Socialist Republic of Vietnam
Ho Chi Minh City People's Committee (HCMC PC)
Ho Chi Minh City Management Authority for Urban Railways (MAUR)

Special Assistance for Project Impementation (SAPI) for Ho Chi Minh City Urban Railway Project (Ben Thanh – Suoi Tien Section (Line 1)) (Improvement of Intermodal Station Access)

Final Report

Appendices

August 2014

Japan International Cooperation Agency (JICA)

ALMEC Corporation
Nippon Koei Co., Ltd.
Nikken Sekkei Research Institute

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Exchange rate used in the Report

USD 1 = JPY 103.9 = VND 21,036

(Based on the "General Guidelines for the 1st Batch of FY2014 Japanese ODA Loan Projects")

PREFACE

The output of the "Special Assistance for Project Implementation (SAPI) for Ho Chi Minh City Urban Railway Project (Ben Thanh – Suoi Tien Section (Line 1))", is organized into the following reports (see table below), each providing detailed findings on specific subjects.

Organization of the Study Output

Final Report

Executive Summary

Part I: General Issues

1. Introduction
2. Urban Development and Transport Contexts
3. Review of the International Experience in Intermodal Transfer Improvement
4. Planning Direction on the HCMC UMRT Line 1 Transit Corridor
5. Travel Demand Forecast
6. Conclusion, Recommendations and Next Steps

Part II: Feeder Bus Network Planning

7. Bus Network Planning
8. Feeder Bus Operation Plan and Institutional Arrangements

Part III: Intermodal Facility Development

9. Concept Plan of Intermodal Facilities
10. Implementation Plan for Intermodal Facilities
11. Environmental and Social Considerations
12. Project Evaluation

Part IV: Station Area Development

13. Concept Plan of Station Area Development
14. Project Implementation Mechanisms and Measures on Station Area Development

Appendices

Appendix A: Bus Network Planning Maps
Appendix B: Estimation of Station Plazas
Appendix C: Breakdown of Cost Estimation
Appendix D: Environmental Legal and Institutional Framework
Appendix E: Sensitive Spots along the Feeder Bus Routes
Appendix F: Meeting Minutes of Task Team Meetings
Appendix G: Breakdown of Benefits for Project Evaluation

Investment Project Report (Feasibility Study)

Drawings

Drawings: Basic Design of Station Facilities

APPENDICES

Appendix A: Bus Network Planning Maps

A APPENDIX A: BUS NETWORK PLANNING MAPS

A.1 Bus Network Planning Maps for the Study

This section includes the 4 bus network planning maps as follows:

1. Existing Bus Routes along the HCMC UMRT Line 1 Corridor
2. Modified Bus Routes
3. Proposed Feeder Bus Routes
4. Overall Bus Network (Including Modified and Proposed Feeder Bus Routes)

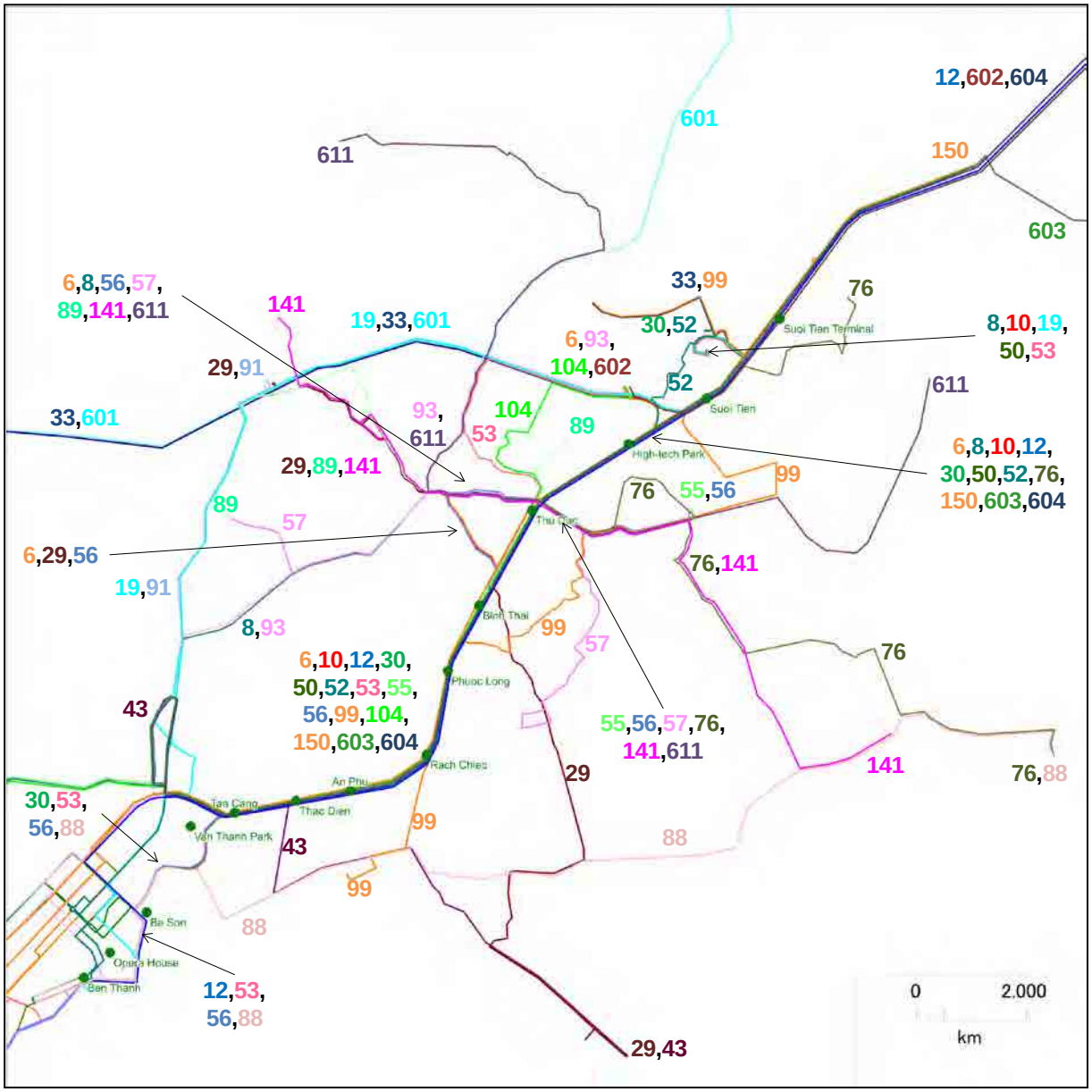


Figure A.1.1 - Existing Bus Routes along the HCMC UMRT Line 1 Corridor

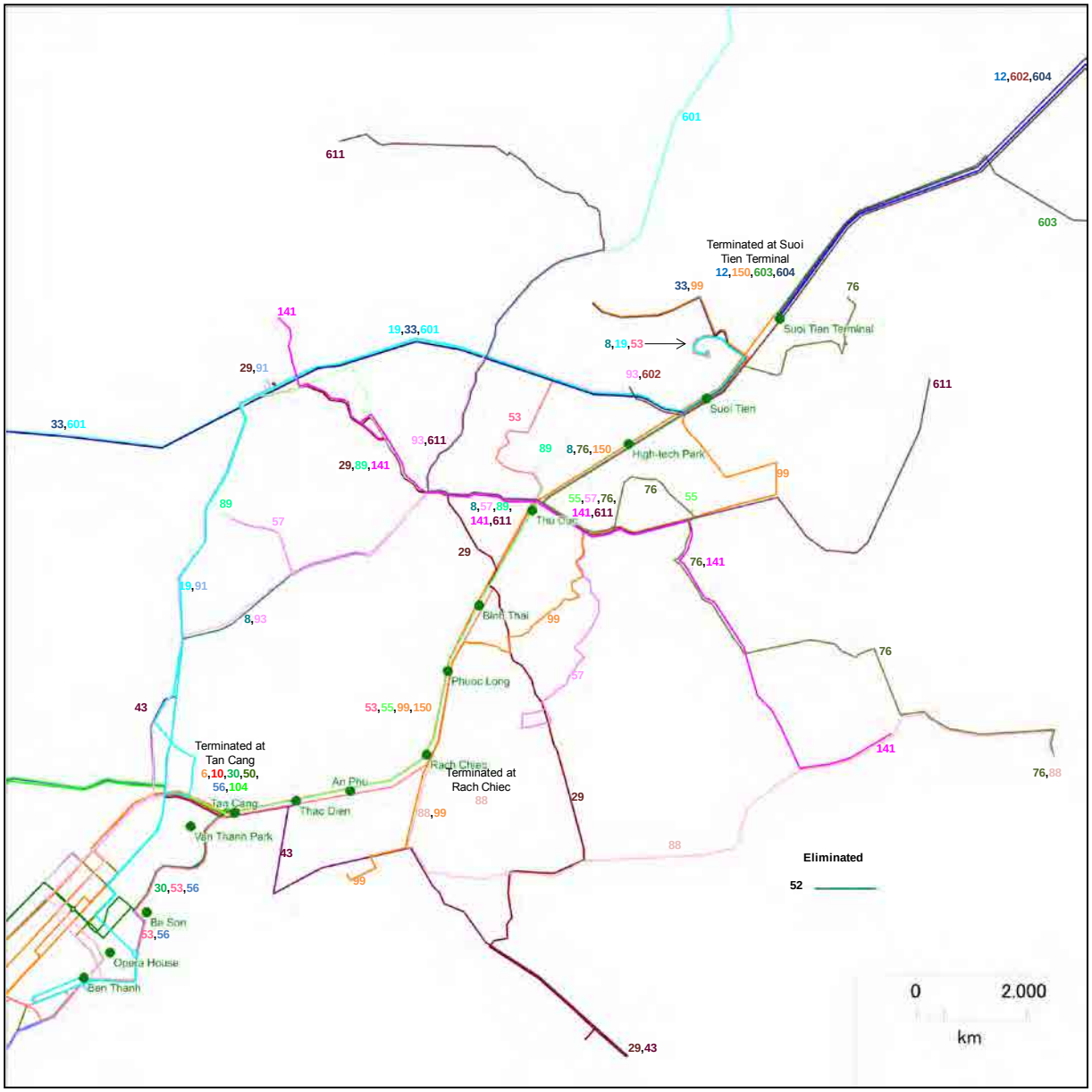


Figure A.1.2 - Modified Bus Routes

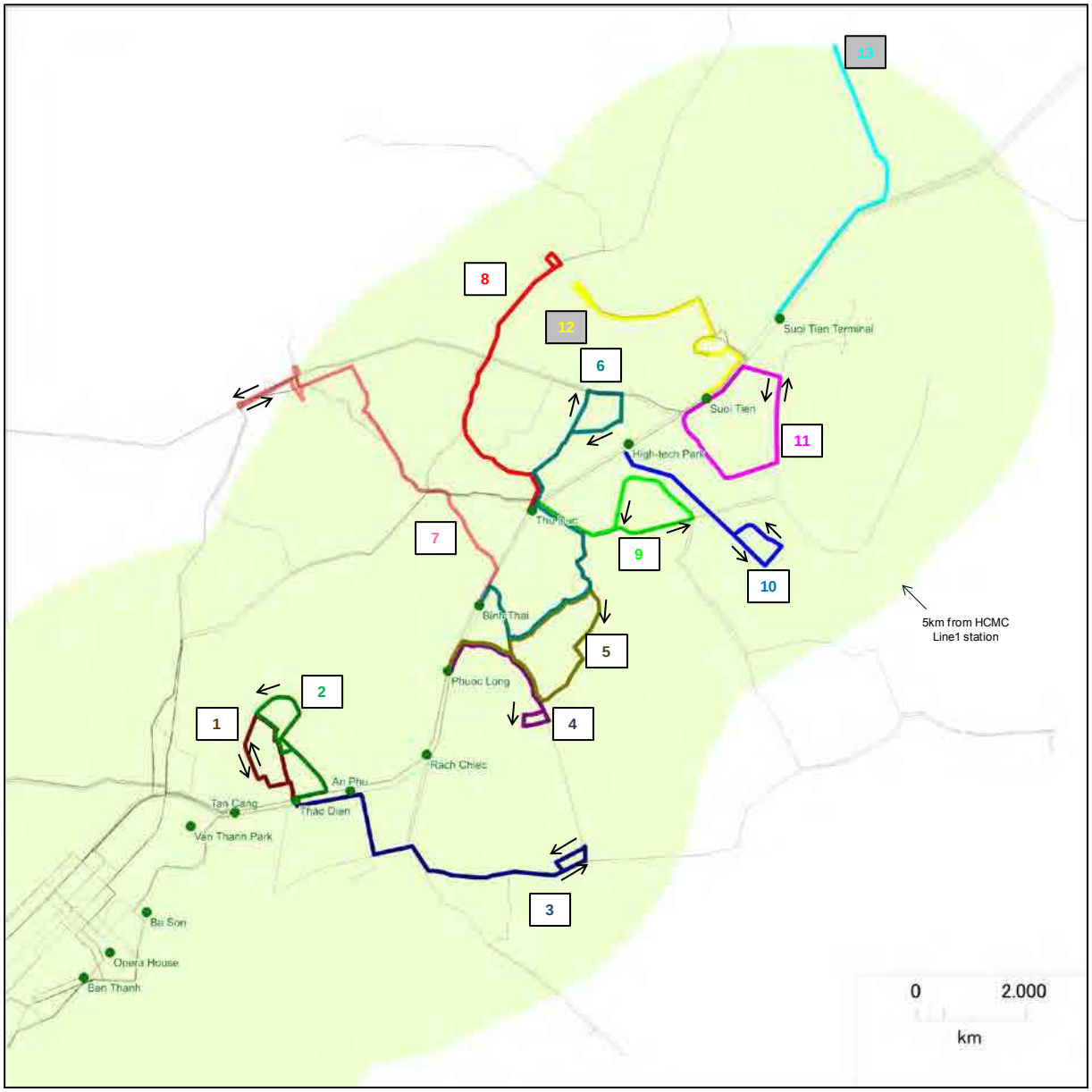


Figure A.1.3 - Proposed Feeder Bus Routes

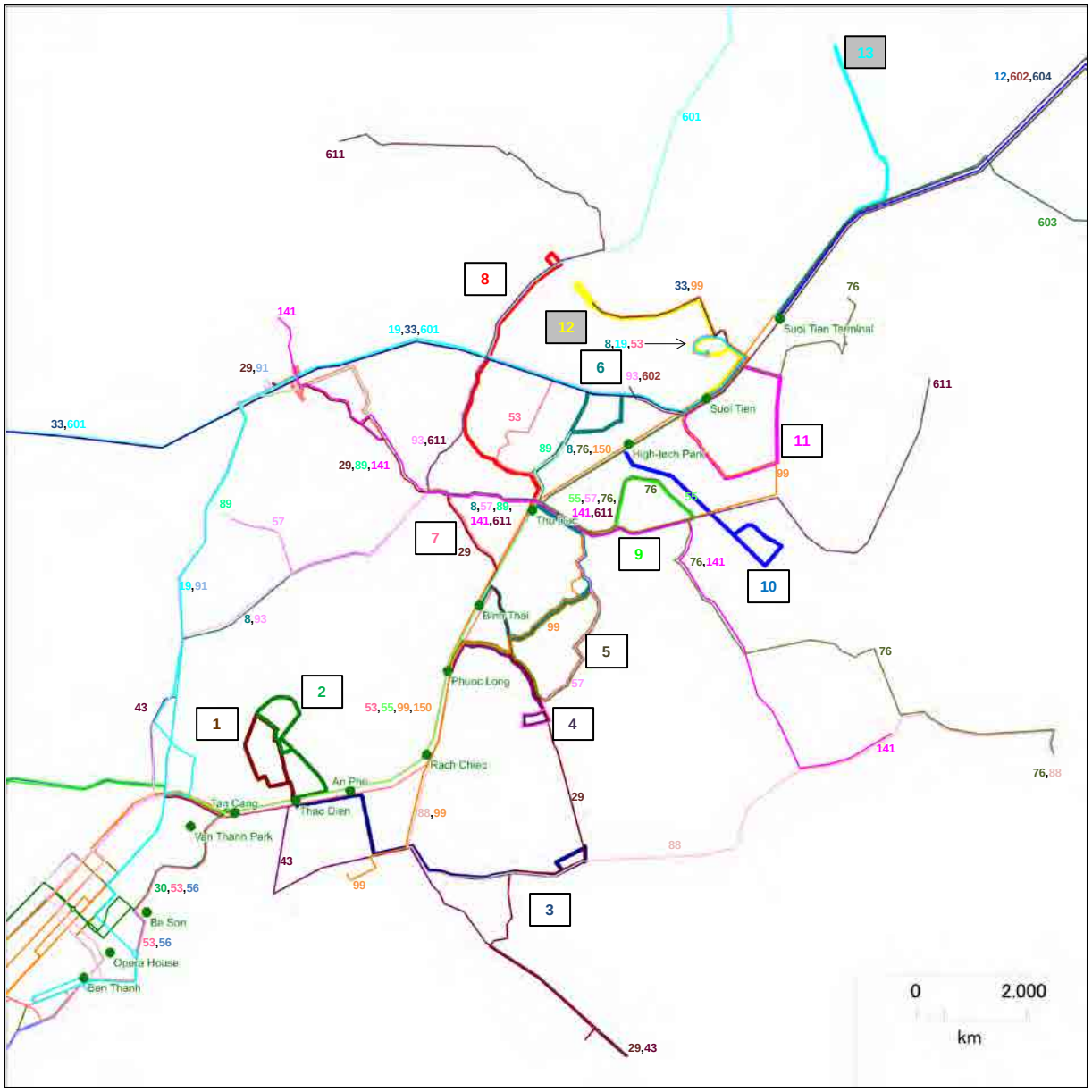


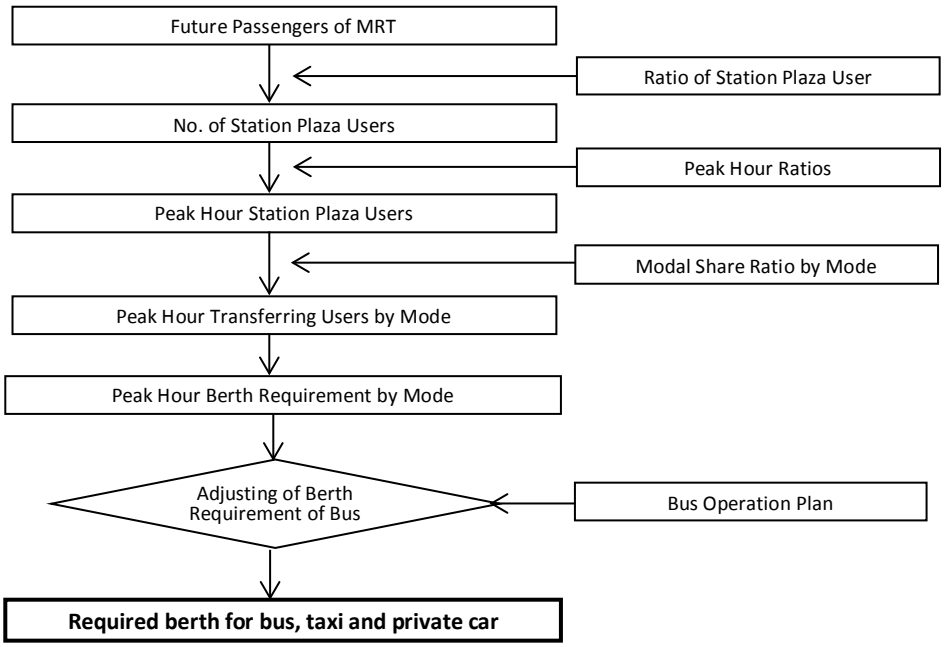
Figure A.1.4 - Overall Bus Network (Including Modified and Proposed Feeder Bus Routes)

Appendix B: Estimation of Capacity of Station Plazas, Bus Stops and Parking

B APPENDIX B: ESTIMATION OF CAPACITY OF STATION PLAZAS, BUS STOPS AND PARKING

B.1 Estimation Flow for Station Plazas and Bus Stops

Capacity of station plazas and bus stops are estimated based on “the Station Plaza Estimation 1998 in Japan”. For the estimation for the HCMC UMRT Line 1, target mode and coefficients are modified to meet the characteristics. In addition, adjustment of requirements in consideration of the feeder bus operation plan is added. The flow of the estimation of capacity of station plazas and bus stops is shown in Figure B.1.1.



Source: Study Team

Figure B.1.1 - Flow of Estimation of Capacity of the Station Plaza and Bus Stops

B.2 Estimation Method for Station Plazas and Bus Stops

1. Future Passengers of the UMRT

- Definition: Total number of daily railway passengers (P) (boarding and alighting)
- Method: To adapt the latest ridership
- Data: Target figure after a 20 year timeframe. In the SAPI study, passenger demand in 2040 is applied. For the estimation for temporary facilities such as road-side bus stops which will be used until the development of future station plazas, passenger demand in 2020 is applied.

  In the case where station plazas are planned for both sides of a station, the number of passengers is divided into both sides based on the result of the demand forecast of the HCMC UMRT Line 1.
- Output: Future passengers as the target number to be calculated for the capacity of the station plaza and bus stops

2. No. of Station Plaza Users

- Definition: Total number of users who use station plaza (P_0 + non-rail users) in a day. 'Non-rail users' mean persons expected to come to/from the station plaza for other purposes such as commuting and shopping to neighboring places or nearby station plazas, meeting with friends, etc. The ratio of non-rail users is applied with 1.0 to 1.5 in accordance with "the Station Plaza Estimation 1998 in Japan". In the SAPI study, the ratio of 1.0 is applied due to no expectations of non-rail users in the peak hour, which is the basis of estimation for the number of transport berths.
- Method: Formula
  Station Plaza Users (N) = P x Plaza User Ratio
- Output: Total station plaza users as the target number to be calculated for the capacity of station plazas

3. Peak Hour Station Plaza Users (Boarding and Alighting)

- Definition: Number of users who use the station plaza during the peak hour of the day. In the SAPI study, the peak hour ratio with 0.081 is applied based on the result of the demand forecast of the HCMC UMRT Line 1.
- Method: Formula
  Peak Hours Station Plaza Users (boarding) (PPa) = N x Phr

  Peak Hours Station Plaza Users (alighting) (PPb) = N x Phr
- Output: Total station plaza users at the peak hour to be calculated for the capacity of station plazas

4. Peak Hour Transferring Users (Boarding and Alighting)

- Definition: Number of users who transfer to other transport modes in the station plaza during the peak hour of the day.
- Method: Formula
  Peak Hours Transferring Users (boarding) (PTUMi) = PPa x 1.0

  Peak Hours Transferring Users (alighting) (PTUMo) = PPb x 1.0
- Output: Total Peak Hour Transferring Users by Modes.

5. Peak Hour Transferring Users by Modes (Boarding and Alighting)

- Definition: Number of users who use the station plaza by each transport mode during the peak hour of the day. In the SAPI study, transport modes consist of bus, taxi, private car, motorcycle, motorcycle taxi (xe-om) and bicycle. In addition, private car and motorcycle are divided into two user types of picking up/dropping off and parking. The share that was applied was 43% for picking up/dropping off and 57% for parking based on the result of the traffic survey.
- Method: Formula
  Peak Hour Transferring Users by Modes (Boarding) (PTUMix) = PTUMi x (Mode Share Ratio)

  Peak Hour Transferring Users by Modes (Alighting) (PTUMox) = PTUMo x (Mode Share Ratio)
- Output: Transferring users by modes at the peak hour to be calculated for the capacity of the station plazas.

6. Peak Hour Berth Requirement by Modes (Boarding and Alighting)

Bus Mode

- Definition: Number of peak hour bus berth requirement by boarding and alighting in the station plaza to accommodate bus transport users.
- Method: Formula
  Peak Hour Requirement of Boarding Bus Berth (Bib) = PTUMib / PSb x Hb / 60min

  Peak Hour Requirement of Alighting Bus Berth (Bob) = PTUMob x Tob / 60min
- Reference Parameter:
  Coefficient “PSb” is the average number of passengers of buses, “Hb” is the headway to board buses and "Tob" is the time required to alight from buses. These values are based on the feeder bus operation plan.
- Output: Peak hour bus berth requirement (boarding and alighting berths) in the station plaza.

Taxi Mode

- Definition: Number of peak hour taxi berth requirement by boarding and alighting in the station plaza to accommodate taxi transport users.
- Method: Formula
  Peak Hour Requirement for the Boarding Taxi Berth (Bit) = PTUMit x Tit / 60min

  Peak Hour Requirement for the Alighting Taxi Berth (Bot) = PTUMot x Tot / 60min
- Reference Parameter:
  Coefficient “Tit” is the time required to board a taxi, “Tot” is the time required to alight from the taxi. The values used are as follows.

  Tit: 10/60 min/berth-person (based on the Station Plaza Planning Guideline of Japan)

  Tot: 30/60 min/berth-person (based on the Station Plaza Planning Guideline of Japan)
- Output: Peak hour taxi berth requirement (boarding and alighting berth) for the station plaza.

Taxi Waiting Mode

- Definition: Number of peak hour waiting spaces for taxis to serve users who want to take taxis and wait for them in the station plaza.
- Method: Formula
  Passengers Waiting for Taxis at the Peak Hour (PTWt) = PTUMit x Ht / 60min

  Peak Hour Requirement of the Taxi Pool (Bitw) = PTWt / PSt
- Reference Parameter:
  Coefficient “Ht” as the headway to wait for boarding taxis and PSt as the average number of passengers of taxis. The values are set as follows.

  Ht: 5 minutes/taxi

  PSt: 0.9 person/taxi (based on the result of the traffic survey)
- Output: Peak hour taxi waiting berth requirement for the station plaza.

Motorcycle Taxi (Xe-om) Mode

- Definition: The required number of peak hour motorcycle taxi berths by boarding and alighting in the station plaza to accommodate motorcycle taxi transport users.
- Method: Formula

Peak Hour Requirement of Boarding Motorcycle Taxi Berth (Bixo) = PTUMixo x Tixo / 60min

Peak Hour Requirement of Alighting Motorcycle Taxi Berth (Boxo) = PTUMoxo x Toxo / 60min

- Reference Parameter:
  Coefficient “Tixo” is the time required to board a motorcycle taxi and “Toxo” is the time required to alight from motorcycle taxi. The values are set as follows.

  Tixo: 10/60 min/berth-person (based on the Station Plaza Planning Guideline of Japan)

  Toxo: 30/60 min/berth-person (based on the Station Plaza Planning Guideline of Japan)

- Output: Peak hour motorcycle taxi berth requirement (boarding and alighting berth) for the station plaza.

Private Car Mode

- Definition: The required number of peak hour private car kiss and ride berths by boarding and alighting in the station plaza to accommodate kiss and ride transport users.

- Method: Formula
  Peak Hour Requirement of Private Car Berth for Pick Up (Bick) = PTUMick / PSc x Tic / 60min

  Peak Hour Requirement of Private Car Berth for Drop Off (Bock) = PTUMock x PSc x Toc / 60min

- Reference Parameter:
  Coefficient “Tic” is the time required to board a private car, “Toc” is the time required to alight from a private car and PSc is the average number of passengers of a private car. The values used are as follows.

  Tic: 60/60 min/berth-person (based on the Station Plaza Planning Guideline of Japan)

  Toc: 60/60 min/berth-person (based on the Station Plaza Planning Guideline of Japan)

  PSc: 1.79 persons /car (based on the result of the traffic survey)

- Output: Peak hour private car berth requirement (boarding and alighting berth) for the station plaza.

7. Adjusting of Berth Requirements for Buses in Consideration of the Bus Operation Plan

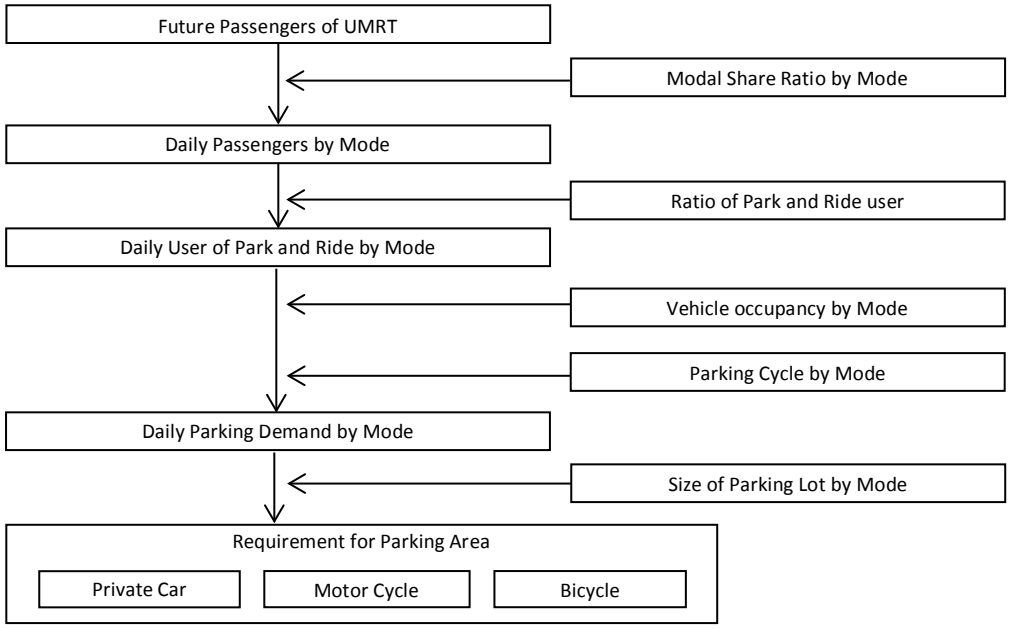
The berth requirement of buses was adjusted to meet the bus operation plan in

consideration of the number of bus routes and the headway. In addition, bus parking space in the off-peak hour was required from the bus operation plan.

B.3 Estimation Flow for Parking Demand

Parking demands of private cars, motorcycles and bicycles were estimated based on future UMRT passenger demand. In the estimation, UMRT passenger demand in 2020 and 2040 are applied.

The flow of estimation of parking demand is shown in Figure B.3.1.



Source: Study Team

Figure B.3.1 - Flow of Estimation for the Capacity of Parking

1. Future Passengers of the UMRT

- Definition: Total number of daily railway passengers (P) (boarding and alighting)
- Method: To adapt the latest ridership
- Data: In the SAPI study, the passenger demand in 2020 and 2040 were applied.
- Output: Future passengers as target number to be calculated for the parking capacity

2. Daily Passengers by Mode (Boarding and Alighting)

- Definition: Number of users who transfer to/from other transport modes in the station during a day.

- Method: Formula
  Transferring Users to Private Cars (Pc) = P x (Mode Share Ratio of Private Cars)

  Transferring Users to Motorcycles (Pmc) = P x (Mode Share Ratio of Motorcycles)

  Transferring Users to bicycles (Pbc) = P x (Mode Share Ratio of Bicycles)

- Output: Daily Passengers by Mode

3. Daily Users of Park and Ride by Mode (Boarding and Alighting)

- Definition: Number of users who use parking in a station during a day.

- Method: Formula
  Parking Users of Private Cars (Pcp) = Pc x Park and Ride Ratio

  Parking Users of Motorcycles (Pmcp) = Pmc x Park and Ride Ratio

  Parking Users of Bicycles = Pbc

- Reference Parameter:
  The coefficient “Park and Ride Ratio” for private cars and motorcycles was set as 57% based on the result of the traffic survey. All bicycle users are parking users in the station.

- Output: Daily Users of Park and Ride by Mode

4. Daily Parking Demand by Mode

- Definition: Number of vehicles which use parking in the station during a day.

- Method: Formula
  Parking Demand of Private Cars (PKc) = Pcp / PSc / 2(boarding, alighting) / daily parking cycle

  Parking Demand of Motorcycles (PKmc) = Pmcp / PSmc / 2(boarding, alighting) / daily parking cycle

  Parking Demand of Bicycles (PKbc) = Pbcp / PSbc / 2(boarding, alighting) / daily parking cycle

- Reference Parameter:
  Coefficients “PSc”, “PSmc”, “PSbc” as the average passenger of each type of vehicle were set as follows:

  PSc: 1.79 person/vehicle (based on the traffic survey)

  PSmc: 1.24 person/vehicle (based on the traffic survey)

  PSbc: 1.23 person/vehicle (based on the traffic survey)

Daily parking of bicycles as the number of parking vehicles in a parking lot in a day was set as 1.5.

- Output: Daily Parking Demand by Mode

5. Requirement of Parking Area by Mode

- Definition: Required parking area in the station by mode.
- Method: Formula
  Parking area of Private Cars = PKc x unit area of parking

  Parking area of Motorcycles = PKmc x unit area of parking

  Parking area of Bicycles = PKbc x unit area of parking
- Reference Parameter:
  The unit area of parking as the average area of a parking lot including passage in a parking area were set as follows;

  Unit area of private car parking: 18 m^2

  Unit area of motorcycle parking: 2.5 m^2

  Unit area of bicycle parking: 2.5 m^2
- Output: Capacity of Parking by Mode

B.4 Estimation Result for Each Station

The estimation result of the requirements for the station plaza and bus stops, and parking in each station are shown in the summary and estimation sheets of each station.

Estimation Result of Capacity of Station Plaza, Bus Stop and Parking (Before Adjustment with Bus Operation Plan)

in 2020

	Station	Distance (m)	Type of Station	Location	In 2020																
					Total passengers	Coverage		Total passengers after sharing	Requirement for Station Plaza								Requirement for Parking				
									No. of Berth								No. of parking lot			Parking area (m^2) (Reference)	
							Share		Bus boarding	Bus alighting	Taxi boarding	Taxi alighting	Taxi waiting	Car picking /dropping	Motorcycle taxi boarding	Motorcycle taxi alighting	Private car	Motorcycle	Bicycle	Private car	Motorcycle	Bicycle
1	Ben Thanh	0	Undergroun	City center	180,000			180,000	5	2	1	1	8	0	1	1	0	16	0	0	40	0
2	Opera House	715	Undergroun	City center	52,000			52,000	1	1	1	1	3	0	1	1	0	71	0	0	180	0
3	Ba Son	991	Undergroun	City center	29,000			29,000	1	1	1	1	2	0	1	1	0	75	0	0	190	0
4	Van Thanh Park	1,814	Elevated	Urban fringe	13,000			13,000	0	0	1	1	2	2	1	1	41	1,198	106	740	3,000	270
5	Tan Cang	918	Elevated	Urban fringe	44,000			44,000	2	1	1	1	2	2	1	1	94	2,491	537	1,690	6,230	1,340
6	Thao Dien	1,158	Elevated	Suburb	29,000	North	41.2%	11,948	2	1	1	1	0	2	1	1	28	520	146	500	1,300	370
						South	58.8%	17,052	1	1	1	1	2	2	1	1	40	742	208	720	1,860	520
						All			1	1	1	1	2	2	1	1	68	1,261	354	1,220	3,150	890
7	An Phu	957	Elevated	Suburb	7,000	North	30.4%	2,128	1	1	1	1	0	2	1	1	7	235	32	130	590	80
						South	69.6%	4,872	1	1	1	1	0	2	1	1	16	538	72	290	1,350	180
						All			1	1	1	1	0	2	1	1	23	773	103	410	1,930	260
8	Rach Chiec	1,654	Elevated	Suburb	37,000	West	7.9%	2,923	1	1	1	1	0	2	1	1	7	169	34	130	420	90
						East	92.1%	34,077	1	1	1	1	2	2	1	1	73	1,961	388	1,310	4,900	970
						All			1	1	1	1	2	2	1	1	79	2,129	422	1,420	5,320	1,060
9	Phuoc Long	1,466	Elevated	Suburb	29,000	West	44.5%	12,905	1	1	1	1	2	2	1	1	37	570	284	670	1,430	710
						East	55.5%	16,095	1	1	1	1	2	2	1	1	47	711	354	850	1,780	890
						All			1	1	1	1	2	2	1	1	84	1,281	637	1,510	3,200	1,590
10	Binh Thai	1,393	Elevated	Suburb	37,000	West	56.4%	20,868	1	1	1	1	2	2	1	1	54	1,144	345	970	2,860	860
						East	43.6%	16,132	1	1	1	1	2	2	1	1	42	884	267	760	2,210	670
						All			2	1	1	1	2	2	1	1	95	2,027	612	1,710	5,070	1,530
11	Thu Duc	1,744	Elevated	Suburb	43,000	West	39.0%	16,770	1	1	1	1	2	2	1	1	49	678	382	880	1,700	960
						East	61.0%	26,230	2	1	1	1	2	2	1	1	76	1,061	598	1,370	2,650	1,500
						All			2	1	1	1	3	2	1	1	124	1,738	979	2,230	4,350	2,450
12	High-Tech Park	2,380	Elevated	Suburb	24,000	West	39.5%	9,480	1	1	1	1	0	2	1	1	31	390	234	560	1,370	820
						East	60.5%	14,520	1	1	1	1	2	2	1	1	47	597	359	850	1,490	900
						All			1	1	1	1	2	2	1	1	77	986	592	1,390	2,470	1,480
13	Suoi Tien	1,575	Elevated	Suburb	19,000	West	77.2%	14,668	2	1	1	1	2	2	1	1	49	590	517	880	1,480	1,290
						East	22.8%	4,332	1	1	1	1	0	2	1	1	15	175	153	270	440	380
						All			2	1	1	1	2	2	1	1	63	764	670	1,130	1,910	1,680
14	Suoi Tien Terminal	2,056	Elevated	Suburb	54,000			54,000	3	1	1	1	3	2	1	1	213	2,711	293	3,830	6,780	730

in 2040

	Station	Distance (m)	Type of Station	Location	In 2040																
					Total passengers	Coverage		Total passengers without transfer	Requirement for Station Plaza								Requirement for Parking					
									No. of Berth								No. of parking lot			Parking area (m^2) (Reference)		
							Share		Bus boarding	Bus alighting	Taxi boarding	Taxi alighting	Taxi waiting	Car picking /dropping	Motorcycle taxi boarding	Motorcycle taxi alighting	Private car	Motorcycle	Bicycle	Private car	Motorcycle	Bicycle
1	Ben Thanh	0	Undergroun	City center	355,000			355,000	8	3	1	2	15	0	1	1	0	109	0	0	270	0
2	Opera House	715	Undergroun	City center	192,000			192,000	2	1	1	1	7	0	1	1	0	72	0	0	180	0
3	Ba Son	991	Undergroun	City center	88,000			88,000	1	1	1	1	4	0	1	1	0	41	0	0	100	0
4	Van Thanh Park	1,814	Elevated	Urban fringe	30,000			30,000	0	0	1	1	3	2	1	1	93	2,731	244	1,670	6,830	610
5	Tan Cang	918	Elevated	Urban fringe	77,000			77,000	3	1	1	1	3	2	1	1	164	4,821	940	2,950	12,050	2,350
6	Thao Dien	1,158	Elevated	Suburb	101,000	North	48.5%	48,985	3	1	1	1	3	2	1	1	115	2,069	598	2,070	5,170	1,500
						South	51.5%	52,015	1	1	1	1	3	2	1	1	122	2,197	635	2,200	5,490	1,590
						All			4	2	1	1	4	2	1	1	236	4,265	1,232	4,250	10,660	3,080
7	An Phu	957	Elevated	Suburb	15,000	North	17.0%	2,550	1	1	1	1	0	2	1	1	9	284	38	160	710	100
						South	83.0%	12,450	1	1	1	1	2	2	1	1	40	1,386	183	720	3,470	460
						All			1	1	1	1	2	2	1	1	48	1,670	220	860	4,180	550
8	Rach Chiec	1,654	Elevated	Suburb	102,000	West	14.2%	14,484	1	1	1	1	2	2	1	1	31	825	165	560	2,060	410
						East	85.8%	87,516	2	1	1	1	4	2	1	1	186	4,984	997	3,350	12,460	2,490
						All			3	1	1	1	4	2	1	1	217	5,809	1,161	3,910	14,520	2,900
9	Phuoc Long	1,466	Elevated	Suburb	64,000	West	27.2%	17,408	1	1	1	1	2	2	1	1	50	735	383	900	1,840	960
						East	72.8%	46,592	2	1	1	1	3	2	1	1	134	1,967	1,023	2,410	4,920	2,560
						All			2	1	1	1	3	2	1	1	184	2,701	1,405	3,310	6,750	3,510
10	Binh Thai	1,393	Elevated	Suburb	73,000	West	74.7%	54,531	2	1	1	1	3	2	1	1	139	3,159	902	2,500	7,900	2,260
						East	25.3%	18,469	1	1	1	1	2	2	1	1	48	1,070	306	860	2,680	770
						All			2	1	1	1	4	2	1	1	187	4,228	1,207	3,370	10,570	3,020
11	Thu Duc	1,744	Elevated	Suburb	65,000	West	48.0%	31,200	1	1	1	1	2	2	1	1	90	1,218	711	1,620	3,050	1,780
						East	52.0%	33,800	1	1	1	1	2	2	1	1	97	1,320	770	1,750	3,300	1,930
						All			2	1	1	1	3	2	1	1	187	2,538	1,480	3,370	6,350	3,700
12	High-Tech Park	2,380	Elevated	Suburb	26,000	West	35.6%	9,256	1	1	1	1	0	2	1	1	30	380	229	540	1,330	800
						East	64.4%	16,744	1	1	1	1	2	2	1	1	54	687	413	970	1,720	1,030
						All			1	1	1	1	2	2	1	1	83	1,067	642	1,490	2,670	1,610
13	Suoi Tien	1,575	Elevated	Suburb	21,000	West	79.5%	16,695	2	1	1	1	2	2	1	1	55	668	589	990	1,670	1,470
						East	20.5%	4,305	1	1	1	1	0	2	1	1	15	173	152	270	430	380
						All			2	1	1	1	2	2	1	1	70	840	740	1,260	2,100	1,850
14	Suoi Tien Terminal	2,056	Elevated	Suburb	81,000			81,000	4	2	1	1	3	2	1	1	319	4,081	440	5,740	10,200	1,100

No. 1 Ben Thanh

1. Planning Factors

1) No. of Passenger

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	180,000	355,000	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	180,000	355,000	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	90,000	177,500	
(Mode alighting)	Pb	pax/day	90,000	177,500	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	7,290	14,378	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	7,290	14,378	Peak Rate:0.081

2) Modal Share

Mode	Code	Unit	2020	2040
Bus	Pb	pax/day	67,681	129,429
Taxi	Pt	pax/day	1,979	3,900
Private car (Picking & dropping)*43% of car	Pck	pax/day	0	0
Private car (Park & ride)*57% of car	Pcp	pax/day	0	0
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	44	305
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	58	405
Xe om	Pxe	pax/day	900	1,775
Bicycle	Pbc	pax/day	0	0
Walk	Pw	pax/day	109,338	219,186
Total		pax/day	180,000	355,000

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	37.60%	36.46%
Taxi		%	1.10%	1.10%
Private car (Picking & dropping)*43% of car		%	0.00%	0.00%
Private car (Park & ride)*57% of car		%	0.00%	0.00%
Motorcycle (Picking & dropping) *43% of MC		%	0.02%	0.09%
Motorcycle (Park & ride) *57% of M/C		%	0.03%	0.11%
Xe om		%	0.50%	0.50%
Bicycle		%	0.00%	0.00%
Walk		%	60.74%	61.74%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 1 Ben Thanh

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	180,000	355,000	
	Mode alignting	Pb	pax/day	90,000	177,500	
	Mode boarding	Pa	pax/day	90,000	177,500	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	180,000	355,000	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	7,290	14,378	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	7,290	14,378	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	7,290	14,378	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	2,742	5,243	
	Taxi		person/hour	81	158	
	Private car (Picking)*43% of car		person/hour	0	0	
	Private car (Park & ride)*57% of car		person/hour	0	0	
	Motorcycle (Picking) *43% of MC		person/hour	2	13	
	Motorcycle (Park & ride) *57% of MC		person/hour	3	17	
	Xe om		person/hour	37	72	
	Bicycle		person/hour	0	0	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	229	437	
	Taxi	PTWt = PTUMix × Ht / 60	person	7	13	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	5	8	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	8	15	
	Xe om	Bixo = (PTUMxo × Tixeo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	0	0	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	7,290	14,378	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	2,742	5,243	
	Taxi		person/hour	81	158	
	Private car (dropping)*43% of car		person/hour	0	0	
	Private car (Park & ride)*57% of car		person/hour	0	0	
	Motorcycle (dropping) *43% of MC		person/hour	2	13	
	Motorcycle (Park & ride) *57% of MC		person/hour	3	17	
	Xe om		person/hour	37	72	
	Bicycle		person/hour	0	0	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	2	3	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	2	
	Xe om	Boxo = PTUMoxe × Toxe / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	0	0	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	100	190	
	Taxi		vehicle/hour	180	350	
	Private car (Picking & dropping)		vehicle/hour	0	0	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	0	30	
	Motorcycle (Park & ride)		vehicle/hour	10	30	
	Xe om		vehicle/hour	60	120	
	Bicycle		vehicle/hour	0	0	
	Total		vehicle/hour	350	720	
Required lots of parking	Private car	PKc = (Pcp/ PSc) / 2(board/alight) /1.5	lot	0	0	1.5 cycles/day
	Motorcycle	PKmc = (Pmcp/ PSmc) / 2(board/alight) /1.5	lot	16	109	1.5 cycles/day
	Bicycle	PKbc = Pbc/1.23 /2(board/alight) /1.5	lot	0	0	1.5 cycles/day, 1.23per/bcy

No. 2 Opera House

1. Planning Factors

1) No. of Passenger

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	52,000	192,000	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	52,000	192,000	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	26,000	96,000	
(Mode alighting)	Pb	pax/day	26,000	96,000	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	2,106	7,776	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	2,106	7,776	Peak Rate:0.081

2) Modal Share

Mode	Code	Unit	2020	2040
Bus	Pb	pax/day	4,807	22,809
Taxi	Pt	pax/day	445	1,626
Private car (Picking & dropping)*43% of car	Pck	pax/day	0	0
Private car (Park & ride)*57% of car	Pcp	pax/day	0	0
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	198	202
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	262	267
Xe om	Pxe	pax/day	260	960
Bicycle	Pbc	pax/day	0	0
Walk	Pw	pax/day	46,028	166,136
Total		pax/day	52,000	192,000

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	9.24%	11.88%
Taxi		%	0.86%	0.85%
Private car (Picking & dropping)*43% of car		%	0.00%	0.00%
Private car (Park & ride)*57% of car		%	0.00%	0.00%
Motorcycle (Picking & dropping) *43% of MC		%	0.38%	0.11%
Motorcycle (Park & ride) *57% of M/C		%	0.50%	0.14%
Xe om		%	0.50%	0.50%
Bicycle		%	0.00%	0.00%
Walk		%	88.52%	86.53%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 2 Opera House

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	52,000	192,000	
	Mode alignting	Pb	pax/day	26,000	96,000	
	Mode boarding	Pa	pax/day	26,000	96,000	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	52,000	192,000	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	2,106	7,776	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	2,106	7,776	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	2,106	7,776	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	195	924	
	Taxi		person/hour	19	66	
	Private car (Picking)*43% of car		person/hour	0	0	
	Private car (Park & ride)*57% of car		person/hour	0	0	
	Motorcycle (Picking) *43% of MC		person/hour	9	9	
	Motorcycle (Park & ride) *57% of MC		person/hour	11	11	
	Xe om		person/hour	11	39	
	Bicycle		person/hour	0	0	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	16	77	
	Taxi	PTWt = PTUMix × Ht / 60	person	2	6	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	2	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	3	7	
	Xe om	Bixo = (PTUMxo × Tixeo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	0	0	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	2,106	7,776	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	195	924	
	Taxi		person/hour	19	66	
	Private car (dropping)*43% of car		person/hour	0	0	
	Private car (Park & ride)*57% of car		person/hour	0	0	
	Motorcycle (dropping) *43% of MC		person/hour	9	9	
	Motorcycle (Park & ride) *57% of MC		person/hour	11	11	
	Xe om		person/hour	11	39	
	Bicycle		person/hour	0	0	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxe × Toxe / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	0	0	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	10	30	
	Taxi		vehicle/hour	40	150	
	Private car (Picking & dropping)		vehicle/hour	0	0	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	20	20	
	Motorcycle (Park & ride)		vehicle/hour	20	20	
	Xe om		vehicle/hour	20	60	
	Bicycle		vehicle/hour	0	0	
	Total		vehicle/hour	110	280	
Required lots of parking	Private car	PKc = (Pcp/ PSc) / 2(board/alight) /1.5	lot	0	0	1.5 cycles/day
	Motorcycle	PKmc = (Pmcp/ PSmc) / 2(board/alight) /1.5	lot	71	72	1.5 cycles/day
	Bicycle	PKbc = Pbc/1.23 /2(board/alight) /1.5	lot	0	0	1.5 cycles/day, 1.23per/bcy

No. 3 Ba Son

1. Planning Factors

1) No. of Passenger

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	29,000	88,000	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	29,000	88,000	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	14,500	44,000	
(Mode alighting)	Pb	pax/day	14,500	44,000	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	1,175	3,564	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	1,175	3,564	Peak Rate:0.081

2) Modal Share

Mode	Code	Unit	2020	2040
Bus	Pb	pax/day	1,632	7,055
Taxi	Pt	pax/day	311	929
Private car (Picking & dropping)*43% of car	Pck	pax/day	0	0
Private car (Park & ride)*57% of car	Pcp	pax/day	0	0
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	209	114
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	278	150
Xe om	Pxe	pax/day	145	440
Bicycle	Pbc	pax/day	0	0
Walk	Pw	pax/day	26,425	79,312
Total		pax/day	29,000	88,000

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	5.63%	8.02%
Taxi		%	1.07%	1.06%
Private car (Picking & dropping)*43% of car		%	0.00%	0.00%
Private car (Park & ride)*57% of car		%	0.00%	0.00%
Motorcycle (Picking & dropping) *43% of MC		%	0.72%	0.13%
Motorcycle (Park & ride) *57% of M/C		%	0.96%	0.17%
Xe om		%	0.50%	0.50%
Bicycle		%	0.00%	0.00%
Walk		%	91.12%	90.13%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 3 Ba Son

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	29,000	88,000	
	Mode alignting	Pb	pax/day	14,500	44,000	
	Mode boarding	Pa	pax/day	14,500	44,000	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	29,000	88,000	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	1,175	3,564	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	1,175	3,564	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	1,175	3,564	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	67	286	
	Taxi		person/hour	13	38	
	Private car (Picking)*43% of car		person/hour	0	0	
	Private car (Park & ride)*57% of car		person/hour	0	0	
	Motorcycle (Picking) *43% of MC		person/hour	9	5	
	Motorcycle (Park & ride) *57% of MC		person/hour	12	7	
	Xe om		person/hour	6	18	
	Bicycle		person/hour	0	0	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	6	24	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	3	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	1	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	4	
	Xe om	Bixo = (PTUMxo × Tixeo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	0	0	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	1,175	3,564	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	67	286	
	Taxi		person/hour	13	38	
	Private car (dropping)*43% of car		person/hour	0	0	
	Private car (Park & ride)*57% of car		person/hour	0	0	
	Motorcycle (dropping) *43% of MC		person/hour	9	5	
	Motorcycle (Park & ride) *57% of MC		person/hour	12	7	
	Xe om		person/hour	6	18	
	Bicycle		person/hour	0	0	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxe × Toxe / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	0	0	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	0	10	
	Taxi		vehicle/hour	30	80	
	Private car (Picking & dropping)		vehicle/hour	0	0	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	20	10	
	Motorcycle (Park & ride)		vehicle/hour	20	10	
	Xe om		vehicle/hour	10	30	
	Bicycle		vehicle/hour	0	0	
	Total		vehicle/hour	80	140	
Required lots of parking	Private car	PKc = (Pcp/ PSc) / 2(board/alight) /1.5	lot	0	0	1.5 cycles/day
	Motorcycle	PKmc = (Pmcp/ PSmc) / 2(board/alight) /1.5	lot	75	41	1.5 cycles/day
	Bicycle	PKbc = Pbc/1.23 /2(board/alight) /1.5	lot	0	0	1.5 cycles/day, 1.23per/bcy

No. 4 Van Thanh Park

1. Planning Factors

1) No. of Passenger

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	13,000	30,000	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	13,000	30,000	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	6,500	15,000	
(Mode alighting)	Pb	pax/day	6,500	15,000	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	527	1,215	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	527	1,215	Peak Rate:0.081

2) Modal Share

Mode	Code	Unit	2020	2040
Bus	Pb	pax/day	0	0
Taxi	Pt	pax/day	218	531
Private car (Picking & dropping)*43% of car	Pck	pax/day	162	374
Private car (Park & ride)*57% of car	Pcp	pax/day	215	496
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	3,361	7,662
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	4,455	10,156
Xe om	Pxe	pax/day	65	150
Bicycle	Pbc	pax/day	390	900
Walk	Pw	pax/day	4,134	9,731
Total		pax/day	13,000	30,000

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	0.00%	0.00%
Taxi		%	1.68%	1.77%
Private car (Picking & dropping)*43% of car		%	1.25%	1.25%
Private car (Park & ride)*57% of car		%	1.65%	1.65%
Motorcycle (Picking & dropping) *43% of MC		%	25.85%	25.54%
Motorcycle (Park & ride) *57% of M/C		%	34.27%	33.85%
Xe om		%	0.50%	0.50%
Bicycle		%	3.00%	3.00%
Walk		%	31.80%	32.44%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	10	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	40	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 4 Van Thanh Park

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	13,000	30,000	
	Mode alignting	Pb	pax/day	6,500	15,000	
	Mode boarding	Pa	pax/day	6,500	15,000	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	13,000	30,000	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	527	1,215	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	527	1,215	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	527	1,215	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	0	0	
	Taxi		person/hour	9	22	
	Private car (Picking)*43% of car		person/hour	7	16	
	Private car (Park & ride)*57% of car		person/hour	9	21	
	Motorcycle (Picking) *43% of MC		person/hour	137	311	
	Motorcycle (Park & ride) *57% of MC		person/hour	181	412	
	Xe om		person/hour	3	7	
	Bicycle		person/hour	16	37	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	0	0	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	2	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	0	0	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	3	
	Xe om	Bixo = (PTUMxo × Tixeo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	527	1,215	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	0	0	
	Taxi		person/hour	9	22	
	Private car (dropping)*43% of car		person/hour	7	16	
	Private car (Park & ride)*57% of car		person/hour	9	21	
	Motorcycle (dropping) *43% of MC		person/hour	137	311	
	Motorcycle (Park & ride) *57% of MC		person/hour	181	412	
	Xe om		person/hour	3	7	
	Bicycle		person/hour	16	37	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	0	0	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxe × Toxe / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	0	0	
	Taxi		vehicle/hour	20	50	
	Private car (Picking & dropping)		vehicle/hour	10	20	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	270	620	
	Motorcycle (Park & ride)		vehicle/hour	360	820	
	Xe om		vehicle/hour	0	10	
	Bicycle		vehicle/hour	30	70	
	Total		vehicle/hour	690	1,590	
Required lots of parking	Private car	PKc = (Pcp/ PSc) / 2(board/alight) /1.5	lot	41	93	1.5 cycles/day
	Motorcycle	PKmc = (Pmcp/ PSmc) / 2(board/alight) /1.5	lot	1,198	2,731	1.5 cycles/day
	Bicycle	PKbc = Pbc/1.23 /2(board/alight) /1.5	lot	106	244	1.5 cycles/day, 1.23per/bcy

No. 5 Tan Cang

1. Planning Factors

1) No. of Passenger

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	44,000	77,000	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	44,000	77,000	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	22,000	38,500	
(Mode alighting)	Pb	pax/day	22,000	38,500	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	1,782	3,119	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	1,782	3,119	Peak Rate:0.081

2) Modal Share

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	22,401	35,811	10 existing routes, 8poles
Taxi	Pt	pax/day	243	535	
Private car (Picking & dropping)*43% of car	Pck	pax/day	378	662	
Private car (Park & ride)*57% of car	Pcp	pax/day	502	878	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	6,988	13,527	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	9,264	17,932	
Xe om	Pxe	pax/day	220	385	
Bicycle	Pbc	pax/day	1,980	3,465	
Walk	Pw	pax/day	2,024	3,805	
Total		pax/day	44,000	77,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	50.91%	46.51%
Taxi		%	0.55%	0.69%
Private car (Picking & dropping)*43% of car		%	0.86%	0.86%
Private car (Park & ride)*57% of car		%	1.14%	1.14%
Motorcycle (Picking & dropping) *43% of MC		%	15.88%	17.57%
Motorcycle (Park & ride) *57% of M/C		%	21.05%	23.29%
Xe om		%	0.50%	0.50%
Bicycle		%	4.50%	4.50%
Walk		%	4.60%	4.94%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	6	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 5 Tan Cang

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	44,000	77,000	
	Mode alignting	Pb	pax/day	22,000	38,500	
	Mode boarding	Pa	pax/day	22,000	38,500	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	44,000	77,000	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	1,782	3,119	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	1,782	3,119	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	1,782	3,119	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	908	1,451	
	Taxi		person/hour	10	22	
	Private car (Picking)*43% of car		person/hour	16	27	
	Private car (Park & ride)*57% of car		person/hour	21	36	
	Motorcycle (Picking) *43% of MC		person/hour	284	548	
	Motorcycle (Park & ride) *57% of MC		person/hour	376	727	
	Xe om		person/hour	9	16	
	Bicycle		person/hour	81	141	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	91	145	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	2	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	2	3	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	3	
	Xe om	Bixo = (PTUMxo × Tixeo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	1,782	3,119	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	908	1,451	
	Taxi		person/hour	10	22	
	Private car (dropping)*43% of car		person/hour	16	27	
	Private car (Park & ride)*57% of car		person/hour	21	36	
	Motorcycle (dropping) *43% of MC		person/hour	284	548	
	Motorcycle (Park & ride) *57% of MC		person/hour	376	727	
	Xe om		person/hour	9	16	
	Bicycle		person/hour	81	141	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxe × Toxe / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = $\bar{}$ {PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	30	50	
	Taxi		vehicle/hour	20	50	
	Private car (Picking & dropping)		vehicle/hour	20	30	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	570	1,100	
	Motorcycle (Park & ride)		vehicle/hour	750	1,450	
	Xe om		vehicle/hour	10	30	
	Bicycle		vehicle/hour	160	280	
	Total		vehicle/hour	1,560	2,990	
Required lots of parking	Private car	PKc = (Pcp/ PSc) / 2(board/alight) /1.5	lot	94	164	1.5 cycles/day
	Motorcycle	PKmc = (Pmcp/ PSmc) / 2(board/alight) /1.5	lot	2,491	4,821	1.5 cycles/day
	Bicycle	PKbc = Pbc/1.23 /2(board/alight) /1.5	lot	537	940	1.5 cycles/day, 1.23per/bcy

No. 6-1 Tao Dien (North)

1. Planning Factors

1) No. of Passenger (North)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	11,948	48,985	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	11,948	48,985	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	5,974	24,493	
(Mode alighting)	Pb	pax/day	5,974	24,493	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	484	1,984	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	484	1,984	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	15,247	53,616	2 Feeder routes in north (1A, 1B)
Taxi	Pt	pax/day	241	900	
Private car (Picking & dropping)*43% of car	Pck	pax/day	274	955	
Private car (Park & ride)*57% of car	Pcp	pax/day	364	1,267	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	3,537	11,968	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	4,688	15,864	
Xe om	Pxe	pax/day	145	505	
Bicycle	Pbc	pax/day	1,305	4,545	
Walk	Pw	pax/day	3,199	11,380	
Total		pax/day	29,000	101,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	52.58%	53.09%
Taxi		%	0.83%	0.89%
Private car (Picking & dropping)*43% of car		%	0.94%	0.95%
Private car (Park & ride)*57% of car		%	1.26%	1.25%
Motorcycle (Picking & dropping) *43% of MC		%	12.20%	11.85%
Motorcycle (Park & ride) *57% of M/C		%	16.17%	15.71%
Xe om		%	0.50%	0.50%
Bicycle		%	4.50%	4.50%
Walk		%	11.03%	11.27%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus 2020	Bus 2040	Taxi	Private car	Motorcycle
			b1	*b2*	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	10	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	30	30	0.9	1.79	1.24
Time required to board	Tix	min/person	-	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.03	0.5	1.0	0.5

No. 6-1 Tao Dien (North)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	11,948	48,985	
	Mode alignting	Pb	pax/day	5,974	24,493	
	Mode boarding	Pa	pax/day	5,974	24,493	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	11,950	48,990	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	484	1,984	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	484	1,984	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	484	1,984	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	255	1,054	
	Taxi		person/hour	5	18	
	Private car (Picking)*43% of car		person/hour	5	19	
	Private car (Park & ride)*57% of car		person/hour	7	25	
	Motorcycle (Picking) *43% of MC		person/hour	60	236	
	Motorcycle (Park & ride) *57% of MC		person/hour	79	312	
	Xe om		person/hour	3	10	
	Bicycle		person/hour	22	90	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	43	88	
	Taxi	PTWt = PTUMix × Ht / 60	person	0	2	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	2	3	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	0	3	
	Xe om	Bit = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	484	1,984	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	255	1,054	
	Taxi		person/hour	5	18	
	Private car (dropping)*43% of car		person/hour	5	19	
	Private car (Park & ride)*57% of car		person/hour	7	25	
	Motorcycle (dropping) *43% of MC		person/hour	60	236	
	Motorcycle (Park & ride) *57% of MC		person/hour	79	312	
	Xe om		person/hour	3	10	
	Bicycle		person/hour	22	90	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Bot = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = $\bar{}${PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	20	70	
	Taxi		vehicle/hour	10	40	
	Private car (Picking & dropping)		vehicle/hour	10	20	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	120	470	
	Motorcycle (Park & ride)		vehicle/hour	160	620	
	Xe om		vehicle/hour	0	20	
	Bicycle		vehicle/hour	40	180	
	Total		vehicle/hour	360	1,420	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	28	115	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	520	2,069	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	146	598	1.5 cycles/day, 1.23per/bcy

No. 6-2 Tao Dien (South)

1. Planning Factors

1) No. of Passenger (South)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	17,052	52,015	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	17,052	52,015	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	8,526	26,008	
(Mode alighting)	Pb	pax/day	8,526	26,008	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	691	2,107	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	691	2,107	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	15,247	53,616	1 Feeder (3M), 1 existing in south
Taxi	Pt	pax/day	241	900	
Private car (Picking & dropping)*43% of car	Pck	pax/day	274	955	
Private car (Park & ride)*57% of car	Pcp	pax/day	364	1,267	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	3,537	11,968	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	4,688	15,864	
Xe om	Pxe	pax/day	145	505	
Bicycle	Pbc	pax/day	1,305	4,545	
Walk	Pw	pax/day	3,199	11,380	
Total		pax/day	29,000	101,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	52.58%	53.09%
Taxi		%	0.83%	0.89%
Private car (Picking & dropping)*43% of car		%	0.94%	0.95%
Private car (Park & ride)*57% of car		%	1.26%	1.25%
Motorcycle (Picking & dropping) *43% of MC		%	12.20%	11.85%
Motorcycle (Park & ride) *57% of M/C		%	16.17%	15.71%
Xe om		%	0.50%	0.50%
Bicycle		%	4.50%	4.50%
Walk		%	11.03%	11.27%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus 2020	Bus 2040	Taxi	Private car	Motorcycle
			b1	*b2*	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	4	4	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	80	0.9	1.79	1.24
Time required to board	Tix	min/person	-	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.03	0.5	1.0	0.5

No. 6-2 Tao Dien (South)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	17,052	52,015	
	Mode alignting	Pb	pax/day	8,526	26,008	
	Mode boarding	Pa	pax/day	8,526	26,008	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	17,050	52,020	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	691	2,107	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	691	2,107	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	691	2,107	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	364	1,119	
	Taxi		person/hour	6	19	
	Private car (Picking)*43% of car		person/hour	7	20	
	Private car (Park & ride)*57% of car		person/hour	9	27	
	Motorcycle (Picking) *43% of MC		person/hour	85	250	
	Motorcycle (Park & ride) *57% of MC		person/hour	112	331	
	Xe om		person/hour	4	11	
	Bicycle		person/hour	32	95	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	24	75	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	2	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	1	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	3	
	Xe om	Bit = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	691	2,107	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	364	1,119	
	Taxi		person/hour	6	19	
	Private car (dropping)*43% of car		person/hour	7	20	
	Private car (Park & ride)*57% of car		person/hour	9	27	
	Motorcycle (dropping) *43% of MC		person/hour	85	250	
	Motorcycle (Park & ride) *57% of MC		person/hour	112	331	
	Xe om		person/hour	4	11	
	Bicycle		person/hour	32	95	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Bot = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = $\bar{}${PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	10	30	
	Taxi		vehicle/hour	10	40	
	Private car (Picking & dropping)		vehicle/hour	10	20	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	170	500	
	Motorcycle (Park & ride)		vehicle/hour	220	660	
	Xe om		vehicle/hour	10	20	
	Bicycle		vehicle/hour	60	190	
	Total		vehicle/hour	490	1,460	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	40	122	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	742	2,197	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	208	635	1.5 cycles/day, 1.23per/bcy

No. 6-3 Tao Dien (All)

1. Planning Factors

1) No. of Passenger (North)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	29,000	101,000	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	29,000	101,000	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	14,500	50,500	
(Mode alighting)	Pb	pax/day	14,500	50,500	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	1,175	4,091	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	1,175	4,091	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	15,247	53,616	2 Feeder routes in north (1A, 1B)
Taxi	Pt	pax/day	241	900	1 Feeder (3M) and 1 existing bus in south
Private car (Picking & dropping)*43% of car	Pck	pax/day	274	955	
Private car (Park & ride)*57% of car	Pcp	pax/day	364	1,267	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	3,537	11,968	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	4,688	15,864	
Xe om	Pxe	pax/day	145	505	
Bicycle	Pbc	pax/day	1,305	4,545	
Walk	Pw	pax/day	3,199	11,380	
Total		pax/day	29,000	101,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	52.58%	53.09%
Taxi		%	0.83%	0.89%
Private car (Picking & dropping)*43% of car		%	0.94%	0.95%
Private car (Park & ride)*57% of car		%	1.26%	1.25%
Motorcycle (Picking & dropping) *43% of MC		%	12.20%	11.85%
Motorcycle (Park & ride) *57% of M/C		%	16.17%	15.71%
Xe om		%	0.50%	0.50%
Bicycle		%	4.50%	4.50%
Walk		%	11.03%	11.27%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 6-3 Tao Dien (All)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	29,000	101,000	
	Mode alignting	Pb	pax/day	14,500	50,500	
	Mode boarding	Pa	pax/day	14,500	50,500	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	29,000	101,000	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	1,175	4,091	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	1,175	4,091	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	1,175	4,091	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	618	2,172	
	Taxi		person/hour	10	37	
	Private car (Picking)*43% of car		person/hour	12	39	
	Private car (Park & ride)*57% of car		person/hour	15	52	
	Motorcycle (Picking) *43% of MC		person/hour	144	485	
	Motorcycle (Park & ride) *57% of MC		person/hour	190	643	
	Xe om		person/hour	6	21	
	Bicycle		person/hour	53	185	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	52	181	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	3	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	4	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	4	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	1,175	4,091	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	618	2,172	
	Taxi		person/hour	10	37	
	Private car (dropping)*43% of car		person/hour	12	39	
	Private car (Park & ride)*57% of car		person/hour	15	52	
	Motorcycle (dropping) *43% of MC		person/hour	144	485	
	Motorcycle (Park & ride) *57% of MC		person/hour	190	643	
	Xe om		person/hour	6	21	
	Bicycle		person/hour	53	185	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	2	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	20	80	
	Taxi		vehicle/hour	20	80	
	Private car (Picking & dropping)		vehicle/hour	10	40	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	290	970	
	Motorcycle (Park & ride)		vehicle/hour	380	1,290	
	Xe om		vehicle/hour	10	30	
	Bicycle		vehicle/hour	110	370	
	Total		vehicle/hour	840	2,860	
Required lots of parking	Private car	PKmc = Pa x share(Pcp)/ PSc /1.5	lot	68	236	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	1,261	4,265	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	354	1,232	1.5 cycles/day, 1.23per/bcy

