quad x = \text{nominal value of risk cost, } i = \text{discount rate} \\ t = \text{year of project}$$

Risk (in terms of cost [billion Peso])	1 st year	2 nd Year	3 rd Year
Delay of Construction	1	1.5	2.5
Present Value (discount rate 10%)	1	1.24	1.88

Present value of risk cost = 1+1.24+1.88=4.12 billion Peso



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Day 5: October 26

- Financial Analysis

**PREPARATORY SURVEY
for
Public Private Partnership (PPP)
Infrastructure Development Projects
in the Republic of the Philippines**

***Pilot Training
Financial Analysis***

Mikio OKANO

JICA Study Team

October 26th, 2010



National Economic Development Authority
(NEDA)



Japan International Cooperation
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(DPWH)

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◆ Aim of the Course



This basic course on “Financial Analysis” aims to provide the participants with:

- 1) Understandings on overall procedure of financial analysis for Public Private Partnership (PPP) road project
- 2) Key principles for financial analysis framework including:
 - (i) financial analysis items
 - (ii) requisite parameters and data
 - (iii) technical procedure for financial analysis



Contents

- 1. What's "Financial Analysis"?**
- 2. Analysis of "Internal Rate of Return" (IRR)**
- 3. Analysis of "Net Public Expenditure Reduction" (NPER)**
- 4. PPP Modality Evaluation**



1. What's "Financial Analysis"?



1.1 Aim of Financial Analysis

■ Aim of Financial Analysis

- To clarify whether target road project is financially viable as PPP project or not.
- To clarify whether target PPP project is eligible as equity investment or not.
- To clarify whether public expenditure is reduced or not by adoption of PPP scheme.
- To identify what PPP modality can satisfy such conditions as above.

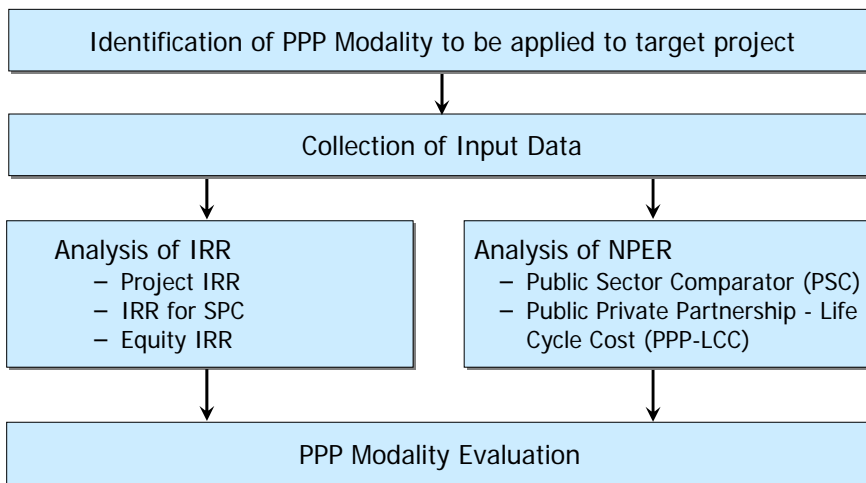
■ Financial Analysis Items

- Analysis of "Internal Rate of Return" (IRR)
- Analysis of "Net Public Expenditure Reduction" (NPER)

- PPP Modality Evaluation



1.2 Structure of Financial Analysis





1.3 Identification of PPP Modality

➤ PPP Modalities should be identified with existing cases and legal framework. In our study, it is identified as below.

	Type 1 Pure BOT	Type 2 BOT with subsidy	Type 3 Segment Dividing		Type 4 Service Payment	Type 5 Lease
			With Lease Fee	Without Lease Fee		
ROW acquisition & Project Administration	GOP (Government of Philippine)					
Finance & Construction	Private	Private with subsidy by GOP (up to 50%)	GOP/Private		Private	GOP
O&M	Private					
Holder of Toll tariff Revenue	Private				GOP	Private
Payment to GOP. by Private	No		Yes (Lease Fee)	No		Yes (Lease Fee)

INFRASTRUCTURE DEVELOPMENT PROJECT



1.4 Collection of Input Data

➤ The following items are needed for financial analysis. (The details are mentioned in the following pages)

- Implementation/Operation Schedule
 - Work schedule,
 - Disbursement Schedule
- Toll tariff
 - Traffic Demand Forecast
 - Toll Rate
- Project Costs
 - ROW acquisition, Civil Work and Detailed Design etc
- Operation and Maintenance Costs
- Other Costs
 - Insurance Fee
 - Financing Charge
- Price Contingencies (Price Rising)
- Financing Structure
 - Equity/Debt Ratio
 - Interest rate (for government and private)
 - Loan Tenure (Repayment Period, Repayment Structure, etc)
- Depreciation
- Taxation
 - Corporate Income Tax Rate etc



2. Analysis of “Internal Rate of Return” (IRR)



2.1 What's "Internal Rate of Return" (IRR) ?

Definition of "Internal Rate of Return" (IRR)

- IRR is a discount rate when the discounted amount of the revenue with the discount rate is equal to the discounted amount of the capital and operating costs with the same discount rate.
- IRR is a rate which satisfies the following formula ;

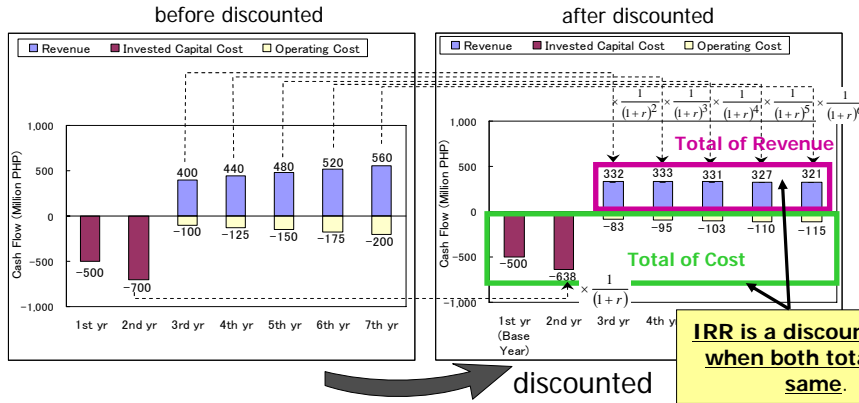
$$\sum \frac{R_i - I_i - C_i}{(1 + IRR)^i} = 0$$

whereby R_i = Revenue at the year i
 I_i = Invested Capital Costs at the year i
 C_i = Operating Costs at the year i



2.2 Concept diagram of IRR calculation

Example of Cash Flow for IRR calculation



- In economics, a future cash flow must be discounted in order to evaluate at the present value. Because present money has higher value than money in the future even if the same quantity of money.



2.3 What's meanings of IRR ?

IRR means the maximum financing cost (e.g. interest rate and return of equity) to keep target PPP project financially viable.

To secure financial viability

**Actual financing cost
(e.g. interest rate, return of equity) < IRR**

Example: when IRR of a PPP project is 5%

➔ Actual interest rate of the debt service for the project **must be less than 5%** to secure the financially viable.

Therefore, the higher IRR is obtained, the more desirable PPP project becomes financially.



2.4 Example of IRR calculation



Simple case study for understanding basic IRR calculation

- Project Schedule
 - Investment period : 1st & 2nd year
 - Operation period : 3rd to 7th year
- Revenue from toll tariff
 - 400 million PHP at the first operation year,
 - and 40 million PHP increase at every year.
- Invested Capital Costs
 - 1st year : 500 million PHP,
 - 2nd year : 1,000 million PHP
- Operating Costs
 - 50 million PHP at the first operation year,
 - and 5 million PHP increase at every year.



2.4 Example of IRR calculation



Simple case study for understanding basic IRR calculation

Cash Flow Table

Year	Investment Period		Operation Period					Total
	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr	7th yr	
Ri: Revenue			400	440	480	520	560	2,400
Ii: Invested Capital Cost	500	1,000						1,500
Ci: Operating Cost			50	55	60	65	70	300
Cash Flow (=Ri - Ii - Ci)	-500	-1,000	350	385	420	455	490	600
IRR	10.4%							

To obtain higher value of IRR, **higher revenue** and **lower capital and operating costs**

are needed.

For instance, IRR is calculated with financial function "IRR" installed in Excel.



2.5 Types of IRR

(1) Definitions

Project IRR

- It is a basic indicator to analyze financial viability of target project regardless PPP modality.

IRR for SPC

- It is an IRR for private sector (Special Purpose Company : SPC) with PPP scheme.
- It is calculated with revenue and cost for SPC which is subtracted public sector financing target PPP project.

Equity IRR

- It is an IRR against equity investment, and it is an indicator for equity investors to determine whether target PPP project is eligible or not.



2.5 Types of IRR

(2) Calculation Formula for each type of IRR

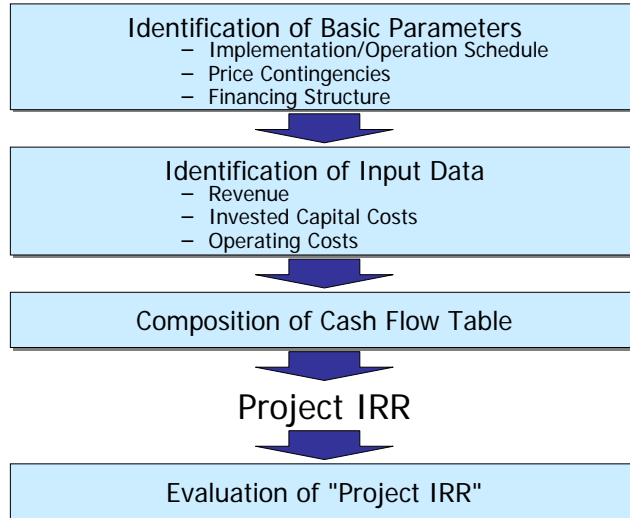
- Project IRR is calculated with cash flow of whole project.
- IRR for SPC is calculated with cash flow for only SPC.
- Equity IRR is calculated with cash flow for only equity investors.

Project IRR	IRR for SPC	Equity IRR
$\sum \frac{R_{0i} - I_{0i} - C_{0i}}{(1 + Project\ IRR)^i} = 0$	$\sum \frac{R'_i - I'_i - C'_i}{(1 + IRR\ for\ SPC)^i} = 0$	$\sum \frac{(D_i - E_i)}{(1 + Equity\ IRR)^i} = 0$
R_{0i} : Revenue from Toll Tariff at year i	R'_i : Revenue for SPC at year i	D_i : Dividend for investor at year i ($= R'_i - I'_i - C''_i$)
I_{0i} : Whole invested capital costs for target project including ROW acquisition cost at year i	I'_i : Invested capital costs by SPC at year i	* C''_i is including loan amortization
C_{0i} : Whole operating costs at year i	C'_i : Operating costs paid by SPC at year i	E_i : Equity investment from investor



2.6 "Project IRR" Calculation

(1) Calculation Flow



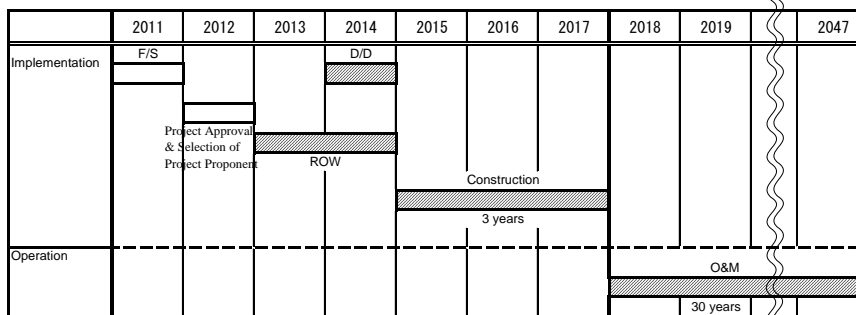
2.6 "Project IRR" Calculation

(2) Basic Parameter

■ Implementation/Operation Schedule

- In our study, it is supposed as below.

The supported work schedule





(2) Basic Parameter (Cont.)

■ Price Contingencies

- It should be applied to Capital costs, Operation & Maintenance Costs.
- In our study, it is supposed that Price Contingencies are **5% per annual**.

■ Financing Structure

- In our study, it is supposed as bellow.

Equity	30% of capital costs	
Debt	Loan from Commercial bank	70% of capital costs
	Repayment Period	10 years
	Grace Period	None
	Interest Rate	10% (Fixed)
	Repayment Structure	Even annuity basis
	Financial Charge fee for Loan	0.3% of Loan at the first disbursement year only



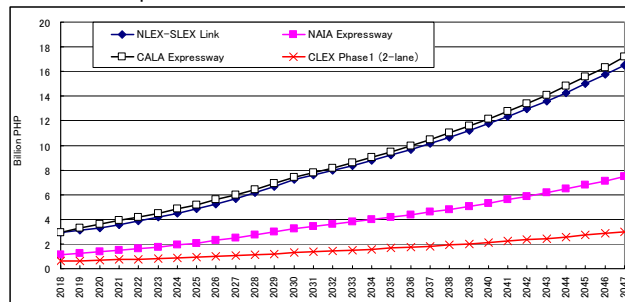
(3) Identification of Input Data

a. Revenue from Toll tariff

- It is calculated with the results of Traffic Demand Forecast.
- Toll Rate should be also adjusted on an assumption of Traffic Demand Forecast during the operation period.

$$\text{Revenue from Toll tariff} = \sum (\text{Traffic volume} \times \text{Toll Rate})$$

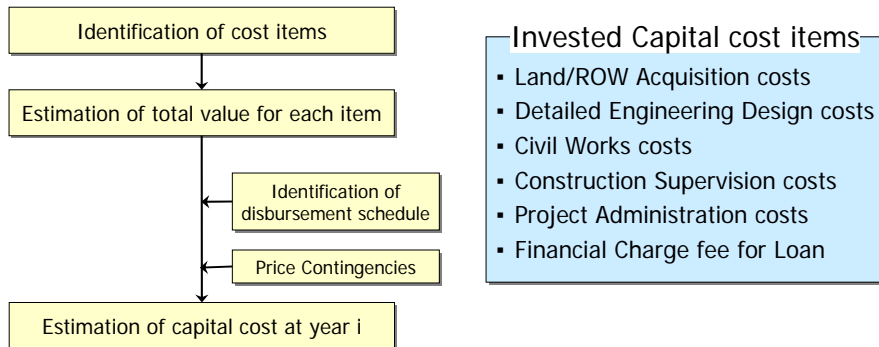
Examples of estimation of Revenue from Toll Tariff





b. Invested Capital Costs

- Invested capital costs is calculated with the following procedure.
- Invested capital costs consist of following items including civil works.
- Implementation and Disbursement schedule should be also identified as well as total value of each item.
- Price contingencies should be also considered.



c. Operating Costs

- Operating Costs consist of O&M Costs, Insurance Fee and Corporate Income Tax.

■ Operation & Maintenance (O&M) Costs

- O&M Costs should be determined in consideration of O&M costs of the existing toll road, length of target road and number of lanes etc.
- O&M Costs would rise gradually due to traffic increase, wear and tear.
- Price Contingencies should be also considered.

- Operation Cost ——— Toll Collection Cost etc
- Maintenance Cost ——— Routine Maintenance
 └── Periodic Maintenance (e.g. at every 10 years)



c. Operating Costs

■ Insurance Fee

In our study, it is supposed that Annual Insurance Fee is 0.075% of value of depreciable assets.

- ◆ Depreciable assets mean total capital cost excluded ROW acquisition and Project Administration Cost.

■ Corporate Income Tax

= Taxable Income × Corporate Income Tax Ratio
when Taxable Income is surplus.

- Tax Ratio is supposed to be 30% in our study.
- Taxable Income = (Revenue - O&M Costs) – (Annual Insurance Fee + Depreciation + Loan Amortization for interest)



d. Example of Cash Flow Table

Cash Flow Table for "Project IRR" in case of "CALA Expressway"

(Unit: Billion PHP)

year		1st yr	2st yr	3st yr	4st yr	5st yr	6st yr	7st yr	8st yr	9st yr	10st yr	11st yr	12st yr	33st yr	34st yr	35st yr	total	
Outflow	Capital Costs	0.66	2.08	4.47	9.26	9.72	-	-	-	-	-	-	-	-	-	-	-	26.19
	ROW Acquisition	0.49	1.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.69
	Detailed Design	-	0.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.77
	Civil Works	-	-	4.04	8.47	8.90	-	-	-	-	-	-	-	-	-	-	-	21.41
	Construction Supervision	-	-	0.32	0.68	0.71	-	-	-	-	-	-	-	-	-	-	-	1.71
	Project Administration	0.11	0.11	0.11	0.11	0.11	-	-	-	-	-	-	-	-	-	-	-	0.55
	Financial Charge	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05
	O&M Costs	-	-	-	-	-	0.33	0.35	0.37	0.41	0.43	0.47	0.50	-	2.25	2.38	8.41	43.91
	Annual Insurance Fee	-	-	-	-	-	0.02	0.02	0.02	0.02	0.02	0.02	0.02	-	0.02	0.02	0.02	0.54
	Corporate income Tax	-	-	-	-	-	-	0.11	0.26	0.38	0.51	0.65	0.81	-	3.84	4.04	2.48	58.42
	total	0.66	2.08	4.47	9.26	9.72	0.34	0.48	0.65	0.80	0.96	1.14	1.33	6.11	6.44	10.91	129.06	
Inflow	Revenue	-	-	-	-	-	2.95	3.28	3.64	3.91	4.20	4.50	4.84	15.56	16.35	17.17	267.28	
	total	-	-	-	-	-	2.95	3.28	3.64	3.91	4.20	4.50	4.84	15.56	16.35	17.17	267.28	
	Net Income (=Inflow-Outflow)	-0.66	-2.08	-4.47	-9.26	-9.72	2.61	2.80	2.99	3.10	3.23	3.36	3.51	9.45	9.91	6.27	88.22	

Project IRR 12.51%



e. Evaluation Criteria of Project IRR

- Target project is considered to be **financially viable when "Project IRR" is above a benchmark rate of financing cost.**
- Generally, **WACC (Weighted Average Capital Cost)** would be used as the benchmark.

Calculation Formula for WACC

$$WACC = r(E) \times \frac{E}{(D + E)} + r(D) \times \frac{D}{(D + E)}$$

Whereby:

$r(E)$: cost of Equity (Return on Equity)
 $r(D)$: cost of debt (interest rate)
 E : total value of equity
 D : total value of debt

Assumption in our study

WACC is 11.5% in case of the below condition on the financing by private sector.

