5.6　プロジェクト実施上の留意点

5.6.1 実施スケジュール

(1)　プロジェクト開始までのスケジュール

2006 年 10 月までに R/D を締結し、2007 年 1 月の開始を予定しているが、ミニッツおよび PDM で前提条件としている以下の進捗を確認・協議する必要がある。

ア　プロジェクト実施計画書（PC-1）

Task Leader R&D が中心となって作成し、NHA 理事会で審査・承認される予定となっている。PC-1 の作成・承認には相当期間を要するとされたことから、ミニッツでは PC-1 承認の時期を明示せず、厳密な意味での前提条件とはしていないが、これによって組織体制、実施予算、施設建設計画などが確定することから PC-1 作成の進捗を注意してモニタリングする必要がある。

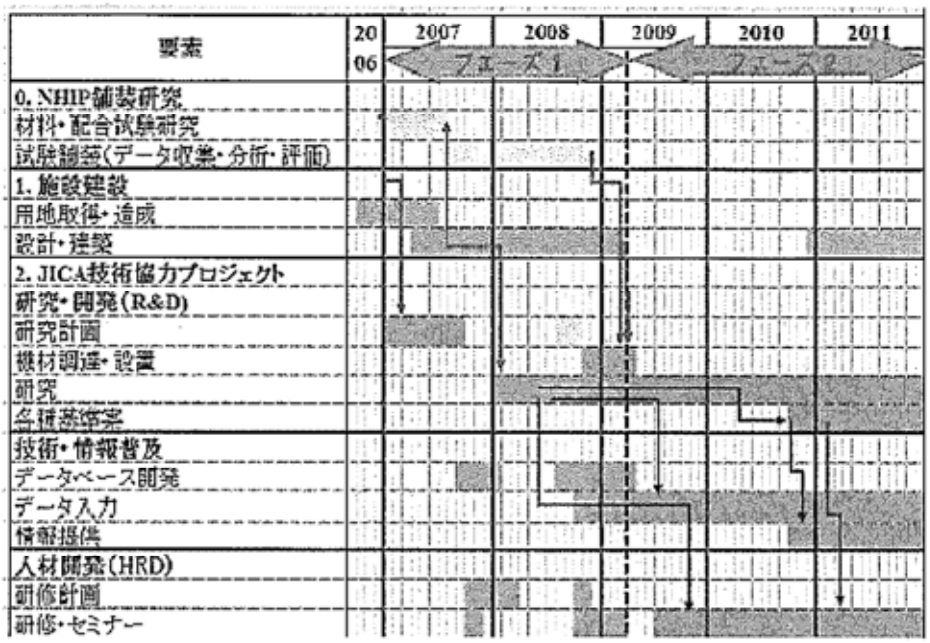
イ　カウンターパートの配置

フルタイムカウンターパートの中核となることが見込まれている Task Leader R&D は 2007 年 5 月まで舗装エキスパートとしての契約が残っている。両業務の兼任は困難と思われることから、現契約内での身分切り替えが行われることが望ましい。他方、NHA 計画担当理事は適任者がいれば別途 HR&TC 所長を指名する可能性を示唆しており、プロジェクト開始までには具体的な職位・氏名を含めてカウンターパートを確認する必要がある。

(2)　HR&TC 建設スケジュール

プロジェクト活動外の要素である「NHIP 舗装研究」「HR&TC 施設建設」と「プロジェクト活動」の関係は概略図 5.9 のように整理される。

図 5.9　HR&TC 設立全体スケジュール（JICA プロジェクトと関連事業）



この内、NHA による施設建設スケジュールは具体的な仕様や作業計画を踏まえて検討されたものではなく、NHA 側の経験則による見通しの域を出てないが、施設建設はフェーズ 2 の活動計画に直接影響することから、今後進められる用地買収交渉や設計・施工にかかる入札・契約手続きなどの作業進捗を注意深くモニタリングする必要がある。