No. 7-1 An Phu (North)

1. Planning Factors

1) No. of Passenger (North)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	2,128	2,550	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	2,128	2,550	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	1,064	1,275	
(Mode alighting)	Pb	pax/day	1,064	1,275	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	86	103	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	86	103	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	592	1,313	No Bus route in north
Taxi	Pt	pax/day	87	169	
Private car (Picking & dropping)*43% of car	Pck	pax/day	90	194	
Private car (Park & ride)*57% of car	Pcp	pax/day	120	257	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	2,168	4,686	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	2,875	6,211	
Xe om	Pxe	pax/day	35	75	
Bicycle	Pbc	pax/day	378	810	
Walk	Pw	pax/day	655	1,285	
Total		pax/day	7,000	15,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	8.46%	8.75%
Taxi		%	1.24%	1.13%
Private car (Picking & dropping)*43% of car		%	1.29%	1.29%
Private car (Park & ride)*57% of car		%	1.71%	1.71%
Motorcycle (Picking & dropping) *43% of MC		%	30.97%	31.24%
Motorcycle (Park & ride) *57% of M/C		%	41.07%	41.41%
Xe om		%	0.50%	0.50%
Bicycle		%	5.40%	5.40%
Walk		%	9.36%	8.57%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	4	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 7-1 An Phu (North)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	2,128	2,550	
	Mode alignting	Pb	pax/day	1,064	1,275	
	Mode boarding	Pa	pax/day	1,064	1,275	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	2,130	2,550	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	86	103	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	86	103	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	86	103	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	8	10	
	Taxi		person/hour	2	2	
	Private car (Picking)*43% of car		person/hour	2	2	
	Private car (Park & ride)*57% of car		person/hour	2	2	
	Motorcycle (Picking) *43% of MC		person/hour	27	33	
	Motorcycle (Park & ride) *57% of MC		person/hour	36	43	
	Xe om		person/hour	1	1	
	Bicycle		person/hour	5	6	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	1	1	
	Taxi	PTWt = PTUMix × Ht / 60	person	0	0	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	1	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	0	0	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	86	103	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	8	10	
	Taxi		person/hour	2	2	
	Private car (dropping)*43% of car		person/hour	2	2	
	Private car (Park & ride)*57% of car		person/hour	2	2	
	Motorcycle (dropping) *43% of MC		person/hour	27	33	
	Motorcycle (Park & ride) *57% of MC		person/hour	36	43	
	Xe om		person/hour	1	1	
	Bicycle		person/hour	5	6	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Bot = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = $\bar{}$ {PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	0	0	
	Taxi		vehicle/hour	0	0	
	Private car (Picking & dropping)		vehicle/hour	0	0	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	50	70	
	Motorcycle (Park & ride)		vehicle/hour	70	90	
	Xe om		vehicle/hour	0	0	
	Bicycle		vehicle/hour	10	10	
	Total		vehicle/hour	130	170	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	7	9	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	235	284	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	32	38	1.5 cycles/day, 1.23per/bcy

No. 7-2 An Phu (South)

1. Planning Factors

1) No. of Passenger (South)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	4,872	12,450	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	4,872	12,450	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	2,436	6,225	
(Mode alighting)	Pb	pax/day	2,436	6,225	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	197	504	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	197	504	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	592	1,313	1 Feeder route in south (3M)
Taxi	Pt	pax/day	87	169	
Private car (Picking & dropping)*43% of car	Pck	pax/day	90	194	
Private car (Park & ride)*57% of car	Pcp	pax/day	120	257	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	2,168	4,686	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	2,875	6,211	
Xe om	Pxe	pax/day	35	75	
Bicycle	Pbc	pax/day	378	810	
Walk	Pw	pax/day	655	1,285	
Total		pax/day	7,000	15,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	8.46%	8.75%
Taxi		%	1.24%	1.13%
Private car (Picking & dropping)*43% of car		%	1.29%	1.29%
Private car (Park & ride)*57% of car		%	1.71%	1.71%
Motorcycle (Picking & dropping) *43% of MC		%	30.97%	31.24%
Motorcycle (Park & ride) *57% of M/C		%	41.07%	41.41%
Xe om		%	0.50%	0.50%
Bicycle		%	5.40%	5.40%
Walk		%	9.36%	8.57%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	4	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 7-2 An Phu (South)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	4,872	12,450	
	Mode alignting	Pb	pax/day	2,436	6,225	
	Mode boarding	Pa	pax/day	2,436	6,225	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	4,870	12,450	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	197	504	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	197	504	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	197	504	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	17	45	
	Taxi		person/hour	3	6	
	Private car (Picking)*43% of car		person/hour	3	7	
	Private car (Park & ride)*57% of car		person/hour	4	9	
	Motorcycle (Picking) *43% of MC		person/hour	62	158	
	Motorcycle (Park & ride) *57% of MC		person/hour	81	209	
	Xe om		person/hour	1	3	
	Bicycle		person/hour	11	28	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	1	3	
	Taxi	PTWt = PTUMix × Ht / 60	person	0	1	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	1	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	0	2	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	197	504	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	17	45	
	Taxi		person/hour	3	6	
	Private car (dropping)*43% of car		person/hour	3	7	
	Private car (Park & ride)*57% of car		person/hour	4	9	
	Motorcycle (dropping) *43% of MC		person/hour	62	158	
	Motorcycle (Park & ride) *57% of MC		person/hour	81	209	
	Xe om		person/hour	1	3	
	Bicycle		person/hour	11	28	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Bot = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	0	0	
	Taxi		vehicle/hour	10	10	
	Private car (Picking & dropping)		vehicle/hour	0	10	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	120	320	
	Motorcycle (Park & ride)		vehicle/hour	160	420	
	Xe om		vehicle/hour	0	0	
	Bicycle		vehicle/hour	20	60	
	Total		vehicle/hour	310	820	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	16	40	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	538	1,386	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	72	183	1.5 cycles/day, 1.23per/bcy

No. 7-3 An Phu (All)

1. Planning Factors

1) No. of Passenger

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	7,000	15,000	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	7,000	15,000	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	3,500	7,500	
(Mode alighting)	Pb	pax/day	3,500	7,500	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	284	608	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	284	608	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040
Bus	Pb	pax/day	592	1,313
Taxi	Pt	pax/day	87	169
Private car (Picking & dropping)*43% of car	Pck	pax/day	90	194
Private car (Park & ride)*57% of car	Pcp	pax/day	120	257
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	2,168	4,686
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	2,875	6,211
Xe om	Pxe	pax/day	35	75
Bicycle	Pbc	pax/day	378	810
Walk	Pw	pax/day	655	1,285
Total		pax/day	7,000	15,000

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	8.46%	8.75%
Taxi		%	1.24%	1.13%
Private car (Picking & dropping)*43% of car		%	1.29%	1.29%
Private car (Park & ride)*57% of car		%	1.71%	1.71%
Motorcycle (Picking & dropping) *43% of MC		%	30.97%	31.24%
Motorcycle (Park & ride) *57% of M/C		%	41.07%	41.41%
Xe om		%	0.50%	0.50%
Bicycle		%	5.40%	5.40%
Walk		%	9.36%	8.57%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	4	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 7-3 An Phu (All)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	7,000	15,000	
	Mode alignting	Pb	pax/day	3,500	7,500	
	Mode boarding	Pa	pax/day	3,500	7,500	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	7,000	15,000	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	284	608	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	284	608	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	284	608	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	25	54	
	Taxi		person/hour	4	7	
	Private car (Picking)*43% of car		person/hour	4	8	
	Private car (Park & ride)*57% of car		person/hour	5	11	
	Motorcycle (Picking) *43% of MC		person/hour	88	190	
	Motorcycle (Park & ride) *57% of MC		person/hour	117	252	
	Xe om		person/hour	2	4	
	Bicycle		person/hour	16	33	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	2	4	
	Taxi	PTWt = PTUMix × Ht / 60	person	0	1	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	1	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	0	2	
	Xe om	Bixo = (PTUMxo × Tixo) / 60		1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	284	608	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	25	54	
	Taxi		person/hour	4	7	
	Private car (dropping)*43% of car		person/hour	4	8	
	Private car (Park & ride)*57% of car		person/hour	5	11	
	Motorcycle (dropping) *43% of MC		person/hour	88	190	
	Motorcycle (Park & ride) *57% of MC		person/hour	117	252	
	Xe om		person/hour	2	4	
	Bicycle		person/hour	16	33	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = $\bar{}${PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	0	0	
	Taxi		vehicle/hour	10	20	
	Private car (Picking & dropping)		vehicle/hour	0	10	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	180	380	
	Motorcycle (Park & ride)		vehicle/hour	230	500	
	Xe om		vehicle/hour	0	10	
	Bicycle		vehicle/hour	30	70	
	Total		vehicle/hour	450	990	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	23	48	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	773	1,670	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	103	220	1.5 cycles/day, 1.23per/bcy

No. 8-1 Rach Chiec (West)

1. Planning Factors

1) No. of Passenger (West)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	2,923	14,484	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	2,923	14,484	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	1,462	7,242	
(Mode alighting)	Pb	pax/day	1,462	7,242	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	118	587	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	118	587	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	14,592	41,296	1 existing route in west (and BRT)
Taxi	Pt	pax/day	360	1,000	
Private car (Picking & dropping)*43% of car	Pck	pax/day	318	877	
Private car (Park & ride)*57% of car	Pcp	pax/day	422	1,163	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	5,974	16,299	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	7,918	21,606	
Xe om	Pxe	pax/day	185	510	
Bicycle	Pbc	pax/day	1,554	4,284	
Walk	Pw	pax/day	5,677	14,965	
Total		pax/day	37,000	102,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	39.44%	40.49%
Taxi		%	0.97%	0.98%
Private car (Picking & dropping)*43% of car		%	0.86%	0.86%
Private car (Park & ride)*57% of car		%	1.14%	1.14%
Motorcycle (Picking & dropping) *43% of MC		%	16.15%	15.98%
Motorcycle (Park & ride) *57% of M/C		%	21.40%	21.18%
Xe om		%	0.50%	0.50%
Bicycle		%	4.20%	4.20%
Walk		%	15.34%	14.67%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	6	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	80	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 8-1 Rach Chiec (West)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	2,923	14,484	
	Mode alignting	Pb	pax/day	1,462	7,242	
	Mode boarding	Pa	pax/day	1,462	7,242	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	2,920	14,480	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	118	587	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	118	587	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	118	587	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	47	238	
	Taxi		person/hour	2	6	
	Private car (Picking)*43% of car		person/hour	2	6	
	Private car (Park & ride)*57% of car		person/hour	2	7	
	Motorcycle (Picking) *43% of MC		person/hour	20	94	
	Motorcycle (Park & ride) *57% of MC		person/hour	26	125	
	Xe om		person/hour	1	3	
	Bicycle		person/hour	5	25	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	5	24	
	Taxi	PTWt = PTUMix × Ht / 60	person	0	1	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	1	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	0	2	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	118	587	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	47	238	
	Taxi		person/hour	2	6	
	Private car (dropping)*43% of car		person/hour	2	6	
	Private car (Park & ride)*57% of car		person/hour	2	7	
	Motorcycle (dropping) *43% of MC		person/hour	20	94	
	Motorcycle (Park & ride) *57% of MC		person/hour	26	125	
	Xe om		person/hour	1	3	
	Bicycle		person/hour	5	25	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Bot = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = $\bar{}$ {PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	0	10	
	Taxi		vehicle/hour	0	10	
	Private car (Picking & dropping)		vehicle/hour	0	10	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	40	190	
	Motorcycle (Park & ride)		vehicle/hour	50	250	
	Xe om		vehicle/hour	0	0	
	Bicycle		vehicle/hour	10	50	
	Total		vehicle/hour	100	520	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	7	31	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	169	825	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	34	165	1.5 cycles/day, 1.23per/bcy

No. 8-2 Rach Chiec (East)

1. Planning Factors

1) No. of Passenger (east)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	34,077	87,516	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	34,077	87,516	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	17,039	43,758	
(Mode alighting)	Pb	pax/day	17,039	43,758	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	1,380	3,544	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	1,380	3,544	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	14,592	41,296	1 existing route in east
Taxi	Pt	pax/day	360	1,000	
Private car (Picking & dropping)*43% of car	Pck	pax/day	318	877	
Private car (Park & ride)*57% of car	Pcp	pax/day	422	1,163	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	5,974	16,299	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	7,918	21,606	
Xe om	Pxe	pax/day	185	510	
Bicycle	Pbc	pax/day	1,554	4,284	
Walk	Pw	pax/day	5,677	14,965	
Total		pax/day	37,000	102,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	39.44%	40.49%
Taxi		%	0.97%	0.98%
Private car (Picking & dropping)*43% of car		%	0.86%	0.86%
Private car (Park & ride)*57% of car		%	1.14%	1.14%
Motorcycle (Picking & dropping) *43% of MC		%	16.15%	15.98%
Motorcycle (Park & ride) *57% of M/C		%	21.40%	21.18%
Xe om		%	0.50%	0.50%
Bicycle		%	4.20%	4.20%
Walk		%	15.34%	14.67%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	6	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	80	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 8-2 Rach Chiec (East)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	34,077	87,516	
	Mode alignting	Pb	pax/day	17,039	43,758	
	Mode boarding	Pa	pax/day	17,039	43,758	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	34,080	87,520	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	1,380	3,544	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	1,380	3,544	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	1,380	3,544	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	545	1,435	
	Taxi		person/hour	14	35	
	Private car (Picking)*43% of car		person/hour	12	31	
	Private car (Park & ride)*57% of car		person/hour	16	41	
	Motorcycle (Picking) *43% of MC		person/hour	223	567	
	Motorcycle (Park & ride) *57% of MC		person/hour	296	751	
	Xe om		person/hour	7	18	
	Bicycle		person/hour	58	149	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	55	144	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	3	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	2	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	4	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	1,380	3,544	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	545	1,435	
	Taxi		person/hour	14	35	
	Private car (dropping)*43% of car		person/hour	12	31	
	Private car (Park & ride)*57% of car		person/hour	16	41	
	Motorcycle (dropping) *43% of MC		person/hour	223	567	
	Motorcycle (Park & ride) *57% of MC		person/hour	296	751	
	Xe om		person/hour	7	18	
	Bicycle		person/hour	58	149	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Bot = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	10	40	
	Taxi		vehicle/hour	30	80	
	Private car (Picking & dropping)		vehicle/hour	10	30	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	450	1,130	
	Motorcycle (Park & ride)		vehicle/hour	590	1,500	
	Xe om		vehicle/hour	10	30	
	Bicycle		vehicle/hour	120	300	
	Total		vehicle/hour	1,220	3,110	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	73	186	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	1,961	4,984	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	388	997	1.5 cycles/day, 1.23per/bcy

No. 8-3 Rach Chiec (All)

1. Planning Factors

1) No. of Passenger

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	37,000	102,000	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	37,000	102,000	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	18,500	51,000	
(Mode alighting)	Pb	pax/day	18,500	51,000	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	1,499	4,131	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	1,499	4,131	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	14,592	41,296	1 existing route in west (and BRT)
Taxi	Pt	pax/day	360	1,000	
Private car (Picking & dropping)*43% of car	Pck	pax/day	318	877	
Private car (Park & ride)*57% of car	Pcp	pax/day	422	1,163	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	5,974	16,299	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	7,918	21,606	
Xe om	Pxe	pax/day	185	510	
Bicycle	Pbc	pax/day	1,554	4,284	
Walk	Pw	pax/day	5,677	14,965	
Total		pax/day	37,000	102,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	39.44%	40.49%
Taxi		%	0.97%	0.98%
Private car (Picking & dropping)*43% of car		%	0.86%	0.86%
Private car (Park & ride)*57% of car		%	1.14%	1.14%
Motorcycle (Picking & dropping) *43% of MC		%	16.15%	15.98%
Motorcycle (Park & ride) *57% of M/C		%	21.40%	21.18%
Xe om		%	0.50%	0.50%
Bicycle		%	4.20%	4.20%
Walk		%	15.34%	14.67%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	6	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	80	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 8-3 Rach Chiec (All)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	37,000	102,000	
	Mode alignting	Pb	pax/day	18,500	51,000	
	Mode boarding	Pa	pax/day	18,500	51,000	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	37,000	102,000	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	1,499	4,131	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	1,499	4,131	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	1,499	4,131	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	592	1,673	
	Taxi		person/hour	15	41	
	Private car (Picking)*43% of car		person/hour	13	36	
	Private car (Park & ride)*57% of car		person/hour	18	48	
	Motorcycle (Picking) *43% of MC		person/hour	243	661	
	Motorcycle (Park & ride) *57% of MC		person/hour	321	876	
	Xe om		person/hour	8	21	
	Bicycle		person/hour	63	174	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	59	167	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	3	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	3	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	4	
	Xe om	Bixo = (PTUMxo × Tixo) / 60		1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	1,499	4,131	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	592	1,673	
	Taxi		person/hour	15	41	
	Private car (dropping)*43% of car		person/hour	13	36	
	Private car (Park & ride)*57% of car		person/hour	18	48	
	Motorcycle (dropping) *43% of MC		person/hour	243	661	
	Motorcycle (Park & ride) *57% of MC		person/hour	321	876	
	Xe om		person/hour	8	21	
	Bicycle		person/hour	63	174	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	10	40	
	Taxi		vehicle/hour	30	90	
	Private car (Picking & dropping)		vehicle/hour	10	40	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	490	1,320	
	Motorcycle (Park & ride)		vehicle/hour	640	1,750	
	Xe om		vehicle/hour	10	30	
	Bicycle		vehicle/hour	130	350	
	Total		vehicle/hour	1,320	3,620	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	79	217	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	2,129	5,809	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	422	1,161	1.5 cycles/day, 1.23per/bcy

No. 9-1 Phuoc Long (West)

1. Planning Factors

1) No. of Passenger (west)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	12,905	17,408	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	12,905	17,408	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	6,453	8,704	
(Mode alighting)	Pb	pax/day	6,453	8,704	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	523	705	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	523	705	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	12,245	28,625	2 Feeder routes in west
Taxi	Pt	pax/day	308	673	
Private car (Picking & dropping)*43% of car	Pck	pax/day	337	743	
Private car (Park & ride)*57% of car	Pcp	pax/day	446	985	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	3,593	7,580	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	4,762	10,047	
Xe om	Pxe	pax/day	145	320	
Bicycle	Pbc	pax/day	2,349	5,184	
Walk	Pw	pax/day	4,815	9,843	
Total		pax/day	29,000	64,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	42.22%	44.73%
Taxi		%	1.06%	1.05%
Private car (Picking & dropping)*43% of car		%	1.16%	1.16%
Private car (Park & ride)*57% of car		%	1.54%	1.54%
Motorcycle (Picking & dropping) *43% of MC		%	12.39%	11.84%
Motorcycle (Park & ride) *57% of M/C		%	16.42%	15.70%
Xe om		%	0.50%	0.50%
Bicycle		%	8.10%	8.10%
Walk		%	16.60%	15.38%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 9-1 Phuoc Long (West)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	12,905	17,408	
	Mode alignting	Pb	pax/day	6,453	8,704	
	Mode boarding	Pa	pax/day	6,453	8,704	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	12,910	17,410	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	523	705	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	523	705	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	523	705	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	221	316	
	Taxi		person/hour	6	8	
	Private car (Picking)*43% of car		person/hour	7	9	
	Private car (Park & ride)*57% of car		person/hour	9	11	
	Motorcycle (Picking) *43% of MC		person/hour	65	84	
	Motorcycle (Park & ride) *57% of MC		person/hour	86	111	
	Xe om		person/hour	3	4	
	Bicycle		person/hour	43	58	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	18	26	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	1	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	1	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	2	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	523	705	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	221	316	
	Taxi		person/hour	6	8	
	Private car (dropping)*43% of car		person/hour	7	9	
	Private car (Park & ride)*57% of car		person/hour	9	11	
	Motorcycle (dropping) *43% of MC		person/hour	65	84	
	Motorcycle (Park & ride) *57% of MC		person/hour	86	111	
	Xe om		person/hour	3	4	
	Bicycle		person/hour	43	58	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Bot = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	10	10	
	Taxi		vehicle/hour	10	20	
	Private car (Picking & dropping)		vehicle/hour	10	10	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	130	170	
	Motorcycle (Park & ride)		vehicle/hour	170	220	
	Xe om		vehicle/hour	0	10	
	Bicycle		vehicle/hour	90	120	
	Total		vehicle/hour	420	560	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	37	50	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	570	735	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	284	383	1.5 cycles/day, 1.23per/bcy

No. 9-2 Phuoc Long (East)

1. Planning Factors

1) No. of Passenger (East)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	16,095	46,592	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	16,095	46,592	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	8,048	23,296	
(Mode alighting)	Pb	pax/day	8,048	23,296	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	652	1,887	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	652	1,887	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	12,245	28,625	no bus route in east
Taxi	Pt	pax/day	308	673	
Private car (Picking & dropping)*43% of car	Pck	pax/day	337	743	
Private car (Park & ride)*57% of car	Pcp	pax/day	446	985	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	3,593	7,580	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	4,762	10,047	
Xe om	Pxe	pax/day	145	320	
Bicycle	Pbc	pax/day	2,349	5,184	
Walk	Pw	pax/day	4,815	9,843	
Total		pax/day	29,000	64,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	42.22%	44.73%
Taxi		%	1.06%	1.05%
Private car (Picking & dropping)*43% of car		%	1.16%	1.16%
Private car (Park & ride)*57% of car		%	1.54%	1.54%
Motorcycle (Picking & dropping) *43% of MC		%	12.39%	11.84%
Motorcycle (Park & ride) *57% of M/C		%	16.42%	15.70%
Xe om		%	0.50%	0.50%
Bicycle		%	8.10%	8.10%
Walk		%	16.60%	15.38%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 9-2 Phuoc Long (East)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	16,095	46,592	
	Mode alignting	Pb	pax/day	8,048	23,296	
	Mode boarding	Pa	pax/day	8,048	23,296	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	16,100	46,590	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	652	1,887	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	652	1,887	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	652	1,887	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	276	844	
	Taxi		person/hour	7	20	
	Private car (Picking)*43% of car		person/hour	8	22	
	Private car (Park & ride)*57% of car		person/hour	11	30	
	Motorcycle (Picking) *43% of MC		person/hour	81	224	
	Motorcycle (Park & ride) *57% of MC		person/hour	108	297	
	Xe om		person/hour	4	10	
	Bicycle		person/hour	53	153	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	23	70	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	2	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	2	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	3	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	652	1,887	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	276	844	
	Taxi		person/hour	7	20	
	Private car (dropping)*43% of car		person/hour	8	22	
	Private car (Park & ride)*57% of car		person/hour	11	30	
	Motorcycle (dropping) *43% of MC		person/hour	81	224	
	Motorcycle (Park & ride) *57% of MC		person/hour	108	297	
	Xe om		person/hour	4	10	
	Bicycle		person/hour	53	153	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Bot = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	10	30	
	Taxi		vehicle/hour	20	40	
	Private car (Picking & dropping)		vehicle/hour	10	20	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	160	450	
	Motorcycle (Park & ride)		vehicle/hour	220	590	
	Xe om		vehicle/hour	10	20	
	Bicycle		vehicle/hour	110	310	
	Total		vehicle/hour	540	1,460	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	47	134	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	711	1,967	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	354	1,023	1.5 cycles/day, 1.23per/bcy

No. 9-3 Phuoc Long (All)

1. Planning Factors

1) No. of Passenger

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	29,000	64,000	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	29,000	64,000	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	14,500	32,000	
(Mode alighting)	Pb	pax/day	14,500	32,000	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	1,175	2,592	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	1,175	2,592	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	12,245	28,625	2 Feeder routes in west
Taxi	Pt	pax/day	308	673	
Private car (Picking & dropping)*43% of car	Pck	pax/day	337	743	
Private car (Park & ride)*57% of car	Pcp	pax/day	446	985	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	3,593	7,580	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	4,762	10,047	
Xe om	Pxe	pax/day	145	320	
Bicycle	Pbc	pax/day	2,349	5,184	
Walk	Pw	pax/day	4,815	9,843	
Total		pax/day	29,000	64,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	42.22%	44.73%
Taxi		%	1.06%	1.05%
Private car (Picking & dropping)*43% of car		%	1.16%	1.16%
Private car (Park & ride)*57% of car		%	1.54%	1.54%
Motorcycle (Picking & dropping) *43% of MC		%	12.39%	11.84%
Motorcycle (Park & ride) *57% of M/C		%	16.42%	15.70%
Xe om		%	0.50%	0.50%
Bicycle		%	8.10%	8.10%
Walk		%	16.60%	15.38%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 9-3 Phuoc Long (All)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	29,000	64,000	
	Mode alignting	Pb	pax/day	14,500	32,000	
	Mode boarding	Pa	pax/day	14,500	32,000	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	29,000	64,000	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	1,175	2,592	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	1,175	2,592	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	1,175	2,592	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	497	1,160	
	Taxi		person/hour	13	28	
	Private car (Picking)*43% of car		person/hour	14	31	
	Private car (Park & ride)*57% of car		person/hour	19	40	
	Motorcycle (Picking) *43% of MC		person/hour	146	307	
	Motorcycle (Park & ride) *57% of MC		person/hour	193	407	
	Xe om		person/hour	6	13	
	Bicycle		person/hour	96	210	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	41	97	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	2	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	2	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	3	
	Xe om	Bixo = (PTUMxo × Tixo) / 60		1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	1,175	2,592	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	497	1,160	
	Taxi		person/hour	13	28	
	Private car (dropping)*43% of car		person/hour	14	31	
	Private car (Park & ride)*57% of car		person/hour	19	40	
	Motorcycle (dropping) *43% of MC		person/hour	146	307	
	Motorcycle (Park & ride) *57% of MC		person/hour	193	407	
	Xe om		person/hour	6	13	
	Bicycle		person/hour	96	210	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	20	40	
	Taxi		vehicle/hour	30	60	
	Private car (Picking & dropping)		vehicle/hour	20	30	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	290	610	
	Motorcycle (Park & ride)		vehicle/hour	390	810	
	Xe om		vehicle/hour	10	20	
	Bicycle		vehicle/hour	190	420	
	Total		vehicle/hour	950	1,990	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	84	184	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	1,281	2,701	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	637	1,405	1.5 cycles/day, 1.23per/bcy

No. 10-1 Binh Thai (West)

1. Planning Factors

1) No. of Passenger (west)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	20,868	54,531	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	20,868	54,531	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	10,434	27,266	
(Mode alighting)	Pb	pax/day	10,434	27,266	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	845	2,209	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	845	2,209	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	12,462	21,972	2 Feeder routes in west
Taxi	Pt	pax/day	355	749	
Private car (Picking & dropping)*43% of car	Pck	pax/day	382	753	
Private car (Park & ride)*57% of car	Pcp	pax/day	506	999	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	5,688	11,864	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	7,540	15,727	
Xe om	Pxe	pax/day	185	365	
Bicycle	Pbc	pax/day	2,257	4,453	
Walk	Pw	pax/day	7,625	16,118	
Total		pax/day	37,000	73,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	33.68%	30.10%
Taxi		%	0.96%	1.03%
Private car (Picking & dropping)*43% of car		%	1.03%	1.03%
Private car (Park & ride)*57% of car		%	1.37%	1.37%
Motorcycle (Picking & dropping) *43% of MC		%	15.37%	16.25%
Motorcycle (Park & ride) *57% of M/C		%	20.38%	21.54%
Xe om		%	0.50%	0.50%
Bicycle		%	6.10%	6.10%
Walk		%	20.61%	22.08%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus 2020	Bus 2040	Taxi	Private car	Motorcycle
			b1	*b2*	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	8	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.03	0.5	1.0	0.5

No. 10-1 Binh Thai (West)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	20,868	54,531	
	Mode alignting	Pb	pax/day	10,434	27,266	
	Mode boarding	Pa	pax/day	10,434	27,266	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	20,870	54,530	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	845	2,209	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	845	2,209	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	845	2,209	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	285	665	
	Taxi		person/hour	9	23	
	Private car (Picking)*43% of car		person/hour	9	23	
	Private car (Park & ride)*57% of car		person/hour	12	31	
	Motorcycle (Picking) *43% of MC		person/hour	130	360	
	Motorcycle (Park & ride) *57% of MC		person/hour	173	476	
	Xe om		person/hour	5	12	
	Bicycle		person/hour	52	135	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	38	55	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	2	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	2	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	3	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	845	2,209	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	285	665	
	Taxi		person/hour	9	23	
	Private car (dropping)*43% of car		person/hour	9	23	
	Private car (Park & ride)*57% of car		person/hour	12	31	
	Motorcycle (dropping) *43% of MC		person/hour	130	360	
	Motorcycle (Park & ride) *57% of MC		person/hour	173	476	
	Xe om		person/hour	5	12	
	Bicycle		person/hour	52	135	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	10	20	
	Taxi		vehicle/hour	20	50	
	Private car (Picking & dropping)		vehicle/hour	10	30	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	260	720	
	Motorcycle (Park & ride)		vehicle/hour	350	950	
	Xe om		vehicle/hour	10	20	
	Bicycle		vehicle/hour	100	270	
	Total		vehicle/hour	760	2,060	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	54	139	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	1,144	3,159	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	345	902	1.5 cycles/day, 1.23per/bcy

No. 10-2 Binh Thai (East)

1. Planning Factors

1) No. of Passenger (east)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	16,132	18,469	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	16,132	18,469	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	8,066	9,235	
(Mode alighting)	Pb	pax/day	8,066	9,235	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	653	748	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	653	748	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	12,462	21,972	no bus route in east
Taxi	Pt	pax/day	355	749	
Private car (Picking & dropping)*43% of car	Pck	pax/day	382	753	
Private car (Park & ride)*57% of car	Pcp	pax/day	506	999	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	5,688	11,864	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	7,540	15,727	
Xe om	Pxe	pax/day	185	365	
Bicycle	Pbc	pax/day	2,257	4,453	
Walk	Pw	pax/day	7,625	16,118	
Total		pax/day	37,000	73,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	33.68%	30.10%
Taxi		%	0.96%	1.03%
Private car (Picking & dropping)*43% of car		%	1.03%	1.03%
Private car (Park & ride)*57% of car		%	1.37%	1.37%
Motorcycle (Picking & dropping) *43% of MC		%	15.37%	16.25%
Motorcycle (Park & ride) *57% of M/C		%	20.38%	21.54%
Xe om		%	0.50%	0.50%
Bicycle		%	6.10%	6.10%
Walk		%	20.61%	22.08%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus 2020	Bus 2040	Taxi	Private car	Motorcycle
			b1	*b2*	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	8	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.03	0.5	1.0	0.5

No. 10-2 Binh Thai (East)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	16,132	18,469	
	Mode alignting	Pb	pax/day	8,066	9,235	
	Mode boarding	Pa	pax/day	8,066	9,235	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	16,130	18,470	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	653	748	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	653	748	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	653	748	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	220	226	
	Taxi		person/hour	7	8	
	Private car (Picking)*43% of car		person/hour	7	8	
	Private car (Park & ride)*57% of car		person/hour	9	11	
	Motorcycle (Picking) *43% of MC		person/hour	101	122	
	Motorcycle (Park & ride) *57% of MC		person/hour	134	162	
	Xe om		person/hour	4	4	
	Bicycle		person/hour	40	46	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	29	19	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	1	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	1	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	2	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	653	748	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	220	226	
	Taxi		person/hour	7	8	
	Private car (dropping)*43% of car		person/hour	7	8	
	Private car (Park & ride)*57% of car		person/hour	9	11	
	Motorcycle (dropping) *43% of MC		person/hour	101	122	
	Motorcycle (Park & ride) *57% of MC		person/hour	134	162	
	Xe om		person/hour	4	4	
	Bicycle		person/hour	40	46	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	10	10	
	Taxi		vehicle/hour	20	20	
	Private car (Picking & dropping)		vehicle/hour	10	10	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	200	240	
	Motorcycle (Park & ride)		vehicle/hour	270	320	
	Xe om		vehicle/hour	10	10	
	Bicycle		vehicle/hour	80	90	
	Total		vehicle/hour	600	700	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	42	48	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	884	1,070	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	267	306	1.5 cycles/day, 1.23per/bcy

No. 10-3 Binh Thai (All)

1. Planning Factors

1) No. of Passenger

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	37,000	73,000	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	37,000	73,000	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	18,500	36,500	
(Mode alighting)	Pb	pax/day	18,500	36,500	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	1,499	2,957	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	1,499	2,957	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	12,462	21,972	2 Feeder routes in west
Taxi	Pt	pax/day	355	749	
Private car (Picking & dropping)*43% of car	Pck	pax/day	382	753	
Private car (Park & ride)*57% of car	Pcp	pax/day	506	999	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	5,688	11,864	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	7,540	15,727	
Xe om	Pxe	pax/day	185	365	
Bicycle	Pbc	pax/day	2,257	4,453	
Walk	Pw	pax/day	7,625	16,118	
Total		pax/day	37,000	73,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	33.68%	30.10%
Taxi		%	0.96%	1.03%
Private car (Picking & dropping)*43% of car		%	1.03%	1.03%
Private car (Park & ride)*57% of car		%	1.37%	1.37%
Motorcycle (Picking & dropping) *43% of MC		%	15.37%	16.25%
Motorcycle (Park & ride) *57% of M/C		%	20.38%	21.54%
Xe om		%	0.50%	0.50%
Bicycle		%	6.10%	6.10%
Walk		%	20.61%	22.08%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus 2020	Bus 2040	Taxi	Private car	Motorcycle
			b1	*b2*	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	8	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.03	0.5	1.0	0.5

No. 10-3 Binh Thai (All)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount 2020	Amount 2040	Remarks
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	37,000	73,000	
	Mode alignting	Pb	pax/day	18,500	36,500	
	Mode boarding	Pa	pax/day	18,500	36,500	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	37,000	73,000	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	1,499	2,957	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	1,499	2,957	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	1,499	2,957	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	505	891	
	Taxi		person/hour	15	31	
	Private car (Picking)*43% of car		person/hour	16	31	
	Private car (Park & ride)*57% of car		person/hour	21	41	
	Motorcycle (Picking) *43% of MC		person/hour	231	481	
	Motorcycle (Park & ride) *57% of MC		person/hour	306	638	
	Xe om		person/hour	8	15	
	Bicycle		person/hour	92	181	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	67	74	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	3	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	2	2	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	4	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	1,499	2,957	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	505	891	
	Taxi		person/hour	15	31	
	Private car (dropping)*43% of car		person/hour	16	31	
	Private car (Park & ride)*57% of car		person/hour	21	41	
	Motorcycle (dropping) *43% of MC		person/hour	231	481	
	Motorcycle (Park & ride) *57% of MC		person/hour	306	638	
	Xe om		person/hour	8	15	
	Bicycle		person/hour	92	181	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
Xe om	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	20	30	
	Taxi		vehicle/hour	30	70	
	Private car (Picking & dropping)		vehicle/hour	20	30	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	460	960	
	Motorcycle (Park & ride)		vehicle/hour	610	1,280	
	Xe om		vehicle/hour	10	20	
	Bicycle		vehicle/hour	180	360	
	Total		vehicle/hour	1,330	2,750	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	95	187	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	2,027	4,228	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	612	1,207	1.5 cycles/day, 1.23per/bcy

No. 11-1 Thu Duc (West)

1. Planning Factors

1) No. of Passenger (west)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	16,770	31,200	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	16,770	31,200	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	8,385	15,600	
(Mode alighting)	Pb	pax/day	8,385	15,600	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	679	1,264	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	679	1,264	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	19,935	30,949	3 Feeder routes in west
Taxi	Pt	pax/day	450	664	(5 existing route enter into plaza in future)
Private car (Picking & dropping)*43% of car	Pck	pax/day	499	755	
Private car (Park & ride)*57% of car	Pcp	pax/day	662	1,000	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	4,877	7,120	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	6,465	9,439	
Xe om	Pxe	pax/day	215	325	
Bicycle	Pbc	pax/day	3,612	5,460	
Walk	Pw	pax/day	6,285	9,288	
Total		pax/day	43,000	65,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	46.36%	47.61%
Taxi		%	1.05%	1.02%
Private car (Picking & dropping)*43% of car		%	1.16%	1.16%
Private car (Park & ride)*57% of car		%	1.54%	1.54%
Motorcycle (Picking & dropping) *43% of MC		%	11.34%	10.95%
Motorcycle (Park & ride) *57% of M/C		%	15.03%	14.52%
Xe om		%	0.50%	0.50%
Bicycle		%	8.40%	8.40%
Walk		%	14.62%	14.29%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus 2020	Bus 2040	Taxi	Private car	Motorcycle
			b1	*b2*	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	8	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	80	0.9	1.79	1.24
Time required to board	Tix	min/person	-	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.03	0.5	1.0	0.5

No. 11-1 Thu Duc (West)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	16,770	31,200	
	Mode alignting	Pb	pax/day	8,385	15,600	
	Mode boarding	Pa	pax/day	8,385	15,600	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	16,770	31,200	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	679	1,264	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	679	1,264	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	679	1,264	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	315	602	
	Taxi		person/hour	8	13	
	Private car (Picking)*43% of car		person/hour	8	15	
	Private car (Park & ride)*57% of car		person/hour	11	20	
	Motorcycle (Picking) *43% of MC		person/hour	78	139	
	Motorcycle (Park & ride) *57% of MC		person/hour	103	184	
	Xe om		person/hour	4	7	
	Bicycle		person/hour	58	107	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	42	50	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	1	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	1	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	2	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	679	1,264	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	315	602	
	Taxi		person/hour	8	13	
	Private car (dropping)*43% of car		person/hour	8	15	
	Private car (Park & ride)*57% of car		person/hour	11	20	
	Motorcycle (dropping) *43% of MC		person/hour	78	139	
	Motorcycle (Park & ride) *57% of MC		person/hour	103	184	
	Xe om		person/hour	4	7	
	Bicycle		person/hour	58	107	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = $\bar{}${PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	10	20	
	Taxi		vehicle/hour	20	30	
	Private car (Picking & dropping)		vehicle/hour	10	20	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	160	280	
	Motorcycle (Park & ride)		vehicle/hour	210	370	
	Xe om		vehicle/hour	10	10	
	Bicycle		vehicle/hour	120	210	
	Total		vehicle/hour	540	940	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	49	90	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	678	1,218	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	382	711	1.5 cycles/day, 1.23per/bcy

No. 11-2 Thu Duc (East)

1. Planning Factors

1) No. of Passenger (east)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	26,230	33,800	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	26,230	33,800	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	13,115	16,900	
(Mode alighting)	Pb	pax/day	13,115	16,900	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	1,062	1,369	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	1,062	1,369	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	19,935	30,949	no bus route
Taxi	Pt	pax/day	450	664	
Private car (Picking & dropping)*43% of car	Pck	pax/day	499	755	
Private car (Park & ride)*57% of car	Pcp	pax/day	662	1,000	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	4,877	7,120	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	6,465	9,439	
Xe om	Pxe	pax/day	215	325	
Bicycle	Pbc	pax/day	3,612	5,460	
Walk	Pw	pax/day	6,285	9,288	
Total		pax/day	43,000	65,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	46.36%	47.61%
Taxi		%	1.05%	1.02%
Private car (Picking & dropping)*43% of car		%	1.16%	1.16%
Private car (Park & ride)*57% of car		%	1.54%	1.54%
Motorcycle (Picking & dropping) *43% of MC		%	11.34%	10.95%
Motorcycle (Park & ride) *57% of M/C		%	15.03%	14.52%
Xe om		%	0.50%	0.50%
Bicycle		%	8.40%	8.40%
Walk		%	14.62%	14.29%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus 2020	Bus 2040	Taxi	Private car	Motorcycle
			b1	*b2*	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	8	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	80	0.9	1.79	1.24
Time required to board	Tix	min/person	-	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.03	0.5	1.0	0.5

No. 11-2 Thu Duc (East)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	26,230	33,800	
	Mode alignting	Pb	pax/day	13,115	16,900	
	Mode boarding	Pa	pax/day	13,115	16,900	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	26,230	33,800	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	1,062	1,369	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	1,062	1,369	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	1,062	1,369	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	493	652	
	Taxi		person/hour	12	14	
	Private car (Picking)*43% of car		person/hour	13	16	
	Private car (Park & ride)*57% of car		person/hour	17	22	
	Motorcycle (Picking) *43% of MC		person/hour	121	150	
	Motorcycle (Park & ride) *57% of MC		person/hour	160	199	
	Xe om		person/hour	6	7	
	Bicycle		person/hour	90	115	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	66	54	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	1	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	2	1	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	2	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	1,062	1,369	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	493	652	
	Taxi		person/hour	12	14	
	Private car (dropping)*43% of car		person/hour	13	16	
	Private car (Park & ride)*57% of car		person/hour	17	22	
	Motorcycle (dropping) *43% of MC		person/hour	121	150	
	Motorcycle (Park & ride) *57% of MC		person/hour	160	199	
	Xe om		person/hour	6	7	
	Bicycle		person/hour	90	115	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	20	20	
	Taxi		vehicle/hour	30	30	
	Private car (Picking & dropping)		vehicle/hour	10	20	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	240	300	
	Motorcycle (Park & ride)		vehicle/hour	320	400	
	Xe om		vehicle/hour	10	10	
	Bicycle		vehicle/hour	180	230	
	Total		vehicle/hour	810	1,010	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	76	97	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	1,061	1,320	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	598	770	1.5 cycles/day, 1.23per/bcy

No. 11-3 Thu Duc (All)

1. Planning Factors

1) No. of Passenger (west)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	43,000	65,000	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	43,000	65,000	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	21,500	32,500	
(Mode alighting)	Pb	pax/day	21,500	32,500	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	1,742	2,633	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	1,742	2,633	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	19,935	30,949	3 Feeder routes in west
Taxi	Pt	pax/day	450	664	(5 existing route enter into plaza in future)
Private car (Picking & dropping)*43% of car	Pck	pax/day	499	755	
Private car (Park & ride)*57% of car	Pcp	pax/day	662	1,000	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	4,877	7,120	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	6,465	9,439	
Xe om	Pxe	pax/day	215	325	
Bicycle	Pbc	pax/day	3,612	5,460	
Walk	Pw	pax/day	6,285	9,288	
Total		pax/day	43,000	65,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	46.36%	47.61%
Taxi		%	1.05%	1.02%
Private car (Picking & dropping)*43% of car		%	1.16%	1.16%
Private car (Park & ride)*57% of car		%	1.54%	1.54%
Motorcycle (Picking & dropping) *43% of MC		%	11.34%	10.95%
Motorcycle (Park & ride) *57% of M/C		%	15.03%	14.52%
Xe om		%	0.50%	0.50%
Bicycle		%	8.40%	8.40%
Walk		%	14.62%	14.29%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus 2020	Bus 2040	Taxi	Private car	Motorcycle
			b1	*b2*	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	8	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	80	0.9	1.79	1.24
Time required to board	Tix	min/person	-	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.03	0.5	1.0	0.5

No. 11-3 Thu Duc (All)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	43,000	65,000	
	Mode alignting	Pb	pax/day	21,500	32,500	
	Mode boarding	Pa	pax/day	21,500	32,500	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	43,000	65,000	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	1,742	2,633	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	1,742	2,633	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	1,742	2,633	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	808	1,254	
	Taxi		person/hour	19	27	
	Private car (Picking)*43% of car		person/hour	21	31	
	Private car (Park & ride)*57% of car		person/hour	27	41	
	Motorcycle (Picking) *43% of MC		person/hour	198	289	
	Motorcycle (Park & ride) *57% of MC		person/hour	262	383	
	Xe om		person/hour	9	14	
	Bicycle		person/hour	147	222	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	108	105	
	Taxi	PTWt = PTUMix × Ht / 60	person	2	2	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	2	2	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	3	3	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	1,742	2,633	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	808	1,254	
	Taxi		person/hour	19	27	
	Private car (dropping)*43% of car		person/hour	21	31	
	Private car (Park & ride)*57% of car		person/hour	27	41	
	Motorcycle (dropping) *43% of MC		person/hour	198	289	
	Motorcycle (Park & ride) *57% of MC		person/hour	262	383	
	Xe om		person/hour	9	14	
	Bicycle		person/hour	147	222	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
Xe om	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	30	30	
	Taxi		vehicle/hour	40	60	
	Private car (Picking & dropping)		vehicle/hour	20	30	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	400	580	
	Motorcycle (Park & ride)		vehicle/hour	520	770	
	Xe om		vehicle/hour	10	20	
	Bicycle		vehicle/hour	290	440	
	Total		vehicle/hour	1,310	1,930	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	124	187	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	1,738	2,538	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	979	1,480	1.5 cycles/day, 1.23per/bcy

No. 12-1 High-tech Park (West)

1. Planning Factors

1) No. of Passenger (west)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	9,480	9,256	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	9,480	9,256	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	4,740	4,628	
(Mode alighting)	Pb	pax/day	4,740	4,628	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	384	375	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	384	375	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	13,110	14,189	no feeder route in west
Taxi	Pt	pax/day	262	295	
Private car (Picking & dropping)*43% of car	Pck	pax/day	310	335	
Private car (Park & ride)*57% of car	Pcp	pax/day	410	445	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	2,767	2,992	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	3,667	3,967	
Xe om	Pxe	pax/day	120	130	
Bicycle	Pbc	pax/day	2,184	2,366	
Walk	Pw	pax/day	1,170	1,281	
Total		pax/day	24,000	26,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	54.63%	54.57%
Taxi		%	1.09%	1.13%
Private car (Picking & dropping)*43% of car		%	1.29%	1.29%
Private car (Park & ride)*57% of car		%	1.71%	1.71%
Motorcycle (Picking & dropping) *43% of MC		%	11.53%	11.51%
Motorcycle (Park & ride) *57% of M/C		%	15.28%	15.26%
Xe om		%	0.50%	0.50%
Bicycle		%	9.10%	9.10%
Walk		%	4.88%	4.93%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	80	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 12-1 High-tech Park (West)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	9,480	9,256	
	Mode alignting	Pb	pax/day	4,740	4,628	
	Mode boarding	Pa	pax/day	4,740	4,628	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	9,480	9,260	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	384	375	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	384	375	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	384	375	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	210	205	
	Taxi		person/hour	5	5	
	Private car (Picking)*43% of car		person/hour	5	5	
	Private car (Park & ride)*57% of car		person/hour	7	7	
	Motorcycle (Picking) *43% of MC		person/hour	45	44	
	Motorcycle (Park & ride) *57% of MC		person/hour	59	58	
	Xe om		person/hour	2	2	
	Bicycle		person/hour	35	35	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	18	17	
	Taxi	PTWt = PTUMix × Ht / 60	person	0	0	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	1	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	0	0	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	384	375	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	210	205	
	Taxi		person/hour	5	5	
	Private car (dropping)*43% of car		person/hour	5	5	
	Private car (Park & ride)*57% of car		person/hour	7	7	
	Motorcycle (dropping) *43% of MC		person/hour	45	44	
	Motorcycle (Park & ride) *57% of MC		person/hour	59	58	
	Xe om		person/hour	2	2	
	Bicycle		person/hour	35	35	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ⁻{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	10	10	
	Taxi		vehicle/hour	10	10	
	Private car (Picking & dropping)		vehicle/hour	10	10	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	90	90	
	Motorcycle (Park & ride)		vehicle/hour	120	120	
	Xe om		vehicle/hour	0	0	
	Bicycle		vehicle/hour	70	70	
	Total		vehicle/hour	310	310	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	31	30	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	390	380	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	234	229	1.5 cycles/day, 1.23per/bcy

No. 12-2 High-tech Park (East)

1. Planning Factors

1) No. of Passenger (east)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	14,520	16,744	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	14,520	16,744	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	7,260	8,372	
(Mode alighting)	Pb	pax/day	7,260	8,372	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	588	678	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	588	678	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	13,110	14,189	1 feeder route in east
Taxi	Pt	pax/day	262	295	
Private car (Picking & dropping)*43% of car	Pck	pax/day	310	335	
Private car (Park & ride)*57% of car	Pcp	pax/day	410	445	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	2,767	2,992	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	3,667	3,967	
Xe om	Pxe	pax/day	120	130	
Bicycle	Pbc	pax/day	2,184	2,366	
Walk	Pw	pax/day	1,170	1,281	
Total		pax/day	24,000	26,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	54.63%	54.57%
Taxi		%	1.09%	1.13%
Private car (Picking & dropping)*43% of car		%	1.29%	1.29%
Private car (Park & ride)*57% of car		%	1.71%	1.71%
Motorcycle (Picking & dropping) *43% of MC		%	11.53%	11.51%
Motorcycle (Park & ride) *57% of M/C		%	15.28%	15.26%
Xe om		%	0.50%	0.50%
Bicycle		%	9.10%	9.10%
Walk		%	4.88%	4.93%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	80	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 12-2 High-tech Park (East)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	14,520	16,744	
	Mode alignting	Pb	pax/day	7,260	8,372	
	Mode boarding	Pa	pax/day	7,260	8,372	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	14,520	16,740	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	588	678	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	588	678	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	588	678	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	322	371	
	Taxi		person/hour	7	8	
	Private car (Picking)*43% of car		person/hour	8	9	
	Private car (Park & ride)*57% of car		person/hour	11	12	
	Motorcycle (Picking) *43% of MC		person/hour	68	79	
	Motorcycle (Park & ride) *57% of MC		person/hour	90	104	
	Xe om		person/hour	3	4	
	Bicycle		person/hour	54	62	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	27	31	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	1	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	1	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	2	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	588	678	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	322	371	
	Taxi		person/hour	7	8	
	Private car (dropping)*43% of car		person/hour	8	9	
	Private car (Park & ride)*57% of car		person/hour	11	12	
	Motorcycle (dropping) *43% of MC		person/hour	68	79	
	Motorcycle (Park & ride) *57% of MC		person/hour	90	104	
	Xe om		person/hour	3	4	
	Bicycle		person/hour	54	62	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	10	10	
	Taxi		vehicle/hour	20	20	
	Private car (Picking & dropping)		vehicle/hour	10	10	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	140	160	
	Motorcycle (Park & ride)		vehicle/hour	180	210	
	Xe om		vehicle/hour	0	10	
	Bicycle		vehicle/hour	110	120	
	Total		vehicle/hour	470	540	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	47	54	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	597	687	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	359	413	1.5 cycles/day, 1.23per/bcy

No. 12-3 High-tech Park (All)

1. Planning Factors

1) No. of Passenger

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	24,000	26,000	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	24,000	26,000	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	12,000	13,000	
(Mode alighting)	Pb	pax/day	12,000	13,000	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	972	1,053	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	972	1,053	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	13,110	14,189	1 feeder route in east
Taxi	Pt	pax/day	262	295	
Private car (Picking & dropping)*43% of car	Pck	pax/day	310	335	
Private car (Park & ride)*57% of car	Pcp	pax/day	410	445	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	2,767	2,992	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	3,667	3,967	
Xe om	Pxe	pax/day	120	130	
Bicycle	Pbc	pax/day	2,184	2,366	
Walk	Pw	pax/day	1,170	1,281	
Total		pax/day	24,000	26,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	54.63%	54.57%
Taxi		%	1.09%	1.13%
Private car (Picking & dropping)*43% of car		%	1.29%	1.29%
Private car (Park & ride)*57% of car		%	1.71%	1.71%
Motorcycle (Picking & dropping) *43% of MC		%	11.53%	11.51%
Motorcycle (Park & ride) *57% of M/C		%	15.28%	15.26%
Xe om		%	0.50%	0.50%
Bicycle		%	9.10%	9.10%
Walk		%	4.88%	4.93%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	5	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	80	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 12-3 High-tech Park (All)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	24,000	26,000	
	Mode alignting	Pb	pax/day	12,000	13,000	
	Mode boarding	Pa	pax/day	12,000	13,000	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	24,000	26,000	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	972	1,053	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	972	1,053	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	972	1,053	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	531	575	
	Taxi		person/hour	11	12	
	Private car (Picking)*43% of car		person/hour	13	14	
	Private car (Park & ride)*57% of car		person/hour	17	19	
	Motorcycle (Picking) *43% of MC		person/hour	113	122	
	Motorcycle (Park & ride) *57% of MC		person/hour	149	161	
	Xe om		person/hour	5	6	
	Bicycle		person/hour	89	96	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	44	48	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	1	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	1	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	2	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	972	1,053	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	531	575	
	Taxi		person/hour	11	12	
	Private car (dropping)*43% of car		person/hour	13	14	
	Private car (Park & ride)*57% of car		person/hour	17	19	
	Motorcycle (dropping) *43% of MC		person/hour	113	122	
	Motorcycle (Park & ride) *57% of MC		person/hour	149	161	
	Xe om		person/hour	5	6	
	Bicycle		person/hour	89	96	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	10	10	
	Taxi		vehicle/hour	20	30	
	Private car (Picking & dropping)		vehicle/hour	10	20	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	230	240	
	Motorcycle (Park & ride)		vehicle/hour	300	320	
	Xe om		vehicle/hour	10	10	
	Bicycle		vehicle/hour	180	190	
	Total		vehicle/hour	760	820	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	77	83	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	986	1,067	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	592	642	1.5 cycles/day, 1.23per/bcy

No. 13-1 Suoi Tien (West)

1. Planning Factors

1) No. of Passenger (west)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	14,668	16,695	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	14,668	16,695	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	7,334	8,348	
(Mode alighting)	Pb	pax/day	7,334	8,348	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	594	676	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	594	676	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	7,405	8,430	1 feeder in west
Taxi	Pt	pax/day	205	254	
Private car (Picking & dropping)*43% of car	Pck	pax/day	253	280	
Private car (Park & ride)*57% of car	Pcp	pax/day	336	371	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	2,142	2,356	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	2,840	3,123	
Xe om	Pxe	pax/day	95	105	
Bicycle	Pbc	pax/day	2,470	2,730	
Walk	Pw	pax/day	3,254	3,351	
Total		pax/day	19,000	21,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	38.97%	40.14%
Taxi		%	1.08%	1.21%
Private car (Picking & dropping)*43% of car		%	1.33%	1.33%
Private car (Park & ride)*57% of car		%	1.77%	1.77%
Motorcycle (Picking & dropping) *43% of MC		%	11.27%	11.22%
Motorcycle (Park & ride) *57% of M/C		%	14.95%	14.87%
Xe om		%	0.50%	0.50%
Bicycle		%	13.00%	13.00%
Walk		%	17.13%	15.96%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	15	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 13-1 Suoi Tien (West)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	14,668	16,695	
	Mode alignting	Pb	pax/day	7,334	8,348	
	Mode boarding	Pa	pax/day	7,334	8,348	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	14,670	16,700	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	594	676	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	594	676	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	594	676	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	232	272	
	Taxi		person/hour	7	9	
	Private car (Picking)*43% of car		person/hour	8	10	
	Private car (Park & ride)*57% of car		person/hour	11	12	
	Motorcycle (Picking) *43% of MC		person/hour	67	76	
	Motorcycle (Park & ride) *57% of MC		person/hour	89	101	
	Xe om		person/hour	3	4	
	Bicycle		person/hour	78	88	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	58	68	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	1	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	2	2	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	2	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	594	676	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	232	272	
	Taxi		person/hour	7	9	
	Private car (dropping)*43% of car		person/hour	8	10	
	Private car (Park & ride)*57% of car		person/hour	11	12	
	Motorcycle (dropping) *43% of MC		person/hour	67	76	
	Motorcycle (Park & ride) *57% of MC		person/hour	89	101	
	Xe om		person/hour	3	4	
	Bicycle		person/hour	78	88	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	10	10	
	Taxi		vehicle/hour	20	20	
	Private car (Picking & dropping)		vehicle/hour	10	10	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	130	150	
	Motorcycle (Park & ride)		vehicle/hour	180	200	
	Xe om		vehicle/hour	0	10	
	Bicycle		vehicle/hour	160	180	
	Total		vehicle/hour	510	580	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	49	55	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	590	668	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	517	589	1.5 cycles/day, 1.23per/bcy

No. 13-2 Suoi Tien (East)

1. Planning Factors

1) No. of Passenger (east)

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	4,332	4,305	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	4,332	4,305	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	2,166	2,153	
(Mode alighting)	Pb	pax/day	2,166	2,153	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	175	174	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	175	174	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	7,405	8,430	1 feeder in east
Taxi	Pt	pax/day	205	254	
Private car (Picking & dropping)*43% of car	Pck	pax/day	253	280	
Private car (Park & ride)*57% of car	Pcp	pax/day	336	371	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	2,142	2,356	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	2,840	3,123	
Xe om	Pxe	pax/day	95	105	
Bicycle	Pbc	pax/day	2,470	2,730	
Walk	Pw	pax/day	3,254	3,351	
Total		pax/day	19,000	21,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	38.97%	40.14%
Taxi		%	1.08%	1.21%
Private car (Picking & dropping)*43% of car		%	1.33%	1.33%
Private car (Park & ride)*57% of car		%	1.77%	1.77%
Motorcycle (Picking & dropping) *43% of MC		%	11.27%	11.22%
Motorcycle (Park & ride) *57% of M/C		%	14.95%	14.87%
Xe om		%	0.50%	0.50%
Bicycle		%	13.00%	13.00%
Walk		%	17.13%	15.96%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	15	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 13-2 Suoi Tien (East)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	4,332	4,305	
	Mode alignting	Pb	pax/day	2,166	2,153	
	Mode boarding	Pa	pax/day	2,166	2,153	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	4,330	4,310	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	175	174	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	175	174	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	175	174	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	69	70	
	Taxi		person/hour	2	3	
	Private car (Picking)*43% of car		person/hour	3	3	
	Private car (Park & ride)*57% of car		person/hour	4	4	
	Motorcycle (Picking) *43% of MC		person/hour	20	20	
	Motorcycle (Park & ride) *57% of MC		person/hour	27	26	
	Xe om		person/hour	1	1	
	Bicycle		person/hour	23	23	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	17	18	
	Taxi	PTWt = PTUMix × Ht / 60	person	0	0	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	1	1	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	0	0	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	175	174	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	69	70	
	Taxi		person/hour	2	3	
	Private car (dropping)*43% of car		person/hour	3	3	
	Private car (Park & ride)*57% of car		person/hour	4	4	
	Motorcycle (dropping) *43% of MC		person/hour	20	20	
	Motorcycle (Park & ride) *57% of MC		person/hour	27	26	
	Xe om		person/hour	1	1	
	Bicycle		person/hour	23	23	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	0	0	
	Taxi		vehicle/hour	0	10	
	Private car (Picking & dropping)		vehicle/hour	0	0	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	40	40	
	Motorcycle (Park & ride)		vehicle/hour	50	50	
	Xe om		vehicle/hour	0	0	
	Bicycle		vehicle/hour	50	50	
	Total		vehicle/hour	140	150	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	15	15	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	175	173	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	153	152	1.5 cycles/day, 1.23per/bcy

No. 13-3 Suoi Tien (All)

1. Planning Factors

1) No. of Passenger

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	19,000	21,000	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	19,000	21,000	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	9,500	10,500	
(Mode alighting)	Pb	pax/day	9,500	10,500	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	770	851	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	770	851	Peak Rate:0.081

2) Modal Share (total passenger)

Mode	Code	Unit	2020	2040	
Bus	Pb	pax/day	7,405	8,430	1 feeder in west, 1 feeder in east
Taxi	Pt	pax/day	205	254	
Private car (Picking & dropping)*43% of car	Pck	pax/day	253	280	
Private car (Park & ride)*57% of car	Pcp	pax/day	336	371	
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	2,142	2,356	
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	2,840	3,123	
Xe om	Pxe	pax/day	95	105	
Bicycle	Pbc	pax/day	2,470	2,730	
Walk	Pw	pax/day	3,254	3,351	
Total		pax/day	19,000	21,000	

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	38.97%	40.14%
Taxi		%	1.08%	1.21%
Private car (Picking & dropping)*43% of car		%	1.33%	1.33%
Private car (Park & ride)*57% of car		%	1.77%	1.77%
Motorcycle (Picking & dropping) *43% of MC		%	11.27%	11.22%
Motorcycle (Park & ride) *57% of M/C		%	14.95%	14.87%
Xe om		%	0.50%	0.50%
Bicycle		%	13.00%	13.00%
Walk		%	17.13%	15.96%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	15	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	55	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 13-3 Suoi Tien (All)

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	19,000	21,000	
	Mode alignting	Pb	pax/day	9,500	10,500	
	Mode boarding	Pa	pax/day	9,500	10,500	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	19,000	21,000	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	770	851	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	770	851	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	770	851	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	301	342	
	Taxi		person/hour	9	11	
	Private car (Picking)*43% of car		person/hour	11	12	
	Private car (Park & ride)*57% of car		person/hour	14	16	
	Motorcycle (Picking) *43% of MC		person/hour	87	96	
	Motorcycle (Park & ride) *57% of MC		person/hour	116	127	
	Xe om		person/hour	4	5	
	Bicycle		person/hour	101	111	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	75	86	
	Taxi	PTWt = PTUMix × Ht / 60	person	1	1	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	2	2	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	2	2	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	770	851	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	301	342	
	Taxi		person/hour	9	11	
	Private car (dropping)*43% of car		person/hour	11	12	
	Private car (Park & ride)*57% of car		person/hour	14	16	
	Motorcycle (dropping) *43% of MC		person/hour	87	96	
	Motorcycle (Park & ride) *57% of MC		person/hour	116	127	
	Xe om		person/hour	4	5	
	Bicycle		person/hour	101	111	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	1	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = $\bar{}${PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	10	10	
	Taxi		vehicle/hour	20	20	
	Private car (Picking & dropping)		vehicle/hour	10	10	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	170	190	
	Motorcycle (Park & ride)		vehicle/hour	230	250	
	Xe om		vehicle/hour	10	10	
	Bicycle		vehicle/hour	200	220	
	Total		vehicle/hour	650	710	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	63	70	1.5 cycles/day
	Motorcycle	PKmc = Pa x share(Pmcp)/ PSmc) /1.5	lot	764	840	1.5 cycles/day
	Bicycle	PKbc = Pa x share (Pbc)/1.23 / 1.5	lot	670	740	1.5 cycles/day, 1.23per/bcy

No. 14 Suoi Tien Terminal

1. Planning Factors

1) No. of Passenger

Items	Code	Unit	2020	2040	Remarks
Future Passengers	P_0	pax/day	54,000	81,000	
(Transfer from/to other UMRT)	Ps	pax/day	0	0	
Future Passengers (without transfer from/to other UMRT)	P	pax/day	54,000	81,000	$P=P_0-Ps$
(Mode boarding)	Pa	pax/day	27,000	40,500	
(Mode alighting)	Pb	pax/day	27,000	40,500	
Peak Passengers of Access (Mode boarding)	PPa	pax/hour	2,187	3,281	Peak Rate:0.081
Peak Passengers of Egress (Mode alighting)	PPb	pax/hour	2,187	3,281	Peak Rate:0.081

2) Modal Share

Mode	Code	Unit	2020	2040
Bus	Pb	pax/day	31,508	47,762
Taxi	Pt	pax/day	455	588
Private car (Picking & dropping)*43% of car	Pck	pax/day	859	1,289
Private car (Park & ride)*57% of car	Pcp	pax/day	1,139	1,708
Motorcycle (Picking & dropping) *43% of MC	Pmck	pax/day	7,606	11,450
Motorcycle (Park & ride) *57% of M/C	Pmcp	pax/day	10,083	15,178
Xe om	Pxe	pax/day	270	405
Bicycle	Pbc	pax/day	1,080	1,620
Walk	Pw	pax/day	1,000	1,000
Total		pax/day	54,000	81,000

3) Modal Share Ratio

Mode	Code	Unit	2020	2040
Bus		%	58.35%	58.97%
Taxi		%	0.84%	0.73%
Private car (Picking & dropping)*43% of car		%	1.59%	1.59%
Private car (Park & ride)*57% of car		%	2.11%	2.11%
Motorcycle (Picking & dropping) *43% of MC		%	14.09%	14.14%
Motorcycle (Park & ride) *57% of M/C		%	18.67%	18.74%
Xe om		%	0.50%	0.50%
Bicycle		%	2.00%	2.00%
Walk		%	1.85%	1.23%
Total		%	100.00%	100.00%

4) Coefficients in Traffic Mode

Items	Code	unit	Bus	Taxi	Private car	Motorcycle
			b	*t*	*c*	*mcp*
Average interval of service	H*x*	min/vehicle	9	5	-	-
Average no. of passengers per vehicle	PS*x*	person/vehicle	80	0.9	1.79	1.24
Time required to board	Tix	min/person	-	0.2	1.0	0.2
Time required to alight	Tox	min/person	0.03	0.5	1.0	0.5

No. 14 Suoi Tien Terminal

2. Requirements for Station Plaza and Related Facilities

Items		Code/formula	Unit	Amount		Remarks
				2020	2040	
Future Passengers (without transferring from/to other lines)		P = Pb + Pa	pax/day	54,000	81,000	
	Mode alignting	Pb	pax/day	27,000	40,500	
	Mode boarding	Pa	pax/day	27,000	40,500	
Future users of station plaza and related facilities		N = P × 1.0	pax/day	54,000	81,000	Plaza User Ratio:1.00
Peak Passengers of Egress (Mode boarding)		PPa	pax/hour	2,187	3,281	
Peak Passengers of Access (Mode alighting)		PPb	pax/hour	2,187	3,281	
Transferring users to other traffic mode at peak hour		PTUMi =PPa × 1.0	person/hour	2,187	3,281	
Transferring users to other traffic mode at peak hour (Mode boarding)	Bus	PTUMix = PTUMi × (Mode Share Ratio)	person/hour	1,277	1,935	
	Taxi		person/hour	19	24	
	Private car (Picking)*43% of car		person/hour	35	53	
	Private car (Park & ride)*57% of car		person/hour	47	70	
	Motorcycle (Picking) *43% of MC		person/hour	309	464	
	Motorcycle (Park & ride) *57% of MC		person/hour	409	615	
	Xe om		person/hour	11	17	
	Bicycle		person/hour	44	66	
Passengers for waiting at peak hour	Bus	PTWb = PTUMix × Hb / 60	person	192	290	
	Taxi	PTWt = PTUMix × Ht / 60	person	2	2	
Required no. of berths at peak	Bus	Bib = PTUMb/PSb x Hb /60	berth	3	4	
	Taxi	Bit = (PTUMt × Tit) / 60	berth	1	1	
	Taxi Pool	Bitw = PTWt / PSt	berth	3	3	
	Xe om	Bixo = (PTUMxo × Tixo) / 60	berth	1	1	
	Private car (Picking)	Bick = (PTUMck / PSc × Tic) / 60	berth	1	1	
Transferring users from other traffic mode at peak hour		PTUMo =PPb × 1.0	person/hour	2,187	3,281	
Transferring users from other traffic mode at peak hour (Mode alighting)	Bus	PTUMox = PTUMo × (Mode Share Ratio)	person/hour	1,277	1,935	
	Taxi		person/hour	19	24	
	Private car (dropping)*43% of car		person/hour	35	53	
	Private car (Park & ride)*57% of car		person/hour	47	70	
	Motorcycle (dropping) *43% of MC		person/hour	309	464	
	Motorcycle (Park & ride) *57% of MC		person/hour	409	615	
	Xe om		person/hour	11	17	
	Bicycle		person/hour	44	66	
Required no. of berths at peak hour	Bus	Bob = PTUMob x Tob / 60	berth	1	2	
	Taxi	Bot = PTUMot × Tot / 60	berth	1	1	
	Xe om	Boxo = PTUMoxo × Toxo / 60	berth	1	1	
	Private car (dropping)	Bick = (PTUMck / PSc × Toc) / 60	berth	1	1	
Traffic volume at peak hour	Bus	PVx = ¯{PTUMix × (Mode Share Ratio) / PSx}	vehicle/hour	30	50	
	Taxi		vehicle/hour	40	50	
	Private car (Picking & dropping)		vehicle/hour	40	60	
	Motorcycle (Picking & dropping) *43%		vehicle/hour	620	930	
	Motorcycle (Park & ride)		vehicle/hour	820	1,230	
	Xe om		vehicle/hour	20	30	
	Bicycle		vehicle/hour	90	130	
	Total		vehicle/hour	1,660	2,480	
Required lots of parking	Private car	PKc = Pa x share(Pcp)/ PSc /1.5	lot	213	319	1.5 cycles/day
	Motorcycle	PKmc = (Pmcp/ PSmc) / 2(board/alight) /1.5	lot	2,711	4,081	1.5 cycles/day
	Bicycle	PKbc = Pbc/1.23 /2(board/alight) / 1.5	lot	293	440	1.5 cycles/day, 1.23per/bcy

Appendix C: Breakdown of Cost Estimation

C APPENDIX C: BREAKDOWN OF COST ESTIMATION

C.1 Cost Estimation Breakdown Tables

The following tables show the cost estimation breakdown for the intermodal facilities and project implementation options.