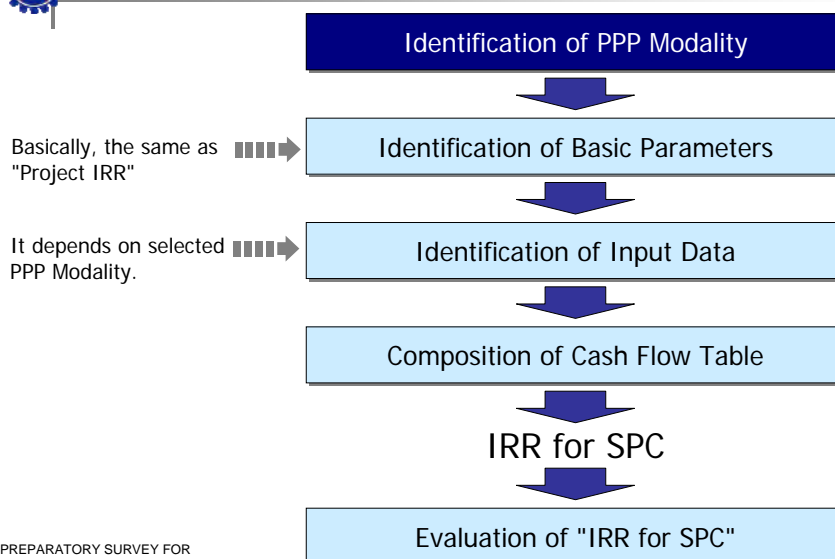
Conditions for the WACC calculation in our study

Equity	Loan
- share of equity is 30%	- share of loan is 70%
- Return of Equity is 15%	- interest rate is 10%



2.7 "IRR for SPC" Calculation

(1) Calculation Flow





(2) Identification of PPP Modality

- Favorable PPP modality should be selected with consideration of suitability of each PPP modality.
- PPP Modality makes the Cash Flow Structure different.

Revenue and Cost Items for calculation of "IRR for SPC" in each PPP Modality

		Pure BOT	BOT with subsidy	Segment Dividing	Service Payment	Lease
Revenue		from Toll Tariff			Service Fee paid by Government	from Toll Tariff
Capital Costs	Row Acquisition & Project Administration	funded by Government				
	Civil Works etc	funded by Private	Subsidy by Government (up to 50%)	Government Portion is funded by Government	funded by Private	funded by Government
Operating Costs	O&M	(the same projection in case of "Project IRR")				
	Insurance			Only Private Portion is paid by Private		None
	Corporate Income Tax	It is different from each PPP Modality				
	Lease Fee	None		paid by Private	None	paid by Private

PREPARATORY SURVEY FOR
PUBLIC PRIVATE PARTNERSHIP (PPP)
INFRASTRUCTURE DEVELOPMENT PROJECT

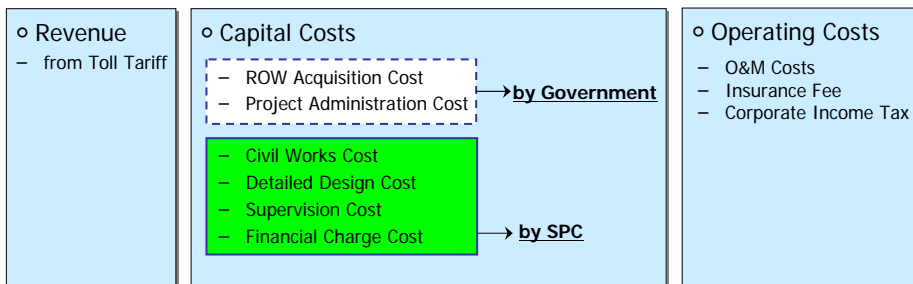
Gray : Different from "Project IRR" calculation

26



(3) "IRR for SPC" in case of "Pure BOT"

Input Data framework



PREPARATORY SURVEY FOR
PUBLIC PRIVATE PARTNERSHIP (PPP)
INFRASTRUCTURE DEVELOPMENT PROJECT

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(3) "IRR for SPC" in case of "Pure BOT" (Cont.)

Example of Cash Flow Table for "IRR for SPC" in case of "CALA Expressway"

(Unit: Billion PHP)

year	1st yr	2st yr	3st yr	4st yr	5st yr	6st yr	7st yr	8st yr	9st yr	10st yr	11st yr	12st yr	32st yr	33st yr	34st yr	35st yr	total
Capital Costs	-	0.82	4.36	9.15	9.61	-	-	-	-	-	-	-	-	-	-	-	23.94
ROW Acquisition	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Detailed Design	-	0.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.77
Civil Works	-	-	4.04	8.47	8.90	-	-	-	-	-	-	-	-	-	-	-	21.41
Construction Supervision	-	-	0.32	0.68	0.71	-	-	-	-	-	-	-	-	-	-	-	1.71
Project Administration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Financial Charge	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05
O&M Costs	-	-	-	-	-	0.33	0.35	0.37	0.41	0.43	0.47	0.50	2.06	2.25	2.38	8.41	43.91
Annual Insurance Fee	-	-	-	-	-	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.54
Corporate Income Tax	-	-	-	-	-	0.04	0.17	0.31	0.43	0.56	0.69	0.85	3.67	3.84	4.04	2.48	58.81
total	-	0.82	4.36	9.15	9.61	0.39	0.54	0.71	0.85	1.01	1.18	1.36	5.76	6.11	6.44	10.91	127.20
Inflow	-	-	-	-	-	2.95	3.28	3.64	3.91	4.20	4.50	4.84	14.81	15.56	16.35	17.17	267.28
Revenue	-	-	-	-	-	2.95	3.28	3.64	3.91	4.20	4.50	4.84	14.81	15.56	16.35	17.17	267.28
total	-	-	-	-	-	2.95	3.28	3.64	3.91	4.20	4.50	4.84	14.81	15.56	16.35	17.17	267.28
Net Income (=Inflow-Outflow)	-	-0.82	-4.36	-9.15	-9.61	2.56	2.73	2.93	3.05	3.19	3.32	3.48	9.05	9.45	9.91	6.27	140.08

IRR for SPC 13.59%

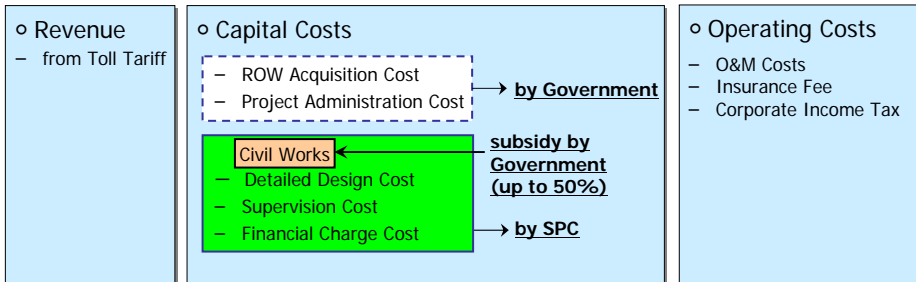
subtracted government financing for ROW acquisition and Project Administration cost.

Corporate income tax also varies from "Project IRR" calculation due to the reduction of SPC's expenditure for capital costs.



(4) "IRR for SPC" in case of "BOT with subsidy"

Input Data framework





(4) "IRR for SPC" in case of "BOT with subsidy" (Cont.)

Example of Cash Flow Table for "IRR for SPC" in case of "CALA Expressway"

year		1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr	7th yr	8th yr	9th yr	10th yr	11th yr	12th yr	32nd yr	33rd yr	34th yr	35th yr	Total	
Outflow	Capital Costs	-	0.80	4.36	9.15	9.61	-	-	-	-	-	-	-	-	-	-	-	-	23.92
	ROW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Detailed Design	-	0.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.77
	Civil Works	-	-	4.04	8.47	8.90	-	-	-	-	-	-	-	-	-	-	-	-	21.41
	Construction Supervision	-	-	0.32	0.68	0.71	-	-	-	-	-	-	-	-	-	-	-	-	1.71
	Project Administration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Financial	-	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03
	O&M Costs	-	-	-	-	-	0.33	0.35	0.37	0.41	0.43	0.47	0.50	-	2.06	2.25	2.38	8.41	43.91
	Annual Insurance	-	-	-	-	-	0.02	0.02	0.02	0.02	0.02	0.02	0.02	-	0.02	0.02	0.02	0.02	0.54
	Corporate income Tax	-	-	-	-	-	0.31	0.42	0.54	0.64	0.75	0.86	0.98	-	3.67	3.84	4.04	2.48	60.48
total	-	0.80	4.36	9.15	9.61	0.65	0.79	0.94	1.07	1.20	1.35	1.50	-	5.76	6.11	6.44	10.91	128.84	
Inflow	Subsidy	-	-	2.02	4.24	4.45	-	-	-	-	-	-	-	-	-	-	-	-	10.70
	Revenue	-	-	-	-	2.95	3.28	3.64	3.91	4.20	4.50	4.84	-	14.81	15.56	16.35	17.17	287.28	
total	-	-	2.02	4.24	4.45	2.95	3.28	3.64	3.91	4.20	4.50	4.84	-	14.81	15.56	16.35	17.17	277.98	
Net Income (=Inflow-Outflow)		-	-0.80	-2.34	-4.92	-5.16	2.30	2.49	2.70	2.84	3.00	3.16	3.34	-	9.05	9.45	9.91	6.27	149.14

IRR for SPC 20.11%

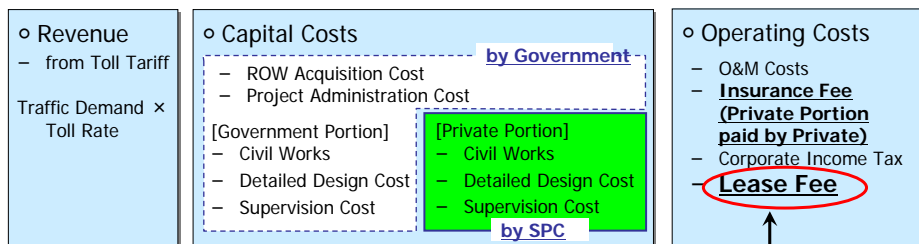
subtracted ROW acquisition etc at the same as "Pure BOT"

Subsidy from government (up to 50% of civil cost).



(5) "IRR for SPC" in case of "Segment Dividing"

Input Data framework



In our study, two cases of "With Lease Fee" and "Without Lease Fee" are examined for "Segment Dividing".

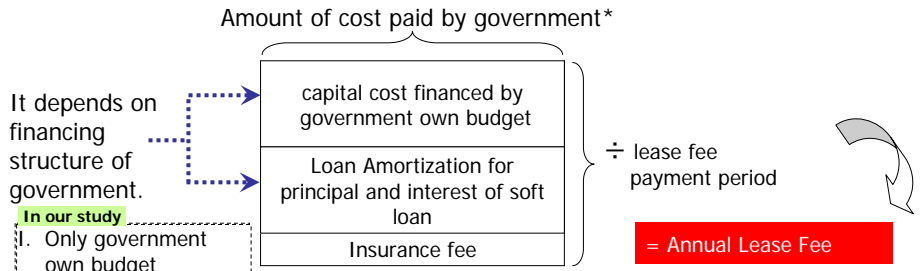


(5) "IRR for SPC" in case of "Segment Dividing"

a. Lease Fee

- Annual Lease Fee is paid by private to compensate the government investment.
- In case of "Without Lease Fee", it means government would undertake construction for government portion as grant.

Assumption in our study



* ROW acquisition cost and administration cost are excluded

◆ Actual Lease Fee should be determined through bidding process for selection of project proponent. Therefore, it should be considered that the way of determination of actual Lease Fee is different by each project.



(5) "IRR for SPC" in case of "Segment Dividing" (Cont.)

Example of Cash Flow Table for "IRR for SPC" in case of "CALA Expressway"

year	1st yr	2st yr	3st yr	4st yr	5st yr	6st yr	7st yr	8st yr	9st yr	10st yr	11st yr	12st yr	32st yr	33st yr	34st yr	35st yr	Total	
Outflow																		
Capital Costs	-	-0.49	2.59	5.43	5.70	-	-	-	-	-	-	-	-	-	-	-	-	14.20
ROW Acquisition	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Detailed Design	-	-0.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.46
Civil Works	-	-	2.30	5.03	5.28	-	-	-	-	-	-	-	-	-	-	-	-	12.70
Construction	-	-	0.19	0.40	0.42	-	-	-	-	-	-	-	-	-	-	-	-	1.02
Supervision	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Project Administration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Financial Charge	-	-	-	-	-	0.93	0.91	0.89	0.87	0.85	0.83	0.81	2.06	2.25	2.38	3.41	43.91	
Clear Costs	-	-	-	-	-	0.93	0.91	0.89	0.87	0.85	0.83	0.81	2.06	2.25	2.38	3.41	43.91	
Annual Insurance Fee	-	-	-	-	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.92
Corporate Income Tax	-	-	-	-	-	0.25	0.35	0.40	0.50	0.50	0.51	0.53	3.64	3.81	4.00	2.44	59.17	
Lease Fee	-	-	-	-	-	0.63	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	9.95
total	-	-0.49	2.59	5.43	5.70	0.91	1.05	1.20	1.33	1.46	1.62	1.77	6.04	6.39	6.72	11.19	127.54	
Inflow																		
Revenue	-	-	-	-	-	2.95	3.28	3.64	3.91	4.20	4.50	4.84	14.81	15.56	16.35	17.17	267.28	
total	-	-	-	-	-	2.95	3.28	3.64	3.91	4.20	4.50	4.84	14.81	15.56	16.35	17.17	267.28	
Net Income (=Inflow-Outflow)																		
	-	-0.49	-2.59	-5.43	-5.70	2.04	2.22	2.44	2.58	2.73	2.89	3.07	8.77	9.16	9.62	5.98	139.74	

IRR for SPC 18.14%

subtracted capital costs for government portion as well as ROW acquisition and project administration

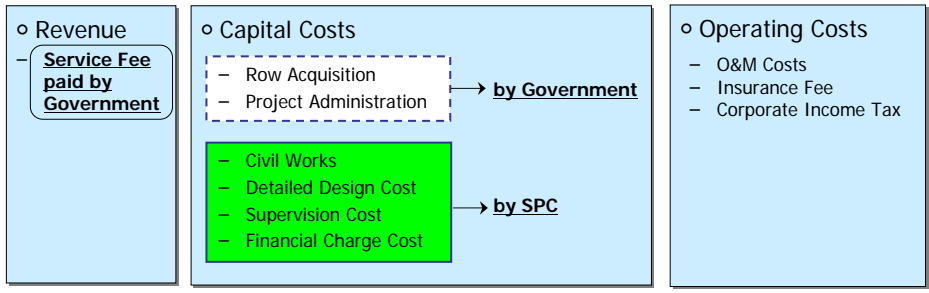
SPC pays Insurance Fee for only SPC's portion

SPC pays lease fee to government as compensation for government portion construction.



(6) "IRR for SPC" in case of "Service Payment"

Input Data framework



(6) "IRR for SPC" in case of "Service Payment"

a. Service Fee

- Annual Service Fee paid by government to compensate the private investment

Assumption in our study

Amount of cost paid by private

Dividend on Equity
Loan Amortization for principal and interest rate of commercial bank loan
O&M Cost
Insurance Fee
Corporate Income Tax

÷ operation period

= Annual Service Fee

◆ Actual Service Fee should be determined through bidding process for selection of project proponent. Therefore, it should be considered that the way of determination of actual Service Fee is different by each project.



(6) "IRR for SPC" in case of "Service Payment" (Cont.)



Example of Cash Flow Table for "IRR for SPC" in case of "CALA Expressway"

Unit: Billion PHP

year	1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr	7th yr	8th yr	9th yr	10th yr	11st yr	12st yr	32st yr	33st yr	34st yr	35st yr	Total	
Capital Costs	-	0.82	4.36	9.15	9.61	-	-	-	-	-	-	-	-	-	-	-	-	23.94
ROW Acquisition	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Detailed Design	-	0.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.77
Civil Works	-	-	4.04	8.47	8.90	-	-	-	-	-	-	-	-	-	-	-	-	21.41
Construction Supervision	-	-	0.32	0.68	0.71	-	-	-	-	-	-	-	-	-	-	-	-	1.71
Project Administration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Financial Charge	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05
O&M Costs	-	-	-	-	-	0.33	0.35	0.37	0.41	0.43	0.47	0.50	2.06	2.25	2.38	8.41	43.91	
Annual Insurance	-	-	-	-	-	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.54
Corporate Income Tax	-	-	-	-	-	0.58	0.61	0.65	0.68	0.73	0.77	0.82	0.66	0.80	0.56	-	-	22.72
total	-	0.82	4.36	9.15	9.61	0.93	0.98	1.04	1.11	1.18	1.26	1.34	2.74	2.87	2.96	8.43	91.11	
Service Fee	-	-	-	-	-	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	142.56
total	-	-	-	-	-	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.75	142.56
Net Income (=Inflow-Outflow)	-	-0.82	-4.36	-9.15	-9.61	3.82	3.77	3.71	3.64	3.58	3.50	3.42	2.01	1.88	1.79	-3.67	-	51.45
IRR for SPC																		11.67%

subtracted ROW acquisition cost and Project Administration cost at the same as "Pure BOT".

SPC's Revenue comes from not toll tariff but Service Fee paid by government.

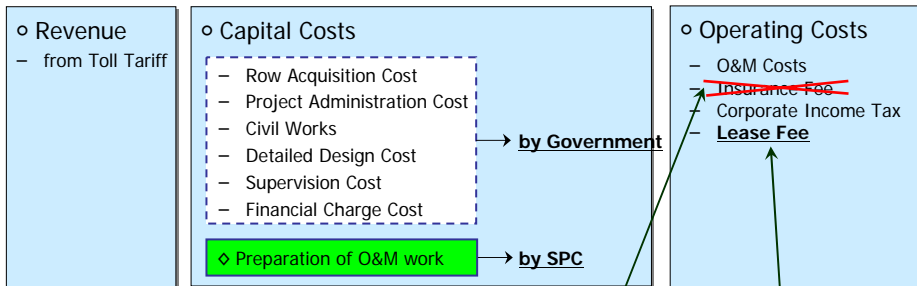
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(7) "IRR for SPC" in case of "Lease"



Input Data framework



Insurance Fee should be paid by government, although it is considered with estimation of Lease Fee to be paid by SPC.

It is determined with the same way as "Segment Dividing".



(7) "IRR for SPC" in case of "Lease" (Cont.)

Example of Cash Flow Table for "IRR for SPC" in case of "CALA Expressway"

		Unit: Billion PHP																																		
year		1st yr	2st yr	3st yr	4st yr	5st yr	6st yr	7st yr	8st yr	9st yr	10st yr	11st yr	12st yr	32st yr	33st yr	34st yr	35st yr	Total																		
Outflow	Capital Costs					0.68													0.68																	
	ROW																																			
	Detailed Design																																			
	Civil Works																																			
	Construction																																			
	Supervision																																			
	Project Administration																																			
	Financial																																			
	Preparation for O&M work					0.68														0.68																
	O&M Costs						0.33	0.35	0.37	0.41	0.43	0.47	0.50		2.06	2.25	2.38	8.41	43.91																	
Corporate income						0.54	0.63	0.74	0.81	0.88	0.97	1.06		3.58	3.75	3.95	2.39	59.68																		
Lease Fee						0.81	0.81	0.81	0.81	0.81	0.81	0.81		0.81	0.81	0.81	0.81	24.43																		
total					0.68	1.68	1.80	1.92	2.03	2.13	2.25	2.37		6.46	6.81	7.14	11.61	128.70																		
Inflow	Revenue					2.95	3.28	3.64	3.91	4.20	4.50	4.84		14.81	15.56	16.35	17.17	267.28																		
total						2.95	3.28	3.64	3.91	4.20	4.50	4.84		14.81	15.56	16.35	17.17	267.28																		
Net Income (=Inflow-Outflow)					-0.68	1.27	1.48	1.72	1.88	2.06	2.25	2.47		8.35	8.75	9.21	5.57	38.58																		
IRR for SPC																			202.20%																	

In case of "Lease", SPC need not finance capital costs but supposed that SPC finances preparation of O&M work (e.g. procurement of equipments for O&M work).

