

ベトナム社会主義共和国
運輸交通省，道路総局

ベトナム国
道路維持管理能力強化向上
プロジェクトフェーズ2
プロジェクト業務完了報告書

平成30年3月
(2018年3月)

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基盤
JR
18-026

This Project Completion Report was jointly prepared by JICA Project Team and Directorate for Roads of Vietnam (DRVN), Vietnamese counterpart of this Project. The contents of this report were prepared, reviewed and agreed by both side.

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略 語 集

C/P	:	カウンターパート	Counterpart
DAC	:	開発支援委員会	Development Assistance Committee
DB	:	データベース	Database
DOP	:	人事部	Department of Personnel
DOST	:	科学技術部	Department of Science and Technology
DPI	:	計画投資部	Department of Planning and Investment
DRVN	:	道路庁	Directorate for Roads of Vietnam
HDM-4	:	道路建設管理	Highway Development and Management
GDP	:	国内総生産	Gross Domestic Product
GOJ	:	日本政府	Government of Japan
GOV	:	ベトナム政府	Government of Vietnam
IT	:	情報技術	Information Technology
ITST	:	運輸科学技術研究所	Institute of Transport Science and Technology
JCC	:	合同調整委員会	Joint Coordination Committee
JICA	:	国際協力機構	Japan International Cooperation Agency
J.S.C.	:	株式会社	Joint Stock Company
M&M	:	メンテナンス管理	Maintenance and Management
MOF	:	財務省	Ministry of Finance
MOT	:	交通運輸省	Ministry of Transport
NH	:	国道	National Highway
OECD	:	経済協力開発機構	Organization for Economic Cooperation and Development
OJT	:	現場研修	On-The-Job-Training
PC	:	舗装路面性状	Pavement Condition
PDAS	:	舗装データ分析システム	Pavement Data Analysis System
PDCA	:	計画・実施・評価サイクル	Plan Do Check Action
PDOT	:	人民委員会交通部	Provincial Department of Transport
PDM	:	プロジェクトデザインマトリックス	Project Design Matrix
PID	:	プロジェクト実施部	Project Implementation Division
PMS	:	舗装管理システム	Pavement Management System
PMoS	:	舗装モニタリングシステム	Pavement Monitoring System
PMU	:	プロジェクト管理部	Project Management Unit
PO	:	行動計画行程表	Plan of Operation
PR	:	工法	Public Relation
RAM-SC	:	道路アセットマネジメントステアリング委員会	Road Asset Management – Steering Committee

R/D	:	協議議事録	Record of Discussion
R&D	:	研究開発	Research and Development
RMB	:	国道地方管理局	Road Management Bureau
RTC	:	技術事務所	Road Engineering Center
SB	:	国道管理事務所	Sub-Bureau
SIP	:	戦略的イノベーション創造プログラム	Cross-Ministerial Innovation Promotion Program
STE-ICD	:	科学技術・環境・国際協力部	Science, Technology, Environment and International Cooperation Department
TCQM	:	交通インフラ建設品質管理局	Transport Construction Quality Management
TWG	:	技術作業グループ	Technical Working Group
WB	:	世界銀行	World Bank
WG	:	ワーキンググループ	Working Group
WS	:	ワークショップ	Workshop
VN	:	ベトナム	Vietnamese
VRAMP	:	ベトナム道路資産管理プロジェクト	Vietnam Road Asset Management Project

1. 業務の概要

1.1 対象国

ベトナム社会民主主義共和国

1.2 プロジェクト名

道路維持管理能力強化プロジェクトフェーズ2

1.3 プロジェクト期間

計画：2015年2月9日～2018年3月9日（38ヶ月）

実績：2015年2月9日～2018年4月28日（39ヶ月）

1.4 背景

ベトナム社会民主主義共和国（以下、「ベトナム」）は、前期の社会経済開発5ヶ年戦略（2006-2010年）の下で、年平均7%の経済成長を遂げ、2010年の国内総生産（GDP）も2000年から倍増して安定した社会経済成長を達成した。新しい社会経済開発5ヶ年戦略（2011～2015年）においても、高度社会経済成長を維持することを継続して目標の1つとしており、それを果たすために12の社会経済戦略が設定されている。交通インフラの社会経済戦略に関しては、交通インフラ整備事業の見直しや都市インフラ整備への優先投資の促進に重点が置かれている。具体的には、南北交通軸と東西回廊軸を段階的に、同期させながら整備し、外資・民間投資のインフラ整備への投資を促進することと投資環境整備を進めること、周辺国との国境を越える道路の早期完成などが挙げられる。

先の開発戦略に従い、2008年にベトナム交通運輸省（MOT）は、2020年までの交通インフラ整備戦略を策定した。首相の指示により、部分的な修正を経ながら、2013年に修正版が承認され、先端技術の導入、技術基準・仕様書・基準の更新という方針が示された。2013年1月にMOTは懸案だった道路維持管理基金を設立し、65%が国道に、35%が省道に充てられることとなった。これにより、これまで予算請求の40%しか認められていなかった道路維持管理予算により多くの予算が充てられることが期待される。

2013年3月にMOTは、国道維持管理総合革新プランを策定した。プランでは、道路維持管理業務の品質向上を通じて、道路の長寿命化と道路交通の安全と効率性の向上を目的とする。プランに示された戦略的政策は以下の通り。

- 1) 国道維持管理の業者選定方法の革新
- 2) 道路維持管理業務の監督の品質向上
- 3) 道路維持管理への新技術の適用
- 4) 過積載車両対策の実施
- 5) 道路維持管理3年計画の計画手法の更新
- 6) 道路維持管理に係る法令・規則の改訂
- 7) 道路維持管理基準・規定の改訂

- 8) 道路維持管理に係る人材育成と組織改革
- 9) 道路維持管理への情報管理技術の導入
- 10) 地方道路の維持管理の能力向上支援

道路庁（DRVN）の道路維持管理における現在の状況を以下に示す。

- 1) DRVN は政府の方針に従って、品質管理と道路維持の運営手法を実施
- 2) 道路管理と補修業務における技術認証制度が未整備で、最新技術を取り入れることがなく、技術革新が遅いために効率性と品質確保が限定的
- 3) 技術基準、業務手続き、機構、政策、財源が不完全なため、維持補修の実施と計画策定（短期、中期、長期）が困難
- 4) 道路データベースシステムが未整備なため、中央から地域の情報を閲覧することができない。データベースを整備することで、中央による管理、主体的な業務調整が容易になる。
- 5) 職員の資質・能力は均一でなく、育成計画がないため、新しい技術への対応ができない

上記の状況を踏まえ、ベトナム政府は、日本政府に「道路維持管理能力強化プロジェクトフェーズ2」の支援を要請した。本要請に応え、国際協力機構（JICA）は道路維持管理サイクルを促進する技術の移転を実施することとし、DRVN と関係機関との協議を行った。JICA とベトナム関係機関との合意事項は、協議議事録（R/D）にとりまとめられ、2014年9月8日に両者が署名した。

1.5 上位目標とプロジェクト目標

(1) 上位目標

全国国道網で、中期維持管理計画と計画・実施・評価（PDCA）サイクルに基づいた適切な道路維持管理が実施される。

(2) プロジェクト目標

全国の道路維持管理の実施能力が強化される。

1.6 対象地域

国道地方管理局（RMB）I, II, III, IV の管轄地域

1.7 実施機関

運輸交通省道路総局（Directorate for Roads of Viet Nam: DRVN）、運輸交通省（MOT）

1.8 実施体制

合同調整委員会（JCC：Joint Coordinate Committee）、技術作業グループ（TWG：Technical Working Group）及びワーキンググループを設立した。JCC は DRVN 局長を委員長とし、TWG は科学技術・環境・国際部（以下、「STE-ICD」）部長を長とする。

表 1.8-1 JCC 及び TWG の機能とメンバー

委員会		JCC	TWG
議長		DRVN 局長	科学技術・環境・国際部長
規定		R/D による	2015 年 4 月 15 日付省令 1088/QD-TCDBVN Decision No.1088/QD-TCDBVN
頻度		各年 1 回 (年間計画協議、プロGRESS報告及び完了報告、モニタリングシートの承認ため)	3 ヶ月に 1 回。但し、JCC と重なるときは除く。
機能		<ul style="list-style-type: none"> • R/D に基づくワークプランの審議と承認 • 年間計画/プロGRESS報告及びモニタリングシートによる進捗確認 • プロジェクト成果の普及促進 • プロジェクト実施上の課題に対する意見交換 	<ul style="list-style-type: none"> • 年間計画/プロGRESS報告及びモニタリングシートに基づいた作業行程の協議・調整 • プロジェクト進捗確認 • プロジェクト実施上の課題に対しての協議及び調整
出席者	ベトナム側	DRVN 局長 (議長) DRVN 副局長 MOT: DPI, DOST, インフラ部, TCQM, ITST DRVN 関連職員 PMU-3 (DRVN)	科学技術・環境・国際部長 (議長) DRVN 関連職員
	日本側	在ベトナム日本国大使館 JICA ベトナム事務所 JICA 長期専門家 JICA プロジェクトチーム	JICA 長期専門家 JICA プロジェクトチーム

TWG の下部組織として、ワーキンググループ (WG) を 3 グループ設立した。担当する活動内容を下表に示す。ワーキンググループメンバーは、DRVN 職員の中から、特に活動に深く関係する職員を選定した。

表 1.8-2 ワーキンググループの構成

WG	対象分野	ベトナム側メンバー
WG 1	[Measure 1] <ul style="list-style-type: none"> • PMS データ収集・処理技術 • ウェブ路面性状データ閲覧システム [Measure 2] <ul style="list-style-type: none"> • PMS 更新/舗装補修予算策定/補修計画 • ウェブシステム 	計 7 名 <ul style="list-style-type: none"> • STE-ICD 部長 (グループ長) • DPI 副部長 • DMM 副部長 • 道路 IT センター長 • DPI、DMM、道路 IT センター 専門職員 • PMU-3 職員
WG 2	[Measure 3] <ul style="list-style-type: none"> • 道路点検及び道路維持管理の技術基準 • 補修工事の試験施工 [Measure 4] <ul style="list-style-type: none"> • 維持管理手続きと責任分担 	計 6 名 <ul style="list-style-type: none"> • STE-ICD 副部長 (グループ長) • DMM 副部長 • 建設管理局 PID3 長 • DMM、STE-ICD 専門職員 • PMU-3 職員
WG 3	[Measure 5] <ul style="list-style-type: none"> • トレーニングプログラムと PR 	計 3 名 <ul style="list-style-type: none"> • DOP 部長 (グループ長) • STE-ICD 専門職員 • PMU-3 職員

備考:

- DMM: Road Management and Maintenance Department (道路維持管理部)

- DOP: Organization and Personnel Department (組織人事部)
- DOST: Department of Science and Technology (科学技術部)
- DPI: Planning and Investment Department (計画投資部)
- IT: Information Technology (情報技術)
- ITST: Institute of Transport Science and Technology (運輸科学技術研究所)
- PID3: Project Implementation Division-3 (プロジェクト実施部-3)
- PMS: Pavement Management System (舗装管理システム)
- PMU-3: Project Management Unit-3 (プロジェクト管理課-3)
- PR: Public Relation (工法)
- STE-ICD: Department of Science, Technology, Environment and International Cooperation (科学技術・環境・国際部)
- TCQM: Transport Construction Quality Management (交通インフラ建設品質管理)

さらに、世銀資金で実施中のベトナム道路資産管理プロジェクト (VRAMP) と本業務との間の調整を円滑に進めるため、道路アセットマネジメントステアリング委員会 (RAM-SC) を設置した。委員会の設置は、2014年6月4日付 No.1267/QD-TCDBVN に基づいている。さらに、2014年8月7日付 No.1267/QD-TCDBVN に基づき、調整ワーキンググループ (CWG) を設置した。省令委員会及びワーキンググループのメンバーの多くは、JCC 及び TWG のメンバーと共通している。

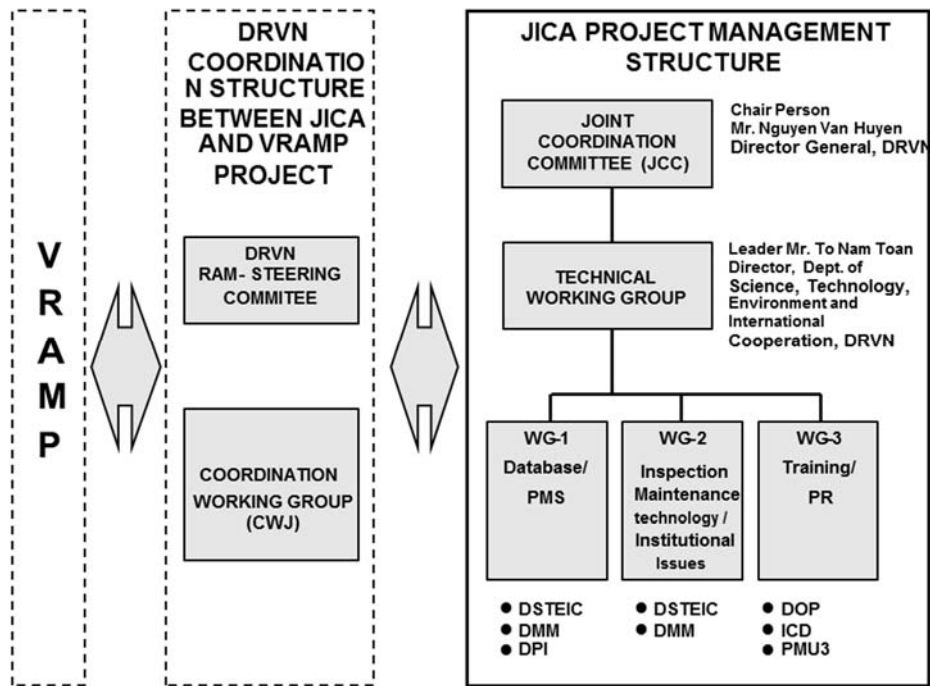


図 1.8-1 プロジェクト管理体制

1.8.1 合同調整会議 (JCC) 及びワーキンググループ協議

(3) 合同調整会議 (JCC)

表 1.8-3 に示す計 4 回の JCC を開催し、年間計画、進捗報告及びモニタリングシートによる進捗確認と協議を行った。

表 1.8-3 JCC 会議

番号	JCC 会議	日付	状況	備考
1	第 1 回 JCC 会議	2015 年 4 月 23 日	実施済み	
2	第 2 回 JCC 会議	2016 年 3 月 25 日	実施済み	
3	第 3 回 JCC 会議	2017 年 3 月 29 日	実施済み	
4	第 4 回 JCC 会議	2017 年 12 月 6 日	実施済み	

(4) ワーキンググループ会議

第 1 回 JCC で承認されたワークプランに従い、各活動の詳細な実施計画を策定した。2015 年に始まったそれぞれの活動計画は、ワーキンググループ（WG）で協議し、基本的に合意に達した。プロジェクト期間中はそれぞれの活動に対応する WG を通じて、適宜協議を行いなが実施した。

1.9 プロジェクトチーム構成

プロジェクトは、カウンターパート、JICA 長期専門家、プロジェクトチームメンバー間の情報共有と協力体制の強化のため、図 1.9-1 に示すグループを形成して業務を実施した。

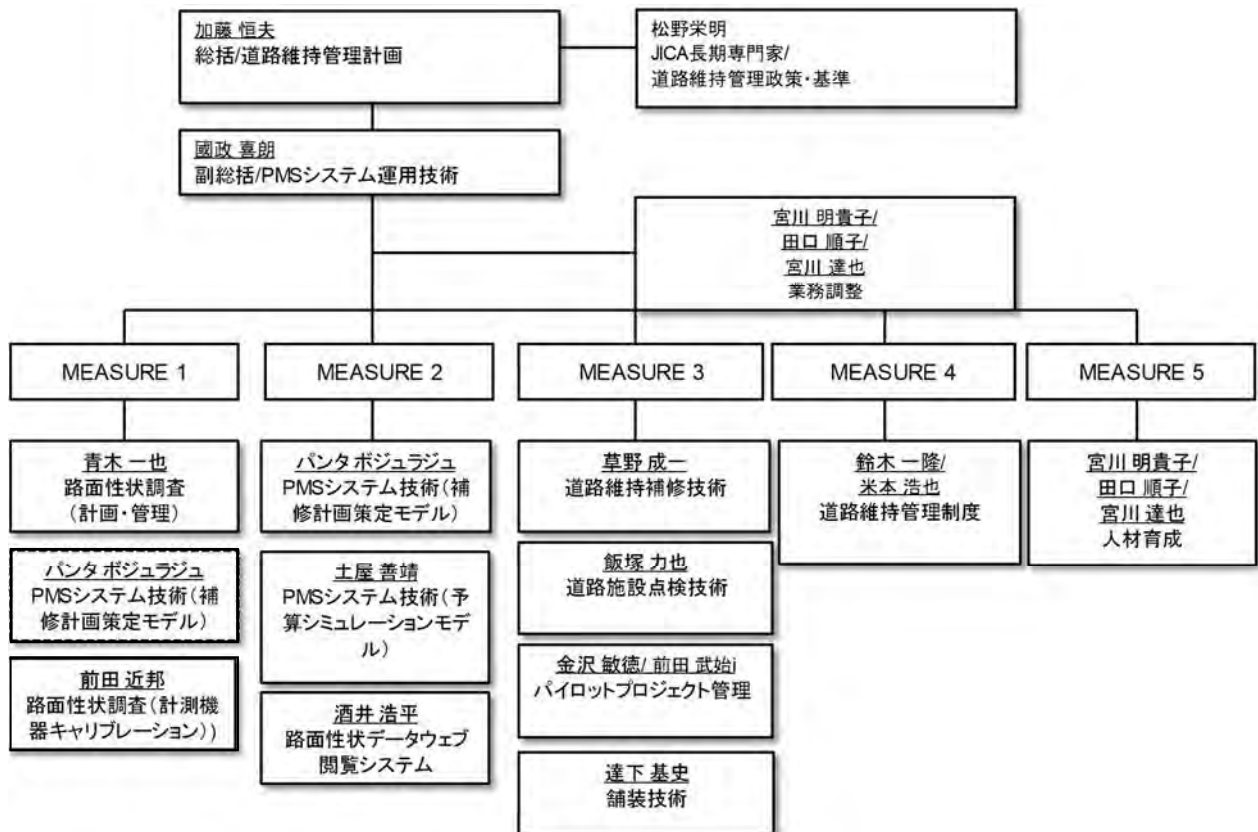


図 1.9-1 プロジェクトチーム構成

1.10 レポート

本業務では、以下の報告書を作成した。

表 1.10-1 プロジェクトの活動報告

	報告書	状況	備考
1	モニタリングシート Ver.1	提出済み (2015年4月23日)	<ul style="list-style-type: none"> • モニタリングシート • ワークプラン
2	モニタリングシート Ver.2	提出済み (2015年10月21日)	<ul style="list-style-type: none"> • モニタリングシート
3	モニタリングシート Ver.3	提出済み (2016年3月25日)	<ul style="list-style-type: none"> • モニタリングシート • プロGRESSレポート I
4	モニタリングシート Ver.4	提出済み (2016年9月30日)	<ul style="list-style-type: none"> • モニタリングシート
5	モニタリングシート Ver.5	提出済み (2017年1月22日)	<ul style="list-style-type: none"> • モニタリングシート
6	モニタリングシート Ver.6	提出済み (2017年3月29日)	<ul style="list-style-type: none"> • モニタリングシート • プロGRESSレポート II
7	モニタリングシート Ver.7	提出済み (2017年9月29日)	<ul style="list-style-type: none"> • モニタリングシート
8	プロジェクト完了報告書	提出予定 (2018年4月9日)	<ul style="list-style-type: none"> • 本レポート • 技術協力成果品

2. プロジェクトの成果

R/D、及びプロジェクトデザインマトリックス (PDM) に基づいたプロジェクト成果につき、以下のとおり要約する。PDM の変更に関しては、各項目にその旨記載する。

2.1 プロジェクトの投入

2.1.1 日本側投入

プロジェクトへの投入については、業務計画書の内容と最終実績とを比較をもって説明する。

(1) 専門家派遣

プロジェクトチームは、1名の長期専門家、及び13名の短期専門家により構成されている。表 2.1-1 に、計画と実績の対比を記す。

表 2.1-1 専門家派遣に係る対比表

指導分野	専門家		期間 (MM)	
	名前	所属先	計画	実績
1. 長期専門家 プロジェクトアドバイザー 道路維持管理政策・基準	松野 栄明	国土交通省 (MLIT)	24	36
2. 短期専門家				
(1) 総括/道路維持管理計画	加藤 恒夫	KEI	16.00	21.73
(2) 副総括/PMS システム運用技術	國政 喜朗	KEI	14.00	14.00
(3) 路面性状調査 (計画・管理)	青木 一也	PASCO	12.00	12.00
(4) PMS システム技術 (補修計画策定モデル)	パンタ ボジジュラジュ	KEI	16.00	16.23
(5) PSM システム技術 (予算シミュレーションモデル)	土屋 善靖	PASCO	11.00	8.47
(6) 路面性状調査 (計測機器キャリブレーション)	前田 近邦	PASCO	1.00	3.93
(7) 路面性状データウェブ閲覧システム	酒井 浩平	PASCO	3.00	7.90
(8) 道路維持補修技術	草野 誠一	KEI	10.00	8.30
(9) 道路施設点検技術	飯塚 力也	OCG	8.00	6.70
(10) パイロット工事管理	金沢 敏徳	OCG	8.00	2.73
	前田 武始		-----	6.57
(11) 舗装技術	達下 基史	KEI 補強	4.00	4.00
(12) 道路維持管理制度	鈴木 一隆	NEXCO 中 日本	7.00	4.00
	米本 浩也		-----	3.00
(13) 人材育成/業務調整 I	宮川 明貴子	KEI	16.00	10.70
	田口 順子		-----	2.00
(14) 人材育成/業務調整 II	宮川 達也	KEI	-----	4.50
人月合計			126.00	137.76

(2) 本邦研修

表 2.1-2 に示すように、プロジェクト期間中3回にわたる本邦研修が計画され、2015年、2016年及び2017年にそれぞれ実施された。また、DRVNからの要請に基づき、JICAは道路アセット・マネジメントに特化した研修を、2018年2月～3月にかけて実施することを計画している。

表 2.1-2 本邦研修対比表

計画		実績	
研修	参加者数	研修	参加者数
1. 第1回本邦研修	5	1. 第1回本邦研修 - 2015年9月13日～ 2015年9月19日	5
2. 第2回本邦研修	5	2. 第2回本邦研修 - 2016年9月26日～ 2016年10月6日	10
3. 第3回本邦研修	5	3. 第3回本邦研修 - 2017年9月3日～ 2017年9月16日	10
-----	-----	4. 道路アセット・マネジメン トに係る国別研修 -2018年2月25日～ 2018年3月21日	15

(3) 資機材の調達

プロジェクトの実施にあたり、本プロジェクトにおいては、初期の業務計画に基づいて資機材の調達を行った。下記リストはこれら資機材の詳細を記している。

- 舗装・橋梁補修プロジェクトのための資機材
- PMS ソフトウェアに係る計画・運用のためのコンピュータ
- アプリケーション・サーバー及びデータベース・サーバー
- 研修用機材

1) パイロット舗装・補修工事のための資機材

プロジェクトの R/D を基に、本プロジェクトは、パイロット舗装・橋梁補修工事のための資機材を日本から調達・輸入の責務を負った。本プロジェクトでは、ワーキング・グループ 2 のカウンターパートと連携し、工事種や補修工事候補地、補修工事仕様を含むパイロット補修工事実施計画を策定した。当該計画に基づき、2017年1月、資機材調達契約が締結された。資機材は、横浜港からベトナムのハイフォン港に輸送された。

資機材到着直後、免税を含む通関手続きが進められ、承認された。その後、資機材は ITST に輸送され、DRVN 下の PMU3 に引き継がれた。2017年4月、輸入した資機材を活用し、現場においてパイロット補修工事が実施された。本プロジェクトの R/D を基に、PMU3 が選定した業者によって工事が行われた。表 2.1-3 はパイロット工事用資機材リストである。

表 2.1-3 パイロット舗装・橋梁補修工事用資機材

No	品名	使用目的	量(PCs)	単位
1.	クラックシール NX	ひび割れ補修	11	箱
2.	NX プライマー	ひび割れ補修	1	缶
3.	レスキューパッチ	穴補修 (深穴)	1,152	袋
4.	ローメンパッチ (エマルジョン)	穴補修 (浅穴)	84	箱
5.	ローメンパッチ (アグリゲート)	穴補修 (浅穴)		
6.	ローメンサンド	ひび割れ補修、穴修理 (深穴・浅穴)	5	缶

No	品名	使用目的	量(PCs)	単位
7	カチョーブル GM	ひび割れ補修、穴修理（深穴・浅穴）	6	缶
8.	カチコート R	ブリッジデッキ防水	16	缶
9.	フレッシュコート	ブリッジデッキ防水	44	箱
10.	ケイ砂 #4	ブリッジデッキ防水	23	袋
11.	バラドレン (I)	ブリッジデッキ防水	8	巻
12.	セロシール SS テープ (II)	ブリッジデッキ防水	27	巻
13.	アスファルト融解装置	ひび割れ補修、防水	1	個
14.	アスファルト融解装置	ひび割れ補修	1	個
15.	バーナーヘッド	ひび割れ補修、防水	2	個
16.	アスファルトディッパー	ひび割れ補修、防水	10	個
17.	大型スクレーパ	ひび割れ補修、穴修理	6	個
18.	小型スクレーパ	ひび割れ補修、穴修理（深穴・浅穴）、防水	12	個
19.	鋤	穴修理（浅穴）	5	個
20.	プライマー用ブラシ	ひび割れ補修、防水	8	個
21.	カーリングテープ	ひび割れ補修、穴修理（深穴・浅穴）、防水	7	個
22.	手動タンパ	穴修理（深穴）	1	個
23.	耐熱防水ブラシ（大型）	橋梁防水	2	個
24.	耐熱防水ブラシ（中型）	橋梁防水	2	個
25.	耐熱防水ブラシ（小型）	橋梁防水	3	個
26.	高周波数水分計	橋梁防水	1	個
27.	防火シート	橋梁防水	2	個

2) PMS ソフトウェア計画及び運用のためのコンピュータ

業務計画書に基づき、本プロジェクトにおいては、PMS ソフトウェア計画及び運用のためのデスクトップ・コンピュータを計 10 台調達した。表 2.1-4 に当該コンピュータ調達及びインストールに係る状況を記す。

表 2.1-4 PMS ソフトウェア運用のためのコンピュータ

項目	コンポーネント	状況
PMS ソフトウェア計画・運用のためのコンピュータ	デスクトップ コンピュータ 10 台	2015 年 12 月に 2 台のコンピュータを調達。2017 年 12 月に DRVN に引き渡し予定。 2017 年 10 月に 8 台のコンピュータを調達。RMBI、II、III 及び IV に各 2 台設置。

3) アプリケーション及びデータベース・サーバー

2016 年 5 月に最終化された仕様に基づき、本プロジェクトで開発した PMS ソフトウェアをインストールするためのアプリケーション及びデータベース・サーバーを各 1 台調達した。当該サーバーは、DRVN の IT センターに設置され、既に PMS ソフトウェアに係る計画や運用が実践されている。

表 2.1-5 アプリケーション及びデータベース・サーバー

項目	コンポーネント	状況
PMS ソフトウェア・インストール用ウェブ・サーバー	アプリケーション・サーバー 1 台	2016 年 8 月 5 日に購入、DRVN の IT センターに設置。
	データベース・サーバー 1 台	

4) プロジェクト実施のために必要なその他の機材

本プロジェクトでは、上記2種以外に、ベトナムにおけるプロジェクト活動実施のため必要なコンピュータ等の機材を購入した。

表 2.1-6 研修機材

項目	コンポーネント	状況
その他のプロジェクト実施上必要な機材 (ローカルスタッフ用及び研修用コンピュータ)	オフィス用デスクトップ・コンピュータ2台	2015年4月購入。2017年12月、DRVNに引き渡し予定。
	プロジェクター1台 スクリーン1台	2015年4月購入。2017年12月、DRVNに引き渡し予定。

(4) その他（再委託）

表 2.1-7 に示すように、本プロジェクトでは6つの事業をベトナムの業者に委託した。具体的な内訳は、路面性状調査に1業者、コンピュータ・システム開発に3業者、更にDRVNのPR活動用資料開発に2業者となっている。

表 2.1-7 再委託先リスト

No	再委託事業名	概要	業者	契約期間
1.	本プロジェクト用路面性状調査	路面性状調査実施、及び以下の道路網に係るデータ分析 - RMBII : 4,232.1 車線キロ - RMBIII : 2,201.1 車線キロ - RMBIV : 3,855.5 車線キロ - RMBI : 2,318.2 車線キロ - 合計 : 12,607.0 車線キロ	ロードエンジニアリングセンター (RTC-Central)	2015/10/07 - 2017/10/06
2.	本プロジェクト用ウェブシステム開発（パッケージI）	1. 路面性状調査データ用ウェブ・ディスプレイ・システム開発 2. PMS データベース・データ入力システム開発	サオマイ・ソフトウェア	2015/10/20 - 2016/04/30
3.	ベトナムにおける国道整備に係る年次報告書及びビデオ・クリップ作成	1. 省庁レベル機関を対象としたDRVNにおけるPR活動の一環としての2016年度年次報告書作成、及びDRVN道路維持管理用ビデオ・クリップ作成	ベトナム・ロード・マガジン	2016/07/01 - 2017/12/22
4.	ベトナムにおける道路整備技術に係るウェブ情報システム開発	民間セクターを対象としたPR活動の一環としての道路整備技術登録用ウェブ情報システム開発	サオマイ・ソフトウェア	2016/08/05 - 2016/12/31
5.	PMS ウェブ運用システム開発（パッケージII）	1. 舗装予算計画立案のためのPMSウェブ運用開発 2. 舗装補修工事計画立案のためのPMSウェブ運用開発 3. 舗装管理のためのウェブ・舗装モニタリングシステム(PMoS)開発	サオマイ・ソフトウェア	2016/10/31 - 2017/12/25
6.	一般情報冊子	一般大衆を対象としたDRVNのPR活動用一般情報冊子作成	ベトナム・ロード・マガジン	2017/8/29 - 2017/12/22

2.1.2 ベトナム側による投入

2015年4月、DRVNは、プロジェクトチームに対し、オフィス・スペースの提供、カウンターパート選定、ワーキング・グループ結成、及び現地資金準備を含めた、プロジェクト環境整備に多大な尽力を果した。このような努力により、DRVN関係者との協力関係を保持し、プロジェクト活動は大変円滑に進められた。

(5) 人材配置

2015年4月23日付決定第1088/QD-TCDBVN号に基づき、合同調整委員会（以下、「JCC」と言う）、テクニカル・ワーキング・グループ（以下、「TWG」と言う）、及びワーキング・グループ（以下、「WG」と言う）の議長及びメンバーが任命された。更に、各RMB、RTC及びSBのPMSシステム担当職員が2015年7月に任命された。

(6) オフィス・スペース及び設備手配

DRVN庁舎におけるオフィス・スペース不足により、DRVNはリース条件を満たして、外部にプロジェクト・オフィスをリースした。2015年4月、プロジェクト・オフィス・スペース賃貸契約を締結し、プロジェクトチームは、第1回JCC前の2015年4月20日に新たなオフィスの使用を開始した。

(7) パイロット舗装・橋梁補修工事の実施

R/Dに基づき、パイロット舗装・橋梁補修工事用資機材、機械輸入にあたり、プロジェクトチームと連携すべく、DRVNはPMU3を任命した。これにより、横浜港における輸出手続き、またハイフォン港における日本からベトナムへの輸送に係る免税を含めた税関手続きに要する期間がおよそ2ヶ月短縮され、パイロット工事の成功裏の実施に繋がった。

DRVNは、道路整備基金から当該パイロット工事実施に係る予算を手配するという責務を果たした。具体的には、再委託先選定及び契約署名、舗装及び橋梁補修工事実施、並び現場における工事状況のモニタリングといった一連の業務に係る予算が挙げられる。

(8) 運用費用手配

DRVNは、以下の事項実施に係る予算を確保した。

1) 路面性状調査用必要経費

DRVN職員用路面性状調査参画のための日当、宿泊、国内出張旅費。

2) ベトナムにおける研修プログラム実施に係る必要経費

DRVN職員用セミナー、ワークショップ及びOJT参画のための日当、宿泊、国内出張旅費。

(9) その他

日本人専門家派遣のためのLV1査証発給に係る支援。

2015年当初、新たな査証手続きに係る移民法が制定されたのを受け、DRVNは査証調達に係る責務を負った。同法律により、プロジェクト専門家はベトナムにおける業務遂行に当たり、LV1査証が求められるようになった。当該査証は1年間有効であり、全専門家はDRVNとMOTの支援を受けて同査証を問題なく受領することができた。

2.2 活動

2.2.1 ベースライン調査

本プロジェクトの開始から第1回JCCまで、プロジェクトはベースライン調査を実施した。同調査に関しては、フェーズ1における成果のレビューを含めた事業計画の策定に要する主要事項、新たな法規に係るデータ収集、及び国道路維持管理に係る現状の更新に焦点を当て、既存資料やインターネットの情報を基に実施された。同調査結果は全て業務計画に反映された。

2.2.2 業務計画

JICAとDRVN間で合意されたR/Dには、**図 2.2-1**に示すように、本プロジェクトの上位目標である、PDCAサイクルに従って道路整備を実施することがPDMに記されている。同PDMに沿って、本プロジェクトは、2015年4月23日に実施された第1回JCC会合において、CPメンバーと詳細活動について協議し、業務計画を策定した。活動の主要事項は以下に分類される。

- PDCAサイクルに係る管理能力強化
- プロジェクト成果実現のための制度化の強化
- 道路アセット・マネジメントのための人材育成

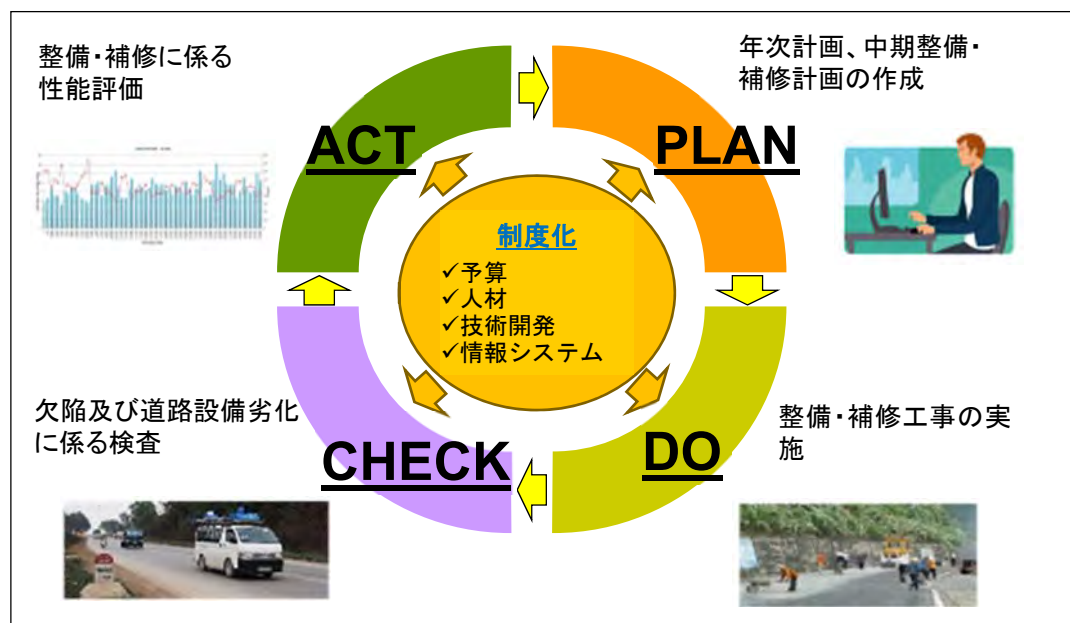


図 2.2-1 道路維持管理に係る PDCA サイクル

2.2.3 活動の枠組

図 2.2-1に記載の要約のとおり、プロジェクト目標達成のための施策や活動を含めたプロジェクトの枠組は以下のとおりである。活動 2-7 及び活動 3-4 は、2016年7月21日に締結された変更契約に追記された。プロジェクトを通して、業務計画では同じ活動番号を適用する。プロセス・マ

ネジメントに係る詳細を伴った、詳細なプロジェクト活動は、2017年9月に作成されたモニタリング・シート Ver.7 に説明されている。また、本完了報告書の Appensix-5 にも含まれている。

表 2.2-1 プロジェクト活動

活動目標	プロジェクト活動		
	計画	実績	
活動目標 1; 舗装維持管理データの作成技術を向上する	1-1	PMS データベースを作成する。	PMS データベースを作成する。
	1-2	路面性状調査を実施する。	路面性状調査を実施する。
	1-3	PSM ウェブ・データ入力システムを作成する。	PSM ウェブ・データ入力システムを作成する。
活動目標 2; PMS をアップグレードし、RMB I, II, III, IV 道路網に適用するとともに、舗装道路整備計画（案）を作成する	2-1	PMS をアップグレードする。	PSM をアップグレードする。
	2-2	PMS データセットを作成する。 PMS データセット作成	PMS データセットを作成する。 PMS データセット作成
	2-3	道路舗装補修計画（案）を策定する。	道路舗装・補修計画（案）を策定する。
	2-4	路面性状データウェブ閲覧システムを作成する。	路面性状データウェブ閲覧システムを作成する。
	2-5	PMS ウェブ運用システムを作成する。	PMS ウェブ運用システムを作成する。
	2-6	ウェブ路面性状調査データ分析システムを作成する。	ウェブ舗装路面性状調査データ分析システムを作成する。
	2-7		ウェブ舗装モニタリング・システムを作成する。
活動目標 3; 道路施設の健全度判定及び補修工法選定技術を改善し、技術仕様を作成する	3-1	パイロット補修工事を実施するとともに、モニタリング及び評価する。	パイロット補修工事を実施するとともに、モニタリング及び評価する。
	3-2	道路施設点検ガイドラインをアップグレードする。	道路施設点検ガイドラインをアップグレードする。
	3-3	道路整備マニュアルをアップグレードする。	道路整備マニュアルをアップグレードする。
	3-4		高速道路整備管理マニュアルを作成する。
活動目標 4; 道路整備の手続きと業務実施体制を明確にする	4-1	道路整備に係る責務の割り当てに関する修正計画を作成する。	道路整備に係る責務の割り当てに関する修正計画を作成する。
	4-2	道路整備における行政手続きに係る修正計画を作成する。	道路整備における行政手続きに係る修正計画を作成する。
活動目標 5; 研修計画の策定と研修実施支援する	5-1	研修案を作成する。	研修案を作成する。
	5-2	研修実施を支援する。	研修実施を支援する。
	5-3	PR 活動を実施する。	PR 活動を実施する。

2.3 プロジェクトの達成状況

プロジェクトの達成状況について、以下の視点から評価を行った。

- 1) アウトプット及び指標
- 2) プロジェクト目的及び指標
- 3) プロジェクト成果の達成状況
- 4) 人材育成の達成状況

2.3.1 アウトプット及び指標（プロジェクト終了時の達成状況）

本プロジェクトの PDM に示されたプロジェクトアウトプットの達成状況を表 2.3-1 に、また、指標の達成状況を表 2.3-2 に取りまとめた。更に、活動の達成状況を

表 2.3-3 に取りまとめた。

表 2.3-1 プロジェクトアウトプット達成状況の評価

プロジェクトアウトプット	達成状況
1. 舗装維持管理データの作成技術が向上する	<p>Achieved</p> <p>PMS データ入力システムを作成し、DRVN ウェブシステム上に設置した。これにより、地方組織の RMB や SB が、インターネットを利用して PMS データを使用することが可能となった。</p> <p>RMB 及び Sub-Bureau (SB)スタッフにより、データ入力システムの試行及び以下に示すデータベースの作成が実施された。データベースは、舗装状況調査の実施延長 6,200km の道路網をカバーしている。この作業により、RMB および SB のスタッフが、PMS データ入力システムを十分活用できることが確認された。</p> <ul style="list-style-type: none"> ● 道路資産データベース ● 補修履歴データベース ● 交通量データベース ● 道路行政データベース <p>プロジェクトの第 1 フェーズで JICA から供与された舗装路面性状調査車両を用いて、選択された 6,200 km の国道を対象に、路面性状調査を実施するとともに、下記の路面性状調査データベースを作成した。調査は、DRVN の道路維持管理センター (RTC-Central) が実施した。これにより、RTC-Central が舗装状況調査を実施するのに十分な能力を備えていることが確認された。</p> <ul style="list-style-type: none"> ● 路面性状調査データベース(DB) <p>(1) DRVN が作成したプロジェクト終了後の責務分担及び行政手続きの見直しに関する行動計画は、以下の通りである；</p> <ol style="list-style-type: none"> 1) RMB が 6,200km 道路網を対象に本プロジェクトが作成した道路資産 DB を、各 RMB 管内の全路線を対象とした DB へとアップグレードすることを計画している。このため、責務分担を見直し、RMB がデータ入力を担当し、また、RTC-Central が路面性状調査を継続して実施できるようにする。更に、現在稼働中の世銀プロジェクト(VRAMP)を利用して、全国 52 の地方人民委員会(PPC)交通部 (PDOT)が管理する 13,000km 道路網の道路資産 DB 及び DRVN 高速道路部 (Vietnam Expressway Administration) が管理する高速道路の道路資産 DB を作成する計画である。 2) 路面性状調査を定期的実施するため、路面性状調査車両を 1 台あるいは 2 台次年度以降に購入することを計画する。購入予算は VRAMP の中で確保する。この車両を利用し、全国の道路網を対象に、定期的に路面性状調査を実施する計画である。 3) DRVN が管理する全ての国道の路面性状調査が終了した段階(2020 年頃)で、道路メンテナンスファンドの適用を MOT に申請し、以降の路面性状調査を実施する。 4) プロジェクトが作成した PMS は VRAMP が開発中の道路資産管理システム(RAMS)に編入する。
2. PMS がアップグレードされ、舗装補修計画の作成に試行的に適用される。	<p>Achieved</p> <p>(1) アップグレードし DRVN ウェブ上で運用可能となった PMS を使用して、DRVN の計画投資部(DPI)自ら舗装補修計画 (案)を作成した。プロジェクトチームはこの作業の技術支援を行った。DPIはこの計画案</p>

プロジェクトアウトプット	達成状況
	<p>の他に、在来手法（マニュアル）により舗装補修計画（案）を同時に作成した。両方の計画案は実際の国道を利用して対比され、計画の妥当性が検証された。</p> <p>(2) DRVN が作成したプロジェクト終了後の行動計画は、以下の通りである。</p> <p>1) DRVN は、PMS システムの試行運用を続け、全 RMB が管理する国道を対象に、年間あるいは5年間の舗装補修予算計画及び維持修繕計画を策定するとともに、現場検証を実施する予定である。</p> <p>2018 には、舗装路面性状調査を実施した全 RMB の管理国道を対象に、2019 年度用の舗装補修計画の作成を試行する。</p> <p>2) 2019 年には、RMB 及び PDOT が管理する国道を対象に、2020 年度用の舗装補修計画の作成を試行する。なお、PDOT の国道については、VRAMP で路面性状調査を実施した国道を計画作成の対象とする。</p> <p>3) 国道管理を実施している PDOT（52 機関）及び高速道路部(VEA)を対象に、PMS 研修を実施する。</p> <p>4) 将来的には、PMS を VRAMP で開発中の道路アセットマネジメントシステム（RAMS）に編入する。</p>
<p>3. 道路施設の健全度判定と補修工法選定が改善され、技術仕様が作成される</p>	<p>Achieved</p> <p>(1) 地方の技術者に道路維持管理に係る基本技術情報を提供するためマニュアル及びガイドラインを作成した。作成したマニュアル及びガイドラインは、情報提供のみならず、技術基準の改訂にも適用することが出来る。</p> <ul style="list-style-type: none"> ● 道路施設点検ガイドライン ● 道路維持管理マニュアル ● 高速道路維持管理マニュアル <p>(2) プロジェクトが作成したマニュアル及びガイドラインを基に、DRVN は独自の道路施設点検維持管理マニュアルを作成した。作成に当たっては、DRVN 道路維持管理部(DMM)、RMB I、運輸通信大学(UTC)等の専門家が参加した。作成されたマニュアルは、2017 年 12 月 20 日に法的手続き（Decision No.4204/QD-TCDBVN）を経て、DRVN 正規のマニュアルとして承認され発効した。</p> <p>(3) DRVN が作成したプロジェクト終了後の行動計画は、以下の通りである。</p> <p>1) プロジェクト成果を基に、道路維持管理契約のための仕様書を作成する。</p> <p>2) プロジェクト成果を基に、橋梁点検ガイドラインを作成する。</p> <p>3) プロジェクト成果を基に、高速道路維持管理技術基準を作成する。</p> <p>4) プロジェクトが実施したパイロット補修工事の成果を基に、道路維持管理技術の調査、設計、施工及びアクセプタンスに係る技術基準を作成する。</p>

プロジェクトアウトプット	達成状況
4. 道路維持管理の責任分担と行政手続きが明確になる	<p>Partly Achieved</p> <p>(1) プロジェクト成果実現のための責務分担及び行政手続きの改善に関する提案を DRVN に提出した。</p> <p>(2) プロジェクトが作成した提案を基に、DRVN は責務分担及び行政手続きの改善のための行動計画を作成した。行動計画の概要は以下の通りである。</p> <ol style="list-style-type: none"> 1) プロジェクトの提案を基に、既存の Road Asset Management Steering Committee に、PMS 運用管理グループを設置し、舗装改良計画作成に関係する一連の作業の管理を行う。 2) 2018 年に DRVN の Decision (通達) を発布し、2019 年から施行することで、PMS 運用管理を DRVN の活動の一部として位置付ける。Decision は、将来的には MOT の Circular (施行規則) に格上げし、PDOT の舗装補修計画の作成にも適用する。 3) 組織規程の改良を実施する。一例として、舗装補修履歴の作成や PMS DB を基にした維持管理計画作成の義務付けなどを、維持補修契約のアクセプタンスの条件として追加する。
5. 研修機能及び広報機能が強化される。	<p>■ 研修</p> <p>Partly Achieved</p> <p>(1) 技術移転セミナー (2 回)、ワークショップ及び OJT (4 都市で、各 5 回)、PMS 及び路面性状調査に係る集中研修 (3 回、5 回) を、DRVN と協力し、実施した。研修生の累計は、約 1,500 人に上った。研修の実施に当たっては、各回 DRVN の 2 人の担当部長及び大学講師が参加し、研修の運営管理のノウハウの習得が実施された。</p> <p>(2) プロジェクト終了時及び将来 (3 年後) の道路維持管理研修の提案を作成し、DRVN に提出した。</p> <p>(3) プロジェクトの提案を基に、RTC-Central が主体となって、路面性状調査に関わる研修が実施され、研修には、RMB に所属する技術事務所 (RTC) の職員が参加した。</p> <p>(4) プロジェクトの提案を基に、DRVN はプロジェクト成果実現のための行動計画を作成した。行動計画の概要は以下の通りである。</p> <ol style="list-style-type: none"> 1) 研修調整機関を選定し、DRVN、RMB 及び SB 職員の能力向上のためにプロジェクト終了後の研修を実施する。 2) 研修の実施に当たっては、DRVN の専門職員のほか、大学関係者、他研究機関の専門家との協力体制を構築する。 <p>■ 広報活動</p> <p>Achieved</p> <p>(1) DRVN は、プロジェクトから資金及び技術支援を受けて、以下に示す広報資料の作成を実施した。</p> <ul style="list-style-type: none"> ● 省庁ベル組織に対する広報資料として、道路維持管理年度報告書 2016 及び広報ビデオを作成 ● 道路維持管理技術の開発を行っている民間セクターに対する広報活動を目的に、技術情報登録のためのウェブシステムを構築した。

プロジェクトアウトプット	達成状況
	<p>システムを活用することで、民間セクターは自社の開発技術を DRVN に広報することができ、また、DRVN は最先端の民間開発技術情報を入手することが可能となる。</p> <ul style="list-style-type: none"> • 道路維持管理の重要性を理解してもらうとともに、維持管理に協力してもらうため、一般国民に対する広報のための道路維持管理パンフレットを作成した。 <p>(2) プロジェクトの終盤に実施したセミナーやワークショップを利用し、参加者に上記資料を配布し、広報活動を行った。</p> <p>(3) プロジェクトの提案を基に、DRVN はプロジェクト成果実現のための行動計画を作成した。行動計画の概要は以下の通りである。</p> <ol style="list-style-type: none"> 1) プロジェクト終了後は、DRVN は2年おきに年度計画書を作成し、広報活動を行う。 2) 開発した道路管理技術情報ウェブ登録システムを利用し、DRVN が必要としている先端技術をウェブ上で広報し、民間セクターからの積極的な情報登録を求める。

表 2.3-2 アウトプット指標達成状況の評価

アウトプット指標	達成状況
<p>1-1. PMS システム開発が完了する。</p>	<p><u>Achieved</u></p> <p>(1) PMS データ入力システムはインターネットウェブで使用できるように開発され、DRVN の情報システムに設置された (www.pms.drvn.gov.vn)。これにより、RMB 及び SB 職員でも利用することが可能となった。成果品は次の通り。</p> <ul style="list-style-type: none"> • PMS データ入力ウェブシステム • 運用マニュアル及びビデオクリップ
<p>1-2. PMS で利用する道路構造 DB・補修履歴 DB・舗装路面性状 DB が完成する</p>	<p><u>Achieved</u></p> <p>(1) 開発した PMS データ入力ウェブシステムを利用して、全国の RMB 及び SB 職員が、メンテナンス履歴データ及び交通量データの入力を実施した。</p> <p>(2) RMB I, II, III 及び IV が管理する国道 (6,200 km、12,606 Lane-km) を対象に、JICA がフェーズで供与した舗装路面性状調査車両を利用して、現地調査を実施した。調査は RTC-Central がプロジェクトシームの技術指導の下、実施した。</p> <p>(3) 入力された以下に示す PMS データ及び路面性状調査データは、DRVN の情報管理システムに PMS データベースとして保存した。データは、DRVN 管内の国道の全延長の約 60%に相当する。</p> <ul style="list-style-type: none"> • 道路アセット DB • メンテナンス履歴 • 交通量 DB • 路面性状調査 DB <p>(4) DRVN, RMB 及び SB は、残りの国道区間について、上記の DB の作成を</p>

アウトプット指標	達成状況
	継続する予定である。
2. PMS を用いた舗装道路維持管理計画（案）（3年、単年度）が策定される	<p><u>Achieved</u></p> <p>(1) PMS のアップデートを実施し、基本モジュールである、データセット作成モジュール、舗装劣化予測モジュール、予算計画モジュール及び舗装補修計画作成モジュールのシステム開発を完了した。開発した PMS ソフトウェアグループは以下の通りである。</p> <ul style="list-style-type: none"> ● ウェブ運用 PMS(www.pms.drvn.gov.vn) ● ウェブ運用舗装モニタリングシステム(www.pms.drvn.gov.vn) ● ウェブ運用路面性状調査データ閲覧システム (www.pms.drvn.gov.vn) ● ウェブ運用路面性状調査データ分析システム(www.pms.drvn.gov.vn) <p>(2) DRVN の計画投資部(DPI)は、プロジェクトチームの協力の下、PMS システム基本モジュールを全て試行し、2018 年度用の舗装補修計画（案）を作成した。</p> <p>(3) PMS を試行して作成した舗装補修計画（案）は、DPI がマニュアルで作成した舗装補修計画（案）との比較評価を行うとともに、実際の国道（NH46 号線）で計画の妥当性検証を実施した。</p> <p>(4) DRVN は、4RMB 管内の全ての国道を対象に路面性状調査を実施するとともに、PMS を適用して 2019 年度用の舗装補修計画（案）を作成する予定である（本プロジェクトでは、選定された 6,200km の国道を対象に計画作成を行った）。</p>
3. 道路維持管理ガイドライン、および道路維持補修マニュアルの最終案が作成される。	<p><u>Achieved</u></p> <p>(1) 道路点検・維持管理に関わる以下のガイドライン及びマニュアルを作成した。</p> <ul style="list-style-type: none"> ● 道路施設点検ガイドライン ● 道路維持管理マニュアル ● 高速道路維持管理マニュアル <p>(2) DRVN はプロジェクトの成果を基に、独自の情報を加えて国道維持管理手続きマニュアルを作成した。マニュアルは、DRVN 通達（Decision No. 4204/QD-TCDBVN ）により、2017 年 12 月 20 日に施行された。</p>
4. アウトプット 1～3 の実施方法と責任分担の改正案ができる。	<p><u>Partly Achieved</u></p> <p>(1) プロジェクト成果実現のための、DRVN 組織の責務分担見直し、行政手続き変更に関する提案書を DRVN に提出した。</p> <p>(2) 提案に基づき、DRVN は責務分担見直し及び行政手続き変更行動計画（案）をの作成し、第 4 回 JCC の席上で報告を行った。</p>
5-1. PMS 研修が DRVN によって定期的実施される	<p><u>Achieved</u></p> <p>(1) PMS 技術移転研修（セミナー、ワークショップ及び OJT）を DRVN とプロジェクトチームが共同で実施した。</p> <p>(2) 技術移転研修には、累計で約 1,500 人の研修生が参加した。研修の実施に当たっては、プロジェクト終了後の研修あるいは将来の研修のために、DRVN 職員及び大学関係者に講義を行ってもらうなど、講師の育成にも重点を置いた。</p>
5-2. DRVN により広報活動	<p><u>Achieved</u></p>

アウトプット指標	達成状況
が実施される。	<p>(1) プロジェクトチームの支援の下、DRVN が主体となって、広報活動資料の作成を行った。広報資料作成は、DRVN では歴史的に初めての取り組みと言われている。作成した広報資機材は、以下の通りである。</p> <ul style="list-style-type: none"> ● 省レベル機関への広報のための、道路維持管理年度レポート 2016 ● 一般国民を対象にした広報のための、道路維持管理パンフレット ● 道路維持管理ビデオクリップ ● 道路維持管理技術ウェブ登録システム (www.tis.drvn.gov.vn)

表 2.3-3 活動の達成状況の評価

活動	達成状況
1-1. PMS データベースを作成する	<p><u>Achieved</u></p> <p>(1) 以下に示すデータベースを作成し、DRVN の情報ネットワークに設置した</p> <ul style="list-style-type: none"> ● 道路アセット DB ● 補修履歴 DB ● 交通量 DB ● 道路行政 DB
1-2. RMBII, III, IV 管内の道路を選定し、舗装性状調査を実施する。	<p><u>Achieved</u></p> <p>(1) RMB I, II, III 及び IV が管理する国道から 6,200km を選定し、路面性状調査を実施した。</p> <p>(2) 上記区間の路面性状調査 DB を作成した。</p> <p>(3) RTC-Central に対し路面性状調査の技術移転を実施した。</p>
1-3. PMS データ入力システムをアップグレードする	<p><u>Achieved</u></p> <p>(1) DRVN のウェブ上で操作できる PMS データ入力システムを作成し、操作マニュアルとともに DRVN の情報ネットワークに設置した。</p> <ul style="list-style-type: none"> ● PMS データ入力システム ● ソフトウェア操作マニュアル
2-1. PMS ソフトウェアを改良する。	<p><u>Achieved</u></p> <p>(1) フェーズ1 で作成したオフラインの PMS を、DRVN のウェブ上で操作できるオンラインシステムへとアップグレードした (2-5 参照)。</p>
2-2. 入力データを変換し、PMS データセットを作成する	<p><u>Achieved</u></p> <p>(1) PMS DB のデータを変換し、PMS データセットを作成するソフトウェアを作成し、PMS ソフトウェアに組み込んだ。</p>
2-3. RMBI, II, III, IV の舗装修理計画 (案) を策定しつつシステム検証を行う	<p><u>Achieved</u></p> <p>(1) PMS を試行し、各 RMB の路面性状調査データのある国道を対象に、予算計画及び舗装補修計画 (案) を作成した。</p>

活動	達成状況
	(2) PMS により作成された舗装補修計画と在来のマニュアル手法で作成した舗装補修計画を比較することで、システムの適合性検証を実施した。
2-4. ウェブ上で路面性状データを閲覧できるシステムを作成する	<p><u>Achieved</u></p> <p>(1) 舗装路面性状調査データのウェブ閲覧システムを開発し、DRVN の情報ネットワークに設置した。</p> <ul style="list-style-type: none"> ● ウェブ閲覧システム ● ソフトウェア操作マニュアル
2-5. ウェブ上でPMS操作を可能とするシステムを作成し、単年度および5年間の舗装補修計画を策定する	<p><u>Achieved</u></p> <p>(1) フェーズ1で作成したPMSを、DRVNのウェブから操作し、単年度あるいは5年間の舗装補修計画が作成できるようオンラインシステムにアップデートし、DRVNの情報ネットワーク上に設置した(www.pms.drvn.gov.vn)。設置した資料は次の通り。</p> <ul style="list-style-type: none"> ● PMS ウェブシステム <ul style="list-style-type: none"> - PMS データセット作成モジュール - 舗装劣化予測モジュール - 予算シミュレーションモジュール - 舗装補修計画作成モジュール ● ソフトウェア操作マニュアル
2-6. 路面性状調査データ分析システムを作成する	<p><u>Achieved</u></p> <p>(1) 路面性状調査データを DRVN のウェブ上で分析するウェブ分析システムを作成し、DRVN 情報ネットワーク上に設置した(www.pms.drvn.gov.vn)。設置した資料は次の通り。</p> <ul style="list-style-type: none"> ● 路面性状調査データ分析システム ● ソフトウェア操作マニュアル
2-7. ウェブ上で舗装路面性状調査データをモニタリングできるシステムを構築する(PMoS)	<p><u>Achieved</u></p> <p>(1) DRVN のウェブ上で舗装路面をモニタリングするシステム(PMoS)を作成し、DRVN 情報ネットワーク上に設置した。設置した資料は次の通り。</p> <ul style="list-style-type: none"> ● ウェブ舗装モニタリングシステム(PMoS) ● ソフトウェア操作マニュアル
3-1. 新技術を導入した舗装・橋梁補修パイロット工事を実施するとともに、工事の性能をモニタリング・評価する。	<p><u>Achieved</u></p> <p>(1) JICA と DRVN との協力の下、舗装及び橋梁パイロット補修工事が終了した。</p> <p>(2) パイロット補修工事のモニタリング調査結果を検証し、点検、診断、補修計画作成、補修工法などの注意点を今後の指針として報告書に取りまとめた。</p> <ul style="list-style-type: none"> ● 舗装及び橋梁パイロット補修工事総括報告書
3-2. 道路施設点検ガイドラインをアップデートする	<p><u>Achieved</u></p> <p>(1) 現場で道路維持管理業務に従事している RMB 及び SB 職員を対象に、道路施設点検技術情報を提供するため、フェーズ1で作成した道路施設点検ガイドラインをアップグレードした。</p> <ul style="list-style-type: none"> ● 道路施設点検ガイドライン ● 道路施設損傷フォトアルバム

活動	達成状況
3-3. 道路維持管理マニュアルをアップデートする	<p><u>Achieved</u></p> <p>(1) 現場で道路維持管理業務に従事している RMB 及び SB 職員を対象に、道路維持補修技術情報を提供するため、フェーズ1 で作成した道路維持管理マニュアルをアップグレードした。</p> <p>(2) 道路維持管理マニュアル</p>
3-4. 高速道路維持管理マニュアルを作成する	<p><u>Achieved</u></p> <p>(1) 現場で高速道路維持管理業務に従事している RMB 及び SB 職員を対象に、高速道路維持補修技術情報を提供するため、高速道路維持管理マニュアルを作成した。</p> <p>(2) 高速道路維持管理マニュアル</p>
4-1. プロジェクト成果実現のために、DRVN の責務分担改善に関する提案を作成する	<p><u>Achieved</u></p> <p>(1) プロジェクト成果を実現するために必要となる DRVN 関連組織の責務分担の改善に関し、提案書を作成し、DRVN に提出した。</p>
4-2. プロジェクト成果実現のために、DRVN の行政手続き改善に関する提案を作成する	<p><u>Achieved</u></p> <p>(1) プロジェクト成果を実現するために必要となる DRVN の道路維持管理行政手続きの改善に関し、提案書を作成し、DRVN に提出した。</p>
5.1. 研修計画(案)及び研修資料を作成する	<p><u>Achieved</u></p> <p>(1) プロジェクト期間中の研修計画(案)を作成し、DRVN に提出した。</p> <ul style="list-style-type: none"> ● プロジェクト期間中の技術移転研修計画(案) <p>(2) プロジェクト終了後および将来の研修計画(案)及び研修資料を作成し、DRVN に提出した。</p> <ul style="list-style-type: none"> ● プロジェクト終了後の研修計画(案) ● 将来の道路維持管理研修(案) ● 自習用 PMS ビデオクリップ <ul style="list-style-type: none"> - 路面性状調査データ閲覧システム用ビデオクリップ - データ入力システム用ビデオクリップ - DRVN 維持管理情報登録システム(TIS)用ビデオクリップ - PMS 全体概要説明用ビデオクリップ(PMS-1) - PMS データセット作成用ビデオクリップ(PMS-2) - 舗装劣化評価用ビデオクリップ(PMS-3) - 舗装補修予算計画作成用ビデオクリップ(PMS-4) - 舗装補修計画作成用ビデオクリップ(PMS-5) - 舗装モニタリングシステム(PMoS)用ビデオクリップ(PMS-6) - 路面性状調査データ分析用ビデオクリップ(PMS-7) - 舗装路面性状調査用ビデオクリップ(PMS-8)
5.2. 研修実施を支援する	<p><u>Achieved</u></p> <p>(1) プロジェクト期間中に実施したセミナー、ワークショップ、OJT、技術移転集中研修及び本邦研修の実施を支援した。</p>
5.3. 広報活動を実施する。	<p><u>Achieved</u></p> <p>(1) DRVN が実施する広報活動の資料作成を支援した。成果品は次の通り。</p> <ul style="list-style-type: none"> ● DRVN 年度報告書 2016 <ul style="list-style-type: none"> - 越語版 5,000 部、英語版 500 部 ● 道路維持管理説明用ビデオクリップ <ul style="list-style-type: none"> - DVD 100 部

活動	達成状況
	<ul style="list-style-type: none"> ● 道路維持管理技術情報ウェブ登録システム ● 道路維持管理説明用パンフレット 2016 の作成 <ul style="list-style-type: none"> - 越語版 8,000 部、英語版 2,000 部

2.3.2 プロジェクト目標及び指標（プロジェクト終了時の達成状況）

プロジェクト目標の達成状況を表 2.3-4 に取りまとめた。

表 2.3-4 プロジェクト目標達成状況の評価

プロジェクト目標	達成状況
全国国道網の道路維持管理の実施能力が強化される	<p><u>Almost Achieved</u></p> <p>PDM に示された指標 (2) については既に達成され、また、指標 (1) 及び (2) についても、指標達成のための今後の行動計画が具体化されていることから、ほぼ達成されたものと判断される(下表参照)。</p>

表 2.3-5 プロジェクト目標指標の達成状況の評価

目標達成指標	達成状況
1. PMS を適用して RMB I, II, III, IV の舗装道路維持管理計画(案)が作成される。	<p><u>Almost Achieved</u></p> <p>実施した路面性状調査データ及び開発した PMS を適用して、DRVN 職員により舗装補修計画(案)の作成が試行された。また、RMB II の国道を利用して、作成された補修計画(案)を実際の現場を利用した検証が行われ、その結果、PMS は国道の補修計画作成に適用できることが立証された。DRVN は路面性状調査、PMS データ入力及び PMS を用いた舗装補修計画の作成について、全国の国道に展開するため、組織の責務分担及び維持管理行政手続きの強化を行う予定である。</p>
2. 道路施設の点検および維持補修工事の基本ルール(対象構造物/頻度/手法/健全度判定手法/補修工法の選定方法/施工および施工管理)が策定される	<p><u>Achieved</u></p> <p>プロジェクトで作成した道路施設点検ガイドライン及び道路維持管理マニュアルを基に、DRVN は契約関係上違法等の情報を追加し、新たに道路維持管理手続きマニュアルを作成した。作成したマニュアルは、2017 年 12 月 20 日に、DRVN 通達 (Decision No. 4204/QD-TCDBVN) により正式に DRVN のマニュアルとして公布された。</p>
3. 道路維持管理の実施体制が構築される。	<p><u>Almost Achieved</u></p> <p>プロジェクトの提案をベースに、DRVN は成果実現のための組織の責務分担や維持管理手続きを見直すとともに、法制度化に向けた行動計画作成作業を実施中である。</p>

2.3.3 技術協力成果品総括

表 2.3-6 に技術協力成果品を取りまとめた。成果品の様式は以下の通りである。

(1) PMS 関連ソフトウェア

道路舗装管理のために開発した PMS 及びデータ処理関連ソフトウェア及び民間セクターに対する広報活動用に作成した道路維持管理技術情報登録システムは、全て DRVN IT センターが管理する情報ネットワークに設置された。

(2) レポート

レポート構成は以下の通りである。

- Volume-1: 報告書
- Volume-1.1: 報告書添付資料
- Volume-2: 舗装路面性状調査実施マニュアル及び PMS システム操作マニュアル
 - Volume 2.1: 舗装路面性状調査マニュアル
 - Volume 2.2: PMS ソフト操作マニュアル
- Volume-3: 道路点検管理ガイドライン及びマニュアル
 - Volume 3.1: 道路施設点検ガイドライン
 - Volume 3.2: 道路日常管理マニュアル
 - Volume 3.3: 高速道路維持管理マニュアル
 - Volume 3.4: 道路施設損傷アルバム
- Volume-4: 研修資料
- Volume-5: 広報活動資料

(3) 広報活動資料

作成した広報活動資料は文書手続きを経て、DRVN に移管された。資料の一部は、2017 年 11 月 29 日に開催された第 2 回セミナーの参加者に配布された。

- DRVN 年度報告書 2016 年版（越語版 5,000 部、英語版 500 部）
- 道路維持管理説明用パンフレット 2016 年版（越語版 8,000 部、英語版 2,000 部）
- 道路維持管理広報用ビデオクリップ DVD 100 部

表 2.3-6 技術協力成果品一覧

活動	技術協力成果品	成果品フォーマット
活動-1	(1) PMS データ入力ウェブシステム	DRVN サーバー
	(2) PMS データ入力システム操作マニュアル	システムユーザーマニュアル (Vol.2.2)
	(3) 舗装路面性状調査	DRVN サーバー
	PMS データベース - 道路アセットデータベース - 道路舗装補修履歴データベース - 路面性状調査データベース - 交通量データベース - 道路行政データベース	DRVN DB サーバー
活動-2	(1) 道路舗装管理ウェブシステム(PMS) - PMS データセット作成モジュール - 道路舗装劣化予測システム - 予算シミュレーションモジュール - 舗装補修計画作成モジュール	DRVN サーバー
	(2) 路面性状調査データウェブ閲覧システム	

活動	技術協力成果品	成果品フォーマット
	(3) 道路舗装ウェブモニタリングシステム(PMoS)	報告書 (Vol.1)
	(4) 路面性状調査データウェブ分析システム	
	(5) 道路補修予算計画及び単年度/5年舗装補修計画 - RMB I, II, III, IV 道路ネットワーク対象	
	(6) PMS ウェブシステム操作マニュアル	
活動-3	(1) 道路施設点検ガイドライン - 道路施設損傷フォトアルバム	ガイドライン (Vol.3.1) フォトアルバム (Vol.3.4)
	(2) 道路日常維持管理マニュアル	マニュアル (Vol.3.2)
	(3) 高速道路維持管理マニュアル	マニュアル(Vol.3.3)
	(4) 道路舗装/橋梁補修パイロットプロジェクト報告書	報告書 (Vol.1)
活動-4	(1) プロジェクト成果実現のための組織・維持管理手続き改善提案書	報告書 (Vol.1)
活動-5	(1) プロジェクト期間中の研修計画書 (2) プロジェクト終了後の研修計画書 (3) 将来の道路アセットマネジメント研修計画書	報告書 (Vol.1)
	(4) PMS e-ラーニングビデオクリップ(e-learning) - 路面性状調査データ閲覧システム用ビデオクリップ - データ入力システム用ビデオクリップ - DRVN 維持管理情報登録システム(TIS)用ビデオクリップ - PMS 全体概要説明用ビデオクリップ(PMS-1) - PMS データセット作成用ビデオクリップ(PMS-2) - 舗装劣化評価用ビデオクリップ(PMS-3) - 舗装補修予算計画作成用ビデオクリップ(PMS-4) - 舗装補修計画作成用ビデオクリップ(PMS-5) - 舗装モニタリングシステム(PMoS)用ビデオクリップ(PMS-6) - 路面性状調査データ分析用ビデオクリップ (PMS-7) - 舗装路面性状調査用ビデオクリップ(PMS-8)	DRVN サーバー
活動-5	(1) DRVN 年度報告書 2016 年版	DRVN 年度報告書 2016
	(2) 道路維持管理広報用ビデオクリップ	DVD
	(3) 道路維持管理技術情報登録システム(TIS)	DRVN サーバー
	(4) 道路維持管理説明用パンフレット 2016 年版	道路維持管理説明用パンフレット 2016

2.3.4 人材育成プログラム総括

本プロジェクトは、DRVN 及び地方局の職員を対象に、多くの人材育成プログラムを実施した。人材育成では、地方で実施するワークショップ、OJT あるいは集中研修などによる、地方局職員に対するプロジェクト成果の技術移転に重点が置かれた。表 2.3-7 には研修プログラム一覧を示した。

表 2.3-7 研修プログラム

研修方法	研修対象	研修講師	場所	日程・参加者人数
セミナー (2回)	道路維持管理関係省庁レベル機関の職員対象 (DRVN, MOT, (PDOTs), ITST and UTC)	DRVN 及び JICA 専門家	Hanoi	1 st : 21 st Oct, 2015 (1日) - 参加者 65人 2 nd : 29 th Nov, 2017 (半日) - 参加者 87人

研修方法	研修対象	研修講師	場所	日程・参加者人数
ワークショップ (5回)	DRVN, RMB, SB 及び RTC の管理職レベル 職員対象	DRVN 職員と JICA 専門家	RMB I, II, III, IV Region	1 st : 20-27 Jul, 2015 (4 cities) - 参加者 207 人 2 nd : 16-23 May, 2016 (4 cities) - 参加者 187 人 3 rd : 31.Oct - 8 Nov, 2016 (4 cities) - 参加者 245 人 4 th : 15-26 May, 2017 (4 cities) - 参加者 228 人 5 th : 22-30 Oct, 2017 (4 cities) - 参加者 256 人
OJTs (5回)	DRVN, RMB, SB 及び RTC 職員対象	DRVN 職員と JICA 専門家	RMB I, II, III, IV Region	1 st : 20-27 Jul, 2015 (4 cities) 2 nd : 16-23 May, 2016 (4 cities) 3 rd : 31.Oct - 8 Nov, 2016 (4 cities) 4 th : 15-26 May, 2017 (4 cities) 5 th : 22-30 Oct, 2017 (4 cities)
PMS 集中研修 (2回)	DRVN, RMB, SB 職員 対象	JICA 専門家と IT コンサルタン ト	Hanoi	1 st : 2 Jun, 2017 (参加者 16 人) 2 nd : October-December, 2017
路面性状調査集 中研修 (5回)	RMB, SB 及び RTC 対 象	JICA 専門家	RMB II, III, IV Region	1 st : 4 Nov, 2015 (参加者 12 人) 2 nd : 23 Feb, 2016 (参加者 16 人) 3 rd : 25 Apr, 2016 (参加者 23 人) 4 th : 23-30 Nov, 2017 (参加者 50 人)
本邦研修 (3回)	DRVN, RMB, SB, RTC のマネジメントレベ ル職員対象	国交省, NEXCO 中日本(株), 本州 四国(株), 京都大 学, PASCO, ニチ レキ	Tokyo, Kyoto, Kobe, Japan	1 st : 13 Sep.-19 Sep, 2015 (5 Participants) 2 nd : 26 Sep.-6 Oct., 2016 (10 Participants) 3 rd : 3 Sep.-16 Sep, 2017 (10 Participants)
道路アセットマ ネジメント国別 研修(1 time)	DRVN, RMB, SB の若 手職員対象	東京大学、名古屋 大学、NEXCO 中 日本(株)、本州四国 (株)、PASCO, ニチ レキ	University of Tokyo/ Nagoya, Kobe, Japan	25 Feb.-21 Mar, 2018 (15 Participants)

2.4 PDM 更新履歴

2.4.1 PO 及び PDM

(1) モニタリングシート Version-1 (2015 年 4 月)における更新

R/D で承認された PDM 及び行動計画行程表 (PO) (Version-0) は、DRVN との協議に基づき、プロジェクト開始時に更新され、2015 年 4 月に開催された最初の JCC(第 1 回) において承認された。また、更新された PDM 及び PO を基に作成された WORK PLAN も同時に JCC において承認された。更新内容は以下の通りである。

- Version-0 を基に作成された WORK PLAN では、Activity-2 に分類されていた活動「RMB II, III 及び IV を対象に、舗装路面性状調査を実施する」を Activity-1 に編入することにし、併せて、タイトルを「PMS データ収集及び処理技術の改良」に変更した。

(2) モニタリングシート Version-2 (2015 年 9 月)における更新

PDM 及び PO(Version-1) は、DRVN との協議に基づき、以下に示すように更新され、Version-2 とされた。なお、更新された PDM 及び PO は 2016 年 3 月に開催された第 2 回 JCC において正式に承認された。

- MOT が定めて道路維持管理中期計画(3 年計画) が Prime Minister Decree No.77/2015/ND-CP に より 5 年計画に変更されたことから、PMD/PO の 3 年計画を 5 年計画に変更する。

(3) モニタリングシート Version-3 (2016 年 3 月)における更新

修正は特になし。ただし、2015 年 10 月に作成された PDM 及び PO(案)が第 2 回 JCC において審議され、承認された。

(4) モニタリングシート Version-4 (2016 年 9 月)における更新

DRVN との協議に基づき、PDM 及び PO (Version-3) が更新され、Version-4(案)が作成された。更新(案)の内容は以下の通りである。PDM 及び PO(案)は、2017 年 3 月に開催された第 3 回 JCC において審議され、正式に承認された。

- Activity-2-7 に「道路舗装ウェブモニタリングシステムの作成(PMoS)」を、また、Activity-3-4 に「高速道路維持管理マニュアルの作成」を追加する。

(5) モニタリングシート Version-5 (2017 年 1 月)における更新

修正・追加なし。

(6) モニタリングシート Version-6 (2017 年 3 月)における更新

修正・追加なし。ただし、2016 年 9 月に作成された PDM 及び PO(案)が第 3 回 JCC において審議され、正式に承認された。

(7) モニタリングシート Version-7 (2017 年 9 月)における更新

修正・追加なし。

2.4.2 JICA との契約変更

(1) 第 1 回契約変更 (2016 年 7 月 21 日)

変更箇所は以下の通り。

- 舗装モニタリングシステム(PMoS)のアップグレード
- 高速道路維持管理マニュアルの作成

(2) 第 2 回契約変更 (2018 年 1 月 29 日)

- 道路アセットマネジメント国内研修の追加 (2018 年 2 月 25 日～3 月 21 日)

2.5 その他

(1) 環境社会への配慮

- 適用無し。

2.5.1 ジェンダーイシュー及び平和構築への配慮

- 適用無し。

3. 共同レビュー結果

3.1 DAC 評価基準に基づいた評価結果

経済協力開発機構（OECD）下の開発援助委員会（DAC）は、開発援助プロジェクト評価のための5つの評価基準を作成した。具体的には、妥当性、効率性、効果、インパクト及び持続性である。プロジェクトのアウトプットはDAC 評価基準に従って評価される。以下は、その要約となっている。

(1) 妥当性

2008年に策定された社会経済開発戦略（2010－2015）との整合性を保つべく、運輸省（MOT）は、2020年までのベトナムにおける交通インフラ整備戦略を設定した。同戦略の設定以降、首相の指導の下、当該戦略は定期的、部分的に変更されている。特に、2013年に承認された変更は、先進技術の導入、技術基準の改定、仕様、及び規範に関する方針が記されている。2013年1月、MOTは、長期間懸案事項であった道路整備基金の制度化を果たした。その結果、65%の道路整備基金が国道に、また35%が地方道に、それぞれ割り当てられた。よって、現時点では、申請額の40%のみが確保された2012年の道路整備予算より多くを確保できる見込みである。

2013年3月、MOTは、国家高速道路システムの維持管理に係る包括的刷新のための計画を策定した。当該計画は、道路設備の耐久性増化と同時に、安全及び道路交通の効率化を図るべく、国道整備の質を向上させることを目的としている。

更に、適切な整備予算配分を受けるべく、DRVNはあらゆる整備計画過程を体系化することが求められている。また、ベトナム国監査により類似の条件がDRVNに課せられている。

従って、整備手順マニュアルに明記されているように、データ収集処理技術、計画システム及び現場での標準的な整備活動の実施に係るシステム化による道路整備のPDCAサイクル要件を満たすために開発された本プロジェクトのアウトプットは、ベトナムにおける社会経済開発戦略、国道システムの維持管理に係る包括的な改修計画、道路整備の法規及び実践の観点からの昨今の要求に関して大いに妥当性がある。

一方、DRVNは、過去にHDM-4、RoSY BASE、RoSY PLANなどの道路管理や保守システムの導入を試みたが、技術移転が不十分なために成功し得なかった。本件に鑑み、JICA技術協力スキーム下の本プロジェクトの実施は、プロジェクトアウトプット及び開発された技術を効果的に移転すべく「共に働き、共に生産する」といったJICA技術協力プロジェクト方針に沿っている点において妥当性が高い。

(2) 効率性

プロジェクト対象期間は38ヶ月と計画されていたが、省庁間の戦略的イノベーション創造プログラム（SIP）である、JICAと東京大学が共同で組織する「道路アセット管理」に係る国別研修（本邦研修）に関する調整等のため、1ヶ月間延長された。

当初、プロジェクト完了は2018年3月末に設定されていた。しかしながら、2018年2月25日から3月21日まで国別研修が予定されたため、プロジェクト期間は2018年4月28日まで延長された。また、当初計画されたパイロット補修工事を除く全てのプロジェクト活動は、成果を含めて計画どおり完了した。日本から輸出されたパイロット補修工事用資材に係るベトナム政府からの免税証明書の受領遅延のため、当該工事の実施が数ヶ月遅れた。但し、本件はプロジェクトスケジュールにいかなる悪影響も及ぼさなかった。

また、予算に関しては、当該国別研修関連経費を除き、計画予算内で実施された。

4地域で実施された研修、舗装状況調査及びPMS運転に関する集中研修がハノイで行われ、路面性状調査とPMS運用の信頼性が更に向上した。集中研修受講者は、“Post project training”及び“Future training”においてトレーナーを担うことになっており、将来的に効果的且つ効率的な方法で定期研修を提供することができるようになる。

なおDRVNは、大学、研究機関、RTCの協力を得て将来の研修実施に関する行動計画を作成した。このように、全活動が計画されたスケジュールと予算内に完了したことから、プロジェクトの効率性は高いと言える。

(3) 効果

本プロジェクトにおいては、ウェブベース・システム、マニュアルとガイドライン、研修プログラム・教材、PR資料など、道路維持管理に係るDRVN業務に役立つ多くの成果物を作成している。DRVNとの密なる協力の下、以下の6つを開発した。(1) PMSデータ入力システム、(2) データセット配合モジュールを含むPMS計画システム、(3) GISを組み込んだ路面性状データ表示システム、(4) 舗装モニタリング・システム(PMoS)、(5) 舗装データ解析システム(PDAS)、(6) 道路整備技術情報システム。各コンピュータシステムのユーザマニュアルについては、テキスト形式及び操作ビデオクリップの両者が作成された。

プロジェクトは、概ね当初計画に沿って実施された。パイロット工事に関しては、若干の遅延が認められたものの、予算に関する変更は生じなかった。具体的には、ベトナム政府からの免税証明書の受領が遅れたため、パイロット補修工事計画の実施がわずかに遅れた。その他に関しては、全ての見込まれたアウトプットはスケジュールどおり達成された。プロジェクト活動については、中央レベルのハノイ市及び3つの他の地域においてそれぞれ実施された。プロジェクトの実施及び研修プログラムにおいて、多数のDRVN/RMB/SB職員/スタッフ(研修員数:1,401名)が直接関与した。これらの職員/スタッフによるプロジェクトへの関与やアウトプットにより、技術移転が効果的に行われた。

(4) インパクト

道路は次世代に引き継がれる国家資産であり、道路機能は、長期間の道路維持を実現すべく留意する必要がある。道路整備の基本原則は、道路整備の長期にわたる最善の経済を確保するために、整備作業の「正しい作業」、「正しい場所」、「正しいタイミング」を選択することにある。道路整備におけるPDCAサイクルの適応は、道路整備に高いインパクトをもたらす。それは、同サイクルにおける全活動が計画され、また体系的になされ、最終的には資源(人的及び財政的)を最適化することによる。

PDCA サイクルの管理は、効率的で効率的な道路維持管理の要となっている。PDCA サイクルはプロジェクトにしっかりと組み込まれており、それぞれのアウトプットも同サイクルに応じて開発された。PDCA サイクルに関する最新技術（ベトナムで実用可能）も開発された。

更に、MOT は通常、DRVN から提出された維持管理予算の約 60%を承認するといった事実に関し、それは、予算要求作成に係る体系的且つ透明性のある方法の欠如に起因する可能性がある。

敵かつ透明な方法の欠如のためかもしれないという事実である。プロジェクトの下で開発された PMS は、舗装劣化の予測に基づいて、戦略的な予算のシミュレーションと修復作業計画（年間および 5 年間）を策定する DRVN を支援する。本プロジェクト下で開発された PMS は、舗装劣化の予測に基づいて、戦略的な予算のシミュレーションと補修工事計画（年次、5 年間）を策定する DRVN を支援する。従って、PMS のアウトプットは、MOT と MOF の指導者に短期及び長期の予算要件を確信させるのに非常に有益である。また、本プロジェクトでは、DRVN/RMB/SB がそれぞれの管理、運用及び整備工事に活用可能な舗装モニタリング・システム、路面性状データ表示システム及び舗装データ解析システムを含む他の有用なシステムを開発した。PMS システム開発の他、本プロジェクトではマニュアル、ガイドライン、研修及び広報資料についても作成した。

これらのプロジェクトにおける活動やアウトプットにより、ベトナムにおける道路管理と補修工事は、従来から計画的且つ体系的な方法に移行しつつある。これは、ベトナムにおける道路管理や補修工事の近代化への努力の証であり、プロジェクトが与えたインパクトは高いと言える。

(5) 持続性

本報告書の第 4 章 4.1 及び 4.2 に記載のとおり、プロジェクトの現段階（最終）において、DRVN における制度化に着手されつつあることが、本プロジェクトのアウトプットの持続性を確保することにつながっている。持続可能性は技術的、制度的、及び財政的側面から検討されている。

A. 技術的側面

- 本プロジェクトで開発されたアウトプットを活用するための一連の OJT 及び集中研修が本プロジェクトにおいて実施された。DRVN は実際にプロジェクトのアウトプットを実現させるべく、職員（スタッフ）を研修している。また、これらの研修を受けた職員（スタッフ）は、プロジェクトのアウトプットの適用を拡大する際に、新入職員或いは PDOT スタッフに技術訓練を提供することが可能である。
- システム管理に関する研修は、全体のシステム管理、PMS サーバー管理、及び計画システムの様々な条件の設定に直接関わった DRVN 職員（スタッフ）にも実施された。また、関連するシステム設計文書、ユーザー・マニュアル、及び研修資料についても DRVN に提供された。
- 路面性状調査車両及び路面性状調査の管理運営については、RTC-Central が十分対応可能である。RTC-Central は、12,000 車線 km 以上の調査を実施したが、その際、データ品質、タイムスケジュール、更には現場作業の安全性の維持を確保した。
- システム更新とアップグレードの技術支援については、これらのシステムを開発したのと同じ IT 企業を割り当て、DRVN の行動計画にも同じ条項が含まれるようにすることを提

案する。PMS 計画システムの保証期間は 2018 年 12 月までとなっている。従って、システム開発者は、保証期間中に発生したバグなどを修正するものとする。

B. 組織的側面

DRVN は、プロジェクトアウトプットを維持するための行動計画を作成し、2017 年 12 月 6 日に開催された第 4 回 JCC 会議に提出した。DRVN 行動計画には、以下が含まれている。

- DRVN の正式な路面性状データ収集方法としての路面性状調査の標準化と調査作業を、RTC-Central に割り当てる。当該措置により、路面性状データは 3～5 年ごとに収集され、これらのデータは年間、また 5 年（中期）の舗装修繕計画策定に活用する。
- 年間、5 年間の補修計画策定のための公式計画システムとして、PMS を使用して策定される舗装維持計画を公式化する。本取り決めにより、PMS は、年間、5 年間の舗装修繕計画策定のための DRVN 公式計画システムとする。
- プロジェクトで開発された道路施設検査指針と道路維持管理マニュアルに基づいて開発されたメンテナンス手順マニュアルを全職員（スタッフ）に標準化する。これにより、保守手順書はベトナムにおける整備作業の公式（標準）マニュアルとなる。
- “Post Project 及び” Future”の各研修プログラムは、大学、研究機関などと協力して DRVN によって実施される予定である。
- 広報資料は、2018 年から 2 年ごとに作成される。

C. 経済的側面

DRVN は以下のとおり財源管理を行う計画である。

- 全国ネットワークにおける残りの路面性状データ収集は、VRAMP 予算（2020 年まで）を使用して実施
- 道路維持基金による定期路面性状データ収集（VRAMP プロジェクト後）
- VRAMP 予算による追加路面性状調査車両の購入
- 通達 60 によるシステムの保守と管理
- VRAMP 予算下にある RAMS への PMS 統合
- RMB の定期予算による道路目録更新・維持履歴・交通量データ入力

3.2 活動実施やアウトプットに影響を与える主要素

日本からの舗道や橋の修理材料の輸入については、手続きの遅れによりわずかな遅延があった。しかし、その後のプロセスはスムーズに進み、遅延は完全に挽回された。

3.3 プロジェクト・リスク管理結果に係る評価

日本からのパイロット工事用資材輸入に係るベトナム政府による免税証明書発行手続きに関し、多大な遅延が懸念されていた。しかしながら、MOT/DRVN/PMU-3 及び JICA の協力により、他の政府開発援助事業よりもかなり早期に当該証明書が発行された。

3.4 教訓

本プロジェクト実施を通して、以下の教訓を得た。

(2) PMS の一貫した管理

PMS は道路舗装の計画システムであり、先端技術を集約したものである。例えば路面性状調査、PMS データベース、PMS ソフトウェアであり、将来の路面劣化状況を予測し、年次及び5年の維持補修計画を策定する。このため、データ入力、PMS システムの開発、更新、運用を適切な役割分担で実施することが求められる。従って、DRVN が年次及び5年の維持補修計画を策定するための管理委員会（ステアリングコミッティ）を設立して管理することを提案する（「4.3 日本及びベトナムへの提言」を参照のこと）。なお、管理委員会は、IT 企業により技術的支援を得るものとする。

(3) データベース管理

年間/5年間の舗装修繕計画の策定を含む PMS アプリケーションは、PMS データベースの品質に負うところが大きい。不規則なデータまたは低品質のデータは、しばしば PMS の動作に問題を引き起こす。従って、DRVN は、全国道に共通して適用できる PMS データのコーディング規則を標準化することが重要である。

4. プロジェクト後における全体目標の達成見込み

4.1 全体目標達成の見込み

プロジェクトの全体目標（Overall Goal）は、「道路維持管理業務が、PDCA サイクル管理に沿って、中期計画を基に適切に実施される。」ことである。DRVN はプロジェクト成果を基に、2017 年 10 月以降成果実現を目指した行動計画の作成に着手しており、一部の行動は 12 月時点で具体的になりつつある。このことから、プロジェクト終了後数年のうちには、この目標を達成するものと予想される。具体化している行動計画(案)を以下に示す。

- DRVN は道路舗装路面性状調査を正規の調査とする計画で、業務を RTC-Central に委託する方法を検討中である。これにより、DRVN 管理の国道の舗装現況データを 3～5 年間隔で収集し、これを基に中期舗装改良計画を作成することが可能となる。
- DRVN は PMS を適用して作成される道路舗装年度計画及び 5 年計改良計画を、MOT との協議のうえ、DRVN の正規の計画とすることを検討している。
- DRVN は、技術協力の成果を基に、契約手続き情報などを加えて、独自の道路維持管理マニュアルを作成し、2017 年 12 月に法的手続きを行い、全国に配布した。これにより、道路維持管理マニュアルは、DRVN の正規のマニュアルとなった。

以上の行動計画から、DRVN の道路維持管理の世界においても PDCA サイクル管理を軸とした維持管理手法が構築されることは明らかである。

4.2 全体目標達成のためのベトナム側の行動予定及び実施体制

DRVN は技術協力の成果を実現するため、法令手続を経て DRVN、RMB 及び SB の責務分担を見直すことを計画している。

4.3 日本側及びベトナム側の提案

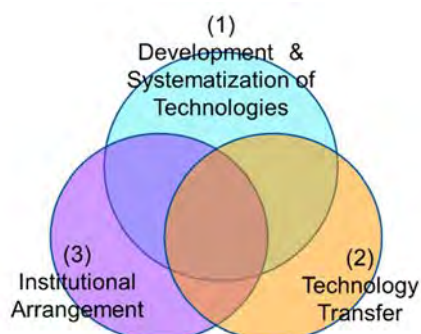
4.3.1 日本側

技術協力プロジェクトの実施期間は短いことから、期間内に技術開発、技術移転および成果実現のための制度の改善を同時に実施することは難しい。特に、精度の改善は、プロジェクトの終盤で開発された技術を見て、実施されるのがふつうであることから、改善計画の作成や実施のための時間的猶予が十分でないことが多い。このことから、日本側に対しては、制度改善の進捗状況のモニタリングを継続するとともに、必要に応じフォローアップを行うことを提案する。

4.3.2 ベトナム側

- (1) 道路維持管理における PDCA サイクル管理を強化するためには、特に、次の 3 要素である： (1) 道路維持管理技術の開発とシステム化、(2) 人材育成プログラムを通じた技術移転の実施および(3) 成果実現のための制度の改善を、バランス良く実施していくことが

重要である。このためには、行動計画を作成するとともに、定期的に見直す必要がある。DRVN においては、早期に行動計画を作成し、また、定期的に見直しすることを提案する。



- (2) PDCA サイクル管理は、道路維持管理の実施手法であることから、PDCA サイクル管理の効果を高めるためには、道路維持管理の様々な活動の中から軸となる活動を選定し、これに焦点を当て、効率化していくことを提案する。

道路舗装改良年度計画及び5か年計画を効率的に作成するためには、PMS 関連業務を一元的に管理するための管理組織として DRVN に PMS ステアリング委員会を創設することを提案する。委員会は、IT 会社（契約ベース）の技術サポートを受け、路面性状調査、PMS データ管理、PMS のシステム改良及び年度計画や5か年計画の作成など業務全体を一元的に関する。図 4.3-1 図 4.3.1 に委員会の組織図を示した。

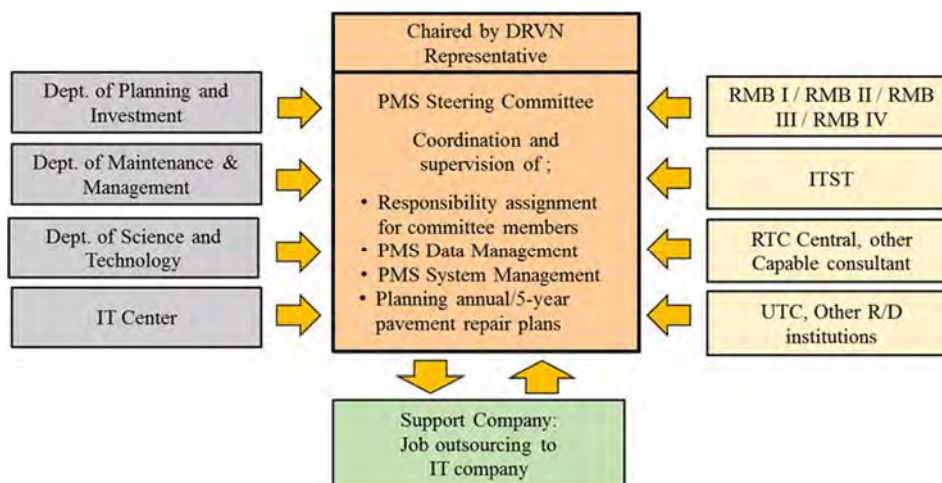


図 4.3-1 PMS ステアリング委員会

- (3) 本プロジェクトは、DRVN 及び DRVN 傘下の組織である RMB 及び SB 職員の道路維持管理能力向上を第一優先として取り組んできた。このため、技術協力成果の実現に当たっては、先ず、DRVN 及び傘下組織への技術普及を第一優先とし、成果が十分得られた時点で、PDOT の国道管理へ適用する段階的普及を提案する。
- (4) 近年、技術革新は目覚ましく、道路維持管理技術についても、PMS や BMS 等の例を見

るように、様々な新技術・新工法が導入されている。しかし、道路環境は道路ごとに大きく異なることから、新技術・新工法も導入に当たってはカスタマイズが重要となる。このため、DRVNにおいても、技術開発(R&D)機能を強化し、導入されている新技術・新工法のシステム改良、データベース管理、マーケット技術の応用などの技術開発に積極的に取り組むことを提案する。既に、DRVNはRTC-Centralを保有していることから、この機能を強化し、研究開発機関としての活用が提案される。

- (5) DRVNの道路維持管理に関わる職員数は、他国の事例から見ても少ないと言える。限られた職員数で国道や高速道路の維持管理を実施していくためには、外部組織との連携強化が重要となる。そのため、技術基準作成や職員研修においては、大学機関や他組織の研究機関等との連携を強化し、実施することを提案する。特に、道路維持管理に関する職員研修は継続的実施が重要であることから、DRVNに研修に関する計画、管理及び実施を行う研修コーディネーション機関を設置することを提案する。

4.4 プロジェクト終了時以降のモニタリングプラン

JICAは、国際評価基準(DAC評価基準)に基づき、各プロジェクトの妥当性、有効性、効率性、影響力および持続性を評価するために、ODAプロジェクトの事後評価を実施している。本報告書の第3章で述べたDAC評価指標に基づき、説明責任を果たし、ODAプロジェクトの有効性及び効率性を高めることを目的に、事後評価は実施される。

本事業についても、JICAの標準ルールに従い、事後評価を実施する。更に、JICAは、プロジェクト終了時から事後評価までの期間、以下に基づき、プロジェクト成果の普及状況についてモニタリングを実施する。

- JICAベトナム事務所は、プロジェクト目標(Project Purpose)を達成するために必要となるプロジェクト成果(Project Output)の達成状況について、モニタリングを実施する。
- JICAは、本報告書の前章で述べたプロジェクト成果実現のためのロードマップに沿った、プロジェクト成果達成状況の現状報告を、DRVNに依頼する。
- JICAは、プロジェクトの成果の進捗状況を確認するために専門家を派遣する必要があると判断した場合は、プロジェクト成果の達成状況を評価するため、あるいはDRVNへの支援を実施するため、フォローアップ調査として専門家を派遣する。
- プロジェクト成果のうち、特にPMSを適用に当たって技術的な問題が発生した場合、JICAとDRVNは問題の対応策について双方協議する。

添付資料

APPENDIX-1: RESULTS OF THE PROJECT

(1) List of Experts

Table A-1.1 JICA Long-Term Expert

SN	Position/Responsibility	Name	Remarks
1.	Project Advisor/Road Maintenance Policy/Regulations	Mr. Yoshiaki MATSUNO	

Table A-1.2 List of JICA Short-Term Experts

SN	Position/Responsibility	Name	Remarks
1.	Team Leader/Road Maintenance Planning	Mr. Tsuneo KATO	
2.	Deputy Team Leader PMS System Operation Technology	Mr. Yoshio KUNIMASA	
3.	Pavement Condition Survey	Dr. Kazuya AOKI	
4.	Pavement Condition Survey (Calibration)	Dr. Chikakuni MAEDA	
5.	PMS System Technology (Strategic Budget Plan)	Mr. Yoshiyasu TSUCHIYA	
6.	PMS System Technology (Repair Work Plan)	Dr. Bhoj Raj PANTHA	
7.	Pavement Condition Data Web Display System	Mr. Kohei SAKAI	
8.	Road Facility Inspection Technology	Mr. Rikiya IIZUKA	
9.	Road Maintenance Technology	Dr. Seiichi KUSANO	
10.	Pilot Repair Work	Mr. Toshinori KANAZAWA/ Mr. Takeshi MAEDA	
11.	Pavement Technology	Mr. Motofumi TATSUSHITA	
12.	Road Maintenance Administration Procedure	Mr. Kazutaka SUZUKI/ Mr. Hiroya YONEMOTO	
13.	Capacity Development/ Project Coordinator	Ms. Akiko MIYAKAWA/ Ms. Junko TAGUCHI and Mr. Tatsuya MIYAKAWA	

(2) List of Counterparts

The following Vietnamese counterparts were assigned by DRVN Decision No.1088/QD-TCDBVN dated 23th April 2015.