- Appendix C-1: Cost Breakdown of Intermodal Facilities for Stations and Phases
- Appendix C-2: Detailed Cost Breakdown of Intermodal Facilities for Stations and Phases
- Appendix C-3: Breakdown of Project Cost for Option 1 - New construction package under the current loan
- Appendix C-4: Breakdown of Project Cost for Option 2 - New construction package under a new loan

Appendix C-1: Cost Breakdown of Intermodal Facilities for Station & Phases

US $ =yen 103.9
VND =yen 0.0049

No.	item	Cost		Total
		Foreign	Local	
		yen	VND	yen
4	**Van Thanh Park**			
	Phase 1			
1	Earth works	733,664	1,200,328,000	6,662,381
2	Sub-base and Base courses	363,416	593,292,000	3,293,832
3	Pavement	2,274,300	3,704,184,000	20,570,180
4	Landscape	80,948	131,949,000	732,677
5	Traffic safety	517,970	844,874,000	4,691,012
6	Drainage system	0	0	0
7	REINFORCED CONCRETE PILE SLAB	0	0	0
8	RETAINING WALL	0	0	0
9	Roof structures for vehicle parking	1,012,442	1,653,938,000	9,181,650
10	Fence	520,905	850,173,000	4,720,118
11	Taxi stop	0	0	0
12	Bus stop	0	0	0
13	Lighting	1,294,941	2,118,591,000	11,759,186
14	Ticketing System in Parking	8,416,000	0	8,416,000
	Sub Total	15,214,586	11,097,329,000	70,027,036
	Phase 2			
1	Earth works	371,979	609,211,000	3,381,022
2	Sub-base and Base courses	108,496	177,093,000	983,202
3	Pavement	302,165	492,138,000	2,732,956
4	Landscape	80,163	130,774,000	726,089
5	Traffic safety	685,097	1,118,726,000	6,210,762
6	Drainage system	231,434	384,393,000	2,130,046
7	REINFORCED CONCRETE PILE SLAB	23,681,947	38,676,244,000	214,713,478
8	RETAINING WALL	2,514,545	4,106,212,000	22,796,142
9	Roof structures for vehicle parking	0	0	0
10	Fence	0	0	0
11	Taxi stop	117,271	191,457,000	1,062,924
12	Bus stop	82,523	134,701,000	747,846
13	Lighting	164,215	269,735,000	1,496,503
	Sub Total	28,339,835	46,290,684,000	256,980,970
	Total	43,554,421	57,388,013,000	327,008,006

No.	item	Cost		Total
		Foreign	Local	
		yen	VND	yen
5	**Tan Cang**			
	Phase 1			
1	Earth works	833,435	1,363,879,000	7,569,971
2	Sub-base and Base courses	898,893	1,468,065,000	8,150,029
3	Pavement	3,871,505	6,313,733,000	35,056,593
4	Landscape	1,382,224	2,312,256,000	12,803,029
5	Traffic safety	1,300,012	2,120,694,000	11,774,644
6	Drainage system	970,675	1,671,255,000	9,225,416
7	Pedestrian Bridge	25,856,927	32,978,736,150	188,747,058
8	Stairs structures	6,365,662	17,619,765,050	93,394,039
9	REINFORCED CONCRETE PILE SLAB	479,164	782,502,000	4,344,135
10	Fence	637,740	1,040,858,000	5,778,796
11	Bus stop	29,799,901	646,255,000	32,991,914
12	Lighting	8,874,710	14,522,058,000	80,602,745
13	Traffic Signal for Vehicle	81,805	133,557,500	741,479
14	Ticketing System in Parking	11,221,000	0	11,221,000
	Total	92,573,654	82,973,613,700	502,400,848

No.	item	Cost		Total
		Foreign	Local	
		yen	VND	yen
6	**Thao Dien**			
	Phase 1			
1	Earth works	668,953	1,093,489,000	6,069,966
2	Sub-base and Base courses	552,562	902,959,000	5,012,500
3	Pavement	1,577,149	2,567,166,000	14,257,017
4	Landscape	1,239,304	2,022,206,000	11,227,481
5	Traffic safety	719,962	1,174,876,000	6,522,965
6	Drainage system	702,422	1,204,771,000	6,653,084
7	Pedestrian Bridge	17,406,517	11,995,102,550	76,653,297
8	Stairs structures	3,095,374	10,306,670,850	54,002,572
9	Roof structures for vehicle parking	2,586,558	4,226,109,000	23,460,357
10	Fence	764,823	1,248,268,000	6,930,327
11	Perdestrian cover roof	999,316	1,630,922,000	9,054,843
12	Bus stop	21,932,774	355,484,000	23,688,597
13	Lighting	3,693,564	6,043,934,000	33,546,049
14	Ticketing System in Parking	8,416,000	0	8,416,000
	Total	64,355,278	44,771,957,400	285,495,055

No.	item	Cost		Total
		Foreign	Local	
		yen	VND	yen
7	**An Phu**			
	Phase 1			
1	**Earth works**	**300,122**	**490,650,000**	**2,723,564**
2	**Sub-base and Base courses**	**251,983**	**412,213,000**	**2,288,005**
3	**Pavement**	**490,252**	**797,568,000**	**4,429,638**
4	**Landscape**	**118,022**	**192,383,000**	**1,068,249**
5	**Traffic safety**	**536,857**	**875,556,000**	**4,861,445**
6	**Stairs structures**	**1,777,603**	**4,878,748,250**	**25,874,947**
7	**REINFORCED CONCRETE PILE SLAB**	**9,938,819**	**16,230,011,000**	**90,102,856**
8	**Roof structures for vehicle parking**	**896,711**	**1,465,298,000**	**8,134,181**
9	**Fence**	**603,461**	**984,906,000**	**5,468,155**
10	**Bus stop**	**7,800,834**	**182,556,000**	**8,702,522**
11	**Lighting**	**1,751,979**	**2,866,329,000**	**15,909,487**
12	**Ticketing System in Parking**	**13,819,000**	**0**	**13,819,000**
	Total	**38,285,643**	**29,376,218,250**	**183,382,049**

No.	item	Cost		Total
		Foreign	Local	
		yen	VND	yen
8	**Rach Chiec**			
	Phase 1			
1	**Earth works**	**558,460**	**912,261,000**	**5,028,539**
2	**Sub-base and Base courses**	**542,664**	**886,911,000**	**4,888,528**
3	**Pavement**	**1,553,539**	**2,528,552,000**	**13,943,445**
4	**Landscape**	**15,418**	**25,185,000**	**138,824**
5	**Traffic safety**	**1,134,242**	**1,851,548,000**	**10,206,828**
6	**Drainage system**	**231,974**	**385,274,000**	**2,119,819**
7	**OVER PASS PIPE SUPPLY WATER BRIDGES**	**83,251,490**	**63,946,549,000**	**399,099,308**
8	**Stairs structures**	**2,792,207**	**6,530,899,100**	**35,049,934**
9	**Roof structures for vehicle parking**	**4,421,132**	**7,222,985,000**	**40,097,239**
10	**Fence**	**1,100,511**	**1,796,132,000**	**9,972,051**
11	**Bus stop**	**53,114**	**86,714,000**	**481,417**
12	**Lighting**	**4,519,598**	**7,394,298,000**	**41,041,864**
13	**Traffic Signal for Vehicle**	**0**	**0**	**0**
14	**Ticketing System in Parking**	**11,221,000**	**0**	**11,221,000**
15	**Widening of Pedestrian Bridge**	**0**	**9,896,477,000**	**48,881,147**
	Total	**111,395,349**	**103,463,785,100**	**622,169,943**

No.	item	Cost		Total
		Foreign	Local	
		yen	VND	yen
9	**Phuoc Long**			
	Phase 1			
1	Earth works	106,195	173,432,000	962,819
2	Sub-base and Base courses	79,870	130,658,000	725,222
3	Pavement	233,090	379,203,000	2,106,068
4	Landscape	0	0	0
5	Traffic safety	362,022	590,841,000	3,280,332
6	Drainage system	0	0	0
7	Pedestrian Bridge	0	0	0
8	Stairs structures	5,235,684	9,077,238,550	50,070,410
9	Roof structures for vehicle parking	1,158,392	1,892,485,000	10,505,843
10	Fence	659,881	1,076,985,000	5,979,377
11	Bus stop	7,804,848	189,122,000	8,738,966
12	Lighting	3,427,785	5,608,035,000	31,127,257
13	Ticketing System in Parking	11,221,000	0	11,221,000
	Sub Total	30,288,767	19,117,999,550	124,717,294
	Phase 2			
1	Earth works	168,453	275,286,000	1,528,159
2	Sub-base and Base courses	125,920	205,533,000	1,141,098
3	Pavement	701,378	1,142,345,000	6,343,702
4	Landscape	221,223	360,733,000	2,002,973
5	Traffic safety	278,444	454,381,000	2,522,744
6	Drainage system	290,698	472,842,000	2,626,184
7	Pedestrian Bridge	4,709,351	3,844,799,800	23,699,768
8	Stairs structures	936,327	2,055,118,950	11,087,067
9	Roof structures for vehicle parking	2,029,795	3,316,226,000	18,409,455
10	Fence	423,602	691,358,000	3,838,390
11	Bus stop	53,010	86,542,000	480,462
12	Lighting	197,058	323,682,000	1,795,803
	Sub Total	10,135,258	13,228,846,750	75,475,805
	Total	40,424,026	32,346,846,300	200,193,099

No.	item	Cost		Total
		Foreign	Local	
		yen	VND	yen
10	**Binh Thai**			
	Phase 1			
1	Earth works	349,512	571,002,000	3,169,832
2	Sub-base and Base courses	316,540	517,821,000	2,874,186
3	Pavement	732,160	1,191,116,000	6,615,376
4	Traffic safety	534,322	872,007,000	4,841,380
5	Stairs structures	1,743,320	3,373,431,200	18,405,531
6	Roof structures for vehicle parking	3,356,320	5,483,408,000	30,440,228
7	Fence	805,097	1,313,991,000	7,295,223
8	Bus stop	7,717,131	45,924,000	7,943,962
9	Lighting	3,757,868	6,148,068,000	34,124,696
10	Ticketing System in Parking	11,221,000	0	11,221,000
	Total	30,533,270	19,516,768,200	126,931,414
11	**Thu Duc**			
	Phase 1			
1	Earth works	213,743	349,159,000	1,938,326
2	Sub-base and Base courses	148,960	243,680,000	1,352,556
3	Pavement	434,720	707,226,000	3,927,884
4	Traffic safety	801,440	1,308,021,000	7,262,079
5	Stairs structures	1,725,495	2,818,446,850	15,646,502
6	Roof structures for vehicle parking	1,877,514	3,067,394,000	17,028,131
7	Fence	1,197,959	1,955,176,000	10,855,057
8	Bus stop	14,380,198	68,887,000	14,720,447
9	Lighting	2,259,799	3,697,149,000	20,520,932
10	Ticketing System in Parking	11,221,000	0	11,221,000
	Total	34,260,828	14,215,138,850	104,472,914

No.	item	Cost		Total
		Foreign	Local	
		yen	VND	yen
12	**High-tech Park**			
	Phase 1			
1	**Earth works**	**392,079**	**640,688,000**	**3,556,596**
2	**Sub-base and Base courses**	**411,516**	**672,172,000**	**3,731,540**
3	**Pavement**	**1,163,527**	**1,894,342,000**	**10,520,150**
4	**Landscape**	**368,530**	**653,041,000**	**3,594,062**
5	**Traffic safety**	**1,123,468**	**1,833,610,000**	**10,180,122**
6	**Drainage system**	**269,691**	**461,330,000**	**2,548,314**
7	**Pedestrian Bridge**	**16,430,156**	**16,042,205,750**	**95,666,575**
8	**Stairs structures**	**1,303,294**	**4,098,509,000**	**21,546,843**
9	**Roof structures for vehicle parking**	**2,045,555**	**3,342,059,000**	**18,552,811**
10	**Fence**	**935,183**	**1,526,304,000**	**8,473,977**
11	**Bus stop**	**7,743,444**	**88,872,000**	**8,182,405**
12	**Lighting**	**2,928,799**	**4,793,381,000**	**26,604,493**
13	**Ticketing System in Parking**	**8,416,000**	**0**	**8,416,000**
	Total	**43,531,241**	**36,046,513,750**	**221,573,888**

No.	item	Cost		Total
		Foreign	Local	
		yen	VND	yen
13	**Suoi Tien**			

No.	item	Cost		Total
		Foreign	Local	
		yen	VND	yen
	Phase 1			
1	**Earth works**	**130,275**	**212,743,000**	**1,181,065**
2	**Sub-base and Base courses**	**99,960**	**163,522,000**	**907,636**
3	**Pavement**	**291,720**	**474,586,000**	**2,635,818**
4	**Landscape**	**0**	**0**	**0**
5	**Traffic safety**	**299,312**	**488,524,000**	**2,712,253**
6	**Drainage system**	**0**	**0**	**0**
7	**Stairs structures**	**1,882,447**	**3,074,722,150**	**17,069,261**
8	**Roof structures for vehicle parking**	**760,446**	**1,242,715,000**	**6,898,523**
9	**Fence**	**598,740**	**977,196,000**	**5,425,353**
10	**Bus stop**	**14,414,903**	**125,541,000**	**15,034,980**
11	**Lighting**	**2,919,965**	**4,777,215,000**	**26,515,811**
12	**Ticketing System in Parking**	**11,221,000**	**0**	**11,221,000**
	Sub Total	**32,618,768**	**11,536,764,150**	**89,601,700**
	Phase 2			
1	**Earth works**	**226,740**	**370,760,000**	**2,058,016**
2	**Sub-base and Base courses**	**355,458**	**580,515,000**	**3,222,765**
3	**Pavement**	**867,362**	**1,412,684,000**	**7,844,957**
4	**Landscape**	**307,748**	**530,239,000**	**2,926,731**
5	**Traffic safety**	**596,309**	**973,471,000**	**5,404,522**
6	**Drainage system**	**320,631**	**550,652,000**	**3,040,437**
7	**Stairs structures**	**1,129,345**	**2,369,644,600**	**12,833,605**
8	**Roof structures for vehicle parking**	**1,238,454**	**2,023,273,000**	**11,231,900**
9	**Fence**	**8,592,028**	**14,027,769,000**	**77,878,647**
10	**Bus stop**	**43,182**	**70,501,000**	**391,404**
11	**Lighting**	**164,215**	**269,735,000**	**1,496,503**
	Sub Total	**13,841,472**	**23,179,243,600**	**128,329,487**
	Total	**46,460,240**	**34,716,007,750**	**217,931,187**

Appendix C-2: Detailed Cost Breakdown of Intermodal Facilities for Station & Phases

US $	=yen	103.9
VND	=yen	0.0049
yen	VND	202.46

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
4. Van Thanh Park									
Phase 1									
1 Earth works							**733,664**	**1,200,328,000**	**6,662,381**
1	P 3	Excavation	m3	250.63	22	35,820	5,514	8,978,000	49,859
2	P 5	Earth Filling (K0.95)	m3	3,920.85	129	211,380	505,790	828,789,000	4,599,384
3	P 6	Earth Filling (K0.98)	m3	1,635.00	136	221,750	222,360	362,561,000	2,013,138
2 Sub-base and Base courses							**363,416**	**593,292,000**	**3,293,832**
4	P 36	Aggregate Subbase course	m3	816.00	246	400,940	200,736	327,167,000	1,816,695
5	P 37	Aggregate Base course	m3	664.00	245	400,790	162,680	266,125,000	1,477,137
3 Pavement							**2,274,300**	**3,704,184,000**	**20,570,180**
6	P 38	Prime coat	m2	6,650.00	19	30,380	126,350	202,027,000	1,124,211
7	P 39	Tack coat	m2	6,650.00	11	17,270	73,150	114,846,000	640,403
8	P 40	Spread medium Asphalt Concrete 7cm thick	m2	6,650.00	180	294,000	1,197,000	1,955,100,000	10,853,722
9	P 41	Spread fine Asphalt Concrete 5cm thick	m2	6,650.00	132	215,370	877,800	1,432,211,000	7,951,844
4 Landscape							**80,948**	**131,949,000**	**732,677**
1	P 42	Soil for planting	m3	155.97	194	316,000	30,258	49,286,000	273,694
2	P 43	Durenta repens	m2	0.00	80	130,000	0	0	0
3	P 44	Hookweed	m2	0.00	68	111,000	0	0	0
4	P 45	Golden showers	m2		628	1,025,000	0	0	0
5	P 46	Wrightia antidysenteria	m2		628	1,025,000	0	0	0
6	P 47	Acanthus integrifolius	m2		80	130,000	0	0	0
7	P 48	Solenostellarioides	m2	0.00	993	1,621,000	0	0	0
8	P 49	Bamboo grass	m2	779.84	26	42,000	20,276	32,753,000	182,051
9	P 50	BEGONIA SEMPERFLORENS	m2	0.00	18	29,000	0	0	0
10	P 52	Maintenance parterre, grass cover 30 days	m2	779.84	39	64,000	30,414	49,910,000	276,932
11	P 53	Positioning, excavation and transportation of tree	tree	0.00	138	225,000	0	0	0
12	P 54	Roystonia regia	tree		804	1,313,000	0	0	0
13	P 55	Lagerstroemia tree	tree		310	506,000	0	0	0
14	P 56	SYZYGIUM CAMPANULATUM	tree	0.00	347	567,000	0	0	0
15	P 57	CYCAS PECTINATA	tree	0.00	211	344,000	0	0	0
16	P 58	CYRTOSTACHYS LAKKA	tree		462	754,000	0	0	0
17	P 59	MADAGASCAR ALMOND	tree		310	506,000	0	0	0
18	P 60	ROYSTONIA REGIA	tree		804	1,313,000	0	0	0
19	P 61	LIVISTONA ROTUNDIFOLIA	tree		7,729	12,619,000	0	0	0
20	P 62	Maintenance tree 90 days	tree	0.00	222	363,000	0	0	0
5 Traffic safety							**517,970**	**844,874,000**	**4,691,012**
1	P 29	Road marking	m2	861.65	228	372,000	196,455	320,532,000	1,779,642
2	P 31	Road signboard - Circle	set	0.00	1,196	1,952,000	0	0	0
3	P 30	Road signboard - rectangular	set	0.00	2,841	4,638,000	0	0	0
10	WI 13	Installation of side walk - Terranzo brick	m2	433.16	311	508,000	134,713	220,045,000	1,221,570
3	WI 8	Installation of Concrete Curbs	m	529.90	170	277,000	90,082	146,781,000	815,070
4	WI 9	Installation of Concrete Curbs	m	460.57	210	342,000	96,720	157,516,000	874,730
6 Drainage system							**0**	**0**	**0**
1	P 3	Excavation	m3		22	35,820	0	0	0
2	P 9	Disposal of Soil	m3		90	205,620	0	0	0
3	P 8	Sand Filling (K0.95)	m3		136	221,953	0	0	0

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
4	P 135	Driven wood pile	m		14	22,690	0	0	0
6	P 155	Blinding stone	m3		419	684,000	0	0	0
6	P 10	Blinding concrete	m3		1,007	1,644,000	0	0	0
5	P 14	Foundation formwork	m2		40	65,000	0	0	0
7	P 13	Foundation rebar	ton		14,097	23,016,000	0	0	0
8	P 12	Foundation concrete	m3		1,246	2,034,000	0	0	0
6	P 142	Retaining wall formwork	m2		116	190,000	0	0	0
9	P 141	Retaining wall rebar	ton		15,471	25,258,000	0	0	0
10	P 140	Retaining wall concrete	m3		1,850	3,020,000	0	0	0
11	P 138	Box culvert formwork	m2		155	253,250	0	0	0
12	P 137	Box culvert rebar	ton		16,994	27,745,000	0	0	0
9	P 136	Box culvert concrete	m3		1,961	3,202,000	0	0	0
10	P 139	Mortar riprap	M3		1,198	1,956,000	0	0	0
7 REINFORCED CONCRETE PILE SLAB							**0**	**0**	**0**
IX.1		**Slab**					**0**	**0**	**0**
1	P 119	Concrete C30 for C.I.P girder	m3		3,887	6,346,000	0	0	0
2	P 113	Rebar for C.I.P girder	ton		15,998	26,119,000	0	0	0
3	P 108	Steel formwork for C.I.P girder	m2		490	800,000	0	0	0
IX.2		**Beam**					**0**	**0**	**0**
4	P 119	Concrete C30 for C.I.P girder	m3		3,887	6,346,000	0	0	0
5	P 113	Rebar for C.I.P girder	ton		15,998	26,119,000	0	0	0
6	P 108	Steel formwork for C.I.P girder	m2		490	800,000	0	0	0
IX.3		**R.C pile 400x400**					**0**	**0**	**0**
7	P 143	Driven pile 400x400, hammer <=3.5T	m		761	1,243,100	0	0	0
8	P 94	Cutting of pile head on land	m3		842	1,375,000	0	0	0
9	P 144	Conection of 400x400 pile	joint		945	1,542,000	0	0	0
IX.4		**Parapet, Railing**					**0**	**0**	**0**
10	P 121	Concrete C25 for parapet	m3		2,168	3,540,000	0	0	0
11	P 115	Rebar for parapet	ton		15,164	24,757,000	0	0	0
12	P 110	Steel formwork for deck slab	m2		86	140,070	0	0	0
13	P 156	Bridge railing	ton		28,077	45,840,000	0	0	0
8 RETAINING WALL							**0**	**0**	**0**
X.1		**Retaining wall**					**0**	**0**	**0**
1	P 119	Concrete C30 for C.I.P girder	m3		3,887	6,346,000	0	0	0
2	P 113	Rebar for C.I.P girder	ton		15,998	26,119,000	0	0	0
3	P 108	Steel formwork for C.I.P girder	m2		490	800,000	0	0	0
X.2		**R.C pile 400x400**					**0**	**0**	**0**
4	P 143	Driven pile 400x400, hammer <=3.5T	m		761	1,243,100	0	0	0
5	P 94	Cutting of pile head on land	m3		842	1,375,000	0	0	0
6	P 144	Conection of 400x400 pile	joint		945	1,542,000	0	0	0
9 Roof structures for vehicle parking							**1,012,442**	**1,653,938,000**	**9,181,650**
1	P 4	Excavation	m3	22.26	154	252,000	3,428	5,610,000	31,137
2	P 155	Blinding stone	m3	3.78	419	684,000	1,584	2,586,000	14,357
3	P 12	Foundation concrete	m3	18.48	1,246	2,034,000	23,026	37,588,000	208,682
4	P 13	Foundation rebar	ton	0.32	14,097	23,016,000	4,467	7,294,000	40,494
5	P 14	Foundation formwork	m2	141.12	40	65,000	5,645	9,173,000	50,953
6	P 161	Fabrication of galvanized steel column	ton	4.49	23,527	38,411,000	105,583	172,378,000	957,001
7	P 162	Fabrication of galvanized steel struss	ton	8.69	24,384	39,810,000	211,813	345,812,000	1,919,864
8	P 163	Fabrication of galvanized steel purlin	ton	9.66	20,106	32,826,000	194,217	317,088,000	1,760,393
9	P 164	Installation of galvanized steel column	ton	4.49	5,342	8,722,000	23,973	39,142,000	217,305

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
10	P 165	Installation of galvanized steel purlin	ton	8.69	2,875	4,693,000	24,974	40,766,000	226,327
11	P 166	Installation of galvanized steel purlin	ton	9.66	13,087	21,366,000	126,416	206,388,000	1,145,817
12	P 160	PVC pipe D=60	m	156.00	55	90,000	8,580	14,040,000	77,927
13	P 169	Roof cover by tole sheet	m2	1,421.40	157	256,970	223,160	365,257,000	2,027,255
14	P 172	Roof gutter work by tole sheet	m2	123.60	157	256,970	19,405	31,761,000	176,280
15	P 173	Fabrication of embed steel structure in concete	ton	1.09	26,800	43,755,000	29,284	47,810,000	265,429
16	P 174	Installation of embed steel structure in concete	ton	1.09	6,303	10,291,000	6,887	11,245,000	62,429
10 Fence							**520,905**	**850,173,000**	**4,720,118**
1	P 4	Excavation	m3	9.47	154	252,000	1,459	2,387,000	13,249
2	P 155	Blinding stone	m3	3.38	419	684,000	1,418	2,314,000	12,847
3	P 12	Foundation concrete	m3	6.09	1,246	2,034,000	7,588	12,387,000	68,770
4	P 13	Foundation rebar	ton	0.43	14,097	23,016,000	6,022	9,833,000	54,590
5	P 14	Foundation formwork	m2	81.20	40	65,000	3,248	5,278,000	29,317
6	P 161	Fabrication of galvanized steel column	ton	1.96	23,527	38,411,000	46,069	75,215,000	417,574
7	P 164	Installation of galvanized steel column	ton	1.96	5,342	8,722,000	10,460	17,079,000	94,817
8	P 173	Fabrication of embed steel structure in concete	ton	1.02	26,800	43,755,000	27,333	44,624,000	247,742
9	P 174	Installation of embed steel structure in concete	ton	1.02	6,303	10,291,000	6,428	10,496,000	58,270
6	P 167	Fabrication of galvanized steel fence	m2	480.00	691	1,128,000	331,680	541,440,000	3,005,986
7	P 168	Installtion of galvanized steel fence	m2	480.00	165	269,000	79,200	129,120,000	716,956
11 Taxi stop							**0**	**0**	**0**
1	P 4	Excavation	m3		154	252,000	0	0	0
2	P 155	Blinding stone	m3		419	684,000	0	0	0
3	P 12	Foundation concrete	m3		1,246	2,034,000	0	0	0
4	P 13	Foundation rebar	ton		14,097	23,016,000	0	0	0
5	P 161	Fabrication of galvanized steel column	ton		23,527	38,411,000	0	0	0
6	P 164	Installation of galvanized steel column	ton		5,342	8,722,000	0	0	0
7	P 170	Roof cover by polycabonate panel	m2		661	1,078,460	0	0	0
8	P 173	Fabrication of embed steel structure in concete	ton		26,800	43,755,000	0	0	0
9	P 174	Installation of embed steel structure in concete	ton		6,303	10,291,000	0	0	0
10		Ticket office	each			50,000,000	0	0	0
12 Bus stop							**0**	**0**	**0**
1	P 4	Excavation	m3		154	252,000	0	0	0
2	P 155	Blinding stone	m3		419	684,000	0	0	0
3	P 12	Foundation concrete	m3		1,246	2,034,000	0	0	0
4	P 13	Foundation rebar	ton		14,097	23,016,000	0	0	0
5	P 14	Foundation formwork	m2		40	65,000	0	0	0
6	P 161	Fabrication of galvanized steel column	ton		23,527	38,411,000	0	0	0
7	P 162	Fabrication of galvanized steel struss	ton		24,384	39,810,000	0	0	0
8	P 163	Fabrication of galvanized steel purlin	ton		20,106	32,826,000	0	0	0
9	P 164	Installation of galvanized steel column	ton		5,342	8,722,000	0	0	0
10	P 165	Installation of galvanized steel purlin	ton		2,875	4,693,000	0	0	0
11	P 166	Installation of galvanized steel purlin	ton		13,087	21,366,000	0	0	0
12	P 171	Roof cover by aluminum composit panel	m2		364	594,110	0	0	0
13	P 173	Fabrication of embed steel structure in concete	ton		26,800	43,755,000	0	0	0
14	P 174	Installation of embed steel structure in concete	ton		6,303	10,291,000	0	0	0
13 Lighting							**1,294,941**	**2,118,591,000**	**11,759,186**
1	WI 16	Installation of Lighting Pole	nos.	51.00	25,391	41,541,000	1,294,941	2,118,591,000	11,759,186
2	WI 17	Installation of Lighting Pole	nos.		32,843	53,947,000	0	0	0
14 Ticketing System in Parking							**8,416,000**	**0**	**8,416,000**
1	P 183	Installation of Ticketing System in Parking	LS	1.00	8,416,000	0	8,416,000	0	8,416,000

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
		Sub Total					**15,214,586**	**11,097,329,000**	**70,027,036**
Phase 2									
1 Earth works							**371,979**	**609,211,000**	**3,381,022**
1	P 3	Excavation	m3	36.18	22	35,820	796	1,296,000	7,197
2	P 5	Earth Filling (K0.95)	m3	2,584.03	129	211,380	333,340	546,212,000	3,031,216
3	P 6	Earth Filling (K0.98)	m3	278.26	136	221,750	37,843	61,703,000	342,609
2 Sub-base and Base courses							**108,496**	**177,093,000**	**983,202**
4	P 36	Aggregate Subbase course	m3	265.06	246	400,940	65,204	106,272,000	590,108
5	P 37	Aggregate Base course	m3	176.70	245	400,790	43,292	70,821,000	393,094
3 Pavement							**302,165**	**492,138,000**	**2,732,956**
6	P 38	Prime coat	m2	883.52	19	30,380	16,787	26,841,000	149,361
7	P 39	Tack coat	m2	883.52	11	17,270	9,719	15,258,000	85,082
8	P 40	Spread medium Asphalt Concrete 7cm thick	m2	883.52	180	294,000	159,034	259,755,000	1,442,028
9	P 41	Spread fine Asphalt Concrete 5cm thick	m2	883.52	132	215,370	116,625	190,284,000	1,056,485
4 Landscape							**80,163**	**130,774,000**	**726,089**
1	P 42	Soil for planting	m3	82.87	194	316,000	16,076	26,186,000	145,415
2	P 43	Durenta repens	m2	56.45	80	130,000	4,516	7,339,000	40,765
3	P 44	Hookweed	m2	17.22	68	111,000	1,171	1,912,000	10,615
4	P 45	Golden showers	m2		628	1,025,000	0	0	0
5	P 46	Wrightia antidysenteria	m2		628	1,025,000	0	0	0
6	P 47	Acanthus integrifolius	m2		80	130,000	0	0	0
7	P 48	Solenostellarioides	m2	10.37	993	1,621,000	10,294	16,805,000	93,298
8	P 49	Bamboo grass	m2	279.61	26	42,000	7,270	11,744,000	65,277
9	P 50	BEGONIA SEMPERFLORENS	m2	50.68	18	29,000	912	1,470,000	8,173
10	P 52	Maintenance parterre, grass cover 30 days	m2	414.33	39	64,000	16,159	26,517,000	147,133
11	P 53	Positioning, excavation and transportation of tree	tree	39.00	138	225,000	5,382	8,775,000	48,724
12	P 54	Roystonia regia	tree		804	1,313,000	0	0	0
13	P 55	Lagerstroemia tree	tree		310	506,000	0	0	0
14	P 56	SYZYGIUM CAMPANULATUM	tree	11.00	347	567,000	3,817	6,237,000	34,623
15	P 57	CYCAS PECTINATA	tree	28.00	211	344,000	5,908	9,632,000	53,483
16	P 58	CYRTOSTACHYS LAKKA	tree		462	754,000	0	0	0
17	P 59	MADAGASCAR ALMOND	tree		310	506,000	0	0	0
18	P 60	ROYSTONIA REGIA	tree		804	1,313,000	0	0	0
19	P 61	LIVISTONA ROTUNDIFOLIA	tree		7,729	12,619,000	0	0	0
20	P 62	Maintenance tree 90 days	tree	39.00	222	363,000	8,658	14,157,000	78,583
5 Traffic safety							**685,097**	**1,118,726,000**	**6,210,762**
1	P 29	Road marking	m2	192.26	228	372,000	43,835	71,520,000	397,090
2	P 31	Road signboard - Circle	set	2.00	1,196	1,952,000	2,392	3,904,000	21,675
3	P 30	Road signboard - rectangular	set	1.00	2,841	4,638,000	2,841	4,638,000	25,749
10	WI 13	Installation of side walk - Terranzo brick	m2	1,861.10	311	508,000	578,802	945,439,000	5,248,559
3	WI 8	Installation of Concrete Curbs	m	194.04	170	277,000	32,987	53,749,000	298,467
4	WI 9	Installation of Concrete Curbs	m	115.43	210	342,000	24,240	39,476,000	219,222
6 Drainage system							**231,434**	**384,393,000**	**2,130,046**
1	P 3	Excavation	m3	119.67	22	35,820	2,633	4,287,000	23,808
2	P 9	Disposal of Soil	m3	119.67	90	205,620	10,770	24,607,000	132,310
3	P 8	Sand Filling (K0.95)	m3	57.51	136	221,953	7,821	12,764,000	70,866
4	P 135	Driven wood pile	m	3,068.00	14	22,690	42,952	69,613,000	386,788
6	P 155	Blinding stone	m3	8.62	419	684,000	3,610	5,893,000	32,717
6	P 10	Blinding concrete	m3	4.95	1,007	1,644,000	4,986	8,141,000	45,196
5	P 14	Foundation formwork	m2	5.38	40	65,000	215	349,000	1,939

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
7	P	13	Foundation rebar	ton	0.95	14,097	23,016,000	13,330	21,763,000	120,823
8	P	12	Foundation concrete	m3	4.15	1,246	2,034,000	5,167	8,435,000	46,830
6	P	142	Retaining wall formwork	m2	60.69	116	190,000	7,040	11,531,000	63,994
9	P	141	Retaining wall rebar	ton	1.36	15,471	25,258,000	21,031	34,336,000	190,625
10	P	140	Retaining wall concrete	m3	14.16	1,850	3,020,000	26,197	42,764,000	237,419
11	P	138	Box culvert formwork	m2	69.78	155	253,250	10,815	17,671,000	98,096
12	P	137	Box culvert rebar	ton	1.94	16,994	27,745,000	32,904	53,721,000	298,245
9	P	136	Box culvert concrete	m3	16.14	1,961	3,202,000	31,641	51,665,000	286,827
10	P	139	Mortar riprap	M3	8.62	1,198	1,956,000	10,322	16,853,000	93,563
7	**REINFORCED CONCRETE PILE SLAB**							**23,681,947**	**38,676,244,000**	**214,713,478**
IX.1			**Slab**					**4,081,730**	**6,663,977,000**	**36,996,760**
1	P	119	Concrete C30 for C.I.P girder	m3	514.00	3,887	6,346,000	1,997,918	3,261,844,000	18,108,972
2	P	113	Rebar for C.I.P girder	ton	51.40	15,998	26,119,000	822,297	1,342,517,000	7,453,320
3	P	108	Steel formwork for C.I.P girder	m2	2,574.52	490	800,000	1,261,515	2,059,616,000	11,434,468
IX.2			**Beam**					**2,777,803**	**4,535,136,000**	**25,177,961**
4	P	119	Concrete C30 for C.I.P girder	m3	333.65	3,887	6,346,000	1,296,890	2,117,330,000	11,754,906
5	P	113	Rebar for C.I.P girder	ton	60.06	15,998	26,119,000	960,786	1,568,619,000	8,708,583
6	P	108	Steel formwork for C.I.P girder	m2	1,061.48	490	800,000	520,127	849,187,000	4,714,472
IX.3			**R.C pile 400x400**					**16,600,127**	**27,114,230,000**	**150,524,013**
7	P	143	Driven pile 400x400, hammer <=3.5T	m	20,131.65	761	1,243,100	15,320,186	25,025,654,000	138,928,079
8	P	94	Cutting of pile head on land	m3	35.28	842	1,375,000	29,706	48,510,000	269,309
9	P	144	Conection of 400x400 pile	joint	1,323.00	945	1,542,000	1,250,235	2,040,066,000	11,326,625
IX.4			**Parapet, Railing**					**222,287**	**362,901,000**	**2,014,744**
10	P	121	Concrete C25 for parapet	m3	7.24	2,168	3,540,000	15,691	25,621,000	142,239
11	P	115	Rebar for parapet	ton	1.09	15,164	24,757,000	16,462	26,877,000	149,214
12	P	110	Steel formwork for deck slab	m2	57.90	86	140,070	4,979	8,110,000	45,036
13	P	156	Bridge railing	ton	6.59	28,077	45,840,000	185,155	302,293,000	1,678,255
8	**RETAINING WALL**							**2,514,545**	**4,106,212,000**	**22,796,142**
X.1			**Retaining wall**					**1,323,782**	**2,161,252,000**	**11,998,740**
1	P	119	Concrete C30 for C.I.P girder	m3	158.69	3,887	6,346,000	616,820	1,007,034,000	5,590,810
2	P	113	Rebar for C.I.P girder	ton	31.74	15,998	26,119,000	507,738	828,954,000	4,602,147
3	P	108	Steel formwork for C.I.P girder	m2	406.58	490	800,000	199,224	325,264,000	1,805,783
X.2			**R.C pile 400x400**					**1,190,763**	**1,944,960,000**	**10,797,402**
4	P	143	Driven pile 400x400, hammer <=3.5T	m	1,440.00	761	1,243,100	1,095,840	1,790,064,000	9,937,409
5	P	94	Cutting of pile head on land	m3	4.99	842	1,375,000	4,203	6,864,000	38,106
6	P	144	Conection of 400x400 pile	joint	96.00	945	1,542,000	90,720	148,032,000	821,887
9	**Roof structures for vehicle parking**							**0**	**0**	**0**
1	P	4	Excavation	m3		154	252,000	0	0	0
2	P	155	Blinding stone	m3		419	684,000	0	0	0
3	P	12	Foundation concrete	m3		1,246	2,034,000	0	0	0
4	P	13	Foundation rebar	ton		14,097	23,016,000	0	0	0
5	P	14	Foundation formwork	m2		40	65,000	0	0	0
6	P	161	Fabrication of galvanized steel column	ton		23,527	38,411,000	0	0	0
7	P	162	Fabrication of galvanized steel struss	ton		24,384	39,810,000	0	0	0
8	P	163	Fabrication of galvanized steel purlin	ton		20,106	32,826,000	0	0	0
9	P	164	Installation of galvanized steel column	ton		5,342	8,722,000	0	0	0
10	P	165	Installation of galvanized steel purlin	ton		2,875	4,693,000	0	0	0
11	P	166	Installation of galvanized steel purlin	ton		13,087	21,366,000	0	0	0
12	P	160	PVC pipe D=60	m		55	90,000	0	0	0
13	P	169	Roof cover by tole sheet	m2		157	256,970	0	0	0

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
14	P	172	Roof gutter work by tole sheet	m2		157	256,970	0	0	0
15	P	173	Fabrication of embed steel structure in concete	ton		26,800	43,755,000	0	0	0
16	P	174	Installation of embed steel structure in concete	ton		6,303	10,291,000	0	0	0
10 Fence								**0**	**0**	**0**
1	P	4	Excavation	m3		154	252,000	0	0	0
2	P	155	Blinding stone	m3		419	684,000	0	0	0
3	P	12	Foundation concrete	m3		1,246	2,034,000	0	0	0
4	P	13	Foundation rebar	ton		14,097	23,016,000	0	0	0
5	P	14	Foundation formwork	m2		40	65,000	0	0	0
6	P	161	Fabrication of galvanized steel column	ton		23,527	38,411,000	0	0	0
7	P	164	Installation of galvanized steel column	ton		5,342	8,722,000	0	0	0
8	P	173	Fabrication of embed steel structure in concete	ton		26,800	43,755,000	0	0	0
9	P	174	Installation of embed steel structure in concete	ton		6,303	10,291,000	0	0	0
6	P	167	Fabrication of galvanized steel fence	m2		691	1,128,000	0	0	0
7	P	168	Installtion of galvanized steel fence	m2		165	269,000	0	0	0
11 Taxi stop								**117,271**	**191,457,000**	**1,062,924**
1	P	4	Excavation	m3	0.50	154	252,000	77	126,000	699
2	P	155	Blinding stone	m3	0.00	419	684,000	0	0	0
3	P	12	Foundation concrete	m3	0.50	1,246	2,034,000	623	1,017,000	5,646
4	P	13	Foundation rebar	ton	7.06	14,097	23,016,000	99,549	162,533,000	902,340
5	P	161	Fabrication of galvanized steel column	ton	0.25	23,527	38,411,000	5,948	9,711,000	53,913
6	P	164	Installation of galvanized steel column	ton	0.25	5,342	8,722,000	1,351	2,205,000	12,242
7	P	170	Roof cover by polycabonate panel	m2	13.20	661	1,078,460	8,725	14,236,000	79,040
8	P	173	Fabrication of embed steel structure in concete	ton	0.03	26,800	43,755,000	808	1,319,000	7,323
9	P	174	Installation of embed steel structure in concete	ton	0.03	6,303	10,291,000	190	310,000	1,721
10			Ticket office	each	0.00		50,000,000	0	0	0
12 Bus stop								**82,523**	**134,701,000**	**747,846**
1	P	4	Excavation	m3	1.13	154	252,000	173	284,000	1,576
2	P	155	Blinding stone	m3	0.00	419	684,000	0	0	0
3	P	12	Foundation concrete	m3	1.13	1,246	2,034,000	1,402	2,288,000	12,703
4	P	13	Foundation rebar	ton	0.03	14,097	23,016,000	405	661,000	3,670
5	P	14	Foundation formwork	m2	36.00	40	65,000	1,440	2,340,000	12,998
6	P	161	Fabrication of galvanized steel column	ton	0.77	23,527	38,411,000	18,231	29,765,000	165,248
7	P	162	Fabrication of galvanized steel struss	ton	0.53	24,384	39,810,000	13,003	21,229,000	117,858
8	P	163	Fabrication of galvanized steel purlin	ton	0.01	20,106	32,826,000	115	187,000	1,039
9	P	164	Installation of galvanized steel column	ton	0.77	5,342	8,722,000	4,140	6,759,000	37,524
10	P	165	Installation of galvanized steel purlin	ton	0.53	2,875	4,693,000	1,533	2,503,000	13,896
11	P	166	Installation of galvanized steel purlin	ton	0.01	13,087	21,366,000	75	122,000	678
12	P	171	Roof cover by aluminum composit panel	m2	108.00	364	594,110	39,312	64,164,000	356,234
13	P	173	Fabrication of embed steel structure in concete	ton	0.08	26,800	43,755,000	2,181	3,561,000	19,770
14	P	174	Installation of embed steel structure in concete	ton	0.08	6,303	10,291,000	513	838,000	4,652
13 Lighting								**164,215**	**269,735,000**	**1,496,503**
1	WI	16	Installation of Lighting Pole	nos.		25,391	41,541,000	0	0	0
2	WI	17	Installation of Lighting Pole	nos.	5.00	32,843	53,947,000	164,215	269,735,000	1,496,503
			Sub Total					**28,339,835**	**46,290,684,000**	**256,980,970**
			Total					**43,554,421**	**57,388,013,000**	**327,008,006**

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
5. Tan Cang									
Phase 1									
1 Earth works							**833,435**	**1,363,879,000**	**7,569,971**
1	P 3	Excavation	m3	20.18	22	35,820	444	723,000	4,015
2	P 5	Earth Filling (K0.95)	m3	4,744.39	129	211,380	612,026	1,002,869,000	5,565,444
3	P 6	Earth Filling (K0.98)	m3	1,624.75	136	221,750	220,965	360,287,000	2,000,512
2 Sub-base and Base courses							**898,893**	**1,468,065,000**	**8,150,029**
4	P 36	Aggregate Subbase course	m3	1,624.75	246	400,940	399,687	651,425,000	3,617,236
5	P 37	Aggregate Base course	m3	2,037.57	245	400,790	499,206	816,640,000	4,532,793
3 Pavement							**3,871,505**	**6,313,733,000**	**35,056,593**
6	P 38	Prime coat	m2	5,415.82	19	30,380	102,901	164,533,000	915,570
7	P 39	Tack coat	m2	5,415.82	11	17,270	59,574	93,531,000	521,547
8	P 40	Spread medium Asphalt Concrete 7cm thick	m2	5,415.82	180	294,000	974,847	1,592,251,000	8,839,368
9	P 41	Spread fine Asphalt Concrete 5cm thick	m2	5,415.82	132	215,370	714,888	1,166,405,000	6,476,051
10	P 11	Pavement concrete	m3	715.81	2,821	4,606,000	2,019,295	3,297,013,000	18,304,057
4 Landscape							**1,382,224**	**2,312,256,000**	**12,803,029**
10	P 42	Soil for planting	m3	1,826.87	194	316,000	354,413	577,291,000	3,205,796
11	P 43	Durenta repens	m2	502.61	80	130,000	40,209	65,339,000	362,934
12	P 44	Hookweed	m2	54.12	68	111,000	3,680	6,007,000	33,350
13	P 45	Golden showers	m2	70.52	628	1,025,000	44,288	72,285,000	401,321
14	P 46	Wrightia antidysenteria	m2	181.62	628	1,025,000	114,055	186,156,000	1,033,526
15	P 47	Acanthus integrifolius	m2	176.65	80	130,000	14,132	22,964,000	127,557
16	P 48	Solenostellarioides	m2	60.87	993	1,621,000	60,446	98,674,000	547,821
17	P 49	Bamboo grass	m2	8,087.96	26	42,000	210,287	339,694,000	1,888,120
18	P 52	Maintenance parterre, grass cover 30 days	m2	9,134.35	39	64,000	356,240	584,598,000	3,243,714
19	P 53	Positioning, excavation and transportation of tree	tree	251.00	138	225,000	34,638	56,475,000	313,582
20	P 57	CYCAS PECTINATA	tree	6.00	211	344,000	1,266	2,064,000	11,461
21	P 56	SYZYGIUM CAMPANULATUM	tree	50.00	347	567,000	17,350	28,350,000	157,378
22	P 58	CYRTOSTACHYS LAKKA	tree	21.00	462	754,000	9,702	15,834,000	87,910
23	P 59	MADAGASCAR ALMOND	tree	150.00	310	506,000	46,500	75,900,000	421,389
24	P 54	Roystonia regia	tree	24.00	804	1,313,000	19,296	31,512,000	174,942
25	P 62	Maintenance tree 90 days	tree	251.00	222	363,000	55,722	91,113,000	505,752
26		Chair	each	29.00		2,000,000	0	58,000,000	286,476
5 Traffic safety							**1,300,012**	**2,120,694,000**	**11,774,644**
27	P 29	Road marking	m2	2,275.59	228	372,000	518,835	846,520,000	4,700,007
28	P 31	Road signboard - Circle	set	8.00	1,196	1,952,000	9,568	15,616,000	86,699
29	P 30	Road signboard - rectangular	set	4.00	2,841	4,638,000	11,364	18,552,000	102,997
10	WI 13	Installation of side walk - Terranzo brick	m2	1,117.47	311	508,000	347,534	567,675,000	3,151,421
29	WI 8	Installation of Concrete Curbs	m	1,404.74	170	277,000	238,806	389,114,000	2,160,736
30	WI 9	Installation of Concrete Curbs	m	828.12	210	342,000	173,905	283,217,000	1,572,784
6 Drainage system							**970,675**	**1,671,255,000**	**9,225,416**
31	P 3	Excavation	m3	1,549.78	22	35,820	34,095	55,513,000	308,287
32	P 9	Disposal of Soil	m3	1,549.78	90	205,620	139,480	318,666,000	1,713,450
33	P 8	Sand Filling (K0.95)	m3	863.68	136	221,953	117,461	191,697,000	1,064,300
34	P 8	Sand Filling (K0.95)	m3	13.25	136	221,953	1,803	2,942,000	16,334
35	P 135	Driven wood pile	m	24,648.00	14	22,690	345,072	559,263,000	3,107,410
36	P 14	Foundation formwork	m2	334.54	40	65,000	13,382	21,745,000	120,786
37	P 10	Blinding concrete	m3	56.78	1,007	1,644,000	57,180	93,350,000	518,259
38	P 13	Foundation rebar	ton	3.69	14,097	23,016,000	51,983	84,872,000	471,187

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
39	P	12	Foundation concrete	m3	39.60	1,246	2,034,000	49,343	80,548,000	447,189
40	P	134	Installation of R.C saddle	nos.	148.00	18	29,500	2,664	4,366,000	24,229
41	P	133	Installation of RC Concrete Pipe (Dia. 800mm)	m	148.00	1,069	1,745,220	158,212	258,293,000	1,433,985
7 Pedestrian Bridge								**25,856,927**	**32,978,736,150**	**188,747,058**
VII.1			**Pier P1**					**897,911**	**1,467,733,500**	**8,147,411**
42	WI	20	Cast in placed pile D1000	m	92.70	7,179	11,720,000	665,493	1,086,444,000	6,031,709
43	P	94	Cutting of pile head on land	m3	1.88	842	1,375,000	1,587	2,592,000	14,390
44	P	154	Concrete for piers	m3	23.84	2,342	3,824,000	55,834	91,166,000	506,125
45	P	153	Reinforcement for piers	ton	2.86	15,980	26,089,000	45,716	74,637,000	414,367
46	P	152	Formwork for piers	m2	40.47	162	265,120	6,556	10,729,000	59,549
47	P	10	Blinding concrete	m3	1.14	1,007	1,644,000	1,152	1,881,000	10,443
48	P	3	Excavation	m3	26.81	22	35,820	590	960,000	5,332
49	P	8	Sand Filling (K0.95)	m3	10.67	136	221,953	1,451	2,368,000	13,147
50	P	9	Disposal of Soil	m3	26.81	90	205,620	2,413	5,513,000	29,643
51			Auxiliary structure for construction	%	15.00	780,792	1,276,290,000	117,119	191,443,500	1,062,706
VII.2			**Pier P2**					**1,839,578**	**3,007,237,350**	**16,693,067**
52	WI	20	Cast in placed pile D1000	m	185.40	7,179	11,720,000	1,330,987	2,172,888,000	12,063,418
53	P	94	Cutting of pile head on land	m3	3.77	842	1,375,000	3,174	5,184,000	28,779
54	P	154	Concrete for piers	m3	51.14	2,342	3,824,000	119,774	195,566,000	1,085,723
55	P	153	Reinforcement for piers	ton	7.67	15,980	26,089,000	122,587	200,136,000	1,111,108
56	P	152	Formwork for piers	m2	50.41	162	265,120	8,166	13,365,000	74,179
57	P	10	Blinding concrete	m3	2.70	1,007	1,644,000	2,723	4,445,000	24,678
58	P	3	Excavation	m3	58.99	22	35,820	1,298	2,113,000	11,735
59	P	8	Sand Filling (K0.95)	m3	41.28	136	221,953	5,615	9,163,000	50,873
60	P	9	Disposal of Soil	m3	58.99	90	205,620	5,309	12,129,000	65,217
61			Auxiliary structure for construction	%	15.00	1,599,633	2,614,989,000	239,945	392,248,350	2,177,357
VII.3			**Pier P3**					**1,844,270**	**3,015,692,150**	**16,739,519**
62	WI	20	Cast in placed pile D1000	m	185.40	7,179	11,720,000	1,330,987	2,172,888,000	12,063,418
63	P	94	Cutting of pile head on land	m3	3.77	842	1,375,000	3,174	5,184,000	28,779
64	P	154	Concrete for piers	m3	51.36	2,342	3,824,000	120,282	196,395,000	1,090,325
65	P	153	Reinforcement for piers	ton	7.70	15,980	26,089,000	123,106	200,984,000	1,115,816
66	P	152	Formwork for piers	m2	51.20	162	265,120	8,294	13,573,000	75,334
67	P	10	Blinding concrete	m3	2.70	1,007	1,644,000	2,723	4,445,000	24,678
68	P	3	Excavation	m3	70.79	22	35,820	1,557	2,536,000	14,083
69	P	8	Sand Filling (K0.95)	m3	53.08	136	221,953	7,219	11,781,000	65,408
70	P	9	Disposal of Soil	m3	70.79	90	205,620	6,371	14,555,000	78,262
71			Auxiliary structure for construction	%	15.00	1,603,713	2,622,341,000	240,557	393,351,150	2,183,416
VII.4			**Pier P4**					**1,843,563**	**3,014,796,300**	**16,734,387**
72	WI	20	Cast in placed pile D1000	m	185.40	7,179	11,720,000	1,330,987	2,172,888,000	12,063,418
73	P	94	Cutting of pile head on land	m3	3.77	842	1,375,000	3,174	5,184,000	28,779
74	P	154	Concrete for piers	m3	51.06	2,342	3,824,000	119,576	195,242,000	1,083,925
75	P	153	Reinforcement for piers	ton	7.66	15,980	26,089,000	122,384	199,804,000	1,109,265
76	P	152	Formwork for piers	m2	50.19	162	265,120	8,131	13,306,000	73,853
77	P	10	Blinding concrete	m3	2.70	1,007	1,644,000	2,723	4,445,000	24,678
78	P	3	Excavation	m3	74.72	22	35,820	1,644	2,676,000	14,861
79	P	8	Sand Filling (K0.95)	m3	57.01	136	221,953	7,754	12,654,000	70,255
80	P	9	Disposal of Soil	m3	74.72	90	205,620	6,725	15,363,000	82,607
81			Auxiliary structure for construction	%	15.00	1,603,098	2,621,562,000	240,465	393,234,300	2,182,746
VII.5			**Pier P5**					**1,841,676**	**3,011,715,450**	**16,717,282**
82	WI	20	Cast in placed pile D1000	m	185.40	7,179	11,720,000	1,330,987	2,172,888,000	12,063,418

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
83	P	94	Cutting of pile head on land	m3	3.77	842	1,375,000	3,174	5,184,000	28,779
84	P	154	Concrete for piers	m3	50.75	2,342	3,824,000	118,848	194,053,000	1,077,324
85	P	153	Reinforcement for piers	ton	7.61	15,980	26,089,000	121,639	198,588,000	1,102,514
86	P	152	Formwork for piers	m2	49.15	162	265,120	7,963	13,032,000	72,331
87	P	10	Blinding concrete	m3	2.70	1,007	1,644,000	2,723	4,445,000	24,678
88	P	3	Excavation	m3	74.72	22	35,820	1,644	2,676,000	14,861
89	P	8	Sand Filling (K0.95)	m3	57.01	136	221,953	7,754	12,654,000	70,255
90	P	9	Disposal of Soil	m3	74.72	90	205,620	6,725	15,363,000	82,607
91			Auxiliary structure for construction	%	15.00	1,601,457	2,618,883,000	240,219	392,832,450	2,180,515
VII.6			**Pier P6**					**1,834,294**	**2,998,343,250**	**16,643,852**
92	WI	20	Cast in placed pile D1000	m	185.40	7,179	11,720,000	1,330,987	2,172,888,000	12,063,418
93	P	94	Cutting of pile head on land	m3	3.77	842	1,375,000	3,174	5,184,000	28,779
94	P	154	Concrete for piers	m3	50.45	2,342	3,824,000	118,164	192,937,000	1,071,128
95	P	153	Reinforcement for piers	ton	7.57	15,980	26,089,000	120,939	197,445,000	1,096,169
96	P	152	Formwork for piers	m2	48.18	162	265,120	7,805	12,774,000	70,899
97	P	10	Blinding concrete	m3	2.70	1,007	1,644,000	2,723	4,445,000	24,678
98	P	3	Excavation	m3	55.06	22	35,820	1,211	1,972,000	10,951
99	P	8	Sand Filling (K0.95)	m3	37.35	136	221,953	5,080	8,290,000	46,026
100	P	9	Disposal of Soil	m3	55.06	90	205,620	4,955	11,320,000	60,867
101			Auxiliary structure for construction	%	15.00	1,595,038	2,607,255,000	239,256	391,088,250	2,170,937
VII.7			**Girders**					**5,140,980**	**8,392,208,950**	**46,592,174**
92	P	117	Concrete C50 for C.I.P girder	m3	364.90	4,064	6,635,000	1,482,949	2,421,104,000	13,441,380
93	P	113	Rebar for C.I.P girder	ton	80.28	15,998	26,119,000	1,284,283	2,096,775,000	11,640,773
94	P	108	Steel formwork for C.I.P girder	m2	1,963.63	490	800,000	962,181	1,570,908,000	8,721,284
95	P	100	Install cable corrugated steel duct D50/57	m	1,328.11	107	174,000	142,108	231,092,000	1,283,529
96	P	102	Internal PC strand for cast-in-place girder on land, post tensioning, type 15.2mm	ton	10.22	37,834	61,769,000	386,556	631,104,000	3,503,735
97	P	105	Install anchorage type 7S15.2	set	150.00	758	1,237,000	113,700	185,550,000	1,030,177
98	P	126	Install Movable bearing, two direction 5000KN	set	12.00	8,220	13,420,000	98,640	161,040,000	894,056
99			Auxiliary structure for construction	%	15.00	4,470,417	7,297,573,000	670,563	1,094,635,950	6,077,240
VII.8			**Diaphragm**					**0**	**0**	**0**
99	P	118	Concrete C35 for C.I.P girder	m3		3,935	6,425,000	0	0	0
100	P	113	Rebar for C.I.P girder	ton		15,998	26,119,000	0	0	0
101	P	108	Steel formwork for C.I.P girder	m2		490	800,000	0	0	0
102			Auxiliary structure for construction	%	15.00	0	0	0	0	0
VII.8			**Deck slab**					**0**	**0**	**0**
102	P	118	Concrete C35 for C.I.P girder	m3		3,935	6,425,000	0	0	0
103	P	113	Rebar for C.I.P girder	ton		15,998	26,119,000	0	0	0
104	P	108	Steel formwork for C.I.P girder	m2		490	800,000	0	0	0
VII.9			**R.C formwork (on Super - T beam)**					**0**	**0**	**0**
105	P	122	Concrete C20 for super T top slab	m3		2,138	3,491,000	0	0	0
106	P	116	Rebar for super T top slab	ton		15,787	25,775,000	0	0	0
107	P	111	Steel formwork for super T top slab	m2		108	175,620	0	0	0
VII.10			**Parapet, Railing, Drainage, Lighting**					**1,458,919**	**2,384,174,000**	**13,234,944**
108	P	121	Concrete C25 for parapet	m3	69.88	2,168	3,540,000	151,503	247,380,000	1,373,374
109	P	115	Rebar for parapet	ton	10.48	15,164	24,757,000	158,952	259,508,000	1,440,726
110	P	110	Steel formwork for deck slab	m2	490.91	86	140,070	42,218	68,762,000	381,851
111	P	156	Bridge railing	ton	10.78	28,077	45,840,000	302,774	494,325,000	2,744,367
112	P	157	Cash iron mesh	set	62.00	76	124,000	4,712	7,688,000	42,685
113	P	158	PVC pipe D=30	m	306.82	28	45,000	8,591	13,807,000	76,787

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
114	P	159	PVC pipe D=90	m	346.82	82	134,000	28,439	46,474,000	257,986
115	WI	16	Installation of Lighting Pole	nos.	30.00	25,391	41,541,000	761,730	1,246,230,000	6,917,168
VII.11			**Expansion joint**					**4,097,082**	**9,991,200**	**4,146,431**
116	P	127	Install Expansion joint, t=50mm	m	24.00	148,445	362,000	3,562,680	8,688,000	3,605,592
117			Auxiliary structure for construction	%	15.00	3,562,680	8,688,000	534,402	1,303,200	540,839
VII.12			**Finished material**					**1,672,476**	**151,250,000**	**2,419,537**
118	P	130	Waterproof membrane	m2	460.23	3,491	96,000	1,606,663	44,182,000	1,824,889
119	P	39	Tack coat	m2	460.23	11	17,270	5,063	7,948,000	44,320
120	P	41	Spread fine Asphalt Concrete 5cm thick	m2	460.23	132	215,370	60,750	99,120,000	550,328
VII.13			**Others**					**3,386,180**	**5,525,594,000**	**30,678,454**
121	P	42	Soil for planting	m3	12.27	194	316,000	2,381	3,878,000	21,535
122	P	45	Golden showers	m2	61.36	628	1,025,000	38,537	62,898,000	349,206
123	P	52	Maintenance parterre, grass cover 30 days	m2	61.36	39	64,000	2,393	3,927,000	21,789
124	WI	42	Roof of perdestrian bridge	m2	699.35	4,780	7,800,000	3,342,869	5,454,891,000	30,285,924
8 Stairs structures								**6,365,662**	**17,619,765,050**	**93,394,039**
VIII.1			**Foundation**					**3,632,242**	**5,938,830,000**	**32,965,592**
1	P	143	Driven pile 400x400, hammer <=3.5T	m	3,414.60	761	1,243,100	2,598,511	4,244,689,000	23,564,080
2	P	94	Cutting of pile head on land	m3	8.74	842	1,375,000	7,356	12,012,000	66,686
3	P	154	Concrete for piers	m3	103.29	2,342	3,824,000	241,902	394,976,000	2,192,786
4	P	153	Reinforcement for piers	ton	14.09	15,980	26,089,000	225,211	367,680,000	2,041,273
5	P	152	Formwork for piers	m2	340.05	162	265,120	55,088	90,153,000	500,376
6	P	10	Blinding concrete	m3	7.85	1,007	1,644,000	7,909	12,912,000	71,685
7	P	3	Excavation	m3	86.39	22	35,820	1,901	3,095,000	17,188
8	P	8	Sand Filling (K0.95)	m3	94.25	136	221,953	12,818	20,919,000	116,142
9	P	9	Disposal of Soil	m3	86.39	90	205,620	7,775	17,764,000	95,516
10			Auxiliary structure for construction	%	15.00	3,158,471	5,164,200,000	473,771	774,630,000	4,299,860
VIII.2			**Beam, slab**					**796,964**	**1,301,153,700**	**7,223,684**
11	P	119	Concrete C30 for C.I.P girder	m3	62.72	3,887	6,346,000	243,782	398,003,000	2,209,617
12	P	113	Rebar for C.I.P girder	ton	9.41	15,998	26,119,000	150,502	245,717,000	1,364,159
13	P	108	Steel formwork for C.I.P girder	m2	609.65	490	800,000	298,728	487,718,000	2,707,688
14			Auxiliary structure for construction	%	15.00	693,012	1,131,438,000	103,952	169,715,700	942,220
VIII.3			**Railing**					**235,002**	**383,676,000**	**2,130,073**
14	P	156	Bridge railing	ton	8.37	28,077	45,840,000	235,002	383,676,000	2,130,073
VIII.3			**Roof**					**1,492,316**	**2,435,160,000**	**13,520,173**
15	WI	42	Roof of perdestrian bridge	m2	312.20	4,780	7,800,000	1,492,316	2,435,160,000	13,520,173
VIII.4			**Elevator, Escalator**					**209,139**	**7,560,945,350**	**37,554,517**
16	P	120	Concrete C30 for elevator	m3	40.00	2,463	4,021,000	98,520	160,840,000	892,949
17	P	114	Rebar for elevator	ton	4.00	16,155	26,376,000	64,620	105,504,000	585,730
18	P	109	Steel formwork for elevator	m2	160.00	117	190,730	18,720	30,517,000	169,451
19			Elevator	set	2.00		1,968,969,600	0	3,937,939,200	19,450,455
20			Escalator	set	1.00		3,281,616,000	0	3,281,616,000	16,208,713
21			Auxiliary structure for construction	%	15.00	181,860	296,861,000	27,279	44,529,150	247,219
9 REINFORCED CONCRETE PILE SLAB								**479,164**	**782,502,000**	**4,344,135**
IX.1			**Slab**					**88,144**	**143,906,000**	**798,931**
1	P	119	Concrete C30 for C.I.P girder	m3	10.80	3,887	6,346,000	41,980	68,537,000	380,501
2	P	113	Rebar for C.I.P girder	ton	1.08	15,998	26,119,000	17,278	28,209,000	156,609
3	P	108	Steel formwork for C.I.P girder	m2	58.95	490	800,000	28,886	47,160,000	261,821
IX.2			**Beam**					**62,103**	**101,391,000**	**562,898**
4	P	119	Concrete C30 for C.I.P girder	m3	6.19	3,887	6,346,000	24,068	39,294,000	218,151
5	P	113	Rebar for C.I.P girder	ton	1.11	15,998	26,119,000	17,831	29,111,000	161,617