5.6.2 実施体制

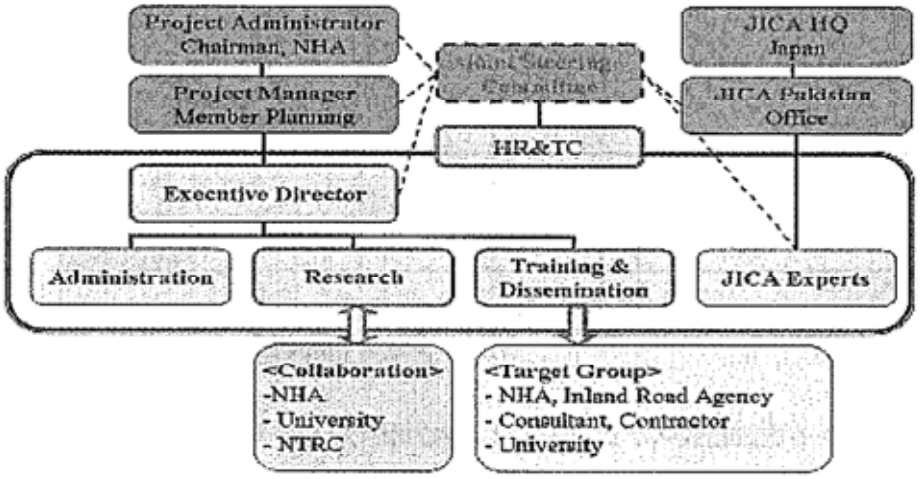
5.6.2.1　管理運営体制

HR&TC の組織体制については「プロジェクト実施体制図（暫定）」として整理し、ミニッツに添付しているが、組織として公式に承認されたものではなく、今後 PC-1 の中で正式なポストおよび定員枠が定められる予定である。

これまでプロジェクトの計画立案に関わってきた Task Leader R&D を中心とする関係者は、HR&TC は研究者を中心とした組織であるべきとしており、Task Leader R&D が HR&TC 所長（あるいは所長代行）として日常的な運営管理を行い、他の職員も契約雇用するとしているが、主要職員を全て契約職員とすることは自立発展性の観点からはマイナス要因となる。また、効率的・効果的な事業実施には管理部門の肥大化を避けることが望ましいが、研究・研修そのものの実施体制だけではなく、その事業実施を可能とする施設整備・維持管理、組織・予算管理などの運営管理体制を構築する必要がある。MOC からは「組織の運営管理には然るべき管理職を配置する必要がある」との意見があり、NHA 内部にも同様の声もある。

プロジェクト開始当初は Task Leader R&D を中核とする技術系契約職員を中心とした体制になると思われるが、組織の安定的な運営管理と自立発展性確保のためには、プロジェクト活動を通じて研究・研修機関のあり方、事務系・技術系のバランスのとれた体制について助言を行うとともに、主要ポストを順次 HNA の正職員に置き換えるよう働きかけて行く必要がある。

図 5.10　HR&TC プロジェクト実施体制の概略図



5.6.2.2 舗装研究体制　（服部）

(1)　人員配置計画

プロジェクト 5 年間の人員配置計画（案）表 5.1 を作成し、NHA 側にアイデアとして渡した。現状では、プラントでの品質管理および現場でのコントラクターへの指導はコンサルタントの責務となっている。そのコンサルタントを監督する NHA のスタッフの数が十分とはいえず、現場に長けたインハウスエンジニアを養成する土壌が育っているとは言えないのが現状である。また、Engineer が如何に継続的に雇用されるか、またこれら Engineer を如何に育成していくかが課題となろう。

表 5.1　人材配置計画

CALENDAR ALLOCATION OF HR&TC PERSONNEL
（人員配置計画）

(No.: Head count)

profession	BS-	2006 III	2006 IV	2007 I	2007 II	2007 III	2007 IV	2008 I	2008 II	2008 III	2008 IV	2009 I	2009 II	2009 III	2009 IV	2010 I	2010 II	2010 III	2010 IV	2011 I	2011 II	2011 III	2011 IV	Remarks
Administration																								
Project Director		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NHA Chairman
Project Manager		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	NHA Member Planning
Executive Director		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	Concurrent with Chief Researcher
Secretary		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Assistant Coordinator						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Drivers		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
S.T.																								
Research																								
Chief Researcher				(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	1	1	1	1	1	1	1	1	1	1	1	Concurrent with Executive
Researchers,								(2)	(2)	(2)	(2)	(2)	5	5	5	5	5	5	5	5	5	5	5	NH IP concern
Laboratory Engineer													1	1	1	1	1	1	1	1	1	1	1	
Laboratory Technicians						(6)	(6)	(6)	(6)	(6)	(6)	(6)	6	6	6	6	6	6	6	6	6	6	6	NH IP concern
Mechanicians													1	1	1	1	1	1	1	1	1	1	1	
Laboratory Helpers						(6)	(6)	(6)	(6)	(6)	(6)	(6)	6	6	6	6	6	6	6	6	6	6	6	NH IP concern
Drivers				1	1	1	1	1	1	1	1	1	8	8	8	8	8	8	8	8	8	8	8	
S.T.																								
Training/Dissemination																								
Training coordinator		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Training assistant													2	2	2	2	2	2	2	2	2	2	2	
IT engineer						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
IT operators						2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Public Relation Officer															1	1	1	1	1	1	1	1	1	
Supporting Staff													2	2	2	2	2	2	2	2	2	2	2	
S.T.																								
T.T.																								