SPC pays lease fee to government as compensation for construction wholly undertaken by government.

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(8) Evaluation Criteria of "IRR for SPC"

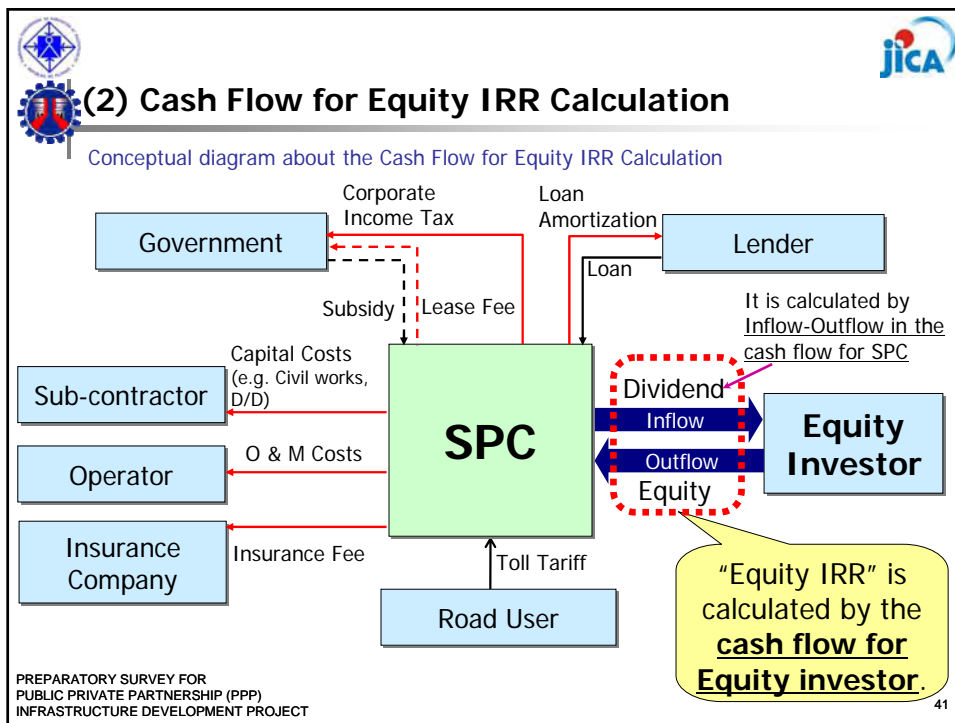
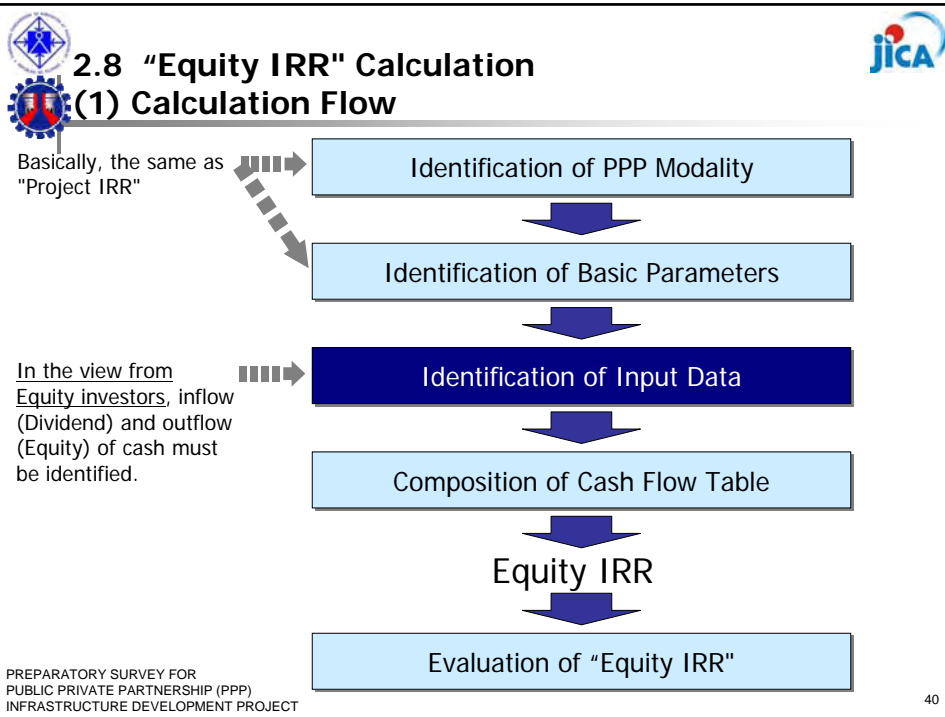
- Target PPP project is considered to be **financially viable when IRR for SPC is above "WACC"** with the same criteria as "Project IRR".
- In cases of "BOT with subsidy", "Segment Dividing" and "Lease";
 - ⇒ IRR for SPC is improved largely due to reduction of capital cost funded by SPC.
- In case of "Lease";
 - ⇒ Especially, the highest score is obtained due to no funding capital cost by SPC.
- In case of "Service Payment";
 - ⇒ financial viability is obtained but it might be lower than other PPP modalities because SPC loses the revenue from toll tariff.

Example of Results of IRR for SPC in case of "CALA Expressway"

	Pure BOT	BOT with subsidy	Segment Dividing			Service Payment	Lease	
			with Lease Fee		without Lease Fee		GOP's budget	Soft Loan
			GOP's budget	Soft Loan				
Project IRR			12.51%					
IRR for SPC	13.59%	20.11%	18.14%	17.83%	19.12%	11.67%	202.20%	177.18%

PREPARATOR: PUBLIC PRIVATE INFRASTRUCTURE
 PUBLIC PRIVATE INFRASTRUCTURE
 GOP's budget : Government funds with their own budget only. Yellow: above WACC (11.5%)
 Soft Loan : Government mobilizes soft loan, too.

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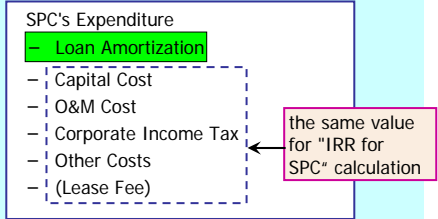
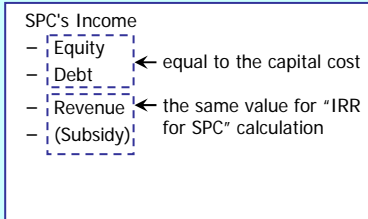


(3) Equity IRR Calculation Principle

Basically, it is the same procedure as "IRR for SPC" calculation, but Loan Amortization must be also considered to identify cash flow for investor.

Equity
- based on Financing Structure
In our study, it is supposed to be 30% of capital costs funded by SPC.

Dividend (=SPC's Income – SPC's Expenditure)



(4) Cash Flow Table for Equity IRR

Example of Cash Flow Table for Equity IRR in case of "CALA Expressway" with Pure BOT

year		1st yr	2st yr	3st yr	4st yr	5st yr	6st yr	7st yr	8st yr	9st yr	10st yr	11st yr	12st yr	13st yr	14st yr	15st yr	16st yr	17st yr	33st yr	34st yr	35st yr	Total		
D: Dividend = Inflow-Outflow		-	-	-	-	-	-0.67	-0.49	-0.30	-0.18	-0.04	0.09	0.25	0.40	0.57	-0.52	4.17	4.46	9.45	9.91	6.27	131.72		
Outflow	Capital Costs	-	0.82	4.36	9.15	9.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23.94	
	ROW Acquisition	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Detailed Design	-	0.77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.77	
	Civil Works	-	-	4.04	8.47	8.90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21.41
	Construction Supervision	-	-	0.32	0.68	0.71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.71
	Project Administration	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Financial Charge	-	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05
	O&M Costs	-	-	-	-	-	0.33	0.35	0.37	0.41	0.43	0.47	0.50	0.54	0.57	2.44	0.66	0.72	-	2.25	2.38	8.41	43.91	
	Annual Insurance Fee	-	-	-	-	-	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	-	0.02	0.02	0.02	0.54	
	Corporate income Tax	-	-	-	-	-	0.04	0.17	0.31	0.43	0.56	0.69	0.85	1.01	1.18	0.83	1.58	1.71	-	3.84	4.04	2.48	58.81	
Loan Amortization	-	-	-	-	-	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3.23	-	-	-	-	-	-	-	32.29	
total	-	0.82	4.36	9.15	9.61	3.92	3.77	3.94	4.08	4.26	4.41	4.59	4.79	5.01	6.51	2.26	2.44	-	6.11	6.44	10.91	159.50		
Inflow	Equity	-	0.25	1.31	2.75	2.88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.18	
	Loan	-	0.57	3.05	6.41	6.73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.76	
	Revenue	-	-	-	-	-	2.95	3.28	3.64	3.91	4.20	4.56	4.84	5.19	5.58	5.99	6.43	6.91	-	15.56	16.35	17.17	267.28	
	total	-	0.82	4.36	9.15	9.61	2.95	3.28	3.64	3.91	4.20	4.56	4.84	5.19	5.58	5.99	6.43	6.91	-	15.56	16.35	17.17	281.22	
E: Equity Investment	-	0.25	1.31	2.75	2.88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.18	
Net Income (D-E)	-	-0.25	-1.31	-2.75	-2.88	-0.67	-0.49	-0.30	-0.18	-0.04	0.09	0.25	0.40	0.57	-0.52	4.17	4.46	-	9.45	9.91	6.27	24.54		
Equity IRR																							14.63%	

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In this case, 30% of capital costs.

Total value is equal to capital costs.

Annual repayment value depends on financing structure.



(5) Evaluation Criteria of Equity IRR

▪ Target PPP project is **eligible for equity investors when Equity IRR is above Hurdle Rate** required by the investors.

- Hurdle Rate means the rate of return that the target PPP project must achieve in order to meet investors requirement.
- Generally, Hurdle Rate should be determined with consideration of the existing equity investment for PPP project and major investor's opinions. In our study, it is supposed to be 15%.

Example of Results of Equity IRR in case of "CALA Expressway"

	Pure BOT	BOT with subsidy	Segment Dividing			Service Payment	Lease	
			with Lease Fee		without Lease Fee		GOP's budget	Soft Loan
			GOP's budget	Soft Loan				
Project IRR	12.51%							
IRR for SPC	14.63%	26.71%	22.52%	21.88%	24.58%	11.66%	202.20%	177.18%

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Yellow: above Hurdle Rate (15%)

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3. Analysis of "Net Public Expenditure Reduction" (NPER)

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3.1 Definition of NPER

- NPER represents **the reduction of net expenditure by government in adoption of PPP scheme**, compared with the net expenditure by government in a conventional scheme wholly implemented by government.
- Net expenditure represents a cost for target project funded by government with subtracted government income from the project.



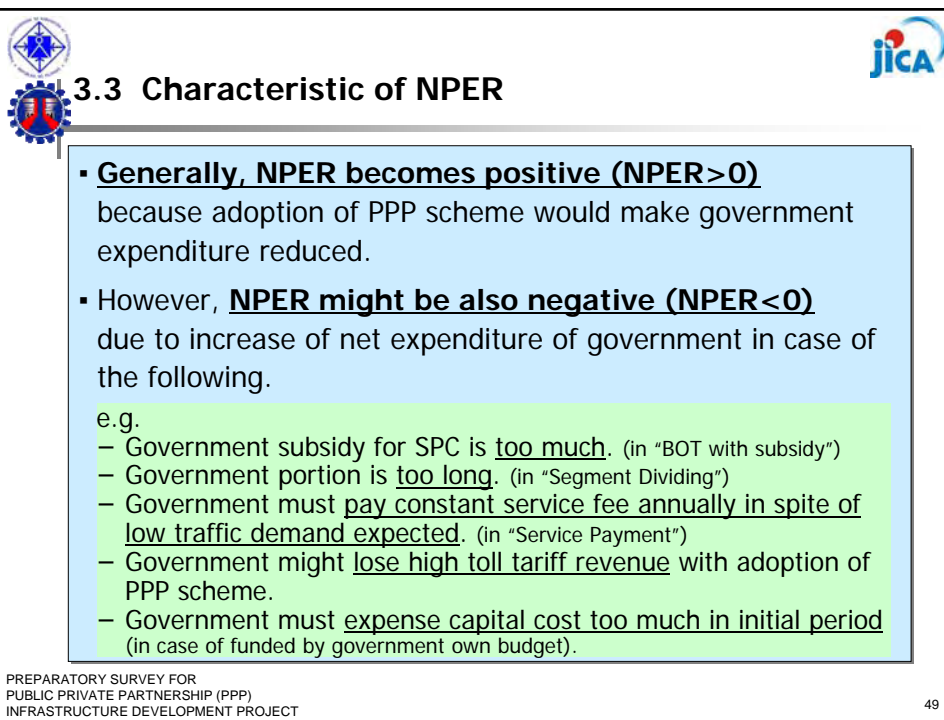
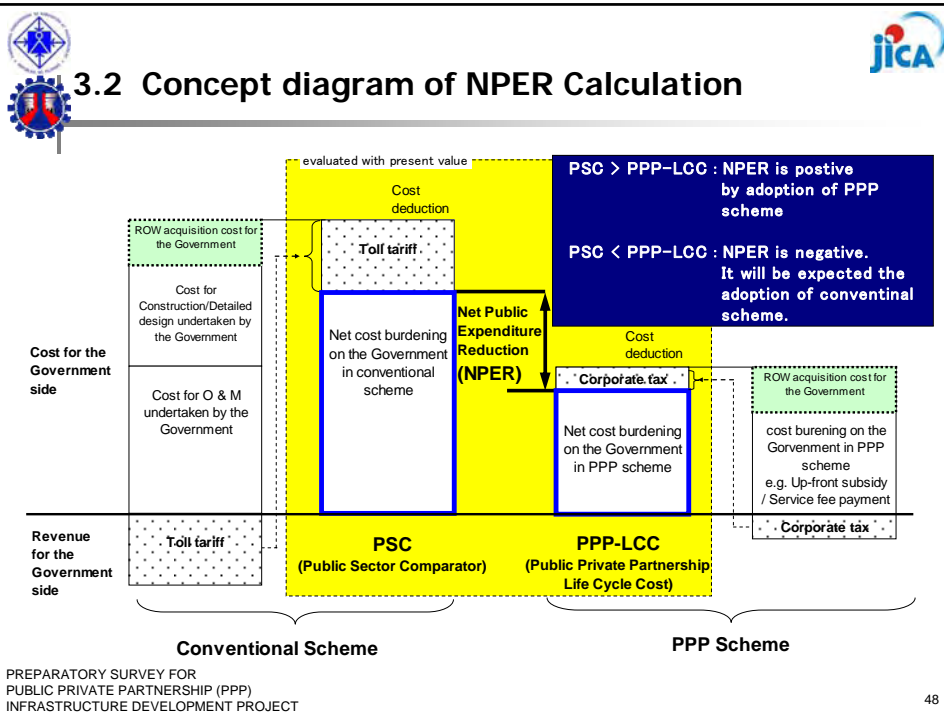
3.1 Definition of NPER (Cont.)

Ref. Value for Money (VFM) ... The concept is very wide idea.

✓VFM is defined as the optimum combination of whole-of-life costs and quality (or fitness for purpose) of the good or service to meet the user's requirement. VFM is not the choice of goods and services based on the lowest cost bid. (Source: HM Treasury "Value for Money Assessment Guidance 2006" http://hm-treasury.gov.uk/d/vfm_assessmentguidance061006opt.pdf)

Source of VFM

1. Utilization of private sector's ability to manage risks.
2. Utilization of innovations by private sector.
3. Improvement of efficiency by long term and comprehensive contract with private sector.





3.4 Calculation Formula for NPER



$$NPER = "PSC" - "PPP - LCC"$$

$$"PSC" = \sum_{i=0}^T \frac{(CG_i - IG_i)}{(1+r)^i}$$

$$"PPP - LCC" = \sum_{i=0}^T \frac{(CG'_i - IG'_i)}{(1+r)^i}$$

Whereby

CG_i : Cost burdening on Government at year i
(e.g. capital cost funded by government own budget and O&M cost)

IG_i : Income (from toll tariff) for Government at year i

r : Discount rate

CG'_i : Cost burdening on Government at year i
(e.g. ROW acquisition cost, subsidy, capital cost for government portion and service fee payment)

IG'_i : Income for Government at year i
(e.g. Corporate tax income, lease fee)

r : Discount rate

Same Value



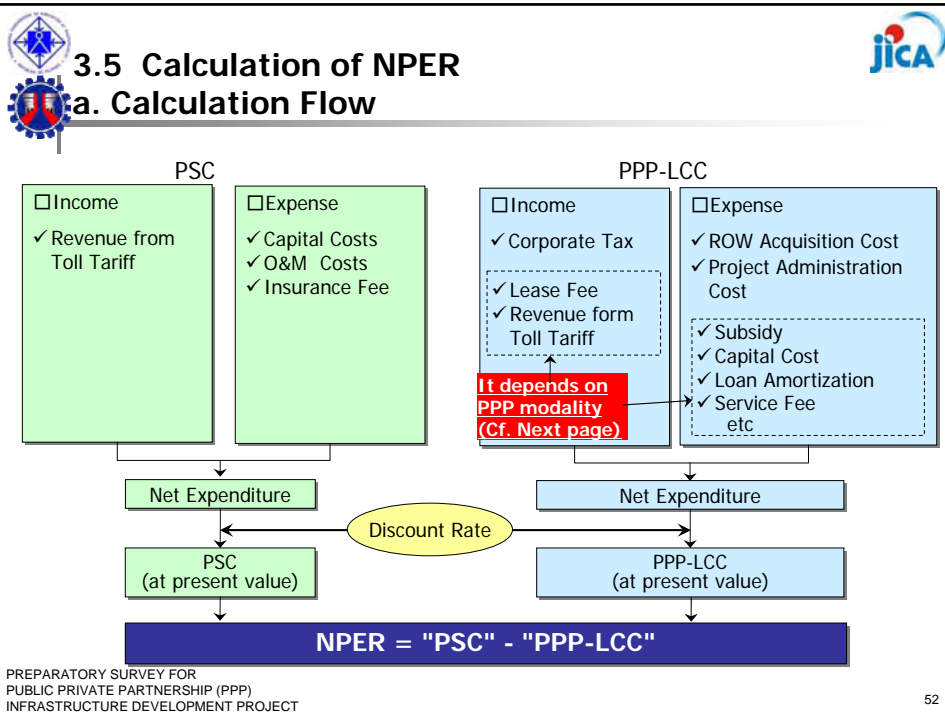
3.4 Calculation Formula for NPER



a. Discount Rate

For the calculation of PSC and PPP-LCC, it is necessary to **discount net cost burdening with government at appropriate discount rate** so as to evaluate net public expenditure with the present value at base year.

