Introduction of
Hai Van Pass Tunnel Construction Project
in Vietnam

Ichizuru Ishimoto

Nippon Koei Co., Ltd., Japan

Session APR04

Hai Van Pass Tunnel Construction Project

Design : Jan 1998 ~ July 1999

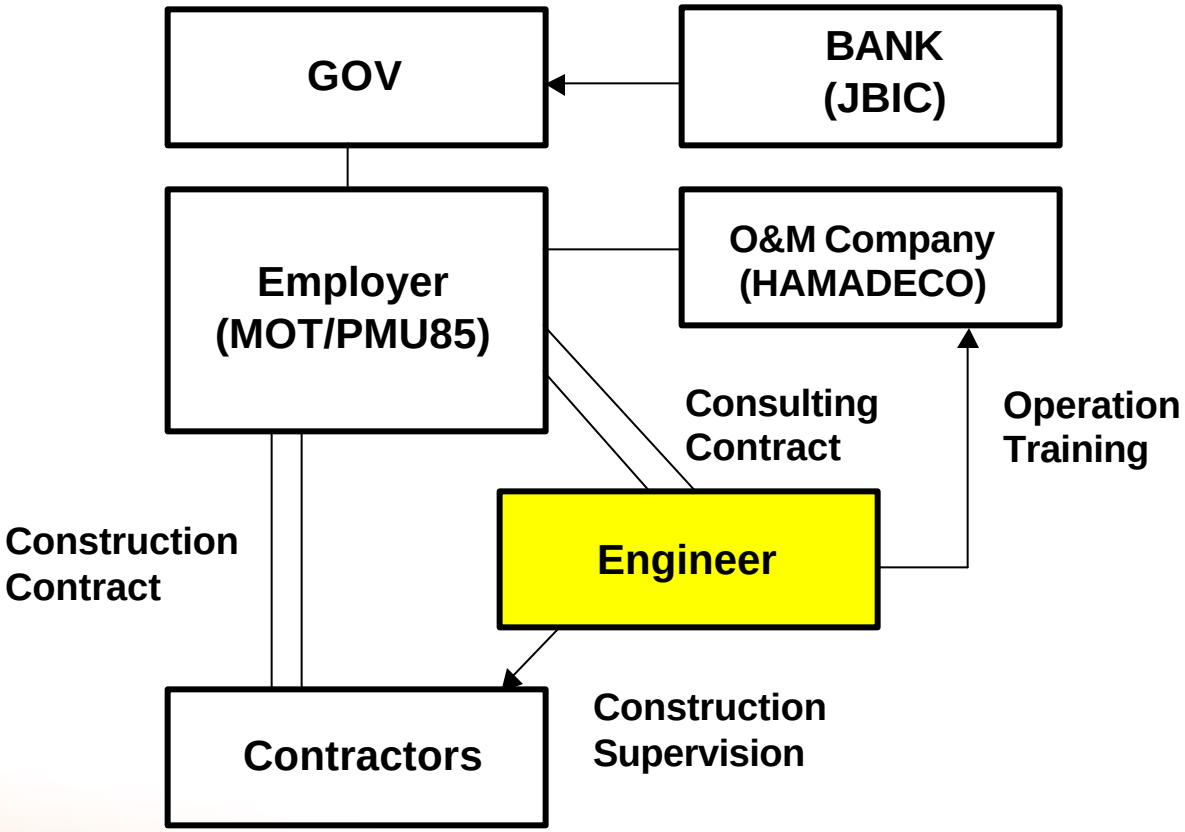
Bidding : June 1999 ~ December 2004

Construction & Procurement

: October 2000 ~ On going

Tunnel Open : May 2005

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam



GOV: Government of Vietnam
JBIC: Japan Bank for International Cooperation

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

My Responsibilities:

Period	Position
August 2000 ~ September 2001	Construction Engineer Resident Engineer (3) Quantity Surveyor
October 2001 ~ March 2002	Construction Engineer Quantity Surveyor
March 2002 ~ March 2003	Project Manager Construction Engineer Quantity Surveyor
April 2003 ~ To Date	Project Manager Construction Engineer Resident Engineer (3) Quantity Surveyor O&M Leader

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

Lang Co Bridge (North Approach)

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

Lang Co Bridge (North Approach)

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

North Portal

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

View from North Portal

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

Jet Fans in Main Tunnel

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

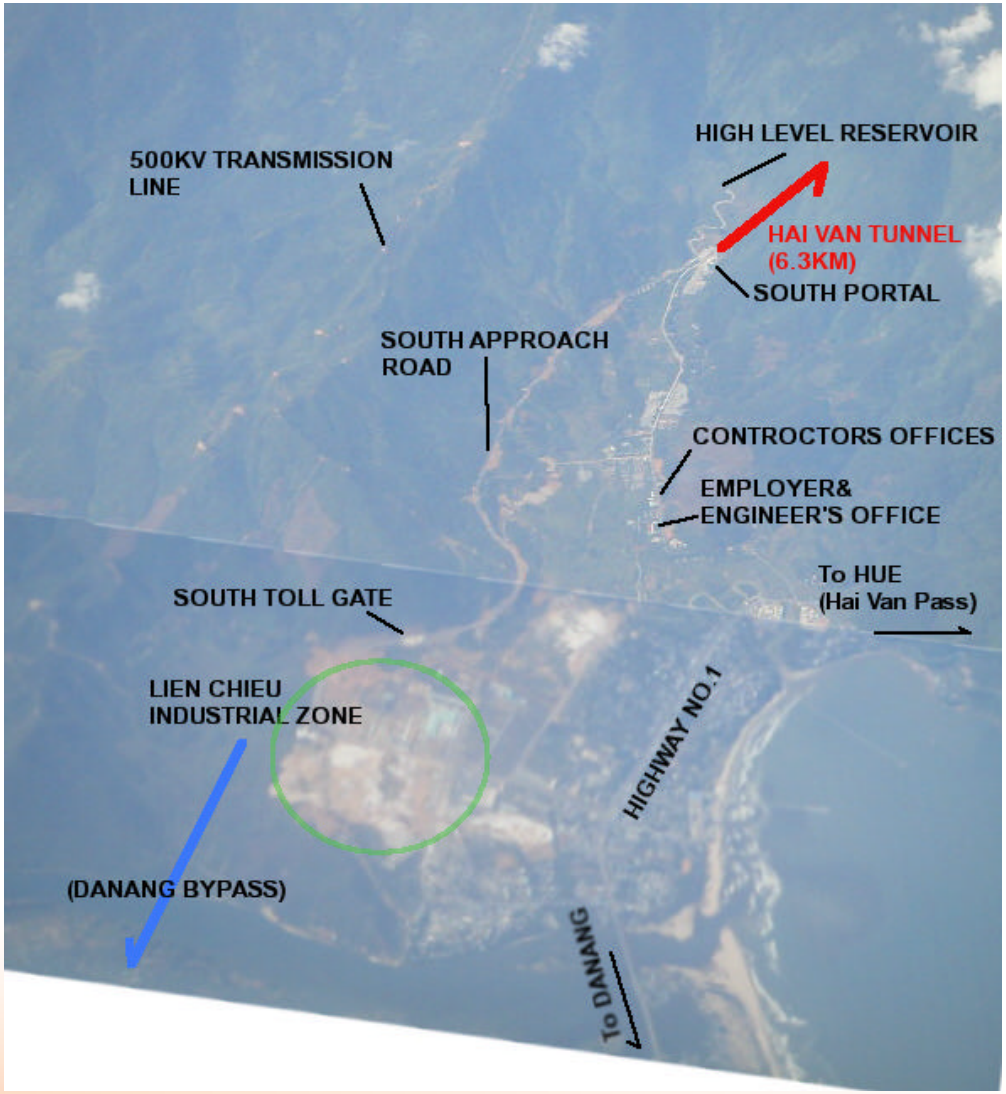
View From South Portal

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

South Portal

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

South Approach Road



Today's Topics

- Introduction of the Project
- PM Practice (1): Human Resource Management
- PM Practice (2): Time Management
- PM Practice (3): Communication Management
  with POWEB (Project Office WEBsite)
- Summary: Keys to Successful PM

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- Introduction of Project
- PM Practice (1): Human Resource Management
- PM Practice (2): Time Management
- PM Practice (3): Communication Management
  with POWEB (Project Office WEBsite)
- Summary: Keys to Successful PM

- Introduction of Project
  1) The Hai Van Pass
  2) Distinct Points of the Project
  3) Project Major Features
  4) Implementation Program of Project
  5) Project Organizations
  6) FIDIC, Condition of the Contract, Based Project

- Introduction of Project
  1) The Hai Van Pass
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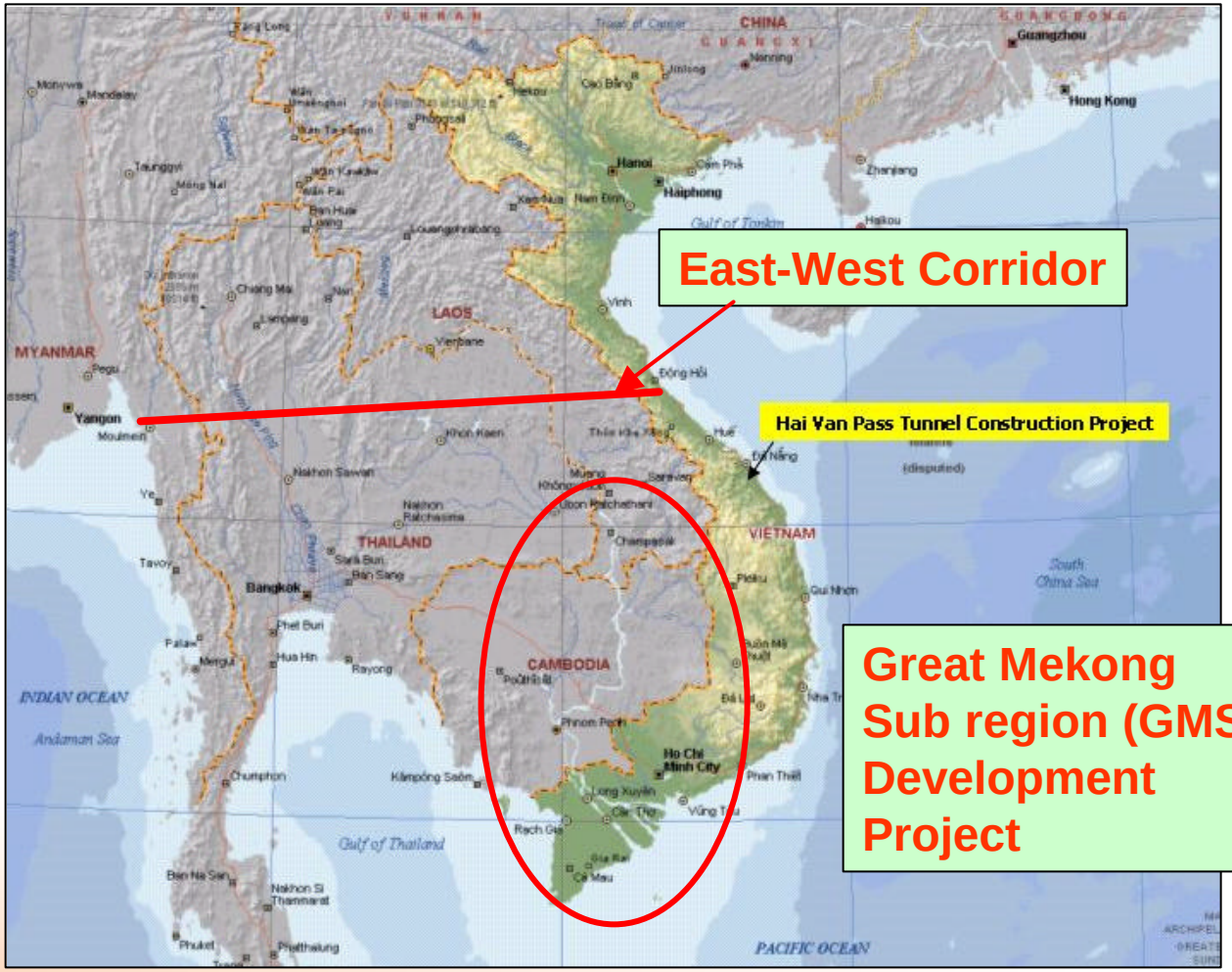
  6) FIDIC Based Project

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, The Hai Van Pass, Location Map (1)

East West Corridor Pjt
-Vietnam
-Laos
-Thailand
-Myanmar

GMS Pjt
-Vietnam
-Laos
-Cambodia
-Thailand



PMI Global Congress ASIA PACIFIC 2005

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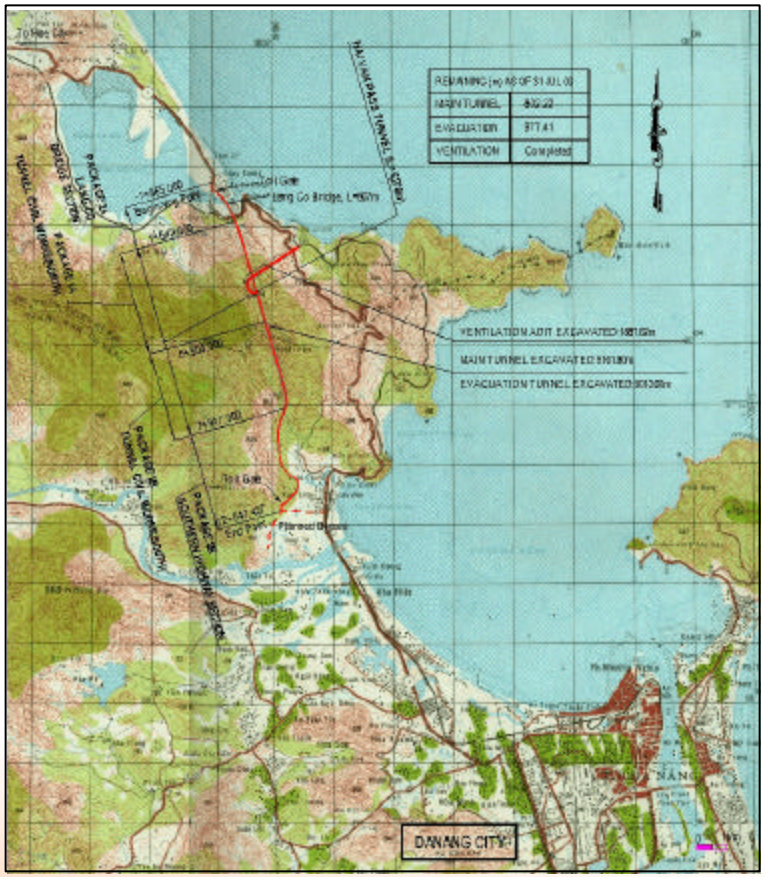
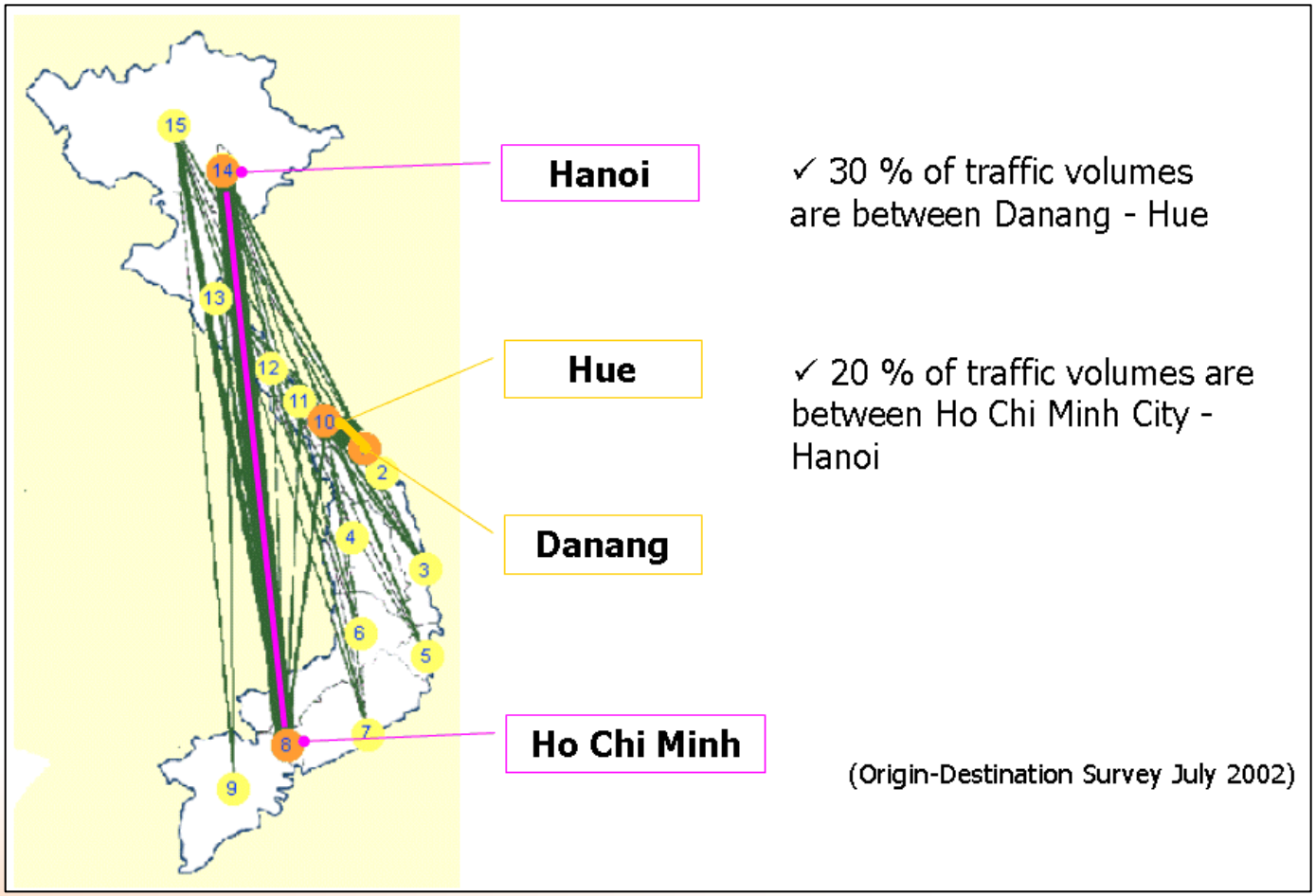
- **Introduction of Project**, The Hai Van Pass, Location Map (2)