*Personnel will be enhanced when it necessary.

(2)　研究計画　―　HR&TC の舗装研究体制

プロジェクト 5 年間の研究テーマを図 5.11 に示す。なお、本計画は説明用に作成したものであり、人員配置計画との整合は取っておらず、また部門は便宜上整えたものである。

なお、研究テーマの案については以下のとおりである。

【フェーズ 1 から開始したいテーマ】

試験法・材料基準の検証・開発　（試験部）

公共工事の品質管理試験の受託・民間製品の材料試験（受託）　（試験部）

道路用資材の有効利用に関する調査試験業務（受託）　（試験部）

耐流動性混合物の研究（共同研究）　（研究部）

路面性状調査の試行　（調査部）

図 5.11　人員配置計画

【フェーズ 2 で開始するテーマ】
道路管理データベースの管理運営　（企画部⇒管理部・技術部）
教育訓練（基準等通達）の立案実施　（企画部⇒）
路面性状調査（データの蓄積）　（調査部）
道路調査　（調査部）
アスファルトプラント（製品）の技術審査／評価証明　（調査部）
ローカル材料の活用技術研究　（調査部）

【プロジェクト期間中（フェーズ 2 終了まで）に構想を立ち上げるテーマ】
民間技術開発の奨励（評価証明）　（調査部）
新しい舗装工法の技術開発研究　（調査部）

5.6.3 HR&TC 施設・機材

舗装試験研究所として備えるべき標準的な試験機器リストは表 5.2 に示すとおりである。このうち、NHIP (R&D)プロジェクトから一連の試験機器が本プロジェクトに譲渡・移設される予定であり、今後フェーズ 1 の中で配備される機材に変更が生じることが予想される。

NHIP(R&D)から移設される予定の試験機器についてはパ国法制上の減価償却価値の把握もさることながら、陳腐化および日常整備状況による実質的な残存価値（inventory control を含む）の実態把握手法を確立しておく必要があろう。

5.6.4　NHIP 舗装試験・研究との関連

(1)　NHIP とプロジェクトの関連について

現在予定されている工程では NHIP-R&D が先行するため、その成果を HR&TC に取り入れなければ合理性を欠くことになる。また NHIP-R&D の経過の中で新たな技術的課題が生じてくることも大いに予想され、その課題に応じて HR&TC のプロジェクトの中でも柔軟に研究テーマを変更させていく必要がある。

テーマの面だけではなく他の面でも HR&TC プロジェクトにおいてその試験機器整備計画、要員（Researcher, Laboratory Technician）計画の一部を NHIP-R&D からのトランスファーに依存しており両者の工程（管理）には密接な関係を持っている。

一方で、HR&TC の立ち上げが NHIP-R&D の進捗度にあまり影響を受けることは好ましくない。幸いにして NHIP-R&D の進捗度にほとんど影響を受けない活動項目（例えば道路管理データベースの準備、路面性状調査、道路調査、アスプラントの技術審査の一部、耐流動混合物に関する大学との共同研究、ローカル材料の調査、NHA 監督職員の研修など）もあり、NHIP と連携を取りつつも着々と進められるべきである。

NHIP-R&D については以下の課題がある。

・NHIP-R&D は既に開始しているが Kick-off meeting のドラフト等は確認されていない。
・NHIP-R&D に関わる下記事項について注意深くフォローしていくことが必要である。
　－試験機器発注に関わる事実関係（稟議手続き等）
　　＊調達される試験機器および什器のメーカー（および総代理店）が　HR&TC の機器整備計画を事実上左右することになる
　－試験室の整備計画（と進捗状況）
　－試験要員（技術員 6 名等）の整備計画（と進捗状況）
　－中間報告（6 ヶ月毎）