As for discount rate, 15% is used in our study in consideration of discount rate applied in existing studies as well as interest rate of the commercial banks in Philippines.



3.5 Calculation of NPER

b. Expenditure / Income Items of Government

Structure of Expenditure and Income of government in each PPP Modality

		Pure BOT	BOT with subsidy	Segment Dividing	Service Payment	Lease
Expenditure by Government	ROW Acquisition	○	○	○	○	○
	Project Administration	○	○	○	○	○
	Subsidy	—	○ (up to 50% of civil works)	—	—	—
	Capital Costs	—	—	○ (Government Portion Only)	—	○
	Insurance Fee	—	—	○ (Government Portion Only)	—	○
	Service Fee	—	—	—	○	—
	Loan Amortization	—	—	△ ¹⁾	—	△ ¹⁾
Income for government	Corporate Income Tax	○	○	○	○	○
	Lease Fee	—	—	△ ²⁾	—	○
	from Toll Tariff	—	—	—	○	—

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1) only case with financing by soft loan.
2) No occurrence in case of "Without Lease Fee" payment from SPC



3.5 Calculation of NPER c. PSC Calculation



Example of PSC Calculation Table in case of "CALA Expressway"

Unit: Billion PHP

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2045	2046	2047	Total
1. Gov. Expenditure			0.60	2.08	4.47	9.26	9.72	-	-	-	-	-	-	-	-	26.13
Capital costs																
O&M Costs								0.33	0.35	0.37	0.41	0.43				43.91
Insurance fees								0.02	0.02	0.02	0.02	0.02				0.54
Total			0.60	2.08	4.47	9.26	9.72	0.34	0.37	0.39	0.43	0.45				70.58
2. Gov. Income								2.95	3.28	3.64	3.91	4.20				267.28
Revenue								2.95	3.28	3.64	3.91	4.20				267.28
Total								2.95	3.28	3.64	3.91	4.20				267.28
3. Net Gov. Expenditure (=Expenditure-Income)			0.60	2.08	4.47	9.26	9.72	-2.61	-2.91	-3.25	-3.48	-3.75				-196.70
4. Net Gov. Expenditure at Present Value			0.39	1.19	2.22	4.00	3.65	-0.85	-0.83	-0.80	-0.75	-0.70				0.35

PSC: 0.35
 Base Year: 2010
 Discount Rate: 15%

From Toll Tariff
 Wholly funded by government
 Discounted with discount rate (15%) and converted to present value at base year (2010)

PREPARATORY SURVEY FOR
 PUBLIC PRIVATE PARTNERSHIP (PPP)
 INFRASTRUCTURE DEVELOPMENT PROJECT

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3.5 Calculation of NPER d. PPP-LCC Calculation for "Pure BOT"



Example of PPP-LCC Calculation Table in case of "CALA Expressway" with "Pure BOT"

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2045	2046	2047	Total
1. Gov. Expenditure			0.49	1.20	-	-	-	-	-	-	-	-	-	-	-	1.69
ROW Acquisition																
Project Administration Cost			0.11	0.11	0.11	0.11	0.11	-	-	-	-	-				0.55
Total			0.60	1.31	0.11	0.11	0.11	-	-	-	-	-				2.24
2. Gov. Income								0.04	0.17	0.31	0.43	0.56				58.81
Corporate Income Tax								0.04	0.17	0.31	0.43	0.56				58.81
Total								0.04	0.17	0.31	0.43	0.56				58.81
3. Net Gov. Expenditure (=Expenditure-Income)			0.60	1.31	0.11	0.11	0.11	-0.04	-0.17	-0.31	-0.43	-0.56				-56.57
4. Net Gov. Expenditure at Present Value			0.39	0.75	0.06	0.05	0.04	-0.01	-0.05	-0.08	-0.09	-0.10				-0.87

PPP-LCC: -0.87
 NPER (= "PSC" - "PPP-LCC"): 1.22 Positive (NPER > 0)

Government expenses only ROW acquisition and Project Administration in case of "Pure BOT".
 The Income from Corporate Income Tax depends on PPP Modality due to variations of SPC's cash flow.

PREPARATORY SURVEY FOR
 PUBLIC PRIVATE PARTNERSHIP (PPP)
 INFRASTRUCTURE DEVELOPMENT PROJECT

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3.5 Calculation of NPER

e. PPP-LCC Calculation for "Segment Dividing"

Example of PPP-LCC Calculation Table in case of "CALA Expressway" with "Segment Dividing (funded by government own budget only)"

Year		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Unit: Billion PHP			Total
1. Gov. Expenditure	For SPC Portion	-	-	0.33	0.82	-	-	-	-	-	-	-	-	-	-	-	-	1.15
	For Government Portion	-	-	0.07	0.07	0.07	0.07	0.07	-	-	-	-	-	-	-	-	-	0.33
	Capital Costs	-	-	0.20	0.74	1.82	3.77	3.95	-	-	-	-	-	-	-	-	-	10.48
	Insurance Fee	-	-	-	-	-	-	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-	-	0.22
	Total	-	-	0.60	1.62	1.88	3.83	4.02	0.01	0.01	0.01	0.01	0.01	0.01	-	-	12.18	
2. Gov. Income	Corporate income Tax	-	-	-	-	-	-	-	0.25	0.38	0.49	0.58	0.69	0.81	-	-	3.81	
	Lease Fee	-	-	-	-	-	-	-	0.33	0.33	0.33	0.33	0.33	0.33	-	-	4.00	
	Total	-	-	-	-	-	-	-	0.58	0.69	0.82	0.91	1.02	1.14	-	-	7.81	
	Total	-	-	-	-	-	-	-	0.58	0.69	0.82	0.91	1.02	1.14	-	-	7.81	
3. Net Gov. Expenditure (=Expenditure-Income)		-	-	0.60	1.62	1.88	3.83	4.02	-0.57	-0.68	-0.81	-0.91	-1.02	-1.13	-	-	-56.92	
4. Net Gov. Expenditure at Present Value		-	-	0.39	0.93	0.94	1.66	1.51	-0.19	-0.19	-0.20	-0.19	-0.19	-0.18	-	-	2.23	

PPP-LCC 2.23
 NPER (= "PSC" - "PPP-LCC") -1.88 Negative (NPER<0)

Paid by SPC to compensate Gov. portion construction

Funded by government own budget only for ROW acquisition etc of SPC portion and Gov. portion construction



3.5 Calculation of NPER

e. PPP-LCC Calculation for "Segment Dividing" (Cont.)

Example of PPP-LCC Calculation Table in case of "CALA Expressway" with "Segment Dividing (including Soft Loan)"

Year		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Unit: Billion PHP			Total
1. Gov. Expenditure	For SPC Portion	-	-	0.33	0.82	-	-	-	-	-	-	-	-	-	-	-	-	1.15
	For Government Portion	-	-	0.07	0.07	0.07	0.07	0.07	-	-	-	-	-	-	-	-	-	0.33
	Capital Costs	-	-	0.16	0.38	-	-	-	-	-	-	-	-	-	-	-	-	0.54
	Insurance Fee	-	-	0.05	0.05	0.05	0.05	0.05	-	-	-	-	-	-	-	-	-	0.23
	Total	-	-	0.60	1.31	1.11	1.11	1.11	0.15	0.15	0.15	0.15	0.15	0.15	-	-	12.93	
2. Gov. Income	Corporate income Tax	-	-	-	-	-	-	-	0.21	0.33	0.45	0.55	0.66	0.77	-	-	3.77	
	Lease Fee	-	-	-	-	-	-	-	0.44	0.44	0.44	0.44	0.44	0.44	-	-	4.44	
	Total	-	-	-	-	-	-	-	0.65	0.76	0.89	0.99	1.10	1.21	-	-	8.21	
	Total	-	-	-	-	-	-	-	0.65	0.76	0.89	0.99	1.10	1.21	-	-	8.21	
3. Net Gov. Expenditure (=Expenditure-Income)		-	-	0.60	1.31	1.11	1.11	1.11	-0.51	-0.62	-0.74	-0.84	-0.95	-1.06	-	-	-55.96	
4. Net Gov. Expenditure at Present Value		-	-	0.39	0.75	0.06	0.05	0.04	-0.17	-0.18	-0.18	-0.18	-0.18	-0.17	-	-	1.50	

PPP-LCC -1.50
 NPER (= "PSC" - "PPP-LCC") 1.84 Positive (NPER>0)

Gov. Expenditure in initial period reduced by soft loan for civil works cost etc.



4. PPP Modality Evaluation



4.1 Principle of Evaluation of PPP Modality

- Most favorable PPP Modality should satisfy such criteria as below.

- ✓ IRR for SPC > WACC
- ✓ Equity IRR > Hurdle Rate
- ✓ NPER > 0

- ➔ More favorable PPP Modality should be identified with sensitivity analysis when none satisfies such criteria.

- e.g.
- lower capital and O&M cost
 - lower ratio of subsidy
 - arrangement of financing structure



4.2 Example of PPP Modality Evaluation

a. NLEX-SLEX Link

- “IRR for SPC” and “Equity IRR” are more favorable with “BOT with subsidy” and “Segment Dividing”, but NPER with GOP is negative.

	Pure BOT	BOT with subsidy (at 50% of civil work)	Segment Dividing				Service Payment	Lease	
			with Lease Fee		without Lease Fee			GOP Budget	Soft Loan
			GOP	Soft Loan	GOP	Soft Loan			
Project IRR			9.14%						
IRR for SPC	9.45%	15.53%	15.80%	15.11%	17.99%	-	-	-	
Equity IRR	8.51%	17.81%	18.03%	16.83%	22.20%	-	-	-	
NPER	7.46	-0.45	-0.56	8.74	-2.00	6.84			
PSC			6.53						
PPP-LCC			7.08	-2.22	8.52	-0.31			

Lower subsidy required to improve NPER

With soft loan, NPER is positive because government need not expense in initial period.

PREPARATORY SURVEY FOR PUBLIC PRIVATE PARTNERSHIP (PPP) INFRASTRUCTURE DEVELOPMENT PROJECT
 Yellow: IRR for SPC > WACC(11.5%), Equity IRR > Hurdle Rate(15%), NPER > 0
 Red: NPER < 0, - : not examined



b. CALA Expressway

- “IRR for SPC” and “Equity IRR” are almost above the benchmarks due to high traffic expected in CALA Expressway.
- However, NPER with GOP's budget is largely negative in “BOT with subsidy” etc.

	Pure BOT	BOT with subsidy (at 50%)	Segment Dividing				Service Payment	Lease	
			with Lease Fee		without Lease Fee			GOP's Budget	Soft Loan
			GOP's Budget	Soft Loan	GOP's Budget	Soft Loan			
Project IRR			12.51%						
IRR for SPC	13.59%	20.11%	18.14%	17.83%	19.12%	11.67%	202.20%	177.18%	
Equity IRR	14.63%	26.71%	22.52%	21.88%	24.58%	11.66%	202.20%	177.18%	
NPER	1.22	-2.92	-1.88	1.84	-2.45	1.09	2.01	-6.41	2.75
PSC			0.35						
PPP-LCC	-0.87	3.27	2.23	-1.50	2.80	-0.74	-1.66	6.75	-2.40

PREPARATORY SURVEY FOR PUBLIC PRIVATE PARTNERSHIP (PPP) INFRASTRUCTURE DEVELOPMENT PROJECT



c. CLEX Phase 1 (2-lane)

- "IRR for SPC" and "Equity IRR" are almost under the benchmarks due to Low traffic demand expected.
- Therefore, more favorable PPP modalities for SPC like "Lease" are required.

	Pure BOT	BOT with subsidy (at 50%)	Segment Dividing				Service Payment	Lease	
			with Lease Fee		without Lease Fee			GOP's Budget	Soft Loan
			GOP's Budget	Soft Loan	GOP's Budget	Soft Loan			
Project IRR	3.62%								
IRR for SPC	4.36%	8.84%	More favorable service fee payment needed to improve Equity IRR although NPER might be also worse.				11.62%	38.49%	22.37%
Equity IRR	1.69%	7.52%					11.56%	38.49%	22.37%
NPER	3.12	1.13					0.91	-0.47	3.62
PSC	2.63								
PPP-LCC	0.50	2.49	Higher annual lease fee needed to improve NPER, although IRR might be also worse.				2.71	4.09	0.00



4.3. For Further Evaluation

■ Sensitivity Analysis

- Sensitivity of IRR for **Traffic demand, Construction Cost** etc needed.
- **Exchange rate risk and Interest rate risk** (for floating rate) etc are recommended to be examined, too.
- **Revenue increase, Cost reduction and Early completion of construction** by innovations and efficiency of private sector.
 - ✓ In our study, concerning on revenue, cost and schedule etc, it is supposed that the conditions for conventional and PPP scheme are same.
 - ✓ However, innovations and efficiency of private sector should be considered ideally, too.



4.3. For Further Evaluation (Cont.)

■ Evaluation of SPC's Capacity for Repayment

- For instance, DSCR (Debt Service Cover Ratio) represents an indicator to evaluate SPC's capacity whether SPC can repay debt service with cash flow from target PPP project.

$$DSCR_i = \frac{OC_i}{LA_i}$$

$DSCR_i$: Debt Service Cover Ratio at year i

OC_i : Operating Cash Flow excluded loan amortization at year i

LA_i : Loan Amortization at year i

✓ It is required that Average DSCR is above 1.2 to 1.4.



Maraming Salamat Po

GOSEICHOU ARIGATOU
GOZAIMASHITA !

御清聴ありがとうございました！

Day 6: October 27

- Project Procurement
- Project Implementation

PPP PROJECT PROCUREMENT

DPWH - JICA
Pilot Training on PPP

Teodoro T. Encarnacion
27 October 2010

1

OUTLINE OF PRESENTATION

- Conventional vs. PPP Procurement
- Legal and Policy Framework for PPP Procurement
- PPP Procurement Within Overall PPP Project Process
- Preparation of PPP Bidding Documents - TOR:
 - Part I - Instructions to Bidders
 - Part II - Performance Standards and Specifications
 - Part III - Draft Concession Agreement
- Finalizing the Procurement Plan for PPP Project
- Conduct of Public Bidding as Prescribed in BOT Law / IRR
- Proposed Immediate Actions to Improve PPP Procurement
- Suggested References/Readings

2

CONVENTIONAL VS. PPP PROCUREMENT

	Conventional Procurement under RA 9184	PPP Procurement under BOT Law (RA 6957/RA7718)
Scope of Work for Bidding	Construction	Business/investment under concession: financing, design, construction, O&M
Government Specifications	Detailed engineering plans and specs	Generic performance standards and specs
Bid Price	Least unit const. prices, or least lump-sum const. price	Least toll rate, or least govt financial support (GFS)
Payment/Cost Recovery	Payment for work accomplished from govt funds	Cost recovery from project tolls/revenues per bid/contract
Responsibilities and Risks	Design, financing, traffic & O&M with govt; construction risks with contractor	Mostly with concessionaire – market/traffic, financing, design, construction, O&M

3

LEGAL AND POLICY FRAMEWORK FOR PPP PROCUREMENT

- Procurement generally under BOT Law embodied in RA 6957 as amended by RA 7718 and IRR.
- General policy is to procure PPP contracts through solicited/public bidding mode, and to discourage unsolicited/negotiated proposals.

4

PPP PROCUREMENT WITHIN OVERALL PPP PROJECT PROCESS

1. Project Identification
2. Project Business Case/Pre-Feasibility Study
3. Project Feasibility Study
 - Traffic, Tech., Econ., Environmental, Fin., Risks, Other Aspects
 - *Preparation of Bidding Documents and Procurement Plan*
- 4. Project Procurement – Conduct of Bidding**
 - *Invitation and Receipt of Bids*
 - *Bids Evaluation and Award*
 - *Contract Execution/Approval*
5. Project Implementation
6. Project Operation and Maintenance
7. Project Monitoring and Post-Evaluation

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PREPARATION OF PPP BIDDING DOCUMENTS: TERMS OF REFERENCE (Based on TPLEX Case and DPWH-JICA Studies)

PART I - INSTRUCTIONS TO BIDDERS (ITB)

- Section 1. Summary of General Conditions
- Section 2. Project Information
- Section 3. Scope of Work
- Section 4. Qualification Requirements
- Section 5. Documents Comprising the Bid
- Section 6. Bid Submission Requirements
- Section 7. Criteria for Evaluation of Bids and Award
- Section 8. Government Undertakings

PART II - PERFORMANCE STANDARDS AND SPECS

- Section 1. Min. Technical Performance Standards and Specs
- Section 2. Economic Parameters

PART III - DRAFT CONCESSION AGREEMENT

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

Section 1. Summary of General Conditions

1.1 Definition of Terms

1.2 Project Scope – Project description, ROW

1.3 Indicative Milestone Dates – bids submission, award, contract approval, NTC, Proj completion, start of O&M

1.4 Financial Aspects – Bid Bond, Performance Bond

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

Section 2. Project Information

2.1 Introduction

2.2 The Project – coverage and components

2.3 Projected Tollway Traffic - Indicative only based on FS. Bidder is expected to conduct its own traffic studies.

2.4 Contractual Framework – e.g., BTO under BOT Law (RA 6957 / 7718 and IRR)

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

Section 3. Scope of Work

3.1 Work to be Performed by Proponent

Concession services – financing, design, construction, O&M of the Project during the Concession Period.

3.2 Project Design, Construction, and O&M – to conform with prescribed performance standards and specifications; certification by Independent Consultant

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

Section 4. Qualification Requirements

4.1 Legal requirements

- a. Proponent/investor - registered with SEC and at least 60% owned by Filipinos (for BOT scheme).
- b. Facility Operator - at least 60% Filipino owned (for public utility franchise).
- c. Constructor - licensed by PCAB for type/cost of the project to be bid.
- d. Designer - registered with PRC.

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

4.2 Technical capability requirements - example (TPLEX)

- a. Business plan – showing members of the proponent and their roles – lead member, financier, designer, constructor, facility operator and maintenance provider.
- b. Experience:
 - i. Completed the design of similar projects in past 15 years with cumulative cost of at least 25% of Project cost.
 - ii. Completed the construction of similar projects in past 10 years with cumulative cost of at least 50% of Project cost.
 - iii. Experience in O&M of toll roads in last 5 years.

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

4.2 Technical capability requirements - example (TPLEX)

- c. Key personnel - must meet minimum experience requirements for design, construction, and O&M.
- d. Major construction equipment – which are owned/leased/pledged must meet minimum requirements.
- e. ISO certification – for proponent or lead member.