Table A-1.3 List of Vietnamese Counterparts

SN	Name	Position in TWG	Job Title/Position
1	To Nam Toan	Group Leader	STE-ICD - Director
2	Thieu Duc Long	Member	STE-ICD - Deputy Director
3	Quach Van Khoa	ditto	Road M&M Dept. - Deputy Director
4	Nguyen Duc Cuong	ditto	Road M&M Dept. - Deputy Director
5	Nguyen Duc Hoai	ditto	Deputy-Director of Personnel and Organizing Dept.
6	Nguyen Manh Cuong	ditto	Road IT Center - Director
7	Nguyen Khanh Toan	ditto	Road M&M Dept. - Specialist
8	Tran Quoc Toan	ditto	Road M&M Dept. - Specialist
9	Trinh Xuan Sinh	ditto	DPI - Specialist
10	Nguyen Viet Tuan	ditto	STE-ICD - Specialist
11	Tran Xuan Binh	ditto	STE-ICD - Specialist
12	Nguyen Thi Thu Hang	ditto	Road IT Center - Specialist
13	Nguyen Hoang Phuong	ditto	Head of Project Implementation Division 3 (PID 3), Road Construction Management Bureau
14	Pham Manh Thang	ditto	Head of PID 4 in PMU3
15	Pham Anh Duc	ditto	PMU3 - Staff
16	Hoang Viet Ha	ditto	PMU3 - Staff
17	Dinh Thi Thanh Huyen	Secretary	STE-ICD - Specialist

Note: Some C/P members were replaced by new members.

(3) List of Trainings

(i) Training in Vietnam

Table A-1.4 shows the implementation summary while the Table A-1.5 shows the number of the participants to the trainings. Each training program is elaborated in the following sections.

Table A-1.4 Summary of Implemented “During Project” Training

Training Method	Target Group	Trainer/ Speaker	Venue	Frequency
Seminar (2 times)	Agencies involved in legislation of road maintenance regulation and institution including leaders of DRVN, MOT, (PDOTs)*, ITST** and UTC***, and ASEAN countries. (Total 100)	DRVN Experts from Japan JICA experts	Hanoi	1 st : 21 st Oct, 2015 (Full day) 2 nd : 29 th Nov, 2017 (Half day)
Workshop (5 times)	Focus on Management level Officials and Engineers of DRVN, RMBs, SBs and RTCs (Total 30-50)	DRVN JICA experts	RMB I, II, III, IV Region	1 st : 20-27 Jul, 2015 (4 cities) 2 nd : 16-23 May, 2016 (4 cities) 3 rd : 31.Oct - 8 Nov, 2016 (4 cities) 4 th : 15-26 May, 2017 (4 cities) 5 th : 22-30 Oct, 2017 (4 cities)

Training Method	Target Group	Trainer/ Speaker	Venue	Frequency
OJTs (5 times)	Focus on Engineer of DRVN, RMBs, SBs and RTCs (Total 15-20)	DRVN JICA experts	RMB I, II, III, IV Region	1 st : 20-27 Jul, 2015 (4 cities) 2 nd : 16-23 May, 2016 (4 cities) 3 rd : 31.Oct - 8 Nov, 2016 (4 cities) 4 th : 15-26 May, 2017 (4 cities) 5 th : 22-30 Oct, 2017 (4 cities)
Intensive Training (3 times)	Focus on Engineer of DRVN, RMBs, SBs, RTCs (Total 15-20)	JICA Expert IT Consultant	Hanoi	1 st : 2 Jun, 2017 2 nd : 23.11.2017 & 24-30.11.2017 3 rd : 19.12.2017
Special OJTs for Pavement Condition Survey (3 times)	Focus on Engineer of RMBs, SBs and RTCs (Total 5-10)	JICA Expert	RMB II, III, IV Region	1 st : 4 Nov, 2015 2 nd : 23 Feb, 2016 3 rd : 25 Apr, 2016

Note: *PDOT: Provincial Department of Transport
 **Institute of Transport Science and Technology
 ***University of Transport and Communications

Table A-1.5 Number of Participants for the Training

Training	Date	Venue	Style	MOT	DRVN			RMBs			Others	Sub Total	Total
					DRVN	RTC-C	PMU 3	RMB	RTC	SBs			
1 st Seminar	21.10.2015	Hanoi	VN	2	19	1	3	2	0	0		38*	38
			JP										
TOTAL													65
2 nd Seminar	29.11.2017	Hanoi	VN	7	20	2	6	5	9	3	18**	70	70
			JP										
TOTAL													87
1 st Workshop & OJT	27.07.2015	RMB I	WS		17	2	2	10	2	15		48	48
			OJT										
	20.07.2015	RMB II	WS					9	8	17		34	53
			OJT										
	24.07.2015	RMB III	WS					16	4	13		33	58
			OJT										
	22.07.2015	RMB IV	WS					11	1	13		25	48
			OJT										
TOTAL					17	2	2	61	22	103		207	207
2 nd Workshop	23.05.2016	RMB I	WS		16		2	10	9	20		57	57
	16.05.2016	RMB II	WS		4			19	3	17		43	43
	20.05.2016	RMB III	WS		4			15	7	19		45	45
	18.05.2016	RMB IV	WS		4			8	5	25		42	42
	TOTAL					28		2	52	24	81		187
3 rd Training (Workshop & OJT)	07-08.11.2016	RMB I	WS		25		3	5	8	19		60	80
			OJT										
	10-11.11.2016	RMB II	WS					16	2	22		40	62
			OJT										
	31.10-01.11.2016	RMB III	WS					16	4	12		32	52
			OJT										
	03-04.11.2016	RMB IV	WS					6	4	21		31	51
			OJT										
TOTAL					25		3	61	31	125		245	245
4 th Training (Workshop & OJT)	22-23. 05. 2017	RMB I	WS		9		3	8	4	16		40	58
			OJT										
	25-26. 05. 2017	RMB II	WS		2		1	16	2	22		43	65
			OJT										
	15-16. 05. 2017	RMB III	WS		3		1	16	4	13		37	57
			OJT										
	18-19. 05. 2017	RMB IV	WS		1		1	6	4	21		33	48
			OJT										
TOTAL					16	0	6	66	26	114		228	228

Training	Date	Venue	Style	MOT	DRVN			RMBs			Others	Sub Total	Total	
					DRVN	RTC-C	PMU 3	RMB	RTC	SBs				
5 th Training (Workshop & OJT)	30. 10. 2017	RMB I	WS		5			8	19	6	4	42	69	
			OJT		3			8	14	2		27		
	27. 10. 2017	RMB II	WS		4		1	18	4	20			47	66
			OJT		4			10		5			19	
	23. 10. 2017	RMB III	WS		3		1	16	8	13			41	62
			OJT		3			7	3	8			21	
	25. 10. 2017	RMBIV	WS		3		1	8	7	16			35	59
			OJT		2			4	4	14			24	
	TOTAL					27	3	79	59	84	4		256	256
	Intensive Training (PMS/ Pavement Condition Survey)	02. 06. 2017	Hanoi	OJT		12			4				16	16
23. 11. 2017		Hanoi	OJT		9	8		9	7			33	33	
24-30.11. 2017					1	8			8			17	17	
19.12.2017		Hanoi	OJT		9							9	9	
TOTAL					22	16		13	16			75	75	
OJT on Pavement Condition Survey	25.04.2016	RMB II	OJT					6	8	9		23	23	
	23.02.2016	RMB III	OJT					1	5	10		16	16	
	04.11.2015	RMBIV	OJT					4	5	3		12	12	
	TOTAL								11	18	22		51	51
GRAND TOTAL													1,401	

Note: *Subtotal includes 11 other participants from UTC, construction company and vocational school.

**Subtotal includes 18 participants from UTT, Software company, Vocational School, Vietnam Expressway Administration (VEA), Construction Management Administration (CMA)

(ii) Training in Japan

(a) First "C/P Training"

1) Date:

The first "C/P Training" was conducted for 7days from 13th to 19th September, 2015.

2) Participants:

5 officials from DRVN and RMBs participated the First C/P training in Japan as shown below.

Table A-1.6 Participants for the 1st "C/P Training"

	Name	Position
1	Mr. Nguyen Ngoc Son	Vice Chairman of RMB I
2	Mr. Dao Van Minh	Vice Chairman of RMB II
3	Mr. Do Huy Thanh	Vice Chairman of RMB III
4	Mr. Nguyen Thuan Phuong	Chairman of RMB IV
5	Mr. Le Hong Diep	Director of Road Management and Maintenance Department, DRVN

3) Training Schedule

Lectures and site visits were offered during the training. The schedule is shown below.

Table A-1.7 Training Schedule for the 1st “C/P Training”

Days	Date	Time	Subject	Training Institution
Day 1	13 th Sep		Arriving Tokyo	
Day 2	14 th Sep	AM	Briefing	JICA
		PM	Orientation Lecture on Road Administration in Japan	KEI
Day 3	15 th Sep		Lecture on Road Maintenance in National Road Site visit to Road Traffic Information Centre, Bridge Weigh in Motion System, Tatsumi Check Point, Repairing Site of Bridge over Arakawa River Estuary	RDB
Day 4	16 th Sep	AM	Lecture on Operation of Pavement Management System used in Local Authority	PASCO
		PM	Lecture on Pavement Repair Material, Surface of Bridge Deck Pavement, Water-proofing Practice for Floor Slab	Nichireki
Day 5	17 th Sep	AM	Lecture on Research on Pavement Technology Site visit to Research Centre	NEXCO Research Centre
		PM	Site visit to TOMEI & SHIN TOMEI Expressway, Ebina Service Area, Maintenance Centre (maintenance vehicle, patrol car, Disaster prevention division) Lecture on Construction and Maintenance of Expressway	NEXCO Central
Day 6	18 th Sep	AM	Presentation	
Day 7	19 th Sep		Fly back to Hanoi	

(b) Second “C/P Training”

1) Date

The second “C/P Training” was conducted for 11 days from the 27th of September to the 6th of October, 2016.

2) Participants

Total of 10 participants from the MOT, DRVN and the RMBs were participated in the 2nd “C/P Training”.

Table A-1.8 Participants for the 2nd “C/P Training”

	Name	Job Position / Organization
1	Mr. Ngo The Thong	Expert, Central Road Maintenance Fund Office, MOT
2	Mr. Nguyen Manh Cuong	Expert, Infrastructure Department of MOT
3	Mr. Pham Van Toan	Director of Administrative Affairs & Personnel Organizing Department, RMBI
4	Mr. Nguyen Thanh Hoai	Director of Technical/Planning Department, RMBII
5	Mr. Bui Hung Man	Director of Technical/Planning Department, RMBIII
6	Mr. Tran Thanh Nam	Director General of Sub-Bureau IV.3, RMBIV
7	Mr. Nguyen Manh Hung	Deputy Director, Road Maintenance & Management Department, DRVN
8	Mr. Pham Minh Tam	Deputy Director, Traffic Safety Department, DRVN

	Name	Job Position / Organization
9	Mr. Dinh Cao Thang	Deputy Director, Finance Department, DRVN
10	Mr. Hoang Manh Tri	Director, Personnel Organizing Department, DRVN

3) Training Schedule

Lectures, site visits and demonstrations were conducted during the 2nd “C/P Training”. The 2nd “C/P Training” schedule is shown below.

Table A-1.9 Training Schedule for the 2nd “C/P Training”

Day	Date	Time	Subject	Training institution
Day 1	26 th Sep		Arriving Tokyo	
Day 2	27 th Sep	AM	Briefing	JICA
		PM	Orientation / Lecture on Road Administration in Japan	KEI
Day 3	28 th Sep	AM	Lecture on works of Maintenance and Management Technical Center Site visit to New Technology at Construction Technology Exhibition Centre, Explanation on Environmental Pavement Trial	RDB
		PM	Lecture on efforts of Road Manager toward 2020 Olympic games Site visit on current status and effects of Environmental Pavement Trial	
Day 4	29 th Sep	AM	Lecture on Road Maintenance and Management at Local Government	Yamanashi Prefectural Government
		PM	Site visit nearby Mt. Fuji	
Day 5	30 th Sep	AM	Lecture on Operation of Pavement Management System	PASCO
		PM	Demonstration of Pavement Condition Vehicle	
Day 6	1 st Oct			
Day 7	2 nd Oct			
Day 8	3 rd Oct	AM	Lecture on Research on Pavement Technology Site visit to Research Centre	NEXCO Research Centre
		PM	Site visit to Ebina Service Area Lecture on Construction and Maintenance of Expressway Lecture on Expressway Maintenance and Management Lecture on Communication Plaza FUJI / Kawasaki Traffic Control Centre Works of Maintenance Service Centre, Site visit (maintenance vehicle etc.)	NEXCO Central
Day 9	4 th Oct	AM	Lecture on Pavement Repair Technology Demonstration of Repair Technology	Nichireki
		PM	Demonstration of Repair Technology	
Day 10	5 th Oct	AM	Presentation on Training in Japan	
Day 11	6 th Oct		Fly back to Hanoi	

(c) Third “C/P Training”

1) Date

The 3rd “C/P Training” was conducted for 14 days from the 3rd to the 16th September, 2017.

2) Participants

10 participants from the DRVN and the RMBs were participated in the 3rd “C/P Training”.

Table A-1.10 Participants for the 3rd “C/P Training”

	Name	Job Position / Organization
1	Mr. Nguyen Xuan Lam	Deputy Director, RMB I
2	Mr. Pham Van Tam	Director of Technical/Planning Dept., RMB I
3	Mr. Vu Tuan Anh	Director of SB I.4, RMB I
4	Mr. Nguyen Duc Dung	Deputy Director of Technical/Planning Dept., RMB II
5	Mr. Nguyen Viet Phuong	Director of SB II.2, RMBII
6	Mr. Le Minh Tuan	Director of SB III.4, RMB III
7	Mr. Nguyen Van Thanh	Deputy Director, RMBIV
8	Mr. Dinh Van Hiep	Director of SB IV.5, RMB IV
9	Mr. Vu Anh Thang	Expert, DPI (DRVN)
10	Mr. Tran The Anh	Expert, DPI (DRVN)

3) Training Schedule

Lectures, site visits, and demonstration were carried out during the course of the training. The 3rd “C/P Training” schedule is shown below.

Table A-1.11 Training Schedule for the 3rd “CP Training”

Days	Date	Time	Subject	Training institution
Day 1	3 rd Sep.		Arriving Tokyo	
Day 2	4 th Sep.	AM	Briefing	JICA Tokyo
		PM	Orientation / Lecture on Road Administration, Inspection, and Road Maintenance in Japan	
Day 3	5 th Sep.	AM	Lecture on Maintenance and Management of National Road	MLIT
		PM	Site visit to the construction work site at Bridge of Arakawa Estuary	
Day 4	6 th Sep.	AM	Move to Kyoto	Kyoto University
		PM	Lecture on Industrial Academic Government Cooperation of Kyoto University	
Day 5	7 th Sep.	AM	Lecture on Political Measures of Asset Management	Kyoto University
		PM	Move to Kobe	
Day 6	8 th Sep.	AM	Site visit to Akashi Kaikyo Bridge Exhibition Center	Honshu-Shikoku Bridge Expressway Company Limited
		PM	Lecture on Transportation Control, Equipment for Maintenance, Bridge Maintenance Management and Operation. Site visit to Akashi Kaikyo Bridge Site visit to Nojima Fault Preservation Museum	
Day 7	9 th Sep.		Move back to Tokyo	
Day 8	10 th Sep.			
Day 9	11 th Sep.	AM	Lecture on Research and Development (R & D) of Pavement Technology Site visit to Institute	Nippon Expressway Research Institute
		PM	Lecture on PMS Operation	PASCO
Day 10	12 th Sep.	AM	Site visit to Communication Plaza Kawasaki Lecture on High-way Business Highway Maintenance and Management Site visit to Transport Central Control Center Demonstration of Repair Technology	NEXCO Central

Days	Date	Time	Subject	Training institution
		PM	Site visit to Ashigara Service Area Site inspection of Tomei and Shintomei Highway (from bus) Lecture on Fuji Service Center Site visit to Fuji Service Center, Inspection of vehicles for Road Maintenance and Management Site visit to Communication Plaza Fuji Site visit to Fujikawa Service Area	NEXCO Central
Day 11	13 th Sep.	AM	Lecture on Road Management of Yamanashi Prefecture	Yamanashi Prefecture
		PM	Site visit to the construction work site at route to Mt. Fuji Site visit to the route to Mt. Fuji	Yamanashi Prefecture
Day 12	14 th Sep.	AM	Lecture on Pavement Materials and Pavement Repair Technology	Nichireki Co., Ltd
		PM	Demonstration of Pavement	Nichireki Co., Ltd
Day 13	15 th Sep.	AM	Presentation on Training in Japan	JICA
Day 14	16 th Sep.		Fly back to Hanoi	

(d) Country-Focused Training on RAM

1) Date

The Country-Focused Training was conducted from February 25 to March 21, 2018.

2) Participants

Fifteen (15) officials representing from DRVN headquarter, RMBs and SBs were participated the country-focused training.

Table A-1.12 List of Participants of the Country-Focused Training

No.	Full name	Position	Organization
1	Doan Quoc Bao	Expert	Department of Planning and Investment, DRVN
2	Le Hoang Long	Expert	Department of Science, Technology, Environment and International Cooperation, DRVN
3	Nguyen Van Hoi	Deputy Chief of Traffic Safety Division	Road Management Bureau I
4	Tran Quoc Thanh	Senior Expert	Department of Road Management and Maintenance, DRVN
5	Luong Van Hung	Deputy Chief No.3	Construction Management Bureau, DRVN
6	Tran Thanh Tung	Director of Sub-Bureau I.2	Road Management Bureau I
7	Nguyen Quang Hung	Director of Sub-Bureau I.3	Road Management Bureau I
8	Ta Quang Vinh	Director of Sub-Bureau I.6	Road Management Bureau I

9	Luu Hung Son	Director of Sub-Bureau II.1	Road Management Bureau II
10	Le Van Hieu	Expert of Road Management and Maintenance Division	Road Management Bureau II
11	Tan Hoang Trung	Director of Sub-Bureau III.1	Road Management Bureau III
12	Tiet Dinh Quang	Director of Sub-Bureau III.2	Road Management Bureau III
13	Nguyen Danh Tien	Director of Sub-Bureau III.5	Road Management Bureau III
14	Pham Minh Trieu	Deputy Chief of Traffic Safety Division	Road Management Bureau IV
15	Hoang Van Phuong	Chief of Road Management and Maintenance Division	Road Management Bureau IV

3) Training Schedule

The Table below shows the training schedule.

Table A-1.13 Schedule for Country-Focused Training

SQ No.	Day & Date		Training Course		Venue
			AM	PM	
1	2018/2/25		Introduction & current status of road infrastructure in Japan		JICA
2	2018/2/26	Mon	Characteristics of concrete structure and damages	Continue	JICA
3	2018/2/27	Tue	Characteristics of steel structure and damages given	Continue	University of Tokyo
4	2018/2/28	Wed	Key points of road facility inspection and diagnosis, and case studies of repair and reinforcement work	Continue/Exchange of Opinion	University of Tokyo
5	2018/3/1	Thu	case studies of repair and reinforcement work	Continue/Exchange of Opinion	University of Tokyo
6	2018/3/2	Fri	Management of road infrastructures	Continue/Exchange of Opinion	University of Tokyo
7	2018/3/3				
8	2018/3/4				
9	2018/3/5	Mon	■ Visit Public Works Research Institute (1) Countermeasures against deteriorated road facilities (2) Research facility	Continue (* Round trip between TSUKUBA	MLIT PWRI
10	2018/3/6	Tue	■ Visit PASCO Company (1) R&D on advanced road maintenance and management technologies	Continue (* Move to NAGOYA from Tokyo (* Stay overnight at NAGOYA	PASCO Company
11	2018/3/7	Wed	■ Visit NEXCO Central Company (1) All about expressway maintenance (2) Pavement maintenance (PMS, PC data application) (3) Human resource development of maintenance engineers	Continue (* Stay overnight at NAGOYA	NEXCO Central Company

SQ No.	Day & Date		Training Course		Venue
			AM	PM	
12	2018/3/8	Thu	■ Visit NAGOYA University (1) Visit N2U Bridge facility (Model facility of concrete deterioration)	Continue (*) Move to KOBE from NAGOYA (*) Stay overnight at Kobe	Nagoya University
13	2018/3/9	Fri	■ Visit Honshu-Shikoku Expressway Company (1) Long span bridge maintenance (2) Bridge facility inspection (3) Facility Inspection and maintenance/repair technical standards and manuals	Continue (*) Return TOKYO from KOBE	Honshu-Shikoku Expressway Company
14	2018/3/10				
15	2018/3/11				
16	2018/3/12	Mon	Exercise on the analysis of road facility inspection data - Use of actual bridge survey data obtained by Niigata Prefecture including relevant cities - Analysis of the trend of bridge deterioration - Development of approximate curve for bridge deterioration - Data mapping for bridge locations - Data Processing and analysis	Continue	University of Tokyo
17	2018/3/13	Tue			
18	2018/3/14	Wed			
19	2018/3/15	Thu	Exercise on the future forecast of bridge maintenance budget and bridge soundness assessment - Lecture on the basic principle - System operation for 50 years - Study on how output changes when conditions change	Continue	University of Tokyo
20	2018/3/16	Fri			
21	2018/3/17				
22	2018/3/18				
23	2018/3/19	Mon	■ Visit Pavement Material Company (NICHIREKI) (1) Pavement repair materials (2) Recycle technology	Continue	NICHIREKI Company
24	2018/3/20	Tue	Summary of training and presentation		JICA
25	2018/3/21	Wed	Back to Viet Nam		JICA

APPENDIX-2: LIST OF PRODUCTS

Table A-2.1 shows the Project outputs by Project measures.

Table A-2.1 List of Project Outputs

Measures	Outputs	Product Output Format
Measure-1	(1) Web-based PMS Data Input System	DRVN Server.
	(2) Operation Manual for PMS Data Input System	Operation Manual (Vol.3)
	(3) Pavement Condition Survey Data	DRVN Server.
	(4) Pavement Condition Survey Manual	Manual (Vol. 2.1)
	(5) PMS Database - Road Asset DB, - Maintenance History DB - Pavement Condition DB - Traffic Volume DB - Road Administration DB	DRVN DB Server
Measure-2	(1) Web-based Pavement Management System (PMS) - PMS Dataset Formulation Module - Pavement Deterioration Forecasting Module - Budget Simulation Module - Pavement Repair Plan Formulation Module	DRVN Server.
	(2) Web-based Pavement Condition Data Display System	
	(3) Web-based Pavement Monitoring System (PMoS)	
	(4) Web-based PC Data Analysis System	
	(5) Pavement Strategic Budget and Annual/5-year Repair Plans - For RMB I, II, III and IV	Main Report (Vol.1)
	(6) Operation Manuals for Web-operation System	Manuals (Vol.2.2)
Measure-3	(1) Road Facility Inspection Guideline - Photo Album for Road Facility Defects	Guideline (Vol.3.1) Photo Album (Vol.3.4)
	(2) Road Routine Maintenance Manual	Manual (Vol.3.2)
	(3) Expressway Maintenance Manual	Manual (Vol.3.3)
	(4) Summary Report for Pilot Pavement and Bridge Repair Project	Main Report (Vol.1)
Measure-4	(1) Recommendation on the Institutional Arrangement for the Dissemination of Project Outputs	Main Report (Vol.1)
Measure-5	(1) Implementation Report of During-Project Training Program	Main Report (Vol.1)
	(2) Post-Project Training Plan	
	(3) Future Training Plans on Road Asset Management	

Measures	Outputs	Product Output Format
	(4) PMS Video Clips for Self-learning <ul style="list-style-type: none"> - Video Clip for Pavement Condition Data Display System - Video Clip for PMS Data Input System - Video Clip for DRVN Information System for Road Maintenance technology (TIS) - Video Clip for PMS-1: PMS overview - Video Clip for PMS-2: PMS dataset Preparation - Video Clip for PMS-3: Pavement deterioration evaluation - Video Clip for PMS-4: Strategic budget planning for pavement repair work - Video Clip for PMS-5: Pavement repair Work Planning - Video Clip for PMS-6: Pavement Monitoring System (PMoS) - Video Clip for PMS-7: Pavement Condition Data Analysis System (PDAS) - Video Clip for PMS-8: Introduction of Pavement Condition Survey 	DRVN Server
Measure-5	(1) DRVN Annual Report 2016	Annual Report 2016
	(2) Video Clip for DRVN road maintenance management	CD-ROM
	(3) Web-based Information System for Road Maintenance Technologies	DRVN Server.
	(4) DRVN General Information 2016	General Information Brochure

APPENDIX-3: PDM (ALL VERSIONS)

Tentative Logical Framework (Project Design Matrix: PDM) Ver. 0

Project Name: The Project for Capacity Enhancement in Road Maintenance Phase-2
 Project Period MM, 201X to MM, 20XX (3 years) Implementation Organization: DRVN under Ministry of Transport
 Target Group: DRVN, Road Management Bureaus (RMBs) I, II, III, IV
 Target Area: Designated area of RMB I, II, III, IV

Date: 8 September, 2014

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions (I.A.)	Achievement	Remarks
Overall Goal					
Road maintenance is conducted based on the plan in Vietnam.	(By 3 years from the project end) The indicators for pavement damage (IRI, cracks, rutting, etc.) will be improved X %.	1.Result of data comparison of regular pavement condition survey by DRVN 2.Trial mid-term and annual plan for pavement maintenance 3.Interview to DRVN			
Project Purpose			I.A to achieve Overall goal		
Implementation capacity for road maintenance is strengthened in Vietnam	1. Trial pavement repair plan using PMS is formulated in RMB I-IV	1. Trial pavement repair plan of RMB I-IV	1.Budget is allocated for maintenance activities in accordance with the Mid-term plan 2. Training is conducted by DRVN continuously to maintain technical skills		
	2. Methods for road facility inspection, maintenance and repair work are formulated (*1) .	2. Regulation			
	3 Implementation structure for road maintenance is established.	3-1. Regulation 3-2. Interview to DRVN			
Outputs			I.A. to achieve Project Purpose		
1. PMS data development technology is improved	1-1.Road structure database and repair history database are completed for PMS 1-2.DRVN conducts DB input training periodically.	1-1.Road structure DB, repair history DB 1-2.Training record	1. Engineers who received training are assigned continuously 2. Regulation procedure for pavement maintenance and road facility inspection moves forward		
2.PMS is upgraded and applied to the planning of trial pavement repair plans	2-1. Trial pavement repair plan (annual, mid-term) using PMS is formulated by DRVN. 2-2.DRVN conducts PMS training periodically.	2-1.Trial pavement repair plan (mid-term and annual) 2-2.Training record			
3. Technical specifications for diagnosing road facility and selecting repair work are developed	3. Final draft of specifications for diagnosing road facility and selecting repair work are formulated.	3. Final draft of specifications for diagnosing road facility and selecting repair work			
4. Implementation procedures and work demarcation are clarified for road maintenance	4. Implementation plans to realize output 1-3 are developed	4-1.Implementation plan (draft) 4-2. Assignment chart (draft)			
Activities	Inputs		I.A. to achieve Outputs		
	Japanese side	Vietnamese side			
1-1.Review PMS data formats and data input system produced in Phase-I Project.	1.Dispatch of Experts (1)Long-term expert(s) Road maintenance policy/regulations	1.Human resources (1)Chairperson of JCC (2)Chairperson of TWG (3)Counterparts (DRVN and RMBs) (4)Coordinator	1. VRAMP Project (WB) is implemented as planned 2. IT policy of DRVN is maintained		
1-2.Upgrade PMS data input system	(2)Short-term experts Institutional development for road maintenance	2.Facilities Suitable office space for JP Experts and local support team with electricity, air-condition, internet, telephone line, etc.			
1-3.Input and verify PMS data	Road inspection/diagnosis (pavement), (structure), (embankment), (measurement), (analysis) Database development System development	3.Cost (1)Cost for pilot project on maintenance and repair work (including cost for general materials) (2)Small running expenses necessary for the implementation of the Project. (e.g. daily allowance, accommodation and domestic travel expenses of DRVN's staff for participating in training in Vietnam)			
1-4.Implement training on PMS data input development	Pavement repair technology Human resource development Pavement repair materials Coordinator	4.Others (1)Implementation of the pilot project on maintenance and repair work with JICA experts' advices. (2)Implementation of the Pilot Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction with JICA's local service.			
2-1.Implement pavement condition surveys for RMB II, III and IV selected roads	2.Training in Japan three times (once/year) on Road maintenance policy and new technology				
2-2.Develop web-based system for pavement condition data on the existing GIS system on the website	3.Equipment, Machinery and Materials (1)Special materials for pilot project works (2)Computers for planning system (3)Others needed for the project implementation				
2-3.Convert input data and make PMS dataset	4.Others Local service for Pilot Pavement Condition Survey				
2-4.Upgrade PMS software					
2-5.Formulate trial annual and mid-term pavement repair work plans for RMB I, II, III and IV road networks by PMS system and examine system operability					
2-6.Develop web-based system which enables PMS operation on the website and formulates trial annual and mid-term pavement repair work plans					
2-7. Implement trainings on Activity 2-1~2-6.					
3-1.Upgrade road facility inspection guideline and road maintenance manual produced in Phase-1 project to technical specifications.					
3-2. Develop pilot projects for pavement maintenance and repair work which incorporates new technology and materials					
3-3. Implement pilot projects for pavement repair work, monitor and evaluate their performances					
3-4. Based on the results of pilot projects, develop final draft of road facility inspection guideline and road maintenance manual for standardization procedures					
3-5. Implement trainings on the use of road inspection guideline and road maintenance manual in the field					
4-1.Conduct baseline survey on the administration procedures and the responsibility assignment for road maintenance					
4-2.Develop implementation plan to realize project outputs					
4-3.Draft implementation plan on the legal procedures to realize project outputs					
			Preconditions		
			Conditions to be fulfilled before the Project commencement		
			Outputs generated through the phase1 project can be utilized.		

Note>(*1): target facilities, frequency, methods, diagnosis, selection method for repair works, repair work, construction management

Tentative Plan of Operation Ver.0

Project Title: The Project for Capacity Enhancement in Road Maintenance Phase II

Activities	Year	1st Year				2nd Year				3rd Year				
		I	II	III	IV	I	II	III	IV	I	II	III	IV	
Output 1: PMS data development technology is improved														
1-1. Review PMS data formats and data input system produced in Phase-I Project.	Plan	■												
	Actual													
1-2. Upgrade PMS data input system	Plan		■											
	Actual													
1-3. Input and verify PMS data	Plan			■										
	Actual													
1-4. Implement training on PMS data input development	Plan			▲	▲									
	Actual													
Output 2: PMS is upgraded and applied to the planning of trial pavement repair plans														
2-1. Implement pavement condition surveys for RMB II, III and IV selected roads	Plan	■												
	Actual													
2-2. Develop web-based system for pavement condition data on the existing GIS system on the website	Plan	■												
	Actual													
2-3. Convert input data and make PMS dataset	Plan	■												
	Actual													
2-4. Upgrade PMS software	Plan	■												
	Actual													
2-5. Formulate trial pavement repair plans for RMB I, II, III and IV road networks by PMS system and examine system operability	Plan							■						
	Actual													
2-6. Develop web-based system which enables PMS operation on the website and formulates trial annual and mid-term pavement repair work plans	Plan	■												
	Actual													
2-7. Implement trainings on Activity 2-1~2-6.	Plan						▲	▲	▲	▲	▲	▲	▲	▲
	Actual													
Output 3: Technical specifications for diagnosing road facility and selecting repair work are developed														
3-1. Upgrade road facility inspection guideline and road maintenance manual produced in Phase-1 project to technical specifications.	Plan	■												
	Actual													
3-2. Develop pilot projects for pavement maintenance and repair work which incorporates new technology and materials	Plan	■												
	Actual													
3-3. Implement pilot projects for pavement repair work, monitor and evaluate their performances	Plan		■											
	Actual													
3-4. Based on the results of pilot projects, develop final draft of road facility inspection guideline and road maintenance manual for standardization procedures	Plan									■				
	Actual													
3-5. Implement trainings on the use of road inspection guideline and road maintenance manual in the field	Plan						▲	▲	▲	▲				
	Actual													
Output 4: Implementation procedures and work demarcation are clarified for road maintenance														
4-1. Conduct baseline survey on the administration procedures and the responsibility assignment for road maintenance	Plan	■												
	Actual													
4-2. Develop implementation plan to realize project outputs	Plan		■											
	Actual													
4-3. Draft implementation plan on the legal procedures to realize project outputs	Plan							■						
	Actual													
Training in Japan														
Road maintenance policy and new technology	Plan			▲					▲				▲	
	Actual													
Monitoring Plan														
Monitoring														
Joint Coordination Committee	Plan	▲						▲					▲	
	Actual													
Set-up the Detailed Plan of Operation	Plan	▲												
	Actual													
Submission of Monitoring Sheet	Plan			▲			▲		▲		▲		▲	
	Actual													
Reports/Documents														
Inception Report	Plan	▲												
	Actual													
Project Completion Report	Plan													▲
	Actual													

Project Monitoring Sheet I (Revision of Project Design Matrix)

Project Name: The Project for Capacity Enhancement in Road Maintenance Phase II
 Project Period: February, 2015 to March, 2018 (3 years)
 Implementation Organization: Directorate for Roads of Vietnam under Ministry of Transport
 Target Group: DRVN, Road Management Bureaus (RMBs) I, II, III, IV
 Target Area: Designated area of RMB I, II, III, IV

Version: 1
Dated: 23rd April, 2015

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions (I.A.)	Achievement	Remarks
Overall Goal Road maintenance is conducted properly based on the mid-term plan, following PDCA cycle.	(By 3 years from the project end) The indicators for pavement damage (IRI, cracks, rutting, etc.) will be improved X %.	1.Result of data comparison of regular pavement condition survey by DRVN 2.Trial 3 year and annual plan for pavement maintenance 3. Annual Report 4.Interview to DRVN			
Project Purpose Implementation capacity for road maintenance is strengthened in Viet Nam	1. Trial pavement repair work plan using PMS is formulated in RMB I,II, III and IV 2. Primary rules for road facility inspection, maintenance and repair work are formulated (*1) 3 Implementation structure for road maintenance is established.	1. Trial pavement repair work plan of RMB I,II, III and IV 2. Regulation 3-1. Regulation 3-2. Interview to DRVN	I.A. to achieve Overall goal 1.Budget is allocated stably for maintenance activities in accordance with 3 year plan 2. Training is conducted by DRVN continuously to maintain technical skills		
Outputs 1. PMS data development technology is improved 2.PMS is upgraded and applied to the planning of trial pavement repair work plans 3.Technical specifications for inspecting road facility and selecting repair work are developed 4.Responsibility assignment and administration procedure are clarified for road maintenance	1-1.Road asset database, maintenance history database and pavement condition database are completed for PMS 1-2.DRVN conducts regular trainings on DB input. 2-1. Trial pavement repair work plan (annual, 3 year) using PMS is formulated by DRVN. 2-2.DRVN conducts PMS training regularly. 3. Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual are formulated. 4. Amendment plans to realize output 1-3 are developed	1-1.Road asset DB, maintenance history DB, pavement condition DB 1-2.Training record 2-1.Trial pavement repair plans (annual, 3 year plan) 2-2.Training record 3.Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual. 4.Amendment plans (draft)	I.A. to achieve Project Purpose 1 Engineers who received training are assigned continuously 2. Legalization procedure for Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual proceeds		
Activities	Inputs		I.A. to achieve Outputs		
	Japanese side	Vietnamese side			
1-1.Review PMS data formats and data input system produced in Phase-I Project. 1-2.Upgrade PMS data input system 1-3.Input and verify PMS data 1-4.Implement pavement condition surveys for RMB II, III and IV selected roads 1-5.Implement training on PMS data input and Pavement condition survey 2-1.Upgrade PMS software 2-2.Convert input data and make PMS dataset 2-3.Formulate trial pavement repair work plans (Annual and 3-Year plan) for RMB I, II, III and IV road networks by PMS system and examine system operability. 2-4.Develop web-based system for displaying pavement condition data on the DRVN mapping system 2-5.Develop web-based system which enables PMS operation on website and formulates trial annual and three year pavement repair work plans 2-6. Implement trainings on Activity 2-1~2-5.	1.Dispatch of Experts (1)Long term Expert • Road maintenance policy/regulations (2)Short-term experts • Team Leader/Road Maintenance Planning • Deputy Team Leader/PMS System Operation Technology • Pavement Condition Survey (Planning and Management) • Pavement Condition Survey(Calibration) • PMS System Technology(Budget Simulation) • PMS System Technology(Repair Work Planning) • Web-based System for Displaying Pavement Condition Data • Road Facility Inspection Technology • Road Maintenance Technology • Pilot Project Management • Pavement Technology • Road Maintenance Administrative Procedure • Capacity Development/Project Coordination 2.Training in Japan • Three times (once/year) on Road maintenance policy and repair technology 3.Equipment, Machinery and Materials (1)Special equipment and materials for pilot project work (2)Computers for planning system (3)Others needed for project implementation 4.Others(Sub Contract) • Local service for Pilot Pavement Condition Survey • Local Service for development of web-based operation system	1.Human resources (1)Chairperson of JCC (2)Chairperson of TWG (3)Counterparts (DRVN and RMBs) (4)Coordinator 2.Facilities Communal office space for JP Team and local support team with electricity, air-condition, internet, telephone line. 3.Cost (1)Cost for pilot project on maintenance and repair work (including cost for general materials) (2)Small running expenses necessary for the implementation of the Project. (e.g. daily allowance, accommodation and domestic travel expenses of DRVN's staff for participating in training in Vietnam) 4.Others (1)Implementation of the pilot repair work for maintenance and repair work with JICA experts' advisory. (2)Implementation of pilot Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction, with JICA's local service.	1. VRAMP Project (WB) is implemented as planned 2. IT policy of DRVN on organization and operation of database and system is maintained		
3-1.Upgrade Road Facility Inspection Guideline and Road Routine Maintenance Manual produced in Phase I project to technical specifications. 3-2. Plan pilot repair works for pavement maintenance and repair work which incorporates new technology and materials 3-3. Implement pilot repair works for pavement repair work, monitor and evaluate their performances 3-4. Based on the results of pilot repair works, develop final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual for standardization 3-5. Implement trainings on Activity 3-1~3-4 4-1.Conduct baseline survey on responsibility assignment and administration procedure for road maintenance 4-2.Develop improvement plan to realize project outputs 4-3.Draft amendment plan on the legal procedures to realize the improvement of responsibility assignment and administration procedures for road maintenance			Preconditions Support and priority of DRVN on outputs generated through the phase I project including system database, technical Standards, and recommendation on institution are maintained		
			<Issues and countermeasures>		

Note:(*1): target facilities, frequency, methods, diagnosis, selection method for repair works, repair work, construction management

Project Monitoring Sheet II (Revision of Plan of Operation)

Version : 1

Dated: 23rd April 2015

Project Title: The Project for Capacity Enhancement in Road Maintenance Phase II

Activities Sub-Activities	Year	2015				2016				2017				2018	Responsible Organization		Monitoring	
		I	II	III	IV	I	II	III	IV	I	II	III	IV		I	Japan	GOV	Achievements
Output 1: PMS data development technology is improved																		
1-1.Review PMS data formats and data input system produced in Phase-I Project.	Plan	■																
	Actual	▬																
1-2.Upgrade PMS data input system	Plan		■															
	Actual		▬															
1-3.Input and verify PMS data	Plan			■														
	Actual			▬														
1-4.Implement pavement condition surveys for RMB II, III and IV selected roads	Plan		■															
	Actual		▬															
1-5.Implement training on PMS data input development and Pavement condition survey	Plan			▲			▲		▲		▲		▲					
	Actual																	

Output 2:PMS is applied to the planning of trial pavement repair work plans																		
2-1.Upgrade PMS software	Plan	■																
	Actual	▬																
2-2.Convert input data and make PMS dataset	Plan						■											
	Actual						▬											
2-3.Formulate trial pavement repair work plans (Annual and 3-Year plan) for RMB I, II, III and IV road networks by PMS system and examine system operability.	Plan							■										
	Actual							▬										
2-4.Develop web-based system for displaying pavement condition data on the DRVN mapping system	Plan		■															
	Actual		▬															
2-5.Develop web-based system which enables PMS operation on website and formulates trial annual and three year pavement repair work plans	Plan						■											
	Actual						▬											
2-6. Implement trainings on Activity 2-1~2-5.	Plan			▲			▲		▲		▲		▲					
	Actual																	

Output 3: Technical specifications for inspecting road facility and selecting repair work are developed																		
3-1.Upgrade Road Facility Inspection Guideline and Road Routine Maintenance Manual produced in Phase I project to technical specifications.	Plan			■														
	Actual			▬														
3-2. Plan pilot repair works for pavement maintenance and repair work which incorporates new technology and materials	Plan	■																
	Actual	▬																
3-3. Implement pilot repair works for pavement repair work, monitor and evaluate their performances	Plan					■												
	Actual					▬												
3-4. Based on the results of pilot repair works, develop final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual for standardization.	Plan									■								
	Actual									▬								
3-5. Implement trainings on Activity 3-1~3-4	Plan			▲			▲		▲		▲		▲					
	Actual																	

Output 4: Administration procedure and responsibility assignment are clarified for road maintenance																		
4-1.Conduct baseline survey on responsibility assignment and administration procedure for road maintenance	Plan	■																
	Actual	▬																
4-2.Develop improvement plan to realize project outputs	Plan		■															
	Actual		▬															
4-3.Draft amendment plan on the legal procedures to realize the improvement of responsibility assignment and administration procedures for road maintenance	Plan									■								
	Actual									▬								

Training in Japan																		
Road maintenance policy and new technology	Plan				▲				▲				▲					
	Actual																	

Monitoring Plan	Year	1st Year				2nd Year				3rd Year				4th	Remarks	Issue	Solution	
		I	II	III	IV	I	II	III	IV	I	II	III	IV					I
Monitoring																		
Joint Coordination Committee	Plan		▲				▲				▲			▲				
	Actual		△															
Technical Working Group	Plan			▲	▲	▲		▲	▲	▲		▲	▲					
	Actual																	
Set-up the Detailed Plan of Operation	Plan	▲																
	Actual	△																
Submission of Monitoring Sheet	Plan		▲		▲		▲				▲		▲					
	Actual																	
Reports/Documents																		
Work Plan	Plan		▲															
	Actual		△															
Project Completion Report (Draft)	Plan																▲	
	Actual																	

Project Monitoring Sheet I (Revision of Project Design Matrix)

Project Name: The Project for Capacity Enhancement in Road Maintenance Phase II
 Project Period: February, 2015 to March, 2018 (3 years)
 Implementation Organization: Directorate for Roads of Vietnam under Ministry of Transport
 Target Group: DRVN, Road Management Bureaus (RMBs) I, II, III, IV
 Target Area: Designated area of RMB I, II, III, IV

Version: 2
Dated: 25th March, 2016

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions (I.A.)	Achievement	Remarks
Overall Goal Road maintenance is conducted properly based on the mid-term plan, following PDCA cycle.	(By 3 years from the project end) The indicators for pavement damage (IRI, cracks, rutting, etc.) will be improved X %.	1.Result of data comparison of regular pavement condition survey by DRVN 2.Trial 3 year and annual plan for pavement maintenance 3. Annual Report 4. Interview to DRVN			
Project Purpose Implementation capacity for road maintenance is strengthened in Viet Nam	1. Trial pavement repair work plan using PMS is formulated in RMB I,II, III and IV 2. Primary rules for road facility inspection, maintenance and repair work are formulated (*1) 3 Implementation structure for road maintenance is established.	1. Trial pavement repair work plan of RMB I,II, III and IV 2. Regulation 3-1. Regulation 3-2. Interview to DRVN	I.A to achieve Overall goal 1.Budget is allocated stably for maintenance activities in accordance with five year plan 2. Training is conducted by DRVN continuously to maintain technical skills		
Outputs 1. PMS data development technology is improved 2.PMS is upgraded and applied to the planning of trial pavement repair work plans 3.Technical specifications for inspecting road facility and selecting repair work are developed 4.Responsibility assignment and administration procedure are clarified for road maintenance 5. Training impelmentation and public relations are reinforced	1.Road asset database, maintenance history database and pavement condition database are completed for PMS 2. Trial pavement repair work plan (annual, five year) using PMS is formulated by DRVN. 3.Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual are formulated. 4. Amendment plans to realize output 1-3 are developed 5-1. DRVN conduct regular trainings on project outputs 5-2. DRVN conduct PR.	1.Road asset DB, maintenance history DB, pavement condition DB 2.Trial pavement repair plans (annual, five year plan) 3.Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual. 4.Amendment plans (draft) 5-1. Training record 5-2. PR outputs	I.A. to achieve Project Purpose 1 Engineers who received training are assigned continuously 2. Legalization procedure for Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual proceeds	In Progress	
Activities	Inputs		I.A. to achieve Outputs		
	Japanese side	Vietnamese side			
1-1.Formulate PMS Database	1.Dispatch of Experts (1)Long term Expert •Road maintenance policy/regulations	1.Human resources (1)Chairperson of JCC (2)Chairperson of TWG (3)Counterparts (DRVN and RMBs) (4)Coordinator	1. VRAMP Project (WB) is implemented as planned		
1-2.Implement Pavement Condition Surveys for RMB II, III and IV selected roads	(2)Short-term experts • Team Leader/Road Maintenance Planning •Deputy Team Leader/PMS System Operation Technology	2.Facilities Communal office space for JP Team and local support team with electricity, air-condition, internet, telephone line.	2. IT policy of DRVN on organization and operation of database and system is maintained		
1-3.Develop Web-based PMS Data Input System	• Pavement Condition Survey (Planning and Management) • Pavement Condition Survey(Calibration) • PMS System Technology(Budget Simulation)	3.Cost (1)Cost for pilot project on maintenance and repair work (including cost for general materials) (2)Small running expenses necessary for the implementation of the Project. (e.g. daily allowance, accommodation and domestic travel expenses of DRVN's staff for participating in training in Vietnam)			
2-1.Upgrade PMS software	• PMS System Technology(Repair Work Planning) • Web-based System for Displaying Pavement Condition Data • Road Facility Inspection Technology • Road Maintenance Technology • Pilot Project Management • Pavement Technology	4.Others (1)Implementation of the pilot repair work for maintenance and repair work with JICA experts' advisory. (2)Implementation of pilot Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction, with JICA's local service.			
2-2.Convert input data and make PMS dataset	• Road Maintenance Administrative Procedure • Capacity Development/Project Coordination				
2-3.Formulate trial Pavement Repair Work Plan (annual and five year plan) for RMB I, II, III and IV road networks by PMS system and examine system operability.	2.Training in Japan • Three times (once/year) on Road maintenance policy and repair technology				
2-4.Develop web-based system for displaying pavement condition data on the DRVN mapping system	3.Equipment, Machinery and Materials (1)Special equipment and materials for pilot project work including; - Crack seal technology - Shallow pothole repair technology - Deep pothole repair technology - Bridge Waterproofing technology (Note) Materials to be imported are all listed in the revised Project Document.				
2-5.Develop Web-based system which enables PMS Operation on website and formulates trial annual and five year pavement repair work plans	(2)Computers for planning system (3)Others needed for project implementation				
2-6. Develop Web-based Analysis System for Pavement Condition Survey Data	4.Others(Sub Contract) • Local service for Pilot Pavement Condition Survey • Local Service for development of web-based operation system				
3-1.Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology which incorporates new technology and materials					
3-2. Upgrade Road Facility Inspection Guideline					
3-3. Upgrade Road Routine Maintenance Manual for standardization					
4-1.Prepare Amendment Plan for Road Maintenance Responsibility Assignment					
4-2.Prepare Amendment Plan for Road Maintenance Administrative Procedure					
5.1. Prepare Draft Training Plan					
5.2. Support Training Implementation					
5.3. Conduct Public Relations					

Note>(*1): target facilities, frequency, methods, diagnosis, selection method for repair works, repair work, construction management

Project Monitoring Sheet I (Revision of Project Design Matrix)

Project Name: The Project for Capacity Enhancement in Road Maintenance Phase II
 Project Period: February, 2015 to March, 2018 (3 years)
 Implementation Organization: Directorate for Roads of Vietnam under Ministry of Transport
 Target Group: DRVN, Road Management Bureaus (RMBs) I, II, III, IV
 Target Area: Designated area of RMB I, II, III, IV

Version: 3 DRAFT*

Dated: 31st Sep, 2016

* Amendments will be authorized at next JCC to be held in March 2017.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions (I.A.)	Achievement	Remarks
Overall Goal Road maintenance is conducted properly based on the mid-term plan, following PDCA cycle.	(By 3 years from the project end) The indicators for pavement damage (IRI, cracks, rutting, etc.) will be improved X %.	1.Result of data comparison of regular pavement condition survey by DRVN 2.Trial 3 year and annual plan for pavement maintenance 3. Annual Report 4. Interview to DRVN			
Project Purpose Implementation capacity for road maintenance is strengthened in Viet Nam	1. Trial pavement repair work plan using PMS is formulated in RMB I,II, III and IV 2. Primary rules for road facility inspection, maintenance and repair work are formulated (*1) 3 Implementation structure for road maintenance is established.	1. Trial pavement repair work plan of RMB I,II, III and IV 2. Regulation 3-1. Regulation 3-2. Interview to DRVN	I.A. to achieve Overall goal 1.Budget is allocated stably for maintenance activities in accordance with five year plan 2. Training is conducted by DRVN continuously to maintain technical skills		
Outputs 1. PMS data development technology is improved 2.PMS is upgraded and applied to the planning of trial pavement repair work plans 3.Technical specifications for inspecting road facility and selecting repair work are developed 4.Responsibility assignment and administration procedure are clarified for road maintenance 5. Training impelmentation and public relations are reinforced	1.PMS Database consisting of Road Aasset data, maintenance history data and pavement condition data are completed. 2. Trial pavement repair work plan (annual, five year) using PMS is formulated by DRVN. 3.Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual, and Expressway Maintenance Manual are formulated. 4. Amendment plans to realize output 1-3 are developed 5-1. DRVN conduct regular trainings on project outputs 5-2. DRVN conduct PR.	1.Road asset DB, maintenance history DB, pavement condition DB 2.Trial pavement repair plans (annual, five year plan) 3.Final draft of Road Facility Inspection Guideline, Road Routine Maintenance Manual and Expressway Maintenance Manual 4.Amendment plans (draft) 5-1. Training record 5-2. PR outputs	I.A. to achieve Project Purpose 1 Engineers who received training are assigned continuously 2. Legalization procedure for Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual proceeds	In Progress	
Activities	Inputs		I.A. to achieve Outputs		
	Japanese side	Vietnamese side			
1-1.Formulate PMS Database	1.Dispatch of Experts (1)Long term Expert •Road maintenance policy/regulations (2)Short-term experts • Team Leader/Road Maintenance Planning •Deputy Team Leader/PMS System Operation Technology	1.Human resources (1)Chairperson of JCC (2)Chairperson of TWG (3)Counterparts (DRVN and RMBs) (4)Coordinator 2.Facilities Communal office space for JP Team and local support team with electricity, air-condition, internet, telephone line. 3.Cost (1)Cost for pilot project on maintenance and repair work (including cost for general materials) (2)Small running expenses necessary for the implementation of the Project. (e.g. daily allowance, accommodation and domestic travel expenses of DRVN's staff for participating in training in Vietnam)	1. VRAMP Project (WB) is implemented as planned 2. IT policy of DRVN on organization and operation of database and system is maintained		
1-2.Implement Pavement Condition Surveys for RMB II, III and IV selected roads	•Pavement Condition Survey (Planning and Management) •Pavement Condition Survey(Calibration) •PMS System Technology(Budget Simulation)				
1-3.Develop Web-based PMS Data Input System	•PMS System Technology(Repair Work Planning) •Web-based System for Displaying Pavement Condition Data •Road Facility Inspection Technology •Road Maintenance Technology •Pilot Project Management •Pavement Technology				
2-1.Upgrade PMS software	•Road Maintenance Administrative Procedure •Capacity Development/Project Coordination				
2-2.Convert input data and make PMS dataset					
2-3.Formulate trial Pavement Repair Work Plan (annual and five year plan) for RMB I, II, III and IV road networks by PMS system and examine system operability.					
2-4.Develop web-based system for displaying pavement condition data on the DRVN mapping system					
2-5.Develop Web-based system which enables PMS Operation on website and formulates trial annual and five year pavement repair work plans					
2-6. Develop Web-based Analysis System for Pavement Condition Survey Data	2.Training in Japan •Three times (once/year) on Road maintenance policy and repair technology	4.Others (1)Implementation of the pilot repair work for maintenance and repair work with JICA experts' advisory. (2)Implementation of pilot Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction, with JICA's local service.	Preconditions		
2-7. Develop Web-based Pavement Monitoring System (PMoS)	3.Equipment, Machinery and Materials (1)Special equipment and materials for pilot project work including: - Crack seal technology - Shallow pothole repair technology - Deep pothole repair technology - Bridge Waterproofing technology (Note) Materials to be imported are all listed in the revised Project Document. (2)Computers for planning system (3)Others needed for project implementation				
3-1.Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology which incorporates new technology and materials					
3-2. Upgrade Road Facility Inspection Guideline					
3-3. Upgrade Road Routine Maintenance Manual for standardization					
3-4. Develop Expressway Maintenance Manual					
4-1.Prepare Amendment Plan for Road Maintenance Responsibility Assignment	4.Others(Sub Contract) •Local service for Pilot Pavement Condition Survey •Local Service for development of web-based operation system				
4-2.Prepare Amendment Plan for Road Maintenance Administrative Procedure					
5.1. Prepare Draft Training Plan					
5.2. Support Training Implementation					
5.3. Conduct Public Relations					

Note:(*1): target facilities, frequency, methods, diagnosis, selection method for repair works, repair work, construction management

APPENDIX-4: R/D, M/M, MINUTES OF JCC MEETINGS

RECORD OF DISCUSSIONS
ON
THE PROJECT FOR CAPACITY ENHANCEMENT
IN ROAD MAINTENANCE PHASE II
IN
SOCIALIST REPUBLIC OF VIET NAM
AGREED UPON BETWEEN
DIRECTORATE FOR ROADS OF VIETNAM
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

Hanoi, November 5th, 2014



Mr. Mutsuya Mori
Chief Representative
JICA Vietnam Office
Japan International Cooperation Agency



Mr. Nguyen Hong Truong
Vice Minister
Ministry of Transport

Based on the minutes of meetings on the Detailed Planning Survey on “the Project for Capacity Enhancement in Road Maintenance Phase II” (hereinafter referred to as “the Project”) signed on September 8, 2014 between the Directorate for Roads of Vietnam (hereinafter referred to as “DRVN”) and the Japan International Cooperation Agency (hereinafter referred to as “JICA”), JICA held a series of discussions with DRVN and relevant organizations to develop a detailed plan of the Project.

Both parties agreed the details of the Project and the main points discussed as described in the Appendix 1 and the Appendix 2 respectively.

Both parties also agreed that DRVN, the counterpart to JICA, will be responsible for the implementation of the Project in cooperation with JICA, coordinate with other relevant organizations and ensure that the self-reliant operation of the Project is sustained during and after the implementation period in order to contribute toward social and economic development of the Socialist Republic of Viet Nam (hereinafter referred to as “Viet Nam”).

The Project will be implemented within the framework of the Agreement on Technical Cooperation signed on October 20, 1998 (hereinafter referred to as “the Agreement”) and the Note Verbales exchanged on July 8, 2014 (hereinafter referred to as “the Note Verbales”) between the Government of Japan (hereinafter referred to as “GOJ”) and the Government of the Socialist Republic of Viet Nam (hereinafter referred to as “GOV”).

Appendix 1: Project Description

Appendix 2: Main Points Discussed

Appendix 3: Minutes of Meetings on Detailed Planning Survey

PROJECT DESCRIPTION

Both parties confirmed that there is no change in the Project Description agreed on in the minutes of meetings on the concerning Preparatory Survey on the Project signed on September 8, 2014 (Appendix-3).

I. BACKGROUND

Under the previous 5 years Socio-Economic Development Strategy (2006-2010), the economy of Vietnam achieved stable socio-economic growth as described with the average growth rate of 7 % / year, and doubling of GDP in 2010 from that of 2000. In the new 5 years Socio-Economic Development Strategy (2011-2015), maintaining of high socio economic growth is continued to be one of objectives through mobilizing 12 socio economic strategies described. With regards to socio economic strategy on transport infrastructure, it concentrates on reviewing of transport infrastructure development projects and promoting priority investment on establishing urban infrastructure such as step by step synchronously- establishment of South-North route axis and East-West corridor axis, encouraging and creating conditions for participation of foreign and private sector investments on infrastructure development, and early completion of cross border roads to surrounding countries.

In complying with the previous development strategy, in 2008, the Ministry of Transport (MOT) set the Transport infrastructure development Strategy of Vietnam up to 2020. Since its establishment, the strategy has been partially amended periodically under the instruction of the Prime Minister. Especially approved amendments in 2013 describe policies on introduction of advanced technologies, upgrading of technical standards, specification and norms. In January 2013, MOT successfully institutionalized road maintenance funds which had been a matter of concerns for a long term. As a result, 65 % of road maintenance funds are allocated to national roads and 35% to provincial road. This is expected to secure more budgets for road maintenance than those in 2012, which only 40% of requested budget was secured.

In March, 2013, MOT published the Plan for Comprehensive Renovation in Management and Maintenance of National Highway System. The Plan aims to upgrade the quality of national road maintenance works so that the longevity of road facilities is increased, and at the same time, safety and efficiency of road traffic are also improved. Strategic policies described in the plan are listed below.

- 1) Renovate contractor selection procedures for national road maintenance
- 2) Upgrade quality of supervision on road maintenance work
- 3) Apply new road maintenance technologies
- 4) Implement measures for overloaded vehicles
- 5) Renovate planning methodology for road maintenance (3 years plan)
- 6) Improve required procedures for laws and regulations relevant to road management and maintenance
- 7) Amend road maintenance standards and norms

- 8) Develop human resources and improve road maintenance institutions
 - 9) Install information management system for road maintenance
 - 10) Assist capacity enhancement of regional road maintenance
- Current situation of Road Asset Management at DRVN is describes as below:
- 1) DRVN implemented operation methodology in quality management and road maintenance in accordance with the Government's policies.
 - 2) Technology qualification in management and maintenance work is low, asynchronous, and slow renovation lead to limited effectiveness and quality of this work in the past.
 - 3) The technical standards, work procedures, mechanism, policies and financial resources are incomplete that make it difficult for implementation and planning (including short-term, medium-term and long-term) of road maintenance.
 - 4) Lack of a road database system which is unified and complete to connect data from the central to the local, facilitate the management and exploitation, and initiatively coordinate the works.
 - 5) Human resources are not equal in qualifications and capabilities, and there is no development plan which is appropriate and satisfied with the new implementation methodology.

Under above background, GOV requested GOJ to implement "Technical Cooperation for the Project for Capacity Enhancement in Road Maintenance Phase II". In response to this request, JICA determined to transfer the technology in order to facilitate the road maintenance cycle and held series of discussion with DRVN and related authorities concerned of Viet Nam. Based on the agreements between JICA and the authorities concerned of Viet Nam, the Minutes of Meetings was signed on September 8, 2014, which leads both parties to conclude this Record of Discussions.

II. OUTLINE OF THE PROJECT

Details of the Project are described in the tentative Logical Framework (Project Design Matrix: PDM) (Annex 1) and the tentative Plan of Operation (PO) (Annex 2).

1. Input

(1) Input by JICA

(a) Dispatch of Experts

(i) Long-term expert(s)

Road maintenance policy / regulations

(ii) Short-term experts

Institutional development for road maintenance

Road inspection / diagnosis

(pavement), (structure), (embankment), (measurement) and (analysis)

Database development

System development

Pavement repair technology

Human resource development

Pavement repair materials

Coordinator

- (b) Training
 - Three time in Japan (once /year) on Road maintenance policy and new technology
- (c) Equipment, Machinery and Materials
 - (1) Special materials for pilot project works
 - (2) Computers for planning system
 - (3) Others needed for the project implementation

In case of importation, the machinery, equipment and other materials under II-1 (1) (c) above will become the property of the GOV upon being delivered C.I.F. (cost, insurance and freight) to the Viet Nam authorities concerned at the ports and/or airports of disembarkation.

Input other than indicated above will be determined through mutual consultations between JICA and DRVN during the implementation of the Project, as necessary, including the Road Condition Survey Vehicle beyond the coverage provided in the previous project.

(2) Input by DRVN

DRVN will take necessary measures to provide at its own expense:

- (a) Services of DRVN's counterpart personnel and administrative personnel as referred to in II-2;
- (b) Suitable office space and basic utilities (electricity, air-conditioning, internet, telephone line etc.) for JICA experts and local support team before commencement of the Project;
- (c) Implementation of the pilot projects for maintenance and repair work with JICA experts' advices;
- (d) Implementation of the Pilot Pavement Condition Survey for the selected roads under Road Management Bureau (RMB) II, III and IV jurisdiction with JICA's local service ;
- (e) Means of transport and travel allowances for JICA experts for official travel within Viet Nam whenever local conditions and financial possibilities in accordance with the Agreement;
- (f) Information as well as support in obtaining medical service;
- (g) Credentials or identification cards;
- (h) Available data (including maps and photographs) and existing information related to the Project;
- (i) Small running expenses necessary for the implementation of the Project. e.g. daily allowance, accommodation and domestic travel expenses of DRVN's staff for participating in training in Vietnam;
- (j) Expenses necessary for transportation within Viet Nam of the equipment referred to in PDM, if arise; and
- (k) Necessary facilities to the JICA experts for the remittance as well as utilization of the funds introduced into Viet Nam from Japan in connection with the implementation of the Project

2. Implementation Structure

The Project organization chart is given in the Annex 3. The roles and assignments of relevant organizations are as follows:

(1) DRVN

(a) Chairperson of Joint Coordination Committee (JCC)

Director General of DRVN will be responsible for overall administration and implementation of the Project.

(b) Chairperson of Technical Cooperation Working Group (TWG)

Team Leader of DRVN's Road Asset Management Working Group (RAM-WG) will be responsible for the implementation of the Project

(c) Counterparts

Relevant officers from following organizations in DRVN will be responsible for the managerial and technical matters of the Project.

- Team Leader of RAM-WG
- Relevant departments of DRVN
- RMB I, II, III and IV.

(d) Coordinator

- Project Management Unit -Technical Assistance (PMU-TA)

(2) JICA Experts

The JICA experts will give necessary technical guidance, advice and recommendations to DRVN on any matters pertaining to the implementation of the Project.

(3) Joint Coordination Committee (JCC)

JCC will be established in order to facilitate inter-organizational coordination. JCC meeting will be held at least once a year and whenever deems it necessary. JCC will approve an annual work plan, review overall progress, conduct evaluation of the Project, and exchange opinions on major issues that arise during the implementation of the Project.

A list of proposed members of JCC and RAM-WG is shown in the Annex 4.

3. Project Site(s) and Beneficiaries

(1) Project Site(s)

The main activities of the Project will be implemented at DRVN's headquarters and jurisdiction of RMB I, II, III and IV.

(2) Direct beneficiaries

Direct beneficiaries of the Project will be the staff of DRVN.

(3) Indirect beneficiaries

Indirect beneficiaries are road users.

4. Duration

The duration of the Project will be three (3) years from the first dispatch of expert(s). The tentative Plan of Operation is shown in Annex 2.

5. Reports

JICA will prepare and submit the following reports to DRVN in English and draft version in Vietnamese.

- (1) Inception Report at the commencement of the Project

DRVN and JICA experts will jointly prepare the following reports in English and draft version in Vietnamese.

- (1) Monitoring Sheets on semiannual basis until the project completion.
- (2) Project Completion Report at the time of completion.

6. Environmental and Social Considerations

DRVN agreed to abide by 'JICA Guidelines for Environmental and Social Considerations' in order to ensure that appropriate considerations will be made for the environmental and social impacts of the Project.

III. UNDERTAKINGS OF DRVN AND MOT

1. DRVN and MOT will take necessary measures to:

- (1) ensure that the technologies and knowledge acquired by Viet Nam nationals as a result of Japanese technical cooperation contributes to the economic and social development of Viet Nam, and that the knowledge and experience acquired by the personnel of Viet Nam from technical training as well as the equipment provided by JICA will be utilized effectively in the implementation of the Project; and
 - (2) facilitate to obtain grant privileges, exemptions and benefits to the JICA experts referred to in PDM and their families, which are no less favorable than those granted to experts and members of the missions and their families of third countries or international organizations performing similar missions in Viet Nam.
 - (3) facilitate to provide tax exemption for repair materials and equipment for the Project.
 - (a) The Viet Nam side agreed that customs duties, internal taxes and other fiscal levies which may be imposed in Viet Nam are exempted under mutual agreement of the Agreement.
 - (b) If any expenses stated above are caused by some reasons such as the delay of execution of tax exemption, the Viet Nam side shall pay for it.
2. Other privileges, exemptions and benefits will be provided in accordance with the Agreement and/or the Note Verbales between MOT and GOJ.

IV. MONITORING AND EVALUATION

JICA and the DRVN will jointly and regularly monitor the progress of the Project through the Monitoring Sheets based on PDM and PO. The Monitoring Sheets shall be reviewed every six (6) months.

Also, Project Completion Report shall be drawn up one (1) month before the termination of the Project.

JICA will conduct the following evaluations and surveys to mainly verify sustainability and impact of the Project and draw lessons. DRVN is required to provide necessary support for them.

1. Ex-post evaluation three (3) years after the project completion, in principle
2. Follow-up surveys on necessity basis

V. PROMOTION OF PUBLIC SUPPORT

For the purpose of promoting support for the Project, DRVN will take appropriate measures to make the Project widely known to the people of Viet Nam.

VI. MISCONDUCT

If JICA receives information related to suspected corrupt or fraudulent practices in the implementation of the Project, DRVN and relevant organizations shall provide JICA with such information as JICA may reasonably request, including information related to any concerned official of the government and/or public organizations of Viet Nam.

DRVN and relevant organizations shall not, unfairly or unfavorably treat the person and/or company which provided the information related to suspected corrupt or fraudulent practices in the implementation of the Project.

VII. MUTUAL CONSULTATION

JICA and DRVN will consult each other whenever any major issues arise in the course of Project implementation.

VII. AMENDMENTS

The record of discussions may be amended by the minutes of meetings between JICA and DRVN.

The minutes of meetings will be signed by authorized persons of each side who may be different from the signers of the record of discussions.

- Annex 1 Tentative Logical Framework (Project Design Matrix : PDM)
- Annex 2 Tentative Plan of Operation
- Annex 3 Project Organization Chart
- Annex 4 A List of Proposed Members of Joint Coordinating Committee / DRVN's Road Asset Management Working Group

Project Name: The Project for Capacity Enhancement in Road Maintenance Phase-2
 Project Period MM, 201X to MM, 20XX (3 years) Implementation Organization: DRVN under Ministry of Transport
 Target Group: DRVN, Road Management Bureau (RMBs) I, II, III, IV
 Target Area: Designated area of RMB I, II, III, IV

Date: 8 September, 2014

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions (I.A.)	Achievement	Remarks
Overall Goal					
Road maintenance is conducted based on the plan in Vietnam.	(By 3 years from the project end) The indicators for pavement damage (IRI, cracks, rutting, etc.) will be improved X %.	1.Result of data comparison of regular pavement condition survey by DRVN 2.Trial mid-term and annual plan for pavement maintenance 3.Interview to DRVN			
Project Purpose			I.A. to achieve Overall goal		
Implementation capacity for road maintenance is strengthened in Vietnam	1. Trial pavement repair plan using PMS is formulated in RMB I-IV	1. Trial pavement repair plan of RMB I-IV	1.Budget is allocated for maintenance activities in accordance with the Mid-term plan 2. Training is conducted by DRVN continuously to maintain technical skills		
	2. Methods for road facility inspection, maintenance and repair work are formulated (*1)	2. Regulation			
	3 Implementation structure for road maintenance is established.	3-1. Regulation 3-2. Interview to DRVN			
Outputs			I.A. to achieve Project Purpose		
1. PMS data development technology is improved	1-1.Road structure database and repair history database are completed for PMS 1-2.DRVN conducts DB input training periodically.	1-1.Road structure DB, repair history DB 1-2.Training record	1. Engineers who received training are assigned continuously 2. Regulation procedure for pavement maintenance and road facility inspection moves forward		
2.PMS is upgraded and applied to the planning of trial pavement repair plans	2-1. Trial pavement repair plan (annual, mid-term) using PMS is formulated by DRVN. 2-2. DRVN conducts PMS training periodically.	2-1.Trial pavement repair plan (mid-term and annual) 2-2.Training record			
3. Technical specifications for diagnosing road facility and selecting repair work are developed	3. Final draft of specifications for diagnosing road facility and selecting repair work are formulated.	3. Final draft of specifications for diagnosing road facility and selecting repair work			
4. Implementation procedures and work demarcation are clarified for road maintenance	4. Implementation plans to realize output 1-3 are developed	4-1.Implementation plan (draft) 4-2. Assignment chart (draft)			
Activities	Inputs		I.A. to achieve Outputs		
	Japanese side	Vietnamese side			
1-1.Review PMS data formats and data input system produced in Phase-I Project.	1.Dispatch of Experts (1)Long-term expert(s) Road maintenance policy/regulations (2)Short-term experts Institutional development for road maintenance Road inspection/diagnosis (pavement), (structure), (embankment), (measurement), (analysis) Database development System development Pavement repair technology Human resource development Pavement repair materials Coordinator 2.Training in Japan three times (once/year) on Road maintenance policy and new technology 3. Equipment, Machinery and Materials (1)Special materials for pilot project works (2)Computers for planning system (3)Others needed for the project implementation 4.Others Local service for Pilot Pavement Condition Survey	1.Human resources (1)Chairperson of JCC (2)Chairperson of TWG (3)Counterparts (DRVN and RMBs) (4)Coordinator 2.Facilities Suitable office space for JP Experts and local support team with electricity, air-condition, internet, telephone line, etc. 3.Cost (1)Cost for pilot project on maintenance and repair work (including cost for general materials) (2)Small running expenses necessary for the implementation of the Project. (e.g. daily allowance, accommodation and domestic travel expenses of DRVN's staff for participating in training in Vietnam) 4.Others (1)Implementation of the pilot project on maintenance and repair work with JICA experts' advices. (2)Implementation of the Pilot Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction with JICA's local service.	1. VRAMP Project (WB) is implemented as planned 2. IT policy of DRVN is maintained		
1-2.Upgrade PMS data input system					
1-3.Input and verify PMS data					
1-4.Implement training on PMS data input development					
2-1.Implement pavement condition surveys for RMB II, III and IV selected roads					
2-2.Develop web-based system for pavement condition data on the existing GIS system on the website					
2-3.Convert input data and make PMS dataset					
2-4.Upgrade PMS software					
2-5.Formulate trial annual and mid-term pavement repair work plans for RMB I, II, III and IV road networks by PMS system and examine system operability					
2-6.Develop web-based system which enables PMS operation on the website and formulates trial annual and mid-term pavement repair work plans					
2-7. Implement trainings on Activity 2-1~2-6.					
3-1.Upgrade road facility inspection guideline and road maintenance manual produced in Phase-1 project to technical specifications.					
3-2. Develop pilot projects for pavement maintenance and repair work which incorporates new technology and materials					
3-3. Implement pilot projects for pavement repair work, monitor and evaluate their performances					
3-4. Based on the results of pilot projects, develop final draft of road facility inspection guideline and road maintenance manual for standardization procedures					
3-5. Implement trainings on the use of road inspection guideline and road maintenance manual in the field					
4-1.Conduct baseline survey on the administration procedures and the responsibility assignment for road maintenance					
4-2.Develop implementation plan to realize project outputs					
4-3.Draft implementation plan on the legal procedures to realize project outputs					
			Preconditions		
			Conditions to be fulfilled before the Project commencement		
			Outputs generated through the phase1 project can be utilized.		

Note>(*1): target facilities, frequency, methods, diagnosis, selection method for repair works, repair work, construction management

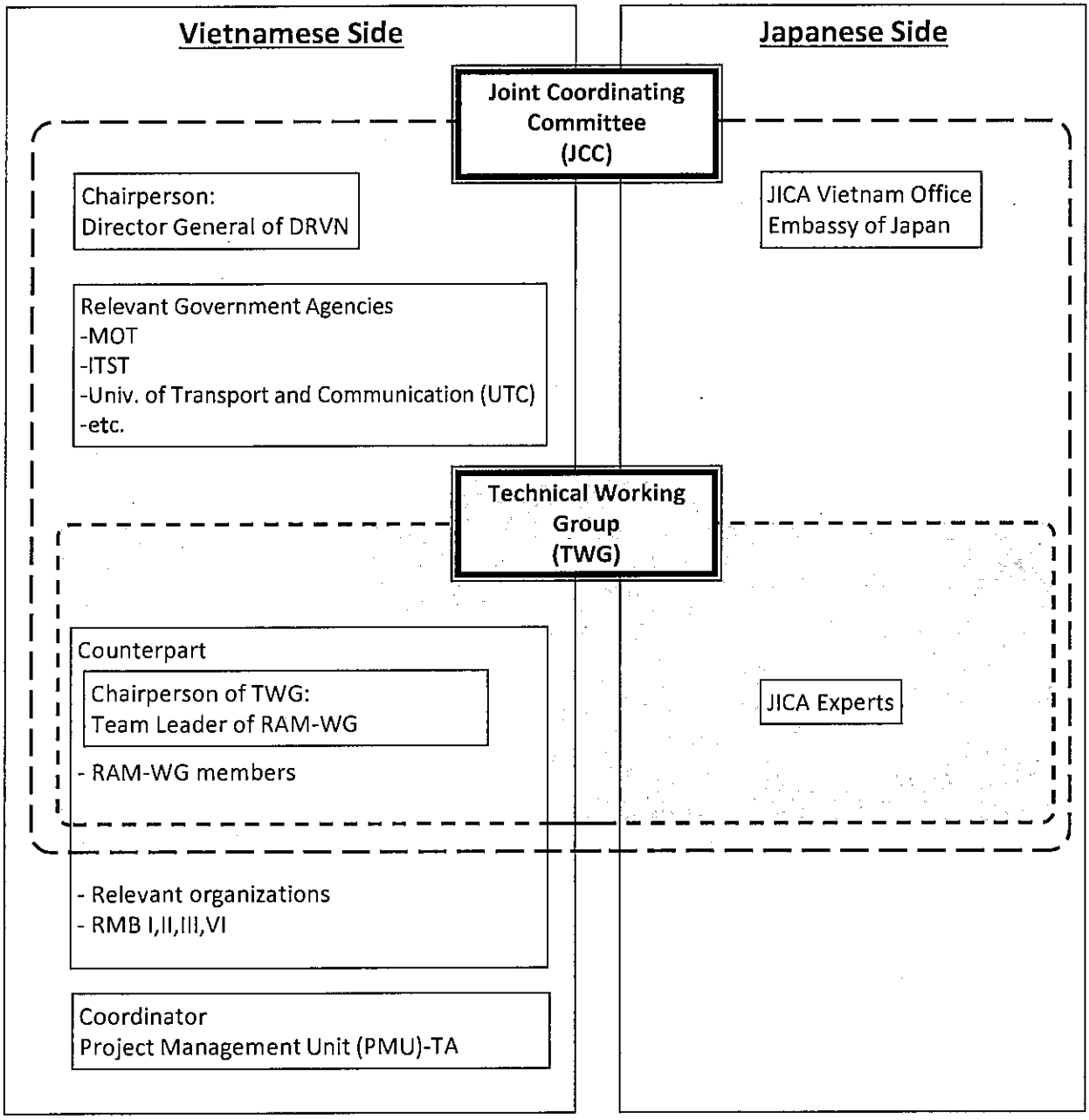
Tentative Plan of Operation

ANNEX 2

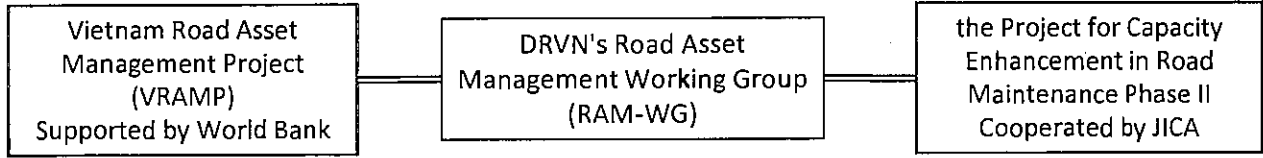
Project Title: The Project for Capacity Enhancement in Road Maintenance Phase II

Activities Sub-Activities	Year	1st Year				2nd Year				3rd Year				
		I	II	III	IV	I	II	III	IV	I	II	III	IV	
Output 1: PMS data development technology is improved														
1-1. Review PMS data formats and data input system produced in Phase-I Project.	Plan	■												
	Actual													
1-2. Upgrade PMS data input system	Plan		■											
	Actual													
1-3. Input and verify PMS data	Plan			■										
	Actual													
1-4. Implement training on PMS data input development	Plan		▲		▲									
	Actual													
Output 2: PMS is upgraded and applied to the planning of trial pavement repair plans														
2-1. Implement pavement condition surveys for RMB II, III and IV selected roads	Plan	■	■	■	■	■	■	■	■	■	■	■	■	■
	Actual													
2-2. Develop web-based system for pavement condition data on the existing GIS system on the website	Plan	■	■	■	■	■	■	■	■	■	■	■	■	■
	Actual													
2-3. Convert input data and make PMS dataset	Plan	■	■	■	■									
	Actual													
2-4. Upgrade PMS software	Plan	■	■	■	■	■	■	■	■					
	Actual													
2-5. Formulate trial pavement repair plans for RMB I, II, III and IV road networks by PMS system and examine system operability	Plan					■	■	■	■	■	■	■	■	■
	Actual													
2-6. Develop web-based system which enables PMS operation on the website and formulates trial annual and mid-term pavement repair work plans	Plan	■	■	■	■	■	■	■	■	■	■	■	■	■
	Actual													
2-7. Implement trainings on Activity 2-1~2-6.	Plan					▲		▲		▲		▲		▲
	Actual													
Output 3: Technical specifications for diagnosing road facility and selecting repair work are developed														
3-1. Upgrade road facility inspection guideline and road maintenance manual produced in Phase-1 project to technical specifications.	Plan	■	■	■	■	■	■	■	■					
	Actual													
3-2. Develop pilot projects for pavement maintenance and repair work which incorporates new technology and materials	Plan	■	■	■	■									
	Actual													
3-3. Implement pilot projects for pavement repair work, monitor and evaluate their performances	Plan		■	■	■	■	■	■	■					
	Actual													
3-4. Based on the results of pilot projects, develop final draft of road facility inspection guideline and road maintenance manual for standardization procedures	Plan									■	■	■	■	■
	Actual													
3-5. Implement trainings on the use of road inspection guideline and road maintenance manual in the field	Plan					▲		▲		▲		▲		▲
	Actual													
Output 4: Implementation procedures and work demarcation are clarified for road maintenance														
4-1. Conduct baseline survey on the administration procedures and the responsibility assignment for road maintenance	Plan	■	■	■	■									
	Actual													
4-2. Develop implementation plan to realize project outputs	Plan		■	■	■	■	■	■	■	■	■	■	■	■
	Actual													
4-3. Draft implementation plan on the legal procedures to realize project outputs	Plan					■	■	■	■	■	■	■	■	■
	Actual													
Training in Japan														
Road maintenance policy and new technology	Plan			▲				▲				▲		
	Actual													
Monitoring Plan														
Monitoring	Year													
		I	II	III	IV	I	II	III	IV	I	II	III	IV	
Joint Coordination Committee	Plan	▲				▲				▲				▲
	Actual													
Set-up the Detailed Plan of Operation	Plan	▲												
	Actual													
Submission of Monitoring Sheet	Plan			▲		▲		▲		▲		▲		
	Actual													
Reports/Documents														
Inception Report	Plan	▲												
	Actual													
Project Completion Report	Plan													▲
	Actual													

Organization chart of the Project



Coordination between the Project and VRAMP



LIST OF MEMBERS OF JOINT COORDINATION COMMITTEE

Chairperson: Director General, DRVN

Members:

JCC consists of the members from the following organizations:

(1) Vietnamese Side

- 1) Steering committee for development of road asset management system under VRAMP Project and JICA Project.
- 2) Ministry of Transport (MOT)
- 3) Institute of Transport Science and Technology (ITST)
- 4) University of Transport and Technology (UTC)
- 5) Others

(2) Japanese Side

- 1) Embassy of Japan (EOJ)
- 2) Japan International Cooperation Agency (JICA)
- 3) JICA Experts

JCC will be held with the maximum availability of the members listed above

LIST OF MEMBERS OF TECHNICAL WORKING GROUP

Chairperson: Leader, Road Asset Database Management Group (RAM-WG)

Members:

JCC consists of the members from the following organizations:

(1) Vietnamese Side

- 1) RAM-WG.
- 2) Others

(2) Japanese Side

- 1) JICA Experts

TWG will be held with the maximum availability of the members listed above

MAIN POINTS DISCUSSED

I. PROJECT DESIGN MATRIX (PDM) AND PLAN OF OPERATIONS (PO)

Both sides agreed on the contents of the tentative Logical Framework (Project Design Matrix: PDM) and tentative Plan of Operations (PO) as shown in Annex-1 and Annex-2 of R/D. The PDM and PO are to be flexibly revised according to the progress and achievement of the Project, upon mutual agreement between DRVN and JICA by signing a Minutes of Meetings, according to the R/D.

II. COUNTERPART

Both sides agreed that necessary counterparts as described in II.1 (2) and Annex-1 (PDM) of the draft R/D shall be assigned.

III. PAVEMENT CONDITION SURVEY AND ANALYSIS

Both sides agreed that pavement condition survey and analysis shall be implemented for selected roads under RMB II, III and IV jurisdiction by DRVN with local staff support of JICA for survey and analysis within the framework of financial restriction.

IV. PMS IMPROVEMENT

Both sides agreed that web-based operation of PMS software (data system, PMS system) will be developed.

V. PILOT PROJECTS

Both sides agreed that pilot projects for pavement maintenance repair work shall be implemented with technical advice given by the JICA experts, selecting and applying a few high priority technologies to the national road sections under RMB I jurisdiction. DRVN shall take responsibilities for the budget, arrangement, contract(s), supervision, safety assurance of the work and monitoring / evaluation of their work performance. DRVN shall bear claims of any arising.

VI. COORDINATION BETWEEN THE PROJECT AND VIETNAM ROAD ASSET MANAGEMENT PROJECT (VRAMP)

Both sides agreed that DRVN shall be responsible for coordination between the Project and VRAMP for the purpose of smooth and effective implementation of the both projects.

VII. PROJECT OFFICE

Both sides agreed necessary office space(s) including office equipment

(furniture) and basic utilities (electricity, air-conditioning, internet line, telephone etc.) will be prepared by DRVN before commencement of the Project.

VIII. TAX OR LEVY

Both sides confirmed that in case any tax or levy is imposed for equipment and materials, DRVN will arrange the budget equivalent to the amount of the tax or levy for JICA on import.

IX. OTHERS

DRVN are strongly encouraged to keep their eyes on the capacity building for self-governance and sustainability.

**MINUTES OF MEETING
BETWEEN
JAPAN INTERNATIONAL COOPERATION AGENCY
AND
AUTHORITIES CONCERNED OF
THE GOVERNMENT OF SOCIALIST REPUBLIC OF VIET NAM
ON
JAPANESE TECHNICAL COOPERATION PROJECT
FOR
THE PROJECT FOR CAPACITY ENHANCEMENT
IN ROAD MAINTENANCE PHASE II**

In response to the official request of the Government of the Socialist Republic of Viet Nam (hereinafter referred to as "Viet Nam"), the Detailed Planning Survey Team (hereinafter referred to as "the Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") headed by Mr. Yoshihiro Kakishita, Senior Road Sector Advisor, Infrastructure and Peacebuilding Department of JICA, visited Viet Nam from August 25 to September 8, 2014 for the purpose of working out the details of the technical cooperation program concerning "the Project for Capacity Enhancement in Road Maintenance Phase II" (hereinafter referred to as "the Project").

During its stay in Viet Nam, the Team exchanged views and had a series of discussions with the concerned officials of the Ministry of Transport (hereinafter referred to as "MOT"), and the Directorate for Roads of Vietnam (hereinafter referred to as "DRVN").

As a result of the discussions, DRVN and JICA agreed upon the matters referred to in the document attached hereto.

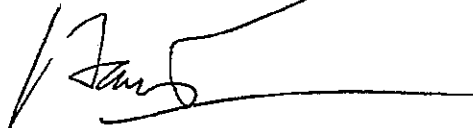
Hanoi, September 8, 2014

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Yoshihiro Kakishita
Leader
Detailed Planning Survey Team,
Japan International Cooperation Agency



Mr. Nguyen Van Huyen
Director General
Directorate for Roads of Vietnam
Ministry of Transport



Witnessed by Ms. Nguyen Thanh Hang
Deputy Director General
Planning and Investment Department
Ministry of Transport

ATTACHED DOCUMENT

1. PROJECT TITLE

Both sides confirmed that the Project title is "the Project for Capacity Enhancement in Road Maintenance Phase II".

2. RECORD OF DISCUSSIONS

Both sides agreed that the Record of Discussions (R/D), the draft of which is attached hereto, will determine the framework of the Project. R/D will be signed after the formal approval of both sides.

Attachment-1 Draft Record of Discussions

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[DRAFT]
RECORD OF DISCUSSIONS
ON
THE PROJECT FOR CAPACITY ENHANCEMENT
IN ROAD MAINTENANCE PHASE II
IN
SOCIALIST REPUBLIC OF VIET NAM
AGREED UPON BETWEEN
DIRECTORATE FOR ROADS OF VIETNAM
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

Hanoi, XX, 2014

(Name)
(Title)
(Department)
Japan International Cooperation Agency
Japan

(Name)
(Title)
(Department),
Ministry of Transport
The Socialist Republic of Viet Nam

Based on the minutes of meetings on the Detailed Planning Survey on the "the Project for Capacity Enhancement in Road Maintenance Phase II" (hereinafter referred to as "the Project") signed on September 8, 2014 between the Directorate for Roads of Vietnam (hereinafter referred to as "DRVN") and the Japan International Cooperation Agency (hereinafter referred to as "JICA"), JICA held a series of discussions with DRVN and relevant organizations to develop a detailed plan of the Project.

Both parties agreed the details of the Project and the main points discussed as described in the Appendix 1 and the Appendix 2 respectively.

Both parties also agreed that DRVN, the counterpart to JICA, will be responsible for the implementation of the Project in cooperation with JICA, coordinate with other relevant organizations and ensure that the self-reliant operation of the Project is sustained during and after the implementation period in order to contribute toward social and economic development of the Socialist Republic of Viet Nam (hereinafter referred to as "Viet Nam").

The Project will be implemented within the framework of the Agreement on Technical Cooperation signed on October 20, 1998 (hereinafter referred to as "the Agreement") and the Note Verbales exchanged on July 8, 2014 (hereinafter referred to as "the Note Verbales") between the Government of Japan (hereinafter referred to as "GOJ") and the Government of the Socialist Republic of Viet Nam (hereinafter referred to as "GOV").

Appendix 1: Project Description

Appendix 2: Main Points Discussed

Appendix 3: Minutes of Meetings on Detailed Planning Survey

PROJECT DESCRIPTION

Both parties confirmed that there is no change in the Project Description agreed on in the minutes of meetings on the concerning Preparatory Survey on the Project signed on September 8, 2014 (Appendix-3).

I. BACKGROUND

Under the previous 5 years Socio-Economic Development Strategy (2006-2010), the economy of Vietnam achieved stable socio-economic growth as described with the average growth rate of 7 % / year, and doubling of GDP in 2010 from that of 2000. In the new 5 years Socio-Economic Development Strategy (2011-2020), maintaining of high socio economic growth is continued to be one of objectives through mobilizing 12 socio economic strategies described. With regards to socio economic strategy on transport infrastructure, it concentrates on reviewing of transport infrastructure development projects and promoting priority investment on establishing urban infrastructure such as step by step synchronously- establishment of South-North route axis and East-West corridor axis, encouraging and creating conditions for participation of foreign and private sector investments on infrastructure development, and early completion of cross border roads to surrounding countries.

In complying with the above development strategy, in 2004, the Ministry of Transport (MOT) set the Transport infrastructure development Strategy of Vietnam up to 2020. Since its establishment, the strategy has been partially amended periodically under the instruction of the Prime Minister. Especially approved amendments in 2013 describe policies on introduction of advanced technologies, upgrading of technical standards, specification and norms. In January 2013, MOT successfully institutionalized road maintenance funds which had been a matter of concerns for a long term. As a result, 65 % of road maintenance funds is allocated to national roads and 35% to provincial road. This is expected to secure more budgets for road maintenance than those in 2012, which only 40% of requested budget was secured.

In March, 2013, MOT published the Plan for Comprehensive Renovation in Management and Maintenance of National Highway System. The Plan aims to upgrade the quality of national road maintenance works so that the longevity of road facilities is increased, and at the same time, safety and efficiency of road traffic are also improved. Strategic policies described in the plan are listed below.

- 1) Renovate contractor selection procedure for national road maintenance
- 2) Upgrade quality of supervision on road maintenance work
- 3) Apply new road maintenance technologies
- 4) Implement measures for overloaded vehicles
- 5) Renovate planning methodology for road maintenance (3 years plan)
- 6) Improve required procedure for laws and regulations relevant to road management and maintenance
- 7) Amend road maintenance standards and norms

- 8) Develop human resource and improve road maintenance institution
- 9) Install information management system for road maintenance
- 10) Assist capacity enhancement of regional road maintenance.

Current situation of Road Asset Management at DRVN is describes as below:

- 1) DRVN implemented operation methodology in quality management and road maintenance in accordance with the Government's policies.
- 2) Technology qualification in management and maintenance work is low, asynchronous, and slow renovation lead to limited effectiveness and quality of this work in the past.
- 3) The technical standards, work procedures, mechanism, policies and financial resources are incomplete that make it difficult for implementation and planning (including short-term, medium-term and long-term) of road maintenance.
- 4) Lack of a road database system which is unified and complete to connect data from the central to the local, facilitate the management and exploitation, and initiatively coordinate the works.
- 5) Human resources is not equal in qualifications and capabilities, and there is no development plan which is appropriate and satisfied with the new implementation methodology.

Under above background, GOV requested GOJ to implement "Technical Cooperation for the Project for Capacity Enhancement in Road Maintenance Phase II". In response to this request, JICA determined to transfer the technology in order to facilitate the road maintenance cycle and held series of discussion with DRVN and related authorities concerned of Viet Nam. Based on the agreements between JICA and the authorities concerned of Viet Nam, the Minutes of Meetings was signed on September 8, 2014, which leads both parties to conclude this Record of Discussions.

II. OUTLINE OF THE PROJECT

Details of the Project are described in the tentative Logical Framework (Project Design Matrix: PDM) (Annex 1) and the tentative Plan of Operation (PO) (Annex 2).

1. Input

(1) Input by JICA

(a) Dispatch of Experts

(i) Long-term experts

Road maintenance policy / regulations

(ii) Short-term experts

Institutional development for road maintenance

Road inspection / diagnosis

(pavement), (structure), (embankment), (measurement) and (analysis)

Database development

System development

Pavement repair technology

Human resource development

Pavement repair materials

Coordinator

(b) Training
Road maintenance policy and new technology

(c) Equipment, Machinery and Materials

-
- (1) Special materials for pilot project works
 - (2) Computers for planning system
 - (3) Others needed for the project implementation

In case of importation, the machinery, equipment and other materials under II-1 (1) (c) above will become the property of the GOV upon being delivered C.I.F. (cost, insurance and freight) to the Viet Nam authorities concerned at the ports and/or airports of disembarkation.

Input other than indicated above will be determined through mutual consultations between JICA and DRVN during the implementation of the Project, as necessary, including the Road Condition Survey Vehicle beyond the coverage provided in the previous project.

(2) Input by DRVN

DRVN will take necessary measures to provide at its own expense:

- (a) Services of DRVN's counterpart personnel and administrative personnel as referred to in II-2;
- (b) Suitable office space and basic utilities (electricity, air-conditioning, internet line, telephone etc.) will be prepared by DRVN before commencement of the Project.
- (c) Implementation of the pilot project for maintenance and repair work with JICA experts' advisory.
- (d) Pilot Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction with JICA's local service
- (e) Means of transport and travel allowances for JICA experts for official travel within Viet Nam whenever local conditions and financial possibilities in accordance with the Agreement.
- (f) Information as well as support in obtaining medical service;
- (g) Credentials or identification cards;
- (h) Available data (including maps and photographs) and existing information related to the Project;
- (i) Small running expenses necessary for the implementation of the Project;
- (j) Expenses necessary for transportation within Viet Nam of the equipment referred to in PDM, if arise; and
- (k) Necessary facilities to the JICA experts for the remittance as well as utilization of the funds introduced into Viet Nam from Japan in connection with the implementation of the Project

2. Implementation Structure

The Project organization chart is given in the Annex 3. The roles and assignments of relevant organizations are as follows:

(1) DRVN

(a) Chairperson of Joint Coordination Committee (JCC).

Director General of DRVN will be responsible for overall administration and implementation of the Project.

(b) Chairperson of Technical Cooperation Working Group (TWG)
Team Leader of DRVN's Road Asset Management Working Group (RAM-WG) will be responsible for the implementation of the Project

(c) Counterparts

Relevant officers from following organizations in DRVN will be responsible for the managerial and technical matters of the Project.

- Team Leader of RAM-WG
- Relevant departments of DRVN
- Road Management Bureau (RMB) I, II, III and IV.

(d) Coordinator

- Project Management Unit - Technical Assistance (PMU-TA)

(2) JICA Experts

The JICA experts will give necessary technical guidance, advice and recommendations to DRVN on any matters pertaining to the implementation of the Project.

(3) Joint Coordination Committee (JCC)

JCC will be established in order to facilitate inter-organizational coordination. JCC meeting will be held at least once a year and whenever deems it necessary. JCC will approve an annual work plan, review overall progress, conduct evaluation of the Project, and exchange opinions on major issues that arise during the implementation of the Project.

A list of proposed members of JCC and RAM-WG is shown in the Annex 4.

3. Project Site(s) and Beneficiaries

(1) Project Site

The main activities of the Project will be implemented at DRVN's headquarters and jurisdiction of RMB I, II, III and IV.

(2) Direct beneficiaries

Direct beneficiaries of the Project will be the staff of DRVN.

(3) Indirect beneficiaries

Indirect beneficiaries are road users.

4. Duration

The duration of the Project will be three (3) years from the dispatch of expert(s). The tentative Plan of Operation is shown in Annex 2.

5. Reports

JICA will prepare and submit the following reports to DRVN in English and Vietnamese.

- (1) Inception Report at the commencement of the Project

DRVN and JICA experts will jointly prepare the following reports in English and Vietnamese.

- (1) Monitoring Sheet on semiannual basis until the project completion.
- (2) Project Completion Report at the time of completion.

6. Environmental and Social Considerations

DRVN agreed to abide by 'JICA Guidelines for Environmental and Social Considerations' in order to ensure that appropriate considerations will be made for the environmental and social impacts of the Project.

III. UNDERTAKINGS OF DRVN and MOT

1. DRVN and MOT will take necessary measures to:

- (1) ensure that the technologies and knowledge acquired by Viet Nam nationals as a result of Japanese technical cooperation contributes to the economic and social development of Viet Nam, and that the knowledge and experience acquired by the personnel of Viet Nam from technical training as well as the equipment provided by JICA will be utilized effectively in the implementation of the Project; and
 - (2) facilitate to obtain grant privileges, exemptions and benefits to the JICA experts referred to in PDM and their families, which are no less favorable than those granted to experts and members of the missions and their families of third countries or international organizations performing similar missions in Viet Nam.
 - (3) facilitate to provide tax exemption for repair materials and equipment for the Project.
 - (a) The Viet Nam side agreed that customs duties, internal taxes and other fiscal levies which may be imposed in Viet Nam are exempted under mutual agreement of the Agreement.
 - (b) If any expenses stated above are caused by some reasons such as the delay of execution of tax exemption, the Viet Nam side shall pay for it.
2. Other privileges, exemptions and benefits will be provided in accordance with the Agreement and/or the Note Verbales between MOT and GOJ.

IV. MONITORING AND EVALUATION

JICA and the DRVN will jointly and regularly monitor the progress of the Project through the Monitoring Sheets based on PDM and PO. The Monitoring Sheets shall be reviewed every six (6) months. Also, Project Completion Report shall be drawn up one (1) month before the termination of the Project.

JICA will conduct the following evaluations and surveys to mainly verify sustainability and impact of the Project and draw lessons. DRVN is required to provide necessary support for them.

1. Ex-post evaluation three (3) years after the project completion, in principle
2. Follow-up surveys on necessity basis

V. PROMOTION OF PUBLIC SUPPORT

For the purpose of promoting support for the Project, DRVN will take appropriate measures to make the Project widely known to the people of Viet Nam.

VI. MISCONDUCT

If JICA receives information related to suspected corrupt or fraudulent practices in the implementation of the Project, DRVN and relevant organizations shall provide JICA with such information as JICA may reasonably request, including information related to any concerned official of the government and/or public organizations of Viet Nam.

DRVN and relevant organizations shall not, unfairly or unfavorably treat the person and/or company which provided the information related to suspected corrupt or fraudulent practices in the implementation of the Project.

VII. MUTUAL CONSULTATION

JICA and DRVN will consult each other whenever any major issues arise in the course of Project implementation.

VII. AMENDMENTS

The record of discussions may be amended by the minutes of meetings between JICA and DRVN.

The minutes of meetings will be signed by authorized persons of each side who may be different from the signers of the record of discussions.