表 5.2　配備機材リスト

試験区分	試験機一式	セットに含まれない試験に必要な器具・用具	Remarks (購入価格 単位, 千円)	Assembly	TAXIL配備済
1. Soil Test (土質試験)					
	*Liquid limit test set		100以下		
	*Plastic limit test set		100以下		
	*compaction test set,		100以下		
	*density (weight in unit volume) testset,		200－250		
	*CBR laboratory set, complete		150-250		○
	*unconfinedapparatus,		－		
		- Soil mixer	－		
		- automatic mechanical compactor	450－700		
		- soil analysis sieve set,	－		
		- soil moisture test set,	100以下		
		- beam balance cap.6kg sen.5g.	200±		
		- table platform scale cap.20kg sen.2g,	200±		
		- table platform scale cap.15kg sen.1g,	200±		
2. Aggregate Test (骨材試験)					
	*bulk density test set, complete		－		
	*amount of deleterious substances test set,		－		
	*specific gravity and absorption test set, fine		－		○
	*specific gravity test set, coarse		－		
	*Los-Angels abration test machine, complete		NHIP (700,000)		○
	*soundness test equipment, complete		NHIP (6,000-7,000)	―	○
	*Flakiness/Elongation Apparatus		NHIP		○
	*film stripping (adhesion) machine, complete				
		- aggregate test sieve set,	500－1,100		○
		- electric ovens,	300±		
		- ovens, constant temperature	300±		
		- beam balance, cap.2kg sen.1g,	300±		
		- platform scales, cap.60kg sen.20g,	300±		
		- platform dial scales, cap.60kg sen.0.1kg,	300±		
		- double beam balances, cap.5kg sen.0.5g			○
		- furnaces balance, cap.200g sen.5mg,	300±		○
3. Asphalt Bitumen test (バインダー性状試験)					
	*asphalt-bitumen flash point tester,		-		○
	*toughness-tenacity test apparatus, complete		2,500-3,000		
	*Dynamic Shear Rheometer (DSR)		NHIP	―	○
	*Bending Beam Rheometer (BBR)		NHIP	―	
	*softening point test apparatus/machine		NHIP		○
	*penetration test meter,		NHIP		○
	*penetration ratio after heating test		NHIP		
	*ductility test machine, complete		900－960		○
	*thin-film oven tester, complete		NHIP(500－650)		○
	*loss on heating test apparatus,		-		○
	*Saybolt Furol viscosimeter, complete		NHIP		○
	*Fraass tester, complete		100－		
		- asphalt oven,	300-700		
4. Asphalt Mixture test (アスファルト混合物試験)					
	*specific gravity test apparatus,		NHIP		
	*Marshall test apparatus, complete, with asphalt mixer		NHIP		○
	** Computerized Marshall/CBR apparatus,complete		2,500－7,000		
	*NCAT Ignition Oven		NHIP (4,500－)	―	
	*				
	*wheel tracking machine, complete		4,000-15,000		○
	- test pieces feeder		3,000		
	- thermostatically controlled chamber,				
	*immersion wheel-tracking test equipment, complete		5,000		
	*Servo-hydraulic HMA Mix testing system		NHIP	―	
	*Asphalt Pavement Analyzer (APA)		NHIP	―	
	*ravelling test machine, complete				
	*four point bending beam system, with roller compactor		NHIP	―	○
		- asphalt mixer	NHIP		
		- asphalt mixer	2,600－5,000		○
		- asphalt compaction machine,			○
		- SuperPave Gyratory compactor		-	○
		- roller compactor,	2,500-3,000		○
		- asphalt sieve set,	500－900		
		- electric ovens,	300－500		○
		- ovens, constant temperature	300－500		○
		- platform scales, cap.20kg sen.10g,	300－500		
		- double beam balances, cap.5kg sen.0.5g,	300－500		
		- standard type rearing baths,			○
5. Cement Concrete Test (セメント・コンクリート試験)					
	*slump test apparatus		100以下		
	*air content test set,		100以下		
	*universal testing machine 200T, complete		5,000－11,000		
	*compression testing machine 100T, complete		6,500－7,000		
	*compression testing machine 20T, complete		1,000-4,000		
6. Field Test					
	*Field Test Track (FTT)		－	－	
	*Field CBR set, complete		150－400		○
	*Plate bearing set, complete		130－150		○
	*Benkelman beam set, complete		300－450		○
	*Weigh in motion equipment (WIM) in Lahore		NHIP	―	
	*Weigh in motion equipment (WIM)		5,000－20,000	-	
	*profile meter 8-wheel, complete		1,100－1,500		○
	*profilometer traverse, straight rule 3-m		NHIP		
	*portable skid-resistance tester		1,100-1,500		○
		- test vehicles,	－	―	
		- thermometric systems	－	―	
		- Asphalt strain gauge	－	―	
		- Thermocouples	－	―	
		- Surface depth deflectometer	－	―	
		- Data acquisition system including Laptop	－	―	
		- cone penetrometer	－		
		- core drill machine	NHIP		○
		- diamond saw cutter	NHIP		○