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

4.3 Financial capability requirements - example (TPLEX)

- a. Equity - Net worth of at least 25% of Project cost, based on audited Financial Statement; or set-aside cash deposit of at least 25% of Project cost.
- b. Access to credit – Letter of intent from lenders/ creditor banks to provide loans of at least 50% of Project cost if the proponent is awarded the contract.

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

Section 5. Documents Comprising the Bid.

5.1 Three-Envelope System

Simultaneous submission of three envelopes:

- a. Envelope No. 1: Qualification Requirements
Documents supporting/certifying compliance with the requirements in Section 4.

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

b. Envelope No. 2: Technical Proposal

- i. Traffic study – traffic forecasts with methodology
- ii. Prel. engg. design - prel. alignment, drawings, and design calculations for carriageway, bridges, interchanges, crossings, toll plazas, O&M center, etc., with +/-10% accuracy
- iii. Construction plan – construction methods, organization, key personnel, major equipment, subcontractors, quality control system, safety, and schedule.
- iv. O&M plan - organization, methods and procedures for operation, financial control, traffic mgt, toll collection system, life-cycle maintenance, rehab and reconstruction.
- iv. Bid Security – cash, certified check, mgr's check, letter of credit or bank draft/guarantee, in the amount of 1-2% of Project cost.

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

c. Envelope No. 3: Financial Proposal

- i. Bid price in terms of either of two alternatives:
 - (a) proposed toll rate at opening year not exceeding the prescribed toll rate ceiling, given the GFS, or
 - (b) proposed GFS not exceeding the prescribed GFS ceiling, given the DPWH-set opening toll rate, whichever is prescribed by DPWH.
- ii. Financial model - including projected cash flow, statement of sources and uses of cash, income statement and balance sheet, project IRR, equity IRR, and related information.

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

5.2 Two-Envelope System

Prequalification is done.

Only prequalified bidders are allowed to submit their bids comprised of Envelopes 2 and 3.

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

Section 6. Bid Submission Requirements

6.1 Deadline and Place for Bid Submission

6.2 Pre-Bid Conference

6.3 Modification of Bids

**6.4 Opening and Preliminary Examination of
Bids**

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

Section 7. Criteria for Evaluation of Bids and Award

7.1 Evaluation of Qualification of Bidders

- a. Compliance with legal requirements in Section 4.1 - Nationality of proponent / investor and operator; license of contractor and designer.
- b. Compliance with technical capability requirements in Section 4.2 - Business plan, experience, personnel, equipment, ISO.
- c. Compliance with financial capability requirements in Section 4.3 - Equity and access to credit.

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

7.2 Evaluation of Bids

- a. Evaluation of Technical Proposals of bidders that passed the qualification requirements.
 - i. Traffic study – soundness of assumptions and methodology in calculating traffic demand.
 - ii. Preliminary engineering design – conformance with performance standards and specs for prel. design, including drawings and calculations.
 - iii. Construction plan – conformance with performance standards and specs for construction methods, organization, quality control system, and schedule.
 - iv. O&M plan – compliance with performance requirements for operation, financial control, traffic mgt, toll collection system, life-cycle maintenance /rehab/reconstruction.
 - vi. Bid Security – compliance with form and amount of Security.

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

- b. Evaluation of Financial Proposals of bidders whose Technical Proposals passed the requirements.
 - i. Bid price – compliance with requirements.
 - ii. Financial model – completeness and conformance with requirements.
- c. Determination of lowest calculated bid (toll rate or GFS).
- d. Post-qualification and determination of lowest calculated responsive bid.

7.3 Award of contract

Award to lowest calculated responsive bid.

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PREPARATION OF BIDDING DOCUMENTS: PART I - INSTRUCTIONS TO BIDDERS

Section 8. Government Undertakings

8.1 Financing and Delivery of ROW

8.2 Provision of Government Financial Support (GFS)

- a. Amount to be specified by DPWH based on FS, not exceeding 50% of capital cost (net of ROW cost).
- b. Schedule of GFS release.

8.3 Availability or Facilitation of Permits

8.4 Approval of Toll Rates and Adjustments

As bid and provided in the contract.

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PREPARATION OF BIDDING DOCUMENTS: PART II – PERF. STANDARDS AND SPECS

Sec. 1. Min. Technical Performance Standards and Specs

1.1 Detailed Engineering Design (DED)

- a. Alignment
- b. Design speed, Level of Service
- c. Geometric standards – no. of lanes, lane width, shoulder width, max. radius of curvature, max. gradient, etc.
- d. Structural standards – design life, modulus of elasticity, modulus of rupture, live load (e.g., HS20-44), seismic load, etc.
- e. Standards for toll facilities
- f. Standards for O&M center
- g. Applicable Codes – National Structural Code of the Philippines, AASHTO Standard Specs for State Highways, AASHTO Policy on Geometric Design of Bridges

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PREPARATION OF BIDDING DOCUMENTS: PART II – PERF. STANDARDS AND SPECS

1.2 Construction

- a. DPWH Standard Specifications for Public Works and Highways (Blue Book), Volume II, 2004.
- b. Special construction standards for toll expressways.

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PREPARATION OF BIDDING DOCUMENTS: PART II – PERF. STANDARDS AND SPECS

1.3 O&M

a. Operation system

- i. Toll collection and accounting system
- ii. Traffic control and management system
- iii. Toll road patrol and vehicle control communication system
- iv. Assistance to disabled vehicles
- v. Information service/message sign boards
- vi. Vehicle regulation facilities (e.g., weight, load, height)
- vii. Emergency operation facilities

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PREPARATION OF BIDDING DOCUMENTS: PART II – PERF. STANDARDS AND SPECS

b. Maintenance system

- i. Management and control systems for maintenance
- ii. Inspection facilities
- iii. Road cleaning and obstruction control facilities
- iv. Routine maintenance of expressway, including carriageway, bridges, interchanges, drainage, slope protection
- v. Periodic/preventive maintenance and rehabilitation of expressway
- vi. Disaster prevention and reaction facilities
- vii. Environmental enhancement and protection
- viii. Output/performance indicators, especially for iv and v (e.g., IRI=4)

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PREPARATION OF BIDDING DOCUMENTS: PART II – PERF. STANDARDS AND SPECS

1.4 TOR of Independent Consultant (IC)

- a. Review of DED and determination of compliance with performance standards and specs for design.
- b. Inspection of Construction and determination of its compliance with approved DED and performance standards and specs for construction; certification of project completion and acceptance.
- c. Inspection of O&M and determination of compliance with approved O&M Manuals and performance standards and specs; certification of toll collection system; review of financing and accounting reports.

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PREPARATION OF BIDDING DOCUMENTS: PART II – PERF. STANDARDS AND SPECS

Section 2. Economic Parameters

2.1 Concession Period – usually 30 years plus Construction Period

2.2 Maximum Construction Period

2.3 Toll Adjustment Formula – example:

$$TR_n = TR_o (CPI_n / CPI_o)$$

where TR_n = new Toll Rate to be adopted; TR_o = old Toll Rate
 CPI_n = new Consumer Price Index; CPI_o = old CPI

2.3 Discount Rate - to be used in evaluating and comparing bids in terms of present value.

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PREPARATION OF BIDDING DOCUMENTS: PART III – DRAFT CONCESSION AGREEMENT

Section 1. Definitions

Section 2. General Project Description - Financing, DED, construction, O&M of Project with main features

Section 3. Grant of Concession – under BTO for financing, DED, construction, O&M including collection of tolls

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PREPARATION OF BIDDING DOCUMENTS: PART III – DRAFT CONCESSION AGREEMENT

Section 4. General Obligations of DPWH/Government

- a. Deliver to the Concessionaire the ROW (including the government segment of the project if any) with Permits to Enter according to the schedule in the Agreement.
- b. Provide the GFS in a Trust Account.
- c. Approve/disapprove – for implementation - the Concessionaire's DED for the facility.
- d. Perform technical supervision over the construction works.
- e. Secure all permits and pay all fees for the Project required by LGUs and other agencies.

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PREPARATION OF BIDDING DOCUMENTS: PART III – DRAFT CONCESSION AGREEMENT

Section 4. General Obligations of DPWH/Government

- f. Ensure that, upon DPWH issuance of Certificate of Acceptance and pursuant to the BDs, TRB automatically grants the TOC/franchise and approves the toll rates and adjustments per bid as awarded.
- g. Pay to the Concessionaire the revenue loss if the gov't-allowed toll rate is lower than the toll rate specified in the Agreement.
- h. Perform technical supervision over the facility O&M.

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PREPARATION OF BIDDING DOCUMENTS: PART III – DRAFT CONCESSION AGREEMENT

Section 5. Principal Obligations of Concessionaire

- a. Provide financing for the Project – including DED, construction, O&M - net of the GFS; attain financial closure before deadline in the BDs and Concession Agreement.
- b. Prepare – by itself or its designated Designers – DED of the facility, including road, structures, toll equipment and systems, according to DPWH performance standards and specs for DED set in the BDs and Agreement.
- c. Construct - by itself or its designated Constructors - the facility according to Concessionaire's DED, as approved by DPWH, and DPWH performance standards and specs for construction set in the BDs and Agreement.

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PREPARATION OF BIDDING DOCUMENTS: PART III – DRAFT CONCESSION AGREEMENT

Section 5. Principal Obligations of Concessionaire

- d. Adhere to the implementation schedule and milestones set in the BDs and Agreement.
- e. Operate and maintain the facility - by itself or by its designated Facility Operator and/or Maintenance Provider – in accordance with DPWH performance standards and specs in the BDs and Agreement.
- f. Utilize the GFS exclusively for the Project.
- g. Transfer the title of the Project to DPWH upon issuance of Certificate of Acceptance.

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PREPARATION OF BIDDING DOCUMENTS: PART III – DRAFT CONCESSION AGREEMENT

Section 5. Principal Obligations of Concessionaire

- h. Charge and collect from the users of the facility the agreed opening toll fees based on the bid, subject to adjustments per the BDs and Agreement.
- i. Pay the concession fee to DPWH set in the BDs and Agreement.
- j. Maintain a Maintenance Fund trust account throughout the Operation Period.
- k. Post the Performance Securities for construction and for O&M as required in the BDs and Agreement.
- l. Turn over the facility to DPWH in good condition per O&M standards at the end of Concession Period

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PREPARATION OF BIDDING DOCUMENTS: PART III – DRAFT CONCESSION AGREEMENT

Section 6. Work Schedule – ROW delivery, GFS, financial closure, DED, construction, TOC, O&M

Section 7. Financing – debt and equity financing, financial closure, GFS and other government costs

Section 8. ROW - govt funding and delivery of clear ROW

Section 9. Design – DED to conform to performance specs, certification by IC, approval by DPWH

Section 10. Construction – construction per DED and performance specs, IC inspection and certification, delays, variations, liquidated damages,

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PREPARATION OF BIDDING DOCUMENTS: PART III – DRAFT CONCESSION AGREEMENT

Section 11. O&M - TOC, operation per approved Opns Manual, maint. per approved Maint. Manual, operator and maint. provider, Maint. Fund account, IC review

Section 12. Tolls - initial toll rates, adjustment formula, compensation for non-implementation

Section 13. Independent Consultant (IC) - checking of DED, const., O&M, for compliance with performance specs; actions on IC findings; appointment and fees.

Section 14. Material Adverse Government Action – grounds (ROW, changes in laws, etc.), solutions

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PREPARATION OF BIDDING DOCUMENTS: PART III – DRAFT CONCESSION AGREEMENT

Section 15. Default and Termination – grounds for default by concessionaire and govt, curing, termination process

Section 16. Force Majeure – events, obligations of concessionaire and government

Section 17. Turnover – mechanics and cost of turnover at end of concession period.

Section 18. Representation and Warranties – powers and authority to perform the contractual obligations.

Section 19. Dispute Resolution – amicable settlement, arbitration.

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Section 20. Misc. – effectivity, assignment, amendment.

FINALIZING THE PROCUREMENT PLAN FOR PPP PROJECT

1. Confirming Scope of Work and Procurement Method - e.g., BTO under BOT Law, using 3 envelopes

2. Checking Readiness of Project for Procurement

a. Completed FS and Project approval (ICC/NEDA).

b. Inclusion of Project in DPWH Med-Term Infra Program.

c. Completed Bidding Documents (Parts I to III).

d. Availability of Multi-Year Obligational Authority (MYOA) and SARO for government fund requirements.

e. Availability of ROW (including MOA with LGUs)

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f. All government clearances – ECC, RDC and LGU endorsements, others

FINALIZING THE PROCUREMENT PLAN FOR PPP PROJECT

3. Activation of BAC and TWG
4. Adoption of Procurement Schedule
 - a. Pre-Procurement Conference
 - b. Publication of Invitation to Bid
 - c. Issuance of Bidding Documents
 - d. Pre-Bid Conference
 - e. Receipt and Opening of Bids
 - e. Evaluation of Bids and Award
 - f. Contract Execution/Approval
- 39 5. Approval of Procurement Plan

CONDUCT OF PUBLIC BIDDING UNDER BOT LAW / IRR

PROCESS	GOVERNMENT	PRIVATE SECTOR
PROJECT ID AND PREPARATION	<ul style="list-style-type: none"> DPWH prepares FS and contract incl. all necessary docs and submit to ICC/NEDA Board for approval 	
APPROVAL BY ICC/NEDA	<ul style="list-style-type: none"> ICC/NEDA is given 30 cal. days (cd) to approve the project and contract. 	
INVITATION TO BID	<ul style="list-style-type: none"> DPWH-BAC publishes invitation once a week for 21 cd in 2 newspapers of gen. circulation and 1 local paper. BAC also posts invitation on DPWH website 	
ISSUANCE OF RFP/BID PREPARATION	<ul style="list-style-type: none"> DPWH issues qualification forms, RFP, bidding docs to interested parties. DPWH conducts Pre-Bid Conference: <ol style="list-style-type: none"> a. at least 30 cd before deadline for bid submission if proj cost is < P300M b. 60-120 cd before deadline if project cost is P300M or more. 	<ul style="list-style-type: none"> Bidders secure qualification forms and bidding docs. Bidders prepare their qualification forms and bid proposals: <ol style="list-style-type: none"> a. 90 cd for projects costing <P300M b. 120 cd for projects costing P300M or more

CONDUCT OF PUBLIC BIDDING UNDER BOT LAW / IRR

PROCESS	GOVERNMENT	PRIVATE SECTOR
BID SUBMISSION AND EVALUATION	<ul style="list-style-type: none"> • DPWH-BAC evaluates qualification docs within 15 cd from opening. It will inform bidders if they are qualified or disqualified and reasons for disqualification. Only qualified bidders will be considered for bid evaluation. • BAC shall evaluate Technical Proposals within 30 cd and Financial Proposals within 15 cd. • DPWH Secretary shall act on any appeal within 45 working days (wd). 	<ul style="list-style-type: none"> • Bidders submit their proposals in 3 envelopes: <ol style="list-style-type: none"> a. Envelope 1 – Qualification docs b. Envelope 2 – Technical Proposal including Bid Security c. Envelope 3 – Financial Proposal • Disqualified bidders may, within 15 wd from receipt of notice, appeal to DPWH Secretary, with a non-refundable appeal fee of at least 0.5% of project cost.
APPROVAL OF CONTRACT AWARD	<ul style="list-style-type: none"> • BAC submits to DPWH Secretary recommendation for award within 7 cd after financial evaluation. • DPWH Sec. approves recommendation for award within 7 cd from receipt. • BAC shall inform all unsuccessful bidders of bidding results. 	

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CONDUCT OF PUBLIC BIDDING UNDER BOT LAW / IRR

PROCESS	GOVERNMENT	PRIVATE SECTOR
ISSUANCE OF NOTICE OF AWARD (NOA)	<ul style="list-style-type: none"> • DPWH Secretary signs NOA and issues it to winning bidder, indicating requirements for contract award for submission. • Within 7 cd upon receipt of all requirements for award, DPWH Secretary shall notify bidder of its compliance. • If deadline for requirements is not met, DPWH may confiscate Bid Security . 	<ul style="list-style-type: none"> • Winning proponent receives NOA and shall comply with all requirements for award within 30 cd.

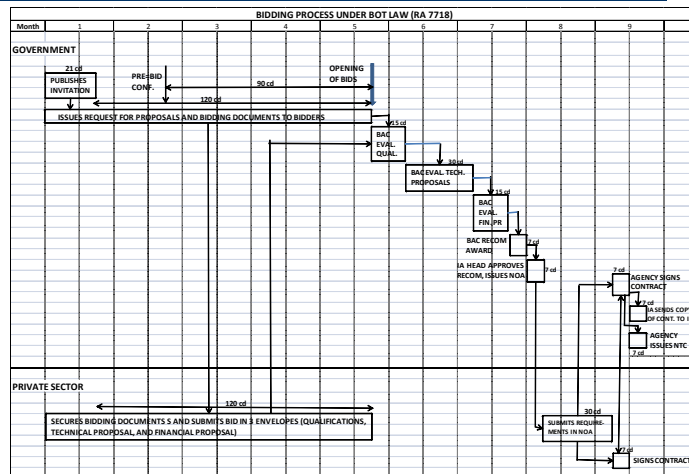
42

CONDUCT OF PUBLIC BIDDING UNDER BOT LAW / IRR

PROCESS	GOVERNMENT	PRIVATE SECTOR
EXECUTION/ APPROVAL OF CONTRACT	<ul style="list-style-type: none"> Authorized signatory of DPWH shall sign contract within 7 cd from receipt of notice that all requirements for award have been met. The contract shall be effective upon signing by DPWH Secretary. DPWH shall submit to the approving authority (ICC/NEDA) an original signed copy of the contract. 	<ul style="list-style-type: none"> Authorized signatory of winning Proponent shall sign contract within 7 cd from receipt of notice that all requirements for award have been met.
ISSUANCE OF NOTICE TO COMMENCE IMPLEMENTATION (NTCI)	<ul style="list-style-type: none"> DPWH shall issue NTCI to winning proponent within 7 cd from date of contract approval. DPWH shall comply with all conditions precedent for contract implementation. 	<ul style="list-style-type: none"> Winning Proponent shall comply with all conditions precedent for contract implementation (usually includes financial closure)

43

CONDUCT OF PUBLIC BIDDING UNDER BOT LAW / IRR



44

PROPOSED IMMEDIATE ACTIONS TO IMPROVE PPP PROCUREMENT

- Preparation and adoption of PPP Standard Bidding Documents, including Model Agreements - for consistent and predictable application.
- Streamlining of rules and procedures for procurement – to expedite project implementation and enhance competition and transparency.
- Consultation on above with main players and stakeholders of government, private sector, and users – to ensure all interests are considered.

45

SUGGESTED REFERENCES / READINGS

- RA 6957 as amended by RA 7718 (BOT Law) and IRR
- DPWH, Tarlac-La Union Toll Expressway Project, Terms of Reference for Bidding under BOT Law, August 2007.
- DPWH, Tarlac-La Union Toll Expressway Project, Toll Concession Agreement.
- JICA-DPWH Team, Draft of Model BTO Concession Agreement
- JICA-DPWH, Study on Master Plan on High Standard Highway Network Development in the Philippines, 2009-2010
- PEGR, RA006-04, GHD Proposals on Model Concession Agreements and Related Documents on PPP, 2008-2009
- PEGR, RA006-07, Castalia Reports on PPP, 2009
- FIDIC, Conditions of Contract for EPC (Engineer-Procure-Construct)/ Turnkey Projects

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Thank you!