- Annex 1 Tentative Logical Framework (Project Design Matrix : PDM)
- Annex 2 Tentative Plan of Operation
- Annex 3 Project Organization Chart
- Annex 4 A List of Proposed Members of Joint Coordinating Committee / DRVN's Road Asset Management Working Group

MAIN POINTS DISCUSSED

I. PROJECT DESIGN MATRIX (PDM) AND PLAN OF OPERATIONS (PO)

Both sides agreed on the contents of the tentative Logical Framework (Project Design Matrix: PDM) and tentative Plan of Operations (PO) as shown in Annex-1 and Annex-2 of R/D. The PDM and PO are to be flexibly revised according to the progress and achievement of the Project, upon mutual agreement between DRVN and JICA by signing a Minutes of Meetings, according to the R/D.

II. COUNTERPART

Both sides agreed that necessary counterparts as described in II.1 (2) and Annex-1 (PDM) of the draft R/D shall be assigned and informed JICA (before the signing of R/D).

III. PAVEMENT CONDITION SURVEY AND ANALYSIS

Both sides agreed that pavement condition survey and analysis shall be implemented for selected roads under RMB II, III and IV jurisdiction by DRVN with local staff support of JICA for survey and analysis within the framework of financial restriction.

IV. PMS IMPROVEMENT

Both sides agreed that web-based operation of PMS software (data system, PMS system) will be developed.

V. PILOT PROJECTS

Both sides agreed that pilot projects for pavement maintenance repair work shall be implemented with technical advice given by the JICA experts, selecting and applying a few high priority technologies to the national road sections under RMB I jurisdiction. DRVN shall take responsibilities for the budget, arrangement, contract(s), supervision, safety assurance of the work and monitoring / evaluation of their work performance. DRVN shall bear claims of any arising.

VI. COORDINATION BETWEEN THE PROJECT AND VRAMP

Both sides agreed that DRVN shall be responsible for coordination between the Project and VRAMP for the purpose of smooth and effective implementation of the both projects.

VII. PROJECT OFFICE

Both sides agreed necessary office space(s) including office equipment



(furniture) and basic utilities (electricity, air-conditioning, internet line, telephone etc.) will be prepared by DRVN before commencement of the Project. It will be informed JICA before the signing of R/D.

~~An estimated number of members to be accommodated in the office is approximately twenty (20).~~

VIII. TAX OR LEVY

Both sides confirmed that in case any tax or levy is imposed for equipment and materials, DRVN will arrange the budget equivalent to the amount of the tax or levy for JICA on import.

IX. OTHERS

DRVN are strongly encouraged to keep their eyes on the capacity building for self-governance and sustainability.

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Project Name: The Project for Capacity Enhancement in Road Maintenance Phase-2
 Project Period: MM, 201X to MM, 20XX (3 years)
 Target Group: DRVN, Road Management Bureau (RMBs) I, II, III, IV
 Target Area: Designated area of RMB I, II, III, IV
 Implementation Organization: DRVN under Ministry of Transport

Date: 8 September, 2014

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions (I.A.)	Achievement	Remarks
Overall Goal					
Road maintenance is conducted based on the plan in Vietnam.	(By 3 years from the project end) The indicators for pavement damage (IRI, cracks, rutting, etc.) will be improved X %.	1. Result of data comparison of regular pavement condition survey by DRVN 2. Trial mid-term and annual plan for pavement maintenance 3. Interview to DRVN			
Project Purpose			I.A. to achieve Overall goal		
Implementation capacity for road maintenance is strengthened in Vietnam	1. Trial pavement repair plan using PMS is formulated in RMB I-IV 2. Methods for road facility inspection, maintenance and repair work are clarified (*1) 3. Implementation structure for road maintenance is established.	1. Trial pavement repair plan of RMB I-IV 2. Regulation 3-1. Regulation 3-2. Interview to DRVN	1. Budget is allocated for maintenance activities in accordance with the Mid-term plan 2. Training is conducted by DRVN continuously to maintain technical skills		
Outputs			I.A. to achieve Project Purpose		
1. PMS data development technology is improved	1-1. Road structure database and repair history database are completed for PMS 1-2. DRVN conducts DB input training periodically.	1-1. Road structure DB, repair history DB 1-2. Training record	1. Engineers who received training are assigned continuously 2. Regulation procedure for pavement maintenance and road facility inspection moves forward		
2. PMS are upgraded and applied to the planning of trial pavement repair plans	2-1. Trial pavement repair plan (annual, mid-term) using PMS is formulated by DRVN. 2-2. DRVN conducts PMS training periodically.	2-1. Trial pavement repair plan (mid-term and annual) 2-2. Training record			
3. Technical specifications for diagnosing road facility and selecting repair work are developed	3. Final draft of specifications for diagnosing road facility and selecting repair work are formulated.	3. Final draft of specifications for diagnosing road facility and selecting repair work			
4. Implementation procedures and work demarcation are clarified for road maintenance	4. Implementation plans to realize output 1-3 are developed	4-1. Implementation plan (draft) 4-2. Assignment chart (draft)			
Activities	Inputs		I.A. to achieve Outputs		
1-1. Review PMS data formats and data input system produced in Phase-1 Project.	Japanese side	Vietnamese side	1. VRAMP Project (WB) is implemented as 2. IT policy of DRVN is maintained		
1-2. Upgrade PMS data input system	(1) Long-term experts Road maintenance policy/regulations	(1) Chairperson of JCC (2) Chairperson of TWG (3) Counterparts (DRVN and RMBs) (4) Coordinator			
1-3. Input and verify PMS data	(2) Short-term experts				
1-4. Implement training on PMS data input development	Institutional development for road maintenance Road inspection/diagnosis (pavement), (structure), (embankment), (measurement), (analysis)	2. Facilities Communal office space for JP team and local support team with electricity, air-condition, internet, & telephone line			
2-1. Implement pavement condition surveys for RMB II, III and IV selected roads	Database development System development Pavement repair technology Human resource development Pavement repair materials Coordinator	3. Cost (1) Expenses for trainees participating in training in Vietnam (2) Cost for pilot construction (including cost for general materials)			
2-2. Develop web-based system for pavement condition data on the existing GIS system on the website		4. Others (1) Implementation of the pilot project for maintenance and repair work with JICA experts' advisory. (2) Pilot Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction with JICA's local service			
2-3. Convert input data and make PMS dataset					
2-4. Upgrade PMS software					
2-5. Formulate trial pavement repair plans for RMB I, II, III and IV road networks by PMS system and examine system operability	2. Training in Japan (three times (once/year)) 3. Machineries / equipment (1) Specific materials for pavement repair (2) Personal Computers for road maintenance planning				
2-6. Develop web-based system which enables PMS operation on the website and formulates trial annual and mid-term pavement repair work plans					
2-7. Implement training on Activity 2-1~2-6.	4. Others Local service for Pilot Pavement Condition Survey				
3-1. Upgrade road facility inspection guideline and road maintenance manual produced in Phase-1 project to technical specifications.					
3-2. Develop pilot projects for pavement maintenance and repair work which incorporates new technology and materials					
3-3. Implement pilot project for pavement repair work, monitor and evaluate their performances					
3-4. Based on the results of pilot project, develop final draft of road facility inspection guideline and road maintenance manual for standardization procedures					
3-5. Implement training on the use of road inspection guideline and road maintenance manual in the field					
4-1. Conduct baseline survey on the administration procedures and the responsibility assignment for road maintenance					
4-2. Develop implementation plan to realize project outputs					
4-3. Draft implementation plan on the legal procedures to realize project outputs					

Note: (*1): target facilities, frequency, methods, diagnosis, selection method for repair works, repair work, construction management

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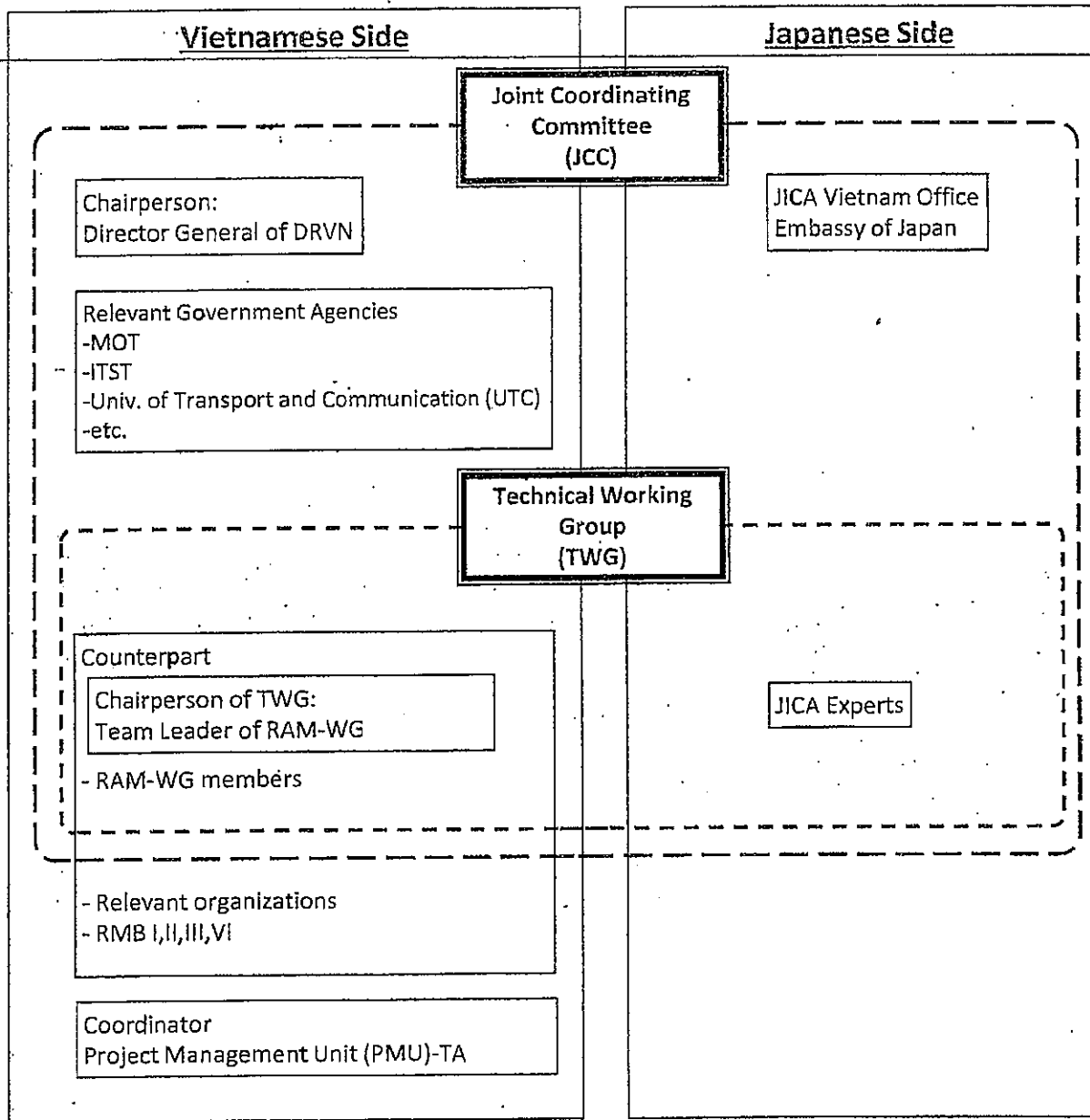
Tentative Plan of Operation

ANNEX 2 of MM

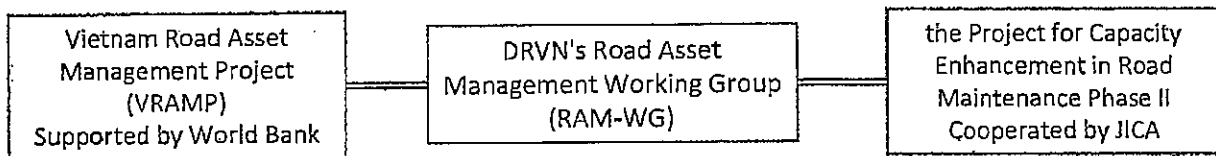
Project Title: The Project for Capacity Enhancement in Road Maintenance Phase II

Activities	Year	1st Year				2nd Year				3rd Year			
		I	II	III	IV	I	II	III	IV	I	II	III	IV
Output 1: PMS data development technology is improved													
1-1. Review PMS data formats and data input system produced in Phase-I Project.	Plan												
	Actual												
1-2. Upgrade PMS data input system.	Plan												
	Actual												
1-3. Input and verify PMS data	Plan												
	Actual												
1-4. Implement training on PMS data input development	Plan			▲	▲								
	Actual												
Output 2: PMS are upgraded and applied to the planning of trial pavement repair plans													
2-1. Implement pavement condition surveys for RMB II, III and IV selected roads	Plan												
	Actual												
2-2. Develop web-based system for pavement condition data on the existing GIS system on the website	Plan												
	Actual												
2-3. Convert input data and make PMS dataset	Plan												
	Actual												
2-4. Upgrade PMS software	Plan												
	Actual												
2-5. Formulate trial pavement repair plans for RMB I, II, III and IV road networks by PMS system and examine system operability	Plan												
	Actual												
2-6. Develop web-based system which enables PMS operation on the website and formulates trial annual and mid-term pavement repair work plans	Plan												
	Actual												
2-7. Implement training on Activity 2-1~2-6.	Plan					▲	▲	▲	▲	▲	▲	▲	▲
	Actual												
Output 3: Technical specifications for diagnosing road facility and selecting repair work are developed													
3-1. Upgrade road facility inspection guideline and road maintenance manual produced in Phase-1 project to technical specifications.	Plan												
	Actual												
3-2. Develop pilot projects for pavement maintenance and repair work which incorporates new technology and materials	Plan												
	Actual												
3-3. Implement pilot project for pavement repair work, monitor and evaluate their performances	Plan												
	Actual												
3-4. Based on the results of pilot project, develop final draft of road facility inspection guideline and road maintenance manual for standardization procedures	Plan												
	Actual												
3-5. Implement training on the use of road inspection guideline and road maintenance manual in the field	Plan					▲	▲	▲	▲	▲	▲	▲	▲
	Actual												
Output 4: Implementation procedures and work demarcation are clarified for road maintenance													
4-1. Conduct baseline survey on the administration procedures and the responsibility assignment for road maintenance	Plan												
	Actual												
4-2. Develop implementation plan to realize project outputs	Plan												
	Actual												
4-3. Draft implementation plan on the legal procedures to realize project outputs	Plan												
	Actual												
Monitoring Plan													
	Year	1st Year				2nd Year				3rd Year			
		I	II	III	IV	I	II	III	IV	I	II	III	IV
Monitoring													
Joint Coordination Committee	Plan	▲				▲				▲			▲
	Actual												
Set-up the Detailed Plan of Operation	Plan	▲											
	Actual												
Submission of Monitoring Sheet	Plan			▲		▲		▲		▲		▲	
	Actual												
Reports/Documents													
Inception Report	Plan	▲											
	Actual												
Project Completion Report	Plan												▲
	Actual												

Organization chart of the Project



Coordination between the Project and VRAMP



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LIST OF PROPOSED MEMBERS OF JOINT COORDINATION COMMITTEE

Chairperson: Director General, DRVN

Members:

JCC consists of the members from the following organizations:

(1) Vietnamese Side

- 1) Steering committee for development of road asset management system under VRAMP Project and JICA Project.
- 2) Ministry of Transport (MOT)
- 3) Institute of Transport Science and Technology (ITST)
- 4) University of Transport and Technology (UTC)
- 5) Others

(2) Japanese Side

- 1) Embassy of Japan (EOJ)
- 2) Japan International Cooperation Agency (JICA)
- 3) JICA Experts

JCC will be held with the maximum availability of the members listed above

LIST OF PROPOSED MEMBERS OF TECHNICAL WORKING GROUP

Chairperson: Leader, Road Asset Database Management Group (RAM-WG)

Members:

JCC consists of the members from the following organizations:

(1) Vietnamese Side

- 1) RAM-WG.
- 2) Others

(2) Japanese Side

- 1) JICA Experts

TWG will be held with the maximum availability of the members listed above



MINUTES OF MEETING
THE 1ST JOINT COORDINATION COMMITTEE (JCC) MEETING
FOR THE PROJECT FOR CAPACITY ENHANCEMENT
IN ROAD MAINTENANCE PHASE II

In accordance with the Record of Discussion (R/D) signed on 5th November, 2014 for the Project, the first JCC meeting chaired by Mr. Nguyen Van Huyen, Director General, DRVN, was convened on 23th April, 2015 attended by members of Vietnamese side and Japanese side.

In the meeting, the JICA Project Team leader presented the outline of the Work Plan which elaborates measures and activities to be studied in the Project. Furthermore, the Vietnamese members made comments and additional requests on the Work Plan, and the chairperson of JCC meeting, Mr. Nguyen Van Huyen, Director General, DRVN, summarized the discussion.

In the meeting the following consensus was reached:

1. The contents of the Work Plan are totally agreed and its consistency with the R/D of the Project is confirmed;
2. Some pending issues raised in the meeting will be solved in the progress of this Project through cooperation between counterparts and the Project Team;
3. DRVN is requested to play an initiative role for all activities in the Project including the development of project outputs, participation in the training program and dissemination of project outputs to the field after the Project;
4. DRVN agreed to hold a regular meeting with JICA to monitor the progress and the outputs of the Project, in response to the request issued by JICA Vietnam. The meeting is to be held in principle quarterly or anytime demand arises.
5. Coordination function of DRVN between the JICA Project and WB VRAMP Project is important;
6. The Vietnamese and JICA Project Team will discuss the comments and requests raised in the meeting and develop further the activities, following the framework and time schedule agreed in the first JCC.

The summary of the discussion by Mr. Nguyen Van Huyen, Director General, DRVN, the summary of the discussion, the meeting agenda, the list of participants, and the Work Plan are attached as annex.

ANNEX I	Summary of the Discussion by Mr. Nguyen Van Huyen, Director General, DRVN
ANNEX II	Summary of the Discussion
ANNEX III	JCC Agenda
ANNEX IV	List of Participants
ANNEX V	Work Plan

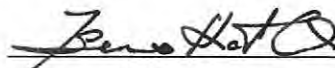


Kenichi Yamamoto
Deputy Chief Representative
Vietnam Office
Japan International Cooperation Agency




Hanoi, 27th April, 2015

Nguyen Van Huyen
Director General
Directorate for Roads of Vietnam, Ministry of Transport,
The Socialist Republic of Vietnam



Tsuneo Kato
Project Team Leader
Japan International Cooperation Agency



To Nam Toan
Director
Science Technology Environmental & International
Cooperation Department, Directorate for Roads of
Vietnam, Ministry of Transport, The Socialist Republic
of Vietnam

SUMMARY OF THE DISCUSSION BY
MR. NGUYEN VAN HUYEN, DIRECTOR GENERAL, DRVN

1. General Comment

- DRVN expressed sincere thanks to JICA for continuing significant supports for DRVN and high appreciation to JICA project team for good preparation and informative presentation for the 1st JCC meeting.
- This Project is very important for DRVN for enhancing road management and maintenance that DRVN will make direction and closely cooperate with JICA and the Project to take proper action. In case the evaluation result of pilot repair technologies is good, DRVN will take quick action by: (i) immediately applying repair technologies to the maintenance and repair projects of the national roads; and (ii) making announcement and publicizing technologies on the DRVN's Website and so forth.
- DRVN expressed sincere thanks to great support from Japanese Embassy, JICA for the Project and is looking forward for further support and assistance.

2. Measures and Activities

- Outputs of this Project will play an important role in enhancing DRVN's road maintenance capacity for national roads.
- DRVN places much focus on the development of pavement maintenance technologies including pavement database, planning system (PMS) and the standardization of maintenance and repair technologies.

3. Cooperation between DRVN departments and bureaus with JICA Project Team

- DRVN will make direction to RMB I, II, III, IV and relevant departments to understand the Work Plan. Leaders of relevant departments are requested to make sure of the effective and active participation of their assigned staffs to the project counterpart. For DRVN, this Project should be a model project for successful implementation of sustainable technology transfer, so that DRVN's staff and officials are encouraged to master the technology during the Project in order that DRVN can successfully disseminate project outputs not only to the national road network but also to the local road network including provincial and district roads after the Project.
- DRVN is strongly looking forward to the institutional and technical supports from MOT's organizations (DPI, Infrastructure Dept, DoST and ITST) including UTC for the successful implementation of the Project.

4. Coordination with VRAMP

For smooth and effective coordination between the two projects (JICA phase II and VRAMP), DRVN coordination structure is to be strengthened including RAM-Steering committee, TWG, WGs and PMU for the best outcomes from the both projects.

SUMMARY OF THE DISCUSSION

1. Report on the Work Plan by the JICA Project Team leader, Mr. Tsuneo kato

The JICA Project Team leader, Mr. Tsuneo Kato, presented the Work Plan by highlighting the frameworks for the project measures and activities (see ANNEX IV).

2. Comments by the Participants

2.1 Ms. Nguyen Thi Nguyet Nga, Deputy-Director of STE-ICD, DRVN

Comments on relevant issues of the project preparation and the Work Plan are as follows:

For relevant issues of the project preparation:

- Office preparation for JICA Project Team was behind the schedule due to the internal change of project management unit in DRVN and some other objective reasons.
- DRVN will try to accelerate the procedures for project approval and the procedure of Visa issuing for JICA long-term expert (Mr. Matsuno).

For the collaboration between JICA Project Team and DRVN's counterpart:

- Enhancing effectiveness of collaboration between JICA Project Team and DRVN's counterpart: all meeting agendas should be shared to the DRVN's counterpart in advance for proper preparation including allocation of right counterpart members; minutes of meetings or discussions should be made to identify the main points that would be useful for the next discussion or collaborative work.
- Leaders of relevant departments that have officials and staff working as counterpart members should take proper arrangement with high priority to secure their sufficient participation for the counterpart of the Project and VRAMP.

For Measure 1 and 2:

- It is necessary to clarify role and budget sharing between JICA and DRVN for pavement condition survey.

For Measure 4:

- Official announcement of the Project from DRVN to RMB II, III and IV has not been made yet. To take smooth preparation of the Project, DRVN is requested to arrange separate meetings with representatives of RMB II, III and IV on the Project while they participate in monthly meetings at DRVN Headquarter.

2.2 Mr. Nguyen Xuan Truong, Director of PMU3 of DRVN

Comments on relevant issues of the project preparation and the Work Plan are as follows:

- PMU3 of DRVN has just taken the assignment of supporting the Project. Right after the assignment from DRVN, PMU3 has taken quick action for the office preparation, furniture procurement using their own budget in advance and accelerated the procedure of project approval by MOT.
- PMU3 is assigned to coordinate for both projects (JICA project phase II and VRAMP project of WB). To secure for the effectiveness of the both projects and prevention of any overlapping:

- PMU3 has established new Project Implementation Division (PID) to coordinate for the both projects.
- PMU3 requested to involve them in all three working groups and activities of the Project for smooth coordination.

2.3 Mr. Nguyen Ngoc Hai, Department of Planning & Investment of MOT

Comments on relevant issues of the project preparation and the Work Plan are as follows:

For project approval and expectation to DRVN and PMU3:

- There is some delay in project initiation due to the objective reason of requirement on transparency especially in case that there exists budget sharing between JICA and DRVN for some activities in the Project, and there are two projects funded by JICA and WB for DRVN with quite similar timeline.
- The situation for project approval has been improved due to proactive cooperation of DRVN and PMU3 recently with sufficient document provision, and the collaboration of JICA Project Team including further explanation and clarification of the project framework.
- It was very difficult to clarify all details of project work items to calculate counterpart budget accurately at the beginning. Hence, project approval should be accelerated with temporary counterpart budget. The final counterpart budget can be specified during project implementation.
- DRVN's PMU3 is expected to play important role of implementation and coordination between the two projects with the good outputs that comprehensively contribute to the full enhancement of DRVN.
- It is expected for the proper and prompt direction of DRVN's leader by evaluation of project progress and results for sustainable application of project outputs.

For expectation to JICA:

- JICA is kindly requested to keep considering for coming and follow-up assistant projects in the road sector because DRVN is in charge of management the whole road network, a huge asset infrastructure in Vietnam.

2.4 Mr. Nguyen Van Thanh, Vice-Chairman of ITST of MOT

Comments on the Work Plan are as follows:

- The role of JCC is important in the Project. Therefore, there should be working mechanism of JCC to clarify functions and responsibilities for effective operation.
- Regarding to definition of pavement soundness classification by rankings, there should be confirmation that beside the individual indicators if there are any overall index for classifying.

2.5 Mr. Tsuneo Kato, JICA Project Team Leader

Comments and responses for the above comments are as follows:

- DRVN is requested to take an initiative role for implementing and disseminating project outputs to the field in this collaboration project between DRVN and JICA Project Team.
- Regarding working group discussions or meetings, agenda will be shared in advance and minutes of meetings or discussions will be made for enhancing the quality of discussions and cooperation. Responsibility sharing on the pavement condition survey is as follow;
 - The Project will implement road condition survey for RMB II, III and IV road network within the framework of maximum road length of 6,300 km or maximum lane length of 12,600 km in total.
 - In implementing the road condition survey, the JICA Project Team will share the expenses on the labor work and small operation costs needed for the survey and analysis by means of outsourcing to a consultant. Selection of consultant will be made based on the competitive quotation.
- Regarding the participation of PMU3 in project working groups, JICA Project Team welcomes PMU3 participation. In particular, The PMU role of coordination between JICA Project and VRAMP Project is necessary and important.
- Regarding pilot projects for new maintenance technologies, some technologies should be selected for implementation with the final target of standardization. However, standardization will in general take a long processing time from preparation, implementation, monitoring and evaluation to standardization, so that DRVN is requested to accelerate procedures including early selection of pilot repair technologies.
- Regarding project approval, JICA Project Team agrees with the idea issued by Mr. Nguyen Ngoc Hai (MOT's DPI) to accelerate the procedure by accepting temporary counterpart budget for initiating other pending works including VISA application for Japanese experts.
- Regarding to ITST's comments, the role and responsibility of JCC has been mentioned in the Work Plan. ITST is requested to cooperate with this Project on the standardization of new maintenance technologies. ITST is also expected to take the bridging function for DRVN to approach and realize many Japanese technologies in road maintenance.
- Moreover, as to the pavement soundness classification, the definition is totally optional and editable. Beside the individual indicators like cracking ratio, rutting depth, IRI, overall index like MCI can be defined and applied for overall pavement soundness classification.

----End----

JOINT COORDINATING COMMITTEE MEETING

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Date: April 23, 2015, Thursday 8:30 AM
Place: DRVN Meeting Room No.204
Handout: Presentation of Work Plan (in Vietnamese and English)
Record of Discussions (in English)

AGENDA OF THE MEETING

Chairperson: Mr. Nguyen Van Huyen - Director General of DRVN

1. Introduction (Facilitator)

Mr. To Nam Toan, Director of DRVN's Science-Technology-Environmental & International Cooperation Department

2. Opening remarks (08:30-08:45)

Mr. Nguyen Van Huyen - Director General of DRVN

3. Message from JICA representative (08:45-09:00)

Mr. Kenichi Yamamoto - Deputy Chief Representative - JICA Vietnam Office

4. Presentation of Work Plan(09:00-10:00)

Mr. Tsuneo Kato, Team leader - JICA project team

5. Comment and Discussion on the Work Plan (10:00-10:30)

Comments from Participants

Moderator: Mr. Nguyen Van Huyen - Director General of DRVN

6. Closing remark (10:30-11:00)

Mr. Nguyen Van Huyen - Director General of DRVN

LIST OF PARTICIPANTS - the 1st Joint Coordination Committee

April 23rd, 2015

Participants of Vietnamese side

No.	Name	Department	Position
1	Nguyen Van Huyen	DRVN	Director General
2	To Nam Toan	Dept. of Science Technology Environment & International Cooperation - DRVN	Director TWG Leader
3	Tran Hoang Giang	Road Construction Management - DRVN	Officer
4	Nguyen Xuan Truong	PMU3	Director
5	Pham Manh Thang	PMU3	Officer
6	Nguyen Ngoc Hai	DPI-MOT	Officer
7	Nguyen Van Thanh	Science Technology Institute - MOT	Vice chairman
8	Bui Duy Tien	IT Center - DRVN	Deputy Director
9	Nguyen Nguyet Nga	Dept. of Science Technology Environment & International Cooperation - DRVN	Deputy Director
10	Nguyen Khanh Toan	Maintenance Management Dept.	Officer
11	Hoang Viet Ha	PMU3	Officer
12	Nguyen Duc Cuong	Maintenance Management Dept.	Deputy Director
13	Trinh Xuan Sinh	Planning & Investment Dept.	Officer
14	Tran Van Ngo	Finance Dept.	Director
15	Quach Van Khoa	Maintenance Management Dept.	Deputy Director
16	Cao Xuan Giao	Planning & Investment Dept.	Director
17	Nguyen Van Minh	Infrastructure Dept.	Officer
18	Nguyen Duc Hoai	Personal Organization Dept.	Officer
19	Dinh Thi Thanh Huyen	Dept. of Science Technology Environment & International Cooperation - DRVN	Officer
20	Nguyen Trung Si	Road Construction Management - DRVN	Officer
21	Vu Ngoc Lang	Traffic Safety Dept.	Director
22	Trinh Huu Trung	IT Center - DRVN	Officer
23	Nguyen Thi Thu Hang	IT Center - DRVN	Officer
24	Ha Viet Tung	IT Center - DRVN	Officer
25	Nguyen Manh Cuong	IT Center - DRVN	Officer
26	Trinh Thi Hong	Vietnam Road Magazine - DRVN	Officer
27	Nguyen Phuc An	Road Construction Management - MOT	Officer
28	Hoang Phuong	Road Construction Management - DRVN	Officer

Participants of Japanese side

No.	Name	Organization /Department	Position
29	Fukushima Yosuke	Embassy of Japan	Second Secretary
30	Kawasaki Yoshihiro	JICA Headquarter	Representative
31	Yamamoto Kenichi	JICA Vietnam	Deputy Chief Representative
32	Tomuro Maki	JICA Vietnam	Representative
33	Vu Thi Thai Ha	JICA Vietnam	Project Coordinator
34	Matsuno Yoshiaki	JICA Project Team	Advisor
35	Kato Tsuneo	JICA Project Team	Team Leader
36	Kunimasa Yoshiro	JICA Project Team	Deputy Team Leader
37	Aoki Kazuya	JICA Project Team	Expert
38	Tsuchiya Yoshiyasu	JICA Project Team	Expert
39	Pantha Bhoj Raj	JICA Project Team	Expert
40	Sakai Kohei	JICA Project Team	Expert
41	Kusano Seiichi	JICA Project Team	Expert
42	Suzuki Kazutaka	JICA Project Team	Expert
43	Miyakawa Akiko	JICA Project Team	Expert
44	Nguyen Dinh Thao	JICA Project Team	Project Assistance
45	Dinh Huyen Trang	JICA Project Team	Project Assistance
46	Bui Cong Do	JICA Project Team	Project Assistance
47	Dao Lan Huong	JICA Project Team	Project Assistance
48	Nguyen Thuy Dung	JICA Project Team	Project Assistance
49	Tran Nhu Quynh	JICA Project Team	Secretary of Mr. Matsuno

MINUTES OF MEETING
THE 2ND JOINT COORDINATION COMMITTEE (JCC) MEETING
FOR THE PROJECT FOR CAPACITY ENHANCEMENT
IN ROAD MAINTENANCE PHASE II

The 2nd JCC meeting chaired by Mr. Nguyen Van Huyen, Director General of DRVN was convened on March 25th, 2016 attended by members of Vietnamese side and Japanese side.

In the meeting, the JICA Project Team members presented the progress of project measures and activities which have been implemented in the Project. Furthermore, the Vietnamese side made comments and additional requests on the implementation of the Project. The chairperson of JCC meeting, Mr. Nguyen Van Huyen, Director General, DRVN, summarized the discussion and made requests to the stakeholders as follows:

1. After the first year of implementation, there have been some achievements and outputs such as the pavement condition survey which has been completed in Road Management Bureau (RMB)-IV and is to be completed in RMB-III. The web-based system for displaying pavement condition data has also been developed for trial operation. The domestic procedures of approving pilot projects applying new road maintenance technologies have also been completed.
2. DRVN would like to kindly ask JICA Vietnam Office to cooperate and support, and to request PMU3 to take quick action in collaboration with JICA Vietnam Office and MOT to work on Project Approval in cooperation with MPI and relevant competent agencies.
3. DRVN strongly requests RMBs to cooperate with JICA Project Team for completion of Pavement Management System (PMS) data input in accordance with the work schedule of maintenance planning.
4. DRVN strongly requests PMU3 to closely coordinate with JICA Project Phase II and VRAMP Project-Component A for the smooth implementation of both projects.
5. DRVN requests Vietnam Expressway Authority (VEA) to involve in the Project and prepare some plan for expanding of the Project outputs.
6. Regarding the workshops and On the Job Trainings (OJTs) for human capacity development, it is necessary to expand the participants including Provincial DOTs (PDOTs) personnel because DRVN would like to make sure that the dissemination from the central level of DRVN to regional levels will be smoothly and sustainable.
7. DRVN requests departments and PMUs to enhance the cooperation with JICA Project Team for the smooth implementation as scheduled.
8. The institutional process should also be accelerated. Institute of Transport Science and Technology (ITST) and other relevant organization shall be expected to cooperate in formalizing technical standards.
9. DRVN would like to express its appreciation and sincere thanks to the Embassy of Japan in Vietnam and JICA for their support and cooperation to the Project and expect for further programs of supports and cooperation with DRVN and the road sector in Vietnam.

The Summary of the Discussion, the 2nd JCC Meeting Agenda, the List of Participant, the Monitoring Sheet and the Project Progress Report are attached as annex.

ANNEX I	Summary of the Discussion
ANNEX II	2 nd JCC Meeting Agenda
ANNEX III	List of Participant
ANNEX IV	Monitoring Sheet
ANNEX V	Project Progress Report

Hanoi, 25 March 2016



Hiroshi Anzo
Senior Project Formulation Officer
Vietnam Office
Japan International Cooperation Agency



Nguyen Van Huyen
Director General
Directorate for Roads of Vietnam, Ministry of Transport,
The Socialist Republic of Vietnam



Tsuneo Kato
Project Team Leader
Japan International Cooperation Agency



To Nam Toan
Director
Science Technology Environmental & International
Cooperation Department, Directorate for Roads of
Vietnam, Ministry of Transport, the Socialist Republic of
Vietnam

SUMMARY OF THE DISCUSSION

1. Dr. To Nam Toan made the introduction about the 2nd JCC meeting and participants

2. Mr. Nguyen Van Huyen made the opening remarks

- Mr. Nguyen Van Huyen briefly introduced the cooperation between JICA and DRVN in technical project for capacity enhancement in road maintenance (Phase I and Phase II).
- The objective of the 2nd JCC meeting is to review to works which have been implemented in the first year of JICA Project Phase 2 and works which have to be implemented in the remaining time of the project.
- DRVN expects the comments and ideas among participants for the success of the Project.
- Mr. Nguyen Van Huyen also expressed sincere thanks to the Embassy of Japan in Vietnam, JICA Vietnam Office, JICA Project Team and relevant agencies in Vietnam.

3. Mr. Hiroshi Anzo delivered the message from JICA

- Mr. Hiroshi Anzo expressed his appreciation to the strong leadership of DRVN leaders and the great efforts being made by the DRVN Technical Working Group and JICA Project Team for the implementation of the Project.
- In his opinion, the Project has been smoothly implemented by making progress on schedule so far, without any particular technical difficulties. The Project has made a steady progress and coordinated with VRAMP Project of the World Bank.
- It is the time to pay more attention how an institutional system is established to effectively use the PMS database and system. It should be noted that reassignment and adjustment of institutional responsibility and amendment of associated procedures would take a long time to establish the proper implementation of the PMS system.
- Since the Project is a time-bound activity and JICA Experts cannot be dispatched after its completion, it is necessary to set deadlines for opinion inquiry on some draft guidelines (Road Facility Inspection Guideline) and manuals (Road Routine Maintenance Manual) to complete the tasks on time. He asked for continuous cooperation in this regard on his final note.

4. JICA Project Team members delivered the presentations about Project progress

- Report 1: JICA Project Progress (Mr. Tsuneo Kato)
- Report 2: Web Display System for Pavement Condition Data (Mr. Yoshiro Kunimasa / Mr. Nguyen Hoang Anh)

- Report 3: Formulation of Road Maintenance Plan by PMS (Dr. Kazuya Aoki / Dr. Bhoj Raj Pantha)
- Report 4: Pilot Repair Works, Road Facility Inspection Guideline and Road Routine Maintenance Manual (Mr. Tsuneo Kato)
- Report 5: Seminar, Workshop, OJTs and Public Relations (Ms. Akiko Miyakawa)

5. Comments and Discussion on the Progress Report

5.1 Comments and reports of RMB-IV

- OJT for PMS data input system (off-line system) had been conducted including system provision and updating as per request. RMB-IV has been inputting the data into the system. So far 3 Sub Bureaus (SBs) out of 6 SBs of RMB-IV have basically completed the data input. There are some delays in data input with the following reasons:
 - Insufficient resources due to allocation of human resource for other urgent tasks and mission.
 - The system is unstable. Updating the system sometimes leads to the loss of input data.
 - Computers of RMB-IV and their subsidiary of SBs are quite outdated while the requirement of PMS system is of higher operating system (i.e. Microsoft Windows 7).
- RMB-IV expects the final PMS system and Manual to be introduced in workshops and OJT this year.

➤ Response of JICA Project Team

- There may be some troubles in data input because this is the first trial for PMS data input system to be operated in each RMB. He suggested that RMBs should send feedback whenever the system is unstable and JICA Project Team shall assist to customize the software and upgrade the system in order to respond to RMBs' requests and their operation system (OS) environment.
- JICA Project Team also takes some actions regarding the computer capacity at RMBs. In the coming workshops in May 2016, JICA Project Team shall have discussion with each RMB.
- The web-based PMS data input system is under development that will be completed soon for trial application and instruction to DRVN and RMBs in May 2016.

5.2 Comments and reports of RMB-III

- RMB-III has cooperated with JICA Project Team to install offline PMS data input system and to input data using this system. When problems arise, RMB-III consulted to JICA Project Team for finding solutions.

- RMB-III would like to request JICA Project Team for supplementing Truong Son Dong route into the core data of the system for inputting data by SB.
- The pavement condition survey for national roads under RMB-III's jurisdiction has been completed with the collaboration of RTC Central.
- RMB-III would like to request DRVN to upgrade the computer system for smooth operation.
- RMB-III basically agrees with the schedule of the Project.

➤ **Response of JICA Project Team**

- PMS data is very important in the road maintenance and budget simulation plan. Therefore it is needed as much and as soon as possible.
- Regarding the request on supplementation of the route in the core data of the system, RMB-III should contact JICA Project Team for updating.
- The web-based PMS data input system will be completed soon for trial operation in May 2016. JICA Project Team kindly requests DRVN, RMBs, SBs to actively do the trial operation for feedbacks and comments.
- Each RMB is kindly requested to assign one coordinator to identify the survey routes in the site and to verify the data for the smooth implementation of pavement condition survey and data analysis as well.

5.3 Comments of DRVN

- For any further comments, DRVN requested the RMBs to submit written letters to Working Groups for further discussion with JICA Project Team.
- Regarding the import procedures of materials and equipment from Japan for pilot pavement repair works, MOT have contacted and submitted an official letter to MPI for consultation on this issue. MPI responded that they will gather some other JICA projects which are in the same situation and prepare one proposal letter to submit the Government Office for project approval. The document of JICA Project for Capacity Enhancement in Road Maintenance Phase II is sufficient for submission to the Government Office for approval, although documents of other JICA projects are insufficient. Therefore they would like JICA to cooperate in accelerating the supplementation of documents for other JICA projects.

➤ **Response of JICA**

- The planning team of JICA Vietnam Office has worked with MPI on the issue and the situation of other JICA projects shall be clarified. In order to secure the schedule of the Project for prompt implementation of pilot works, JICA Vietnam Office may have a discussion with MPI to handle the procedure to obtain approval by the Government Office separately from other JICA projects.

➤ **Response of JICA Project Team**

- JICA Project Team suggested JICA Vietnam Office that the Project should be handled separately from the other projects in order to accelerate the procedures.

6. Mr. Nguyen Van Huyen made the closing remarks

- After the first year of implementation, there have been some achievements and outputs such as the pavement condition survey which has been completed in RMB-IV and is to be completed in RMB III. The web-based system for displaying pavement condition data has also been developed for trial operation. The domestic procedures of approving pilot projects applying new road maintenance technologies have also been completed.
- DRVN would like to kindly ask JICA Vietnam Office to cooperate and support, and to request PMU3 to take quick action in collaboration with JICA Vietnam Office and MOT to work on Project Approval in cooperation with MPI and relevant competent agencies.
- DRVN strongly requests RMBs to cooperate with JICA Project Team for completion of PMS data input in accordance with the work schedule of maintenance planning.
- DRVN strongly requests PMU3 to closely coordinate with JICA Project Phase II and VRAMP Project-Component A for the smooth implementation of both projects.
- DRVN requests Vietnam Expressway Authority (VEA) to involve in the Project and prepare some plan for expanding of the Project outputs such as PMS system to expressway system.
- Regarding the workshops and OJTs for human capacity development, it is necessary to expand the participants including PDOTs personnel because DRVN would like to make sure that the dissemination from the central level of DRVN to regional levels will be smoothly and sustainable.
- DRVN requests departments and PMUs to enhance the cooperation with JICA Project Team for the smooth implementation as scheduled.
- The institutional process should also be accelerated. ITST and other relevant organization shall be expected to cooperate in formalizing technical standard.
- DRVN would like to express the appreciation and sincere thanks to Embassy of Japan in Vietnam and JICA for support and cooperation in the Project and do expect for further programs of supports and cooperation with DRVN and the road sector in Vietnam.

2ND JCC MEETING AGENDA

The Project for Capacity Enhancement in Road Maintenance Phase II

The 2nd Joint Coordination Committee Meeting

Date: March 25th, 2016
Venue: Meeting Room No.204, DRVN
Chair: Mr. Nguyen Van Huyen, Director General
Handout: Monitoring Sheet, Progress Report, Presentation Material



- 8:30 – 8:40 Introduction**
Dr. To Nam Toan,
(Director of Science, Technology, Environment and International Cooperation Department)
- 8:40 – 8:50 Opening Remarks**
Mr. Nguyen Van Huyen
(Director General of DRVN)
- 8:50 – 09:00 Message from JICA**
Mr. Hiroshi ANZO
(Senior Project Formulation Advisor, Japan International)
- 09:00 – 09:20 Report 1 JICA Project Progress**
Mr. Tsuneo KATO
(Team leader, JICA Project Team)
- 09:20 – 09:35 Report 2 Web Display System for Pavement Condition Data**
Mr. Yoshiro KUNIMASA / Mr. Nguyen Hoang Anh
(JICA Project Team / SAO MAI Software J.S.C.)
- 09:35 – 09:50 Report 3 Formulation of Road Maintenance Plan by PMS**
Dr. Kazuya AOKI / Dr. Bhoj Raj PANTHA
(JICA Project Expert)
- 09:50 – 10:05 Report 4 Pilot Repair Works, Road Facility Inspection Guideline and Road Routine Maintenance Manual**
Mr. Tsuneo KATO
(Team leader, JICA Project Team)
- 10:05 – 10:20 Report 5 Seminar, Workshop, OJTs and Public Relations**
Ms Akiko MIYAKAWA
(JICA Project Expert)
- 10:20 – 10:50 Comment and Discussion on the Progress Report**
- 10:50 – 11:00 Closing Remark**
Representative of DRVN

LIST OF PARTICIPANTS – The 2nd JCC meetingMarch 25th, 2016**Participants of Vietnamese side**

No.	Name	Organization	Position
1	Nguyen Van Huyen	DRVN	Director General
2	To Nam Toan	Department of Science Technology Environment & International Cooperation - DRVN	Director TWG Leader
3	Quach Van Khoa	Department of Science Technology Environment & International Cooperation - DRVN	Deputy Director
4	Tran Van Son	RMB-I	Director
5	Pham Van Tam	Department of Science Technology – RMB-I	Director
6	Nguyen Phuc An	Road Department 1 - Road Construction Management Administration - DRVN	Deputy Director
7	Ta Quang Vinh	Sub Bureau I.6	Director
8	Cao Xuan Giao	Department of Planning and Investment - DRVN	Director
9	Nguyen The Minh	Road Construction Management Administration - DRVN	Deputy Director
10	Ta Dang Tien	Department of Road Construction Management Administration - DRVN	Deputy Director
11	Vu Minh Thuan	PMU 3	Deputy Director
12	Vu Tuan Anh	VEA - DRVN	Deputy Director
13	Pham Manh Thang	PID 4 - PMU 3	Director
14	Le Hong Diep	Department of Road Management & Maintenance - DRVN	Director
15	Le Ngoc Minh	RMB-II	Deputy Director
16	Tran Quoc Thanh	Department of Road Management & Maintenance - DRVN	Officer
17	Nguyen Van Thanh	ITST	Deputy Director
18	Pham Thanh Hai	ITST	Officer
19	Nguyen Van Dan	RTC-Central	Deputy Director
20	Dang Dinh Quang	Sub Bureau I.5	Director
21	Nguyen Quoc Tung	VEA - DRVN	Director
22	Trinh Xuan Sinh	Department of Road Management & Maintenance - DRVN	Officer
23	Nguyen Anh Tu	Road Management & Maintenance Division – RMB-I	Officer
24	Pham Anh Duc	PID 4 - PMU 3	Officer
25	Dinh Thanh Huyen	Department of Science Technology Environment & International Cooperation - DRVN	Officer
26	Chu Thi Hong Nhan	ITST	Officer
27	Nguyen Khanh Toan	Department of Road Management & Maintenance - DRVN	Officer
28	Nguyen Duc Hoai	Pesonnal Organizing Department - DRVN	Deputy Director
29	Tran Nguyen Huy	Department of Planning and Investment - DRVN	Deputy Director
30	Le Hoang Long	Department of Science Technology Environment & International Cooperation - DRVN	Officer
31	Hoang Phuong	Road Construction Management Administration - DRVN	Officer
32	Tran Xuan Binh	Department of Science Technology Environment & International Cooperation - DRVN	Officer
33	Nguyen Xuan Lam	Department of Road Management & Maintenance - DRVN	Deputy Director

Participants of Japanese side

No.	Name	Organization	Position
34	Fukushima Yosuke	Embassy of Japan in Vietnam	Second Secretary
35	Hiroshi Anzo	JICA Vietnam	Senior Project Formulation Officer
36	Vu Thi Thai Ha	JICA Vietnam	Project Coordinator
37	Hiroshi Honda	VRAMP	Managing Director
38	Yoshiaki Matsuno	JICA Project Team	Advisor
39	Tsuneo Kato	JICA Project Team	Team Leader
40	Yoshiaki Kunimasa	JICA Project Team	Deputy Team Leader
41	Kazuya Aoki	JICA Project Team	Expert
42	Yoshiyasu Tsuchiya	JICA Project Team	Expert
43	Bhoj Raj Pantha	JICA Project Team	Expert
44	Akiko Miyakawa	JICA Project Team	Expert
45	Nguyen Dinh Thao	JICA Project Team	Project Assistant
46	Bui Cong Do	JICA Project Team	Project Assistant
47	Do Hong Phong	JICA Project Team	Project Assistant
48	Quach Thu Trang	JICA Project Team	Project Assistant
49	Nguyen Thu Trang	JICA Project Team	Project Assistant
50	Tran Thu Muoi	JICA Project Team	Project Assistant
51	Hoang Minh Trang	JICA Project Team	Secretary of Mr. Matsuno
52	Nguyen Hoang Anh	Sao Mai JSC	Officer
53	Nguyen Van Toan	Sao Mai JSC	Officer

MONITORING SHEET

PROJECT PROGRESS REPORT

MINUTES OF MEETING
THE 3RD JOINT COORDINATION COMMITTEE (JCC) MEETING
FOR THE PROJECT FOR CAPACITY ENHANCEMENT
IN ROAD MAINTENANCE PHASE II

The 3rd JCC meeting chaired by Mr. Nguyen Van Huyen, Director General of DRVN was convened on March 29th, 2017 attended by members of Vietnamese side and Japanese side.

In the meeting, the JICA Project Team members presented the progress of project measures and activities which have been implemented in the Project. Furthermore, the Vietnamese side made comments and additional requests on the implementation of the Project. The chairperson of JCC meeting, Mr. Nguyen Van Huyen, Director General, DRVN, summarized the discussion and made requests to the stakeholders as follows:

1. The functional departments shall compile the pending issues and questions in writing, and request JPT to arrange further technical discussion for clarification due to the limited time of 3rd JCC meeting.
2. A number of issues need being accelerated such as trial operation of road repair technologies, finalization of pavement maintenance planning modules and implementation of intensive training for RMBs and DPI for sustainable application of PMS supporting for planning work of DRVN.
3. Close coordination on the Project items and implementation plan of the JICA Project Phase II with Component A of the VRAMP project are also necessary.
4. Working Groups, JICA Project Team and PMU3 are requested to closely cooperate to implement the remaining items of the Project on schedule.
5. DPI-DRVN and the DPis under RMBs are requested to participate in the intensive training courses of the Project for fully understanding the pavement maintenance planning by PMS system for actual operation.
6. JPT is requested to transfer the data collection and analysis technology to RTC staff for sustainable implementation after the Project. RTC are assigned to receive all data collection and analysis technology for the PMS pavement management system.
7. DRVN is now focusing on the increase the transparency, accuracy and effective usage of road maintenance fund. Therefore DRVN need to ensure the sustainable outputs of the project using road maintenance fund.
8. DRVN assign function departments to cooperate with JPT for solutions of the inconsistency between road inventory and field survey. Resetting of KM post shall also be considered if necessary.
9. Further technical meetings shall be arranged between JPT and functional departments under DRVN to discuss about the relevant contents of the Project.

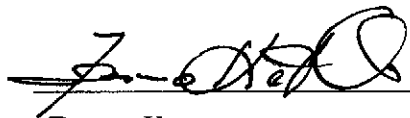
10. DRVN highly appreciates the idea of JPT in development of Technology Information System. It is a good tool for intercommunication with private sector for their technologies in road maintenance and management. DRVN assigns STE-ICD to manage this system. Currently they are working with JPT for finalization of the system
11. Regarding Annual Report, DRVN requests functional departments to cooperate and make comments to Road Magazine by next week, so that they can finalize and publish the report in the soonest time. It is important to publish the report as it helps competent agencies to understand the current practices of road maintenance and raise awareness about the importance of road maintenance.
12. DRVN would like to express their high appreciation and sincere thanks to Japanese Government, Embassy of Japan in Vietnam and JICA for continuing supports and cooperation in the Project and does expect for further programs of supports and cooperation with DRVN and the road sector in Vietnam.

The Summary of the Discussion, the 2nd JCC Meeting Agenda, the List of Participant, the Monitoring Sheet and the Project Progress Report are attached as annex.

ANNEX I	Summary of the Discussion
ANNEX II	3 rd JCC Meeting Agenda
ANNEX III	List of Participant
ANNEX IV	Monitoring Sheet
ANNEX V	Draft Annual Report




Hiroshi Anzo
Senior Project Formulation Officer
Vietnam Office
Japan International Cooperation Agency



Tsuneo Kato
Project Team Leader
Japan International Cooperation Agency



Hanoi, March 2017


Nguyen-Van Huyen
Director General
Directorate for Roads of Vietnam, Ministry of Transport,
The Socialist Republic of Vietnam



To Nam Toan
Director
Science Technology Environmental & International
Cooperation Department, Directorate for Roads of
Vietnam, Ministry of Transport, The Socialist Republic
of Vietnam

SUMMARY OF THE DISCUSSION

1. Dr. To Nam Toan made the introduction about the 3rd JCC meeting and participants

2. Mr. Nguyen Van Huyen made the opening remarks

- Mr. Nguyen Van Huyen briefly introduced the cooperation between JICA and DRVN in technical project for capacity enhancement in road maintenance (Phase I and Phase II).
- The objective of the 3rd JCC meeting is to review to works which have been implemented in the first two years of JICA Project Phase 2 and works which have to be implemented in the remaining time of the project.
- DRVN expected the comments and ideas among participants for the success of the Project.
- Mr. Nguyen Van Huyen also expressed the sincere thanks to Embassy of Japan in Vietnam, JICA Vietnam Office, JICA Project Team and relevant agencies in Vietnam.

3. Mr. Hiroshi Anzo delivered the message from JICA

- Mr. Hiroshi Anzo expressed the appreciation to the clear direction of DRVN leaders and the great efforts of DRVN-TWG and JICA Project Team in the implementation of the Project.
- There are delays in Measure 3 such as approval for Project Document, import procedures of materials and equipment for pilot repair project. This may lead to the delay in the implementation, monitoring and evaluation of the pilot repair project. The delays in procedures in Vietnam shall not be the reasons to lengthen the project implementation period. The outputs of the Project shall be certainly ensured.
- As mentioned in 2nd JCC, much concerns are still given on the institutionalization for the effective application of the PMS system and standardization of Project outputs. The institutionalization procedures shall be finalized as soon as possible. If no proper policy or budget are provided for the implementation of PMS and other Project outputs after the completion of the Project, it may be difficult to discuss on request of other technical cooperation projects in the future.
- The discussion on Project progress and effective solutions for pending issues shall be made in 3rd JCC meeting.

4. JICA Project Team members delivered the presentations about Project progress

- Report 1: Project Overall Progress (Mr. Tsuneo KATO)
- Report 2: Pavement Condition Survey and Analysis (Mr. Do Hong PHONG)
- Report 3: PMS System Development (Dr. Kazuya AOKI, Dr. Bhoj Raj PANTHA)

- Report 4: Road Facility Inspection Guideline and Road Routine Maintenance Manual (Dr. Nguyen Dinh THAO)
- Report 5: Institutional Development (Mr. Tsuneo KATO)
- Report 6: Public Relations (Mr. Yoshiro KUNIMASA, Road Magazine)
- Report 7: Seminar, Workshop, OJTs (Ms. Akiko MIYAKAWA)

5. Comments and requests of the functional departments under DRVN:

5.1 Department of Road Management and Maintenance (Director of M&M Department)

- Regarding the inconsistency between road inventory and field survey, Dept. of M&M request to have a discussion with JPT to clarify the situation and find out countermeasures. RMB I is also expected to join that meeting.
- The presentations delivered in 3rd JCC meeting are short and brief. For the effective technology transfer from JPT to DRVN, some more detailed discussions and explanations are necessary. DRVN not only need to understand the outputs of the Project but also the whole process to achieve to outputs.
- DRVN has closely cooperated with JPT to review and finalize the Guideline and Manual. Relevant departments under DRVN and RMBs shall keep reviewing and providing comments for the updated Guideline and Manual.
- The concerns and recommendations of JPT on legalization of maintenance standards are relevant to the actual situation. Separated standard for road inspection is not currently available, so the standard for inspection of capital construction is applied.
- PR and training: Dept. of Road M&M shall collaborate with JPT and Road Magazine for the finalization of Annual Report. More discussion with JPT on the training program shall be arranged in order to ensure that DRVN staff shall attend the training adequately.

5.2 Department of Planning and Investment (Deputy Director of DPI)

- Currently DPI is preparing annual maintenance plan of 2018, so it is a good opportunity to fit the schedule between JPT and DRVN. DPI request JPT to share pavement condition survey data and PMS data so far for them to review. DPI requests a technical meeting with JPT to explain about the data and how to operate the planning system.
- DPI hope that in the preparation for annual maintenance plan of 2018, two methods can be applied including convention method and PMS planning system.
- DPI request JPT to share information on the minimum requirements for the sustainable application of pavement condition survey, such as technical method, budget, software/hardware, etc.

- DPI request JPT to clarify the difficulties in pavement condition data processing as JPT has made the survey in 2-3 months and the data processing in 5-6 months. DPI ask if the difficulties are lack of human resources or technical issues.

5.3 Technical Working Group (TWG Leader)

- The road maintenance planning is performed by DPI-DRVN and the DPIs under RMBs. TWG request JPT to provide an intensive training in Hanoi for DPI-DRVN.
- RTC has sufficiently conducted the pavement condition data collection and processing. DRVN shall keep assigning RTC to perform this task in long term. TWG also requests for an intensive training for RTC for sustainable application of this technology.
- DRVN shall support in the implementation of pilot repair project at site from April 2017 and accelerate the progress for monitoring and evaluation. DRVN requests JPT to cooperate for a more flexible plan of expert mobilization in order to catch up with the schedule.

6. Mr. Nguyen Van Huyen made the closing remarks

- The functional departments shall compile the pending issues and questions in writing, and request JPT to arrange further technical discussion for clarification due to the limited duration of 3rd JCC meeting.
- A number of issues need to be accelerated such as trial operation of road repair technologies, finalization of pavement maintenance planning modules and implementation of intensive training for RMBs and DPI for sustainable application of PMS.
- Close coordination on the Project items and implementation plan of the JICA Project Phase II with Component A of the VRAMP project are also necessary.
- Working Groups, JICA Project Team and PMU3 are requested to closely cooperate to implement the remaining items of the Project on schedule.
- DPI-DRVN and the DPIs under RMBs are requested to participate in the intensive training courses of the Project to understand the pavement maintenance planning by PMS system.
- JPT is requested to transfer the data collection and analysis technology to RTC staff for sustainable implementation after the Project. RTC is assigned to receive all data collection and analysis technology for the PMS pavement management system.
- DRVN is now focusing on the increase the transparency, accuracy and effective usage of road maintenance fund. Therefore, DRVN need to ensure the sustainable outputs of the project using road maintenance fund.

- DRVN assign function department to cooperate with JPT for solutions of the inconsistency between road inventory and field survey. Resetting of KM post shall also be considered if necessary.
- Further technical meeting shall be arranged between JPT and functional department under DRVN to discuss about the relevant contents of the Project.
- DRVN highly appreciate the idea of JPT in development of Technology Information System. It is a good tool for intercommunication with private sector for their technology in road maintenance and management. DRVN assign Dept. of Science and Technology to conduct this task. Currently they are working with JPT for finalization of the system
- Regarding Annual Report, DRVN request functional departments to cooperate and make comments to Road Magazine by next week, so that they can finalize and publish the report in the soonest time. It is important to publish the report as it helps competent agencies to understand the current practices of road maintenance and raise awareness about the importance of road maintenance.
- DRVN would like to express the appreciation and sincere thanks to Embassy of Japan in Vietnam and JICA for support and cooperation in the Project and do expect for further programs of supports and cooperation with DRVN and the road sector in Vietnam.

8:30

8:40

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10:4

3RD JCC MEETING AGENDA

The Project for Capacity Enhancement in Road Maintenance Phase II

The 3rd Joint Coordination Committee Meeting

Date: March 29th, 2017
Venue: Meeting Room No.204, DRVN
Chair: Mr. Nguyen Van Huyen, Director General
Handout: Monitoring Sheet, Presentation Material, Draft Annual Report



8:30 – 8:40 Introduction
Dr. To Nam Toan,
(Director of Science, Technology, Environment and International Cooperation Department)

8:40 – 8:50 Opening Remarks
Mr. Nguyen Van Huyen
(Director General of DRVN)

8:50 – 09:00 Message from JICA
Mr. Hiroshi ANZO
(Senior Project Formulation Advisor, Japan International)

09:00 – 09:15 Report 1: Project Overall Progress
Mr. Tsuneo KATO
(Team leader, JICA Project Team)

09:15 – 09:30 Report 2: Pavement Condition Survey and Analysis
Mr. Do Hong Phong
(JICA Project Team)

09:30 – 10:00 Report 3: PMS System Development
Dr. Kazuya AOKI
Dr. Bhoj Raj PANTHA
(JICA Project Team)



10:15 – 10:30 Report 4: Road Facility Inspection Guideline and Road Routine Maintenance Manual
Dr. Nguyen Dinh Thao
(JICA Project Team)

10:30 – 10:45 Report 5: Institutional Development
Mr. Tsuneo KATO
(Team leader, JICA Project Team)

10:45 – 11:00 Report 6: Public Relations
Mr. Yoshiro KUNIMASA
Road Magazine
(JICA Project Team / Road Magazine / SAO MAI Software J.S.C.)

ANNEX II

11:00 – 11:15 Report 7: Seminar, Workshop, OJTs
Ms Akiko MIYAKAWA
(JICA Project Expert)

11:15 – 11:40 Comment and Discussion on the Progress Report

11:40 – 11:45 Closing Remark
Representative of DRVN



LIST OF PARTICIPANTS – The 3rd JCC meetingMarch 29th, 2017**Participants of Vietnamese side**

No.	Name	Organization	Position
1.	Nguyen Van Huyen	DRVN	Director General
2.	To Nam Toan	STE-ICD – DRVN	Director TWG Leader
3.	Nguyen Viet Thinh	STE-ICD – DRVN	Deputy Director
4.	Tran Xuan Binh	STE-ICD – DRVN	Officer
5.	Le Hong Diep	Department of Road Management & Maintenance – DRVN	Director
6.	Nguyen Duc Cuong	Department of Road Management & Maintenance – DRVN	Deputy Director
7.	Trinh Xuan Sinh	Department of Road Management & Maintenance – DRVN	Officer
8.	Nguyen Khanh Toan	Department of Road Management & Maintenance – DRVN	Officer
9.	Nguyen Duc Hoai	Personnel Organizing Department – DRVN	Deputy Director
10.	Doan Chi Hieu	Department of Planning and Investment	
11.	Nguyen Minh Sy	Department of Road Construction Management	Director
12.	Tran Ba Dat	Department of Traffic Safety	Deputy Director
13.	Nguyen Ngoc Hai	Department of Planning and Investment – MOT	Officer
14.	Duong Thanh Hien	Road Magazine	Director
15.	Khanh Hong	Road Magazine	Officer
16.	Le Khac Anh	RTC – DRVN	Director
17.	Truong Tien Dung	RTC – DRVN	Deputy Director
18.	Hoang Anh Tuan	RTC – DRVN	
19.	Nguyen Thi Thu Hang	Road IT Center	Officer
20.	Nguyen Xuan Thuy	VEA – DRVN	Deputy Director
21.	Nguyen Tuan Anh	VEA – DRVN	Deputy Director
22.	Tran Minh Thu	VEA – DRVN	Officer
23.	Lai Van Huy	VEA – DRVN	Officer
24.	Le Duc Loc	PMU 3	Deputy Director
25.	Pham Manh Thang	PID 4 - PMU 3	Director
26.	Dao Thi Ngoc Anh	PMU 3	Officer

Participants of Japanese side

No.	Name	Organization	Position
27.	Takuya Kudo	Embassy of Japan in Vietnam	Second Secretary
28.	Hiroshi Anzo	JICA Vietnam	Senior Project Formulation Officer
29.	Nguyen Hoang Ngan	JICA Vietnam	Project Coordinator
30.	Yoshiaki Matsuno	JICA Project Team	Long-Term Expert
31.	Tsuneo Kato	JICA Project Team	Team Leader
32.	Yoshiaki Kunimasa	JICA Project Team	Deputy Team Leader
33.	Kazuya Aoki	JICA Project Team	Expert
34.	Motofumi Tatsushita	JICA Project Team	Expert
35.	Bhoj Raj Pantha	JICA Project Team	Expert
36.	Akiko Miyakawa	JICA Project Team	Expert
37.	Nguyen Dinh Thao	JICA Project Team	Project Assistant
38.	Bui Cong Do	JICA Project Team	Project Assistant
39.	Do Hong Phong	JICA Project Team	Project Assistant
40.	Quach Thi Thu Trang	JICA Project Team	Project Assistant
41.	Nguyen Thu Trang	JICA Project Team	Project Assistant
42.	Tran Thu Muoi	JICA Project Team	Project Assistant
43.	Le Dac Hien	JICA Project Team	Project Assistant
44.	Do Minh Tu	JICA Project Team	Secretary of Mr. Matsuno
45.	Nguyen Hoang Anh	Sao Mai JSC	Officer
46.	Nguyen Van Toan	Sao Mai JSC	Officer

MINUTES OF MEETING
THE 4TH JOINT COORDINATION COMMITTEE (JCC) MEETING
FOR THE PROJECT FOR CAPACITY ENHANCEMENT
IN ROAD MAINTENANCE PHASE II

The 4th JCC meeting chaired by Mr. Nguyen Van Huyen, Director General of DRVN was convened on December 6th, 2017 attended by members of Vietnamese side and Japanese side.

In the meeting, first of all, Mr. Nguyen Van Huyen delivered the opening remarks with introduction of the Project, appreciation words to all concerned stakeholders and started the meeting formally. Right after the opening remarks from the chairperson, Mr. Hiroshi Anzo from JICA Vietnam delivered the message about the importance of sustaining the Project outputs after the completion of the Project. Next, JICA Project Team Leader, Mr. Tsuneo Kato made a presentation on the Project outputs and Project Completion Report and Dr. Kazuya Aoki made a presentation on the Development of PMS and the Formulation of Pavement Maintenance Plan. After that, Mr. To Nam Toan (Leader of TWG, Director of STE-ICD) made one presentation on the DRVN's Action Plan regarding Take-Over of the Project Outputs and the Institutional Arrangement to realize the Project Outputs. Furthermore, the Vietnamese side made comments and exchanged ideas about the implementation of the Project outputs and the strategy to make the Project outputs sustainable. The chairperson of JCC meeting, Mr. Nguyen Van Huyen, Director General, DRVN, summarized the discussion and made conclusions of the 4th JCC meeting as follows:

1. The Project is successful, and it has contributed to raising the awareness of road maintenance and management and facilitated the comprehensive renovation in road maintenance and management of DRVN. After nearly 3 years of Project implementation, the Project has obtained expected achievements.
2. In the coming time, in order to maintain and upgrade JICA Project Outputs, DRVN will:
 - keep surveying pavement conditions to collect data for around 17,000 km of the remaining national highways under jurisdiction of 4 RMBs, 52 authorized PDOTs, and VEA also.
 - formulate pavement maintenance plans by PMS system for FY 2019 in the road network managed by RMBs;
 - formulate pavement maintenance plans by PMS system for FY 2020 in the whole national road network.
 - integrate PMS software family into the Road Asset Management System or RAM System under VRAMP project.
3. Certain resources are needed to maintain not only PMS but also RAM System and others. Requirement of systematic planning for budget allocation is clarified in Circular No.60, which shall support the transparency in road management and maintenance.
4. However, due to the limited time for taking over the planning and pavement management by new PMS system; DRVN understands that there will be some difficulties when deploying.
 - Limited skills of staffs from functional departments of DRVN as well as RMBs to operate PMS software properly; especially for PDOTs who manage around 50% of total national road network, PMS system are totally new for them.

- PMS software has been introduced to RMBs with the great efforts from JPT and DRVN working groups. However, it would be also very challenging for expanding the deployment to 52 authorized PDOTs and Expressway Authority because of their limited resources and insufficient human capacity.
 - Upgrading PMS software has been completed successfully but in the future, there might arise some demands for customization to local conditions of road maintenance and management in Vietnam. In this regard, it might be hard for DRVN's staff. Moreover, PMS software should be integrated with the RAM System in Component A of VRAMP Project.
5. DRVN expects to receive the further and continuing supports from JICA to successfully realize the Project outputs in reality through post-project trainings and supports to upgrade the system by dispatching system experts during PMS operation and management.
 6. TWGs, functional departments, RMBs and affiliated agencies are requested to promptly cooperate with the Project team to in order to complete the Project outputs and to prepare the action plans on taking over and realization of Project outputs.
 7. DRVN strongly requests not only concerned staff but also leaders and all staff of DRVN and RMBs to master the PMS operation.

The Summary of the Discussion, the 4th JCC Meeting Agenda, and List of Participant are attached as annexes.

ANNEX I	Summary of the Discussion
ANNEX II	4 th JCC Meeting Agenda
ANNEX III	List of Participant

Hiroshi Anzo
Senior Project Formulation Advisor
Vietnam Office
Japan International Cooperation Agency



Hanoi, December 2017

Nguyen Van Huyen
Director General
Directorate for Roads of Vietnam, Ministry of Transport,
The Socialist Republic of Vietnam

Tsuneo Kato
Project Team Leader
Japan International Cooperation Agency

To Nam Toan
TWG Leader and Director
Science Technology Environmental & International
Cooperation Department, Directorate for Roads of Vietnam,
Ministry of Transport, The Socialist Republic of Vietnam

SUMMARY OF THE DISCUSSION

1. Dr. To Nam Toan made the introduction about the 4th JCC meeting and participants

2. Mr. Nguyen Van Huyen made the opening remarks

- Mr. Nguyen Van Huyen briefly introduced the cooperation between JICA and DRVN in Technical Cooperation Project for Capacity Enhancement in Road Maintenance (Phase I and Phase II).
- This is the last JCC meeting to review the implementation results of the Project as well as exchange opinions and discuss issues to be implemented to maintain and enhance the Project outputs after the completion of the Project.
- Comments and ideas among participants are expected to ensure the sustainability of the Project outputs.
- Mr. Nguyen Van Huyen also expressed the sincere thanks to Embassy of Japan in Vietnam, JICA Vietnam Office, JICA Project Team and relevant agencies in Vietnam.

3. Mr. Hiroshi Anzo delivered the message from JICA

- Mr. Hiroshi Anzo expressed the appreciation to the clear direction of DRVN leaders and the great efforts of DRVN-TWG and JICA Project Team in the implementation of the Project.
- The expert dispatch lasts until the end of December. The only remaining task is training in Japan. It is important to takeover, maintain and enhance the Project outputs effectively after the completion of the Project.
- It is important to have proper budget allocation and administration procedures to realize the Project outputs including not only PMS but other outputs as well.
- JICA is expecting DRVN's direction and commitment on the concrete Action Plan on Taking Over and Realization of Project outputs, especially for Measure 4 in this JCC.
- The remaining working period of experts in Vietnam is very limited, therefore it should be utilized effectively to sustain the Project outputs.

4. Mr. Tsuneo Kato (Team Leader of JICA Project Team) delivered the presentation on the Project Achievements and Project Completion Report

- Mr. Tsuneo Kato reported all about the Project outputs and technology transfer and time schedule hereafter for the finalization of the Project.
- Summary of the presentation has emphasized the importance of harmonizing Systematization, Technology Transfer and Institutional Arrangement.

5. Dr. Kazuya Aoki (JICA Project Team) delivered the presentation on the Development of PMS and Formulation of Pavement Maintenance Plan

- Dr. Kazuya Aoki made a demonstration of PMS software developed in this Project, which is a customized model specialized for DRVN national road management.
- PMS is not a closed system, so that DRVN can upgrade the system and expand system functions.

6. Mr. To Nam Toan delivered the presentation about DRVN's Action Plan on Taking Over and Realization of Project Outputs

- Dr. Toan presented about draft plans of institutional arrangement for DRVN to put the Project output into the practice. The following actions are included in the draft plan.
 - Collecting and inputting of PMS data (road inventory, maintenance history, traffic volume and pavement condition) will continue until data of whole network be collected/inputted in the database.
 - Necessary fund for procuring additional pavement condition survey vehicle and data collection will be managed from VRAMP and road maintenance fund.
 - PMS management and operation group will be established under Road Asset Management (RAM) Steering Committee.
 - PMS will be integrated into RAM system which is being developed under VRAMP.
 - Regulations of PMS management and operation will be developed and promulgated by DRVN decision first and later upgraded into MOT circular to expand PMS applications in PDOTs also.
 - Technical manuals and guidelines including Procedure Manual for National Road Management and Maintenance, Expressway Maintenance Standards and Standards for Design, Construction and Acceptance of Repair Technologies will be developed, applying manuals and a guideline developed in the Project.
 - Post-project training programs will be implemented to enhance the capacity of DRVN, especially RMBs and SBs' staff.
 - Future training programs to RMBs, SBs and PDOTs will be provided in cooperation with DRVN, Universities and Research Institutes.
- Dr. Toan also expressed DRVN's expectation on JICA's support for the trainings to the DRVN staff including overseas training courses.

7. Comments and ideas among participants:

7.1 Department of Road Management and Maintenance – DRVN (Mr. Le Hong Diep – Director)

- JPT faced many difficulties at the beginning due to insufficient data (e.g. Road inventory data, Maintenance history data) and complicated management system (e.g. lack or duplication of KM post, overlapping of jurisdiction area, etc.). It leads to

challenges in systemization for road coding, pavement condition survey, and finalization of data input system. JPT's effort is highly appreciated for overcoming those difficulties.

- There are also some difficulties in pavement condition survey. For example, before making the pavement condition survey plan, there was no repair project, however during survey, there are actually some repair projects planned by MOT at sites.
- The Project outputs are quite new to DRVN and RMBs' staff in comparison to current practices. Therefore, they faced some difficulties in approaching the Project, due to lack of capacity and experience and inadequate ICT skills.
- In order to sustain the Project outputs, some actions are to be taken by DRVN as follows:
 - To request RMBs to accelerate completion of data inputting or registration of RI data, MH data and TV data to the system;
 - To finalize the road code for data registration in the system;
 - As to pavement condition survey:
 - To keep conducting survey for national highway under jurisdiction of RMBs, e.g. some section transferred from BOT projects;
 - To expand the survey for national roads under the authorized jurisdiction of 52 PDOTs as well as expressways under VEA's jurisdiction;
 - To propose MOT for allocation of annual budget from Road Maintenance Fund to facilitate pavement condition survey conducted by RTCs for national roads under the authorized jurisdiction of 52 PDOTs;
 - To purchase one new pavement inspection vehicle under VRAMP project.
 - DPI shall take main roles for legalization and realization of PMS into operation.
 - RMMD shall be responsible for application of Road Facility Inspection Guideline and Road Routine Maintenance Manual/Expressway Maintenance Manual in road maintenance works. Currently, development of Road Maintenance Procedure Manual for DRVN is under development by UTC's experts taking full advantage of JICA projects' outputs such as developed manuals and guidelines.
 - RMMD shall initiate to integrate PCDA management cycle into all single tactical work activity.
 - Institutional arrangement:
 - For institutional arrangement within the competence of DRVN: it will be made properly by making internal decisions on regulations, operation mechanism, decentralization, and responsibility demarcation also;

- For institutional arrangement out of the competence of DRVN: proper proposal should be prepared by DRVN to submit to competent governmental agencies such as MOT, MOF for approval (ex, budget allocation for road maintenance planning, pavement condition survey, circular for systemization of road planning, etc.).
- Human resources development and PR:
 - Currently due to the personnel constraint, it is difficult for DRVN to supplement further staff. DRVN must manage to maintain semi-business functional agencies such as RTCs for R&D activities, Road Magazine for PR work, and IT Center for system support;
 - Since many training materials have been received from the Project, DRVN shall conduct post-project training courses for regional organizations.

7.2 Organization and Personnel Department – DRVN (Mr. Hoang Manh Tri – Director)

- JPT supported DRVN in development and implementation of detailed and informative training program with adequate training materials;
- Most of the trainees are key staff with sufficient capacity and responsibility. After the training, all trainees can take the role of trainer for DRVN in the future;
- In order to sustain the Project outputs, not only domestic training but also overseas trainings should be continued;
- DRVN shall consider the JPT's recommendation for establishing the Human Resources Development Steering Committee.

7.3 Department of Planning and Investment – MOT (Mr. Nguyen Ngoc Hai – Officer)

- At the beginning, there was concerns about overlapping between JICA Project and WB that required for many discussions among all relevant parties. However, after 3 years of implementation, now it is very obvious about activities, achievements and contribution of JICA Project Phase II. The project outputs are more than expectation that is obtained not only within Phase II but the fruitful collaboration between JICA and DRVN for a long time.
- JICA is expected to keep continuing support to help assist Vietnam in renovation in maintenance and management. Now, DRVN is quite confident about PMS system for pavement planning and management. However, there still exist difficulties of limited experience and insufficient capacity for other fields such as expressway or long-span bridges and so forth which play the extremely significant role for socio-economic growth in Vietnam.

7.4 World Bank (Mr. Nguyen Chi Kien – Transportation Specialist)

- The Project outputs are very clear and useful for DRVN especially under the context of limited budget allocation and higher requirement of transparency and effectiveness in road maintenance;

- The sustainability of Project outputs should be secured with the strong commitment of DRVN for attentive direction;
- Sufficient resources (e.g. competent IT experts) are required for system management and maintenance, therefore the institutional arrangement is very important;
- Further data collection should be done to optimize the system by its full function;
- WB and DRVN have been cooperating in application of new soft technologies (e.g. smartphone, image recognition, AI, etc.), which can help reduce the burden of DRVN in data collection. So far, good results have been achieved;
- For the development of RAMS and PMS, further cooperation from JICA and JPT are still needed to support DRVN's intention of integrating PMS and VBMS into RAMS. The effective cooperation can help avoid overlapping among systems and facilitate the development of unified system.

7.5 JICA Vietnam (Mr. Hiroshi Anzo)

- JICA appreciated the efforts taken by DRVN in preparing the Action Plan to take over and sustain the Project outputs. The sustainability of Project outputs will be quite challenging;
- Project framework is limited with the activities and time framework which were planned in the beginning of the Project. It is not possible to extend the Project at this juncture;
- Institutionalization arrangement generally runs in long term. It is difficult for JICA to support the institutionalization arrangement in such long duration. DRVN is requested to prepare a concrete Action Plan with priorities and detailed road map with timeframe for the sustainability of Project outputs.
- JICA will pay a visit to DRVN in future to see the status of the implementation of the Action Plan. JICA will see the extent to which DRVN tries to sustain the Project outputs. The result of such review is important to consider any future cooperation to DRVN.

7.6 JICA Long-Term Expert (Mr. Yoshiaki Matsuno)

- In my opinion, in the action plan, it is the most important to make legalization and regulation for PMS.
- If without the regulation, it is difficult probably to obtain budget from MOF.

8. Mr. Nguyen Van Huyen made the closing remarks

- The Project has contributed to raising the awareness of road maintenance and management and facilitated the comprehensive reform in road maintenance and management of DRVN. After nearly 3 years of Project implementation, the Project has obtained expected achievements including the collection of pavement condition data for more than 6,000km of national highways under jurisdiction of 04 RMBs;

completion of web-based pavement management system (PMS); especially the pavement maintenance planning modules based on the result of pavement condition survey; and the implementation of pilot repair project on crack sealing, pothole patching and bridge waterproofing; and many training course for DRVN's staffs were conducted successfully in RMBs and Japan; and the completion of PR materials such as Annual Report 2016, video for road maintenance in Vietnam, etc.

- In the coming time, in order to maintain and upgrade JICA Project outputs, DRVN will keep surveying pavement condition to collect data for around 17,000 km of the remaining national highways under jurisdiction of 4 RMBs, 52 PDOTs, and VEA also; execution of pavement maintenance planning for FY 2019 will be our second task; integrating PMS software family into the Road Asset Management System or RAM System in VRAMP project would be one mission.
- Certain resources are needed to maintain not only PMS but also RAM System and others. Requirement of systematic planning for budget allocation is clarified in Circular No.60, which shall support the transparency in road management and maintenance.
- However, due to the limited time for taking over the planning and pavement management by new PMS system; DRVN understands that there will be some difficulties when deploying.
 - Limited skills of staffs from functional departments of DRVN as well as RMBs to operate PMS software properly; especially for PDOTs who manage around 50% of total national road network, PMS system are totally new for them.
 - PMS software has been introduced to RMBs within great efforts from JPT and DRVN working groups. However, it would be also very challenging for expanding the deployment to 52 authorized PDOTs and Expressway Authority because of their limited resources and insufficient human capacity.
 - Upgrading PMS software has been completed successfully but in the future, there might arise some certain demands for customization to local conditions of road maintenance and management in Vietnam. It might be hard for DRVN's staff. Moreover, PMS software should be integrated with the RAM System in Component A of VRAMP Project.
- DRVN expects to receive the further and continuing supports from JICA to successfully realize the Project outputs in reality through post-project trainings and supports to upgrade the system by dispatching system experts during PMS operation and management.
- TWGs, functional departments, RMBs and affiliated agencies are requested to promptly cooperate with the Project team in order to complete the Project outputs and to prepare the action plans on taking over and realization of Project outputs.
- DRVN strongly requests not only concerned staff but also leaders and all staff of DRVN and RMBs to master the PMS operation.

ANNEX I

- On such very meaningful event of the last JCC meeting, the leader of DRVN took the opportunity to express their sincere thanks to Japanese Government, Japanese People, Embassy of Japan, JICA Vietnam for their many effective and continuing assistances and supports. DRVN also thanks to MOT leaders, MOT relevant departments of DPI, DOST, DOI, TCQM (Transport Work Construction Quality Administration) and institutions such as UTC and ITST.

4TH JCC MEETING AGENDA

The Project for Capacity Enhancement in Road Maintenance Phase II

The 4th Joint Coordination Committee Meeting

Date: December 6th, 2017
Venue: Meeting Room No.204, DRVN
Chair: Mr. Nguyen Van Huyen, Director General
Handout: Presentation Material, Project Completion Report, Annual Report 2016, General Information Brochure 2016, Draft Final Report



- 08:30 – 08:40 Introduction**
Dr. To Nam Toan
 - Project Technical Working Group Leader
 - Director, Department of Science, Technology, Environment and International Cooperation

- 08:40 – 08:50 Opening Remarks**
Mr. Nguyen Van Huyen
 - Director General, DRVN

- 08:50 – 09:00 Message from JICA**
Mr. Hiroshi ANZO
 - Senior Project Formulation Advisor, JICA

- 09:00 – 09:40 (1) Project Achievements and Project Completion Report**
Mr. Tsuneo KATO
 - Team leader, JICA Project Team

- (2) Development of PMS and Formulation of Pavement Maintenance Plan**
Dr. Kazuya AOKI
 - JICA Project Team

- 09:40 – 10:10 DRVN’s Action Plan on Taking Over and Realization of Project Outputs**
Dr. To Nam Toan,
 - Project Technical Working Group Leader
 - Director, Department of Science, Technology, Environment and International Cooperation

- 10:10 – 11:40 Comment and Discussion**

- 11:40 – 11:50 Closing Remark**
 - DRVN Representative



LIST OF PARTICIPANTS

Participants of Vietnamese side

No.	Name	Organization	Position
1.	Nguyen Van Huyen	DRVN	Director General
2.	Nguyen Manh Thang	DRVN	Deputy Director
3.	Tran Quoc Toan	Dept. of Transport Infrastructure – MOT	Deputy Director
4.	Nguyen Ngoc Hai	Dept. of Planning and Investment – MOT	Officer
5.	Le Hong Diep	Dept. of Road Management & Maintenance – DRVN	Director
6.	To Nam Toan	STE-ICD – DRVN	Director TWG Leader
7.	Nguyen Viet Thanh	STE-ICD – DRVN	Deputy Director
8.	Nguyen Thu Van	STE-ICD – DRVN	Officer
9.	Le Hoang Long	STE-ICD – DRVN	Officer
10.	Dinh Thanh Huyen	STE-ICD – DRVN	Officer
11.	Nguyen Thi Thu Hang	STE-ICD – DRVN	Officer
12.	Hoang Manh Tri	Dept. of Personnel Organizing – DRVN	Director
13.	Nguyen Hai Vinh	Dept. of Personnel Organizing – DRVN	Deputy Director
14.	Nguyen Tuan Anh	VEA – DRVN	Deputy Director
15.	Lai Van Huy	VEA – DRVN	Officer
16.	Dang Van Chung	Dept. of Traffic Safety – DRVN	Deputy Director
17.	Vu Sy Quy	Dept. of Traffic Safety – DRVN	Officer
18.	Dam Thi Sinh	Dept. of Finance – DRVN	Deputy Director
19.	Nguyen Trong Tue	Dept. of Road Construction Management – DRVN	Deputy Director
20.	Hoang Phuong	Dept. of Road Construction Management – DRVN	Officer
21.	Le Khac Anh	RTC – DRVN	Director
22.	Truong Tien Dung	RTC – DRVN	Deputy Director
23.	Tran Hung Ha	RMB I	Director
24.	Nguyen Anh Tu	Dept. of Road Management & Maintenance – RMB I	Director
25.	Dao Van Minh	RMB II	Deputy Director
26.	Vo Tuan Ngoc	Dept. of Road Management & Maintenance – RMB II	Deputy Director
27.	Bui Hung Man	Dept. of Road Management & Maintenance – RMB III	Director
28.	Hoang Van Phuong	Dept. of Road Management & Maintenance – RMB IV	Director
29.	Le Duc Loc	PMU 3	Deputy Director
30.	Pham Manh Thang	PID 4 – PMU 3	Director

No.	Name	Organization	Position
31.	Nguyen Duc Phong	PMU3	Officer
32.	Dao Thi Ngoc Anh	PMU 3	Officer
33.	Nguyen Chi Kien	World Bank	Officer

Participants of Japanese side

No.	Name	Organization	Position
34.	Takuya Kudo	Embassy of Japan in Vietnam	Second Secretary
35.	Hiroshi Anzo	JICA Vietnam	Senior Project Formulation Advisor
36.	Nguyen Hoang Ngan	JICA Vietnam	Project Coordinator
37.	Yoshiaki Matsuno	JICA Project Team	Long Term Expert
38.	Tsuneo Kato	JICA Project Team	Team Leader
39.	Yoshiaki Kunimasa	JICA Project Team	Deputy Team Leader
40.	Seiichi Kusano	JICA Project Team	Expert
41.	Takeshi Maeda	JICA Project Team	Expert
42.	Kazuya Aoki	JICA Project Team	Expert
43.	Chikakuni Maeda	JICA Project Team	Expert
44.	Bhoj Raj Pantha	JICA Project Team	Expert
45.	Junko Taguchi	JICA Project Team	Expert
46.	Tatsuya Miyakawa	JICA Project Team	Expert
47.	Nguyen Dinh Thao	JICA Project Team	Project Assistant
48.	Bui Cong Do	JICA Project Team	Project Assistant
49.	Do Hong Phong	JICA Project Team	Project Assistant
50.	Quach Thi Thu Trang	JICA Project Team	Project Assistant
51.	Nguyen Thu Trang	JICA Project Team	Project Assistant
52.	Tran Thu Muoi	JICA Project Team	Project Assistant
53.	Le Dac Hien	JICA Project Team	Project Assistant
54.	Do Minh Tu	JICA Project Team	Secretary of Mr. Matsuno

APPENDIX-5: PROJECT MONITORING SHEET

TO CR of JICA VIETNAM OFFICE**PROJECT MONITORING SHEET****Project Title: Project for Capacity Enhancement in Road Maintenance Phase II**

Version of the Sheet: Ver.1 (Term: February, 2015 - March, 2015)

Name:	Tsuneo Kato
Title	Team Leader
Submission Date	23 rd April 2015

I. Summary**1. Progress****1-1 Progress of Inputs**

JICA long-term experts has been assigned since January 26th, 2015. Until the end of April, a total of 9 JICA short-term experts (Consultant Team) have been assigned for total of 11 man/ months.

Assignment of four experts on Road Facility Inspection Technology, Road Maintenance Technology, Pilot Project Management, and Pavement Technology are moved in May.

1-2 Progress of Activities

Since the beginning of this Project, the Project has been focusing on baseline survey until the targeted JCC, which is to be held on April 23rd, 2015. During this time period, the Project has conducted the review of Phase I Project outputs, data collection of new regulations, update of the current status of national road maintenance and management, focusing more on the document and internet surveys. However, due to absence of counterparts, the Project has some difficulties in conducting in-depth discussion on each activity, so that the Project has focused on the key issues needed to formulate Work Plan, discussed with TWG Leader and collected data.

In addition to the support of the baseline survey, DRVN has also made efforts to set its project environment such as finding out project team office space, organizing working groups and selecting counterpart members including procurement of local funds since the beginning of the Project. Above project environment is expected to be all set before JCC meeting. Thanks to DRVN effort, the Project Team moved in the new the office on April 20th, and all members of working group and counterpart will participate in JCC.

Following describes detail activities conducted by each activity.

(1) Activity 1

Project Experts have conducted the review of Phase I Project outputs including document survey on the regulations stipulating responsibility assignment of DRVN departments. Also, the Project team

visited DRVN IT Centre, and conducted baseline survey and exchange of opinions on the internet information management including web operation system. Since 2007, DRVN has been promoting E-Transaction in line with the Government Information Strategy. To support this, Activity will develop five web based system including PMS operation system and displaying system of pavement condition data. Outline of these web based operation system to be developed in the Project was already shown to DRVN and discussed with TWG and IT Center. Further detailed discussion will be made with WG members after Work Plan is agreed on in JCC.

(2) Activity 2

Baseline survey has been conducted on the selection of national roads under RMB II, III and IV jurisdiction. During this Project, pavement condition survey will be conducted in maximum road length of approx. 6,280 km (or 12,560km both directions). DRVN is requested to take an initiative in the implementation of this survey. Final selection of target roads is to be made in cooperation between DRVN and the Project, based on the criteria shown below. Now, data analysis is on the way based on the information given to the Project by TWG.

- Road section under DRVN direct management is to be selected
- Road section newly constructed and transferred to maintenance in the latest 5 years is to be excluded
- Road sections to be transferred to PDOT management in the near future is to be excluded
- Road section where medium or big repair is now planned is to be excluded.

(3) Activity 3

Baseline survey has reported that DRVN formulated “Draft Expressway Maintenance Standards” under the supervision of Department of Science, Technology, Environment and International Cooperation. The draft Standard has been already distributed to the competent agencies (MOT Science and Technology Dept, ITST, etc.) for commenting. The Department wishes to place high priority on the establishment of this draft Standards and then moves in the discussion on the Road Facility Inspection Guideline and Road Routine Maintenance Manual, which will be developed in this Project. It was found that some contents of the Guideline and the Manual produced in JICA Phase I Project have been incorporated into this draft Standards, in particular information relevant to road facility inspection. The Project will support establishment of this Standards. For further details, the Project team will continue discussions with WG members after JCC.

(4) Activity 4

Project experts have conducted baseline survey including review of recommendations made at JICA Phase I Project and update of regulations and study on the progress of DRVN Comprehensive Renovation Plan commenced in 2013.

(5) Activity 5

Project expert has conducted baseline survey on any update on legislation, government, ministry and DRVN policy on trainings, current training on road maintenance offered, and further action on training proposal developed on Phase 1 Project. For further details, the Project team will continue discussions with WG members after JCC.

(6) Supporting Activities

During the project, training in Japan will be held 3 times. The Project team has developed and proposed a draft plan to DRVN for commenting and requested DRVN to select 5 participants by the deadline set by JICA.

1-3 Achievement of Output

Based on discussion with DRVN, the Project team has prepared Work plan for the authorization at the JCC, to be held on April 23rd, 2015. Work plan set the framework of the Project activities to be conducted to achieve the Project purpose, incorporating all outcomes of activities conducted so far.

1-4 Achievement of the Project Purpose (to be added as project progress)

1-5 Changes of Risks and Actions for Mitigation (to be added as project progress)

1-6 Progress of Actions undertaken by JICA (to be added as project progress)

1-7 Progress of Actions undertaken by Gov. of Viet Nam (to be added as project progress)

1-8 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

In March, 2015, Vietnam Road Asset Management Project (VRAMP) funded by World Bank, has invited consultants to submit proposals on Component A “Consulting Service for Road Database Framework and Development of the Road Asset Management System and Road Asset Management Plans, which is to commence from October 2015.

This VRAMP plans to succeed Road Asset Database System developed under Phase I Project. Therefore in the case of a large scale modification applied to Road Asset Database structure by VRAMP which might take significant time in completing, it will impact significantly to the Project on the formulation of PMS Dataset for pavement repair work plan using data conversion software. Thus, RAM-WG set by DRVN is expected to coordinate regularly with VRAMP on

issues including target route and extent of work for pavement condition survey.

2. Delay of Work Schedule and/or Problems (if any)

2-1 Detail

As the Project needs a couple of months to start, counterpart of DRVN also needed time to set up the project environment including selection and making contract of Project team office space, organizing working groups and selecting counterpart members including local budget arrangement. At the beginning of this project, there was a little concern that uncertainty on how much time will take for preparing this project environment due to involvement of many stakeholders, might causes delay in project implementation. However, thanks to MOT and DRVN efforts, the above project environment is to be settled before JCC.

While DRVN working to settle the project environment, the Project focused on a baseline survey and developed Work Plan. As being a Phase II Project, the Project already had a clear road map to start up the project and able to conduct the review of Phase I Project outputs as mentioned earlier. However, the Project has some difficulties in conducting in-depth discussion on each activity due to absence of counterparts, therefore the Project has discussed with TWG Leader focusing on the key issues required to formulate Work Plan and collection of data. With these measures, the Project could avoid major delay in project implementation.

(1) Allocation of Office Space

Due to the shortage in office space in the DRVN building, DRVN needed to lease a project office space outside DRVN building. However, due to the difficulty in finding out office space which can meet leasing conditions, it took about two months to provide office space to the Project team. During this time period, the Project arranged own office space for two weeks and moved in the temporary project office space within DRVN building on March 30th, which was kindly offered by DRVN. In April, DRVN successfully made a lease contract for a project office space and offered to the Project team. The Project team has moved in the new office on April 20th before JCC.

(2) Establishing Working Group

JICA Technical Assistance project requires work together between JICA Project Team and Counterparts to develop project outputs, focusing more on the processes of development and technology transfer during project implementation rather than simply producing project outputs. Thus Project team requested Counterparts to assign working group members to have in-depth discussion on the project activities. Assignment of members was in fact delayed slightly, but was settled before JCC.

(3) Acquisition of VISA

Since the change of law at the beginning of 2015, there seems to be a little confusion in VISA processing. The JICA Project Team experts have been requested to obtain ODA visa to conduct tasks in Viet Nam. The Project is proposing acceleration of VISA processing to DRVN and MOT.

2-2 Cause

A counterpart organization also needs to prepare project environment and the Project team knows that in general it takes a long time for processing administrative procedures in Viet Nam. It is necessary to cooperate each other and to solve these issues in the shortest time at the beginning of the Project. With this understanding, during this two month of project commencement, JICA project team and DRVN have strongly cooperated to resolve issues arises and successfully prepared a good project environment for the next three years of the Project.

2-3 Roles of Responsible Persons/Organization (JICA, Gov. of Viet Nam,etc.)

3. Modification of the Project Implementation Plan

3-1 PO

A slight adjustment on Implementation schedule was made based on Work Plan prepared in discussion with DRVN.

Also a sub activity “Implement pavement condition surveys for RMB II, III and IV selected roads” which was originally under Activity 2 “Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan”, has now incorporated under Activity 1 “Improve PMS Data Collection and Processing Technology”.