Present Pass Road

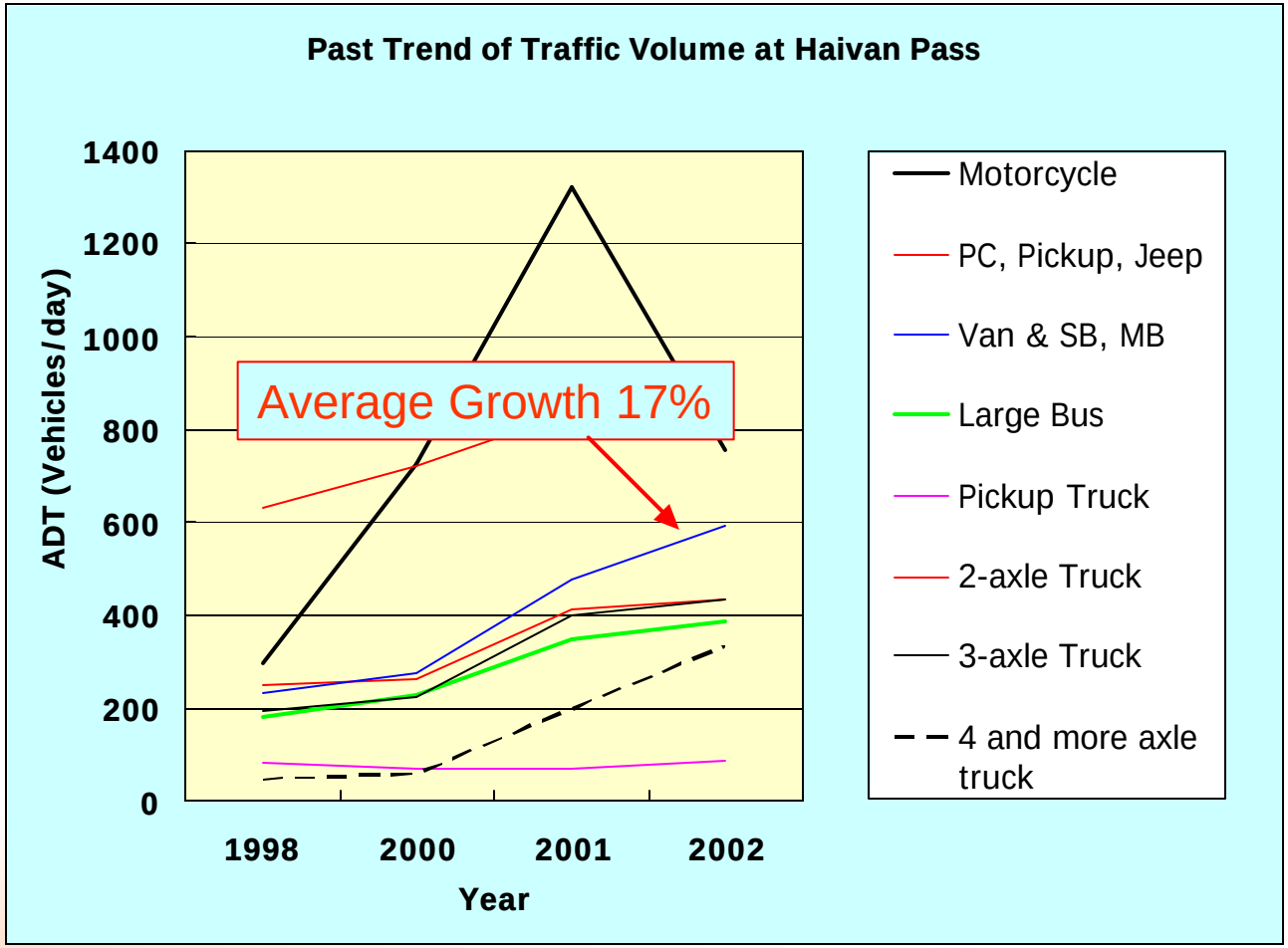
Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, The Hai Van Pass, Traffic Through Hai Van Pass (1)



Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, The Hai Van Pass, Traffic Through Hai Van Pass (2)



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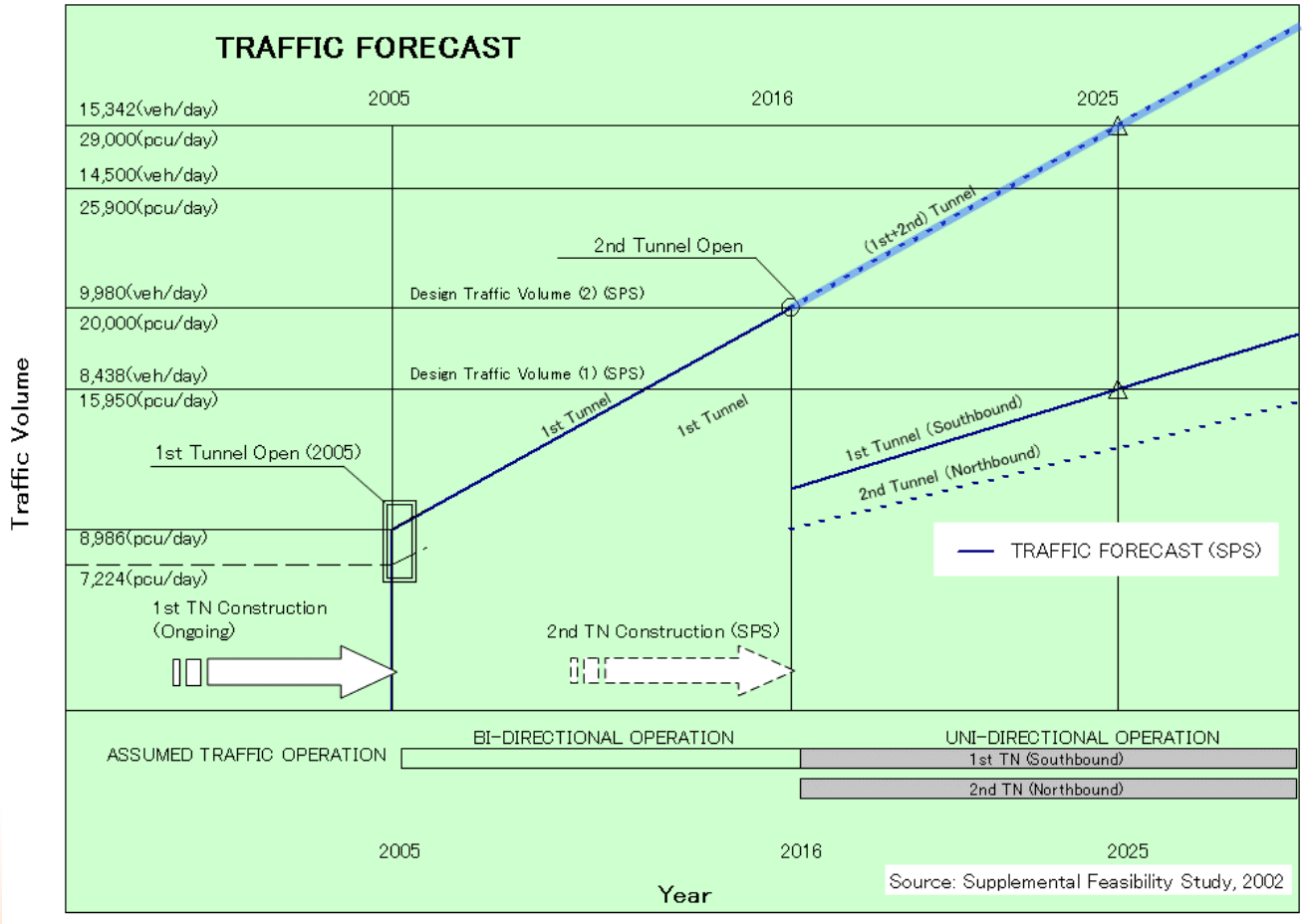
- **Introduction of Project**, The Hai Van Pass, Traffic Forecast



- Introduction of Project
  1) The Hai Van Pass
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Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, Distinct Points of the Project (1)

1) 6.3km long tunnel; longest highway tunnel in Southeast Asia,

2) First Application of New Austrian Tunneling Method (NATM) in Vietnam,

3) Application of Longitudinal Ventilation System, including Electrostatic Precipitator (EP), Ventilation Adit and Jet Fans,

4) Application of integrated overall operation control system said SCADA (Supervisory Control And Data Acquisition), and

5) Operation and Maintenance (O&M) Company Required.

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, Distinct Points of the Project (2),
  A 6.3 km Long Highway Tunnel

1) Longest highway tunnel in Southeast Asia,

2) Approximately 30th longest highway tunnel in the world

3) Combined tunnel ventilation system required to keep air inside the tunnel clean (Dust, CO, NOx)

4) Emergency Response Team Required

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, Distinct Points of the Project (3), NATM Tunneling Method

New Austrian Tunneling Method (NATM) was developed by Austrian engineers such as RABCEWICZ from 1957 to 1965.

The principles of the method is that observations should be undertaken to confirm that the support is adequately stabilizing the surrounding ground, so that the rate of convergence towards the tunnel is perceived to be approaching an asymptotic value.

The essence of design of a system of incremental support is to understand the stress-strain properties of the ground and of the tunnel support since, essentially, controlled strain of the ground has to occur in order to develop a changed stress field in the ground around the tunnel compatible with the degree of support.

The NATM has now gained general acceptance in the engineering world through the years of construction practices in various field such as highway, railway, and waterway.

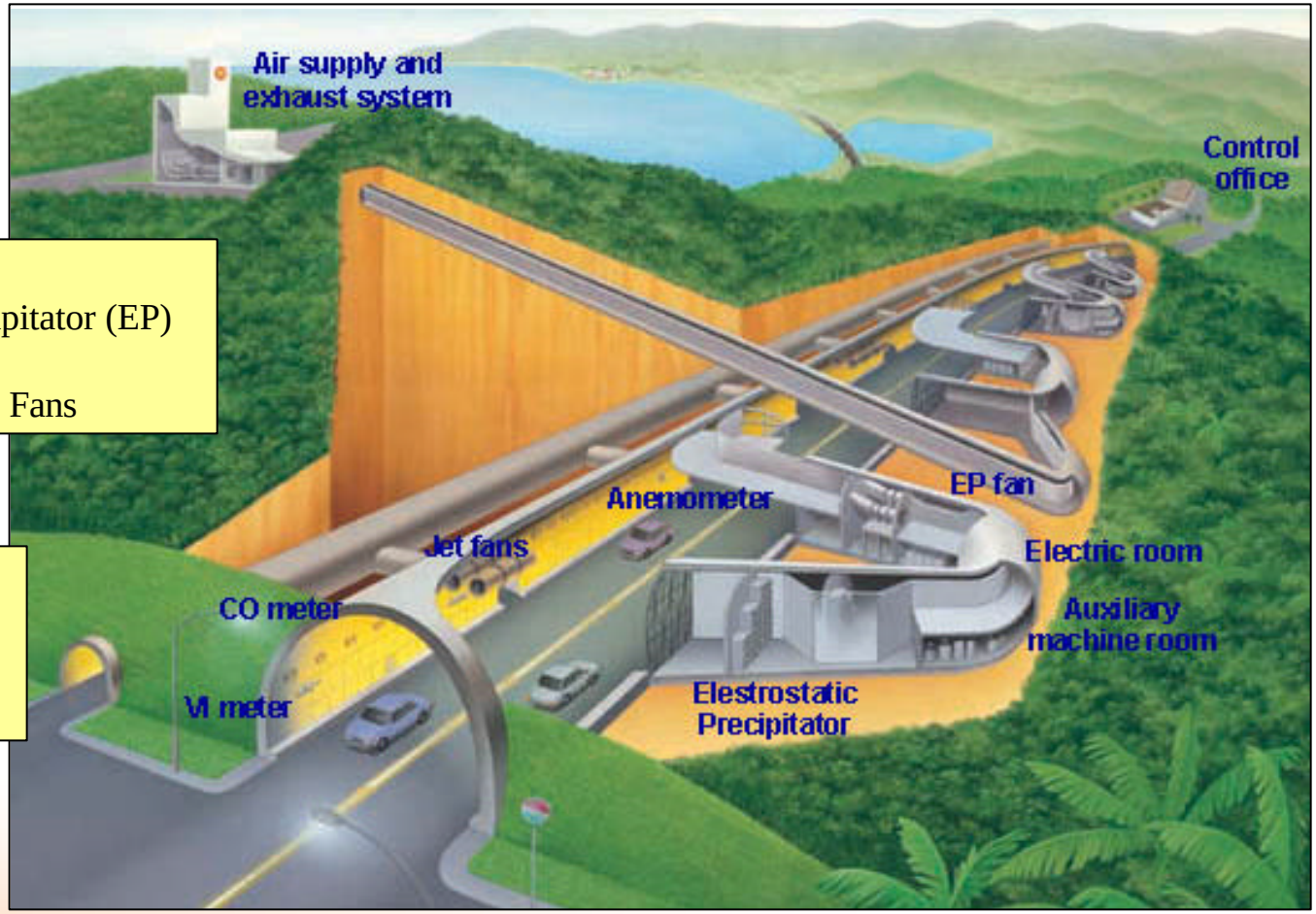
Economic Method → Standard Tunneling Method in the World

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, Distinct Points of the Project (4), Ventilation System (1)

Ventilation Facilities
1) 3@ Electrostatic Precipitator (EP)
2) 23@ Jet Fan
3) 1@ Supply & Exhaust Fans

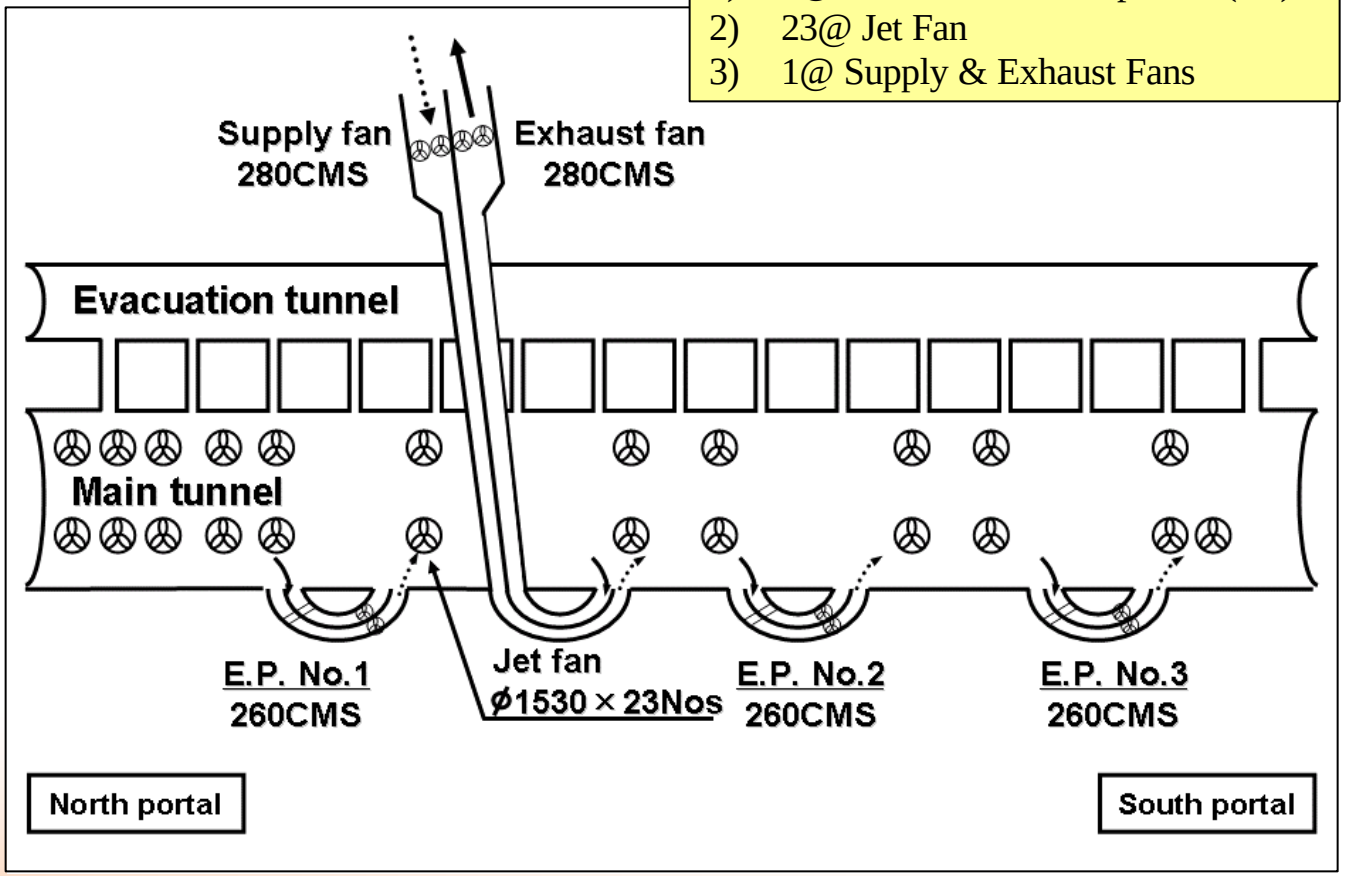
Ventilation Measurements
1) VI Meters
2) CO Meters
3) Anemometers



Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, Distinct Points of the Project (5), Ventilation System (2)

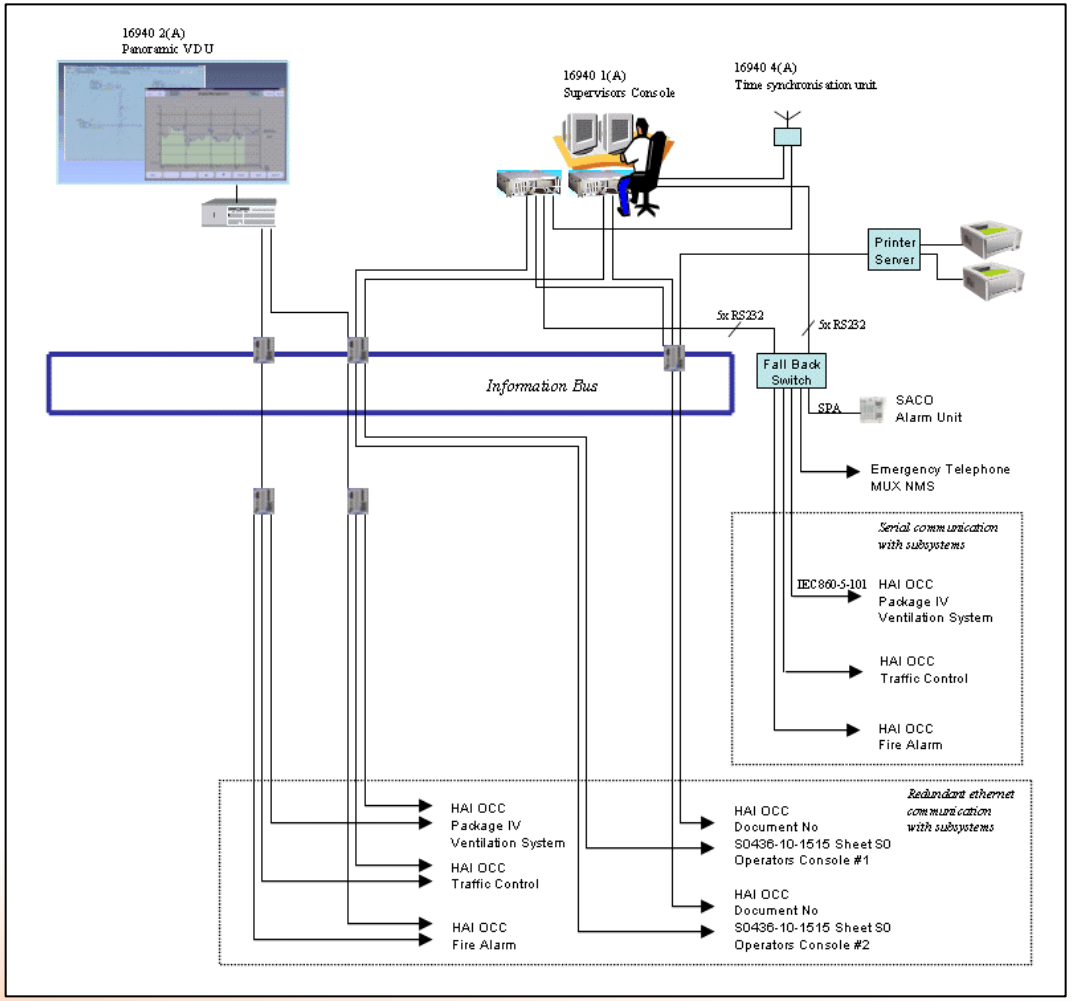
1) 3@ Electrostatic Precipitator (EP)
2) 23@ Jet Fan
3) 1@ Supply & Exhaust Fans



Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, Distinct Points of the Project (6), SCADA System

1) Power Distribution System
2) Tunnel Lighting System
3) Traffic Management System
4) Telecommunication System
5) Fire Detection System
6) Fire Protection System
7) CCTV System
8) Radio Rebroadcast System
9) Ventilation System



Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, Distinct Points of the Project (7), Operation and Maintenance Company Required (1)

For the operation and maintenance of the first long highway tunnel in Vietnam, HAMADECO, O&M Company, was established by referring the Japanese practice. Followings have been advised:

- O&M Organization
- O&M Manuals
- O&M Training
- Emergency Response Training
- Tunnel Opening Plan

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, Distinct Points of the Project (8), Operation and Maintenance Company Required (2), Training Program