Public-Private Partnership (PPP), Pilot Training

PROJECT IMPLEMENTATION OF PHASE 1, NLEX

27th October 2010

Bayview Hotel, Manila

[1]

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EXPANSION PROJECTS

[2]



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[3]

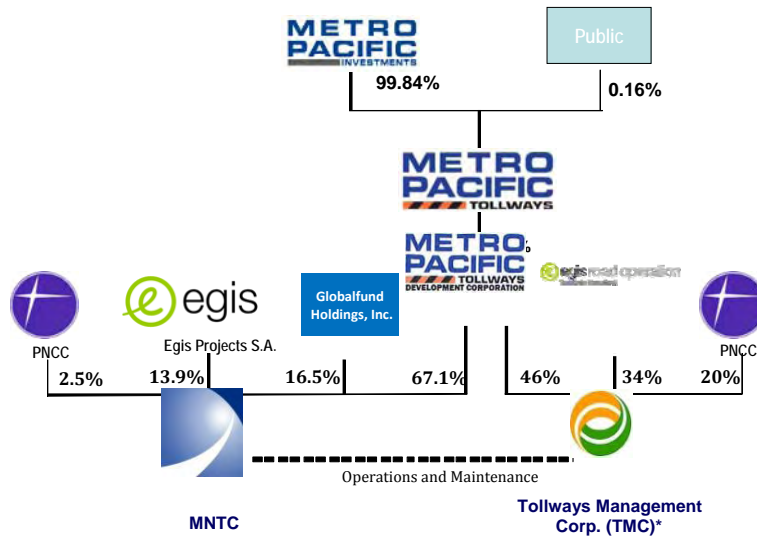


MNTC: COMPANY OUTLINE

Company Name	Manila North Tollways Corp. (MNTC)
Date of incorporation	February 1997
Date of commercial operations	February 2005
Average daily traffic (YTD 2010)	160,000 vehicle-entries per day
Expressways in operation (km)	95.2 km NLEX Phase 1 (84 km mainline NLEX & 8.5 km Subic Road) Phase 2 , Segment 8.1 (2.7 km. link to Mindanao Avenue)
Concession Period	Until December 31, 2037
Grantor	Republic of the Philippines through the Toll Regulatory Board
Franchisee	Philippine National Construction Corp. (PNCC)
Operator	Tollways Management Corp. (TMC)


[4]

MANILA NORTH TOLLWAYS CORP (MNTC), A UNIT OF THE METRO PACIFIC GROUP, IS THE PROJECT COMPANY FOR THE MANILA NORTH EXPRESSWAY CONCESSION




[5]


MNTC'S LOCAL AND FOREIGN SPONSORS ARE LEADERS IN THE INFRASTRUCTURE SECTOR

- 


PHI

 - One of the leading infrastructure companies in the Philippines.
 - Owns and controls businesses involved in water distribution, electricity distribution, toll roads and hospital management
- 

FRA

 - Egis Projects S.A., along with its subsidiaries and affiliates, has over 10 years experience in toll road operations, having participated in over 24 projects in 13 countries in various capacities as developer, equipment supplier and operator.
- 

PHI

 - Experienced in operating expressways in the Philippines, through its role as the original operator and franchisee for both the SLEX and the NLEX tollways.
 - It is also a leading domestic construction company, with a strong track record in the construction of bridges, toll roads and other civil works projects.
- 

PHI

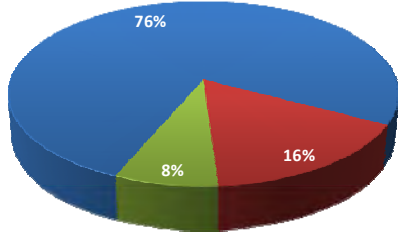
 - An investment holding company owned by the Sy family, who controls SM Investments Corporation, one of the largest conglomerates in the Philippines with businesses in real estate, mall operations and banking

[6]

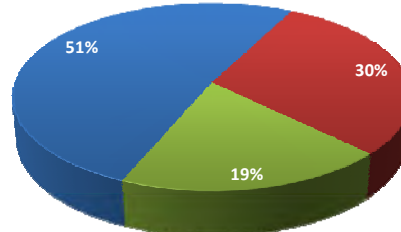


TRAFFIC AND REVENUE PROFILE

Average Daily Traffic by Vehicle Class
As of 30 June 2010



Average Daily Net Toll Revenues by Vehicle Class
As of 30 June 2010



Vehicle Class	Ave. Daily Traffic (vehicle entries)	Ave. Daily Revenues (in Php millions)
Class 1	121,257	8.28
Class 2	25,686	4.78
Class 3	11,785	3.08
TOTAL	158,729	16.14

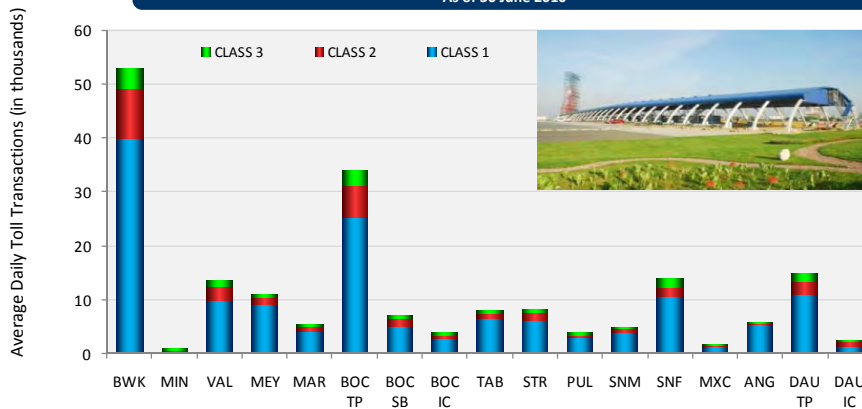
[7]



PROFILE OF TOLL TRANSACTIONS PER TOLL PLAZA

AVERAGE DAILY TOLL TRANSACTIONS PER TOLL PLAZA

As of 30 June 2010



[8]



MNTC IS THE LARGEST PRIVATE TOLL ROAD COMPANY IN THE PHILIPPINES

Concessionaire	Project	Length	Ave. Revenues /Day*
MNTC	MNEP	92 km	PhP15.0 M
MTD/PNCC	SLEX	27km	Php 3.5 M
CITRA	Skyway	21km	Php 8.0 M
STAR	STAR	22 km	Php 0.3 M
PEA/UEM	Coastal	6 km	Php 0.8 M

* Estimates based on available audited FS

[9]



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THE MNTC CONCESSION COVERS THREE PHASES - PHASE 1 AND PHASE 2, SEGMENT 8.1 ALREADY IN COMMERCIAL OPERATIONS

Phase 1: The rehabilitation, expansion, operation and maintenance of the existing 84-km NLEX that connects Metro Manila to Sta Ines, near Clark, Pampanga & the construction, operation and maintenance of an 8-km Subic-Tipo road segment;

Phase 2: The construction, operation and maintenance of the 22-km northern portion of C-5 from UP to Malabon (in Metro Manila);

Phase 3: The construction, operation and maintenance of the 65.8-km Subic arm that will connect the Subic Special Economic Zone to the NLEX and the 5.85-km road (Segment 10) from MacArthur Highway to Letre.

Note: Segment 10 was integrated into Phase 2 by TRB in its resolution dated 17 July 2007.



THERE HAD BEEN NO SIGNIFICANT IMPROVEMENTS IN THE NORTH LUZON EXPRESSWAY (NLEX) IN THE EARLY 90s

The 30-year old NLEX had gone into a sorry state of disrepair; thus, the need for its rehabilitation and modernization to handle the 3.0% to 3.5% growth in transport demand in Central and North Luzon.



Traffic Congestion



Flooded sections

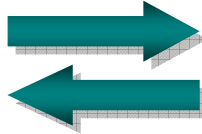


Potholes

[12]



TO UNDERTAKE THE REHABILITATION, EXPANSION AND MODERNIZATION OF NLEX, THE GOVERNMENT INVITED THE PRIVATE SECTOR INTO A PARTNERSHIP (“PPP”)



Government Inputs:

- Usufructuary rights over the state-owned Philippine National Construction Corporation (PNCC) franchise
- Toll operation certificate over the 30-year concession period
- Incentives in the form of a 6-year income tax holiday
- Additional right-of-way

Private Sector Inputs:

- Capital and financing
- Technical and management know-how

[13]



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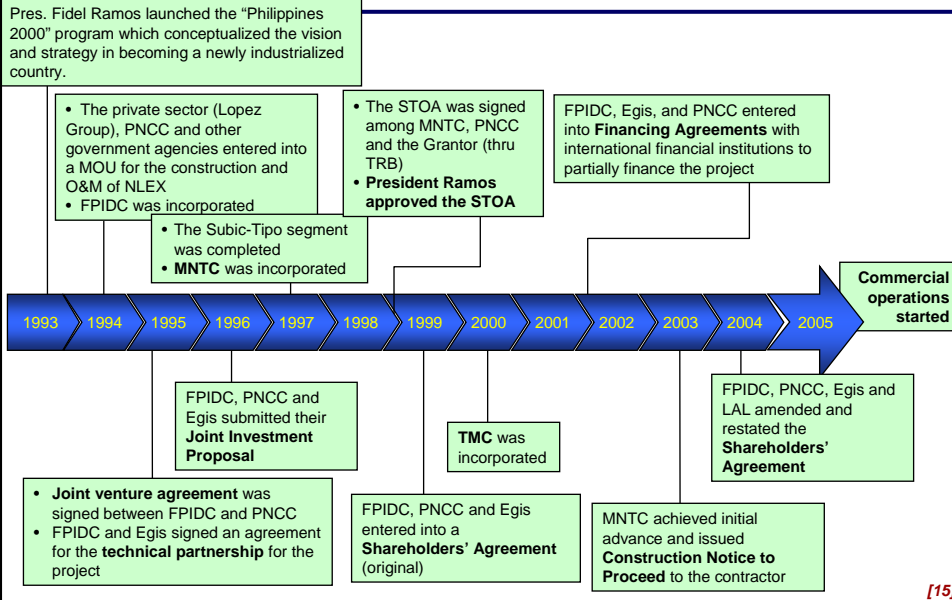
INSURANCE COVER

EXPANSION PROJECTS

[14]



HISTORY OF THE STOA (CONCESSION)



THE STOA WAS APPROVED BY APPROPRIATE GOVERNMENT AUTHORITIES



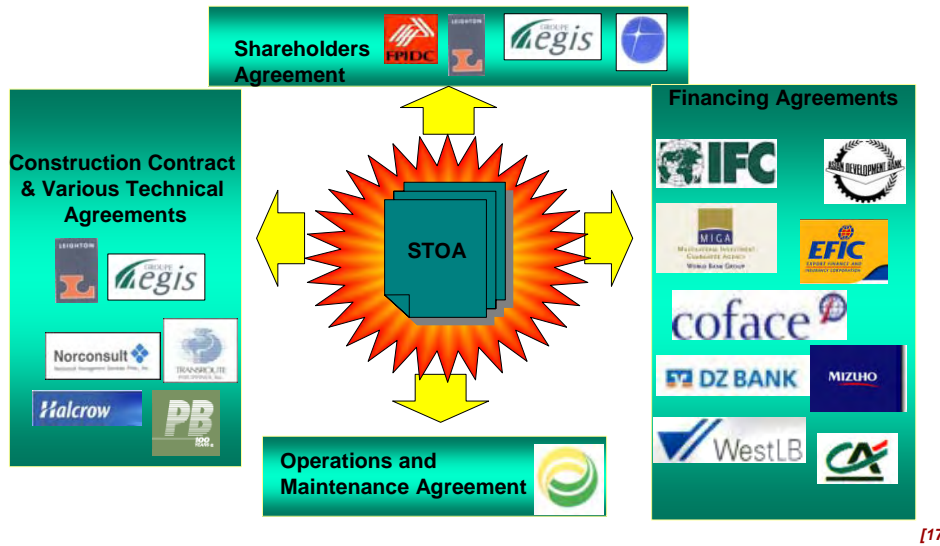
Approval of the STOA by the President

The Project was approved by the Toll Regulatory Board composed of representatives from:

- Department of Public Works and Highways
 - Department of Finance
 - National Economic and Development Authority
 - Department of Transportation and Communication and
 - Private sector.
- The STOA was approved by the President of the Republic of the Philippines on 15 June 1998.

[16]

THE STOA BECAME THE CORNERSTONE OF THE PROJECT UNDERTAKEN BY LOCAL AND INTERNATIONAL PARTNERS



[17]

SALIENT TERMS OF THE CONCESSION (“STOA”)

- **End of Concession:**
 - December 31, 2030. This was later extended until December 31, 2037.
- **Ownership of Project Roads:**
 - The Project Roads are owned by the Grantor subject to the rights and privileges of MNTC to construct, operate and maintain the roads in accordance with the Concession.
- **Operation and Maintenance:**
 - MNTC shall be primarily liable for the operation and maintenance of the completed Project Roads.
- **Toll Fees:**
 - MNTC is entitled to set the effective toll rate which shall not exceed the Authorized Toll Rate (“ATR”). The ATR was set at a level that would allow MNTC to cover its debt service obligations and enable the Sponsors’ to generate reasonable returns. The ATR is adjusted every two years to take into account movements in the inflation rates.
 - The Grantor warrants to compensate MNTC for any resulting loss of revenue in case the ATRs based on the parametric formula were not granted in full.

[18]



KEY DELIVERABLES UNDER THE STOA

GOVERNMENT DELIVERABLES	PNCC	MNTC DELIVERABLES
<p>Provide right of way (ROW) at government cost</p> <p>Assist MNTC in obtaining all permits/ approvals/ licenses.</p> <p>Help MNTC implement the Project.</p> <p>Assure MNTC of continued support and public acceptance.</p> <p>Implement the agreed toll rates</p> <p>Recognize Lenders' "step-in" rights if MNTC defaults in its obligations</p> <p>Compensate MNTC if it decides to unilaterally cancel the Project (thru no fault of MNTC)</p> <p>Compensate MNTC for any loss of revenue due to failure to implement agreed toll rate formula</p>	<p>Assign its usufructuary rights to MNTC</p> <p>Turn over possession of the tollway to MNTC upon completion of construction</p>	<p>Raise financing on its own without government guarantee</p> <p>Rebuild and modernize the NLE tollway system according to government required standards and levels of service</p> <p>Complete the construction within the time required</p> <p>Operate the tollway meeting government standards</p> <p>Maintain the pavement and the toll collection system properly</p> <p>Return the tollway system to government at no cost after concession period ends</p>

[19]



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[20]



MNTC ARRANGED A LIMITED RECOURSE PROJECT FINANCING FOR THE NLEX REHABILITATION



[21]



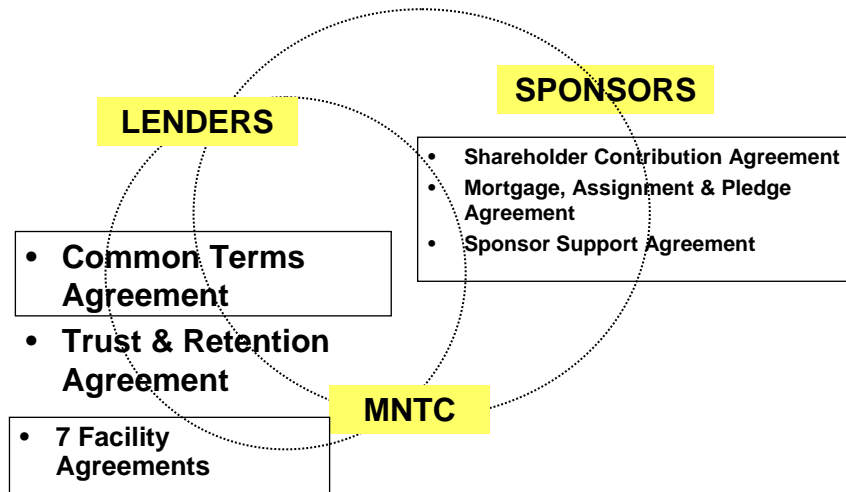
MNTC HAVE 7 LOAN FACILITIES, 6 ARE TERM LOAN FACILITIES WHILE 1 IS AN L/C FACILITY

- 1) ADB Loan - \$45mm
- 2) EFIC Loan - \$55mm
- 3) IFC Loan - \$46mm
- 4) ADB Complementary Loan - \$25mm
- 5) COFACE-Covered Loan - \$35mm
- 6) MIGA-Covered Loan - \$47.5mm
- 7) L/C Facility - \$7.5mm

US\$261mm in available amount, of which US\$253.5mm are term-loan facilities

[22]

ALL LENDERS ARE BOUND BY THE COMMON TERMS AGREEMENT



[23]

THE FINANCING DOCUMENTS:

- 1) Common Terms Agreement – loan drawdown procedures, repayment terms, covenants, events of default, reps & warranties
- 2) Trust & Retention Agreement – appointment of security trustee, deposits & withdrawals from project accounts, cash waterfall
- 3) Shareholder Contribution Agreement – equity contribution, ownership covenants
- 4) Mortgage, Assignment & Pledge Agreement – security package over assets, contract rights, contracts, shares
- 5) Sponsor Support Agreement – contingent support from sponsors for financing & completion insufficiency

[24]

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[25]

REQUISITES TO CONSTRUCTION

- The obligation of MNTC to commence with the construction of the relevant Phase of the Project Roads is subject to the issuance by the Grantor (i.e., ROP through TRB) of a Notice to Proceed (“NTP”). (Clause 4.2)
- MNTC will apply for such NTP only upon the satisfaction of the following general and specific requisites:
 - General Requisite:
No governmental agency has enacted a law or regulation which would prohibit, materially restrict, substantially increase the cost, or materially delay, the implementation of the Project. (Clause 4.2)

[26]

REQUISITES TO CONSTRUCTION

(cont.)