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
6	P 108	Steel formwork for C.I.P girder	m2	41.23	490	800,000	20,204	32,986,000	183,130
IX.3		**R.C pile 400x400**					**282,872**	**462,034,000**	**2,564,973**
7	P 143	Driven pile 400x400, hammer <=3.5T	m	341.20	761	1,243,100	259,653	424,146,000	2,354,615
8	P 94	Cutting of pile head on land	m3	0.64	842	1,375,000	539	880,000	4,886
9	P 144	Conection of 400x400 pile	joint	24.00	945	1,542,000	22,680	37,008,000	205,472
IX.4		**Parapet, Railing**					**46,045**	**75,171,000**	**417,333**
10	P 121	Concrete C25 for parapet	m3	1.50	2,168	3,540,000	3,252	5,310,000	29,479
11	P 115	Rebar for parapet	ton	0.23	15,164	24,757,000	3,412	5,570,000	30,924
12	P 110	Steel formwork for deck slab	m2	12.00	86	140,070	1,032	1,681,000	9,335
13	P 156	Bridge railing	ton	1.37	28,077	45,840,000	38,349	62,610,000	347,595
10 Fence							**637,740**	**1,040,858,000**	**5,778,796**
1	P 4	Excavation	m3	11.57	154	252,000	1,782	2,916,000	16,185
2	P 155	Blinding stone	m3	4.13	419	684,000	1,732	2,827,000	15,695
3	P 12	Foundation concrete	m3	7.44	1,246	2,034,000	9,270	15,133,000	84,016
4	P 13	Foundation rebar	ton	0.52	14,097	23,016,000	7,354	12,006,000	66,655
5	P 14	Foundation formwork	m2	99.20	40	65,000	3,968	6,448,000	35,816
6	P 161	Fabrication of galvanized steel column	ton	2.39	23,527	38,411,000	56,282	91,888,000	510,140
7	P 164	Installation of galvanized steel column	ton	2.39	5,342	8,722,000	12,779	20,865,000	115,836
8	P 173	Fabrication of embed steel structure in concete	ton	1.25	26,800	43,755,000	33,392	54,517,000	302,665
9	P 174	Installation of embed steel structure in concete	ton	1.25	6,303	10,291,000	7,853	12,822,000	71,184
6	P 167	Fabrication of galvanized steel fence	m2	588.00	691	1,128,000	406,308	663,264,000	3,682,333
7	P 168	Installtion of galvanized steel fence	m2	588.00	165	269,000	97,020	158,172,000	878,271
11 Bus stop							**29,799,901**	**646,255,000**	**32,991,914**
1	P 4	Excavation	m3	9.41	154	252,000	1,449	2,371,000	13,160
2	P 155	Blinding stone	m3	2.59	419	684,000	1,086	1,773,000	9,843
3	P 12	Foundation concrete	m3	9.00	1,246	2,034,000	11,214	18,306,000	101,632
4	P 13	Foundation rebar	ton	0.16	14,097	23,016,000	2,247	3,669,000	20,369
5	P 14	Foundation formwork	m2	288.00	40	65,000	11,520	18,720,000	103,983
6	P 161	Fabrication of galvanized steel column	ton	4.17	23,527	38,411,000	98,019	160,028,000	888,437
7	P 162	Fabrication of galvanized steel struss	ton	4.08	24,384	39,810,000	99,510	162,463,000	901,955
8	P 163	Fabrication of galvanized steel purlin	ton	2.29	20,106	32,826,000	46,036	75,160,000	417,270
9	P 164	Installation of galvanized steel column	ton	4.17	5,342	8,722,000	22,256	36,338,000	201,738
10	P 165	Installation of galvanized steel purlin	ton	4.08	2,875	4,693,000	11,733	19,152,000	106,329
11	P 166	Installation of galvanized steel purlin	ton	2.29	13,087	21,366,000	29,965	48,921,000	271,598
12	P 171	Roof cover by aluminum composit panel	m2	108.00	364	594,110	39,312	64,164,000	356,234
13	P 173	Fabrication of embed steel structure in concete	ton	0.65	26,800	43,755,000	17,450	28,489,000	158,164
14	P 174	Installation of embed steel structure in concete	ton	0.65	6,303	10,291,000	4,104	6,701,000	37,202
15	P 175	Installation of Digital Signage System	LS	1.00	29,404,000	0	29,404,000	0	29,404,000
12 Lighting							**8,874,710**	**14,522,058,000**	**80,602,745**
1	WI 16	Installation of Lighting Pole	nos.	334.00	25,391	41,541,000	8,480,594	13,874,694,000	77,011,138
2	WI 17	Installation of Lighting Pole	nos.	12.00	32,843	53,947,000	394,116	647,364,000	3,591,607
13 Traffic Signal for Vehicle							**81,805**	**133,557,500**	**741,479**
1	P 132	Traffic Signal for Vehicle	nos.	2.00	32,722	53,423,000	65,444	106,846,000	593,183
2		Others	%	25.00	65,444	106,846,000	16,361	26,711,500	148,296
14 Ticketing System in Parking							**11,221,000**	**0**	**11,221,000**
1	P 184	Installation of Ticketing System in Parking	LS	1.00	11,221,000	0	11,221,000	0	11,221,000
		Sub Total					**92,573,654**	**82,973,613,700**	**502,400,848**
		Total					**92,573,654**	**82,973,613,700**	**502,400,848**

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
6. Thao Dien									
Phase 1									
1 Earth works							**668,953**	**1,093,489,000**	**6,069,966**
1	P 3	Excavation	m3	55.17	22	35,820	1,214	1,976,000	10,974
2	P 5	Earth Filling (K0.95)	m3	2,640.26	129	211,380	340,594	558,098,000	3,097,178
3	P 6	Earth Filling (K0.98)	m3	2,405.48	136	221,750	327,145	533,415,000	2,961,814
2 Sub-base and Base courses							**552,562**	**902,959,000**	**5,012,500**
4	P 36	Aggregate Subbase course	m3	649.05	246	400,940	159,667	260,231,000	1,445,012
5	P 37	Aggregate Base course	m3	1,603.65	245	400,790	392,895	642,728,000	3,567,488
3 Pavement							**1,577,149**	**2,567,166,000**	**14,257,017**
6	P 38	Prime coat	m2	2,163.51	19	30,380	41,107	65,727,000	365,749
7	P 39	Tack coat	m2	8,018.26	11	17,270	88,201	138,475,000	772,163
8	P 40	Spread medium Asphalt Concrete 7cm thick	m2	2,163.51	180	294,000	389,431	636,071,000	3,531,143
9	P 41	Spread fine Asphalt Concrete 5cm thick	m2	8,018.26	132	215,370	1,058,410	1,726,893,000	9,587,962
4 Landscape							**1,239,304**	**2,022,206,000**	**11,227,481**
10	P 42	Soil for planting	m3	944.55	194	316,000	183,243	298,479,000	1,657,505
11	P 43	Durenta repens	m2	444.56	80	130,000	35,565	57,793,000	321,019
12	P 44	Hookweed	m2	209.90	68	111,000	14,273	23,299,000	129,353
13	P 45	Golden showers	m2	285.57	628	1,025,000	179,339	292,710,000	1,625,106
14	P 46	Wrightia antidysenteria	m2	86.42	628	1,025,000	54,271	88,578,000	491,780
15	P 47	Acanthus integrifolius	m2	425.19	80	130,000	34,015	55,275,000	307,032
16	P 48	Solenostellarioides	m2	425.19	993	1,621,000	422,216	689,236,000	3,826,523
17	P 49	Bamboo grass	m2	2,845.93	26	42,000	73,994	119,529,000	664,377
18	P 52	Maintenance parterre, grass cover 30 days	m2	4,722.76	39	64,000	184,188	302,257,000	1,677,110
19	P 53	Positioning, excavation and transportation of tree	tree	50.00	138	225,000	6,900	11,250,000	62,467
20	P 54	Roystonia regia	tree	50.00	804	1,313,000	40,200	65,650,000	364,462
21	P 62	Maintenance tree 90 days	tree	50.00	222	363,000	11,100	18,150,000	100,747
5 Traffic safety							**719,962**	**1,174,876,000**	**6,522,965**
22	P 29	Road marking	m2	1,145.29	228	372,000	261,126	426,048,000	2,365,482
23	P 31	Road signboard - Circle	set	4.00	1,196	1,952,000	4,784	7,808,000	43,350
24	P 30	Road signboard - rectangular	set	7.00	2,841	4,638,000	19,887	32,466,000	180,245
25	WI 13	Installation of side walk - Terranzo brick	m2	921.51	311	508,000	286,590	468,128,000	2,598,790
25	WI 8	Installation of Concrete Curbs	m	623.10	170	277,000	105,927	172,599,000	958,436
26	WI 9	Installation of Concrete Curbs	m	198.32	210	342,000	41,648	67,827,000	376,662
6 Drainage system							**702,422**	**1,204,771,000**	**6,653,084**
1	P 3	Excavation	m3	1,041.93	22	35,820	22,922	37,322,000	207,265
2	P 9	Disposal of Soil	m3	1,041.93	90	205,620	93,774	214,242,000	1,151,968
3	P 8	Sand Filling (K0.95)	m3	567.51	136	221,953	77,181	125,960,000	699,329
4	P 135	Driven wood pile	m	17,652.00	14	22,690	247,128	400,524,000	2,225,415
5	P 8	Sand Filling (K0.95)	m3	10.21	136	221,953	1,388	2,265,000	12,575
6	P 10	Blinding concrete	m3	59.23	1,007	1,644,000	59,648	97,379,000	540,627
7	P 14	Foundation formwork	m2	230.96	40	65,000	9,238	15,012,000	83,386
8	P 13	Foundation rebar	ton	3.03	14,097	23,016,000	42,754	69,805,000	387,538
9	P 12	Foundation concrete	m3	28.36	1,246	2,034,000	35,341	57,691,000	320,291
10	P 142	Retaining wall formwork	m2		116	190,000	0	0	0
11	P 141	Retaining wall rebar	ton		15,471	25,258,000	0	0	0
12	P 140	Retaining wall concrete	m3		1,850	3,020,000	0	0	0
13	P 134	Installation of R.C saddle	nos.	104.00	18	29,500	1,872	3,068,000	17,026
14	P 133	Installation of RC Concrete Pipe (Dia. 800mm)	m	104.00	1,069	1,745,220	111,176	181,503,000	1,007,664

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
7 Pedestrian Bridge							**17,406,517**	**11,995,102,550**	**76,653,297**
VII.1		**Pier P1**					**459,523**	**751,422,650**	**4,170,986**
1	WI 21	Cast in placed pile D1200	m	46.35	6,822	11,139,000	316,200	516,293,000	2,866,299
2	P 94	Cutting of pile head on land	m3	1.36	842	1,375,000	1,143	1,866,000	10,360
3	P 154	Concrete for piers	m3	15.01	2,342	3,824,000	35,154	57,399,000	318,662
4	P 153	Reinforcement for piers	ton	2.25	15,980	26,089,000	35,980	58,741,000	326,116
5	P 152	Formwork for piers	m2	45.38	162	265,120	7,352	12,032,000	66,781
6	P 10	Blinding concrete	m3	0.36	1,007	1,644,000	364	593,000	3,293
7	P 3	Excavation	m3	16.25	22	35,820	358	582,000	3,233
8	P 8	Sand Filling (K0.95)	m3	11.55	136	221,953	1,571	2,564,000	14,235
9	P 9	Disposal of Soil	m3	16.25	90	205,620	1,463	3,341,000	17,965
10		Auxiliary structure for construction	%	15.00	399,585	653,411,000	59,938	98,011,650	544,042
VII.2		**Pier P2**					**758,875**	**1,240,394,600**	**6,885,491**
11	WI 22	Cast in placed pile D1500	m	46.35	11,877	19,391,000	550,499	898,773,000	4,989,761
12	P 94	Cutting of pile head on land	m3	2.12	842	1,375,000	1,786	2,916,000	16,189
13	P 154	Concrete for piers	m3	19.96	2,342	3,824,000	46,745	76,326,000	423,738
14	P 153	Reinforcement for piers	ton	2.99	15,980	26,089,000	47,843	78,109,000	433,643
15	P 152	Formwork for piers	m2	51.59	162	265,120	8,358	13,678,000	75,917
16	P 10	Blinding concrete	m3	0.48	1,007	1,644,000	487	796,000	4,419
17	P 3	Excavation	m3	20.38	22	35,820	448	730,000	4,054
18	P 8	Sand Filling (K0.95)	m3	13.90	136	221,953	1,890	3,085,000	17,128
19	P 9	Disposal of Soil	m3	20.38	90	205,620	1,835	4,191,000	22,535
20		Auxiliary structure for construction	%	15.00	659,891	1,078,604,000	98,984	161,790,600	898,107
VII.3		**Pier P3**					**464,102**	**758,794,150**	**4,211,974**
21	WI 21	Cast in placed pile D1200	m	46.35	6,822	11,139,000	316,200	516,293,000	2,866,299
22	P 94	Cutting of pile head on land	m3	1.36	842	1,375,000	1,143	1,866,000	10,360
23	P 154	Concrete for piers	m3	15.90	2,342	3,824,000	37,229	60,788,000	337,476
24	P 153	Reinforcement for piers	ton	2.38	15,980	26,089,000	38,104	62,208,000	345,365
25	P 152	Formwork for piers	m2	46.54	162	265,120	7,539	12,338,000	68,479
26	P 10	Blinding concrete	m3	0.36	1,007	1,644,000	364	593,000	3,293
27	P 3	Excavation	m3	14.63	22	35,820	322	524,000	2,910
28	P 8	Sand Filling (K0.95)	m3	9.93	136	221,953	1,350	2,204,000	12,236
29	P 9	Disposal of Soil	m3	14.63	90	205,620	1,316	3,007,000	16,168
30		Auxiliary structure for construction	%	15.00	403,567	659,821,000	60,535	98,973,150	549,388
VII.4		**Pier P4**					**426,728**	**697,702,700**	**3,872,854**
31	WI 21	Cast in placed pile D1200	m	41.35	6,822	11,139,000	282,090	460,598,000	2,557,097
32	P 94	Cutting of pile head on land	m3	1.36	842	1,375,000	1,143	1,866,000	10,360
33	P 154	Concrete for piers	m3	16.27	2,342	3,824,000	38,106	62,220,000	345,426
34	P 153	Reinforcement for piers	ton	2.44	15,980	26,089,000	39,001	63,673,000	353,498
35	P 152	Formwork for piers	m2	47.02	162	265,120	7,617	12,465,000	69,185
36	P 10	Blinding concrete	m3	0.36	1,007	1,644,000	364	593,000	3,293
37	P 3	Excavation	m3	13.65	22	35,820	300	489,000	2,715
38	P 8	Sand Filling (K0.95)	m3	8.95	136	221,953	1,218	1,987,000	11,032
39	P 9	Disposal of Soil	m3	13.65	90	205,620	1,229	2,807,000	15,093
40		Auxiliary structure for construction	%	15.00	371,068	606,698,000	55,660	91,004,700	505,155
VII.5		**Pier P5**					**425,533**	**695,871,900**	**3,862,617**
41	WI 21	Cast in placed pile D1200	m	41.35	6,822	11,139,000	282,090	460,598,000	2,557,097
42	P 94	Cutting of pile head on land	m3	1.36	842	1,375,000	1,143	1,866,000	10,360
43	P 154	Concrete for piers	m3	15.97	2,342	3,824,000	37,405	61,074,000	339,065
44	P 153	Reinforcement for piers	ton	2.40	15,980	26,089,000	38,283	62,501,000	346,991

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
45	P	152	Formwork for piers	m2	46.63	162	265,120	7,554	12,363,000	68,618
46	P	10	Blinding concrete	m3	0.36	1,007	1,644,000	364	593,000	3,293
47	P	3	Excavation	m3	15.44	22	35,820	340	553,000	3,071
48	P	8	Sand Filling (K0.95)	m3	10.74	136	221,953	1,461	2,384,000	13,236
49	P	9	Disposal of Soil	m3	15.44	90	205,620	1,389	3,174,000	17,066
50			Auxiliary structure for construction	%	15.00	370,029	605,106,000	55,504	90,765,900	503,820
VII.6			**Girders**					**3,980,582**	**2,647,410,400**	**17,056,798**
51	WI	23	Super T girder, L=31m	girder	4.00	250,281	408,646,000	1,001,124	1,634,584,000	9,074,739
52	WI	25	Super T girder, L=24m	girder	2.00	197,778	322,926,000	395,556	645,852,000	3,585,579
53	P	123	Install Elastomeric Bearing, type 510x660x44	set	12.00	172,058	1,805,000	2,064,696	21,660,000	2,171,680
54			Auxiliary structure for construction	%	15.00	3,461,376	2,302,096,000	519,206	345,314,400	2,224,800
VII.7			**Diaphragm**					**21,062**	**34,386,150**	**190,905**
54	P	118	Concrete C35 for C.I.P girder	m3	1.56	3,935	6,425,000	6,139	10,023,000	55,645
55	P	113	Rebar for C.I.P girder	ton	0.23	15,998	26,119,000	3,744	6,112,000	33,933
56	P	108	Steel formwork for C.I.P girder	m2	17.21	490	800,000	8,432	13,766,000	76,426
57			Auxiliary structure for construction	%	15.00	18,315	29,901,000	2,747	4,485,150	24,901
VII.8			**Deck slab**					**339,513**	**554,331,000**	**3,077,491**
57	P	118	Concrete C35 for C.I.P girder	m3	51.60	3,935	6,425,000	203,046	331,530,000	1,840,555
58	P	113	Rebar for C.I.P girder	ton	7.74	15,998	26,119,000	123,825	202,161,000	1,122,348
59	P	108	Steel formwork for C.I.P girder	m2	25.80	490	800,000	12,642	20,640,000	114,588
VII.9			**R.C formwork (on Super - T beam)**					**19,940**	**32,546,000**	**180,693**
60	P	122	Concrete C20 for super T top slab	m3	3.03	2,138	3,491,000	6,487	10,592,000	58,804
61	P	116	Rebar for super T top slab	ton	0.76	15,787	25,775,000	11,974	19,550,000	108,536
62	P	111	Steel formwork for super T top slab	m2	13.69	108	175,620	1,479	2,404,000	13,353
VII.10			**Parapet, Railing, Drainage, Lighting**					**826,811**	**1,351,311,000**	**7,501,270**
63	P	121	Concrete C25 for parapet	m3	33.51	2,168	3,540,000	72,660	118,643,000	658,667
64	P	115	Rebar for parapet	ton	5.03	15,164	24,757,000	76,233	124,459,000	690,967
65	P	110	Steel formwork for deck slab	m2	282.53	86	140,070	24,297	39,574,000	219,763
66	P	156	Bridge railing	ton	6.18	28,077	45,840,000	173,524	283,305,000	1,572,837
67	P	157	Cash iron mesh	set	34.00	76	124,000	2,584	4,216,000	23,408
68	P	158	PVC pipe D=30	m	110.40	28	45,000	3,091	4,968,000	27,629
69	P	159	PVC pipe D=90	m	212.00	82	134,000	17,384	28,408,000	157,698
70	WI	16	Installation of Lighting Pole	nos.	18.00	25,391	41,541,000	457,038	747,738,000	4,150,301
VII.11			**Expansion joint**					**6,828,470**	**16,652,000**	**6,910,718**
71	P	127	Install Expansion joint, t=50mm	m	40.00	148,445	362,000	5,937,800	14,480,000	6,009,320
72			Auxiliary structure for construction	%	15.00	5,937,800	14,480,000	890,670	2,172,000	901,398
VII.12			**Finished material**					**937,572**	**84,789,000**	**1,356,365**
73	P	130	Waterproof membrane	m2	258.00	3,491	96,000	900,678	24,768,000	1,023,013
74	P	39	Tack coat	m2	258.00	11	17,270	2,838	4,456,000	24,847
75	P	41	Spread fine Asphalt Concrete 5cm thick	m2	258.00	132	215,370	34,056	55,565,000	308,505
VII.13			**Others**					**1,917,805**	**3,129,491,000**	**17,375,135**
76	P	42	Soil for planting	m3	7.06	194	316,000	1,370	2,232,000	12,394
77	P	45	Golden showers	m2	35.32	628	1,025,000	22,178	36,199,000	200,974
78	P	52	Maintenance parterre, grass cover 30 days	m2	35.32	39	64,000	1,377	2,260,000	12,540
79	WI	42	Roof of perdestrian bridge	m2	396.00	4,780	7,800,000	1,892,880	3,088,800,000	17,149,227
8 Stairs structures								**3,095,374**	**10,306,670,850**	**54,002,572**
VIII.1			**Foundations SA**					**873,156**	**1,428,328,750**	**7,928,026**
1	WI	20	Cast in placed pile D1000	m	92.70	7,179	11,720,000	665,493	1,086,444,000	6,031,709
2	P	94	Cutting of pile head on land	m3	1.88	842	1,375,000	1,587	2,592,000	14,390
3	P	154	Concrete for piers	m3	20.07	2,342	3,824,000	47,000	76,741,000	426,043

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
4	P	153	Reinforcement for piers	ton	2.01	15,980	26,089,000	32,069	52,356,000	290,668
5	P	152	Formwork for piers	m2	18.46	162	265,120	2,990	4,893,000	27,158
6	P	10	Blinding concrete	m3	2.77	1,007	1,644,000	2,786	4,549,000	25,255
7	P	3	Excavation	m3	42.12	22	35,820	927	1,509,000	8,380
8	P	8	Sand Filling (K0.95)	m3	19.28	136	221,953	2,623	4,280,000	23,763
9	P	9	Disposal of Soil	m3	42.12	90	205,620	3,791	8,661,000	46,570
10			Auxiliary structure for construction	%	15.00	759,266	1,242,025,000	113,890	186,303,750	1,034,090
VIII.2			**Piers SP**					**1,609,100**	**2,626,973,750**	**14,584,372**
11	WI	20	Cast in placed pile D1000	m	185.40	7,179	11,720,000	1,330,987	2,172,888,000	12,063,418
12	P	94	Cutting of pile head on land	m3	3.77	842	1,375,000	3,174	5,184,000	28,779
13	P	154	Concrete for piers	m3	11.76	2,342	3,824,000	27,533	44,956,000	249,582
14	P	153	Reinforcement for piers	ton	1.76	15,980	26,089,000	28,180	46,006,000	255,415
15	P	152	Formwork for piers	m2	57.68	162	265,120	9,343	15,291,000	84,869
16			Auxiliary structure for construction	%	15.00	1,399,217	2,284,325,000	209,883	342,648,750	1,902,309
VIII.3			**Beam, slab (stair structure)**					**232,372**	**379,380,400**	**2,106,226**
17	P	119	Concrete C30 for C.I.P girder	m3	18.28	3,887	6,346,000	71,056	116,007,000	644,043
18	P	113	Rebar for C.I.P girder	ton	2.74	15,998	26,119,000	43,867	71,620,000	397,616
19	P	108	Steel formwork for C.I.P girder	m2	177.84	490	800,000	87,140	142,269,000	789,842
20			Auxiliary structure for construction	%	15.00	202,063	329,896,000	30,309	49,484,400	274,725
VIII.4			**Railing (stair structure)**					**68,238**	**111,410,000**	**618,520**
20	P	156	Bridge railing	ton	2.43	28,077	45,840,000	68,238	111,410,000	618,520
VIII.5			**Roof**					**197,175**	**321,750,000**	**1,786,378**
21	WI	42	Roof of perdestrian bridge	m2	41.25	4,780	7,800,000	197,175	321,750,000	1,786,378
VIII.6			**Elevator**					**115,334**	**5,438,827,950**	**26,979,050**
22	P	120	Concrete C30 for elevator	m3	20.00	2,463	4,021,000	49,260	80,420,000	446,474
23	P	114	Rebar for elevator	ton	2.00	16,155	26,376,000	32,310	52,752,000	292,865
24	P	109	Steel formwork for elevator	m2	160.00	117	190,730	18,720	30,517,000	169,451
25			Elevator	set	1.00		1,968,969,600	0	1,968,969,600	9,725,228
26			Escalator	set	1.00		3,281,616,000	0	3,281,616,000	16,208,713
25			Auxiliary structure for construction	%	15.00	100,290	163,689,000	15,044	24,553,350	136,319
9 Roof structures for vehicle parking								**2,586,558**	**4,226,109,000**	**23,460,357**
1	P	4	Excavation	m3	25.87	154	252,000	3,984	6,520,000	36,188
2	P	155	Blinding stone	m3	6.52	419	684,000	2,730	4,457,000	24,744
3	P	12	Foundation concrete	m3	32.24	1,246	2,034,000	40,171	65,576,000	364,067
4	P	13	Foundation rebar	ton	1.86	14,097	23,016,000	26,240	42,843,000	237,852
5	P	14	Foundation formwork	m2	147.84	40	65,000	5,914	9,610,000	53,380
6	P	161	Fabrication of galvanized steel column	ton	11.86	23,527	38,411,000	279,040	455,570,000	2,529,213
7	P	162	Fabrication of galvanized steel struss	ton	22.33	24,384	39,810,000	544,401	888,804,000	4,934,424
8	P	163	Fabrication of galvanized steel purlin	ton	21.79	20,106	32,826,000	438,108	715,276,000	3,971,033
9	P	164	Installation of galvanized steel column	ton	11.86	5,342	8,722,000	63,358	103,446,000	574,303
10	P	165	Installation of galvanized steel purlin	ton	22.33	2,875	4,693,000	64,188	104,777,000	581,708
11	P	166	Installation of galvanized steel purlin	ton	21.79	13,087	21,366,000	285,165	465,564,000	2,584,701
12	P	160	PVC pipe D=60	m	420.00	55	90,000	23,100	37,800,000	209,804
13	P	169	Roof cover by tole sheet	m2	4,410.00	157	256,970	692,370	1,133,238,000	6,289,713
14	P	172	Roof gutter work by tole sheet	m2	495.60	157	256,970	77,809	127,354,000	706,842
15	P	173	Fabrication of embed steel structure in concete	ton	1.21	26,800	43,755,000	32,368	52,845,000	293,383
16	P	174	Installation of embed steel structure in concete	ton	1.21	6,303	10,291,000	7,612	12,429,000	69,002
10 Fence								**764,823**	**1,248,268,000**	**6,930,327**
17	P	4	Excavation	m3	13.98	154	252,000	2,152	3,522,000	19,548
18	P	155	Blinding stone	m3	4.99	419	684,000	2,092	3,414,000	18,955

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
19	P	12	Foundation concrete	m3	8.99	1,246	2,034,000	11,195	18,275,000	101,460
20	P	13	Foundation rebar	ton	0.38	14,097	23,016,000	5,331	8,704,000	48,322
21	P	14	Foundation formwork	m2	119.80	40	65,000	4,792	7,787,000	43,254
22	P	161	Fabrication of galvanized steel column	ton	2.89	23,527	38,411,000	67,970	110,969,000	616,073
23	P	164	Installation of galvanized steel column	ton	2.89	5,342	8,722,000	15,433	25,198,000	139,892
24	P	173	Fabrication of embed steel structure in concete	ton	1.50	26,800	43,755,000	40,326	65,838,000	365,516
25	P	174	Installation of embed steel structure in concete	ton	1.50	6,303	10,291,000	9,484	15,485,000	85,968
22	P	167	Fabrication of galvanized steel fence	m2	708.00	691	1,128,000	489,228	798,624,000	4,433,829
23	P	168	Installtion of galvanized steel fence	m2	708.00	165	269,000	116,820	190,452,000	1,057,510
11 Perdestrian cover roof								**999,316**	**1,630,922,000**	**9,054,843**
24	P	4	Excavation	m3	14.05	154	252,000	2,164	3,541,000	19,654
25	P	155	Blinding stone	m3	2.30	419	684,000	965	1,575,000	8,744
26	P	12	Foundation concrete	m3	11.75	1,246	2,034,000	14,641	23,900,000	132,689
27	P	13	Foundation rebar	ton	0.33	14,097	23,016,000	4,706	7,683,000	42,654
28	P	14	Foundation formwork	m2	94.00	40	65,000	3,760	6,110,000	33,939
29	P	161	Fabrication of galvanized steel column	ton	3.69	23,527	38,411,000	86,813	141,733,000	786,867
30	P	162	Fabrication of galvanized steel struss	ton	4.59	24,384	39,810,000	111,814	182,551,000	1,013,479
31	P	163	Fabrication of galvanized steel purlin	ton	6.44	20,106	32,826,000	129,549	211,507,000	1,174,234
32	P	164	Installation of galvanized steel column	ton	3.69	5,342	8,722,000	19,711	32,183,000	178,671
33	P	165	Installation of galvanized steel purlin	ton	4.59	2,875	4,693,000	13,183	21,520,000	119,476
34	P	166	Installation of galvanized steel purlin	ton	6.44	13,087	21,366,000	84,323	137,667,000	764,294
35	P	170	Roof cover by polycabonate panel	m2	798.00	661	1,078,460	527,478	860,611,000	4,778,249
36	P	173	Fabrication of embed steel structure in concete	ton	0.01	26,800	43,755,000	169	276,000	1,532
37	P	174	Installation of embed steel structure in concete	ton	0.01	6,303	10,291,000	40	65,000	361
12 Bus stop								**21,932,774**	**355,484,000**	**23,688,597**
38	P	4	Excavation	m3	5.80	154	252,000	893	1,461,000	8,109
39	P	155	Blinding stone	m3	1.30	419	684,000	543	886,000	4,919
40	P	12	Foundation concrete	m3	4.50	1,246	2,034,000	5,607	9,153,000	50,816
41	P	13	Foundation rebar	ton	0.08	14,097	23,016,000	1,124	1,835,000	10,188
42	P	14	Foundation formwork	m2	144.00	40	65,000	5,760	9,360,000	51,991
43	P	161	Fabrication of galvanized steel column	ton	2.08	23,527	38,411,000	49,009	80,014,000	444,218
44	P	162	Fabrication of galvanized steel struss	ton	2.04	24,384	39,810,000	49,755	81,231,000	450,975
45	P	163	Fabrication of galvanized steel purlin	ton	1.14	20,106	32,826,000	23,018	37,580,000	208,635
46	P	164	Installation of galvanized steel column	ton	2.08	5,342	8,722,000	11,128	18,169,000	100,869
47	P	165	Installation of galvanized steel purlin	ton	2.04	2,875	4,693,000	5,866	9,576,000	53,164
48	P	166	Installation of galvanized steel purlin	ton	1.14	13,087	21,366,000	14,982	24,460,000	135,796
49	P	171	Roof cover by aluminum composit panel	m2	108.00	364	594,110	39,312	64,164,000	356,234
50	P	173	Fabrication of embed steel structure in concete	ton	0.33	26,800	43,755,000	8,725	14,245,000	79,085
51	P	174	Installation of embed steel structure in concete	ton	0.33	6,303	10,291,000	2,052	3,350,000	18,598
52	P	176	Installation of Digital Signage System	LS	1.00	21,715,000	0	21,715,000	0	21,715,000
13 Lighting								**3,693,564**	**6,043,934,000**	**33,546,049**
1	WI	16	Installation of Lighting Pole	nos.	139.00	25,391	41,541,000	3,529,349	5,774,199,000	32,049,546
2	WI	17	Installation of Lighting Pole	nos.	5.00	32,843	53,947,000	164,215	269,735,000	1,496,503
14 Ticketing System in Parking								**8,416,000**	**0**	**8,416,000**
1	P	185	Installation of Ticketing System in Parking	LS	1.00	8,416,000	0	8,416,000	0	8,416,000
			Sub Total					**64,355,278**	**44,771,957,400**	**285,495,055**
			Total					**64,355,278**	**44,771,957,400**	**285,495,055**

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
7. An Phu									
Phase 1									
1 Earth works							**300,122**	**490,650,000**	**2,723,564**
1	P 3	Excavation	m3	0.00	22	35,820	0	0	0
2	P 5	Earth Filling (K0.95)	m3	1,242.22	129	211,380	160,246	262,580,000	1,457,194
3	P 6	Earth Filling (K0.98)	m3	1,028.50	136	221,750	139,876	228,070,000	1,266,370
2 Sub-base and Base courses							**251,983**	**412,213,000**	**2,288,005**
4	P 36	Aggregate Subbase course	m3		246	400,940	0	0	0
5	P 37	Aggregate Base course	m3	1,028.50	245	400,790	251,983	412,213,000	2,288,005
3 Pavement							**490,252**	**797,568,000**	**4,429,638**
6	P 38	Prime coat	m2	0.00	19	30,380	0	0	0
7	P 39	Tack coat	m2	3,428.34	11	17,270	37,712	59,207,000	330,150
8	P 40	Spread medium Asphalt Concrete 7cm thick	m2	0.00	180	294,000	0	0	0
9	P 41	Spread fine Asphalt Concrete 5cm thick	m2	3,428.34	132	215,370	452,540	738,361,000	4,099,488
4 Landscape							**118,022**	**192,383,000**	**1,068,249**
10	P 42	Soil for planting	m3	227.40	194	316,000	44,116	71,859,000	399,045
11	P 49	Bamboo grass	m2	1,137.01	26	42,000	29,562	47,755,000	265,436
12	P 52	Maintenance parterre, grass cover 30 days	m2	1,137.01	39	64,000	44,344	72,769,000	403,768
5 Traffic safety							**536,857**	**875,556,000**	**4,861,445**
13	P 29	Road marking	m2	1,189.52	228	372,000	271,210	442,500,000	2,456,827
14	P 31	Road signboard - Circle	set	2.00	1,196	1,952,000	2,392	3,904,000	21,675
15	P 30	Road signboard - rectangular	set	10.00	2,841	4,638,000	28,410	46,380,000	257,492
16	WI 13	Installation of side walk - Terranzo brick	m2	184.17	311	508,000	57,278	93,561,000	519,399
16	WI 8	Installation of Concrete Curbs	m	203.47	170	277,000	34,590	56,362,000	312,976
17	WI 9	Installation of Concrete Curbs	m	680.84	210	342,000	142,977	232,849,000	1,293,076
6 Stairs structures							**1,777,603**	**4,878,748,250**	**25,874,947**
VIII.1		**Foundation**					**1,082,662**	**1,775,417,150**	**9,851,886**
1	P 143	Driven pile 400x400, hammer <=3.5T	m	975.60	761	1,243,100	742,432	1,212,768,000	6,732,593
2	P 94	Cutting of pile head on land	m3	2.50	842	1,375,000	2,102	3,432,000	19,053
3	P 154	Concrete for piers	m3	36.90	2,342	3,824,000	86,425	141,114,000	783,422
4	P 153	Reinforcement for piers	ton	5.04	15,980	26,089,000	80,464	131,366,000	729,313
5	P 152	Formwork for piers	m2	103.25	162	265,120	16,727	27,375,000	151,939
6	P 10	Blinding concrete	m3	1.19	1,007	1,644,000	1,196	1,953,000	10,842
7	P 3	Excavation	m3	27.14	22	35,820	597	972,000	5,398
8	P 8	Sand Filling (K0.95)	m3	15.96	136	221,953	2,170	3,541,000	19,660
9	P 9	Disposal of Soil	m3	103.68	90	205,620	9,332	21,320,000	114,637
10		Auxiliary structure for construction	%	15.00	941,445	1,543,841,000	141,217	231,576,150	1,285,029
VIII.2		**Beam, slab**					**338,583**	**552,783,150**	**3,068,915**
11	P 119	Concrete C30 for C.I.P girder	m3	19.39	3,887	6,346,000	75,352	123,021,000	682,983
12	P 113	Rebar for C.I.P girder	ton	10.58	15,998	26,119,000	169,225	276,283,000	1,533,855
13	P 108	Steel formwork for C.I.P girder	m2	101.72	490	800,000	49,843	81,377,000	451,784
14		Auxiliary structure for construction	%	15.00	294,420	480,681,000	44,163	72,102,150	400,293
VIII.3		**Railing**					**37,755**	**61,641,000**	**342,215**
14	P 156	Bridge railing	ton	1.34	28,077	45,840,000	37,755	61,641,000	342,215
VIII.3		**Roof**					**203,270**	**331,695,000**	**1,841,594**
15	WI 42	Roof of perdestrian bridge	m2	42.53	4,780	7,800,000	203,270	331,695,000	1,841,594
VIII.4		**Elevator, Escalator**					**115,334**	**2,157,211,950**	**10,770,337**
16	P 120	Concrete C30 for elevator	m3	20.00	2,463	4,021,000	49,260	80,420,000	446,474
17	P 114	Rebar for elevator	ton	2.00	16,155	26,376,000	32,310	52,752,000	292,865

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
18	P 109	Steel formwork for elevator	m2	160.00	117	190,730	18,720	30,517,000	169,451
19		Elevator	set	1.00		1,968,969,600	0	1,968,969,600	9,725,228
20		Escalator	set			3,281,616,000	0	0	0
21		Auxiliary structure for construction	%	15.00	100,290	163,689,000	15,044	24,553,350	136,319
7 REINFORCED CONCRETE PILE SLAB							**9,938,819**	**16,230,011,000**	**90,102,856**
IX.1		**Slab**					**1,156,322**	**1,887,853,000**	**10,480,895**
1	P 119	Concrete C30 for C.I.P girder	m3	140.69	3,887	6,346,000	546,852	892,803,000	4,956,627
2	P 113	Rebar for C.I.P girder	ton	14.07	15,998	26,119,000	225,072	367,462,000	2,040,058
3	P 108	Steel formwork for C.I.P girder	m2	784.49	490	800,000	384,398	627,588,000	3,484,210
IX.2		**Beam**					**3,517,840**	**5,743,334,000**	**31,885,587**
4	P 119	Concrete C30 for C.I.P girder	m3	494.55	3,887	6,346,000	1,922,328	3,138,433,000	17,423,825
5	P 113	Rebar for C.I.P girder	ton	89.02	15,998	26,119,000	1,424,135	2,325,101,000	12,908,384
6	P 108	Steel formwork for C.I.P girder	m2	349.75	490	800,000	171,377	279,800,000	1,553,378
IX.3		**R.C pile 400x400**					**4,940,204**	**8,069,130,000**	**44,795,632**
7	P 143	Driven pile 400x400, hammer <=3.5T	m	5,934.90	761	1,243,100	4,516,459	7,377,674,000	40,956,615
8	P 94	Cutting of pile head on land	m3	11.68	842	1,375,000	9,835	16,060,000	89,159
9	P 144	Conection of 400x400 pile	joint	438.00	945	1,542,000	413,910	675,396,000	3,749,858
IX.4		**Parapet, Railing**					**324,453**	**529,694,000**	**2,940,742**
10	P 121	Concrete C25 for parapet	m3	10.69	2,168	3,540,000	23,172	37,836,000	210,053
11	P 115	Rebar for parapet	ton	1.93	15,164	24,757,000	29,292	47,823,000	265,502
12	P 110	Steel formwork for deck slab	m2	85.51	86	140,070	7,353	11,977,000	66,510
13	P 156	Bridge railing	ton	9.43	28,077	45,840,000	264,636	432,058,000	2,398,677
8 Roof structures for vehicle parking							**896,711**	**1,465,298,000**	**8,134,181**
1	P 4	Excavation	m3	14.77	154	252,000	2,275	3,723,000	20,664
2	P 155	Blinding stone	m3	2.68	419	684,000	1,122	1,832,000	10,171
3	P 12	Foundation concrete	m3	12.10	1,246	2,034,000	15,072	24,603,000	136,592
4	P 13	Foundation rebar	ton	0.75	14,097	23,016,000	10,543	17,213,000	95,562
5	P 14	Foundation formwork	m2	40.32	40	65,000	1,613	2,621,000	14,559
6	P 161	Fabrication of galvanized steel column	ton	3.63	23,527	38,411,000	85,472	139,544,000	774,714
7	P 162	Fabrication of galvanized steel struss	ton	15.16	24,384	39,810,000	369,680	603,549,000	3,350,758
8	P 163	Fabrication of galvanized steel purlin	ton	0.41	20,106	32,826,000	8,283	13,523,000	75,076
9	P 164	Installation of galvanized steel column	ton	3.63	5,342	8,722,000	19,407	31,686,000	175,912
10	P 165	Installation of galvanized steel purlin	ton	15.16	2,875	4,693,000	43,587	71,149,000	395,010
11	P 166	Installation of galvanized steel purlin	ton	0.41	13,087	21,366,000	5,391	8,802,000	48,866
12	P 160	PVC pipe D=60	m	379.20	55	90,000	20,856	34,128,000	189,423
13	P 169	Roof cover by tole sheet	m2	1,725.60	157	256,970	270,919	443,427,000	2,461,115
14	P 172	Roof gutter work by tole sheet	m2	193.20	157	256,970	30,332	49,647,000	275,551
15	P 173	Fabrication of embed steel structure in concete	ton	0.37	26,800	43,755,000	9,844	16,071,000	89,223
16	P 174	Installation of embed steel structure in concete	ton	0.37	6,303	10,291,000	2,315	3,780,000	20,985
9 Fence							**603,461**	**984,906,000**	**5,468,155**
17	P 4	Excavation	m3	10.99	154	252,000	1,692	2,769,000	15,369
18	P 155	Blinding stone	m3	3.93	419	684,000	1,645	2,685,000	14,907
19	P 12	Foundation concrete	m3	7.07	1,246	2,034,000	8,803	14,370,000	79,780
20	P 13	Foundation rebar	ton	0.50	14,097	23,016,000	6,986	11,407,000	63,328
21	P 14	Foundation formwork	m2	125.60	40	65,000	5,024	8,164,000	45,348
22	P 161	Fabrication of galvanized steel column	ton	2.27	23,527	38,411,000	53,445	87,256,000	484,424
23	P 164	Installation of galvanized steel column	ton	2.27	5,342	8,722,000	12,135	19,813,000	109,996
24	P 173	Fabrication of embed steel structure in concete	ton	1.18	26,800	43,755,000	31,708	51,769,000	287,408
25	P 174	Installation of embed steel structure in concete	ton	1.18	6,303	10,291,000	7,457	12,176,000	67,597
22	P 167	Fabrication of galvanized steel fence	m2	554.40	691	1,128,000	383,090	625,363,000	3,471,912

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
23	P 168	Installtion of galvanized steel fence	m2	554.40	165	269,000	91,476	149,134,000	828,086
10 Bus stop							**7,800,834**	**182,556,000**	**8,702,522**
1	P 4	Excavation	m3	4.10	154	252,000	631	1,033,000	5,733
2	P 155	Blinding stone	m3	0.80	419	684,000	335	547,000	3,037
3	P 12	Foundation concrete	m3	3.30	1,246	2,034,000	4,112	6,712,000	37,264
4	P 13	Foundation rebar	ton	0.11	14,097	23,016,000	1,480	2,417,000	13,418
5	P 14	Foundation formwork	m2	72.00	40	65,000	2,880	4,680,000	25,996
6	P 161	Fabrication of galvanized steel column	ton	1.20	23,527	38,411,000	28,215	46,065,000	255,741
7	P 162	Fabrication of galvanized steel struss	ton	1.11	24,384	39,810,000	27,097	44,239,000	245,604
8	P 163	Fabrication of galvanized steel purlin	ton	0.57	20,106	32,826,000	11,509	18,790,000	104,317
9	P 164	Installation of galvanized steel column	ton	1.20	5,342	8,722,000	6,407	10,460,000	58,072
10	P 165	Installation of galvanized steel purlin	ton	1.11	2,875	4,693,000	3,195	5,215,000	28,953
11	P 166	Installation of galvanized steel purlin	ton	0.57	13,087	21,366,000	7,491	12,230,000	67,898
12	P 171	Roof cover by aluminum composit panel	m2	35.97	364	594,110	13,094	21,371,000	118,651
13	P 173	Fabrication of embed steel structure in concete	ton	0.16	26,800	43,755,000	4,362	7,122,000	39,539
14	P 174	Installation of embed steel structure in concete	ton	0.16	6,303	10,291,000	1,026	1,675,000	9,299
15	P 177	Installation of Digital Signage System	LS	1.00	7,689,000	0	7,689,000	0	7,689,000
11 Lighting							**1,751,979**	**2,866,329,000**	**15,909,487**
1	WI 16	Installation of Lighting Pole	nos.	69.00	25,391	41,541,000	1,751,979	2,866,329,000	15,909,487
2	WI 17	Installation of Lighting Pole	nos.		32,843	53,947,000	0	0	0
12 Ticketing System in Parking							**13,819,000**	**0**	**13,819,000**
1	P 186	Installation of Ticketing System in Parking	LS	1.00	13,819,000	0	13,819,000	0	13,819,000
		Sub Total					**38,285,643**	**29,376,218,250**	**183,382,049**
		Total					**38,285,643**	**29,376,218,250**	**183,382,049**

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Phase 1									
7 OVER PASS PIPE SUPPLY WATER BRIDGES							**83,251,490**	**63,946,549,000**	**399,099,308**
VII.1		**Abutment A1.2**					**5,437,811**	**8,894,578,000**	**49,370,330**
11	WI 21	Cast in placed pile D1200	m	674.85	6,822	11,139,000	4,603,827	7,517,154,000	41,732,909
12	P 94	Cutting of pile head on land	m3	14.93	842	1,375,000	12,570	20,527,000	113,958
13	P 154	Concrete for piers	m3	154.09	2,342	3,824,000	360,881	589,244,000	3,271,303
14	P 153	Reinforcement for piers	ton	23.11	15,980	26,089,000	369,356	603,012,000	3,347,781
15	P 152	Formwork for piers	m2	213.06	162	265,120	34,515	56,485,000	313,508
16	P 10	Blinding concrete	m3	8.80	1,007	1,644,000	8,862	14,467,000	80,318
17	P 3	Excavation	m3	267.32	22	35,820	5,881	9,575,000	53,174
18	P 8	Sand Filling (K0.95)	m3	131.32	136	221,953	17,860	29,147,000	161,824
19	P 9	Disposal of Soil	m3	267.32	90	205,620	24,059	54,967,000	295,555
VII.2		**Abutment A1.2**					**5,445,177**	**8,908,342,000**	**49,445,681**
21	WI 21	Cast in placed pile D1200	m	674.85	6,822	11,139,000	4,603,827	7,517,154,000	41,732,909
22	P 94	Cutting of pile head on land	m3	14.93	842	1,375,000	12,570	20,527,000	113,958
23	P 154	Concrete for piers	m3	154.09	2,342	3,824,000	360,881	589,244,000	3,271,303
24	P 153	Reinforcement for piers	ton	23.11	15,980	26,089,000	369,356	603,012,000	3,347,781
25	P 152	Formwork for piers	m2	213.06	162	265,120	34,515	56,485,000	313,508
26	P 10	Blinding concrete	m3	8.80	1,007	1,644,000	8,862	14,467,000	80,318
27	P 3	Excavation	m3	297.02	22	35,820	6,535	10,639,000	59,084
28	P 8	Sand Filling (K0.95)	m3	161.02	136	221,953	21,899	35,740,000	198,428
29	P 9	Disposal of Soil	m3	297.02	90	205,620	26,732	61,074,000	328,392
VII.3		**Abutment A2.1**					**8,886,625**	**14,535,434,000**	**80,680,728**
31	WI 21	Cast in placed pile D1200	m	1,104.30	6,822	11,139,000	7,533,535	12,300,798,000	68,290,218

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
32	P	94	Cutting of pile head on land	m3	24.43	842	1,375,000	20,569	33,590,000	186,478
33	P	154	Concrete for piers	m3	250.30	2,342	3,824,000	586,201	957,145,000	5,313,777
34	P	153	Reinforcement for piers	ton	37.54	15,980	26,089,000	599,968	979,509,000	5,438,005
35	P	152	Formwork for piers	m2	340.06	162	265,120	55,089	90,156,000	500,392
36	P	10	Blinding concrete	m3	14.30	1,007	1,644,000	14,400	23,509,000	130,517
37	P	3	Excavation	m3	431.12	22	35,820	9,485	15,443,000	85,762
38	P	8	Sand Filling (K0.95)	m3	210.12	136	221,953	28,577	46,637,000	258,929
39	P	9	Disposal of Soil	m3	431.12	90	205,620	38,801	88,647,000	476,650
VII.4			**Abutment A2.2**					**8,898,504**	**14,557,632,000**	**80,802,249**
41	WI	21	Cast in placed pile D1200	m	1,104.30	6,822	11,139,000	7,533,535	12,300,798,000	68,290,218
42	P	94	Cutting of pile head on land	m3	24.43	842	1,375,000	20,569	33,590,000	186,478
43	P	154	Concrete for piers	m3	250.30	2,342	3,824,000	586,201	957,145,000	5,313,777
44	P	153	Reinforcement for piers	ton	37.54	15,980	26,089,000	599,968	979,509,000	5,438,005
45	P	152	Formwork for piers	m2	340.06	162	265,120	55,089	90,156,000	500,392
46	P	10	Blinding concrete	m3	14.30	1,007	1,644,000	14,400	23,509,000	130,517
47	P	3	Excavation	m3	479.02	22	35,820	10,539	17,159,000	95,292
48	P	8	Sand Filling (K0.95)	m3	258.02	136	221,953	35,091	57,269,000	317,957
49	P	9	Disposal of Soil	m3	479.02	90	205,620	43,112	98,497,000	529,613
VII.5			**Girders**					**18,537,435**	**11,485,320,000**	**75,266,270**
51	WI	32	Precast hollow girder, L=15m	girder	105.00	62,579	102,164,000	6,570,795	10,727,220,000	59,555,187
52	P	125	Install Elastomeric Bearing, type 350x350x42	set	420.00	28,492	1,805,000	11,966,640	758,100,000	15,711,083
VII.6			**Deck slab**					**1,630,245**	**2,661,736,000**	**14,777,217**
54	P	118	Concrete C35 for C.I.P girder	m3	236.25	3,935	6,425,000	929,644	1,517,906,000	8,426,957
55	P	113	Rebar for C.I.P girder	ton	42.53	15,998	26,119,000	680,315	1,110,710,000	6,166,386
56	P	108	Steel formwork for C.I.P girder	m2	41.40	490	800,000	20,286	33,120,000	183,874
VII.7			**Approach slab, Railing, Drainage, Lighting**					**620,380**	**1,012,736,000**	**5,622,534**
57	P	14	Foundation formwork	m2	124.20	40	65,000	4,968	8,073,000	44,843
58	P	13	Foundation rebar	ton	22.36	14,097	23,016,000	315,153	514,546,000	2,856,623
59	P	12	Foundation concrete	m3	104.33	1,246	2,034,000	129,993	212,203,000	1,178,116
60	P	10	Blinding concrete	m3	41.40	1,007	1,644,000	41,690	68,062,000	377,865
60	P	156	Bridge railing	ton	4.00	28,077	45,840,000	112,308	183,360,000	1,017,968
61	P	157	Cash iron mesh	set	8.00	76	124,000	608	992,000	5,508
62	P	158	PVC pipe D=30	m	120.00	28	45,000	3,360	5,400,000	30,032
63	P	159	PVC pipe D=90	m	150.00	82	134,000	12,300	20,100,000	111,579
64	WI	16	Installation of Lighting Pole	nos.		25,391	41,541,000	0	0	0
VII.8			**Expansion joint**					**32,196,353**	**1,746,169,000**	**40,821,114**
65	P	127	Install Expansion joint, t=50mm	m	210.00	148,445	362,000	31,173,450	76,020,000	31,548,932
66	P	121	Concrete C25 for parapet	m3	359.95	2,168	3,540,000	780,363	1,274,209,000	7,073,996
67	P	115	Rebar for parapet	ton	15.40	15,164	24,757,000	233,510	381,233,000	2,116,514
68	P	110	Steel formwork for deck slab	m2	105.00	86	140,070	9,030	14,707,000	81,672
VII.9			**Finished material**					**1,598,960**	**144,602,000**	**2,313,185**
69	P	130	Waterproof membrane	m2	440.00	3,491	96,000	1,536,040	42,240,000	1,744,674
70	P	39	Tack coat	m2	440.00	11	17,270	4,840	7,599,000	42,373
71	P	41	Spread fine Asphalt Concrete 5cm thick	m2	440.00	132	215,370	58,080	94,763,000	526,138
8 Stairs structures								**2,792,207**	**6,530,899,100**	**35,049,934**
VIII.1			**Foundation**					**1,502,298**	**2,456,585,150**	**13,635,981**
1	P	143	Driven pile 400x400, hammer <=3.5T	m	1,319.40	761	1,243,100	1,004,063	1,640,146,000	9,105,150
2	P	94	Cutting of pile head on land	m3	3.74	842	1,375,000	3,152	5,148,000	28,579
3	P	154	Concrete for piers	m3	58.10	2,342	3,824,000	136,063	222,163,000	1,233,381
4	P	153	Reinforcement for piers	ton	8.01	15,980	26,089,000	128,072	209,091,000	1,160,824

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
5	P 152	Formwork for piers	m2	156.60	162	265,120	25,369	41,518,000	230,437
6	P 10	Blinding concrete	m3	1.67	1,007	1,644,000	1,684	2,749,000	15,262
7	P 3	Excavation	m3	40.62	22	35,820	894	1,455,000	8,081
8	P 8	Sand Filling (K0.95)	m3	24.95	136	221,953	3,393	5,538,000	30,747
9	P 9	Disposal of Soil	m3	40.62	90	205,620	3,656	8,353,000	44,914
10		Auxiliary structure for construction	%	15.00	1,306,346	2,136,161,000	195,952	320,424,150	1,778,606
VIII.2		**Beam, slab**					**402,301**	**656,811,000**	**3,646,453**
11	P 119	Concrete C30 for C.I.P girder	m3	31.95	3,887	6,346,000	124,183	202,743,000	1,125,581
12	P 113	Rebar for C.I.P girder	ton	4.77	15,998	26,119,000	76,388	124,714,000	692,381
13	P 108	Steel formwork for C.I.P girder	m2	304.60	490	800,000	149,256	243,683,000	1,352,867
14		Auxiliary structure for construction	%	15.00	349,827	571,140,000	52,474	85,671,000	475,624
VIII.3		**Railing**					**109,767**	**179,211,000**	**994,934**
14	P 156	Bridge railing	ton	3.91	28,077	45,840,000	109,767	179,211,000	994,934
VIII.3		**Roof**					**662,508**	**1,081,080,000**	**6,002,229**
15	WI 42	Roof of perdestrian bridge	m2	138.60	4,780	7,800,000	662,508	1,081,080,000	6,002,229
VIII.4		**Elevator, Escalator**					**115,334**	**2,157,211,950**	**10,770,337**
16	P 120	Concrete C30 for elevator	m3	20.00	2,463	4,021,000	49,260	80,420,000	446,474
17	P 114	Rebar for elevator	ton	2.00	16,155	26,376,000	32,310	52,752,000	292,865
18	P 109	Steel formwork for elevator	m2	160.00	117	190,730	18,720	30,517,000	169,451
19		Elevator	set	1.00		1,968,969,600	0	1,968,969,600	9,725,228
20		Escalator	set	0.00		3,281,616,000	0	0	0
21		Auxiliary structure for construction	%	15.00	100,290	163,689,000	15,044	24,553,350	136,319
9 Roof structures for vehicle parking							**4,421,132**	**7,222,985,000**	**40,097,239**
1	P 4	Excavation	m3	68.57	154	252,000	10,559	17,279,000	95,904
2	P 155	Blinding stone	m3	11.69	419	684,000	4,896	7,993,000	44,375
3	P 12	Foundation concrete	m3	56.88	1,246	2,034,000	70,872	115,694,000	642,313
4	P 13	Foundation rebar	ton	3.94	14,097	23,016,000	55,526	90,656,000	503,298
5	P 14	Foundation formwork	m2	367.92	40	65,000	14,717	23,915,000	132,839
6	P 161	Fabrication of galvanized steel column	ton	20.09	23,527	38,411,000	472,608	771,596,000	4,283,711
7	P 162	Fabrication of galvanized steel struss	ton	36.62	24,384	39,810,000	892,843	1,457,681,000	8,092,690
8	P 163	Fabrication of galvanized steel purlin	ton	42.49	20,106	32,826,000	854,367	1,394,880,000	7,744,024
9	P 164	Installation of galvanized steel column	ton	20.09	5,342	8,722,000	107,310	175,207,000	972,701
10	P 165	Installation of galvanized steel purlin	ton	36.62	2,875	4,693,000	105,271	171,839,000	954,026
11	P 166	Installation of galvanized steel purlin	ton	42.49	13,087	21,366,000	556,108	907,909,000	5,040,495
12	P 160	PVC pipe D=60	m	595.20	55	90,000	32,736	53,568,000	297,322
13	P 169	Roof cover by tole sheet	m2	6,807.60	157	256,970	1,068,793	1,749,349,000	9,709,260
14	P 172	Roof gutter work by tole sheet	m2	744.00	157	256,970	116,808	191,186,000	1,061,123
15	P 173	Fabrication of embed steel structure in concete	ton	1.74	26,800	43,755,000	46,728	76,290,000	423,543
16	P 174	Installation of embed steel structure in concete	ton	1.74	6,303	10,291,000	10,990	17,943,000	99,615
10 Fence							**1,100,511**	**1,796,132,000**	**9,972,051**
1	P 4	Excavation	m3	20.00	154	252,000	3,079	5,039,000	27,968
2	P 155	Blinding stone	m3	7.14	419	684,000	2,992	4,885,000	27,120
3	P 12	Foundation concrete	m3	12.86	1,246	2,034,000	16,017	26,147,000	145,163
4	P 13	Foundation rebar	ton	0.54	14,097	23,016,000	7,627	12,453,000	69,135
5	P 14	Foundation formwork	m2	228.53	40	65,000	9,141	14,855,000	82,514
6	P 161	Fabrication of galvanized steel column	ton	4.13	23,527	38,411,000	97,245	158,766,000	881,430
7	P 164	Installation of galvanized steel column	ton	4.13	5,342	8,722,000	22,080	36,051,000	200,145
8	P 173	Fabrication of embed steel structure in concete	ton	2.15	26,800	43,755,000	57,695	94,195,000	522,947
9	P 174	Installation of embed steel structure in concete	ton	2.15	6,303	10,291,000	13,569	22,154,000	122,993
6	P 167	Fabrication of galvanized steel fence	m2	1,017.60	691	1,128,000	703,162	1,147,853,000	6,372,692

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
7	P 168	Installtion of galvanized steel fence	m2	1,017.60	165	269,000	167,904	273,734,000	1,519,944
11 Bus stop							**53,114**	**86,714,000**	**481,417**
1	P 4	Excavation	m3	2.42	154	252,000	372	609,000	3,380
2	P 155	Blinding stone	m3	0.54	419	684,000	226	369,000	2,049
3	P 12	Foundation concrete	m3	1.88	1,246	2,034,000	2,336	3,814,000	21,174
4	P 13	Foundation rebar	ton	0.00	14,097	23,016,000	5	8,000	45
5	P 14	Foundation formwork	m2	15.00	40	65,000	600	975,000	5,416
6	P 161	Fabrication of galvanized steel column	ton	1.72	23,527	38,411,000	40,402	65,961,000	366,200
7	P 164	Installation of galvanized steel column	ton	1.72	5,342	8,722,000	9,173	14,978,000	83,153
12 Lighting							**4,519,598**	**7,394,298,000**	**41,041,864**
1	WI 16	Installation of Lighting Pole	nos.	178.00	25,391	41,541,000	4,519,598	7,394,298,000	41,041,864
2	WI 17	Installation of Lighting Pole	nos.		32,843	53,947,000	0	0	0
13 Traffic Signal for Vehicle							**0**	**0**	**0**
1	P 132	Traffic Signal for Vehicle	nos.		32,722	53,423,000	0	0	0
2		Others	%	25.00	0	0	0	0	0
14 Ticketing System in Parking							**11,221,000**	**0**	**11,221,000**
1	P 187	Installation of Ticketing System in Parking	LS	1.00	11,221,000	0	11,221,000	0	11,221,000
15 Widening of Pedestrian Bridge							**0**	**9,896,477,000**	**48,881,147**
1	P 193	Widening of Pedestrian Bridge	m2	193.20	0	51,224,000	0	9,896,477,000	48,881,147
		Sub Total					**111,395,349**	**103,463,785,100**	**622,169,943**
		Total					**111,395,349**	**103,463,785,100**	**622,169,943**

9. Phuoc Long

Phase 1									
1 Earth works							**106,195**	**173,432,000**	**962,819**
1	P 3	Excavation	m3	179.30	22	35,820	3,945	6,423,000	35,670
2	P 5	Earth Filling (K0.95)	m3	277.10	129	211,380	35,746	58,573,000	325,053
3	P 6	Earth Filling (K0.98)	m3	489.00	136	221,750	66,504	108,436,000	602,096
2 Sub-base and Base courses							**79,870**	**130,658,000**	**725,222**
4	P 36	Aggregate Subbase course	m3	0.00	246	400,940	0	0	0
5	P 37	Aggregate Base course	m3	326.00	245	400,790	79,870	130,658,000	725,222
3 Pavement							**233,090**	**379,203,000**	**2,106,068**
6	P 38	Prime coat	m2	0.00	19	30,380	0	0	0
7	P 39	Tack coat	m2	1,630.00	11	17,270	17,930	28,150,000	156,970
8	P 40	Spread medium Asphalt Concrete 7cm thick	m2	0.00	180	294,000	0	0	0
9	P 41	Spread fine Asphalt Concrete 5cm thick	m2	1,630.00	132	215,370	215,160	351,053,000	1,949,098
4 Landscape							**0**	**0**	**0**
10	P 42	Soil for planting	m3	0.00	194	316,000	0	0	0
11	P 43	Durenta repens	m2	0.00	80	130,000	0	0	0
12	P 44	Hookweed	m2		68	111,000	0	0	0
13	P 45	Golden showers	m2	0.00	628	1,025,000	0	0	0
14	P 46	Wrightia antidysenteria	m2		628	1,025,000	0	0	0
15	P 47	Acanthus integrifolius	m2	0.00	80	130,000	0	0	0
16	P 48	Solenostellarioides	m2		993	1,621,000	0	0	0
17	P 49	Bamboo grass	m2	0.00	26	42,000	0	0	0
18	P 52	Maintenance parterre, grass cover 30 days	m2	0.00	39	64,000	0	0	0
19	P 53	Positioning, excavation and transportation of tree	tree	0.00	138	225,000	0	0	0
20	P 56	SYZYGIUM CAMPANULATUM	tree	0.00	347	567,000	0	0	0
21	P 59	MADAGASCAR ALMOND	tree	0.00	310	506,000	0	0	0
21	P 62	Maintenance tree 90 days	tree	0.00	222	363,000	0	0	0

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
5 Traffic safety								**362,022**	**590,841,000**	**3,280,332**
22	P	29	Road marking	m2	933.58	228	372,000	212,857	347,292,000	1,928,218
23	P	31	Road signboard - Circle	set	0.00	1,196	1,952,000	0	0	0
24	P	30	Road signboard - rectangular	set	7.00	2,841	4,638,000	19,887	32,466,000	180,245
25	WI	13	Installation of side walk - Terranzo brick	m2	346.70	311	508,000	107,823	176,123,000	977,738
26	WI	8	Installation of Concrete Curbs	m	126.21	170	277,000	21,455	34,960,000	194,131
27	WI	9	Installation of Concrete Curbs	m	0.00	210	342,000	0	0	0
6 Drainage system								**0**	**0**	**0**
28	P	3	Excavation	m3		22	35,820	0	0	0
29	P	8	Sand Filling (K0.95)	m3		136	221,953	0	0	0
30	P	9	Disposal of Soil	m3		90	205,620	0	0	0
31	P	8	Sand Filling (K0.95)	m3		136	221,953	0	0	0
32	P	135	Driven wood pile	m		14	22,690	0	0	0
33	P	14	Foundation formwork	m2		40	65,000	0	0	0
34	P	10	Blinding concrete	m3		1,007	1,644,000	0	0	0
35	P	13	Foundation rebar	ton		14,097	23,016,000	0	0	0
36	P	12	Foundation concrete	m3		1,246	2,034,000	0	0	0
37	P	134	Installation of R.C saddle	nos.		18	29,500	0	0	0
38	P	133	Installation of RC Concrete Pipe (Dia. 800mm)	m		1,069	1,745,220	0	0	0

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
7 Pedestrian Bridge							**0**	**0**	**0**
VII.1		**Pier P1**					**0**	**0**	**0**
39	WI 21	Cast in placed pile D1200	m		6,822	11,139,000	0	0	0
40	P 94	Cutting of pile head on land	m3		842	1,375,000	0	0	0
41	P 154	Concrete for piers	m3		2,342	3,824,000	0	0	0
42	P 153	Reinforcement for piers	ton		15,980	26,089,000	0	0	0
43	P 152	Formwork for piers	m2		162	265,120	0	0	0
44	P 10	Blinding concrete	m3		1,007	1,644,000	0	0	0
45	P 3	Excavation	m3		22	35,820	0	0	0
46	P 8	Sand Filling (K0.95)	m3		136	221,953	0	0	0
47	P 9	Disposal of Soil	m3		90	205,620	0	0	0
48		Auxiliary structure for construction	%		0	0	0	0	0
VII.2		**Pier P2**					**0**	**0**	**0**
49	WI 22	Cast in placed pile D1500	m		11,877	19,391,000	0	0	0
50	P 94	Cutting of pile head on land	m3		842	1,375,000	0	0	0
51	P 154	Concrete for piers	m3		2,342	3,824,000	0	0	0
52	P 153	Reinforcement for piers	ton		15,980	26,089,000	0	0	0
53	P 152	Formwork for piers	m2		162	265,120	0	0	0
54	P 10	Blinding concrete	m3		1,007	1,644,000	0	0	0
55	P 3	Excavation	m3		22	35,820	0	0	0
56	P 8	Sand Filling (K0.95)	m3		136	221,953	0	0	0
57	P 9	Disposal of Soil	m3		90	205,620	0	0	0
58		Auxiliary structure for construction	%		0	0	0	0	0
VII.3		**Girders**					**0**	**0**	**0**
59	WI 24	Super T girder, L=20m	girder		169,206	276,273,000	0	0	0
60	P 123	Install Elastomeric Bearing, type 510x660x44	set		172,058	1,805,000	0	0	0
61		Auxiliary structure for construction	%		0	0	0	0	0
VII.4		**Diaphragm**					**0**	**0**	**0**
61	P 118	Concrete C35 for C.I.P girder	m3		3,935	6,425,000	0	0	0
62	P 113	Rebar for C.I.P girder	ton		15,998	26,119,000	0	0	0
63	P 108	Steel formwork for C.I.P girder	m2		490	800,000	0	0	0
64		Auxiliary structure for construction	%		0	0	0	0	0
VII.5		**Deck slab**					**0**	**0**	**0**
64	P 118	Concrete C35 for C.I.P girder	m3		3,935	6,425,000	0	0	0
65	P 113	Rebar for C.I.P girder	ton		15,998	26,119,000	0	0	0
66	P 108	Steel formwork for C.I.P girder	m2		490	800,000	0	0	0
VII.6		**R.C formwork (on Super - T beam)**					**0**	**0**	**0**
67	P 122	Concrete C20 for super T top slab	m3		2,138	3,491,000	0	0	0
68	P 116	Rebar for super T top slab	ton		15,787	25,775,000	0	0	0
69	P 111	Steel formwork for super T top slab	m2		108	175,620	0	0	0
VII.7		**Parapet, Railing, Drainage, Lighting**					**0**	**0**	**0**
70	P 121	Concrete C25 for parapet	m3		2,168	3,540,000	0	0	0
71	P 115	Rebar for parapet	ton		15,164	24,757,000	0	0	0
72	P 110	Steel formwork for deck slab	m2		86	140,070	0	0	0
73	P 156	Bridge railing	ton		28,077	45,840,000	0	0	0
74	P 157	Cash iron mesh	set		76	124,000	0	0	0
75	P 158	PVC pipe D=30	m		28	45,000	0	0	0
76	P 159	PVC pipe D=90	m		82	134,000	0	0	0
77	WI 16	Installation of Lighting Pole	nos.		25,391	41,541,000	0	0	0