<table>
<tr><td></td><td rowspan="2">Police</td><td rowspan="2">Local Govt. Fire/Ambulance Dept.</td><td colspan="6">Highway Operator</td></tr>
<tr><td>Months prior to Commissioning</td><td>Traffic Surveillance & Control Center</td><td>Traffic Control Troops</td><td>Toll Collection</td><td>Equipment Operation & Maintenance</td><td>Civil Maintenance</td><td>Internal Coordination</td><td>External Coordination w/ Mass Media, Hospitals, etc.</td></tr>
<tr><td>12</td><td></td><td></td><td></td><td></td><td></td><td rowspan="10">Operation, Test and Maintenance at Factory & at Site</td><td></td><td rowspan="12"></td><td rowspan="12"></td></tr>
<tr><td>11</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
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<tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="3">3</td><td></td><td></td><td>Traffic Surveillance & Control</td><td>Traffic Regulation</td><td rowspan="3"></td><td rowspan="3"></td></tr>
<tr><td colspan="3">Emergency Control for Accidents</td></tr>
<tr><td colspan="3">Emergency Control for Fires</td></tr>
<tr><td>2</td><td></td><td></td><td>Traffic Surveillance & Control</td><td>Traffic Regulation
Patrols</td><td>Toll Collection</td><td></td><td></td></tr>
<tr><td rowspan="3">1</td><td colspan="6">Emergency Control for Natural Disasters</td></tr>
<tr><td colspan="5">Emergency Control for Accidents and Fires</td><td></td></tr>
<tr><td></td><td></td><td>Traffic Surveillance & Control</td><td>Traffic Regulation
Patrols</td><td>Toll Collection</td><td></td><td>Routine Inspection</td></tr>
<tr><td>Commissioning</td><td></td><td></td><td></td><td colspan="2">Over-Dimension Vehicle Control</td><td></td><td></td><td></td><td></td></tr>
</table>

- Introduction of Project
  1) The Hai Van Pass
  2) Distinct Points of the Project
  3) Project Major Features
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  5) Project Organizations
  6) FIDIC Based Project

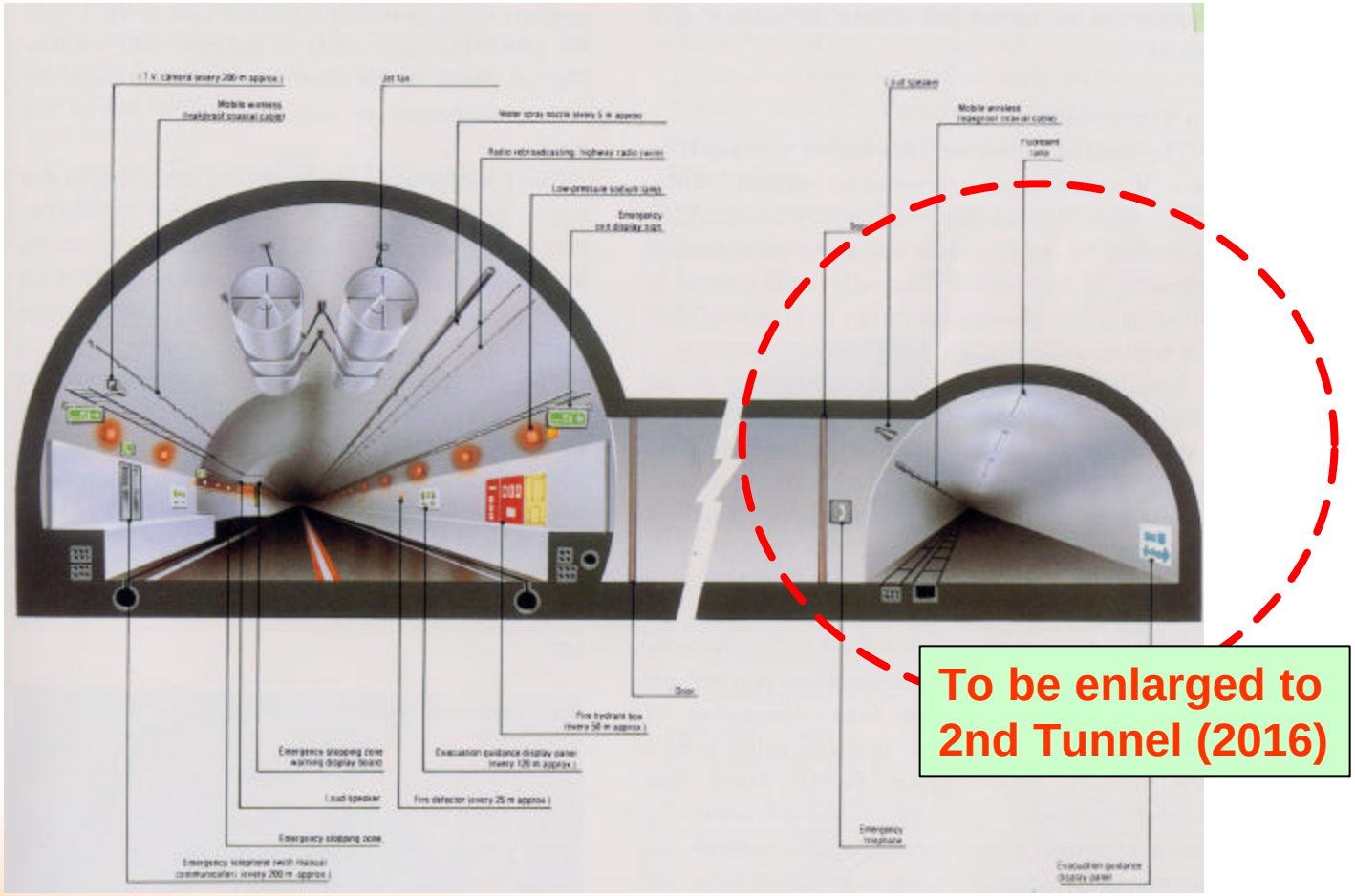
Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, Project Major Features (1)

1) Project Length:	12,182m (incl. Tunnel = 6,280m, Bridges = 1,653m)
2) Traffic Lane:	2 Lanes (Stage 1)
	1.25 (shoulder) +3.75 (Carriageway) +3.75+1.25, Total 10.0m wide
3) Operation System:	SCADA (Supervisory Control And Data Acquisition)
4) Tunnel Length:	6,280m (Main Tunnel, MT), 6,286m (Evacuation Tunnel, ET), 1,888m (Ventilation Adit, VA)
5) Tunneling Method:	NATM (New Austrian Tunneling Method)
6) Cross-section:	89m2(MT), 15.5(ET), 36.2(VA)
7) Cross-Passage:	400m interval
8) Ventilation System:	Longitudinal System, 23 Jet Fans, 3 EPs, 1 VA
9) Bridge Number and Length:	8 bridges, 1,653m in total length
10) Toll Plazas:	Two plazas on both ends of project roads

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, Project Major Features (2)



- Introduction of Project

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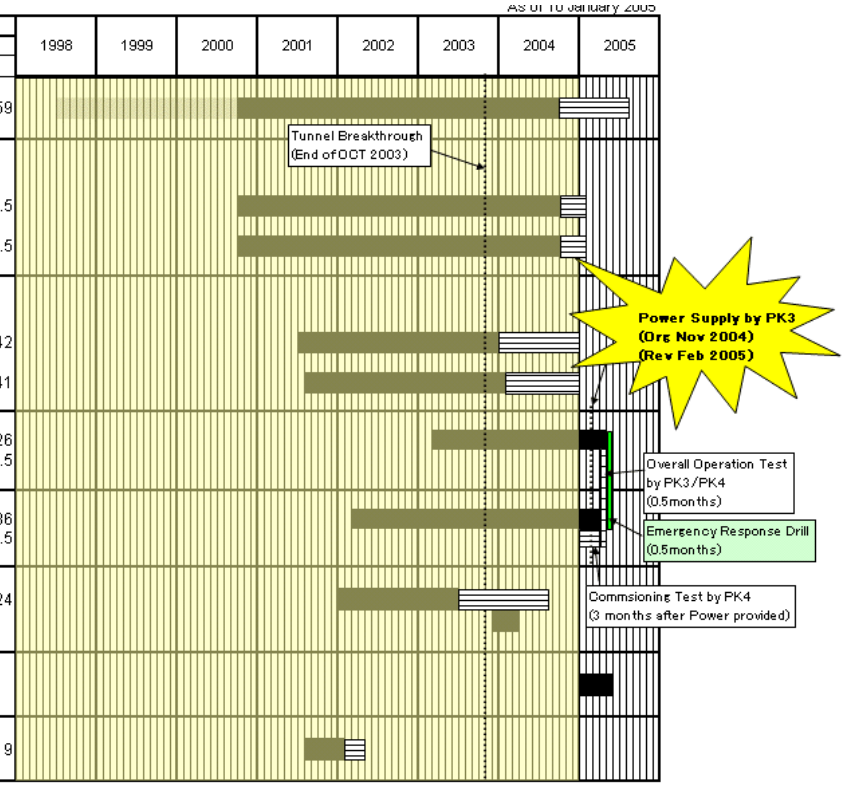
7) Organization Structure

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, Implementation Program of Project (1)

	Contract Period						
	Original			EOT	With EOT		
	Start	End	Month		End	Month	
Consulting Services (Construction Supervision)	1-Oct-00	30-Sep-04	48	11	31-Aug-05	59	
Package I: Tunnel Civil Works							
1A (North)	1-Oct-00	30-Sep-04	48	3.5	15-Jan-05	51.5	
1B (South)	1-Oct-00	30-Sep-04	48	2.5	15-Dec-04	50.5	
Package II: Road and BridgeWorks							
2A (North)	1-Jul-01	31-Dec-03	30	12	31-Dec-04	42	
2B (South)	26-Jul-01	25-Mar-04	32	9	31-Dec-04	41	
Package III: Electrical Works	14-Feb-03	13-Apr-05	26	0		26	
Overall Operation Testing				0.5	30-Apr-05	26.5	
Package IV: Mechanical Works	13-Mar-02	12-Mar-05	36	0		36	
Overall Operation Testing				1.5	30-Apr-05	37.5	
Package V: 110/22kV Substation and 110kV TL	21-Dec-01	20-Jun-03	18	6	20-Dec-03	24	
V01: Lien Chieu SS	1-Dec-03	30-Apr-04	5	4	19-Aug-04		
Package VI: Procurement of Maintenance Vehicles							
Package VII: Infrastructure Development in the Resettlement Areas	1-Aug-01	31-Jan-02	6	3	29-Apr-02	9	



EOT indicated is assumption only, not approved yet.

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, Implementation Program of Project (2)

Package	Commensment of Works			Construction Period		
	Addendum 2	Actual	Difference (months)	Addendum 2	Actual	Difference (months)
1A	1999.10	2000.10	12	48	52	4
1B	1999.10	2000.10	12	48	52	4
2A	2000.10	2001.07	10	30	42	12
2B	2000.10	2001.07	10	32	41	9
3	2000.10	2003.02	29	36	(27)	(1)
4	2000.10	2002.03	17	36	(38)	(2)
5	2000.04	2001.12	20	18	24	6

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Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, Project Organizations

1) Organization Structure

Organization	Name
Financing Agency	Japan Bank for International Cooperation (JBIC)
	L/A No. VNIV-5, March 26, 1997, Loan Amount: JPY 5.5 billion L/A No. VNVI-5, March 30, 1999, Loan Amount: JPY 10.0 billion L/A No. VNIX-4, March 29, 2002, Loan Amount: JPY 3.359 billion Total: JPY 18.859 billion
Executing Agency	Project Management Unit No. 85 (PMU85) under Ministry of Transport and Communications (MOT)
Consultant	Joint Venture of Nippon Koei Co., Ltd., Japan and Louis Berger International Inc., USA in association with Transport Engineering Design Incorporation (TEDI), Vietnam

2) Contract Packages

Contract Packages	Major Works	Sub Packages	Package Title	Contract Amount (1000USD)	
Consulting Services				14,724	Contracted
Package I	Tunnel Civil Works	Package IA	North Tunnel Section	43,256	Contracted
		Package IB	South Tunnel Section	27,863	Contracted
Package II	Road and Bridge Works	Package IIA	Lang Co Bridge Section	4,633	Contracted
		Package IIB	Southern Highway Section	3,920	Contracted
Package III	Electrical Works			20,686	Contracted
Package IV	Mechanical Works			23,055	Contracted
Package V	110/22kV Substation and 110kV Transmission Line			7,256	Contracted
Package VI	Procurement of Maintenance Vehicles			(2,000)	Estimate
Package VII	Infrastructure Development in the Resettlement Areas			413	Contracted
			Total	133,082	

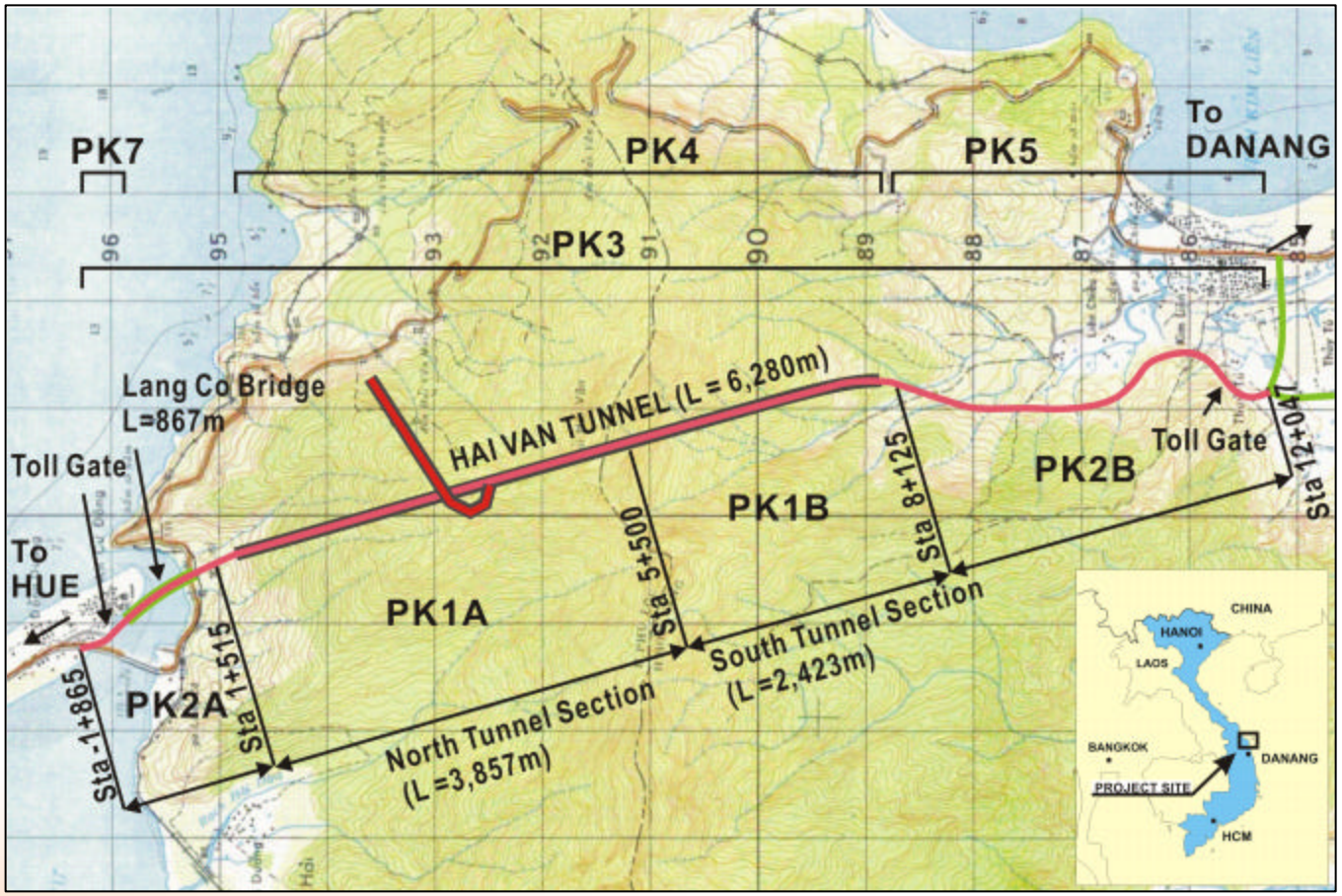
Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, Project Organizations, JBIC Loan Conditions

Loan No.	VN - IV - 5	VN - VI - 5	VN - IX - 4
Date of Agreement	26-Mar-97	23-Jul-99	29-Mar-02
Agreed Loan Amount (JPY)	5.500 billion	10.000 billion	3.359 billion
Status	Closed 5.487 billion	On going	Not used yet
Interest (% / Year)	2.3%	1.7%	1.8%
Grace Period (Years)	10	10	10
Repayment Period (Years)	30	30	30
Start to Repayment	2007	2009	2012
Finish to Repayment	2036	2039	2041

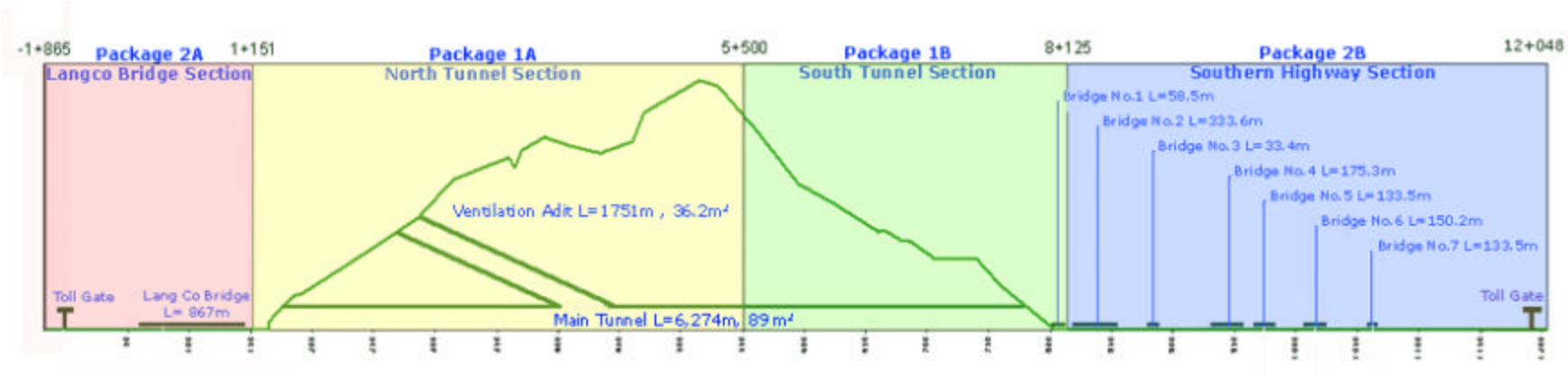
Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

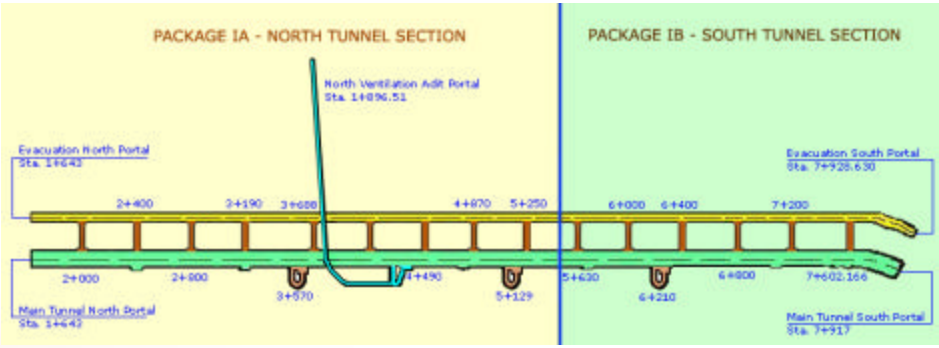
- **Introduction of Project**, Project Organizations, Location of Contractors (1)



Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, Project Organizations, Location of Contractors (2)





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Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, FIDIC Based Project

  FIDIC (International Federation of Consulting Engineers) is widely used as conditions of contract for international construction contracts.
  http://fidic.org/