Specific Requisites:

- Delivery by Grantor of Land Required
- Approval by Grantor of the Detailed Engineering Design
- Issuance by DENR of the Environmental Compliance Certificate
- Issuance by Grantor and its agencies of the required approvals, permits, and licenses for the construction of the toll road facilities
- Posting by MNTC of a Performance Bond equivalent to 5% of the total estimated construction cost – within 30 days from Grantor's issuance of the NTP
- Presentation by MNTC of proof of availability of funds for the implementation of construction (Clause 4.2)

[27]

PHASE 1 - PRE-CONSTRUCTION ACTIVITIES

- Selection of Contractor by Competitive Bidding
- MNTC identified requirements, develop its selection criteria and procedures
- MNTC organized its Selection and Bids and Awards Committee supported by a Technical Working Group
- Invitation letter to pre-qualify and bid issued to prospective contractors (published in newspapers of general circulation).
- MNTC secured confirmation by the Grantor of its nominated D&C Contractor.
- MNTC submits and Grantor approved its proposed manner and procedure for selecting the Independent Design Checker
- MNTC select and appoints a Employer's Representative for the Project

[28]

CONSIDERATION OF RISKS IN SELECTING THE CONTRACT TYPE

- **Contracts must be structured and managed to distribute and control the risk in an equitable way.**
- **The risks identified were costs and schedule uncertainties, and technical unknowns due to incomplete plans.**
- **“Turn key” contract : Contractors assumed most of the project risk**
- **Lenders preferred a “turn key” (design and build) contract at fixed lump sum amount than the conventional unit price contract.**

[29]

KEY FEATURES OF THE D&C CONTRACT

- **Full turnkey contract which “wraps around” the toll operating equipment and system.**
- **Single responsibility, fixed lump sum Price, date certain.**
- **Detailed engineering design, construction and costs of construction reviewed and approved by TRB Board through an Independent Design Checker (IDC) and Independent Certification Engineer (ICE).**

[30]



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[31]



KEY FEATURES OF THE O&M AGREEMENT

Pre-start Up Services	<ul style="list-style-type: none">• Functional specifications for O&M facilities and FOE• Reviewing the FOE and civil works design• Staffing and training TMC personnel• Preparing O&M procedures and manuals.• Assisting with the commissioning of the NLEX Project.
Post-start Up Services	<ul style="list-style-type: none">• Day to day operations of the NLEX• Implementation of secure toll collections and deposit of funds to MNTC's accounts• Traffic management• Carrying out of routine maintenance• Identification of heavy maintenance requirements• Liaising with relevant authorities and emergency services• Ensuring effective safety response• Advising on commercial policies

Performance standards and penalties are also specified in the O&M Agreement.

[32]



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MNTC HAS PUT IN PLACE A COMPREHENSIVE INSURANCE PACKAGE

INSURANCE COVERAGES FOR THE CONSTRUCTION PERIOD	SCOPE AND TERM OF COVER
“Contractor’s All Risks”	<ul style="list-style-type: none"> • Loss or damage to the Works, Plant, Materials, and Contractor’s Documents for the period from the Commencement Date until the date of issue of the Performance Certificate. • Cost: Equivalent of Contract Cost
Marine Cargo Insurance (Imported Equipment)	<ul style="list-style-type: none"> • Loss of or damage to all materials and/or equipment for the Works whilst in transit and/or shipment from outside the Philippines until delivery to the Site or to any final place of pre-Site storage/delivery point in the Philippines and whilst in storage anywhere in the world during such transit/shipment • Cost: The replacement cost of materials to be shipped

[34]



MNTC HAS PUT IN PLACE A COMPREHENSIVE INSURANCE PACKAGE

INSURANCE COVERAGES FOR THE CONSTRUCTION PERIOD	SCOPE OF COVER
Third Party Liability Insurance	<ul style="list-style-type: none"> • Legal liability, including liability under contract for loss, damage, death or bodily injury or illness to any person or loss of or damage to any property (other than liability of an insured party to its employees or in respect of loss or damage to the Works. • Cost: Not less than \$10M for any 1 accident or series of occurrence.
Professional Indemnity Insurance	<ul style="list-style-type: none"> • Against liability arising from the act, omission or default of the Contractor and its subcontractors of any tier in carrying out the design, specification and management of the Project (including, for the avoidance of doubt, the design and specification of the Imported Equipment). • Cost: \$10M for the design of Works per occurrence on "claim made" basis and \$10M for the design of Imported Equipment

[35]



MNTC HAS PUT IN PLACE A COMPREHENSIVE INSURANCE PACKAGE

INSURANCE COVERAGES FOR THE OPERATIONAL PERIOD	TERMS
"All Risks" and Business Interruption	<ul style="list-style-type: none"> • BPI / MS Insurance Corp is fronting insurer with no retention • Full value – US\$288.6 MM • BI – US\$133.7MM (18 mos) • Reinsurers include: New Hampshire Insurance Co. (34%), Munich Reinsurance Co. (30%), Allianz AG Reinsurance (22.5%), SCOR Reinsurance Co. (7.5%), Sun Alliance & London Insurance Plc (6%)
Third Party Liability	<ul style="list-style-type: none"> • Insured with New Hampshire Insurance Co. • Limit of Liability – US\$50MM • Deductible – US\$10,000 each and every occurrence
Terrorism	<ul style="list-style-type: none"> • Insured with QBE (50%) and New Hampshire Insurance Co (50%) • Sum Insured – US\$ 15MM • Deductible – US\$250,000 for Property Damage and 14 days for BI

[36]



**TOTAL PREMIUM INCLUDING OTHER CHARGES AMOUNTED
TO US\$2.025 MILLION**

INSURANCE COVERAGES FOR THE OPERATIONAL PERIOD	TERMS
Professional Indemnity / Errors and Omission Insurance	<ul style="list-style-type: none">• Insured with QBE Insurance (Phils) Inc.• Limit of Indemnity – US\$10MM• Deductible – US\$150,000
Workers Compensation and Employer’s Liability Insurance	<ul style="list-style-type: none">• Insured with Philam Insurance• Limit of Liability – US\$1.0MM
Directors and Officers Liability Insurance	<ul style="list-style-type: none">• Insured with Philam Insurance• Limit of Indemnity – US\$10.0MM
Crime Insurance	<ul style="list-style-type: none">• Insured with Philam Insurance• Limit of Liability – US\$500K

[37]



**MNTC COMPLETED THE PROJECT ON
TIME AND WITHIN BUDGET**

- After a lengthy process of complying with Lenders’ covenants, project construction started in February 2003. We complied and satisfied 234 condition precedents (CPs) to obtain initial draw of the funds.
- The construction was completed on time and within budget.
- The new NLEX started commercial operations on February 10, 2005.

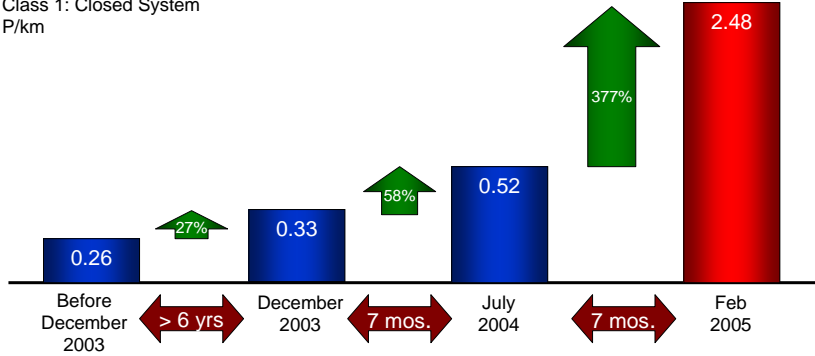
Private-public partnership is behind the successful completion and operation of NLEX Phase 1 components of the Manila North Expressway (MNE) Concession

[38]



MNTC WAS ABLE TO HURDLE THE BIG CHALLENGE OF GAINING PUBLIC ACCEPTANCE OF INCREASED TOLL RATES

Class 1: Closed System
P/km



[39]



MNTC CONTINUES TO SUPPORT TOURISM PROGRAMS IN THE NORTH TO BOOST NLEX TRAFFIC

Supports Various Events in the North

WOW CALLEPINES
CENTRAL LUZON
a wellspring of...
17 June - 05 July
Committed, Ambitious, and...
DOT - Special Projects

SCHEDULE OF ACTIVITIES
Date Time Activity

TRAVEL EXPLORE
M.I.C.E. BUYER INVITATIONAL PROGRAMME 2008

DREAM TRIP
JULY 5 - 9, 2009
A visual, experiential, and gastronomic tour of Manila & Environs and selected dream destinations in the Philippines.

MICE MART
JULY 10, 2009
One-on-one business session between the invited Foreign Buyers and Philippine Suppliers of M.I.C.E. products and services
Over 100 Foreign M.I.C.E. Buyers participating from all over the world and the Philippines
One day of power-packed business appointments, social networking and seminars.



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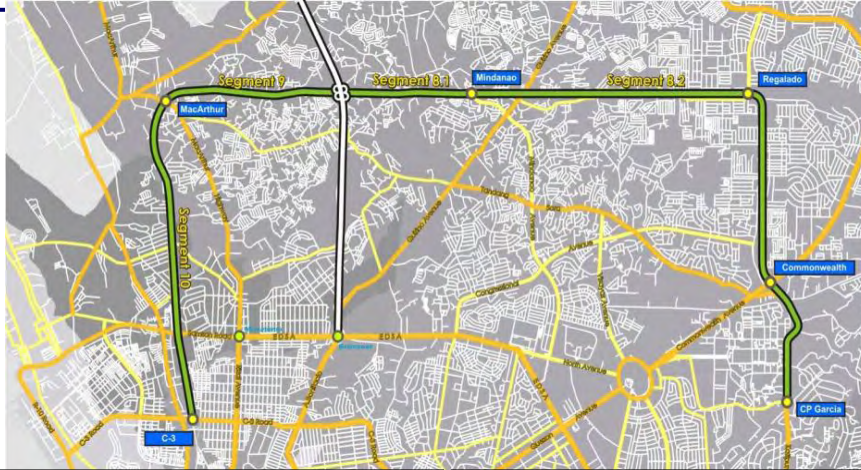
Agenda

NLEX HARBOR LINK PROJECT

[42]

PROJECT PROFILE

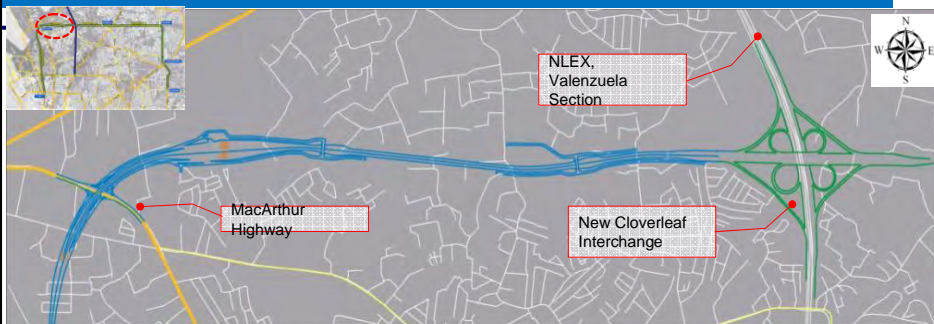
MNTC READY TO ACCELERATE ITS PHASE 2 EXPANSION; PURSUES SEGMENTS 9 AND 10, THE NLEX HARBOR LINK PROJECT



Segment No. 8.1 (in operation – June 2010)	Mindanao Avenue – NLE (2.70 km) 4 lanes divided expressway, at-grade 1 interchange, 1 new bridge, 1 vehicular overpass	Segment No. 10	McArthur – Letre (5.65 km) 4 lanes divided expressway (fully elevated)
Segment No. 9	NLE – McArthur Highway (2.42 km) 4 lanes divided expressway, at-grade 1 interchange, 2 vehicular overpass	Segment No. 8.2	C.P. Garcia Ave – Mindanao Ave (10.30 km) 4 lane divided expressway, at- grade 2 interchanges, 5 vehicular overpass

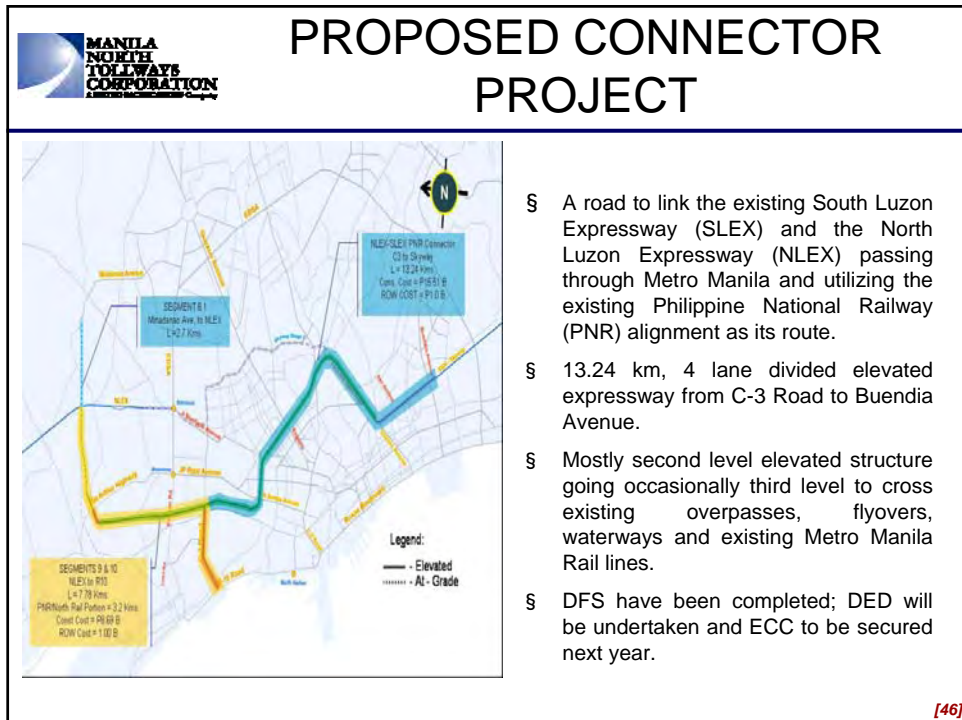
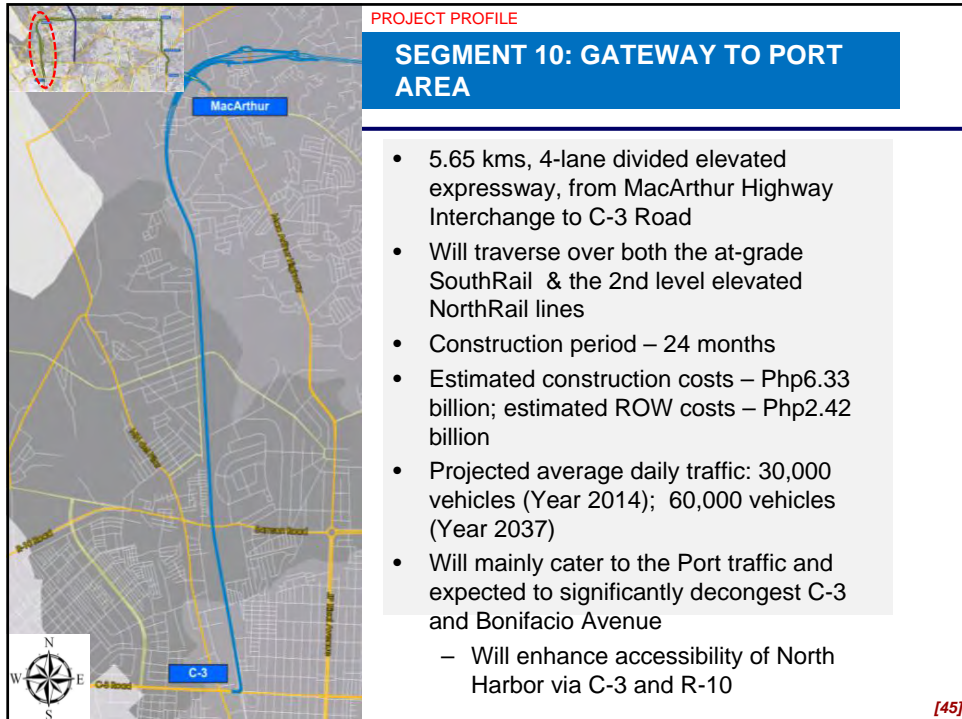
PROJECT PROFILE

SEGMENT 9 – NLEX EXTENSION TO WEST OF METRO MANILA



- 2.42 kms, 4 lane divided at-grade expressway from NLEX Cloverleaf Interchange to MacArthur Highway
- Construction period – 15 months
- Estimated construction costs – Php1.69 billion; estimated ROW costs – 1.35 billion
- Projected average daily traffic: 27,000 vehicles (Year 2014); 53,000 vehicles (Year 2037)
- Expected to spur further development in the CAMANAVA area and reduce traffic congestion at Valenzuela

[44]



PROPOSED ROAD CONFIGURATION

Expressway	At-grade/Elevated	Distance
Segment 9	At-grade	2.70 km
Segment 10	Elevated	7.78 km
Connector via existing PNR line	Elevated	13.24 km

- NEED FOR ALL ELEVATED STRUCTURES:**
- PNR requirement of possible expansion
 - Numerous road crossings
 - Existing transport infrastructures
 - Security

[47]

END OF PRESENTATION

THANK YOU!

[48]

Public-Private Partnership (PPP), Pilot Training

PHASE 2, SEGMENT 8.1
(NLEX-Mindanao Avenue Link)

PROJECT IMPLEMENTATION

27 October 2010

Bayview Hotel

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[49]

Presentation Outline

PRE-CONSTRUCTION PHASE

- Detailed Engineering Design (DED)
- Project Requirements
- Procurement Process

CONSTRUCTION PHASE

- Project Description
- Project Organisation
- Project Objectives
 - Timely Completion →→
 - Best Quality →→
 - Within Budget →→

[50]

→→ **Timely Completion**

- Planning and Scheduling
- Site Activities Inspection and Monitoring
- Government and Community Relations

→→ **Best Quality**

- Design Review during Construction
- Quality Assurance / Control
- Environmental, Safety and Health

→→ **Within Budget**

- Contract Administration
- Cost Engineering and Control

[51]

PRE-CONSTRUCTION PHASE

[52]

- 1. Detailed Engineering Design (DED)**
- 2. Project Requirements**
- 3. Procurement Process**

[53]

- 1. Detailed Engineering Design (DED)**
 - Engagement of a Designer
- 2. Project Requirements**
 - Design Review Process
- 3. Procurement Process**

[54]

1. Detailed Engineering Design (DED)

• Engagement of a Designer

- ✓ The designer was selected through a bidding process. A local consultant was mandated;
- ✓ The bid evaluation took into consideration technical experience and financial capacity; and
- ✓ The designer's ability to post a Professional Indemnity Insurance (PII).

[55]

1. Detailed Engineering Design (DED)

• Design Review Process

- ✓ Consultation with DPWH-Bureau of Design (BOD) for alignment and interface with national roads;
- ✓ MNTC in-house review;
- ✓ Peer review by an engineering consultant; and
- ✓ Detailed review by the Independent Design Checker/Independent Certification Engineer (IDC/ICE), who certifies and recommend approval of the design to the TRB

[56]

1. Detailed Engineering Design (DED)

2. Project Requirements

- Scoping

3. Procurement Process

- Right-of-Way (ROW)
- Technical and Financial

[57]

2. Project Requirements

- **Scoping**

- ✓ DPWH / OSG – ROW Acquisition
- ✓ NHA / LGU – Relocation of Informal Settler Families
- ✓ DENR – Environmental Compliance Certificate (ECC)
- ✓ MMDA – Traffic Coordination / Truck Ban Exemption
- ✓ Utility Companies – Relocation of Affected Utilities
- ✓ MNTC – Design, Finance & Construct

[58]

2. Project Requirements

- **Right of Way**

- ✓ Identification of affected lots and improvements (by the DPWH with the assistance of MNTC);
- ✓ Expropriation of the titled lots and improvements (by the DPWH and the Office of the Solicitor General);
- ✓ Relocation of affected informal settler families (ISFs) (by the NHA and relevant LGU, in this case the City of Valenzuela); and
- ✓ Identification (addressed by the designs) and relocation of affected utilities concerned utility companies with the assistance from DPWH.