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
VII.8		**Expansion joint**					**0**	**0**	**0**
78	P 127	Install Expansion joint, t=50mm	m		148,445	362,000	0	0	0
79		Auxiliary structure for construction	%		0	0	0	0	0
VII.9		**Finished material**					**0**	**0**	**0**
80	P 130	Waterproof membrane	m2		3,491	96,000	0	0	0
81	P 39	Tack coat	m2		11	17,270	0	0	0
82	P 41	Spread fine Asphalt Concrete 5cm thick	m2		132	215,370	0	0	0
VII.10		**Others**					**0**	**0**	**0**
83	P 42	Soil for planting	m3		194	316,000	0	0	0
84	P 45	Golden showers	m2		628	1,025,000	0	0	0
85	P 52	Maintenance parterre, grass cover 30 days	m2		39	64,000	0	0	0
86	WI 42	Roof of perdestrian bridge	m2		4,780	7,800,000	0	0	0
8 Stairs structures							**5,235,684**	**9,077,238,550**	**50,070,410**
VIII.1		**Foundation SA**					**417,135**	**684,197,100**	**3,796,554**
1	P 143	Driven pile 400x400, hammer <=3.5T	m	373.10	761	1,243,100	283,929	463,801,000	2,574,757
2	P 94	Cutting of pile head on land	m3	1.46	842	1,375,000	1,226	2,002,000	11,114
3	P 154	Concrete for piers	m3	16.00	2,342	3,824,000	37,472	61,184,000	339,675
4	P 153	Reinforcement for piers	ton	1.60	15,980	26,089,000	25,568	41,742,000	231,742
5	P 152	Formwork for piers	m2	28.00	162	265,120	4,536	7,423,000	41,200
6	P 10	Blinding concrete	m3	1.89	1,007	1,644,000	1,905	3,110,000	17,266
7	P 3	Excavation	m3	42.43	22	35,820	934	1,520,000	8,442
8	P 8	Sand Filling (K0.95)	m3	24.54	136	221,953	3,337	5,447,000	30,241
9	P 9	Disposal of Soil	m3	42.43	90	205,620	3,819	8,725,000	46,914
10		Auxiliary structure for construction	%	15.00	362,726	594,954,000	54,409	89,243,100	495,203
VIII.2		**Pier SP**					**3,375,772**	**5,512,257,050**	**30,602,173**
11	P 143	Driven pile 400x400, hammer <=3.5T	m	852.80	761	1,243,100	648,981	1,060,116,000	5,885,156
12	P 94	Cutting of pile head on land	m3	109.51	842	1,375,000	92,209	150,579,000	835,956
13	P 154	Concrete for piers	m3	149.72	2,342	3,824,000	350,644	572,528,000	3,178,501
14	P 153	Reinforcement for piers	ton	113.07	15,980	26,089,000	1,806,826	2,949,830,000	16,376,766
15	P 152	Formwork for piers	m2	227.12	162	265,120	36,794	60,214,000	334,206
16		Auxiliary structure for construction	%	15.00	2,935,454	4,793,267,000	440,318	718,990,050	3,991,588
VIII.3		**Beam, slab (stair structure)**					**503,653**	**822,281,050**	**4,565,102**
17	P 119	Concrete C30 for C.I.P girder	m3	40.21	3,887	6,346,000	156,312	255,198,000	1,416,798
18	P 113	Rebar for C.I.P girder	ton	6.03	15,998	26,119,000	96,502	157,552,000	874,690
19	P 108	Steel formwork for C.I.P girder	m2	377.85	490	800,000	185,145	302,277,000	1,678,166
20		Auxiliary structure for construction	%	15.00	437,959	715,027,000	65,694	107,254,050	595,448
VIII.4		**Railing (stair structure)**					**116,351**	**189,961,000**	**1,054,615**
20	P 156	Bridge railing	ton	4.14	28,077	45,840,000	116,351	189,961,000	1,054,615
VIII.4		**Roof**					**707,440**	**1,154,400,000**	**6,409,307**
21	WI 42	Roof of perdestrian bridge	m2	148.00	4,780	7,800,000	707,440	1,154,400,000	6,409,307
VIII.6		**Elevator**					**115,334**	**714,142,350**	**3,642,659**
22	P 120	Concrete C30 for elevator	m3	20.00	2,463	4,021,000	49,260	80,420,000	446,474
23	P 114	Rebar for elevator	ton	2.00	16,155	26,376,000	32,310	52,752,000	292,865
24	P 109	Steel formwork for elevator	m2	160.00	117	190,730	18,720	30,517,000	169,451
24		Elevator	set	1.00		525,900,000	0	525,900,000	2,597,550
25		Auxiliary structure for construction	%	15.00	100,290	163,689,000	15,044	24,553,350	136,319
9 Roof structures for vehicle parking							**1,158,392**	**1,892,485,000**	**10,505,843**
1	P 4	Excavation	m3	19.92	154	252,000	3,067	5,019,000	27,857
2	P 155	Blinding stone	m3	3.50	419	684,000	1,466	2,393,000	13,286
3	P 12	Foundation concrete	m3	16.42	1,246	2,034,000	20,454	33,390,000	185,375

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
4	P	13	Foundation rebar	ton	1.04	14,097	23,016,000	14,643	23,908,000	132,731
5	P	14	Foundation formwork	m2	120.96	40	65,000	4,838	7,862,000	43,670
6	P	161	Fabrication of galvanized steel column	ton	4.81	23,527	38,411,000	113,124	184,691,000	1,025,359
7	P	162	Fabrication of galvanized steel struss	ton	10.21	24,384	39,810,000	248,873	406,317,000	2,255,773
8	P	163	Fabrication of galvanized steel purlin	ton	11.03	20,106	32,826,000	221,855	362,211,000	2,010,905
9	P	164	Installation of galvanized steel column	ton	4.81	5,342	8,722,000	25,686	41,938,000	232,828
10	P	165	Installation of galvanized steel purlin	ton	10.21	2,875	4,693,000	29,343	47,899,000	265,928
11	P	166	Installation of galvanized steel purlin	ton	11.03	13,087	21,366,000	144,406	235,759,000	1,308,878
12	P	160	PVC pipe D=60	m	258.00	55	90,000	14,190	23,220,000	128,879
13	P	169	Roof cover by tole sheet	m2	1,860.00	157	256,970	292,020	477,964,000	2,652,802
14	P	172	Roof gutter work by tole sheet	m2	54.00	157	256,970	8,478	13,876,000	77,015
15	P	173	Fabrication of embed steel structure in concete	ton	0.48	26,800	43,755,000	12,912	21,080,000	117,031
16	P	174	Installation of embed steel structure in concete	ton	0.48	6,303	10,291,000	3,037	4,958,000	27,526
10 Fence								**659,881**	**1,076,985,000**	**5,979,377**
1	P	4	Excavation	m3	11.95	154	252,000	1,840	3,011,000	16,712
2	P	155	Blinding stone	m3	4.27	419	684,000	1,788	2,918,000	16,201
3	P	12	Foundation concrete	m3	7.68	1,246	2,034,000	9,569	15,621,000	86,725
4	P	13	Foundation rebar	ton	0.54	14,097	23,016,000	7,595	12,400,000	68,842
5	P	14	Foundation formwork	m2	136.53	40	65,000	5,461	8,875,000	49,297
6	P	161	Fabrication of galvanized steel column	ton	2.47	23,527	38,411,000	58,097	94,852,000	526,594
7	P	164	Installation of galvanized steel column	ton	2.47	5,342	8,722,000	13,192	21,538,000	119,574
8	P	173	Fabrication of embed steel structure in concete	ton	1.29	26,800	43,755,000	34,469	56,275,000	312,425
9	P	174	Installation of embed steel structure in concete	ton	1.29	6,303	10,291,000	8,107	13,236,000	73,483
6	P	167	Fabrication of galvanized steel fence	m2	607.20	691	1,128,000	419,575	684,922,000	3,802,574
7	P	168	Installtion of galvanized steel fence	m2	607.20	165	269,000	100,188	163,337,000	906,950
11 Bus stop								**7,804,848**	**189,122,000**	**8,738,966**
1	P	4	Excavation	m3	2.90	154	252,000	446	730,000	4,052
2	P	155	Blinding stone	m3	0.65	419	684,000	272	443,000	2,460
3	P	12	Foundation concrete	m3	2.25	1,246	2,034,000	2,804	4,577,000	25,411
4	P	13	Foundation rebar	ton	0.04	14,097	23,016,000	562	917,000	5,091
5	P	14	Foundation formwork	m2	0.30	40	65,000	12	20,000	111
6	P	161	Fabrication of galvanized steel column	ton	1.04	23,527	38,411,000	24,505	40,007,000	222,109
7	P	162	Fabrication of galvanized steel struss	ton	1.02	24,384	39,810,000	24,878	40,616,000	225,490
8	P	163	Fabrication of galvanized steel purlin	ton	0.57	20,106	32,826,000	11,509	18,790,000	104,317
9	P	164	Installation of galvanized steel column	ton	1.04	5,342	8,722,000	5,564	9,084,000	50,432
10	P	165	Installation of galvanized steel purlin	ton	1.02	2,875	4,693,000	2,933	4,788,000	26,582
11	P	166	Installation of galvanized steel purlin	ton	0.57	13,087	21,366,000	7,491	12,230,000	67,898
12	P	171	Roof cover by aluminum composit panel	m2	81.00	364	594,110	29,484	48,123,000	267,175
13	P	173	Fabrication of embed steel structure in concete	ton	0.16	26,800	43,755,000	4,362	7,122,000	39,539
14	P	174	Installation of embed steel structure in concete	ton	0.16	6,303	10,291,000	1,026	1,675,000	9,299
15	P	178	Installation of Digital Signage System	LS	1.00	7,689,000	0	7,689,000	0	7,689,000
12 Lighting								**3,427,785**	**5,608,035,000**	**31,127,257**
1	WI	16	Installation of Lighting Pole	nos.	135.00	25,391	41,541,000	3,427,785	5,608,035,000	31,127,257
2	WI	17	Installation of Lighting Pole	nos.		32,843	53,947,000	0	0	0
13 Ticketing System in Parking								**11,221,000**	**0**	**11,221,000**
1	P	188	Installation of Ticketing System in Parking	LS	1.00	11,221,000	0	11,221,000	0	11,221,000
			Sub Total					**30,288,767**	**19,117,999,550**	**124,717,294**

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
			Phase 2							
1 Earth works								**168,453**	**275,286,000**	**1,528,159**
1	P	3	Excavation	m3	284.46	22	35,820	6,258	10,189,000	56,584
2	P	5	Earth Filling (K0.95)	m3	608.70	129	211,380	78,522	128,667,000	714,040
3	P	6	Earth Filling (K0.98)	m3	615.24	136	221,750	83,673	136,430,000	757,535
2 Sub-base and Base courses								**125,920**	**205,533,000**	**1,141,098**
4	P	36	Aggregate Subbase course	m3	307.62	246	400,940	75,675	123,338,000	684,872
5	P	37	Aggregate Base course	m3	205.08	245	400,790	50,245	82,195,000	456,226
3 Pavement								**701,378**	**1,142,345,000**	**6,343,702**
6	P	38	Prime coat	m2	2,050.81	19	30,380	38,965	62,304,000	346,700
7	P	39	Tack coat	m2	2,050.81	11	17,270	22,559	35,418,000	197,497
8	P	40	Spread medium Asphalt Concrete 7cm thick	m2	2,050.81	180	294,000	369,147	602,939,000	3,347,212
9	P	41	Spread fine Asphalt Concrete 5cm thick	m2	2,050.81	132	215,370	270,707	441,684,000	2,452,293
4 Landscape								**221,223**	**360,733,000**	**2,002,973**
10	P	42	Soil for planting	m3	328.24	194	316,000	63,679	103,725,000	576,002
11	P	43	Durenta repens	m2	50.00	80	130,000	4,000	6,500,000	36,105
12	P	44	Hookweed	m2		68	111,000	0	0	0
13	P	45	Golden showers	m2	15.08	628	1,025,000	9,470	15,456,000	85,811
14	P	46	Wrightia antidysenteria	m2		628	1,025,000	0	0	0
15	P	47	Acanthus integrifolius	m2	80.07	80	130,000	6,406	10,409,000	57,819
16	P	48	Solenostellarioides	m2		993	1,621,000	0	0	0
17	P	49	Bamboo grass	m2	1,496.07	26	42,000	38,898	62,835,000	349,256
18	P	52	Maintenance parterre, grass cover 30 days	m2	1,641.22	39	64,000	64,008	105,038,000	582,817
19	P	53	Positioning, excavation and transportation of tree	tree	51.00	138	225,000	7,038	11,475,000	63,716
20	P	56	SYZYGIUM CAMPANULATUM	tree	16.00	347	567,000	5,552	9,072,000	50,361
21	P	59	MADAGASCAR ALMOND	tree	35.00	310	506,000	10,850	17,710,000	98,324
21	P	62	Maintenance tree 90 days	tree	51.00	222	363,000	11,322	18,513,000	102,762
5 Traffic safety								**278,444**	**454,381,000**	**2,522,744**
22	P	29	Road marking	m2	184.48	228	372,000	42,061	68,626,000	381,022
23	P	31	Road signboard - Circle	set	1.00	1,196	1,952,000	1,196	1,952,000	10,837
24	P	30	Road signboard - rectangular	set	1.00	2,841	4,638,000	2,841	4,638,000	25,749
25	WI	13	Installation of side walk - Terranzo brick	m2	475.63	311	508,000	147,922	241,621,000	1,341,348
26	WI	8	Installation of Concrete Curbs	m	382.70	170	277,000	65,060	106,009,000	588,665
27	WI	9	Installation of Concrete Curbs	m	92.21	210	342,000	19,364	31,535,000	175,123
6 Drainage system								**290,698**	**472,842,000**	**2,626,184**
28	P	3	Excavation	m3	0.00	22	35,820	0	0	0
29	P	8	Sand Filling (K0.95)	m3	0.00	136	221,953	0	0	0
30	P	9	Disposal of Soil	m3	0.00	90	205,620	0	0	0
31	P	8	Sand Filling (K0.95)	m3	6.93	136	221,953	942	1,538,000	8,539
32	P	135	Driven wood pile	m	10,260.00	14	22,690	143,640	232,799,000	1,293,492
33	P	14	Foundation formwork	m2	145.60	40	65,000	5,824	9,464,000	52,569
34	P	10	Blinding concrete	m3	32.80	1,007	1,644,000	33,025	53,915,000	299,325
35	P	13	Foundation rebar	ton	1.79	14,097	23,016,000	25,218	41,172,000	228,577
36	P	12	Foundation concrete	m3	17.00	1,246	2,034,000	21,177	34,570,000	191,927
37	P	134	Installation of R.C saddle	nos.	56.00	18	29,500	1,008	1,652,000	9,168
38	P	133	Installation of RC Concrete Pipe (Dia. 800mm)	m	56.00	1,069	1,745,220	59,864	97,732,000	542,587
7 Pedestrian Bridge								**4,709,351**	**3,844,799,800**	**23,699,768**
VII.1			**Pier P1**					**471,311**	**770,672,500**	**4,277,855**
39	WI	21	Cast in placed pile D1200	m	46.35	6,822	11,139,000	316,200	516,293,000	2,866,299
40	P	94	Cutting of pile head on land	m3	1.36	842	1,375,000	1,143	1,866,000	10,360

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
41	P	154	Concrete for piers	m3	17.08	2,342	3,824,000	40,006	65,322,000	362,648
42	P	153	Reinforcement for piers	ton	2.56	15,980	26,089,000	40,946	66,848,000	371,125
43	P	152	Formwork for piers	m2	48.06	162	265,120	7,785	12,741,000	70,716
44	P	10	Blinding concrete	m3	0.36	1,007	1,644,000	364	593,000	3,293
45	P	3	Excavation	m3	16.25	22	35,820	358	582,000	3,233
46	P	8	Sand Filling (K0.95)	m3	11.55	136	221,953	1,571	2,564,000	14,235
47	P	9	Disposal of Soil	m3	16.25	90	205,620	1,463	3,341,000	17,965
48			Auxiliary structure for construction	%	15.00	409,836	670,150,000	61,475	100,522,500	557,981
VII.2			**Pier P2**					**769,080**	**1,257,056,950**	**6,977,995**
49	WI	22	Cast in placed pile D1500	m	46.35	11,877	19,391,000	550,499	898,773,000	4,989,761
50	P	94	Cutting of pile head on land	m3	2.12	842	1,375,000	1,786	2,916,000	16,189
51	P	154	Concrete for piers	m3	21.75	2,342	3,824,000	50,947	83,186,000	461,823
52	P	153	Reinforcement for piers	ton	3.26	15,980	26,089,000	52,143	85,129,000	472,616
53	P	152	Formwork for piers	m2	53.89	162	265,120	8,730	14,287,000	79,297
54	P	10	Blinding concrete	m3	0.48	1,007	1,644,000	487	796,000	4,419
55	P	3	Excavation	m3	20.38	22	35,820	448	730,000	4,054
56	P	8	Sand Filling (K0.95)	m3	13.90	136	221,953	1,890	3,085,000	17,128
57	P	9	Disposal of Soil	m3	20.38	90	205,620	1,835	4,191,000	22,535
58			Auxiliary structure for construction	%	15.00	668,765	1,093,093,000	100,315	163,963,950	910,173
VII.3			**Girders**					**1,180,641**	**643,730,900**	**4,360,186**
59	WI	24	Super T girder, L=20m	girder	2.00	169,206	276,273,000	338,412	552,546,000	3,067,573
60	P	123	Install Elastomeric Bearing, type 510x660x44	set	4.00	172,058	1,805,000	688,232	7,220,000	723,893
61			Auxiliary structure for construction	%	15.00	1,026,644	559,766,000	153,997	83,964,900	568,720
VII.4			**Diaphragm**					**7,021**	**11,462,050**	**63,634**
61	P	118	Concrete C35 for C.I.P girder	m3	0.52	3,935	6,425,000	2,046	3,341,000	18,548
62	P	113	Rebar for C.I.P girder	ton	0.08	15,998	26,119,000	1,248	2,037,000	11,309
63	P	108	Steel formwork for C.I.P girder	m2	5.74	490	800,000	2,811	4,589,000	25,477
64			Auxiliary structure for construction	%	15.00	6,105	9,967,000	916	1,495,050	8,300
VII.5			**Deck slab**					**78,956**	**128,914,000**	**715,694**
64	P	118	Concrete C35 for C.I.P girder	m3	12.00	3,935	6,425,000	47,220	77,100,000	428,036
65	P	113	Rebar for C.I.P girder	ton	1.80	15,998	26,119,000	28,796	47,014,000	261,010
66	P	108	Steel formwork for C.I.P girder	m2	6.00	490	800,000	2,940	4,800,000	26,648
VII.6			**R.C formwork (on Super - T beam)**					**4,312**	**7,037,000**	**39,069**
67	P	122	Concrete C20 for super T top slab	m3	0.66	2,138	3,491,000	1,403	2,290,000	12,714
68	P	116	Rebar for super T top slab	ton	0.16	15,787	25,775,000	2,589	4,227,000	23,467
69	P	111	Steel formwork for super T top slab	m2	2.96	108	175,620	320	520,000	2,888
VII.7			**Parapet, Railing, Drainage, Lighting**					**178,732**	**292,122,000**	**1,621,595**
70	P	121	Concrete C25 for parapet	m3	7.21	2,168	3,540,000	15,636	25,532,000	141,745
71	P	115	Rebar for parapet	ton	1.08	15,164	24,757,000	16,405	26,784,000	148,698
72	P	110	Steel formwork for deck slab	m2	32.29	86	140,070	2,777	4,523,000	25,117
73	P	156	Bridge railing	ton	1.33	28,077	45,840,000	37,342	60,967,000	338,473
74	P	157	Cash iron mesh	set	8.00	76	124,000	608	992,000	5,508
75	P	158	PVC pipe D=30	m	40.00	28	45,000	1,120	1,800,000	10,011
76	P	159	PVC pipe D=90	m	40.00	82	134,000	3,280	5,360,000	29,754
77	WI	16	Installation of Lighting Pole	nos.	4.00	25,391	41,541,000	101,564	166,164,000	922,289
VII.8			**Expansion joint**					**1,365,694**	**3,330,400**	**1,382,144**
78	P	127	Install Expansion joint, t=50mm	m	8.00	148,445	362,000	1,187,560	2,896,000	1,201,864
79			Auxiliary structure for construction	%	15.00	1,187,560	2,896,000	178,134	434,400	180,280
VII.9			**Finished material**					**218,040**	**19,718,000**	**315,432**
80	P	130	Waterproof membrane	m2	60.00	3,491	96,000	209,460	5,760,000	237,910

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
81	P	39	Tack coat	m2	60.00	11	17,270	660	1,036,000	5,777
82	P	41	Spread fine Asphalt Concrete 5cm thick	m2	60.00	132	215,370	7,920	12,922,000	71,745
VII.10			**Others**					**435,564**	**710,756,000**	**3,946,164**
83	P	42	Soil for planting	m3	1.52	194	316,000	295	480,000	2,666
84	P	45	Golden showers	m2	7.60	628	1,025,000	4,773	7,790,000	43,250
85	P	52	Maintenance parterre, grass cover 30 days	m2	7.60	39	64,000	296	486,000	2,696
86	WI	42	Roof of perdestrian bridge	m2	90.00	4,780	7,800,000	430,200	702,000,000	3,897,552
8 Stairs structures								**936,327**	**2,055,118,950**	**11,087,067**
VIII.1			**Foundation SA**					**115,304**	**188,841,500**	**1,048,038**
1	P	143	Driven pile 400x400, hammer <=3.5T	m	106.60	761	1,243,100	81,123	132,514,000	735,642
2	P	94	Cutting of pile head on land	m3	0.42	842	1,375,000	350	572,000	3,175
3	P	154	Concrete for piers	m3	4.00	2,342	3,824,000	9,368	15,296,000	84,919
4	P	153	Reinforcement for piers	ton	0.40	15,980	26,089,000	6,392	10,436,000	57,938
5	P	152	Formwork for piers	m2	8.00	162	265,120	1,296	2,121,000	11,772
6	P	10	Blinding concrete	m3	0.48	1,007	1,644,000	487	796,000	4,419
7	P	3	Excavation	m3	7.49	22	35,820	165	268,000	1,489
8	P	8	Sand Filling (K0.95)	m3	3.00	136	221,953	409	667,000	3,703
9	P	9	Disposal of Soil	m3	7.49	90	205,620	674	1,540,000	8,280
10			Auxiliary structure for construction	%	15.00	100,264	164,210,000	15,040	24,631,500	136,701
VIII.2			**Pier SP**					**270,046**	**441,085,950**	**2,448,679**
11	P	143	Driven pile 400x400, hammer <=3.5T	m	213.20	761	1,243,100	162,245	265,029,000	1,471,289
12	P	94	Cutting of pile head on land	m3	0.83	842	1,375,000	701	1,144,000	6,351
13	P	154	Concrete for piers	m3	13.67	2,342	3,824,000	32,020	52,282,000	290,254
14	P	153	Reinforcement for piers	ton	2.05	15,980	26,089,000	32,772	53,504,000	297,041
15	P	152	Formwork for piers	m2	43.73	162	265,120	7,085	11,594,000	64,351
16			Auxiliary structure for construction	%	15.00	234,823	383,553,000	35,223	57,532,950	319,393
VIII.3			**Beam, slab (stair structure)**					**157,881**	**257,762,150**	**1,431,032**
17	P	119	Concrete C30 for C.I.P girder	m3	12.84	3,887	6,346,000	49,913	81,489,000	452,407
18	P	113	Rebar for C.I.P girder	ton	1.89	15,998	26,119,000	30,248	49,384,000	274,168
19	P	108	Steel formwork for C.I.P girder	m2	116.59	490	800,000	57,127	93,268,000	517,801
20			Auxiliary structure for construction	%	15.00	137,288	224,141,000	20,593	33,621,150	186,656
VIII.4			**Railing (stair structure)**					**42,944**	**70,112,000**	**389,245**
20	P	156	Bridge railing	ton	1.53	28,077	45,840,000	42,944	70,112,000	389,245
VIII.4			**Roof**					**234,818**	**383,175,000**	**2,127,414**
21	WI	42	Roof of perdestrian bridge	m2	49.13	4,780	7,800,000	234,818	383,175,000	2,127,414
VIII.6			**Elevator**					**115,334**	**714,142,350**	**3,642,659**
22	P	120	Concrete C30 for elevator	m3	20.00	2,463	4,021,000	49,260	80,420,000	446,474
23	P	114	Rebar for elevator	ton	2.00	16,155	26,376,000	32,310	52,752,000	292,865
24	P	109	Steel formwork for elevator	m2	160.00	117	190,730	18,720	30,517,000	169,451
24			Elevator	set	1.00		525,900,000	0	525,900,000	2,597,550
25			Auxiliary structure for construction	%	15.00	100,290	163,689,000	15,044	24,553,350	136,319
9 Roof structures for vehicle parking								**2,029,795**	**3,316,226,000**	**18,409,455**
1	P	4	Excavation	m3	31.80	154	252,000	4,897	8,014,000	44,480
2	P	155	Blinding stone	m3	5.40	419	684,000	2,263	3,694,000	20,509
3	P	12	Foundation concrete	m3	26.40	1,246	2,034,000	32,894	53,698,000	298,122
4	P	13	Foundation rebar	ton	1.17	14,097	23,016,000	16,519	26,970,000	149,730
5	P	14	Foundation formwork	m2	168.00	40	65,000	6,720	10,920,000	60,657
6	P	161	Fabrication of galvanized steel column	ton	8.01	23,527	38,411,000	188,540	307,818,000	1,708,929
7	P	162	Fabrication of galvanized steel struss	ton	16.99	24,384	39,810,000	414,209	676,250,000	3,754,375
8	P	163	Fabrication of galvanized steel purlin	ton	20.20	20,106	32,826,000	406,175	663,140,000	3,681,587

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
9	P	164	Installation of galvanized steel column	ton	8.01	5,342	8,722,000	42,810	69,896,000	388,044
10	P	165	Installation of galvanized steel purlin	ton	16.99	2,875	4,693,000	48,837	79,720,000	442,594
11	P	166	Installation of galvanized steel purlin	ton	20.20	13,087	21,366,000	264,379	431,629,000	2,396,301
12	P	160	PVC pipe D=60	m	216.00	55	90,000	11,880	19,440,000	107,899
13	P	169	Roof cover by tole sheet	m2	3,236.40	157	256,970	508,115	831,658,000	4,615,879
14	P	172	Roof gutter work by tole sheet	m2	348.00	157	256,970	54,636	89,426,000	496,333
15	P	173	Fabrication of embed steel structure in concete	ton	0.81	26,800	43,755,000	21,795	35,584,000	197,553
16	P	174	Installation of embed steel structure in concete	ton	0.81	6,303	10,291,000	5,126	8,369,000	46,463
10 Fence								**423,602**	**691,358,000**	**3,838,390**
1	P	4	Excavation	m3	7.65	154	252,000	1,179	1,929,000	10,707
2	P	155	Blinding stone	m3	2.73	419	684,000	1,145	1,870,000	10,381
3	P	12	Foundation concrete	m3	4.92	1,246	2,034,000	6,130	10,007,000	55,557
4	P	13	Foundation rebar	ton	0.35	14,097	23,016,000	4,865	7,944,000	44,102
5	P	14	Foundation formwork	m2	87.47	40	65,000	3,499	5,685,000	31,579
6	P	161	Fabrication of galvanized steel column	ton	1.58	23,527	38,411,000	37,219	60,765,000	337,352
7	P	164	Installation of galvanized steel column	ton	1.58	5,342	8,722,000	8,451	13,798,000	76,603
8	P	173	Fabrication of embed steel structure in concete	ton	0.82	26,800	43,755,000	22,081	36,051,000	200,146
9	P	174	Installation of embed steel structure in concete	ton	0.82	6,303	10,291,000	5,193	8,479,000	47,073
6	P	167	Fabrication of galvanized steel fence	m2	390.00	691	1,128,000	269,490	439,920,000	2,442,364
7	P	168	Installtion of galvanized steel fence	m2	390.00	165	269,000	64,350	104,910,000	582,526
11 Bus stop								**53,010**	**86,542,000**	**480,462**
1	P	4	Excavation	m3	1.45	154	252,000	223	365,000	2,026
2	P	155	Blinding stone	m3	0.32	419	684,000	136	222,000	1,233
3	P	12	Foundation concrete	m3	1.13	1,246	2,034,000	1,402	2,288,000	12,703
4	P	13	Foundation rebar	ton	0.02	14,097	23,016,000	281	459,000	2,548
5	P	14	Foundation formwork	m2	0.15	40	65,000	6	10,000	55
6	P	161	Fabrication of galvanized steel column	ton	0.52	23,527	38,411,000	12,252	20,004,000	111,057
7	P	162	Fabrication of galvanized steel struss	ton	0.51	24,384	39,810,000	12,439	20,308,000	112,745
8	P	163	Fabrication of galvanized steel purlin	ton	0.29	20,106	32,826,000	5,754	9,395,000	52,158
9	P	164	Installation of galvanized steel column	ton	0.52	5,342	8,722,000	2,782	4,542,000	25,216
10	P	165	Installation of galvanized steel purlin	ton	0.51	2,875	4,693,000	1,467	2,394,000	13,292
11	P	166	Installation of galvanized steel purlin	ton	0.29	13,087	21,366,000	3,746	6,115,000	33,949
12	P	171	Roof cover by aluminum composit panel	m2	27.00	364	594,110	9,828	16,041,000	89,058
13	P	173	Fabrication of embed steel structure in concete	ton	0.08	26,800	43,755,000	2,181	3,561,000	19,770
14	P	174	Installation of embed steel structure in concete	ton	0.08	6,303	10,291,000	513	838,000	4,652
12 Lighting								**197,058**	**323,682,000**	**1,795,803**
1	WI	16	Installation of Lighting Pole	nos.		25,391	41,541,000	0	0	0
2	WI	17	Installation of Lighting Pole	nos.	6.00	32,843	53,947,000	197,058	323,682,000	1,795,803
			Sub Total					**10,135,258**	**13,228,846,750**	**75,475,805**
			Total					**40,424,026**	**32,346,846,300**	**200,193,099**

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
10. Binh Thai									
Phase 1									
1 Earth works							**349,512**	**571,002,000**	**3,169,832**
1	P 3	Excavation	m3	87.04	22	35,820	1,915	3,118,000	17,316
2	P 5	Earth Filling (K0.95)	m3	1,075.20	129	211,380	138,701	227,276,000	1,261,273
3	P 6	Earth Filling (K0.98)	m3	1,536.00	136	221,750	208,896	340,608,000	1,891,243
2 Sub-base and Base courses							**316,540**	**517,821,000**	**2,874,186**
4	P 36	Aggregate Subbase course	m3		246	400,940	0	0	0
5	P 37	Aggregate Base course	m3	1,292.00	245	400,790	316,540	517,821,000	2,874,186
3 Pavement							**732,160**	**1,191,116,000**	**6,615,376**
6	P 38	Prime coat	m2		19	30,380	0	0	0
7	P 39	Tack coat	m2	5,120.00	11	17,270	56,320	88,422,000	493,058
8	P 40	Spread medium Asphalt Concrete 7cm thick	m2	0.00	180	294,000	0	0	0
9	P 41	Spread fine Asphalt Concrete 5cm thick	m2	5,120.00	132	215,370	675,840	1,102,694,000	6,122,318
4 Traffic safety							**534,322**	**872,007,000**	**4,841,380**
10	P 29	Road marking	m2	1,201.52	228	372,000	273,946	446,965,000	2,481,617
11	P 31	Road signboard - Circle	set		1,196	1,952,000	0	0	0
12	P 30	Road signboard - rectangular	set	10.00	2,841	4,638,000	28,410	46,380,000	257,492
13	WI 13	Installation of side walk - Terranzo brick	m2	553.80	311	508,000	172,233	281,332,000	1,561,801
14	WI 8	Installation of Concrete Curbs	m	351.37	170	277,000	59,733	97,330,000	540,470
15	WI 9	Installation of Concrete Curbs	m		210	342,000	0	0	0
5 Stairs structures							**1,743,320**	**3,373,431,200**	**18,405,531**
VIII.1		**Foundation SA**					**240,838**	**394,598,350**	**2,189,856**
1	P 143	Driven pile 400x400, hammer <=3.5T	m	213.20	761	1,243,100	162,245	265,029,000	1,471,289
2	P 94	Cutting of pile head on land	m3	0.83	842	1,375,000	701	1,144,000	6,351
3	P 154	Concrete for piers	m3	10.00	2,342	3,824,000	23,420	38,240,000	212,297
4	P 153	Reinforcement for piers	ton	1.00	15,980	26,089,000	15,980	26,089,000	144,840
5	P 152	Formwork for piers	m2	18.00	162	265,120	2,916	4,772,000	26,486
6	P 10	Blinding concrete	m3	1.19	1,007	1,644,000	1,196	1,953,000	10,842
7	P 3	Excavation	m3	18.10	22	35,820	398	648,000	3,599
8	P 8	Sand Filling (K0.95)	m3	6.91	136	221,953	939	1,533,000	8,511
9	P 9	Disposal of Soil	m3	18.10	90	205,620	1,629	3,721,000	20,008
10		Auxiliary structure for construction	%	15.00	209,424	343,129,000	31,414	51,469,350	285,633
VIII.2		**Pier SP**					**551,031**	**900,029,100**	**4,996,497**
11	P 143	Driven pile 400x400, hammer <=3.5T	m	426.40	761	1,243,100	324,490	530,058,000	2,942,578
12	P 94	Cutting of pile head on land	m3	1.66	842	1,375,000	1,401	2,288,000	12,702
13	P 154	Concrete for piers	m3	29.53	2,342	3,824,000	69,149	112,906,000	626,820
14	P 153	Reinforcement for piers	ton	4.43	15,980	26,089,000	70,773	115,544,000	641,473
15	P 152	Formwork for piers	m2	82.37	162	265,120	13,344	21,838,000	121,207
16		Auxiliary structure for construction	%	15.00	479,157	782,634,000	71,874	117,395,100	651,717
VIII.3		**Beam, slab (stair structure)**					**264,760**	**432,257,400**	**2,399,787**
17	P 119	Concrete C30 for C.I.P girder	m3	21.26	3,887	6,346,000	82,624	134,893,000	748,894
18	P 113	Rebar for C.I.P girder	ton	3.15	15,998	26,119,000	50,452	82,370,000	457,298
19	P 108	Steel formwork for C.I.P girder	m2	198.27	490	800,000	97,150	158,613,000	880,579
20		Auxiliary structure for construction	%	15.00	230,226	375,876,000	34,534	56,381,400	313,016
VIII.4		**Railing (stair structure)**					**72,326**	**118,084,000**	**655,572**
20	P 156	Bridge railing	ton	2.58	28,077	45,840,000	72,326	118,084,000	655,572
VIII.4		**Roof**					**499,032**	**814,320,000**	**4,521,160**
21	WI 42	Roof of perdestrian bridge	m2	104.40	4,780	7,800,000	499,032	814,320,000	4,521,160

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
VIII.6		**Elevator**					**115,334**	**714,142,350**	**3,642,659**
22	P 120	Concrete C30 for elevator	m3	20.00	2,463	4,021,000	49,260	80,420,000	446,474
23	P 114	Rebar for elevator	ton	2.00	16,155	26,376,000	32,310	52,752,000	292,865
24	P 109	Steel formwork for elevator	m2	160.00	117	190,730	18,720	30,517,000	169,451
24		Elevator	set	1.00		525,900,000	0	525,900,000	2,597,550
25		Auxiliary structure for construction	%	15.00	100,290	163,689,000	15,044	24,553,350	136,319
6 Roof structures for vehicle parking							**3,356,320**	**5,483,408,000**	**30,440,228**
1	P 4	Excavation	m3	55.01	154	252,000	8,471	13,862,000	76,939
2	P 155	Blinding stone	m3	9.50	419	684,000	3,982	6,501,000	36,092
3	P 12	Foundation concrete	m3	45.50	1,246	2,034,000	56,698	92,555,000	513,850
4	P 13	Foundation rebar	ton	2.83	14,097	23,016,000	39,926	65,187,000	361,901
5	P 14	Foundation formwork	m2	210.00	40	65,000	8,400	13,650,000	75,821
6	P 161	Fabrication of galvanized steel column	ton	13.57	23,527	38,411,000	319,262	521,238,000	2,893,785
7	P 162	Fabrication of galvanized steel struss	ton	25.39	24,384	39,810,000	619,220	1,010,956,000	5,612,582
8	P 163	Fabrication of galvanized steel purlin	ton	35.48	20,106	32,826,000	713,373	1,164,687,000	6,466,050
9	P 164	Installation of galvanized steel column	ton	13.57	5,342	8,722,000	72,491	118,358,000	657,090
10	P 165	Installation of galvanized steel purlin	ton	25.39	2,875	4,693,000	73,009	119,177,000	661,654
11	P 166	Installation of galvanized steel purlin	ton	35.48	13,087	21,366,000	464,335	758,079,000	4,208,675
12	P 160	PVC pipe D=60	m	514.80	55	90,000	28,314	46,332,000	257,159
13	P 169	Roof cover by tole sheet	m2	5,200.56	157	256,970	816,488	1,336,388,000	7,417,239
14	P 172	Roof gutter work by tole sheet	m2	552.00	157	256,970	86,664	141,847,000	787,281
15	P 173	Fabrication of embed steel structure in concete	ton	1.38	26,800	43,755,000	36,988	60,388,000	335,259
16	P 174	Installation of embed steel structure in concete	ton	1.38	6,303	10,291,000	8,699	14,203,000	78,851
7 Fence							**805,097**	**1,313,991,000**	**7,295,223**
17	P 4	Excavation	m3	14.61	154	252,000	2,249	3,681,000	20,430
18	P 155	Blinding stone	m3	5.22	419	684,000	2,186	3,568,000	19,809
19	P 12	Foundation concrete	m3	9.39	1,246	2,034,000	11,700	19,099,000	106,035
20	P 13	Foundation rebar	ton	0.66	14,097	23,016,000	9,286	15,160,000	84,165
21	P 14	Foundation formwork	m2	166.93	40	65,000	6,677	10,851,000	60,273
22	P 161	Fabrication of galvanized steel column	ton	3.02	23,527	38,411,000	71,033	115,971,000	643,842
23	P 164	Installation of galvanized steel column	ton	3.02	5,342	8,722,000	16,129	26,334,000	146,199
24	P 173	Fabrication of embed steel structure in concete	ton	1.57	26,800	43,755,000	42,143	68,805,000	381,988
25	P 174	Installation of embed steel structure in concete	ton	1.57	6,303	10,291,000	9,912	16,183,000	89,844
22	P 167	Fabrication of galvanized steel fence	m2	740.40	691	1,128,000	511,616	835,171,000	4,636,732
23	P 168	Installtion of galvanized steel fence	m2	740.40	165	269,000	122,166	199,168,000	1,105,906
8 Bus stop							**7,717,131**	**45,924,000**	**7,943,962**
1	P 4	Excavation	m3	2.40	154	252,000	370	605,000	3,358
2	P 155	Blinding stone	m3	0.30	419	684,000	127	207,000	1,149
3	P 12	Foundation concrete	m3	2.10	1,246	2,034,000	2,617	4,271,000	23,713
4	P 13	Foundation rebar	ton	0.13	14,097	23,016,000	1,837	3,000,000	16,655
5	P 14	Foundation formwork	m2	0.10	40	65,000	4	7,000	39
6	P 161	Fabrication of galvanized steel column	ton	0.32	23,527	38,411,000	7,421	12,116,000	67,265
7	P 162	Fabrication of galvanized steel struss	ton	0.12	24,384	39,810,000	2,808	4,584,000	25,450
8	P 163	Fabrication of galvanized steel purlin	ton	0.02	20,106	32,826,000	409	668,000	3,708
9	P 164	Installation of galvanized steel column	ton	0.32	5,342	8,722,000	1,685	2,751,000	15,273
10	P 165	Installation of galvanized steel purlin	ton	0.12	2,875	4,693,000	331	540,000	2,998
11	P 166	Installation of galvanized steel purlin	ton	0.02	13,087	21,366,000	266	435,000	2,415
12	P 171	Roof cover by aluminum composit panel	m2	23.94	364	594,110	8,716	14,225,000	78,977
13	P 173	Fabrication of embed steel structure in concete	ton	0.05	26,800	43,755,000	1,247	2,036,000	11,303
14	P 174	Installation of embed steel structure in concete	ton	0.05	6,303	10,291,000	293	479,000	2,659

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
15	P 179	Installation of Digital Signage System	LS	1.00	7,689,000	0	7,689,000	0	7,689,000
9 Lighting							**3,757,868**	**6,148,068,000**	**34,124,696**
1	WI 16	Installation of Lighting Pole	nos.	148.00	25,391	41,541,000	3,757,868	6,148,068,000	34,124,696
2	WI 17	Installation of Lighting Pole	nos.		32,843	53,947,000	0	0	0
10 Ticketing System in Parking							**11,221,000**	**0**	**11,221,000**
1	P 189	Installation of Ticketing System in Parking	LS	1.00	11,221,000	0	11,221,000	0	11,221,000
		Sub Total					**30,533,270**	**19,516,768,200**	**126,931,414**
		Total					**30,533,270**	**19,516,768,200**	**126,931,414**

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
11. Thu Duc										
Phase 1										
1 Earth works								**213,743**	**349,159,000**	**1,938,326**
1	P	3	Excavation	m3	334.40	22	35,820	7,357	11,978,000	66,519
2	P	5	Earth Filling (K0.95)	m3	638.40	129	211,380	82,354	134,945,000	748,881
3	P	6	Earth Filling (K0.98)	m3	912.00	136	221,750	124,032	202,236,000	1,122,926
2 Sub-base and Base courses								**148,960**	**243,680,000**	**1,352,556**
4	P	36	Aggregate Subbase course	m3		246	400,940	0	0	0
5	P	37	Aggregate Base course	m3	608.00	245	400,790	148,960	243,680,000	1,352,556
3 Pavement								**434,720**	**707,226,000**	**3,927,884**
6	P	38	Prime coat	m2		19	30,380	0	0	0
7	P	39	Tack coat	m2	3,040.00	11	17,270	33,440	52,501,000	292,755
8	P	40	Spread medium Asphalt Concrete 7cm thick	m2	0.00	180	294,000	0	0	0
9	P	41	Spread fine Asphalt Concrete 5cm thick	m2	3,040.00	132	215,370	401,280	654,725,000	3,635,129
4 Traffic safety								**801,440**	**1,308,021,000**	**7,262,079**
10	P	29	Road marking	m2	1,271.57	228	372,000	289,918	473,024,000	2,626,300
11	P	31	Road signboard - Circle	set		1,196	1,952,000	0	0	0
12	P	30	Road signboard - rectangular	set	12.00	2,841	4,638,000	34,092	55,656,000	308,991
13	WI	13	Installation of side walk - Terranzo brick	m2	1,126.72	311	508,000	350,411	572,375,000	3,177,513
14	WI	8	Installation of Concrete Curbs	m	747.17	170	277,000	127,019	206,966,000	1,149,275
15	WI	9	Installation of Concrete Curbs	m		210	342,000	0	0	0
5 Stairs structures								**1,725,495**	**2,818,446,850**	**15,646,502**
VIII.1			**Foundation SA**					**240,838**	**394,598,350**	**2,189,856**
1	P	143	Driven pile 400x400, hammer <=3.5T	m	213.20	761	1,243,100	162,245	265,029,000	1,471,289
2	P	94	Cutting of pile head on land	m3	0.83	842	1,375,000	701	1,144,000	6,351
3	P	154	Concrete for piers	m3	10.00	2,342	3,824,000	23,420	38,240,000	212,297
4	P	153	Reinforcement for piers	ton	1.00	15,980	26,089,000	15,980	26,089,000	144,840
5	P	152	Formwork for piers	m2	18.00	162	265,120	2,916	4,772,000	26,486
6	P	10	Blinding concrete	m3	1.19	1,007	1,644,000	1,196	1,953,000	10,842
7	P	3	Excavation	m3	18.10	22	35,820	398	648,000	3,599
8	P	8	Sand Filling (K0.95)	m3	6.91	136	221,953	939	1,533,000	8,511
9	P	9	Disposal of Soil	m3	18.10	90	205,620	1,629	3,721,000	20,008
10			Auxiliary structure for construction	%	15.00	209,424	343,129,000	31,414	51,469,350	285,633
VIII.2			**Pier SP**					**564,559**	**922,125,200**	**5,119,164**
11	P	143	Driven pile 400x400, hammer <=3.5T	m	426.40	761	1,243,100	324,490	530,058,000	2,942,578
12	P	94	Cutting of pile head on land	m3	1.66	842	1,375,000	1,401	2,288,000	12,702
13	P	154	Concrete for piers	m3	31.65	2,342	3,824,000	74,114	121,013,000	671,827
14	P	153	Reinforcement for piers	ton	4.75	15,980	26,089,000	75,855	123,840,000	687,531
15	P	152	Formwork for piers	m2	92.97	162	265,120	15,061	24,649,000	136,809
16			Auxiliary structure for construction	%	15.00	490,921	801,848,000	73,638	120,277,200	667,717
VIII.3			**Beam, slab (stair structure)**					**289,079**	**471,962,300**	**2,620,218**
17	P	119	Concrete C30 for C.I.P girder	m3	23.22	3,887	6,346,000	90,248	147,341,000	818,002
18	P	113	Rebar for C.I.P girder	ton	3.48	15,998	26,119,000	55,716	90,965,000	505,015
19	P	108	Steel formwork for C.I.P girder	m2	215.12	490	800,000	105,409	172,096,000	955,434
20			Auxiliary structure for construction	%	15.00	251,373	410,402,000	37,706	61,560,300	341,767
VIII.4			**Railing (stair structure)**					**76,061**	**124,181,000**	**689,422**
20	P	156	Bridge railing	ton	2.71	28,077	45,840,000	76,061	124,181,000	689,422
VIII.4			**Roof**					**554,958**	**905,580,000**	**5,027,842**
21	WI	42	Roof of perdestrian bridge	m2	116.10	4,780	7,800,000	554,958	905,580,000	5,027,842

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
6 Roof structures for vehicle parking								**1,877,514**	**3,067,394,000**	**17,028,131**
1	P	4	Excavation	m3	34.04	154	252,000	5,243	8,579,000	47,617
2	P	155	Blinding stone	m3	6.16	419	684,000	2,579	4,211,000	23,378
3	P	12	Foundation concrete	m3	27.89	1,246	2,034,000	34,748	56,724,000	314,922
4	P	13	Foundation rebar	ton	1.82	14,097	23,016,000	25,595	41,789,000	232,001
5	P	14	Foundation formwork	m2	225.12	40	65,000	9,005	14,633,000	81,281
6	P	161	Fabrication of galvanized steel column	ton	7.59	23,527	38,411,000	178,485	291,401,000	1,617,787
7	P	162	Fabrication of galvanized steel struss	ton	13.66	24,384	39,810,000	333,080	543,796,000	3,019,023
8	P	163	Fabrication of galvanized steel purlin	ton	19.78	20,106	32,826,000	397,771	649,420,000	3,605,417
9	P	164	Installation of galvanized steel column	ton	7.59	5,342	8,722,000	40,526	66,168,000	367,346
10	P	165	Installation of galvanized steel purlin	ton	13.66	2,875	4,693,000	39,272	64,105,000	355,902
11	P	166	Installation of galvanized steel purlin	ton	19.78	13,087	21,366,000	258,909	422,698,000	2,346,719
12	P	160	PVC pipe D=60	m	82.80	55	90,000	4,554	7,452,000	41,361
13	P	169	Roof cover by tole sheet	m2	3,249.36	157	256,970	510,150	834,988,000	4,634,362
14	P	172	Roof gutter work by tole sheet	m2	72.00	157	256,970	11,304	18,502,000	102,690
15	P	173	Fabrication of embed steel structure in concete	ton	0.79	26,800	43,755,000	21,287	34,754,000	192,946
16	P	174	Installation of embed steel structure in concete	ton	0.79	6,303	10,291,000	5,006	8,174,000	45,379
7 Fence								**1,197,959**	**1,955,176,000**	**10,855,057**
17	P	4	Excavation	m3	21.65	154	252,000	3,335	5,457,000	30,288
18	P	155	Blinding stone	m3	7.73	419	684,000	3,240	5,290,000	29,369
19	P	12	Foundation concrete	m3	13.92	1,246	2,034,000	17,344	28,313,000	157,189
20	P	13	Foundation rebar	ton	0.98	14,097	23,016,000	13,765	22,474,000	124,770
21	P	14	Foundation formwork	m2	247.47	40	65,000	9,899	16,085,000	89,347
22	P	161	Fabrication of galvanized steel column	ton	4.48	23,527	38,411,000	105,302	171,919,000	954,452
23	P	164	Installation of galvanized steel column	ton	4.48	5,342	8,722,000	23,910	39,038,000	216,728
24	P	173	Fabrication of embed steel structure in concete	ton	2.33	26,800	43,755,000	62,474	101,999,000	566,272
25	P	174	Installation of embed steel structure in concete	ton	2.33	6,303	10,291,000	14,693	23,990,000	133,186
22	P	167	Fabrication of galvanized steel fence	m2	1,102.80	691	1,128,000	762,035	1,243,958,000	6,906,251
23	P	168	Installtion of galvanized steel fence	m2	1,102.80	165	269,000	181,962	296,653,000	1,647,205
8 Bus stop								**14,380,198**	**68,887,000**	**14,720,447**
1	P	4	Excavation	m3	3.60	154	252,000	555	908,000	5,040
2	P	155	Blinding stone	m3	0.45	419	684,000	190	310,000	1,721
3	P	12	Foundation concrete	m3	3.15	1,246	2,034,000	3,925	6,407,000	35,571
4	P	13	Foundation rebar	ton	0.20	14,097	23,016,000	2,756	4,500,000	24,983
5	P	14	Foundation formwork	m2	0.15	40	65,000	6	10,000	55
6	P	161	Fabrication of galvanized steel column	ton	0.47	23,527	38,411,000	11,132	18,174,000	100,898
7	P	162	Fabrication of galvanized steel struss	ton	0.17	24,384	39,810,000	4,212	6,876,000	38,174
8	P	163	Fabrication of galvanized steel purlin	ton	0.03	20,106	32,826,000	614	1,002,000	5,563
9	P	164	Installation of galvanized steel column	ton	0.47	5,342	8,722,000	2,528	4,127,000	22,912
10	P	165	Installation of galvanized steel purlin	ton	0.17	2,875	4,693,000	497	811,000	4,503
11	P	166	Installation of galvanized steel purlin	ton	0.03	13,087	21,366,000	399	652,000	3,619
12	P	171	Roof cover by aluminum composit panel	m2	35.92	364	594,110	13,073	21,338,000	118,467
13	P	173	Fabrication of embed steel structure in concete	ton	0.07	26,800	43,755,000	1,871	3,054,000	16,955
14	P	174	Installation of embed steel structure in concete	ton	0.07	6,303	10,291,000	440	718,000	3,986
15	P	180	Installation of Digital Signage System	LS	1.00	14,338,000	0	14,338,000	0	14,338,000
9 Lighting								**2,259,799**	**3,697,149,000**	**20,520,932**
1	WI	16	Installation of Lighting Pole	nos.	89.00	25,391	41,541,000	2,259,799	3,697,149,000	20,520,932
2	WI	17	Installation of Lighting Pole	nos.		32,843	53,947,000	0	0	0

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
10 Ticketing System in Parking							**11,221,000**	**0**	**11,221,000**
1	P 190	Installation of Ticketing System in Parking	LS	1.00	11,221,000	0	11,221,000	0	11,221,000
		Sub Total					**34,260,828**	**14,215,138,850**	**104,472,914**
		Total					**34,260,828**	**14,215,138,850**	**104,472,914**

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
12. High-tech Park									
Phase 1									
1 Earth works							**392,079**	**640,688,000**	**3,556,596**
1	P 3	Excavation	m3	610.38	22	35,820	13,428	21,864,000	121,420
2	P 5	Earth Filling (K0.95)	m3	1,367.89	129	211,380	176,458	289,145,000	1,604,617
3	P 6	Earth Filling (K0.98)	m3	1,486.72	136	221,750	202,193	329,679,000	1,830,559
2 Sub-base and Base courses							**411,516**	**672,172,000**	**3,731,540**
4	P 36	Aggregate Subbase course	m3	685.72	246	400,940	168,686	274,931,000	1,526,638
5	P 37	Aggregate Base course	m3	991.14	245	400,790	242,830	397,241,000	2,204,902
3 Pavement							**1,163,527**	**1,894,342,000**	**10,520,150**
6	P 38	Prime coat	m2	2,285.72	19	30,380	43,429	69,440,000	386,410
7	P 39	Tack coat	m2	4,955.72	11	17,270	54,513	85,585,000	477,238
8	P 40	Spread medium Asphalt Concrete 7cm thick	m2	2,285.72	180	294,000	411,430	672,003,000	3,730,619
9	P 41	Spread fine Asphalt Concrete 5cm thick	m2	4,955.72	132	215,370	654,155	1,067,314,000	5,925,883
4 Landscape							**368,530**	**653,041,000**	**3,594,062**
10	P 42	Soil for planting	m3	483.56	194	316,000	93,810	152,804,000	848,547
11	P 43	Durenta repens	m2		80	130,000	0	0	0
12	P 44	Hookweed	m2		68	111,000	0	0	0
13	P 45	Golden showers	m2	9.13	628	1,025,000	5,734	9,359,000	51,960
14	P 46	Wrightia antidysenteria	m2		628	1,025,000	0	0	0
15	P 47	Acanthus integrifolius	m2	6.60	80	130,000	528	858,000	4,766
16	P 48	Solenostellarioides	m2		993	1,621,000	0	0	0
17	P 49	Bamboo grass	m2	2,402.06	26	42,000	62,454	100,887,000	560,760
18	P 52	Maintenance parterre, grass cover 30 days	m2	2,417.79	39	64,000	94,294	154,739,000	858,588
19	P 53	Positioning, excavation and transportation of tree	tree	56.00	138	225,000	7,728	12,600,000	69,963
19	P 61	LIVISTONA ROTUNDIFOLIA	tree	10.00	7,729	12,619,000	77,290	126,190,000	700,574
20	P 59	MADAGASCAR ALMOND	tree	46.00	310	506,000	14,260	23,276,000	129,226
21	P 62	Maintenance tree 90 days	tree	56.00	222	363,000	12,432	20,328,000	112,837
		Chairs	set	26.00		2,000,000	0	52,000,000	256,841
5 Traffic safety							**1,123,468**	**1,833,610,000**	**10,180,122**
22	P 29	Road marking	m2	1,054.35	228	372,000	240,392	392,218,000	2,177,654
23	P 31	Road signboard - Circle	set	3.00	1,196	1,952,000	3,588	5,856,000	32,512
24	P 30	Road signboard - rectangular	set	7.00	2,841	4,638,000	19,887	32,466,000	180,245
25	WI 13	Installation of side walk - Terranzo brick	m2	1,962.23	311	508,000	610,253	996,811,000	5,533,749
25	WI 8	Installation of Concrete Curbs	m	1,252.42	170	277,000	212,911	346,919,000	1,926,430
26	WI 9	Installation of Concrete Curbs	m	173.51	210	342,000	36,437	59,340,000	329,532
6 Drainage system							**269,691**	**461,330,000**	**2,548,314**
1	P 3	Excavation	m3	379.81	22	35,820	8,356	13,605,000	75,554
2	P 9	Disposal of Soil	m3	379.81	90	205,620	34,183	78,097,000	419,923
3	P 8	Sand Filling (K0.95)	m3	246.95	136	221,953	33,585	54,811,000	304,310
4	P 135	Driven wood pile	m	7,044.00	14	22,690	98,616	159,828,000	888,046
5	P 8	Sand Filling (K0.95)	m3	4.47	136	221,953	607	991,000	5,502
6	P 10	Blinding concrete	m3	21.09	1,007	1,644,000	21,236	34,670,000	192,480
7	P 14	Foundation formwork	m2	96.34	40	65,000	3,854	6,262,000	34,784
8	P 13	Foundation rebar	ton	1.16	14,097	23,016,000	16,314	26,636,000	147,876
9	P 12	Foundation concrete	m3	11.08	1,246	2,034,000	13,808	22,540,000	125,139
10	P 134	Installation of R.C saddle	nos.	36.00	18	29,500	648	1,062,000	5,893
11	P 133	Installation of RC Concrete Pipe (Dia. 800mm)	m	36.00	1,069	1,745,220	38,484	62,828,000	348,807

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
7 Pedestrian Bridge							**16,430,156**	**16,042,205,750**	**95,666,575**
VII.1		**Pier P1**					**878,661**	**1,436,973,300**	**7,976,226**
1	WI 21	Cast in placed pile D1200	m	92.70	6,822	11,139,000	632,399	1,032,585,000	5,732,592
2	P 94	Cutting of pile head on land	m3	2.71	842	1,375,000	2,285	3,732,000	20,718
3	P 154	Concrete for piers	m3	23.78	2,342	3,824,000	55,694	90,936,000	504,849
4	P 153	Reinforcement for piers	ton	3.57	15,980	26,089,000	57,002	93,061,000	516,653
5	P 152	Formwork for piers	m2	55.54	162	265,120	8,997	14,724,000	81,722
6	P 10	Blinding concrete	m3	0.80	1,007	1,644,000	805	1,314,000	7,295
7	P 3	Excavation	m3	33.70	22	35,820	741	1,207,000	6,703
8	P 8	Sand Filling (K0.95)	m3	22.77	136	221,953	3,097	5,054,000	28,060
9	P 9	Disposal of Soil	m3	33.70	90	205,620	3,033	6,929,000	37,257
10		Auxiliary structure for construction	%	15.00	764,053	1,249,542,000	114,608	187,431,300	1,040,377
VII.2		**Pier P2**					**1,923,784**	**3,145,394,900**	**17,459,666**
11	WI 21	Cast in placed pile D1200	m	185.40	6,822	11,139,000	1,264,799	2,065,171,000	11,465,189
12	P 94	Cutting of pile head on land	m3	8.48	842	1,375,000	7,142	11,663,000	64,748
13	P 154	Concrete for piers	m3	78.38	2,342	3,824,000	183,575	299,740,000	1,664,065
14	P 153	Reinforcement for piers	ton	11.76	15,980	26,089,000	187,886	306,744,000	1,702,970
15	P 152	Formwork for piers	m2	99.88	162	265,120	16,180	26,480,000	146,971
16	P 10	Blinding concrete	m3	2.21	1,007	1,644,000	2,224	3,632,000	20,163
17	P 3	Excavation	m3	62.43	22	35,820	1,373	2,236,000	12,417
18	P 8	Sand Filling (K0.95)	m3	29.84	136	221,953	4,059	6,624,000	36,777
19	P 9	Disposal of Soil	m3	62.43	90	205,620	5,618	12,836,000	69,018
20		Auxiliary structure for construction	%	15.00	1,672,856	2,735,126,000	250,928	410,268,900	2,277,348
VII.3		**Pier P3**					**875,536**	**1,431,871,900**	**7,947,906**
21	WI 21	Cast in placed pile D1200	m	92.70	6,822	11,139,000	632,399	1,032,585,000	5,732,592
22	P 94	Cutting of pile head on land	m3	2.71	842	1,375,000	2,285	3,732,000	20,718
23	P 154	Concrete for piers	m3	23.23	2,342	3,824,000	54,408	88,836,000	493,191
24	P 153	Reinforcement for piers	ton	3.48	15,980	26,089,000	55,685	90,912,000	504,722
25	P 152	Formwork for piers	m2	54.83	162	265,120	8,883	14,537,000	80,685
26	P 10	Blinding concrete	m3	0.80	1,007	1,644,000	805	1,314,000	7,295
27	P 3	Excavation	m3	33.70	22	35,820	741	1,207,000	6,703
28	P 8	Sand Filling (K0.95)	m3	22.77	136	221,953	3,097	5,054,000	28,060
29	P 9	Disposal of Soil	m3	33.70	90	205,620	3,033	6,929,000	37,257
30		Auxiliary structure for construction	%	15.00	761,336	1,245,106,000	114,200	186,765,900	1,036,683
VII.4		**Pier P4**					**1,734,474**	**2,836,300,200**	**15,743,661**
31	WI 21	Cast in placed pile D1200	m	185.40	6,822	11,139,000	1,264,799	2,065,171,000	11,465,189
32	P 94	Cutting of pile head on land	m3	8.48	842	1,375,000	7,142	11,663,000	64,748
33	P 154	Concrete for piers	m3	43.80	2,342	3,824,000	102,578	167,488,000	929,843
34	P 153	Reinforcement for piers	ton	6.57	15,980	26,089,000	104,987	171,401,000	951,579
35	P 152	Formwork for piers	m2	95.42	162	265,120	15,458	25,297,000	140,406
36	P 10	Blinding concrete	m3	2.21	1,007	1,644,000	2,224	3,632,000	20,163
37	P 3	Excavation	m3	62.43	22	35,820	1,373	2,236,000	12,417
38	P 8	Sand Filling (K0.95)	m3	29.84	136	221,953	4,059	6,624,000	36,777
39	P 9	Disposal of Soil	m3	62.43	90	205,620	5,618	12,836,000	69,018
40		Auxiliary structure for construction	%	15.00	1,508,238	2,466,348,000	226,236	369,952,200	2,053,521
VII.5		**Pier P5**					**464,850**	**760,123,550**	**4,219,288**
41	WI 21	Cast in placed pile D1200	m	46.35	6,822	11,139,000	316,200	516,293,000	2,866,299
42	P 94	Cutting of pile head on land	m3	1.36	842	1,375,000	1,143	1,866,000	10,360
43	P 154	Concrete for piers	m3	15.95	2,342	3,824,000	37,346	60,979,000	338,536
44	P 153	Reinforcement for piers	ton	2.39	15,980	26,089,000	38,223	62,404,000	346,452

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
45	P	152	Formwork for piers	m2	46.60	162	265,120	7,549	12,355,000	68,573
46	P	10	Blinding concrete	m3	0.36	1,007	1,644,000	364	593,000	3,293
47	P	3	Excavation	m3	16.25	22	35,820	358	582,000	3,233
48	P	8	Sand Filling (K0.95)	m3	11.55	136	221,953	1,571	2,564,000	14,235
49	P	9	Disposal of Soil	m3	16.25	90	205,620	1,463	3,341,000	17,965
50			Auxiliary structure for construction	%	15.00	404,217	660,977,000	60,633	99,146,550	550,342
VII.6			**Girders**					**3,822,624**	**2,210,640,700**	**14,741,525**
51	WI	27	Super T girder, L=25m	girder	2.00	204,922	334,588,000	409,844	669,176,000	3,715,070
52	WI	28	Super T girder, L=18m	girder	4.00	154,920	252,947,000	619,680	1,011,788,000	5,617,151
53	WI	29	Super T girder, L=6m	girder	2.00	65,349	106,697,000	130,698	213,394,000	1,184,704
53	P	123	Install Elastomeric Bearing, type 510x660x44	set	12.00	172,058	1,805,000	2,064,696	21,660,000	2,171,680
54	P	125	Install Elastomeric Bearing, type 350x350x42	set	4.00	28,492	1,805,000	113,968	7,220,000	149,629
54			Auxiliary structure for construction	%	15.00	3,224,918	1,916,018,000	483,738	287,402,700	1,903,291
VII.7			**Diaphragm**					**28,082**	**45,848,200**	**254,538**
54	P	118	Concrete C35 for C.I.P girder	m3	2.08	3,935	6,425,000	8,185	13,364,000	74,193
55	P	113	Rebar for C.I.P girder	ton	0.31	15,998	26,119,000	4,991	8,149,000	45,241
56	P	108	Steel formwork for C.I.P girder	m2	22.94	490	800,000	11,243	18,355,000	101,903
57			Auxiliary structure for construction	%	15.00	24,419	39,868,000	3,663	5,980,200	33,201
VII.8			**Deck slab**					**264,504**	**431,863,000**	**2,397,582**
57	P	118	Concrete C35 for C.I.P girder	m3	40.20	3,935	6,425,000	158,187	258,285,000	1,433,920
58	P	113	Rebar for C.I.P girder	ton	6.03	15,998	26,119,000	96,468	157,498,000	874,390
59	P	108	Steel formwork for C.I.P girder	m2	20.10	490	800,000	9,849	16,080,000	89,272
VII.9			**R.C formwork (on Super - T beam)**					**13,203**	**21,550,000**	**119,644**
60	P	122	Concrete C20 for super T top slab	m3	2.01	2,138	3,491,000	4,295	7,013,000	38,934
61	P	116	Rebar for super T top slab	ton	0.50	15,787	25,775,000	7,929	12,945,000	71,868
62	P	111	Steel formwork for super T top slab	m2	9.07	108	175,620	979	1,592,000	8,842
VII.10			**Parapet, Railing, Drainage, Lighting**					**652,971**	**1,067,133,000**	**5,923,806**
63	P	121	Concrete C25 for parapet	m3	27.14	2,168	3,540,000	58,843	96,081,000	533,411
64	P	115	Rebar for parapet	ton	4.07	15,164	24,757,000	61,736	100,791,000	559,568
65	P	110	Steel formwork for deck slab	m2	228.80	86	140,070	19,677	32,048,000	177,970
66	P	156	Bridge railing	ton	5.01	28,077	45,840,000	140,525	229,429,000	1,273,732
67	P	157	Cash iron mesh	set	26.00	76	124,000	1,976	3,224,000	17,900
68	P	158	PVC pipe D=30	m	134.00	28	45,000	3,752	6,030,000	33,536
69	P	159	PVC pipe D=90	m	134.00	82	134,000	10,988	17,956,000	99,677
70	WI	16	Installation of Lighting Pole	nos.	14.00	25,391	41,541,000	355,474	581,574,000	3,228,012
VII.11			**Expansion joint**					**3,414,235**	**8,326,000**	**3,455,359**
71	P	127	Install Expansion joint, t=50mm	m	20.00	148,445	362,000	2,968,900	7,240,000	3,004,660
72			Auxiliary structure for construction	%	15.00	2,968,900	7,240,000	445,335	1,086,000	450,699
VII.12			**Finished material**					**778,766**	**70,428,000**	**1,126,627**
73	P	130	Waterproof membrane	m2	214.30	3,491	96,000	748,121	20,573,000	849,736
74	P	39	Tack coat	m2	214.30	11	17,270	2,357	3,701,000	20,637
75	P	41	Spread fine Asphalt Concrete 5cm thick	m2	214.30	132	215,370	28,288	46,154,000	256,254
VII.13			**Others**					**1,578,466**	**2,575,753,000**	**14,300,747**
76	P	42	Soil for planting	m3	5.72	194	316,000	1,110	1,808,000	10,040
77	P	45	Golden showers	m2	28.60	628	1,025,000	17,961	29,315,000	162,755
78	P	52	Maintenance parterre, grass cover 30 days	m2	28.60	39	64,000	1,115	1,830,000	10,154
79	WI	42	Roof of perdestrian bridge	m2	326.00	4,780	7,800,000	1,558,280	2,542,800,000	14,117,798