Contract Package	FIDIC Conditions of Contracts
Civil Works	Conditions of Contract for Works of Civil Engineering Construction, PART I GENERAL CONDITIONS, 4th Edition, 1987 (Red Book)
1A: Tunnel Civil Works, North Tunnel Section	
1B: Tunnel Civil Works, South Tunnel Section	
2A: Road and Bridge Works, Lang Co Bridge Section	
2B: Road and Bridge Works, Southern Highway Section	
Electrical and Mechanical Works	Conditions of Contract for Electrical and Mechanical Works, 3rd Edition, 1987 (Yellow Book)
3: Electrical Works	
4: Mechanical Works	
5: 110/22kV Substation and 110kV Transmission Line	

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

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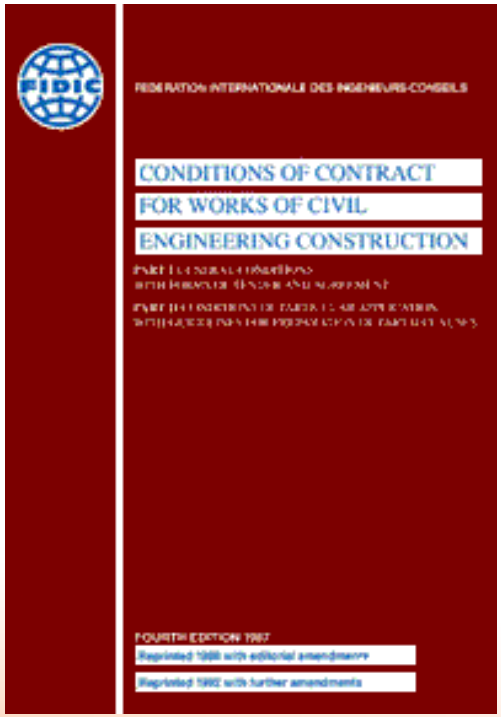
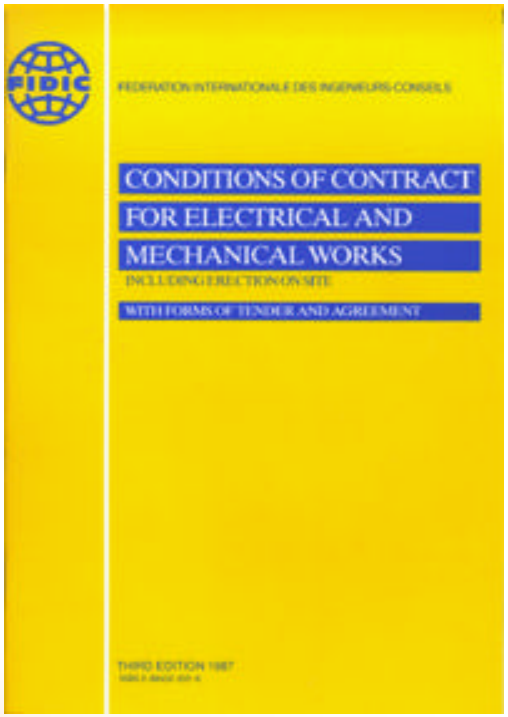
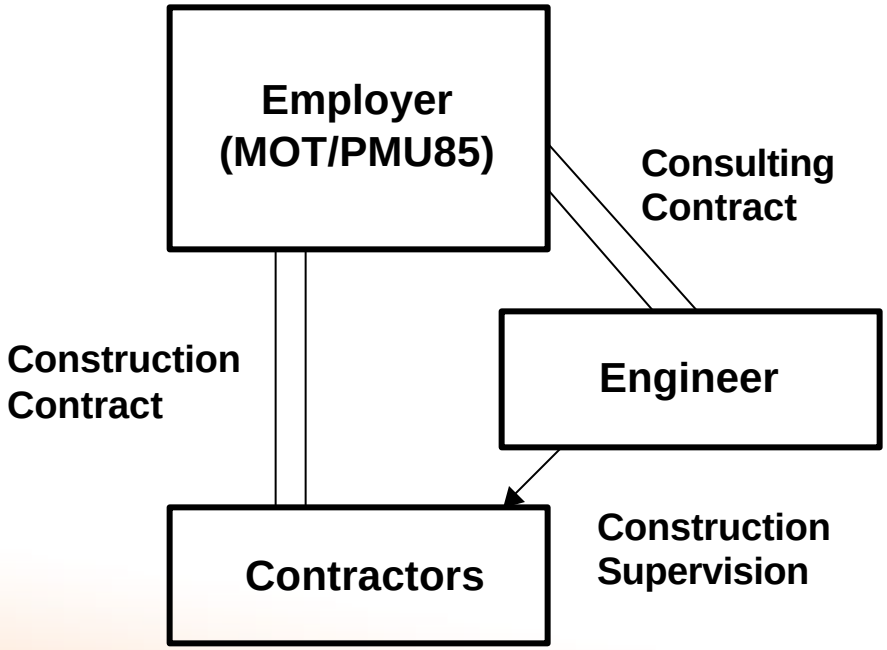




Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

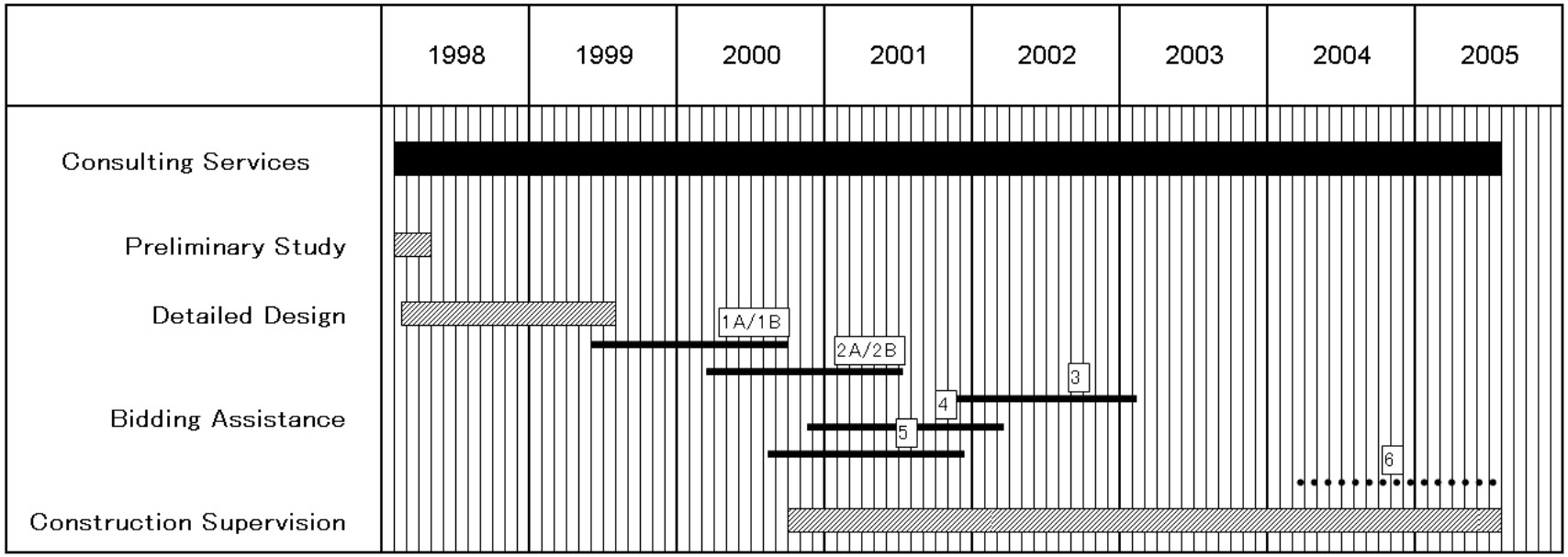
- **Introduction of Project**, FIDIC Based Project, Organization Structure

A construction contract is placed between the Employer and the Contractor, however, the Consultant, stipulated as the Engineer in the contract, is required to act impartially to the both.



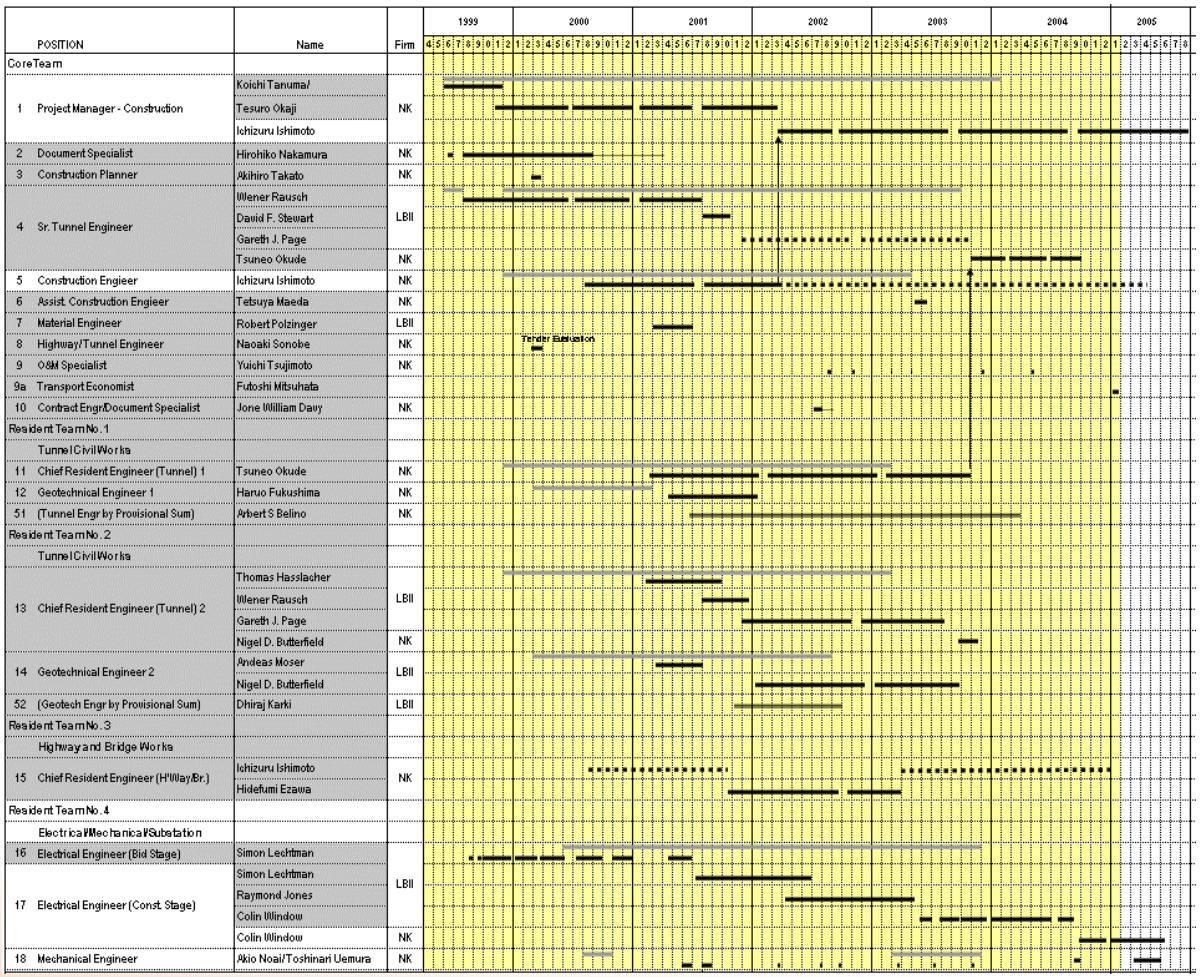
Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, FIDIC Based Project, Organization Structure Consultant Service



Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **Introduction of Project**, FIDIC Based Project, Organization Structure Consultant Service



POSITION	Name	Firm
Core Team		
1 Project Manager - Construction	Koichi Tanuma/	NK
	Tesuro Okaji	
	Ichizuru Ishimoto	
2 Document Specialist	Hirohiko Nakamura	NK
3 Construction Planner	Akihiro Takato	NK
4 Sr. Tunnel Engineer	Wiener Rausch	LBII
	David F. Stewart	
	Gareth J. Page	
	Tsuneo Okude	NK
5 Construction Engieer	Ichizuru Ishimoto	NK
6 Assist. Construction Engieer	Tetsuya Maeda	NK
7 Material Engineer	Robert Polzinger	LBII
8 Highway/Tunnel Engineer	Naoaki Sonobe	NK
9 O&M Specialist	Yuichi Tsujimoto	NK
9a Transport Economist	Futoshi Mitsuhata	
10 Contract Engr/Document Specialist	Jone William Davy	NK
Resident Team No. 1		
Tunnel Civil Works		
11 Chief Resident Engineer (Tunnel) 1	Tsuneo Okude	NK
12 Geotechnical Engineer 1	Haruo Fukushima	NK
51 (Tunnel Engr by Provisional Sum)	Arbert S Belino	NK
Resident Team No. 2		
Tunnel Civil Works		
13 Chief Resident Engineer (Tunnel) 2	Thomas Hasslacher	LBII
	Wiener Rausch	
	Gareth J. Page	
	Nigel D. Butterfield	NK
14 Geotechnical Engineer 2	Andeas Moser	LBII
	Nigel D. Butterfield	
52 (Geotech Engr by Provisional Sum)	Dhiraj Karki	LBII
Resident Team No. 3		
Highway and Bridge Works		
15 Chief Resident Engineer (HWay/Br.)	Ichizuru Ishimoto	NK
	Hidefumi Ezawa	
Resident Team No. 4		
Electrical/Mechanical/Substation		
16 Electrical Engineer (Bid Stage)	Simon Lechtman	LBII
17 Electrical Engineer (Const. Stage)	Simon Lechtman	
	Raymond Jones	
	Colin Window	
	Colin Window	NK
18 Mechanical Engineer	Akio Noai/Toshinari Uemura	NK

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- Introduction of Project
- PM Practice (1): Human Resource Management
- PM Practice (2): Time Management
- PM Practice (3): Communication Management
  with POWEB (Project Office WEBsite)
- Summary: Keys to Successful PM

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- PM Practice (1): Human Resource Management
  1) Three Objectives for Project Management
  2) Application of PMBOK
  3) RAM for Consultant Team
  4) RAM for Overall Project and Each Contract Package

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- PM Practice (1): Human Resource Management

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2) Application of PMBOK
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Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

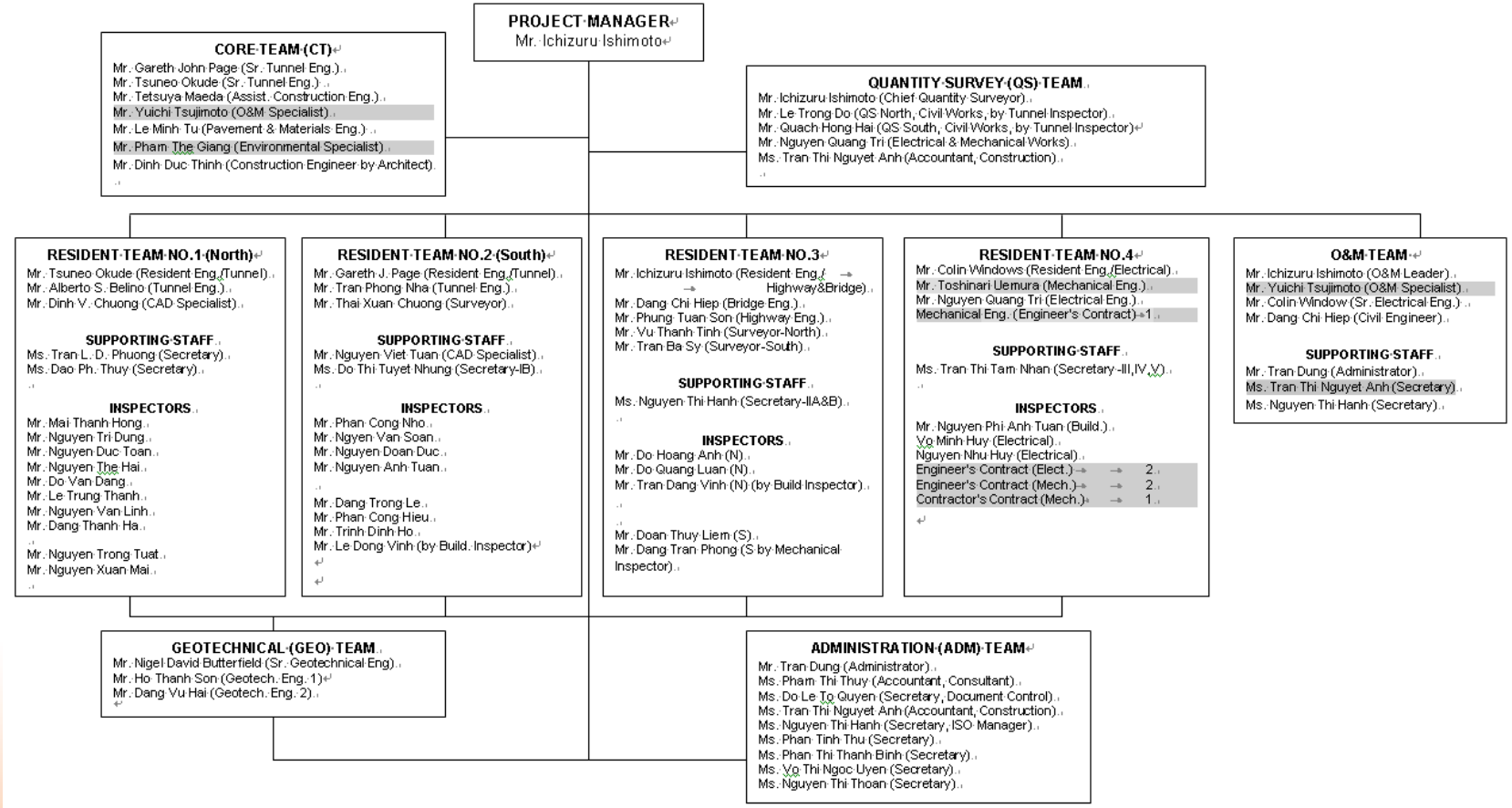
- **PM Practice (1): Human Resource Management**,
  Three Objectives for Project Management

  The Project Manager (PMR) of the Consultant team is responsible for both the management of the Consultant Team and the overall project.