[59]

2. Project Requirements

- **Technical and Financial**

- ✓ Estimated ROW cost (a Government deliverable);
- ✓ Estimated construction cost;
- ✓ Allocation of contingencies; and
- ✓ Funding source whether through loan or in-house; and

[60]

1. Detailed Engineering Design (DED)

2. Project Requirements

3. Procurement Process

[61]

3. Procurement Process

- **Preparation of Bid Documents**
- **Prequalification of Prospective Bidders**
- **Competitive Bidding Process**

[62]

3. Procurement Process

- **Preparation of Bid Documents**
 - ✓ Instruction to bidders
 - ✓ Technical Specifications (DPWH Standards for Bridges and Highways)
 - ✓ Drawings
 - ✓ Contract Form (FIDIC based)

[63]

3. Procurement Process

- **Preparation of Bid Documents**
- **Prequalification of Prospective Bidders**
- **Competitive Bidding Process**

[64]

3. Procurement Process

- **Prequalification of Prospective Bidders**

- ✓ Publication of invitation to pre-qualify and to bid to minimum of 3 newspapers of nationwide circulation;
- ✓ Issuance of formal invitation to pre-qualify;
- ✓ Evaluation of Prequalification Documents; and
- ✓ Notifications to qualified bidders.

[65]

3. Procurement Process

- **Preparation of Bid Documents**
- **Prequalification of Prospective Bidders**
- **Competitive Bidding Process**

[66]

3. Procurement Process

- **Competitive Bidding Process**

- ✓ Four (4) bidders were requested to submit their bids;
- ✓ Bid opening and evaluation was conducted by the Bid Evaluation Team (BET);
- ✓ Bid Evaluation Report submitted to the Selection, Bids and Award Committee (SBAC) for approval; and
- ✓ Notice of Award issued to the winning bidder.

[67]

CONSTRUCTION PHASE

[68]

Phase 2 - Project Map



[69]

CONSTRUCTION PHASE



“NLEX Mindanao Avenue Link”
(Phase 2, Segment 8.1)

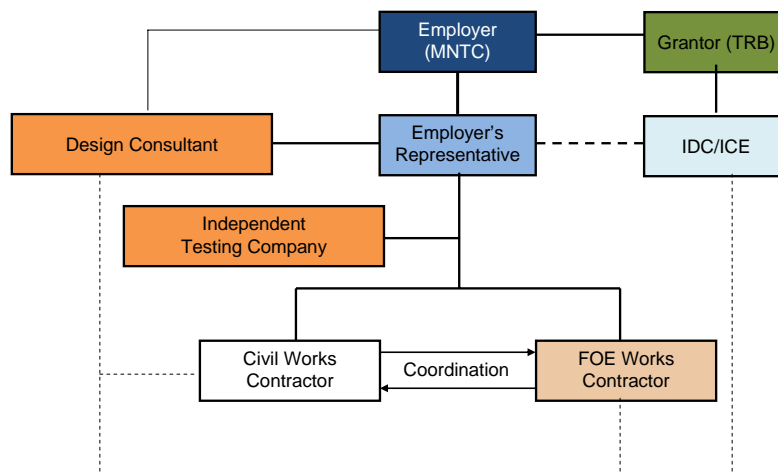
[70]

NLEX-Mindanao Avenue Link (Phase 2, Segment 8.1)

- Segment 8.1, with a length of about 2.70 kms., connects Mindanao Avenue to NLEX – Phase 1 south of Valenzuela Interchange.
- Initially, the mainline is a 2 x 2 lanes stonemastic asphalt cement pavement with provisions for two-way service roads at certain sections to interconnect the local access roads.
- A vehicular (Que Grande) overpass was constructed to provide public access to and from both sides of the expressway.
- The connection Segment 8.1 and 9 to the NLEX Phase 1 is a full cloverleaf type interchange.
- The segment is fully equipped with Toll Collection, Traffic Management and Telecommunication Systems. The whole alignment is completely fenced off, with median lighting, lane markings and signages. There are also emergency call boxes and laybys.



PROJECT ORGANISATION



- 1. Timely Completion**
- 2. Best Quality**
- 3. Within Budget**

[73]

- 1. Planning and Scheduling**
- 2. Site Activities Inspection and Monitoring**
- 3. Government and Community Relations**

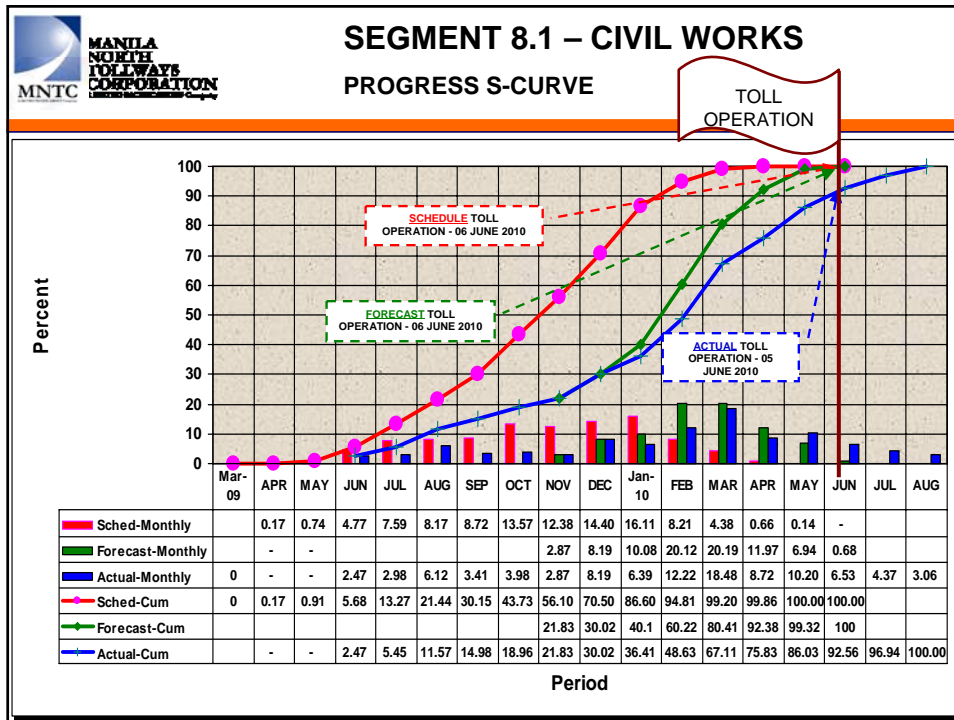
[74]

1. Planning and Scheduling

2. Site Activities Inspection and Monitoring

3. Government and Community Relations

[75]



1. Planning and Scheduling

2. Site Activities Inspection and Monitoring

3. Government and Community Relations

[77]

2. Site Activities Inspection and Monitoring

- Full compliance with the requirement of the drawings and specifications
- Differing site conditions that may affect the completion of specific activities;
- Identification of non-complying works; and
- Timely identification of additional works that could impact on the cost and schedule

[78]

Site Inspection



[79]

1. Planning and Scheduling

2. Site Activities Inspection and Monitoring

3. Government and Community Relations

[80]

3. Government and Community Relations

- **Coordination with Government Agencies**
 - ✓ DENR for the ECC
 - ✓ DPWH – BOD for the Detailed Engineering Design
 - ✓ DPWH – IRROW and OSG for the Right of Way Acquisition
 - ✓ NHA for the Relocation of Informal Settlers
 - ✓ Valenzuela LGU for the Permits and Community Related issued.

[81]

DPWH Demolition activities



[82]

NHA DEMOLITION ACTIVITIES



NHA RELOCATION OF ISFs



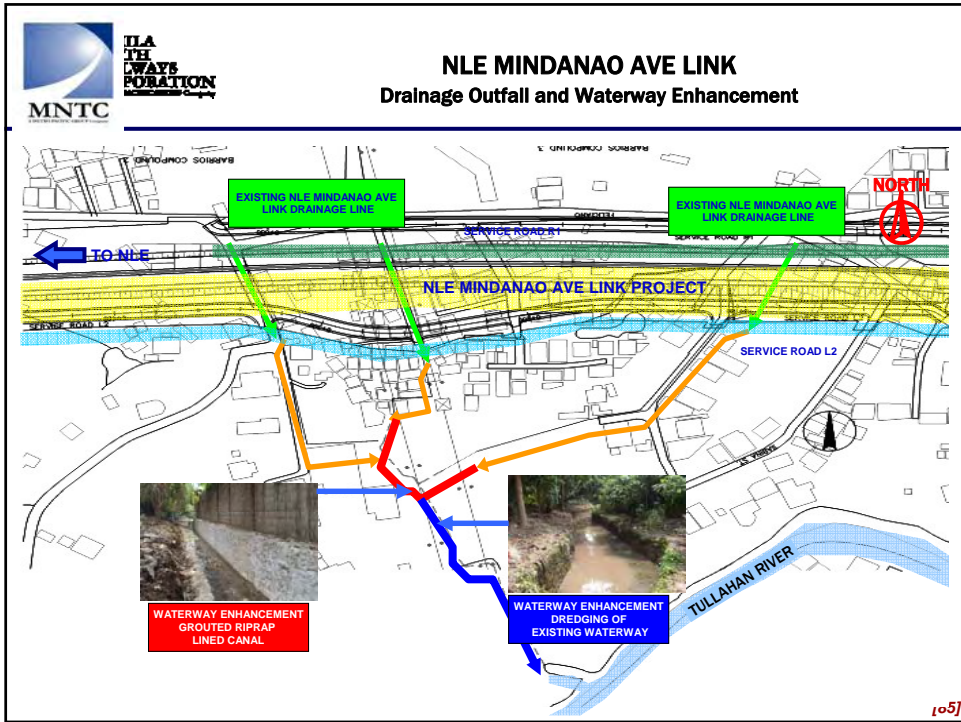
NHA RESETTLEMENT AREA

[83]

3. Government and Community Relations

- **Community Related Issues :**
 - ✓ Access – service roads, pedestrian overpass, etc.
 - ✓ Pollution – dust, noise
 - ✓ Public Safety
 - ✓ Requests for assistance
 - ✓ Drainage enhancements
 - ✓ Corporate Social Responsibility activities

[84]



MANILA NORTH TOLLWAYS CORPORATION

TIMELY COMPLETION

Tullahan River Clean-up
(CSR Activity)

MOA Signing

Cleaning of Bridge

Installation of Filter Screen

River Cleaning

- 1. Design Review during Construction**
- 2. Quality Assurance / Control**
- 3. Environmental, Safety and Health**

[87]

1. Design Review during Construction

2. Quality Assurance / Control

3. Environmental, Safety and Health

[88]

1. Design Review during Construction

- Prompt response to queries raised by contractors during implementation
- Checked compliance with drawings and specifications
- Coordinated the design intent and adherence to the quality specified in the designs
- Provided additional design details during construction
- Checked shop drawings
- Evaluated value engineering proposals
- Attended coordination meetings.

[89]

1. Design Review during Construction

2. Quality Assurance / Control

3. Environmental, Safety and Health

[90]

2. Quality Control

- Checked material submittals
- Conducted materials sampling at sources
- Supervised and monitored conduct of both on-site and off-site tests
- Engaged the services of an Independent Testing Company for the conduct of all official tests
 - Cost of the test is to the account of MNTC but all retests were paid by the contractors.
- Utilized stonemastic asphalt (SMA) surfacing for longer pavement life

[91]

Independent Testing Laboratory >>



Field testing



[92]



<< Inspection of Precast Girders in
Abucay, Bataan

Inspection and Monitoring of >>
Stone Mastic Asphalt (SMA)
Pavement Laying



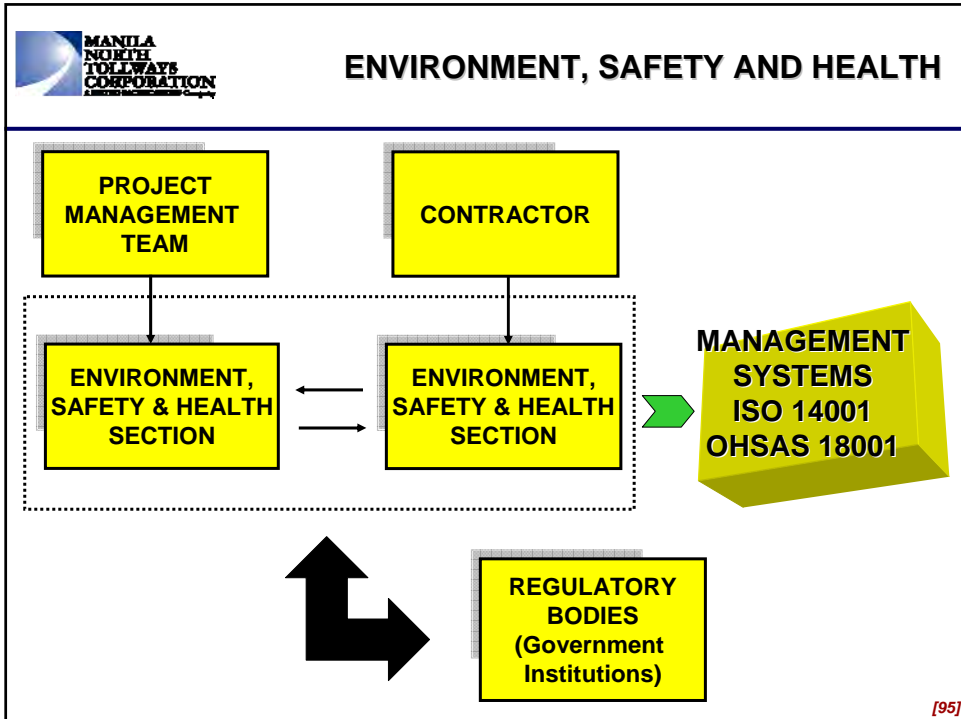
[93]

1. Design Review during Construction

2. Quality Assurance / Control

3. Environmental, Safety and Health

[94]



MANILA NORTH TOLLWAYS CORPORATION

Environmental Compliance Certificate

Republic of the Philippines
 Department of Environment and Natural Resources
 1000 Shiloh Avenue, Diliman, Quezon City 1115
 Tel. Nos. (02) 520-65-20 to 25 • (02) 529-65-52
 929-66-20 • 929-66-33 to 35
 929-70-41 to 43

ENVIRONMENTAL COMPLIANCE CERTIFICATE
 (Issued under Presidential Decree 1586)
9701-904-7130

THIS IS TO CERTIFY THAT PROPONENT **MANILA NORTH TOLLWAYS CORPORATION**, represented by its Assistant Vice President, **Messio G. Castillo**, is granted this Environmental Compliance Certificate (ECC) for the proposed **PHASE 2 (SEGMENTS 8.1 AND 9.0) OF CIRCUMFERENTIAL ROAD 5 (C-5) NORTHERN ARC PROJECT** located in **VALENZUELA CITY**, by the Department of Environment and Natural Resources (DENR), through the Environmental Management Bureau (EMB).

PROJECT DESCRIPTION
 The Certificate covers the proposed Phase 2 (Segments 8.1 and 9.0) of Circumferential Road 5 (C-5) Northern Arc Project to be located in Valenzuela City.
 The proposed northern section of C-5 is a 6.21 kilometer road divided into two segments 8.1 and 9.0. Segment 8.1 is about 2.34 kilometers and spans from Miranda Avenue to North Luzon Expressway south of Valenzuela Interchange, while Segment 9.0 is about 3.87 kilometers which spans from the North Luzon Expressway to the Manila North Road McArthur Highway.

This Certification is issued in compliance to the requirements of Presidential Decree No. 1586, in accordance to Department Administrative Order No. 2003-30. The Bureau, however, is not precluded from reevaluating, adding, removing, and correcting any deficiencies or errors that may be found after issuance of this Certificate.

Issued at DENR, Quezon City, Philippines this **JUL 0 4 2007**

Approved by:
ANGELO T. REYES
 Secretary

Recommending Approval:
ELY ANTHONY R. GUANO
 OIC, Director

ELY ANTHONY R. GUANO
 OIC, Director

[96]

Earth Baling and Tree cutting carried out in strict compliance with DENR Procedures. 173 Trees were relocated



Earth - Baling and Tree Replanting

Tree replanting: earth-balling in compliance with the Department of Environment and Natural Resources new guidelines following public clamor to ban tree cutting in light of the concern on global warming and climate change.



Earth-Balling Trees with 15 to 25 centimeter diameter trunks

Dust Suppression



Site Access Roads are watered frequently to suppress dust.



Sediment Control



Wash Bay constructed at strategic area to remove dirt from vehicles leaving the site and passing the expressway.



1. Contract Administration

2. Cost Engineering and Control

[101]

1. Contract Administration

- Claims Management and administration thru close supervision of activities
- Prepared and administered Utility Facilities Agreement between MNTC and affected utility companies
- Timely and efficient documentation of changes to the design and scope of work.
- Convened the Project Steering Committee
 - Composed of top level management representatives of MNTC and Contractor
 - Monthly meetings conducted for the duration of the project to discuss status and immediately resolved issues not settled at project level

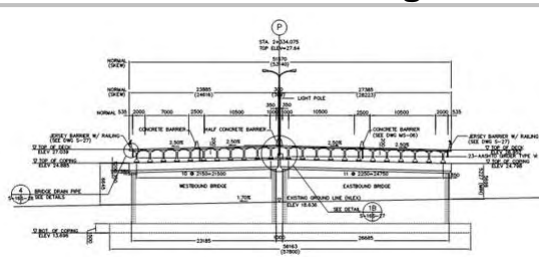
[102]

2. Cost Engineering and Control

- Closely monitored costs against budget
- Coordinated with field staff the determination of project accomplishments
- Ensured timely processing and payments of progress billings
- Prepared detailed estimate of additional and deleted works
- Reviewed and evaluated value engineering proposals

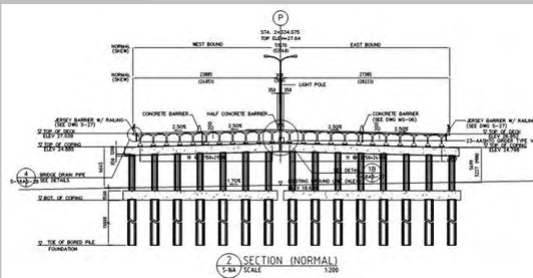
[103]

Value Engineering Exercise



<< From Spread-Footing
(Original Design)

To Bored Piling >>
(Revised Design)



Elements of a Successful Project Implementation:

- 1. Timely Completion**
- 2. Best Quality**
- 3. Within Budget.**

NLEX-Mindanao Avenue Link Project -
a testament to a successful Public-Private Partnership.

[105]

THANK YOU...

[106]