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
8 Stairs structures							**1,303,294**	**4,098,509,000**	**21,546,843**
VIII.1		**Foundations SA**					**240,838**	**394,598,350**	**2,189,856**
1	P 143	Driven pile 400x400, hammer <=3.5T	m	213.20	761	1,243,100	162,245	265,029,000	1,471,289
2	P 94	Cutting of pile head on land	m3	0.83	842	1,375,000	701	1,144,000	6,351
3	P 154	Concrete for piers	m3	10.00	2,342	3,824,000	23,420	38,240,000	212,297
4	P 153	Reinforcement for piers	ton	1.00	15,980	26,089,000	15,980	26,089,000	144,840
5	P 152	Formwork for piers	m2	18.00	162	265,120	2,916	4,772,000	26,486
6	P 10	Blinding concrete	m3	1.19	1,007	1,644,000	1,196	1,953,000	10,842
7	P 3	Excavation	m3	18.10	22	35,820	398	648,000	3,599
8	P 8	Sand Filling (K0.95)	m3	6.91	136	221,953	939	1,533,000	8,511
9	P 9	Disposal of Soil	m3	18.10	90	205,620	1,629	3,721,000	20,008
10		Auxiliary structure for construction	%	15.00	209,424	343,129,000	31,414	51,469,350	285,633
VIII.2		**Piers SP**					**562,572**	**918,878,750**	**5,101,141**
11	P 143	Driven pile 400x400, hammer <=3.5T	m	426.40	761	1,243,100	324,490	530,058,000	2,942,578
12	P 94	Cutting of pile head on land	m3	1.66	842	1,375,000	1,401	2,288,000	12,702
13	P 154	Concrete for piers	m3	31.33	2,342	3,824,000	73,385	119,822,000	665,215
14	P 153	Reinforcement for piers	ton	4.70	15,980	26,089,000	75,108	122,621,000	680,763
15	P 152	Formwork for piers	m2	91.41	162	265,120	14,809	24,236,000	134,517
16		Auxiliary structure for construction	%	15.00	489,193	799,025,000	73,379	119,853,750	665,366
VIII.3		**Beam, slab (stair structure)**					**295,541**	**482,508,950**	**2,678,772**
17	P 119	Concrete C30 for C.I.P girder	m3	23.32	3,887	6,346,000	90,653	148,001,000	821,667
18	P 113	Rebar for C.I.P girder	ton	3.50	15,998	26,119,000	55,966	91,372,000	507,275
19	P 108	Steel formwork for C.I.P girder	m2	225.25	490	800,000	110,373	180,200,000	1,000,425
20		Auxiliary structure for construction	%	15.00	256,992	419,573,000	38,549	62,935,950	349,405
VIII.4		**Railing (stair structure)**					**76,061**	**124,181,000**	**689,422**
20	P 156	Bridge railing	ton	2.71	28,077	45,840,000	76,061	124,181,000	689,422
VIII.5		**Roof**					**12,949**	**21,130,000**	**117,315**
21	WI 42	Roof of perdestrian bridge	m2	2.71	4,780	7,800,000	12,949	21,130,000	117,315
VIII.6		**Elevator**					**115,334**	**2,157,211,950**	**10,770,337**
22	P 120	Concrete C30 for elevator	m3	20.00	2,463	4,021,000	49,260	80,420,000	446,474
23	P 114	Rebar for elevator	ton	2.00	16,155	26,376,000	32,310	52,752,000	292,865
24	P 109	Steel formwork for elevator	m2	160.00	117	190,730	18,720	30,517,000	169,451
25		Elevator	set	1.00		1,968,969,600	0	1,968,969,600	9,725,228
26		Escalator	set			3,281,616,000	0	0	0
25		Auxiliary structure for construction	%	15.00	100,290	163,689,000	15,044	24,553,350	136,319
9 Roof structures for vehicle parking							**2,045,555**	**3,342,059,000**	**18,552,811**
1	P 4	Excavation	m3	37.95	154	252,000	5,844	9,563,000	53,078
2	P 155	Blinding stone	m3	6.65	419	684,000	2,788	4,551,000	25,267
3	P 12	Foundation concrete	m3	31.30	1,246	2,034,000	38,995	63,656,000	353,408
4	P 13	Foundation rebar	ton	1.98	14,097	23,016,000	27,854	45,477,000	252,476
5	P 14	Foundation formwork	m2	228.48	40	65,000	9,139	14,851,000	82,492
6	P 161	Fabrication of galvanized steel column	ton	9.19	23,527	38,411,000	216,193	352,964,000	1,959,569
7	P 162	Fabrication of galvanized steel struss	ton	15.37	24,384	39,810,000	374,805	611,917,000	3,397,214
8	P 163	Fabrication of galvanized steel purlin	ton	19.30	20,106	32,826,000	388,060	633,565,000	3,517,394
9	P 164	Installation of galvanized steel column	ton	9.19	5,342	8,722,000	49,088	80,148,000	444,959
10	P 165	Installation of galvanized steel purlin	ton	15.37	2,875	4,693,000	44,191	72,136,000	400,489
11	P 166	Installation of galvanized steel purlin	ton	19.30	13,087	21,366,000	252,588	412,379,000	2,289,430
12	P 160	PVC pipe D=60	m	654.00	55	90,000	35,970	58,860,000	326,694
13	P 169	Roof cover by tole sheet	m2	3,147.60	157	256,970	494,173	808,839,000	4,489,229
14	P 172	Roof gutter work by tole sheet	m2	480.00	157	256,970	75,360	123,346,000	684,596

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
15	P	173	Fabrication of embed steel structure in concete	ton	0.92	26,800	43,755,000	24,698	40,323,000	223,863
16	P	174	Installation of embed steel structure in concete	ton	0.92	6,303	10,291,000	5,809	9,484,000	52,653
10 Fence								**935,183**	**1,526,304,000**	**8,473,977**
1	P	4	Excavation	m3	16.94	154	252,000	2,609	4,269,000	23,695
2	P	155	Blinding stone	m3	6.05	419	684,000	2,535	4,138,000	22,974
3	P	12	Foundation concrete	m3	10.89	1,246	2,034,000	13,569	22,150,000	122,973
4	P	13	Foundation rebar	ton	0.76	14,097	23,016,000	10,769	17,582,000	97,611
5	P	14	Foundation formwork	m2	193.60	40	65,000	7,744	12,584,000	69,899
6	P	161	Fabrication of galvanized steel column	ton	3.50	23,527	38,411,000	82,380	134,497,000	746,694
7	P	164	Installation of galvanized steel column	ton	3.50	5,342	8,722,000	18,705	30,540,000	169,550
8	P	173	Fabrication of embed steel structure in concete	ton	1.82	26,800	43,755,000	48,875	79,797,000	443,012
9	P	174	Installation of embed steel structure in concete	ton	1.82	6,303	10,291,000	11,495	18,768,000	104,195
6	P	167	Fabrication of galvanized steel fence	m2	860.40	691	1,128,000	594,536	970,531,000	5,388,229
7	P	168	Installtion of galvanized steel fence	m2	860.40	165	269,000	141,966	231,448,000	1,285,145
11 Bus stop								**7,743,444**	**88,872,000**	**8,182,405**
1	P	4	Excavation	m3	1.45	154	252,000	223	365,000	2,026
2	P	155	Blinding stone	m3	0.32	419	684,000	136	222,000	1,233
3	P	12	Foundation concrete	m3	1.13	1,246	2,034,000	1,402	2,288,000	12,703
4	P	13	Foundation rebar	ton	0.02	14,097	23,016,000	281	459,000	2,548
5	P	14	Foundation formwork	m2	36.00	40	65,000	1,440	2,340,000	12,998
6	P	161	Fabrication of galvanized steel column	ton	0.52	23,527	38,411,000	12,252	20,004,000	111,057
7	P	162	Fabrication of galvanized steel struss	ton	0.51	24,384	39,810,000	12,439	20,308,000	112,745
8	P	163	Fabrication of galvanized steel purlin	ton	0.29	20,106	32,826,000	5,754	9,395,000	52,158
9	P	164	Installation of galvanized steel column	ton	0.52	5,342	8,722,000	2,782	4,542,000	25,216
10	P	165	Installation of galvanized steel purlin	ton	0.51	2,875	4,693,000	1,467	2,394,000	13,292
11	P	166	Installation of galvanized steel purlin	ton	0.29	13,087	21,366,000	3,746	6,115,000	33,949
12	P	171	Roof cover by aluminum composit panel	m2	27.00	364	594,110	9,828	16,041,000	89,058
13	P	173	Fabrication of embed steel structure in concete	ton	0.08	26,800	43,755,000	2,181	3,561,000	19,770
14	P	174	Installation of embed steel structure in concete	ton	0.08	6,303	10,291,000	513	838,000	4,652
15	P	181	Installation of Digital Signage System	LS	1.00	7,689,000	0	7,689,000	0	7,689,000
12 Lighting								**2,928,799**	**4,793,381,000**	**26,604,493**
1	WI	16	Installation of Lighting Pole	nos.	105.00	25,391	41,541,000	2,666,055	4,361,805,000	24,210,088
2	WI	17	Installation of Lighting Pole	nos.	8.00	32,843	53,947,000	262,744	431,576,000	2,394,405
13 Ticketing System in Parking								**8,416,000**	**0**	**8,416,000**
1	P	191	Installation of Ticketing System in Parking	LS	1.00	8,416,000	0	8,416,000	0	8,416,000
			Sub Total					**43,531,241**	**36,046,513,750**	**221,573,888**
			Total					**43,531,241**	**36,046,513,750**	**221,573,888**

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
13. Suoi Tien									
Phase 1									
1 Earth works							**130,275**	**212,743,000**	**1,181,065**
1	P 3	Excavation	m3	224.40	22	35,820	4,937	8,038,000	44,639
2	P 5	Earth Filling (K0.95)	m3	326.40	129	211,380	42,106	68,994,000	382,884
3	P 6	Earth Filling (K0.98)	m3	612.00	136	221,750	83,232	135,711,000	753,542
2 Sub-base and Base courses							**99,960**	**163,522,000**	**907,636**
4	P 36	Aggregate Subbase course	m3	0.00	246	400,940	0	0	0
5	P 37	Aggregate Base course	m3	408.00	245	400,790	99,960	163,522,000	907,636
3 Pavement							**291,720**	**474,586,000**	**2,635,818**
6	P 38	Prime coat	m2	0.00	19	30,380	0	0	0
7	P 39	Tack coat	m2	2,040.00	11	17,270	22,440	35,231,000	196,455
8	P 40	Spread medium Asphalt Concrete 7cm thick	m2	0.00	180	294,000	0	0	0
9	P 41	Spread fine Asphalt Concrete 5cm thick	m2	2,040.00	132	215,370	269,280	439,355,000	2,439,363
4 Landscape							**0**	**0**	**0**
10	P 42	Soil for planting	m3	0.00	194	316,000	0	0	0
11	P 43	Durenta repens	m2		80	130,000	0	0	0
12	P 44	Hookweed	m2		68	111,000	0	0	0
13	P 45	Golden showers	m2	0.00	628	1,025,000	0	0	0
14	P 46	Wrightia antidysenteria	m2		628	1,025,000	0	0	0
15	P 47	Acanthus integrifolius	m2	0.00	80	130,000	0	0	0
16	P 48	Solenostellarioides	m2	0.00	993	1,621,000	0	0	0
17	P 49	Bamboo grass	m2	0.00	26	42,000	0	0	0
18	P 52	Maintenance parterre, grass cover 30 days	m2	0.00	39	64,000	0	0	0
19	P 53	Positioning, excavation and transportation of tree	tree	0.00	138	225,000	0	0	0
20	P 61	LIVISTONA ROTUNDIFOLIA	tree	0.00	7,729	12,619,000	0	0	0
21	P 59	MADAGASCAR ALMOND	tree	0.00	310	506,000	0	0	0
22	P 62	Maintenance tree 90 days	tree	0.00	222	363,000	0	0	0
23		Chairs	set	0.00		2,000,000	0	0	0
5 Traffic safety							**299,312**	**488,524,000**	**2,712,253**
10	P 29	Road marking	m2	323.86	228	372,000	73,840	120,475,000	668,896
11	P 31	Road signboard - Circle	set		1,196	1,952,000	0	0	0
12	P 30	Road signboard - rectangular	set	6.00	2,841	4,638,000	17,046	27,828,000	154,495
13	WI 13	Installation of side walk - Terranzo brick	m2	500.59	311	508,000	155,683	254,300,000	1,411,734
14	WI 8	Installation of Concrete Curbs	m	173.64	170	277,000	29,519	48,099,000	267,092
15	WI 9	Installation of Concrete Curbs	m	110.59	210	342,000	23,224	37,822,000	210,036
6 Drainage system							**0**	**0**	**0**
1	P 3	Excavation	m3		22	35,820	0	0	0
2	P 9	Disposal of Soil	m3		90	205,620	0	0	0
3	P 8	Sand Filling (K0.95)	m3		136	221,953	0	0	0
4	P 135	Driven wood pile	m		14	22,690	0	0	0
5	P 14	Foundation formwork	m2		40	65,000	0	0	0
6	P 10	Blinding concrete	m3		1,007	1,644,000	0	0	0
7	P 13	Foundation rebar	ton		14,097	23,016,000	0	0	0
8	P 12	Foundation concrete	m3		1,246	2,034,000	0	0	0
9	P 134	Installation of R.C saddle	nos.		18	29,500	0	0	0
10	P 133	Installation of RC Concrete Pipe (Dia. 800mm)	m		1,069	1,745,220	0	0	0

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
7 Stairs structures							**1,882,447**	**3,074,722,150**	**17,069,261**
VIII.1		**Foundation SA**					**268,842**	**440,344,200**	**2,443,811**
1	P 143	Driven pile 400x400, hammer <=3.5T	m	245.20	761	1,243,100	186,597	304,808,000	1,692,119
2	P 94	Cutting of pile head on land	m3	0.83	842	1,375,000	701	1,144,000	6,351
3	P 154	Concrete for piers	m3	10.00	2,342	3,824,000	23,420	38,240,000	212,297
4	P 153	Reinforcement for piers	ton	1.00	15,980	26,089,000	15,980	26,089,000	144,840
5	P 152	Formwork for piers	m2	18.00	162	265,120	2,916	4,772,000	26,486
6	P 10	Blinding concrete	m3	1.19	1,007	1,644,000	1,196	1,953,000	10,842
7	P 3	Excavation	m3	18.10	22	35,820	398	648,000	3,599
8	P 8	Sand Filling (K0.95)	m3	6.91	136	221,953	939	1,533,000	8,511
9	P 9	Disposal of Soil	m3	18.10	90	205,620	1,629	3,721,000	20,008
10		Auxiliary structure for construction	%	15.00	233,776	382,908,000	35,066	57,436,200	318,758
VIII.2		**Pier SP**					**614,735**	**1,004,086,850**	**5,574,168**
11	P 143	Driven pile 400x400, hammer <=3.5T	m	490.40	761	1,243,100	373,194	609,616,000	3,384,238
12	P 94	Cutting of pile head on land	m3	1.66	842	1,375,000	1,401	2,288,000	12,702
13	P 154	Concrete for piers	m3	30.73	2,342	3,824,000	71,973	117,516,000	652,414
14	P 153	Reinforcement for piers	ton	4.61	15,980	26,089,000	73,663	120,262,000	667,667
15	P 152	Formwork for piers	m2	88.40	162	265,120	14,321	23,437,000	130,082
16		Auxiliary structure for construction	%	15.00	534,552	873,119,000	80,183	130,967,850	727,065
VIII.3		**Beam, slab (stair structure)**					**275,346**	**449,540,750**	**2,495,739**
17	P 119	Concrete C30 for C.I.P girder	m3	21.72	3,887	6,346,000	84,422	137,829,000	765,194
18	P 113	Rebar for C.I.P girder	ton	3.26	15,998	26,119,000	52,119	85,092,000	472,409
19	P 108	Steel formwork for C.I.P girder	m2	209.98	490	800,000	102,890	167,984,000	932,605
20		Auxiliary structure for construction	%	15.00	239,431	390,905,000	35,915	58,635,750	325,531
VIII.4		**Railing (stair structure)**					**73,309**	**119,688,000**	**664,478**
20	P 156	Bridge railing	ton	2.61	28,077	45,840,000	73,309	119,688,000	664,478
VIII.5		**Roof**					**534,882**	**872,820,000**	**4,845,956**
21	WI 42	Roof of perdestrian bridge	m2	111.90	4,780	7,800,000	534,882	872,820,000	4,845,956
VIII.6		**Elevator**					**115,334**	**188,242,350**	**1,045,109**
22	P 120	Concrete C30 for elevator	m3	20.00	2,463	4,021,000	49,260	80,420,000	446,474
23	P 114	Rebar for elevator	ton	2.00	16,155	26,376,000	32,310	52,752,000	292,865
24	P 109	Steel formwork for elevator	m2	160.00	117	190,730	18,720	30,517,000	169,451
24		Elevator	set	0.00		525,900,000	0	0	0
25		Auxiliary structure for construction	%	15.00	100,290	163,689,000	15,044	24,553,350	136,319
8 Roof structures for vehicle parking							**760,446**	**1,242,715,000**	**6,898,523**
1	P 4	Excavation	m3	19.31	154	252,000	2,973	4,865,000	27,002
2	P 155	Blinding stone	m3	3.37	419	684,000	1,412	2,305,000	12,797
3	P 12	Foundation concrete	m3	15.94	1,246	2,034,000	19,856	32,414,000	179,957
4	P 13	Foundation rebar	ton	1.00	14,097	23,016,000	14,122	23,057,000	128,006
5	P 14	Foundation formwork	m2	114.24	40	65,000	4,570	7,426,000	41,249
6	P 161	Fabrication of galvanized steel column	ton	4.70	23,527	38,411,000	110,610	180,586,000	1,002,569
7	P 162	Fabrication of galvanized steel struss	ton	4.84	24,384	39,810,000	118,041	192,718,000	1,069,923
8	P 163	Fabrication of galvanized steel purlin	ton	4.18	20,106	32,826,000	84,036	137,201,000	761,706
9	P 164	Installation of galvanized steel column	ton	4.70	5,342	8,722,000	25,115	41,006,000	227,654
10	P 165	Installation of galvanized steel purlin	ton	4.84	2,875	4,693,000	13,918	22,719,000	126,133
11	P 166	Installation of galvanized steel purlin	ton	4.18	13,087	21,366,000	54,699	89,302,000	495,784
12	P 160	PVC pipe D=60	m	206.40	55	90,000	11,352	18,576,000	103,103
13	P 169	Roof cover by tole sheet	m2	1,755.60	157	256,970	275,629	451,137,000	2,503,906
14	P 172	Roof gutter work by tole sheet	m2	54.00	157	256,970	8,478	13,876,000	77,015
15	P 173	Fabrication of embed steel structure in concete	ton	0.47	26,800	43,755,000	12,658	20,666,000	114,732

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
16	P 174	Installation of embed steel structure in concete	ton	0.47	6,303	10,291,000	2,977	4,861,000	26,987
9 Fence							**598,740**	**977,196,000**	**5,425,353**
17	P 4	Excavation	m3	10.85	154	252,000	1,671	2,734,000	15,175
18	P 155	Blinding stone	m3	3.88	419	684,000	1,624	2,651,000	14,718
19	P 12	Foundation concrete	m3	6.98	1,246	2,034,000	8,691	14,187,000	78,764
20	P 13	Foundation rebar	ton	0.49	14,097	23,016,000	6,897	11,261,000	62,518
21	P 14	Foundation formwork	m2	124.00	40	65,000	4,960	8,060,000	44,770
22	P 161	Fabrication of galvanized steel column	ton	2.24	23,527	38,411,000	52,764	86,145,000	478,255
23	P 164	Installation of galvanized steel column	ton	2.24	5,342	8,722,000	11,981	19,561,000	108,598
24	P 173	Fabrication of embed steel structure in concete	ton	1.17	26,800	43,755,000	31,305	51,109,000	283,745
25	P 174	Installation of embed steel structure in concete	ton	1.17	6,303	10,291,000	7,362	12,021,000	66,737
22	P 167	Fabrication of galvanized steel fence	m2	550.80	691	1,128,000	380,603	621,302,000	3,449,367
23	P 168	Installtion of galvanized steel fence	m2	550.80	165	269,000	90,882	148,165,000	822,706
10 Bus stop							**14,414,903**	**125,541,000**	**15,034,980**
1	P 4	Excavation	m3	2.65	154	252,000	408	668,000	3,707
2	P 155	Blinding stone	m3	0.48	419	684,000	199	325,000	1,804
3	P 12	Foundation concrete	m3	2.18	1,246	2,034,000	2,710	4,424,000	24,561
4	P 13	Foundation rebar	ton	0.09	14,097	23,016,000	1,200	1,958,000	10,871
5	P 14	Foundation formwork	m2	0.15	40	65,000	6	10,000	55
6	P 161	Fabrication of galvanized steel column	ton	0.68	23,527	38,411,000	15,963	26,062,000	144,690
7	P 162	Fabrication of galvanized steel struss	ton	0.57	24,384	39,810,000	13,843	22,600,000	125,470
8	P 163	Fabrication of galvanized steel purlin	ton	0.30	20,106	32,826,000	5,959	9,729,000	54,013
9	P 164	Installation of galvanized steel column	ton	0.68	5,342	8,722,000	3,625	5,918,000	32,855
10	P 165	Installation of galvanized steel purlin	ton	0.57	2,875	4,693,000	1,632	2,664,000	14,790
11	P 166	Installation of galvanized steel purlin	ton	0.30	13,087	21,366,000	3,879	6,332,000	35,154
12	P 171	Roof cover by aluminum composit panel	m2	65.97	364	594,110	24,014	39,195,000	217,608
13	P 173	Fabrication of embed steel structure in concete	ton	0.10	26,800	43,755,000	2,805	4,579,000	25,422
14	P 174	Installation of embed steel structure in concete	ton	0.10	6,303	10,291,000	660	1,077,000	5,980
15	P 182	Installation of Digital Signage System	LS	1.00	14,338,000	0	14,338,000	0	14,338,000
11 Lighting							**2,919,965**	**4,777,215,000**	**26,515,811**
1	WI 16	Installation of Lighting Pole	nos.	115.00	25,391	41,541,000	2,919,965	4,777,215,000	26,515,811
2	WI 17	Installation of Lighting Pole	nos.		32,843	53,947,000	0	0	0
12 Ticketing System in Parking							**11,221,000**	**0**	**11,221,000**
1	P 192	Installation of Ticketing System in Parking	LS	1.00	11,221,000	0	11,221,000	0	11,221,000
		Sub Total					**32,618,768**	**11,536,764,150**	**89,601,700**
Phase 2									
1 Earth works							**226,740**	**370,760,000**	**2,058,016**
1	P 3	Excavation	m3	258.34	22	35,820	5,683	9,254,000	51,391
2	P 5	Earth Filling (K0.95)	m3	1,025.35	129	211,380	132,270	216,738,000	1,202,793
3	P 6	Earth Filling (K0.98)	m3	652.84	136	221,750	88,787	144,768,000	803,832
2 Sub-base and Base courses							**355,458**	**580,515,000**	**3,222,765**
4	P 36	Aggregate Subbase course	m3	652.84	246	400,940	160,600	261,751,000	1,453,453
5	P 37	Aggregate Base course	m3	795.34	245	400,790	194,858	318,764,000	1,769,312
3 Pavement							**867,362**	**1,412,684,000**	**7,844,957**
6	P 38	Prime coat	m2	2,536.15	19	30,380	48,187	77,048,000	428,746
7	P 39	Tack coat	m2	2,536.15	11	17,270	27,898	43,799,000	244,232
8	P 40	Spread medium Asphalt Concrete 7cm thick	m2	2,536.15	180	294,000	456,506	745,627,000	4,139,342
9	P 41	Spread fine Asphalt Concrete 5cm thick	m2	2,536.15	132	215,370	334,771	546,210,000	3,032,637

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
4 Landscape								**307,748**	**530,239,000**	**2,926,731**
10	P	42	Soil for planting	m3	175.36	194	316,000	34,020	55,413,000	307,719
11	P	43	Durenta repens	m2		80	130,000	0	0	0
12	P	44	Hookweed	m2		68	111,000	0	0	0
13	P	45	Golden showers	m2	25.34	628	1,025,000	15,913	25,973,000	144,200
14	P	46	Wrightia antidysenteria	m2		628	1,025,000	0	0	0
15	P	47	Acanthus integrifolius	m2	20.93	80	130,000	1,674	2,721,000	15,114
16	P	48	Solenostellarioides	m2	73.60	993	1,621,000	73,087	119,309,000	662,384
17	P	49	Bamboo grass	m2	756.92	26	42,000	19,680	31,791,000	176,704
18	P	52	Maintenance parterre, grass cover 30 days	m2	876.80	39	64,000	34,195	56,115,000	311,361
19	P	53	Positioning, excavation and transportation of tree	tree	71.00	138	225,000	9,798	15,975,000	88,702
20	P	61	LIVISTONA ROTUNDIFOLIA	tree	11.00	7,729	12,619,000	85,019	138,809,000	770,631
21	P	59	MADAGASCAR ALMOND	tree	60.00	310	506,000	18,600	30,360,000	168,556
22	P	62	Maintenance tree 90 days	tree	71.00	222	363,000	15,762	25,773,000	143,061
23			Chairs	set	14.00		2,000,000	0	28,000,000	138,299
5 Traffic safety								**596,309**	**973,471,000**	**5,404,522**
10	P	29	Road marking	m2	778.35	228	372,000	177,464	289,546,000	1,607,603
11	P	31	Road signboard - Circle	set		1,196	1,952,000	0	0	0
12	P	30	Road signboard - rectangular	set	1.00	2,841	4,638,000	2,841	4,638,000	25,749
13	WI	13	Installation of side walk - Terranzo brick	m2	1,168.04	311	508,000	363,261	593,366,000	3,294,042
14	WI	8	Installation of Concrete Curbs	m	173.64	170	277,000	29,519	48,099,000	267,092
15	WI	9	Installation of Concrete Curbs	m	110.59	210	342,000	23,224	37,822,000	210,036
6 Drainage system								**320,631**	**550,652,000**	**3,040,437**
1	P	3	Excavation	m3	487.83	22	35,820	10,732	17,474,000	97,040
2	P	9	Disposal of Soil	m3	487.83	90	205,620	43,905	100,308,000	539,351
3	P	8	Sand Filling (K0.95)	m3	264.96	136	221,953	36,035	58,809,000	326,507
4	P	135	Driven wood pile	m	8,028.00	14	22,690	112,392	182,155,000	1,012,101
5	P	14	Foundation formwork	m2	122.85	40	65,000	4,914	7,986,000	44,359
6	P	10	Blinding concrete	m3	26.04	1,007	1,644,000	26,221	42,808,000	237,660
7	P	13	Foundation rebar	ton	1.45	14,097	23,016,000	20,457	33,400,000	185,428
8	P	12	Foundation concrete	m3	14.56	1,246	2,034,000	18,147	29,624,000	164,467
9	P	134	Installation of R.C saddle	nos.	44.00	18	29,500	792	1,298,000	7,203
10	P	133	Installation of RC Concrete Pipe (Dia. 800mm)	m	44.00	1,069	1,745,220	47,036	76,790,000	426,321
7 Stairs structures								**1,129,345**	**2,369,644,600**	**12,833,605**
VIII.1			**Foundation SA**					**0**	**0**	**0**
1	P	143	Driven pile 400x400, hammer <=3.5T	m	0.00	761	1,243,100	0	0	0
2	P	94	Cutting of pile head on land	m3	0.00	842	1,375,000	0	0	0
3	P	154	Concrete for piers	m3	0.00	2,342	3,824,000	0	0	0
4	P	153	Reinforcement for piers	ton	0.00	15,980	26,089,000	0	0	0
5	P	152	Formwork for piers	m2	0.00	162	265,120	0	0	0
6	P	10	Blinding concrete	m3	0.00	1,007	1,644,000	0	0	0
7	P	3	Excavation	m3	0.00	22	35,820	0	0	0
8	P	8	Sand Filling (K0.95)	m3	0.00	136	221,953	0	0	0
9	P	9	Disposal of Soil	m3	0.00	90	205,620	0	0	0
10			Auxiliary structure for construction	%	15.00	0	0	0	0	0
VIII.2			**Pier SP**					**0**	**0**	**0**
11	P	143	Driven pile 400x400, hammer <=3.5T	m	0.00	761	1,243,100	0	0	0
12	P	94	Cutting of pile head on land	m3	0.00	842	1,375,000	0	0	0
13	P	154	Concrete for piers	m3	0.00	2,342	3,824,000	0	0	0
14	P	153	Reinforcement for piers	ton	0.00	15,980	26,089,000	0	0	0

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.	item	unit	Quantity	Unit Price		Cost		Total
					Foreign	Local	Foreign	Local	
					yen	VND	yen	VND	yen
15	P 152	Formwork for piers	m2	0.00	162	265,120	0	0	0
16		Auxiliary structure for construction	%	15.00	0	0	0	0	0
VIII.3		**Beam, slab (stair structure)**					**1,004,381**	**1,639,779,250**	**9,103,656**
17	P 119	Concrete C30 for C.I.P girder	m3	153.90	3,887	6,346,000	598,209	976,649,000	5,422,120
18	P 113	Rebar for C.I.P girder	ton	17.14	15,998	26,119,000	274,158	447,601,000	2,484,970
19	P 108	Steel formwork for C.I.P girder	m2	2.06	490	800,000	1,008	1,645,000	9,133
20		Auxiliary structure for construction	%	15.00	873,375	1,425,895,000	131,006	213,884,250	1,187,433
VIII.4		**Railing (stair structure)**					**9,630**	**15,723,000**	**87,290**
20	P 156	Bridge railing	ton	0.34	28,077	45,840,000	9,630	15,723,000	87,290
VIII.5		**Roof**					**0**	**0**	**0**
21	WI 42	Roof of perdestrian bridge	m2	0.00	4,780	7,800,000	0	0	0
VIII.6		**Elevator**					**115,334**	**714,142,350**	**3,642,659**
22	P 120	Concrete C30 for elevator	m3	20.00	2,463	4,021,000	49,260	80,420,000	446,474
23	P 114	Rebar for elevator	ton	2.00	16,155	26,376,000	32,310	52,752,000	292,865
24	P 109	Steel formwork for elevator	m2	160.00	117	190,730	18,720	30,517,000	169,451
24		Elevator	set	1.00		525,900,000	0	525,900,000	2,597,550
25		Auxiliary structure for construction	%	15.00	100,290	163,689,000	15,044	24,553,350	136,319
8 Roof structures for vehicle parking							**1,238,454**	**2,023,273,000**	**11,231,900**
1	P 4	Excavation	m3	22.23	154	252,000	3,424	5,603,000	31,099
2	P 155	Blinding stone	m3	3.37	419	684,000	1,412	2,305,000	12,797
3	P 12	Foundation concrete	m3	18.86	1,246	2,034,000	23,505	38,369,000	213,019
4	P 13	Foundation rebar	ton	1.21	14,097	23,016,000	17,036	27,814,000	154,416
5	P 14	Foundation formwork	m2	146.16	40	65,000	5,846	9,500,000	52,769
6	P 161	Fabrication of galvanized steel column	ton	5.45	23,527	38,411,000	128,207	209,316,000	1,162,070
7	P 162	Fabrication of galvanized steel struss	ton	9.08	24,384	39,810,000	221,385	361,440,000	2,006,627
8	P 163	Fabrication of galvanized steel purlin	ton	13.10	20,106	32,826,000	263,313	429,897,000	2,386,681
9	P 164	Installation of galvanized steel column	ton	5.45	5,342	8,722,000	29,111	47,529,000	263,868
10	P 165	Installation of galvanized steel purlin	ton	9.08	2,875	4,693,000	26,102	42,608,000	236,553
11	P 166	Installation of galvanized steel purlin	ton	13.10	13,087	21,366,000	171,391	279,814,000	1,553,462
12	P 160	PVC pipe D=60	m	79.20	55	90,000	4,356	7,128,000	39,563
13	P 169	Roof cover by tole sheet	m2	2,002.80	157	256,970	314,440	514,660,000	2,856,473
14	P 172	Roof gutter work by tole sheet	m2	98.40	157	256,970	15,449	25,286,000	140,343
15	P 173	Fabrication of embed steel structure in concete	ton	0.41	26,800	43,755,000	10,911	17,814,000	98,899
16	P 174	Installation of embed steel structure in concete	ton	0.41	6,303	10,291,000	2,566	4,190,000	23,261
9 Fence							**8,592,028**	**14,027,769,000**	**77,878,647**
17	P 4	Excavation	m3	9.99	154	252,000	1,538	2,517,000	13,970
18	P 155	Blinding stone	m3	3.57	419	684,000	1,494	2,440,000	13,546
19	P 12	Foundation concrete	m3	6.42	1,246	2,034,000	7,999	13,058,000	72,496
20	P 13	Foundation rebar	ton	570.67	14,097	23,016,000	8,044,688	13,134,464,000	72,919,053
21	P 14	Foundation formwork	m2	114.13	40	65,000	4,565	7,419,000	41,209
22	P 161	Fabrication of galvanized steel column	ton	2.06	23,527	38,411,000	48,566	79,290,000	440,199
23	P 164	Installation of galvanized steel column	ton	2.06	5,342	8,722,000	11,027	18,004,000	99,953
24	P 173	Fabrication of embed steel structure in concete	ton	1.08	26,800	43,755,000	28,814	47,043,000	261,171
25	P 174	Installation of embed steel structure in concete	ton	1.08	6,303	10,291,000	6,777	11,064,000	61,425
22	P 167	Fabrication of galvanized steel fence	m2	510.00	691	1,128,000	352,410	575,280,000	3,193,860
23	P 168	Installtion of galvanized steel fence	m2	510.00	165	269,000	84,150	137,190,000	761,765

Appendix C: Breakdown of Cost Estimation
C-2: Detailed Cost Breakdown of Intermodal Facilities for Station Phases

No.	Unit price No.		item	unit	Quantity	Unit Price		Cost		Total
						Foreign	Local	Foreign	Local	
						yen	VND	yen	VND	yen
10 Bus stop								**43,182**	**70,501,000**	**391,404**
1	P	4	Excavation	m3	1.45	154	252,000	223	365,000	2,026
2	P	155	Blinding stone	m3	0.32	419	684,000	136	222,000	1,233
3	P	12	Foundation concrete	m3	1.13	1,246	2,034,000	1,402	2,288,000	12,703
4	P	13	Foundation rebar	ton	0.02	14,097	23,016,000	281	459,000	2,548
5	P	14	Foundation formwork	m2	0.15	40	65,000	6	10,000	55
6	P	161	Fabrication of galvanized steel column	ton	0.52	23,527	38,411,000	12,252	20,004,000	111,057
7	P	162	Fabrication of galvanized steel struss	ton	0.51	24,384	39,810,000	12,439	20,308,000	112,745
8	P	163	Fabrication of galvanized steel purlin	ton	0.29	20,106	32,826,000	5,754	9,395,000	52,158
9	P	164	Installation of galvanized steel column	ton	0.52	5,342	8,722,000	2,782	4,542,000	25,216
10	P	165	Installation of galvanized steel purlin	ton	0.51	2,875	4,693,000	1,467	2,394,000	13,292
11	P	166	Installation of galvanized steel purlin	ton	0.29	13,087	21,366,000	3,746	6,115,000	33,949
12	P	171	Roof cover by aluminum composit panel	m2	0.00	364	594,110	0	0	0
13	P	173	Fabrication of embed steel structure in concete	ton	0.08	26,800	43,755,000	2,181	3,561,000	19,770
14	P	174	Installation of embed steel structure in concete	ton	0.08	6,303	10,291,000	513	838,000	4,652
11 Lighting								**164,215**	**269,735,000**	**1,496,503**
1	WI	16	Installation of Lighting Pole	nos.		25,391	41,541,000	0	0	0
2	WI	17	Installation of Lighting Pole	nos.	5.00	32,843	53,947,000	164,215	269,735,000	1,496,503
			Sub Total					**13,841,472**	**23,179,243,600**	**128,329,487**
			Total					**46,460,240**	**34,716,007,750**	**217,931,187**

Appendix C-3: Breakdown of Project Cost

Option 1: New construction package under the current loan

Exchange Rate 1JPY= 202.46 VND

Item	TOTAL			2014			2015			2016			2017			2018			2019		
	F.C.C. (mil. JPY)	L.C.C. (mil. VND)	Equivalent Total in Mil. JPY	F.C.C. (mil. JPY)	L.C.C. (mil. VND)	Equivalent Total in Mil. JPY	F.C.C. (mil. JPY)	L.C.C. (mil. VND)	Equivalent Total in Mil. JPY	F.C.C. (mil. JPY)	L.C.C. (mil. VND)	Equivalent Total in Mil. JPY	F.C.C. (mil. JPY)	L.C.C. (mil. VND)	Equivalent Total in Mil. JPY	F.C.C. (mil. JPY)	L.C.C. (mil. VND)	Equivalent Total in Mil. JPY	F.C.C. (mil. JPY)	L.C.C. (mil. VND)	Equivalent Total in Mil. JPY
I. Eligible Portion	**766.0**	**567,811.1**	**3,570.4**	**10.6**	**1,263.5**	**16.8**	**42.0**	**2,189.4**	**52.8**	**6.0**	**245.2**	**7.3**	**445.1**	**350,574.0**	**2,176.6**	**262.3**	**213,539.0**	**1,317.0**	**0.0**	**0.0**	**0.0**
1. Construction Cost	**598.0**	**557,596.0**	**3,351.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**375.9**	**346,171.7**	**2,085.7**	**222.1**	**211,424.3**	**1,266.3**	**0.0**	**0.0**	**0.0**
1-1. Construction Cost (Base Cost as of 2014)	**545.3**	**454,814.8**	**2,791.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**344.4**	**287,251.5**	**1,763.2**	**200.9**	**167,563.3**	**1,028.5**	**0.0**	**0.0**	**0.0**
Phase 1:	493.1	372,116.1	2,330.8			0.0			0.0			0.0	311.4	235,020.7	1,472.2	181.7	137,095.4	858.8			0.0
Phase 2:	52.2	82,698.7	460.8			0.0			0.0			0.0	33.0	52,230.8	291.0	19.2	30,467.9	169.7			0.0
1-2. Price Escalation of Construction Cost	**24.2**	**76,229.1**	**400.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**13.6**	**42,435.9**	**223.2**	**10.6**	**33,793.2**	**177.5**	**0.0**	**0.0**	**0.0**
Phase 1:	21.9	62,368.4	330.0				0.0	0.0	0.0	0.0	0.0	0.0	12.3	34,719.8	183.8	9.6	27,648.6	146.2	0.0	0.0	0.0
Phase 2:	2.3	13,860.7	70.7				0.0	0.0	0.0	0.0	0.0	0.0	1.3	7,716.1	39.4	1.0	6,144.6	31.3	0.0	0.0	0.0
1-3. Physical Contingency of Construction Cos	**28.5**	**26,552.1**	**159.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**17.9**	**16,484.3**	**99.3**	**10.6**	**10,067.8**	**60.3**	**0.0**	**0.0**	**0.0**
Phase 1:	25.8	21,724.2	133.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.2	13,487.0	82.8	9.6	8,237.2	50.3	0.0	0.0	0.0
Phase 2:	2.7	4,827.9	26.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	2,997.3	16.5	1.0	1,830.6	10.0	0.0	0.0	0.0
2. Design, Tendering and Supervision Cost	**161.3**	**10,215.1**	**211.8**	**10.6**	**1,263.5**	**16.8**	**42.0**	**2,189.4**	**52.8**	**6.0**	**245.2**	**7.3**	**65.0**	**4,402.3**	**86.7**	**37.7**	**2,114.7**	**48.2**	**0.0**	**0.0**	**0.0**
Design, Tender Preparation & Tendering	58.6	3,698.1	76.9	10.6	1,263.5	16.8	42.0	2,189.4	52.8	6.0	245.2	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Construction Supervison	102.7	6,517.0	134.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.0	4,402.3	86.7	37.7	2,114.7	48.2	0.0	0.0	0.0
3. Interest during Construction	**6.7**	**0.0**	**6.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**4.2**	**0.0**	**4.2**	**2.5**	**0.0**	**2.5**	**0.0**	**0.0**	**0.0**
II. Counterpart Funds	**42.6**	**145,969.3**	**763.5**	**7.1**	**4,155.0**	**27.6**	**7.1**	**44,752.5**	**228.1**	**7.1**	**8,309.7**	**48.1**	**7.1**	**55,454.8**	**280.9**	**7.1**	**33,297.3**	**171.5**	**7.1**	**0.0**	**7.1**
1. Project Administration Cost of the Employer	**0.0**	**33,931.3**	**167.6**	**0.0**	**4,155.0**	**20.5**	**0.0**	**8,309.7**	**41.0**	**0.0**	**8,309.7**	**41.0**	**0.0**	**8,309.7**	**41.0**	**0.0**	**4,847.2**	**23.9**	**0.0**		**0.0**
2. Tax and VAT	**0.0**	**75,595.2**	**373.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**47,145.1**	**232.8**	**0.0**	**28,450.1**	**140.5**	**0.0**	**0.0**	**0.0**
For Construction	0.0	71,498.8	353.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44,510.8	219.8	0.0	26,988.0	133.3	0.0	0.0	0.0
For Construction Supervision	0.0	4,096.4	20.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,634.3	13.0	0.0	1,462.1	7.2	0.0	0.0	0.0
3. Land Acquisition & Compensation Cost	**0.0**	**36,442.8**	**180.0**	**0.0**	**0.0**	**0.0**	**0.0**	**36,442.8**	**180.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
4. Front end Fee	**42.6**	**0.0**	**42.6**	**7.1**	**0.0**	**7.1**	**7.1**	**0.0**	**7.1**	**7.1**	**0.0**	**7.1**	**7.1**	**0.0**	**7.1**	**7.1**	**0.0**	**7.1**	**7.1**	**0.0**	**7.1**
TOTAL (I. + II.)	**808.6**	**713,780.4**	**4,333.9**	**17.7**	**5,418.5**	**44.4**	**49.1**	**46,941.9**	**280.9**	**13.1**	**8,554.9**	**55.4**	**452.2**	**406,028.8**	**2,457.5**	**269.4**	**246,836.3**	**1,488.5**	**7.1**	**0.0**	**7.1**

Note:

Price Escalation Rate:	Foreign Currency Component (JPY Portic	1.3%	per year	
	Local Currency Component (VND Portior	4.7%	per year	
Physical Contingency:		5%		
Administration Cost:		5%		
Tax and VAT	Foreign Currency Component (JPY Portic	Import Tax 3% and VAT 10% of the expenditure in foreign currency of procurement /construction		
	Local Currency Component (VND Portior	VAT 10% of the expenditure in local currency of procurement/construction		
	Consulting Services:	Tax on Consulting Services 15% of the expenditure of C/S		
Interest during Construction	Construction Works	Financing Rate:	100.00%	
		Debt at the end of term:	0.20%	
	Consulting Services:	Financing Rate:	100.00%	
		Debt at the end of term:	0.01%	
Front end fee	Balance of yen loan	100.00%		
	Commitment Charge	0.20%		

Appendix C-4: Breakdown of Project Cost

Option 2: New construction package under a new loan

Exchange Rate: 1JPY= 202.46 VND

Item	TOTAL			2014			2015			2016			2017			2018			2019		
	F.C.C. (mil. JPY)	L.C.C. (mil. VND)	Equivalent Total in Mil. JPY	F.C.C. (mil. JPY)	L.C.C. (mil. VND)	Equivalent Total in Mil. JPY	F.C.C. (mil. JPY)	L.C.C. (mil. VND)	Equivalent Total in Mil. JPY	F.C.C. (mil. JPY)	L.C.C. (mil. VND)	Equivalent Total in Mil. JPY	F.C.C. (mil. JPY)	L.C.C. (mil. VND)	Equivalent Total in Mil. JPY	F.C.C. (mil. JPY)	L.C.C. (mil. VND)	Equivalent Total in Mil. JPY	F.C.C. (mil. JPY)	L.C.C. (mil. VND)	Equivalent Total in Mil. JPY
I. Eligible Portion	**774.1**	**588,873.1**	**3,682.5**	**0.0**	**0.0**	**0.0**	**14.5**	**1,593.3**	**22.4**	**40.8**	**2,058.6**	**51.0**	**81.7**	**58,654.5**	**371.5**	**443.3**	**366,765.8**	**2,254.7**	**193.8**	**159,800.9**	**983.1**
1. Construction Cost	**604.1**	**578,252.2**	**3,460.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**62.7**	**57,695.2**	**347.8**	**380.7**	**362,441.8**	**2,170.8**	**160.7**	**158,115.2**	**941.7**
1-1. Construction Cost (Base Cost as of 2014)	**545.3**	**454,814.8**	**2,791.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**57.4**	**47,875.2**	**293.9**	**344.4**	**287,251.5**	**1,763.2**	**143.5**	**119,688.1**	**734.7**
Phase 1:	493.1	372,116.1	2,330.8			0.0			0.0			0.0	51.9	39,170.1	245.4	311.4	235,020.7	1,472.2	129.8	97,925.3	613.5
Phase 2:	52.2	82,698.7	460.8			0.0			0.0			0.0	5.5	8,705.1	48.5	33.0	52,230.8	291.0	13.7	21,762.8	121.2
1-2. Price Escalation of Construction Cost	**30.1**	**95,901.6**	**503.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.3**	**7,072.6**	**37.3**	**18.2**	**57,931.2**	**304.3**	**9.6**	**30,897.8**	**162.2**
Phase 1:	27.3	78,463.9	414.9				0.0	0.0	0.0	0.0	0.0	0.0	2.1	5,786.6	30.7	16.5	47,397.6	250.6	8.7	25,279.7	133.6
Phase 2:	2.8	17,437.7	88.9				0.0	0.0	0.0	0.0	0.0	0.0	0.2	1,286.0	6.6	1.7	10,533.6	53.7	0.9	5,618.1	28.6
1-3. Physical Contingency of Construction Cos	**28.7**	**27,535.8**	**164.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**3.0**	**2,747.4**	**16.6**	**18.1**	**17,259.1**	**103.3**	**7.6**	**7,529.3**	**44.8**
Phase 1:	26.0	22,529.0	137.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	2,247.8	13.8	16.4	14,120.9	86.1	6.9	6,160.3	37.3
Phase 2:	2.7	5,006.8	27.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	499.6	2.8	1.7	3,138.2	17.2	0.7	1,369.0	7.5
2. Design, Tendering and Supervision Cost	**163.1**	**10,620.9**	**215.5**	**0.0**	**0.0**	**0.0**	**14.5**	**1,593.3**	**22.4**	**40.8**	**2,058.6**	**51.0**	**18.3**	**959.3**	**23.0**	**58.3**	**4,324.0**	**79.6**	**31.2**	**1,685.7**	**39.5**
Design, Tender Preparation & Tendering	59.3	3,856.8	78.3	0.0	0.0	0.0	14.5	1,593.3	22.4	40.8	2,058.6	51.0	4.0	204.9	4.9	0.0	0.0	0.0	0.0	0.0	0.0
Construction Supervison	103.8	6,764.1	137.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.3	754.4	18.1	58.3	4,324.0	79.6	31.2	1,685.7	39.5
3. Interest during Construction	**6.9**	**0.0**	**6.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.7**	**0.0**	**0.7**	**4.3**	**0.0**	**4.3**	**1.9**	**0.0**	**1.9**
II. Counterpart Funds	**44.4**	**149,361.4**	**782.0**	**7.4**	**3,184.1**	**23.1**	**7.4**	**42,811.3**	**218.9**	**7.4**	**6,368.5**	**38.9**	**7.4**	**14,335.8**	**78.2**	**7.4**	**55,051.7**	**279.3**	**7.4**	**27,610.0**	**143.8**
1. Project Administration Cost of the Employer	**0.0**	**35,026.6**	**173.0**	**0.0**	**3,184.1**	**15.7**	**0.0**	**6,368.5**	**31.5**	**0.0**	**6,368.5**	**31.5**	**0.0**	**6,368.5**	**31.5**	**0.0**	**6,368.5**	**31.5**	**0.0**	**6,368.5**	**31.5**
2. Tax and VAT	**0.0**	**77,892.0**	**384.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**7,967.3**	**39.3**	**0.0**	**48,683.2**	**240.4**	**0.0**	**21,241.5**	**104.9**
For Construction	0.0	73,725.0	364.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7,419.8	36.6	0.0	46,264.1	228.5	0.0	20,041.1	99.0
For Construction Supervision	0.0	4,167.0	20.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	547.5	2.7	0.0	2,419.1	11.9	0.0	1,200.4	5.9
3. Land Acquisition & Compensation Cost	**0.0**	**36,442.8**	**180.0**	**0.0**	**0.0**	**0.0**	**0.0**	**36,442.8**	**180.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
4. Front end Fee	**44.4**	**0.0**	**44.4**	**7.4**	**0.0**	**7.4**	**7.4**	**0.0**	**7.4**	**7.4**	**0.0**	**7.4**	**7.4**	**0.0**	**7.4**	**7.4**	**0.0**	**7.4**	**7.4**	**0.0**	**7.4**
TOTAL (I. + II.)	**818.5**	**738,234.5**	**4,464.5**	**7.4**	**3,184.1**	**23.1**	**21.9**	**44,404.6**	**241.3**	**48.2**	**8,427.1**	**89.9**	**89.1**	**72,990.3**	**449.7**	**450.7**	**421,817.5**	**2,534.0**	**201.2**	**187,410.9**	**1,126.9**

Note:

Price Escalation Rate:	Foreign Currency Component (JPY Portic	1.3%	per year
	Local Currency Component (VND Portior	4.7%	per year
Physical Contingency:		5%	
Administration Cost:		5%	
Tax and VAT	Foreign Currency Component (JPY Portic	Import Tax 3% and VAT 10% of the expenditure in foreign currency of procurement /construction	
	Local Currency Component (VND Portior	VAT 10% of the expenditure in local currency of procurement/construction	
	Consulting Services:	Tax on Consulting Services 15% of the expenditure of C/S	
Interest during Construction	Construction Works	Financing Rate:	100.00%
		Debt at the end of term:	0.20%
	Consulting Services:	Financing Rate:	100.00%
		Debt at the end of term:	0.01%
Front end fee	Balance of yen loan	100.00%	
	Commitment Charge	0.20%	

Appendix D: Environmental Legal and Institutional Framework

D APPENDIX D: ENVIRONMENTAL LEGAL AND INSTITUTIONAL FRAMEWORK

D.1 Legal and Institutional Framework on Environmental and Social Impact Assessment in Vietnam

1) Laws and Regulations on Environmental Protection

In Vietnam, the Law on Environmental Protection (LEP) is the umbrella law and the most comprehensive legal base relating to environmental protection. Its first version was approved in 1993, and was modified, amended in 2005 before became effective since July 2006.

In addition, the Government of Vietnam (GoV) has issued Decree 80/2006/ND-CP, and then Decree 21/2008/ND-CP as the instructive guidance for implementation of LEP. Furthermore, as shown in Table D.1.1, many regulations on environmental protection have been issues, such as Circular 26/2011/TT-BTNMT that states principal issues on Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA), etc.

Table D.1.1 - Main Laws and Regulations on Environmental Protection

Issuance Date	Code/Number	Title
2002/06/26	Decision No. 82/2002/QD-TTg	Establishment, Mandate and Operations of the Vietnam Environment Protection Fund
2002/07/16	Decision No. 53/2002/QD-BKHCNMT	Promulgating the Organization and Operation Charter of Vietnam Environmental Protection Fund (expired)
2002/08/09	Decision No. 62/2002/QD-BKHCNMT	Promulgating the Regulation on the Protection of the Environment in Industrial Parks
2002/11/11	Decree No. 91/2002/ND-CP	Prescribing the Functions, Tasks, Powers and Organizational Structure of the Ministry of Natural Resources and Environment
2003/04/02	Decision No. 45/QD-TTg	Establishment of provincial Department of Natural Resources and Environment.
2003/05/08	Decision No. 600/2003/QD-BTNMT	Specifying mandates, responsibilities; powers and organizational structure of the Department of Water Resources Management
2003/06/23	Decision No. 782/2003/QD-BTNMT	Promulgating the Charter on organization and operation of Vietnam Environment Protection Fund
2005/11/29	**Order No. 52/2005/QH11**	**Law on Environmental Protection** (Note *)
2005/12/12	Decision No. 328/2005/QD-TTg	Approving the state plan on environmental pollution control till 2010
2006/06/23	Decree No. 65/2006/ND-CP	Organization and Operation of the Natural Resources and Environment Inspectorate
2006/08/09	**Decree No.**	**Providing detailed guidelines for Implementation of a**

Issuance Date	Code/Number	Title
	80/2006/ND-CP	**Number of Articles of the Law on Environmental Protection** (Note *)
2006/08/09	Decree No. 81/2006/ND-CP	Sanctioning of Administrative Violation in the Domain of Environmental Protection
2006/11/22	Decree No. 140/2006/ND-CP	Providing for the Environmental Protection at Stages of Elaboration, Evaluation, Approval and Implementation of Development Strategies, Planning, Plans, Programs and Projects
2007/08/27	Circular No. 06/TT-BKH	On environmental protection in appraising and approving programs and projects
2008/02/28	**Decree No. 21/2008/ND-CP**	**Amending and supplementing a number of articles of the Government's Decree No. 80/2006/ND-CP of August 9, 2006, detailing and guiding the implementation of a number of articles of the Law on Environmental Protection** (Note *)
2008/07/15	Circular No. 03/2008/TTLT-BTNMT- BNV	Guiding the functions, tasks, powers and organizations of the natural resources and environment related specialized units under the people's committees at all levels
2008/09/15	Decree No. 102/2008/ND-CP	On the collection, management, exploitation and use of natural resources and environmental data
2008/09/18	Circular No. 04/2008/TT-BTNMT	Guiding the formulation and approval or certification of environmental protection schemes and the examination and inspection of implementation of environmental protection schemes
2008/09/30	Decision No. 132/2008/QD-TTg	On function, tasks, responsibilities, and organizational structure of Vietnam Environmental Protection Administration under MONRE
2010/03/18	Circular No. 08/2010/TT-BTNMT	Stipulation on the preparation of national environmental report, sectorial environmental situation report, and provincial environmental status report
2010/04/06	Circular No. 09/2010/TT-BGTVT	Stipulation on environmental protection for transportation infrastructure development projects
2011/04/18	**Decree No. 29/2011/ND-CP**	**Stipulation on strategic environmental assessment (SEA), environmental impact assessment (EIA), and environmental protection commitment (EPC)** (Note *)
2011/07/18	**Circular No. 26/2011/TT-BTNMT**	**Detailed stipulation on several articles of Decree No. 29/2011/ND-CP** (Note *)
2013/11/14	**Decree No. 179/2013/ND-CP**	Decree on the sanction of administrative violations in the domain of environmental protection
2014/4/29	**Decree No. 35/2014/ND-CP (will come into effect on 15 June 2014)**	**Amending and supplementing a number of articles of the Government's Decree No. 29/2011/ND-CP of stipulation on strategic environmental assessment (SEA), environmental impact assessment (EIA), and environmental protection commitment (EPC).**

Note*: Important law or regulation relating to the environmental impact assessment (EIA) of this project

In addition, there are a number of law and regulations relating to water resources, sewage and drainage, solid waste, forest, biodiversity, natural environment, climate change, etc.

Besides, GoV has joined 32 international environmental conventions/agreements/treaties, and is reviewing the plan to join other 6 ones (refer to the document "Register of International Treaties and Other Agreements in the Field of the Environment", published by UNEP in 2005, and website of Vietnam Environmental Protection Agency).

2) Law on Environmental Protection

The Law on Environmental Protection amended in 2005 (LEP 2005) has fifteen (15) chapters and 136 articles as shown in Table D.1.2.

Table D.1.2 - Structure of the Vietnam Law on Environmental Protection

Chapter	Name	Included Articles
Chapter I	General Provisions	Article 1 ~ Article 7
Chapter II	Environmental Standards	Article 8 ~ Article 13
Chapter III	Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Undertakings	Article 14 ~ Article 27
Chapter IV	Conservation and Rational Utilization of Natural Resources	Article 28 ~ Article 34
Chapter V	Environmental Protection in Manufacturing, Business and Services Activities	Article 35 ~ Article 49
Chapter VI	Environmental Protection in Urban Centers and Residential Areas	Article 50 ~ Article 54
Chapter VII	Protection of Marine, River and Other Water Source Environments	Article 55 ~ Article 65
Chapter VIII	Waste Management	Article 66 ~ Article 85
Chapter IX	Prevention of and Response to Environmental Incidents; Remedying Environmental Pollution and Rehabilitation of Environment	Article 86 ~ Article 93
Chapter X	Environmental Monitoring and Information	Article 94 ~ Article 105
Chapter XI	Resources for Environmental Protection	Article 106 ~ Article 117
Chapter XII	International Co-operation in Protection of Environment	Article 118 ~ Article 120
Chapter XIII	Responsibilities of State Administrative Bodies and of Vietnam Fatherland Front and its Member Organizations for Environmental Protection	Article 121 ~ Article 124
Chapter XIV	Inspections, Dealing with Breaches, Resolution of Complaints and Denunciations Related to Environment, and Compensation for Environmental Damage	Article 125 ~ Article 134
Chapter XV	Implementing Provisions	Article 135 ~ Article 136

In addition, GoV has issued Decree 80/2006/ND-CP on August 9, 2006, to provide guidance for the implementation of the LEP 2005. Issues on environmental impact assessment are stated as followings in this Decree.

- Environmental Standards;
- Strategic Environmental Assessment (SEA);
- Environmental Impact Assessment (EIA);
- Environmental Protection Commitment (EPC);
- Environmental Protection in manufacture, production, business and services;

- Hazardous waste management;
- Environmental data and information disclosure.

The Decree includes two (02) annexes:

- o Annex 1: List of project subject to prepare the EIA reports.
- o Annex 2: List of inter-sector and inter-provincial projects with EIA reports to be appraised and approved by the Ministry of Natural Resources and Environment (MONRE)

Two years later, on February 28, 2008, the GoV issued Decree 21/2008/ND-CP that includes several modifications, amendments of Decree 80/2006/ND-CP. Particularly, the following articles are modified by Decree 21/2008/ND-CP.

- List of projects subjected to prepare EIA report
- Public consultation
- Appraisal, approval of EIA report
- Implementation of the project after the approval of the EIA report
- EIA for projects in industrial parks, processing zones, high tech parks
- Inspection

In addition, on April 18, 2011, the GoV issued Decree 29/2011/ND-CP which stipulates in detail the contents and procedure for formulation, submission and approval of SEA report, EIA report, and EPC. Some articles of this Decree were amended by Decree 35/2014/NĐ-CP dated April 29, 2014, which will come into effect on June 15, 2014.

As guidance for Decree 29/2011/ND-CP, on July 18, 2011, the Ministry of Natural Resources and Environment (MONRE) issued Circular 26/2011/TT-BTNMT providing detailed stipulations on several articles of the Decree.

3) Environmental Impact Assessment

The Vietnam legal framework on environmental impact assessment (EIA) has two characteristics as follows:

Firstly, the projects which are obligated to make EIA report are defined in detail and listed up. Decree 29/2011/ND-CP (issued on April 18, 2011) lists up 146 projects which are obligated to make and submit the concerned EIA report for approval.

Secondly, the concept on Strategic Environmental Assessment (SEA) is introduced and incorporated. Consequently, before implementation of an individual project, the concerned development policy/plan/program should be approved, and the concerned environmental impacts should be anticipated and assessed. Categorization of plan/program which should make the SEA report is stated in the amended LEP 2005.

Furthermore, each ministry / central government authority has also issued technical guidelines or standards relating to EIA implementation, based on LEP and concerned

regulations. Table D.1.3 shows main technical guidelines issued by ministries/central government relating to environmental protection or EIA implementation for infrastructure development projects.

Table D.1.3 - Technical Guidelines on Environmental Protection or EIA Implementation Issued by Individual Ministries/Central Government

Ministry/Central government	Guidelines	Year of Issuance
Ministry of Transportation (MOT)	Sector standard 22TCN 242-98 on EIA procedure during F/S and D/D for the transportation infrastructure development projects	1998
Ministry of Natural Resources and Environment (MONRE)	Guidelines for preparation of an EIA report of a transportation project	1999
Prime Minister (based mainly on recommendation of MPI)	Guidelines on preparation of F/S report for the ODA projects financed by international bank (ADB、AFD、JBIC、KfW、WB）(Decision No. 48/2008/QD-TTg)	2008
Ministry of Transportation (MOT）	Regulation on environmental protection for the transportation infrastructure development projects（Circular 09/2010/TT-BGTVT）	2010

4) Legal Framework on Land Acquisition, Compensation and Resettlement

The Law on Land (issued in 1993 and revised in 2003) is the umbrella law that regulates issues on land administration, in general, and land acquisition, in particular. Besides, as shown in Table D.1.4, there are many laws and regulations relating to the issues on land acquisition for development projects. In addition, each People's Committee of local province/city has to stipulate its own regulations to govern issues of land acquisition in its own territory. Table D.1.5 shows regulations issued by Ho Chi Minh City on land administration and land acquisition.

Table D.1.4 - Laws and Regulations Relating to Land Administration, Land Acquisition, and Compensation, Resettlement for Loss of Land

Date of Issuance	Law / Regulation	Content
1993/02	Circular No. 05-BXD/ DT	Classification of houses
1993/09/27	Decree No. 64/CP	Allocation of agricultural land to citizens for long-term use
1994/07/05	Decree No. 60/CP	Property ownership and the right to use urban residential land
1994/08/17	Decree No. 91/CP	Urban Planning Management
1998/12/02	Law of Grievance and Accusing	
2003/11/26	New Land Law 2003	(Came into effect on 1 July 2004, replacing the Land Law 1993)
2003/12/10	Construction Law	
2004/06/15 2006/11/29	Revised Law of Grievance and Accusing	
2004/10/29	Decree No. 181/2004/ ND-CP	Implementation guidelines for the Land Law
2004/10/29	Decree No. 182/2004/	Administrative management of violations in the land use

Date of Issuance	Law / Regulation	Content
	ND-CP	rights
2004/11/16	Decree No. 188/2004/ ND-CP	On setting of prices (price frames) for different categories of land
	Circulation No. 114/2004/TT-BTC	Implementation guidelines for Decree No 188/2004/ND-CP
2004/12/03	Decree No. 197/2004/ ND-CP	On compensation, assistance and resettlement when the State recovers land for use in national defense, security, national interests and public interests (replacing Decree No. 22/CP)
2004/12/03	Decree No. 198/2004/ ND-CP	Collection of land use fee
2004/12/07	Circular No. 116/2004/TT-BTC	Issued by Ministry of Finance, on implementation guide-lines for Decree 197/2004/CP
2004	Circulation No. 117/ 2004/TT-BTC	Implementation guidelines for Decree No 198/2004/ND-CP
2005/03/18	Decree No37/2005/ ND-CP	Procedures for application of measures enforcing implementation of decision on administrative violation
2005/04/06	Decision No. 74/2005/QD-TTg	On the use of land use right transferred budget, the budget got from selling house, workshop and other structures when an economic unit has to relocate its office and estates, business in accordance with planning
2005/09/15	Circular No. 80/2005/ TT-BTC	Guidelines for organization of a network for conducting statistics of and surveying, investigating of the land prices in accordance with Decree No 188/2004/ND-CP (16 November 2004)
2006/01/27	Decree No. 17/2006/ ND-CP	On amendments to some provisions of some Decrees on implementation guidelines for the Land Law and Decree 187/2004/ND-CP on shifting the state companies into stock ones.
2006/02/18	Circular No. 69/2006/ TT-BTC	Amendment to Circular No116/2004/TT-BTC
2007/05/25	Decree No. 84/2007/ ND-CP	Additionally stipulating the grant of land use right certificates, recovery of land, exercise of land use rights, order and procedures for compensation, support and resettlement upon land recovery by the State, and settlement of land related complaints.
2007/07/02	Circular No. 06/2007/ TT-BTNMT	Guidance for implementation of a number of articles of Decree No. 84/2007/ND-CP.
2007/07/27	Decree No.123/2007/NDCP	Amending and supplementing Decree No.188/2004/ ND-CP giving provincial PC the authority to set local land prices by establishing ranges for all categories of land.
2008/01/31	Circular No. 14/2008/ TTLT/BTC-BTNMT	Joint circular on guidance for implementation of a number of articles of Decree No. 84/2007/ND-CP.
2009/08/13	Decree No. 69/2009/ ND-CP	Additional stipulation on land use planning, land use price, land acquisition, compensation, support and resettlement.
2009/10/19	Decree No.88/2009/ND-CP	On grant of certificates of land use rights and house and land-attached asset ownership.
2009/10/23	Notice No. 181/DC-CP	Amendment of Decree No. 69/2009/ND-CP.
2009/10/01	Circular No. 14/2009/TT-BTNMT	Detailed stipulations on compensation, supports, resettlement, and procedure for land acquisition, land hand-over, land lease.
2013/11/29	Law No.45/2013/QH13	New Land Law which will come into effect on 1 July 2014.

Table D.1.5 - Regulations on Land Acquisition, Resettlement, etc. Issued by Ho Chi Minh City

Regulation Number and Date of Issuance	Title
Decision 35/2010/QĐ-UBND, May 28, 2010	Issuance of regulations on compensation, support and resettlement when the State acquire lands in the territory of HCM City
Decision 66/2012/QD-UBND, December 28, 2012	Issuance of rates of physical structures and houses.

5) Relevant Authorities

As stipulated by LEP 2005 (Article 121), Ministry of Natural Resources and Environment (MONRE) is the main agency in charge of environmental protection. MONRE's functions and responsibilities are stipulated as following.

a) To submit to the Government legal documents on environmental protection;

b) To submit to the Government for decision national policies, strategies and plans on environmental protection;

c) To assume the prime responsibility for settling or propose the Government or Prime Minister for settlement inter-branch or inter-provincial environmental issues;

d) To formulate and issue systems of environmental standards according to regulations of the Government;

e) To direct the construction and management of the national environment monitoring system and perform unified management of environment monitoring data;

f) To direct and organize the assessment of the national environment status to serve the formulation of environmental protection policies and solutions;

g) To perform uniform management of the evaluation and approval of strategic environment assessment reports and environmental impact assessment reports and registration of environmental protection commitments nationwide;

h) To guide, supervise, inspect and handle violations of the environmental protection law; settle disputes, complaints, denunciations and petitions related to environmental protection in accordance with the provisions of law on complaints and denunciations and other relevant laws;

i) To propose the Government the participation in international organizations, conclusion of or accession to treaties on environmental protection; take the prime responsibility for activities of international cooperation in environmental protection with other countries and international organizations;

j) To direct and supervise the observance of the environmental protection law by People's Committee at all levels;

k) To meet environmental protection requirements in national land use planning and plans, national strategy on water resources and integrated planning on

inter-provincial river basins, national master plan on basic inventory, exploration, exploitation and processing of minerals.

Other ministries, ministerial-level agencies and Government-attached agencies should perform tasks specified in the LEP and coordinate with MONRE in directing, guiding and supervising the observance of the environmental protection law under their respective management.

MONRE was established mainly based on the restructure of the National Environment Agency (NEA, established in 1993) which was an agency under Ministry of Science, Technology and Environment (MOSTE, established in 1992). In 2002, with aim to strengthen governmental function for environmental protection, NEA was detached from MOSTE and integrated with several relevant agencies, and led to the establishment of MONRE.

The Vietnam Environment Protection Agency (VEPA), an organization under MONRE, was responsible for preparing policies relating to environmental protection, monitoring the observance of LEP, regulations, standards, etc., settling problems of disputes, accidents on environment, instructing local authorities and agencies on the tasks to protect environment, etc. In 2008, the Environmental Department and the EIA Department under MONRE were integrated into VEPA, and VEPA was restructured and renamed to be "Vietnam Environment Administration" (VEA) with furthermore functions and staffs.

Besides, in regional areas, the provincial-level people's committees are in charge of pollution control in its jurisdiction. According to LEP 2005 (Article 122), provincial-level people's committees are responsible for the following tasks:

a) To promulgate according to their competence environmental protection regulations, mechanisms, policies, programs and plans;

b) To direct and organize the implementation of environmental protection strategies, programs, plans and tasks;

c) To direct the construction and management of local environment monitoring systems;

d) To direct periodical environmental status assessments;

e) To organize the evaluation and approval of EIA reports under their competence;

f) To organize propaganda and education about the environmental protection law;

g) To direct the supervision, inspection and handling of violations of the environmental protection law; settle disputes, complaints, denunciations and petitions related to environment; and coordinate with other provincial-level People's Committees in dealing with inter-provincial environmental issues.

In 2002, agencies in charge of environmental protection in regional areas were also restructured similarly to what were done in central government. Consequently, the former Department of Science, Technology and Environment (DOSTE) under provincial-level people's committee was restructured, and the Department of Natural Resources and Environment (DONRE) was newly established. DONRE's main functions are: issuance of

operation permit for factories, carrying out environmental monitoring of river water, air ambient, carrying out inspections to factories and waste water / solid waste treatment plants, exposing activities which violate law and regulations on environmental protection.

6) Project Implementation Procedure

a) Procedure Relating to EIA Preparation and Appraisal

The following 3 sections of Chapter III of the LEP 2005 stipulate issues on environmental assessment.