No.	Management Object
A	Consultant Team
B B-1 B-2	Project Overall Project Each Contract Package

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (1): Human Resource Management**,
  Consultant Organization



Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (1): Human Resource Management**, Contractors

3) Contractors

No.	Contract Packages	Package Title	Contractor	Contract Period
1	Package IA	North Tunnel Section	JV Hazama – Cienco 6	48
2	Package IB	South Tunnel Section	JV Dong Ah – Song Da	48
3	Package IIA	Lang Co Bridge Section	JV Thang Long – Truong Son	30
4	Package IIB	Southern Highway Section	JV Cienco 1 – Lung Lo – Vinawaco	32
5	Package III	Electrical Works	JO of ABB – Kinden – Vinainco	26
6	Package IV	Mechanical Works	Matsushita – Itochu Consortium	36
7	Package V	110/22kV Substation and 110kV Transmission Line	JO of ABB – Kinden – Vinainco	18
8	Package VI	Procurement of Maintenance Vehicles	(Under Preparation)	
9	Package VII	Infrastructure Development in the Resettlement Areas	Construction Company No. 185	6

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- PM Practice (1): Human Resource Management

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Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (1): Human Resource Management**,
  Application of PMBOK

  The PMR has used the following PMBOKs for responsibility distribution to each team of the Consultant:

1)	*Construction Extension to A Guide to the Project Management Body of Knowledge (PMBOK® Guide) (PMI, 2003)*
2)	*A Guide to the Project Management Body of Knowledge (PMBOK® Guide) (PMI, 2000)*

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (1): Human Resource Management**,
  Application of PMBOK (Construction Extension)

Process Groups / Knowledge Area	Initiating	Planning	Executing	Controlling	Closing
4. Project Integration Management		4.1 Project Plan Development	4.2 Project Plan Execution	4.3 Integrated Change Control	
5. Project Scope Management	5.1 Initiation	5.2 Scope Planning 5.3 Scope Definition		5.4 Scope Verification 5.5 Scope Change Control	
6. Project Time Management		6.1 Activity Definition 6.2 Activity Sequencing 6.3 Activity Duration Estimating 6.4 Schedule Development	6.6 Activity Weights Definition	6.5 Schedule Control 6.7 Progress Curves Development 6.8 Progress Monitoring	
7. Project Cost Management		7.1 Resource Planning 7.2 Cost Estimating 7.3 Cost Budgeting		7.4 Cost Control	
8. Project Quality Management		8.1 Quality Planning	8.2 Quality Assurance	8.3 Quality Control	
9. Project Human Resource Management		9.1 Organizational Planning 9.2 Staff Acquisition	9.3 Team Development		9.3 Project Completion
10. Project Communications Management		10.1 Communications Planning	10.2 Information Distribution	10.3 Performance Reporting	10.4 Administrative Closure
11. Project Risk Management		11.1 Risk Management Planning 11.2 Risk Identification 11.3 Qualitative Risk Analysis 11.4 Quantitative Risk Analysis 11.5 Risk Response Planning		11.6 Risk Monitoring and Control	
12. Project Procurement Management		12.1 Procurement Planning 12.2 Solicitation	12.3 Solicitation 12.4 Source Selection 12.5 Contract Administration		12.6 Contract Closeout
13. Project Safety Management		13.1 Safety Planning	13.2 Safety Plan Execution		13.3 Administration & Reporting
14. Project Environmental Management		14.1 Environmental Planning	14.2 Environmental Assurance	14.3 Environmental Control	
15. Project Financial Management		15.1 Financial Planning		15.2 Financial Control	15.3 Administration & Records
16. Project Claim Management		16.1 Claim Identification 16.2 Claim Quantification		16.3 Claim Prevention	16.3 Claim Resolution

Figure 3–1. Mapping of Project Management Processes and Construction Management Processes to the Process Groups and Knowledge Areas

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- PM Practice (1): Human Resource Management

1) Three Objectives for Project Management
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Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (1): Human Resource Management**,
  RAM (Responsibility Assignment Matrix) for Consultant Team

Team / Knowledge Area	PMR	CT	RT	GEO	QS	OM	ADM
4. Project Integration Management	●	○					
5. Project Scope Management	●	○					
6. Project Time Management	●	○					
7. Project Cost Management	●						○
8. Project Quality Management	●	○	○	○	○	○	○
9. Project Human Resorce Management	●	○	○	○	○	○	○
10. Project Communication Management	●	○	○	○	○	○	○
11. Project Risk Management	●	○	○				
12. Project Procurment Management	●						○
13. Project Safety Management	●	○	○				
14. Project Environmental Management	●	○	○				○
15. Project Financial Management	●						○
16. Project Claim Management	●	○	○		○		
PMR: Project Manager, CT: Core Team, RT: Resident Team, GEO: Geotechnical Team QS: Quantity Surveyor Team, OM: Operation and Maintenane Team, ADM: Administration Team							
●: Primary Responsibility ○: Secondary Responsibility							

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (1): Human Resource Management**,
  RAM (Responsibility Assignment Matrix) for Consultant Team

Team / Knowledge Area	PMR	CT	RT	GEO	QS	OM	ADM
4. Project Integration Management	●	○					
5. Project Scope Management	●	○					
6. Project Time Management	●	○					
7. Project Cost Management	●						○
8. Project Quality Management	●	○	○	○	○	○	○
9. Project Human Resorce Management	●	○	○	○	○	○	○
10. Project Communication Management	●	○	○	○	○	○	○
11. Project Risk Management	●	○	○				
12. Project Procurment Management	●						○
13. Project Safety Management	●	○	○				
14. Project Environmental Management	●	○	○				○
15. Project Financial Management	●						○
16. Project Claim Management	●	○	○		○		
PMR: Project Manager, CT: Core Team, RT: Resident Team, GEO: Geotechnical Team QS: Quantity Surveyor Team, OM: Operation and Maintenane Team, ADM: Administration Team							
●: Primary Responsibility ○: Secondary Responsibility							

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- PM Practice (1): Human Resource Management

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- **PM Practice (1): Human Resource Management**,
  RAM for Overall Project and Each Contract Package

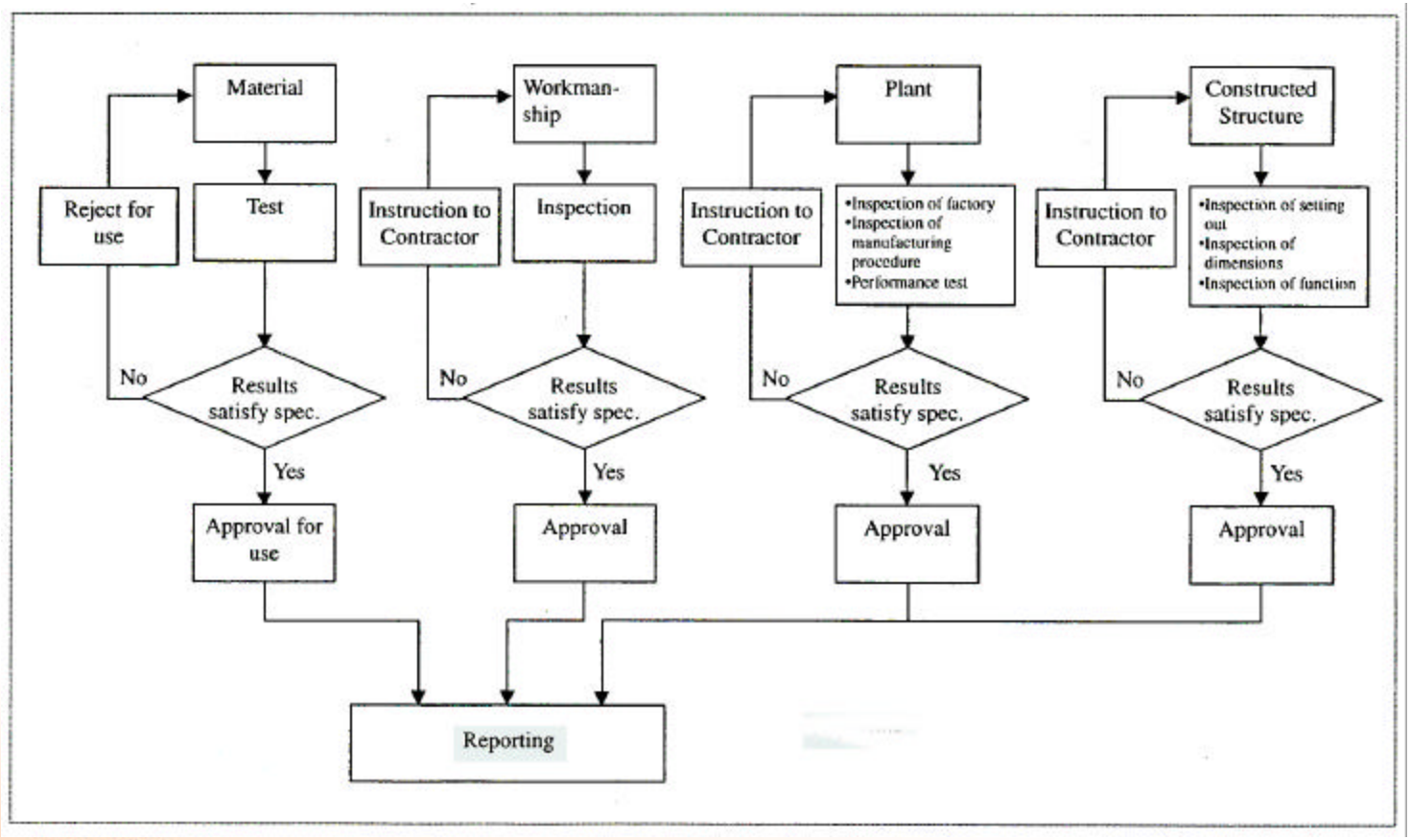
Team / Knowledge Area	Overall Project			Each Package		
	PMR	RE	Other	PMR	RE	Other
4. Project Integration Management	●	○		●	○	
5. Project Scope Management	●	○	QS	○	●	
6. Project Time Management	●	○		○	●	
7. Project Cost Management	●		QS		○	QS
8. Project Quality Management	●				●	GEO
9. Project Human Resorce Management	●	○		●	○	
10. Project Communication Management	●	○	ADM	○	●	ADM
11. Project Risk Management	●	○	QS	○	●	
12. Project Procurment Management	●		ADM	●	○	ADM
13. Project Safety Management	●	○		○	●	
14. Project Environmental Management	●	○		○	●	
15. Project Financial Management	●		QS	●	○	QS
16. Project Claim Management	●		QS	●	○	QS

PMR: Project Manager, RT: Resident Team, GEO: Geotechnical Team
QS: Quantity Surveyor Team, ADM: Administration Team

●: Primary Responsibility ○: Secondary Responsibility

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (1): Human Resource Management**,
  QA/QC by RE



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- Summary: Keys to Successful PM

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- PM Practice (2): Time Management
  1) Project Milestone
  2) Diagram Types for Scheduling
  3) CPM Scheduling by Primavera P3
  4) Monthly Progress Tracking Report

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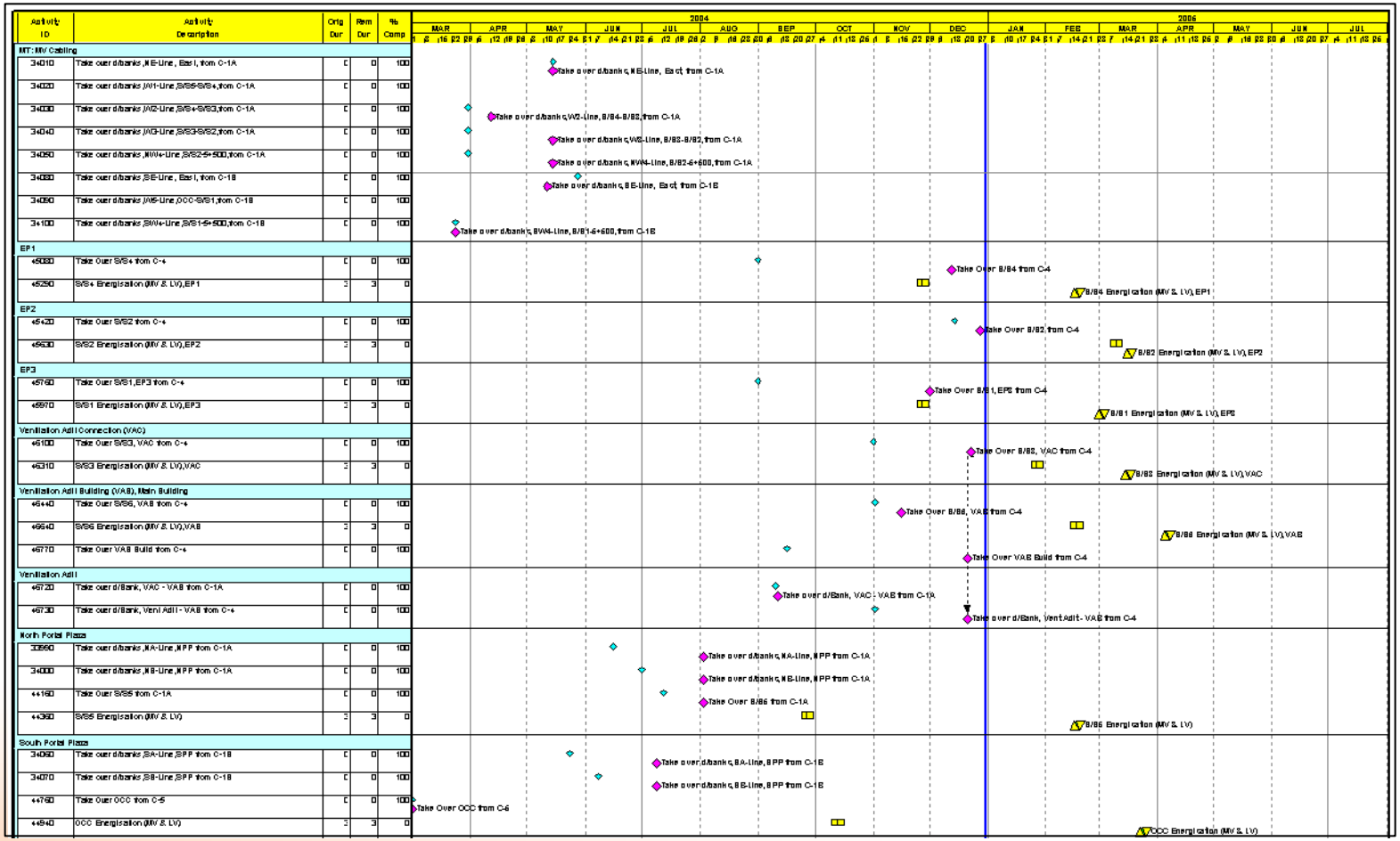
Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (2): Time Management**, Project Milestone (1)

No.	Milestone	Actual (Schedule)	Delay
1	Commencement of Each Contract Package	CP3 (Feb 2003), CP4 (Mar 2002)	
2	Tunnel Breakthrough	28 Oct 2003	4 months
3	Site Hand-Over from Tunnel Civil to Mechanical	Oct 2003 – Mar 2004	0.5 month
4	Site Hand-Over from Mechanical to Electrical	Nov - Dec 2004	0.5 month
5	Site Hand-Over from Tunnel Civil to Electrical	Nov 2003 – Aug 2004	0.5 month
6	Power Distribution from Electrical to Mechanical	(Mar 2005)	
7	Commissioning of Each Facility	(Mar-Apr 2005)	
8	Emergency Response Training	(May 2005)	
9	Tunnel Open	(May 2005)	On Schedule

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (2): Time Management**, Project Milestone (2)



Activity ID	Activity Description	Orig Dur	Rem Dur	% Comp
MT: MV Cabling				
34010	Take over d/banks ,NE-Line , East , from C-1A	0	0	100
34020	Take over d/banks ,NV1-Line ,SVS5-SVS4,from C-1A	0	0	100
34030	Take over d/banks ,NV2-Line ,SVS4-SVS3,from C-1A	0	0	100
34040	Take over d/banks ,NV3-Line ,SVS3-SVS2,from C-1A	0	0	100
34050	Take over d/banks ,NV4-Line ,SVS2-5+500,from C-1A	0	0	100
34060	Take over d/banks ,SE-Line , East , from C-1B	0	0	100
34090	Take over d/banks ,NV5-Line ,OCC-SVS1,from C-1B	0	0	100
34100	Take over d/banks ,SNV4-Line ,SVS1-5+500,from C-1B	0	0	100
EP1				
45030	Take Over SVS4 from C-4	0	0	100
45250	SVS4 Energisation (MV & LV),EP1	3	3	0
EP2				
45420	Take Over SVS2 from C-4	0	0	100
45630	SVS2 Energisation (MV & LV),EP2	3	3	0
EP3				
45760	Take Over SVS1,EP3 from C-4	0	0	100
45970	SVS1 Energisation (MV & LV),EP3	3	3	0
Ventilation Adit Connection (VAC)				
46100	Take Over SVS3, VAC from C-4	0	0	100
46310	SVS3 Energisation (MV & LV),VAC	3	3	0
Ventilation Adit Building (VAB), Main Building				
46440	Take Over SVS6, VAB from C-4	0	0	100
46540	SVS6 Energisation (MV & LV),VAB	3	3	0
46770	Take Over VAB Build from C-4	0	0	100
Ventilation Adit				
46720	Take over d/Bank, VAC - VAB from C-1A	0	0	100
46730	Take over d/Bank, Vent Adit - VAB from C-4	0	0	100
North Portal Plaza				
33660	Take over d/banks ,NA-Line ,NPP from C-1A	0	0	100
34000	Take over d/banks ,NB-Line ,NPP from C-1A	0	0	100
44160	Take Over SVS6 from C-1A	0	0	100
44360	SVS6 Energisation (MV & LV)	3	3	0
South Portal Plaza				
34060	Take over d/banks ,SA-Line ,SPP from C-1B	0	0	100
34070	Take over d/banks ,SB-Line ,SPP from C-1B	0	0	100
44760	Take Over OCC from C-5	0	0	100
44940	OCC Energisation (MV & LV)	3	3	0

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- PM Practice (2): Time Management
  1) Project Milestone
  2) Diagram Types for Scheduling
  3) CPM Scheduling by Primavera P3
  4) Monthly Progress Tracking Report

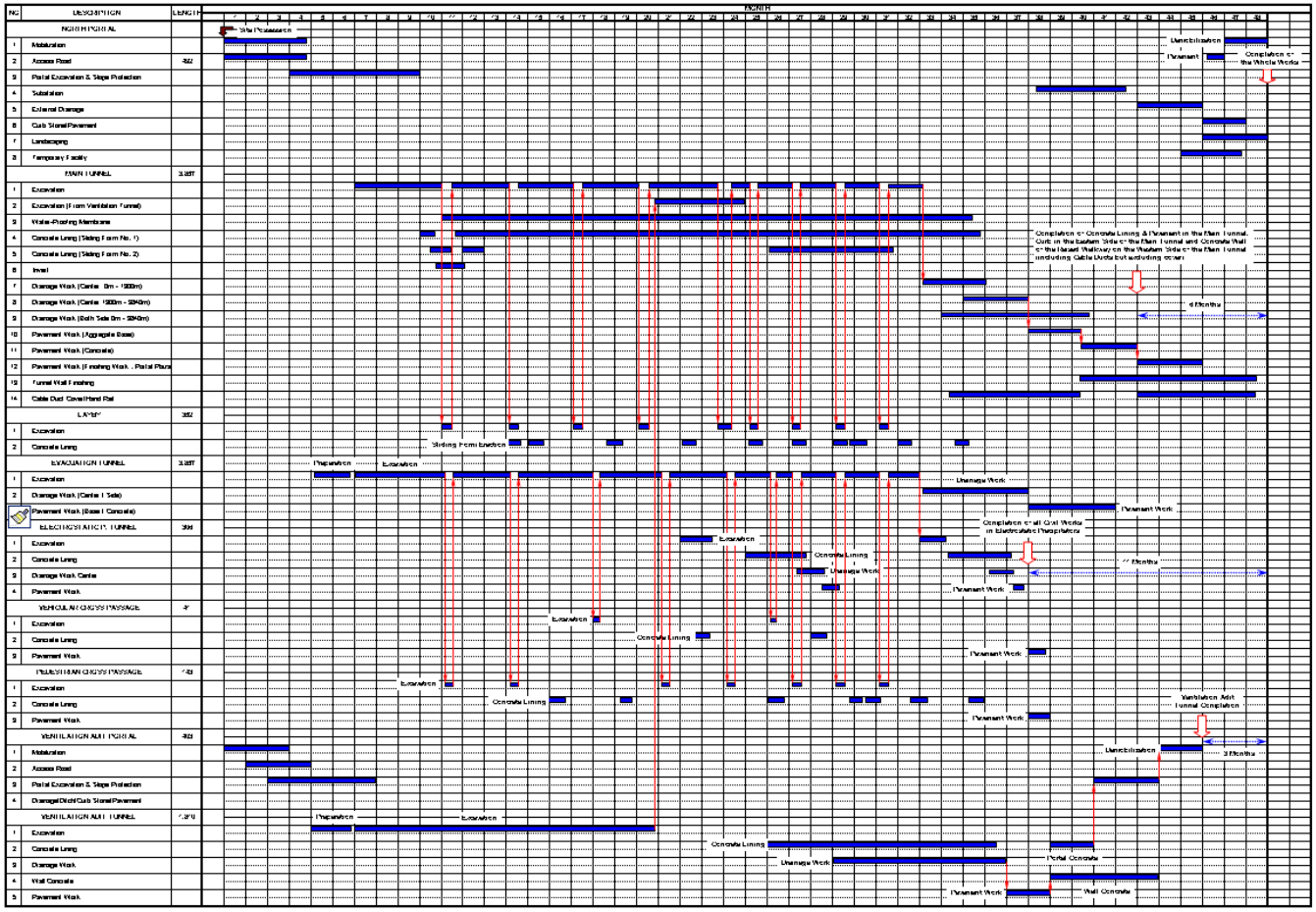
Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (2): Time Management**,
  Diagram Type for Scheduling of Work Coordination