付属資料

付属資料１：事前調査　Minutes of Meeting
付属資料２：事前調査　Minutes of Meeting　その２（フェーズ０）
付属資料３：協議議事録（R/D）
付属資料４：PDM
付属資料５：P/O

MINUTES OF MEETINGS
BETWEEN THE EX-ANTE EVALUATION STUDY TEAM OF THE GOVERNMENT OF JAPAN AND THE RELATED AUTHORITIES OF THE GOVERNMENT OF PAKISTAN ON TECHNICAL COOPERATION FOR HIGHWAY RESEARCH AND TRAINING CENTRE

The Ex-Ante Evaluation Study Team of the Government of Japan (hereinafter referred to as "the Team") on technical cooperation for Project for the Establishment of Highway Research and Training Centre (hereinafter referred to as "the Project"), organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") headed by Mr. Yutaka Miyaji, was dispatched to the Islamic Republic of Pakistan from Feb 27th 2006. The purpose of the dispatch was to formulate the Project requested by the related authorities in the Government of Pakistan (hereinafter referred to as "GOP") under the technical cooperation of the Government of Japan (hereinafter referred to as "GOJ").

During its stay, the Team exchanged views with the related authorities of GOP through a series of meetings, workshops and field observations on the Project.

As the result of the discussions, both parties reached common understanding regarding the matters mentioned in the attached document. Both parties agreed to recommend them to their respective governments.

Islamabad, 3rd March 2006

Mr. Yutaka Miyaji
Leader
Ex-Ante Evaluation Study Team
Japan International Cooperation Agency

Maj. Gen. Farrukh Javed
Chairman
National Highway Authority
Government of Pakistan

Mr. Firdaus Alam
Joint Secretary
Ministry of Communications
Government of Pakistan

Mr. Altaf Ezid Khan
Joint Secretary
Economic Affairs Division
Ministry of Economic Affairs and Statistics
Government of Pakistan

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Attached Document

1. Project Title
   The project is titled as "Highway Research and Training Centre (HR&TC)".

2. The Result of PCM Workshop
   In this ex-ante evaluation study, PCM (Project Cycle Management) workshop was held to make an outline of the Project. The result of the workshop is summarized in the first draft Project Design Matrix (PDM) shown in ANNEX 1.
   Both sides confirmed that this PDM is a draft at this moment, and that it is going to be reviewed and revised in the discussion on Japanese side. The final PDM will be formulated in Phase 0, mentioned later, with the consultation of both sides.
   PDM, after the completion, will be flexibly changed upon mutual agreement when necessity arises.

3. Schedule of the Project
   The Project will be comprised of three (3) Phases. Phase 0 will be focused on the formulation of preparation plan of HR&TC and project outline. After Phase 0, Record of Discussion (R/D) will be signed. Phase I will be focused on the establishment of research body in NHA and formulation of research plan of HR&TC, while Phase II on the technology transfer in pavements in the new building of HR&TC

4. Plan of Operation
   Both sides have agreed to formulate Plan of Operation (P/O), for the whole duration of the Project. The purpose of P/O is to make a time framework of the activities defined in PDM. P/O will be formulated after the fixation of the activities in PDM in phase 0.
   The schedule and input is subject to change in the course of the Project. The Japanese experts and the Pakistani counterparts shall formulate annual work plan.

5. Work Breakdown Structure
   In addition to P/O, Work Breakdown Structure (WBS) will be prepared at the beginning of the Project to monitor the process of the Project. The WBS is to be flexibly revised according to the progress and achievement of the Project, upon mutual agreement in the Steering Committee to be formed. Sample WBS is attached for reference in Annex 2.

6. Administration of Project
   Both sides have agreed that administration of the project will be as follows;

   Project Administrator: Chairman, NHA
   Project Manager: Member Planning, NHA
   Counterpart Staff:
   NHA will assign following counterpart staff for the successful implementation of the project
   The counterpart assigned at this point are as follows, and the list of counterpart will be submitted by the commencement of the study.

   Task Leader Research and Development, NHA
   Director (Private Sector Cell) NHA

7. Steering Committee
   For the effective and successful implementation of technical cooperation for the Project, Steering Committee will be established in order to fulfil the following function:
   (a) To formulate annual work plan of the Project based on the Plan of Operations and Work Breakdown Structure (WBS)
   (b) To review the results of the annual work plan and the progress of the Project
   (c) To exchange views and ideas on major issues which arise during the implementation period of the Project
   (d) To evaluate PDM during the course of the Project and suggest revision, if necessary.