Section 1: Strategic Environmental Assessment (SEA)

Section 2: Environmental Impact Assessment (EIA)

Section 3: Environmental Protection Commitments (EPC)

Section 2 has 6 articles (from Article 18 to Article 23) that define projects to be prepared EIA reports, elaboration and contents of the EIA report, appraisal and approval of the EIA report, implementation of the EIA report's commitments.

Besides, MONRE and other ministries have also issued several legal documents related to EIA. Table D.1.6 lists up main regulations on EIA issued by MONRE and MOC (Ministry of Construction).

Table D.1.6 - Regulations on EIA Issued by MONRE and MOC

Issuance Date	Code/Number	Title
2000/08/08	Circular No. 10/2000/TT-BXD	Guiding the formulation of EIA report for a construction project
2006/09/09	Circular No. 08/2006/TT-BTNMT	Guiding the preparation of Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment
2006/09/08	Circular No. 13/2006/TT-BTNMT	Stipulation of organizations and operation of the assessment board for reports on Strategic Environmental Assessment (SEA) and EIA
2007/08/27	Decision No. 1281/QD-BTNMT	Authorizing directors of departments to review and approve the EIA reports
2007/11/26	Decision No. 19/2007/QD-BTNMT	Promulgating the Regulation on the conditions for and provision of the service of appraising environmental impact assessment reports
2008/12/08	Circular No. 05/2008/TT-BTNMT	Replace Circular 08/2006/TT-BTNMT on Guiding the preparation of Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Commitment
2011/07/18	**Circular No. 26/2011/TT-BTNMT**	**Detailed stipulation on several articles of Decree 29/2011/ND-CP on SEA, EIA, and EPC**

b) Major Issues Relating to the Preparation, Appraisal, and Approval of the EIA Report

Circular 26/2011/TT-BTNMT issued by MONRE on July 18, 2011 is the most important regulation on the preparation, appraisal and approval of the strategic environmental assessment (SEA) report, the environmental impact assessment (EIA) report, and the environmental protection commitment (EPC). Table D.1.7 shows structure of the Circular.

Table D.1.7 - Structure of Circular 26/2011/TT-BTNMT

No.	Title	Content
I	General Provisions	1 The Circular stipulates in detail some articles of Decree 29/2011/ND-CP with focus on: (a) strategic environmental assessment (SEA); (b) environmental impact assessment (EIA); (c) environmental protection commitments (EPC); 2 Subjects of applications
II	SEA	3 Objects subject to elaboration of SEA and method of elaboration of SEA 4 Elaboration of SEA Report 5 Dossiers of request for appraisal of SEA Report 6 Entity in charge of appraising SEA Report 7 Responsibilities of the project owner after the appraisal of SEA Report 8 Report on result of appraisal of SEA Report 9 Responsibilities of agencies appraising, approving the strategy, planning, plan after receiving report on result of appraisal of SEA Report
III	EIA	10 Objects subject to elaboration of EIA Report and responsibilities of the project owner on elaboration of EIA Report 11 Re-elaboration and submission for appraisal, and approval of EIA Report 12 Public consultation during the process of elaboration of EIA Report 13 Dossiers of request for appraisal, approval of EIA Report 14 Entity in charge of appraising EIA Report 15 Procedure and period for appraising, approving an EIA Report 16 Responsibilities of the agency approving the EIA Report and project owner after the EIA Report is approved
IV	Organization structure and activities of SEA Appraisal Committee, EIA Appraisal Committee	17 Establishment of SEA Appraisal Committee, EIA Appraisal Committee 18 Members and structure of SEA Appraisal Committee, EIA Appraisal Committee 19 Functions and working principles of SEA Appraisal Committee, EIA Appraisal Committee 20 Conditions and criteria for selection of members of SEA Appraisal Committee, EIA Appraisal Committee 21 Responsibilities of members of SEA Appraisal Committee, EIA Appraisal Committee 22 Rights of members of SEA Appraisal Committee, EIA Appraisal Committee 23 Responsibilities and rights of chairman of Appraisal Committee 24 Responsibilities and rights of vice-chairman of Appraisal Committee 25 Responsibilities and rights of rebut members of Appraisal Committee 26 Responsibilities and rights of secretary member of Appraisal Committee 27 Responsibilities and rights of representative of DONRE who participates the Appraisal Committee established by a ministerial-level agencies 28 Responsibilities and rights of a permanent Appraisal Committee 29 Obtain opinions of DONRE when an Appraisal Committee established by ministerial-level agency has not member as representative of DONRE 30 Conditions for proceeding a formal meeting of Appraisal Committee 31 Participants of a formal meeting of Appraisal Committee 32 Content and procedure of a formal meeting of Appraisal Committee 33 Content of conclusion of Appraisal Committee 34 Format and content of record of a formal meeting of Appraisal Committee
V	Inspection and confirmation of environmental protection facilities/ measures before bringing the project to operation	35 Responsibilities of project owner before bringing the project to operation 36 Inspection, confirmation of environmental protection facilities/measures before bringing the project to operation 37 Trial operation of waste treatment facilities 38 Dossiers of request for inspection, confirmation of environmental protection facilities/measures using in operation phase of the project 39 Inspection, confirmation of environmental protection facilities/measures using in operation phase of the project 40 Establishment of the team to inspect environmental protection facilities/measures using in operation phase of the project 41 Working principles of the inspection team 42 Responsibilities and rights of members of the inspection team 43 Content and format of report on results of inspection 44 Re-inspection of environmental protection facilities/measures

No.	Title	Content
VI	EPC	45 Objects subject to elaboration and registration of EPC and content of an EPC 46 Dossiers for registration of EPC 47 Procedure of registration of EPC 48 Responsibilities of project owner and authorities after the EPC is registered
VII	Implementation of the Circular	49 Implementing ministries/agencies/organizations 50 Implementation of the Circular (the Circular shall become effective from September 02, 2011. Circular 05/2008/TT-BTNMT, and Circular 13/2009/TT-BTNMT shall lose effect after the Circular becomes effective)

Circular 26/2011/TT-BTNMT has 41 appendices providing sample formats of the SEA Report, EIA Report, EPC document, etc.

c) Procedure for the Preparation, Appraisal and Approval of an EIA Report

Figure C.1.1 summarizes the procedure to prepare, appraise and approve an EIA report, as stipulated by Decree 80/2006/ND-CP, Decree 21/2008/ND-CP, Decree 29/2011/ND-CP and Circular 26/2011/TT-BTTMT. A competent agency should have responsibility for the whole procedure of appraising and approving the EIA report. Based on the scope of work and the total project cost, MONRE or another ministry, or a ministerial level agency, or a governmental body or a provincial level People's Committee will be assigned as the competent approval agency.

After receiving application for appraisal and approval, the competent approval agency shall make decision to establish or assign an independent entity to take role as the entity in charge of appraising the EIA report.

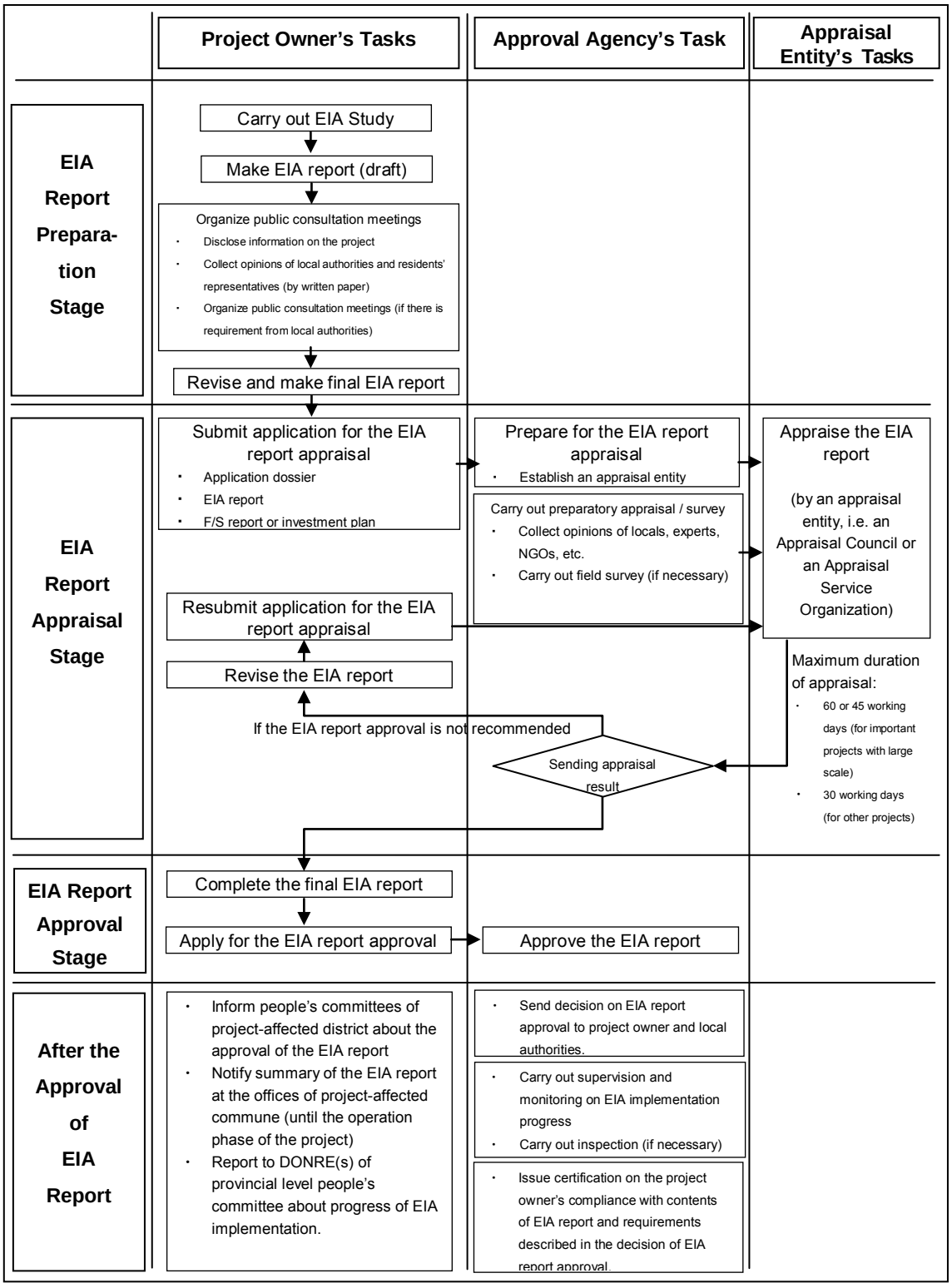
The EIA appraisal entity is an external entity independent to the EIA approval agency. Director of the EIA approval agency may examine the specificity, the technical characteristic of the project, the complication of surrounding environment, etc. and determine to assign an Appraisal Council, or an Appraisal Service Organization to appraise the EIA report. Duration for appraisal is fixed to be 30 or 45 or 60 working days. The EIA approval agency may determine the duration, after examining the project scope, the complication of the task, etc.

The EIA approval agency will then inform the project owner about result of EIA report appraisal. The project owner shall revise the EIA report and submit it again if there is such requirement from the EIA approval agency. Since then, the EIA approval agency shall issue the decision to approve the EIA report within 15 working days.

The EIA approval agency is nominated based on the project scope and the estimated project cost described in the F/S report. If the project cost is estimated to exceed 35 trillion VND (about 1.2 billion US$), then its investment plan should be approved by the National Assembly, and its EIA report should be appraised and approved by MONRE (refer to Decision 49/2010/QH-12 approved by National Assembly on June 19, 2010). If the project cost is estimated not exceed 35 trillion VND, then its investment plan is commonly approved by ministerial level agency or provincial level people's committee, and its EIA report is commonly appraised and approved by relevant Department of Environment of

ministerial level agency or Department of Natural Resources and Environment (DONRE) of provincial level people's committee.

Figure D.1.1 - Flow Chart of the Procedure for the Preparation, Appraisal, and Approval of an EIA Report



D.2 Deviation between the JICA Environmental Guidelines and Vietnam's Legal Framework on Environmental Assessment

The current EIA system in Vietnam is basically consistent with international practice. However, it lacks concrete procedures and requirements for information disclosure, public consultation. In addition, it lacks consideration on impacts to the local socio-economy such as the following:

(1) Local economy such as employment, livelihood, etc.

(2) Utilization of land, local resources, etc.

(3) Social institutions, local decision-making institutions

(4) Vulnerable social groups (the poor, indigenous peoples, etc.)

(5) Equality of benefits and losses, equality in the development process

(6) Gender, children's rights

(7) Local conflicts of interest

The following Table D.2.1 lists up major deviations between Vietnam's impact assessment legal framework and JICA Guidelines for Environmental and Social Considerations (April 2010).

Table D.2.1 - Deviations between Vietnam's EIA Legal Framework and JICA Guidelines

JICA Guidelines	Vietnam's EIA Legal Framework
1. Principle: Environmental impacts that may be caused by projects must be assessed and examined in the earliest possible planning stage. Alternatives or mitigation measures to avoid or minimize adverse impacts must be examined and incorporated into the project plan.	At the project level, environmental impacts are assessed and examined only from the stage of F/S. IEE or Environmental Scoping is not compulsory in the environmental assessment procedure. In an EIA report, alternatives should be examined, and all anticipated impacts caused by the project should be assessed without the scoping process.
2. Ensuring accountability and transparency	There is no provision on accountability and transparency in Vietnam regulations on environmental assessment.
3. Ensuring meaningful participation of stakeholders - In principle, project proponents etc. consult with local stakeholders through means that induce broad public participation to a reasonable extent, in order to take into consideration the environmental and social factors in a way that is most suitable to local situations, and in order to reach an appropriate consensus. - (In the case of Category A projects,) JICA encourages project proponents etc. to consult with local stakeholders about their understanding of development needs, the likely adverse impacts on the environment and society, and the analysis of alternatives at an early stage of the project, and assists project proponents as needed. - The outcome of such consultations must be incorporated into the contents of project plans.	According to Decree 29/2011/ND-CP, in the process of making the EIA report, the project owner should carry out consultation by the following method: - Send a written request for consultation and a document outlining the main project items, environmental issues, and measures to mitigate environmental impacts to people's committees (PCs) of communes, wards or townships where the project is to be implemented and representatives of communities and organizations directly affected by the project; - Request the above-mentioned PCs and representatives of communities and organizations to give comments on the document sent. - In case of necessity, the commune-level PCs shall organize a dialogue with the project owner and representatives of organizations and communities directly affected by the project.

JICA Guidelines	Vietnam's EIA Legal Framework
	- After receiving the written request for consultation, the commune-level PCs shall reply the project owner in writing and publicize such reply. Past this time limit, if a consulted PC fails to send a written reply to the project owner, it is regarded as agreeing with the project owner's investment plan. As described above, consultation is limited to commune-level PCs and representatives of affected organizations and communities. The concept on "local stakeholders" has not been widely recognized in Vietnam yet. And main purpose of consultation is likely to obtain agreeing or disagreeing opinions of local authorities, instead of to promote local residents' understanding and participation.
4. Information disclosure - JICA discusses frameworks with project proponents etc. in order to ensure information disclosure, and comes to an agreement in an early stage of cooperation projects. - (In the case of Preparatory Survey,) Project proponents etc. disclose scoping drafts, which consist of project name, countries, locations, project outlines, categorizations and the reasons behind them, alternatives, impacts, and contents. - EIA reports are required to be made available to the local residents of the country in which the project is to be implemented. The EIA reports are required to be available at all times for perusal by project stakeholders such as local residents and copying must be permitted.	According to Decree 29/2011/ND-CP (Article 22), after the EIA report is approved, the project owner shall formulate, approve and publicize the Environmental Management Plan at the offices of the commune-level PCs where consultation had been conducted to enhance people's awareness about the project, and enable people's participation in the supervision and monitoring of the project. However, it seems that the process and method to disclose such information are not properly undertaken in actuality. Therefore, in general, the project-affected people are not easy to access to information such as the EIA report or the EMP of the project, and present their opinions on the project.
5. Project categorization: JICA classifies projects into four categories (A ~ C, and FI) according to the extent of environmental and social impacts, taking into account an outline of project, scale, site condition, etc.	The system of environmental assessment in Vietnam is consisted of: (1) Strategic Environmental Assessment (SEA), (2) Environmental Impact Assessment (EIA), and (3) Environmental Protection Commitment (EPC). Objects subject to elaboration of SEA are socio-economic development strategies, plannings and plans at national level, regional level, provincial level, key economic regions, and inter-provincial river watersheds. At the project level, projects are categorized into two groups: group has to elaborate an EIA report, and group has not to elaborate an EIA report but only has to submit an EPC. Decree 29/2011/ND-CP lists up 146 groups of projects which have to elaborate and submit an EIA report for approval.
6. Impacts to be assessed: The impacts to be assessed with regard to environmental and social considerations include impacts on human health and safety, as well as on the natural environment, that are transmitted through air, water, soil, waste, accidents, water usage, climate change, ecosystems, fauna and flora, including trans-boundary or global scale impacts. These also include social impacts, including migration of population and involuntary resettlement, local economy such as employment and livelihood, utilization of land and local resources, social institutions such as social capital	According to Circular 26/101/TT-BTNMT (stipulating in detail a number of articles of Decree 29/2011/ ND-CP), impacts in pre-construction phase, construction phase, and operation phase should be anticipated and assessed. In pre-construction phase, alternatives on project location, and without- the-project option should be examined, and impacts caused by land acquisition, relocation, and resettlement should be assessed. In construction phase and operation phase, all project activities should be identified and impacts caused by these activities should be anticipated and assessed while taking into considerations the source of impact, subject of impact, extent of impact, occurrence

JICA Guidelines	Vietnam's EIA Legal Framework
and local decision-making institutions, existing social infrastructures and services, vulnerable social groups such as poor and indigenous peoples, equality of benefits and losses and equality in the development process, gender, children's rights, cultural heritage, local conflicts of interest, infectious diseases such as HIV/AIDS, and working conditions including occupational safety. Items to be addressed in the specific project are narrowed down to the needed ones through the scoping process.	frequency of impact, recovering possibility, etc. However, it seems that the following impacts are not properly considered: impacts to local economy (employment, livelihood, utilization of land, etc.), local resources, social institutions, local decision-making institutions, vulnerable social groups (the poors, indigenous peoples, etc.), equality of benefits and losses, equality in the development process, gender, children's rights, and local conflicts of interest.
7. Concern about Social Environment and Human Rights: JICA respects the principles of internationally established human rights standards such as the International Convention on Human Rights, and gives special attention to the human rights of vulnerable social groups including women, indigenous peoples, persons with disabilities, and minorities when implementing cooperation projects.	There is no provision on concern about human rights in the legal framework on project impact assessment in Vietnam.
8. Involuntary Resettlement People who must be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported by project proponents etc. in a timely manner. Prior compensation, at full replacement cost, must be provided as much as possible. Host countries must make efforts to enable people affected by projects and to improve their standard of living, income opportunities, and production levels, or at least to restore these to pre-project levels. Measures to achieve this may include: providing land and monetary compensation for losses (to cover land and property losses), supporting means for an alternative sustainable livelihood, and providing the expenses necessary for the relocation and re-establishment of communities at resettlement sites. ... In preparing a resettlement action plan, consultations must be held with the affected people and their communities based on sufficient information made available to them in advance.	In Vietnam, issues on land acquisition, compensation, resettlement, etc. are regulated by the law and regulations on land administration (such as the New Land Law 2003, Decree 69/2009/ND-CP, Circular 14/2009/TT-BTNMT, etc.). If a development project needs to acquire some lots of land, then these above-mentioned law and regulations will be applied, an inventory-of-loss (IOL) will be carried out, and people who loses lands, properties, means of livelihood, etc. will be compensated and/or supported in relocation and resettlement. Measures to help project-affected people in restoring livelihood, improving living standard, etc. after resettlement have not been properly considered for a long time in the past. Only in the recently-issued Decree 69/2009/ ND-CP, the livelihood restoration plan has been stated for the first time as a measure to help affected people in obtaining sustainable livelihood. However, it needs further efforts to improve legal framework on involuntary resettlement and strengthen capacity of local agencies responsible for planning and implementing the livelihood restoration plan.
9. Indigenous Peoples Any adverse impacts that a project may have on indigenous peoples are to be avoided when feasible by exploring all viable alternatives.	There is no particular provision on indigenous peoples in Vietnam's legal framework on project impact assessment.
10. Monitoring Project proponents etc. should make efforts to make the results of the monitoring process available to local project stakeholders. When third parties point out, in concrete terms, that environmental and social considerations are not being fully undertaken, forums for discussion and examination of countermeasures are established based on sufficient information disclosure, including stakeholders' participation in relevant projects. Project proponents etc. should make efforts to reach an agreement on procedures to be adopted with a view to resolving problems.	According to Decree 29/2011/ND-CP (Article 22), after the EIA report is approved, the project owner shall formulate, approve and publicize the Environmental Management Plan at the offices of the commune-level PCs where consultation had been conducted. However, in the legal framework on impact assessment in Vietnam, there is no provision on the project owner's obligation to publicize results of monitoring process, and the procedure to settle complaints raised by the public on environmental issues relating to the project.

Appendix E: Environmentally Sensitive Spots along the Proposed Feeder Bus Routes

E APPENDIX E: ENVIRONMENTALLY-SENSITIVE SPOTS ALONG THE PROPOSED FEEDER BUS ROUTES

E.1 Tables of Environmentally-Sensitive Spots

Table E.1.1 shows the information regarding the environmentally sensitive sports along the proposed feeder bus routes.

Table E.1.1 – Environmentally Sensitive Spots along the Feeder Bus Routes

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
1	1	Ho Chi Minh City University of Culture	51 Quoc Huong Street, Thao Dien Ward, District 2, Ho Chi Minh City	University	7000m^2 and # 4.500 students	Monday - Saturday: Morning 07h00 - 11h30; Afternoon 13h00 - 17h50	Education for subjects: tourist, cultural management, ethnic cultures, museum, library, etc.	10°48′19.7″N 106°43′50.8″E	0.4	Edge of the route	Surrounded by Thao Dien street, street 41. Wall at the front side
2	1	An Hoa pagoda	42 Quoc Huong Street, Thao Dien Ward, District 2, Ho Chi Minh City	Pagoda	#3.000m^2	18h00 - 19h00		10°48′21″N 106°43′53″E	0.4	Edge of the route	Opposite to University of culture in the main gate, one side surrounded by street 65 of Thao Dien ward
3	1	Huynh Van Ngoi primary school	78 Quoc Huong Street, Thao Dien Ward, District 2, Ho Chi Minh City	Primary school	2.268m^2; 10 classrooms and 16 function rooms	office hours	For pupils of ThaoDien Ward, District 2, Ho Chi Minh City	10°48′30.5″N 106°43′51.1″E	0.7	Edge of the route	

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
4	1	Viet Phuong Private Kindergarten	61 Street 47, Thao Dien Ward, District 2, Ho Chi Minh City	Kindergarten	# 300m^2. 05 classrooms and 03 function rooms. 110 pupils age from 18 months to 5 years	Monday -Saturday: 07h00 to 17h00	Day-school, from 7h00 - 17h00	10°48′40″N 106°43′46″E	1.5	Edge of the route	Front side is surrounded by a gate and steel fence;
5	1	Ho Chi Minh City Vocational Maritime College	232 Nguyen Van Huong, Thao Dien Ward, District 2, Ho Chi Minh City	College	Classrooms: 22 (40-50Students /class). 01 lecture-room (250 seats). 2.000 students	Morning 07h00 - 11h30; Afternoon 13h00 - 17h50	Dormitory at branch 1: 232 Nguyen Van Huong,Thao Dien Ward, District 2, Ho Chi Minh City	10°48′40.9″N 106°43′49.1″E		Edge of the route	Surrounded by Nguyen Van Huong street, alley 216. The front side has steel fence. plants in front of the front gate
6	2	Ky Quang 3 Pagoda	725 Hanoi highway street, Thao Dien Ward, District 2, Ho Chi Minh City	Pagoda	# 2000m^2	18h00 - 19h00		10°48′05.2″N 106°44′12.4″E	0.5	Edge of the route	Located at the T-junction of Hanoi highway, Nguyen Ba Lan street, and 80m from Thao Dien intersection

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
7	2	Post Office 2 Hospital	68 Nguyen Duy Hieu street, Thao Dien Ward, District 2, Ho Chi Minh	Hospital	Area # 1.200m^2, including 31 departments, #160 patient beds.	07h30 to 17h00; emergency 24/24		10°48′10.1″N 106°44′14.3″E	1.5	54m	located on Nguyen Duy Hieu, # 50m from Thao Dien street
8	2	Medical Clinic of Thao Dien Ward	89, Thao Dien street, Thao Dien Ward, District 2, Ho Chi Minh City	Health care	Area # 500m2 including 1 ground floor, 2 floors	Morning: 7h30 – 11h30 Afternoon: 13h00 – 17h00 Noon: emergency only		10°48′25.1″N 106°44′03.3″E	2.2	Edge of the route	#17m from the route, steel fencing in the front site. Enclosed rooms
9	2	Thao Dien Special Education School	91, Thao Dien street, Thao Dien Ward, District 2, Ho Chi Minh City	School; enrolling abnormal pupils at ages of kindergarten and primary schools	Area 1.598m2, pupils # 150 pupils; 9 staff	office hours	For autistic children	10°48′26.1″N 106°44′02.6″E	2.3	Edge of the route	Front side has steel fence, classrooms is about 15m from the route
10	2	Carmel FMP Hospital	95 Thao Dien street, Thao Dien Ward, District 2,	Hospital	65 patient beds; # 40 doctors and staff; service for	Monday-Friday: 08h00-17h00. Saturday: 08h30 -	100% foreign investment	10°48′08.2″N 106°44′16.2″E	2.4	Edge of the route	

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
			Ho Chi Minh City		Vietnamese peoples from other countries	12h30					
11	2	The British International School	246 Nguyen Van Huong, Thao Dien Ward, District 2, Ho Chi Minh City	School teaching in English	161 teachers; 1.800 students from 50 countries.	07h30 - 17h00		10°48′41.9″N 106°43′54.6″E	2.7	Edge of the route	enclosed with walls of 3m
12	2	International Vietnamese-American Secondary School	172 -180 Nguyen Van Huong, Thao Dien Ward, District 2, Ho Chi Minh City	School	37 teachers	office hours		10°48′57.5″N 106°43′41.6″E		Edge of the route	
13	3	Thu Thiem High School	01 Street 2, An Khanh New Urban Area, An Phu Ward, District 2, Ho Chi Minh City	School	20.000m^2, 36 rooms, 1.200 pupils	Monday-Friday: Morning: 07h00-11h00; Afternoon: 14h00-16h30		10°47′48.8″N 106°44′38.6″E	1.5	70m	
14	3	Thien Than Nho Private Kindergarten	186 Nguyen Hoang, Quarter 5, An Phu Ward,	School	Area # 300m^2, including 05 classrooms; 50	Monday-Friday: 07h30 - 16h30		10°47′35″N 106°44′44″E	2.12	Edge of the route	

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
			District 2, Ho Chi Minh City		pupils, 5 teachers						
15	3	Giong Ong To Secondary School	256B Nguyen Duy Trinh street, Binh Trung Tay ward, District 2, Ho Chi Minh City	School	Including 30 classrooms; 35 teachers; # 800 pupils	Monday-Friday: Morning: 07h00-11h00; Afternoon: 14h00-16h30		10°47′17.4″N 106°45′25.6″E	3.9	Edge of the route	
16	3	Binh Trung Buddhist Temple	243 Nguyen Duy Trinh ward, Binh Trung Tay ward, District 2, Ho Chi Minh City	Temple	16239m^2	18h00-19h00		10°47′16″N 106°45′29″E	4.2	30m	have 2 section, Buddhism structure
17	3	Binh Trung Dong Marty's Memorial Temple		Memorial temple	1617m^2	Event such as unification day		10°47′14.4″N 106°45′41.1″E	4.3	Edge of the route	
18	4	Giuse Saint Parish	452 Hanoi highway, Phuoc Long A Ward, District 9, Ho Chi Minh City	Monastery	# 1044 catholic	Monday-Saturday: 17h30 Sunday: morning 06h30, 09h00,17h30		10°49′23.4″N 106°45′35.7″E	0.3	Edge of the route	On the edge of Hanoi highway

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
19	4	Vocational College of Technique and Technology	502 Do Xuan Hop, Phuoc Binh Ward, District 9, Ho Chi Minh City	College	10.000 m^2. Including 1 ground floor and 4 floors. 100 rooms; 3000-4000 students and 200 staff	Monday-Saturday: Morning:07h00-11h30. Afternoon: 13h00-16h30. Evening: 18h00-21h00.	Combining training and working on several majors from intermediate level to college level	10°49′16.1″N 106°46′18.6″E	2.3	Edge of the route	Opposite the Coop food supermarket, 100m from Phuoc Long B Primary school
20	4	Phuoc Long B Primary School	341 Do Xuan Hop, Phuoc Long B Ward, District 9, Ho Chi Minh City	School	40 classrooms; 2000 pupils	Monday-Friday Morning: 07h00-10h30 Afternoon:13h00 -16h30		10°49′19.6″N 106°46′17.9″E	2.2	Edge of the route	100m from Coop food supermarket, adjacent to crowded residential area
21	4	Thien Minh Pagoda	614 Do Xuan Hop, Phuoc Binh Ward, District 9, Ho Chi Minh City	Pagoda	10.000m^2. About 1.000 monks; main quarter of Buddhism of district 9	Monday-Saturday Morning: 07h00-10h30 Afternoon:13h00 -16h30		10°48′58.2″N 106°46′27.7″E	2.9	Edge of the route	College of Buddhism in the back side, Tan Duc monastery on the right side, and PhuocBinh ward PPC on the left side. 100m from

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
											T-junction of Do Xuan Hop and Duong Dinh Hoi streets
22	4	Tan Duc Church	Do Xuan Hop street, Phuoc Binh Ward, District 9, Ho Chi Minh City	Church	4000m^2; 1000 catholic in normal days	Monday- Saturday: 18h00 Sunday: 05h00, 07h00,18h00		10°48′56.8″N 106°46′28″E	3	Edge of the route	
23	4	College of Foreign Economic Relations	106A street 3, Phuoc Binh Ward, District 9, Ho Chi Minh City	College	10.000m^2. 10 classrooms; 400-500 students	Morning 07h00-11h30		10°48′47″N 106°46′19.4″E	3.4	Edge of the route	
24	4	Vocational Training College - 3rd Branch	165 street 3, Phuoc Binh Ward, District 9, Ho Chi Minh City	College	10.000m^2	Office hours		10°48′44.9″N 106°46′16.4″E	3.5	Edge of the route	opposite college of foreign economic
25	5	Giuse Saint Parish	452 Hanoi highway, Phuoc Long A Ward, District 9, Ho Chi Minh City	Monastery	# 1044 catholic	Monday-Saturday 17h30 Sunday: 06h30, 09h00,17h30		10°49′23.4″N 106°45′35.7″E	0.3	Edge of the route	On the edge of Hanoi highway

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
26	5	Ho Chi Minh City Industry and Trade College	20 Tang Nhon Phu Street, Phuoc Long B Ward, District 9, Ho Chi Minh City	College	20 ha including 4 floors; 100 lecture-rooms, Dormitory: 2000 students; and other entertainment facilities	Morning:07h00-11h30. Afternoon:13h00-16h30.		10°49′50.8″N 106°46′30.6″E	2.9	Edge of the route	
27	5	Phong Linh Pagoda	189 Dinh Phong Phu street, Tang NhonPhu B Ward, District 9, Ho Chi Minh City	Pagoda	Around 1.000m^2. Pagoda Wednesday and Saturday night: around 100 Buddhist present			10°50′05.2″N 106°46′58.3″E	3.1	Edge of the route	Beside medical clinic of Phuoc Long B and police station of Tang Nhon Phu ward. Opposite the residential area
28	5	Phong Phu Primary School	Duong Dinh Hoi street, Tang Nhon Phu B Ward, District 9, Ho Chi Minh City	School	More than 5000m^2, 30 classrooms and1.200 pupils.	morning 7h -16h30.Monday-Friday		10°49′59.1″N 106°46′59.8″E	3.4	Edge of the route	Opposite Phong Phu Kindergarten Phong Phu, and adjacent to Phong Phu shrine

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
29	5	Phong Phu Shrine	255 Duong Dinh Hoi street, Tang Nhon Phu B Ward, District 9, Ho Chi Minh City	National heritage	4.620m^2	Event 14 - 16 October (lunar calendar)		10°49′54.9″N 106°47′01.1″E	3.5	Edge of the route	
30	5	Tang Nhon Phu B Secondary School	Duong Dinh Hoi street, Tang Nhon Phu B Ward, District 9, Ho Chi Minh City	School	30 classrooms and more than 1000 pupils			10°49'43.67"N 106°46'56.20"E	3.8	Edge of the route	Beside college of communication and transport. Opposite an area of graves
31	5	College of Transport and Communications-3rd Branch	256 Duong Dinh Hoi street, Tang Nhon Phu B Ward, District 9, Ho Chi Minh City	School	20.000 m^2; 1000 students			10°49'41"N 106°46'59"E	3.9	Edge of the route	Adjacent to Phuoc Long B secondary school
32	5	Ho Chi Minh City College of Technique and Technology	502 Do Xuan Hop street, Phuoc Binh, Ward, District 9, Ho Chi Minh City	College	10.000m^2 Including 1 ground floor and 4 floors. More than 100 rooms; 3000-4000 students; 200	Monday- Saturday: Morning07h00-11h30. Afternoon 13h00-16h30. Evening 18h00-21h00.	Combining training and working on several majors from intermediate level to college	10°49′16.1″N 106°46′18.6″E	5.5	Edge of the route	Opposite Coop food supermarket, 100m from Phuoc Long B Primary school.

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
					staff		level				
33	5	Phuoc Binh B Primary School	341 Do Xuan Hop street, Phuoc Long B Ward, District 9, Ho Chi Minh City	School	Including 2 units; 40 classrooms and 2000 pupils	Monday-Friday Morning 07h00-11h30. Afternoon 13h00-16h30.		10°49′19.6″N 106°46′17.9″E	5.6	Edge of the route	100m from Coop food supermarket, adjacent to crowded residential area
34	6	Phuoc Long Kindergarten	Do Xuan Hop street, Phuoc Long B Ward, District 9, Ho Chi Minh City	Kindergarten	Nearly 8.000m^2; 10 rooms; 250 children and 27 kindergarteners	Monday-Friday 07h00-17h30		10°49'44.33"N 106°46'7.86"E	1.3	Edge of the route	Opposite Phuoc Long B market, and surrounded with residential areas
35	6	Ho Chi Minh City Industry and Trade College	20 Tang Nhon Phu Street, Phuoc Long B Ward, District 9, Ho Chi Minh City	College	4 buildings; 100 lecture-room; 60 workshops, library: 1000m^2; Dormitory: 2000 places, and other entertainment facilities			10°49′50.8″N 106°46′30.6″E	2.4	Edge of the route	

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
36	6	Phong Linh Pagoda	189 Dinh Phong Phu street, Tang Nhon Phu B Ward, District 9, Ho Chi Minh City	Pagoda	More than 1.000m^2. Wednesday and Saturday: more than 100 Buddhist present	Wednesday and Saturday: 18h00 -19h00		10°50′05.2″N 106°46′58.3″E	3.4	Edge of the route	Beside medical clinic of Phuoc Long B and police station of Tang Nhon Phu ward. Opposite the residential area
37	6	Thu Duc Phanxico Monastery	42 Dinh Phong Phu street, Tang Nhon Phu B Ward, District 9, Ho Chi Minh City	Monastery	30.600 m^2; 6 classrooms including 2 floors and 150 pupils. 60-70 persons present in the evening, in events: 300- 400 persons	Morning07h30 -11h00		10°50'27.51"N 106°46'53.57"E	4.3	Edge of the route	Opposite Clara Saint Monastery and Thanh Linh Church
38	6	Clara Saint Monastery	35 Dinh Phong Phu street, Tang Nhon Phu B Ward, District 9, Ho Chi Minh City	Monastery	10.000 m^2; 40 persons; many people present in events, Saturdays and Sundays	-		10°50'27.51"N 106°46'53.57"E	4.3	Edge of the route	Adjacent to Thanh Linh church

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
39	6	Thanh Linh Church	1/6 Dinh Phong Phu street, Tang NhonPhu B Ward, District 9, Ho Chi Minh City	Church	10.000 m^2. 200 person present everyday; Sunday: around 5000 persons.	04h00, 05h00, 07h00, 17h00, 18h00		10°50'27.51"N 106°46'53.57"E	4.4	Edge of the route	Near the cross-section of Le Van Viet street
40	6	Quan Dan Mien Dong Hospital	50 Le Van Viet street, Hiep Phu Ward, District 9, Ho Chi Minh City	Hospital	500 patient beds; 42.000 m^2	24/24		10°50'46.29"N 106°46'41.59"E	5	Edge of the route	
41	6	College of Military Medicine	50 Le Van Viet street, Hiep Phu Ward, District 9, Ho Chi Minh City	College	37,500m^2 and 2.000 students. 28 classrooms and 36 experimental rooms;	08h00 - 22h00		10°50'46.68"N 106°46'39.53"E	5.1	Edge of the route	
42	6	Hoang Dieu Primary School	33 Le Van Chi street, Linh Trung Ward, Thu Duc District, Ho Chi Minh City	School	6400 m^2. 30 classrooms; more than 1200 pupils	Morning 06h30 -11h00 Afternoon 13h50-16h10		10°51'19.99"N 106°46'25.93"E	6.5	100 m	100m from the route and in a alley
43	6	Do Tan Phong Primary	103 Le Van Chi street, Linh Trung	School	4.560m^2 (including 3	Morning06h30 -11h00		10°51'25.53"N 106°46'36.04"E	6.9	Edge of the route	Opposite Thu Duc water treatment

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
		School	Ward, Thu Duc District, Ho Chi Minh City		floors, 25 classrooms and 15 function rooms). Nearly 1000 pupils.	Afternoon 13h50-16h10					plant
44	6	Hao Quang Pagoda	113 Le Van Chi street, Linh Trung Ward, Thu Duc District, Ho Chi Minh City	Pagoda	600m^2. Sunday mornings 180-200 Buddhists present.	-		10°51'29.09"N 106°46'38.33"E	7.2	Edge of the route	Adjacent to a tennis club; opposite Cadivi electrical cable company
45	6	Thu Duc General Hospital	64 Le Van Chi street, Linh Trung Ward, Thu Duc District, Ho Chi Minh City	Hospital	5,8 ha. Including 3 floors and 1000 patient bed	24/24		10°51'42.83"N 106°46'47.22"E	7.8	Edge of the route	
46	7	Quang Duc Monastery	33 Dang Van Bi Street, Truong Tho Ward, Thu Duc District, Ho Chi Minh City	Monastery	3000 m^2	18h00-19h00		10°50′21.7″N 106°45′58″E	0.4	Edge of the route	
47	7	Health Care Center of Thu	59 Dang Van Bi Street, Truong	Health care	500 m^2					Edge of the route	

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
		Duc district	Tho Ward, Thu Duc District, Ho Chi Minh City								
48	7	Ho Chi Minh City Architecture University			In construction phase			10°50′31″N 106°45′52″E		Edge of the route	
49	7	One Pillar Pagoda of Thu Duc	10 Dang Van Bi Street, Binh Tho Ward, Thu Duc District, Ho Chi Minh City	Pagoda	10.000m^2; the main structure is located in a pond of 600m^2.	18h00-19h00		10°50′36.9″N 106°45′47.6″E		Edge of the route	
50	7	Viet-Anh Kindergarten	2 Dan Chu, Binh Tho Ward, Thu Duc District, Ho Chi Minh City	School	2.000m^2 including 20 classrooms, #350 pupils, 16 staff	Monday- Friday: 07h00 to 16h30		10°50′38″N 106°45′48″E		Edge of the route	
51	7	Thu Duc High School	166/24 Dang Van Bi Street, Binh Tho Ward, Thu Duc District, Ho Chi Minh City	School	11.200m^2, 1underground floors and 4 other floors; 50 classrooms,	Monday-Friday: Morning: 07h00-11h00 Afternoon: 13h30-16h30		10°50′53.8″N 106°45′42.7″E		Edge of the route	

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
					2100 pupils and 125 staff and teachers.						
52	7	Hue Nghiem Pagoda	204 Dang Van Bi Street, Binh Tho Ward, Thu Duc District, Ho Chi Minh City	Pagoda				10°50′56.2″N 106°45′34.6″E		Edge of the route	
53	7	Thu Duc College of Technology	53 Vo Van Ngan street, Linh Chieu Ward, Thu Duc District, Ho Chi Minh City	School	24,294m^2. Including 57 classrooms. Dormitory: 36 rooms with 380 students. Teachers and staff 289, students # 5000.	Monday-Friday: morning: 7h-11h; afternoon: 1h30h-4h30		10°51′09.1″N 106°45′32.4″E		Edge of the route	The front side has fence and many plants. Lecture rooms are around 50m from the route
54	7	Thu Duc Parish	51 Vo Van Ngan street, Linh Chieu Ward, Thu Duc District, Ho Chi Minh City	Monastery	6468m^2; serving # 6200 catholic	Monday-Saturday: 05h00 - 17h30, Sunday: 05h00 -19h00		10°51′06.8″N 106°45′25.8″E		Edge of the route	

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
55	7	Truong Van Ngu Secondary School	49 Vo Van Ngan street, Linh Chieu Ward, Thu Duc District, Ho Chi Minh City	School	# 700m^2, 3 floors; 28 classrooms 1104 pupils; staffs: 68			10°51′05.5″N 106°45′23.7″E		Edge of the route	
56	7	Nguyen Trung Truc Primary School	962 Kha Van Can street, Linh Chieu Ward, Thu Duc District, Ho Chi Minh City	School	# 4.000m^2, 39 classrooms, 41 classes, 1739 pupils, 62 staffs	Monday-Friday: Morning: 7h-11h; Afternoon: 2h-4h30	Day-school for pupils	10°51′06.7″N 106°45′18.5″E		Edge of the route	
57	7	Linh Dong Primary School	170 To Ngoc Van street, Linh Dong Ward, Thu Duc District, Ho Chi Minh City	School	In construction phase, 3 floors and more than 20 classrooms			10°51′19″N 106°45′03″E		Edge of the route	
58	7	Tam Ha Church	66 Tam Ha, Quater 4 Tam Phu Ward, Thu Duc District, Ho Chi Minh City	Church	2,000m^2; catholic: #3000	Monday-Friday: 4h30 - 17h00 Sunday: 04h00 - 07h00 - 16h00- 18h00;		10°51' 42"N 106° 44' 49"E		Edge of the route	Surrounded by Tam Ha street and street No. 4. The main structure is 50 m from the route and 20m from Tam Ha

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
											street.
59	7	Thu Duc District Hospital	29 Quater 5 Phu Chau street, Tam Phu Ward, Thu Duc District, Ho Chi Minh City	Hospital	8 rooms and 28 departments; more than 500 patient bed, staff: more than 1000 persons	07h30 to 17h00; emergency 24/24	-	10°51′51.7″N 106°44′43.4″E		Edge of the route,	
60	7	Chau Binh Parish	470/17 Provincial Highway 43, Tam Phu Ward, Thu Duc District, Ho Chi Minh City	Church	# 3.500m^2; serving 5300 catholic	Monday-Saturday: 05h00; 17h30 Sunday: 05h00 - 07h15 - 16h30		10°51′48.4″N 106°44′43.1″E		Edge of the route	Opposite Thu Duc hospital, surrounded by steel fence. The main structure is 40m from the route
61	7	Tam Hai Parish	180 Tam Chau street, Quarter 2, Tam Binh Ward, Thu Duc District, Ho Chi Minh City	Church	5000m^2; serving # 7000 catholic	Monday - Saturday: 05h00 - 18h00; Sunday: 05h00 - 07h00 - 10h00 - 16h00 - 17h30 - 19h30		10°52′18″N 106°44′34″E		Edge of the route	

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
62	8	Ho Chi Minh City University of Technical Education	01 Vo Van Ngan street, Linh Chieu Ward, Thu Duc District, Ho Chi Minh City	University	170.000m^2; 175 classrooms; 13 departments and more than 25.000 students	Monday-Friday: Morning: 07h00-11h00; Afternoon: 13h30-16h30		10°51′01.8″N 106°46′16.7″E	0.1	Edge of the route	In the North of Ho Chi Minh City, about 10km from city center.
63	8	20-11 Kindergarten	237 Hoang Dieu 2 street, Linh Trung Ward, Thu Duc District, Ho Chi Minh City	Kindergarten	# 200m^2 including 4 floors; 08 staffs, # 130 pupils	Monday-Friday: 06h45 to 17h00	-	10°51′15″N 106°46′22″E		Edge of the route	Located at T-junction of Hoang Dieu2 street and Le Van Chi street, opposite dormitory of University of Technical Education
64	8	Nguyen Van Triet Primary School	57 Hoang Dieu 2 street, Linh Trung Ward, Thu Duc District, Ho Chi Minh City	School	# 4.000m^2, 46 classrooms, 41 classes, 1.739 pupils, 60 staffs	Monday-Friday: morning: 7h-11h; afternoon: 2h-4h30		10°51′30.5″N 106°45′50″E		Edge of the route	Opposite Banking University
65	8	Ho Chi Minh City Banking University	56 Hoang Dieu 2 street, Linh Trung Ward, Thu Duc	University	11ha; 75 lecture-rooms. 500 teachers		-	10°51′27.6″N 106°45′41.7″E		Edge of the route	-

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
			District, Ho Chi Minh City		Dormitory for 5.000 students						
66	8	Hoan Hao General Hospital	26 Kha Van Can street, Linh Trung Ward, Thu Duc District, Ho Chi Minh City	Hospital	~1,500m^2, several medical rooms			10°52′06″N 106°45′45″E		Edge of the route	
67	8	Linh Trung Secondary School	5 Linh Trung street, Quater2, Linh Trung Ward, Thu Duc District, Ho Chi Minh City	School	1.080m^2; 33 classrooms; and 1439 pupils; teachers and staff: 75 persons.	Monday-Friday: Morning: 07h00-11h00; Afternoon: 14h00-16h30		10°51′48.9″N 106°45′44″E		80m	Located on Linh Trung street (the width of street is 70m), many plants on this side. 80m from Kha Van Can street.
68	8	Xuan Truong Secondary School	1K Highway, Linh Xuan Ward, Thu Duc District, Ho Chi Minh City	School	1000m^2; 24 classrooms; pupils: 1.013; staffs: 47 persons	Monday-Friday: Morning: 07h00-11h00; Afternoon: 14h00-16h30	Day-school for 50% pupils	10°52′35.7″N 106°45′57.4″E		Edge of the route	
69	8	Xuan Hiep Primary	146 1K Highway, Linh Xuan Ward,	School	# 1700m^2, 233 classrooms,			10°52′44.4″N 106°46′05.5″E		70m	

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
		School	Thu Duc District, Ho Chi Minh City		including 2 floors. pupils: 1.463; staffs: 62 persons						
70	8	Tu Quang Pagoda	68/5 Xuan Hiep 1 Hamlet, Linh Xuan Ward, Thu Duc District, Ho Chi Minh City	Pagoda	More than 2000m^2	18h00-19h00	Have charity traditional medicine	0°53′05.3″N 106°46′20.8″E		Edge of the route	
71	9	Quan Dan Mien Dong Hospital	50 Le Van Viet street, Hiep Phu Ward, District 9, Ho Chi Minh City	Hospital	42.000 m^2; 500 patient beds	24/24	-		1	Edge of the route	Adjacent to College of military medicine
72	9	Australian English International School	182-184-186, street, Hiep Phu Ward, District 9, Ho Chi Minh City	Foreign school	Area 200m^2. Including 4 floors and more than 10 rooms	Office hours		10°50′38.6″N 106°46′55.1″E	1.5	Edge of the route	surrounded by 2 streets
73	9	Tran Quoc Toan Secondary School	381 street, Tang Nhon Phu A Ward, District 9, Ho Chi Minh City	Secondary school	15268 m^2; 23 classrooms and 6 function rooms.	Office hours		10°50'40.74"N 106°47'21.34"E	2.3	Edge of the route	

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
74	9	District 9 Hospital	Quarter 2, Le Van Viet street, District 9, Ho Chi Minh City	Hospital	6400m^2	24/24		10°50'41"N 106°47'24"E	2.5	Edge of the route	
75	9	Planet International English Center	431-431B, Le Van Viet street, Tang Nhon Phu Ward, District 9, Ho Chi Minh City	Foreign school	500 m^2; 4 floors, 20 classrooms; around 200 learners	Office hours		10°50'41.96"N 106°47'29.37"E	2.7	Edge of the route	
76	9	University of Transport and Communications- 2nd Branch	450-451 Le Van Viet street, Tang Nhon Phu A Ward, District 9, Ho Chi Minh City	University	14,5ha; 63 rooms; nearly 8000 students	Office hours		10°50'47.40"N 106°47'41.03"E	3.1	Edge of the route	a dormitory, guest house, and houses for staff surround other structures of the university
77	9	Technical Practice College	484 Le Van Viet street, Tang Nhon Phu A Ward, District 9, Ho Chi Minh City	College	44.408 m²; 9.440 m² for classrooms. Enrollment: 1.000 pupils/year.	Office hours		10°50'44.27"N 106°47'44.41"E	3.2	Edge of the route	
78	9	Tuoi Hong Kindergarten	Man Thien street, Quarter 5 Tang	Private kindergarten	150 children	office hours		10°51′07.7″N 106°47′40.7″E	4.4	Edge of the route	

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
			Nhon Phu A Ward, District 9, Ho Chi Minh City								
79	9	National Academy of Politics and Public Administration		Academy/Institute	15 ha, 259 persons	office hours		10°51′00.7″N 106°47′09.6″E	5.7	Edge of the route	
80	9	Posts and Telecommunications Institute of Technology Ho Chi minh City		Academy/Institute	more than 3.3 ha; around 1200 students/year	Office hours		10°50′51.4″N 106°47′12.7″E	6	Edge of the route	
81	9	Le Van Viet Primary School	Man Thien street, Hiep Phu Ward, District 9, Ho Chi Minh City	School	10.400m^2 and 3 floors, and 40 rooms including 30 classrooms, and around 1200 pupils	Office hours		10°50′47.5″N 106°47′13.3″E	6.2	Edge of the route	

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
82	11	Suoi Tien Cultural Theme Park	120 Hanoi highway, Tan Phu Ward, District 9, Ho Chi Minh City	Park	105 ha	Monday-Friday: 07h00 - 17h00; Saturday, Sunday: 07h00 - 18h00		10°51′57″N 106°48′07″E	0	Edge of the route	Located on Hanoi highway, main gate is about 40 m from the route
83	11	Minh Duc Parish	10 Street 154, Cay Dau village, Tan Phu Ward, District 9, Ho Chi Minh City	Church	More than 3,000m^2	Monday-Friday: 4h45-17h45 Sunday: 04h45-7h15-17h30		10°52′02.2″N 106°48′25″E	0.9	Edge of the route	
84	11	Mai Hoa Kindergarten	79 Street 154, Quater3, Tan Phu Ward, District 9, Ho Chi Minh City	School	3.673m^2including 3 floor, 4 classrooms; 500 children	Monday-Friday: 07h00 to 16h30	-	10°51′53″N 106°48′48″E	0.9	Edge of the route	
85	11	Tan Phu Kindergarten	Hoang Huu Nam street, Quarter 3, Tan Phu Ward, District 9, Ho Chi Minh City	School	# 3000m^2 including 2 floors, 11 classrooms; 330 children and 43 staffs	Monday-Friday: 07h00 to 16h30		10°51′53″N 106°48′48″E		Edge of the route	

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
86	11	Nguyen Minh Quang Primary School	284 Hoang Huu Nam street, Long Thanh My Ward, Districs9, Ho Chi Minh City	School	17770 m^2; 33 teachers, 33 classrooms and more than 1000 pupils	Monday-Friday: Morning: 07h00-11h00; Afternoon: 14h00-16h30		10°51′45.1″N 106°48′52.5″E		Edge of the route	
87	11	Vietnam Youth Institute - Southern Branch	261, Hoang Huu Nam street, Tan Phu Ward, District 9, Ho Chi Minh City	Academy/Institute	1558 students; stay-in students: 50%; Teachers and staff: 50 – 60 persons	Monday-Friday: Morning: 07h00-11h00; Afternoon: 13h30-16h30	-	10°51′46.4″N 106°48′45.8″E		Edge of the route	
88	11	Tu An Ni That Hermitage	Cau Xay, Tan Phu Ward, District 9, Ho Chi Minh City	Pagoda	# 120m^2	On events: open for Buddhists to visit		10°51′20″N 106°48′45″E		Edge of the route	
89	11	Tan Phu Secondary School	119 Nam Cao street, Tan Phu Ward, District 9, Ho Chi Minh City	School	# 4000m^2, 2 floors including 37 classrooms; 1263 pupils; staffs: 68 persons	Monday-Friday: Morning: 07h00-11h00; Afternoon: 14h00-16h30		10°51′31.9″N 106°48′05.7″E		Edge of the route	
90	11	Medical Clinic of Tan Phu	82 Nam Cao Tan Phu Ward,	Health care	More than 500m^2					Edge of the route	

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
		Ward	District 9, Ho Chi Minh City								
91	12	Ho Chi Minh City University of Information Technology	Quater 6, Linh Trung Ward, Thu Duc District, Ho Chi Minh City	University	12,3ha. Enrollment: around 800 students/year	office hours		10°52'10.59"N 106°48'14.26"E	0.4	100m	
92	12	University of Natural Sciences - 2nd Branch	Quater 6, Linh Trung Ward, Thu Duc District, Ho Chi Minh City		34ha; Administration building of 10 floors on 1,928m^2	office hours		10°52'31.82"N 106°47'56.45"E	2.1	Edge of the route	
93	12	International University	Quarter 6, Linh Trung Ward, Thu Duc District, Ho Chi Minh City	University	5.39ha; 4.000 students	office hours		10°52'38.28"N106°48'9.76"E	2.7	Edge of the route	
94	13	Suoi Tien Cultural Theme Park	120 Hanoi highway, Tan Phu Ward, District 9, Ho Chi Minh City	Park	105ha	Monday-Friday: 07h00 - 17h00; Saturday, Sunday: 07h00 - 18h00	-	10°51′42.5″N 106°48′08.6″E	0	Edge of the route	Located on Hanoi highway, main gate is about 40m from the route

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
95	13	Ho Chi Minh City University of Information Technology	Quarter 6, Linh Trung Ward, Thu Duc District, Ho Chi Minh City	University	12,3 hecture; teachers: 142 persons; students: 3.698	Monday-Friday: morning : 7h30 - 11h30; afternoon: 13h30 - 16h30		10°52'10.59"N 106°48'14.26"E		Edge of the route	
96	13	Hochiminh City Martyrs' Cemetery	7 Hanoi highway, Linh Trung Ward, Thu Duc District, Ho Chi Minh City	Cemetery	more than 30ha	Tet holidays	Cemetery for 14,000 martyrs mainly originated from Ho Chi Minh City	10°52′24.4″N 106°48′41.3″E		Edge of the route	
97	13	Medical Clinic of Binh Thang Ward	Quyết Thắng Quarter, Binh Thang Ward, Di An Provincial town, Binh Duong Province	Health care	# 650m^2, including 8 function rooms, 13 patient beds, 11 staffs	Morning: 7h30 – 11h30 Afternoon: 13h00 – 17h00 Noon: emergency only	-	10°53′56″N 106°48′28″E		Edge of the route	The width is 30m, and the front side has walls
98	13	Tan Phu-Truong Cong Dinh Shrine		Shrine	-					Edge of the route	

No.	Route No.	1. General Information						2. Location of the Site			
		a. Name	b. Address	c. Type	d. Size	e. Operation time	f. Other characteristics	a. Coordinates	b. At Km	c. Distance from the route	d. Description of the site
99	13	Tran Van On Primary School	Quarter 5, Buu Hoa ward, Bien Hoa City, Dong Nai Province	School	#9000m^2, including 2 floors; 27 classes, more than 900 pupils, 38 staffs	Monday-Friday: Morning: 07h00-11h00; Afternoon: 14h00-16h30		10°55′27″N 106°49′25″E		Edge of the route	Classrooms are around 40 m from the route. The front gate is 4m high and has many plants surrounding
100	13	Ngo GiaTu Secondary School	Quarter 5, Bui Huu Nghia street, Buu Hoa ward, Bien Hoa City, Dong Nai Province	School	# 5000m^2, including 2 floors; 27 classes, more than 900 pupils, 38 staffs	Monday-Friday: Morning: 7h-11h; Afternoon: 2h-4h30		10°55′26″N 106°49′22″E		Edge of the route	Classrooms are about 25 m from the route. The front side has surrounding wall of 1.5m. The school opposite has several plants.

Appendix F: Minutes of Meetings with the Task Team

F APPENDIX F: MINUTES OF MEETINGS WITH THE TASK TEAM

F.1 Contents of the Task Team Meetings

Table F.1.1 - 1st Task Team Meeting Minutes

1st Task Team Meeting	
Date/ Time	August 29, 2013 / 9:00 - 10:50
Venue	Meeting Room on the ground floor, NJPT Office, HCMC
Topic	Discussion on the Inception Report
Attendee	(MAUR) Hoang Nhu Cuong, Tran Dang Thanh, Bui Nhat Nam (DOT) Trinh Tuan Hung, Tran Luu Nghia (DPI) Pham Duy Hanh (DPA) Nguyen Thai Thanh (MOCPT) Bui Trung Phuong, Dong Thi Hoai Phuong (JICA Study Team) Takagi, Seki, Matsumura, Matsui, Imada, Horie, Kametani, Minami, Makimura, Thu, Trang, Tuan (NJPT) Masuzawa

- Mr. Cuong mentioned that in order to implement SAPI, HCMC-PC has already agreed to set up the Station Development Task Team composed of MAUR and relative departments. Mr. Cuong is the team leader and Mr. Huy, who is the deputy director of Line 1 project, is the deputy team leader. Mr. Huy, who is absent from this meeting, can directly contact SAPI team from now on.
- Members of Vietnamese counterpart and JICA Study Team were introduced.
- Mr. Takagi explained the Inception Report. The contents are (1) Introduction, (2) Overall Schedule and Scope of Work, (3) Study Organization, (4) Study Approach, (5) Preliminary Identification and (6) Requests from JICA Study Team.
  In (6), JICA Study Team requested Vietnamese counterpart to:
  Provide related data/information in "List of Required Data/Information,"
  Permit the field surveys,
  Establish "UMRT Station Development Task Team," and
  Have a meeting with Advisory Board on Sep. 19.
- Mr. Cuong commented as follows:
  First task team meeting should be arranged for further discussion on details of the Inception Report.

For Meeting with Advisory Board, meeting time should be determined. Mr. Cuong will issue the invitation letter for relative organizations.

Regarding required data/information/documents: Vietnam side will review and supply all the required data/information/documents. Mr. Thanh & Mr. Nam will coordinate with JICA Study Team about this.

Applying IC card for bus system (type of the card and clearing house etc.) should be considered carefully. For example, if IC card is introduced, how to make balance the profits of UMRT operation company and bus operation company should be considered.

Regarding urban development around stations, both sides of the Hanoi Highway or National Highway 1 should be considered.

Regarding intermodal facilities, regulations and standards for construction should be considered.

Given the difference in characteristic of the traffic between Vietnam and Japan, parking areas for motorcycle and bicycle will be needed. Parking fare should be reasonably set.

Two types of feeder bus will be assumed. The first one can be named "Metro Bus." It should be managed by UMRT operation company and carries passengers from surrounding areas to stations. The second one can be named "City Bus." It should be managed by MOCPT. The fare of the Metro Bus should be set as competitive price so that more people living around stations can access and volume of private vehicle traffic decrease. A clear proposal of all kinds of bus should be provided to submit to People's Committee for approval.

Regarding station plaza, consider which station we can construct it.

Our study should be consistent with the study of CBD, dealing with Ben Thanh and Opera House, by Nikken Sekkei.

The area around Ba Son Station has a big potential, so its design should be considered carefully. We can consider PPP scheme.

Along Hanoi Highway there are some potential stations. This study can consider them for future investment.

- Regular meeting between JICA Study Team and the counterpart should be arranged once or twice a month. The documents should be sent to Vietnamese counterpart three days before and the summary should be prepared.
- Mr. Minami mentioned about land acquisition issues and Mr. Cuong said that we can contact with Mr. Thu of Planning Information Center who is carrying out planning along Hanoi Highway for more details.
- Mr. Seki mentioned that JICA Study Team will soon submit the official letter for the traffic surveys to MAUR. Mr. Cuong stated that MAUR will cooperate the surveys.
- Mr. Masuzawa commented as follows:

  UMRT needs intermodal facilities and bus service when it opens, but UMRT construction

project does not include them. Implementation program for them is needed. This SAPI should provide the design for it, not for just research. Thus, these issues should be clarified: who invests and implements, and, who has the right of approve this investment. ・ First task team meeting will be arranged in 4th September.	
Collected Document	
Remarks	

Table F.1.2 - 2nd Task Team Meeting Minutes

2nd Task Team Meeting	
Date/ Time	September 4, 2013 / 14:00 - 16:30
Venue	Meeting Room on the ground floor, NJPT Office, HCMC
Topic	Discussion and Comments on the Inception Report Discussion on Detailed Work Plan and Schedule
Attendee	(MAUR) Hoang Nhu Cuong, Nguyen Duc Huy, Bui Nhat Nam (DPI) Pham Duy Hanh (MOCPT) Bui Trung Phuong, Dong Thi Hoai Phuong (JICA Study Team) Takagi, Seki, Matsumura, Matsui, Horie, Minami, Makimura, Thu, Trang, Tuan

- Mr. Takagi explained the minutes of the kick-off previous meeting on Aug 29 and announced that JICA has already sent the Official letter for meeting with Japanese Advisory Board to MAUR.
- Mr. Cuong took the chair instead of Mr. Takagi because he had to leave the meeting and go to Hanoi.
- Mr. Huy, Deputy Leader of Task Team, was introduced. He proposed that regular meeting should be held twice a month; on Thursday every two weeks.

- Mr. Seki explained detailed work plan and schedule for transport demand forecast and evaluation and feeder bus network development.
- MOCPT commented on Mr. Seki's explanation as follows:

  The bus routes having direct or indirect impacts from the Line 1 are:

  Direct impacts : 6, 10, 19, 30, 50, 52, 53, 55, 56, 104, 150.

  Indirect impacts: 8, 29, 33, 43, 57, 76, 88, 89, 99, 141.

  MOCPT will provide the information on regulation and license for new bus route and rerouting. JICA have to send an official letter about proposed bus routes so that MOCPT will have the basis to issue the letter to the cooperatives. Mr. Thanh will work with MOCPT about this.

  Regarding regulation for new bus system, MOCPT proposed SAPI Team to study the decision No.16. According to it, when we introduce new bus route, we have to have a bidding. We have to consider whether it is possible for METRO BUS company to manage it.

  Regarding information of Line 1, MAUR can provide previous NJPT SAPROF study. If SAPI team wants to survey traffic demand along Line 1, MAUR will issue documents (send to localities along Line 1) to support SAPI survey team.

  Regarding IC card, MOT issued the standard with JICA support. MAUR has the standard for Line 1 and can provide the information about it. MAUR proposed to have an IC card which can

be used for both UMRT and bus. MAUR would like SAPI team to study IC application to bus. We should consider that bus passengers usually have not so much money, so we should consider the applicable level of deposit. Dr. Phuoc Viet Hung of Vietnamese-German University, has studied IC card system. During a project implementation, it should be better for him to get involved.

According to detailed schedule, we will only support the SAPI Team for project implementation. In the next meeting, please clarify the outputs of the study, for example the report, the content and the value of the report… so that MAUR will have the basis for reporting to authorities.

- Mr. Matsui explained detailed work plan and schedule for intermodal facility development.
- Mr. Cuong commented as follows:

  After SAPI Team's study we will deeply study one or two stations and make a proposal for investment and development.

  Information of technical infrastructure (1.3 of Table 1.1) is not available at the moment.

  Regarding land availability(3.1 of Table 1.1), ROW of highway is managed by DOT and 11m of it is managed by MAUR.

  MAUR cannot answer immediately to the question that who is the responsible agency to discuss the plan of each station(3.3 of Table 1.1) because HCMC-PC has not issued any official letter or decision.

  Financial mechanism should be mentioned within the scope of this study.

  We should clarify in which stations we can develop intermodal facility. One or two typical stations should be focused on for design and cost estimation.

- Mr. Huy commented as follows:

  There are another 5 planned stations in the future(The location of these stations has not been fixed yet). The target should be expanded.

  There is a similar study conducted in 2006. This study should be reviewed in ICR.

  There is no specific regulation for the cost of connecting facilities, but recently some investor proposed to connect their building to the station and they had to pay the cost.

- Mr. Matsumura stated that JICA Study Team will try to mention another 5 planned stations in the future but the consideration will be limited because there is no concrete plan and demand forecast for these stations.

- Mr. Matsumura explained detailed work plan and schedule for urban planning.
- Mr. Cuong commented as follows:

  HCMC-PC has already established an institute for urban development. This institute deals with

issues of regulation for urban development. Dr. Hoan is the director.

Regarding topographic maps and cadastre maps, MAUR will send official letter to DONRE and relevant districts.

Regarding request for meeting with local authorities, it must be more effective and convenient to request through DPA.

- Mr. Huy commented as follows:

  Regarding current condition of the urban development projects(1.4 of Table 1.1), which project is already approved should be clarified.

  Regarding management mechanism for a project, this study deal with the mechanism to manage and update the information.

  A new proper planning system is needed in order not to implement outdated project or revise the plan.

- Mr. Seki announced that JICA study team will be discussing tomorrow with JICA headquarter detailed agenda of meeting with Japanese Advisory Board.
- Mr. Cuong stated that it would be better if there is a chance to visit Japan because the agencies in HCMC, including decisive agencies for approval of the project like DOT and DPA, have no concept of station development.

Collected Document	
Remarks	

Table F.1.3 - 3rd Task Team Meeting Minutes

3rd Task Team Meeting	
Date/ Time	9:00 - 11:30 on October 3, 2013
Venue	Meeting Room on the ground floor, NJPT Office, HCMC
Topic	Report on Progress in Each Sector
Attendee	(MAUR) Hoang Nhu Cuong, Nguyen Duc Huy, Bui Nhat Nam (DPI) Nguyen Dang Anh Tu (MOCPT) Bui Trung Phuong, Mr. Phan Thanh Tan (JICA Study Team) Seki, Matsui, Imada, Urata, Makimura, Thu, Tuan

- Mr. Seki expressed his sincere thanks to the Task Team for attending the meeting with Japanese Advisory Board and explained that Mr. Takagi was not in HCMC, therefore he and Mr. Matsui would reported about the progress.
- Mr. Seki reported about the progress of traffic surveys and the conceptual ideas of feeder bus planning.
- Mr. Cuong commented on Mr. Seki's explanation as follows:

  As for Area A, the idea is basically reasonable. Adjustment of existing bus routes should be considered.

  As for Area B, it may be reasonable to consider mainly Metro Bus accessing Thao Dien and An Phu station because the east side of Rach Chiec station has not been developed yet. As for Rach Chiec area, we should concentrate on the route to Cat Lai (ferry point) through the *East-West* Avenue; connection between the bus stop and the station with the pedestrian deck. A new bus route is not necessary.