No.	Diagram Type	Tool	Work Zone Interval	Applied Period
0	Bar Chart	MS-Excel	No Work Zone	Tunnel Civil Contractors
1	Time:Chainage Program	AutoCAD	Approx. 1000 m	May 2003 – Oct 2003
2	CPM (BLP 1)	Primavera P3	Approx. 1000 m	Jun 2003 – Mar 2004
3	CPM (BLP 2)	Primavera P3	Approx. 400 m	Apr 2004 – Jan 2005
4	CPM (BLP 3) With Commissioning Schedule	Primavera P3	Approx. 400 m	Feb 2005 – To date
BLP: BaseLine Program				

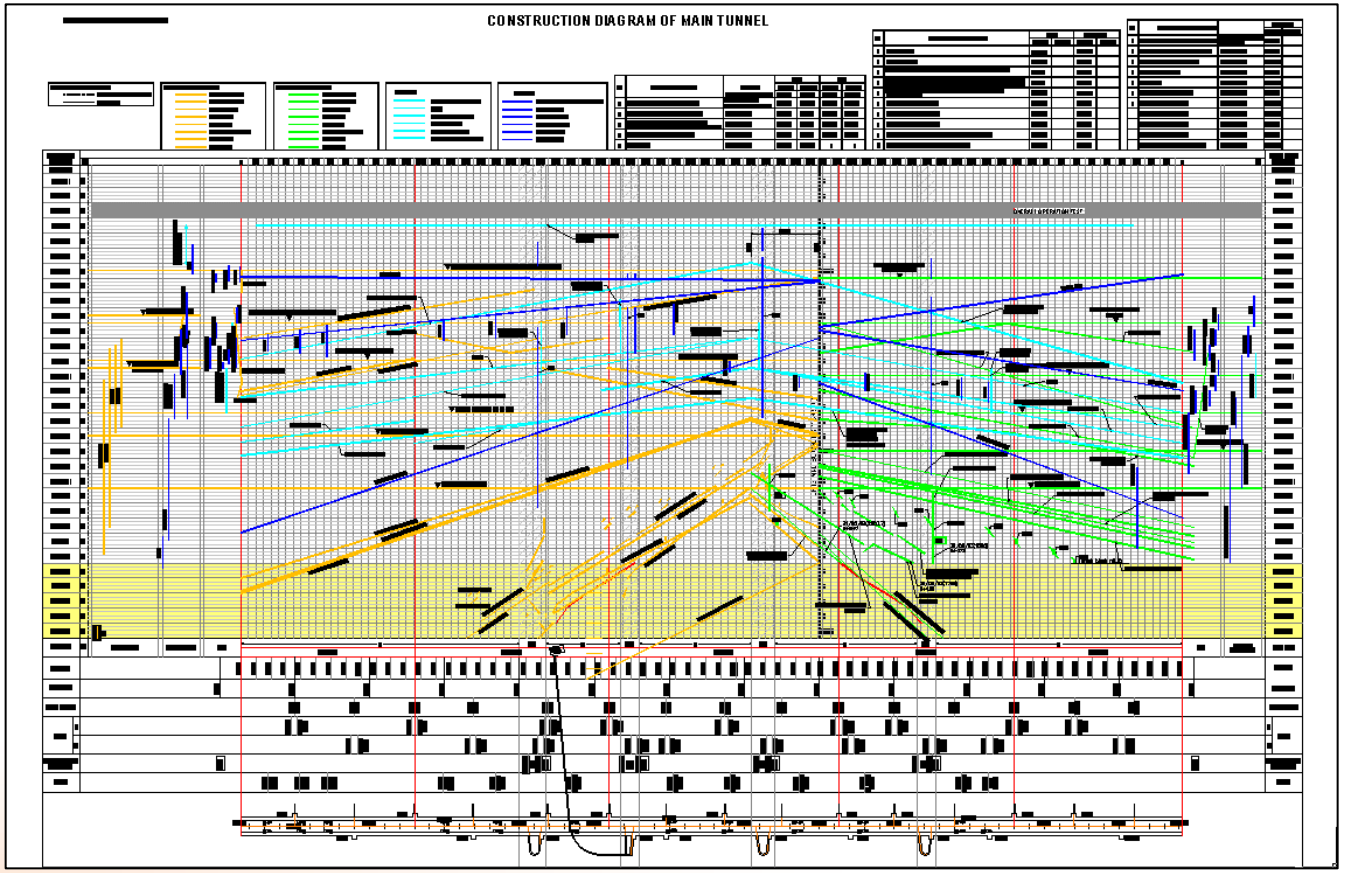
Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (2): Time Management**, Diagram Type for Scheduling, Bar Chart



Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (2): Time Management**, Diagram Type for Scheduling, Time: Chainage Program



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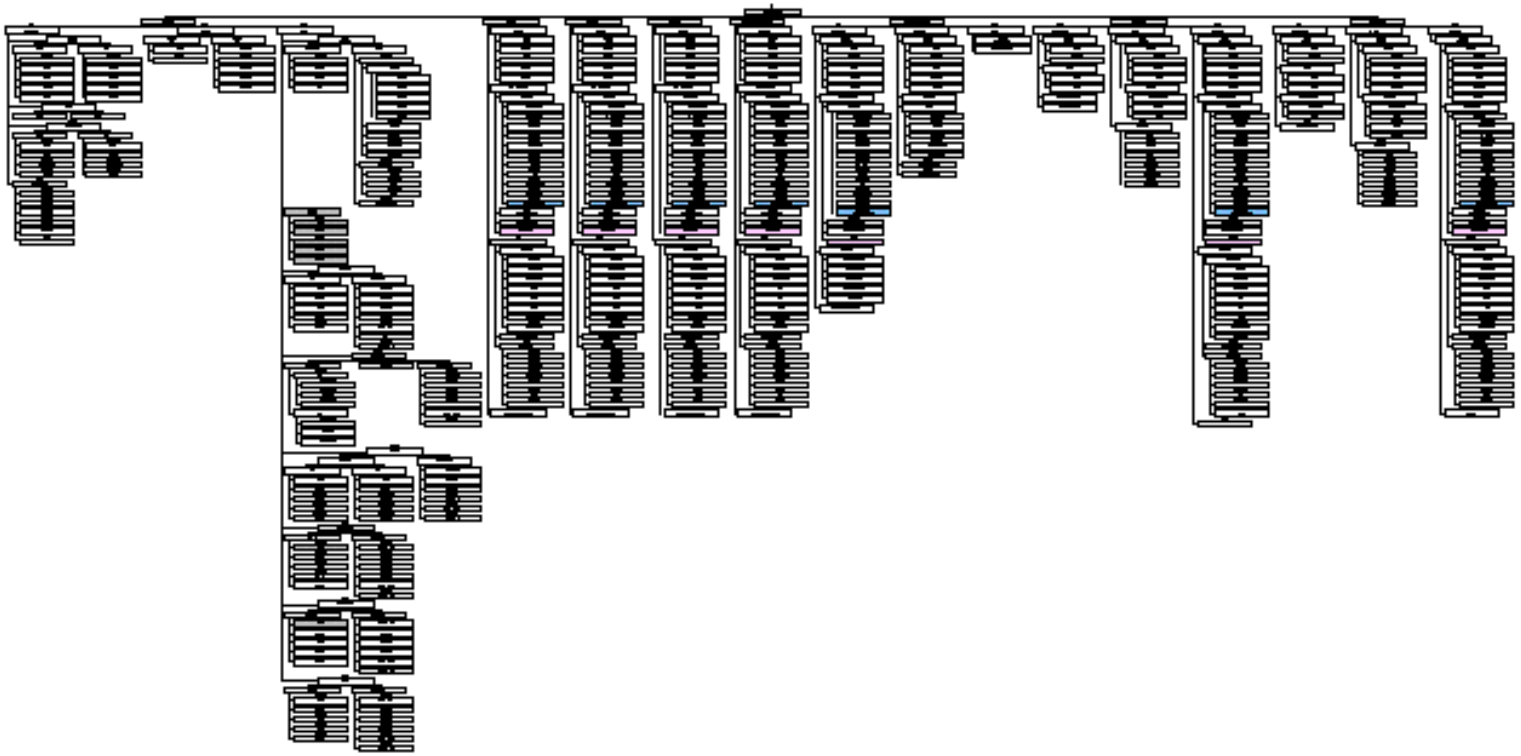
- PM Practice (2): Time Management
  1) Project Milestone
  2) Diagram Types for Scheduling
  3) CPM Scheduling by Primavera P3
  4) Monthly Progress Tracking Report

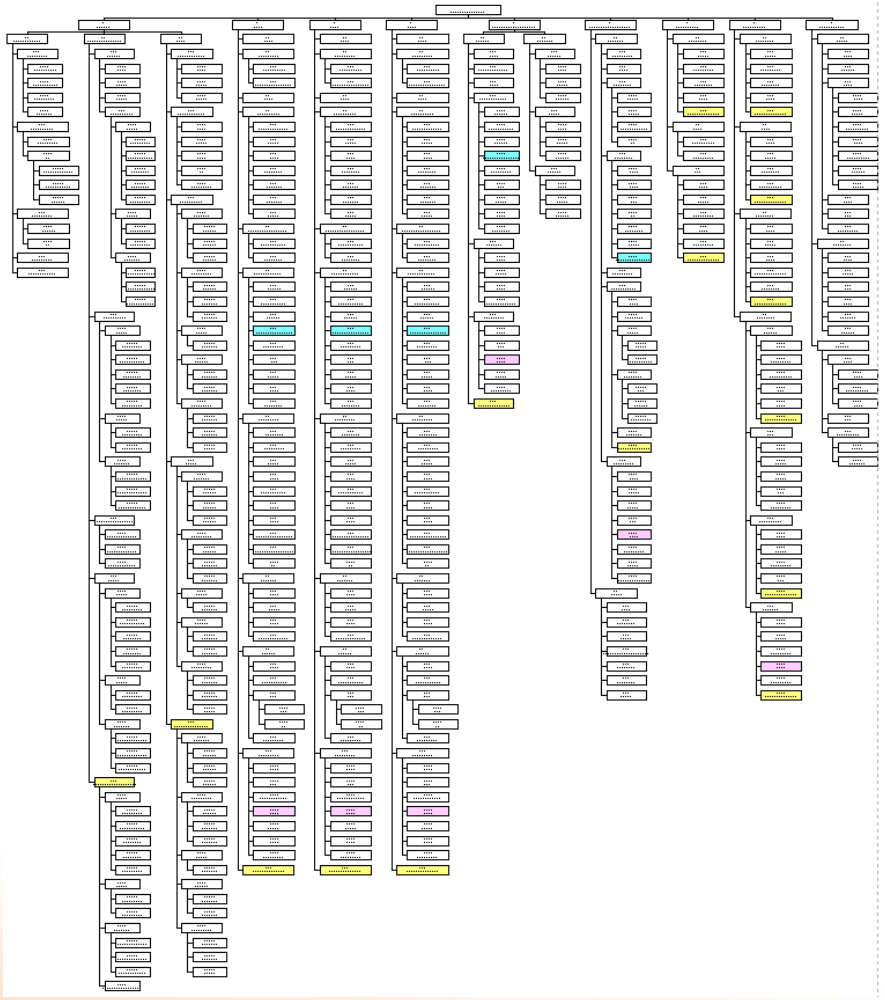
Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (2): Time Management**, Diagram Type for Scheduling, Critical Path Method (CPM) Scheduling, WBS (1), Electrical Works



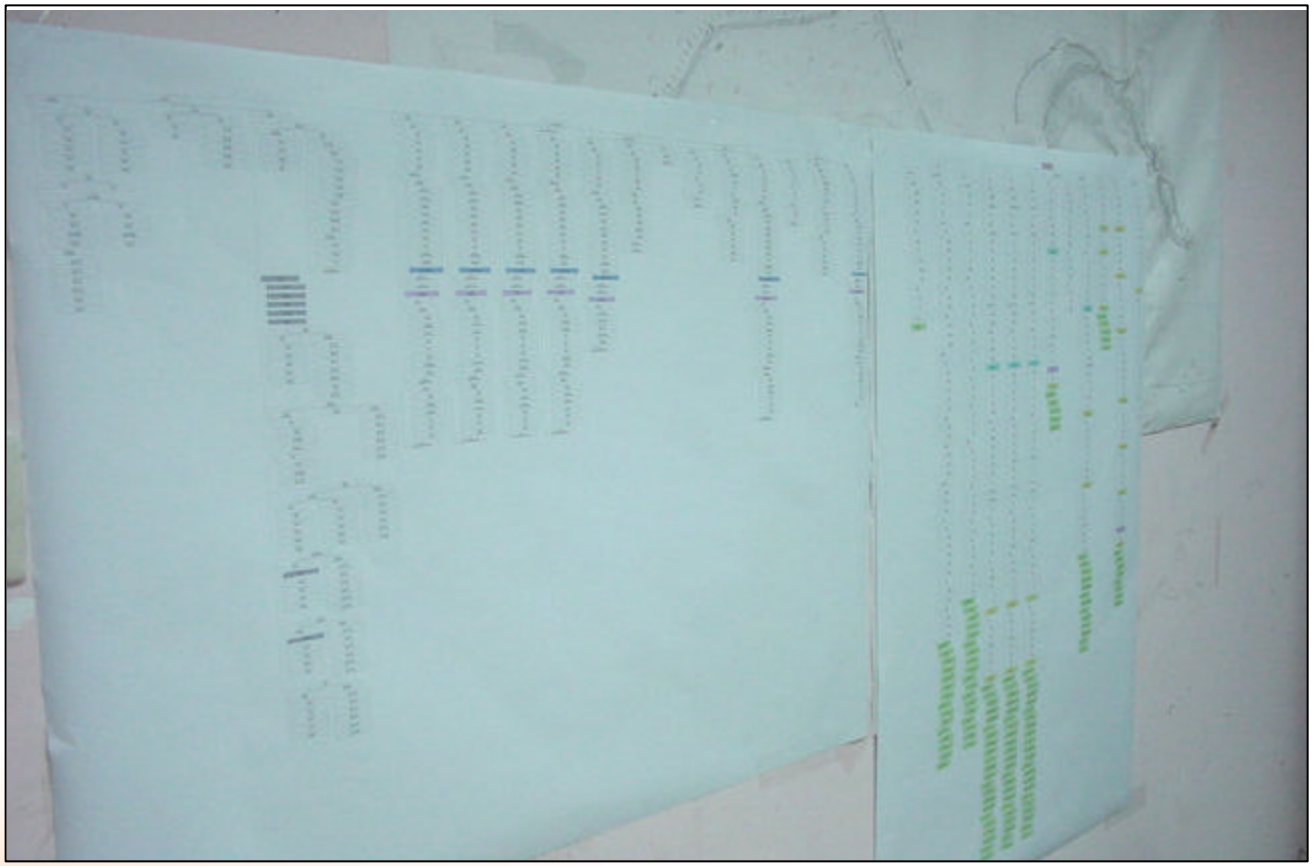
Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (2): Time Management**, Diagram Type for Scheduling,
  CPM Scheduling,
  WBS (2), Mechanical Works



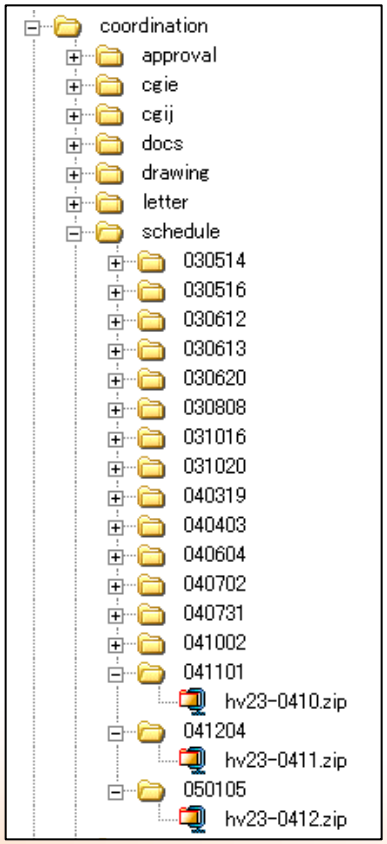
Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (2): Time Management**, Diagram Type for Scheduling, CPM Scheduling, WBS (3)



Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (2): Time Management**, Diagram Type for Scheduling, CPM Scheduling, Progress Tracking by Primavera P3

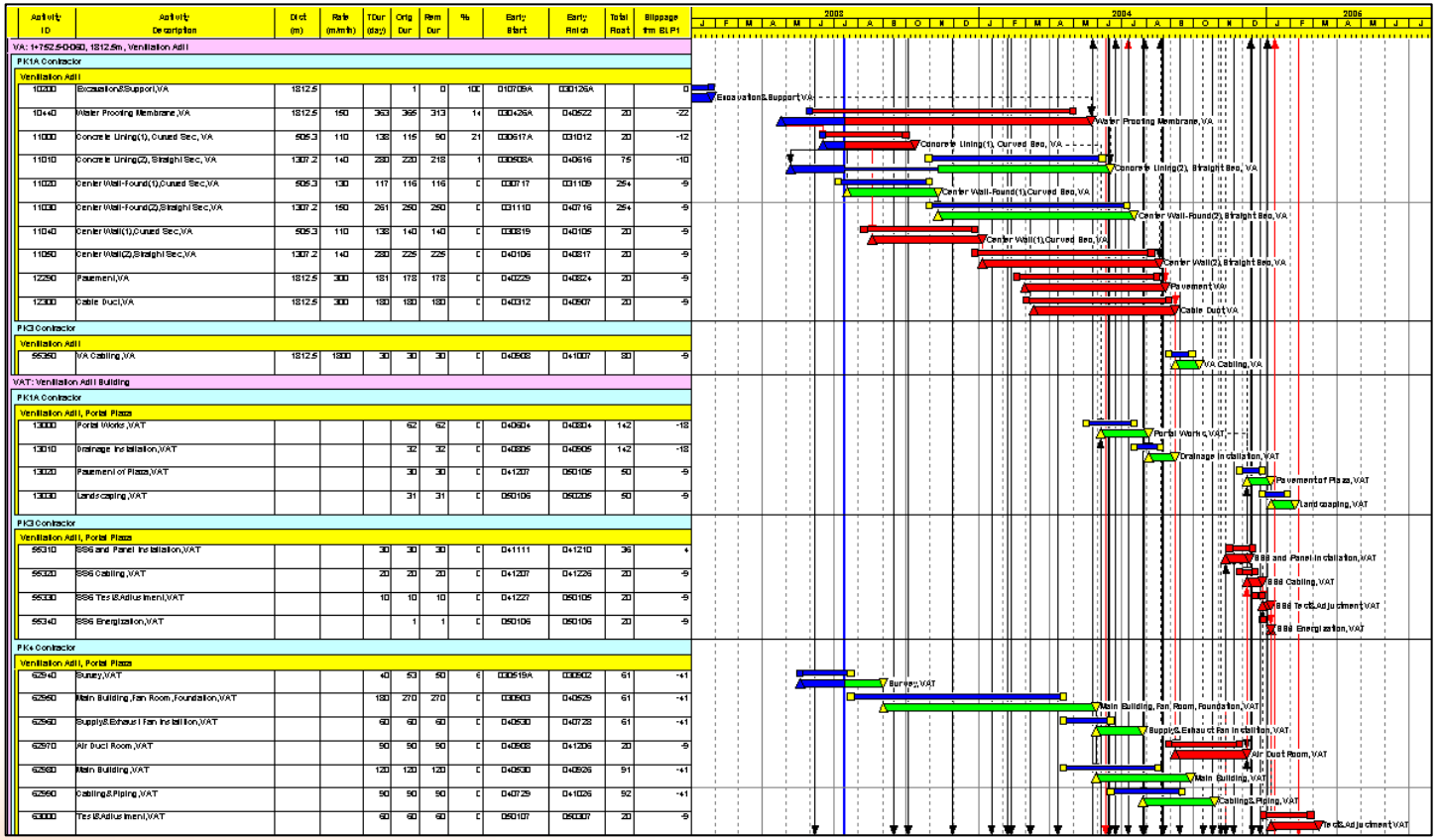


Monthly Activities

1) Consultant deliver CPM data of previous month to the Contractor (1~5th of each month)
2) Contractor submit CPM data (8~10th)
3) Consultant update tracking CPM (8~10th)
4) Monthly Progress Tracking Report (10th)
5) Report on weekly work coordination meeting with concerned contractors

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (2): Time Management**, Diagram Type for Scheduling, CPM Scheduling, Progress Tracking by Primavera P3



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- PM Practice (2): Time Management
  1) Project Milestone
  2) Diagram Types for Scheduling
  3) CPM Scheduling by Primavera P3
  4) Monthly Progress Tracking Report

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (2): Time Management**, Monthly Progress Tracking Report (1)

HAI VAN PASS TUNNEL PROJECT

Joint Venture of
NIPPON KOEI CO., LTD., JAPAN and
District
LOUIS BERGER INTERNATIONAL INC., USA
In association with
TRANSPORT ENGINEERING DESIGN
INCORPORATION (TEDI), VIETNAM

Project Office in Danang, Vietnam
Quang Thanh, Hoa Khanh, Lien Chieu

Danang City, Vietnam
Tel.: (84)-511-841924, -841925
Fax.: (84)-511-841928

Ref. No. PMU- 005 - 05
Date January 10, 2005

To:
Mr. Nguyen Ngoc Canh, Project Manager, PMU85

Copy to:(Cover Only)
Mr. Nguyen Ngoc Tran, General Director, PMU85 038-834-705
PK1A, PK1B, PK3, PK4
1) RT1, 2) RT4, 3) File

SUBJECT: **Submission of Progress Tracking (December 2004)**

Dear Mr. Canh,

We are pleased to submit the progress tracking result based on BLP2a as of the end of December 2004. We applied Baseline Program No2 (BLP2) which has the following characters:

1) Detailed work schedule on the basis of working zone approximately 400 m intervals
2) All work linkages between related packages taken into account
3) Most probable work schedule as of 31 March 2004.