3-2 Other modifications on detailed implementation plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)

4. Preparation of Gov. of Viet Nam toward after completion of the Project

II. Project Monitoring Sheet I & II *as Attached*

Project Monitoring Sheet I (Revision of Project Design Matrix)

Project Name: The Project for Capacity Enhancement in Road Maintenance Phase II
 Project Period: February, 2015 to March, 2018 (3 years)
 Implementation Organization: Directorate for Roads of Vietnam under Ministry of Transport
 Target Group: DRVN, Road Management Bureaus (RMBs) I, II, III, IV
 Target Area: Designated area of RMB I, II, III, IV

Version: 1
Dated: 23rd April, 2015

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions (I.A.)	Achievement	Remarks
Overall Goal Road maintenance is conducted properly based on the mid-term plan, following PDCA cycle.	(By 3 years from the project end) The indicators for pavement damage (IRI, cracks, rutting, etc.) will be improved X %.	1.Result of data comparison of regular pavement condition survey by DRVN 2.Trial 3 year and annual plan for pavement maintenance 3. Annual Report 4.Interview to DRVN			
Project Purpose Implementation capacity for road maintenance is strengthened in Viet Nam	1. Trial pavement repair work plan using PMS is formulated in RMB I,II, III and IV 2. Primary rules for road facility inspection, maintenance and repair work are formulated (*1) 3 Implementation structure for road maintenance is established.	1. Trial pavement repair work plan of RMB I,II, III and IV 2. Regulation 3-1. Regulation 3-2. Interview to DRVN	I.A. to achieve Overall goal 1.Budget is allocated stably for maintenance activities in accordance with 3 year plan 2. Training is conducted by DRVN continuously to maintain technical skills		
Outputs 1. PMS data development technology is improved 2.PMS is upgraded and applied to the planning of trial pavement repair work plans 3.Technical specifications for inspecting road facility and selecting repair work are developed 4.Responsibility assignment and administration procedure are clarified for road maintenance	1-1.Road asset database, maintenance history database and pavement condition database are completed for PMS 1-2.DRVN conducts regular trainings on DB input. 2-1. Trial pavement repair work plan (annual, 3 year) using PMS is formulated by DRVN. 2-2.DRVN conducts PMS training regularly. 3. Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual are formulated. 4. Amendment plans to realize output 1-3 are developed	1-1.Road asset DB, maintenance history DB, pavement condition DB 1-2.Training record 2-1.Trial pavement repair plans (annual, 3 year plan) 2-2.Training record 3.Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual. 4.Amendment plans (draft)	I.A. to achieve Project Purpose 1 Engineers who received training are assigned continuously 2. Legalization procedure for Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual proceeds		
Activities	Inputs		I.A. to achieve Outputs		
	Japanese side	Vietnamese side			
1-1.Review PMS data formats and data input system produced in Phase-I Project. 1-2.Upgrade PMS data input system 1-3.Input and verify PMS data 1-4.Implement pavement condition surveys for RMB II, III and IV selected roads 1-5.Implement training on PMS data input and Pavement condition survey 2-1.Upgrade PMS software 2-2.Convert input data and make PMS dataset 2-3.Formulate trial pavement repair work plans (Annual and 3-Year plan) for RMB I, II, III and IV road networks by PMS system and examine system operability. 2-4.Develop web-based system for displaying pavement condition data on the DRVN mapping system 2-5.Develop web-based system which enables PMS operation on website and formulates trial annual and three year pavement repair work plans 2-6. Implement trainings on Activity 2-1~2-5.	1.Dispatch of Experts (1)Long term Expert • Road maintenance policy/regulations (2)Short-term experts • Team Leader/Road Maintenance Planning • Deputy Team Leader/PMS System Operation Technology • Pavement Condition Survey (Planning and Management) • Pavement Condition Survey(Calibration) • PMS System Technology(Budget Simulation) • PMS System Technology(Repair Work Planning) • Web-based System for Displaying Pavement Condition Data • Road Facility Inspection Technology • Road Maintenance Technology • Pilot Project Management • Pavement Technology • Road Maintenance Administrative Procedure • Capacity Development/Project Coordination 2.Training in Japan • Three times (once/year) on Road maintenance policy and repair technology 3.Equipment, Machinery and Materials (1)Special equipment and materials for pilot project work (2)Computers for planning system (3)Others needed for project implementation 4.Others(Sub Contract) • Local service for Pilot Pavement Condition Survey • Local Service for development of web-based operation system	1.Human resources (1)Chairperson of JCC (2)Chairperson of TWG (3)Counterparts (DRVN and RMBs) (4)Coordinator 2.Facilities Communal office space for JP Team and local support team with electricity, air-condition, internet, telephone line. 3.Cost (1)Cost for pilot project on maintenance and repair work (including cost for general materials) (2)Small running expenses necessary for the implementation of the Project. (e.g. daily allowance, accommodation and domestic travel expenses of DRVN's staff for participating in training in Vietnam) 4.Others (1)Implementation of the pilot repair work for maintenance and repair work with JICA experts' advisory. (2)Implementation of pilot Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction, with JICA's local service.	1. VRAMP Project (WB) is implemented as planned 2. IT policy of DRVN on organization and operation of database and system is maintained		
3-1.Upgrade Road Facility Inspection Guideline and Road Routine Maintenance Manual produced in Phase I project to technical specifications. 3-2. Plan pilot repair works for pavement maintenance and repair work which incorporates new technology and materials 3-3. Implement pilot repair works for pavement repair work, monitor and evaluate their performances 3-4. Based on the results of pilot repair works, develop final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual for standardization 3-5. Implement trainings on Activity 3-1~3-4 4-1.Conduct baseline survey on responsibility assignment and administration procedure for road maintenance 4-2.Develop improvement plan to realize project outputs 4-3.Draft amendment plan on the legal procedures to realize the improvement of responsibility assignment and administration procedures for road maintenance			Preconditions Support and priority of DRVN on outputs generated through the phase I project including system database, technical Standards, and recommendation on institution are maintained		
			<Issues and countermeasures>		

Note:(*1): target facilities, frequency, methods, diagnosis, selection method for repair works, repair work, construction management

Project Monitoring Sheet II (Revision of Plan of Operation)

Version : 1

Dated: 23rd April 2015

Project Title: The Project for Capacity Enhancement in Road Maintenance Phase II

Activities Sub-Activities	Year	2015				2016				2017				2018	Responsible Organization		Monitoring		
		I	II	III	IV	I	II	III	IV	I	II	III	IV		I	Japan	GOV	Achievements	Issue & Countermeasures
Output 1: PMS data development technology is improved																			
1-1. Review PMS data formats and data input system produced in Phase-I Project.	Plan	■	■																
	Actual	▬	▬																
1-2. Upgrade PMS data input system	Plan		■	■															
	Actual		▬	▬															
1-3. Input and verify PMS data	Plan			■	■														
	Actual			▬	▬														
1-4. Implement pavement condition surveys for RMB II, III and IV selected roads	Plan			■	■	■	■	■	■	■	■	■	■						
	Actual			▬	▬	▬	▬	▬	▬	▬	▬	▬	▬						
1-5. Implement training on PMS data input development and Pavement condition survey	Plan			▲				▲		▲			▲			▲			
	Actual																		

Output 2: PMS is applied to the planning of trial pavement repair work plans																			
2-1. Upgrade PMS software	Plan	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Actual	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
2-2. Convert input data and make PMS dataset	Plan							■	■	■	■	■	■	■	■	■	■	■	■
	Actual							▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
2-3. Formulate trial pavement repair work plans (Annual and 3-Year plan) for RMB I, II, III and IV road networks by PMS system and examine system operability.	Plan							■	■	■	■	■	■	■	■	■	■	■	■
	Actual							▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
2-4. Develop web-based system for displaying pavement condition data on the DRVN mapping system	Plan		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Actual		▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
2-5. Develop web-based system which enables PMS operation on website and formulates trial annual and three year pavement repair work plans	Plan							■	■	■	■	■	■	■	■	■	■	■	■
	Actual							▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
2-6. Implement trainings on Activity 2-1~2-5.	Plan			▲				▲		▲			▲			▲			▲
	Actual																		

Output 3: Technical specifications for inspecting road facility and selecting repair work are developed																			
3-1. Upgrade Road Facility Inspection Guideline and Road Routine Maintenance Manual produced in Phase I project to technical specifications.	Plan			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Actual			▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
3-2. Plan pilot repair works for pavement maintenance and repair work which incorporates new technology and materials	Plan	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Actual	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
3-3. Implement pilot repair works for pavement repair work, monitor and evaluate their performances	Plan					■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Actual					▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
3-4. Based on the results of pilot repair works, develop final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual for standardization.	Plan													■	■	■	■	■	■
	Actual													▬	▬	▬	▬	▬	▬
3-5. Implement trainings on Activity 3-1~3-4	Plan			▲				▲		▲			▲			▲			▲
	Actual																		

Output 4: Administration procedure and responsibility assignment are clarified for road maintenance																			
4-1. Conduct baseline survey on responsibility assignment and administration procedure for road maintenance	Plan	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Actual	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
4-2. Develop improvement plan to realize project outputs	Plan		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Actual		▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
4-3. Draft amendment plan on the legal procedures to realize the improvement of responsibility assignment and administration procedures for road maintenance	Plan															■	■	■	■
	Actual															▬	▬	▬	▬

Training in Japan																			
Road maintenance policy and new technology	Plan															▲			▲
	Actual																		

Monitoring Plan	Year	1st Year				2nd Year				3rd Year				4th	Remarks	Issue	Solution		
		I	II	III	IV	I	II	III	IV	I	II	III	IV					I	
Monitoring																			
Joint Coordination Committee	Plan		▲													▲			▲
	Actual		△																
Technical Working Group	Plan			▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
	Actual			▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬	▬
Set-up the Detailed Plan of Operation	Plan	▲																	
	Actual	△																	
Submission of Monitoring Sheet	Plan		▲		▲			▲				▲			▲				▲
	Actual																		
Reports/Documents																			
Work Plan	Plan		▲																
	Actual		△																
Project Completion Report (Draft)	Plan																		▲
	Actual																		

TO CR of JICA VIET NAM OFFICE**PROJECT MONITORING SHEET****Project Title: Project for Capacity Enhancement in Road Maintenance Phase II**

Version of the Sheet: Ver.2 (Term: May, 2015 - October, 2015)

Name:	Tsuneo Kato
Title	Team Leader
Submission Date	22 nd October 2015

I. Summary**1. Progress****1-1 Progress of Inputs**

JICA long-term expert has been assigned since January 26th, 2015. Until the end of October 2015, a total of 13 JICA short-term experts have been assigned for total of 34.2MM out of total project assignment 126MM. (Together with long term expert and short time experts, hereafter to be referred as “The Project”)

1-2 Progress of Activities

In April 2015, thanks to DRVN efforts, project environment were all set such as project team office space (moved in 20th of April, 2015), organizing working groups and selecting counterpart members including procurement of local funds. The project activities are currently running very smoothly with a good cooperation of DRVN.

1-2-1 Baseline Survey

From the beginning of this Project until Joint Coordination Committee (JCC), due to absence of counterparts, the Project has focused baseline survey on the key issues needed to formulate Work Plan, which conducted based on available resources focusing more on the document and internet surveys including the review of Phase I Project outputs, data collection of new regulations, update of the current status of national road maintenance and management. As the result, the Project found some difficulties in conducting in-depth discussion on each activity.

Since the decision made on Working Groups (WG) members, the detail baseline survey has been continuously conducted within each working group.

1-2-2 Work Plan

At JCC meeting held on 23rd April, 2015, the Project discussed on Work Plan set the framework of the project activities to be delivered to achieve the project purpose, incorporating all outcomes of activities

conducted so far.

(1) Project Framework

Framework including measures and activities to achieve project purpose is summarized in below table. (Flow chart is shown on Table 17). Under the Work Plan, activities have been rearranged considering the actual and practical delivery of tasks and outputs. The Project applies the activity number applied at Work Plan throughout the Project.

Table 1 Measures and Activities to Achieve Project Purpose

Project Purpose	Measures	Project Activities agreed at Work Plan		PDM Activity no
Enhance Implementation Capacity for National Road Maintenance in Viet Nam	MEASURE 1; Improve PMS Data Collection and Processing Technology	1-1	Formulate PMS Database	1-1, 1-2, 1-3
		1-2	Implement Pavement Condition Survey	1-4
		1-3	Develop Web-based PMS Data Input System	2-4
	MEASURE 2; Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan	2-1	Upgrade PMS	2-1
		2-2	Formulate PMS Dataset	2-2
		2-3	Formulate Pavement Repair Work Draft Plan	2-3
		2-4	Develop Web-based System for Displaying Pavement Condition Survey Data	2-4
		2-5	Develop Web-based PMS Operation System	2-5
		2-6	Develop Web-based Analysis System for Pavement Condition Survey Data	2-5
	MEASURE 3; Improve Inspection and Repair Work Selection Technology on Road Facility and Develop Technical Standards	3-1	Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology	3-2, 3-3
		3-2	Upgrade Road Facility Inspection Guideline	3-1, 3-4
		3-3	Upgrade Road Routine Maintenance Manual	3-2, 3-4
	MEASURE 4; Enhance Responsibility Assignment and Administration Procedures for Road Maintenance	4-1	Prepare Amendment Plan for Road Maintenance Responsibility Assignment	4-1,4-2,4-3
		4-2	Prepare Amendment Plan for Road Maintenance Administrative Procedure	4-1,4-2,4-3
	MEASURE 5; Plan and Support Implementation of Training Programs and Conduct Public Relations	5-1	Prepare Draft Training Plan	1-5, 2-6, 3-5
		5-2	Support Training Implementation	1-5, 2-6, 3-5
		5-3	Conduct Public Relations	

(2) Project Management

JCC and Technical Working Group (TWG) and WG were established. JCC is led by Director General of DRVN and TWG is led by Director of Science, Technology, Environment and International cooperation Department of DRVN.

Table 2 Functions and Participants of JCC and TWG

		JCC	TWG
Chairperson		Director General of DRVN	Director of Science, Technology, Environment and International Cooperation Dept. of DRVN
Frequency of meeting		Once a year (to discuss and report Work Plan, Progress Report, and Completion Report, and Monitoring Sheet)	Every 3months, except when JCC is hold
Function		<ul style="list-style-type: none"> Discuss and approve Work Plan based on R/D Review the progress of the Project based on annual Work Plans/ Progress Report and Monitoring Sheet. Promote dissemination procedure of project outputs Exchange views on main issues arising from the project in progress 	<ul style="list-style-type: none"> Discuss and Coordinate project progress based on annual Work Plans/ Progress Report and Monitoring Sheet Review and coordinate a progress of the project Discuss and coordinate issues related to Project implementation Select speakers, trainers and trainees for seminars, workshops and OJTs.
Members	Viet Name side	<ul style="list-style-type: none"> Director General of DRVN (Chairperson) Vice Director General of DRVN MOT: DPI, DOST, Infrastructure Dept., TCQM Bureau, ITST DRVN Department Members PMU3 	<ul style="list-style-type: none"> Director of Science, Technology, Environment and International Cooperation Dept. of DRVN (Group leader) DRVN Department Members
	Japanese side	<ul style="list-style-type: none"> Embassy of Japan in Viet Nam Representative of JICA Viet Nam Office JICA Long-term Expert JICA Project Team 	<ul style="list-style-type: none"> JICA Long-term Expert JICA Project Team

Three (3) WGs has been also set up under TWG, who are in charge of project measures as shown below. The members were selected from departments and units under DRVN intensively involved to the project activities, at the same time staff and officials who are directly involved to the project activities.

Table 3 Structure of Working Group

WG	Targeted Field	Vietnamese side member
WG 1	[Measure 1] <ul style="list-style-type: none"> PMS data collection and processing technology Web operation view system for road condition data [Measure 2] <ul style="list-style-type: none"> PMS upgrade/ formulation of pavement budget/repair plans Web based system 	In total of 7 members; <ul style="list-style-type: none"> Director of Science, Technology, Environment and International Cooperation Department (Group Leader) Planning and Investment Department Maintenance and Management Department Road IT Center
WG 2	[Measure 3] <ul style="list-style-type: none"> Technical standards for road inspection and maintenance Pilot Repair works [Measure4] <ul style="list-style-type: none"> Maintenance procedures and responsibility assignment 	In total of 6 members; <ul style="list-style-type: none"> Deputy Director of Science, Technology, Environment and International Cooperation Department of DRVN (Group leader) Maintenance and Management Department Road Construction Management Bureau
WG 3	[Measure 5]	In total of 3 members;

WG	Targeted Field	Vietnamese side member
	Training Programs and Public Relations	<ul style="list-style-type: none"> • Deputy Director of Personnel Department (Group Leader) • International Cooperation Division • PMU3

In addition, Road Asset Management Steering Committee (RAM-SC) and Road Asset Management Working Group (RAM-WG) have been established for efficient coordination between World Bank Vietnam Road Asset Management Project (VRAMP) and this JICA project. Most members of RAM-SC and RAM-WG are also assigned to both JCC and TWG, therefore, this RAM-WG shall take a role as coordination mechanism for the Project at the practical level.

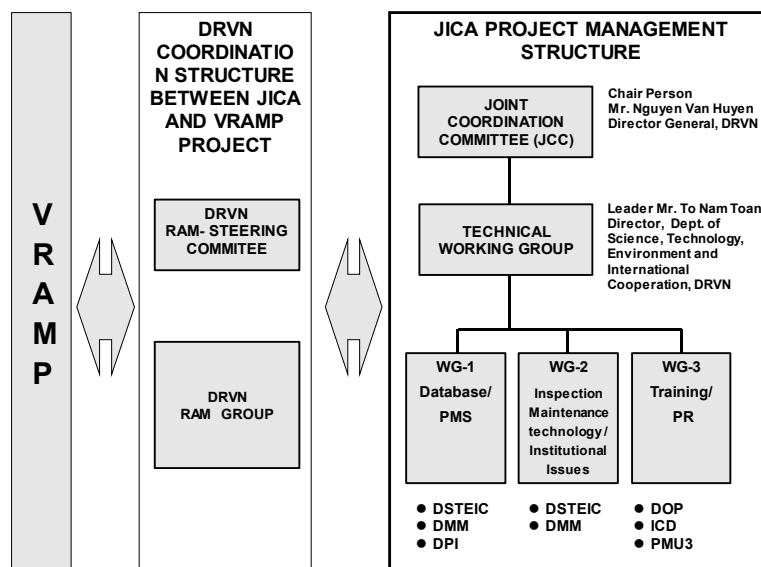


Figure 1 Structure of Project Management

1-2-3 Working Group Discussion

Since WGs are established, the Project focused on consensus building of Framework describing implementation of each measure. Continuous meetings have been held between The Project and WG members to discuss further details. Activity 4-1 and Activity 4-2(Measure 4) are planned to discussed in November 2015, and Activity 1-3(Measure1), Activity 2-2(Measure 2) and Activiy2-3(Measure 2) are planned to discussed in 2016.

In particular, for these web-bases systems, two main tasks shall be conducted in parallel: (1) upgrading or development of systems (ex PMS), and (2) trial operation on web for: (i) accumulating comments and feedbacks from many end-users for revising or modifying the systems; (ii) testing the system operability of web-systems; (iii) drafting institutional arrangement or responsibility demarcation (data/system management/maintenance; data updating; system updating; planning,...) for official implementation of these institutional issues once the systems are completed.

DRVN is requested to inquire comments to relevant stakeholders, to gather comments in written formats and to wrap up the comments in order to facilitate further upgrading of web-operation system.

Following describes detail activities conducted by each activity following activities set under Work Plan.

(1) Measure 1: Improve PMS Data Collection and Processing Technology

1) Activity 1-1 Formulate PMS Database

a. Baseline Survey

The Project conducted the survey on the preservation of road data for RMBs including data type, data formats, data storage, RMB computer system, and RMB data server, so forth.

b. Development and Discussion of Work Plan

Based on the finding from baseline survey and review of Phase I outputs conducted, the Project developed Work Plan for the formulation of PMS database. The Work Plan was discussed and agreed at JCC meeting held on April 23rd, 2015.

c. Development and Discussion of Implementation Plan

The Project developed Implementation Plan of PMS data formulation with information listed below, and discussed and agreed with WG1 members.

- Rationale
- Current Status of PMS Data And PMS Data Input System
- Framework of PMS Data Input System Design
- Purpose of Development of PMS Data Input System Including target Users, Target Data Type and Items, System Features, Main Functions
- Role and Responsibility Assignment
- Implementation Schedule
- Training

d. Upgrading of PMS Data Format and Data Input Computer Software

The Project upgraded PMS data input formats and developed offline-based data input software by means of Microsoft ACCESS for the smooth implementation of data input by RMBs. The Project shall soon develop web-based PMS data input software and replace existing offline-based system to the system.

e. Technical Transfer by OJT for PMS Data Input and Software Operation

With upgraded data input format and computer software in hand, the Project conducted OJTs to RMB and SB officials and transferred technologies of data input and software operation to each RMB in July 2015. The Project also requested RMBs to input PMS data which shall be used in the Project in planning pavement periodic repair plans for each RMB road network. Upon receiving some requests of improving data input software, the Project slightly improved the data input software to make it comply with regional road conditions.

- RMB II; Vinh City, July 20nd, 2015

- RMB IV; Ho Chi Minh City, July 22th, 2015
- RMB III; Da Nang City, July 24th, 2015
- RMB I; Ha Noi, July 27th, 2015

f. Monitoring of Data Input

Data input by RMBs is supposed to be completed by the end of December, 2015, so that the Project is currently conducting monitoring of data input, following the work schedule in the Work Plan.

2) Activity 1-2 Pavement Condition Survey

a. Baseline Survey

After the 1st JCC meeting, the Project has conducted further baseline survey on national road length under RMB II, III and IV jurisdiction, in order to plan pavement condition survey. Due to data of national roads accumulated from DRVN lacking in information of lane numbers, the Project requested data directly to RMBs. Data was provided at the end of August 2015. Total length of national roads was calculated by route, by lane, and by pavement type for each RMB II, III and IV.

Also feasibility of sub-contracting pavement condition survey was surveyed. Pavement condition survey required operation of a vehicle equipped with advanced system such as laser system, GPS and IRI survey equipment. It was found that only two contractors have experience in pavement condition survey in Viet Nam.

b. Development and Discussion of Work Plan

Based on the finding from baseline survey, the Project developed Work Plan for the pavement condition survey. The Work Plan was discussed and agreed at JCC meeting held on April 23rd, 2015.

c. Development and Discussion of Implementation Plan

The Project developed the Implementation Plan of pavement condition survey with information listed below, and discussed and agreed with working group members (WG1) on July 13th, 2015.

- Background
- Current Status of Pavement Condition Survey
- Objective
- Target Area of Pavement Condition Survey
- Selection of Road Sections
- Data Items
- Implementation Schedule
- Implementation Method
- Responsibility Sharing between DRVN and Jica Team
- Survey Vehicle and Equipment

At the discussion, WG1 agreed the following;

- 1) Survey is carried out by lane,
- 2) Survey length should not be more than 6,280 kilometers in maximum,
- 3) Confirmation of target lane is done by RMBs, which DRVN shall issue an official letter,
- 4) Draft technical norm essential for sustainable delivery of road maintenance survey is prepared under the Project.

In order to adjust the survey length, the Project set selection criteria so that the survey cost to be within the budget planed. Survey length of lane km was finalized at the end of August 2015. Total target road section of 12,574 lane kilometers including some contingency selected in consultation with DRVN. Following are the selection criteria for elimination;

- Road sections under DOTs jurisdiction
- Road sections newly constructed and transferred after 2010 to DRVN.
- Road sections which have work repair plans to repave the pavement surface conditions on a large scale including overlays.
- Road sections scheduled to be transferred to Provincial People's Committees.
- Road sections which exceed the maximum survey road length of 6,287km (or survey lane length is 12,574km).

Table 4 Length of National Road Selected

No.	Total National Road Length (km) under management of RMBs		Total National Road Lane Length for Surveying (km)	Remarks
2	RMB-II	2821.99	4963.3	7 routes are out of the target for survey
3	RMB-III	1871.45	2501.2	4 routes are out of the target for survey
4	RMB-IV	2911.39	5109.6	3 routes are out of the target for survey
Total			12,574	

d. Consultant Selection for Pavement Condition Survey

In September 2015, two potential contractors who have experience in conducting pavement condition survey in the past, RTC Central and University of Transport and Communication (UTC), were invited to submit a proposal. Submission deadline was set on the 30th of September, 2015. However, UTC expressed withdrawal of participation, so that the Project conducted negotiation with RTC Central and signed the contract on the 7th of October, 2015.

e. Implementation of Pavement Condition Survey (Current status)

After the contract was signed, RTC Central is currently developing its own implementation plan including the commencement day of pavement condition field survey.

(2) Measure 2: Upgrade PMS to Apply Road Network of RMB I, II, III and IV, and Formulate

Draft Repair Work Plans

1) Activity 2-1 Upgrade of PMS

a. Baseline Survey

Baseline survey was made on the computer software and hardware environment, and their operation methods at RMBs and IT Center under Department of Science and Technology in DRVN, and also on web operation system for VBMS, which was developed recently and became operational.

b. Development and Discussion of Work Plan

Based on the finding from baseline survey, the Project developed Work Plan for the pavement condition survey. The Work Plan was discussed and agreed at JCC meeting held on April 23rd, 2015.

c. Development and Discussion of Implementation Plan

In order to have common understanding on the targets of PMS development, the Project developed Implementation Plan and discussed at WG1. The Plan was developed based on the review of the Phase 1 activities, issues arising on PMS, and information gathered through interview to IT Centre.

The WG1 meeting on the discussion of the Plan was held on the 16th of September, 2015. In the meeting, the plan was agreed basically as well as to be included following items into PMS system upgrading;

- 1) Make it applicable to the planning of multiple lane national roads,
- 2) Reflect deterioration indexes to the planning of road maintenance plans,
- 3) Make it applicable to the nationwide national road network,
- 4) Improve operation system, automatizing simulation functions,
- 5) Simplification of simulation data input.

The Project shall organize further discussion on overall system and system upgrades in collaboration with DRVN.

d. Upgrade of PMS Software (Current status)

Based on the Plan, the Project is upgrading the PMS in collaboration with DRVN in accordance with the items agreed during the WG meetings.

2) Activity 2-4 Develop Web-based System for Displaying Pavement Condition Survey Data

The Project plans to develop five (5) web based operation systems shown below;

- Web-based PMS Data Input System (Activity 1-3)
- Web-based System for Displaying Pavement Condition Survey Data (Activity 2-4)
- Web-based PMS Operation System - for Strategic Budget Planning Model (Activity 2-5)

- Web-based PMS Operation System - for Pavement Repair Work Planning Model (Activity 2-5)
- Web-based Analysis System for Pavement Condition Survey Data (Activity 2-6)

In developing these web-based systems, the following tasks shall be conducted in parallel:

- Upgrading or development of systems (ex PMS), and trial operation on the web-based operation system.
- Opinion inquiry on the web-based operation systems

Opinion inquiry includes the following; (i) accumulation of comments from stakeholders and feedback of these comments into further development of the systems. In addition, in order to ensure sustainable and official implementation of these systems, recommendation on the institutional strengthening shall be issued on the responsibility demarcation (data/ system management/ maintenance; data updating; system updating; planning etc.) between organizations.

DRVN is requested to play a role of counterpart and to inquire comments to relevant stakeholders, to gather comments in a written format and to wrap up the comments in order to facilitate further development by the Project team. In addition, DRVN is requested to formally strengthen institutions based on the recommendations issued in this Project for smooth operation of the web-based systems.

a. Baseline Survey

The Project has conducted baseline survey related web system through the review of Phase I Project outputs including document survey on the regulations stipulating responsibility assignment of DRVN departments. Also, the Project visited DRVN IT Centre and conducted interview and exchange of opinions on the internet information management including web operation system. The following is the findings in the survey.

- Since 2007, DRVN has been promoting E-Transaction in line with the Government Information Strategy.
- DRVN has developed Vehicle Tracking system for PDOT, using web inputting form.
- GIS base map under DRVN is available and VBMS which uses base map prepared by MONRE has been transferred to DRVN.
- IT Centre has capacity to develop planned web systems to be developed under the Project, however the decision depends on DRVN leaders.

b. Development and Discussion of Work Plan

Based on the finding from baseline survey, the Project developed Work Plan for the upgrading of PMS software. The Work Plan was discussed and agreed at JCC meeting held on April 23, 2015.

c. Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the 1st JCC meeting, the Project developed Implementation Plan for web-based system for displaying pavement condition survey data with the framework shown below.

- Background
- Objective
- Current Status of E-Document Policy for Road Maintenance System
- Definition of Web-Based Display System for Pavement Condition Data
- Expected Users
- System Development Policy
- System Description
- System Operation and Maintenance
- Responsibility Sharing Between DRVN and Jica Project Team
- Outputs
- Technology Transfer
- Schedule

Based on the Plan, WG1 meeting was held on the 13th of July, 2015, to discuss on the Plan. At the meeting, the plan was basically agreed with some requests from DRVN. The following points were agreed at the meeting.

The Project develops web operation system to be systematically applicable to the PDOT road networks from the viewpoints of system development, assuming the development of PMS database and data conversion to PMS datasets are all prepared as are the cases of the DRVN National Roads. However, PMS database for PDOT road networks is not currently available, so that DRVN is requested to examine its applicability on its own when PMS database and PMS Datasets have been prepared for PDOT road networks in the future.

In developing the web operation system, system user is to be divided into the following three groups;

- Level 1: DRVN (MOT)
- Level 2: RMBs & RTCs
- Level 3: SBs & PDOTs
 - The system is to enable comparing data of two points of time.

d. Current Status of Developing Web-based System for Displaying Pavement Condition Survey Data Preparation for Pilot Repair Works

Implementation Plan was agreed at WG meeting. Taking account the request from DRVN raised during the meeting, the Project has revised the framework for the system, and currently under contract negotiation with sub-contractor.

(3) Measure 3: Improve Inspection and Repair Work Selection Technology on Road Facility and Develop Technical Standards

1) Activity 3-1 Pilot Repair Works

a. Baseline Survey

Baseline survey was conducted on the pavement condition, current status of maintenance and repair work, maintenance repair technologies, technical standards for road maintenance and repair work, design guideline, contractor selection, repair work implementation contracts and MOT policies on the road maintenance and repair works.

b. Development and Discussion of Work Plan

Based on the finding from baseline survey, the Project developed Work Plan for the implementation of pilot repair work. The Work Plan was discussed and agreed at JCC meeting held on April 23rd, 2015.

c. Development and Discussion of Implementation Plan

In line with Work Plan agreed at the 1st JCC meeting, the Project developed Implementation Plan, clarifying the following framework and getting common understanding on the target of development.

- Background
- Aim
- Needs of Technical Standard
- Current status of Road Routine Maintenance
- Selection, Outline, Selection of pilot repair work area, Scale, Preparation of Specification, procurement of material and equipment, Monitoring and evaluation on Pilot Repair Works
- Administrative procedure of standardization
- Responsibility and cost sharing between DRVN and the Project
- Implementation schedule
- Implementation Plan and consensus building

WG1 meeting was held on the 3rd of June, 2015 to discuss on the plan. In the meeting Implementation Plan was basically agreed. Selected pilot repair works to be experimented in the field contains crack seal technology, pothole repair work technology by cold asphalt mix and bump repair work by cold asphalt mix.

d. Selection and Discussion of Pilot Repair Works Section

The Project conducted an on-the-desk survey in order to preliminary select the candidate road sections for each of pilot work by applying pavement condition survey data 2012. Care is paid on the selection of road sections. It is necessary not to select heavy damaged road sections for the pilot repair works, since routine maintenance technologies like those under consideration in this pilot project are all small-scale of repair technologies which are only applicable to the minor damages. In case pavement is heavily damaged, small repair technologies can no longer be applicable. Much bigger scale repair technologies such as overlays and structural overlays must be applied to the damages. With this in mind, the Project selected some candidate sections of national roads near Ha Noi for each pilot technology in the form of technical paper and submitted to DRVN.

e. Development and Discussion of Specification, Bill of Quantity and Work Volume

It is reported that DRVN shall apply the Law on Tendering and competitive bidding in the selection of maintenance companies and in making contracts with maintenance companies from September 2015. As regards to the pilot repair works, Record of Discussion explains that JICA side shall import materials from Japan with JICA funds, on the other hand, DRVN shall select maintenance companies with its own budget and implement pilot repair work in the field. In order to support DRVN's responsibilities of company selection and cost estimation for the project, the Project developed technical specification of repair work, Bill of Quantity (BOQ) and work volumes for cost estimate and submitted to DRVN in September 2015.

f. Fund raising by DRVN for the pilot repair works

DRVN has already procured the budget for the implementation of pilot project from Road Maintenance Fund.

g. Joint pilot project between JICA project and DRVN own project

DRVN has developed its own domestic pilot project separately from the JICA pilot project. DRVN shall implement JICA pilot project together with DRVN domestic pilot project at the same time within its budget framework. Close coordination between two projects is needed in particular on the selection of pilot sections, the time-line/schedule of applying technologies, monitoring and evaluation methods. DRVN is requested to develop implementation plans on its domestic pilot project, to explain them to the Project Team and to coordinate between two projects.

Also, DRVN is requested to coordinate with RMB I and to remain pilot sections untouched from other repair work until the end of the pilot projects.

h. Current Status of Preparation for Pilot Repair Works

Technical papers on the pilot repair works were already handed over to PMU3. The Project shall conduct a field survey with RMB I and select repair work sections for the pilot repair works within a month time. Also, the Project shall go into the procedures of material procurement in Japan in October 2015. DRVN is requested to cooperate on the material importing procedures to Viet Nam.

Regarding the pilot repair works, DRVN confirmed that the procedures of importing materials will be responsible of contractor. There might be discussion in the future for clarification.

2) Activity 3-2 Upgrade Road Facility Inspection Guideline

a. Baseline Survey

The Project conducted baseline survey on the policy and the current status of standardization and utilization of inspection guideline. The survey has reported that the current "Specifications of Road Routine Road Maintenance" published in 2013 stipulates only the outline of inspection procedure and needs upgrading of provisions.

b. Development and Discussion of Work Plan

Based on the finding from baseline survey, the Project developed Work Plan for the development of Road Facility Inspection Guideline. The Work Plan was discussed and agreed at JCC meeting held on April 23rd, 2015.

c. Development and Discussion of Implementation Plan

In line with Work Plan agreed at the 1st JCC meeting, the Project developed Implementation Plan, clarifying the following framework before implementation and getting consensus on the target of development.

- Background
- Aim
- Current status of Road Facility Inspection Standard
- Development of Road Facility Guideline standard, including policy, targeted user, type of road facility, targeted road facility, inspection method, frequency of inspection, current states of deterioration and aging and focused inspection points, evaluation method of deterioration and aging, selection of repair method, implementation structure of inspection, registration of data
- Opinion inquiry to competent agency
- Administrative procedure of standardization
- Technical transfer
- Implementation schedule

Based on Implementation Plan, WG1 meeting was held on the 3rd of June, 2015 to discuss on the plan. In the meeting, the plan was basically agreed. In line with the discussion at the meeting, the Project revised the draft of Road Facility Inspection Guideline and submitted to DRVN in September 2015 for further discussion.

d. Opinion Inquiry to Competent Agencies (Current Status)

As a step for the formalization of technical standards, pursuant to regulation, DRVN is obliged to inquire opinions to the competent professional agencies in Viet Nam on the contents of draft standards. Competent agencies include Science and Technology Department of MOT, ITST, UTC and UTT etc. In line with this regulation, DRVN is now in the process of opinion inquiry to these organizations. The results of the inquiry shall be reported at TWG meeting to be held on the 22nd of October, 2015.

3) Activity 3-3 Upgrade Road Routine Maintenance Manual

a. Baseline Survey

Road Routing Maintenance Manual prepared in Phase 1 was developed as a manual for maintenance administrator based on the concept adapted to Japanese Manuals. Customization was also made into DRVN standard style by expanding section of road repair works technology including deterioration and aging

information. The Project confirmed DRVN comments on the manual developed at Phase 1.

b. Development and Discussion of Work Plan

Based on the DRVN comments addressed to the Project, the Project developed Work Plan for the development of Road Routine Maintenance Manual. The Work Plan was discussed and agreed at JCC meeting held on April 23rd, 2015.

c. Development and Discussion of Implementation Plan

In line with Work Plan agreed at the 1st JCC meeting, the Project developed Implementation Plan, to clarify the following framework before implementation and get consensus on the target of development.

- Background
- Aim
- Current status of Routine Maintenance Manual
- Development of Routine Maintenance Manual including policy, targeted user, difference to DRVN standards, coordination with competent agency
- Inclusion of pilot repair work results
- Opinion inquiry to competent agency
- Administrative procedure of standardization
- Technical transfer
- Implementation schedule

WG1 meeting was held on the 3rd of June, 2015 to discuss on the plan and basically agreed. In line with the discussion at the meeting, the Project developed the revised draft of Road Routine Maintenance Manual based on the DRVN comments and submitted it to DRVN in September 2015 for further discussion.

d. Opinion Inquiry to Competent Agencies (Current Status)

Same formalization procedure as that for the above Road Facility Inspection Guideline is applied to Road Routine Maintenance Manual. In line with this regulation, DRVN is now in the process of opinion inquiry to these organizations. The results of the opinion inquiry shall be reported at TWG meeting to be held on the 22nd of October, 2015.

(4) Measure 4: Enhance Responsibility Assignment and administration Procedures for Road Maintenance

a. Baseline Survey

The Project conducted baseline survey including review of recommendations made at JICA Phase I Project and update of regulations relevant to road maintenance and institutions in Viet Nam, and also studied the progress of DRVN Comprehensive Renovation Plan commenced in 2013. The Team translated and studied regulations relevant to organization updated.

b. Development and Discussion of Work Plan

Based on the DRVN comments addressed to the Project, the Project developed Work Plan for the enhancement of responsibility assignment and administration procedures. The Work Plan was discussed and agreed at JCC meeting held on April 23rd, 2015.

c. Development and Discussion of Implementation Plan (Current status)

Measure 4 shall cover whole activities in this Project and make recommendations on the enhancement of responsibility assignment and administration procedures, so that development of Implementation Plan for this activity shall start after the discussion on Implementation Plan for relevant activities are completed. The Project is now developing Implementation Plan for these activities. WG2 discussion on the plan shall be held in November 2015.

(5) Measure 5: Plan and Support Implementation of Training Program and Conduct Public Relations**1) Activity 5-1 Prepare Draft Training Plan****a. Baseline Survey**

Until the 1st JCC meeting, the Project has conducted baseline survey on any update on legislation, government, and ministry and DRVN policy on trainings. In May 2015, after the WG member as confirmed, the Project confirmed that there is no comment on training programs developed under Phase1. Besides, the team conducted baseline survey questionnaire to relevant organizations. Based on answers delivered at the end of June 2015, further additional information was requested in July and August 2015. Accumulated data and information was compiled into a report and shared among the team in September, 2015.

b. Development and Discussion of Work Plan

Based on the baseline survey, the Project developed Work Plan for the development of training programs. The Work Plan was discussed and agreed at JCC meeting held on April 23rd, 2015.

c. Development and Discussion of Implementation Plan

In line with Work Plan agreed at the 1st JCC meeting, the Project developed Implementation Plan, clarifying the following framework before implementation and getting consensus on the target of development.

- Outline of Baseline survey
- Organization Structure
- Objectives
- Framework for Capacity Development
- Training schedule during the Project term
- Review Phase 1 Training Program

- Baseline Survey
- Development of Training Program
- Formulation of Training Implementation Plan for during the project
- Support implementation of trainings During the project
- Implementation Procedure and Task Sharing
- Cost sharing
- Support legalization of Training Program

WG3 meeting was held on 28th of May, 2015 and discussed on Framework. Clarification was made on training of pilot repair works which shall focus on information dissemination of results at workshops. Overall framework as well as cost sharing and delivery of activities in cooperation with DRVN were agreed.

d. Development of Training Program for “During the Project”

A working paper for Training Program was prepared contains following items.

- Analysis on development of Project output and Training Implementation Body
- Development of Training program
- Step 1: Identify Project Output and responsibility assignment
- Step 2: Identify Stakeholders
- Step 3: Identify Required Information and Technologies
- Step 4: Plan Training Program including Responsible Organizations for Training Implementation, training style, Venue, frequency and duration, material, Equipment and facility required.

In the WG3 meeting, the Project explained on the process of developing Training Program, importance of coordinating with other WGs especially Measure 4, and confirmed that training on pavement condition survey shall be also conducted.

e. Development of Implementation Plan for Training “During the Project”

The Project has developed Working Paper on “Training Implementation Plan for training During the Project”, which contains as follows.

- Training Outline
- Implementation Plan of Seminar
- Implementation Plan of Workshop and OJT/ Computer based training
- Implementation Procedure and Task Sharing
- Cost sharing

At the meeting held on 11th of June, 2015, the Project discussed the plan. Detail implementation plans have been developed for training up to October 2015 and discussed for implementation with WG3. The remaining trainings proposed shall be also further discussed at WG3 meetings, when the time comes.

Table 7 Number of participant (1st Workshops and OJTs)

Training Venue and Date		DRVN			RMBs			Sub Total	Total
		DRVN Main Dep.	RTC C	PMU 3	RMB	RTC	SBs		
RMB I (Hanoi, Jul.27 th)	WS	17	2	2	10	2	15	48	48
	OJT							0	
RMB II (Vinh City, Jul.20 th)	WS				9	8	17	34	53
	OJT				5	2	12	19	
RMB III (Da Nang, Jul.24 th)	WS				16	4	13	33	58
	OJT				9	3	13	25	
RMB IV (HCMC, Jul.22 th)	WS				11	1	13	25	48
	OJT				1	2	20	23	
TOTAL		17	2	2	61	22	103	207	207

b. 1st Seminar (Seminar program is shown on Table 16)

1st Seminar was held on 21st October, 2015 at Ha Noi Daewoo Hotel. Speakers were invited from Public Works Research Institute of MLIT, NEXCO Research Institute, Kyoto University, and DRVN. Approx. 40 officials attended from MOT, DRVN, RMBs, and RTC Central.

Table 8 Number of participant (1st Seminar)

Organization		NO.
MOT		2
DRVN	Leaders and Main Dept.	13
	IT Centre	2
	Road Magazine	2
	PMU3	3
	RCA	2
	RMB I	1
	RMB II	1
	RTC Central	1
	NTVS	2
CIENCO 4		1
UTC		8
Vietnamese Sub total		38
Japanese Sub total		28
TOTAL		66

c. Training in Japan (Participant list and training program is shown on Table 14 & Table 15)

Training in Japan was conducted from 13th to 19th of September 2015. In total of five (5) participants, Director of Road Maintenance and Management Department, and Director and Deputy Director of RMBs were selected.

Trainings were offered by six (6) originations of Tokyo National Road Office of MLIT, Central Nippon Expressway, Nippon Expressway Research Institute, PASCO, NICHIREKI, and KATAHIRA and Engineers

International. Topics were covered on Road Administration, Inspection and Road Maintenance in Japan, National Road Maintenance and Management, Operation of Pavement Management System at Local Authority, Pavement Repair Material, and Research on Pavement Technology and Expressway maintenance and management.

3) Activity 5-3 Public Relations

a. Baseline Survey

In May 2015, after the WG members are confirmed, the Project delivered baseline survey questionnaire to WG3 on Public Relations (PR). Based on answers delivered at the end of June 2015, further additional information was requested in July and August 2015. It is confirmed that Road Magazine is the responsible unit for PR under DRVN. On 2nd October 2015, the Project interviewed Road Magazine and informed that Road Magazine conduct PR activities under the commission from DRVN and has published monthly Road magazine, runs web based Road magazines, developed Video Clips on Road related topic, and also submit articles to news agencies.

b. Development and Discussion of Work Plan

Based on the baseline survey, the Project developed Work Plan for the development of public relation programs. The Work Plan was discussed and agreed at JCC meeting held on April 23rd, 2015.

c. Development and Discussion of Implementation Plan

In line with Work Plan agreed upon at JCC meeting, the Project developed Implementation Plan, clarifying the following Framework before implementation and getting consensus on the target of development.

- Aim
- Objectives by Target Group
- Framework for Public Relations
- Basic Policy
- Baseline Survey
- Development of PR Implementation Plan
- Development of Detail PR implementation plans
- Implementation of PR

WG3 meeting was held on 28th of May, 2015 and discussed the plan on PR. At the meeting, Road Magazine, the independent unit under DRVN, was assigned for PR of DRVN.

d. Development and Discussion of Detail Public Relation Plan (Current status)

The Project is currently developing a detail PR activity plan and shall discuss with DRVN.

On 8th to 10th of July, 2015, the Project participated to “Viet Nam Ha Noi Transport & Logistics Conference & Exhibition”, and set up a booth to introduce the Project and project activities with Board Panel and

Photos, leaflet, a short video clip. (Leaflet and photos of Exhibition is shown on Figure 2 and Figure3)

1-3 Achievement of Output

1-3-1 Report

Table 9 Current Status of Report

	Type of Report	Status	Notes
1	Monitoring Sheet Ver.1	Submitted on 23 rd April 2015	Monitoring sheet comprises from; <ul style="list-style-type: none"> · Project Monitoring Sheet · Project Monitoring Sheet I (PDM) · Project Monitoring Sheet II (PO) · Work Plan
2	Monitoring Sheet Ver.2	Submitted on 21 st October 2015	Monitoring sheet comprises from; <ul style="list-style-type: none"> · Project Monitoring Sheet · Project Monitoring Sheet I (PDM) · Project Monitoring Sheet II (PO)
3	Monitoring Sheet	To be submitted every 6 months	
4	Project Completion Report(include outputs of technical cooperation)	To be submitted at beginning of February 2018	

1-3-2 Outputs of Technical Cooperation

Expected outputs are all specified in the Work Plan agreed upon at JCC held on April 23.

Table 10 Current Status of Technical Cooperation Output

	Type of Report	Project Activity	Status
1.	PMS data (57 items)	Activity 1-1	Development of offline PMS data input software was completed for the purpose of temporary use. The Project shall develop a new web-based PMS data input system and replace the temporal system with the new system.
2.	Pavement Condition Database for RMB II, III, and IV roads (Activity	Activity 1-2	
3.	Web-based PMS Data Input System	Activity 1-3	
4.	Upgraded PMS Software	Activity 2-1	
5.	Data Conversion Software	Activity 2-2	
6.	Annual and 3 Year Pavement Repair Plan for RMB I, II, III and IV Jurisdiction	Activity 2-3	
7.	Web-based System for Displaying Pavement Condition Data	Activity 2-4	
8.	Web-Based PMS Operation System	Activity 2-5	
9.	Pavement Condition Data Analysis System	Activity 2-6	
10.	Evaluation Report of Pilot Repair Works	Activity 3-1	

	Type of Report	Project Activity	Status
11.	Road Facility Inspection Guideline (Draft)	Activity 3-2	Revised Draft Road Facility Inspection Guideline was submitted on 30 th September 2015.
12.	Road Routine Maintenance Manual (Draft)	Activity 3-3	Revised Road Routine Maintenance Manual was submitted on 14 th September 2015.
13.	Operation Manual on PMS and PMS data input system	Activity 4-1	
14.	Operation Manual on web based system for displaying Pavement Condition Survey data	Activity 4-2	
15.	Training Programs and Training Materials	Activity 5-1,5-2	(1) 1 st Workshop and OJT: <ul style="list-style-type: none"> · 20th July,2015: Vinh City · 22nd July 2015: Ho Chi Minh City · 24th July 2015: Da Nang City · 27th July 2015: Ha Noi (Workshop Only) (2) 1 st Seminar: 21 st October, 2015 (3) 1 st Training in Japan: 13-19 th September 2015

1-4 Achievement of the Project Purpose (to be added as project progress)

1-5 Changes of Risks and Actions for Mitigation (to be added as project progress)

1-6 Progress of Actions undertaken by JICA (to be added as project progress)

1-7 Progress of Actions undertaken by Gov. of Viet Nam (to be added as project progress)

1-8 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

1-8-1 Expressway Maintenance Standard

During the baseline survey, DRVN clarified that they are developing “Draft Expressway Maintenance Standards” under the supervision of Department of Science, Technology, Environment and International Cooperation. The Department wishes to place high priority on the establishment of this draft Standards.

In 2013, JICA conducted “the Project for Strengthening Operation and Maintenance System for Expressway” and developed the Technical Specification Guidelines for Operation and Maintenance of Expressways, consisting of 1) Technical Specification Guidelines for Inspection and Maintenance of Pavement, 2) Technical Specification Guidelines for Inspection and Maintenance of Electric facilities, 3) Technical Specification Guidelines for Inspection and Maintenance of Bridge and Culvert, and 4) Technical

Specification Guidelines for Traffic Management.

Technical guidelines developed for the inspection and maintenance of expressways in this Project covers the major facilities including pavements, bridges and culverts and electrical facilities. For each facility inspection and maintenance guideline were developed.

Opinion inquiry conducted upon completion of this project to competent agencies in Viet Nam has clarified that the expressway guideline does not cover all expressway facilities and need supplementation of information before standardization. Upon receiving this comment, DRVN is asking “JICA project for Capacity Enhancement in Road Maintenance Phase II” to support further development of these technical guidelines for expressways in Viet Nam.

The Project is now conducting the review of the above guidelines and studying on how to comply with this DRVN request.

1-8-2 Vietnam Road Asset Management Project (VRAMP)

Component A “Consulting Service for Road Database Framework and Development of the Road Asset Management System and Road Asset Management Plans”, of Vietnam Road Asset Management Project (VRAMP) funded by World Bank has selected consultant and contract was made on 15th October, 2015.

This VRAMP plans to succeed Road Asset Database System developed under Phase I Project. Therefore in the case of a large scale modification applied to Road Asset Database structure by VRAMP which might take significant time in completing, it shall impact significantly to the Project on the formulation of PMS Dataset for pavement repair work plan using data conversion software. Thus, RAM-SC and RAM-WG set by DRVN are expected to coordinate regularly with VRAMP on issues including target route and extent of work for pavement condition survey.

DRVN is requested to clarify the detail plans of the VRAMP project, avoiding overlaps of activities between JICA Project and VRAMP Project, and to present them to the JICA Project Team in the formal Steering Committee at the kickoff of DRVN project. Regarding PMS development, DRVN is requested to keep maintaining the principle of concluding the PMS development during the implementation of the JICA Project. The JICA Project Team shall make an effort in developing PMS system until its operability in DRVN environment is confirmed.

2. Delay of Work Schedule and/or Problems (if any)

2-1 Detail

2-1-1 February 2015 to April 2015 (Monitoring Sheet Ver.1)

As the Project needs a couple of months to start, counterpart of DRVN also needed time to set up the project environment including selection and making contract of Project team office space, organizing working groups and selecting counterpart members including local budget arrangement. At the beginning

of this project, there was a little concern that uncertainty on how much time shall take for preparing this project environment due to involvement of many stakeholders, might causes delay in project implementation. However, thanks to MOT and DRVN efforts, the above project environment is to be settled before JCC.

While DRVN working to settle the project environment, the Project focused on a baseline survey and developed Work Plan. As being a Phase II Project, the Project already had a clear road map to start up the project and able to conduct the review of Phase I Project outputs as mentioned earlier. However, the Project has some difficulties in conducting in-depth discussion on each activity due to absence of counterparts, therefore the Project has discussed with TWG Leader focusing on the key issues required to formulate Work Plan and collection of data. With these measures, the Project could avoid major delay in project implementation.

(1) Allocation of Office Space

Due to the shortage of office space in the DRVN building, DRVN needed to lease a project office space outside the DRVN building. However, due to the difficulty in finding out office space which can meet leasing conditions, it took about two months to provide a office space for the Project team. During this time period, the Project arranged own office space for two weeks and moved in the temporary project office space within DRVN building on March 30th, which was kindly offered by DRVN. In April, DRVN successfully made a lease contract for a project office space and offered to the Project team. The Project team has moved in the new office on April 20th before the 1st JCC meeting.

(2) Establishing Working Group

JICA Technical Assistance project requires work together between JICA Project Team and Counterparts to develop project outputs, focusing more on the processes of development and technology transfer during project implementation rather than simply producing project outputs. Thus Project team requested Counterparts to assign working group members to have in-depth discussion on the project activities. Assignment of members was in fact delayed slightly, but was settled before JCC.

(3) Acquisition of VISA

Since the change of law at the beginning of 2015, there seems to be a little confusion in visa processing. The JICA Project Team experts have been requested to obtain LV1 visa to conduct tasks in Viet Nam. The Project is proposing acceleration of visa processing to DRVN and MOT.

2-1-2 May 2015 to October 2015 (Monitoring Sheet Ver.2)

Since the 1st JCC meeting, project environment has been established including set up of project office and working group in April 2015. Also visa application procedure has been set up with good support from DRVN and MOT, and now all experts obtained LV1 visa. Following activities are delayed during this term.

(1) Technical Working Group

During this term, TWG was planned to be hold in July and October 2015. However the 1st TWG was postponed to the 22nd of October, 2015.

2-2 Cause**2-2-1 February 2015 to April 2015(Monitoring Sheet Ver.1)**

A counterpart organization also needs to prepare project environment and the Project knows that in general it takes a long time for processing administrative procedures in Viet Nam. It is necessary to cooperate each other and to solve these issues in the shortest time at the beginning of the Project. With this understanding, during this two month of project commencement, JICA project team and DRVN have strongly cooperated to resolve issues arises and successfully prepared a good project environment for the next three years of the Project.

2-2-2 May 2015 to October 2015(Monitoring Sheet Ver.2)

Due to no particular issues to be coordinated in July, TWG was postponed to October 2015.

2-3 Roles of Responsible Persons/Organization (JICA, Gov. of Viet Nam, etc.)**3. Modification of the Project Implementation Plan****3-1 PO and PDM****3-1-1 Modification made at Version 1**

At Version 1, a slight adjustment on Implementation schedule was made based on Work Plan prepared in discussion with DRVN. And also a sub activity “Implement pavement condition surveys for RMB II, III and IV selected roads” which was originally under Activity 2 “Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan”, has now incorporated under Activity 1 “Improve PMS Data Collection and Processing Technology”.

3-1-2 Modification made at Version 2

Currently, there is no big change in the contents of PDM and PO. However, in the Technical Working Group held on October 22nd in 2015, DRVN reported a new regulation on the formulation of pavement midterm repair plans, which includes the change of target year from “3-year” to “5-Year”. Upon this information, the Project promised to comply the current PMS development with this new regulation.

With this change including some others, resultant change of PDM and PO shall be discussed later in the next JCC meeting.

3-2 Other modifications on detailed implementation plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)

4. Preparation of Gov. of Viet Nam toward after completion of the Project

II. Project Monitoring Sheet I & II *as Attached*

1st Workshops and OJTs**Table 11 Timetable of Workshop**

Time	Min	Presentation Title	Presenter
8:00 – 8:30	30	Registration	
8:30 – 8:40	10	Opening Remark	Mr. To Nam Toan Director of STE-ICD, DRVN
8:40 – 9:00	20	Current Status and Plans of Road Maintenance in Viet Nam	Mr. Thieu Duc Long Deputy Director of STE-ICD, DRVN
9:00 – 9:35	35	Work Plan of JICA Project Phase II	Mr. Tsuneo KATO Team Leader, JICA Project Team
9:35 – 9:50	15	Discussion	
9:50 – 10:10	20	Tea Break	
10:10– 10:35	25	Road Maintenance Institution of National Highways in Japan	Mr. Yoshiaki MATSUNO JICA Expert, Project Advisor
10:35- 11:00	25	Pavement Maintenance for the Expressway System in Japan	Mr. Tsuneo KATO Mr. Kazutaka SUZUKI JICA Project Team
11:00– 11:25	25	Results of Pavement Condition Survey for RMB I Road Network	Mr. Yoshiro KUNIMASA Dr. Bhoj Raj PANTHA JICA Project Team
11:25 –11:50	25	Discussion	
11:50– 12:00	10	Closing Remark	Mr. To Nam Toan Director of STE-ICD DRVN
12:00		Close	

Table 12 Timetable of OJT Training on Data Input System

Time	Min	Training Content	Trainer
12:30 – 13:00		Registration	
13:00 – 13:15	15	Session I: Introduction An overview of Road asset Management and Importance of Database	Mr. To Nam Toan Director of STE-ICD DRVN
13:15 – 14:00	45	Session II: General Guidance on Operation of Data Input System <ul style="list-style-type: none"> • PMS and Pavement Maintenance Plans • PMS Dataset • PMS Database • PMS Data Input System • Data Input Control and Validation Check • Operation and Management of Data Input System • Data Input Demonstration 	Dr. PANTHA Bhoj Raj JICA Project Team
14:00 – 14:45	45	Session II : Computer Practicing <ul style="list-style-type: none"> • Data Inputting, • Editing • Data Assembling 	Dr. PANTHA Bhoj Raj Mr. Bui Cong Do JICA Project Team
14:45 –15:15	30	Discussion	
15:15		Close	

MOT exhibition

FRONT



BACK

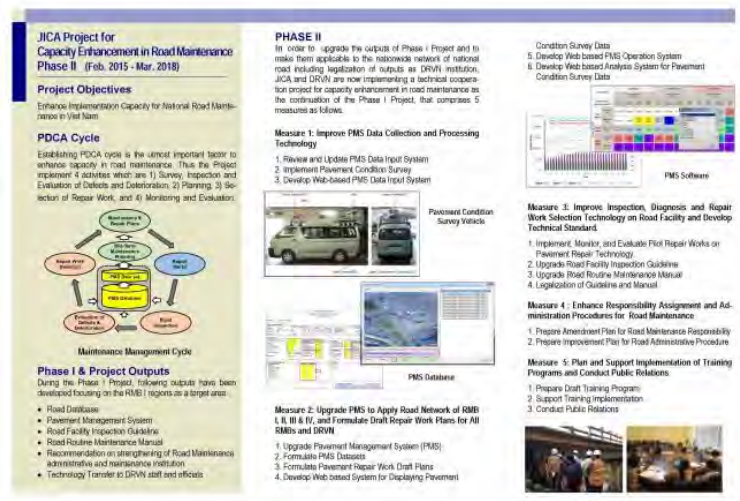


Figure 2 Project leaflet



Figure 3 MOT Transport & Logistics Exhibition and Conference 2015

Training in Japan

Table 13 Participant list of Training in Japan

	Name	Job Title and Organization
1	Mr. Nguyen Ngoc Son	Deputy Director of RMB I (Road Management Bureau)
2	Mr. Dao Van Minh	Deputy Director of RMB II
3	Mr. Do Huy Thanh	Deputy Director of RMB III
4	Mr. Nguyen Thuan Phuong	Director of RMB IV
5	Mr. Le Hong Diep	Director of Road Management and Maintenance Department, DRVN

Table 14 Detail training Plan (Implemented)

Detail Training Plan (Implemented)									
Training Course		Project for Capacity Enhancement in Road Maintenance Phase II, the first training in Japan							
Code		J1521879							
Date		2015/9/13		~		2015/9/19		Number of Trainee	
								5 people	
Date	Time	Type	Content	Trainers			Language	Training Place	
				Name	Organization	Address			
9/13(Sun)			Arrival						
	10:00 ~ 12:30		Briefing		JICA Tokyo			JICA Tokyo	
9/14(Mon)	14:00 ~ 14:30		Program Orientation	Akiko MIYAKAWA	Katahira & Engineers International	3F Ichigo Hatchobori BLDG., 1-14-1 Shintomi Chuo-ku Tokyo	JP	Meeting Room, Katahira & Engineers International, 3F Ichigo Hatchobori BLDG., 1-14-1 Shintomi Chuo-ku Tokyo	
	14:30 ~ 17:00	Lecture	Road Administration, Inspection and road maintenance in Japan	Tuneo KATO			JP		
9/15(Tue)	10:00 ~ 11:30	Lecture	Road maintenance in National Road	Hideo TORISAWA	Tokyo National Road Office, KANTO Regional Development Bureau, MLIT	15F Kudan Bulding No.3, 1-2-1 Kudan Minami, Chiyoda-ku, Tokyo	JP	Tokyo National Road Office, 15F Kudan Bulding No.3, 1-2-1 Kudan Minami, Chiyoda-ku, Tokyo	
	11:30 ~ 12:00	Site Visit	Site visit to Road Traffic Information Centre				JP		
	13:10 ~ 14:00	Site Visit	Site visit to Bridge Weigh in Motion System				JP		R357 Urayasu-City, Chiba
	14:10 ~ 14:20	Site Visit	Site visit to Tatsumi Check point				JP		Tatsumi Check point, R357 Kotou-ku, Tokyo
	14:30 ~ 16:00	Site Visit	Site visit to the repaimg site of Bridge over Arakawa River estuary				JP		R357 Kotou-ku, Tokyo
9/16(Wed)	10:00 ~ 12:00	Lecture	Operation of Pavement Management System used in Local Authority	Junichi OSHIMA	Infrastrucure Management Department, Technical Centre, Central Opeartion Division, PASCO CORPORATION	1-1-2 Higashiyama, Meguro-ku, Tokyo 153-0043	JP	Seminar Room, PASCO CORPORATION, 1-1-2 Higashiyama, Meguro-ku, Tokyo 153-0043	
	14:00 ~ 16:00	Lecture	Pavement Repair Material, Surface of Bridge Deck Pavement, a waterproofing practice for a floor slab	Tatsuya ITO	Technical Production Department, Nichireki Co., Ltd.	4-3-29 Kudan-Kita, Chiyoda-ku Tokyo	JP	Nichireki Co., Ltd. 4-3-29 Kudan-Kita, Chiyoda-ku Tokyo	
9/17(Thu)	10:00 ~ 11:00	Lecture	Reserch on Pavement Tecnology	Keizo KAMIYA	Nippon Expressway Research Institute Co.,Ltd.	1-4-1 Tadao, Machida-shi, Tokyo	JP	1-4-1 Tadao, Machida-shi, Tokyo	
	11:00 ~ 11:40	Site Visit	Site visit of Reserch Centre				JP		
	11:40 ~ 13:00	Site Visit	TOMEI & SHIN TOMEI Expressway	Takanori ICHIOKA	Central Nippon Expressway Company Limited		JP	Ebina Service Area	
	13:00 ~ 14:10	Site Visit	Ebina Service Area			JP			
	14:10 ~ 15:20	Site Visit	TOMEI & SHIN TOMEI Expressway	Hiroyuki YAMADA		JP			
	15:20 ~ 16:00	Lecture	Construction and Maintenance of Expressway	Tomonobu TANINO			JP		
	16:00 ~ 16:30	Lecture	Site visit of mainteannce Centre (maintenance vehicle, patroll car, Disaster prevention divison)	Daisuke HAJIMA	Central Nippon Expressway Company Limited, Fuji Maintenance and	1738-4, Atsuhara Fuji city, 419- 0201	JP	Shin Fuji Communication Plaza, 1738-4, Atsuhara, Fuji-shi, Shizuoka 419-0201	
	16:30 ~ 17:00	Site Visit	Road maintenance vehicle	Takenori MAEDA	Customer Service Centre		JP		
17 : 00 ~	Site Visit	TOMEI & SHIN TOMEI Expressway		Central Nippon Expressway Company Limited		JP			
9/18(Fri)	10:00 ~ 12:00		Presentation on Training in Japan					JICA Tokyo	
9/19(Sat)			Leaving						

The 1st Seminar**Table 15 Seminar Program**

Time	min	Presentation Title	Presenter
8:00	30	Reception	
8:30 – 9:00	30	Opening Remark	DRVN EOJ/JICA
9:00 – 9:30	30	Key Note I Infrastructure Asset Management and Implementation in Viet Nam	Prof. Kiyoshi KOBAYASHI (Kyoto University)
9:40 – 10:00	30	Key Note II Pavement in Japan	Dr. Kazuyuki KUBO (Public Works Research Institute, MLIT)
10:00–10:20	20	Current status and issue of road maintenance in Viet Nam	Mr. Le Hong Diep, (Director of Road Management and Maintenance Department, DRVN)
10:20– 10:40	20	Tea Break	
10:40– 11:10	30	Challenges for Road Asset Management	Mr. Tsuneo KATO (Team leader, JICA Project Team)
11:10– 11:40	30	Pavement Management for Expressway System in Japan	Mr. Keizo KAMIYA (NEXCO Research Institute)
11:40– 12:00	30	Discussion	
12:00– 13:30	90	Lunch	
13:30 – 13:50	20	Current Status of Road Maintenance Standard	Mr. Thieu Duc Long(Deputy Director of Science, Technology, Environment and International Cooperation Department DRVN)
13:50 – 14:20	30	Human capacity development of Engineers in MLIT	Mr. Yoshiaki MATSUNO (JICA Long term expert / MLIT)
14:20– 14:50	30	Discussion	
14:50– 15:00	20	Closing Remark	DRVN
15:00		Close	

Project Monitoring Sheet I (Revision of Project Design Matrix)

Project Name: The Project for Capacity Enhancement in Road Maintenance Phase II
 Project Period: February, 2015 to March, 2018 (3 years)
 Implementation Organization: Directorate for Roads of Vietnam under Ministry of Transport
 Target Group: DRVN, Road Management Bureaus (RMBs) I, II, III, IV
 Target Area: Designated area of RMB I, II, III, IV

Version: 1
Dated: 23rd April, 2015

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions (I.A.)	Achievement	Remarks
Overall Goal Road maintenance is conducted properly based on the mid-term plan, following PDCA cycle.	(By 3 years from the project end) The indicators for pavement damage (IRI, cracks, rutting, etc.) will be improved X %.	1.Result of data comparison of regular pavement condition survey by DRVN 2.Trial 3 year and annual plan for pavement maintenance 3. Annual Report 4.Interview to DRVN			
Project Purpose Implementation capacity for road maintenance is strengthened in Viet Nam	1. Trial pavement repair work plan using PMS is formulated in RMB I,II, III and IV 2. Primary rules for road facility inspection, maintenance and repair work are formulated (*1) 3 Implementation structure for road maintenance is established.	1. Trial pavement repair work plan of RMB I,II, III and IV 2. Regulation 3-1. Regulation 3-2. Interview to DRVN	I.A. to achieve Overall goal 1.Budget is allocated stably for maintenance activities in accordance with 3 year plan 2. Training is conducted by DRVN continuously to maintain technical skills		
Outputs 1. PMS data development technology is improved 2.PMS is upgraded and applied to the planning of trial pavement repair work plans 3.Technical specifications for inspecting road facility and selecting repair work are developed 4.Responsibility assignment and administration procedure are clarified for road maintenance	1-1.Road asset database, maintenance history database and pavement condition database are completed for PMS 1-2.DRVN conducts regular trainings on DB input. 2-1. Trial pavement repair work plan (annual, 3 year) using PMS is formulated by DRVN. 2-2.DRVN conducts PMS training regularly. 3. Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual are formulated. 4. Amendment plans to realize output 1-3 are developed	1-1.Road asset DB, maintenance history DB, pavement condition DB 1-2.Training record 2-1.Trial pavement repair plans (annual, 3 year plan) 2-2.Training record 3.Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual. 4.Amendment plans (draft)	I.A. to achieve Project Purpose 1 Engineers who received training are assigned continuously 2. Legalization procedure for Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual proceeds		
Activities	Inputs		I.A. to achieve Outputs		
	Japanese side	Vietnamese side			
1-1.Review PMS data formats and data input system produced in Phase-I Project. 1-2.Upgrade PMS data input system 1-3.Input and verify PMS data 1-4.Implement pavement condition surveys for RMB II, III and IV selected roads 1-5.Implement training on PMS data input and Pavement condition survey 2-1.Upgrade PMS software 2-2.Convert input data and make PMS dataset 2-3.Formulate trial pavement repair work plans (Annual and 3-Year plan) for RMB I, II, III and IV road networks by PMS system and examine system operability. 2-4.Develop web-based system for displaying pavement condition data on the DRVN mapping system 2-5.Develop web-based system which enables PMS operation on website and formulates trial annual and three year pavement repair work plans 2-6. Implement trainings on Activity 2-1~2-5.	1.Dispatch of Experts (1)Long term Expert • Road maintenance policy/regulations (2)Short-term experts • Team Leader/Road Maintenance Planning • Deputy Team Leader/PMS System Operation Technology • Pavement Condition Survey (Planning and Management) • Pavement Condition Survey(Calibration) • PMS System Technology(Budget Simulation) • PMS System Technology(Repair Work Planning) • Web-based System for Displaying Pavement Condition Data • Road Facility Inspection Technology • Road Maintenance Technology • Pilot Project Management • Pavement Technology • Road Maintenance Administrative Procedure • Capacity Development/Project Coordination 2.Training in Japan • Three times (once/year) on Road maintenance policy and repair technology 3.Equipment, Machinery and Materials (1)Special equipment and materials for pilot project work (2)Computers for planning system (3)Others needed for project implementation 4.Others(Sub Contract) • Local service for Pilot Pavement Condition Survey • Local Service for development of web-based operation system	1.Human resources (1)Chairperson of JCC (2)Chairperson of TWG (3)Counterparts (DRVN and RMBs) (4)Coordinator 2.Facilities Communal office space for JP Team and local support team with electricity, air-condition, internet, telephone line. 3.Cost (1)Cost for pilot project on maintenance and repair work (including cost for general materials) (2)Small running expenses necessary for the implementation of the Project. (e.g. daily allowance, accommodation and domestic travel expenses of DRVN's staff for participating in training in Vietnam) 4.Others (1)Implementation of the pilot repair work for maintenance and repair work with JICA experts' advisory. (2)Implementation of pilot Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction, with JICA's local service.	1. VRAMP Project (WB) is implemented as planned 2. IT policy of DRVN on organization and operation of database and system is maintained		
3-1.Upgrade Road Facility Inspection Guideline and Road Routine Maintenance Manual produced in Phase I project to technical specifications. 3-2. Plan pilot repair works for pavement maintenance and repair work which incorporates new technology and materials 3-3. Implement pilot repair works for pavement repair work, monitor and evaluate their performances 3-4. Based on the results of pilot repair works, develop final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual for standardization 3-5. Implement trainings on Activity 3-1~3-4 4-1.Conduct baseline survey on responsibility assignment and administration procedure for road maintenance 4-2.Develop improvement plan to realize project outputs 4-3.Draft amendment plan on the legal procedures to realize the improvement of responsibility assignment and administration procedures for road maintenance			Preconditions Support and priority of DRVN on outputs generated through the phase I project including system database, technical Standards, and recommendation on institution are maintained		
			<Issues and countermeasures>		

Note:(*1): target facilities, frequency, methods, diagnosis, selection method for repair works, repair work, construction management

Project Monitoring Sheet II (Revision of Plan of Operation)

Version : 1

Dated: 23rd April 2015

Project Title: The Project for Capacity Enhancement in Road Maintenance Phase II

Activities Sub-Activities	Year	2015				2016				2017				2018	Responsible Organization		Monitoring	
		I	II	III	IV	I	II	III	IV	I	II	III	IV		I	Japan	GOV	Achievements
Output 1: PMS data development technology is improved																		
1-1. Review PMS data formats and data input system produced in Phase-I Project.	Plan	■																
	Actual	▬																
1-2. Upgrade PMS data input system	Plan		■															
	Actual		▬															
1-3. Input and verify PMS data	Plan			■														
	Actual			▬														
1-4. Implement pavement condition surveys for RMB II, III and IV selected roads	Plan		■															
	Actual		▬															
1-5. Implement training on PMS data input development and Pavement condition survey	Plan			▲			▲		▲		▲		▲					
	Actual																	

Output 2: PMS is applied to the planning of trial pavement repair work plans																		
2-1. Upgrade PMS software	Plan	■																
	Actual	▬																
2-2. Convert input data and make PMS dataset	Plan									■								
	Actual									▬								
2-3. Formulate trial pavement repair work plans (Annual and 3-Year plan) for RMB I, II, III and IV road networks by PMS system and examine system operability.	Plan														■			
	Actual														▬			
2-4. Develop web-based system for displaying pavement condition data on the DRVN mapping system	Plan		■															
	Actual		▬															
2-5. Develop web-based system which enables PMS operation on website and formulates trial annual and three year pavement repair work plans	Plan									■								
	Actual									▬								
2-6. Implement trainings on Activity 2-1~2-5.	Plan			▲			▲		▲		▲		▲					
	Actual																	

Output 3: Technical specifications for inspecting road facility and selecting repair work are developed																			
3-1. Upgrade Road Facility Inspection Guideline and Road Routine Maintenance Manual produced in Phase I project to technical specifications.	Plan			■															
	Actual			▬															
3-2. Plan pilot repair works for pavement maintenance and repair work which incorporates new technology and materials	Plan	■																	
	Actual	▬																	
3-3. Implement pilot repair works for pavement repair work, monitor and evaluate their performances	Plan														■				
	Actual														▬				
3-4. Based on the results of pilot repair works, develop final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual for standardization.	Plan														■				
	Actual														▬				
3-5. Implement trainings on Activity 3-1~3-4	Plan			▲			▲		▲		▲		▲						
	Actual																		

Output 4: Administration procedure and responsibility assignment are clarified for road maintenance																		
4-1. Conduct baseline survey on responsibility assignment and administration procedure for road maintenance	Plan	■																
	Actual	▬																
4-2. Develop improvement plan to realize project outputs	Plan		■															
	Actual		▬															
4-3. Draft amendment plan on the legal procedures to realize the improvement of responsibility assignment and administration procedures for road maintenance	Plan														■			
	Actual														▬			

Training in Japan																		
Road maintenance policy and new technology	Plan				▲						▲					▲		
	Actual																	

Monitoring Plan	Year	1st Year				2nd Year				3rd Year				4th	Remarks	Issue	Solution	
		I	II	III	IV	I	II	III	IV	I	II	III	IV					I
Monitoring																		
Joint Coordination Committee	Plan		▲				▲				▲					▲		
	Actual		△															
Technical Working Group	Plan			▲	▲	▲		▲	▲	▲		▲	▲					
	Actual																	
Set-up the Detailed Plan of Operation	Plan	▲																
	Actual	△																
Submission of Monitoring Sheet	Plan		▲		▲		▲				▲			▲				
	Actual																	
Reports/Documents																		
Work Plan	Plan		▲															
	Actual		△															
Project Completion Report (Draft)	Plan																▲	
	Actual																	

TO CR of JICA VIET NAM OFFICE**PROJECT MONITORING SHEET****Project Title: Project for Capacity Enhancement in Road Maintenance Phase II**

Version of the Sheet: Ver. 3 (Term: November 2016 – March 2016)

Name:	Tsuneo Kato
Title	Team Leader
Submission Date	25 th March 2016

I. Summary**1. Progress****1-1 Progress of Inputs****1-1-1 Japanese Side****(1) Dispatch of Experts**

The project team is formed from 13 short term experts and one (1) long term expert.

Since the 9th of February 2015, a total of 13 JICA short term experts have been assigned for total of 49.8 Man Month (hereinafter to be called as “MM”, as of the end of March 2016) out of total project assignment 126 MM. A long term expert has been assigned since January 26th, 2015. (Together with long term expert and short time experts, hereafter to be referred as “The Project Team”)

(2) Training in Japan

Three (3) trainings are planned under the Project, the first training was conducted for 7 days from 13th to 19th of September 2015. In total of five (5) participants, Director of Road Maintenance and Management Department, and Director and Deputy Director of each RMB participated. Second training is planned for September 2016, and currently in the process of preparation.

(3) Procurement of Equipment, Machinery and Materials

Under the project, following three (3) items are procured for project activities and will be handed over to counterparts.

1) Special equipment and materials for pilot repair work

Procurement for equipment and materials for pilot repair works is currently under preparation. Currently the JICA Project Team has been informed by JICA Vietnam Office that approval on the revised project document including C1 Form which are needed for custom clearance in Viet Nam might take about 6 months for processing. Due to a shelf life of materials (about 6 months from production), the order and

dispatch of equipment and materials from Japan should be carefully decided, and decision will be made considering the duration needed for the period of custom clearance in Viet Nam. For further detail, please refer to “1-2-6 (1) Pilot Project”.

2) Computers for planning system

The project procures in total of 10 desktop computer for planning system. Two desktop computers have been purchased and currently used to develop planning system by the Project. Further eight computers will be procured and handed over to each RMB.

3) Others needed for project implementation

Besides the above two items, the Project purchased computers etc. which are necessary to conduct project activities in Viet Nam.

Table 1 Procurement of Equipment and Machinery

Items	Component	Status	Note
Special equipment and materials for pilot project work	To be referred to 1-2-6 (1) Pilot Project	Approval on Project Document and C1 form is under processing	
Computers for planning system	10 desktop computers	2 computers purchased	
	1 Application Server	Specifications for procurement are under preparation	
	1 Database Server		
Others needed for project implementation	2 desktop computers	purchased	
	1 Projector	purchased	
	1 Screen	purchased	
	1 Printer (A3/colour)	purchased	

(4) Others (Sub contracting)

The Project subcontracts following two items.

1) Subcontract for Pavement Condition Survey

Pavement condition survey for RMB II, III and IV was subcontracted to RTC Central on 7th of October, 2015. For further detail progress of activities, please refer to “1-2-4 (2) Activity 1-2 Pavement Condition Survey”.

2) Subcontract for development of web-based operation systems

Under the project, five web based operation systems will be developed by sub-contracting.

Currently development of web-based systems for PMS Data Input (Activity 1-3) and Displaying of Pavement Condition Survey Data (Activity 2-4) is subcontracted to SAOMAI Software J.S.C on 20th October 2015.

Table 2 List of activities to be subcontracted

Items	Subcontractor	Contracted date	Status
Pavement condition survey (Activity 1-2)	RTC Central	7 th of Oct. 2015	• RMB IV region completed.

Items	Subcontractor	Contracted date	Status
			<ul style="list-style-type: none"> • Currently survey RMB III region is ongoing and will be completed in March 2016.
Web-based PMS Data Input System(Activity 1-3)	SAOMAI Software J.S.C (Web based system Package 1)	20 th of Oct. 2015	Currently under development
Web-based System for Displaying Pavement Condition Survey Data (Activity 2-4)			
Web-based PMS Operation System - for Strategic Budget Planning Model (Activity 2-5)		Contract is scheduled in May 2016	
Web-based PMS Operation System - for Pavement Repair Work Planning Model (Activity 2-5)		Same as above	
Web-based Analysis System for Pavement Condition Survey Data (Activity 2-6)			

1-1-2 Vietnamese Side

In April 2015, thanks to DRVN efforts, project environment were all established such as arrangement of office space for the Project Team, selecting counterpart members and organizing working groups, and procuring local funds. Project activities currently run very smoothly with a good cooperation of DRVN.

(1) Human resources

Chairperson and member of Joint Coordination Committee (hereinafter to be referred as “JCC”), Technical Working Group (hereinafter to be referred as “TWG”) as well as Working Group (hereinafter to be referred as “WG”) have been assigned in accordance with Decision No.1088/QD-TCDBVN dated 23rd April 2015. Furthermore, staff in charge of PMS system at each RMB, RTCs and SBs have also been assigned in July 2015. For further detail, please refer to “1-2-2 (2) Project Management”.

(2) Office Space and Facilities

Due to the shortage in office space in the DRVN building, DRVN needed to lease a project office outside the building fulfilling a DRVN leasing conditions. It took about two months to provide an office space to the Project team, and during this time period, the Project arranged own office space for two weeks and moved into the temporary project office space within the DRVN building on March 30th, which was kindly offered by DRVN. In April, DRVN successfully made a lease contract for a project office space and Project team has moved into the new office on 20th April 2015 before the first JCC.

(3) Cost

DRVN have successfully secured the budget required for execution of following items.

1) Cost for pilot project on maintenance and repair work (including cost for general materials)

DRVN has already approved domestic projects including clarification of the domestic budget from Road

Maintenance Fund for costs of domestic expenditure that are different from the costs for special materials and equipment covered by Japanese side.

2) Small running expenses necessary for pavement condition survey

DRVN secured daily allowance, accommodation, and domestic travel expenses for DRVN's staff for participating in the pavement condition survey.

3) Small running expenses necessary for the implementation of training programs in Viet Nam

DRVN secured daily allowance, accommodation and domestic travel expenses for DRVN's staff for participating in the workshops held in RMB I, II, III and IV region on July 19th through 27th in 2015.

(4) Others

Besides, DRVN has been kindly requested to take responsibility for the following items essential for project activities.

1) Implementation of the pilot repair works for pavements and bridges with JICA experts' advisory.

2) Implementation of Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction, with JICA's local service.

3) VISA

At the beginning of 2015, a new immigration law became effective and caused a little confusion in VISA processing. Under the new law, project experts requires to obtain LV1 visa to conduct tasks in Viet Nam, which valid for one year. All experts have successfully obtained visa with a support of DRVN and MOT.

1-2 Progress of Activities

1-2-1 Baseline Survey

From the beginning of this Project until the first JCC, the Project has conducted baseline survey based on documents and internet searching, focusing on the key issues needed to formulate the Work Plan including the review of Phase I Project outputs, data collection of new regulations, update of the current status of national road maintenance and management. The result of baseline survey is reported in the Progress Report submitted at the second JCC in March 2016.

1-2-2 Work Plan

At the first JCC meeting held on 23rd April 2015, the Project discussed and agreed on the Work Plan setting the framework of the project activities to be delivered to achieve the project purpose, incorporating all outcomes of activities.

(1) Project Framework

Framework including measures and activities to achieve project purpose is summarized in below table. Flow chart is shown on Table 15. The Project applies the activity number applied at the Work Plan throughout the Project.

Table 3 Measures and Activities to Achieve Project Purpose

Project Purpose		
Enhance Implementation Capacity for National Road Maintenance in Viet Nam		
Measures	Project Activities agreed at Work Plan	
MEASURE 1; Improve PMS Data Collection and Processing Technology	1-1	Formulate PMS Database
	1-2	Implement Pavement Condition Survey
	1-3	Develop Web-based PMS Data Input System
MEASURE 2; Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan	2-1	Upgrade PMS
	2-2	Formulate PMS Dataset
	2-3	Formulate Pavement Repair Work Draft Plan
	2-4	Develop Web-based System for Displaying Pavement Condition Survey Data
	2-5	Develop Web-based PMS Operation System
	2-6	Develop Web-based Analysis System for Pavement Condition Survey Data
MEASURE 3; Improve Inspection and Repair Work Selection Technology on Road Facility and Develop Technical Standards	3-1	Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology
	3-2	Upgrade Road Facility Inspection Guideline
	3-3	Upgrade Road Routine Maintenance Manual
MEASURE 4; Enhance Responsibility Assignment and Administration Procedures for Road Maintenance	4-1	Prepare Amendment Plan for Road Maintenance Responsibility Assignment
	4-2	Prepare Amendment Plan for Road Maintenance Administrative Procedure
MEASURE 5; Plan and Support Implementation of Training Programs and Conduct Public Relations	5-1	Prepare Draft Training Plan
	5-2	Support Training Implementation
	5-3	Conduct Public Relations

(2) Project Management

JCC, TWG, and WGs have been established. JCC is led by Director General of DRVN and TWG is led by Director of Science, Technology, Environment and International cooperation Department (hereinafter to be referred as “STE-ICD”) of DRVN.

Table 4 Functions and Participants of JCC and TWG

	JCC	TWG
Chairperson	Director General of DRVN	Director of STE-ICD. of DRVN
Regulation	As agreed on Record of Discussion	Decision No.1088/QD-TCDBVN dated 23 rd April 2015
Frequency of meeting	Once a year (to discuss and report Work Plan, Progress Report, and Completion Report, and Monitoring Sheet)	Every 3 months, except when JCC is hold
Function	<ul style="list-style-type: none"> • Discuss and approve Work Plan based on R/D • Review the progress of the Project based on annual Work Plans/ Progress Report and Monitoring Sheet. • Promote dissemination procedure of project outputs 	<ul style="list-style-type: none"> • Discuss and Coordinate project progress based on annual Work Plans/ Progress Report and Monitoring Sheet • Review and coordinate a progress of the project • Discuss and coordinate issues related to

		JCC	TWG
		<ul style="list-style-type: none"> • Exchange views on main issues arising from the project in progress 	Project implementation <ul style="list-style-type: none"> • Select speakers, trainers, and trainees for seminars, workshops, and OJTs.
Members	Vietnamese side	<ul style="list-style-type: none"> • Director General of DRVN (Chairperson) • Vice Director General of DRVN • MOT: DPI, DOST, Infrastructure Dept., TCQM Bureau, ITST • DRVN Department Members • PMU3 of DRVN 	<ul style="list-style-type: none"> • Director of STE-ICD, DRVN (Group leader) • DRVN Department Members
	Japanese side	<ul style="list-style-type: none"> • Embassy of Japan in Viet Nam • Representative of JICA Viet Nam Office • JICA Long-term Expert • JICA Project Team 	<ul style="list-style-type: none"> • JICA Long-term Expert • JICA Project Team

Three (3) WGs have been set up under TWG, who are in charge of project measures as shown below table. The members were selected from departments and units under DRVN intensively involved to the project activities.

Table 5 Structure of Working Group

WG	Targeted Field	Vietnamese side member
WG 1	<ul style="list-style-type: none"> • [Measure 1] • PMS data collection and processing technology • Web operation view system for road condition data • [Measure 2] • PMS upgrade/ formulation of pavement budget/repair plans • Web based system 	In total of 7 members; <ul style="list-style-type: none"> • Director of STE-ICD (Group Leader) • Deputy Director of DPI • Deputy Director of Road M& M • Director of Road IT Centre • Specialists of DPI, Road M&M, Road IT Centre, • Staff of PMU3
WG 2	<ul style="list-style-type: none"> • [Measure 3] • Technical standards for road inspection and maintenance • Pilot Repair works • [Measure 4] • Maintenance procedures and responsibility assignment 	In total of 6 members; <ul style="list-style-type: none"> • Deputy Director of STE-ICD of DRVN (Group leader) • Deputy Director of Road M& M • Head of PID3, Road Construction Management Bureau • Specialists of Road M&M, STE-ICD • Staff of PMU3
WG 3	<ul style="list-style-type: none"> • [Measure 5] • Training Programs and Public Relations 	In total of 3 members; <ul style="list-style-type: none"> • Deputy Director of DOP (Group Leader) • Specialists of STE-ICD • Staff of PMU3

Note

- DPI: Planning and Investment Department
- Road M&M : Road Maintenance and Management Department
- DOP: Organization and Personnel Department

In addition, for the efficient coordination between the World Bank Vietnam Road Asset Management Project (hereinafter to be referred as “VRAMP”) and this JICA project, Road Asset Management Steering Committee (hereinafter to be referred as “RAM-SC”) based on Decision No.1267/QD-TCDBVN dated 24th June 2014, and Coordination Working Group (hereinafter to be referred as “CWG”) based on Decision No. 1777/QD-TCDBVN dated on 7th August 2014, have been established. Some DRVN members of RAM-SC and CWG are assigned to both JCC and TWG mentioned above.

VRAMP has commenced from November 2015. CWG has been held three times until the end of January 2016.

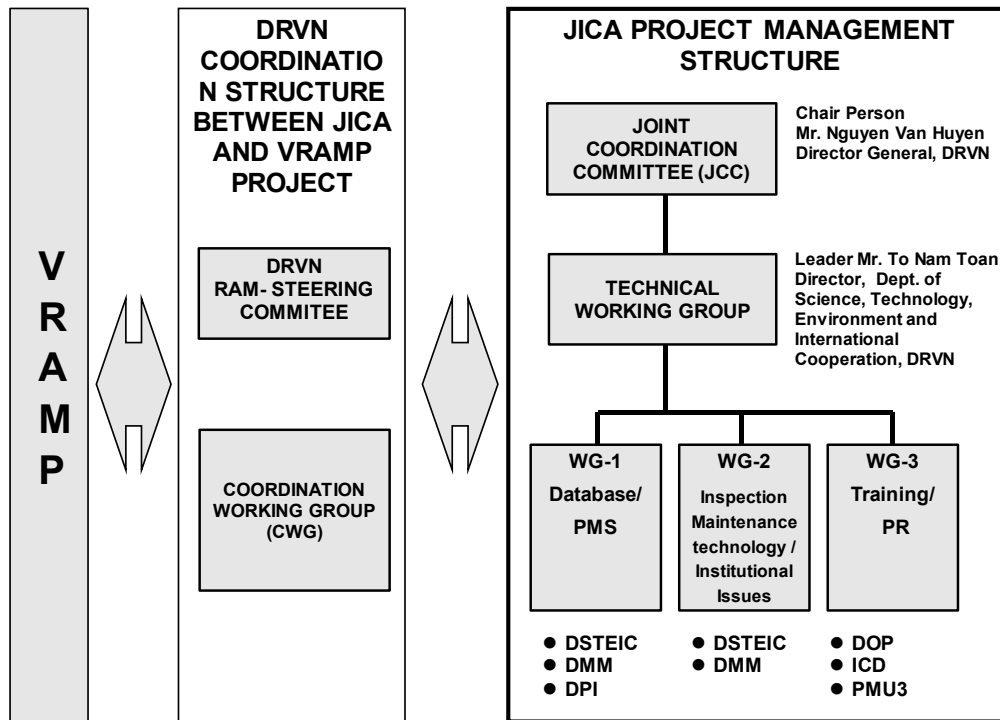


Figure 1 Structure of Project Management

1-2-3 Working Group Discussion

Following the approval of Work Plans at the first JCC meeting, the Project moved forward to the consensus building on the Implementation Plan for each activity. Implementation Plan aims at showing the detailed implementation methods of each activity. The Implementation Plans for the activities which started in 2015 were developed and submitted to WGs for discussion and were basically agreed. In line with these implementation plans, further discussion for each activity is now going on in the WGs.

Following describes detail activities conducted by each activity following activities set under the Work Plan.

1-2-4 Measure 1 Improve PMS Data Collection and Processing Technology

(1) Activity 1-1 Formulate PMS Database

1) Baseline Survey

The Project conducted the survey on the conservation of road data for RMBs including data type, data formats, data storage, RMB computer system, and RMB data server, so forth.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey and review of JICA Phase I Project outputs conducted,

the Project developed the Work Plan for the formulation of PMS database. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

The Project developed the Implementation Plan of PMS data formulation, discussed and agreed with WG1 members.

4) Upgrading of PMS Data Format and Data Input Computer Software

The Project has upgraded PMS data input formats and developed an offline-based data input software by means of Microsoft ACCESS for the smooth implementation of data input by RMBs in order to prepare PMS dataset for maintenance planning. The Project has also been developing a web-based PMS data input software for permanent use.

5) Technical Transfer by OJT for PMS Data Input and Software Operation

Using the upgraded data input format and the computer software, the Project conducted OJTs in July 2015 to RMB and SB officials to transfer technologies on data input and software operation to each RMB. At that time, the Project also requested RMBs to input PMS data which will be used in planning of pavement periodic repair for each RMB road network during the Project. Upon receiving some requests of improving data input software, the Project had slightly improved the data input software to make it comply with regional road conditions.

6) Monitoring of Data Input

RMBs are requested to fill out data in the PMS database format. Currently, data input is still underway and the Project is conducting monitoring of data input.

(2) Activity 1-2 Pavement Condition Survey

1) Baseline Survey

After the first JCC meeting, the Project has conducted further baseline survey on national road length under RMB II, III and IV jurisdiction in order to plan pavement condition survey. Due to the data of national roads accumulated from DRVN lacking in information of lane numbers, the Project requested data directly to RMBs. Using the data provided by RMBs at the end of August 2015, total length of national roads was calculated by route, by lane, and by pavement type for each RMB II, III and IV.

Also, information collection on the feasibility of sub-contracting pavement condition survey was conducted. Pavement condition survey requires operation of a pavement condition survey vehicle equipped with advanced systems such as laser system, GPS and IRI survey equipment.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the pavement condition survey. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

The Project developed the Implementation Plan of pavement condition survey, and discussed and agreed with WG1 members on July 13th 2015. At the discussion, WG1 agreed the followings;

- Survey is carried out by lane,
- Survey length of national roads should not be more than 6,280 km in maximum,
- Confirmation of target lane is done by RMBs, which DRVN shall issue an official letter,
- Base data required for developing technical norm essential for the cost estimation of pavement condition survey is to be gathered by the Project.

The Project set a selection criteria so that the survey cost to be within the budget planed. At the end of August 2015, the survey length was finalized as a total target of 12,574 lane-kilometre including some contingency selected in consultation with DRVN. Following are the elimination criteria for selection of targeted survey sections.

- Road sections under DOTs jurisdiction
- Road sections newly constructed and transferred to DRVN after 2010.
- Road sections which have been planned for pavement repair on on a large scale.
- Road sections scheduled to be transferred to Provincial People’s Committees.
- Road sections which exceed the maximum survey road length of 6,287km (or survey lane length is 12,574 km).

Table 6 Length of National Road Selected

No.	RMBs	Planned Survey Length (Lane km)	Actual Surveyed Length (Lane km)	Note
1	RMB-II	4,963.3	Survey starts in April 2016.	Actual survey length; As of the end of February in 2016
2	RMB-III	2,501.2	2,244.4	
3	RMB-IV	5,109.6	3,855.5	
Total		12,574		

(Note) Routes out of the target for survey include 7 routes in RMB-II, 4 routes for RMB-III and 3 routes in RMB-IV.

4) Consultant Selection for Pavement Condition Survey

In September 2015, two potential subcontractors who have experience in conducting pavement condition survey in the past, RTC Central and University of Transport and Communication (hereinafter to be referred as “UTC”), were invited to submit a proposal by the 30th of September, 2015. However, UTC expressed a withdrawal of participation, so that the Project conducted negotiations with RTC Central and signed the contract on the 7th of October, 2015.

5) Implementation of Pavement Condition Survey (Current status)

After the contract was signed, RTC Central completed survey of RMB IV in early January and currently conducting a survey under RMB III jurisdiction from 26th February to 27th May 2016 (tentative).

Table 7 Schedule of Road Condition Survey

Area	Total surveyed length (km)	Calibration	Training	Survey	Analysis	Monitoring
RMB II	4,964.3 (*1)	In planning	In planning	In planning	In planning	In planning
RMB III	2,501.2 (*1)	24 th – 27 th Feb. 2016	23 rd Feb. 2016	28 th Feb. 2016 Under survey	In planning	In planning
RMB IV	3,855.51 (*2)	2 nd – 5 th Nov. 2015	4 th Nov. 2015	6 th Nov. 2015 - 2 nd Jan, 2016	23 rd Nov-2015	26 th Nov.- 4 th Dec. 2015 -

(Note) (*1): Planned survey length (lane km)

(*2): Actual survey length (lane km)

(3) Activity 1-3 Develop Web-based PMS Data Input System

The Project plans to develop five (5) web based operation systems shown below;

- Web-based PMS Data Input System (Activity 1-3)
- Web-based System for Displaying Pavement Condition Survey Data (Activity 2-4)
- Web-based PMS Operation System - for Strategic Budget Planning Model (Activity 2-5)
- Web-based PMS Operation System - for Pavement Repair Work Planning Model (Activity 2-5)
- Web-based Analysis System for Pavement Condition Survey Data (Activity 2-6)

In developing these web-based systems, DRVN will be requested to inquire comments to relevant stakeholders, to gather comments in a written format and to wrap up the comments in order to facilitate further development by the Project team.

1) Baseline Survey

The Project has conducted the baseline survey related to the web-systems through the review of JICA Phase I Project outputs including a document survey on the regulations stipulating responsibility assignment of DRVN departments. Also, the Project visited DRVN's IT Centre and conducted interviews and exchange of opinions on the internet information management including web-operation system. The following is the findings in the survey.

- Since 2007, DRVN has been promoting E-Transaction in line with the Government Information Strategy.
- RVN had developed Web-based system of Vehicle Tracking.
- GIS base map developed by MONRE is available and has been transferred to DRVN.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the upgrading of the PMS software. The Work Plan was discussed and agreed at the first JCC meeting held on April 23, 2015.

3) Consultant Selection

Development of the web based system for PMS data input was subcontracted together with development

of the web based system for displaying pavement condition survey data (Activity 2-4). A sub-contractor was selected based on the competitive bidding, JICA Project Team has made a contract with SAOMAI Software J.S.C on 20th October 2015.

4) Development of System (Current Status)

In line with the Work Plan, the Project developed an off-line PMS data input system. The Project visited RMB II, III and IV, and delivered the developed system software to RMBs and asked them to fill out the PMS data. The off-line PMS data input system is equipped with the data handling concept which is the same concept as that of the web based PMS data input system. The system development of web based system for PMS Data Input is now underway, but soon will be finalized. Demonstration of this system will be conducted to WG2 upon the completion of system development. When system development of web based PMS data input system is completed, the web based system turns to the major system for PMS data input.

5) PMS Data Input by RMBs

Data input to the PMS database is currently underway.

1-2-5 Measure 2 Upgrade PMS to Apply Road Network of RMB I, II, III and IV, and Formulate Draft Repair Work Plans

(1) Activity 2-1 Upgrade of PMS

1) Baseline Survey

A baseline survey was conducted on the computer software and hardware environment, and their operation methods at RMBs and IT Centre under SCE-ICD in DRVN, and also on the web operation system for VBMS, which was developed recently and became operational.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the pavement condition survey. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd 2015.

3) Development and Discussion of Implementation Plan

In order to have a common understanding on the targets of PMS development, the Project developed the Implementation Plan and discussed at WG1. The Plan was developed based on the review of the Phase I Project activities, issues arising on PMS, and information gathered through an interview to IT Centre.

The WG1 meeting on the discussion of the Plan was held on September 16th of, 2015. In the meeting, the plan was agreed basically with the following comments to be taken into consideration in this activity.

- Make it applicable to the planning of multiple lane national roads,

- Reflect deterioration indexes to the planning of road maintenance plans,
- Make it applicable to the nationwide national road network,
- Improve the operation system, automatizing simulation functions,
- Simplification of simulation data input.

Following the discussion on the implementation plan, the Project team prepared a discussion paper on the conditions of system development showing relation between PMS application and database and conducted detailed discussion on November 18th and on December 11th, 2015.

The Project will organize another discussion on the PMS system upgrades in collaboration with DRVN.

4) Upgrade of PMS Software (Current status)

Based on the Implementation Plan, the Project is currently upgrading the PMS in collaboration with DRVN in accordance with the items agreed upon in the WG meetings.

(2) Activity 2-2 Formulate PMS Dataset

To be added as the Project progresses.

(3) Activity 2-3 Formulate Pavement Repair Work Draft Plan

To be added as the Project progresses.

(4) Activity 2-4 Develop Web-based System for Displaying Pavement Condition Survey Data

1) Baseline Survey

Please refer to “1-2-4 (3) Activity 1-3 Develop Web Based PMS Data Input System”.

2) Development and Discussion of Work Plan

Please refer to “1-2-4 (3) Activity 1-3 Develop Web Based PMS Data Input System”.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Implementation Plan for the Web-Based System for Displaying Pavement Condition Survey Data with the framework. The Implementation Plan was submitted to WG1 on July 14th in 2015 and the plan was basically agreed. The following are the points agreed at the meeting.

- The Web operation system for Displaying Pavement Condition Survey Data is to be developed in order to make it applicable to the PDOT road networks from the viewpoints of system development, assuming PMS database development and data conversion to PMS Datasets are all prepared with the same quality as those with the DRVN National Roads. However, PMS database for the PDOT road networks is not currently available, so that DRVN is requested to examine its applicability on its own when PMS database and PMS Datasets are prepared for PDOT road networks in the future.
- In developing the web operation system, system user is to be divided into three levels; Level 1:

DRVN (MOT), Level 2: RMBs & RTCs, and Level 3: SBs & PDOTs

- The system is to enable comparing data of two points of time.

4) Consultant Selection

Please refer to “1-2-4 (3) Activity 1-3 Develop Web Based PMS Data Input System”.

5) Development of System (Current Status)

The Project will conduct the demonstration of draft web system for displaying Pavement Condition Data at the second JCC to be held on March 25th 2016. In addition, the Project is now developing TORs for procuring a set of Application Server, Database Server including UPS and related software to install whole sets of software developed in this Project. Above two systems are to be installed in the servers.

(5) Activity 2-5 Develop Web-based Analysis System for Pavement Condition Survey Data

To be added as the Project progresses.

(6) Activity 2-6 Develop Web-based PMS Operation System

To be added as the Project progresses.

1-2-6 Measure 3 Improve Inspection and Repair Work Selection Technology on Road Facility and Develop Technical Standards

(1) Activity 3-1 Pilot Repair Works

1) Baseline Survey

Baseline survey was conducted on the pavement condition, current status of maintenance and repair work, maintenance repair technologies, technical standards for road maintenance and repair work, design guideline, contractor selection, repair work implementation contracts and MOT policies on the road maintenance and repair works.