  As for Area C, around Phuoc Long station there are currently container depots and factories but the area is potential for residential development. Our feeder bus plan should be consistent with the detail plan of DPA-PlanInc. Around Binh Thai station, residential development will progress in the future according to the urban planning of Thu Duc District. We should consider about it. Discussion on the rerouting of the existing bus routes with MOCPT is necessary.
- The opposite side of the station is the boundary between District 2 and District 9. It may be reasonable to connect the new residential areas to the station by Metro Bus. In the opposite side of Thu Duc station, the development of apartment areas is now ongoing. It might be better to relocate the bus stops around Thu Duc station.

  As for Area D, in the High-tech Pack, we should provide the internal bus services connecting to the station. The High-tech Park is now providing the shuttle bus service to the city center (for the employees). There is a potential area behind the HTP but there is no bus service connecting the area with HTP now. HTP area is not so much developed yet at the moment but it will be potential. We can consider the urban development with PPP scheme. It is important to connect National University to Suoi Tien station. As far as Mr. Cuong knows, there is a feeder

bus plan in the National University area. It may be necessary to get the information through Dr. Tuan. As for Suoi Tien Terminal, there is another JICA PPP FS. According to the current plan, there is no pedestrian overpass on the National Highway connecting with Di An (Binh Duong) side to the station. This PPP FS should consider having the overpass.

- Mr. Thanh commented as follows:
  Previously NJPT study also provided the result of the boarding/alighting passengers of each station. After the demand forecast, we should compare the results of our study and that of NJPT.
- Dr. Tuan explained the result of the traffic survey to Mr. Thanh.
- Mr. Phuong commented as follows:
  In several areas, we should provide not only direct routes but also other routes going through different locations.
  There are some residential areas inside HTP. It may be necessary to grasp the trip situation inside HTP. And around Suoi Tien station, residential areas are located not only along National Highway 1 but also at a distance from it.
  There are areas having only narrow streets. For example, the Route 76 connects several small communities; several sections of which are on narrow streets. We also have to consider the size of the feeder bus.
  When the UMRT Line 1 opens, several bus routes (e.g. Route 6) will be operated no longer. We should consider how to do for the operator of such routes.
- Mr. Tan commented as follows:
  There are residential areas the south of Suoi Tien station, so a feeder bus route should be provided in them. We can also consider a bus route connecting to High Tech Park.
  As for around Thao Dien station, the bus route only connecting the station with Thao Dien area is too short. The route connecting the rural area and An Phu also is another reasonable idea.
  MOCPT will review SAPI team's plan further and provide additional comments and another plan later.

- Mr. Matsui reported the progress of intermodal facility development and presented the draft layout plan.

- Mr. Cuong commented on Mr. Matsui's explanation as follows:
  We should provide the intermodal facilities outside of the road, because he is afraid that DOT doesn't agree with the plan to provide the facilities inside the right of way. On the other hand, because we have already done it once to construct railway facilities, another land acquisition is also difficult; we should avoid the acquisition of private land as much as possible. He also thinks that possibly DOT agrees if the facilities doesn't conflict with the roadway even if it is inside the ROW.

At the moment he agrees with the proposal of SAPI Team; further study and consideration on the mechanism and system of land acquisition is needed.

Regarding authorized procedures of intermodal facility development, we should submit the investment project to PC for approval in order to conduct land acquisition.

If the government provides intermodal facilities, we should have two proposals; for funding and for implement. If it is provided by JICA funding, we should follow the national ODA program. In this case, the projects shall be revised by the relevant Government Ministries.

Regarding the detailed plan for Ben Thanh area, at the moment it has not been done yet. In his expectation, it will be finalized in August or September of 2014. Maybe our project can get the document and information at the end of our project. If we are still continuing this study at that time, we can ask the provision of the document after the approval, but it is a little later for our study.

- Mr. Seki reported the progress of urban planning.

- Mr. Cuong commented Mr.Seki's explanation as follows:

  In the procedure for approval for station development, we should submit a kind of brief report of this project to PC. It should contain the detail study on land acquisition, financial matter and related issues. And the PC makes the authorized agency to perform appraisal and inspection. Because our project is a kind of planning study, we should closely cooperate with DPA.

  As for cooperation to Binh Duong Province, Mr. Cuong advised that it would better for SAPI Team to contact directly.

  The project financing is under the management of DPI, and access road and station facility is under DOT. If we work closely with them, obtaining of the approval may be easier. When we enter into deep study, we should have a meeting with such authorities to present our study output.

- Mr. Seki briefly reported the progress of environmental and social impact assessment, which Mr. Minami has already reported to MAUR in the previous meeting (September 30th).

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Table F.1.4 - 4th Task Team Meeting Minutes

4th Task Team Meeting	
Date/Time	9:00 - 12:00 on October 24, 2013
Venue	Meeting Room on the ground floor, NJPT Office, HCMC
Topic	Report on Progress in Each Sector
Attendee	(MAUR) Nguyen Duc Huy, Bui Nhat Nam, Tran Dang Thanh (DPI) Nguyen Dang Anh Tu (DOT) Tran Luu Nguyen (MOCPT) Bui Trung Phuong, Phan Thanh Tan (DPA) Nguyen Thai Thanh (JICA Study Team) Seki, Matsui, Matsumura, Imada, Thu, Trang, Tuan

- Mr. Huy explained that Mr. Cuong had an important meeting with HCMCPC so Mr. Huy took the chair instead of Mr. Cuong.
- Mr. Seki introduced the meeting agenda.

- Mr. Seki reported about the progress of Transport Demand Forecast/ Survey and Feeder Bus Network Planning.
- Mr. Thanh commented on Mr. Seki's report as follows:
  In general, analyzing only 2 scenarios is insufficient because it does not cover all of the cases. We should explain why we removed other scenarios.
  In the 1st Figure of scenario 1, the total percentage of all options is smaller than 100%, it should be revised.
- Mr. Nguyen commented as follows:
  When UMRT Line 1 comes into operation, the traffic volume will be concentrated. The modal shift from Metro Line to surrounding areas should be considered. Within a radius of 500m, passengers can walk, 500m – 1000m they can go by xe-om or electric bus or some kinds of small vehicles. We should propose Metro bus service for short distance such as: 4-7 seats, 7-15 seats, 15-20 seats and more than 20 seats, and also propose the mechanism for these vehicles.
- Mr. Huy will provide research documents of institutions and regulations on the development of ITFs of the Sustainable Urban Transport Development project (which have just been approved by HCMC PC) for our reference. These documents include the small vehicles mentioned above.
- Mr. Thanh pointed out some more errors in the calculations, Mr. Seki said that the study team would review and show exact figures.
  Regarding the conclusions of 2 scenarios, Mr. Thanh thought that the difference between the 2

scenarios was too small to conclude that the provision of feeder bus can encourage further shift to UMRT Line 1. We should make a comparison table between the 2 scenarios to clearly show the differences.

Regarding the willingness to pay, we have to clarify the concept of "willing to pay" to avoid misunderstandings.

Mr. Tu commented on the measures to attract more passengers to UMRT Line 1: Providing facilities for handicapped people in station area. He said that if the study team didn't interview handicapped people but only interview normal people then the result was unreliable, so we could not assert that using this measure will attract more passengers. He requested us to provide/attach questionnaires and raw data in the future report.

"Người tàn tật" should be changed to "người khuyết tật" as prescribed by law. Laws, decrees for disabilities, all have the regulation on the construction of transport infrastructure facilities serving disabilities. To 2015, all infrastructure facilities must meet this regulation, so we should refer to and update to our report. He will send the regulations via email.

- Mr. Matsui reported about the progress of Intermodal Facility Development.
- Mr. Huy commented as follows:

The bidding package for constructing 17km elevated bridge and station has basically completed the design, and even it's not officially approved by MAUR but they can send us the file for our reference if we need.

Regarding land acquisition for station plaza development: there are cases that the authorities do not agree with MAUR's proposal. Therefore, we need to complete this proposal soon so that MAUR will have the basis to propose to the competent authorities for approval. If not, modification or adjustment will be needed.

Regarding the alternatives of An Phu, 2 sides of Metro Line may touch the water pipeline, especially the outer old pipeline in HN highway. In this case, when constructing or developing, a bridge should be built to isolate the pipeline. So if possible, we should propose another alternative which do not affect the pipeline.

About the construction standards/guidelines of station plaza in Japan, provide the English version (if possible) for MAUR to pre-study. Mr. Matsui replied that we only had the Japanese version but we could provide the English guidelines of JICA based on the Japanese version.

For land acquisition, contact the related agencies/companies such as Saigon Tourist, Suoi Tien, Metro An Phu, High-Tech Park… to discuss. MAUR will help us to contact Saigon Tourist and will inform when they have the result.

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Table F.1.5 - 5th Task Team Meeting Minutes

5th Task Team Meeting	
Date/Time	9:00 - 11:30 on 07 November 2013
Venue	Meeting Room on the ground floor, NJPT Office, HCMC
Topic	Report on Progress in Each Sector
Attendee	(MAUR) Nguyen Duc Huy, Bui Nhat Nam (DPI) Nguyen Dang Anh Tu (DPA) Nguyen Thai Thanh (MOCPT) Dong Thi Hoai Phuong, Phan Thanh Tan (JICA Study Team) Takagi, Seki, Matsui, Horie, Thu, Trang

- Mr. Huy expressed his sincere thanks to everyone for attending the meeting even the bad weather, and explained that Mr. Cuong was not in HCMC so he could not attend the meeting.
- Mr. Takagi explained the minutes of the 4th meeting and introduced the agenda of the 5th meeting.

- Mr. Seki and Mr. Matsui reported about the concept plan in District 2 area.
- Mr. Huy commented as follows:

  MAUR would like to confirm if the developing plans of SAPI were existing plans or only concept plans.

  Regarding the parking in slide 18, the space underneath the station is too narrow to develop the parking, because there are 24 columns of piers which are spaced 12 meters vertically and 10 meters horizontally. MAUR will provide the design drawings for SAPI to review and comment if any shockproof arrangement will be needed.
- Mr. Tan commented as follows:

  People's Committee of district 2 requested a bus route in the south of An Phu-An Khanh to serve the administrative center of district 2. However, this request is quite difficult at the present time with such a short distance. So he proposed that in the feeder bus route planning, SAPI team should consider this request and have a bus route going through this area.

  Regarding Thao Dien area, at the request of district 2, MOCPT intends to establish a bus route from district 4 – Thu Thiem Tunnel - An Phu-An Khanh - Thao Dien in the 2nd quarter of 2014. The route is too long so it will be shortened at some sections (ex. by going through alley 76).
- Mr. Thanh commented as follows:

  Regarding land use restriction for high voltage cable in the south of An Phu in Slide 19, we should work with relevant agencies to discuss.

  We should provide a list explaining concepts, definitions such as bus stop, separated bus

stop… so that they can be completely understood.
Provide a list of relevant companies/agencies/authorities so MAUR can help us to contact.

- Mr. Seki and Mr. Matsui reported about the concept plan in Thu Duc and District 9 Area.
- Mr. Huy commented as follows:
  Large parking areas should be considered to be developed in the further west of this area because the demand for parking is very large here.
  The positions of bus stops and parkings to be developed in the short term on the water mains should be noted. For years, the city has a policy to isolate water pipelines by building a bridge when constructing or developing any construction works, and the structure must be able to be taken off for maintaining or repairing the pipelines when necessary.

- Mr. Seki and Mr. Matsui reported about the concept plan in University and High-tech Park Area.
- Mr. Huy commented as follows:
  National University has just send a letter to HCMC PC proposing 2 things: 1. Rename Suoi Tien Station to National University Station, and 2. The traffic facilities connecting between National University and Suoi Tien station. Mr Huy will send SAPI the answer letter of MAUR to National University for information.
  High-tech Park concerned about the future management methods because land is owned by HTP while operation is by others. Based on our experiences, we can propose appropriate alternatives to MAUR if any.

- Discussion about Specific Issues
- Mr. Huy commented as follows:
  Regarding Metro Line 5, there are some difficulties in implementing the project, Mr. Huy will provide information to SAPI team when having official data from MAUR.
  Regarding Tan Cang, Mr. Thanh had some comments via email to Mr. Huy, will forward to SAPI team and discuss further in the next meeting.
  Mr. Tan will send SAPI team the specific planning position of Van Thanh station.

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Table F.1.6 - 6th Task Team Meeting Minutes

6th Task Team Meeting	
Date/Time	9:00 - 11:30 on 03 December 2013
Venue	Meeting Room on the 3rd floor, NJPT Office, HCMC
Topic	Report on Progress in Each Sector
Attendee	(MAUR) Nguyen Duc Huy, Tran Dang Thanh (MOCPT) Bui Trung Phuong, Phan Thanh Tan (JICA Study Team) Seki, Takata, Matsumura, Urata, Imada, Tajima, Makimura, Thu, Trang

- Mr. Huy explained that several members were absent and that Mr. Cuong had to attend an urgent meeting so he would be late for this meeting.
- Mr. Seki explained the agenda of the 6th meeting and the tentative schedule as follows:
  7th Task Team Meeting (December 19)
  Submission of the Interim Report (middle of January)
  Meeting or workshop on the Interim Report (one week after the submission of IR, before Tet holidays)
- Mr. Seki replied to the comments that Mr. Thanh sent to Study Team in November 22 as follows:
  - As Mr. Thanh pointed out, Rach Chiec Station area should be classified as "B. Developing area in District 2".
  - Regarding Mr. Thanh's apprehension of the complication of traffic movement for example at Tan Cang Station, the Study Team will do further analysis for it. The Study Team is now assuming two scenarios for demand forecast: following the approved socio-economic framework in the general plans and considering the trends of these years. After the demand forecast the Task Team can do more detailed analysis.
- Mr. Seki mentioned the necessity of collaboration among UMRT Line 1, Line 5 (connecting to UMRT Line 1 at Tan Cang) and BRT Line 1(connecting to UMRT Line 1 at Rach Chiec). He also requested the latest information on the plan for the UMRT Line 5 and the BRT Line 1. As for BRT, Mr. Seki thinks that at first MAUR should confirm with DOT about the project and after that Study Team we should consider how to collaborate with BRT study team.
- Mr. Seki asked further comments from the Vietnamese attendees on the proposals of previous task team meeting.
- Mr. Huy commented as follows:
  He generally agrees the schedule for the interim report and will inform Mr. Cuong about the Study Team's intention to have a workshop.
  Regarding to collaborating with the Line 5 and BRT project, MAUR requests the official letter

from Study Team mentioning the necessary information on these plans.

For information, BRT Line 1 is originally planned as a tramway line in the master plan but after that it is changed into BRT.

- Mr. Matsumura explained the socio-economic framework along UMRT Line 1 corridor. In this framework setting, Study Team respects the population projection in officially approved plans as much as possible and makes some realistic adjustments.
- Mr. Thanh commented as follows:

  In the document, the population framework setting for 2040 should be described in detail as well as that for 2020.

  In setting future population framework, not only current trend but also other factors such as population relocation should be taken into consideration.
- Mr. Matsumura replied to Mr. Thanh's comment that his point is the very reason why current trend is applied only for 2020, near future and Task Team respects the government policy as much as possible.
- Mr. Seki explained the reason why the population framework setting of the document is inconsistent with that of previous Task Team meeting presentation that Study Team revised the setting after the meeting with JICA Tokyo Headquarter.
- Mr. Huy commented as follows:

  He understands that there are difficulties in population estimation.

  When we discuss the population estimation, it might be better to cooperate with HIDS (HCMC Institute of Development Studies). If Study Team needs support for contacting HIDS, please prepare the document for official letter.
- Mr. Matsumura explained the TOD concepts in the station area taking Phuoc Long Station as a case study.
- Mr. Huy commented as follows:

  It is difficult to follow the suggestion of improvement of pedestrian bridge over Hanoi Highway because the parameters of railway facilities such as the width of pedestrian bridges have already been fixed.

  If the pedestrian bridges will be widened, more detailed design and additional cost estimation will be needed.
- Mr. Seki replied to Mr. Huy's comment as follows:

  There are several stations which have the potential of widening of pedestrian bridge. We can discuss at which station the widening is needed on Interim Report; and if both Vietnamese side and Japanese side agree to analyze further, additional cost estimation can be conducted.
- Mr. Huy replied that if Study Team need some further information of railway facilities, MAUR can invite the subcontractor of elevated section (Package 2) to the next meeting.
- Mr. Huy asked as follows:

If Study Team has any information or comments on the document which MAUR provided to Study Team about the technical design of Package 2, please inform MAUR; and MAUR will ask some modification or adjustment to the subcontractor.

- Mr. Huy asked Study Team again the standard or regulation on station plaza in Japan. SAPI team confirmed that after receiving the documents from Mr. Imada, Ms. Thu sent the documents to Mr. Nam/ MAUR.
- Mr. Seki asked whether there are some regulations for providing some commercial facilities such as shops or cafes in a station or a station plaza.
- Mr. Huy answered Mr. Seki's question that there is no detailed regulation at the moment; however, for investment projects, there is some mentions of investment cost and funding.
- Mr. Thanh commented that there is no plan for commercial facilities in Package 2 at the moment so MAUR would like Study Team to provide further ideas or comments on these facilities if they have any.
- Mr. Seki asked who grants the approval for the commercial activities in this case.
- Mr. Huy answered that PC decision for investment projects regulates only permanent construction such as buildings; it does not mention commercial facilities or small items; MAUR can consider and propose a plan for commercial facilities.
- Mr. Thanh commented that he is in charge of O&M company study and they also proposed the commercial activities.

- Mr. Seki explained briefly the progress of environment and social impact assessment on behalf of Mr. Minami. Regarding about the land availability for ITF development in HTP and Suoi Tien Amusement Park, Mr. Seki would like MAUR to arrange meetings with these two organizations.
- Regarding Mr. Huy commented as follows:
  Before meeting with the organizations, Mr. Huy would like SAPI team to clarify two items. First, the scale of development for ITF (areas/ facilities, etc.) and the management mechanism.
- Mr. Seki replied that regarding these two stations, Study Team should make clear the urban planning condition and after that we will discuss how to propose the station plaza.
- Mr. Huy commented that firstly Study Team and MAUR should have a meeting to make a general agreement and after that we should have meetings with related companies and he asked Study Team to provide the detail ITF plan for these two stations.
- Mr. Seki stated that unfortunately the preparation of these meeting will take time because the ITF plan of Suoi Tien Station will be provided after the start of Mr. Matsui's next assignment (Dec-20).
- MOCPT commented that more detailed feeder bus plan including estimated passengers is needed in order to examine the plan.

・ Mr. Seki replied that feeder bus demand forecast is also ongoing so more detailed plan will be provided in the Interim Report. ・ Regarding information from UTMD2 about the land availability, it is advised by Mr. Huy/ MAUR that minutes of meeting should be made in order to avoid any misunderstanding because there have been some misunderstanding between a subcontractor of UMRT and UTMD2. ・ Mr. Thanh arranged a meeting with a responsible official for BRT project. It will be from 9am, Dec 10. ・ Next Task Team meeting will be on Dec 19. ・ Mr. Seki proposed that the workshop for Interim Report on January 23 but the date is undecided because Vietnamese members will be very busy before and after Tet holidays.	
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Table F.1.7 - 7th Task Team Meeting Minutes

7th Task Team Meeting	
Date/Time	8:30 - 11:00 on 19 December 2013
Venue	Meeting Room on the ground floor, NJPT Office, HCMC
Topic	Report on Progress in Each Sector
Attendee	(MAUR) Hoang Nhu Cuong, Nguyen Duc Huy, Tran Dang Thanh, Bui Nhat Nam (DPI) Nguyen Dang Anh Tu (DPA) Nguyen Thai Thanh (MOCPT) Bui Trung Phuong, Phan Thanh Tan (JICA Study Team) Seki, Takata, Urata, Kametani, Makimura, Tuan, Thu, Trang

- Mr. Seki expressed his thanks to the Task Team members for the earlier meeting than usual and explained the agenda of the 7th meeting.

- Mr. Seki explained the study on the provision of U-turn flyover bridges and improvement of pedestrian bridges over Hanoi Highway.
- Mr. Seki added the information of the construction cost as follows:
  Following STEP condition, a pair of U-turn flyover bridges costs 240 Billion VND (12 Million USD).
  As for the improvement of pedestrian bridges, additional cost are 74 Billion VND(option 1), 38 Billion VND(option 2) and 25 Billion VND(option 3).
- Mr. Kametani explained that if this construction will be separated from the CP2, the cost can be reduced.
- Mr. Seki stated that it may be reasonable to have two options when SAPI Team discuss on the issue with JICA HQ; one is following the STEP condition and another is applying the Vietnamese standard; and also, this facility makes the surrounding areas more attractive for developers, therefore when SAPI Team discuss with developers they can show these options.
- Mr. Kametani explained that the cost of moving walk is based on the market price but that of other facilities such as elevator, escalator and pedestrian bridge are based on the CP2 price; the price of moving walk includes the cost of reinforcement of pedestrian bridge.
- Mr. Cuong commented that DOT has a plan of providing U-turn flyover bridge around An Phu Station and also has a study on the provision of U-turn flyover and underpass near the Saigon Bridge. SAPI Team can contact DOT and UTMD2 to obtain the detailed information.

- Mr. Cuong commented as follows:
  Detail report on the U-turn facilities should be prepared for DOT as soon as possible; in the report the cost should be clarified and the two fund options, namely, JICA loan and

government budget, should be considered.

The objectives of U-turn facility should be made clear as well.

U-turn facility is beneficial for residents and urban development. Vietnamese side also has some studies on U-turn facilities, in which beneficiary should be clarified; for example, which area will enjoy the benefit from them are considered.

There is an investment plan in front of High-tech Park Station so increase of traffic volume is expected. Provision of U-turn facility there should be considered in order to avoid the traffic congestion in the Tram 2 Interchange.

The capacity for truck vehicles around Binh Thai Station should be considered as well.

- Mr. Seki replied that for the solution to mitigate truck vehicle congestion, SAPI Team can propose only further study because truck vehicle traffic is quite different from that now SAPI team dealing with therefore if they consider it they need another information collection and analysis.

- Mr. Cuong commented as follows:
  As for pedestrian bridges, detailed report should be prepared in which estimation of passenger volume and the connectivity to BRT station. Based on it, we can propose the upgrade the width, because with the 3m width it cannot meet the future demand.
  We should make a report studying and proposing the additional cost and submit it to the HCMC-PC for approval.

- Mr. Seki made an explanation on rerouting existing bus and feeder bus planning. SAPI Team have a meeting with DOT next Monday and after that the proposal will be revised.
- Mr. Cuong asked why SAPI Team planned feeder bus routes only from Tan Cang to Suoi Tien Terminal.
- Mr. Seki answered that existing bus routes will play a role for feeder, from Ben Thanh to Van Thanh Park.

- MOCPT asked which option of three is most recommended.
- Mr. Seki answered that in 2020 option 2 is most reasonable and in the future option 3 will be suitable, because option 3 needs some supplemental measures such as new ticketing system or detailed coordination of railway and bus network.
- MOCPT asked why only 3 route will be discontinued although the routes whose overlapping section is more than 5km are to be discontinued.
- Mr. Seki answered that the Master Plan for Public Passenger Transport also proposed keeping the bus routes for the alternative in case of the suspension of train operation.
- MOCPT asked that when an existing bus route will be allocated to feeder section and

overlapping, how to set the bus number.

- MOCPT pointed out that the unit bus operation cost (18400VND/veh-km) is low and asked to set it based on the Decision 23/2012 on bus operation cost.

- Mr. Cuong commented as follows:

  He recommends having a separated meeting with DOT and MOCPT.

  For bus re-routing, it may not be necessary to comply strictly with the Master Plan for Public Transport; we can propose another idea. We should learn from experience of Bangkok, where the elevated UMRT and existing bus routes compete and heavy traffic congestion still remains. We should avoid such kind of situation.

  He recommends reducing overlapping sections between UMRT and bus and considering discontinuing more routes.

  As for feeder bus planning, specific bus routes for specific purposes should be considered, such as routes for commuters to High-tech Park or other industrial parks or long-distance routes to Dong Nai or Binh Duong Province.

  As for back-up bus operation for urban railway, further study is needed in terms of operator, because the back-up bus operation will be temporary service therefore who will operate is important. It is reasonable that the back-up bus route is set exactly along HCMC Line 1 and that bus stops are located exactly in front of each Line 1 station and between two stations.

  It may be better to provide parking areas not only in UMRT stations but also feeder bus terminals for passengers transferring from private vehicle to feeder bus.

  Tan Cang Station will be important transit point for Line 1, Line 5 and bus therefore parking areas are needed as well.

  Shuttle bus transport from Tan Cang to Ben Thanh is needed if Line 1 will be partially opened.

  Feeder bus planning should take the type of bus vehicle into consideration as well based on estimated passenger volume and road condition.

- Mr. Cuong proposed having the seminar for Interim Report in the middle of January.
- Mr. Seki replied that he will confirm the date with Mr. Takagi.

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Table F.1.8 - 8th Task Team Meeting Minutes

8th Task Team Meeting	
Date/Time	9:00 - 11:30 on 09 January 2014
Venue	Meeting Room on the ground floor, NJPT Office, HCMC
Topic	Report on Progress in Each Sector
Attendee	(MAUR) Hoang Nhu Cuong, Nguyen Duc Huy, Tran Dang Thanh, Bui Nhat Nam (DPI) Nguyen Dang Anh Tu (DPA) Nguyen Thai Thanh (MOCPT) Bui Trung Phuong, Phan Thanh Tan (JICA Study Team) Matsui, Imada, Kametani, Frits, Thu, Trang

- Mr. Matsui expressed his thanks to the Task Team members for attending the meeting and introduced Mr. Frits, JICA Study Team member in charge of management, organization and institution.

- Mr. Imada explained the Study on U-Turn flyover bridge for improvement of accessibility to the stations in the viaduct section
- Mr. Cuong commented on Mr. Imada's report as follows:
  SAPI Team should make a more detailed study on the technical side of U-turn and should have a meeting with DOT for their comments, because this issue affects the cross section and the landscape of Hanoi Highway. The structure of U-turn must ensure the landscape of Hanoi Highway.
  Regarding the girders, cast-in-place method or precast method should be consider to lower the height of the bridge. We can refer to U-shape girder of Metro Line 1.
  Regarding cost estimation, the cost shouldn't be estimated based on unit rate of CP2 of Metro Line 1 Project to avoid misunderstanding that this is the additional work of CP2, but it should be based on Vietnamese market prices so that the future investors can also make this according to local market prices.
- Mr. Kametani said that if we based on unit rate of CP2, we could work directly with the contractor and save time. But if we applied market prices, it would take a lot of time and costs arising.
- Mr. Cuong explained that the city budget is limited while there're a lot of packages, so the higher authority had to consider how to allocate budget reasonably and the important package would be given priority. Therefore, it's very difficult to propose this cost into CP2's back-up cost.
- Mr. Matsui said that he had to work with JICA about this budget issue.
- Mr. Cuong suggested that we should give only one price option to avoid comparison between the 2 options. And in his opinion, we should base on Vietnamese market prices.

- Mr. Kametani explained that this is only the initial cost estimation, after the completion of the Interim Report, the experts will conduct a more detailed study.
- Mr. Huy commented as follows:
  Regarding U-turn bridge, we should prepare carefully before discussing with DOT to reach an agreement with them on this alignment.
  Regarding the cost, it should be re-estimated based on Vietnamese market prices, especially the super structure should be calculated in detail. He will send an email to explain more.
- Mr. Phuong commented as follows:
  The concept “shoulder” should be changed to “sub lane”.
  In Slide 13, the bridge has 2 piers next to the pipeline corridor, so when constructing, water pipeline protection measures will be needed and make the cost increase. Therefore the cost calculation should be more specific.

- Mr. Imada explained the study on pedestrian bridge for improvement of accessibility to the stations.
- Mr. Cuong commented as follows:
  At the moment, SCC has not implemented the design, we need to consider to study the items which are not included in the SCC contract. The design and installation of elevator or escalator is the responsibility of SCC because the bidding dossier clearly stated that the contractor of CP2 must ensure the utility for the disabled.

- Mr. Kametani explained the initial cost estimation for intermodal facilities.
- Mr. Cuong commented as follows:
  Land acquisition within the ROW of Hanoi Highway must be completed in this year. For station plazas which need to acquire land outside the ROW of Hanoi Highway, there is no study on this issue at the moment. In a detailed study for each station, the area and the cost of land acquisition need to be clearly stated, and land acquisition need to be completed in once rather than in several stages.
  About the cost of land acquisition, each project can hire a consulting company to calculate appraisal price for each area.
  For Binh Thanh Station, bus stops will not be constructed because there was an underground bus berth in this area.
  For Opera House Station, bus stops will also not be constructed because in the future, Le Loi and Nguyen Hue Street will become pedestrian roads and traffic volumes should be reduced in this area. However, bus stops can still be constructed in the neighborhood/adjacent area of about 100- 200m from the station so that people can still walk to the station.
  Regarding car parking, we should conduct a study from now on because Metro Line will be

opened in 4-6 years later when Vietnamese economy may different from now and more people will use cars. Regarding station plazas which are ready to construct now, a separated study should be conducted and land acquisition should be carried out immediately, because later land cost will increase and make it difficult to acquire. ・ Mr. Tan said that according to bus planning to 2025, Van Thanh Station would be the gathering place of 10 bus routes, so a bus parking should be considered to be constructed here. ・ Mr. Frits discussed with the Task Team some issues of feeder bus operating management mechanism and bus route adjustment. ・ Mr. Cuong said that public transport operation in HCMC now is not concentrated. He hopes that Mr. Frits can study based on the existing situation of HCMC to proposed the general institutions and mechanism for public transport operation, or suggest establishing one general regulatory agency for public transport operation like LRT in Singapore. The Task Team members will support Mr. Frits and hopes that he will completed the study soon. ・ The Interim Meeting will be on the morning of February, 2014.	
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Table F.1.9 - 9th Task Team Meeting Minutes

9th Task Team Meeting	
Date/Time	9:00 - 11:00 on March 06, 2014
Venue	Meeting Room on the ground floor, NJPT Office, HCMC
Topic	Report on Progress in Each Sector
Attendee	MAUR) Nguyen Duc Huy, Tran Dang Thanh, Bui Nhat Nam (DPI) Nguyen Dang Anh Tu (DPA) Nguyen Thai Thanh (MOCPT) Bui Trung Phuong, Phan Thanh Tan (JICA Study Team) Takagi, Seki, Imada, Urata, Horie, Kametani, Thu, Trang, Tuan

- Mr. Huy explained that Mr. Cuong had an important meeting with HCMCPC so Mr. Huy took the chair instead of Mr. Cuong.
- Mr. Seki introduced the meeting agenda.

- Mr. Seki presented on the Procedure for Legalization of Proposed Concept Design on Station Area Urban Development
- Mr. Thanh (DPA) commented as follows:
  According to Mr. Thanh, it will be difficult to ask the director of DPA to organize an Architectural Planning Committee (APC) on urban planning for station area development from the beginning, therefore we should submit the report to the People's Committee (HCMC-PC) on the necessity of amendment or formulation of urban planning for station area development first and then propose to establish an APC.
  At the present, Vietnam has no specific legal procedure on approving the concept design, so Mr. Thanh will further discuss with the relevant divisions under DPA to find out the most appropriate legal procedure.
- Mr. Seki asked Mr. Thanh to contact with Mr. Kien – Chief of City Planning Management Division under DPA to confirm the specific procedure.
- Mr. Thanh suggested SAPI Team to send a written proposal to DPA in order to have the exact information about the specific procedure.
- Mr. Huy commented as follows:
  SAPI Team will definitely have a report meeting with APC on this issue. Therefore, the report contents should be prepared in advance, and the meeting time should be informed soon so that Mr. Huy will register with DPA to invite members to attend the meeting.

- Mr. Seki represented on UMRT Feeder Routes and General Route Modifications
- Mr. Thanh (MAUR) commented as follows:

Regarding the 3rd point in the methodology section: "Only short distance feeder routes to the UMRT will be under UMRT O&M generally limited to a 5 km radius of the UMRT stations", Mr. Thanh would like to ask whether SAPI Team discussed with the relevant authorities or not, and why there are a lot of routes such as UMRT 3, UMRT 9, UMRT 10… which are outside the 5 km radius but operated by UMRT Company.

Regarding the 5th point in the methodology section, existing bus routes are now operated by existing operators under a contract with the city and are now subsidized. If they operate feeder routes under a contract with the UMRT company, then how the subsidies will be offered.

He suggested SAPI Team to review the methodology section and to discuss carefully with MOCPT on this issue.

- Mr. Seki explained that SAPI Team proposed different O&M alternatives, the advantages and disadvantages of each one and will further discuss with MOCPT about this.
- Mr. Thanh asked SAPI Team to explain more about HLS routes and their locations.
- Mr. Seki explained that it is very important to modify existing bus routes to attract more passengers to Line 1, so SAPI Team has proposed HLS routes. These routes have similar directions with general routes, but the quality of services will be upgraded.
- Mr. Thanh commented on Table 6 - SAPI Team should explain clearly each alternative and why that alternative was proposed to make them more convincing.
- Mr. Huy said that all the comments should be noted and updated to discuss more with MOCPT in the next meeting. MAUR will send Mr. Thanh to join the next meeting between SAPI Team and MOCPT due to the importance of this issue.

- Mr. Seki represented on the Required Procedure and Implementation Schedule on FS of Intermodal Facility Development.
- Mr. Huy commented as follows:

  At the present, the design of CP2 has been submitted for approval and in about 2 months the approval process will be completed, after that they will go on the next steps – designing pedestrian bridges and stations. Therefore, the coordination between SAPI Team and CP2 should be prepared soon.

  CP2 contractor sent the design of pedestrian bridge, Mr. Huy would like to send the file to SAPI Team for our review and consideration, and if we have any modification proposal, we should propose soon for timely modification.
- Mr. Seki replied that SAPI Team would review and propose where should be expanded or where elevators or escalators should be installed. The design will be proposed after its completion in April.
- Mr. Huy said that necessary parking area should also be proposed soon in order not to affect the progress of CP2. If possible, it's better to send proposals to him before 15th.

・ The next Task Team meeting will be delayed because Mr. Cuong and Mr. Huy will go on business trip at that time. Specific time will be confirmed later.	
Collected Documents	
Remarks	

Table F.1.10 - 10th Task Team Meeting Minutes

10th Task Team Meeting	
Date/Time	9:00 - 11:00 on March 20, 2014
Venue	Meeting Room on the ground floor, NJPT Office, HCMC
Topic	Report on Progress in Each Sector
Attendee	(MAUR) Nguyen Duc Huy, Tran Dang Thanh, Bui Nhat Nam (MOCPT) Bui Trung Phuong (JICA Study Team) Takagi, Seki, Matsui, Imada, Tajima, Makimura, Trang

- Mr. Huy explained that Mr. Cuong was on a business trip until the end of this month so Mr. Huy took the chair instead of Mr. Cuong.
- Mr. Seki introduced the meeting agenda.

- Mr. Seki reported on the Implementation Schedule for ITF Development and Role Sharing for Development and O&M of ITF.
- Mr. Huy commented as follows:

  At the present Vietnam has no specific regulation on the procedure on approving the investment report and the necessary time for this. Therefore, Mr. Huy will further discuss with the relevant agencies such as DOT and DPI to find out the most appropriate procedure.

  Regarding the Table of Implementation Schedule (Table 1), the work construction in Phase 1 requires a number of steps such as preparing the bidding plan to submit to the competent authority for approval, preparing the bidding documents and these steps will take about 4-5 months to complete. Specific details will be informed in the next meeting.

  According to Vietnam regulations, the approval of the investment report requires the budget plan, however, the procedure of FF mission requires the approved investment report to provide budget. Therefore, we should invite the relevant Vietnamese authorities to attend the upcoming FF meeting. The FF's MOU must show the possibility of providing budget so that the investment report will be easier to be approved. SAPI team should also prepare the exact cost estimation to discuss in the FF.

  Regarding Role Sharing for Development and O&M of ITF, Mr. Huy basically agreed with the proposals of SAPI Team. Parking, Pedestrian bridge, Service facility should be operated by O&M company. However, the additional parts of these items (such as extension of pedestrian bridge…) can be invested by MAUR.
- Mr. Seki asked if the design and construction of these items would be implemented by O&M or MAUR. Mr. Huy replied that O&M Company would be only responsible for O&M and MAUR would be responsible for the design and construction.
- For other facilities – Station plaza, Bus/taxi stop, and Access road - Mr Huy has to discuss more with Mr. Cuong to find out the most suitable investor to propose to the City.

- Mr. Seki said that SAPI Team would revise Table 1 and 2, and send back to MAUR for their discussion.
- Mr. Seki asked about the budget issue for the development of ITF, it would be from back-up budget of UMRT Line 1 or from JICA investment.
- Mr. Huy replied that the current cost of UMRT Line 1 had exceeded the total investment due to the costs incurred in the construction work of underground sections. Therefore, they are now preparing the procedure to ask for additional investment for elevated sections. Mr. Huy thought that it could be combined with the procedure for ITF development investment, however the procedure may be quite complex. SAPI team can suggest if having any better alternative.
- Mr. Seki asked about the progress of the procedure for additional investment.
- Mr. Huy replied that they are now rebalancing the costs to calculate the cost in excess. According to preliminary calculation (not exactly), the costs exceed about 3.5% the total investment.

- Mr. Seki reported on the results of individual meetings.
- Mr. Huy commented as follows:

  For the meeting with CP2, Mr. Huy already received SAPI's written report and would like to have some solutions: 1) MAUR will ask CP2 to provide the structure of pedestrian bridge to consider installing solar panel or other items in the future, and 2) ask CP2 to provide the loading value of ground floor to consider developing parking accordingly.

  As CP2 was behind the schedule and they're now working very urgently in design and construction, they will provide us their current work to adjust accordingly.

  SAPI Team should continue to discuss and try to reach agreement with relevant landowners/agencies to find out the most feasible solutions.
- Mr. Huy also had some comments on Attachment -1 as follows:

  (Slide 8) The width of elevated stations along Hanoi Highway is 22m, including 6m for safety corridors of the city main water pipeline, 6m for the service road of Hanoi Highway, so we only have 10m wide for our Parking development. It's impossible to expand the parking into the service road of HW, however the expansion into the safety corridor is possible and would require some procedures and budget for constructing pipeline's protection structures.
- The meeting ended at 10:30 am.

Collected Documents	
Remarks	

Table F.1.11 - 11th Task Team Meeting Minutes

11th Task Team Meeting	
Date/Time	9:00 - 11:00 on April 03, 2014
Venue	Meeting Room on the ground floor, NJPT Office, HCMC
Topic	Report on Progress in Each Sector
Attendee	(MAUR) Hoang Nhu Cuong, Nguyen Duc Huy, Tran Dang Thanh, Bui Nhat Nam (DPI) Nguyen Dang Anh Tu (MOCPT) Bui Trung Phuong (JICA Study Team) Seki, Tajima, Takata, Thu, Trang

- Mr. Seki expressed his sincere thanks to the Task Team for attending the meeting.
- Mr. Seki introduced the meeting agenda.

- Mr. Seki reported on Alternatives of Implementation Scheme on ITF Development.
- Mr. Cuong commented as follows:
  The items that can be included in the additional project of Line 1 Project are Parking under Station, Parking under Viaduct and Pedestrian Bridge Extension in Phase 1. The other items such as Station Plaza, Access Road…are not under the management of MAUR.
  Therefore, we should carry out a study for all items and another new study for these 3 items. MAUR will discuss with SCC to design these 3 items in advance, and the construction work will be considered after the procurement of all packages of Route 1. If there is back-up budget left over after rebalancing the costs, these 3 items will be developed as the additional part of Line 1. If there is no budget left over, they will be developed with the remaining items as a new project (including all items). However, the costs can't be rebalanced until next year.
- Mr. Seki asked about the necessary procedure for MAUR to be the main management unit of this project.
- Mr. Cuong replied that in this stage, it's not necessary to clarify who is the project owner because the PC will decide which agencies will be the project owner after we propose to the PC about this additional project.
- Mr. Seki would like to ask for DOT's opinion because they're currently in charge of ITF development for UMRT Line 2.
- Mr. Cuong said that the ITF development project for UMRT Line 2 did not belong to UMRT Line 2 project, but it was a separated project which DOT was assigned to be project owner, and currently in the study stage. Because the project is mainly on bus route and parking, it is appropriate to be managed by DOT. However, our ITF development project includes many other items so it has the possibility to be managed by MAUR in the future. MAUR will ask to be in charge of this project, however the final decision is still of the PC.
- Mr. Seki said that after the meeting he would separate the 3 items: Parking under Station,

Parking under Viaduct and Pedestrian Bridge Extension in Phase 1, and would report to JICA on the contents of the meeting. ・ Mr. Cuong suggested SAPI Team to propose these 3 items as additional part of Line 1 in SAPI Study. However in his opinion, we should choose the second alternative. ・ Mr. Seki reported on Revision of Feeder Bus Planning and Operation Plan ・ Mr. Cuong asked Mr. Seki if SAPI Team had studied about the cost of feeder bus planning and adjusting existing bus routes. ・ Mr. Seki replied that SAPI Team are now studying on operation costs and investment costs, especially for parking. ・ Mr. Thanh also had some comments on the drawings and the feeder bus operation plan in the material. SAPI Team should carefully review these issues to discuss more effectively with MOCPT in the next meeting with them. ・ Mr. Seki said that Mr. Katsurai – JICA's representative will come to Vietnam next week. Mr. Seki will arrange a meeting with MAUR and Mr. Katsurai to discuss more about these issues. ・ The meeting ended at 10:30 am.	
Collected Documents	
Remarks	

Table F.1.12 - 12th Task Team Meeting Minutes

12th Task Team Meeting	
Date/Time	14:00 -17:30 on April 24, 2014
Venue	Meeting Room in MAUR office
Topic	Coordination of Intermodal Facilities and Implementation Plan
Attendee	MAUR) Nguyen Duc Huy, Tran Dang Thanh (DOT) Tran Luu Nguyen (DPI) Nguyen Dang Anh Tu (MOCPT) Le Hoan (Refico) Nguyen Son Ha (JICA Study Team) Matsui, Imada, Minami, Kametani, Matsumura, Frits, Thu

<1> Information about the meeting with National University and High Tech Park

- The detailed planned 1/2000 of NU was approved by Prime Minister in March 2014 and a part of the area with 1.5 ha in ITP of NU adjacent to Suoi Tien Station can be used for development of intermodal facilities. On next Monday, the environmental & social expert shall work in details with NU about the land acquisition progress/ schedule in the area of 1.5 ha in order to define the phase for development of the intermodal facilities.
- According to Mr. Huy, Suoi Tien Station is renamed to National University Station. JICA SAPI team would like MAUR to provide the official document/ decision on this official name of the station.

<2> Regarding the Institutional Design of the Feeder Bus Routes for HCMC Line 1 and Level of Service and Cost Implications

After the presentation by Mr. Frits, Mr. Thanh has comments as follows:

- According to the current legal regulations in Article 10 – Decision no. 16 of HCMC PC, "subsidy mechanism for bus routes shall be done as follows: … Implement bidding or ordering for operation of bus routes in accordance with plans of DOT. Bidding shall be applied for the operation of new bus route…"
- In addition, Mr. Hoan/ MOCPT comments that if UMRT O&M Company is the only operator for 13 FB routes without bidding, it is necessary to have a special mechanism promulgated by HCMPC. According to the current regulations, it is advised by MOCPT to avoid "subcontract" word because MOCPT/ DOT is the agency ordering operators for bus operation. Therefore, he proposes that UMRT O&M Company can make a "joint venture" with other private operators. Mr. Frits expresses his concern about the joint venture because of the cooperation mechanism between UMRT and other private bus operators and the service quality.

- Mr. Hoan shall arrange a meeting between Mr. Frits and DOT & MOCPT to discuss in order to understand clearly the point of view of MOCPT. The time for the meeting will be informed tomorrow on 25 April 2014.

<3> Regarding the intermodal facilities in Tan Cang Station, DOT has comments has follows:

In general, DOT agrees with the concept plan of Tan Cang Station. And DOT has some comments as follows:

- Regarding the under-bridge area, it is informed by DOT that there is a greening project (tree planting) in this area. SAPI team is advised to contact with Urban Transport Management Department 2 (DOT) to get detailed information about the scale and exact location of the project.
- In addition, for the parking arrangement under SG bridge, DOT also advises SAPI team to study the Decree No. 11/2010/ND-CP of February 24, 2010, prescribing the management and protection of road infrastructure facilities and Decree No. 100/2013/ND-CP of September 03, 2013, amending and supplementing a number of articles of the Government Decree No. 11/2010/ND-CP, prescribing the management and protection of road infrastructure facilities. According to Decree no. 100, it is not prohibited to arrange a parking area under a bridge. However SG bridge is a big bridge and it is advised by DOT not to arrange the parking area in this position due to safety reasons (fire fighting).
- For the smooth operation of 13 FB routes, if JICA SAPI has some proposals for extension of sidewalk or pavement (within ROW) in order to ensure the accessibility of pedestrians and feeder buses, it is advised by DOT to send information soon.
- Regarding SAPI's proposal to design a convenient store under the station viaduct, Mr. Huy suggested that this proposal shall not be included in SAPI Study, because MAUR is now working with Police Department of Fire Fight and Prevention on the facilities planned under the station viaduct, and SAPI's proposal on the convenient shop would cause disturbance to the undergoing discussion.
- In Tan Cang Station area, the city also have a plan for development of a underground parking area in the area. It is advised by DOT to contact with Binh Thanh District to get detailed information about the location in order to avoid any overlapping between the District plan and SAPI proposal. For SAPI information, DOT also had requested/instructed related districts to arrange an area of 3-5 ha for development of intermodal facilities and urban areas surrounding the station. Therefore, SAPI team is suggested to contact with local districts about the possibility to use such land arranged by the districts in followance with DOT's request/instruction.
- The concept plan of SAPI team should be shown with coordinates VN2000 in accordance with

regulations of Vietnam (with actual occupied area).

<4> Regarding the environmental and social impact assessment:

After introduction about the progress of the environmental and social impact assessment and introduction about the subcontract work of CBD, Mr. Minami would like MAUR to have support to CBD to perform the survey and two rounds of stakeholders if there is such request raised by CBD.

Mr. Huy comments that environmental impact assessment was carried out in the Metro Line 1 project. Is this possible to utilize this result in order to minimize the work of environmental and social impact assessment under SAPI project? Mr. Mimani has feedback that the environmental impact assessment under Metro Line 1 was done without consideration about impacts that may be caused by the Feeder buses and other related intermodal facilities (such as station plaza, parking area, etc.). Therefore, the EIA and IEE reports would be done in accordance with JICA Guidelines and they will be the legal basis for loan application and other procedures in the future. However, an EIA-level assessment will be carried out for Van Thanh Park Station only. For other stations, an IEE-level assessment will be applied. The Study Team will ask the sub-constracted local consultant (CBD) to send to MAUR a document which describes all issues to be discussed in the stakeholder consultation meetings in Ward 22 of Binh Thanh District.

Documents to be collected	1) Decision/ official documents about rename of Suoi Tien Station. 2) Expense estimation for UMRT Line 1
Remarks	

Table F.1.13 - 13th Task Team Meeting Minutes

13th Task Team Meeting	
Date/Time	14:00 - 16:30 May 15th 2014
Venue	Meeting Room on the ground floor, NJPT Office, HCMC
Topic	Report on Progress in Each Sector
Attendee	(MAUR) Nguyen Đuc Huy, Tran Dang Thanh, Bui Nhat Nam (DOT) Tran Luu Nguyen (DPI) Nguyen Dang Anh Tu (DPA) Nguyen Thai Thanh (MOCPT) Bui Trung Phuong (JICA Study Team) Seki, Matsui, Minami, Takata, Makimura, Ngai, Thu, Trang, Tuan

1) Mr. Seki introduced the meeting agenda:
   - o Part 1: Intermodal Facility Development
   - o Part 2: Social and Environmental Consideration
   - o Part 3: Overall Schedule on SAPI Study (Inc. schedule of study tour in Japan)

- Based on Mr. Cuong's comment in the previous meeting that we should develop the intermodal facility as a new project, SAPI Team made the implementation schedule at option 2&3. Mr. Seki also asked Mr. Katsurai – JICA representative about the process by JICA side. When Mr. Katsurai comes to HCMC next week, JICA Vietnam Office will send MAUR a document to request a meeting between MAUR and Mr. Katsurai for more detailed discussion on this issue.

2) Mr. Seki and Mr. Matsui reported on Intermodal Facility Development.
3) Mr. Minami reported on Social and Environmental Consideration.
4) Mr. Seki reported on the schedule of study tour in Japan.
   SAPI Team already sent MAUR a letter about the request to select members for study tour in Japan. Mr. Seki hope that MAUR will manage the member selection process and send the member list at the end of this month (May).

5) Mr. Huy commented as follows:

- After the meeting with Mr. Hoang Song Ha – Vice Chairman of Binh Thanh PC, Mr. Huy found that we should have some considerations as follows:
  - o One of the key principals of Vietnam's Law on Construction is that projects must be consistent with the approved plans. Therefore, as commented in the previous meeting, SAPI Team should review all the existing urban plans of the city because it is an important legal basis for us to make futher related studies (not only for Binh Thanh district, but for other relevant districts as well).
  - o Regarding Van Thanh Station, CP2 is currently contacting DOT to ask for their opinions about

filling Van Thanh Lake to build the ground floor of the station. CP2 also asked DOT about the water capacity of the existing lake to arrange the appropriate drainage system around and will send the information to SAPI for reference after receiving an official response from DOT.

- o Regarding the public land managed by the Government, if we want to develop any facilities or construction works in this area, land allocation procedures must be done by the Chairman of HCMC PC.
- o Tan Cang Station also has the same issues to Van Thanh Station, which are the issue of filling the space under the station and the issue of public land acquisition. On the triangular area in the south of Dien Bien Phu Street mentioned in the meeting yesterday, Mr. Huy found that the suggestion of SAPI is suitable because it's necessary to have the access space for the station. However, SAPI Team should also analyze the difficulties of this area in connection with the station because of the long distance. In addition, SAPI Team should also consider the area of the green space under Tan Cang Station.

- Regarding Intermodal Facility Development, Mr. Huy prefers option 1-2 (new package with additional loan under Metro Line 1 Project) in consideration with the current situation about funds for Metro Line 1 Project and implementation time of ITF. In addition, he would like SAPI Team to provide the provisional cost estimation of ITF development in order to define the most appropriate option on ITF implementation plan after discussion with Mr. Cuong/ MAUR.

- Regarding the study tour in Japan, Mr. Huy requested SAPI Team to send the official schedule to HCMC PC/ MAUR to get the approval from HCMC PC to assign officials to participate in the tour.

- Regarding Social and Environmental Consideration, Mr. Huy commented that currently, many contractors and consultants also perform environmental impact assessments such as SCC, and SAPI Team can contact with them for reference. We should also consider the impact of the UMRT Line 1 before and after going into operation

  Mr. Minami replied that the scope of SAPI study only includes the social and environment impact assessments of the ITFs such as access roads, parking lots, station plazas, etc…, the impact of the UMRT Line 1 is beyond the scope of our study.

- Regarding the comment document from MOCPT, SAPI Team should make clear some points, for example, according to MOCPT's comments, if Route 99, 76, 53 will not be terminated then the feeder routes 4, 5, 6, 8, 13 will be still in operation or not.

  Mr. Seki replied that SAPI Team agreed with MOCPT's comments, and because of the differences between the functions of these 2 kinds of bus route, these feeder routes will still be retained. SAPI Team will explain more clearly in the document.

Mr. Huy suggested that SAPI Team should update the document and then send it to MOCPT together with a written reply in which explain clearly about the update.

- Regarding bus institutional issue, Mr. Frits is making adjustments based on the comments in the previous meetings and will report on this issue in the next Task Team meeting.

6) Mr. Nam suggested that after completing and submitting the final report in July, there should be a period to continue to monitor and supervise the implementation of the project.

7) Mr. Huy summarized the important points as follows:
   - o Update the relevant approved urban planning.
   - o Provide the most accurate cost estimate for the development of ITFs.
   - o Early complete the study related to bus routes based on the comments of Mr. Thanh.
   - o Send an official schedule of study tour in Japan to the City.

8) Mr. Huy also informed that the design consultants of SCC in charge of architectural design and construction related to the station space is CISTRA and they have many interesting ideas. If SAPI Team have time, he suggested that we should arrange a meeting with them to refer to their ideas.
   Mr. Seki replied that the meeting can be arranged in Monday, Tuesday or Wednesday next week.
   Mr. Huy will contact CISTRA and the specific time of the meeting will be informed later.

9) The meeting ended at 4:30 p.m.

Collected Documents	
Remarks	

Table F.1.14 - 14th Task Team Meeting Minutes

14th Task Team Meeting	
Date/Time	9:00 - 10:30 June 10th 2014
Venue	Meeting Room on the ground floor, NJPT Office, HCMC
Topic	Report on Progress in Each Sector
Attendee	(MAUR) Nguyen Đuc Huy, Bui Nhat Nam (DOT) Trinh Quoc Hung, Tran Luu Nguyen (DPI) Nguyen Dang Anh Tu (MOCPT) Le Hoan, Dong Thi Hoai Phuong, Doan Xuan Bich (JICA Study Team) Matsui, Thu, Trang

10) Mr. Matsui introduced the meeting agenda and reported on progress in each sector:

- Part 1: Contents of Project Investment Report
- Part 2: Land acquisition of ITF
- Part 3: Progress and Schedule of Draft Final Report

Regarding the progress of DFR, Mr. Matsui informed that it would be finalized by SAPI next week. After submitting to JICA for approval, SAPI would send it to Vietnamese counterpart for their review and then a meeting was planned on 26/06 to discuss about it.

11) The Task Team members commented as follows:

- Regarding the discussion meeting on the DFR, Mr. Hung said that DOT would need at least 10 days to review and comment on it. Therefore, SAPI team should send the DFR early so that they would have time to review and give their comments.

  Mr. Huy said that he would try to arrange the meeting in June, and would inform the specific time of the meeting on the next day.

- Regarding land acquisition in the High-tech Park, Mr. Huy asked about the working progress between SAPI and ACENDAS – the Singaporean developer of the HTP after the previous meeting.

  Mr. Matsui replied that SAPI Team had just received the basic design of ACENDAS, which was not very different with the basic design of SAPI. There was only a few minor differences such as the location of the station plaza's entrance... Mr. Matsui said that both sides would discuss more with each other to reach an agreement and it would be reflected in the detailed design.

  Mr. Huy said that in their last meeting with the HTP, the HTP had expressed their opinion that they still wanted to own the land use right of the proposed land area for station plaza development, and MAUR

could only have the right to develop station plaza in HTP land considering connecting with other facilities around. Therefore, in order to facilitate better discussions with HTP, we need to reach an agreement with the relevant consultants first. Mr. Huy suggested SAPI Team to discuss with ACENDAS soon to achieve their agreement.

Mr. Nam will contact and arrange a meeting with ACENDAS today or tomorrow because Mr.Matsui will come back to Japan on 12/6.

- Concerning the pedestrian bridge structure, SAPI is currently implementing the basic design of pedestrian bridges including the extension. However, according to the structural design which SAPI received from NJPT and CISTRA, it is very difficult to be able to connect the extension part with their beam/girder structure. SAPI will have to discuss more with NJPT and CISTRA on this issue.

  Mr. Huy requested SAPI to send him the design from NJPT and CISTRA for his review and consider.

- Regarding the written replies on the comments of MOCPT on the bus routes, Mr. Hoan said that MOCPT had not received the documents which was sent from SAPI via email because unfortunately Mr. Diem was on a business trip at that time. So he would like to ask SAPI to send official documents to MOCPT.

- Mr. Huy asked about the progress of the basic design prepared by Hung Nghiep Consulting Company (the company who was in charge of implementing the basic design for SAPI).

  Mr. Matsui replied that Hung Nghiep had almost completed the design of all facilities for a station and was implementing for the remaining stations, they would send SAPI the draft drawings by next week.

- Regarding the investment report, Mr. Matsui said that SAPI would complete the draft investment report at the end of this month.

  Mr. Huy said that Hung Nghiep must be approved to be the consulting unit in charge of preparing the investment report by the competent authority for the approval procedure of the investment report in the future.

- Mr. Nam commented that the DFR was lack of investment costs.

- Mr. Nam arranged a meeting with ACENDAS at 3pm at ACENDAS Office.

12) The meeting ended at 10:30 AM.	
Collected Documents	
Remarks	

Appendix G: Breakdown of Benefits for Project Evaluation

Total(Benefit '000 USD/Year)

1year= 365 days

VOT= 1.52 USD/hour in 2014

Station Name	Facility	Beneficieries	Phase	Type of Benefit	Unit Price (Phase I/II)	VOT (US$/hour)		Demand (No. of beneficieries by mode) pax/day		Benefit Total (US$/year)		Benefit Total ('000 US$/year)	
					2019	2020	2040	2020	2040	2020	2040	2020	2040
4 Van Thanh Park										**239,058**	**1,015,467**	**239**	**1,015**
	Station Plaza	All station users	2	WTP	315 VND			13,000	30,000	71,053	163,969	71	164
				time saving	0 min			4,193	9,582	0	0	0	0
	Bus Stop	Bus users	-	time saving	-	-	-	-	-	-	-	-	-
	Taxi Stop	Taxi users	1	time saving	0 min	1.90	4.22	218	531	0	0	0	0
	M/C Parking	M/C users riding by themselves	1	time saving	3 min	1.90	4.22	4,455	10,156	154,481	782,184	154	782
	Bike Parking	Bicycle users	1	time saving	3 min	1.90	4.22	390	900	13,523	69,314	14	69
	Car Parking	Car users	-	time saving	-	-	-	-	-	-	-	-	-
	Pedestrian Bridge	Pedestrians	-	time saving	-	-	-	-	-	-	-	-	-
5 Tan Cang										**1,026,269**	**3,720,998**	**1,026**	**3,721**
	Station Plaza	All station users	1	WTP	315 VND			44,000	77,000	240,488	420,854	240	421
				time saving	3 min	1.90	4.22	10,068	18,917	349,120	1,456,921	349	1,457
	Bus Stop	Bus users	1	time saving	0 min	1.90	4.22	22,401	35,811	0	0	0	0
	Taxi Stop	Taxi users	1	time saving	0 min	1.90	4.22	243	535	0	0	0	0
	M/C Parking	M/C users riding by themselves	1	time saving	3 min	1.90	4.22	9,264	17,932	321,217	1,381,004	321	1,381
	Bike Parking	Bicycle users	1	time saving	3 min	1.90	4.22	1,980	3,465	68,657	266,857	69	267
	Car Parking	Car users	-	time saving	-	-	-	-	-	-	-	-	-
	Pedestrian Bridge	Pedestrians	1	time saving	0 min	1.90	4.22	2,024	3,805	46,788	195,361	47	195
6 Thao Dien										**635,308**	**4,189,884**	**636**	**4,190**
	Station Plaza	All station users	1	WTP	315 VND			29,000	101,000	158,503	552,029	159	552
				time saving	3 min	1.90	4.22	5,625	19,240	195,038	1,481,750	195	1,482
	Bus Stop	Bus users	1	time saving	0 min	1.90	4.22	15,247	53,616	0	0	0	0
	Taxi Stop	Taxi users	1	time saving	0 min	1.90	4.22	241	900	0	0	0	0
	M/C Parking	M/C users riding by themselves	1	time saving	3 min	1.90	4.22	4,688	15,864	162,565	1,221,784	163	1,222
	Bike Parking	Bicycle users	1	time saving	3 min	1.90	4.22	1,305	4,545	45,251	350,033	45	350
	Car Parking	Car users	-	time saving	-	-	-	-	-	-	-	-	-
	Pedestrian Bridge	Pedestrians	1	time saving	2 min	1.90	4.22	3,199	11,380	73,950	584,287	74	584
7 An Phu										**112,781**	**1,070,483**	**113**	**1,070**
	Station Plaza	All station users	3	WTP	0 VND			7,000	15,000	0	0	0	0
				time saving	0 min	1.90	4.22	2,791	6,021	0	463,718	0	464
	Bus Stop	Bus users	1	time saving	0 min	1.90	4.22	592	1,313	0	0	0	0
	Taxi Stop	Taxi users	1	time saving	0 min	1.90	4.22	87	169	0	0	0	0
	M/C Parking	M/C users riding by themselves	1	time saving	3 min	1.90	4.22	2,875	6,212	99,674	478,406	100	478
	Bike Parking	Bicycle users	1	time saving	3 min	1.90	4.22	378	810	13,107	62,382	13	62
	Car Parking	Car users	-	time saving	-	-	-	-	-	-	-	-	-
	Pedestrian Bridge	Pedestrians	1,3	time saving	0 min	1.90	4.22	655	1,285	0	65,976	0	66
8 Rach Chiec										**328,457**	**4,543,859**	**329**	**4,544**
	Station Plaza	All station users	3	WTP				37,000	102,000	0	0	0	0
				time saving	0 min	1.90	4.22	8,453	23,133	0	1,781,600	0	1,782
	Bus Stop	Bus users	1	time saving	0 min	1.90	4.22	14,592	41,296	0	0	0	0
	Taxi Stop	Taxi users	1	time saving	0 min	1.90	4.22	360	1,000	0	0	0	0
	M/C Parking	M/C users riding by themselves	1	time saving	3 min	1.90	4.22	7,918	21,606	274,572	1,663,975	275	1,664
	Bike Parking	Bicycle users	1	time saving	3 min	1.90	4.22	1,554	4,284	53,885	329,932	54	330
	Car Parking	Car users	3	time saving	0 min	1.90	4.22	422	1,163	0	0	0	0
	Pedestrian Bridge	Pedestrians	1,3	time saving	0 min	1.90	4.22	5,677	14,965	0	768,353	0	768

Total(Benefit '000 USD/Year)

1year= 365 days

VOT= 1.52 USD/hour in 2014

Station Name	Facility	Beneficieries	Phase	Type of Benefit	Unit Price (Phase I/II)	VOT (US$/hour)		Demand (No. of beneficieries by mode) pax/day		Benefit Total (US$/year)		Benefit Total ('000 US$/year)	
					2019	2020	2040	2020	2040	2020	2040	2020	2040
9 Phuoc Long										**770,077**	**3,244,791**	**769**	**3,245**
	Station Plaza	All station users	2	WTP	315 VND			29,000	64,000	158,503	349,800	159	350
				time saving	3 min	1.90	4.22	6,870	14,812	238,205	1,140,716	238	1,141
	Bus Stop	Bus users	1	time saving	0 min	1.90	4.22	12,245	28,625	0	0	0	0
	Taxi Stop	Taxi users	1	time saving	0 min	1.90	4.22	308	673	0	0	0	0
	M/C Parking	M/C users riding by themselves	1	time saving	3 min	1.90	4.22	4,762	10,047	165,134	773,800	165	774
	Bike Parking	Bicycle users	1	time saving	3 min	1.90	4.22	2,349	5,184	81,452	399,246	81	399
	Car Parking	Car users	1	time saving	3 min	1.90	4.22	446	985	15,476	75,857	15	76
	Pedestrian Bridge	Pedestrians	1,2	time saving	2 min	1.90	4.22	4,815	9,843	111,307	505,372	111	505
10 Binh Thai			1							**1,048,454**	**4,277,310**	**1,048**	**4,278**
	Station Plaza	All station users	1	WTP	315 VND			37,000	73,000	202,228	398,991	202	399
			1	time saving	3 min	1.90	4.22	9,018	18,434	312,701	1,419,705	313	1,420
	Bus Stop	Bus users	1	time saving	0 min	1.90	4.22	12,462	21,972	0	0	0	0
	Taxi Stop	Taxi users	1	time saving	0 min	1.90	4.22	360	1,000	0	0	0	0
	M/C Parking	M/C users riding by themselves	1	time saving	3 min	1.90	4.22	7,540	15,727	261,448	1,211,205	261	1,211
	Bike Parking	Bicycle users	1	time saving	3 min	1.90	4.22	2,257	4,453	78,261	342,948	78	343
	Car Parking	Car users	1	time saving	3 min	1.90	4.22	506	999	17,551	76,910	18	77
	Pedestrian Bridge	Pedestrians	1	time saving	2 min	1.90	4.22	7,625	16,118	176,265	827,552	176	828
11 Thu Duc										**349,418**	**2,791,884**	**349**	**2,793**
	Station Plaza	All station users	3	WTP				43,000	65,000	0	0	0	0
				time saving	0 min	1.90	4.22	9,865	14,660	0	1,129,068	0	1,129
	Bus Stop	Bus users	1	time saving	0 min	1.90	4.22	19,935	30,949	0	0	0	0
	Taxi Stop	Taxi users	1	time saving	0 min	1.90	4.22	450	664	0	0	0	0
	M/C Parking	M/C users riding by themselves	1	time saving	3 min	1.90	4.22	6,465	9,439	224,172	726,916	224	727
	Bike Parking	Bicycle users	1	time saving	3 min	1.90	4.22	3,612	5,460	125,246	420,502	125	421
	Car Parking	Car users	1,3	time saving	1.5 min	1.90	4.22	662	1,000	0	38,521	0	39
	Pedestrian Bridge	Pedestrians	1,3	time saving	0 min	1.90	4.22	6,285	9,288	0	476,877	0	477
12 High-tech Park										**561,908**	**1,178,343**	**562**	**1,178**
	Station Plaza	All station users	1	WTP	315 VND			24,000	26,000	131,175	142,106	131	142
				time saving	3 min	1.90	4.22	5,791	6,268	200,790	482,759	201	483
	Bus Stop	Bus users	2	time saving	0 min	1.90	4.22	13,110	14,189	0	0	0	0
	Taxi Stop	Taxi users	2	time saving	0 min	1.90	4.22	262	295	0	0	0	0
	M/C Parking	M/C users riding by themselves	1,2	time saving	3 min	1.90	4.22	3,667	3,967	127,166	305,490	127	305
	Bike Parking	Bicycle users	1,2	time saving	3 min	1.90	4.22	2,184	2,366	75,730	182,217	76	182
	Car Parking	Car users	-	time saving	-	-	-	-	-	-	-	-	-
	Pedestrian Bridge	Pedestrians	1,2	time saving	2 min	1.90	4.22	1,170	1,281	27,047	65,771	27	66
13 National University										**546,832**	**1,187,520**	**547**	**1,188**
	Station Plaza	All station users	2	WTP	315 VND			19,000	21,000	103,847	114,778	104	115
				time saving	3 min	1.90	4.22	5,296	5,842	183,648	449,919	184	450
	Bus Stop	Bus users	1,2	time saving	0 min	1.90	4.22	7,405	8,430	0	0	0	0
	Taxi Stop	Taxi users	1,2	time saving	0 min	1.90	4.22	205	254	0	0	0	0
	M/C Parking	M/C users riding by themselves	1,2	time saving	3 min	1.90	4.22	2,840	3,123	98,468	240,520	98	241
	Bike Parking	Bicycle users	1,2	time saving	3 min	1.90	4.22	2,470	2,730	85,647	210,251	86	210
	Car Parking	Car users	-	time saving	-	-	-	-	-	-	-	-	-
	Pedestrian Bridge	Pedestrians	1,2	time saving	2 min	1.90	4.22	3,254	3,351	75,222	172,052	75	172
Total										**5,618,561**	**27,220,539**	**5,618**	**27,222**