Steering Committee will be held at least once a year. The chairperson will be the Chairman of NHA and will bear overall responsibility for the administration and implementation of the Project. The member of Steering Committee will be notified to JICA by NHA before the commencement of the Project.

8. Duration of Cooperation
The duration of technical cooperation for the Project will be five (5) years. It might be changed depending on the evaluation throughout the Project.

9. Area of cooperation
The cooperation of this project will be focused on the formulation of pavement research plan and technology transfer in pavement research.

10. Input to the Project by the Pakistani Side
(a) Assignment of Personnel
(b) Allocation of Counterpart Budget
(c) Land, Building and Facilities
NHA has agreed to prepare the land and building necessary to carry out the Project. Until the completion of the building, however, the project will be carried out in the existing building of NHA, and sufficient space will be prepared for the Project.
(d) Equipment

11. Input to the Project by the Japanese side
(a) Dispatch of Long- and Short-term expert
The Japanese side has shown the plan of dispatch of following experts. The title, number and duration of the expert may change due to the budgetary constraint of Japanese side, or the mutual consultation of the Project.

Long-term Experts
i) Chief Advisor/ Organizational Designing and Research Planning (Phase I)
ii) Chief Advisor/ Road pavement (Phase II)

Short-term Experts
To be decided by mutual discussion

(b) Necessary equipment for the Project
JICA has agreed to provide equipment. The content of equipment, however, will be decided in Phase 0, and subject to change due to the budgetary constraint or mutual agreement in the course of the Project.

(c) Training of Pakistani Counterpart Personnel in Japan
For the improvement of their knowledge in the research management development and pavement, counterparts will be provided with training in Japan during the Project period. The participants and contents of training will be decided upon the basis of the purpose of the Project.

12. Signing of Record of Discussions (R/D)
R/D will determine the framework of the Project, and include the contents of this Minutes of Meeting (M/M). It will be agreed and signed among Japanese side and related Pakistani authorities after the approval from JICA Headquarters.

List of Annexes
Annex 1: First Draft PDM
Annex 2: Sample of WBS

ANNEX I

PROJECT DESIGN MATRIX (PDM) Version 0 Dated 3 March 2006

Project Name: Highway Research and Training Centre (HR&TC)

Implementing Agency:National Highway Authority(NHA)

Duration: JFY2006 to JFY 2011
Target Region: Pakistan
Project Site: Islamabad

	Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
	Overall Goal - To build and maintain durable user-friendly roads - To reduce O&M cost of road	Durability of highway pavement increase by XX % Rate of accident on highway is reduced by XX % % saving of O&M cost	Road Inventory Survey Safe Audit Report, NHA Statistic Data Book	- Budget for road construction and maintenance is assured continuously
	Project Purpose Standards and trained engineers for road construction and maintenance are developed Practical Standard developed are proved in actual road	Published manual, specification and standard are officially approved for continuous action Sample paving showed expected performance	Government Report Inventory/Interview	- Developed standards are adopted for construction - Construction is monitored and managed properly - Engineer/consultant/technical staff trained by HRTC remain in construction sector
OUTPUT	Output 1 International standard research lab is established	XX % of planned key posts are filled in Phase I 100 % of planned staff are filled within Phase II	Annual Performance Report of NHA, Annual Report of HRTC	- Equipment is maintained properly - Database is maintained and updated properly - Research is carried out continuously - Training is provided continuously - Original and new themes of researches are taken up and implemented - Budget for NHA is kept at adequate level
	Output 2 Research/ Implementation plan is finalized	At least XX research themes are planned Research plan is approved officially	Annual Performance Report of NHA, Annual Report of HRTC	
	Output 3 Standards and specification of pavement are developed	Pavement design manual is published	Annual Performance Report of NHA, Annual Report of HRTC	
	Output 4 Methodology of prevention of premature failures (defects in early stage) is developed	Research paper is periodically published by HRTC	Annual Performance Report of NHA, Annual Report of HRTC	
	Output 5 Indigenous pavement expertise are development	Regional specification is published XX of articles are taken up by academic journals	Annual Performance Report of NHA, Academic magazine	
	Output 6 Equipment is procured and installed	XX % of planned equipment is installed	Annual Performance Report of NHA, Annual Report of HRTC	
	Output 7 Highway safety standard is developed	Highway safety manual is published	Annual Performance Report of NHA, Annual Report of HRTC	
	Output 8 Human Resource is developed	XX % of researcher training is conduced per plan	Annual Performance Report of NHA, Annual Report of HRTC	