2) Development and Discussion of Work Plan

Based on the finding from the baseline survey, the Project developed the Work Plan for the implementation of pilot repair works. The Work Plan was discussed and agreed at the first JCC meeting.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Implementation Plan, clarifying the framework and getting common understanding on the target of development. WG1 meeting was held on the 3rd of June, 2015 to discuss on the plan, and it was basically agreed. Later on the Implementation Plan was revised to include the water proofing technology and discussed with the WG

a. Selection and Discussion of Pilot Repair Works

Selected pilot repair works to be experimented on the field was agreed at the WG1 meeting which contains; 1) a crack seal technology, 2) a shallow pothole repair work technology by cold asphalt mix, 3) a deep pothole repair work by cold asphalt mix, and 4) bridge water proofing technology. Later in order to incorporate the request from Director of Road M&M to add water proof technology, the JICA Project Team conducted field surveys and technology reviews and agreed to include bridge water proof technology, as pilot repair works.

b. Selection and Discussion of Pilot Repair Works Section

The Project conducted an on-the-desk survey in order to preliminary select the candidate road sections for the each of pilot work by applying the pavement condition survey data 2012.

At the end of November, the Project conducted a field survey with RMB I for selecting repair work sections. It is necessary not to select heavy damaged road sections for the pilot repair works, since routine maintenance technologies like those under consideration in this pilot project are all small-scale repair technologies which are only applicable to the minor damages. In case, pavement is heavily damaged, small repair technologies can no longer be applicable. Much bigger scale repair technologies such as overlays and structural overlays must be applied to the damages. With this in mind, the Project selected some candidate sections of national roads near Ha Noi for each pilot technology in the form of a technical paper and submitted to DRVN.

Table 8 Pilot Repair Works agreed

	Repair Work	Specification	Repair Materials	Selected National Road		Maximum Work Volume (total)
1	Crack seal		CRACK SEAL NX	NH6	70+000- 78+000	1,000 m
2	Pothole Repair Work-I	Shallow Pothole; Pothole depth less than 3 cm	ROMEN PAT CH (*1)	Ho Chi Minh Route	458+000- 468+000	20 square meters
3	Pothole Repair Work-II	Deeper Pothole; Pothole depth from 3 cm to 5 cm	RESCUE PATCH (*1)	NH6/ Ho Chi Minh Route	70+000- 78+000	150 square meters
4	Bridge Waterproofing (*2)		CATICOAT R BARADRAIN	NH18	197+887、 198+457、 212+960	620 square meters

4) Development and Discussion of Specification, Bill of Quantity and Work Volume

As the Record of Discussion explains that JICA side import materials from Japan with JICA funds, on the other hand, DRVN select maintenance companies with its own budget and implement pilot repair work in the field. In order to support DRVN responsibilities on the company selection and cost estimation for the pilot repair works, the Project developed a technical specification of repair work, Bill of Quantity (BOQ) and work volumes for cost estimation and submitted to DRVN in September 2015.

5) Fund Raising by DRVN for the pilot repair works

DRVN has already procured the budget for the implementation of pilot project from Road Maintenance Fund.

6) Joint Pilot Project between JICA project and DRVN Own Project

DRVN has developed its own domestic pilot projects separately from the JICA pilot project. DRVN will implement JICA pilot project together with DRVN domestic pilot project at the same time within its budget framework. Close coordination between two projects is needed in particular on the selection of pilot sections, the time-line/schedule of applying technologies, monitoring and evaluation methods. DRVN is requested to develop implementation plans on its domestic pilot project, to explain them to the JICA Project Team and to coordinate between two projects.

Also, DRVN is requested to coordinate with RMB I and to maintain the identified pilot sections untouched from other repair work until the end of the pilot projects.

7) Development and Discussion on the list of Material and equipment

The JICA Project Team has carefully examined the material and equipment for pilot repair works and developed the material and equipment list for procurement in Japan.

8) Current Status of Preparation for Pilot Repair Works

The Project is currently involved in the administration procedures which contains the following; 1) approval on the list of materials and equipment included in the Project Documents from MOT and 2) approval on C1 Form from MOF (Prime Minister's Office). The latter is approval from MOF on C1 form relevant to custom clearance (Tax Exemption) for materials and equipment imported from Japan. The former is approval (Verification) from MOT on materials and equipment to be used in the Project, which need to be processed in advance of the C1 form approval.

DRVN has already prepared the documents of proposal for the former approval and submitted them to MOT. MOT is currently processing the DRVN proposal in consultation with MPI. The Project would like to express sincere appreciation to DRVN and PMU3 to take quick action for the preparation of necessary documents. When approval is issued by MOT, PMU3 and DRVN are kindly requested to take the other action, which is the proposal of C1 form to MOF. Information delivered by JICA Viet Nam Office has explains that it would take four (4) to six (6) months in order to complete both procedures.

In addition, to get situation worse, it is also said that there seems to be a backlog of clearing cargo at Hai Phong port which was caused by regulation change relevant to tax clearance. There is a long queue of cargo waiting for processing which need preferential treatment.

The Project is now preparing contract documents for the procurement of pilot materials and equipment. However, with these reasons, close coordination and information exchange between JICA, MOT, DRVN, PMU3 and the JICA Project Team is now needed in order to find out the best timing of purchasing materials and equipment in Japan. Table 9 shows the revised time schedule of pilot project implementation, taking account of the above administrative procedures into consideration.

Table 9 Expected Procurement Schedule (Tentative)

■ Apr. to Sep. 2015	Planning of pilot repair work implementation plan
■ Sep. to Nov. 2015	Selection of pilot section
■ Dec. to Jan. 2016	Documentation of proposals for the revision of Project Document
■ Feb. to Jun. 2016	Proposal of new Project Document and C1 Form to MOT/MPI for approval
■ Jun. to Jul. 2016	Procurement of material and equipment and export/import procedures
■ Aug. to Sep. 2016	Custom clearance in Hanoi
■ Sep. to Oct. 2016	Pilot repair work execution in the fields
■ Nov. to Apr. 2017	Monitoring and evaluation of pilot work performance
■ May 2017	Standardization of repair technologies

(2) Activity 3-2 Upgrade Road Facility Inspection Guideline**1) Baseline Survey**

The Project conducted a baseline survey on the policy and the current status of standardization and utilization of inspection guideline. The survey has reported that the current “Specifications of Road Routine Road Maintenance” published in 2013 stipulates only the outline of inspection procedure and needs upgrading of provisions.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the development of Road Facility Inspection Guideline. The Work Plan was discussed and agreed at the first JCC meeting.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Implementation Plan, clarifying the detailed implementation plans before implementation and getting consensus on the target of development.

A WG1 meeting was held on the 3rd of June, 2015 to discuss on the plan, and was basically agreed. In line with the discussion at the meeting, the Project revised the draft Road Facility Inspection Guideline and submitted to DRVN in September 2015 for further discussion.

4) Opinion Inquiry to Competent Agencies (Current Status)

As a step for the formalization of technical standards, pursuant to regulation, DRVN is obliged to inquire opinions to the competent professional agencies in Viet Nam on the contents of draft standards. Competent agencies include Science and Technology Department of MOT, ITST, UTC and UTT etc. In line with this regulation, DRVN is now in the process of opinion inquiry to these organizations including RMBs, SBs and RTCs under DRVN.

5) Upgrade of Road Facility Inspection Guideline (Current Status)

Comments from RMBs to the opinion inquiry have already arrived, however they have not arrived from competent agencies. The JICA Project Team is now reviewing the Guideline, taking account of these

comments. Discussion on the further discussion toward realization of this inspection Guideline will be implemented after the second JCC meeting.

(3) Activity 3-3 Upgrade Road Routine Maintenance Manual

1) Baseline Survey

The Project conducted a baseline survey on the policy, on the regulations and on the current status of standardization and utilization of the inspection guideline. The Project also confirmed the comments issued on the Road Routine Maintenance Manual developed in the JICA Phase I Project.

2) Development and Discussion of Work Plan

Based on the DRVN comments addressed to the Project, the Project developed the Work Plan for the development of the Road Routine Maintenance Manual. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed the Implementation Plan, to clarify the following framework before implementation and get consensus on the target of development.

WG 1 meeting was held on the 3rd of June, 2015 to discuss on the plan and basically agreed. In line with the discussion at the meeting, the Project developed the revised draft of Road Routine Maintenance Manual based on the DRVN comments and submitted it to DRVN in September 2015 for further discussion.

4) Opinion Inquiry to Competent Agencies (Current Status)

The same formalization procedure as that for the above Road Facility Inspection Guideline is applied to the Road Routine Maintenance Manual. In line with this regulation, DRVN is now in the process of opinion inquiry to the organizations including competent agencies (Science and Technology Department, MOT, ITST, UTC and UTT) and DRVN subordinate organizations (RMBs, SBs and RTCs). Until today, comments are issued from WG2 and RMB II and III to the Project, saying that draft Road routine Maintenance Manual is basically agreed. Further discussion will be conducted to the realization of this Manual from April 2016 after the JCC.

1-2-7 Measure 4 Enhance Responsibility Assignment and administration Procedures for Road Maintenance

(1) Baseline Survey

The Project conducted the baseline survey including the review of recommendations made at the JICA Phase I Project, update of regulations relevant to road maintenance and institutions in Viet Nam, and also studied the progress of the DRVN Comprehensive Renovation Plan commenced in 2013. The JICA

Project Team also translated and studied regulations relevant to organization updated.

(2) Development and Discussion of Work Plan

Based on the DRVN comments addressed to the Project, the Project developed the Work Plan for the enhancement of responsibility assignment and administration procedures. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

(3) Development of amendment plan for responsibility assignment and administrative procedure (Current status)

The Project is currently introducing new technologies for national road maintenance including PMS database, pavement condition survey, road maintenance planning by PMS, web based operation systems for pavement condition data and PMS, road facility inspection guideline, road routine maintenance manual and training plans. In order to ensure smooth and effective operation of these new technologies, it is necessary to review current responsibility assignment and maintenance procedures to be able to comply with these technologies.

The Project developed the first draft recommendation on the amendment of responsibility assignment and administration procedures, taking account of the progress of discussions being carried out by WGs. Discussion on the draft recommendation will be conducted in April 2016 after the second JCC meeting.

1-2-8 Measure 5 Plan and Support Implementation of Training Program and Conduct Public Relations

(1) Activity 5-1 Prepare Draft Training Plan

1) Baseline Survey

Until the first JCC meeting, the Project has conducted a baseline survey on any update on legislation, government, and ministry and DRVN policy on trainings. In May 2015, after the WG member as confirmed, the Project conducted further baseline survey and confirmed that there is no comment on training programs developed under the JICA Phase I Project. Besides, the JICA Project Team conducted the baseline survey questionnaires to relevant organization. Accumulated data and information was compiled into a report, and shared among the team in September 2015, and submitted to WG3 in February 2016.

2) Development and Discussion of Work Plan

Based on the baseline survey, the Project developed the Work Plan for the development of training programs. The Work Plan was discussed and agreed at JCC meeting held on April 23rd 2015. In the Project, three (3) training programs will be developed as shown in

Table 10 and one (1) training program, which is “During the Project Training” shown in the table will be implemented.

Table 10 Outline of Training program developed under the Project

Training Program	Term	Concept	Trainer	Target trainees
1. Training Program on Project Outputs (During the Project Training)	During the project (2015-2017)	<ul style="list-style-type: none"> • Step by Step transfer of technology developed by the Project to DRVN. • Training is led by JICA project which handover to DRVN from the second year, in order to oversee that training implementation is properly handover to DRVN. 	<ul style="list-style-type: none"> • DRVN • JICA Project Team 	Project counterparts of <ul style="list-style-type: none"> • DRVN • RMBs • SBs • RTCs • (future trainers)
2. Training Program on Project Outputs (After the Project Training)	Until 5 years after the Project Completion (2018-2022)	<ul style="list-style-type: none"> • Deployment of project outputs to nationwide road maintenance agencies focused on selected trainings conducted during the Project • DRVN is to organize and implement training program “After the Project”, with support of trained trainers identified by DRVN. DRVN is highly recommended to identify future trained trainer and include them into training during the Project 	<ul style="list-style-type: none"> • DRVN • Trained trainers 	Project counterparts of <ul style="list-style-type: none"> • DRVN • RMBs, • SBs • RTCs (Inclusion of PDOT to be considered)
3. Training Program on Road Administration (Future Training Program)	After 5 years of the Project Completion (2022-)	<ul style="list-style-type: none"> • Capacity enhancement on comprehensive management capacity of PDCA cycle for road administration in Vietnam sustainably • Delivery with DRVN and assigned training institution. DRVN is highly recommended to identify competent agency and include them into training during the Project. 	<ul style="list-style-type: none"> • DRVN • Assigned training institution 	<ul style="list-style-type: none"> • Staff involved in road administration nationwide • DRVN • RMBs • SBs • RTCs • PPC/ PDOTs

3) Development and Discussion of Overall Training Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Overall Training Implementation Plan, clarifying the framework of training before implementation and getting consensus on the target of development.

WG3 meeting was held on 28th of May, 2015 and discussed on Framework, and overall framework as well as cost sharing and cooperative implementation with DRVN, which were agreed. Also, taking account of comments issued in the meeting, the Project agreed to disseminate information on the pilot repair works in the regional workshops and conduct technical transfer OJTs before implementing pavement condition surveys in each of RMB II, III and IV region.

(2) Activity 5-2 Support Training Implementation

1) Development of Annual Implementation Plan for Training “During the Project”

Based on training program developed above, the Project has developed Annual Training Implementation Plan in 2015 for during the Project”, which contains Implementation Plan of Seminar, Workshop, and OJT, Implementation Procedure and Task and Cost sharing. The annual training implementation plan was discussed at the WG3 meeting held on 11th of June in 2015 and then agreed. The remaining trainings

a. The first Seminar

The first Seminar was held on 21st October, 2015 at Ha Noi Daewoo Hotel. Speakers were invited from Public Works Research Institute of MLIT, NEXCO Research Institute, Kyoto University, and DRVN. Approx. 40 Vietnamese officials attended from MOT, DRVN, RMBs, and RTC Central.

b. The first Workshops and OJTs

The first Workshops and OJTs were delivered from 20th to 27th of July, 2015 at 4 cities of RMBs, Hanoi, Ho Chi Minh City, Da Nang and Vinh City. Training was 1 day training which workshop and OJT were organized in a same day.

In total approx. 200 participants from Officials (Engineers) at Management level of RMBs, SBs and RTCs, and Filed engineers of RMBs, SBs and RTCs attended the first training, participants of each training is summarized in below.

c. OJTs on Pavement Condition Survey

OJT on Pavement Condition Survey are conducted at the beginning of pavement condition survey prior to commencement of survey at each region. So far two OJTs have been conducted at RMBIII and RMBIV.

4) Review of the first year training

After the completion of the first year training, the JICA Project Team conducted the review of the first year training and reviewed the plan for the second and third year in January 2016, and got a consent on the reviewed Annual Implementation Plan.

(3) Activity 5-3 Public Relations**1) Baseline Survey**

In May 2015, after the WG members are confirmed, the Project delivered a baseline survey questionnaire to WG3 on Public Relations (PR). Based on answers delivered at the end of June 2015, further additional information was requested to DRVN in July and August 2015. The survey confirmed that Road Magazine is the responsible unit for PR under DRVN. On 2nd October 2015, the Project interviewed Road Magazine and were informed that Road Magazine conducts PR activities under the commission from DRVN and has published monthly Road magazine, runs web based Road magazines, developed Video Clips on Road related topics, and also submit articles to news agencies.

2) Development and Discussion of Work Plan

Based on the baseline survey, the Project developed the Work Plan for the development of public relation programs. The Work Plan was discussed and agreed at the JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed upon at the JCC meeting, the Project developed an Implementation Plan, clarifying the Framework before implementation and getting consensus on the target of development.

WG3 meeting was held on 28th of May, 2015 and discussed the Project Objectives (Approach) on PR. At the meeting, Road Magazine, the independent unit under DRVN, was assigned to conduct PR activities of DRVN. JICA Project Team has further developed implementation plan with detail activities, and discussed with WG 3. The plan has been basically agreed.

4) Development and Discussion of Detail Implementation Plan

The Project is currently developing a detail PR activity plan and will discuss with Road Magazine of DRVN.

5) Delivery of PR activities

From 8th to 10th of July, 2015, the Project participated to “Viet Nam Ha Noi Transport & Logistics Conference & Exhibition”, and set up a booth to introduce the Project and project activities with Board Panel and Photos, leaflet, a short video clip.

1-3 Achievement of Output

1-3-1 **OUPUT 1** PMS data development technology is improved

Objectively Verifiable Indicators	Achievement Level
Road asset database, maintenance history database and pavement condition database are completed for PMS	<p><u>In Progress</u></p> <ul style="list-style-type: none"> Upgrading of PMS data input format and offline based data input software has been completed. Currently data is inputted by RMBs. Pavement Condition survey is under progress. Survey of RMB IV region had been completed, and currently surveying at RMB III region.

1-3-2 **OUPUT 2** PMS IS UPGRADED AND APPLIED TO THE PLANNING OF TRIAL PAVEMENT REPAIR WORK PLANS

Objectively Verifiable Indicators	Achievement Level
Trial pavement repair work plan (Annual, five year) using PMS is formulated by DRVN.	<p><u>In Progress</u></p> <ul style="list-style-type: none"> PMS is currently under upgrading.

1-3-3 **OUPUT 3** Final draft of Road Facility Inspection Guideline and Road Routine

Maintenance Manual are formulated.

Objectively Verifiable Indicators	Achievement Level
Draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual are formulated.	<u>In Progress</u> The First draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual has been submitted to DRVN and awaiting for comments from Competent Agencies.

1-3-4 OUPUT 4 Responsibility assignment and administration procedure are clarified for road maintenance

Objectively Verifiable Indicators	Achievement Level
Amendment plans to realize output 1-3 are developed	<u>In Progress</u> First recommendation has been developed and submitted to DRVN.

1-3-5 OUPUT 5 Training implementation and public relations are reinforced

Objectively Verifiable Indicators	Achievement Level
DRVN conduct regular trainings on project outputs	<u>In Progress</u> 1 seminar, 1 st Workshop and OJTs and 2 OJTs on Pavement Condition Survey have been offered
DRVN conduct PR.	<u>In Progress</u> Project leaflet has been develop and distributed at MOT Exhibition and Seminar.

1-3-6 Report

Followings are a list of report to be prepared under the Project.

Table 13 Current Status of Report

	Type of Report	Status	Notes
1	Monitoring Sheet Ver.1	Submitted on 23 rd April 2015	<ul style="list-style-type: none"> • Project Monitoring Sheets • Work Plan
2	Monitoring Sheet Ver.2	Submitted on 21 st October 2015	<ul style="list-style-type: none"> • Project Monitoring Sheets
3	Monitoring Sheet Ver. 3	Submitted on 25 March 2016	<ul style="list-style-type: none"> • Project Monitoring Sheets • Progress Report
3	Monitoring Sheet	To be submitted every 6 months	
4	Project Completion Report(include outputs of technical cooperation)	To be submitted at beginning of February 2018	

1-3-7 Outputs of Technical Cooperation

Expected Technical outputs are all specified in the Work Plan agreed upon at JCC held on April 23.

Table 14 Current Status of Technical Cooperation Output

	Type of Report	Project Activity	Status
1.	PMS data (57 items)	Activity 1-1	Development of offline PMS data input software was completed for the purpose of temporary use. The Project shall develop a new web-based PMS data input system and replace the temporal system with the new system.
2.	Pavement Condition Database for RMB II, III, and IV roads (Activity	Activity 1-2	
3.	Web-based PMS Data Input System	Activity 1-3	
4.	Upgraded PMS Software	Activity 2-1	
5.	Data Conversion Software	Activity 2-2	
6.	Annual and 5 Year Pavement Repair Plan for RMB I, II, III and IV Jurisdiction	Activity 2-3	
7.	Web-based System for Displaying Pavement Condition Data	Activity 2-4	
8.	Web-Based PMS Operation System	Activity 2-5	
9.	Pavement Condition Data Analysis System	Activity 2-6	
10.	Evaluation Report of Pilot Repair Works	Activity 3-1	
11.	Road Facility Inspection Guideline (Draft)	Activity 3-2	Revised Draft Road Facility Inspection Guideline was submitted on 30 th September 2015.
12.	Road Routine Maintenance Manual (Draft)	Activity 3-3	Revised Road Routine Maintenance Manual was submitted on 14 th September 2015.
13.	Operation Manual on PMS and PMS data input system	Activity 4-1	
14.	Operation Manual on web based system for displaying Pavement Condition Survey data	Activity 4-2	
15.	Training Programs and Training Materials	Activity 5-1,5-2	<p>(1) 1st Workshop and OJT:</p> <ul style="list-style-type: none"> • 20th July,2015: Vinh City • 22nd July 2015: Ho Chi Minh City • 24th July 2015: Da Nang City • 27th July 2015: Ha Noi (Workshop Only) <p>(2) OJT on Pavement Condition Survey:</p> <ul style="list-style-type: none"> • 1st October 4th at Ho Chi Minh City • 2nd February 23rd at Da Nang City <p>(3) 1st Seminar: 21st October, 2015</p> <p>(4) 1st Training in Japan: 13-19th September 2015</p>

1-4 Achievement of the Project Purpose (to be added as the project progresses)

PROJECT PURPOSE: Implementation capacity for road maintenance is strengthened in Viet Nam.

Objectively Verifiable Indicators	Achievement Level
Trial pavement repair work plan using PMS is formulated in RMB I, II, III and IV	
Primary rules for road facility inspection, maintenance and repair work are formulated (*1)	
Implementation structure for road maintenance is established.	

1-5 Changes of Risks and Actions for Mitigation

(1) February 2014 – March 2015

As the Project required a couple of months to start, counterpart of DRVN also needed time to set up the project environment including arranging a project team office space, organizing working groups and selecting counterpart members including local budget arrangement. This raised a little concern in the delay of the Project. During this term, the Project Team consulted to MOT, DRVN and JICA Vietnam, and moved to a temporary office space prepared by DRVN and conducted baseline surveys based on desktop study. Thanks to MOT, DRVN, and JICA Vietnam efforts, the above project environment was settled before the first JCC.

(2) April 2015 – October 2015

No risks was observed during this term.

(3) October 2015 – March 2016

As mentioned at “1-2-6 (1) Activity 3-1 Pilot Repair Works”, the procurement of equipment and materials for pilot repair works is expected to delay due to long processing time for approval on the import material and equipment and also due to regulation change of custom clearance. Consequently the implementation of pilot repair works also to be delayed for about half a year. JICA Project Team needs to coordinate with supplier for the production timing of materials, to rearrange experts’ assignment schedule, and to coordinate with DRVN for arrangement of local contractors for pilot repair works.

1-6 Progress of Actions undertaken by JICA

(1) February 2014 – March 2015

JICA Vietnam has provided a great support to accelerate DRVN arrangement for office space.

(2) April 2015 – October 2015

Not applicable

(3) October 2015 – March 2016

JICA Vietnam provides a great support to JICA Project Team, DRVN and MOT for providing information on tax exemption and coordinating relevant agencies.

1-7 Progress of Actions undertaken by Gov. of Viet Nam

(1) February 2014 – March 2015

After PMU3 had been assigned to the Project, arrangement for office space and furniture etc. have been arranged very smoothly.

(1) April 2015 – October 2015

Not applicable

(2) October 2015 – March 2016

Documents required for Custom Clearance are prepared by PMU3 of DRVN.

1-8 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

1-8-1 Expressway Maintenance Standard

Baseline survey has clarified that DRVN is developing “Specifications of Expressway Maintenance Standards” under the supervision of Department of Science, Technology, Environment, and International Cooperation. The Department wishes to place high priority on the establishment of this draft Standard.

In 2013, JICA conducted “the Project for Strengthening Operation and Maintenance System for Expressway” and developed the Technical Specification Guidelines for Operation and Maintenance of Expressways, consisting of 1) Technical Specification Guidelines for Inspection and Maintenance of Pavement, 2) Technical Specification Guidelines for Inspection and Maintenance of Electric facilities, 3) Technical Specification Guidelines for Inspection and Maintenance of Bridge and Culvert, and 4) Technical Specification Guidelines for Traffic Management.

However, the baseline survey has clarified that the expressway guideline does not cover all expressway facilities and does not satisfy requirements for developing the Specifications of Expressway Maintenance Standard. With this reason, DRVN is asking “JICA project for Capacity Enhancement in Road Maintenance Phase II” to support further development of these technical guidelines for expressways in Viet Nam. The Project is now conducting the review of the above guidelines and studying on how to comply with this DRVN request.

1-8-2 Vietnam Road Asset Management Project (VRAMP)

Component A “Consulting Service for Road Database Framework and Development of the Road Asset

Management System and Road Asset Management Plans”, of Vietnam Road Asset Management Project (VRAMP) funded by the World Bank has selected a consultant and contract was made on 15 October, 2015.

This VRAMP plans to succeed Road Asset Database System developed under the JICA Phase I Project. Therefore in the case of a large scale modification applied to Road Asset Database structure by VRAMP which might take significant time in completing, it will impact significantly to the Project on the formulation of PMS Dataset for pavement repair work plan using data conversion software. Thus, RAM-SC and RAM-WG set by DRVN are expected to coordinate regularly with VRAMP on issues including target route and extent of work for pavement condition survey.

DRVN is requested to clarify the detail plans of the VRAMP project, avoiding overlaps of activities between JICA Project and VRAMP Project, and to present them to the JICA Project Team in the formal Steering Committee at the kick-off of VRAMP. However so far meeting has not been organized.

Regarding PMS development, DRVN is requested to keep maintaining the principle of concluding the PMS development during the implementation of the JICA Project. The JICA Project Team will make an effort in developing PMS system until its operability in DRVN environment is confirmed.

In terms of human capacity development, counterparts for training activities of VRAMP has not been identified yet and discussions are on. Training capacity and road administration capacity of DRVN are expected to be strengthened through two projects of VRAMP and JICA Project. However due to the absent of counterparts causes delay in finalising the training plan. There is concern that the effect of technical transfer might be minimized.

2. Delay of Work Schedule and/or Problems (if any)

2-1 Detail

(1) February 2015 to April 2015

As mentioned earlier, there was a risk of delay, however those issues were resolved in a good cooperation of involved agencies.

(2) May 2015 to October 2015 (Monitoring Sheet Ver.2)

During this term, TWG was planned to be hold in July and October 2015. However the first TWG was postponed to the 22nd of October, 2015.

(3) November 2015 to March 2016 (Monitoring Sheet Ver. 3)

Procurement of material and equipment for pilot repair works is expected to delay due to required time scale for document preparation required for tax exemption. Thus the implementation of pilot repair works also to be delayed. As mentioned in “1.2.6 (1) Activity 3-1 Pilot Repair Works.”

2-2 Cause

(1) February 2015 to April 2015(Monitoring Sheet Ver.1)

Not applicable

(2) May 2015 to October 2015(Monitoring Sheet Ver.2)

Due to no particular issues to be coordinated in July, TWG was postponed to October 2015.

(3) October 2015 to March 2016 (Monitoring Sheet Ver.3)

JICA Project Team has been informed that Document preparation for Tax Exemption requires (Amended Project Document and C1 Form) will take 4 to 6 months. Thus pilot repair works will commence in October 2016 as the earliest.

2-3 Roles of Responsible Persons/Organization (JICA, Gov. of Viet Nam, etc.)

Preparation of documents required for Custom Clearance: JICA Vietnam Office / PMU 3 of DRVN

3. Modification of the Project Implementation Plan

3-1 PO and PDM

(1) Modification made at Version 1

At Version 1, a slight adjustment on Implementation schedule was made based on Work Plan prepared in discussion with DRVN. And also a sub activity “Implement pavement condition surveys for RMB II, III and IV selected roads” which was originally under Activity 2 “Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan”, has now incorporated under Activity 1 “Improve PMS Data Collection and Processing Technology”.

(2) Modification made at Version 2

Outputs and Activities of PDM have been updated according to the Project Activities considering the actual and practical delivery of tasks and outputs, which defined in the Work Plan. Thus output has change from 4 outputs to 5 outputs adding training implementation and public relations, and activities for output 5 have been included.

In addition, in the TWG held on October 2015, DRVN reported a new regulation on the formulation of pavement midterm repair plans, which includes the change of target year from “3-year” to “5-Year” according to the Preparation of Mid-term road maintenance plan in the period of 2017–2020 issued by DRVN on 4th September 2015 prudent to the Public Investment Law No.49/2014/QH13 and Prime Minister Decree No.77/2015/ND-CP. Upon this information, the Project promised to comply the current PMS development with this new regulation and accordingly updated PDM.

Proposed modification has been consulted to JICA in January 2016. PO is also amended accordingly.

3-2 Other modifications on detailed implementation plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)

4. Preparation of Gov. of Viet Nam toward after completion of the Project

To be added as the Project progresses.

II. Project Monitoring Sheet I & II *as Attached*

Project Monitoring Sheet I (Revision of Project Design Matrix)

Project Name: The Project for Capacity Enhancement in Road Maintenance Phase II
 Project Period: February, 2015 to March, 2018 (3 years)
 Implementation Organization: Directorate for Roads of Vietnam under Ministry of Transport
 Target Group: DRVN, Road Management Bureaus (RMBs) I, II, III, IV
 Target Area: Designated area of RMB I, II, III, IV

Version: 2
Dated: 25th March, 2016

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions (I.A.)	Achievement	Remarks
Overall Goal Road maintenance is conducted properly based on the mid-term plan, following PDCA cycle.	(By 3 years from the project end) The indicators for pavement damage (IRI, cracks, rutting, etc.) will be improved X %.	1.Result of data comparison of regular pavement condition survey by DRVN 2.Trial 3 year and annual plan for pavement maintenance 3. Annual Report 4. Interview to DRVN			
Project Purpose Implementation capacity for road maintenance is strengthened in Viet Nam	1. Trial pavement repair work plan using PMS is formulated in RMB I,II, III and IV 2. Primary rules for road facility inspection, maintenance and repair work are formulated (*1) 3 Implementation structure for road maintenance is established.	1. Trial pavement repair work plan of RMB I,II, III and IV 2. Regulation 3-1. Regulation 3-2. Interview to DRVN	I.A to achieve Overall goal 1.Budget is allocated stably for maintenance activities in accordance with five year plan 2. Training is conducted by DRVN continuously to maintain technical skills		
Outputs 1. PMS data development technology is improved 2.PMS is upgraded and applied to the planning of trial pavement repair work plans 3.Technical specifications for inspecting road facility and selecting repair work are developed 4.Responsibility assignment and administration procedure are clarified for road maintenance 5. Training impelmentation and public relations are reinforced	1.Road asset database, maintenance history database and pavement condition database are completed for PMS 2. Trial pavement repair work plan (annual, five year) using PMS is formulated by DRVN. 3.Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual are formulated. 4. Amendment plans to realize output 1-3 are developed 5-1. DRVN conduct regular trainings on project outputs 5-2. DRVN conduct PR.	1.Road asset DB, maintenance history DB, pavement condition DB 2.Trial pavement repair plans (annual, five year plan) 3.Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual. 4.Amendment plans (draft) 5-1. Training record 5-2. PR outputs	I.A. to achieve Project Purpose 1 Engineers who received training are assigned continuously 2. Legalization procedure for Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual proceeds	In Progress	
Activities	Inputs		I.A. to achieve Outputs		
	Japanese side	Vietnamese side			
1-1.Formulate PMS Database	1.Dispatch of Experts (1)Long term Expert •Road maintenance policy/regulations	1.Human resources (1)Chairperson of JCC (2)Chairperson of TWG (3)Counterparts (DRVN and RMBs) (4)Coordinator	1. VRAMP Project (WB) is implemented as planned		
1-2.Implement Pavement Condition Surveys for RMB II, III and IV selected roads	(2)Short-term experts • Team Leader/Road Maintenance Planning •Deputy Team Leader/PMS System Operation Technology	2.Facilities Communal office space for JP Team and local support team with electricity, air-condition, internet, telephone line.	2. IT policy of DRVN on organization and operation of database and system is maintained		
1-3.Develop Web-based PMS Data Input System	• Pavement Condition Survey (Planning and Management) • Pavement Condition Survey(Calibration) • PMS System Technology(Budget Simulation)	3.Cost (1)Cost for pilot project on maintenance and repair work (including cost for general materials) (2)Small running expenses necessary for the implementation of the Project. (e.g. daily allowance, accommodation and domestic travel expenses of DRVN's staff for participating in training in Vietnam)			
2-1.Upgrade PMS software	• PMS System Technology(Repair Work Planning) • Web-based System for Displaying Pavement Condition Data • Road Facility Inspection Technology • Road Maintenance Technology • Pilot Project Management • Pavement Technology	4.Others (1)Implementation of the pilot repair work for maintenance and repair work with JICA experts' advisory. (2)Implementation of pilot Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction, with JICA's local service.			
2-2.Convert input data and make PMS dataset	• Road Maintenance Administrative Procedure • Capacity Development/Project Coordination				
2-3.Formulate trial Pavement Repair Work Plan (annual and five year plan) for RMB I, II, III and IV road networks by PMS system and examine system operability.	2.Training in Japan • Three times (once/year) on Road maintenance policy and repair technology				
2-4.Develop web-based system for displaying pavement condition data on the DRVN mapping system	3.Equipment, Machinery and Materials (1)Special equipment and materials for pilot project work including; - Crack seal technology - Shallow pothole repair technology - Deep pothole repair technology - Bridge Waterproofing technology (Note) Materials to be imported are all listed in the revised Project Document.				
2-5.Develop Web-based system which enables PMS Operation on website and formulates trial annual and five year pavement repair work plans	(2)Computers for planning system (3)Others needed for project implementation				
2-6. Develop Web-based Analysis System for Pavement Condition Survey Data	4.Others(Sub Contract) • Local service for Pilot Pavement Condition Survey • Local Service for development of web-based operation system				
3-1.Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology which incorporates new technology and materials					
3-2. Upgrade Road Facility Inspection Guideline					
3-3. Upgrade Road Routine Maintenance Manual for standardization					
4-1.Prepare Amendment Plan for Road Maintenance Responsibility Assignment					
4-2.Prepare Amendment Plan for Road Maintenance Administrative Procedure					
5.1. Prepare Draft Training Plan					
5.2. Support Training Implementation					
5.3. Conduct Public Relations					

Note>(*1): target facilities, frequency, methods, diagnosis, selection method for repair works, repair work, construction management



**THE SOCIALIST REPUBLIC OF VIETNAM
MINISTRY OF TRANSPORT
DIRECTORATE FOR ROADS OF VIETNAM
JAPAN INTERNATIONAL COOPERATION AGENCY**



**THE PROJECT FOR CAPACITY ENHANCEMENT
IN ROAD MAINTENANCE
PHASE II**

PROJECT MONITORING SHEET VER.4

(April 2016 – September 2016)

Submitted To:

TO CHIEF REPRESENTATIVE of JICA VIET NAM OFFICE

PROJECT MONITORING SHEET

Project Title: Project for Capacity Enhancement in Road Maintenance Phase II

Version of the Sheet: Ver. 4 (Term: April 2016 – Sep 2016)

Name:	Tsuneo Kato
Title	Team Leader
Submission Date	25 October 2016

(Prepared in cooperation with DRVN)

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1. PROJECT OUTLINE

1-1 Country

The Socialist Republic of Vietnam

1-2 Title of the Project

Project for Capacity Enhancement in Road Maintenance Phase II

1-3 Duration of the Project (Planned and Actual)

From February 2015 to March 2018 (38 months)

1-4 Background (from Record of Discussion (R/D))

Under the previous 5 years Socio-Economic Development Strategy (2006-2010), the economy of Vietnam achieved stable socio-economic growth as described with the average growth rate of 7 % / year, and doubling of GDP in 2010 from that of 2000. In the new 5 years Socio-Economic Development Strategy (2011-2015), maintaining of high socio economic growth is continued to be one of objectives through mobilizing 12 socio economic strategies described. With regards to socio economic strategy on transport infrastructure, it concentrates on reviewing of transport infrastructure development projects and promoting priority investment on establishing urban infrastructure such as step by step synchronously- establishment of South-North route axis and East-West corridor axis, encouraging and creating conditions for participation of foreign and private sector investments on infrastructure development, and early completion of cross border roads to surrounding countries.

In complying with the previous development strategy, in 2008, the Ministry of Transport (MOT) set the Transport infrastructure development Strategy of Vietnam up to 2020. Since its establishment, the strategy has been partially amended periodically under the instruction of the Prime Minister. Especially approved amendments in 2013 describe policies on introduction of advanced technologies, upgrading of technical standards, specification and norms. In January 2013, MOT successfully institutionalized road maintenance funds which had been a matter of concerns for a long term. As a result, 65 % of road maintenance funds are allocated to national roads and 35% to provincial road. This is expected to secure more budgets for road maintenance than those in 2012, which only 40% of requested budget was secured.

In March, 2013, MOT published the Plan for Comprehensive Renovation in Management and Maintenance of National Highway System. The Plan aims to upgrade the quality of national road maintenance works so that the longevity of road facilities is increased, and at the same time, safety and efficiency of road traffic are also improved. Strategic policies described in the plan are listed below.

- 1) Renovate contractor selection procedures for national road maintenance
- 2) Upgrade quality of supervision on road maintenance work
- 3) Apply new road maintenance technologies
- 4) Implement measures for overloaded vehicles
- 5) Renovate planning methodology for road maintenance (3 years plan)

- 6) Improve required procedures for laws and regulations relevant to road management and maintenance
- 7) Amend road maintenance standards and norms
- 8) Develop human resources and improve road maintenance institutions
- 9) Install information management system for road maintenance
- 10) Assist capacity enhancement of regional road maintenance

Current situation of Road Asset Management at DRVN is describes as below:

- 1) DRVN implemented operation methodology in quality management and road maintenance in accordance with the Government's policies.
- 2) Technology qualification in management and maintenance work is low, asynchronous, and slow renovation lead to limited effectiveness and quality of this work in the past.
- 3) The technical standards, work procedures, mechanism, policies and financial resources are incomplete that make it difficult for implementation and planning (including short-term, medium-term and long-term) of road maintenance.
- 4) Lack of a road database system which is unified and complete to connect data from the central to the local, facilitate the management and exploitation, and initiatively coordinate the works.
- 5) Human resources are not equal in qualifications and capabilities, and there is no development plan which is appropriate and satisfied with the new implementation methodology.

Under above background, GOV requested GOJ to implement "Technical Cooperation for the Project for Capacity Enhancement in Road Maintenance Phase II". In response to this request, JICA determined to transfer the technology in order to facilitate the road maintenance cycle and held series of discussion with DRVN and related authorities concerned of Viet Nam. Based on the agreements between JICA and the authorities concerned of Viet Nam, the Minutes of Meetings was signed on September 8, 2014, which leads both parties to conclude this Record of Discussions.

(Copied from R/D)

1-5 Overall Goal and Project Purpose (from Record of Discussions (R/D))

(1) Overall Goal

Road maintenance is conducted properly based on the mid-term plan, following PDCA cycle.

(2) Project Purpose

Implementation capacity for road maintenance is strengthened in Viet Nam

1-6 Implementation Agency

Directorate for Roads of Vietnam (DRVN)

1-7 Reporting

Followings are a list of report to be prepared under the Project.

Table 1 Current Status of Report

	Type of Report	Status	Notes
1	Monitoring Sheet Ver.1	Submitted on 23 rd April 2015	<ul style="list-style-type: none"> • Project Monitoring Sheets • Work Plan
2	Monitoring Sheet Ver.2	Submitted on 21 st October 2015	<ul style="list-style-type: none"> • Project Monitoring Sheets
3	Monitoring Sheet Ver. 3	Submitted on 25 March 2016	<ul style="list-style-type: none"> • Project Monitoring Sheets • Progress Report I
4	<u>Monitoring Sheet Ver. 4</u>	<u>Submitted on 30 September 2016</u>	<ul style="list-style-type: none"> • Project Monitoring Sheets
5	<u>Monitoring Sheet Ver. 5</u>	<u>To be submitted in March 2016</u>	
6	<u>Monitoring Sheet Ver. 6</u>	<u>To be submitted in September 2016</u>	
7	Project Completion Report (include outputs of technical cooperation)	To be submitted at beginning of February 2018	

2. PROGRESS

2-1 Progress of Inputs

2-1-1 Japanese Side

(3) Dispatch of Experts

The project team is formed from 13 short term experts and one (1) long term expert.

Based on the amended contract on 21st July 2016, total Man Month (hereinafter to be called as “MM”) has been increased from 126 MM to 134.9 MM. Since the 9th of February 2015, a total of 13 JICA short term experts have been assigned for total of 77.7 MM (53 %) as of the end of September 2016. A long term expert has been assigned since January 26th, 2015. (Together with long term expert and short time experts, hereafter to be referred as “The Project Team”)

(4) Training in Japan

Three (3) trainings are planned under the Project, the first training was conducted for 7 days from 13th to 19th of September 2015, and the second training is planned from 26th September to 6th October, 2016 for 11 days.

(5) Procurement of Equipment, Machinery and Materials

Under the project, following three (3) items are procured for project activities and will be handed over to counterparts. The list of equipment and machinery procured under the project are listed up in Table 2.

Table 2 Procurement of Equipment and Machinery

Items	Component	Status	Note
Special equipment and materials for pilot project work	To be referred to 1-2-6 (1) Pilot Project	<u>JICA VN in negotiation with OOG, MOF and MPI</u>	
Computers for planning system	10 desktop computers	2 computers purchased	<u>8 computers still to be purchased</u>
	1 Application Server	<u>Purchased and installed to</u>	
	1 Database Server	<u>Server room (July 27, 2016)</u>	

Items	Component	Status	Note
Others needed for project implementation	2 desktop computers	purchased	
	1 Projector	purchased	
	1 Screen	purchased	
	1 Printer (A3/colour)	purchased	

1) Special Equipment and Materials for Pilot Repair Work

Procurement for equipment and materials for pilot repair works is currently under preparation. The Project Team has been informed by JICA Vietnam Office that tax exemption procedure is further in delay due to the changes in project approval for ODA projects, which is a preliminary approval to obtain Grant Aid Certificates to proceed custom clearance in Viet Nam. New regulation, Decree 38, stipulates that OOG (Office of Government) comes to approve ODA projects instead of MPI. JICA Vietnam is currently discussing the issue with OOG, MPI and MOF. Current expected approval of funding list and Grant Aid Certificate are further 3 months from the end of August 2016. Due to a shelf life of materials (about 6 months from production), the order and dispatch of equipment and materials from Japan should be carefully decided, and decision will be made considering the duration needed for the period of custom clearance in Viet Nam. For further detail, please refer to “1-2-6 (1) Pilot Project”.

2) Computers for Planning System

The project procures in total of 10 desktop computers for planning system. Two desktop computers have been purchased and currently used to develop planning system by the Project. Further eight computers will be procured and handed over to each RMB.

3) Application and Database Server

Based on the specification finalized in May 2016, contractor was selected in June 2016 and servers were installed to the DRVN server room in July 27, 2016.

4) Others Needed for Project Implementation

Besides the above two items, the Project purchased computers etc. which are necessary to conduct project activities in Viet Nam.

(6) Others (Sub-contracting)

The Project has subcontracted the activities as shown in Table 3.

Table 3 List of Activities to be Subcontracted

Items	Subcontractor	Contracted date	Status
Pavement condition survey			
Pavement condition survey (Activity 1-2)	RTC Central	7 th of Oct. 2015	• Currently field survey on RMB I region is ongoing and will be completed in November 2016.
PMS related Web-based System			
Web-based PMS Data Input System (Activity 1-3)		Contracted on 20 th of Oct. 2015	Contract was completed on 30 th April 2016.

Items	Subcontractor	Contracted date	Status
Web-based System for Displaying Pavement Condition Survey Data (Activity 2-4)	SAOMAI Software J.S.C (Web based system Package 1)		
Web-based PMS Operation System - for Strategic Budget Planning Model (Activity 2-5)		Contract is scheduled in September 2016	Contract document preparation is underway.
Web-based PMS Operation System - for Pavement Repair Work Planning Model (Activity 2-5)		Contract is scheduled in September 2016	Contract document preparation is underway.
Web-based Analysis System for Pavement Condition Survey Data (Activity 2-6)		Contract is scheduled in January 2017.	
Web based Pavement Monitoring System (Activity 2-7)		Contract is scheduled in September 2016	Contract document preparation is underway.
Public Relations			
Development of annual report and video clip (Activity 5-3)	Road Magazine	Contracted on 30th June 2016	Currently under development
System Development of Web Based Information System Road Maintenance Technology In Vietnam (Activity 5-3)	SAOMAI Software J.S.C	Contracted on 5th August 2016	Currently under development
Development of General Information Brochure (Activity 5-3)		Contract is schedule in February 2017.	

The subcontracts are broadly divided into the following three items.

1) Subcontract for Pavement Condition Survey

Pavement condition survey for RMB II, III and IV was subcontracted to RTC Central on 7th of October, 2015. In order to fulfil the contracted survey length km, survey on RMB I region has been added. For further detail progress of activities, please refer to “1-2-4 (2) Activity 1-2 Pavement Condition Survey”.

2) Subcontract for Development of PMS related Web-based Operation Systems

Under the project, five web based operation systems will be developed by sub-contracting as shown below. In addition to the work plan, the Project is planning to add one more system development to the initial Work Plan, aiming to upgrade Pavement Monitoring System (PMoS) to be a web-based operation system.

- Web-based PMS Data Input System (Activity 1-3)
- Web-based System for Displaying Pavement Condition Survey Data (Activity 2-4)
- Web-based PMS Operation System - for Strategic Budget Planning Model (Activity 2-5)
- Web-based PMS Operation System - for Pavement Repair Work Planning Model (Activity 2-5)
- Web-based Analysis System for Pavement Condition Survey Data (Activity 2-6)
- Web based Pavement Monitoring System (PMoS) (Activity 2-7)

In developing these web-based systems, DRVN will be requested to inquire comments to relevant stakeholders, to gather comments in a written format and to wrap up the comments in order to facilitate further development by the Project team

Development of web-based systems for PMS Data Input (Activity 1-3) and Displaying of Pavement Condition Survey Data (Activity 2-4) were subcontracted to SAOMAI Software J.S.C on 20th October 2015 and completed on 30th April 2016. The subcontracting for other remaining systems are in progress.

3) Subcontract for Development of Annual Report and Video Clip

Contract was made on 30th June 2016 with Road Magazine under DRVN to develop annual report and video clip, and expected to complete by February 2017.

2-1-2 Vietnamese Side

In April 2015, thanks to DRVN efforts, project environment were all established such as arrangement of office space for the Project Team, selecting counterpart members and organizing working groups, and procuring local funds. Project activities currently run very smoothly with a good cooperation of DRVN.

(1) Human Resources

Chairperson and member of Joint Coordination Committee (hereinafter to be referred as “JCC”), Technical Working Group (hereinafter to be referred as “TWG”) as well as Working Group (hereinafter to be referred as “WG”) have been assigned in accordance with Decision No.1088/QD-TCDBVN dated 23rd April 2015. Furthermore, staff in charge of PMS system at each RMB, RTCs and SBs have also been assigned in July 2015. For further detail, please refer to “2-2-2 (2) Project Management”.

(2) Office Space and Facilities

Due to the shortage in office space in the DRVN building, DRVN needed to lease a project office outside the building fulfilling a DRVN leasing conditions. It took about two months to provide an office space to the Project team, and during this time period, the Project arranged own office space for two weeks and moved into the temporary project office space within the DRVN building on March 30th, which was kindly offered by DRVN. In April, DRVN successfully made a lease contract for a project office space and Project team has moved into the new office on 20th April 2015 before the first JCC.

(3) Cost

DRVN have successfully secured the budget required for execution of following items.

1) Cost for pilot project on maintenance and repair work (including cost for general materials)

DRVN has already approved domestic projects including clarification of the domestic budget from Road Maintenance Fund for costs of domestic expenditure that are different from the costs for special materials and equipment covered by Japanese side.

2) Small running expenses necessary for pavement condition survey

DRVN secured daily allowance, accommodation, and domestic travel expenses for DRVN's staff for participating in the pavement condition survey.

3) Small running expenses necessary for the implementation of training programs in Viet Nam

DRVN secured daily allowance, accommodation, and domestic travel expenses for the staff of DRVN for participating the seminars, workshops and OJTs.

(4) Others

Besides, DRVN has been kindly requested to take responsibility for the following items essential for project activities.

- 1) Implementation of the pilot repair works for pavements and bridges with JICA experts' advisory.
- 2) Implementation of Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdictions, and additional survey for RMB I region, with JICA's local service.
- 3) VISA

At the beginning of 2015, a new immigration law became effective and caused a little confusion in VISA processing. Under the new law, project experts require to obtain LV1 visa to conduct tasks in Viet Nam, which valid for one year. All experts have successfully obtained visa with a support of DRVN and MOT.

2-2 Progress of Activities

2-2-1 Baseline Survey

From the beginning of this Project until the first JCC, the Project has conducted baseline survey based on documents and internet searching, focusing on the key issues needed to formulate the Work Plan including the review of Phase I Project outputs, data collection of new regulations, update of the current status of national road maintenance and management. The result of baseline survey is reported in the Progress Report submitted at the second JCC in March 2016.

2-2-2 Work Plan

At the first JCC meeting held on 23rd April 2015, the Project discussed and agreed on the Work Plan setting the framework of the project activities to be delivered to achieve the project purpose, incorporating all outcomes of activities.

(1) Project Framework

Framework including measures and activities to achieve project purpose is summarized in below table. Flow chart is shown on Table 15. Activity 2-7 and Activity 3-4 are added by the amended Contract on 21st July 2016. The Project applies the activity number applied at the Work Plan throughout the Project.

Table 4 Measures and Activities to Achieve Project Purpose

Project Purpose		
Enhance Implementation Capacity for National Road Maintenance in Viet Nam		
Measures	Project Activities agreed at Work Plan	
MEASURE 1; Improve PMS Data Collection and Processing Technology	1-1	Formulate PMS Database
	1-2	Implement Pavement Condition Survey
	1-3	Develop Web-based PMS Data Input System

MEASURE 2; Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan	2-1	Upgrade PMS
	2-2	Formulate PMS Dataset
	2-3	Formulate Pavement Repair Work Draft Plan
	2-4	Develop Web-based System for Displaying Pavement Condition Survey Data
	2-5	Develop Web-based PMS Operation System
	2-6	Develop Web-based Analysis System for Pavement Condition Survey Data
	2-7	<u>Develop Web based Pavement Monitoring System</u>
MEASURE 3; Improve Inspection and Repair Work Selection Technology on Road Facility and Develop Technical Standards	3-1	Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology
	3-2	Upgrade Road Facility Inspection Guideline
	3-3	Upgrade Road Routine Maintenance Manual
	3-4	<u>Develop Expressway Maintenance Manual</u>
MEASURE 4; Enhance Responsibility Assignment and Administration Procedures for Road Maintenance	4-1	Prepare Amendment Plan for Road Maintenance Responsibility Assignment
	4-2	Prepare Amendment Plan for Road Maintenance Administrative Procedure
MEASURE 5; Plan and Support Implementation of Training Programs and Conduct Public Relations	5-1	Prepare Draft Training Plan
	5-2	Support Training Implementation
	5-3	Conduct Public Relations

(2) Project Management

JCC, TWG, and WGs have been established. JCC is led by Director General of DRVN and TWG is led by Director of Science, Technology, Environment and International Cooperation Department (hereinafter to be referred as “STE-ICD”) of DRVN.

Table 5 Functions and Participants of JCC and TWG

		JCC	TWG
Chairperson		Director General of DRVN	Director of STE-ICD. of DRVN
Regulation		As agreed on Record of Discussion	Decision No.1088/QD-TCDBVN dated 23 rd April 2015
Frequency of meeting		Once a year (to discuss and report Work Plan, Progress Report, and Completion Report, and Monitoring Sheet)	Every 3 months, except when JCC is hold
Function		<ul style="list-style-type: none"> • Discuss and approve Work Plan based on R/D • Review the progress of the Project based on annual Work Plans/ Progress Report and Monitoring Sheet. • Promote dissemination procedure of project outputs • Exchange views on main issues arising from the project in progress 	<ul style="list-style-type: none"> • Discuss and Coordinate project progress based on annual Work Plans/ Progress Report and Monitoring Sheet • Review and coordinate a progress of the project • Discuss and coordinate issues related to Project implementation • Select speakers, trainers, and trainees for seminars, workshops, and OJTs.
Members	Vietnamese side	<ul style="list-style-type: none"> • Director General of DRVN (Chairperson) • Vice Director General of DRVN • MOT: DPI, DOST, Infrastructure Dept., TCQM Bureau, ITST • DRVN Department Members • PMU3 of DRVN 	<ul style="list-style-type: none"> • Director of STE-ICD, DRVN (Group leader) • DRVN Department Members
	Japanese side	<ul style="list-style-type: none"> • Embassy of Japan in Viet Nam • Representative of JICA Viet Nam Office • JICA Long-term Expert • JICA Project Team 	<ul style="list-style-type: none"> • JICA Long-term Expert • JICA Project Team

Three (3) WGs have been set up under TWG, who are in charge of project measures as shown below table. The members were selected from departments and units under DRVN intensively involved to the project activities.

Table 6 Structure of Working Group

WG	Targeted Field	Vietnamese side member
WG 1	<p>[Measure 1]</p> <ul style="list-style-type: none"> • PMS data collection and processing technology • Web operation view system for road condition data <p>[Measure 2]</p> <ul style="list-style-type: none"> • PMS upgrade/ formulation of pavement budget/repair plans • Web based system 	<p><u>In total of 7 members:</u></p> <ul style="list-style-type: none"> • Director of STE-ICD (Group Leader) • Deputy Director of DPI • Deputy Director of Road M& M • Director of Road IT Centre • Specialists of DPI, Road M&M, Road IT Centre, • Staff of PMU3
WG 2	<p>[Measure 3]</p> <ul style="list-style-type: none"> • Technical standards for road inspection and maintenance • Pilot Repair works <p>[Measure 4]</p> <ul style="list-style-type: none"> • Maintenance procedures and responsibility assignment 	<p><u>In total of 6 members:</u></p> <ul style="list-style-type: none"> • Deputy Director of STE-ICD of DRVN (Group leader) • Deputy Director of Road M& M • Head of PID3, Road Construction Management Bureau • Specialists of Road M&M, STE-ICD • Staff of PMU3
WG 3	<p>[Measure 5]</p> <ul style="list-style-type: none"> • Training Programs and Public Relations 	<p><u>In total of 3 members:</u></p> <ul style="list-style-type: none"> • Deputy Director of DOP (Group Leader) • Specialists of STE-ICD • Staff of PMU3

Note

- DPI: Planning and Investment Department
- Road M&M: Road Maintenance and Management Department
- DOP: Organization and Personnel Department
- STE-ICD: Department of Science, Technology, Environment and International Cooperation

In addition, for the efficient coordination between the World Bank Vietnam Road Asset Management Project (hereinafter to be referred as “VRAMP”) and this JICA project, Road Asset Management Steering Committee (hereinafter to be referred as “RAM-SC”) based on Decision No.1267/QD-TCDBVN dated 24th June 2014, and Coordination Working Group (hereinafter to be referred as “CWG”) based on Decision No. 1777/QD-TCDBVN dated on 7th August 2014, have been established. Some DRVN members of RAM-SC and CWG are assigned to both JCC and TWG mentioned above.

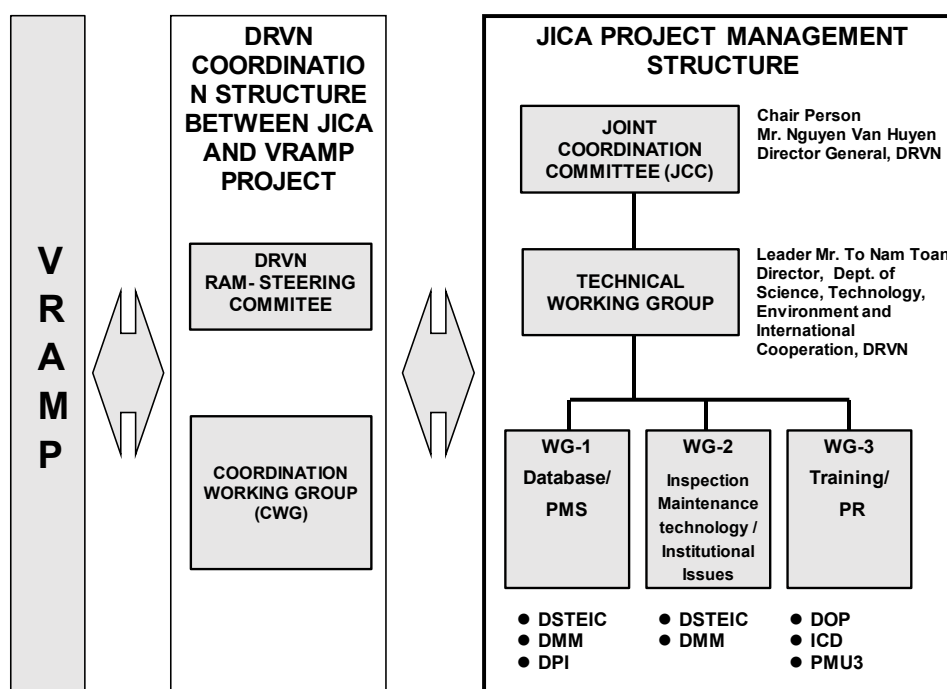


Figure 1 Structure of Project Management

2-2-3 JCC Meeting and Working Group Discussion

(1) Joint Coordination Committee Meeting (JCC Meeting)

A total of four (4) JCC meetings as shown in Table 2 are planned during the project period to discuss and report Work Plan, Progress Report, and Completion Report, and Monitoring Sheet. Two JCC meetings were already held dated 23rd April, 2015 and 25th March, 2016 to discuss Work Plan and Progress Report respectively. The details of discussions have summarized and included in Appendix-3. Remaining two JCC meetings are tentatively planned in March and November, 2017.

Table 7 JCC Meetings

SN	JCC Meeting	Date	Status	Remarks
1	1 st JCC Meeting	23 April, 2015	Completed	
2	2 nd JCC Meeting	25 th March, 2016	Completed	
3	3 rd JCC Meeting	March, 2017	Yet to organize	
4	4 th JCC Meeting	November, 2017	Yet to organize	

(2) Working Group Discussion

Following the approval of Work Plans at the first JCC meeting, the Project moved forward to the consensus building on the Implementation Plan for each activity, which aims to show the detailed implementation methods of each activity. The Implementation Plans for the activities which started in 2015 were developed and submitted to WGs for discussion and were basically agreed. In line with these implementation plans, further discussion for each activity is now going on in the WGs.

Following describes detail activities conducted by each activity following activities set under the Work Plan.

2-2-4 Measure 1: Improve PMS Data Collection and Processing Technology

(1) Activity 1-1 Formulate PMS Database

1) Baseline Survey

The Project conducted the survey on the conservation of road data for RMBs including data type, data formats, data storage, RMB computer system, and RMB data server, so forth.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey and review of JICA Phase I Project outputs, the Project developed the Work Plan for the formulation of PMS database. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

The Project developed the Implementation Plan of PMS data formulation, discussed and agreed with WG1 members.

4) Upgrading of PMS Data Format and Data Input Computer Software

The Project has upgraded PMS data input system and developed an offline-based data input software by means of Microsoft ACCESS for the smooth implementation of data input by RMBs in order to prepare PMS dataset for maintenance planning. Upon receiving some requests of improving data input software during the trainings, the Project had slightly improved the data input software to make it comply with regional road conditions. The Project has also been developing a web-based PMS data input software for permanent use.

5) Information Dissemination and Technical Transfer on PMS Data Input and Software Operation

Using the upgraded data input format and the computer software, the Project conducted OJTs in July 2015 to RMB and SB officials to transfer technologies on data input and software operation to each RMB. Based on this training, the Project requested RMBs to input PMS data into the upgraded PMS Data Input Format.

6) PMS Data Input

Data input by RMBs and SBs using the PMS database format was completed in July 2016. Review of inputted data has been completed in the beginning of August 2016 and a review report was submitted to DRVN on 9th August 2016. Based on DRVN send an official letter dated on August 19th to request each RMBs to conduct necessary amendments until August 26th. These PMS data will be converted together with Pavement Condition Data and used in planning of pavement periodic repair for each RMB road network during the Project.

(2) Activity 1-2 Pavement Condition Survey

1) Baseline Survey

After the first JCC meeting, the Project has conducted further baseline survey on national road length under RMB II, III and IV jurisdictions in order to plan pavement condition survey. Due to lack of lane number information in the data of national roads accumulated from DRVN, the Project requested data directly to RMBs. Using the data provided by RMBs at the end of August 2015, total length of national roads was calculated by route, by lane, and by pavement type for each RMB II, III and IV.

Also, information collection on the feasibility of sub-contracting pavement condition survey was conducted. Pavement condition survey requires operation of a pavement condition survey vehicle equipped with advanced systems such as laser system, GPS and IRI survey equipment.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the pavement condition survey. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

The Project developed the Implementation Plan of pavement condition survey, and discussed and agreed with WG1 members on July 13th 2015. At the discussion, WG1 agreed the followings;

- Survey is carried out by lane,
- Survey length of national roads should not be more than 6,280 km in maximum,
- Confirmation of target lane is done by RMBs, which DRVN shall issue an official letter,
- Base data required for developing technical norm essential for the cost estimation of pavement condition survey is to be gathered by the Project.

The Project set selection criteria so that the survey cost to be within the budget planed. At the end of August 2015, the survey length was finalized as a total target of 12,574 lane-kilometer including some contingency selected in consultation with DRVN. Following are the elimination criteria for selection of targeted survey sections.

- Road sections under DOTs jurisdiction
- Road sections newly constructed and transferred to DRVN after 2010.
- Road sections which have been planned for pavement repair on a large scale.
- Road sections scheduled to be transferred to Provincial People's Committees.
- Road sections which exceed the maximum survey road length of 6,287km (or survey lane length is 12,574 km).

4) Contractor Selection for Pavement Condition Survey

In September 2015, two potential subcontractors who have experience in conducting pavement condition survey in the past, RTC Central and Science and technology Center of University of Transport and Communications (hereinafter to be referred as "TOTC"), were invited to submit a proposal by the 30th of September, 2015. However, UTC expressed a withdrawal of participation, so that the Project conducted negotiations with RTC Central and signed the contract on the 7th of October, 2015.

5) Implementation of Pavement Condition Survey and Analysis (Current Status)

a. Survey

RTC Central started the survey from early November 2015 and completed at the end of May 2016 for the road sections set in the initial plan (12,574.1 km). Actual surveyed length reached 10,292.44 km which is below the planned length for 2,281.51 km (17% of planned length). Based on the contract, it is agreed that additional survey of 2,319 lane-km is to be conducted for RMB I road sections where significant changes (such as big repair work and road widening) have been made after the 2012 survey. Survey is conducted for each lane of the road sections.

Road selection selected is shown below.

Table 8 Progress of Road Condition Survey (as of 31st August, 2016)

RMBs	Total surveyed length (lane km)			Calibration	Training	Survey			Analysis	
	Planned	Surveyed	+ -			Start	Complete	Days	Start	Progress (%)
RMB I	2319.18				N/A	3 Aug. 2016				0%
RMB II	4,964.3	4,232.10	731.20	20-24 Apr. 2016	25 Apr. 2016	25 Apr. 2016	28 May. 2016	35	-	0%
RMB III	2,501.2	2,204.83	296.43	24-27 Feb. 2016	23 Feb. 2016	27 Feb. 2016	10 Mar. 2016	13	1 Jul. 2016	22.9%
RMB IV	5,109.60	3,855.51	1,253.88	2- 5 Nov. 2015	4 Nov. 2015	6 Nov. 2015	2 Jan. 2016	58	24 Nov. 2015	100%
Total	12,574.1	10,292.44	2,281.51							

Table 9 Targeted Route and Length of Pavement Condition Survey under RMB I

Route name	Km post (from)	Km post (to)	Number of Lane	Total survey length (lane km)
Expressway (Hanoi- Thai Nguyen)	Km0+00	Km63+800	4	249.65
NH2	Km30+600	Km163+000	2;4	285.53
NH3	Km33+300	Km344+	2;4	623.95
NH10	Km6+500	Km144+200	2;4	280.51
NH21B	Km66+500	Km90+130	4	93.60
NH70	Km00+00	Km98+050	2;4	419.09
NH279	Km0+00	Km116+00	2;4	263.85
Ho Chi Minh	Km438+00	Km503+00	2	130.00
Total				2319.18

b. Data Processing and Analysis

Survey data is currently processed and analyzed at RTC Central. At the end of August 2016, progress report has shown 100 % progress for RMB IV road sections and about 22.9 % progress for RMB III road sections.

6) Information Dissemination and Technical Transfer on Pavement Condition Survey

OJT trainings were held at RMB II, III and IV at the beginning of survey as mentioned above. At the 2nd Workshop in May 2016, the progress of pavement condition survey was also reported at each region.

(3) Activity 1-3 Develop Web-based PMS Data Input System

1) Baseline Survey

The Project has conducted the baseline survey related to the web-systems through the review of JICA Phase I Project outputs including a document survey on the regulations stipulating responsibility assignment of DRVN departments. Also, the Project visited DRVN's IT Centre and conducted interviews and exchange of opinions on the internet information management including web-operation system. The following is the findings in the survey.

- Since 2007, DRVN has been promoting E-Transaction in line with the Government Information Strategy.
- DRVN had developed Web-based system of Vehicle Tracking.
- GIS base map developed by MONRE is available and has been transferred to DRVN.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the upgrading of the PMS software. The Work Plan was discussed and agreed at the first JCC meeting held on April 23, 2015.

3) Consultant Selection

Development of the web based system for PMS data input was subcontracted together with development of the web based system for displaying pavement condition survey data (Activity 2-4). A sub-contractor was selected based on the competitive bidding, JICA Project Team has made a contract with SAOMAI Software J.S.C on 20th October 2015.

4) Development of System (Current Status)

In line with the Work Plan, the development of web based system for PMS Data Input was completed at the beginning of May 2016. Any system troubles will be fixed by the contractor using the 1 year warranty set in the Contract.

2-2-5 Measure 2: Upgrade PMS to Apply Road Network of RMB I, II, III and IV, and Formulate Draft Repair Work Plans**(1) Activity 2-1 Upgrade of PMS****1) Baseline Survey**

A baseline survey was conducted on the computer software and hardware environment, and their operation methods at RMBs and IT Centre under SCE-ICD in DRVN, and also on the web operation system for VBMS, which was developed recently and became operational.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the pavement condition survey. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd 2015.

3) Development and Discussion of Implementation Plan

In order to have a common understanding on the targets of PMS development, the Project developed the Implementation Plan and discussed at WG1. The Plan was developed based on the review of the Phase I Project activities, issues arising on PMS, and information gathered through an interview to IT Centre.

The WG1 meeting on the discussion of the Plan was held on September 16th, 2015. In the meeting, the plan was agreed basically with the following comments to be taken into consideration in this activity.

- Make it applicable to the planning of multiple lane national roads,
- Reflect deterioration indexes to the planning of road maintenance plans,
- Make it applicable to the nationwide national road network,
- Improve the operation system, automatizing simulation functions,
- Simplification of simulation data input.

Following the discussion on the implementation plan, the Project team prepared a discussion paper on the conditions of system development showing relation between PMS application and database and conducted detailed discussion on November 18th and on December 11th, 2015.

4) Information Dissemination and Technical Transfer

Using the Phase 1 data, the Project applied PMS software upgraded until May 2016 and formulated pavement maintenance plans for RMBI road network. The outlines of the plans were reported at RMB workshops in May 2016. Information on the PMS operation incorporating new RMB data will be presented in the 3rd Workshop and OJT scheduled on October 31st through November 11th 2016.

5) Upgrade of PMS Software (Current Status)

Based on the Implementation Plan, the Project has upgraded the off-line PMS operation system (Strategic Budget Planning Model and Pavement Repair Work Planning Model) in collaboration with DRVN in accordance with the items agreed at the WG meetings. The system will be formulated using program language (C++, C#, VBA) and converted to Execution Mode through a compiler and stored into the application server. The system is operated from Web system by calling up the execution mode.

Using the Phase I Project data, the Project operated the updated system to formulate RMB I annual and mid-term maintenance plan and presented the plans to DRVN in June 2016. Based on the DRVN comments received in June 28th 2016, Project team is currently amending the system.

Information have been also shared among project experts to coordinate interface between the off line PMS operation system and six (6) web based operation systems listed above.

(2) Activity 2-2 Formulate PMS Dataset

1) Development and Discussion of Implementation Plan

Implementation plan for PMS Dataset has been discussed together with Activity 2-1 Upgrading of PMS.

2) Development of PMS Dataset /Module Dataset Software (Current Status)

PMS Dataset will be converted to dataset for the operation of PMS software module (Strategic Budget Planning Module / Pavement Repair Work Planning Module) for maintenance planning.

Currently the Project is developing algorithm for data conversion. Upon finalizing algorithm development, the Team will develop TOR and subcontract system development of the software for PMS Dataset /Module Dataset together with Web-based PMS Operation System.

(3) Activity 2-3 Formulate Strategic Budget Plan and Pavement Repair Work Draft Plan

Strategic Budget Plans and Pavement Repair Plans will be formulated upon completion of PMS database and pavement condition data (Refer to “2-2-4. (1) Activity 1-1 Formulate PMS Database” and (2) Activity 1-2 Formulated Pavement Condition Data”), and Web-based PMS Operation System. During the time period of PMS database preparation and PMS system development, the Project will tentatively apply RMB I data for PMS software trial operation.

(4) Activity 2-4 Develop Web-based System for Displaying Pavement Condition Survey Data

1) Baseline Survey

Please refer to “2-2-4 (3) Activity 1-3 Develop Web Based PMS Data Input System”.

2) Development and Discussion of Work Plan

Please refer to “2-2-4 (3) Activity 1-3 Develop Web Based PMS Data Input System”.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Implementation Plan for the Web-Based System for Displaying Pavement Condition Survey Data with the framework. The Implementation Plan was submitted to WG1 on July 14th in 2015 and the plan was basically agreed. The following are the points agreed at the meeting.

- The Web operation system for Displaying Pavement Condition Survey Data is to be developed in order to make it applicable to the PDOT road networks from the viewpoints of system development, assuming PMS database development and data conversion to PMS Datasets are all prepared with the same quality as those with the DRVN National Roads. However, PMS database for the PDOT road networks is not currently available, so that DRVN is requested to examine its applicability on its own when PMS database and PMS Datasets are prepared for PDOT road networks in the future.
- In developing the web operation system, system user is to be divided into three levels; Level 1: DRVN (MOT), Level 2: RMBs & RTCs, and Level 3: SBs & PDOTs
- The system is to enable comparing data of two points of time.

4) Consultant Selection

Please refer to “2-2-4 (3) Activity 1-3 Develop Web Based PMS Data Input System”.

5) Development of System (Current Status)

In line with the Work Plan, the system development of web based system was completed at the beginning of May 2016. Any system troubles will be fixed by the contractor using the 1 year warranty set in the Contract. The Project conducted the demonstration of the web system for displaying Pavement Condition Data at the second JCC held on March 25th 2016 and at RMB workshops held in May 2016.

(5) Activity 2-5 Develop Web-based PMS Operation System

Currently the Project is developing algorithm for PMS web-based operation system. Upon finalizing algorithm development, the Team will develop TOR and then subcontract system development in September 2016.

(6) Activity 2-6 Develop Web-based Analysis System for Pavement Condition Survey Data

To be added hereafter as the Project progresses.

(7) Activity 2-7 Develop Web-based Pavement Monitoring System (PMoS)

The activity is added under the amended contract with JICA on 21st July 2016, aiming to upgrade PMoS which was once developed in the Phase I Project as offline software. The system will be upgraded to be a Web-based operation system. Currently the Project is developing algorithm for PMoS web-based operation system. Upon finalizing the development, the Team will develop TOR and subcontract system development in September 2016.

2-2-6 Measure 3: Improve Inspection and Repair Work Selection Technology on Road Facility and Develop Technical Standards

(1) Activity 3-1 Pilot Repair Works

1) Baseline Survey

Baseline survey was conducted on the pavement condition, current status of maintenance and repair work, maintenance repair technologies, technical standards for road maintenance and repair work, design guideline, contractor selection, repair work implementation contracts and MOT policies on the road maintenance and repair works.

2) Development and Discussion of Work Plan

Based on the finding from the baseline survey, the Project developed the Work Plan for the implementation of pilot repair works. The Work Plan was discussed and agreed at the first JCC meeting.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Implementation Plan, clarifying the framework and getting common understanding on the target of development. WG2 meeting was held on the 3rd of June, 2015 to discuss on the plan, and it was basically agreed. Later on the Implementation Plan was revised to include the water proofing technology and discussed with the WG

a. Selection and Discussion of Pilot Repair Works

Selected pilot repair works to be experimented on the field was agreed at the WG2 meeting which contains; 1) a crack seal technology, 2) a shallow pothole repair work technology by cold asphalt mix, 3) a deep pothole repair work by cold asphalt mix, and 4) bridge water proofing technology. Later in order to incorporate the request from Director of Road M&M to add water proof technology, the JICA Project Team conducted field surveys and technology reviews and agreed to include bridge water proof technology, as pilot repair works.

b. Selection and Discussion of Pilot Repair Works Section

The Project conducted an on-the-desk survey in order to preliminary select the candidate road sections for the each of pilot work by applying the pavement condition survey data 2012.

At the end of November 2015, the Project conducted a field survey with RMB I for selecting repair work sections. It is necessary not to select heavy damaged road sections for the pilot repair works, since routine maintenance technologies like those under consideration in this pilot project are all small-scale repair technologies which are only applicable to the minor damages. In case, pavement is heavily damaged, small repair technologies can no longer be applicable. Much bigger scale repair technologies such as overlays and structural overlays must be applied to the damages. With this in mind, the Project selected some candidate sections of national roads near Ha Noi for each pilot technology in the form of a technical paper and submitted to DRVN.

Table 10 Pilot Repair Works Agreed

	Repair Work	Specification	Repair Materials	Selected National Road		Maximum Work Volume (total)
1	Crack seal		CRACK SEAL NX	NH6	70+000- 78+000	1,000 m
2	Pothole Repair Work-I	Shallow Pothole; Pothole depth less than 3 cm	ROMEN PAT CH	Ho Chi Minh Route	458+000- 468+000	20 square meters
3	Pothole Repair Work-II	Deeper Pothole; Pothole depth from 3 cm to 5 cm	RESCUE PATCH	NH6/ Ho Chi Minh Route	70+000- 78+000	150 square meters
4	Bridge Waterproofing (*2)		CATICOAT R BARADRAIN	NH18	197+887, 198+457, 212+960	620 square meters

4) Development and Discussion of Specification, Bill of Quantity and Work Volume

As the Record of Discussion explains that JICA side import materials from Japan with JICA funds, on the other hand, DRVN select maintenance companies with its own budget and implement pilot repair work in the field. In order to support DRVN responsibilities on the company selection and cost estimation for the pilot repair works, the Project developed a technical specification of repair work, Bill of Quantity (BOQ) and work volumes for cost estimation and submitted to DRVN in September 2015.

5) Fund Securing by DRVN for the Pilot Repair Works

DRVN has already secured the budget for the implementation of pilot project from Road Maintenance Fund.

6) Joint Pilot Project between JICA Project and DRVN Own Project

DRVN has developed its own domestic pilot projects separately from the JICA pilot project. DRVN will implement JICA pilot project together with DRVN domestic pilot project at the same time within its budget framework. Close coordination between two projects is needed in particular on the selection of pilot sections, the time-line/schedule of applying technologies, monitoring and evaluation methods. DRVN is requested to develop implementation plans on its domestic pilot project, to explain them to the JICA Project Team and to coordinate between two projects.

Also, DRVN is requested to coordinate with RMB I and to maintain the identified pilot sections untouched from other repair work until the end of the pilot projects.

7) Development and Discussion on the list of Material and Equipment

The JICA Project Team has carefully examined the material and equipment for pilot repair works and developed the material and equipment list for procurement in Japan.

8) Current Status of Preparation for Pilot Repair Works

The Project is currently involved in the administration procedures of “Approval of Funding List by Prime Minister’s Office”. This is the approval by Prime Minister’s Office on the Technical Cooperation project list to be funded by Japanese ODA which requires tax exemption procedures for equipment provided within JICA TC projects. This will be proceeded by MPI. After the approval, application for “Certificate for Grant Aid” will be proceed to MOF, which is applied together with documents relevant to tax exemption for materials and equipment imported from Japan, which includes Form C1, Amended Project Documents, Funding List approved by Prime Minister’s Office, etc. Information delivered by JICA Viet Nam Office has explains that “Approval of Funding List by Prime Minister’s Office” would take minimum three (3) months. When approval of funding list by PM is assured, PMU3 and DRVN are kindly requested to proceed C1 form to MOF.

DRVN already completed design and the selection of consultant and contractors in 2015 including the budget procurement from Road Maintenance Fund. However, as the project become delayed for nearly one year, it is now requested for DRVN and the Project to review the implementation plan including the selection of pilot sections when the time schedule become clarified for the procedures of document approval. With these reasons, close coordination between JICA, MOT, DRVN, PMU3 and the JICA Project Team is now needed in order to find out the best timing of purchasing materials and equipment in Japan. Table 11 shows the revised time schedule of pilot project implementation, taking account of the above administrative procedures into consideration.

Table 11 Expected Procurement Schedule (Tentative)

■ Apr. to Sep. 2015	Planning of pilot repair work implementation plan
■ Sep. to Nov. 2015	Selection of pilot section
■ Dec. to Jan. 2016	Documentation of proposals for the revision of Project Document
■ Nov. to Dec. 2016	Proposal of new Project Document and C1 Form to MOT/MPI for approval
■ Dec 2016 to Jan. 2017	Procurement of material and equipment and export/import procedures
■ Jan. to Feb. 2017	Custom clearance in Hanoi
■ Feb. to Mar. 2017	Pilot repair work execution in the fields

■ Apr. to Sep. 2017	Monitoring and evaluation of pilot work performance
■ Oct. 2017	Standardization of repair technologies

(2) Activity 3-2 Upgrade Road Facility Inspection Guideline

1) Baseline Survey

The Project conducted a baseline survey on the policy and the current status of standardization and utilization of inspection guideline. The survey has reported that the current “Specifications of Road Routine Road Maintenance” published in 2013 stipulates only the outline of inspection procedure and needs upgrading of provisions.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the development of Road Facility Inspection Guideline. The Work Plan was discussed and agreed at the first JCC meeting.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Implementation Plan, clarifying the detailed implementation plans before implementation and getting consensus on the target of development.

A WG2 meeting was held on the 3rd of June, 2015 to discuss on the plan, and was basically agreed. In line with the discussion at the meeting, the Project revised the draft Road Facility Inspection Guideline and submitted to DRVN in September 2015 for further discussion.

4) Opinion Inquiry to Competent Agencies (Current Status)

As a step for the formalization of technical standards, pursuant to regulation, DRVN is obliged to inquire opinions to the competent professional agencies in Viet Nam on the contents of draft standards. Competent agencies include Science and Technology Department of MOT, ITST, UTC and UTT etc. In line with this regulation, DRVN conducted opinion inquiry to these organizations including RMBs, SBs and RTCs under DRVN from October 2015 to March 2016. Comments from RMBs to the opinion inquiry have already arrived, however they have not arrived from competent agencies. The JICA Project Team is now reviewing the Guideline, taking account of these comments

5) Integration of Bridge Inspection Guideline

Bridge Inspection Guideline under development as a guideline is intended to provide detailed knowhow on road facility inspection and to encourage road operators to understand the importance of road facility inspection during road maintenance. Information included in the Guideline can be fully utilized not only in the training courses, but also in the standardization road facility inspection technology. In road maintenance, it is well known that bridge inspection is a main part of road facility inspection, so that the Road Facility Inspection Guideline should cover the bridge inspection guidelines which are developed with the same concept common to other road facilities. With these reasons, the Project is now updating the first draft of

Road Facility Inspection Guideline to include information on bridge inspection.

(3) Activity 3-3 Upgrade Road Routine Maintenance Manual

1) Baseline Survey

The Project conducted a baseline survey on the policy, on the regulations and on the current status of standardization and utilization of road maintenance standards. DRVN is now planning and upgrade the current Specifications for Road Routine Maintenance (2013 version) in 2017, supplementing information on road routine maintenance. The Project also confirmed the comments issued on the Road Routine Maintenance Manual developed in the JICA Phase I Project.

2) Development and Discussion of Work Plan

Based on the DRVN comments addressed to the Project, the Project developed the Work Plan for the development of the Road Routine Maintenance Manual. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed the Implementation Plan, to clarify the following framework before implementation and get consensus on the target of development.

WG2 meeting was held on the 3rd of June, 2015 to discuss on the plan and basically agreed. In line with the discussion at the meeting, the Project developed the revised draft of Road Routine Maintenance Manual based on the DRVN comments and submitted it to DRVN in September 2015 for further discussion.

4) Opinion Inquiry to Competent Agencies

The same formalization procedure as that for the above Road Facility Inspection Guideline is applied to the Road Routine Maintenance Manual. In line with this regulation, DRVN is now in the process of opinion inquiry to the organizations including competent agencies (Science and Technology Department, MOT, ITST, UTC and UTT) and DRVN subordinate organizations (RMBs, SBs and RTCs). Until today, comments are issued from WG2 and RMB II and III to the Project, saying that draft Road Routine Maintenance Manual is basically agreed. Further discussion will be conducted to the realization of this Manual from April 2016 after the JCC.

5) Upgrade of Road Routine Maintenance Manual (Current Status)

Project Team is currently upgrading Road Routine Maintenance Manual and plans to discuss with DRVN for its application to DRVN Specification of Road Routine Maintenance 2013 for amendment. Project Team is also developing the framework of Road Maintenance Manual applicable to both Routine Maintenance and Periodic Maintenance.

(4) Activity 3-4 Develop Expressway Maintenance Manual

This activity has been conducted as a supplemental study of this Project. However, it was officially added to

the Project activity under the amended contract with JICA on 21st July 2016.

1) Baseline Survey

Baseline survey has clarified that DRVN developed “Specifications of Expressway Routine Maintenance in 2016” under the supervision of Department of Science, Technology, Environment, and International Cooperation. In 2013, JICA conducted “the Project for Strengthening Operation and Maintenance System for Expressway” and developed the Technical Specification Guidelines for Operation and Maintenance of Expressways. The Department wishes to update these products and develop Specifications of Expressway Maintenance Standards.

The Project is now developing the Expressway Maintenance Manual whose first draft is to be submitted to DRVN by the end of December 2016.

2-2-7 Measure 4: Enhance Responsibility Assignment and Administration Procedures for Road Maintenance

(1) Baseline Survey

The Project conducted the baseline survey including the review of recommendations made at the JICA Phase I Project, update of regulations relevant to road maintenance and institutions in Viet Nam, and also studied the progress of the DRVN Comprehensive Renovation Plan commenced in 2013. The JICA Project Team also translated and studied regulations in Viet Nam relevant to organization updated.

(2) Development and Discussion of Work Plan

Based on the DRVN comments addressed to the Project, the Project developed the Work Plan for the enhancement of responsibility assignment and administration procedures. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

(3) Development of Amendment Plan for Responsibility Assignment and Administrative Procedure (Current Status)

The Project developed the first draft recommendation on the amendment of responsibility assignment and administration procedures, and submit to DRVN in January 2016. The Project is currently introducing new technologies for national road maintenance including PMS database, pavement condition survey, road maintenance planning by PMS, web based operation systems for pavement condition data and PMS, road facility inspection guideline, road routine maintenance manual and training plans. Responsibility assignment and maintenance procedures for smooth and effective operation of these new technologies shall be clarified step by step as the Project progresses. Project team plans to develop the second recommendation by the end of December 2016 and discuss it with DRVN. Before developing the second recommendation, the Project will conduct opinion exchange with RMB and SB staff on this issue in the coming 3rd Workshop and OJTs.

2-2-8 Measure 5: Plan and Support Implementation of Training Program and Conduct Public Relations**(1) Activity 5-1 Prepare Draft Training Plan****1) Baseline Survey**

Until the first JCC meeting, the Project has conducted a baseline survey on any update on legislation, government, and ministry and DRVN policy on trainings. In May 2015, after the WG member as confirmed, the Project conducted further baseline survey and confirmed that there is no comment on training programs developed under the JICA Phase I Project. Besides, the JICA Project Team conducted the baseline survey questionnaires to relevant organization. Accumulated data and information was compiled into a report, and shared among the team in September 2015, and submitted to WG3 in February 2016.

2) Development and Discussion of Work Plan

Based on the baseline survey, the Project developed the Work Plan for the development of training programs. The Work Plan was discussed and agreed at JCC meeting held on April 23rd 2015. In the Project, three (3) training programs will be developed as shown in Table 12 and one (1) training program, which is “During the Project Training” shown in the table will be implemented.

Table 12 Outline of Training Program Developed under the Project

Training Program	Term	Concept	Trainer	Target trainees
1. Training Program on Project Outputs (During the Project Training)	During the project (2015-2017)	<ul style="list-style-type: none"> • Step by Step transfer of technology developed by the Project to DRVN. • Training is led by JICA project which handover to DRVN from the second year, in order to oversee that training implementation is properly handover to DRVN. 	<ul style="list-style-type: none"> • DRVN • JICA Project Team 	<u>Project counterparts of</u> <ul style="list-style-type: none"> • DRVN • RMBs • SBs • RTCs • (future trainers)
2. Training Program on Project Outputs (After the Project Training)	Until 5 years after the Project Completion (2018-2022)	<ul style="list-style-type: none"> • Deployment of project outputs to nationwide road maintenance agencies focused on selected trainings conducted during the Project • DRVN is to organize and implement training program “After the Project”, with support of trained trainers identified by DRVN. DRVN is highly recommended to identify future trained trainer and include them into training during the Project 	<ul style="list-style-type: none"> • DRVN • Trained trainers 	<u>Project counterparts of</u> <ul style="list-style-type: none"> • DRVN • RMBs, • SBs • RTCs <u>(Inclusion of PDOT to be considered)</u>
3. Training Program on Road Administration (Future Training Program)	After 5 years of the Project Completion (2022-)	<ul style="list-style-type: none"> • Capacity enhancement on comprehensive management capacity of PDCA cycle for road administration in Vietnam sustainably • Delivery with DRVN and assigned training institution. DRVN is highly recommended to identify competent agency and include them into training during the Project. 	<ul style="list-style-type: none"> • DRVN • Assigned training institution 	<ul style="list-style-type: none"> • Staff involved in road administration nationwide • DRVN • RMBs • SBs • RTCs • PPC/ PDOTs

Table 14 Number of Participant (First Workshops and OJTs)

Training	Date	Training Venue	Style	MOT	DRVN			RMBs			Sub Total	Total
					DRVN	RTC C	PMU3	RMB	RTC	SBs		
1 st Seminar	21.10.2015	Hanoi	VN	2	19	1	3	2	0	0	11	38
			JP									28
	TOTAL											66
1 st Training (Workshop & OJT)	27.07.2015	RMB I	WS		17	2	2	10	2	15	48	48
			OJT								0	
	20.07.2015	RMB II	WS					9	8	17	34	53
			OJT				5	2	12	19		
	24.07.2015	RMB III	WS					16	4	13	33	58
			OJT				9	3	13	25		
	22.07.2015	RMB IV	WS					11	1	13	25	48
			OJT				1	2	20	23		
TOTAL					17	2	2	61	22	103	207	207
2 nd Training (Workshop)	23.05.2016	RMB I	WS		16		2	10	9	20	57	57
	16.05.2016	RMB II	WS		4			19	3	17	43	43
	20.05.2016	RMB III	WS		4			15	7	19	45	45
	18.05.2016	RMB IV	WS		4			8	5	25	42	42
	TOTAL					28		2	52	24	81	187
OJT on Pavement Condition Survey	25.04.2016	RMB II	OJT					6	8	9	23	23
	23.02.2016	RMB III	OJT					1	5	10	16	16
	04.11.2015	RMB IV	OJT					4	5	3	12	12
	TOTAL								11	18	22	51

(3) Activity 5-3 Public Relations

1) Baseline Survey

In May 2015, after the WG members are confirmed, the Project delivered a baseline survey questionnaire to WG3 on Public Relations (PR). Based on answers delivered at the end of June 2015, further additional information was requested to DRVN in July and August 2015. The survey confirmed that Road Magazine is the responsible unit for PR under DRVN. On 2nd October 2015, the Project interviewed Road Magazine and were informed that Road Magazine conducts PR activities under the commission from DRVN and has published monthly Road magazine, runs web based Road magazines, developed Video Clips on Road related topics, and also submit articles to news agencies.

2) Development and Discussion of Work Plan

Based on the baseline survey, the Project developed the Work Plan for the development of public relation programs. The Work Plan was discussed and agreed at the JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed upon at the JCC meeting, the Project developed an Implementation Plan, clarifying the Framework before implementation and getting consensus on the target of development. WG3 meeting was held on 28th of May, 2015 and discussed the Project Objectives (Approach) on PR. At the meeting, Road Magazine, the independent unit under DRVN, was assigned to conduct PR activities of DRVN. JICA Project Team has further developed implementation plan with detail activities, and discussed with WG

3. The plan has been basically agreed.

4) Development and Discussion of Detail Implementation Plan

The Project developed detailed implementation plans for each PR activities of Annual Report, General Information Brochure, Video Clip and Web-based Information System for Road Maintenance Technology and discussed with WG 3 and Road Magazine of DRVN, and agreed.

5) Contractor Selection

The Project team prepared TOR on the development of Annual Report and Video Clip, and contracted out to Road Magazine on 30th June 2016. These works are to be completed by 28th February 2017. Development of Web-based Information System for Road Maintenance Technology was subcontracted to SAOMAI through competitive quote on 5th August 2016 which is to be completed by the end of December 2016.

6) Development of PR Outputs (Current Status)

Development of Annual Report and Video Clip, Web-based Information System for Road Maintenance Technology are in progress and the Project team conduct monitoring time to time.

7) Delivery of PR Activities

From 8th to 10th of July, 2015, the Project participated to “Viet Nam Ha Noi Transport & Logistics Conference & Exhibition”, and set up a booth to introduce the Project and project activities with Board Panel and Photos, leaflet, a short video clip.

2-3 Achievement of Output (Based on PDM)

2-3-1 OUPUT 1: PMS Data Development Technology is Improved.

Objectively Verifiable Indicators	Achievement Level
<p>Road asset database, maintenance history database and pavement condition database are completed for PMS.</p> <p>The following products are to be developed upon completion of the project.</p> <ul style="list-style-type: none"> • PMS Data Input System (offline and Web-based) • Road Inventory/Asset Database • Maintenance History Database • Pavement Condition Database 	<p>In Progress</p> <ul style="list-style-type: none"> • Upgrading of PMS data input format and offline and web based data input software has been completed. Currently amendment of inputted data is requested to RMBs. • Pavement Condition Survey in RMB II, III and IV has already been completed. Data processing of RMB IV has also completed and data procession of RMB II and III is under progress. • Pavement Condition survey of additional road under RMB I is under progress. Data analysis is undergoing.

2-3-2 OUPUT 2: PMS is Upgraded and Applied to the Planning of Trial Pavement Repair Work Plans.

Objectively Verifiable Indicators	Achievement Level
Trial pavement repair work plan	In Progress

<p>(Annual, five year) using PMS is formulated by DRVN. The following products are to be developed upon completion of the project.</p> <ul style="list-style-type: none"> • Web based PMS • Web-based Pavement Condition Data Display System • Trial Pavement Repair Plans (Annual and Five Year Plans) • Web-based Pavement Condition Data Analysis System • Web-based PMoS 	<ul style="list-style-type: none"> • PMS is currently under upgrading. • Development of Web-based Pavement Condition Data Display System was completed and now operational level • Development of web-based PMS operation system in under progress.
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2-3-3 OUPUT 3: Final Draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual are Formulated.

Objectively Verifiable Indicators	Achievement Level
<p>Draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual are formulated. The following products are to be developed upon completion of the project.</p> <ul style="list-style-type: none"> • Final draft of Road Facility Inspection Guidelines • Road Routine Maintenance Manual • Expressway Maintenance Manual 	<p><u>In Progress</u> <u>The First draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual has been submitted to DRVN and their second drafts are under development based on the comments issued to the first drafts by the competent agencies.</u></p>

2-3-4 OUPUT 4: Responsibility Assignment and Administration Procedure are Clarified for Road Maintenance.

Objectively Verifiable Indicators	Achievement Level
<p>Amendment plans to realize output 1-3 are developed. The following products are to be developed upon completion of the project.</p> <ul style="list-style-type: none"> • Amendment plans (draft) on responsibility assignment and administrative procedure 	<p><u>In Progress</u> First recommendation has been developed and submitted to DRVN.</p>

2-3-5 OUPUT 5: Training Implementation and Public Relations are Reinforced.

Objectively Verifiable Indicators	Achievement Level
<p>DRVN conduct regular trainings on</p>	<p><u>In Progress</u></p>

<p>project outputs. The following products/events are to be developed/organized upon completion of the project.</p> <ul style="list-style-type: none"> • Training Program and Plan (during and after the project) • Capacity enhancement of counterpart staff 	<p>(1) Trainings</p> <ul style="list-style-type: none"> • 1st Training (Workshop and OJT (PMS data input)): 20-27 Jul.2015 • 2nd Training (Workshop): 16 – 23 May 2016 <p>(2) OJT on Pavement Condition Survey:</p> <ul style="list-style-type: none"> • 1st October 4th at Ho Chi Minh City • 2nd February 23rd at Da Nang City • 3rd April 25th at Vinh City <p>(3) Seminar</p> <ul style="list-style-type: none"> • 1st Seminar: 21st October, 2015 <p>(4) Training in Japan</p> <ul style="list-style-type: none"> • 1st Training: 13-19th September 2015 • 2nd training: 26 Sep. – 6 Oct. 2016
<p>DRVN conduct PR. The following products are to be developed upon completion of the project.</p> <ul style="list-style-type: none"> • Annual Report • Video Clip • Web-based Road Maintenance Technology • Leaflet 	<p><u>In Progress</u></p> <p>Project leaflet has been developed and distributed at MOT Exhibition and Seminar. Annual report, video clip and Web-based Information System for Road Maintenance Technology are under development.</p>

2-4 Achievement of the Project Purpose (to be added as the project progresses)

PROJECT PURPOSE: Implementation capacity for road maintenance is strengthened in Viet Nam.

Objectively Verifiable Indicators	Achievement Level
Trial pavement repair work plan using PMS is formulated in RMB I, II, III and IV	
Primary rules for road facility inspection, maintenance and repair work are formulated (*1)	
Implementation structure for road maintenance is established.	

2-5 Risks and Actions for Mitigation

(1) February 2015 – March 2015 (Up to Monitoring Sheet Ver.1)

As the Project required a couple of months to start, counterpart of DRVN also needed time to set up the project environment including arranging a project team office space, organizing working groups and selecting counterpart members including local budget arrangement. This raised a little concern in the delay of the Project. During this term, the Project Team consulted to MOT, DRVN and JICA Vietnam, and moved to a temporary office space prepared by DRVN and conducted baseline surveys based on desktop study. Thanks to MOT, DRVN, and JICA Vietnam efforts, the above project environment was settled before the first JCC.

(2) April 2015 – October 2015 (Up to Monitoring Sheet Ver.2)

No risk was observed during this term.

(3) October 2015 – March 2016 (Up to Monitoring Sheet Ver.3)

As mentioned at “1-2-6 (1) Activity 3-1 Pilot Repair Works”, the procurement of equipment and materials for pilot repair works is expected to delay due to long processing time for approval on the import material and equipment and also due to regulation change of custom clearance. Consequently, the implementation of pilot repair works also to be delayed for about half a year. JICA Project Team needs to coordinate with supplier for the production timing of materials, to rearrange experts’ assignment schedule, and to coordinate with DRVN for arrangement of local contractors for pilot repair works.

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver.4)

As mentioned at “1-2-6 (1) Activity 3-1 Pilot Repair Works”, the procurement of equipment and materials for pilot repair works has been delayed due to import and tax exemption procedures. Implementation of pilot repair works has been originally planned from January to March 2016 is expected to be in Feb – Mar 2017, which is delay of about 1 year. JICA Project Team has coordinated with the supplier for the production timing of materials, to rearrange experts’ assignment schedule, and to coordinate with DRVN for arrangement of local contractors for pilot repair works.

2-6 Progress of Actions Undertaken by JICA

(1) February 2015 – March 2015 (Up to Monitoring Sheet Ver.1)

JICA Vietnam has provided a great support to accelerate DRVN arrangement for office space.

(2) April 2015 – October 2015 (Up to Monitoring Sheet Ver.2)

Not applicable

(3) October 2015 – March 2016 (Up to Monitoring Sheet Ver.3)

JICA Vietnam provides a great support to JICA Project Team, DRVN and MOT for providing information on tax exemption and coordinating relevant agencies.

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

JICA Vietnam provides a great support to JICA Project Team by close coordination with relevant ministries, and sharing information with DRVN and Project Team.

2-7 Progress of Actions undertaken by Gov. of Viet Nam

(1) February 2015 – March 2015 (Up to Monitoring Sheet Ver.1)

After PMU3 had been assigned to the Project, arrangement for office space and furniture etc. have been arranged very smoothly.

(1) April 2015 – October 2015 (Up to Monitoring Sheet Ver.2)

Not applicable

(2) October 2015 – March 2016 (Up to Monitoring Sheet Ver.3)

Documents required for Custom Clearance are prepared by PMU3 of DRVN.

(3) April 2016 – September 2016 (Up to Monitoring Sheet Ver.4)

Proceeding the Approval of Funding List has been delayed, which requires to apply Grant Aid Certificate to import and tax exemption procedures of the material and equipment needed for the pilot pavement repair works.