1 General

During December, all electrical rooms were hand-over to PK3 from PK4. PK3 has started his installation works at all electrical rooms. Open works of NPP and SPP could not be completed because of rain.

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (2): Time Management**, Monthly Progress Tracking Report (2), Items Reported

1) General
2) Modification of Linkage and Duration
3) Input Data
4) Site Hand-Over Record (Between Contractors)
5) Forecasted Final Activity by BLP2a (TF=0)
6) Critical Activities by BLP2a (TF<30)
7) Energization Forecast
8) Points in January 2005

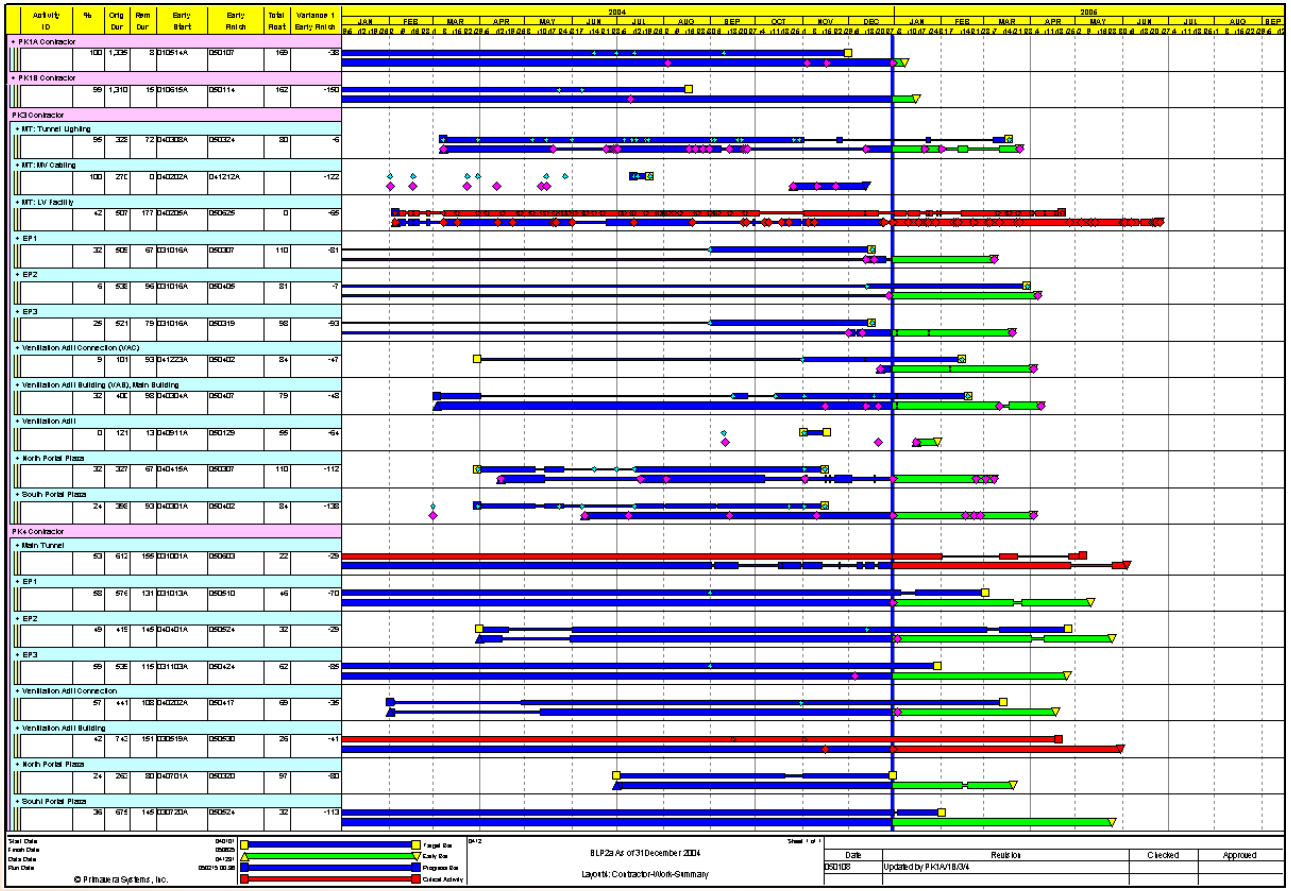
Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (2): Time Management**, Monthly Progress Tracking Report (3), Attachments: Primavera P3 Output

    1) Overall progress of the project (summary)
    2) Critical works (TF < 30 days)
    3) Site Hand-over and Energization
    4) Detailed output as of the end of December 2004.

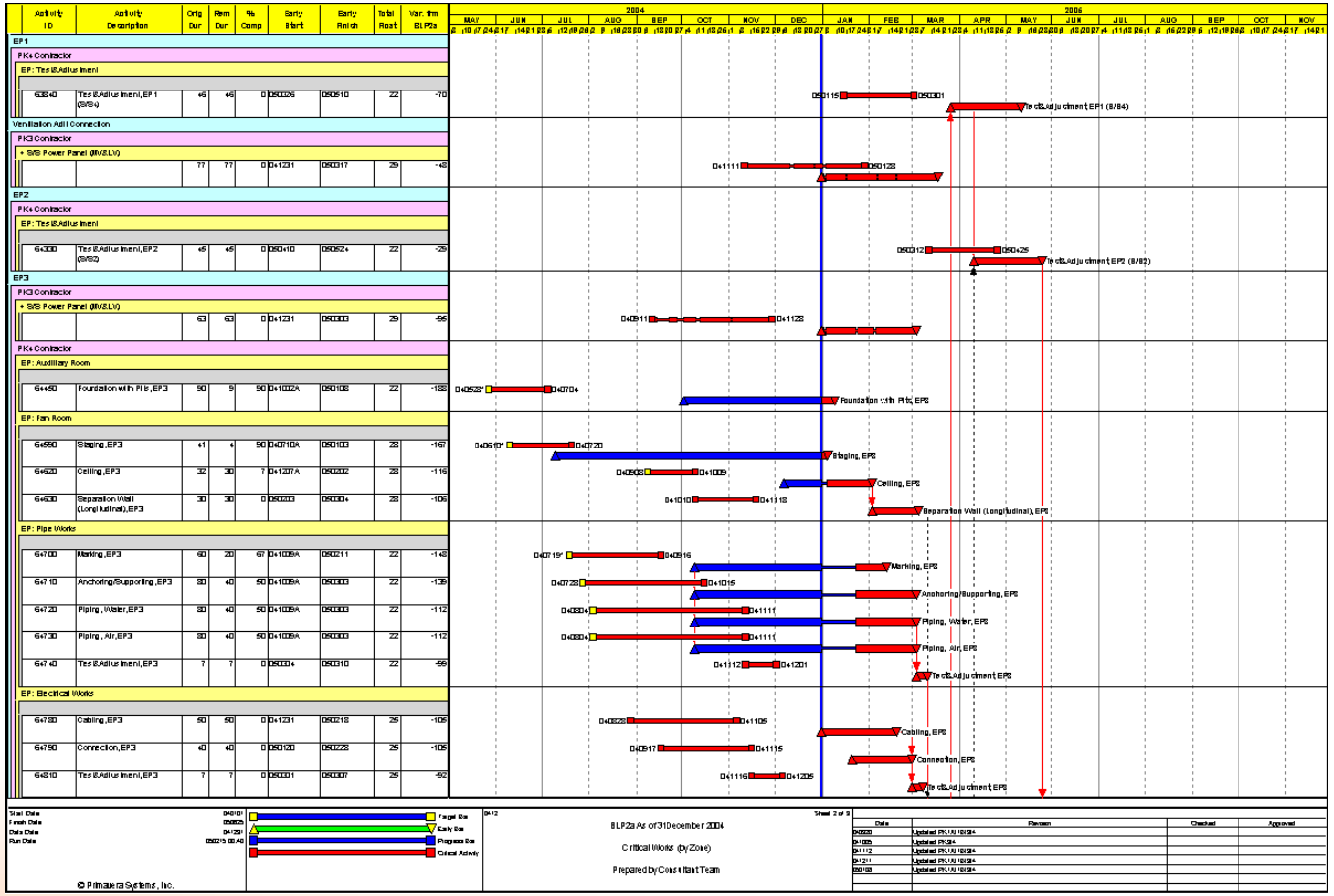
Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (2): Time Management**, Monthly Progress Tracking Report (3), Attachments: Primavera P3 Output, Overall Progress



Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (2): Time Management**, Monthly Progress Tracking Report (3), Attachments: Primavera P3 Output, Critical Works (TF < 30 days)



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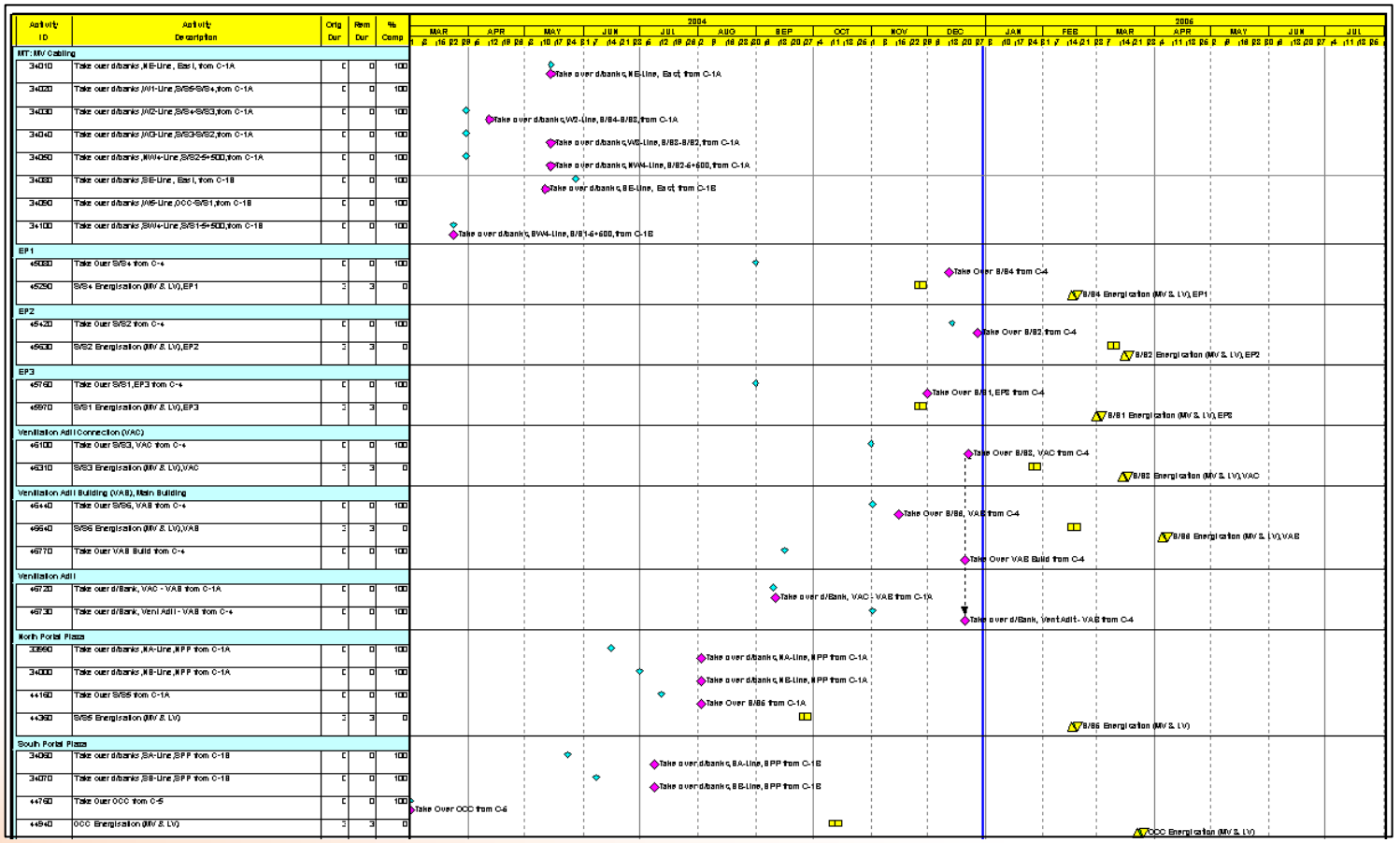
- **PM Practice (2): Time Management**, Monthly Progress Tracking Report (3), Attachments: Primavera P3 Output, Site Hand-over and Energization



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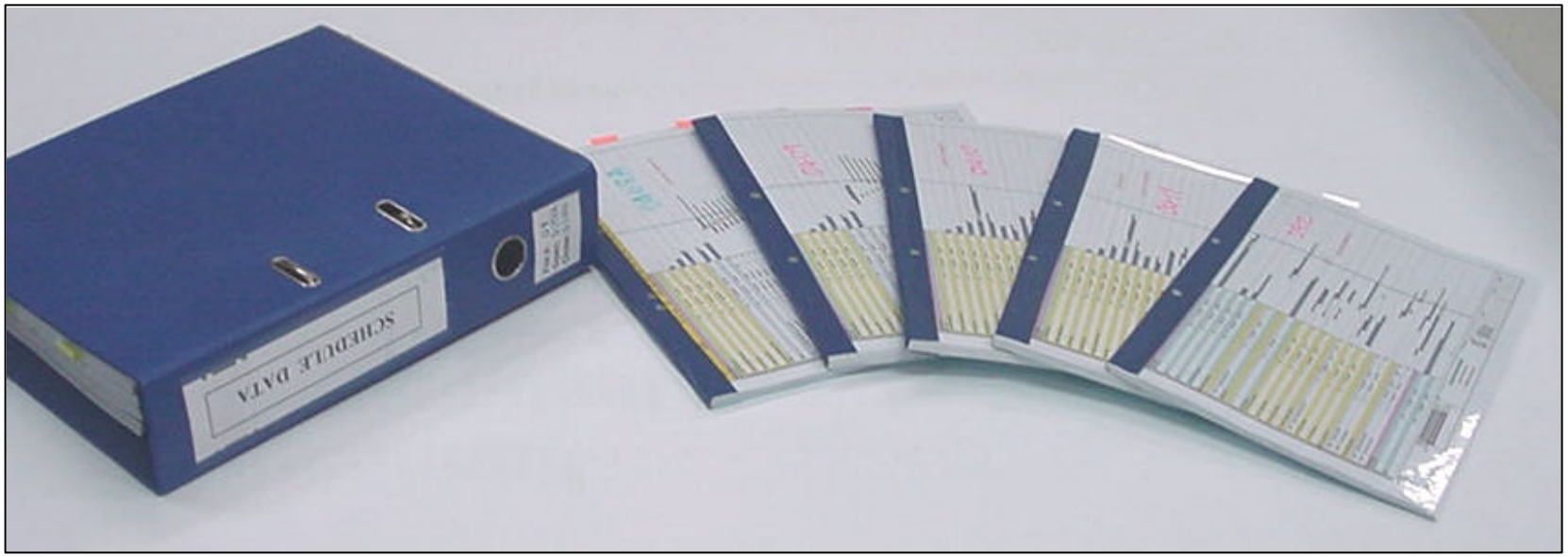
- **PM Practice (2): Time Management**, Monthly Progress Tracking Report (3), Attachments: Primavera P3 Output, Detailed Progress Tracking Report



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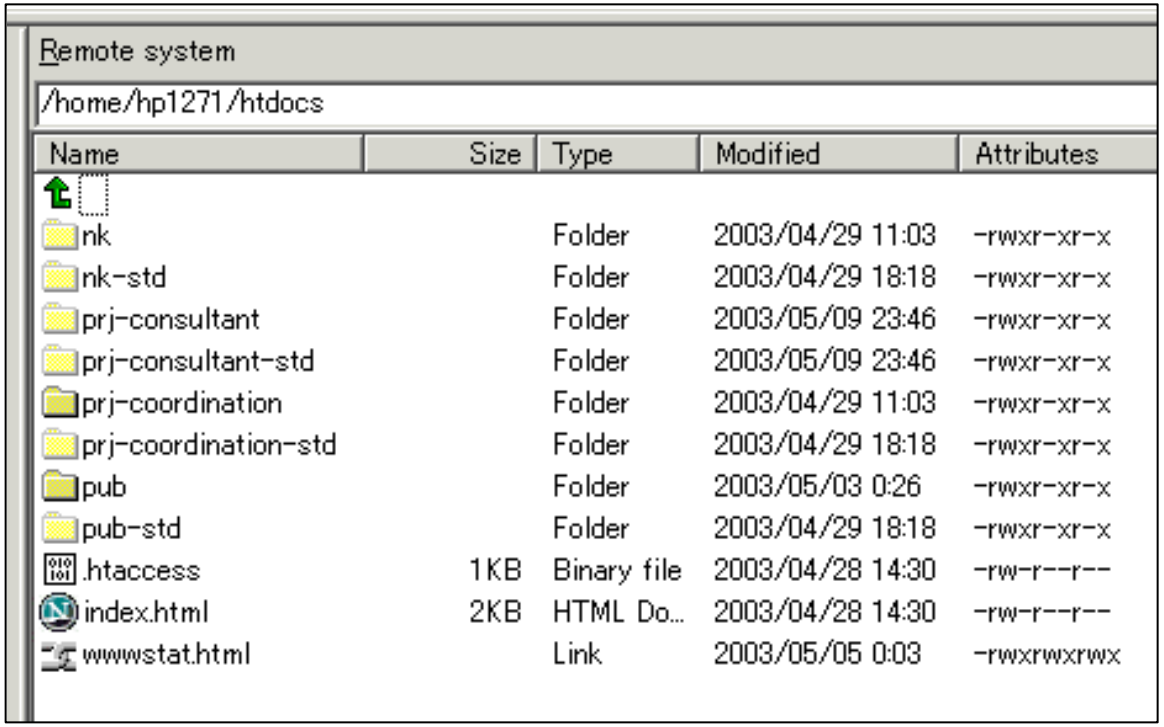
- PM Practice (3): Com. Management with POWEB (Project Office WEBsite)
  1) Public
  2) Project-Coordination
  3) Project-Consultant (Intranet)
  4) Company