	Output 9 Collaboration with international lab is achieved	XX % of ··tual exchange of researchers with international ·.earch laboratory is achieved per plan	Annual Perf·ance Report of NHA, ..anual Report of HRTC	

ACTIVITIES

Phase I

a) Establishment of Organization
- Appointment of Project Director(Chairman NHA) and Project Manager(Member of Planning)
- Finalization of organization plan
- Planning of research building
- Planning and acquisition of development as well as operation budget
- Arrangement or construction of temporary space for commencement of operation
- Arrangement of Supervisors, researchers and staffs and development of their capacity

b) Procurement of Equipment and Vehicles
- Finalizing of list of equipment and vehicles required for Phase I and II
- Plan and acquisition of procurement and maintenance budget
- Procurement of equipment and vehicles for the Phase I activities
- Installation and calibration of the procured equipment

c) Coordination and Collaboration
- Coordination and collaboration with other stakeholders

d) Operation of Research and Training Centre
- Finalization of implementation plan including Environmental research

Phase II

a) Establishment of Organization
- Construction of centre building

b) Procurement of Equipment and Vehicles
- Procurement, installation and calibration of equipment for Phase II

c) Coordination and Collaboration
- Coordination and collaboration with other stakeholders

d) Operation of Research and Training Centre

Pavement and material Related Matter
- Construction material research
- Research on binder rheology characteristics
- Load and pavement temperature study
- Research on pavement mix design
- In service pavement research
- Accelerated pavement testing
- Study on upgrading of standards and specifications of pavement

Construction Related Matter
- Modernization of construction methodology
- Improvement in quality control on road construction

Traffic Safety and Miscellaneous Matter
- Safety Audit
- Proper database development

INPUT

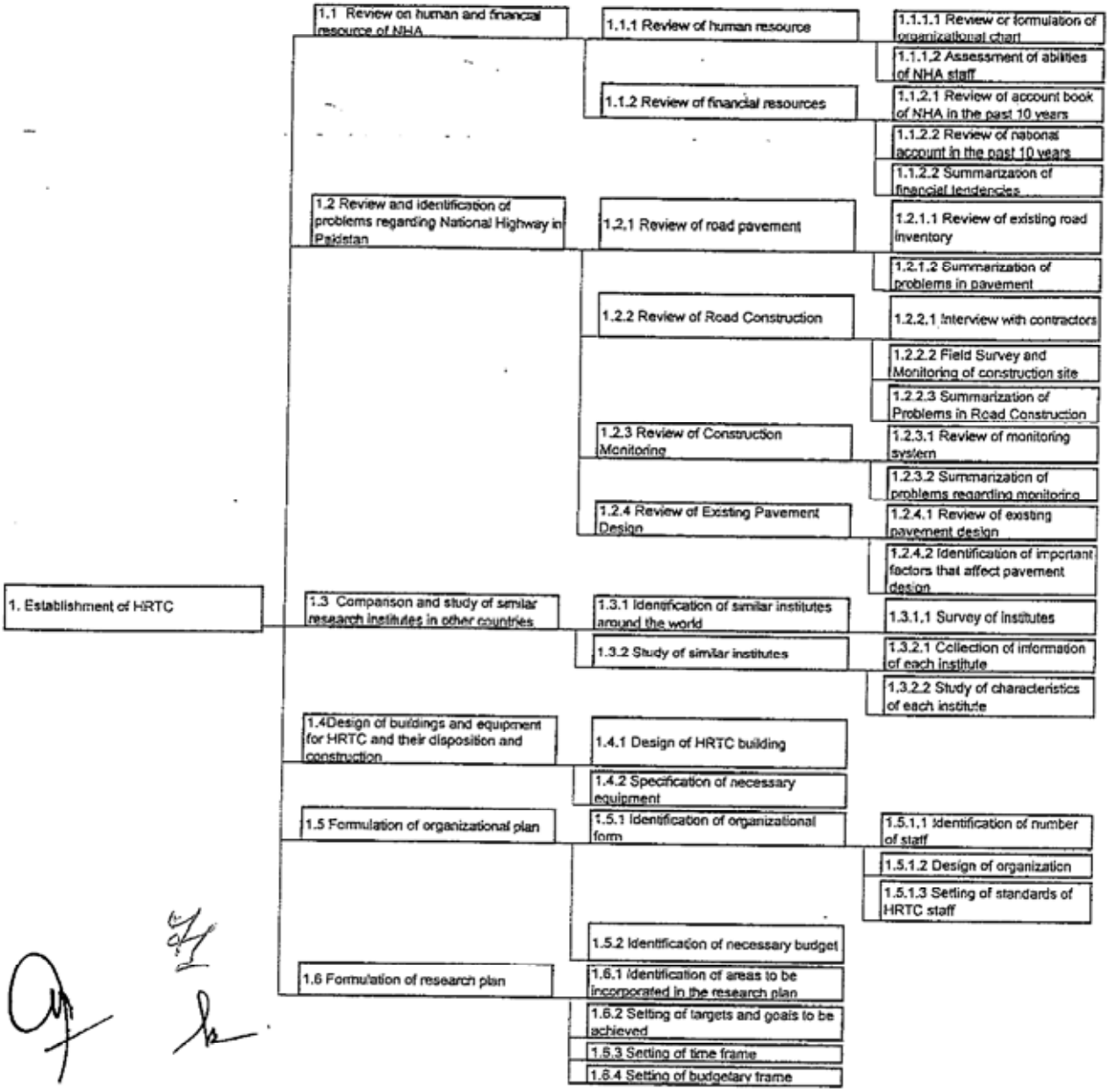
Japanese side
- Experts(long and short term)
- Equipment
- Counterpart Training in Japan