2-8 Other Remarkable/Considerable Issues related/affect to the Project (such as Other JICA's Projects, Activities of Counterparts, Other Donors, Private Sectors, NGOs etc.)

2-8-1 Coordination with Vietnam Road Asset Management Project (VRAMP)

Component A-1 “Consulting Service for Road Database Framework and Development of the Road Asset Management System and Road Asset Management Plans”, of Vietnam Road Asset Management Project (VRAMP) funded by the World Bank has commenced from 1st November, 2015. As explained in section 2-2-2 (2); Project Management, also there is close relation between JICA Phase II Project and VRAMP Component A-1 in relation to data collection, PMS integration in RAMS and database utilization. Thus, RAM-SC and RAM-WG set by DRVN are expected to coordinate regularly with VRAMP.

Regarding PMS development, DRVN is requested to keep maintaining the principle of concluding the PMS development during the implementation of the JICA Project. The JICA Project Team will make an effort in developing PMS system until its operability in DRVN environment is confirmed.

3. DELAY OF WORK SCHEDULE AND/OR PROBLEMS (IF ANY)

3-1 Detail**(1) February 2015 to April 2015 (Up to Monitoring Sheet Ver.1)**

As mentioned earlier, there was a risk of delay, however those issues were resolved in a good cooperation of involved agencies.

(2) May 2015 to October 2015 (Up to Monitoring Sheet Ver.2)

During this term, TWG was planned to be hold in July and October 2015. However, the first TWG was postponed to the 22nd of October, 2015.

(3) November 2015 to March 2016 (Up to Monitoring Sheet Ver. 3)

Procurement of material and equipment for pilot repair works is expected to delay due to required time scale for document preparation required for tax exemption. Thus, the implementation of pilot repair works also to

be delayed as mentioned in “1.2.6 (1) Activity 3-1 Pilot Repair Works.”

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver.4)

Procurement of material and equipment for pilot repair works is expected to delay due to required time scale for document preparation required for tax exemption. Thus, the implementation of pilot repair works also to be delayed as mentioned in “1.2.6 (1) Activity 3-1 Pilot Repair Works.”

3-2 Cause

(1) February 2015 to April 2015 (Up to Monitoring Sheet Ver.1)

- Very initial period of project commencement and team mobilization

(2) May 2015 to October 2015 (Up to Monitoring Sheet Ver.2)

- No particular issues to be coordinated

(3) November 2015 to March 2016 (Up to Monitoring Sheet Ver. 3)

- Time require for preparation of tax exemption document

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 04)

- Time require for approval from Prime Minister

3-3 Actions to be Taken

(1) February 2015 to April 2015 (Up to Monitoring Sheet Ver.1)

Not applicable

(2) May 2015 to October 2015(Up to Monitoring Sheet Ver.2)

Due to no particular issues to be coordinated in July, TWG was postponed to October 2015.

(3) October 2015 to March 2016 (Up to Monitoring Sheet Ver.3)

JICA Project Team has been informed that document preparation for Tax Exemption requires (Amended Project Document and C1 Form) will take 4 to 6 months. Thus pilot repair works will commence in October 2016 as the earliest.

JICA Project team monitored the preparation of relevant documents.

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

JICA Project Team has been informed that approval for funding list by PM will take minimum 3 months. Thus pilot repair works will commence in March 2017 as the earliest.

JICA Project Team has requested to JICA Vietnam office to coordinate with Vietnamese authorities to accelerate the document processing.

3-4 Roles of Responsible Persons/Organization (JICA, Gov. of Viet Nam, etc.)

Preparation of documents required for Custom Clearance: JICA Vietnam Office / PMU 3 of DRVN

4. MODIFICATION OF THE PROJECT IMPLEMENTATION PLAN

4-1 PO and PDM

(1) Modification Made at PDM Version 1

At Version 1, a slight adjustment on Implementation schedule was made based on Work Plan prepared in discussion with DRVN. And also a sub activity “Implement pavement condition surveys for RMB II, III and IV selected roads” which was originally under Activity 2 “Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan”, has now incorporated under Activity 1 “Improve PMS Data Collection and Processing Technology”.

(2) Modification Made at PDM Version 2

Outputs and Activities of PDM have been updated according to the Project Activities considering the actual and practical delivery of tasks and outputs, which defined in the Work Plan. Thus output has change from 4 outputs to 5 outputs adding training implementation and public relations, and activities for output 5 have been included.

In addition, in the TWG held on October 2015, DRVN reported a new regulation on the formulation of pavement midterm repair plans, which includes the change of target year from “3-year” to “5-Year” according to the Preparation of Mid-term road maintenance plan in the period of 2017–2020 issued by DRVN on 4th September 2015 prudent to the Public Investment Law No.49/2014/QH13 and Prime Minister Decree No.77/2015/ND-CP. Upon this information, the Project promised to comply the current PMS development with this new regulation and accordingly updated PDM.

Proposed modification has been consulted to JICA in January 2016. PO is also amended accordingly.

(3) Modification Made at PDM Version 3

Draft modification is made on PDM and PO as Version 3 Draft. These modifications will be discussed and authorized at the 3rd JCC which will be held in March 2017. On PDM, additional activities of Activity 2-7 Develop Web based Pavement Monitoring System, and Activity 3-4 Develop Expressway Maintenance Manual are added. On PO, the sub activities of each activity are added to make clear the progress of activities.

4-2 Other Modifications on Detailed Implementation Plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose

the draft.)

Contract has been amended on July 21st 2016 to include additional tasks shown below;

- 1) Operation Verification of web systems developed under the Project
- 2) Operation Verification of Web-based System for Displaying Pavement Condition Survey Data
- 3) Upgrading of Pavement Monitoring System
- 4) Development of Expressway Routine Maintenance Manual
- 5) Addition of Pavement Condition Survey

In order to proceed the above additional activities, in total of 8.9 MM (4.9 MM for expert on Web-based System for Displaying Pavement Condition Data, 3.6 MM for Team Leader/Road Maintenance Planning, and 0.4 MM for the expert on Pavement Condition Survey (Calibration) , are added, which is an increase from 126 MM to 134.9 MM.

In addition to above modification, the following modification was also made during implementation of project:

- The number of trainees in second training in Japan to be conducted in 2016 has been increased from 5 to 10 persons.

5. PREPARATION OF GOV. OF VIET NAM TOWARD AFTER COMPLETION OF THE PROJECT

To be added as the Project progresses.

APPENDIX-1: PROJECT MONITORING SHEET I (PDM) PM FORM3-2

APPENDIX-2: PROJECT MONITORING SHEET II (PO) PM FORM3-3

APPENDIX-3: MINUTES OF JCC MEETINGS

Project Monitoring Sheet I (Revision of Project Design Matrix)

Project Name: The Project for Capacity Enhancement in Road Maintenance Phase II
 Project Period: February, 2015 to March, 2018 (3 years)
 Implementation Organization: Directorate for Roads of Vietnam under Ministry of Transport
 Target Group: DRVN, Road Management Bureaus (RMBs) I, II, III, IV
 Target Area: Designated area of RMB I, II, III, IV

Version: 3 DRAFT*

Dated: 31st Sep, 2016

* Amendments will be authorized at next JCC to be held in March 2017.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions (I.A.)	Achievement	Remarks
Overall Goal Road maintenance is conducted properly based on the mid-term plan, following PDCA cycle.	(By 3 years from the project end) The indicators for pavement damage (IRI, cracks, rutting, etc.) will be improved X %.	1.Result of data comparison of regular pavement condition survey by DRVN 2.Trial 3 year and annual plan for pavement maintenance 3. Annual Report 4. Interview to DRVN			
Project Purpose Implementation capacity for road maintenance is strengthened in Viet Nam	1. Trial pavement repair work plan using PMS is formulated in RMB I,II, III and IV 2. Primary rules for road facility inspection, maintenance and repair work are formulated (*1) 3 Implementation structure for road maintenance is established.	1. Trial pavement repair work plan of RMB I,II, III and IV 2. Regulation 3-1. Regulation 3-2. Interview to DRVN	I.A. to achieve Overall goal 1.Budget is allocated stably for maintenance activities in accordance with five year plan 2. Training is conducted by DRVN continuously to maintain technical skills		
Outputs 1. PMS data development technology is improved 2.PMS is upgraded and applied to the planning of trial pavement repair work plans 3.Technical specifications for inspecting road facility and selecting repair work are developed 4.Responsibility assignment and administration procedure are clarified for road maintenance 5. Training impelmentation and public relations are reinforced	1.PMS Database consisting of Road Aasset data, maintenance history data and pavement condition data are completed. 2. Trial pavement repair work plan (annual, five year) using PMS is formulated by DRVN. 3.Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual, and Expressway Maintenance Manual are formulated. 4. Amendment plans to realize output 1-3 are developed 5-1. DRVN conduct regular trainings on project outputs 5-2. DRVN conduct PR.	1.Road asset DB, maintenance history DB, pavement condition DB 2.Trial pavement repair plans (annual, five year plan) 3.Final draft of Road Facility Inspection Guideline, Road Routine Maintenance Manual and Expressway Maintenance Manual 4.Amendment plans (draft) 5-1. Training record 5-2. PR outputs	I.A. to achieve Project Purpose 1 Engineers who received training are assigned continuously 2. Legalization procedure for Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual proceeds	In Progress	
Activities	Inputs		I.A. to achieve Outputs		
	Japanese side	Vietnamese side			
1-1.Formulate PMS Database	1.Dispatch of Experts (1)Long term Expert •Road maintenance policy/regulations (2)Short-term experts • Team Leader/Road Maintenance Planning •Deputy Team Leader/PMS System Operation Technology	1.Human resources (1)Chairperson of JCC (2)Chairperson of TWG (3)Counterparts (DRVN and RMBs) (4)Coordinator 2.Facilities Communal office space for JP Team and local support team with electricity, air-condition, internet, telephone line. 3.Cost (1)Cost for pilot project on maintenance and repair work (including cost for general materials) (2)Small running expenses necessary for the implementation of the Project. (e.g. daily allowance, accommodation and domestic travel expenses of DRVN's staff for participating in training in Vietnam)	1. VRAMP Project (WB) is implemented as planned 2. IT policy of DRVN on organization and operation of database and system is maintained		
1-2.Implement Pavement Condition Surveys for RMB II, III and IV selected roads	•Pavement Condition Survey (Planning and Management) •Pavement Condition Survey(Calibration) •PMS System Technology(Budget Simulation) •PMS System Technology(Repair Work Planning) •Web-based System for Displaying Pavement Condition Data				
1-3.Develop Web-based PMS Data Input System	•Road Facility Inspection Technology •Road Maintenance Technology •Pilot Project Management •Pavement Technology •Road Maintenance Administrative Procedure •Capacity Development/Project Coordination				
2-1.Upgrade PMS software					
2-2.Convert input data and make PMS dataset					
2-3.Formulate trial Pavement Repair Work Plan (annual and five year plan) for RMB I, II, III and IV road networks by PMS system and examine system operability.					
2-4.Develop web-based system for displaying pavement condition data on the DRVN mapping system					
2-5.Develop Web-based system which enables PMS Operation on website and formulates trial annual and five year pavement repair work plans					
2-6. Develop Web-based Analysis System for Pavement Condition Survey Data	2.Training in Japan •Three times (once/year) on Road maintenance policy and repair technology	4.Others (1)Implementation of the pilot repair work for maintenance and repair work with JICA experts' advisory. (2)Implementation of pilot Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction, with JICA's local service.	Preconditions		
2-7. Develop Web-based Pavement Monitoring System (PMoS)	3.Equipment, Machinery and Materials (1)Special equipment and materials for pilot project work including: - Crack seal technology - Shallow pothole repair technology - Deep pothole repair technology - Bridge Waterproofing technology (Note) Materials to be imported are all listed in the revised Project Document. (2)Computers for planning system (3)Others needed for project implementation				
3-1.Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology which incorporates new technology and materials					
3-2. Upgrade Road Facility Inspection Guideline					
3-3. Upgrade Road Routine Maintenance Manual for standardization					
3-4. Develop Expressway Maintenance Manual					
4-1.Prepare Amendment Plan for Road Maintenance Responsibility Assignment	4.Others(Sub Contract) •Local service for Pilot Pavement Condition Survey •Local Service for development of web-based operation system				
4-2.Prepare Amendment Plan for Road Maintenance Administrative Procedure					
5.1. Prepare Draft Training Plan					
5.2. Support Training Implementation					
5.3. Conduct Public Relations					

Note:(*1): target facilities, frequency, methods, diagnosis, selection method for repair works, repair work, construction management



**THE SOCIALIST REPUBLIC OF VIETNAM
MINISTRY OF TRANSPORT
DIRECTORATE FOR ROADS OF VIETNAM
JAPAN INTERNATIONAL COOPERATION AGENCY**



**THE PROJECT FOR CAPACITY ENHANCEMENT
IN ROAD MAINTENANCE
PHASE II**

PROJECT MONITORING SHEET VER.5

(October 2016 – December 2016)

Submitted To:

TO CHIEF REPRESENTATIVE of JICA VIET NAM OFFICE

PROJECT MONITORING SHEET

Project Title: Project for Capacity Enhancement in Road Maintenance Phase II

Version of the Sheet: Ver. 5 (Term: October 2016 – December 2016)

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Title	Team Leader
Submission Date	31 December 2016

(Prepared in cooperation with DRVN)

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1. PROJECT OUTLINE

1-1 Country

The Socialist Republic of Vietnam

1-2 Title of the Project

Project for Capacity Enhancement in Road Maintenance Phase II

1-3 Duration of the Project (Planned and Actual)

From February 2015 to March 2018 (38 months)

1-4 Background (from Record of Discussion (R/D))

Under the previous 5 years Socio-Economic Development Strategy (2006-2010), the economy of Vietnam achieved stable socio-economic growth as described with the average growth rate of 7 % / year, and doubling of GDP in 2010 from that of 2000. In the new 5 years Socio-Economic Development Strategy (2011-2015), maintaining of high socio economic growth is continued to be one of objectives through mobilizing 12 socio economic strategies described. With regards to socio economic strategy on transport infrastructure, it concentrates on reviewing of transport infrastructure development projects and promoting priority investment on establishing urban infrastructure such as step by step synchronously- establishment of South-North route axis and East-West corridor axis, encouraging and creating conditions for participation of foreign and private sector investments on infrastructure development, and early completion of cross border roads to surrounding countries.

In complying with the previous development strategy, in 2008, the Ministry of Transport (MOT) set the Transport infrastructure development Strategy of Vietnam up to 2020. Since its establishment, the strategy has been partially amended periodically under the instruction of the Prime Minister. Especially approved amendments in 2013 describe policies on introduction of advanced technologies, upgrading of technical standards, specification, and norms. In January 2013, MOT successfully institutionalized road maintenance funds which had been a matter of concerns for a long term. As a result, 65 % of road maintenance funds are allocated to national roads and 35% to provincial road. This is expected to secure more budgets for road maintenance than those in 2012, which only 40% of requested budget was secured.

In March, 2013, MOT published the Plan for Comprehensive Renovation in Management and Maintenance of National Highway System. The Plan aims to upgrade the quality of national road maintenance works so that the longevity of road facilities is increased, and at the same time, safety and efficiency of road traffic are also improved. Strategic policies described in the plan are listed below.

- 1) Renovate contractor selection procedures for national road maintenance
- 2) Upgrade quality of supervision on road maintenance work
- 3) Apply new road maintenance technologies
- 4) Implement measures for overloaded vehicles
- 5) Renovate planning methodology for road maintenance (3 years plan)
- 6) Improve required procedures for laws and regulations relevant to road management and maintenance

- 7) Amend road maintenance standards and norms
- 8) Develop human resources and improve road maintenance institutions
- 9) Install information management system for road maintenance
- 10) Assist capacity enhancement of regional road maintenance

Current situation of Road Asset Management at DRVN is describes as below:

- 1) DRVN implemented operation methodology in quality management and road maintenance in accordance with the Government's policies.
- 2) Technology qualification in management and maintenance work is low, asynchronous, and slow renovation lead to limited effectiveness and quality of this work in the past.
- 3) The technical standards, work procedures, mechanism, policies and financial resources are incomplete that make it difficult for implementation and planning (including short-term, medium-term and long-term) of road maintenance.
- 4) Lack of a road database system which is unified and complete to connect data from the central to the local, facilitate the management and exploitation, and initiatively coordinate the works.
- 5) Human resources are not equal in qualifications and capabilities, and there is no development plan which is appropriate and satisfied with the new implementation methodology.

Under the above background, GOV requested GOJ to implement "Technical Cooperation for the Project for Capacity Enhancement in Road Maintenance Phase II". In response to this request, JICA determined to transfer the technology in order to facilitate the road maintenance cycle and held series of discussion with DRVN and related authorities concerned of Viet Nam. Based on the agreements between JICA and the authorities concerned of Viet Nam, the Minutes of Meetings was signed on September 8, 2014, which leads both parties to conclude this Record of Discussions.

1-5 Overall Goal and Project Purpose (from Record of Discussions (R/D))

(1) Overall Goal

Road maintenance is conducted properly based on the mid-term plan, following PDCA cycle.

(2) Project Purpose

Implementation capacity for road maintenance is strengthened in Viet Nam

1-6 Implementation Agency

Directorate for Roads of Vietnam (DRVN)

1-7 Reporting

Followings are a list of report to be prepared under the Project.

Table 1-1 Current Status of Report

	Type of Report	Status	Notes
1	Monitoring Sheet Ver.1	Submitted on 23 rd April 2015	<ul style="list-style-type: none"> • Project Monitoring Sheets • Work Plan
2	Monitoring Sheet Ver.2	Submitted on 21 st October 2015	<ul style="list-style-type: none"> • Project Monitoring Sheets
3	Monitoring Sheet Ver. 3	Submitted on 25 th March 2016	<ul style="list-style-type: none"> • Project Monitoring Sheets • Progress Report I
4	Monitoring Sheet Ver. 4	Submitted on 31 st September 2016	<ul style="list-style-type: none"> • Project Monitoring Sheets
5	Monitoring Sheet Ver. 5	To be submitted on 31 st December 2016	<ul style="list-style-type: none"> • Project Monitoring Sheets
6	Monitoring Sheet Ver. 6	To be submitted in September 2016	
7	Project Completion Report (include outputs of technical cooperation)	To be submitted at beginning of February 2018	

2. PROGRESS

2-1 Progress of Inputs

2-1-1 Japanese Side

(1) Dispatch of Experts

The Project Team is formed from 13 short term experts and one (1) long term expert.

Based on the amended contract on 21st July 2016, total Man Month (hereinafter to be called as “MM”) has been increased from 126 MM to 134.9 MM. Since the 9th of February 2015, a total of 13 JICA short term experts have been assigned for total of 83.5 MM (61%) as of the end of December 2016. A long term expert has been assigned since January 26th, 2015. (Together with long term expert and short time experts, hereafter to be referred as “The Project Team”)

(2) Training in Japan

Three (3) trainings are planned under the Project, the first and second trainings were conducted from 13th to 19th of September 2015 for 7 days, and from 26th September to 6th October 2016 for 11 days respectively.

(3) Procurement of Equipment, Machinery and Materials

Under the project, following three (3) items are procured for project activities and will be handed over to counterparts. The list of equipment and machinery procured under the project are listed up in Table 2.

Table 2-1 Procurement of Equipment and Machinery

Items	Component	Status	Note
Special equipment and materials for pilot project work	To be referred to 1-2-6 (1) Pilot Project	OOG, MOF and MPI approved	
Computers for planning system	10 desktop computers	2 computers purchased	8 computers still to be purchased
	1 Application Server	Purchased and installed to DRVN (July 27, 2016)	
	1 Database Server		
Others needed for project implementation	2 desktop computers	purchased	
	1 Projector	purchased	
	1 Screen	purchased	
	1 Printer (A3/colour)	purchased	

1) Special equipment and materials for pilot repair work

Procurement for equipment and materials for pilot repair works is now in progress. With the letter issued on October 28th, the Office of the Government approved the funding list including this Project, which is one of documents requires to obtain Grant Aid Certificates to proceed custom clearance in Viet Nam. With this approval, the Project has immediately moved into the preparation of equipment and material procurement including contractor selection in November, and concluded the contract in December 2016. Due to a shelf life of materials (about 6 months from production), the order and dispatch of equipment and materials from Japan should be carefully decided. With this, shipping from Yokohama Port to Hai Phong Port in Vietnam is now planned in the middle of February 2017, avoiding cargo congestion before and after TETO Holidays in Viet Nam and the duration needed for custom clearance in Viet Nam, For further detail, please refer to “1-2-6 (1) Pilot Project”.

2) Computers for planning system

The project procures in total of 10 desktop computer for planning system. Two desktop computers have been purchased and currently used to develop planning system by the Project. Further eight computers will be procured and handed over to each RMB.

3) Application and Database Server

Based on the specification finalised in May 2016, contractor was selected in June 2016 and servers were installed to the DRVN server room on July 27, 2016.

4) Others needed for project implementation

Besides the above two items, the Project purchased computers etc. which are necessary to conduct project activities in Viet Nam.

(4) Others (Sub contracting)

The Project has subcontracted the activities as shown in Table 3.

Table 2-2 List of activities to be subcontracted

Items	Subcontractor	Contracted date	Status
Pavement condition survey			
Pavement condition survey (Activity 1-2)	RTC Central, DRVN	Contracted on 7 th of Oct. 2015. Amended contract on 20 th Aug.2016.	Currently field survey is ongoing under RMB I region and will be completed in November 2016.
PMS related Web-based System			
Web-based PMS Data Input System (Activity 1-3)	SAOMAI Software J.S.C (Web based system Package 1)	Contracted on 20 ^h of Oct. 2015	Contract was completed on 30 th April 2016.
Web-based System for Displaying Pavement Condition Survey Data (Activity 2-4)			
Web-based PMS Operation System - for Strategic Budget Planning Model (Activity 2-5)	SAOMAI Software J.S.C (Web based system Package 2)	Contracted on 31 st October 2016	Currently under development
Web-based PMS Operation System - for Pavement Repair Work Planning Model (Activity 2-5)	SAOMAI Software J.S.C (Web based system Package 2)	Contracted on 31 st October 2016	Currently under development
Web-based Analysis System for Pavement Condition Survey Data (Activity 2-6)		Contract is scheduled in early 2017.	

Items	Subcontractor	Contracted date	Status
Web based Pavement Monitoring System (Activity 2-7)	SAOMAI Software J.S.C (Web based system Package 2)	Contracted on 31 st October 2016	Currently under development
Public Relations			
Development of annual report and video clip (Activity 5-3)	Road Magazine	Contracted on 30th June 2016	Currently under development
System Development of Web Based Information System Road Maintenance Technology In Vietnam (Activity 5-3)	SAOMAI Software J.S.C	Contracted on 5th August 2016	Contract was completed at the end of December 2016.
Development of General Information Brochure (Activity 5-3)		Contract is scheduled in February 2017.	

The subcontracts are broadly divided into the following three items.

1) Subcontract for Pavement Condition Survey

Pavement condition survey for RMB II, III and IV was subcontracted to RTC Central on 7th of October, 2015. In order to fulfil the contracted survey length km, contract was amended on 20th August 2016 to add the survey on RMB I region. For further detail progress of activities, please refer to “1-2-4 (2) Activity 1-2 Pavement Condition Survey”.

2) Subcontract for development of PMS related web-based operation systems

Under the project, five web based operation systems will be developed by sub-contracting as shown below. In addition to the work plan, the Project added one more system development to the initial Work Plan, aiming to upgrade Pavement Monitoring System (PMoS) to be a web-based operation system.

- Web-based PMS Data Input System (Activity 1-3)
- Web-based System for Displaying Pavement Condition Survey Data (Activity 2-4)
- Web-based PMS Operation System - for Strategic Budget Planning Model (Activity 2-5)
- Web-based PMS Operation System - for Pavement Repair Work Planning Model (Activity 2-5)
- Web-based Analysis System for Pavement Condition Survey Data (Activity 2-6)
- Web based Pavement Monitoring System (PMoS) (Activity 2-7)

In developing these web-based systems, DRVN will be requested to inquire comments to relevant stakeholders, to gather comments in a written format and to wrap up the comments in order to facilitate further development by the Project Team

“Package 1: Development of web-based systems for PMS Data Input (Activity 1-3) and Displaying of Pavement Condition Survey Data (Activity 2-4)” was subcontracted to SAOMAI Software J.S.C on October 20th, 2015 and completed on April 30th, 2016. “Package 2: Development of web-based PMS operation system” was subcontracted to SAOMAI Software J.S.C on October 31st, 2016 and currently under development. The subcontracting for other remaining systems are in progress.

3) Subcontract for Public Relations

Contract was made on the 30th June 2016 with Road Magazine under DRVN to develop an annual report and a video clip. The contract is scheduled to complete by February 2017. System Development of Web Based

Information System Road Maintenance Technology was contracted out to IT Company, SAOMAI, on the 5th August 2016 till the end of December 2016,

2-1-2 Vietnamese Side

In April 2015, thanks to DRVN efforts, project environment were all established such as arrangement of office space for the Project Team, selecting counterpart members and organizing working groups, and procuring local funds. Project activities currently run very smoothly with a good cooperation of DRVN.

(1) Human resources

Chairperson and member of Joint Coordination Committee (hereinafter to be referred as “JCC”), Technical Working Group (hereinafter to be referred as “TWG”) as well as Working Group (hereinafter to be referred as “WG”) have been assigned in accordance with Decision No.1088/QD-TCDBVN dated April 23rd, 2015. Furthermore, staff in charge of PMS system at each RMB, RTCs and SBs have also been assigned in July 2015. For further detail, please refer to “2-2-2 (2) Project Management”.

(2) Office Space and Facilities

Due to the shortage in office space in the DRVN building, DRVN needed to lease a project office outside the building fulfilling a DRVN leasing conditions. It took about two months to provide an office space to the Project Team, and during this time period, the Project arranged own office space for two weeks and moved into the temporary project office space within the DRVN building on March 30th, which was kindly offered by DRVN. In April, DRVN successfully made a lease contract for a project office space and Project Team has moved into the new office on April 20th, 2015 before the first JCC.

(3) Cost

DRVN have successfully secured the budget required for execution of following items.

1) Cost for pilot project on maintenance and repair work (including cost for general materials)

DRVN has already approved domestic projects including clarification of the domestic budget from Road Maintenance Fund for costs of domestic expenditure that are different from the costs for special materials and equipment covered by Japanese side.

2) Small running expenses necessary for pavement condition survey

DRVN secured daily allowance, accommodation, and domestic travel expenses for DRVN's staff for participating in the pavement condition survey.

3) Small running expenses necessary for the implementation of training programs in Viet Nam

DRVN secured daily allowance, accommodation, and domestic travel expenses for the staff of DRVN for participating the seminars, workshops and OJTs.

(4) Others

Besides, DRVN has been kindly requested to take responsibility for the following items essential for project

activities.

- 1) **Implementation of the pilot repair works for pavements and bridges with JICA experts' advisory.**
- 2) **Implementation of Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction, and additional survey for RMB I region, with JICA's local service.**
- 3) **VISA**

At the beginning of 2015, a new immigration law became effective and caused a little confusion in VISA processing. Under the new law, project experts require to obtain LV1 visa to conduct tasks in Viet Nam, which valid for one year. All experts have successfully obtained visa with a support of DRVN and MOT.

2-2 Progress of Activities

2-2-1 Baseline Survey

From the beginning of this Project until the first JCC, the Project has conducted baseline survey based on documents and internet searching, focusing on the key issues needed to formulate the Work Plan including the review of Phase I Project outputs, data collection of new regulations, update of the current status of national road maintenance and management. The result of baseline survey is reported in the Progress Report submitted at the second JCC in March 2016.

2-2-2 Work Plan

At the first JCC meeting held on 23rd April 2015, the Project discussed and agreed on the Work Plan setting the framework of the project activities to be delivered to achieve the project purpose, incorporating all outcomes of activities.

(1) Project Framework

Framework including measures and activities to achieve project purpose is summarized in below table. Flow chart is shown on Table 0-1. Activity 2-7 and Activity 3-4 are added by the amended Contract on 21st July 2016. The Project applies the activity number applied at the Work Plan throughout the Project.

Table 2-3 Measures and Activities to Achieve Project Purpose

Project Purpose	
Enhance Implementation Capacity for National Road Maintenance in Viet Nam	
Measures	Project Activities agreed at Work Plan
MEASURE 1; Improve PMS Data Collection and Processing Technology	1-1 Formulate PMS Database
	1-2 Implement Pavement Condition Survey
	1-3 Develop Web-based PMS Data Input System
MEASURE 2; Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan	2-1 Upgrade PMS
	2-2 Formulate PMS Dataset
	2-3 Formulate Pavement Repair Work Draft Plan
	2-4 Develop Web-based System for Displaying Pavement Condition Survey Data
	2-5 Develop Web-based PMS Operation System
	2-6 Develop Web-based Analysis System for Pavement Condition Survey Data
	2-7 Develop Web based Pavement Monitoring System
MEASURE 3;	3-1 Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology
	3-2 Upgrade Road Facility Inspection Guideline

Improve Inspection and Repair Work	3-3	Upgrade Road Routine Maintenance Manual
Selection Technology on Road Facility and Develop Technical Standards	3-4	Develop Expressway Maintenance Manual
MEASURE 4; Enhance Responsibility Assignment and Administration Procedures for Road	4-1	Prepare Amendment Plan for Road Maintenance Responsibility Assignment
Maintenance	4-2	Prepare Amendment Plan for Road Maintenance Administrative Procedure
MEASURE 5; Plan and Support Implementation of Training Programs and Conduct Public Relations	5-1	Prepare Draft Training Plan
	5-2	Support Training Implementation
	5-3	Conduct Public Relations

(2) Project Management

JCC, TWG, and WGs have been established. JCC is led by Director General of DRVN and TWG is led by Director of Science, Technology, Environment and International Cooperation Department (hereinafter to be referred as “STE-ICD”) of DRVN.

Table 2-4 Functions and Participants of JCC and TWG

	JCC	TWG
Chairperson	Director General of DRVN	Director of STE-ICD. of DRVN
Regulation	As agreed on Record of Discussion	Decision No.1088/QD-TCDBVN dated 23 rd April 2015
Frequency of meeting	Once a year (to discuss and report Work Plan, Progress Report, and Completion Report, and Monitoring Sheet)	Every 3 months, except when JCC is hold
Function	Discuss and approve Work Plan based on R/D Review the progress of the Project based on annual Work Plans/ Progress Report and Monitoring Sheet. Promote dissemination procedure of project outputs Exchange views on main issues arising from the project in progress	Discuss and Coordinate project progress based on annual Work Plans/ Progress Report and Monitoring Sheet Review and coordinate a progress of the project Discuss and coordinate issues related to Project implementation Select speakers, trainers, and trainees for seminars, workshops, and OJTs.
Members	Vietnamese side Director General of DRVN (Chairperson) Vice Director General of DRVN MOT: DPI, DOST, Infrastructure Dept., TCQM Bureau, ITST DRVN Department Members PMU3 of DRVN	Director of STE-ICD, DRVN (Group leader) DRVN Department Members
	Japanese side Embassy of Japan in Viet Nam Representative of JICA Viet Nam Office JICA Long-term Expert JICA Project Team	JICA Long-term Expert JICA Project Team

Three (3) WGs have been set up under TWG, who are in charge of project measures as shown below table. The members were selected from departments and units under DRVN intensively involved to the project activities.

Table 2-5 Structure of Working Group

WG	Targeted Field	Vietnamese side member
WG 1	[Measure 1] PMS data collection and processing technology Web operation view system for road condition data [Measure 2] PMS upgrade/ formulation of pavement budget/repair plans Web based system	In total of 7 members; Director of STE-ICD (Group Leader) Deputy Director of DPI Deputy Director of Road M& M Director of Road IT Centre Specialists of DPI, Road M&M, Road IT Centre, Staff of PMU3
WG 2	[Measure 3] Technical standards for road inspection and maintenance Pilot Repair works [Measure 4] Maintenance procedures and responsibility assignment	In total of 6 members; Deputy Director of STE-ICD of DRVN (Group leader) Deputy Director of Road M& M Head of PID3, Road Construction Management Bureau Specialists of Road M&M, STE-ICD

WG	Targeted Field	Vietnamese side member
		Staff of PMU3
WG 3	[Measure 5] Training Programs and Public Relations	In total of 3 members; Deputy Director of DOP (Group Leader) Specialists of STE-ICD Staff of PMU3

Note

DPI: Planning and Investment Department
 Road M&M: Road Maintenance and Management Department
 DOP: Organization and Personnel Department
 STE-ICD: Department of Science, Technology, Environment and International Cooperation

In addition, for the efficient coordination between the World Bank Vietnam Road Asset Management Project (hereinafter to be referred as “VRAMP”) and this JICA project, Road Asset Management Steering Committee (hereinafter to be referred as “RAM-SC”) based on Decision No.1267/QD-TCDBVN dated 24th June 2014, and Coordination Working Group (hereinafter to be referred as “CWG”) based on Decision No. 1777/QD-TCDBVN dated on 7th August 2014, have been established. Some DRVN members of RAM-SC and CWG are assigned to both JCC and TWG mentioned above.

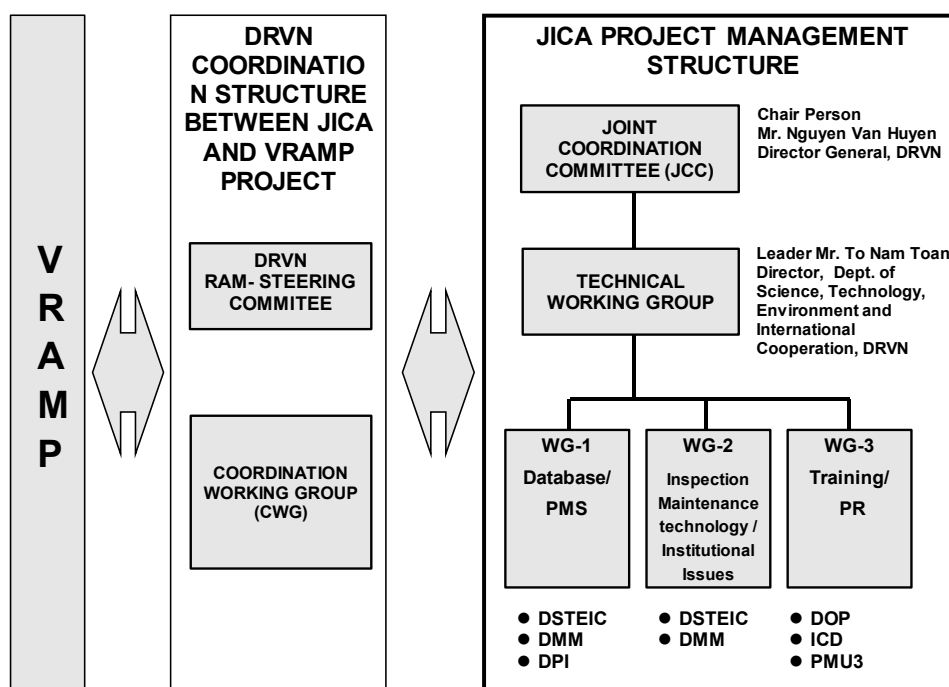


Figure 1 Structure of Project Management

2-2-3 JCC Meeting and Working Group Discussion

(1) Joint Coordination Committee Meeting (JCC Meeting)

A total of four (4) JCC meetings as shown in Table 2 are planned during the project period to discuss and report Work Plan, Progress Report, and Completion Report, and Monitoring Sheet. Two JCC meetings were already held dated 23rd April, 2015 and 25th March, 2016 to discuss Work Plan and Progress Report respectively. The details of discussions have summarized and included in Appendix-3. Remaining two JCC meetings are tentatively planned in March and November, 2017.

Table 2-6 JCC Meetings

SN	JCC Meeting	Date	Status	Remarks
1	1 st JCC Meeting	23 April, 2015	Completed	
2	2 nd JCC Meeting	25 th March, 2016	Completed	
3	3 rd JCC Meeting	March, 2017	Yet to organize	
4	4 th JCC Meeting	November, 2017	Yet to organize	

(2) Working Group Discussion

Following the approval of Work Plans at the first JCC meeting, the Project moved forward to the consensus building on the Implementation Plan for each activity, which aims to show the detailed implementation methods of each activity. The Implementation Plans for the activities which started in 2015 were developed and submitted to WGs for discussion and were basically agreed. In line with these implementation plans, further discussion for each activity is now going on in the WGs.

Following describes detail activities conducted by each activity following activities set under the Work Plan.

2-2-4 Measure 1: Improve PMS Data Collection and Processing Technology

(1) Activity 1-1 Formulate PMS Database

1) Baseline Survey

The Project conducted the survey on the conservation of road data for RMBs including data type, data formats, data storage, RMB computer system, and RMB data server, so forth.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey and review of JICA Phase I Project outputs, the Project developed the Work Plan for the formulation of PMS database. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

The Project developed the Implementation Plan of PMS data formulation, discussed and agreed with WG1 members.

4) Upgrading of PMS Data Format and Data Input Computer Software

The Project has upgraded PMS data input system and developed an offline-based data input software by means of Microsoft ACCESS for the smooth implementation of data input by RMBs in order to prepare PMS dataset for maintenance planning. Upon receiving some requests of improving data input software during the trainings, the Project improved the data input software to make it comply with regional road conditions.

5) Information Dissemination and Technical Transfer on PMS Data Input and Software Operation

Using the upgraded data input format and the computer software, the Project conducted OJTs in July 2015 to RMB and SB officials to transfer technologies on data input and software operation to each RMB. Based on this trainings,

the Project requested RMBs to input PMS data into the upgraded PMS Data Input Format.

6) PMS Data Input

Initial data input by RMBs and SBs using the PMS database format was completed in July 2016. Review of inputted data has been completed in the beginning of August 2016 and a review report was submitted to DRVN on 9th August 2016. Based on DRVN send an official letter dated on August 19th to request each RMBs to conduct necessary amendments until August 26th. At the end of December 2016, all RMBs including RMB II, III and IV completed data amendments and submitted data to the Project Team. The Project Team would like to express sincere appreciation to the effort made by RMBs. Final check of these data is now underway by the Project Team. These PMS data will be converted together with Pavement Condition Data and used in planning of pavement periodic repair for each RMB road network during the Project.

(2) Activity 1-2 Pavement Condition Survey

1) Baseline Survey

After the first JCC meeting, the Project conducted further baseline survey on national road length under RMB II, III and IV jurisdiction in order to plan pavement condition survey. Due to lack of lane number information in the data of national roads accumulated from DRVN, the Project requested data directly to RMBs. Using the data provided by RMBs at the end of August 2015, total length of national roads was calculated by route, by lane, and by pavement type for each RMB II, III and IV.

Also, information collection on the feasibility of sub-contracting pavement condition survey was conducted. Pavement condition survey requires operation of a pavement condition survey vehicle equipped with advanced systems such as laser system, GPS and IRI survey equipment.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the pavement condition survey. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

The Project developed the Implementation Plan of pavement condition survey, and discussed and agreed with WG1 members on July 13th 2015. At the discussion, WG1 agreed the followings;

- Survey is carried out by lane,
- Survey length of national roads should not be more than 6,280 km in maximum,
- Confirmation of target lane is done by RMBs, which DRVN shall issue an official letter,
- Base data required for developing technical norm essential for the cost estimation of pavement condition survey is to be gathered by the Project.

The Project set selection criteria so that the survey cost to be within the budget planed. At the end of August 2015, the survey length was finalized as a total target of 12,574 lane-kilometre including some contingency selected in consultation with DRVN. Following are the elimination criteria for selection of targeted survey sections.

- Road sections under DOTs jurisdiction
- Road sections newly constructed and transferred to DRVN after 2010.
- Road sections which have been planned for pavement repair on a large scale.
- Road sections scheduled to be transferred to Provincial People's Committees.
- Road sections which exceed the maximum survey road length of 6,287km (or survey lane length is 12,574 km).

4) Contractor Selection for Pavement Condition Survey

In September 2015, two potential subcontractors who have experience in conducting pavement condition survey in the past, RTC Central and Science and technology Centre of University of Transport and Communications (hereinafter to be referred as "TOTC"), were invited to submit a proposal by the September 30th, 2015. However, UTC expressed a withdrawal of participation, so that the Project conducted negotiations with RTC Central and signed the contract on October 7th, 2015.

5) Amendment of Contract

In order to fulfil the contracted survey length km, additional survey of 2,319 lane-km is agreed to be conducted for RMB I road sections where significant changes (such as big repair work and road widening) were made after the 2012 survey, contract was amended on 20th August 2016 accordingly.

6) Implementation of Pavement Condition Survey and Analysis (Current status)

a. Survey

RTC Central started the survey from early November 2015 and completed at the end of May 2016 for the road sections set in the initial plan (12,575.1 km). Actual surveyed length reached 10,288.81 km which is below the planned length for 2,286.29 km (About 18% of planned length). Survey is conducted for each lane of the road sections.

Road selection selected is shown below.

Table 2-7 Progress of Road Condition Survey (as of 31st December, 2016)

RMBs	Total surveyed length (lane km)			Calibration	Training	Survey			Analysis	
	Planned	Surveyed	+ -			Start	Complete	Days	Start	Progress (%)
RMB I	2319.18	2,318.17	+2,318.17		N/A	3 Aug. 2016	12 Nov.	101		0%
RMB II	4,964.3	4,232.10	-731.20	20-24 Apr. 2016	25 Apr. 2016	25 Apr. 2016	27 May. 2016	35	14 Nov.	45%
RMB III	2,501.2	2,201.20	-296.43	24-27 Feb. 2016	23 Feb. 2016	27 Feb. 2016	10 Mar. 2016	13	4 May. 2016	100%
RMB IV	5,109.60	3,855.51	-1,253.88	2- 5 Nov. 2015	4 Nov. 2015	6 Nov. 2015	2 Jan. 2016	58	24 Nov. 2015	100%
Total	12,575.1	12,606.98	+36.66							

Table 2-8 Targeted Route and length of Pavement Condition Survey under RMB I

Route name	Km post (from)	Km post (to)	Number of Lane	Total survey length (lane km)
Expressway (Hanoi- Thai Nguyen)	Km0+00	Km63+800	4	249.65
NH2	Km30+600	Km163+000	2;4	285.53

Route name	Km post (from)	Km post (to)	Number of Lane	Total survey length (lane km)
NH3	Km33+300	Km344+	2;4	623.95
NH10	Km6+500	Km144+200	2;4	280.51
NH21B	Km66+500	Km90+130	4	93.60
NH70	Km00+00	Km98+050	2;4	419.09
NH279	Km0+00	Km116+00	2;4	263.85
Ho Chi Minh	Km438+00	Km503+00	2	130.00
Total				2319.18

b. Data Processing and Analysis

Survey data is currently processed and analysed at RTC Central. At the end of December 2016, progress report has shown 100 % progress for RMB III and IV road sections and about 10% progress of RMB II road sections.

7) Information Dissemination and Technical Transfer on Pavement Condition Survey

OJT trainings were held at RMB II, III and IV at the beginning of survey as mentioned above. At the 2nd Training in May 2016 and 3rd Training in October and November 2016, the progress of pavement condition survey was also reported at each region.

(3) Activity 1-3 Develop Web-based PMS Data Input System

1) Baseline Survey

The Project has conducted the baseline survey related to the web-systems through the review of JICA Phase I Project outputs including a document survey on the regulations stipulating responsibility assignment of DRVN departments. Also, the Project visited DRVN's IT Centre and conducted interviews and exchange of opinions on the internet information management including web-operation system. The following is the findings in the survey.

- Since 2007, DRVN has been promoting E-Transaction in line with the Government Information Strategy.
- DRVN had developed Web-based system of Vehicle Tracking.
- GIS base map developed by MONRE is available and has been transferred to DRVN.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the upgrading of the PMS software. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Contractor Selection

Development of the web based system for PMS data input was subcontracted together with development of the web based system for displaying pavement condition survey data (Activity 2-4). A sub-contractor was selected based on the competitive bidding. JICA Project Team has made a contract with SAOMAI Software J.S.C on 20th October 2015.

4) Development of System (Current Status)

In line with the Work Plan, the development of web based system for PMS Data Input was completed at the beginning of May 2016. Any system troubles will be fixed by the contractor using the 1 year warranty set in the

Contract.

5) Information Dissemination and Technical Transfer on PMS Data Input and Software Operation

Using the web-based PMS data input system, the Project conducted OJTs in each region in October – November, 2016 to RMB and SB officials to transfer technologies on operation of web-based PMS data input system.

2-2-5 Measure 2: Upgrade PMS to Apply Road Network of RMB I, II, III and IV, and Formulate Draft Repair Work Plans

(1) Activity 2-1 Upgrade of PMS

1) Baseline Survey

A baseline survey was conducted on the computer software and hardware environment, and their operation methods at RMBs and IT Centre under SCE-ICD in DRVN, and also on the web operation system for VBMS, which was developed recently and became operational.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the pavement condition survey. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd 2015.

3) Development and Discussion of Implementation Plan

In order to have a common understanding on the targets of PMS development, the Project developed the Implementation Plan and discussed at WG1. The Plan was developed based on the review of the Phase I Project activities, issues arising on PMS, and information gathered through an interview to IT Centre.

The WG1 meeting on the discussion of the Plan was held on September 16th, 2015. In the meeting, the plan was agreed basically with the following comments to be taken into consideration in this activity.

- Make it applicable to the planning of multiple lane national roads,
- Reflect deterioration indexes to the planning of road maintenance plans,
- Make it applicable to the nationwide national road network,
- Improve the operation system, automatizing simulation functions,
- Simplification of simulation data input.

Following the discussion on the implementation plan, the Project Team prepared a discussion paper on the conditions of system development showing relation between PMS application and database and conducted detailed discussion on November 18th and on December 11th 2015.

4) Information Dissemination and Technical Transfer

Using the Phase 1 data, the Project applied PMS software upgraded until May 2016 and formulated pavement maintenance plans for RMBI road network. The outline of the plans were reported at RMB workshops in May 2016. Information on the PMS operation incorporating new RMB data will be presented in the 4th Workshop and

OJT scheduled in May 2017.

5) Upgrade of PMS Software (Current status)

Based on the Implementation Plan, the Project has upgraded the offline PMS operation system (Strategic Budget Planning Model and Pavement Repair Work Planning Model) in collaboration with DRVN in accordance with the items agreed at the WG meetings.

Using the Phase I Project data, the Project operated the updated system to formulate annual and mid-term pavement repair work plans for RMB I road network and presented the plans to DRVN in June 2016. Based on the DRVN comments received in June 28th 2016, Project Team amended the system. Trial operation was conducted to examine the compatibility of the customised system based on Phase 1 on the existing web based system (Linux OS), and confirmed the good operational ability.

Development of web-based PMS is to be reported in “(5) Activity 2-5 Develop Web-based PMS Operation System”.

Information have been also shared among project experts to coordinate interface between the offline PMS operation system and six (6) web based operation systems listed above.

(2) Activity 2-2 Formulate PMS Dataset

1) Development and Discussion of Implementation Plan

Implementation plan for PMS Dataset has been discussed together with Activity 2-1 Upgrading of PMS.

2) Development of PMS Dataset /Module Dataset Software (Current Status)

PMS Dataset will be converted to dataset for the operation of PMS software module (Strategic Budget Planning Module / Pavement Repair Work Planning Module) for maintenance planning.

The Project Team subcontracted the development of the software for PMS Dataset /Module Dataset on 31st October 2016 as a component of Web-based PMS Operation System. System development is now underway.

(3) Activity 2-3 Formulate Strategic Budget Plan and Pavement Repair Work Draft Plan

Strategic Budget Plans and Pavement Repair Plans will be formulated upon completion of PMS database and pavement condition data (Refer to “2-2-4. (1) Activity 1-1 Formulate PMS Database” and (2) Activity 1-2 Formulated Pavement Condition Data”), and Web-based PMS Operation System. During the time period of PMS database preparation and PMS system development, the Project will tentatively apply RMB I data for PMS software trial operation.

(4) Activity 2-4 Develop Web-based System for Displaying Pavement Condition Survey Data

1) Baseline Survey

Please refer to “2-2-4 (3) Activity 1-3 Develop Web Based PMS Data Input System”.

2) Development and Discussion of Work Plan

Please refer to “2-2-4 (3) Activity 1-3 Develop Web Based PMS Data Input System”.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Implementation Plan for the Web-Based System for Displaying Pavement Condition Survey Data with the framework. The Implementation Plan was submitted to WG1 on July 14th in 2015 and the plan was basically agreed. The following are the points agreed at the meeting.

- The Web operation system for Displaying Pavement Condition Survey Data is to be developed in order to make it applicable to the PDOT road networks from the viewpoints of system development, assuming PMS database development and data conversion to PMS Datasets are all prepared with the same quality as those with the DRVN National Roads. However, PMS database for the PDOT road networks is not currently available, so that DRVN is requested to examine its applicability on its own when PMS database and PMS Datasets are prepared for PDOT road networks in the future.
- In developing the web operation system, system user is to be divided into three levels; Level 1: DRVN (MOT), Level 2: RMBs & RTCs, and Level 3: SBs & PDOTs
- The system is to enable comparing data of two points of time.

4) Contractor Selection

Please refer to “2-2-4 (3) Activity 1-3 Develop Web Based PMS Data Input System”.

5) Development of System (Current Status)

In line with the Work Plan, the system development of web based system was completed at the beginning of May 2016. Any system troubles will be fixed by the contractor using the 1 year warranty set in the Contract. The Project conducted the demonstration of the web system for displaying Pavement Condition Data at the second JCC held on March 25th 2016 and at RMB workshops held in May 2016.

(5) Activity 2-5 Develop Web-based PMS Operation System

Web-based PMS Operation System is one of the six systems shown in “2, 2-1-1, (4), 2) Subcontract for development of PMS related web-based operation systems”

In line with the Work Plan, the Project Team has developed the algorithms for web-based PMS Operation System and then TORs for contract which consists of Strategic Budget Planning Module and Pavement Repair Work Planning Module. The Project Team subcontracted system development to an IT company on October 2016.

1) Compatibility of systems and database

All six (6) systems developed under the Project will be managed on DRVN web system. Interrelationship between systems and database was evaluated and necessary changes were made at each system.

2) Contractor Selection

Development of the web based PMS Operation system was subcontracted as Package 2 including web-based PMS Operation System (Strategic budget Planning Module and Pavement Repair Work Planning Module) and web

based Pavement Monitoring System (PMoS) (Activity 2-7). A sub-contractor was selected based on the competitive bidding among preselected contractors, and JICA Project Team made a contract with SAOMAI Software J.S.C on 31st October 2016.

3) Development of System (Current Status)

Currently development is ongoing.

(6) Activity 2-6 Develop Web-based Analysis System for Pavement Condition Survey Data

To be added hereafter as the Project progresses.

(7) Activity 2-7 Develop Web-based Pavement Monitoring System (PMoS)

The activity is added under the amended contract with JICA on 21st July 2016, aiming to upgrade PMoS which was once developed in the Phase I Project as offline software. The system will be upgraded to be a Web-based operation system. The system development is contracted out to SAOMAI Software J.S.C on 31st October 2016. For further details on the development of the system, please refer to Activity 2-5 Web-based PMS Operation System._

2-2-6 Measure 3: Improve Inspection and Repair Work Selection Technology on Road Facility and Develop Technical Standards

(1) Activity 3-1 Pilot Repair Works

1) Baseline Survey

Baseline survey was conducted on the pavement condition, current status of maintenance and repair work, maintenance repair technologies, technical standards for road maintenance and repair work, design guideline, contractor selection, repair work implementation contracts and MOT policies on the road maintenance and repair works.

2) Development and Discussion of Work Plan

Based on the finding from the baseline survey, the Project developed the Work Plan for the implementation of pilot repair works. The Work Plan was discussed and agreed at the first JCC meeting.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Implementation Plan, clarifying the framework and getting common understanding on the target of development. WG2 meeting was held on the 3rd of June, 2015 to discuss on the plan, and it was basically agreed. Later on the Implementation Plan was revised to include the water proofing technology and discussed with the WG

a. Selection and Discussion of Pilot Repair Works

Selected pilot repair works to be experimented on the field was agreed at the WG2 meeting which contains; 1) a crack seal technology, 2) a shallow pothole repair work technology by cold asphalt mix, 3) a deep pothole repair work by cold asphalt mix, and 4) bridge water proofing technology. Later in order to incorporate the request from

Director of Road M&M to add water proof technology, the JICA Project Team conducted field surveys and technology reviews and agreed to include bridge water proof technology, as pilot repair works.

b. Selection and Discussion of Pilot Repair Work Sections

The Project conducted an on-the-desk survey in order to preliminary select the candidate road sections for the each of pilot work by applying the pavement condition survey data 2012.

At the end of November 2015, the Project conducted a field survey with RMB I for selecting repair work sections. An important point in selection is not to select heavy damaged road sections for the pilot repair works, since routine maintenance technologies like those under consideration in this pilot project are all small-scale repair technologies which are only applicable to the minor damages. In case, pavement is heavily damaged, small repair technologies can no longer be applicable. Much bigger scale repair technologies such as overlays and structural overlays must be applied to the damages. With this in mind, the Project selected some candidate sections of national roads near Ha Noi for each pilot technology in the form of a technical paper and submitted to DRVN.

Table 2-9 Pilot Repair Work Sections Initially Agreed

	Repair Work	Specification	Repair Materials	Selected National Road		Maximum Work Volume (total)
1	Crack seal		CRACK SEAL NX	NH6	70+000- 78+000	1,000 m
2	Pothole Repair Work-I	Shallow Pothole; Pothole depth less than 3 cm	ROMEN PAT CH	Ho Chi Minh Route	458+000- 468+000	20 square meters
3	Pothole Repair Work-II	Deeper Pothole; Pothole depth from 3 cm to 5 cm	RESCUE PATCH	NH6/ Ho Chi Minh Route	70+000- 78+000	150 square meters
4	Bridge Waterproofing (*2)		CATICOAT R BARADRAIN	NH18	197+887, 198+457, 212+960	620 square meters

c. Review of Pilot Repair Work Sections

In December 2016, the Project was informed that part of candidate sections of pilot repair works, those on NH6, were officially incorporated into the annual plan of RMB I road repair projects, so that the Project conducted a field study with DRVN and PMU3 to find out alternative repair work sections in the RMB I national road network. The field survey has clarified that the candidate site is high potential for the application of Crack Sealing as an alternative to NH6 sections. Upon this preliminary agreement, PMU3 will conduct examination on the site in coordination with relevant agencies (DRVN, RMB I) before making the final agreement. If finally agreed, consultant will move into a detail survey and the design of the pilot repair works in consultation with JPT or DRVN. The following is the outline of the candidate site. Table 1-1 shows reviewed pilot repair work sections.

- Road; National Highway No.10 (NH10)
- Location; Dong Hung District, Thai Binh Province
- Section; From 65+00 km to 72+00 km (Tentative)
- Management Unit; SB1.7
- Carriageway; 2 direction with 1 motorized lane and 1 non-motorized lane in each direction
- Pavement type and width; Asphalt Concrete, 6 meter width each direction
- Traffic condition; High traffic with many heavy vehicles to/from Hai Phong Port

- Typical pavement distress;
 - Single crack and isolated alligator crack (Out of scope for the pilot)
 - Rutting is quite serious in some parts (Out of scope for the pilot)

Table 2-10 Review of Pilot Repair Work Sections

	Repair Work	Specification	Repair Materials	Selected National Road		Maximum Work Volume (total)
1	Crack seal		CRACK SEAL NX	NH10	65+000- 72+000	1,000 m
2	Pothole Repair Work-I	Shallow Pothole; Pothole depth less than 3 cm	ROMEN PAT CH	Ho Chi Minh Route	458+000- 468+000	20 square meters
3	Pothole Repair Work-II	Deeper Pothole; Pothole depth from 3 cm to 5 cm	RESCUE PATCH	Ho Chi Minh Route	458+000- 468+000	150 square meters
4	Bridge Waterproofing (*2)		CATICOAT R BARADRAIN	NH18	197+887, 198+457, 212+960	620 square meters

4) Development and Discussion of Specification, Bill of Quantity and Work Volume

As the Record of Discussion explains that JICA side import materials from Japan with JICA funds, on the other hand, DRVN select maintenance companies with its own budget and implement pilot repair work in the field. In order to support DRVN responsibilities on the company selection and cost estimation for the pilot repair works, the Project developed a technical specification of repair work, Bill of Quantity (BOQ) and work volumes for cost estimation and submitted to DRVN in September 2015.

5) Fund Securing by DRVN for the pilot repair works

DRVN has already secured the budget for the implementation of pilot project from Road Maintenance Fund.

6) Joint Pilot Project between JICA project and DRVN Own Project

DRVN has developed its own domestic pilot projects separately from the JICA pilot project. DRVN will implement JICA pilot project together with DRVN domestic pilot project at the same time within its budget framework. Close coordination between two projects is needed in particular on the selection of pilot sections, the time-line/schedule of applying technologies, monitoring and evaluation methods. DRVN is requested to develop implementation plans on its domestic pilot project, to explain them to the JICA Project Team and to coordinate between two projects.

Also, DRVN is requested to coordinate with RMB I and to maintain the identified pilot sections untouched from other repair work until the end of the pilot projects.

7) Development and Discussion on the list of Material and equipment

The JICA Project Team has carefully examined the material and equipment for pilot repair works and developed the material and equipment list for procurement in Japan.

8) Procurement of Equipment/Materials in Japan and Export/Import Procedures

On 28th October 2016, the Office of the Government (Prime Minister's Office) issued a letter approving the Technical Cooperation Project List to be funded by Japanese ODA. The letter instructs MOF to take an immediate action on the tax exemption procedure for nine projects including this JICA Project. Following this letter, the

Project Team immediately proceeded to the procurement of equipment and materials in Japan which contain TOR development, contractor selection and then signing on the contract in early January 2017.

In compliance with the contract, the contractor will go into the production of equipment and materials in Japan and will assemble them to Yokohama Port for exportation until early February in 2017, followed by the export procedures at the port. Shipping and marine transportation to Hai Phong Port in Viet Nam is to be made in February after TETO. The documents for tax exemption procedures (C1 Form etc.) needed for the proposal of Certificate for Grant Aid by MOF will be prepared in parallel with export procedures. PMU3 is requested to cooperate on the preparation of documents needed for the custom clearance in Hai Phong Port in Viet Nam

9) Preparation of pilot work implementation by DRVN

Selection of consultant, design and contractor selection have been completed by DRVN. The budget for pilot project implementation is funded by Road Maintenance Fund, therefore the contract are valid even after the financial year. However, with these reasons, close coordination and information exchange between JICA, MOT, DRVN, PMU3 and the JICA Project Team is now needed. Table 11 shows the revised time schedule of pilot project implementation, taking account of the above import and export procedures into consideration.

Table 2-11 Expected Procurement Schedule (Tentative)

Period	Action
■ Apr. to Sep. 2015	Planning of pilot repair work implementation plan
■ Sep. to Nov. 2015	Selection of pilot section
■ Dec. to Jan. 2016	Proposals for the revision of Project Document
■ Oct. 28, 2016	Project approval by the Office of the Viet Nam Government
■ Nov. to Dec. 2016	Development of contract document, Contractor selection
■ Dec 2016 to Jan. 2017	Signing of Contract (Jan 5, 2017) and Production of equipment and materials in Japan
■ Feb. 2017	Export procedures at Yokohama Port and marine transportation to Viet Nam Proposal for Tax Exemption Certificate to MOF
■ Mar. 2017	Custom clearance at Hai Phong Port and land transportation
■ Apr. 2017	Pilot repair work execution in the fields
■ May. to Sep. 2017	Monitoring and evaluation of pilot work performance
■ Oct. 2017	Standardization of repair technologies

(2) Activity 3-2 Upgrade Road Facility Inspection Guideline

1) Baseline Survey

The Project conducted a baseline survey on the policy and the current status of standardization and utilization of inspection guideline. The survey has reported that the current “Specifications of Road Routine Road Maintenance” published in 2013 stipulates only the outline of inspection procedure and needs upgrading of provisions.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the development of Road Facility Inspection Guideline. The Work Plan was discussed and agreed at the first JCC meeting.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Implementation Plan, clarifying the detailed implementation plans before implementation and getting consensus on the target of development.

WG2 meeting was held on the 3rd of June, 2015 to discuss on the plan, and was basically agreed. In line with the discussion at the meeting, the Project revised the draft Road Facility Inspection Guideline and submitted to DRVN in September 2015 for further discussion.

4) Opinion Inquiry to Competent Agencies (Current Status)

As a step for the formalization of technical standards, pursuant to regulation, DRVN is obliged to inquire opinions to the competent professional agencies in Viet Nam on the contents of draft standards. Competent agencies include Science and Technology Department of MOT, ITST, UTC and UTT etc. In line with this regulation, DRVN conducted opinion inquiry to the organizations which include RMBs, SBs and RTCs under DRVN from October 2015 to March 2016. The Project Team also conducted information dissemination on the Guideline and opinion exchange with RMB and SB engineers in the 3rd Workshop and OJT held from October 31st through November 11th 2016.

Based on the comments gathered in these events, the Project Team is conducting modification of the Guideline and developing the second draft of the Guideline. DRVN is kindly requested to have an opportunity to exchange opinions with competent agencies in Viet Nam on the Road Facility Inspection Guideline.

5) Integration of Bridge Inspection Guideline

Bridge Inspection Guideline under development as a guideline is intended to provide detailed knowhow on road facility inspection and to encourage road operators to understand the importance of road facility inspection during road maintenance. Information included in the Guideline can be fully utilized not only in the training courses, but also in the standardization road facility inspection technology. In road maintenance, it is well known that bridge inspection is a main part of road facility inspection, so that the Road Facility Inspection Guideline should cover the bridge inspection guidelines which are developed with the same concept common to other road facilities. With these reasons, the Project is now updating the first draft of Road Facility Inspection Guideline to include information on bridge inspection.

6) Information Dissemination and Technical Transfer

The first training was conducted at the 3rd Workshop and OJT scheduled from October 31st through November 11th 2016. During the training, developed guideline was explained at class room training and its application to the actual site was conducted as OJT focusing on pavement, slope, and retaining wall.

(3) Activity 3-3 Upgrade Road Routine Maintenance Manual

1) Baseline Survey

The Project conducted a baseline survey on the policy, on the regulations and on the current status of standardization and utilization of the inspection guideline. The Project also confirmed the comments issued on the

Road Routine Maintenance Manual developed in the JICA Phase I Project.

2) Development and Discussion of Work Plan

Based on the DRVN comments addressed to the Project, the Project developed the Work Plan for the development of the Road Routine Maintenance Manual. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed the Implementation Plan, to clarify the following framework before implementation and get consensus on the target of development.

WG2 meeting was held on the 3rd of June, 2015 to discuss on the plan and basically agreed. In line with the discussion at the meeting, the Project developed the revised draft of Road Routine Maintenance Manual based on the DRVN comments and submitted it to DRVN in September 2015 for further discussion.

4) Opinion Inquiry to Competent Agencies

The same formalization procedure as that for the above Road Facility Inspection Guideline is applied to the Road Routine Maintenance Manual. In line with this regulation, DRVN is now in the process of opinion inquiry to the organizations including competent agencies (Science and Technology Department, MOT, ITST, UTC and UTT) and DRVN subordinate organizations (RMBs, SBs and RTCs). Until today, comments are issued from WG2 and RMB II and III to the Project, saying that draft Road Routine Maintenance Manual is basically agreed. In addition to this opinion inquiry, the Project Team also conducted information dissemination on the Manual and opinion exchange with RMB and SB engineers in the 3rd Workshop and OJT held from October 31st through November 11th 2016.

DRVN is kindly requested to have an opportunity to exchange opinions with competent agencies in Viet Nam on the Road Routine Maintenance Manual. Further discussion will be conducted to the realization of this Manual from April 2016 after the JCC.

5) Upgrade of Road Routine Maintenance Manual (Current Status)

Project Team is currently upgrading Road Routine Maintenance Manual and plans to discuss with DRVN for its application to DRVN Specification of Road Routine Maintenance 2013 for amendment. Project Team is also developing the framework of Road Maintenance Manual applicable to both Routine Maintenance and Periodic Maintenance.

6) Information Dissemination and Technical Transfer

The first training was conducted at the 3rd training (Workshop and OJT) in October and November 2016. During the training, developed manual was explained at class room training and its application to the actual site was conducted as OJT focusing on pavement, slope, and retaining wall.

(4) Activity 3-4 Develop Expressway Maintenance Manual

This activity has been conducted as a supplemental study of this Project. However, it was officially added to the Project activity under the amended contract with JICA on July 21st, 2016.

1) Baseline Survey

Baseline survey has clarified that DRVN is developing “Specifications of Expressway Maintenance Standards” under the supervision of Department of Science, Technology, Environment, and International Cooperation. In 2013, JICA conducted “the Project for Strengthening Operation and Maintenance System for Expressway” and developed the Technical Specification Guidelines for Operation and Maintenance of Expressways. The Department wishes to update these products and develop Specifications of Expressway Maintenance Standards.

2) Development of Manual

The first draft of Manual on slope, drainage, pavement, and slope have been prepared, followed by the drafting of tunnel, box culvert, traffic management facilities, and road management facilities.

2-2-7 Measure 4: Enhance Responsibility Assignment and administration Procedures for Road Maintenance

(1) Baseline Survey

The Project conducted the baseline survey including the review of recommendations made at the JICA Phase I Project, update of regulations relevant to road maintenance and institutions in Viet Nam, and also studied the progress of the DRVN Comprehensive Renovation Plan commenced in 2013. The JICA Project Team also translated and studied regulations in Viet Nam relevant to organization updated.

(2) Development and Discussion of Work Plan

Based on the DRVN comments addressed to the Project, the Project developed the Work Plan for the enhancement of responsibility assignment and administration procedures. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

(3) Development of amendment plan for responsibility assignment and administrative procedure (Current status)

The Project developed the first draft recommendation on the amendment of responsibility assignment and administration procedures, and submit to DRVN in January 2016. The Project is currently introducing new technologies for national road maintenance including PMS database, pavement condition survey, road maintenance planning by PMS, web based operation systems for pavement condition data and PMS, road facility inspection guideline, road routine maintenance manual and training plans. Responsibility assignment and maintenance procedures for smooth and effective operation of these new technologies are getting clarified as the Project progresses. Project Team plans to develop the second recommendation by the end of December 2016 and submit it to DRVN in January 2017.

(4) Information Dissemination and Technical Transfer

The first training was conducted at the 3rd Workshop and OJT scheduled from October 31st through November 11th 2016. At Workshops, needs of review on DRVN responsibility assignment and administration procedure on road

maintenance was addressed.

2-2-8 Measure 5: Plan and Support Implementation of Training Program and Conduct Public Relations

(1) Activity 5-1 Prepare Draft Training Plan

1) Baseline Survey

Until the first JCC meeting, the Project has conducted a baseline survey on any update on legislation, government, and ministry and DRVN policy on trainings. In May 2015, after the WG member as confirmed, the Project conducted further baseline survey and confirmed that there is no comment on training programs developed under the JICA Phase I Project. Besides, the JICA Project Team conducted the baseline survey questionnaires to relevant organization. Accumulated data and information was compiled into a report, and shared among the Project Team in September 2015, and submitted to WG3 in February 2016.

2) Development and Discussion of Work Plan

Based on the baseline survey, the Project developed the Work Plan for the development of training programs. The Work Plan was discussed and agreed at JCC meeting held on April 23rd, 2015. In the Project, three (3) training programs will be developed as shown in Table 2-12 and one (1) training program, which is “During the Project Training” shown in the table will be implemented.

Table 2-12 Outline of Training program developed under the Project

Training Program	Term	Concept	Trainer	Target trainees
1. Training Program on Project Outputs (During the Project Training)	During the project (2015-2017)	Step by Step transfer of technology developed by the Project to DRVN. Training is led by JICA project which handover to DRVN from the second year, in order to oversee that training implementation is properly handover to DRVN.	DRVN JICA Project Team	Project counterparts of DRVN RMBs SBs RTCs (future trainers)
2. Training Program on Project Outputs (After the Project Training)	Until 5 years after the Project Completion (2018-2022)	Deployment of project outputs to nationwide road maintenance agencies focused on selected trainings conducted during the Project DRVN is to organize and implement training program “After the Project”, with support of trained trainers identified by DRVN. DRVN is highly recommended to identify future trained trainer and include them into training during the Project	DRVN Trained trainers	Project counterparts of DRVN RMBs, SBs (Inclusion of PDOT to be considered)
3. Training Program on Road Administration focusing on road maintenance and management_ (Future Training Program)	After 5 years of the Project Completion (2022-)	Capacity enhancement on comprehensive management capacity of PDCA cycle for road administration in Vietnam sustainably Delivery with DRVN and assigned training institution. DRVN is highly recommended to identify competent agency and include them into training during the Project.	DRVN Assigned training institution	Staff involved in road administration nationwide DRVN RMBs SBs PPC/ PDOTs Contractors

3) Development and Discussion of Overall Training Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Overall Training Implementation Plan, clarifying the framework of training before implementation and getting consensus on the

Table 2-14 Number of participant (first Workshops and OJTs)

Training	Date	Training Venue	Style	MO T	DRVN			RMBs			Sub Total	Total
					DRVN	RTC C	PMU3	RMB	RTC	SBs		
1st Seminar	21.10.2015	Hanoi	VN JP	2	19	1	3	2	0	0	11	38 28
	TOTAL											66
1st Training (Workshop & OJT)	27.07.2015	RMBI	WS OJT		17	2	2	10	2	15	48 0	48
	20.07.2015	RMB II	WS OJT					9	8	17	34	53
	24.07.2015	RMB III	WS OJT					16	4	13	33	58
	22.07.2015	RMBIV	WS OJT					11	1	13	25	48
	TOTAL					17	2	2	61	22	103	207
2nd Training (Workshop)	23.05.2016	RMBI	WS		16		2	10	9	20	57	57
	16.05.2016	RMB II	WS		4			19	3	17	43	43
	20.05.2016	RMB III	WS		4			15	7	19	45	45
	18.05.2016	RMBIV	WS		4			8	5	25	42	42
	TOTAL					28		2	52	24	81	187
3rd Training (Workshop & OJT)	07-08.11.2016	RMBI	WS OJT		25		3	5	8	19	60	80
	10-11.11.2016	RMB II	WS OJT					16	2	22	40	62
	31.10-01.11.2016	RMB III	WS OJT					16	4	12	32	52
	03-04.11.2016	RMBIV	WS OJT					6	4	21	31	51
	TOTAL					25		3	61	31	125	245
OJT on Pavement Condition Survey	25.04.2016	RMB II	OJT					6	8	9	23	23
	23.02.2016	RMB III	OJT					1	5	10	16	16
	04.11.2015	RMBIV	OJT					4	5	3	12	12
	TOTAL								11	18	22	51

(3) Activity 5-3 Public Relations**1) Baseline Survey**

In May 2015, after the WG members are confirmed, the Project delivered a baseline survey questionnaire to WG3 on Public Relations (PR). Based on answers delivered at the end of June 2015, further additional information was requested to DRVN in July and August 2015. The survey confirmed that Road Magazine is the responsible unit for PR under DRVN. On 2nd October 2015, the Project interviewed Road Magazine and were informed that Road Magazine conducts PR activities under the commission from DRVN and has published monthly Road magazine, runs web based Road magazines, developed Video Clips on Road related topics, and also submit articles to news agencies.

2) Development and Discussion of Work Plan

Based on the baseline survey, the Project developed the Work Plan for the development of public relation programs. The Work Plan was discussed and agreed at the JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed upon at the JCC meeting, the Project developed an Implementation Plan, clarifying the Framework before implementation and getting consensus on the target of development. WG3 meeting was held on 28th of May, 2015 and discussed the Project Objectives (Approach) on PR. At the meeting, Road Magazine, the independent unit under DRVN, was assigned to conduct PR activities of DRVN. JICA Project Team has further developed implementation plan with detail activities, and discussed with WG 3. The plan has been basically agreed.

4) Development and Discussion of Detail Implementation Plan

The Project developed detailed implementation plans for each PR activities of Annual Report, General Information Brochure, Video Clip, and Web-based Information System for Road Maintenance Technology and discussed with WG 3 and Road Magazine of DRVN, and agreed.

5) Contractor Selection

The Project Team prepared TOR on the development of Annual Report and Video Clip, and contracted out to Road Magazine on 30th June 2016. These works are to be completed by 28th February 2017. Development of Web-based Information System for Road Maintenance Technology was subcontracted to SAOMAI through competitive quote on 5th August 2016 which is to be completed by the end of December 2016.

6) Development of PR Outputs (Current Status)

Development of Annual Report and Video Clip, Web-based Information System for Road Maintenance Technology are in progress and the Project Team conduct monitoring time to time.

7) Delivery of PR activities

From 8th to 10th of July, 2015, the Project participated to “Viet Nam Ha Noi Transport & Logistics Conference & Exhibition”, and set up a booth to introduce the Project and project activities with Board Panel and Photos, leaflet, a short video clip.

2-3 Achievement of Output (Based on PDM)

2-3-1 OUPUT 1: PMS Data Development Technology is improved.

Objectively Verifiable Indicators	Project Output	Achievement Level
Road asset database, maintenance history database and pavement condition database are completed for PMS.	PMS Data Input System (offline and Web-based) Road Inventory/Asset Database Maintenance History Database Pavement Condition Database	<u>In Progress</u> <ul style="list-style-type: none"> Upgrading of PMS data input format has been completed. System development of PMS data input has been completed for offline system and web based online system. Input and amendment of PMS data were completed for RMB II and III roads and are still underway for RMB IV roads. Pavement Condition Survey for RMB II, III and IV roads has already completed.

		<ul style="list-style-type: none"> Data processing has also completed for RMB III and IV roads and that of RMB II has already begun. Pavement Condition survey of additional road sections under RMB I was already completed. Data processing will start in April 2017, following RMB II road analysis.
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2-3-2 OUPUT 2: PMS is Upgraded and applied to the Planning of Trial Pavement Repair Work Plans.

Objectively Verifiable Indicators	Project Output	Achievement Level
Trial pavement repair work plan (Annual, five year) using PMS is formulated by DRVN.	Web based PMS Web-based Pavement Condition Data Display System Trial Pavement Repair Plans (Annual and Five Year Plans) Web-based Pavement Condition Data Analysis System Web-based PMoS	<u>In Progress</u> <ul style="list-style-type: none"> PMS is currently under upgrading. Development of Web-based Pavement Condition Data Display System was completed and now operational level. Development of web-based PMS operation system is in progress.

2-3-3 OUPUT 3: Final Draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual are Formulated.

Objectively Verifiable Indicators	Project Output	Achievement Level
Draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual are formulated.	Final draft of Road Facility Inspection Guidelines Road Routine Maintenance Manual Expressway Maintenance Manual	<u>In Progress</u> The First draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual has been submitted to DRVN and their second drafts are under development based on the comments issued to the first drafts by the competent agencies.

2-3-4 OUPUT 4: Responsibility Assignment and Administration Procedure are Clarified for Road Maintenance.

Objectively Verifiable Indicators	Project Output	Achievement Level
Amendment plans to realize output 1 to 3 are developed.	Amendment plans (draft) on responsibility assignment and administrative procedure	<u>In Progress</u> First recommendation has been developed and submitted to DRVN. Second recommendation is now under preparation.

2-3-5 OUPUT 5: Training Implementation and Public Relations are Reinforced.

Objectively Verifiable Indicators	Project Output	Achievement Level
DRVN conduct regular trainings on project	Training Program and Plan (during and after the project, National road	<u>In Progress</u> Training program during the project is submitted.

outputs.	administration) Capacity enhancement of counterpart staff	Currently training program for national administration (road maintenance and management) is under development. (1) Trainings 1 st Training (Workshop and OJT (PMS data input)): 20-27 Jul.2015 2 nd Training (Workshop): 16 – 23 May 2016 3 rd Training (Workshop and OJT) : 31 st Oct.-11 Nov. 2016 (2) OJT on Pavement Condition Survey: 1st October 4th at Ho Chi Minh City 2 nd February 23 rd at Da Nang City 3 rd April 25 th at Vinh City (3) Seminar 1st Seminar: 21st October, 2015 (4) Training in Japan 1 st Training: 13-19 th September 2015 2 nd training: 26 Sep. – 6 Oct. 2016
DRVN conduct PR.	Annual Report Video Clip Web-based Road Maintenance Technology Leaflet	<u>In Progress</u> Project leaflet has been developed and distributed at MOT Exhibition and Seminar. Development of Annual report, Video clip and Web-based Information System for Road Maintenance Technology are under development.

2-4 Achievement of the Project Purpose (to be added as the project progresses)

PROJECT PURPOSE: Implementation capacity for road maintenance is strengthened in Viet Nam.

Objectively Verifiable Indicators	Achievement Level
Trial pavement repair work plan using PMS is formulated in RMB I, II, III and IV	
Primary rules for road facility inspection, maintenance and repair work are formulated (*1)	
Implementation structure for road maintenance is established.	

2-5 Risks and Actions for Mitigation

(1) February 2015 – March 2015 (Up to Monitoring Sheet Ver. 1)

As the Project required a couple of months to start, counterpart of DRVN also needed time to set up the project environment including arranging Project Team office space, organizing working groups and selecting counterpart members including local budget arrangement. This raised a little concern in the delay of the Project. During this term, the Project Team consulted to MOT, DRVN and JICA Vietnam, and moved to a temporary office space prepared by DRVN and conducted baseline surveys based on desktop study. Thanks to MOT, DRVN, and JICA Vietnam efforts, the above project environment was settled before the first JCC.

(2) April 2015 – October 2015 (Up to Monitoring Sheet Ver. 2)

No risk was observed during this term.

(3) October 2015 – March 2016 (Up to Monitoring Sheet Ver. 3)

As mentioned at “1-2-6 (1) Activity 3-1 Pilot Repair Works”, the procurement of equipment and materials for pilot repair works is expected to delay due to long processing time for approval on the import material and equipment and also due to regulation change of custom clearance. Consequently, the implementation of pilot repair works also to be delayed for about half a year. JICA Project Team needs to coordinate with supplier for the production timing of materials, to rearrange experts’ assignment schedule, and to coordinate with DRVN for arrangement of local contractors for pilot repair works.

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

As mentioned at “1-2-6 (1) Activity 3-1 Pilot Repair Works”, the procurement of equipment and materials for pilot repair works has been delayed due to import and tax exemption procedures. Implementation of pilot repair works has been originally planned from January to March 2016 is expected to be in Feb – Mar 2017, which is delay of about 1 year. JICA Project Team has coordinated with the supplier for the production timing of materials, to rearrange experts’ assignment schedule, and to coordinate with DRVN for arrangement of local contractors for pilot repair works.

(5) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

As mentioned at “1-2-6 (1) Activity 3-1 Pilot Repair Works”, there has been some progress in administration procedure in Viet Nam (Project approval by the Office of the Government). The Project Team has restarted the internal procedure of equipment and material procurement, targeting the goods to be arrived in March 2017, however there still remain some concerns for the delay of the rest of the administration procedures (Tax exemption Procedures in Viet Nam).

2-6 Progress of Actions undertaken by JICA

(1) February 2015 – March 2015 (Up to Monitoring Sheet Ver. 1)

JICA Vietnam has provided a great support to accelerate DRVN arrangement for office space.

(2) April 2015 – October 2015 (Up to Monitoring Sheet Ver. 2)

Not applicable

(3) October 2015 – March 2016 (Up to Monitoring Sheet Ver. 3)

JICA Vietnam provides a great support to JICA Project Team, DRVN and MOT for providing information on tax exemption and coordinating relevant agencies.

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

JICA Vietnam provides a great support to JICA Project Team by close coordination with relevant ministries, and sharing information with DRVN and Project Team on tax exemption

(5) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

Thanks to JICA Vietnam on close coordination with relevant ministries, tax exemption procedure have now move forward. Continuous support is very much appreciated to ensure that necessary procurement will be successfully carried out to conduct the planed pilot repair project within the project term.

2-7 Progress of Actions undertaken by Gov. of Viet Nam

(1) February 2015 – March 2015 (Up to Monitoring Sheet Ver. 1)

After PMU3 had been assigned to the Project, arrangement for office space and furniture etc. have been arranged very smoothly.

(1) April 2015 – October 2015 (Up to Monitoring Sheet Ver. 2)

Not applicable

(2) October 2015 – March 2016 (Up to Monitoring Sheet Ver. 3)

Documents required for Custom Clearance are prepared by PMU 3 of DRVN.

(3) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

Proceeding the Approval of Funding List has been delayed, which requires to apply Grant Aid Certificate to import and tax exemption procedures of the material and equipment needed for the pilot pavement repair works.

(4) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

On 28th October 2016, the Prime Minister's Office issued a letter approving on the Technical Cooperation project list to be funded by JICA ODA, requesting MOF to proceed the tax exemption procedure of urgent projects including this Project. Formal approval on the Funding List will be processed separately from this urgent treatment through discussion between MPI and the Office of the Government (Prime Minister's Office).

2-8 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

2-8-1 Coordination with Vietnam Road Asset Management Project (VRAMP)

Component A-1 "Consulting Service for Road Database Framework and Development of the Road Asset Management System and Road Asset Management Plans", of Vietnam Road Asset Management Project (VRAMP) funded by the World Bank has commenced from 1st November, 2015. As explained in section 2-2-2 (2); Project Management, also there is close relation between JICA Phase II Project and VRAMP Component A-1 in relation to data collection, PMS integration in RAMS and database utilization. Thus, RAM-SC and RAM-WG set by DRVN are expected to coordinate regularly with VRAMP.

Regarding PMS development, DRVN is requested to keep maintaining the principle of concluding the PMS development during the implementation of the JICA Project. The JICA Project Team will make an effort in developing PMS system until its operability in DRVN environment is confirmed.

The 3rd JICA training and the planned VRAMP first training (Workshop) was planned to be held on the same day. However, VRAMP workshop was rescheduled to the days from November 21, 2016.

3. DELAY OF WORK SCHEDULE AND/OR PROBLEMS (IF ANY)

3-1 Detail

(1) February 2015 to April 2015 (Up to Monitoring Sheet Ver.1)

As mentioned earlier, there was a risk of delay, however those issues were resolved in a good cooperation of involved agencies.

(2) May 2015 to October 2015 (Up to Monitoring Sheet Ver. 2)

During this term, TWG was planned to be hold in July and October 2015. However, the first TWG was postponed to the 22nd of October, 2015.

(3) November 2015 to March 2016 (Up to Monitoring Sheet Ver. 3)

Procurement of material and equipment for pilot repair works is expected to delay due to required time scale for document preparation required for tax exemption. Thus the implementation of pilot repair works also to be delayed as mentioned in “1.2.6 (1) Activity 3-1 Pilot Repair Works.”

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

Procurement of material and equipment for pilot repair works is expected to delay due to required time scale for document preparation required for tax exemption. Thus the implementation of pilot repair works also to be delayed as mentioned in “1.2.6 (1) Activity 3-1 Pilot Repair Works.”

(5) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

Procurement of material and equipment for pilot repair works is expected to delay due to required time scale for document preparation required for tax exemption. Thus the implementation of pilot repair works also to be delayed as mentioned in “1.2.6 (1) Activity 3-1 Pilot Repair Works.”

3-2 Cause

(1) February 2015 to April 2015 (Up to Monitoring Sheet Ver.1)

Very initial period of project commencement and Project Team mobilization

(2) May 2015 to October 2015 (Up to Monitoring Sheet Ver. 2)

No particular issues to be coordinated

(3) November 2015 to March 2016 (Up to Monitoring Sheet Ver. 3)

Time require for preparation of tax exemption document

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

Time require for approval from Prime Minister

(5) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

Time require for tax exemption procedure in Viet Nam.

3-3 Actions to be Taken

(1) February 2015 to April 2015 (Up to Monitoring Sheet Ver.1)

Not applicable

(2) May 2015 to October 2015(Up to Monitoring Sheet Ver.2)

Due to no particular issues to be coordinated in July, TWG was postponed to October 2015.

(3) October 2015 to March 2016 (Up to Monitoring Sheet Ver.3)

JICA Project Team has been informed that document preparation for Tax Exemption requires (Amended Project Document and C1 Form) will take 4 to 6 months. Thus pilot repair works will commence in October 2016 as the earliest.

JICA Project Team monitored the preparation of relevant documents.

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

JICA Project Team was informed that approval for funding list by PM will take minimum 3 months. Thus pilot repair works will commence in March 2017 as the earliest.

JICA Project Team has requested to JICA Vietnam office to coordinate with Vietnamese authorities to accelerate the document processing.

(5) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

JICA Project Team has stated necessary internal procedure (tender, selection of contractor, shipping of material etc.) to minimise the delay of procedure. DRVN is also kindly requested to proceed necessary preparation of documents for tax exemption in Viet Nam.

3-4 Roles of Responsible Persons/Organization (JICA, Gov. of Viet Nam, etc.)

Preparation of documents required for Custom Clearance: JICA Vietnam Office / PMU 3 of DRVN

4. MODIFICATION OF THE PROJECT IMPLEMENTATION PLAN

4-1 PO and PDM

(1) Modification made at Ver. 1

At Version 1, a slight adjustment on Implementation schedule was made based on Work Plan prepared in discussion with DRVN. And also a sub activity “Implement pavement condition surveys for RMB II, III and IV selected roads” which was originally under Activity 2 “Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan”, has now incorporated under Activity 1 “Improve PMS Data Collection and Processing Technology”.

(2) Modification made at Ver. 2

Outputs and Activities of PDM have been updated according to the Project Activities considering the actual and practical delivery of tasks and outputs, which defined in the Work Plan. Thus output has change from 4 outputs to 5 outputs adding training implementation and public relations, and activities for output 5 have been included.

In addition, in the TWG held on October 2015, DRVN reported a new regulation on the formulation of pavement midterm repair plans, which includes the change of target year from “3-year” to “5-Year” according to the Preparation of Mid-term road maintenance plan in the period of 2017–2020 issued by DRVN on 4th September 2015 prudent to the Public Investment Law No.49/2014/QH13 and Prime Minister Decree No.77/2015/ND-CP. Upon this information, the Project promised to comply the current PMS development with this new regulation and accordingly updated PDM.

Proposed modification has been consulted to JICA in January 2016. PO is also amended accordingly.

(3) Modification made at Ver. 3

No modification was made.

(4) Modification made at Ver. 4

Draft modification is made on PDM and PO as Version 3 Draft. These modifications will be discussed and authorized at the 3rd JCC which will be held in March 2017. On PDM, additional activities of Activity 2-7 Develop Web based Pavement Monitoring System, and Activity 3-4 Develop Expressway Maintenance Manual are added. On PO, the sub activities of each activity are added to make clear the progress of activities.

(5) Modification made at Ver. 5

As mentioned at Version 4, draft modification will be discussed at the 3rd JCC which will be held in March 2017.

4-2 Other modifications on detailed implementation plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)

Contract was amended on July 21st, 2016 to include additional tasks shown below;

- 1) Operation Verification of web systems developed under the Project
- 2) Operation Verification of Web-based System for Displaying Pavement Condition Survey Data

- 3) Upgrading of Pavement Monitoring System
- 4) Development of Expressway Routine Maintenance Manual
- 5) Addition of Pavement Condition Survey

In order to proceed the above additional activities, in total of 8.9 MM (4.9 MM for expert on Web-based System for Displaying Pavement Condition Data, 3.6 MM for Team Leader/Road Maintenance Planning, and 0.4 MM for the expert on Pavement Condition Survey (Calibration) , are added, which is an increase from 126 MM to 134.9 MM.

In addition to above modification, the following modification was also made during implementation of project:

- The number of trainees in second training in Japan to be conducted in 2016 has been increased from 5 to 10 persons.

5. PREPARATION OF GOV. OF VIET NAM TOWARD AFTER COMPLETION OF THE PROJECT

To be added as the Project progresses.

APPENDIX-1: PROJECT MONITORING SHEET I (PDM) PM FORM3-2

APPENDIX-2: PROJECT MONITORING SHEET II (PO) PM FORM3-3

APPENDIX-3: MINUTES OF JCC MEETINGS

Table 0-1 Flow Chart

	2015												2016												2017												2018		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Work in JP/VN																																							
Joint Coordination Committee				△											△																								
Technical Working Group																																							
Seminar																																							
Workshop / OJT																																							
Training in Japan																																							
Monitoring Sheets																																							
Reports (PR: Progress Report, PCR: Project Completion Report)																																							
Main Project Activities	<p>Measure 1: Improve PMS Data Collection and Processing Technology</p> <p>1-1 Formulate PMS Database: Baseline Survey, Work Plan Preparation, Upgrading of PMS Data Format/ Data Input System, Monitoring of PMS Data(*) to be Inputted by RMB/SB</p> <p>1-2 Implement Pavement Condition Survey: Baseline Survey, Work Plan Preparation, Development of Survey Plan/Local Sub Contract, Implementation of Pavement Condition Survey for Selected Road of RMB II, III, IV Jurisdiction, Processing / Analysis of Pavement Condition Survey Data</p> <p>1-3 Develop Web based PMS Data Input System: Develop Web based PMS Data Input System, Monitoring of PMS Data(*) to be Inputted by RMB/SB (Continue)</p> <p>Activities: WS/OJT (Data Input), Seminar, WS/OJT, OJT, WS/OJT, WS/OJT/Seminar</p>																																						
	<p>Measure 2: Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan</p> <p>1-2 Upgrade PMS: Baseline Survey, Work Plan Preparation, Preparation of PMS Upgrading Plan, Review and Upgrade of PMS considering Management Data and Geographical Parameters</p> <p>2-4 Develop Web-based System for Displaying Pavement Condition Data: Development of Web-based System for Displaying Pavement Condition Data</p> <p>2-5/2-6/2-7 Develop Web-based PMS Operation System, PC Data Analysis system and PMS for Pavement condition Data: Development of PMS Web-based System, Analysis System and PMS for pavement condition data</p> <p>2-2 Formulate PMS Dataset: Conversion of Inputted PMS Data / Development of PMS Dataset(**)</p> <p>2-3 Formulate Pavement Repair Work Draft Plan for RMB II, III, IV: Formulation of Repair Work Draft Plan (Annual / 3 year) using Web-based Operation System, Monitoring of PMS Legalization Process</p> <p>Activities: WS, Seminar, WS/OJT, OJT, WS/OJT, WS/OJT/Seminar</p>																																						
	<p>Measure 3: Improve Inspection and Repair Work Selection technology on Road Facility and Develop Technical Standards</p> <p>3-1 Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology: Develop Pilot Repair Works Plan, Selection of Pilot Repair Works/ Contractor /Procurement of Equipment and Materials, Implementation of Pilot Repair Works, Monitoring and Evaluation of Pilot Repair Works</p> <p>3-2 Upgrade Road Facility Inspection Guideline: Upgrading of Road Facility Inspection Guideline and Discussion with Competent Agencies, Monitoring of Guideline Legalization Process</p> <p>3-3 Upgrade Road Routine Maintenance Manual: Upgrading of Road Routine Maintenance Manual and Discussion with Competent Agencies, Finalization of Road Maintenance Manual / Discussion and Confirmation to Specialized Agencies, Monitoring of Manuals Legalization</p> <p>3-4 Development of Expressway Maintenance Manual: Development of Expressway Maintenance Manual</p> <p>Activities: WS, Seminar, WS/OJT, OJT, WS/OJT, WS/OJT/Seminar</p>																																						
	<p>Measure 4: Enhance Responsibility Assignment and Administration Procedures for Road Maintenance</p> <p>4-1 Prepare Amendment Plan for Road Maintenance Responsibility Assignment(Conducted by JICA Long-term Expert): Preparation of Amendment Plan for Responsibility Assignment and coordination with Relevant Parties on the Draft Plan, Monitoring of Legalization Process</p> <p>4-2 Prepare Amendment Plan for Road Maintenance Administrative Procedure: Preparation of Amendment Plan for Administrative Procedure and coordination with Relevant Parties on the Draft Plan, Monitoring of Legalization Process</p> <p>Activities: WS, Seminar, WS/OJT, OJT, WS/OJT, WS/OJT/Seminar</p>																																						
	<p>Measure 5: Plan and Support Implementation of Training Program and Conduct Public Relations</p> <p>5-1 Prepare Draft Training Plan: Baseline Survey, Work Plan, Development of Draft Training Plan for During/After Project /Long Term Training and Discussion and Coordination with Relevant Parties, Monitoring of Legalization Process</p> <p>5-2 Support Training Implementation: Coordination of WS/OJT, Coordination of Seminar/Training in JP, Coordination of WS/OJT, Coordination of OJT/Training in JP, Coordination of WS/OJT, Coordination of WS, OJT, Seminar, Training in JP</p> <p>5-3 Conduct Public Relations: Baseline Survey, Work Plan, Conduct Public Relations</p>																																						

*PMS Data: Data which includes PMS specific and some location specific (identifier) Data. These data are not combined into a single format/structure/table.
 ** PMS Dataset: Only the required PMS data for running PMS Software. Data are stored in a pre-defined single format/structure

Project Monitoring Sheet I (Revision of Project Design Matrix)

Project Name: The Project for Capacity Enhancement in Road Maintenance Phase II
 Project Period: February, 2015 to March, 2018 (3 years)
 Implementation Organization: Directorate for Roads of Vietnam under Ministry of Transport
 Target Group: DRVN, Road Management Bureaus (RMBs) I, II, III, IV
 Target Area: Designated area of RMB I, II, III, IV

Version: 3 DRAFT*

Dated: 31st Sep, 2016

* Amendments will be authorized at next JCC to be held in March 2017.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions (I.A.)	Achievement	Remarks
Overall Goal Road maintenance is conducted properly based on the mid-term plan, following PDCA cycle.	(By 3 years from the project end) The indicators for pavement damage (IRI, cracks, rutting, etc.) will be improved X %.	1.Result of data comparison of regular pavement condition survey by DRVN 2.Trial 3 year and annual plan for pavement maintenance 3. Annual Report 4. Interview to DRVN			
Project Purpose Implementation capacity for road maintenance is strengthened in Viet Nam	1. Trial pavement repair work plan using PMS is formulated in RMB I,II, III and IV 2. Primary rules for road facility inspection, maintenance and repair work are formulated (*1) 3 Implementation structure for road maintenance is established.	1. Trial pavement repair work plan of RMB I,II, III and IV 2. Regulation 3-1. Regulation 3-2. Interview to DRVN	I.A. to achieve Overall goal 1.Budget is allocated stably for maintenance activities in accordance with five year plan 2. Training is conducted by DRVN continuously to maintain technical skills		
Outputs 1. PMS data development technology is improved 2.PMS is upgraded and applied to the planning of trial pavement repair work plans 3.Technical specifications for inspecting road facility and selecting repair work are developed 4.Responsibility assignment and administration procedure are clarified for road maintenance 5. Training impelmentation and public relations are reinforced	1.PMS Database consisting of Road Aasset data, maintenance history data and pavement condition data are completed. 2. Trial pavement repair work plan (annual, five year) using PMS is formulated by DRVN. 3.Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual, and Expressway Maintenance Manual are formulated. 4. Amendment plans to realize output 1-3 are developed 5-1. DRVN conduct regular trainings on project outputs 5-2. DRVN conduct PR.	1.Road asset DB, maintenance history DB, pavement condition DB 2.Trial pavement repair plans (annual, five year plan) 3.Final draft of Road Facility Inspection Guideline, Road Routine Maintenance Manual and Expressway Maintenance Manual 4.Amendment plans (draft) 5-1. Training record 5-2. PR outputs	I.A. to achieve Project Purpose 1 Engineers who received training are assigned continuously 2. Legalization procedure for Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual proceeds	In Progress	
Activities	Inputs		I.A. to achieve Outputs		
	Japanese side	Vietnamese side			
1-1.Formulate PMS Database	1.Dispatch of Experts (1)Long term Expert •Road maintenance policy/regulations (2)Short-term experts • Team Leader/Road Maintenance Planning •Deputy Team Leader/PMS System Operation Technology	1.Human resources (1)Chairperson of JCC (2)Chairperson of TWG (3)Counterparts (DRVN and RMBs) (4)Coordinator 2.Facilities Communal office space for JP Team and local support team with electricity, air-condition, internet, telephone line. 3.Cost (1)Cost for pilot project on maintenance and repair work (including cost for general materials) (2)Small running expenses necessary for the implementation of the Project. (e.g. daily allowance, accommodation and domestic travel expenses of DRVN's staff for participating in training in Vietnam)	1. VRAMP Project (WB) is implemented as planned 2. IT policy of DRVN on organization and operation of database and system is maintained		
1-2.Implement Pavement Condition Surveys for RMB II, III and IV selected roads	•Pavement Condition Survey (Planning and Management) •Pavement Condition Survey(Calibration) •PMS System Technology(Budget Simulation) •PMS System Technology(Repair Work Planning) •Web-based System for Displaying Pavement Condition Data •Road Facility Inspection Technology •Road Maintenance Technology •Pilot Project Management •Pavement Technology •Road Maintenance Administrative Procedure •Capacity Development/Project Coordination	4.Others (1)Implementation of the pilot repair work for maintenance and repair work with JICA experts' advisory. (2)Implementation of pilot Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction, with JICA's local service.			
1-3.Develop Web-based PMS Data Input System					
2-1.Upgrade PMS software					
2-2.Convert input data and make PMS dataset					
2-3.Formulate trial Pavement Repair Work Plan (annual and five year plan) for RMB I, II, III and IV road networks by PMS system and examine system operability.					
2-4.Develop web-based system for displaying pavement condition data on the DRVN mapping system					
2-5.Develop Web-based system which enables PMS Operation on website and formulates trial annual and five year pavement repair work plans					
2-6. Develop Web-based Analysis System for Pavement Condition Survey Data	2.Training in Japan •Three times (once/year) on Road maintenance policy and repair technology				
2-7. Develop Web-based Pavement Monitoring System (PMoS)	3.Equipment, Machinery and Materials (1)Special equipment and materials for pilot project work including: - Crack seal technology - Shallow pothole repair technology - Deep pothole repair technology - Bridge Waterproofing technology (Note) Materials to be imported are all listed in the revised Project Document. (2)Computers for planning system (3)Others needed for project implementation				
3-1.Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology which incorporates new technology and materials					
3-2. Upgrade Road Facility Inspection Guideline					
3-3. Upgrade Road Routine Maintenance Manual for standardization					
3-4. Develop Expressway Maintenance Manual					
4-1.Prepare Amendment Plan for Road Maintenance Responsibility Assignment	4.Others(Sub Contract) •Local service for Pilot Pavement Condition Survey •Local Service for development of web-based operation system				
4-2.Prepare Amendment Plan for Road Maintenance Administrative Procedure					
5.1. Prepare Draft Training Plan					
5.2. Support Training Implementation					
5.3. Conduct Public Relations					
			Preconditions		
			Support and priority of DRVN on outputs generated through the phase I project including system database, technical Standards, and recommendation on institution are maintained		

Note:(*1): target facilities, frequency, methods, diagnosis, selection method for repair works, repair work, construction management



**THE SOCIALIST REPUBLIC OF VIETNAM
MINISTRY OF TRANSPORT
DIRECTORATE FOR ROADS OF VIETNAM
JAPAN INTERNATIONAL COOPERATION AGENCY**



**THE PROJECT FOR CAPACITY ENHANCEMENT
IN ROAD MAINTENANCE
PHASE II**

PROJECT MONITORING SHEET VER.6

(January 2017 – March 2017)

Submitted To:

TO CHIEF REPRESENTATIVE of JICA VIET NAM OFFICE

PROJECT MONITORING SHEET

Project Title: Project for Capacity Enhancement in Road Maintenance Phase II

Version of the Sheet: Ver. 6 (Term: January 2017 – March 2017)

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	Title	Team Leader
	Submission Date	29 March 2017

(Prepared in cooperation with DRVN)

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1. PROJECT OUTLINE

1-1 Country

The Socialist Republic of Vietnam

1-2 Title of the Project

Project for Capacity Enhancement in Road Maintenance Phase II

1-3 Duration of the Project (Planned and Actual)

From February 2015 to March 2018 (38 months)

1-4 Background (from Record of Discussion (R/D))

Under the previous 5 years Socio-Economic Development Strategy (2006-2010), the economy of Vietnam achieved stable socio-economic growth as described with the average growth rate of 7 % / year, and doubling of GDP in 2010 from that of 2000. In the new 5 years Socio-Economic Development Strategy (2011-2015), maintaining of high socio-economic growth is continued to be one of objectives through mobilizing 12 socio economic strategies described. With regards to socio economic strategy on transport infrastructure, it concentrates on reviewing of transport infrastructure development projects and promoting priority investment on establishing urban infrastructure such as step by step synchronously- establishment of South-North route axis and East-West corridor axis, encouraging and creating conditions for participation of foreign and private sector investments on infrastructure development, and early completion of cross border roads to surrounding countries.