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- PM Practice (3): Com. Management with POWEB (Project Office WEBsite)
  1) Public
  2) Project-Coordination
  3) Project-Consultant (Intranet)
  4) Company

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (3): Communication Management**, POWEB, General Structure



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- **PM Practice (3): Communication Management**, POWEB, Public (1)
  URL:http://haivan.cup.com

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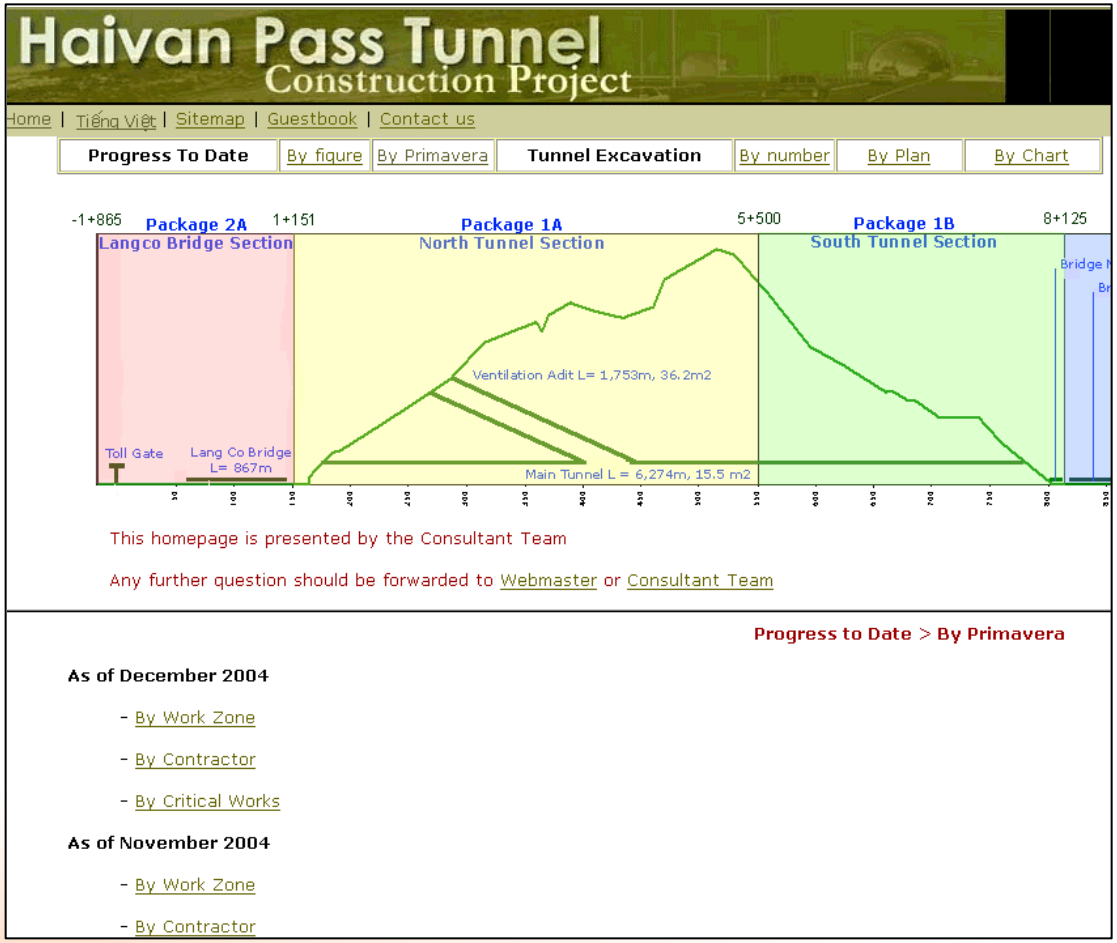
- **PM Practice (3): Communication Management**, POWEB, Public (2)
  Progress to Date by Primavera P3



Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

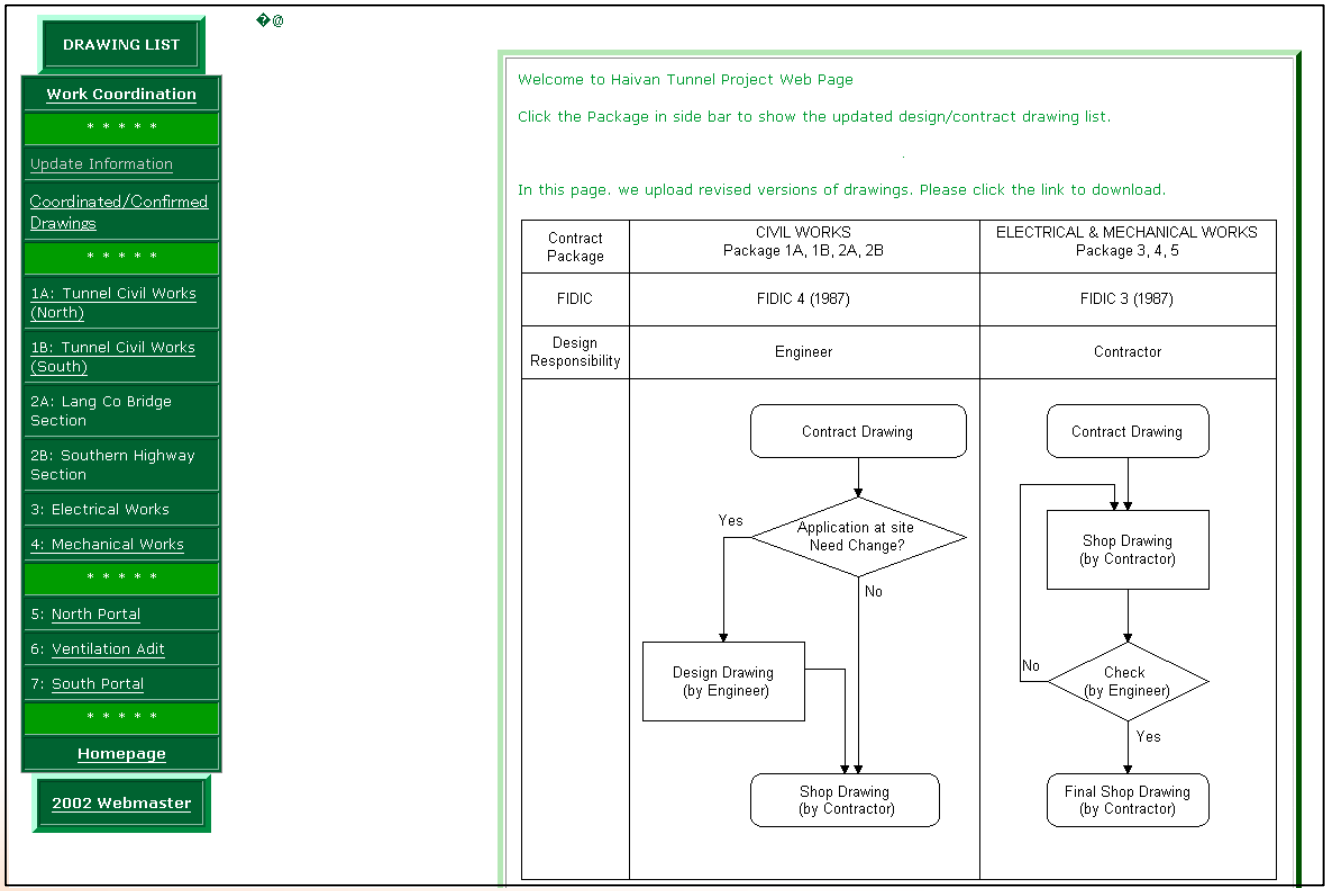
- PM Practice (3): Com. Management with POWEB (Project Office WEBsite)
  1) Public
  2) Project-Coordination
  3) Project-Consultant (Intranet)
  4) Company

Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (3): Communication Management**, POWEB, Project-Coordination

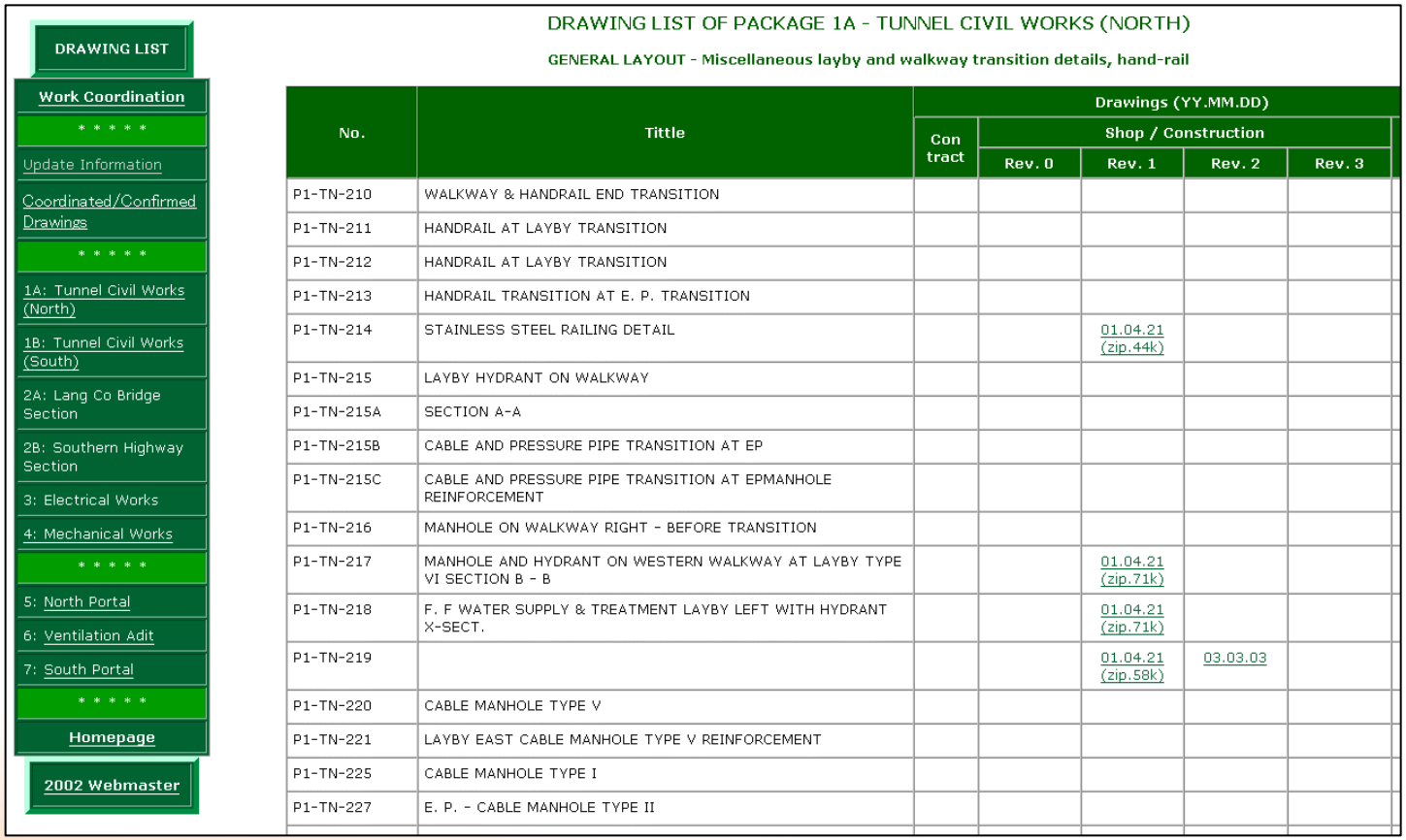
Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (3): Communication Management**, POWEB, Project-Coordination



Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (3): Communication Management**, POWEB, Project-Coordination



DRAWING LIST

Work Coordination

* * * * *

Update Information

Coordinated/Confirmed Drawings

* * * * *

1A: Tunnel Civil Works (North)

1B: Tunnel Civil Works (South)

2A: Lang Co Bridge Section

2B: Southern Highway Section

3: Electrical Works

4: Mechanical Works

* * * * *

5: North Portal

6: Ventilation Adit

7: South Portal

* * * * *

Homepage

2002 Webmaster

DRAWING LIST OF PACKAGE 1A - TUNNEL CIVIL WORKS (NORTH)

GENERAL LAYOUT - Miscellaneous layby and walkway transition details, hand-rail

No.	Tittle	Drawings (YY.MM.DD)				
		Con tract	Shop / Construction			
			Rev. 0	Rev. 1	Rev. 2	Rev. 3
P1-TN-210	WALKWAY & HANDRAIL END TRANSITION					
P1-TN-211	HANDRAIL AT LAYBY TRANSITION					
P1-TN-212	HANDRAIL AT LAYBY TRANSITION					
P1-TN-213	HANDRAIL TRANSITION AT E. P. TRANSITION					
P1-TN-214	STAINLESS STEEL RAILING DETAIL			01.04.21 (zip.44k)		
P1-TN-215	LAYBY HYDRANT ON WALKWAY					
P1-TN-215A	SECTION A-A					
P1-TN-215B	CABLE AND PRESSURE PIPE TRANSITION AT EP					
P1-TN-215C	CABLE AND PRESSURE PIPE TRANSITION AT EPMANHOLE REINFORCEMENT					
P1-TN-216	MANHOLE ON WALKWAY RIGHT - BEFORE TRANSITION					
P1-TN-217	MANHOLE AND HYDRANT ON WESTERN WALKWAY AT LAYBY TYPE VI SECTION B - B			01.04.21 (zip.71k)		
P1-TN-218	F. F WATER SUPPLY & TREATMENT LAYBY LEFT WITH HYDRANT X-SECT.			01.04.21 (zip.71k)		
P1-TN-219				01.04.21 (zip.58k)	03.03.03	
P1-TN-220	CABLE MANHOLE TYPE V					
P1-TN-221	LAYBY EAST CABLE MANHOLE TYPE V REINFORCEMENT					
P1-TN-225	CABLE MANHOLE TYPE I					
P1-TN-227	E. P. - CABLE MANHOLE TYPE II					

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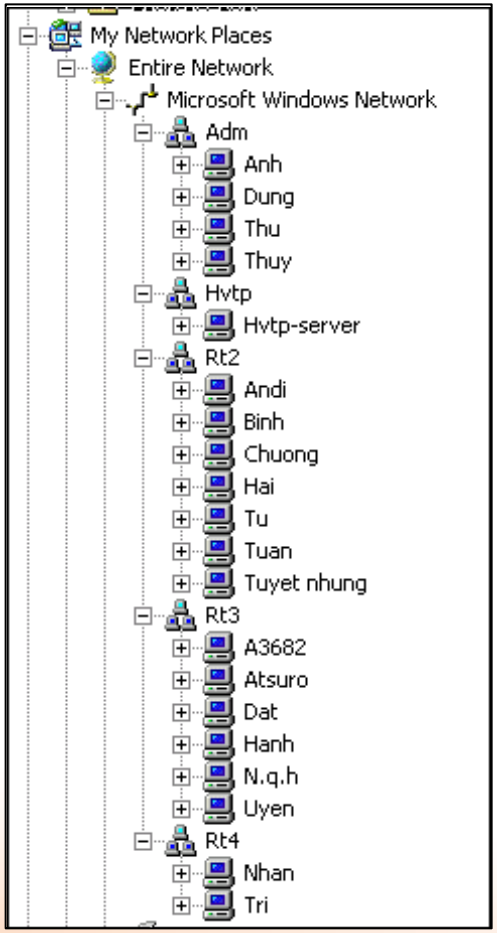
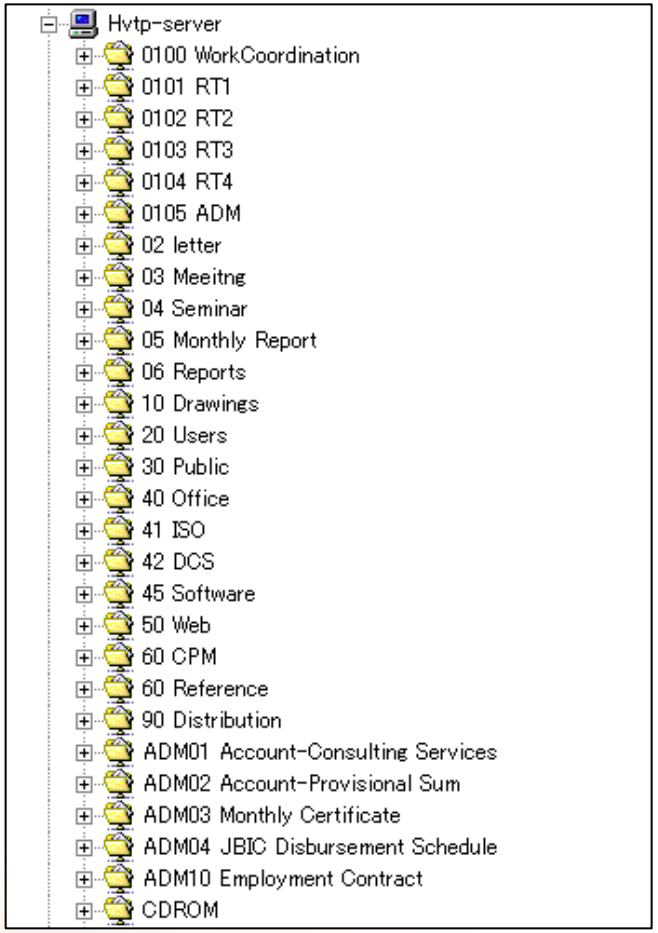
- **PM Practice (3): Communication Management**, POWEB, Project-Consultant (Intranet)





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Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- **PM Practice (3): Communication Management**, POWEB, Company

このページについて
お知らせ (CGI)
プロジェクト通信記録
KO:
KO: 一般通信
プロジェクト評価
KA: Project Promotion
カイメップ－チーバイ国際港
カー峠トンネル
交通安全案件形成
ニャッタン橋
HCM第3環状線
KZ
KZ: 一般通信
KN-ISO
ニュース
ベトナムニュース
ダナンニュース
学会・協会活動
PMシンポジウム2005
IRF2005, BKK, Jun. 2005
PMI2005 Asia-Pacific, Singapore, Feb. 2005
3rd CECAR, Korea, Aug. 2004
＊＊＊＊＊
OJTの記録
POWEBノート

VNニュース

[タイトル一覧(リプライ順) // 最新メッセージID: 8 // 時刻: 2005/2/15(01:22)]

表示画面: 最新タイトル一覧(リプライ順) // 表示件数: 30 表示

ハノイ事務所から配布されるインターネット新聞から、運輸セクター関連記事を抽出し、掲載しています。

POWEB-NKに戻ります

次のページはありません. // △▽ // 前のページはありません.

- 8. ホーチミン市2区と7区を結ぶPhu My橋が着工へ [ishimoto] 2005/2/14(23:10)
- 7. Can Tho橋連絡道路を日本政府のODAで建設 [ishimoto] 2005/2/4(13:38)
- 6. 地下鉄建設プロジェクトの事業化可能性調査報告 [ishimoto] 2005/2/1(11:59)
- 5. 国内投資単独での高速道路建設は困難 [ishimoto] 2005/2/1(11:55)
- 4. ハノイ市のLang－Hoa Lac間を結ぶ高速道路が着工 [ishimoto] 2005/1/31(21:30)
- 3. Thu Thiemトンネル、2007年末に完成予定 [ishimoto] 2005/1/17(21:12)
- 2. 050106(2) [ishimoto] 2005/1/6(13:00)
- 1. 050106 [ishimoto] 2005/1/6(12:18)

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Introduction of Hai Van Pass Tunnel Construction Project in Vietnam

- Introduction of Project
- PM Practice (1): Human Resource Management
- PM Practice (2): Time Management
- PM Practice (3): Communication Management with POWEB (Project Office WEBsite)
- Summary: Keys to Successful PM

- Summary: Keys to Successful PM
  1. Communication Management with Clear RAM
  2. Time Management with Appropriate Depth of WBS
  3. Utilization of Web, as Communication Tools, in PMO

Contact Information

Session APR04

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