Pakistani side
- Counterpart Personnel
- Development budget
- Equipment, furniture and stationary
- Land and building for HRTC
- O&M Budget

- Political situation remains stable
- Government policy doesn't change
- Personnel of HRTC stays in the organization
- NHA keeps enough amount of budget
- Steering committee is held periodically

Pre-conditions
- PC-1 is approved
- Financial measure for the project is taken
- Land for HRTC is secured
- Counterparts are appointed

Annex 2 Sample Work Breakdown Structure (WBS)



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Attached Document

1. Project Title
The project is titled as "Highway Research and Training Centre (HR&TC)".

2. The Result of PCM Workshop
In this ex-ante evaluation study, PCM (Project Cycle Management) workshop was held to make an outline of the Project. The result of the workshop is summarized in the first draft Project Design Matrix (PDM) shown in ANNEX 1.
Both sides confirmed that this PDM is a draft at this moment, and that it is going to be reviewed and revised in the discussion on Japanese side. The final PDM will be formulated in Phase 0, mentioned later, with the consultation of both sides.
PDM, after the completion, will be flexibly changed upon mutual agreement when necessity arises.

3. Schedule of the Project
The Project will be comprised of three (3) Phases. Phase 0 will be focused on the formulation of preparation plan of HR&TC and project outline. After Phase 0, Record of Discussion (R/D) will be signed. Phase I will be focused on the establishment of research body in NHA and formulation of research plan of HR&TC, while Phase II on the technology transfer in pavements in the new building of HR&TC

4. Plan of Operation
Both sides have agreed to formulate Plan of Operation (P/O), for the whole duration of the Project. The purpose of P/O is to make a time framework of the activities defined in PDM. P/O will be formulated after the fixation of the activities in PDM in phase 0.
The schedule and input is subject to change in the course of the Project. The Japanese experts and the Pakistani counterparts shall formulate annual work plan.

5. Work Breakdown Structure
In addition to P/O, Work Breakdown Structure (WBS) will be prepared at the beginning of the Project to monitor the process of the Project. The WBS is to be flexibly revised according to the progress and achievement of the Project, upon mutual agreement in the Steering Committee to be formed. Sample WBS is attached for reference in Annex 2.

6. Administration of Project
Both sides have agreed that administration of the project will be as follows;

Project Administrator: Chairman, NHA
Project Manager: Member Planning, NHA
Counterpart Staff:
NHA will assign following counterpart staff for the successful implementation of the project
The counterpart assigned at this point are as follows, and the list of counterpart will be submitted by the commencement of the study.

Task Leader Research and Development, NHA
Director (Private Sector Cell) NHA

7. Steering Committee
For the effective and successful implementation of technical cooperation for the Project, Steering Committee will be established in order to fulfil the following function:
(a) To formulate annual work plan of the Project based on the Plan of Operations and Work Breakdown Structure (WBS)
(b) To review the results of the annual work plan and the progress of the Project
(c) To exchange views and ideas on major issues which arise during the implementation period of the Project
(d) To evaluate PDM during the course of the Project and suggest revision, if necessary.