In complying with the previous development strategy, in 2008, the Ministry of Transport (MOT) set the Transport infrastructure development Strategy of Vietnam up to 2020. Since its establishment, the strategy has been partially amended periodically under the instruction of the Prime Minister. Especially approved amendments in 2013 describe policies on introduction of advanced technologies, upgrading of technical standards, specification, and norms. In January 2013, MOT successfully institutionalized road maintenance funds which had been a matter of concerns for a long term. As a result, 65 % of road maintenance funds are allocated to national roads and 35% to provincial road. This is expected to secure more budgets for road maintenance than those in 2012, which only 40% of requested budget was secured.

In March, 2013, MOT published the Plan for Comprehensive Renovation in Management and Maintenance of National Highway System. The Plan aims to upgrade the quality of national road maintenance works so that the longevity of road facilities is increased, and at the same time, safety and efficiency of road traffic are also improved. Strategic policies described in the plan are listed below.

- 1) Renovate contractor selection procedures for national road maintenance
- 2) Upgrade quality of supervision on road maintenance work
- 3) Apply new road maintenance technologies
- 4) Implement measures for overloaded vehicles
- 5) Renovate planning methodology for road maintenance (3 years plan)
- 6) Improve required procedures for laws and regulations relevant to road management and maintenance
- 7) Amend road maintenance standards and norms

- 8) Develop human resources and improve road maintenance institutions
- 9) Install information management system for road maintenance
- 10) Assist capacity enhancement of regional road maintenance

Current situation of Road Asset Management at DRVN is describes as below:

- 1) DRVN implemented operation methodology in quality management and road maintenance in accordance with the Government's policies.
- 2) Technology qualification in management and maintenance work is low, asynchronous, and slow renovation lead to limited effectiveness and quality of this work in the past.
- 3) The technical standards, work procedures, mechanism, policies and financial resources are incomplete that make it difficult for implementation and planning (including short-term, medium-term and long-term) of road maintenance.
- 4) Lack of a road database system which is unified and complete to connect data from the central to the local, facilitate the management and exploitation, and initiatively coordinate the works.
- 5) Human resources are not equal in qualifications and capabilities, and there is no development plan which is appropriate and satisfied with the new implementation methodology.

Under the above background, GOV requested GOJ to implement "Technical Cooperation for the Project for Capacity Enhancement in Road Maintenance Phase II". In response to this request, JICA determined to transfer the technology in order to facilitate the road maintenance cycle and held series of discussion with DRVN and related authorities concerned of Viet Nam. Based on the agreements between JICA and the authorities concerned of Viet Nam, the Minutes of Meetings was signed on September 8, 2014, which leads both parties to conclude this Record of Discussions.

1-5 Overall Goal and Project Purpose (from Record of Discussions (R/D))

(1) Overall Goal

Road maintenance is conducted properly based on the mid-term plan, following PDCA cycle.

(2) Project Purpose

Implementation capacity for road maintenance is strengthened in Viet Nam

1-6 Implementation Agency

Directorate for Roads of Vietnam (DRVN)

1-7 Reporting

Followings are a list of report to be prepared under the Project.

Table 1-1 Current Status of Report

	Type of Report	Status	Notes
1	Monitoring Sheet Ver.1	Submitted on 23 rd April 2015	<ul style="list-style-type: none"> • Project Monitoring Sheets • Work Plan
2	Monitoring Sheet Ver.2	Submitted on 21 st October 2015	<ul style="list-style-type: none"> • Project Monitoring Sheets
3	Monitoring Sheet Ver. 3	Submitted on 25 th March 2016	<ul style="list-style-type: none"> • Project Monitoring Sheets • Progress Report I
4	Monitoring Sheet Ver. 4	Submitted on 31 st September 2016	<ul style="list-style-type: none"> • Project Monitoring Sheets
5	Monitoring Sheet Ver. 5	Submitted on 22 nd January 2017	<ul style="list-style-type: none"> • Project Monitoring Sheets
6	Monitoring Sheet Ver. 6	Submitted on 29 th March 2017	<ul style="list-style-type: none"> • Project Monitoring Sheets • Progress Report II
7	Monitoring Sheet Ver. 7	To be submitted in September 2016	
8	Project Completion Report (include outputs of technical cooperation)	To be submitted at beginning of February 2018	

2. PROGRESS

2-1 Progress of Inputs

2-1-1 Japanese Side

(1) Dispatch of Experts

The Project Team is formed from 13 short term experts and one (1) long term expert.

Based on the amended contract on 21st July 2016, total Man Month (hereinafter to be called as “MM”) has been increased from 126 MM to 134.9 MM. Since the 9th of February 2015, a total of 15 JICA short term experts have been assigned for total of 94.1 MM (70%) as of the end of March 2017. One long term expert has been assigned since January 26th, 2015. (Together with long term expert and short time experts, hereafter to be referred as “The Project Team”)

(2) Training in Japan

Three (3) trainings are planned under the Project, the first and second trainings were conducted from 13th to 19th of September 2015 for 7 days, and from 26th September to 6th October 2016 for 11 days respectively. The third training is planned in early September 2017.

(3) Procurement of Equipment, Machinery and Materials

Under the project, following three (3) items are procured for project activities and will be handed over to counterparts. The list of equipment and machinery procured under the project are listed up in Table 2-1.

Table 2-1 Procurement of Equipment and Machinery

Items	Component	Status	Note
Special equipment and materials for pilot project work	To be referred to 1-2-6 (1) Pilot Project		
Computers for planning system	10 desktop computers	2 computers purchased in December 2015	8 computers still to be purchased
	1 Application Server	Purchased and installed to DRVN (August 5, 2016)	
	1 Database Server		
	2 desktop computers	Purchased in April 2015	

Others needed for project implementation	1 Projector	Purchased in April 2015	
	1 Screen	purchased in April 2015	
	1 Printer (A3/colour)	purchased in June 2015	

1) Special equipment and materials for pilot repair work

Contract of material procurement was already signed with the material provider NICHIREKI on January 5, 2017. The Material was already shipped from YOKOHAMA Port to Hai Phong Port in Viet Nam on March 4, 2017 and will be arriving at Hai Phong Port on March 16th 2017. Upon arrival, custom clearance including tax exemption procedures will be conducted from 17th of March 2017. For further detail, please refer to “1-2-6 (1) Pilot Project”.

2) Computers for planning system

The project procures in total of 10 desktop computer for planning system. Two desktop computers have been purchased and currently used to develop planning system by the Project. Further eight computers will be procured and handed over to each RMB.

3) Application and Database Server

Based on the specification finalised in May 2016, contractor was selected in June 2016 and servers were installed to the DRVN server room on July 27, 2016.

4) Others needed for project implementation

Besides the above two items, the Project purchased computers etc. which are necessary to conduct project activities in Viet Nam.

(4) Others (Sub contracting)

The Project has subcontracted the activities as shown in Table 2-2.

Table 2-2 List of activities to be subcontracted

Items	Subcontractor	Contracted date	Status
Pavement condition survey			
Pavement condition survey (Activity 1-2)	RTC Central, DRVN	Contracted on 7 th of Oct. 2015. Amended contract on 20 th Aug.2016.	<u>Field survey for RMB I, II, III and IV road sections was all completed on 12 November, 2016. Data processing for RMB III and IV data is completed on October 15, 2016 and that for RMB II is about to complete. Remaining data processing for additional RMM I data will start in April 2017.</u>
PMS related Web-based System			
Web-based PMS Data Input System (Activity 1-3)	SAOMAI Software J.S.C (Web based system Package 1)	Contracted on 20 ^h of Oct. 2015	Contract was completed on 30 th April 2016.
Web-based System for Displaying Pavement Condition Survey Data (Activity 2-4)			
Web-based PMS Operation System - for Strategic Budget Planning Model (Activity 2-5)	SAOMAI Software J.S.C (Web based system Package 2)	Contracted on 31 st October 2016	Currently under development
Web-based PMS Operation System - for Pavement Repair Work Planning Model (Activity 2-5)	SAOMAI Software J.S.C (Web based system Package 2)	Contracted on 31 st October 2016	Currently under development

Items	Subcontractor	Contracted date	Status
Web-based Analysis System for Pavement Condition Survey Data (Activity 2-6)		Contract is scheduled in early 2017.	
Web based Pavement Monitoring System (Activity 2-7)	SAOMAI Software J.S.C (Web based system Package 2)	Contracted on 31 st October 2016	Currently under development
Public Relations			
Development of annual report and video clip (Activity 5-3)	Road Magazine	Contracted on 30th June 2016	<u>Contract was extended to the end of March 2017.</u>
System Development of Web Based Information System Road Maintenance Technology in Vietnam (Activity 5-3)	SAOMAI Software J.S.C	Contracted on 5th August 2016	Contract was completed at the end of December 2016.
Development of General Information Brochure (Activity 5-3)		<u>Contract is scheduled in April 2017.</u>	

The subcontracts are broadly divided into the following three items.

1) Subcontract for Pavement Condition Survey

Pavement condition survey for RMB II, III and IV was subcontracted to RTC Central on 7th of October, 2015. In order to fulfil the contracted survey length km, contract was amended on 20th August 2016 to add the survey on RMB I region. Field survey for RMB I, II, III and IV road sections was all completed in November 2016 and currently data processing is in progress for RMB II road sections. Final data processing for additional RMB I road sections is about to begin in April 2017. For further detail progress of activities, please refer to “1-2-4 (2) Activity 1-2 Pavement Condition Survey”.

2) Subcontract for development of PMS related web-based operation systems

Under the project, five (5) web based operation systems will be developed by sub-contracting as shown below. In addition to the work plan, the Project added one more system development to the initial Work Plan, aiming to upgrade Pavement Monitoring System (PMoS) to be a web-based operation system.

- Web-based PMS Data Input System (Activity 1-3)
- Web-based System for Displaying Pavement Condition Survey Data (Activity 2-4)
- Web-based PMS Operation System - for Strategic Budget Planning Model (Activity 2-5)
- Web-based PMS Operation System - for Pavement Repair Work Planning Model (Activity 2-5)
- Web-based Analysis System for Pavement Condition Survey Data (Activity 2-6)
- Web based Pavement Monitoring System (PMoS) (Activity 2-7)

In developing these web-based systems, DRVN will be requested to inquire comments to relevant stakeholders, to gather comments in a written format and to wrap up the comments in order to facilitate further development by the Project Team

“Package 1: Development of web-based systems for PMS Data Input (Activity 1-3) and Displaying of Pavement Condition Survey Data (Activity 2-4)” was subcontracted to SAOMAI Software J.S.C on October 20th, 2015 and completed on April 30th, 2016. “Package 2: Development of web-based PMS operation system” was subcontracted to SAOMAI Software J.S.C on October 31st, 2016 and currently under development. The subcontracting for other remaining systems are in progress.

3) Subcontract for Public Relations

Contract was made on the 30th June 2016 with Road Magazine under DRVN to develop an annual report and a video clip. The contract was extended for one month to the end of March 2017. System Development of Web Based Information System Road Maintenance Technology was contracted out to IT Company, SAOMAI, on the 5th August 2016 and completed at the end of December 2016.

2-1-2 Vietnamese Side

In April 2015, thanks to DRVN efforts, project environment were all established such as arrangement of office space for the Project Team, selecting counterpart members and organizing working groups, and procuring local funds. Project activities currently run very smoothly with a good cooperation of DRVN.

(1) Human resources

Chairperson and member of Joint Coordination Committee (hereinafter to be referred as “JCC”), Technical Working Group (hereinafter to be referred as “TWG”) as well as Working Group (hereinafter to be referred as “WG”) have been assigned in accordance with Decision No.1088/QD-TCDBVN dated April 23rd, 2015. Furthermore, staff in charge of PMS system at each RMB, RTCs and SBs have also been assigned in July 2015. For further detail, please refer to “2-2-2 (2) Project Management”.

(2) Office Space and Facilities

Due to the shortage in office space in the DRVN building, DRVN needed to lease a project office outside the building fulfilling a DRVN leasing conditions. It took about two months to provide an office space to the Project Team, and during this time period, the Project arranged own office space for two weeks and moved into the temporary project office space within the DRVN building on March 30th, which was kindly offered by DRVN. In April, DRVN successfully made a lease contract for a project office space and Project Team has moved into the new office on April 20th, 2015 before the first JCC.

(3) Cost

DRVN have successfully secured the budget required for execution of following items.

1) Cost for pilot project on maintenance and repair work (including cost for general materials)

DRVN has already approved domestic projects including clarification of the domestic budget from Road Maintenance Fund for costs of domestic expenditure that are different from the costs for special materials and equipment covered by Japanese side.

2) Small running expenses necessary for pavement condition survey

DRVN secured daily allowance, accommodation, and domestic travel expenses for DRVN's staff for participating in the pavement condition survey.

3) Small running expenses necessary for the implementation of training programs in Viet Nam

DRVN secured daily allowance, accommodation, and domestic travel expenses for the staff of DRVN for participating the seminars, workshops and OJTs.

(4) Others

Besides, DRVN has been kindly requested to take responsibility for the following items essential for project activities.

- 1) **Implementation of the pilot repair works for pavements and bridges with JICA experts' advisory.**
- 2) **Implementation of Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction, and additional survey for RMB I region, with JICA's local service.**
- 3) **VISA**

At the beginning of 2015, a new immigration law became effective and caused a little confusion in VISA processing. Under the new law, project experts require to obtain LV1 visa to conduct tasks in Viet Nam, which valid for one year. All experts have successfully obtained visa with a support of DRVN and MOT.

2-2 Progress of Activities**2-2-1 Baseline Survey**

From the beginning of this Project until the first JCC, the Project has conducted baseline survey based on documents and internet searching, focusing on the key issues needed to formulate the Work Plan including the review of Phase I Project outputs, data collection of new regulations, update of the current status of national road maintenance and management. The result of baseline survey is reported in the Progress Report submitted at the second JCC in March 2016.

2-2-2 Work Plan

At the first JCC meeting held on 23rd April 2015, the Project discussed and agreed on the Work Plan setting the framework of the project activities to be delivered to achieve the project purpose, incorporating all outcomes of activities.

(1) Project Framework

Framework including measures and activities to achieve project purpose is summarized in below table. Flow chart is shown on Table 0-1. Activity 2-7 and Activity 3-4 are added by the amended Contract on 21st July 2016. The Project applies the activity number applied at the Work Plan throughout the Project.

Table 2-3 Measures and Activities to Achieve Project Purpose

Project Purpose	
Enhance Implementation Capacity for National Road Maintenance in Viet Nam	
Measures	Project Activities agreed at Work Plan
MEASURE 1; Improve PMS Data Collection and Processing Technology	1-1 Formulate PMS Database
	1-2 Implement Pavement Condition Survey
	1-3 Develop Web-based PMS Data Input System
MEASURE 2; Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan	2-1 Upgrade PMS
	2-2 Formulate PMS Dataset
	2-3 Formulate Pavement Repair Work Draft Plan
	2-4 Develop Web-based System for Displaying Pavement Condition Survey Data
	2-5 Develop Web-based PMS Operation System
	2-6 Develop Web-based Analysis System for Pavement Condition Survey Data

	2-7	Develop Web based Pavement Monitoring System
MEASURE 3; Improve Inspection and Repair Work Selection Technology on Road Facility and Develop Technical Standards	3-1	Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology
	3-2	Upgrade Road Facility Inspection Guideline
	3-3	Upgrade Road Routine Maintenance Manual
	3-4	Develop Expressway Maintenance Manual
MEASURE 4; Enhance Responsibility Assignment and Administration Procedures for Road Maintenance	4-1	Prepare Amendment Plan for Road Maintenance Responsibility Assignment
	4-2	Prepare Amendment Plan for Road Maintenance Administrative Procedure
MEASURE 5; Plan and Support Implementation of Training Programs and Conduct Public Relations	5-1	Prepare Draft Training Plan
	5-2	Support Training Implementation
	5-3	Conduct Public Relations

(2) Project Management

JCC, TWG, and WGs have been established. JCC is led by Director General of DRVN and TWG is led by Director of Science, Technology, Environment and International Cooperation Department (hereinafter to be referred as “STE-ICD”) of DRVN.

Table 2-4 Functions and Participants of JCC and TWG

	JCC	TWG
Chairperson	Director General of DRVN	Director of STE-ICD. of DRVN
Regulation	As agreed on Record of Discussion	Decision No.1088/QD-TCDBVN dated 23 rd April 2015
Frequency of meeting	Once a year (to discuss and report Work Plan, Progress Report, and Completion Report, and Monitoring Sheet)	Every 3 months, except when JCC is hold
Function	<ul style="list-style-type: none"> Discuss and approve Work Plan based on R/D Review the progress of the Project based on annual Work Plans/ Progress Report and Monitoring Sheet. Promote dissemination procedure of project outputs Exchange views on main issues arising from the project in progress 	<ul style="list-style-type: none"> Discuss and Coordinate project progress based on annual Work Plans/ Progress Report and Monitoring Sheet Review and coordinate a progress of the project Discuss and coordinate issues related to Project implementation Select speakers, trainers, and trainees for seminars, workshops, and OJTs.
Members	Vietnamese side <ul style="list-style-type: none"> Director General of DRVN (Chairperson) Vice Director General of DRVN MOT: DPI, DOST, Infrastructure Dept., TCQM Bureau, ITST DRVN Department Members PMU3 of DRVN 	<ul style="list-style-type: none"> Director of STE-ICD, DRVN (Group leader) DRVN Department Members
	Japanese side <ul style="list-style-type: none"> Embassy of Japan in Viet Nam Representative of JICA Viet Nam Office JICA Long-term Expert JICA Project Team 	<ul style="list-style-type: none"> JICA Long-term Expert JICA Project Team

Three (3) WGs have been set up under TWG, who are in charge of project measures as shown below table. The members were selected from departments and units under DRVN intensively involved to the project activities.

Table 2-5 Structure of Working Group

WG	Targeted Field	Vietnamese side member
WG 1	[Measure 1] <ul style="list-style-type: none"> PMS data collection and processing technology Web operation view system for road condition data [Measure 2] PMS upgrade/ formulation of pavement budget/repair plans Web based system 	In total of 7 members; <ul style="list-style-type: none"> Director of STE-ICD (Group Leader) Deputy Director of DPI Deputy Director of Road M& M Director of Road IT Centre Specialists of DPI, Road M&M, Road IT Centre, Staff of PMU3
WG 2	[Measure 3]	In total of 6 members;

WG	Targeted Field	Vietnamese side member
	<ul style="list-style-type: none"> • Technical standards for road inspection and maintenance • Pilot Repair works [Measure 4]	<ul style="list-style-type: none"> • Deputy Director of STE-ICD of DRVN (Group leader) • Deputy Director of Road M& M • Head of PID3, Road Construction Management Bureau • Specialists of Road M&M, STE-ICD • Staff of PMU3
WG 3	[Measure 5] <ul style="list-style-type: none"> • Training Programs and Public Relations 	In total of 3 members; <ul style="list-style-type: none"> • Deputy Director of DOP (Group Leader) • Specialists of STE-ICD • Staff of PMU3

Note

- DPI: Planning and Investment Department
- Road M&M: Road Maintenance and Management Department
- DOP: Organization and Personnel Department
- STE-ICD: Department of Science, Technology, Environment and International Cooperation

In addition, for the efficient coordination between the World Bank Vietnam Road Asset Management Project (hereinafter to be referred as “VRAMP”) and this JICA project, Road Asset Management Steering Committee (hereinafter to be referred as “RAM-SC”) based on Decision No.1267/QD-TCDBVN dated 24th June 2014, and Coordination Working Group (hereinafter to be referred as “CWG”) based on Decision No. 1777/QD-TCDBVN dated on 7th August 2014, have been established. Some DRVN members of RAM-SC and CWG are assigned to both JCC and TWG mentioned above.

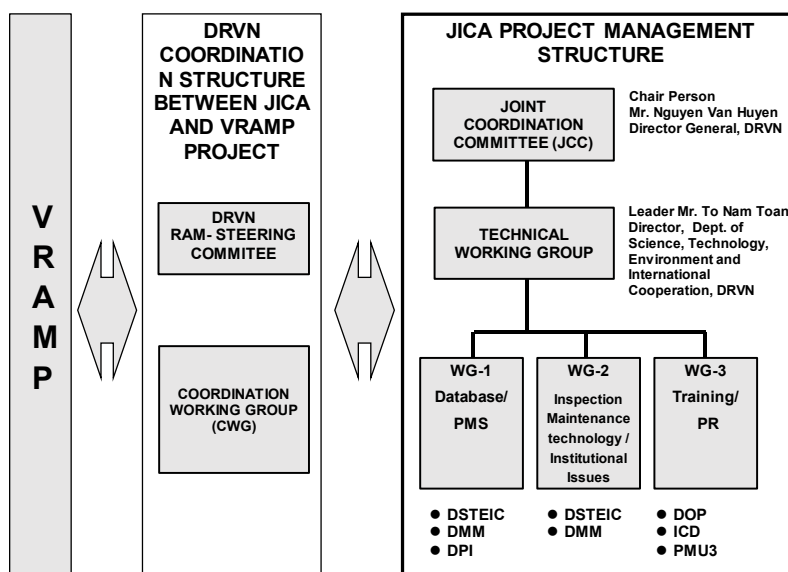


Figure 2-1 Structure of Project Management

2-2-3 JCC Meeting and Working Group Discussion

(1) Joint Coordination Committee Meeting (JCC Meeting)

A total of four (4) JCC meetings as shown in Table 2-6 are planned during the project period to discuss and report Work Plan, Progress Report, and Completion Report, and Monitoring Sheet. Two JCC meetings were already held dated 23rd April, 2015 and 25th March, 2016 to discuss Work Plan and Progress Report respectively. The details of discussions have summarized and included in Appendix-3. The 3rd JCC is planned in March 29th in 2017. The last JCC meeting for the Project is tentatively planned in November, 2017.

Table 2-6 JCC Meetings

SN	JCC Meeting	Date	Status	Remarks
1	1 st JCC Meeting	23 April, 2015	Completed	
2	2 nd JCC Meeting	25 th March, 2016	Completed	
3	3 rd JCC Meeting	29 March, 2017	Completed	
4	4 th JCC Meeting	November, 2017	Yet to organize	

(2) Working Group Discussion

Following the approval of Work Plans at the first JCC meeting, the Project moved forward to the consensus building on the Implementation Plan for each activity, which aims to show the detailed implementation methods of each activity. The Implementation Plans for the activities which started in 2015 were developed and submitted to WGs for discussion and were basically agreed. In line with these implementation plans, further discussion for each activity is now going on in the WGs.

Following describes detail activities conducted by each activity following activities set under the Work Plan.

2-2-4 Measure 1: Improve PMS Data Collection and Processing Technology

(1) Activity 1-1 Formulate PMS Database

1) Baseline Survey

The Project conducted the survey on the conservation of road data for RMBs including data type, data formats, data storage, RMB computer system, and RMB data server, so forth.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey and review of JICA Phase I Project outputs, the Project developed the Work Plan for the formulation of PMS database. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

The Project developed the Implementation Plan of PMS data formulation, discussed and agreed with WG1 members.

4) Upgrading of PMS Data Format and Data Input Computer Software

The Project has upgraded PMS data input system and developed an offline-based data input software by means of Microsoft ACCESS for the smooth implementation of data input by RMBs in order to prepare PMS dataset for maintenance planning. Upon receiving some requests of improving data input software during the trainings, the Project improved the data input software to make it comply with regional road conditions.

5) Information Dissemination and Technical Transfer on PMS Data Input and Software Operation

Using the upgraded data input format and the computer software, the Project conducted OJTs in July 2015 to RMB and SB officials to transfer technologies on data input and software operation to each RMB. Based on this training, the Project requested RMBs to input PMS data into the upgraded PMS Data Input Format.

6) PMS Data Input

Initial data input by RMBs and SBs using the PMS database format was completed in July 2016. Review of inputted data has been completed in the beginning of August 2016 and a review report was submitted to DRVN on 9th August 2016. Based on DRVN send an official letter dated on August 19th to request each RMBs to conduct necessary amendments until August 26th. At the end of December 2016, all RMBs including RMB II, III and IV completed data amendments and submitted data to the Project Team and the Project Team completed final check of these data in December 2016. The Project Team would like to express sincere appreciation to the effort made by RMBs. These PMS data will be converted together with Pavement Condition Data and used in planning of pavement periodic repair for each RMB road network during the Project.

(2) Activity 1-2 Pavement Condition Survey

1) Baseline Survey

After the first JCC meeting, the Project conducted further baseline survey on national road length under RMB II, III and IV jurisdiction in order to plan pavement condition survey. Due to lack of lane number information in the data of national roads accumulated from DRVN, the Project requested data directly to RMBs. Using the data provided by RMBs at the end of August 2015, total length of national roads was calculated by route, by lane, and by pavement type for each RMB II, III and IV.

Also, information collection on the feasibility of sub-contracting pavement condition survey was conducted. Pavement condition survey requires operation of a pavement condition survey vehicle equipped with advanced systems such as laser system, GPS and IRI survey equipment.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the pavement condition survey. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

The Project developed the Implementation Plan of pavement condition survey, and discussed and agreed with WG1 members on July 13th 2015. At the discussion, WG1 agreed the followings;

- Survey is carried out by lane,
- Survey length of national roads should not be more than 6,280 km in maximum,
- Confirmation of target lane is done by RMBs, which DRVN shall issue an official letter,
- Base data required for developing technical norm essential for the cost estimation of pavement condition survey is to be gathered by the Project.

The Project set selection criteria so that the survey cost to be within the budget planed. At the end of August 2015, the survey length was finalized as a total target of 12,574 lane-kilometre including some contingency selected in consultation with DRVN. Following are the elimination criteria for selection of targeted survey sections.

- Road sections under DOTs jurisdiction
- Road sections newly constructed and transferred to DRVN after 2010.
- Road sections which have been planned for pavement repair on a large scale.

- Road sections scheduled to be transferred to Provincial People’s Committees.
- Road sections which exceed the maximum survey road length of 6,287km (or survey lane length is 12,574 km).

4) Contractor Selection for Pavement Condition Survey

In September 2015, two potential subcontractors who have experience in conducting pavement condition survey in the past, RTC Central and Science and technology Centre of University of Transport and Communications (hereinafter to be referred as “TOTC”), were invited to submit a proposal by the September 30th, 2015. However, UTC expressed a withdrawal of participation, so that the Project conducted negotiations with RTC Central and signed the contract on October 7th, 2015.

5) Amendment of Contract

In order to fulfil the contracted survey length km, additional survey of 2,319 lane-km is agreed to be conducted for RMB I road sections where significant changes (such as big repair work and road widening) were made after the 2012 survey, contract was amended on 20th August 2016 accordingly.

6) Implementation of Pavement Condition Survey and Analysis

a. Survey

RTC Central started the survey from early November 2015 and completed at the end of May 2016 for the road sections set in the initial plan (12,575.1 km). Actual surveyed length has reached 12,606.98 km. Survey was conducted for each lane of the road sections. Field survey for RMB I, II, III and IV road sections was all completed on 12th November 2016.

Road selection selected is shown below.

Table 2-7 Progress of Road Condition Survey (as of 28th February, 2017)

RMBs	Total surveyed length (lane km)			Calibration	Training	Survey			Analysis	
	Planned	Surveyed	+ -			Start	Complete	Days	Start	Progress (%)
RMB I	-----	2,318.17	+2,318.17		N/A	3 Aug. 2016	12 Nov.	101	1 st Apr. 2017	0%
RMB II	4,964.3	4,232.10	-731.20	20-24 Apr. 2016	25 Apr. 2016	25 Apr. 2016	27 May. 2016	35	14 Nov. 2016	95%
RMB III	2,501.2	2,201.20	-296.43	24-27 Feb. 2016	23 Feb. 2016	27 Feb. 2016	10 Mar. 2016	13	4 May. 2016	100%
RMB IV	5,109.60	3,855.51	-1,253.88	2- 5 Nov. 2015	4 Nov. 2015	6 Nov. 2015	2 Jan. 2016	58	24 Nov. 2015	100%
Total	12,575.1	12,606.98	+36.66							

Table 2-8 Targeted Route and length of Pavement Condition Survey under RMB I

Route name	Km post (from)	Km post (to)	Number of Lane	Total survey length (lane km)
Expressway (Hanoi- Thai Nguyen)	Km0+00	Km63+800	4	249.65
NH2	Km30+600	Km163+000	2;4	285.53
NH3	Km33+300	Km344+	2;4	623.95
NH10	Km6+500	Km144+200	2;4	280.51
NH21B	Km66+500	Km90+130	4	93.60

Route name	Km post (from)	Km post (to)	Number of Lane	Total survey length (lane km)
NH70	Km00+00	Km98+050	2;4	419.09
NH279	Km0+00	Km116+00	2;4	263.85
Ho Chi Minh	Km438+00	Km503+00	2	130.00
Total				2,319.18

b. Data Processing and Data processing (Current status)

Survey data is currently processed and analysed at RTC Central. At the end of March 2017, progress report has shown 100 % progress for RMB III and IV road sections and RMB II road sections is about to complete soon at the end of March 2017. Data processing of RMB I data will commence in April 2017.

7) Information Dissemination and Technical Transfer on Pavement Condition Survey

OJT trainings were held at RMB II, III and IV at the beginning of survey as mentioned above. At the 2nd Training in May 2016 and 3rd Training in October and November 2016, the progress of pavement condition survey was also reported at each region.

(3) Activity 1-3 Develop Web-based PMS Data Input System

1) Baseline Survey

The Project has conducted the baseline survey related to the web-systems through the review of JICA Phase I Project outputs including a document survey on the regulations stipulating responsibility assignment of DRVN departments. Also, the Project visited DRVN's IT Centre and conducted interviews and exchange of opinions on the internet information management including web-operation system. The following is the findings in the survey.

- Since 2007, DRVN has been promoting E-Transaction in line with the Government Information Strategy.
- DRVN had developed Web-based system of Vehicle Tracking.
- GIS base map developed by MONRE is available and has been transferred to DRVN.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the upgrading of the PMS software. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Contractor Selection

Development of the web based system for PMS data input was subcontracted together with development of the web based system for displaying pavement condition survey data (Activity 2-4). A sub-contractor was selected based on the competitive bidding, JICA Project Team has made a contract with SAOMAI Software J.S.C on 20th October 2015.

4) Development of System

In line with the Work Plan, the development of web based system for PMS Data Input was completed at the beginning of May 2016. Any system troubles will be fixed by the contractor using the 1 year warranty set in the Contract.

5) Output management

Completed Web-based PMS Data Input System was installed into DRVN application server in August 2016.

6) Information Dissemination and Technical Transfer on PMS Data Input and Software Operation

Using the Web-based PMS Data Input system, the Project conducted OJTs in each region in October – November, 2016 to RMB and SB staff and officials to transfer technologies on operation of web-based PMS data input system.

2-2-5 Measure 2: Upgrade PMS to Apply Road Network of RMB I, II, III and IV, and Formulate Draft Repair Work Plans**(1) Activity 2-1 Upgrade of PMS****1) Baseline Survey**

A baseline survey was conducted on the computer software and hardware environment, and their operation methods at RMBs and IT Centre under SCE-ICD in DRVN, and also on the web operation system for VBMS, which was developed recently and became operational.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the pavement condition survey. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd 2015.

3) Development and Discussion of Implementation Plan

In order to have a common understanding on the targets of PMS development, the Project developed the Implementation Plan and discussed at WG1. The Plan was developed based on the review of the Phase I Project activities, issues arising on PMS, and information gathered through an interview to IT Centre.

The WG1 meeting on the discussion of the Plan was held on September 16th, 2015. In the meeting, the plan was agreed basically with the following comments to be taken into consideration in this activity.

- Make it applicable to the planning of multiple lane national roads,
- Reflect deterioration indexes to the planning of road maintenance plans,
- Make it applicable to the nationwide national road network,
- Improve the operation system, automatizing simulation functions,
- Simplification of simulation data input.

Following the discussion on the implementation plan, the Project Team prepared a discussion paper on the conditions of system development showing relation between PMS application and database and conducted detailed discussion on November 18th and on December 11th 2015.

4) Information Dissemination and Technical Transfer

Using the Phase 1 data, the Project applied PMS software upgraded until May 2016 and formulated pavement maintenance plans for RMBI road network. The outline of the plans were reported at RMB workshops in May 2016. Information on the PMS operation incorporating new RMB data will be presented in the 4th Workshop and OJT scheduled in May 2017.

In the 3rd JCC Meeting held on March 29th in 2017, DRVN strongly requested JICA Project Team to provide intensive training courses on PMS operation and on the formulation of strategic budget plans and annual and 5-year repair plans for road pavement, inviting concerned members to Hanoi from DPI in DRVN and in RMB organizations. In addition, DRVN requested the Project Team to cooperate with the formulation of pavement repair plans for the 2018 annual budget proposal. In response to this request, the Project promised to cooperate with the formulation of annual pavement repair plans for 2018 and to hold an intensive training course on PMS operation and the formulation of strategic budget plans and annual and 5-year repair plans for road pavement

5) Upgrade of PMS Software (Current status)

Based on the Implementation Plan, the Project upgraded the offline PMS operation system (Strategic Budget Planning Model and Pavement Repair Work Planning Model) in collaboration with DRVN in accordance with the items agreed at the WG meetings.

Using the Phase I Project data, the Project operated the updated system to formulate annual and mid-term pavement repair work plans for RMB I road network and presented the plans to DRVN in June 2016. Based on the DRVN comments received in June 28th 2016, Project Team amended the system. Trial operation was conducted to examine the compatibility of the customised system based on Phase 1 on the existing web based system (Linux OS), and confirmed the good operational ability.

Development of web-based PMS is to be reported in “(5) Activity 2-5 Develop Web-based PMS Operation System”.

Information have been also shared among project experts to coordinate interface between the offline PMS operation system and six (6) web based operation systems listed above.

(2) Activity 2-2 Formulate PMS Dataset

1) Development and Discussion of Implementation Plan

Implementation plan for PMS Dataset has been discussed together with Activity 2-1 Upgrading of PMS.

2) Development of PMS Dataset /Module Dataset Software (Current Status)

PMS Dataset will be converted to dataset for the operation of PMS software module (Strategic Budget Planning Module / Pavement Repair Work Planning Module) for maintenance planning.

The Project Team subcontracted the development of the software for PMS Dataset /Module Dataset on 31st October 2016 as a component of Web-based PMS Operation System. System development is now underway.

(3) Activity 2-3 Formulate Strategic Budget Plan and Pavement Repair Work Draft Plan

Strategic Budget Plans and Pavement Repair Plans will be formulated upon completion of PMS database and pavement condition data (Refer to “2-2-4. (1) Activity 1-1 Formulate PMS Database” and (2) Activity 1-2 Formulated Pavement Condition Data”), and Web-based PMS Operation System. During the time period of PMS database preparation and PMS system development, the Project will tentatively apply RMB I data for PMS software trial operation.

(4) Activity 2-4 Develop Web-based System for Displaying Pavement Condition Survey Data**1) Baseline Survey**

Please refer to “2-2-4 (3) Activity 1-3 Develop Web Based PMS Data Input System”.

2) Development and Discussion of Work Plan

Please refer to “2-2-4 (3) Activity 1-3 Develop Web Based PMS Data Input System”.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Implementation Plan for the Web-Based System for Displaying Pavement Condition Survey Data with the framework. The Implementation Plan was submitted to WG1 on July 14th in 2015 and the plan was basically agreed. The following are the points agreed at the meeting.

- The Web operation system for Displaying Pavement Condition Survey Data is to be developed in order to make it applicable to the PDOT road networks from the viewpoints of system development, assuming PMS database development and data conversion to PMS Datasets are all prepared with the same quality as those with the DRVN National Roads. However, PMS database for the PDOT road networks is not currently available, so that DRVN is requested to examine its applicability on its own when PMS database and PMS Datasets are prepared for PDOT road networks in the future.
- In developing the web operation system, system user is to be divided into three levels; Level 1: DRVN (MOT), Level 2: RMBs & RTCs, and Level 3: SBs & PDOTs
- The system is to enable comparing data of two points of time.

4) Contractor Selection

Please refer to “2-2-4 (3) Activity 1-3 Develop Web Based PMS Data Input System”.

5) Development of System

In line with the Work Plan, the system development of web based system was completed at the beginning of May 2016. Any system troubles will be fixed by the contractor using the 1 year warranty set in the Contract. The Project conducted the demonstration of the web system for displaying Pavement Condition Data at the second JCC held on March 25th 2016 and at RMB workshops held in May 2016.

6) Output Management

Completed Web Operation System for Displaying Pavement Condition Survey Data was already installed into DRVN application server in August 2016.

7) Information Dissemination and Technical Transfer on Web Operation System for Displaying Pavement Condition Survey Data

Using the Web Operation System, the Project conducted OJTs in each region in October – November, 2016 to RMB and SB staff and officials to transfer technologies on operation of web-based PMS data input system.

(5) Activity 2-5 Develop Web-based PMS Operation System

Web-based PMS Operation System is one of the six systems shown in “2, 2-1-1, (4), 2) Subcontract for development of PMS related web-based operation systems”

In line with the Work Plan, the Project Team has developed the algorithms for web-based PMS Operation System and then TORs for contract which consists of Strategic Budget Planning Module and Pavement Repair Work Planning Module. The Project Team subcontracted system development to an IT company on October 2016.

1) Compatibility of systems and database

All six (6) systems developed under the Project will be managed on DRVN web system. Interrelationship between systems and database was evaluated and necessary changes were made at each system.

2) Contractor Selection

Development of the web based PMS Operation system was subcontracted as Package 2 including web-based PMS Operation System (Strategic budget Planning Module and Pavement Repair Work Planning Module) and web based Pavement Monitoring System (PMoS) (Activity 2-7). A sub-contractor was selected based on the competitive bidding among preselected contractors, and JICA Project Team made a contract with SAOMAI Software J.S.C on 31st October 2016.

3) Development of System (Current Status)

Currently system development is ongoing to the first target period the end of April.

(6) Activity 2-6 Develop Web-based Analysis System for Pavement Condition Survey Data

TOR development for the contract is now going on.

Information is to be added hereafter as the Project progresses.

(7) Activity 2-7 Develop Web-based Pavement Monitoring System (PMoS)

The activity is added under the amended contract with JICA on 21st July 2016, aiming to upgrade PMoS which was once developed in the Phase I Project as offline software. The system will be upgraded to be a Web-based operation system. The system development is contracted out to SAOMAI Software J.S.C on 31st October 2016. For further details on the development of the system, please refer to Activity 2-5 Web-based PMS Operation System.

2-2-6 Measure 3: Improve Inspection and Repair Work Selection Technology on Road Facility and Develop Technical Standards**(1) Activity 3-1 Pilot Repair Works****1) Baseline Survey**

Baseline survey was conducted on the pavement condition, current status of maintenance and repair work, maintenance repair technologies, technical standards for road maintenance and repair work, design guideline, contractor selection, repair work implementation contracts and MOT policies on the road maintenance and repair

works.

2) Development and Discussion of Work Plan

Based on the finding from the baseline survey, the Project developed the Work Plan for the implementation of pilot repair works. The Work Plan was discussed and agreed at the first JCC meeting.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Implementation Plan, clarifying the framework and getting common understanding on the target of development. WG2 meeting was held on the 3rd of June, 2015 to discuss on the plan, and it was basically agreed. Later on the Implementation Plan was revised to include the water proofing technology and discussed with the WG

a. Selection and Discussion of Pilot Repair Works

Selected pilot repair works to be experimented on the field was agreed at the WG2 meeting which contains; 1) a crack seal technology, 2) a shallow pothole repair work technology by cold asphalt mix, 3) a deep pothole repair work by cold asphalt mix, and 4) bridge water proofing technology. Later in order to incorporate the request from Director of Road M&M to add water proof technology, the JICA Project Team conducted field surveys and technology reviews and agreed to include bridge water proof technology, as pilot repair works.

b. Selection and Discussion of Pilot Repair Work Sections

The Project conducted an on-the-desk survey in order to preliminary select the candidate road sections for the each of pilot work by applying the pavement condition survey data 2012.

At the end of November 2015, the Project conducted a field survey with RMB I for selecting repair work sections. An important point in selection is not to select heavy damaged road sections for the pilot repair works, since routine maintenance technologies like those under consideration in this pilot project are all small-scale repair technologies which are only applicable to the minor damages. In case, pavement is heavily damaged, small repair technologies can no longer be applicable. Much bigger scale repair technologies such as overlays and structural overlays must be applied to the damages. With this in mind, the Project selected some candidate sections of national roads near Ha Noi for each pilot technology in the form of a technical paper and submitted to DRVN.

Table 2-9 Pilot Repair Work Sections Initially Agreed

	Repair Work	Specification	Repair Materials	Selected National Road		Maximum Work Volume (total)
1	Crack seal		CRACK SEAL NX	NH6	70+000- 78+000	1,000 m
2	Pothole Repair Work-I	Shallow Pothole; Pothole depth less than 3 cm	ROMEN PAT CH	Ho Chi Minh Route	458+000- 468+000	20 square meters
3	Pothole Repair Work-II	Deeper Pothole; Pothole depth from 3 cm to 5 cm	RESCUE PATCH	NH6/ Ho Chi Minh Route	70+000- 78+000	150 square meters
4	Bridge Waterproofing (*2)		CATICOAT R BARADRAIN	NH18	197+887, 198+457, 212+960	620 square meters

c. Review of Pilot Repair Work Sections

In December 2016, the Project was informed that part of candidate sections of pilot repair works, those on NH6, were officially incorporated into the annual plan of RMB I road repair projects, so that the Project conducted a field study with DRVN and PMU3 to find out alternative repair work sections in the RMB I national road network. The field survey has clarified that the candidate site is high potential for the application of Crack Sealing as an alternative to NH6 sections. Upon this preliminary agreement, PMU3 will conduct examination on the site in coordination with relevant agencies (DRVN, RMB I) before making the final agreement. If finally agreed, consultant will move into a detail survey and the design of the pilot repair works in consultation with JPT or DRVN. The following is the outline of the candidate site. Table 2-10 shows reviewed pilot repair work sections.

- Road; National Highway No.10 (NH10)
- Location; Dong Hung District, Thai Binh Province
- Section; From 65+00 km to 72+00 km (Tentative)
- Management Unit; SB1.7
- Carriageway; 2 direction with 1 motorized lane and 1 non-motorized lane in each direction
- Pavement type and width; Asphalt Concrete, 6 meter width each direction
- Traffic condition; High traffic with many heavy vehicles to/from Hai Phong Port
- Typical pavement distress;
 - Single crack and isolated alligator crack (Out of scope for the pilot)
 - Rutting is quite serious in some parts (Out of scope for the pilot)

Table 2-10 Review of Pilot Repair Work Sections

	Repair Work	Specification	Repair Materials	Selected National Road		Maximum Work Volume (total)
1	Crack seal		CRACK SEAL NX	NH10	65+000- 72+000	1,000 m
2	Pothole Repair Work-I	Shallow Pothole; Pothole depth less than 3 cm	ROMEN PAT CH	Ho Chi Minh Route	458+000- 468+000	20 square meters
3	Pothole Repair Work-II	Deeper Pothole; Pothole depth from 3 cm to 5 cm	RESCUE PATCH	Ho Chi Minh Route	458+000- 468+000	150 square meters
4	Bridge Waterproofing (*2)		CATICOAT R BARADRAIN	NH18	197+887, 198+457, 212+960	620 square meters

4) Development and Discussion of Specification, Bill of Quantity and Work Volume

As the Record of Discussion explains that JICA side import materials from Japan with JICA funds, on the other hand, DRVN select maintenance companies with its own budget and implement pilot repair work in the field. In order to support DRVN responsibilities on the company selection and cost estimation for the pilot repair works, the Project developed a technical specification of repair work, Bill of Quantity (BOQ) and work volumes for cost estimation and submitted to DRVN in September 2015.

5) Fund Securing by DRVN for the pilot repair works

DRVN has already secured the budget for the implementation of pilot project from Road Maintenance Fund.

6) Joint Pilot Project between JICA project and DRVN Own Project

DRVN has developed its own domestic pilot projects separately from the JICA pilot project. DRVN will implement

JICA pilot project together with DRVN domestic pilot project at the same time within its budget framework. Close coordination between two projects is needed in particular on the selection of pilot sections, the time-line/schedule of applying technologies, monitoring and evaluation methods. DRVN is requested to develop implementation plans on its domestic pilot project, to explain them to the JICA Project Team and to coordinate between two projects.

Also, DRVN is requested to coordinate with RMB I and to maintain the identified pilot sections untouched from other repair work until the end of the pilot projects.

7) Development and Discussion on the list of Material and equipment

The JICA Project Team has carefully examined the material and equipment for pilot repair works and developed the material and equipment list for procurement in Japan.

8) Procurement of Equipment/Materials in Japan and Export/Import Procedures

On 28th October 2016, the Office of the Government (Prime Minister's Office) issued a letter approving the Technical Cooperation Project List to be funded by Japanese ODA. The letter instructs MOF to take an immediate action on the tax exemption procedure for nine projects including this JICA Project. Following this letter, the Project Team immediately proceeded to the procurement of equipment and materials in Japan which contain TOR development, contractor selection and then signing on the contract in early January 2017.

In compliance with the contract, the contractor went into the production of equipment and materials in Japan and assembled them to Yokohama Port in February, followed by the export procedures at the port. Shipping was made on 4th of March 2017 from Yokohama Port (Japan), and cargo arrived at Hai Phong Port in Viet Nam on 17th of March 2017. C1 Form for the proposal of tax exemption procedures was submitted to MOF on 27th March 2017. As of March 27th, MOF examination on the tax exemption (C1 form) and the custom clearance is still going on. The Project would like to express sincere appreciation to PMU3 who took quick action for the proposal of tax exemption and custom clearance approval.

9) Preparation of pilot work implementation by DRVN

Selection of consultant, design and contractor selection have been completed by DRVN. The budget for pilot project implementation is funded by Road Maintenance Fund, therefore the contract are valid even after the financial year. However, with these reasons, close coordination and information exchange between JICA, MOT, DRVN, PMU3 and the JICA Project Team is now needed. Table 11 shows the revised time schedule of pilot project implementation, taking account of the above import and export procedures into consideration.

Table 2-11 Expected Procurement Schedule (Tentative)

Period	Action
■ Apr. to Sep. 2015	Planning of pilot repair work implementation plan
■ Sep. to Nov. 2015	Selection of pilot section
■ Dec. to Jan. 2016	Proposals for the revision of Project Document
■ Oct. 28, 2016	Project approval by the Office of the Viet Nam Government
■ Nov. to Dec. 2016	Development of contract document, Contractor selection
■ Jan. 5, 2017	Signing of Contract (Jan 5, 2017) and Production of equipment and materials in Japan
■ Mar. 4 th 2017	<u>Shipping to Hai Phong Port in Viet Nam</u>

Period	Action
■ <u>Mar. 17th 2017</u>	<u>Arrival at Hai Phong Port</u>
■ <u>From Mar. 20th 2017</u>	<u>MOF examination on tax exemption and custom clearance documents</u>
■ <u>Mar. 30th 2017</u>	<u>MOF approval (Expected)</u>
■ <u>Apr. 1st 2017</u>	<u>Land transportation to ITST (Expected)</u>
■ <u>From Middle April</u>	<u>Pilot repair work execution in the fields (Expected)</u>
■ <u>May to Oct 2017</u>	<u>Monitoring and evaluation of pilot work performance (Expected)</u>
■ <u>Oct. 2017</u>	<u>Draft plans for upgrading technical standards (Expected)</u>

(2) Activity 3-2 Upgrade Road Facility Inspection Guideline

1) Baseline Survey

The Project conducted a baseline survey on the policy and the current status of standardization and utilization of inspection guideline. The survey has reported that the current “Specifications of Road Routine Road Maintenance” published in 2013 stipulates only the outline of inspection procedure and needs upgrading of provisions.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the development of Road Facility Inspection Guideline. The Work Plan was discussed and agreed at the first JCC meeting.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Implementation Plan, clarifying the detailed implementation plans before implementation and getting consensus on the target of development.

WG2 meeting was held on the 3rd of June, 2015 to discuss on the plan, and was basically agreed. In line with the discussion at the meeting, the Project revised the draft Road Facility Inspection Guideline and submitted to DRVN in September 2015 for further discussion.

4) Opinion Inquiry to Competent Agencies (Current Status)

As a step for the formalization of technical standards, pursuant to regulation, DRVN is obliges to inquire opinions to the competent professional agencies in Viet Nam on the contents of draft standards. Competent agencies include Science and Technology Department of MOT, ITST, UTC and UTT etc. In line with this regulation, DRVN conducted opinion inquiry to the organizations which include RMBs, SBs and RTCs under DRVN from October 2015 to March 2016. The Project Team also conducted information dissemination on the Guideline and opinion exchange with RMB and SB engineers in the 3rd Workshop and OJT held from October 31st through November 11th 2016.

Based on the comments gathered in these events, the Project Team is conducting modification of the Guideline and developing the second draft of the Guideline. DRVN is kindly requested to have an opportunity to exchange opinions with competent agencies in Viet Nam on the Road Facility Inspection Guideline.

5) Integration of Bridge Inspection Guideline

Bridge Inspection Guideline under development as a guideline is intended to provide detailed knowhow on road

facility inspection and to encourage road operators to understand the importance of road facility inspection during road maintenance. Information included in the Guideline can be fully utilized not only in the training courses, but also in the standardization road facility inspection technology. In road maintenance, it is well known that bridge inspection is a main part of road facility inspection, so that the Road Facility Inspection Guideline should cover the bridge inspection guidelines which are developed with the same concept common to other road facilities. With these reasons, the Project is now updating the first draft of Road Facility Inspection Guideline to include information on bridge inspection.

6) Information Dissemination and Technical Transfer

The first training was conducted at the 3rd Workshop and OJT scheduled from October 31st through November 11th 2016. During the training, developed guideline was explained at class room training and its application to the actual site was conducted as OJT focusing on pavement, slope, and retaining wall. At the 4th Workshop and OJT planned in May, classroom and field training will be offered again.

(3) Activity 3-3 Upgrade Road Routine Maintenance Manual

1) Baseline Survey

The Project conducted a baseline survey on the policy, on the regulations and on the current status of standardization and utilization of the inspection guideline. The Project also confirmed the comments issued on the Road Routine Maintenance Manual developed in the JICA Phase I Project.

2) Development and Discussion of Work Plan

Based on the DRVN comments addressed to the Project, the Project developed the Work Plan for the development of the Road Routine Maintenance Manual. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed the Implementation Plan, to clarify the following framework before implementation and get consensus on the target of development.

WG2 meeting was held on the 3rd of June, 2015 to discuss on the plan and basically agreed. In line with the discussion at the meeting, the Project developed the revised draft of Road Routine Maintenance Manual based on the DRVN comments and submitted it to DRVN in September 2015 for further discussion.

4) Opinion Inquiry to Competent Agencies

The same formalization procedure as that for the above Road Facility Inspection Guideline is applied to the Road Routine Maintenance Manual. In line with this regulation, DRVN is now in the process of opinion inquiry to the organizations including competent agencies (Science and Technology Department, MOT, ITST, UTC and UTT) and DRVN subordinate organizations (RMBs, SBs and RTCs). Until today, comments are issued from WG2 and RMB II and III to the Project, saying that draft Road Routine Maintenance Manual is basically agreed

DRVN is kindly requested to have an opportunity to exchange opinions with competent agencies in Viet Nam on

the Road Routine Maintenance Manual. Further discussion will be conducted to the realization of this Manual from April 2016 after the JCC.

5) Upgrade of Road Routine Maintenance Manual (Current Status)

Project Team is currently upgrading Road Routine Maintenance Manual and plans to discuss with DRVN for its application to DRVN Specification of Road Routine Maintenance 2013 for amendment. Project Team is also developing the framework of Road Maintenance Manual applicable to both Routine Maintenance and Periodic Maintenance.

6) Information Dissemination and Technical Transfer

The Project Team also conducted information dissemination on the Manual and opinion exchange with RMB and SB engineers in the 3rd Workshop and OJT held from October 31st through November 11th 2016. During the training, developed manual was explained at class room training and its application to the actual site was conducted as OJT focusing on pavement, slope, and retaining wall.

(4) Activity 3-4 Develop Expressway Maintenance Manual

This activity has been conducted as a supplemental study of this Project. However, it was officially added to the Project activity under the amended contract with JICA on July 21st, 2016.

1) Baseline Survey

Baseline survey has clarified that DRVN is developing “Specifications of Expressway Maintenance Standards” under the supervision of Department of Science, Technology, Environment, and International Cooperation. In 2013, JICA conducted “the Project for Strengthening Operation and Maintenance System for Expressway” and developed the Technical Specification Guidelines for Operation and Maintenance of Expressways. The Department wishes to update these products and develop Specifications of Expressway Maintenance Standards.

2) Development of Manual

The first draft of Manual on slope, drainage, pavement, and slope was prepared, followed by the drafting of tunnel, box culvert, traffic management facilities, and road management facilities.

2-2-7 Measure 4: Enhance Responsibility Assignment and administration Procedures for Road Maintenance

(1) Baseline Survey

The Project conducted the baseline survey including the review of recommendations made at the JICA Phase I Project, update of regulations relevant to road maintenance and institutions in Viet Nam, and also studied the progress of the DRVN Comprehensive Renovation Plan commenced in 2013. The JICA Project Team also translated and studied regulations in Viet Nam relevant to organization updated.

(2) Development and Discussion of Work Plan

Based on the DRVN comments addressed to the Project, the Project developed the Work Plan for the enhancement of responsibility assignment and administration procedures. The Work Plan was discussed and agreed at the first

JCC meeting held on April 23rd, 2015.

(3) Development of amendment plan for responsibility assignment and administrative procedure (Current status)

The Project developed the first draft recommendation on the amendment of responsibility assignment and administration procedures, and submit to DRVN in January 2016. The Project is currently introducing new technologies for national road maintenance including PMS database, pavement condition survey, road maintenance planning by PMS, web based operation systems for pavement condition data and PMS, road facility inspection guideline, road routine maintenance manual and training plans. Responsibility assignment and maintenance procedures for smooth and effective operation of these new technologies are getting clarified as the Project progresses. Project Team plans to develop and submit the second recommendation to DRVN in March 2017.

(4) Information Dissemination and Technical Transfer

The first training was conducted at the 3rd Workshop and OJT scheduled from October 31st through November 11th 2016. At Workshops, needs of review on DRVN responsibility assignment and administration procedure on road maintenance was addressed.

2-2-8 Measure 5: Plan and Support Implementation of Training Program and Conduct Public Relations

(1) Activity 5-1 Prepare Draft Training Plan

1) Baseline Survey

Until the first JCC meeting, the Project has conducted a baseline survey on any update on legislation, government, and ministry and DRVN policy on trainings. In May 2015, after the WG member as confirmed, the Project conducted further baseline survey and confirmed that there is no comment on training programs developed under the JICA Phase I Project. Besides, the JICA Project Team conducted the baseline survey questionnaires to relevant organization. Accumulated data and information was compiled into a report, and shared among the Project Team in September 2015, and submitted to WG3 in February 2016.

2) Development and Discussion of Work Plan

Based on the baseline survey, the Project developed the Work Plan for the development of training programs. The Work Plan was discussed and agreed at JCC meeting held on April 23rd, 2015. In the Project, three (3) training programs will be developed as shown in Table 2-12 and one (1) training program, which is “During the Project Training” shown in the table will be implemented.

Table 2-12 Outline of Training program developed under the Project

Training Program	Term	Concept	Trainer	Target trainees
1. Training Program on Project Outputs (During the Project Training)	During the project (2015-2017)	<ul style="list-style-type: none"> • Step by Step transfer of technology developed by the Project to DRVN. • Training is led by JICA project which handover to DRVN from the second year, in order to oversee that training implementation is properly handover to DRVN. 	<ul style="list-style-type: none"> • DRVN • JICA Project Team 	Project counterparts of <ul style="list-style-type: none"> • DRVN • RMBs • SBs • RTCs • (future trainers)

2. Training Program on Project Outputs (After the Project Training)	Until 5 years after the Project Completion (2018-2022)	<ul style="list-style-type: none"> • Deployment of project outputs to nationwide road maintenance agencies focused on selected trainings conducted during the Project • DRVN is to organize and implement training program “After the Project”, with support of trained trainers identified by DRVN. DRVN is highly recommended to identify future trained trainer and include them into training during the Project 	<ul style="list-style-type: none"> • DRVN • Trained trainers 	Project counterparts of <ul style="list-style-type: none"> • DRVN • RMBs, • SBs (Inclusion of PDOT to be considered)
3. Training Program on Road Administration focusing on road maintenance and management (Future Training Program)	After 5 years of the Project Completion (2022-)	<ul style="list-style-type: none"> • Capacity enhancement on comprehensive management capacity of PDCA cycle for road administration in Vietnam sustainably • Delivery with DRVN and assigned training institution. DRVN is highly recommended to identify competent agency and include them into training during the Project. 	<ul style="list-style-type: none"> • DRVN • Assigned training institution 	<ul style="list-style-type: none"> • Staff involved in road administration nationwide • DRVN • RMBs • SBs • PPC/ PDOTs • Contractors

3) Development and Discussion of Overall Training Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Overall Training Implementation Plan, clarifying the framework of training before implementation and getting consensus on the target of development. WG3 meeting was held on 28th of May, 2015 and discussed on Framework, and overall framework as well as cost sharing and cooperative implementation with DRVN, which were agreed. Also, taking account of comments issued in the meeting, the Project agreed to disseminate information on the pilot repair works in the regional workshops and conduct technical transfer OJTs before implementing pavement condition surveys in each of RMB II, III and IV region.

4) Development of training program (Current Status)

Training program on Project Outputs (During the Project Training) was presented in June 2015. Based on the program, training courses have been implemented as shown in the following section. In November 2016, considering the project activities which is now taking shape, discussion on the future training programs for road administration (road maintenance and management) has started in collaboration with Activity 4, followed by discussion on “Training program after the Project” in January 2017.

(2) Activity 5-2 Support Training Implementation

1) Development of Annual Implementation Plan for Training “During the Project”

Based on training program developed above, the Project has developed Annual Training Implementation Plan 2015 for during the Project”, which contains Implementation Plan of Seminar, Workshop, and OJT, Implementation Procedure and Task and Cost sharing. The annual training implementation plan was discussed at the WG3 meeting held on 11th of June in 2015 and then agreed.

After the completion of the first year training, the JICA Project Team conducted the review of the first year training and reviewed the plan for the second and third year in January 2016, and got a consent on the reviewed Annual Implementation Plan. After the end of second year training, the plan is reviewed again for the third year training in February 2017.

Training	Date	Training Venue	Style	MOT	DRVN			RMBs			Sub Total	Total
					DRVN	RTC C	PMU3	RMB	RTC	SBs		
OJT on Pavement Condition Survey	25.04.2016	RMB II	OJT					6	8	9	23	23
	23.02.2016	RMB III	OJT					1	5	10	16	16
	04.11.2015	RMBIV	OJT					4	5	3	12	12
	TOTAL								11	18	22	51

(3) Activity 5-3 Public Relations

1) Baseline Survey

In May 2015, after the WG members are confirmed, the Project delivered a baseline survey questionnaire to WG3 on Public Relations (PR). Based on answers delivered at the end of June 2015, further additional information was requested to DRVN in July and August 2015. The survey confirmed that Road Magazine is the responsible unit for PR under DRVN. On 2nd October 2015, the Project interviewed Road Magazine and were informed that Road Magazine conducts PR activities under the commission from DRVN and has published monthly Road magazine, runs web based Road magazines, developed Video Clips on Road related topics, and also submit articles to news agencies.

2) Development and Discussion of Work Plan

Based on the baseline survey, the Project developed the Work Plan for the development of public relation programs. The Work Plan was discussed and agreed at the JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed upon at the JCC meeting, the Project developed an Implementation Plan, clarifying the Framework before implementation and getting consensus on the target of development. WG3 meeting was held on 28th of May, 2015 and discussed the Project Objectives (Approach) on PR. At the meeting, Road Magazine, the independent unit under DRVN, was assigned to conduct PR activities of DRVN. JICA Project Team has further developed implementation plan with detail activities, and discussed with WG 3. The plan was basically agreed.

4) Development and Discussion of Detail Implementation Plan

Implementation plan on the development of PR materials was developed and discussed at the First JCC held on March 25th 2016;

- Annual Report and Video Crip for PR to ministry level organizations
- Web-based Information System for Road Maintenance Technology for PR to private sector
- General Information Brochure for PR to general public

5) Contractor Selection

The Project Team prepared TOR on the development of Annual Report and Video Clip, and contracted out to Road Magazine on 30th June 2016. These works are to be completed by 28th February 2017. Development of Web-based Information System for Road Maintenance Technology was subcontracted to SAOMAI through competitive quote

on 5th August 2016. TOR development for the contract of General Information Brochure is now in progress.

6) **Development of PR Outputs (Current Status)**

Development of Annual Report and Video Clip are in progress and to be completed by the end of March 2017.
Web-based Information System for Road Maintenance Technology was completed at the end of December 2016.

7) **Output Management**

Procedure for installing the completed Web-based Information System for Road Maintenance Technology into DRVN application server is now under processing.

8) **Technical Transfer**

Report of the completed Web-based Information System for Road Maintenance Technology was presented in the 3rd JCC held on March 29 2017.

9) **Delivery of PR activities**

From 8th to 10th of July, 2015, the Project participated to “Viet Nam Ha Noi Transport & Logistics Conference & Exhibition”, and set up a booth to introduce the Project and project activities with Board Panel and Photos, leaflet, a short video clip.

2-3 Achievement of Output (Based on PDM)

2-3-1 OUPUT 1: PMS Data Development Technology is improved.

Objectively Verifiable Indicators	Project Output	Achievement Level
Road asset database, maintenance history database and pavement condition database are completed for PMS.	<ul style="list-style-type: none"> • PMS Data Input System (offline and Web-based) • Road Inventory/Asset Database • Maintenance History Database • Pavement Condition Database 	<p><u>In Progress</u></p> <ul style="list-style-type: none"> • Upgrading of PMS data input format has been completed. • System development of PMS data input was completed for offline system and web based online system. • <u>Input and amendment of PMS data were completed for RMB II and III and RMB IV roads.</u> • <u>Pavement Condition Survey for RMB II, III and IV roads was completed in November 2016.</u> • Data processing has also completed for RMB III and IV roads and that of <u>RMB II is in progress.</u> • Pavement Condition survey of additional road sections under RMB I was already completed. Data processing will start in April 2017, following RMB II road analysis.

2-3-2 OUPUT 2: PMS is Upgraded and applied to the Planning of Trial Pavement Repair Work Plans.

Objectively Verifiable Indicators	Project Output	Achievement Level
Trial pavement repair work plan (Annual, five year) using PMS is formulated by DRVN.	<ul style="list-style-type: none"> • Web based PMS • Web-based Pavement Condition Data Display System • Trial Pavement Repair Plans (Annual and Five Year Plans) • Web-based Pavement 	<p><u>In Progress</u></p> <ul style="list-style-type: none"> • PMS is currently under upgrading. • Development of Web-based Pavement Condition Data Display System was completed and now operational level. • Development of web-based PMS operation system is in progress.

	Condition Data Analysis System	
	<ul style="list-style-type: none"> Web-based PMoS 	

2-3-3 OUPUT 3: Final Draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual are Formulated.

Objectively Verifiable Indicators	Project Output	Achievement Level
Draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual are formulated.	<ul style="list-style-type: none"> Final draft of Road Facility Inspection Guidelines Road Routine Maintenance Manual Expressway Maintenance Manual 	<p><u>In Progress</u> The First draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual has been submitted to DRVN and their second drafts are under development based on the comments issued to the first drafts by the competent agencies.</p>

2-3-4 OUPUT 4: Responsibility Assignment and Administration Procedure are Clarified for Road Maintenance.

Objectively Verifiable Indicators	Project Output	Achievement Level
Amendment plans to realize output 1 to 3 are developed.	<ul style="list-style-type: none"> Amendment plans on responsibility assignment and administrative procedure 	<p><u>In Progress</u> <ul style="list-style-type: none"> First recommendation has been developed and submitted to DRVN. Second recommendation is now under preparation. </p>

2-3-5 OUPUT 5: Training Implementation and Public Relations are Reinforced.

Objectively Verifiable Indicators	Project Output	Achievement Level
DRVN conduct regular trainings on project outputs.	<ul style="list-style-type: none"> Training Program and Plan (during and after the project, National road administration) Capacity enhancement of counterpart staff 	<p><u>In Progress</u> <u>Training program during the project and training program for national administration (road maintenance and management) are submitted. Currently training program after the project is under development.</u></p> <p>(1) Trainings</p> <ul style="list-style-type: none"> 1st Training (Workshop and OJT (PMS data input)): 20-27 Jul.2015 2nd Training (Workshop): 16 – 23 May 2016 3rd Training (Workshop and OJT) : 31st Oct.-11 Nov. 2016 <p>(2) OJT on Pavement Condition Survey:</p> <ul style="list-style-type: none"> 1st October 4th at Ho Chi Minh City 2nd February 23rd at Da Nang City 3rd April 25th at Vinh City <p>(3) Seminar</p> <ul style="list-style-type: none"> 1st Seminar: 21st October, 2015 <p>(4) Training in Japan</p> <ul style="list-style-type: none"> 1st Training: 13-19th September 2015 2nd training: 26 Sep. – 6 Oct. 2016
DRVN conduct PR.	<ul style="list-style-type: none"> Annual Report Video Clip 	<p><u>In Progress</u> <ul style="list-style-type: none"> Project leaflet was developed and distributed at MOT </p>

	<ul style="list-style-type: none"> • Web-based Maintenance Technology • Leaflet 	Road	<p>Exhibition and Seminar.</p> <ul style="list-style-type: none"> • Development of Annual report and Video clip will be completed at the end of February 2017. • Web-based Information System for Road Maintenance Technology was completed in under development at the end of December.
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2-4 Achievement of the Project Purpose (to be added as the project progresses)

PROJECT PURPOSE: Implementation capacity for road maintenance is strengthened in Viet Nam.

Objectively Verifiable Indicators	Achievement Level
Trial pavement repair work plan using PMS is formulated in RMB I, II, III and IV	
Primary rules for road facility inspection, maintenance and repair work are formulated (*1)	
Implementation structure for road maintenance is established.	

2-5 Risks and Actions for Mitigation

(1) February 2015 – March 2015 (Up to Monitoring Sheet Ver. 1)

As the Project required a couple of months to start, counterpart of DRVN also needed time to set up the project environment including arranging Project Team office space, organizing working groups and selecting counterpart members including local budget arrangement. This raised a little concern in the delay of the Project. During this term, the Project Team consulted to MOT, DRVN and JICA Vietnam, and moved to a temporary office space prepared by DRVN and conducted baseline surveys based on desktop study. Thanks to MOT, DRVN, and JICA Vietnam efforts, the above project environment was settled before the first JCC.

(2) April 2015 – October 2015 (Up to Monitoring Sheet Ver. 2)

No risk was observed during this term.

(3) October 2015 – March 2016 (Up to Monitoring Sheet Ver. 3)

As mentioned at “1-2-6 (1) Activity 3-1 Pilot Repair Works”, the procurement of equipment and materials for pilot repair works is expected to delay due to long processing time for approval on the import material and equipment and also due to regulation change of custom clearance. Consequently, the implementation of pilot repair works also to be delayed for about half a year. JICA Project Team needs to coordinate with supplier for the production timing of materials, to rearrange experts’ assignment schedule, and to coordinate with DRVN for arrangement of local contractors for pilot repair works.

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

As mentioned at “1-2-6 (1) Activity 3-1 Pilot Repair Works”, the procurement of equipment and materials for pilot repair works has been delayed due to import and tax exemption procedures. Implementation of pilot repair works has been originally planned from January to March 2016 is expected to be in Feb – Mar 2017, which is delay of

about 1 year. JICA Project Team has coordinated with the supplier for the production timing of materials, to rearrange experts' assignment schedule, and to coordinate with DRVN for arrangement of local contractors for pilot repair works.

(5) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

As mentioned at “1-2-6 (1) Activity 3-1 Pilot Repair Works”, there has been some progress in administration procedure in Viet Nam (Project approval by the Office of the Government). The Project Team has restarted the internal procedure of equipment and material procurement, targeting the goods to be arrived in March 2017, however there still remain some concerns for the delay of the rest of the administration procedures (Tax exemption Procedures in Viet Nam).

(6) January 2017 – March 2017 (Up to Monitoring Sheet Ver. 6)

As mentioned at “1-2-6 (1) Activity 3-1 Pilot Repair Works”, the good is now planned to be arrived in 16th March 2017. There still remain some concerns for the delay of the rest of the administration procedures and dispatch to the site.

2-6 Progress of Actions undertaken by JICA

(1) February 2015 – March 2015 (Up to Monitoring Sheet Ver. 1)

JICA Vietnam has provided a great support to accelerate DRVN arrangement for office space.

(2) April 2015 – October 2015 (Up to Monitoring Sheet Ver. 2)

Not applicable

(3) October 2015 – March 2016 (Up to Monitoring Sheet Ver. 3)

JICA Vietnam provides a great support to JICA Project Team, DRVN and MOT for providing information on tax exemption and coordinating relevant agencies.

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

JICA Vietnam provides a great support to JICA Project Team by close coordination with relevant ministries, and sharing information with DRVN and Project Team on tax exemption

(5) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

Thanks to JICA Vietnam on close coordination with relevant ministries, tax exemption procedure have now move forward. Continuous support is very much appreciated to ensure that necessary procurement will be successfully carried out to conduct the planed pilot repair project within the project term.

(6) January 2017 – March 2017 (Up to Monitoring Sheet Ver. 6)

Continuous support for JICA Vietnam is very much appreciated to ensure that necessary procurement will be successfully carried out to conduct the planed pilot repair project within the project term.

2-7 Progress of Actions undertaken by Gov. of Viet Nam

(1) February 2015 – March 2015 (Up to Monitoring Sheet Ver. 1)

After PMU3 had been assigned to the Project, arrangement for office space and furniture etc. have been arranged very smoothly.

(1) April 2015 – October 2015 (Up to Monitoring Sheet Ver. 2)

Not applicable

(2) October 2015 – March 2016 (Up to Monitoring Sheet Ver. 3)

Documents required for Custom Clearance are prepared by PMU 3 of DRVN.

(3) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

Proceeding the Approval of Funding List has been delayed, which requires to apply Grant Aid Certificate to import and tax exemption procedures of the material and equipment needed for the pilot pavement repair works.

(4) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

On 28th October 2016, the Prime Minister's Office issued a letter approving on the Technical Cooperation project list to be funded by JICA ODA, requesting MOF to proceed the tax exemption procedure of urgent projects including this Project. Formal approval on the Funding List will be processed separately from this urgent treatment through discussion between MPI and the Office of the Government (Prime Minister's Office).

(5) January 2017 – March 2017 (Up to Monitoring Sheet Ver. 6)**2-8 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)**

2-8-1 Coordination with Vietnam Road Asset Management Project (VRAMP)

Component A-1 "Consulting Service for Road Database Framework and Development of the Road Asset Management System and Road Asset Management Plans", of Vietnam Road Asset Management Project (VRAMP) funded by the World Bank has commenced from 1st November, 2015. As explained in section 2-2-2 (2); Project Management, also there is close relation between JICA Phase II Project and VRAMP Component A-1 in relation to data collection, PMS integration in RAMS and database utilization. Thus, RAM-SC and RAM-WG set by DRVN are expected to coordinate regularly with VRAMP.

Regarding PMS development, DRVN is requested to keep maintaining the principle of concluding the PMS development during the implementation of the JICA Project. The JICA Project Team will make an effort in developing PMS system until its operability in DRVN environment is confirmed.

The 3rd JICA training and the planned VRAMP first training (Workshop) was planned to be held on the same day. However, VRAMP workshop was rescheduled to the days from November 21, 2016.

3. DELAY OF WORK SCHEDULE AND/OR PROBLEMS (IF ANY)

3-1 Detail

(1) February 2015 to April 2015 (Up to Monitoring Sheet Ver.1)

As mentioned earlier, there was a risk of delay, however those issues were resolved in a good cooperation of involved agencies.

(2) May 2015 to October 2015 (Up to Monitoring Sheet Ver. 2)

During this term, TWG was planned to be hold in July and October 2015. However, the first TWG was postponed to the 22nd of October, 2015.

(3) November 2015 to March 2016 (Up to Monitoring Sheet Ver. 3)

Procurement of material and equipment for pilot repair works is expected to delay due to required time scale for document preparation required for tax exemption. Thus the implementation of pilot repair works also to be delayed as mentioned in “1.2.6 (1) Activity 3-1 Pilot Repair Works.”

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

Procurement of material and equipment for pilot repair works is expected to delay due to required time scale for document preparation required for tax exemption. Thus the implementation of pilot repair works also to be delayed as mentioned in “1.2.6 (1) Activity 3-1 Pilot Repair Works.”

(5) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

Procurement of material and equipment for pilot repair works is expected to delay due to required time scale for document preparation required for tax exemption. Thus the implementation of pilot repair works also to be delayed as mentioned in “1.2.6 (1) Activity 3-1 Pilot Repair Works.”

(6) January 2017 – March 2017 (Up to Monitoring Sheet Ver. 6)

Procurement of material and equipment for pilot repair works is expected to delay due to required time scale for document preparation required for tax exemption. Thus the implementation of pilot repair works also to be delayed as mentioned in “1.2.6 (1) Activity 3-1 Pilot Repair Works.”

3-2 Cause

(1) February 2015 to April 2015 (Up to Monitoring Sheet Ver.1)

Very initial period of project commencement and Project Team mobilization

(2) May 2015 to October 2015 (Up to Monitoring Sheet Ver. 2)

No particular issues to be coordinated

(3) November 2015 to March 2016 (Up to Monitoring Sheet Ver. 3)

Time require for preparation of tax exemption document

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

Time require for approval from Prime Minister

(5) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

Time require for tax exemption procedure in Viet Nam.

(6) January 2017 – March 2017 (Up to Monitoring Sheet Ver. 6)

Time require for tax exemption procedure in Viet Nam.

3-3 Actions to be Taken

(1) February 2015 to April 2015 (Up to Monitoring Sheet Ver.1)

Not applicable

(2) May 2015 to October 2015(Up to Monitoring Sheet Ver.2)

Due to no particular issues to be coordinated in July, TWG was postponed to October 2015.

(3) October 2015 to March 2016 (Up to Monitoring Sheet Ver.3)

JICA Project Team has been informed that document preparation for Tax Exemption requires (Amended Project Document and C1 Form) will take 4 to 6 months. Thus pilot repair works will commence in October 2016 as the earliest.

JICA Project Team monitored the preparation of relevant documents.

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

JICA Project Team was informed that approval for funding list by PM will take minimum 3 months. Thus pilot repair works will commence in March 2017 as the earliest.

JICA Project Team has requested to JICA Vietnam office to coordinate with Vietnamese authorities to accelerate the document processing.

(5) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

JICA Project Team has stated necessary internal procedure (tender, selection of contractor, shipping of material etc.) to minimise the delay of procedure. DRVN was also kindly requested to proceed necessary preparation of documents for tax exemption in Viet Nam.

(6) January 2017 – March 2017 (Up to Monitoring Sheet Ver. 6)

- Monitoring of material shipping and delivery
- Rescheduling of pilot work implementation schedule to start pilot work immediately after arrival of materials and equipment in Viet Nam.

3-4 Roles of Responsible Persons/Organization (JICA, Gov. of Viet Nam, etc.)

Preparation of documents required for Custom Clearance: JICA Vietnam Office / PMU 3 of DRVN

4. MODIFICATION OF THE PROJECT IMPLEMENTATION PLAN

4-1 PO and PDM

(1) Modification made at Monitoring Sheet Ver. 1

At Version 1, a slight adjustment on Implementation schedule was made based on Work Plan prepared in discussion with DRVN. And also a sub activity “Implement pavement condition surveys for RMB II, III and IV selected roads” which was originally under Activity 2 “Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan”, has now incorporated under Activity 1 “Improve PMS Data Collection and Processing Technology”.

(2) Modification made at Monitoring Sheet Ver. 2

Outputs and Activities of PDM have been updated according to the Project Activities considering the actual and practical delivery of tasks and outputs, which defined in the Work Plan. Thus output has change from 4 outputs to 5 outputs adding training implementation and public relations, and activities for output 5 have been included.

In addition, in the TWG held on October 2015, DRVN reported a new regulation on the formulation of pavement midterm repair plans, which includes the change of target year from “3-year” to “5-Year” according to the Preparation of Mid-term road maintenance plan in the period of 2017–2020 issued by DRVN on 4th September 2015 prudent to the Public Investment Law No.49/2014/QH13 and Prime Minister Decree No.77/2015/ND-CP. Upon this information, the Project promised to comply the current PMS development with this new regulation and accordingly updated PDM.

Proposed modification has been consulted to JICA in January 2016. PO is also amended accordingly.

(3) Modification made at Monitoring Sheet Ver. 3

No modification was made.

(4) Modification made at Monitoring Sheet Ver. 4

Draft modification is made on PDM and PO as Version 3 Draft. These modifications will be discussed and authorized at the 3rd JCC which will be held in March 2017. On PDM, additional activities of Activity 2-7 Develop Web based Pavement Monitoring System, and Activity 3-4 Develop Expressway Maintenance Manual are added. On PO, the sub activities of each activity are added to make clear the progress of activities.

(5) Modification made at Monitoring Sheet Ver. 5

As mentioned at Version 4, draft modification will be discussed at the 3rd JCC which will be held in March 2017.

(6) Modification made at Monitoring Sheet Ver. 5

As mentioned at Version 4, draft modification will be discussed at the 3rd JCC which will be held in March 2017.

4-2 Other modifications on detailed implementation plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)

Contract was amended on July 21st, 2016 to include additional tasks shown below;

- 1) Operation Verification of web systems developed under the Project
- 2) Operation Verification of Web-based System for Displaying Pavement Condition Survey Data
- 3) Upgrading of Pavement Monitoring System
- 4) Development of Expressway Routine Maintenance Manual
- 5) Addition of Pavement Condition Survey

In order to proceed the above additional activities, in total of 8.9 MM (4.9 MM for expert on Web-based System for Displaying Pavement Condition Data, 3.6 MM for Team Leader/Road Maintenance Planning, and 0.4 MM for the expert on Pavement Condition Survey (Calibration) , are added, which is an increase from 126 MM to 134.9 MM.

In addition to above modification, the following modification was also made during implementation of project:

- The number of trainees in second training in Japan to be conducted in 2016 has been increased from 5 to 10 persons.

5. PREPARATION OF GOV. OF VIET NAM TOWARD AFTER COMPLETION OF THE PROJECT

To be added as the Project progresses.

APPENDIX-1: PROJECT MONITORING SHEET I (PDM) PM FORM3-2

APPENDIX-2: PROJECT MONITORING SHEET II (PO) PM FORM3-3

APPENDIX-3: MINUTES OF JCC MEETINGS

Table 0-1 Flow Chart

	2015												2016												2017												2018		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Work in JP/VN																																							
Joint Coordination Committee			△											△													△												
Technical Working Group																																							
Seminar																																							
Workshop / OJT																																							
Training in Japan																																							
Monitoring Sheets																																							
Reports (PR: Progress Report, PCR: Project Completion Report)																																							
Main Project Activities	<p>Measure 1 Improve PMS Data Collection and Processing Technology</p> <p>1-1 Formulate PMS Database: Baseline Survey, Work Plan Preparation, Upgrading of PMS Data Format/ Data Input System, Monitoring of PMS Data(*) to be Inputted by RMB/SB</p> <p>1-2 Implement Pavement Condition Survey: Baseline Survey, Work Plan Preparation, Development of Survey Plan/Local Sub Contract, Implementation of Pavement Condition Survey for Selected Road of RMB II, III, IV Jurisdiction, Processing/Analysis of Pavement Condition Survey Data</p> <p>1-3 Develop Web based PMS Data Input System: Develop Web based PMS Data Input System, Monitoring of PMS Data(*) to be Inputted by RMB/SB (Continue)</p> <p>Activities: WS/OJT (Data Input), Seminar, WS/OJT, OJT, WS/OJT, WS/OJT/Seminar</p>																																						
	<p>Measure 2 Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan</p> <p>1-2 Upgrade PMS: Baseline Survey, Work Plan Preparation, Preparation of PMS Upgrading Plan, Review and Upgrade of PMS considering Management Data and Geographical Parameters</p> <p>2-4 Develop Web-based System for Displaying Pavement Condition Data: Development of Web-based System for Displaying Pavement Condition Data</p> <p>2-5/2-6/2-7 Develop Web-based PMS Operation System, PC Data Analysis system and PMS for Pavement condition Data: Development of PMS Web-based System, Analysis System and PMS for pavement condition data</p> <p>2-2 Formulate PMS Dataset: Conversion of Inputted PMS Data / Development of PMS Dataset(**)</p> <p>2-3 Formulate Pavement Repair Work Draft Plan for RMB II, III, IV: Formulation of Repair Work Draft Plan (Annual / 3 year) using Web-based Operation System, Monitoring of PMS Legalization Process</p> <p>Activities: WS, Seminar, WS/OJT, OJT, WS/OJT, WS/OJT/Seminar</p>																																						
	<p>Measure 3 Improve Inspection and Repair Work Selection technology on Road Facility and Develop Technical Standards</p> <p>3-1 Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology: Develop Pilot Repair Works Plan, Selection of Pilot Repair Works/ Contractor /Procurement of Equipment and Materials, Implementation of Pilot Repair Works, Monitoring and Evaluation of Pilot Repair Works</p> <p>3-2 Upgrade Road Facility Inspection Guideline: Upgrading of Road Facility Inspection Guideline and Discussion with Competent Agencies, Monitoring of Guideline Legalization Process</p> <p>3-3 Upgrade Road Routine Maintenance Manual: Upgrading of Road Routine Maintenance Manual and Discussion with Competent Agencies, Finalization of Road Maintenance Manual / Discussion and Confirmation to Specialized Agencies, Monitoring of Manuals Legalization</p> <p>3-4 Development of Expressway Maintenance Manual: Development of Expressway Maintenance Manual</p> <p>Activities: WS, Seminar, WS/OJT, OJT, WS/OJT, WS/OJT/Seminar</p>																																						
	<p>Measure 4 Enhance Responsibility Assignment and Administration Procedures for Road Maintenance</p> <p>4-1 Prepare Amendment Plan for Road Maintenance Responsibility Assignment(Conducted by JICA Long-term Expert): Preparation of Amendment Plan for Responsibility Assignment and coordination with Relevant Parties on the Draft Plan, Monitoring of Legalization Process</p> <p>4-2 Prepare Amendment Plan for Road Maintenance Administrative Procedure: Preparation of Amendment Plan for Administrative Procedure and coordination with Relevant Parties on the Draft Plan, Monitoring of Legalization Process</p> <p>Activities: WS, Seminar, WS/OJT, OJT, WS/OJT, WS/OJT/Seminar</p>																																						
	<p>Measure 5 Plan and Support Implementation of Training Program and Conduct Public Relations</p> <p>5-1 Prepare Draft Training Plan: Baseline Survey, Work Plan, Development of Draft Training Plan for During/After Project /Long Term Training and Discussion and Coordination with Relevant Parties, Monitoring of Legalization Process</p> <p>5-2 Support Training Implementation: Coordination of WS/OJT, Coordination of Seminar/Training in JP, Coordination of WS/OJT, Coordination of OJT/Training in JP, Coordination of WS/OJT, Coordination of WS, OJT, Seminar, Training in JP</p> <p>5-3 Conduct Public Relations: Baseline Survey, Work Plan, Conduct Public Relations</p>																																						

*PMS Data: Data which includes PMS specific and some location specific (identifier) Data. These data are not combined into a single format/structure/table.
 ** PMS Dataset: Only the required PMS data for running PMS Software. Data are stored in a pre-defined single format/structure

Project Monitoring Sheet I (Revision of Project Design Matrix)

Project Name: The Project for Capacity Enhancement in Road Maintenance Phase II
 Project Period: February, 2015 to March, 2018 (3 years)
 Implementation Organization: Directorate for Roads of Vietnam under Ministry of Transport
 Target Group: DRVN, Road Management Bureaus (RMBs) I, II, III, IV
 Target Area: Designated area of RMB I, II, III, IV

Version: 3 DRAFT*

Dated: 31st Sep, 2016

* Amendments will be authorized at next JCC to be held in March 2017.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions (I.A.)	Achievement	Remarks
Overall Goal Road maintenance is conducted properly based on the mid-term plan, following PDCA cycle.	(By 3 years from the project end) The indicators for pavement damage (IRI, cracks, rutting, etc.) will be improved X %.	1.Result of data comparison of regular pavement condition survey by DRVN 2.Trial 3 year and annual plan for pavement maintenance 3. Annual Report 4. Interview to DRVN			
Project Purpose Implementation capacity for road maintenance is strengthened in Viet Nam	1. Trial pavement repair work plan using PMS is formulated in RMB I,II, III and IV 2. Primary rules for road facility inspection, maintenance and repair work are formulated (*1) 3 Implementation structure for road maintenance is established.	1. Trial pavement repair work plan of RMB I,II, III and IV 2. Regulation 3-1. Regulation 3-2. Interview to DRVN	I.A. to achieve Overall goal 1.Budget is allocated stably for maintenance activities in accordance with five year plan 2. Training is conducted by DRVN continuously to maintain technical skills		
Outputs 1. PMS data development technology is improved 2.PMS is upgraded and applied to the planning of trial pavement repair work plans 3.Technical specifications for inspecting road facility and selecting repair work are developed 4.Responsibility assignment and administration procedure are clarified for road maintenance 5. Training impelmentation and public relations are reinforced	1.PMS Database consisting of Road Aasset data, maintenance history data and pavement condition data are completed. 2. Trial pavement repair work plan (annual, five year) using PMS is formulated by DRVN. 3.Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual, and Expressway Maintenance Manual are formulated. 4. Amendment plans to realize output 1-3 are developed 5-1. DRVN conduct regular trainings on project outputs 5-2. DRVN conduct PR.	1.Road asset DB, maintenance history DB, pavement condition DB 2.Trial pavement repair plans (annual, five year plan) 3.Final draft of Road Facility Inspection Guideline, Road Routine Maintenance Manual and Expressway Maintenance Manual 4.Amendment plans (draft) 5-1. Training record 5-2. PR outputs	I.A. to achieve Project Purpose 1 Engineers who received training are assigned continuously 2. Legalization procedure for Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual proceeds	In Progress	
Activities	Inputs		I.A. to achieve Outputs		
	Japanese side	Vietnamese side			
1-1.Formulate PMS Database	1.Dispatch of Experts (1)Long term Expert •Road maintenance policy/regulations (2)Short-term experts • Team Leader/Road Maintenance Planning •Deputy Team Leader/PMS System Operation Technology	1.Human resources (1)Chairperson of JCC (2)Chairperson of TWG (3)Counterparts (DRVN and RMBs) (4)Coordinator 2.Facilities Communal office space for JP Team and local support team with electricity, air-condition, internet, telephone line. 3.Cost (1)Cost for pilot project on maintenance and repair work (including cost for general materials) (2)Small running expenses necessary for the implementation of the Project. (e.g. daily allowance, accommodation and domestic travel expenses of DRVN's staff for participating in training in Vietnam)	1. VRAMP Project (WB) is implemented as planned 2. IT policy of DRVN on organization and operation of database and system is maintained		
1-2.Implement Pavement Condition Surveys for RMB II, III and IV selected roads	•Pavement Condition Survey (Planning and Management) •Pavement Condition Survey(Calibration) •PMS System Technology(Budget Simulation)				
1-3.Develop Web-based PMS Data Input System	•PMS System Technology(Repair Work Planning) •Web-based System for Displaying Pavement Condition Data •Road Facility Inspection Technology •Road Maintenance Technology •Pilot Project Management •Pavement Technology				
2-1.Upgrade PMS software	•Road Maintenance Administrative Procedure •Capacity Development/Project Coordination				
2-2.Convert input data and make PMS dataset					
2-3.Formulate trial Pavement Repair Work Plan (annual and five year plan) for RMB I, II, III and IV road networks by PMS system and examine system operability.					
2-4.Develop web-based system for displaying pavement condition data on the DRVN mapping system					
2-5.Develop Web-based system which enables PMS Operation on website and formulates trial annual and five year pavement repair work plans					
2-6. Develop Web-based Analysis System for Pavement Condition Survey Data	2.Training in Japan •Three times (once/year) on Road maintenance policy and repair technology	4.Others (1)Implementation of the pilot repair work for maintenance and repair work with JICA experts' advisory. (2)Implementation of pilot Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction, with JICA's local service.	Preconditions		
2-7. Develop Web-based Pavement Monitoring System (PMoS)	3.Equipment, Machinery and Materials (1)Special equipment and materials for pilot project work including: - Crack seal technology - Shallow pothole repair technology - Deep pothole repair technology - Bridge Waterproofing technology (Note) Materials to be imported are all listed in the revised Project Document. (2)Computers for planning system (3)Others needed for project implementation				
3-1.Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology which incorporates new technology and materials					
3-2. Upgrade Road Facility Inspection Guideline					
3-3. Upgrade Road Routine Maintenance Manual for standardization					
3-4. Develop Expressway Maintenance Manual					
4-1.Prepare Amendment Plan for Road Maintenance Responsibility Assignment	4.Others(Sub Contract) •Local service for Pilot Pavement Condition Survey •Local Service for development of web-based operation system				
4-2.Prepare Amendment Plan for Road Maintenance Administrative Procedure					
5.1. Prepare Draft Training Plan					
5.2. Support Training Implementation					
5.3. Conduct Public Relations					

Note:(*1): target facilities, frequency, methods, diagnosis, selection method for repair works, repair work, construction management



**THE SOCIALIST REPUBLIC OF VIETNAM
MINISTRY OF TRANSPORT
DIRECTORATE FOR ROADS OF VIETNAM
JAPAN INTERNATIONAL COOPERATION AGENCY**



**THE PROJECT FOR CAPACITY ENHANCEMENT
IN ROAD MAINTENANCE
PHASE II**

PROJECT MONITORING SHEET VER. 7

(April 2017 – September 2017)

Submitted To:

TO CHIEF REPRESENTATIVE of JICA VIET NAM OFFICE

PROJECT MONITORING SHEET

Project Title: Project for Capacity Enhancement in Road Maintenance Phase II

Version of the Sheet: Ver. 7 (Term: April 2017 – September 2017)

	Name:	Tsuneo Kato
	Title	Team Leader
	Submission Date	29 September 2017

(Prepared in cooperation with DRVN)

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1. PROJECT OUTLINE

1-1 Country

The Socialist Republic of Vietnam

1-2 Title of the Project

Project for Capacity Enhancement in Road Maintenance Phase II

1-3 Duration of the Project (Planned and Actual)

From February 2015 to March 2018 (38 months)

1-4 Background (from Record of Discussion (R/D))

Under the previous 5 years Socio-Economic Development Strategy (2006-2010), the economy of Vietnam achieved stable socio-economic growth as described with the average growth rate of 7 % / year, and doubling of GDP in 2010 from that of 2000. In the new 5 years Socio-Economic Development Strategy (2011-2015), maintaining of high socio-economic growth is continued to be one of objectives through mobilizing 12 socio economic strategies described. With regards to socio economic strategy on transport infrastructure, it concentrates on reviewing of transport infrastructure development projects and promoting priority investment on establishing urban infrastructure such as step by step synchronously- establishment of South-North route axis and East-West corridor axis, encouraging and creating conditions for participation of foreign and private sector investments on infrastructure development, and early completion of cross border roads to surrounding countries.

In complying with the previous development strategy, in 2008, the Ministry of Transport (MOT) set the Transport infrastructure development Strategy of Vietnam up to 2020. Since its establishment, the strategy has been partially amended periodically under the instruction of the Prime Minister. Especially approved amendments in 2013 describe policies on introduction of advanced technologies, upgrading of technical standards, specification, and norms. In January 2013, MOT successfully institutionalized road maintenance funds which had been a matter of concerns for a long term. As a result, 65 % of road maintenance funds are allocated to national roads and 35% to provincial road. This is expected to secure more budgets for road maintenance than those in 2012, which only 40% of requested budget was secured.

In March, 2013, MOT published the Plan for Comprehensive Renovation in Management and Maintenance of National Highway System. The Plan aims to upgrade the quality of national road maintenance works so that the longevity of road facilities is increased, and at the same time, safety and efficiency of road traffic are also improved. Strategic policies described in the plan are listed below.

- 1) Renovate contractor selection procedures for national road maintenance
- 2) Upgrade quality of supervision on road maintenance work
- 3) Apply new road maintenance technologies
- 4) Implement measures for overloaded vehicles
- 5) Renovate planning methodology for road maintenance (3 years plan)
- 6) Improve required procedures for laws and regulations relevant to road management and maintenance
- 7) Amend road maintenance standards and norms

- 8) Develop human resources and improve road maintenance institutions
- 9) Install information management system for road maintenance
- 10) Assist capacity enhancement of regional road maintenance

Current situation of Road Asset Management at DRVN is describes as below:

- 1) DRVN implemented operation methodology in quality management and road maintenance in accordance with the Government’s policies.
- 2) Technology qualification in management and maintenance work is low, asynchronous, and slow renovation lead to limited effectiveness and quality of this work in the past.
- 3) The technical standards, work procedures, mechanism, policies and financial resources are incomplete that make it difficult for implementation and planning (including short-term, medium-term and long-term) of road maintenance.
- 4) Lack of a road database system which is unified and complete to connect data from the central to the local, facilitate the management and exploitation, and initiatively coordinate the works.
- 5) Human resources are not equal in qualifications and capabilities, and there is no development plan which is appropriate and satisfied with the new implementation methodology.

Under the above background, GOV requested GOJ to implement “Technical Cooperation for the Project for Capacity Enhancement in Road Maintenance Phase II”. In response to this request, JICA determined to transfer the technology in order to facilitate the road maintenance cycle and held series of discussion with DRVN and related authorities concerned of Viet Nam. Based on the agreements between JICA and the authorities concerned of Viet Nam, the Minutes of Meetings was signed on September 8, 2014, which leads both parties to conclude this Record of Discussions.

1-5 Overall Goal and Project Purpose (from Record of Discussions (R/D))

(1) Overall Goal

Road maintenance is conducted properly based on the mid-term plan, following PDCA cycle.

(2) Project Purpose

Implementation capacity for road maintenance is strengthened in Viet Nam

1-6 Implementation Agency

Directorate for Roads of Vietnam (DRVN)

1-7 Reporting

Followings are a list of report to be prepared under the Project.

Table 1-7-1 Current Status of Report

	Type of Report	Status	Notes
1	Monitoring Sheet Ver.1	Submitted on 23 rd April 2015	<ul style="list-style-type: none"> • Project Monitoring Sheets • Work Plan
2	Monitoring Sheet Ver.2	Submitted on 21 st October 2015	<ul style="list-style-type: none"> • Project Monitoring Sheets
3	Monitoring Sheet Ver. 3	Submitted on 25 th March 2016	<ul style="list-style-type: none"> • Project Monitoring Sheets • Progress Report I
4	Monitoring Sheet Ver. 4	Submitted on 31 st September 2016	<ul style="list-style-type: none"> • Project Monitoring Sheets
5	Monitoring Sheet Ver. 5	Submitted on 22 nd January 2017	<ul style="list-style-type: none"> • Project Monitoring Sheets
6	Monitoring Sheet Ver. 6	Submitted on 29 th March 2017	<ul style="list-style-type: none"> • Project Monitoring Sheets • Progress Report II
7	Monitoring Sheet Ver. 7	Submitted on 29 September 2017	<ul style="list-style-type: none"> • Project Monitoring Sheets
8	Project Completion Report (include outputs of technical cooperation)	To be submitted at beginning of February 2018	

2. PROGRESS

2-1 Progress of Inputs

2-1-1 Japanese Side

(1) Dispatch of Experts

The Project Team is formed from 13 short term experts and one (1) long term expert.

Based on the amended contract on 21st July 2016, total Man Month (hereinafter to be called as “MM”) has been increased from 126 MM to 134.9 MM. Since the 9th of February 2015, a total of 17 JICA short term experts have been assigned for total of 115.9 MM (86%) as of the end of September 2017. One long term expert has been assigned since January 26th, 2015 (together with long term expert and short time experts, hereafter to be referred as “The Project Team”).

(2) Training in Japan

Three (3) trainings are planned under the Project, the first, second and third trainings were conducted from 13th to 19th of September 2015 for 7 days, 26th September to 6th October 2016 for 11 days, and September 3rd to September 16th 2017 for 14 days respectively.

(3) Procurement of Equipment, Machinery and Materials

Under the project, following three (3) items are procured for project activities and will be handed over to counterparts. The list of equipment and machinery procured under the project are listed up in Table 2-1-1.

Table 2-1-1 Procurement of Equipment and Machinery

Items	Component	Status	Note
Special equipment and materials for pilot project work	To be referred to 1-2-6 (1) Pilot Project		
Computers for planning system	10 desktop computers	2 computers purchased in December 2015	Procurement of 8 computers is in progress.
	1 Application Server		

	1 Database Server	Purchased and installed to DRVN (August 5, 2016)	
Others needed for project implementation	2 desktop computers	Purchased in April 2015	
	1 Projector	Purchased in April 2015	
	1 Screen	purchased in April 2015	
	1 Printer (A3/colour)	purchased in June 2015	

1) Special equipment and materials for pilot repair work

Contract of material procurement was signed with the material provider NICHIREKI on January 5, 2017. The Material was shipped from YOKOHAMA Port to Hai Phong Port in Viet Nam on March 4, 2017 and arrived at Hai Phong Port on March 17, 2017. Upon arrival, custom clearance including tax exemption was processed and approved up until April 1, 2017. The Material was then transported to ITST on April 4, 2017 and taken over to PMU3, DRVN. Pilot repair work was then immediately implemented with imported materials from April 15 to 26, 2017 in the site. For further detail, please refer to "1-2-6 (1) Pilot Project".

2) Computers for planning system

The project procures in total of 10 desktop computer for planning system. Two desktop computers have been purchased and currently used to develop planning system by the Project. Further eight computers are under procurement process and handed over to each RMB in October 2017.

3) Application and Database Server

Based on the specification finalised in May 2016, contractor was selected in June 2016 and servers were installed to the DRVN server room on July 27, 2016.

4) Others needed for project implementation

Besides the above two items, the Project purchased computers etc. which are necessary to conduct project activities in Viet Nam.

(4) Others (Sub contracting)

The Project has subcontracted the activities as shown in Table 2-1-2.

Table 2-1-2 List of Activities Subcontracted

Items	Subcontractor	Contracted date	Status
Pavement condition survey			
Pavement condition survey (Activity 1-2)	RTC Central, DRVN	Contracted on 7 th of Oct. 2015. Amended contract on 20 th Aug.2016.	<u>Field survey for RMB I, II, III and IV road sections was all completed on 12 November, 2016.</u> <u>Data processing for RMB III and IV data is completed on October 15, 2016 and that for RMB II is about to complete. Remaining data processing for additional RMM I data will start in April 2017.</u>
PMS related Web-based System			
Web-based PMS Data Input System (Activity 1-3)	SAOMAI Software J.S.C (Web based system Package 1)	Contracted on 20 th of Oct. 2015	Contract was completed on 30 th April 2016.
Web-based System for Displaying Pavement Condition Survey Data (Activity 2-4)			

Items	Subcontractor	Contracted date	Status
Web-based PMS Operation System - for Strategic Budget Planning Model (Activity 2-5)	SAOMAI Software J.S.C (Web based system Package 2)	Contracted on 31 st October 2016	Currently under development
Web-based PMS Operation System - for Pavement Repair Work Planning Model (Activity 2-5)	SAOMAI Software J.S.C (Web based system Package 2)	Contracted on 31 st October 2016	Currently under development
Web-based Analysis System for Pavement Condition Survey Data (Activity 2-6)		Contracted on xx August 2017.	Currently under development
Web based Pavement Monitoring System (Activity 2-7)	SAOMAI Software J.S.C (Web based system Package 2)	Contracted on 31 st October 2016	Currently under development
<u>System Development for Web-based Analysis System of Pavement Condition Survey Data</u>	<u>SAOMAI Software J.S.C (Web based system Package 2)</u>	<u>Contracted on 23 August 2017 with addendum on Package 2</u>	<u>Currently under development</u>
Public Relations			
Development of annual report and video clip (Activity 5-3)	Road Magazine	Contracted on 30th June 2016	<u>Contract was extended to the end of August 2017.</u>
System Development of Web Based Information System Road Maintenance Technology in Vietnam (Activity 5-3)	SAOMAI Software J.S.C	Contracted on 5th August 2016	Contract was completed at the end of December 2016.
<u>Development of General Information Brochure (Activity 5-3)</u>	<u>Road Magazine</u>	<u>Contracted on August 29, 2017.</u>	<u>Currently under development</u>

The subcontracts are broadly divided into the following three items.

1) Subcontract for Pavement Condition Survey

Pavement condition survey for RMB II, III and IV was subcontracted to RTC Central on 7th of October, 2015. In order to fulfil the contracted survey length km, contract was amended on 20th August 2016 to add the survey on RMB I region. Field survey of the initial plan targeting RMB II, III and IV road sections was all completed in May 2016 and data processing was completed in April 2017. Field survey and data processing for the additional RMB I road sections were completed in August 2017. For further detail progress of activities, please refer to “1-2-4 (2) Activity 1-2 Pavement Condition Survey”.

2) Subcontract for development of PMS related web-based operation systems

Under the project, five (5) web based operation systems will be developed by sub-contracting as shown below. In addition to the work plan, the Project added one more system development to the initial Work Plan, aiming to upgrade Pavement Monitoring System (PMoS) to be a web-based operation system.

- Web-based PMS Data Input System (Activity 1-3)
- Web-based System for Displaying Pavement Condition Survey Data (Activity 2-4)
- Web-based PMS Operation System - for Strategic Budget Planning Model (Activity 2-5)
- Web-based PMS Operation System - for Pavement Repair Work Planning Model (Activity 2-5)
- Web-based Analysis System for Pavement Condition Survey Data (Activity 2-6)
- Web based Pavement Monitoring System (PMoS) (Activity 2-7)

In developing these web-based systems, DRVN were/are being requested to inquire comments to relevant stakeholders, to gather comments in a written format and to wrap up the comments in order to facilitate further development by the Project Team

“Package 1: Development of web-based systems for PMS Data Input (Activity 1-3) and Displaying of Pavement Condition Survey Data (Activity 2-4)” was subcontracted to SAOMAI Software J.S.C on October 20th, 2015 and completed on April 30th, 2016. “Package 2: Development of web-based PMS operation system” was subcontracted to SAOMAI Software J.S.C on October 31st, 2016 and currently the system is in final check by JICA Project Team and DRVN except PMoS. Package 2 contract was amended on 23rd August, 2017 to supplement the sub-contract of the Web-based Analysis System for Pavement Condition Survey Data (Activity 2-6).

Development of PMoS and Pavement Condition data analysis are in progress.

3) Subcontract for Material and System Development for Public Relation Activities

Contract was made on the 30th June 2016 with Road Magazine under DRVN to develop an annual report and a video clip. The contract was extended to the end of August, 2017. System Development of Web Based Information System Road Maintenance Technology was contracted out to IT Company, SAOMAI, on the 5th August, 2016 and completed at the end of December, 2016. In addition to the above subcontracts, the final contract with Road Magazine for the development of General Information Brochure was made on the 29th August, 2017.

2-1-2 Vietnamese Side

In April 2015, DRVN made tremendous efforts for project environment including arrangement of office space for the Project Team, selection of counterpart members and formulation of working groups, and provision of local funds. Project activities currently run very smoothly with a good cooperation of DRVN.

(1) Human resources

Chairperson and member of Joint Coordination Committee (hereinafter to be referred as “JCC”), Technical Working Group (hereinafter to be referred as “TWG”) as well as Working Group (hereinafter to be referred as “WG”) have been assigned in accordance with Decision No.1088/QD-TCDBVN dated April 23rd, 2015. Furthermore, staff in charge of PMS system at each RMB, RTCs and SBs have also been assigned in July 2015. For further detail, please refer to “2-2-2 (2) Project Management”.

(2) Office Space and Facilities

Due to the shortage in office space in the DRVN building, DRVN needed to lease a project office outside the building fulfilling a DRVN leasing conditions. It took about two months to provide an office space to the Project Team, and during this time-period, the Project arranged own office space for two weeks and moved into the temporary project office space within the DRVN building on March 30th, which was kindly offered by DRVN. In April, DRVN successfully made a lease contract for a project office space and Project Team has moved into the new office on April 20th, 2015 before the first JCC.

(3) Cost

DRVN have successfully secured the budget required for execution of following items.

1) Cost for pilot project on maintenance and repair work (including cost for general materials)

DRVN has already approved domestic projects including clarification of the domestic budget from Road

Maintenance Fund for costs of domestic expenditure that are different from the costs for special materials and equipment covered by Japanese side.

2) Small running expenses necessary for pavement condition survey

DRVN secured daily allowance, accommodation, and domestic travel expenses for DRVN's staff for participating in the pavement condition survey.

3) Small running expenses necessary for the implementation of training programs in Viet Nam

DRVN secured daily allowance, accommodation, and domestic travel expenses for the staff of DRVN for participating the seminars, workshops and OJTs.

(4) Others

Besides, DRVN has been kindly requested to take responsibility for the following items essential for project activities.

1) Implementation of the pilot repair works for pavements and bridges with JICA experts' advisory.

2) Implementation of Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdictions, and additional survey for RMB I region, with JICA's local service.

3) VISA

At the beginning of 2015, a new immigration law became effective and caused a little confusion in VISA processing. Under the new law, project experts require to obtain LV1 visa to conduct tasks in Viet Nam, which valid for one year. All experts have successfully obtained visa with a support of DRVN and MOT.

2-2 Progress of Activities

2-2-1 Baseline Survey

From the beginning of this Project until the first JCC, the Project has conducted baseline survey based on documents and internet searching, focusing on the key issues needed to formulate the Work Plan including the review of Phase I Project outputs, data collection of new regulations, update of the current status of national road maintenance and management. The result of baseline survey is reported in the Progress Report submitted at the second JCC in March 2016.

2-2-2 Work Plan

At the first JCC meeting held on 23rd April 2015, the Project discussed and agreed on the Work Plan setting the framework of the project activities to be delivered to achieve the project purpose, incorporating all outcomes of activities.

(1) Project Framework

Framework including measures and activities to achieve project purpose is summarized in below table. Flow chart is shown on Table 4-2-1. Activity 2-7 and Activity 3-4 are added by the amended Contract on 21st July 2016. The

Project applies the activity number applied at the Work Plan throughout the Project.

Table 2-2-1 Measures and Activities to Achieve Project Purpose

Project Purpose	
Enhance Implementation Capacity for National Road Maintenance in Viet Nam	
Measures	Project Activities agreed at Work Plan
MEASURE 1; Improve PMS Data Collection and Processing Technology	1-1 Formulate PMS Database
	1-2 Implement Pavement Condition Survey
	1-3 Develop Web-based PMS Data Input System
MEASURE 2; Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan	2-1 Upgrade PMS
	2-2 Formulate PMS Dataset
	2-3 Formulate Pavement Repair Work Draft Plan
	2-4 Develop Web-based System for Displaying Pavement Condition Survey Data
	2-5 Develop Web-based PMS Operation System
	2-6 Develop Web-based Analysis System for Pavement Condition Survey Data
	2-7 Develop Web based Pavement Monitoring System
MEASURE 3; Improve Inspection and Repair Work Selection Technology on Road Facility and Develop Technical Standards	3-1 Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology
	3-2 Upgrade Road Facility Inspection Guideline
	3-3 Upgrade Road Routine Maintenance Manual
	3-4 Develop Expressway Maintenance Manual
MEASURE 4; Enhance Responsibility Assignment and Administration Procedures for Road Maintenance	4-1 Prepare Amendment Plan for Road Maintenance Responsibility Assignment
	4-2 Prepare Amendment Plan for Road Maintenance Administrative Procedure
MEASURE 5; Plan and Support Implementation of Training Programs and Conduct Public Relations	5-1 Prepare Draft Training Plan
	5-2 Support Training Implementation
	5-3 Conduct Public Relations

(2) Project Management

JCC, TWG, and WGs have been established. JCC is led by Director General of DRVN and TWG is led by Director of Science, Technology, Environment and International Cooperation Department (hereinafter to be referred as “STE-ICD”) of DRVN.

Table 2-2-2 Functions and Participants of JCC and TWG

		JCC	TWG
Chairperson		Director General of DRVN	Director of STE-ICD. of DRVN
Regulation		As agreed on Record of Discussion	Decision No.1088/QD-TCDBVN dated 23 rd April 2015
Frequency of meeting		Once a year (to discuss and report Work Plan, Progress Report, and Completion Report, and Monitoring Sheet)	Every 3 months, except when JCC is hold
Function		<ul style="list-style-type: none"> Discuss and approve Work Plan based on R/D Review the progress of the Project based on annual Work Plans/ Progress Report and Monitoring Sheet. Promote dissemination procedure of project outputs Exchange views on main issues arising from the project in progress 	<ul style="list-style-type: none"> Discuss and Coordinate project progress based on annual Work Plans/ Progress Report and Monitoring Sheet Review and coordinate a progress of the project Discuss and coordinate issues related to Project implementation Select speakers, trainers, and trainees for seminars, workshops, and OJTs.
Members	Vietnamese side	<ul style="list-style-type: none"> Director General of DRVN (Chairperson) Vice Director General of DRVN MOT: DPI, DOST, Infrastructure Dept., TCQM Bureau, ITST DRVN Department Members PMU3 of DRVN 	<ul style="list-style-type: none"> Director of STE-ICD, DRVN (Group leader) DRVN Department Members
	Japanese side	<ul style="list-style-type: none"> Embassy of Japan in Viet Nam Representative of JICA Viet Nam Office JICA Long-term Expert JICA Project Team 	<ul style="list-style-type: none"> JICA Long-term Expert JICA Project Team

Three (3) WGs have been set up under TWG, who are in charge of project measures as shown below table. The members were selected from departments and units under DRVN intensively involved to the project activities.

Table 2-2-3 Structure of Working Group

WG	Targeted Field	Vietnamese side member
WG 1	[Measure 1] <ul style="list-style-type: none"> PMS data collection and processing technology Web operation view system for road condition data [Measure 2] <ul style="list-style-type: none"> PMS upgrade/ formulation of pavement budget/repair plans Web based system 	In total of 7 members; <ul style="list-style-type: none"> Director of STE-ICD (Group Leader) Deputy Director of DPI Deputy Director of Road M& M Director of Road IT Centre Specialists of DPI, Road M&M, Road IT Centre, Staff of PMU3
WG 2	[Measure 3] <ul style="list-style-type: none"> Technical standards for road inspection and maintenance Pilot Repair works [Measure 4] <ul style="list-style-type: none"> Maintenance procedures and responsibility assignment 	In total of 6 members; <ul style="list-style-type: none"> Deputy Director of STE-ICD of DRVN (Group leader) Deputy Director of Road M& M Head of PID3, Road Construction Management Bureau Specialists of Road M&M, STE-ICD Staff of PMU3
WG 3	[Measure 5] <ul style="list-style-type: none"> Training Programs and Public Relations 	In total of 3 members; <ul style="list-style-type: none"> Deputy Director of DOP (Group Leader) Specialists of STE-ICD Staff of PMU3

Note

- DPI: Planning and Investment Department
- Road M&M: Road Maintenance and Management Department
- DOP: Organization and Personnel Department
- STE-ICD: Department of Science, Technology, Environment and International Cooperation

In addition, for the efficient coordination between the World Bank Vietnam Road Asset Management Project (hereinafter to be referred as “VRAMP”) and this JICA project, Road Asset Management Steering Committee (hereinafter to be referred as “RAM-SC”) based on Decision No.1267/QD-TCDBVN dated 24th June 2014, and Coordination Working Group (hereinafter to be referred as “CWG”) based on Decision No. 1777/QD–TCDBVN dated on 7th August 2014, have been established. Some DRVN members of RAM-SC and CWG are assigned to both JCC and TWG mentioned above.

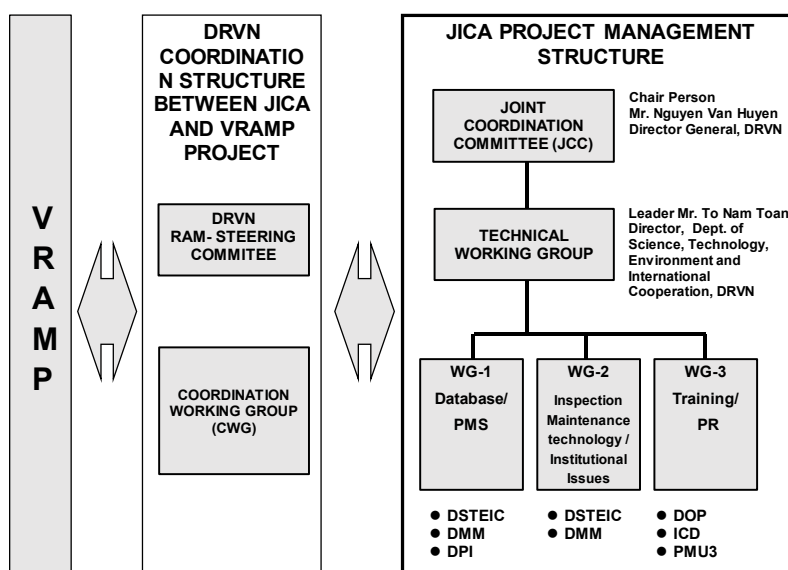


Figure 2-1 Structure of Project Management

2-2-3 JCC Meeting and Working Group Discussion

(1) Joint Coordination Committee Meeting (JCC Meeting)

A total of four (4) JCC meetings as shown in Table 2-2-4 are planned during the project period to discuss and report Work Plan, Progress Report, and Completion Report, and Monitoring Sheet. Three JCC meetings were already held dated 23rd April, 2015, 25th March, 2016, and 29 March, 2017 to discuss Work Plan and Progress Report respectively. The details of discussions have summarized and included in Appendix-3. The last JCC meeting for the Project is tentatively planned in December, 2017.

Table 2-2-4 JCC Meetings

SN	JCC Meeting	Date	Status	Remarks
1	1 st JCC Meeting	23 April, 2015	Completed	
2	2 nd JCC Meeting	25 th March, 2016	Completed	
3	3 rd JCC Meeting	29 March, 2017	Completed	
4	4 th JCC Meeting	6 th December, 2017	Under Planning	

(2) Working Group Discussion

Following the approval of Work Plans at the first JCC meeting, the Project moved forward to the consensus building on the Implementation Plan for each activity, which aims to show the detailed implementation methods of each activity. The Implementation Plans for the activities which started in 2015 were developed and submitted to WGs for discussion and were basically agreed. In line with these implementation plans, further discussion for each activity is now going on in the WGs.

Following describes detail activities conducted by each activity following activities set under the Work Plan.

2-2-4 Measure 1: Improve PMS Data Collection and Processing Technology

(1) Activity 1-1 Formulate PMS Database

1) Baseline Survey

The Project conducted the survey on the conservation of road data for RMBs including data type, data formats, data storage, RMB computer system, data server, and so forth.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey and review of JICA Phase I Project outputs, the Project developed the Work Plan for the formulation of PMS database. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

The Project developed the Implementation Plan of PMS data formulation, discussed and agreed with WG1 members.

4) Upgrading of PMS Data Format and Data Input Computer Software

The Project has upgraded PMS data input system and developed an offline-based data input software by means of Microsoft ACCESS for the smooth implementation of data input by RMBs in order to prepare PMS dataset for maintenance planning. Upon receiving some requests of improving data input software during the trainings, the Project improved the data input software to make it comply with regional road conditions.

5) Information Dissemination and Technical Transfer on PMS Data Input and Software Operation

Using the upgraded data input format and the computer software, the Project conducted OJTs in July 2015 to RMB and SB officials to transfer technologies on data input and software operation to each RMB. Based on this training, the Project requested RMBs to input PMS data into the upgraded PMS Data Input Format.

6) PMS Data Input

Initial data input by RMBs and SBs using the PMS database format was completed in July 2016. Review of inputted data has been completed in the beginning of August 2016 and a review report was submitted to DRVN on 9th August 2016. Based on DRVN send an official letter dated on August 19th to request each RMBs to conduct necessary amendments until August 26th. At the end of December 2016, all RMBs including RMB II, III and IV completed data amendments and submitted data to the Project Team and the Project Team completed final check of these data in December 2016. The Project Team would like to express sincere appreciation to the effort made by RMBs. These PMS data were converted together with Pavement Condition Data and used in planning of pavement periodic repair for each RMB road network during the Project.

(2) Activity 1-2 Pavement Condition Survey

1) Baseline Survey

After the first JCC meeting, the Project conducted further baseline survey on national road length under RMB II, III and IV jurisdictions in order to plan pavement condition survey. Due to lack of lane number information in the data of national roads accumulated from DRVN, the Project requested data directly to RMBs. Using the data provided by RMBs at the end of August 2015, total length of national roads was calculated by route, by lane, and by pavement type for each RMB II, III and IV.

Also, information collection on the feasibility of sub-contracting pavement condition survey was conducted. Pavement condition survey requires operation of a pavement condition survey vehicle equipped with advanced systems such as laser system, GPS and IRI survey equipment.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the pavement condition survey. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

The Project developed the Implementation Plan of pavement condition survey, and discussed and agreed with WG1 members on July 13th 2015. At the discussion, WG1 agreed the followings;

- Survey is carried out by lane,
- Survey length of national roads should not be more than 6,280 km in maximum,
- Confirmation of target lane is done by RMBs, which DRVN shall issue an official letter,
- Base data required for developing technical norm essential for the cost estimation of pavement condition survey is to be gathered by the Project.

The Project set selection criteria so that the survey cost to be within the budget planed. At the end of August 2015, the survey length was finalized as a total target of 12,574 lane-kilometre including some contingency selected in consultation with DRVN. Following are the elimination criteria for selection of targeted survey sections.

- Road sections under DOTs jurisdiction
- Road sections newly constructed and transferred to DRVN after 2010.
- Road sections which have been planned for pavement repair on a large scale.
- Road sections scheduled to be transferred to Provincial People’s Committees.
- Road sections which exceed the maximum survey road length of 6,287km (or survey lane length is 12,574 km).

4) Contractor Selection for Pavement Condition Survey

In September 2015, two potential subcontractors who have experience in conducting pavement condition survey in the past, RTC Central and Science and technology Centre of University of Transport and Communications (hereinafter to be referred as “TOTC”), were invited to submit a proposal by the September 30th, 2015. However, UTC expressed a withdrawal of participation, so that the Project conducted negotiations with RTC Central and signed the contract on October 7th, 2015.

5) Amendment of Contract

In order to fulfil the contracted survey length km, additional survey of 2,319 lane-km is agreed to be conducted for RMB I road sections where significant changes (such as big repair work and road widening) were made after the 2012 survey, contract was amended on 20th August 2016 accordingly.

6) Implementation of Pavement Condition Survey and Analysis

RTC Central started the survey from early November 2015 and completed at the end of May 2016 for the road sections set in the initial plan (12,575.1 km). Actual surveyed length has reached 12,606.98 km. Survey was conducted for each lane of the road sections. Field survey and data processing for the initial plan of RMB II, III and IV road sections was completed on 17th April 2017. Field survey and data processing for the additional RMB I road sections were completed in August 2017. Road selection selected is shown below.

Table 2-2-5 Progress of Road Condition Survey

RMBs	Total surveyed length (lane km)			Trainin g	Survey		Analysis		
	Planned	Surveyed	+ -		Start	Complete	Start	Complete	Progress (%)
RMB I	‘-----	2,318.2	+2,318.1 7	N/A	3 Aug. 2016	12 Nov.	1 st Apr. 2017	Aug 2017	100%
RMB II	4,964.3	4,232.1	-731.20	25 Apr. 2016	25 Apr. 2016	27 May. 2016	14 Nov. 2016	17 Apr 2017	100%

RMBs	Total surveyed length (lane km)			Trainin g	Survey		Analysis		
	Planned	Surveyed	+ -		Start	Complete	Start	Complete	Progress (%)
RMB III	2,501.2	2,201.2	-296.43	23 Feb. 2016	27 Feb. 2016	10 Mar. 2016	4 May. 2016	15 Oct 2016	100%
RMB IV	5,109.60	3,855.5	- 1,253.88	4 Nov. 2015	6 Nov. 2015	2 Jan. 2016	24 Nov. 2015	8 Jul 2016	100%
Total	12,575.1	12,607.0	+36.66						

Table 2-2-6 Targeted Route and Length of Pavement Condition Survey under RMB I

Route name	Km post (from)	Km post (to)	Number of Lane	Total survey length (lane km)
Expressway (Hanoi- Thai Nguyen)	Km0+00	Km63+800	4	249.65
NH2	Km30+600	Km163+000	2;4	285.53
NH3	Km33+300	Km344+	2;4	623.95
NH10	Km6+500	Km144+200	2;4	280.51
NH21B	Km66+500	Km90+130	4	93.60
NH70	Km00+00	Km98+050	2;4	419.09
NH279	Km0+00	Km116+00	2;4	263.85
Ho Chi Minh	Km438+00	Km503+00	2	130.00
Total				2,319.18

7) Information Dissemination and Technical Transfer on Pavement Condition Survey

OJT trainings were held at RMB II, III and IV at the beginning of survey as mentioned above. At the 2nd Training in May 2016 and 3rd Training in October and November 2016, the progress of pavement condition survey was also reported at each region.

(3) Activity 1-3 Develop Web-based PMS Data Input System

1) Baseline Survey

The Project has conducted the baseline survey related to the web-systems through the review of JICA Phase I Project outputs including a document survey on the regulations stipulating responsibility assignment of DRVN departments. Also, the Project visited DRVN's IT Centre and conducted interviews and exchange of opinions on the internet information management including web-operation system. The followings are the findings in the survey.

- Since 2007, DRVN has been promoting E-Transaction in line with the Government Information Strategy.
- DRVN had developed Web-based system of Vehicle Tracking.
- GIS base map developed by MONRE is available and has been transferred to DRVN.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the upgrading of the PMS software. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Contractor Selection

Development of the web based system for PMS data input was subcontracted together with development of the web based system for displaying pavement condition survey data (Activity 2-4). A sub-contractor was selected based on the competitive bidding, JICA Project Team has made a contract with SAOMAI Software J.S.C on 20th October 2015.

4) Development of System

In line with the Work Plan, the development of web based system for PMS Data Input was completed at the beginning of May 2016. Until now, the contractor has fixed/incorporated the feedback on inputting system provided by DRVN and JICA Project Team though the contractor using the 1 year warranty period was set only one (1) year after completion/termination of the Contract. A powerful data visualization function and data review tool were also supplemented considering the request from the user.

5) Output management

Upon completion of the system development for Web-based PMS Data Input System, the PMS data inputting system was immediately installed into DRVN application server in August 2016. Currently the PMS data inputting system is operable by DRVN, RMB and SB staff at www.pms.drvn.gov.vn.

6) Information Dissemination and Technical Transfer on PMS Data Input and Software Operation

Using the Web-based PMS Data Input system, the Project conducted OJTs in each region in October-November, 2016 to RMB and SB staff and officials to transfer technologies on operation of web-based PMS data input system.

2-2-5 Measure 2: Upgrade PMS to Apply Road Network of RMB I, II, III and IV, and Formulate Draft Repair Work Plans

(4) Activity 2-1 Upgrade of PMS

1) Baseline Survey

A baseline survey was conducted on the computer software and hardware environment, and their operation methods at RMBs and IT Centre under SCE-ICD in DRVN, and also on the web operation system for VBMS, which was developed recently and became operational.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the pavement condition survey. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd 2015.

3) Development and Discussion of Implementation Plan

In order to have a common understanding on the targets of PMS development, the Project developed the Implementation Plan and discussed at WG1. The Plan was developed based on the review of the Phase I Project activities, issues arising on PMS, and information gathered through an interview to IT Centre.

The WG1 meeting on the discussion of the Plan was held on September 16th, 2015. In the meeting, the plan was agreed basically with the following comments to be taken into consideration in this activity.

- Make it applicable to the planning of multiple lane national roads,

- Reflect deterioration indexes to the planning of road maintenance plans,
- Make it applicable to the nationwide national road network,
- Improve the operation system, automatizing simulation functions,
- Simplification of simulation data input.

Following the discussion on the implementation plan, the Project Team prepared a discussion paper on the conditions of system development showing relation between PMS application and database and conducted detailed discussion on November 18th and on December 11th 2015.

4) Information Dissemination and Technical Transfer

Using the Phase 1 data, the Project applied PMS software upgraded until May 2016 and formulated pavement maintenance plans for RMBI road network. The outline of the plans were reported at RMB workshops in May 2016. Information on the PMS operation incorporating new RMB data will be presented in the 4th Workshop and OJT scheduled in May 2017.

In the 3rd JCC Meeting held on March 29th in 2017, DRVN strongly requested JICA Project Team to provide intensive training courses on PMS operation and on the formulation of strategic budget plans and annual and 5-year repair plans for road pavement, inviting concerned members to Hanoi from DPI in DRVN and in RMB organizations. In addition, DRVN requested the Project Team to cooperate with the formulation of pavement repair plans for the 2018 annual budget proposal. In response to this request, the Project promised to cooperate with the formulation of annual pavement repair plans for 2018 and to hold an intensive training course on PMS operation and the formulation of strategic budget plans and annual and 5-year repair plans for road pavement.

As for the support to the formulation of 2018 repair work plan, JICA Project Team has supported DPI/DRVN by providing related data specifically pavement condition data. However, repair work plan itself, as an output of PMS, could not be provided due to some issues in road inventory data and time limitation. As for intensive training, the first intensive training on PMS operation was provided on 2nd June, 2017 to DRVN and RMB I officials. The second Intensive Training is under planning for the period between 10th and 20th October 2017.

5) Upgrade of PMS Software (Current Status)

Based on the Implementation Plan, the Project upgraded the offline PMS operation system (Strategic Budget Planning Model and Pavement Repair Work Planning Model) in collaboration with DRVN in accordance with the items agreed at the WG meetings.

Using the Phase I Project data, the Project operated the updated system to formulate annual and mid-term pavement repair work plans for RMB I road network and presented the plans to DRVN in June 2016. Based on the DRVN comments received in June 28th 2016, Project Team amended the system. Trial operation was conducted to examine the compatibility of the customised system based on Phase 1 on the existing web based system (Linux OS), and confirmed the good operational ability.

Development of web-based PMS is to be reported in “(5) Activity 2-5 Develop Web-based PMS Operation System”.

Information have been also shared among project experts to coordinate interface between the offline PMS

operation system and six (6) web based operation systems listed above.

(5) Activity 2-2 Formulate PMS Dataset

1) Development and Discussion of Implementation Plan

Implementation plan for PMS Dataset has been discussed together with Activity 2-1 Upgrading of PMS.

2) Development of PMS Dataset /Module Dataset Software (Current Status)

PMS Dataset will be converted to dataset for the operation of PMS software module (Strategic Budget Planning Module / Pavement Repair Work Planning Module) for maintenance planning.

The Project Team subcontracted the development of the software for PMS Dataset /Module Dataset on 31st October 2016 as a component of Web-based PMS Operation System. System development has already completed and the system is currently under the final check of JICA Project Team and DRVN. The final check is being done by applying pavement condition data and PMS data relevant to RMB II, III and IV road sections to the PMS Operation System. PMS dataset formulated by web-based Dataset formulation module was used for pavement deterioration evaluation, strategic budget simulation and repair work plans of RMB II, III and RMB IV.

(6) Activity 2-3 Formulate Strategic Budget Plan and Pavement Repair Work Draft Plan

A draft Strategic Budget Plans and Pavement Repair Plans of RMB II was formulated using PMS database and pavement condition data (Refer to “2-2-4. (1) Activity 1-1 Formulate PMS Database” and (2) Activity 1-2 Formulated Pavement Condition Data”), and Web-based PMS Operation System. During the time period of PMS database preparation and PMS system development, the Project used RMB I data for PMS software trial operation. However, upon available of RMB II, III and IV data, Project has used these data for trial operation of PMS. The first draft repair work plan of RMB II (i.e. output of the PMS modules) was explained and provided to DRVN DPI on 14th September 2017 for their review and feedback. Similarly, the RMB II repair work plan was explained to Directors of STE-ICD and RMM. Since PMS dataset for RMB II, III and RMB IV are available at PMS server, repair work plans except for RMB I can be formulated by web-based system. Currently, DPI officials are carrying out trial run of PMS modules to formulate maintenance plans and confirming the PMS output. DPI is now checking PMS output with their 2018 repair work plans which they formulated with their conventional method (i.e. manually). As for RMB I, some modification in data are required because PMS database has not been updated after 2012 and there are many sections where repair work projects were implemented between 2012 and 2017. Repair work plans of RMB I will be formulated upon completion of formulation of PMS dataset.

Upon confirmation of output of PMS by DPI officials, draft plans of all RMBs will be formulated and provided to DRVN.

(7) Activity 2-4 Develop Web-based System for Displaying Pavement Condition Survey Data

1) Baseline Survey

Please refer to “2-2-4 (3) Activity 1-3 Develop Web Based PMS Data Input System”.

2) Development and Discussion of Work Plan

Please refer to “2-2-4 (3) Activity 1-3 Develop Web Based PMS Data Input System”.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Implementation Plan for the Web-Based System for Displaying Pavement Condition Survey Data with the framework. The Implementation Plan was submitted to WG1 on July 14th in 2015 and the plan was basically agreed. The following are the points agreed at the meeting.

- The Web operation system for Displaying Pavement Condition Survey Data is to be developed in order to make it applicable to the PDOT road networks from the viewpoints of system development, assuming PMS database development and data conversion to PMS Datasets are all prepared with the same quality as those with the DRVN National Roads. However, PMS database for the PDOT road networks is not currently available, so that DRVN is requested to examine its applicability on its own when PMS database and PMS Datasets are prepared for PDOT road networks in the future.
- In developing the web operation system, system user is to be divided into three levels; Level 1: DRVN (MOT), Level 2: RMBs & RTCs, and Level 3: SBs & PDOTs
- The system is to enable comparing data of two points of time.

4) Contractor Selection

Please refer to “2-2-4 (3) Activity 1-3 Develop Web Based PMS Data Input System”.

5) Development of System

In line with the Work Plan, the system development of web based system was completed at the beginning of May 2016. Any system troubles will be fixed by the contractor using the 1 year warranty set in the Contract. The Project conducted the demonstration of the web system for displaying Pavement Condition Data at the second JCC held on March 25th 2016 and at RMB workshops held in May 2016.

6) Output Management

Completed Web Operation System for Displaying Pavement Condition Survey Data was already installed into DRVN web server (www.pms.drvn.gov.vn) in August 2016 and become fully operable for DRVN, RMB and SB staff.

7) Information Dissemination and Technical Transfer on Web Operation System for Displaying Pavement Condition Survey Data

Using the Web Operation System, the Project conducted OJTs in each region in October – November, 2016 to RMB and SB staff and officials to transfer technologies on operation of web-based PC data display system.

(8) Activity 2-5 Develop Web-based PMS Operation System

Web-based PMS Operation System is one of the six systems shown in “2, 2-1-1, (4), 2) Subcontract for development of PMS related web-based operation systems”.

In line with the Work Plan, the Project Team has developed the algorithms for web-based PMS Operation System

and then TORs for contract which consists of Strategic Budget Planning Module and Pavement Repair Work Planning Module. The Project Team subcontracted system development to an IT company on October 2016.

1) Compatibility of Systems and Database

All six (6) systems developed under the Project will be managed on DRVN web system. Interrelationship between systems and database was evaluated and necessary changes were made at each system.

2) Contractor Selection

Development of the web based PMS Operation system was subcontracted as Package 2 including web-based PMS Operation System (Strategic budget Planning Module and Pavement Repair Work Planning Module) and web based Pavement Monitoring System (PMoS) (Activity 2-7). A sub-contractor was selected based on the competitive bidding among preselected contractors, and JICA Project Team made a contract with SAOMAI Software J.S.C on 31st October 2016.

3) Development of System (Current Status)

System development has already completed and the system is currently under the final check of JICA Project Team and DRVN. Since the contract period with SAOMAI is till the end of October 2017, any modification in the system can be made before expiring of the contract.

4) Output Management

Web-based PMS was already installed in DRVN server and the PMS is currently running at www.pms.drvn.gov.vn. All PMS modules (dataset formulation, deterioration evaluation, strategic simulation and repair work planning) are fully operable at DRVN server. Currently, DPI staff are checking the performance, output, etc. of the PMS.

5) Information Dissemination and Technical Transfer on Web Operation System for Displaying Pavement Condition Survey Data

Using the Web Operation System, the Project conducted OJTs in each region in May 2017 to RMB and SB staff and officials to transfer technologies on operation of web-based PMS operation. Furthermore, the first intensive training on PMS was conducted on 2nd June 2017 to the DPI staff of DRVN and RMB I.

(9) Activity 2-6 Develop Web-based Analysis System for Pavement Condition Survey Data

Web-based pavement condition data analysis system is one of the web-system among six (6) systems mentioned in section 2, 2-1-1, (4), 2) Subcontract for development of PMS related web-based operation systems". This analysis system aims to support analysis of pavement condition and maintenance history data to use the analysis results in various DRVN documents such as annual report, budget proposal document and DRVN internal reporting system specifically related to pavement.

1) System Development

Sub-contract for development of web-based pavement condition data analysis system was made on 23rd August 2017 with SAOMAI, the same contractor who is developing web-based PMS. This sub-contract was supplemented

in Package 2 contract by amending the contract and the expected date of system development completion is the end of November, 2017. The system development work is already in progress.

2) Output Management

Upon completion of system development work, the system will be available at DRVN server; i.e. www.pms.drvn.gov.vn.

(10) Activity 2-7 Develop Web-based Pavement Monitoring System (PMoS)

The activity is added under the amended contract with JICA on 21st July 2016, aiming to upgrade PMoS which was once developed in the Phase I Project as offline software. The system was upgraded to be a Web-based operation system by best utilizing some functions which were already developed in other PMS related web-systems. The system development is contracted out to SAOMAI Software J.S.C on 31st October 2016. For further details on the development of the system, please refer to Activity 2-5 Web-based PMS Operation System.

1) System Development (Current Status)

System development has already completed and the system is currently under the final check of JICA Project Team and DRVN. Since the contract period with SAOMAI is till the end of October 2017, any modification in the system can be made before expiring of the contract. The system development work is already in progress and it is expected to complete by the end of October 2017.

2) Output Management

Upon completion of system development work, the system will be available at DRVN server; i.e. www.pms.drvn.gov.vn. Currently, the development phase system is running at SAOMAI's system development portal.

2-2-6 Measure 3: Improve Inspection and Repair Work Selection Technology on Road Facility and Develop Technical Standards

(1) Activity 3-1 Pilot Repair Works

1) Baseline Survey

Baseline survey was conducted on the pavement condition, current status of maintenance and repair work, maintenance repair technologies, technical standards for road maintenance and repair work, design guideline, contractor selection, repair work implementation contracts and MOT policies on the road maintenance and repair works.

2) Development and Discussion of Work Plan

Based on the finding from the baseline survey, the Project developed the Work Plan for the implementation of pilot repair works. The Work Plan was discussed and agreed at the first JCC meeting.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Implementation Plan, clarifying the framework and getting common understanding on the target of development. WG2 meeting was held on the 3rd of June, 2015 to discuss on the plan, and it was basically agreed. Later on the Implementation Plan was revised to include the water proofing technology and discussed with the WG

a. Selection and Discussion of Pilot Repair Works

Selected pilot repair works to be experimented on the field was agreed at the WG2 meeting which contains; 1) a crack seal technology, 2) a shallow pothole repair work technology by cold asphalt mix, 3) a deep pothole repair work by cold asphalt mix, and 4) bridge water proofing technology. Later in order to incorporate the request from Director of Road M&M to add water proof technology, the JICA Project Team conducted field surveys and technology reviews and agreed to include bridge water proof technology, as pilot repair works.

b. Selection and Discussion of Pilot Repair Work Sections

The Project conducted an on-the-desk survey in order to preliminary select the candidate road sections for the each of pilot work by applying the pavement condition survey data 2012.

At the end of November 2015, the Project conducted a field survey with RMB I for selecting repair work sections. An important point in selection is not to select heavy damaged road sections for the pilot repair works, since routine maintenance technologies like those under consideration in this pilot project are all small-scale repair technologies which are only applicable to the minor damages. In case, pavement is heavily damaged, small repair technologies can no longer be applicable. Much bigger scale repair technologies such as overlays and structural overlays must be applied to the damages. With this in mind, the Project selected some candidate sections of national roads near Ha Noi for each pilot technology in the form of a technical paper and submitted to DRVN.

Table 2-2-7 Pilot Repair Work Sections Initially Agreed

	Repair Work	Specification	Repair Materials	Selected National Road		Maximum Work Volume (total)
1	Crack seal		CRACK SEAL NX	NH6	70+000- 78+000	1,000 m
2	Pothole Repair Work-I	Shallow Pothole; Pothole depth less than 3 cm	ROMEN PAT CH	Ho Chi Minh Route	458+000- 468+000	20 square meters
3	Pothole Repair Work-II	Deeper Pothole; Pothole depth from 3 cm to 5 cm	RESCUE PATCH	NH6/ Ho Chi Minh Route	70+000- 78+000	150 square meters
4	Bridge Waterproofing (*2)		CATICOAT R BARADRAIN	NH18	197+887, 198+457, 212+960	620 square meters

c. Review of Pilot Repair Work Sections

In December 2016, the Project was informed that part of candidate sections of pilot repair works, those on NH6, were officially incorporated into the annual plan of RMB I road repair projects, so that the Project conducted a field study with DRVN and PMU3 to find out alternative repair work sections in the RMB I national road network. The field survey has clarified that the candidate site is high potential for the application of Crack Sealing as an alternative to NH6 sections. Upon this preliminary agreement, PMU3 will conduct examination on the site in coordination with relevant agencies (DRVN, RMB I) before making the final agreement. If finally agreed, consultant will move into a detail survey and the design of the pilot repair works in consultation with JPT or DRVN.

The following is the outline of the candidate site. Table 2-2-8 shows reviewed pilot repair work sections.

- Road; National Highway No.10 (NH10)
- Location; Dong Hung District, Thai Binh Province
- Section; From 65+00 km to 72+00 km (Tentative)
- Management Unit; SB1.7
- Carriageway; 2 direction with 1 motorized lane and 1 non-motorized lane in each direction
- Pavement type and width; Asphalt Concrete, 6 meter width each direction
- Traffic condition; High traffic with many heavy vehicles to/from Hai Phong Port
- Typical pavement distress;
 - Single crack and isolated alligator crack (Out of scope for the pilot)
 - Rutting is quite serious in some parts (Out of scope for the pilot)

Table 2-2-8 Review of Pilot Repair Work Sections

	Repair Work	Specification	Repair Materials	Selected National Road		Maximum Work Volume (total)
1	Crack seal		CRACK SEAL NX	NH10	65+000- 72+000	1,000 m
2	Pothole Repair Work-I	Shallow Pothole; Pothole depth less than 3 cm	ROMEN PAT CH	Ho Chi Minh Route	458+000- 468+000	20 square meters
3	Pothole Repair Work-II	Deeper Pothole; Pothole depth from 3 cm to 5 cm	RESCUE PATCH	Ho Chi Minh Route	458+000- 468+000	150 square meters
4	Bridge Waterproofing (*2)		CATICOAT R BARADRAIN	NH18	197+887, 198+457, 212+960	620 square meters

4) Development and Discussion of Specification, Bill of Quantity and Work Volume

As the Record of Discussion explains that JICA side import materials from Japan with JICA funds, on the other hand, DRVN select maintenance companies with its own budget and implement pilot repair work in the field. In order to support DRVN responsibilities on the company selection and cost estimation for the pilot repair works, the Project developed a technical specification of repair work, Bill of Quantity (BOQ) and work volumes for cost estimation and submitted to DRVN in September 2015.

5) Fund Securing by DRVN for the pilot repair works

DRVN has already secured the budget for the implementation of pilot project from Road Maintenance Fund.

6) Joint Pilot Project between JICA project and DRVN Own Project

DRVN has developed its own domestic pilot projects separately from the JICA pilot project. DRVN will implement JICA pilot project together with DRVN domestic pilot project at the same time within its budget framework. Close coordination between two projects is needed in particular on the selection of pilot sections, the time-line/schedule of applying technologies, monitoring and evaluation methods. DRVN is requested to develop implementation plans on its domestic pilot project, to explain them to the JICA Project Team and to coordinate between two projects.

Also, DRVN is requested to coordinate with RMB I and to maintain the identified pilot sections untouched from other repair work until the end of the pilot projects.

7) Development and Discussion on the list of Material and equipment

The JICA Project Team has carefully examined the material and equipment for pilot repair works and developed the material and equipment list for procurement in Japan.

8) Procurement of Equipment/Materials in Japan and Export/Import Procedures

On 28th October 2016, the Office of the Government (Prime Minister's Office) issued a letter approving the Technical Cooperation Project List to be funded by Japanese ODA. The letter instructs MOF to take an immediate action on the tax exemption procedure for nine projects including this JICA Project. Following this letter, the Project Team immediately proceeded to the procurement of equipment and materials in Japan which contain TOR development, contractor selection and then signing on the contract in early January 2017.

In compliance with the contract, the contractor went into the production of equipment and materials in Japan and assembled them to Yokohama Port in February, followed by the export procedures at the port. Shipping was made on 4th of March 2017 from Yokohama Port (Japan), and cargo arrived at Hai Phong Port in Viet Nam on 17th of March 2017. C1 Form for the proposal of tax exemption procedures was submitted to MOF on 27th March 2017. After the MOF examination on the tax exemption procedure, tax clearance was finally approved by MOF on Apr. 1st, 2017. On the same day, materials and equipment were transported to ITST designated by PMU3 as a temporary material and equipment warehouse. The final inspection was then conducted at ITST and exchange of signs on the take-over documents was conducted between PMU3, DRVN and JICA Project Team, following the final inspection.

The Project would like to express sincere appreciation to PMU3 who took quick action for the proposal of tax exemption and custom clearance approval.

9) Pilot Repair Work Implementation on the Sites by PMU3, DRVN

Pilot repair work was implemented in the period from 15th to 26th April, 2017 on the sites. Final work volume is summarized in **Table 2-2-9**. Selection of consultant, design and contractor selection have been completed by DRVN. The budget for pilot project implementation is funded by Road Maintenance Fund, therefore the contract are valid even after the financial year.

10) Monitoring on the Pilot Repair Work

Monitoring on the performance of pilot repair work was commenced by ITST and the Project Team right after field work implementation, following the Implementation Plan for Pilot Repair Work developed by WG3. Based on the mid-term report on the monitoring survey, the Project is currently developing the progress report on the pilot repair work which covers not only the monitoring results, but also key points in selecting repair sections, repair materials and repair work in the form of a flowchart. Work specification (Technical Standard) will also be reviewed based on the monitoring results. The Progress Report will be discussed in WG3 in October 2017.

Table 2-2-9 Work Volume Implemented on the Sites

No.	Technologies	Units	Work Volume for Actual Execution				Maximum Work Volume Proposed by JPT
			NH.10	HCM Highway	NH.18	Total	
1	Crack Sealing	m	1,091.1			1,091	1,000

2	Pothole Patching (RESCUE PATCH) Average depth: - 5cm on NH.10 - 7cm on Ho Chi Minh Highway	m2	19.60	134.46		154	150
3	Pump Repair/Shallow Pothole Repair (ROMEN PATCH)	m2	0.68	25.04		26	20
4	Bridge Waterproof	m2			620	620	620

Table 2-2-10 shows the revised time schedule of pilot project implementation, taking account of the above import and export procedures into consideration.

Table 2-2-10 Expected Procurement Schedule (Tentative)

Period	Action
■ Apr. to Sep. 2015	Planning of pilot repair work implementation plan
■ Sep. to Nov. 2015	Selection of pilot section
■ Dec. to Jan. 2016	Proposals for the revision of Project Document
■ Oct. 28, 2016	Project approval by the Office of the Viet Nam Government
■ Nov. to Dec. 2016	Development of contract document, Contractor selection
■ Jan. 5, 2017	Signing of Contract (Jan 5, 2017) and Production of equipment and materials in Japan
■ Mar. 4 th 2017	Shipping to Hai Phong Port in Viet Nam
■ Mar. 17 th 2017	Arrival at Hai Phong Port
■ From Mar. 20 th 2017	MOF examination on tax exemption and custom clearance documents
■ <u>April 1st 2017</u>	<u>MOF approval on tax exemption</u>
■ <u>Apr. 1st 2017</u>	<u>Land transportation to ITST, Final Inspection and Take-over to PMU3, DRVN</u>
■ <u>From Apr. 15th to 26th, 2017</u>	<u>Pilot repair work execution in the sites</u>
■ <u>May to Oct 2017</u>	<u>Monitoring and evaluation of pilot work performance</u>
■ <u>Oct. 2017</u>	<u>Progress Report summarising pilot repair work including work specification development</u>

(2) Activity 3-2 Upgrade Road Facility Inspection Guideline

Road Facility Inspection Guideline has been updated, aiming to provide voluntary user's guideline to field engineers and to provide base information to the revision of the current technical standards.

1) Baseline Survey

The Project conducted a baseline survey on the policy and the current status of standardization and utilization of inspection guideline. The survey has reported that the current "Specifications of Road Routine Road Maintenance" published in 2013 stipulates only the outline of inspection procedure and needs upgrading of provisions.

2) Development and Discussion of Work Plan

Based on the findings from the baseline survey, the Project developed the Work Plan for the development of Road Facility Inspection Guideline. The Work Plan was discussed and agreed at the first JCC meeting.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Implementation Plan,

clarifying the detailed implementation plans before implementation and getting consensus on the target of development.

WG2 meeting was held on the 3rd of June, 2015 to discuss on the plan, and was basically agreed. In line with the discussion at the meeting, the Project revised the draft Road Facility Inspection Guideline and submitted to DRVN in September 2015 for further discussion.

4) Opinion Inquiry to Competent Agencies

As a step for the formalization of the Road Facility Inspection Guideline, pursuant to regulation, DRVN is obliged to inquire opinions to the competent professional agencies in Viet Nam on the contents of draft guideline. Competent agencies include Science and Technology Department of MOT, ITST, UTC and UTT etc. In line with this regulation, DRVN conducted opinion inquiry to the organizations which include RMBs, SBs and RTCs under DRVN from October 2015 to March 2016.

Based on the comments gathered in these events, the Project Team is conducting modification of the Guideline and developing the second draft of the Guideline. DRVN is kindly requested to have an opportunity to exchange opinions with competent agencies in Viet Nam on the Road Facility Inspection Guideline.

5) Integration of Bridge Inspection Guideline

Bridge Inspection Guideline under development as a guideline is intended to provide detailed knowhow on road facility inspection and to encourage road operators to understand the importance of road facility inspection during road maintenance. Information included in the Guideline can be fully utilized not only in the training courses, but also in the standardization road facility inspection technology. In road maintenance, it is well known that bridge inspection is a main part of road facility inspection, so that the Road Facility Inspection Guideline should cover the bridge inspection guidelines which are developed with the same concept common to other road facilities. With these reasons, the Project is now updating the first draft of Road Facility Inspection Guideline to include information on bridge inspection.

6) Information Dissemination and Technical Transfer

The Project Team also conducted information dissemination on the Guideline and opinion exchange with RMB and SB engineers in the 3rd Workshop and OJT held on October 31st through November 11th 2016 and in the 4th Workshop and OJT held on May 15th through May 26th 2017. During the training, classroom lectures were done on the developed guideline and field training was also conducted as OJTs focused on the facilities including pavement, slope, retaining wall, box-culvert and bridges.

Based on the comments gathered in these events, the Project Team is conducting modification of the Guideline and developing the Progress Report II of the Guideline. DRVN is kindly requested to have an opportunity to exchange opinions with competent agencies in Viet Nam on the Road Facility Inspection Guideline.

(3) Activity 3-3 Upgrade Road Routine Maintenance Manual

Road Routine Maintenance Manual has been updated, aiming to provide voluntary user's manual to field engineers and to provide base information to the revision of the current technical standards.

1) Baseline Survey

The Project conducted a baseline survey on the policy, on the regulations and on the current status of standardization and utilization of the inspection guideline. The Project also confirmed the comments issued on the Road Routine Maintenance Manual developed in the JICA Phase I Project.

2) Development and Discussion of Work Plan

Based on the DRVN comments addressed to the Project, the Project developed the Work Plan for the development of the Road Routine Maintenance Manual. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed the Implementation Plan, to clarify the following framework before implementation and get consensus on the target of development.

WG2 meeting was held on the 3rd of June, 2015 to discuss on the plan and basically agreed. In line with the discussion at the meeting, the Project developed the revised draft of Road Routine Maintenance Manual based on the DRVN comments and submitted it to DRVN in September 2015 for further discussion.

4) Opinion Inquiry to Competent Agencies

The same formalization procedure as that for the above Road Facility Inspection Guideline is applied to the Road Routine Maintenance Manual. In line with this regulation, DRVN is now in the process of opinion inquiry to the organizations including competent agencies (Science and Technology Department, MOT, ITST, UTC and UTT) and DRVN subordinate organizations (RMBs, SBs and RTCs). Until today, comments are issued from WG2 and RMB II and III to the Project, saying that draft Road Routine Maintenance Manual is basically agreed

DRVN is kindly requested to have an opportunity to exchange opinions with competent agencies in Viet Nam on the Road Routine Maintenance Manual. Further discussion will be conducted to the realization of this Manual from April 2016 after the JCC.

5) Upgrade of Road Routine Maintenance Manual (Current Status)

Project Team is currently upgrading Road Routine Maintenance Manual and plans to discuss with DRVN for its application to DRVN Specification of Road Routine Maintenance 2013 for amendment. Project Team is also developing the framework of Road Maintenance Manual applicable to both Routine Maintenance and Periodic Maintenance.

6) Information Dissemination and Technical Transfer

The Project Team also conducted information dissemination on the Manual and opinion exchange with RMB and SB engineers in the 3rd Workshop and OJT held on October 31st through November 11th 2016 and in the 4th Workshop and OJT held on May 15th through May 26th 2017. During the training, classroom lectures were done on the developed guideline and field training was also conducted as OJTs focused on the facilities including pavement, slope, retaining wall, box-culvert and bridges.

Based on the comments gathered in these events, the Project Team is conducting modification of the Manual and

developing the Progress Report II of the Manual. DRVN is kindly requested to have an opportunity to exchange opinions with competent agencies in Viet Nam on the Road Facility Inspection Guideline.

7) Change scope to the Development of Road Maintenance Manual

Road maintenance activity in general covers activities including routine maintenance, periodic repair and disaster restoration, so that it is preferable for DRVN to have a manual equipped with wider perspectives which can cover all these activities. With this purpose, the Project decided to change its scope from the development of Road Routine Maintenance Manual to the development of Road Maintenance Manual which has a wider perspective than the Road Routine Maintenance Manual.

(4) Activity 3-4 Develop Expressway Maintenance Manual

The study on the Expressway Maintenance Manual was initially conducted as an informal activity of this Project. However, in the contract amendment with JICA on July 21st, 2016, the activity turned to an official scope of work included in the Project.

1) Baseline Survey

Baseline survey has clarified that DRVN is developing “Specifications of Expressway Maintenance Standards” under the supervision of Department of Science, Technology, Environment, and International Cooperation. In 2013, JICA conducted “the Project for Strengthening Operation and Maintenance System for Expressway” and developed the Technical Specification Guidelines for Operation and Maintenance of Expressways. The Department wishes to update these products and develop Specifications of Expressway Maintenance Standards.

2) Development of Manual (Current Status)

Development of the Progress Report on the Expressway Maintenance Manual is currently underway with target completion until October 2017. The Expressway Manual consists of technical guidelines on expressway facility maintenance which includes road slope, drainage, pavement, bridge, tunnel, box culvert, traffic management facility, road management facility and traffic control methods during maintenance and repair work. The Expressway Maintenance Manual will be soon reported and discussed in WG2.

2-2-7 Measure 4: Enhance Responsibility Assignment and administration Procedures for Road Maintenance

(1) Baseline Survey

The Project conducted the baseline survey including the review of recommendations made at the JICA Phase I Project, update of regulations relevant to road maintenance and institutions in Viet Nam, and also studied the progress of the DRVN Comprehensive Renovation Plan commenced in 2013. The JICA Project Team also translated and studied regulations in Viet Nam relevant to organization updated.

(2) Development and Discussion of Work Plan

Based on the DRVN comments addressed to the Project, the Project developed the Work Plan for the enhancement of responsibility assignment and administration procedures. The Work Plan was discussed and agreed at the first JCC meeting held on April 23rd, 2015.

(3) Development of amendment plan for responsibility assignment and administrative procedure (Current status)

DRVN is kindly requested to take actions for reviewing its responsibility assignment maintenance procedures to comply with the Project outputs until the end of this Project.

The Project developed the first draft recommendation on the amendment of responsibility assignment and administration procedures, and submit to DRVN in January 2016.

The Project developed the second draft recommendation as a form of Progress Report based on the final output of this Project and reported to the directors of Dept. of Science, Technology and International Cooperation, Dept. of Maintenance Management and Dept. of Personnel of DRVN on the 16th of August 2017. Further discussion on the recommendation will be hereafter conducted based on the comments DRVN is now summarizing based on the Progress Report.

2-2-8 Measure 5: Plan and Support Implementation of Training Program and Conduct Public Relations

(1) Activity 5-1 Prepare Draft Training Plan

1) Baseline Survey

Until the first JCC meeting, the Project has conducted a baseline survey on any update on legislation, government, and ministry and DRVN policy on trainings. In May 2015, after the WG member as confirmed, the Project conducted further baseline survey and confirmed that there is no comment on training programs developed under the JICA Phase I Project. Besides, the JICA Project Team conducted the baseline survey questionnaires to relevant organization. Accumulated data and information was compiled into a report, and shared among the Project Team in September 2015, and submitted to WG3 in February 2016.

2) Development and Discussion of Work Plan

Based on the baseline survey, the Project developed the Work Plan for the development of training programs. The Work Plan was discussed and agreed at JCC meeting held on April 23rd, 2015. In the Project, three (3) training programs will be developed as shown in Table 2-2-11 and one (1) training program, which is “During the Project Training” shown in the table will be implemented.

Table 2-2-11 Outline of Training program developed under the Project

Training Program	Term	Concept	Trainer	Target trainees
1. Training Program on Project Outputs (During the Project Training)	During the project (2015-2017)	<ul style="list-style-type: none"> Step by Step transfer of technology developed by the Project to DRVN. Training is led by JICA project which handover to DRVN from the second year, in order to oversee that training implementation is properly handover to DRVN. 	<ul style="list-style-type: none"> DRVN JICA Project Team 	Project counterparts of <ul style="list-style-type: none"> DRVN RMBs SBs RTCs (future trainers)
2. Training Program on Project Outputs (After the Project Training)	Until 5 years after the Project Completion (2018-2022)	<ul style="list-style-type: none"> Deployment of project outputs to nationwide road maintenance agencies focused on selected trainings conducted during the Project DRVN is to organize and implement training program “After the Project”, 	<ul style="list-style-type: none"> DRVN Trained trainers 	Project counterparts of <ul style="list-style-type: none"> DRVN RMBs, SBs (Inclusion of PDOT to be considered)

		with support of trained trainers identified by DRVN. DRVN is highly recommended to identify future trained trainer and include them into training during the Project		
3. Training Program on Road Administration focusing on road maintenance and management (Future Training Program)	After 5 years of the Project Completion (2022-)	<ul style="list-style-type: none"> Capacity enhancement on comprehensive management capacity of PDCA cycle for road administration in Vietnam sustainably Delivery with DRVN and assigned training institution. DRVN is highly recommended to identify competent agency and include them into training during the Project. 	<ul style="list-style-type: none"> DRVN Assigned training institution 	<ul style="list-style-type: none"> Staff involved in road administration nationwide DRVN RMBs SBs PPC/ PDOTs Contractors

3) Development and Discussion of Overall Training Implementation Plan

In line with the Work Plan agreed at the first JCC meeting, the Project developed an Overall Training Implementation Plan, clarifying the framework of training before implementation and getting consensus on the target of development. WG3 meeting was held on 28th of May, 2015 and discussed on Framework, and overall framework as well as cost sharing and cooperative implementation with DRVN, which were agreed. Also, taking account of comments issued in the meeting, the Project agreed to disseminate information on the pilot repair works in the regional workshops and conduct technical transfer OJTs before implementing pavement condition surveys in each of RMB II, III and IV regions.

4) Development of training program (Current Status)

Training program on Project Outputs (During the Project Training) was presented in June 2015. Based on the program, training courses have been implemented as shown in the following section.

The Project also developed detailed training programs for the “Future Training Program” in collaboration with Measure 4 and summarized into the Progress Report of DRVN Human Resource Development Programs in August 2017. The Progress Report is currently under translation and will soon be reported to WG3 for further discussion.

The Project is now developing remaining training program, “Training program after the Project”. The program will soon be reported to WG3 for further discussion.

(2) Activity 5-2 Support Training Implementation

1) Development of Implementation Plan for “During Project Training Programs”

Based on training program developed above, the Project has developed Annual Training Implementation Plan 2015 for during the Project”, which contains Implementation Plan of Seminar, Workshop, and OJT, Implementation Procedure and Task and Cost sharing. The annual training implementation plan was discussed at the WG3 meeting held on 11th of June in 2015 and then agreed.

After the completion of the first year training, the JICA Project Team conducted the review of the first year training and reviewed the plan for the second and third year in January 2016, and got a consent on the reviewed Annual Implementation Plan. After the end of second year training, the plan is reviewed again for the third year training in February 2017.

Training	Date	Training Venue	Style	MOT	DRVN			RMBs			Sub Total	Total			
					DRVN	RTC C	PMU3	RMB	RTC	SBs					
TOTAL					25		3	61	31	125	245	245			
4 th Training (Workshop & OJT)	22-23. 05. 2017	RMBI	WS		9		3	8	4	16	40	58			
			OJT		1			3	4	10	18				
	25-26. 05. 2017	RMB II	WS		2		1	16	2	22	43	65			
			OJT				5	3	14	22					
	15-16. 05. 2017	RMB III	WS		3		1	16	4	13	37	57			
			OJT				7	4	9	20					
	18-19. 05. 2017	RMBIV	WS		1		1	6	4	21	33	48			
			OJT				5	1	9	15					
TOTAL					16	0	6	66	26	114	228	228			
PMS 1 st Intensive Training	02. 06. 2017	Hanoi	OJT		12			4			16	16			
TOTAL											16	16			
OJT on Pavement Condition Survey	25.04.2016	RMB II	OJT					6	8	9	23	23			
	23.02.2016	RMB III	OJT					1	5	10	16	16			
	04.11.2015	RMBIV	OJT					4	5	3	12	12			
	TOTAL											11	18	22	51
GRAND TOTAL												999			

(3) Activity 5-3 Public Relations

1) Baseline Survey

In May 2015, after the WG members are confirmed, the Project delivered a baseline survey questionnaire to WG3 on Public Relations (PR). The survey has reported that that Road Magazine conducts PR activities under the commission from DRVN and has published monthly Road magazine, runs web based Road magazines, developed Video Clips on Road related topics, and also submit articles to news agencies.

2) Development and Discussion of Work Plan

Based on the baseline survey, the Project developed the Work Plan for the development of public relation programs. The Work Plan was discussed and agreed at the JCC meeting held on April 23rd, 2015.

3) Development and Discussion of Implementation Plan

In line with the Work Plan agreed upon at the JCC meeting, the Project developed an Implementation Plan, clarifying the Framework before implementation and getting consensus on the target of development shown below. Road Magazine, the independent unit under DRVN, was assigned to conduct PR activities of DRVN.

- Annual Report and Video Crip for PR to ministry level organizations
- Web-based Information System for Road Maintenance Technology for PR to private sector
- General Information Brochure for PR to general public

4) Contractor Selection and Product Development

- Development of Annual Report and Video Clip was contracted out to Road Magazine on 30th June 2016 and completed at the end of August 2017.
- Development of Web-based Information System for Road Maintenance Technology was subcontracted to IT Company, SAOMAI, through competitive quote on 5th August 2016 and completed in December 2016.

- Development of General Information Brochure was contracted out to Road Magazine on 29th August 2017 and is now in progress.

5) **Output Management**

- Printing of Annual Report and Video Clip was completed and materials are deliverable.
- Web-based Information System for Road Maintenance Technology was installed in the DRVN appreciation server and is already operable.

6) **Technical Transfer**

- Completed Web-based Information System for Road Maintenance Technology was presented in the 3rd JCC held on March 29 2017.

7) **Delivery of PR activities (Reference Activity)**

From 8th to 10th of July, 2015, the Project participated to “Viet Nam Ha Noi Transport & Logistics Conference & Exhibition”, and set up a booth to introduce the Project and project activities with Board Panel and Photos, leaflet, a short video clip.

2-3 Achievement of Output (Based on PDM)

2-3-1 OUPUT 1: PMS Data Development Technology is improved.

Objectively Verifiable Indicators	Project Output	Achievement Level
Road asset database, maintenance history database and pavement condition database are completed for PMS.	<ul style="list-style-type: none"> • PMS Data Input System (offline and Web-based) • Road Inventory/Asset Database • Maintenance History Database • Pavement Condition Database 	<p><u>In Progress</u></p> <ul style="list-style-type: none"> • Upgrading of PMS data input format has been completed. • System development of PMS data input was completed for offline system and web based online system. Online system is currently running at www.pms.drvn.gov.vn. • Input and amendment of PMS data were completed for RMB II and III and RMB IV roads. • Pavement Condition Survey for RMB II, III and IV roads was completed in May 2016. • Data analysis and processing has also completed for RMB, II, III and IV roads <u>in April 2017</u>. • Pavement Condition survey of additional road sections under RMB I was already completed (<u>November 2016</u>). Data analysis and processing was completed <u>in August 2017</u>.

2-3-2 OUPUT 2: PMS is Upgraded and applied to the Planning of Trial Pavement Repair Work Plans.

Objectively Verifiable Indicators	Project Output	Achievement Level
Trial pavement repair work plan (Annual, five year) using PMS is formulated by DRVN.	<ul style="list-style-type: none"> • Web based PMS • Web-based Pavement Condition Data Display System • Trial Pavement Repair Plans (Annual and Five Year Plans) • Web-based Pavement Condition Data 	<p><u>In Progress</u></p> <ul style="list-style-type: none"> • PMS is in final check by DRVN and JICA Project Team. • Development of Web-based Pavement Condition Data Display System was completed and now operational level. • Development of web-based PMS operation system is in operational level on the web and currently running at www.pms.drvn.gov.vn. • PMoS and PC data analysis system are under development.

	Analysis System	
	<ul style="list-style-type: none"> • Web-based PMoS 	

2-3-3 OUPUT 3: Final Draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual are Formulated.

Objectively Verifiable Indicators	Project Output	Achievement Level
Draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual are formulated.	<ul style="list-style-type: none"> • Final draft of Road Facility Inspection Guidelines • Road Routine Maintenance Manual • Expressway Maintenance Manual 	<p><u>In Progress</u></p> <ul style="list-style-type: none"> • The First draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual was submitted to DRVN • Second drafts are under development based on the comments issued to the first drafts by the competent agencies and the results of pilot repair work implementation.

2-3-4 OUPUT 4: Responsibility Assignment and Administration Procedure are Clarified for Road Maintenance.

Objectively Verifiable Indicators	Project Output	Achievement Level
Amendment plans to realize output 1 to 3 are developed.	<ul style="list-style-type: none"> • Amendment plans on responsibility assignment and administrative procedure 	<p><u>In Progress</u></p> <ul style="list-style-type: none"> • First recommendation was developed and submitted to DRVN. • Second recommendation was developed and explained to DRVN

2-3-5 OUPUT 5: Training Implementation and Public Relations are Reinforced.

Objectively Verifiable Indicators	Project Output	Achievement Level
DRVN conduct regular trainings on project outputs.	<ul style="list-style-type: none"> • Training Program and Plan (during and after the project, National road administration) • Capacity enhancement of counterpart staff 	<p><u>In Progress</u></p> <ul style="list-style-type: none"> • Training program for During-Project Training was developed and is currently under implementation. • Training program for Future Road Maintenance Training was developed and reported to DRVN on 16th Aug 2017 for further discussion. • Training program for After-Project training is under development. <p>(1) Workshop and OJTs</p> <ul style="list-style-type: none"> • 1st Training (Workshop and OJT (PMS data input)): 20-27 Jul.2015 • 2nd Training (Workshop): 16th – 23rd May 2016 • 3rd Training (Workshop and OJT) : 31st Oct.-11th Nov. 2016 • 4th Training (Workshop and OJT) : 15st -26th May. 2016 <p>(2) OJTs on Pavement Condition Survey:</p> <ul style="list-style-type: none"> • 1st October 4th at Ho Chi Minh City • 2nd February 23rd at Da Nang City • 3rd April 25th at Vinh City <p>(3) Seminar</p> <ul style="list-style-type: none"> • 1st Seminar: 21st October, 2015 <p>(4) Training in Japan</p>

		<ul style="list-style-type: none"> • 1st Training: 13-19th September 2015 • 2nd training: 26 Sep. – 6 Oct. 2016 • 3rd training: 3 Sep. -16 Sep, 2017
DRVN conduct PR.	<ul style="list-style-type: none"> • Annual Report • Video Clip • Web-based Maintenance Technology • Leaflet 	<p><u>In Progress</u></p> <ul style="list-style-type: none"> • Project leaflet was developed and distributed for the purpose of MOT Exhibition and Seminar on July 2015. • Development of Annual Report and Video clip was completed and will be distributed in early October 2017. • Development of Web-based Information System for Road Maintenance Technology was completed. The system was installed in the DRVN web information system. • Development of General Information Brochure is underway.

2-4 Achievement of the Project Purpose (to be added as the project progresses)

PROJECT PURPOSE: Implementation capacity for road maintenance is strengthened in Viet Nam.

Objectively Verifiable Indicators	Achievement Level
Trial pavement repair work plan using PMS is formulated in RMB I, II, III and IV	
Primary rules for road facility inspection, maintenance and repair work are formulated (*1)	
Implementation structure for road maintenance is established.	

2-5 Risks and Actions for Mitigation

(1) February 2015 – March 2015 (Up to Monitoring Sheet Ver. 1)

As the Project required a couple of months to start, counterpart of DRVN also needed time to set up the project environment including arranging Project Team office space, organizing working groups and selecting counterpart members including local budget arrangement. This raised a little concern in the delay of the Project. During this term, the Project Team consulted to MOT, DRVN and JICA Vietnam, and moved to a temporary office space prepared by DRVN and conducted baseline surveys based on desktop study. Thanks to MOT, DRVN, and JICA Vietnam efforts, the above project environment was settled before the first JCC.

(2) April 2015 – October 2015 (Up to Monitoring Sheet Ver. 2)

No risk was observed during this term.

(3) November 2015 – March 2016 (Up to Monitoring Sheet Ver. 3)

As mentioned at “1-2-6 (1) Activity 3-1 Pilot Repair Works”, the procurement of equipment and materials for pilot repair works is expected to delay due to long processing time for approval on the import material and equipment and also due to regulation change of custom clearance. Consequently, the implementation of pilot repair works also to be delayed for about half a year. JICA Project Team needs to coordinate with supplier for the production timing of materials, to rearrange experts’ assignment schedule, and to coordinate with DRVN for arrangement of local contractors for pilot repair works.

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

As mentioned at “1-2-6 (1) Activity 3-1 Pilot Repair Works”, the procurement of equipment and materials for pilot repair works has been delayed due to import and tax exemption procedures. Implementation of pilot repair works has been originally planned from January to March 2016 is expected to be in Feb – Mar 2017, which is delay of about 1 year. JICA Project Team has coordinated with the supplier for the production timing of materials, to rearrange experts’ assignment schedule, and to coordinate with DRVN for arrangement of local contractors for pilot repair works.

(5) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

As mentioned at “1-2-6 (1) Activity 3-1 Pilot Repair Works”, there has been some progress in administration procedure in Viet Nam (Project approval by the Office of the Government). The Project Team has restarted the internal procedure of equipment and material procurement, targeting the goods to be arrived in March 2017, however there still remain some concerns for the delay of the rest of the administration procedures (Tax exemption Procedures in Viet Nam).

(6) January 2017 – March 2017 (Up to Monitoring Sheet Ver. 6)

As mentioned at “1-2-6 (1) Activity 3-1 Pilot Repair Works”, the good is now planned to be arrived in 16th March 2017. There still remain some concerns for the delay of the rest of the administration procedures and dispatch to the site.

(7) April 2017 – September 2017 (Up to Monitoring Sheet Ver. 7)

Pilot repair work was implemented on the sites and monitoring their performance is now in progress. No risk is identified now.

2-6 Progress of Actions undertaken by JICA

(1) February 2015 – March 2015 (Up to Monitoring Sheet Ver. 1)

JICA Vietnam has provided a great support to accelerate DRVN arrangement for office space.

(2) April 2015 – October 2015 (Up to Monitoring Sheet Ver. 2)

Not applicable

(3) November 2015 – March 2016 (Up to Monitoring Sheet Ver. 3)

JICA Vietnam provides a great support to JICA Project Team, DRVN and MOT for providing information on tax exemption and coordinating relevant agencies.

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

JICA Vietnam provides a great support to JICA Project Team by close coordination with relevant ministries, and sharing information with DRVN and Project Team on tax exemption

(5) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

Thanks to JICA Vietnam on close coordination with relevant ministries, tax exemption procedure have now move forward. Continuous support is very much appreciated to ensure that necessary procurement will be successfully carried out to conduct the planed pilot repair project within the project term.

(6) January 2017 – March 2017 (Up to Monitoring Sheet Ver. 6)

Continuous support for JICA Vietnam is very much appreciated to ensure that necessary procurement will be successfully carried out to conduct the planed pilot repair project within the project term.

(7) April 2017 – September 2017 (Up to Monitoring Sheet Ver. 7)

No risk is identified.

2-7 Progress of Actions undertaken by Gov. of Viet Nam

(1) February 2015 – March 2015 (Up to Monitoring Sheet Ver. 1)

After PMU3 had been assigned to the Project, arrangement for office space and furniture etc. have been arranged very smoothly.

(1) April 2015 – October 2015 (Up to Monitoring Sheet Ver. 2)

Not applicable

(2) November 2015 – March 2016 (Up to Monitoring Sheet Ver. 3)

Documents required for Custom Clearance are prepared by PMU 3 of DRVN.

(3) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

Proceeding the Approval of Funding List has been delayed, which requires to apply Grant Aid Certificate to import and tax exemption procedures of the material and equipment needed for the pilot pavement repair works.

(4) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

On 28th October 2016, the Prime Minister's Office issued a letter approving on the Technical Cooperation project list to be funded by JICA ODA, requesting MOF to proceed the tax exemption procedure of urgent projects including this Project. Formal approval on the Funding List will be processed separately from this urgent treatment through discussion between MPI and the Office of the Government (Prime Minister's Office).

(5) January 2017 – March 2017 (Up to Monitoring Sheet Ver. 6)

DRVN actively worked on MOF to accelerate tax clearance for the imported materials of pilot repair work.

(6) April 2017 – September 2017 (Up to Monitoring Sheet Ver. 7)

Tax clearance was completed at the end of March 2017 and pilot repair work on the sites was implemented in April 2017, so that there is no risk currently identified. DRVN is now reviewing its institutional arrangement which

includes responsibility assignment and maintenance procedures between relevant stakeholders in order to materialize and widespread new road maintenance technologies introduced by the Project based on the recommendation issued by the Project Team.

2-8 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

2-8-1 Coordination with Vietnam Road Asset Management Project (VRAMP)

Component A-1 “Consulting Service for Road Database Framework and Development of the Road Asset Management System and Road Asset Management Plans”, of Vietnam Road Asset Management Project (VRAMP) funded by the World Bank has commenced from 1st November, 2015. As explained in section 2-2-2 (2); Project Management, also there is close relation between JICA Phase II Project and VRAMP Component A-1 in relation to data collection, PMS integration in RAMS and database utilization. Thus, RAM-SC and RAM-WG set by DRVN are expected to coordinate regularly with VRAMP.

Regarding PMS development, DRVN is requested to keep maintaining the principle of concluding the PMS development during the implementation of the JICA Project. The JICA Project Team will make an effort in developing PMS system until its operability in DRVN environment is confirmed.

The 3rd JICA training and the planned VRAMP first training (Workshop) was planned to be held on the same day. However, VRAMP workshop was rescheduled to the days from November 21, 2016.

3. DELAY OF WORK SCHEDULE AND/OR PROBLEMS (IF ANY)

3-1 Detail

(1) February 2015 to April 2015 (Up to Monitoring Sheet Ver.1)

As mentioned earlier, there was a risk of delay, however those issues were resolved in a good cooperation of involved agencies.

(2) May 2015 to October 2015 (Up to Monitoring Sheet Ver. 2)

During this term, TWG was planned to be hold in July and October 2015. However, the first TWG was postponed to the 22nd of October, 2015.

(3) November 2015 to March 2016 (Up to Monitoring Sheet Ver. 3)

Procurement of material and equipment for pilot repair works is expected to delay due to required time scale for document preparation required for tax exemption. Thus the implementation of pilot repair works also to be delayed as mentioned in “1.2.6 (1) Activity 3-1 Pilot Repair Works.”

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

Procurement of material and equipment for pilot repair works is expected to delay due to required time scale for document preparation required for tax exemption. Thus the implementation of pilot repair works also to be delayed

as mentioned in “1.2.6 (1) Activity 3-1 Pilot Repair Works.”

(5) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

Procurement of material and equipment for pilot repair works is expected to delay due to required time scale for document preparation required for tax exemption. Thus the implementation of pilot repair works also to be delayed as mentioned in “1.2.6 (1) Activity 3-1 Pilot Repair Works.”

(6) January 2017 – March 2017 (Up to Monitoring Sheet Ver. 6)

Procurement of material and equipment for pilot repair works is expected to delay due to required time scale for document preparation required for tax exemption. Thus the implementation of pilot repair works also to be delayed as mentioned in “1.2.6 (1) Activity 3-1 Pilot Repair Works.”

(7) April 2017 – September 2017 (Up to Monitoring Sheet Ver. 7)

Tax exemption procedure was completed at the end of March 2017. There is no risk causing delay.

3-2 Cause

(1) February 2015 to April 2015 (Up to Monitoring Sheet Ver.1)

Very initial period of project commencement and Project Team mobilization

(2) May 2015 to October 2015 (Up to Monitoring Sheet Ver. 2)

No particular issues to be coordinated

(3) November 2015 to March 2016 (Up to Monitoring Sheet Ver. 3)

Time require for preparation of tax exemption document

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

Time require for approval from Prime Minister

(5) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

Time require for tax exemption procedure in Viet Nam.

(6) January 2017 – March 2017 (Up to Monitoring Sheet Ver. 6)

Time require for tax exemption procedure in Viet Nam.

(7) April 2017 – September 2017 (Up to Monitoring Sheet Ver. 7)

Tax exemption procedure was completed at the end of March 2017. There is no risk causing delay.

3-3 Actions to be Taken

(1) February 2015 to April 2015 (Up to Monitoring Sheet Ver.1)

Not applicable

(2) May 2015 to October 2015(Up to Monitoring Sheet Ver.2)

Due to no particular issues to be coordinated in July, TWG was postponed to October 2015.

(3) November 2015 to March 2016 (Up to Monitoring Sheet Ver.3)

JICA Project Team has been informed that document preparation for Tax Exemption requires (Amended Project Document and C1 Form) will take 4 to 6 months. Thus pilot repair works will commence in October 2016 as the earliest.

JICA Project Team monitored the preparation of relevant documents.

(4) April 2016 – September 2016 (Up to Monitoring Sheet Ver. 4)

JICA Project Team was informed that approval for funding list by PM will take minimum 3 months. Thus pilot repair works will commence in March 2017 as the earliest.

JICA Project Team has requested to JICA Vietnam office to coordinate with Vietnamese authorities to accelerate the document processing.

(5) October 2016 – December 2016 (Up to Monitoring Sheet Ver. 5)

JICA Project Team has stated necessary internal procedure (tender, selection of contractor, shipping of material etc.) to minimise the delay of procedure. DRVN was also kindly requested to proceed necessary preparation of documents for tax exemption in Viet Nam.

(6) January 2017 – March 2017 (Up to Monitoring Sheet Ver. 6)

- Monitoring of material shipping and delivery
- Rescheduling of pilot work implementation schedule to start pilot work immediately after arrival of materials and equipment in Viet Nam.

(7) April 2017 – September 2017 (Up to Monitoring Sheet Ver. 7)

Pilot repair work was already implemented in April 2017 and monitoring survey has commenced.

3-4 Roles of Responsible Persons/Organization (JICA, Gov. of Viet Nam, etc.)

Preparation of documents required for Custom Clearance: JICA Vietnam Office / PMU 3 of DRVN

4. MODIFICATION OF THE PROJECT IMPLEMENTATION PLAN

4-1 PO and PDM

(1) Modification made at Monitoring Sheet Ver. 1

At Version 1, a slight adjustment on Implementation schedule was made based on Work Plan prepared in discussion with DRVN. And also a sub activity “Implement pavement condition surveys for RMB II, III and IV selected roads” which was originally under Activity 2 “Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan”, has now incorporated under Activity 1 “Improve PMS Data Collection and Processing Technology”.

(2) Modification made at Monitoring Sheet Ver. 2

Outputs and Activities of PDM have been updated according to the Project Activities considering the actual and practical delivery of tasks and outputs, which defined in the Work Plan. Thus output has change from 4 outputs to 5 outputs adding training implementation and public relations, and activities for output 5 have been included.

In addition, in the TWG held on October 2015, DRVN reported a new regulation on the formulation of pavement midterm repair plans, which includes the change of target year from “3-year” to “5-Year” according to the Preparation of Mid-term road maintenance plan in the period of 2017–2020 issued by DRVN on 4th September 2015 prudent to the Public Investment Law No.49/2014/QH13 and Prime Minister Decree No.77/2015/ND-CP. Upon this information, the Project promised to comply the current PMS development with this new regulation and accordingly updated PDM.

Proposed modification has been consulted to JICA in January 2016. PO is also amended accordingly.

(3) Modification made at Monitoring Sheet Ver. 3

No modification was made.

(4) Modification made at Monitoring Sheet Ver. 4

Draft modification is made on PDM and PO as Version 3 Draft. These modifications were discussed and authorized at the 3rd JCC which was held in March 2017. Modification includes the following:

1) PDM modification

- Additional activities which include Activity 2-7: Development of Web based Pavement Monitoring System and Activity 3-4 Develop Expressway Maintenance Manual

2) PO modification

- PO relevant to PDM modification was reviewed.

(5) Modification made at Monitoring Sheet Ver. 5

No modification was made

(6) Modification made at Monitoring Sheet Ver. 6

Draft modification made at Monitoring Sheet Ver4 which includes Activity 2-7: Development of Web-based Pavement Monitoring System and Activity 3-4: Development of Expressway Maintenance Manual were all discussed in the 3rd JCC meeting held on 29th March 2017 and duly approved the modifications.

(7) Modification made at Monitoring Sheet Ver. 7

No modification was made.

4-2 Other modifications on detailed implementation plan

(Remarks: The amendment of R/D and PDM (title of the project, duration, project site(s), target group(s), implementation structure, overall goal, project purpose, outputs, activities, and input) should be authorized by JICA HDQs. If the project team deems it necessary to modify any part of R/D and PDM, the team may propose the draft.)

Contract was amended on July 21st, 2016 to include additional tasks shown below;

- 1) Operation Verification of web systems developed under the Project
- 2) Operation Verification of Web-based System for Displaying Pavement Condition Survey Data
- 3) Upgrading of Pavement Monitoring System
- 4) Development of Expressway Routine Maintenance Manual
- 5) Addition of Pavement Condition Survey

In order to proceed the above additional activities, in total of 8.9 MM (4.9 MM for expert on Web-based System for Displaying Pavement Condition Data, 3.6 MM for Team Leader/Road Maintenance Planning, and 0.4 MM for the expert on Pavement Condition Survey (Calibration) , are added, which is an increase from 126 MM to 134.9 MM.

In addition to above modification, the following modification was also made during implementation of project:

- The number of trainees in second training in Japan to be conducted in 2016 has been increased from 5 to 10 persons.

5. PREPARATION OF GOV. OF VIET NAM TOWARD AFTER COMPLETION OF THE PROJECT

To be added as the Project progresses.

APPENDIX-1: PROJECT MONITORING SHEET I (PDM) PM FORM3-2

APPENDIX-2: PROJECT MONITORING SHEET II (PO) PM FORM3-3

APPENDIX-3: MINUTES OF JCC MEETINGS

Table 4-2-1 Flow Chart

	2015												2016												2017												2018		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Work in JP/VN																																							
Joint Coordination Committee			△											△													△												
Technical Working Group																																							
Seminar																																							
Workshop / OJT																																							
Training in Japan																																							
Monitoring Sheets																																							
Reports (PR: Progress Report, PCR: Project Completion Report)																																							
Main Project Activities	<p>Measure 1: Improve PMS Data Collection and Processing Technology</p> <p>1-1 Formulate PMS Database: Baseline Survey, Work Plan Preparation, Upgrading of PMS Data Format/ Data Input System, Monitoring of PMS Data(*) to be Inputted by RMB/SB</p> <p>1-2 Implement Pavement Condition Survey: Baseline Survey, Work Plan Preparation, Development of Survey Plan/Local Sub Contract, Implementation of Pavement Condition Survey for Selected Road of RMB II, III, IV Jurisdiction, Processing / Analysis of Pavement Condition Survey Data</p> <p>1-3 Develop Web based PMS Data Input System: Develop Web based PMS Data Input System, Monitoring of PMS Data(*) to be Inputted by RMB/SB (Continue)</p> <p>Activities: WS/OJT (Data Input), Seminar, WS/OJT, OJT, WS/OJT, WS/OJT/Seminar</p>																																						
	<p>Measure 2: Upgrade PMS to Apply Road Network of RMB I, II, III, and IV, and Formulate Draft Repair Work Plan</p> <p>1-2 Upgrade PMS: Baseline Survey, Work Plan Preparation, Preparation of PMS Upgrading Plan, Review and Upgrade of PMS considering Management Data and Geographical Parameters</p> <p>2-4 Develop Web-based System for Displaying Pavement Condition Data: Development of Web-based System for Displaying Pavement Condition Data</p> <p>2-5/2-6/2-7 Develop Web-based PMS Operation System, PC Data Analysis system and PMoS for Pavement condition Data: Development of PMS Web-based System, Analysis System and PMoS for pavement condition data</p> <p>2-2 Formulate PMS Dataset: Conversion of Inputted PMS Data / Development of PMS Dataset(**)</p> <p>2-3 Formulate Pavement Repair Work Draft Plan for RMB II, III, IV: Formulation of Repair Work Draft Plan (Annual / 3 year) using Web-based Operation System, Monitoring of PMS Legalization Process</p> <p>Activities: WS, Seminar, WS/OJT, OJT, WS/OJT, WS/OJT/Seminar</p>																																						
	<p>Measure 3: Improve Inspection and Repair Work Selection technology on Road Facility and Develop Technical Standards</p> <p>3-1 Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology: Develop Pilot Repair Works Plan, Selection of Pilot Repair Works/ Contractor /Procurement of Equipment and Materials, Implementation of Pilot Repair Works, Monitoring and Evaluation of Pilot Repair Works</p> <p>3-2 Upgrade Road Facility Inspection Guideline: Upgrading of Road Facility Inspection Guideline and Discussion with Competent Agencies, Monitoring of Guideline Legalization Process</p> <p>3-3 Upgrade Road Routine Maintenance Manual: Upgrading of Road Routine Maintenance Manual and Discussion with Competent Agencies, Finalization of Road Maintenance Manual / Discussion and Confirmation to Specialized Agencies, Monitoring of Manuals Legalization</p> <p>3-4 Development of Expressway Maintenance Manual: Development of Expressway Maintenance Manual</p> <p>Activities: WS, Seminar, WS/OJT, OJT, WS/OJT, WS/OJT/Seminar</p>																																						
	<p>Measure 4: Enhance Responsibility Assignment and Administration Procedures for Road Maintenance</p> <p>4-1 Prepare Amendment Plan for Road Maintenance Responsibility Assignment(Conducted by JICA Long-term Expert): Preparation of Amendment Plan for Responsibility Assignment and coordination with Relevant Parties on the Draft Plan, Monitoring of Legalization Process</p> <p>4-2 Prepare Amendment Plan for Road Maintenance Administrative Procedure: Preparation of Amendment Plan for Administrative Procedure and coordination with Relevant Parties on the Draft Plan, Monitoring of Legalization Process</p> <p>Activities: WS, Seminar, WS/OJT, OJT, WS/OJT, WS/OJT/Seminar</p>																																						
	<p>Measure 5: Plan and Support Implementation of Training Program and Conduct Public Relations</p> <p>5-1 Prepare Draft Training Plan: Baseline Survey, Work Plan, Development of Draft Training Plan for During/After Project /Long Term Training and Discussion and Coordination with Relevant Parties, Monitoring of Legalization Process</p> <p>5-2 Support Training Implementation: Coordination of WS/OJT, Coordination of Seminar/Training in JP, Coordination of WS/OJT, Coordination of OJT/Training in JP, Coordination of WS/OJT, Coordination of WS, OJT, Seminar, Training in JP</p> <p>5-3 Conduct Public Relations: Baseline Survey, Work Plan, Conduct Public Relations</p>																																						

*PMS Data: Data which includes PMS specific and some location specific (identifier) Data. These data are not combined into a single format/structure/table.
 ** PMS Dataset: Only the required PMS data for running PMS Software. Data are stored in a pre-defined single format/structure

Project Monitoring Sheet I (Revision of Project Design Matrix)

Project Name: The Project for Capacity Enhancement in Road Maintenance Phase II
 Project Period: February, 2015 to March, 2018 (3 years)
 Implementation Organization: Directorate for Roads of Vietnam under Ministry of Transport
 Target Group: DRVN, Road Management Bureaus (RMBs) I, II, III, IV
 Target Area: Designated area of RMB I, II, III, IV

Version: 3 DRAFT*

Dated: 31st Sep, 2016

* Amendments will be authorized at next JCC to be held in March 2017.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions (I.A.)	Achievement	Remarks
Overall Goal Road maintenance is conducted properly based on the mid-term plan, following PDCA cycle.	(By 3 years from the project end) The indicators for pavement damage (IRI, cracks, rutting, etc.) will be improved X %.	1.Result of data comparison of regular pavement condition survey by DRVN 2.Trial 3 year and annual plan for pavement maintenance 3. Annual Report 4. Interview to DRVN			
Project Purpose Implementation capacity for road maintenance is strengthened in Viet Nam	1. Trial pavement repair work plan using PMS is formulated in RMB I,II, III and IV 2. Primary rules for road facility inspection, maintenance and repair work are formulated (*1) 3 Implementation structure for road maintenance is established.	1. Trial pavement repair work plan of RMB I,II, III and IV 2. Regulation 3-1. Regulation 3-2. Interview to DRVN	I.A. to achieve Overall goal 1.Budget is allocated stably for maintenance activities in accordance with five year plan 2. Training is conducted by DRVN continuously to maintain technical skills		
Outputs 1. PMS data development technology is improved 2.PMS is upgraded and applied to the planning of trial pavement repair work plans 3.Technical specifications for inspecting road facility and selecting repair work are developed 4.Responsibility assignment and administration procedure are clarified for road maintenance 5. Training impelmentation and public relations are reinforced	1.PMS Database consisting of Road Aasset data, maintenance history data and pavement condition data are completed. 2. Trial pavement repair work plan (annual, five year) using PMS is formulated by DRVN. 3.Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual, and Expressway Maintenance Manual are formulated. 4. Amendment plans to realize output 1-3 are developed 5-1. DRVN conduct regular trainings on project outputs 5-2. DRVN conduct PR.	1.Road asset DB, maintenance history DB, pavement condition DB 2.Trial pavement repair plans (annual, five year plan) 3.Final draft of Road Facility Inspection Guideline, Road Routine Maintenance Manual and Expressway Maintenance Manual 4.Amendment plans (draft) 5-1. Training record 5-2. PR outputs	I.A. to achieve Project Purpose 1 Engineers who received training are assigned continuously 2. Legalization procedure for Final draft of Road Facility Inspection Guideline and Road Routine Maintenance Manual proceeds	In Progress	
Activities	Inputs		I.A. to achieve Outputs		
	Japanese side	Vietnamese side			
1-1.Formulate PMS Database	1.Dispatch of Experts (1)Long term Expert •Road maintenance policy/regulations (2)Short-term experts • Team Leader/Road Maintenance Planning •Deputy Team Leader/PMS System Operation Technology	1.Human resources (1)Chairperson of JCC (2)Chairperson of TWG (3)Counterparts (DRVN and RMBs) (4)Coordinator 2.Facilities Communal office space for JP Team and local support team with electricity, air-condition, internet, telephone line. 3.Cost (1)Cost for pilot project on maintenance and repair work (including cost for general materials) (2)Small running expenses necessary for the implementation of the Project. (e.g. daily allowance, accommodation and domestic travel expenses of DRVN's staff for participating in training in Vietnam)	1. VRAMP Project (WB) is implemented as planned 2. IT policy of DRVN on organization and operation of database and system is maintained		
1-2.Implement Pavement Condition Surveys for RMB II, III and IV selected roads	•Pavement Condition Survey (Planning and Management) •Pavement Condition Survey(Calibration) •PMS System Technology(Budget Simulation) •PMS System Technology(Repair Work Planning) •Web-based System for Displaying Pavement Condition Data •Road Facility Inspection Technology •Road Maintenance Technology •Pilot Project Management •Pavement Technology •Road Maintenance Administrative Procedure •Capacity Development/Project Coordination	4.Others (1)Implementation of the pilot repair work for maintenance and repair work with JICA experts' advisory. (2)Implementation of pilot Pavement Condition Survey for the selected roads under RMB II, III and IV jurisdiction, with JICA's local service.			
1-3.Develop Web-based PMS Data Input System					
2-1.Upgrade PMS software					
2-2.Convert input data and make PMS dataset					
2-3.Formulate trial Pavement Repair Work Plan (annual and five year plan) for RMB I, II, III and IV road networks by PMS system and examine system operability.					
2-4.Develop web-based system for displaying pavement condition data on the DRVN mapping system					
2-5.Develop Web-based system which enables PMS Operation on website and formulates trial annual and five year pavement repair work plans					
2-6. Develop Web-based Analysis System for Pavement Condition Survey Data	2.Training in Japan •Three times (once/year) on Road maintenance policy and repair technology		Preconditions		
2-7. Develop Web-based Pavement Monitoring System (PMoS)	3.Equipment, Machinery and Materials (1)Special equipment and materials for pilot project work including: - Crack seal technology - Shallow pothole repair technology - Deep pothole repair technology - Bridge Waterproofing technology (Note) Materials to be imported are all listed in the revised Project Document. (2)Computers for planning system (3)Others needed for project implementation		Support and priority of DRVN on outputs generated through the phase I project including system database, technical Standards, and recommendation on institution are maintained		
3-1.Implement, Monitor and Evaluate Pilot Repair Works on Pavement Repair Technology which incorporates new technology and materials					
3-2. Upgrade Road Facility Inspection Guideline					
3-3. Upgrade Road Routine Maintenance Manual for standardization					
3-4. Develop Expressway Maintenance Manual					
4-1.Prepare Amendment Plan for Road Maintenance Responsibility Assignment	4.Others(Sub Contract) •Local service for Pilot Pavement Condition Survey •Local Service for development of web-based operation system				
4-2.Prepare Amendment Plan for Road Maintenance Administrative Procedure					
5.1. Prepare Draft Training Plan					
5.2. Support Training Implementation					
5.3. Conduct Public Relations					

Note:(*1): target facilities, frequency, methods, diagnosis, selection method for repair works, repair work, construction management

APPENDIX-6: PO FOR DRVN ACTION PLAN

