

## 第 3 章 プロジェクトの概要

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### 3-1 プロジェクトの概要

#### (1) 上位目標とプロジェクト目標

上位目標：「ベ」国及び地域経済が強化される。

プロジェクト目標：

アビジャン・ラゴス回廊上に位置するベドコ交差点において、国際道路1号線からアーバン道路に向かう立体交差建設、及び平面交差部改良、並びに周辺交差点の信号制御を改善することにより、同交差点の交通混雑の改善を図り、もってコトヌ市、及び「ベ」国内並びに西アフリカにおける物流改善及び成長産業の強化等経済構造改革に寄与する。

#### (2) プロジェクトの概要

本プロジェクトは上記目標を達成するため、無償資金協力により既存ラウンドアバウト形式の平面交差点に2車線の高架橋を建設するとともに平面交差部を信号交差点に改良する事業である。

### 3-2 協力対象事業の概略設計

#### 3-2-1 設計方針

##### (1) 基本方針

プロジェクトの背景、対象地域周辺の状況並びにプロジェクトの妥当性・必要性を踏まえ、本プロジェクトで整備する橋梁及び道路、交差点の基本方針を以下に列挙する。

- ・ 国際幹線道路としての安全性、快適な走行性を確保する。
- ・ 円滑に安定した人員、物資の輸送を確保する。
- ・ 周辺の道路、交差点も含め、主要幹線道路全体として整合がとれた計画とする。
- ・ 交通量及び特性（大型車、小型車、バイク、バス、歩行者等）、将来交通需要予測について検討し、設計に反映する。
- ・ 確保された道路占有地（ROW）を最大限活用するとともに、沿道に占める商店等の建物、商業活動に対する環境社会配慮上の影響を可能な限り低減する。
- ・ 沿道と良好な接続性を確保する。
- ・ 交通安全を考慮した計画を検討する。
- ・ ユーティリティの移設や事業後のメンテナンスも考慮し、調和の取れた計画とする。
- ・ 必要な機能、及び耐久性を確保した上でプロジェクトコストの縮減を図る。
- ・ 橋梁形式については、経済性・施工性・工期・維持管理性の妥当性のみでなく、「ベ」国政府が望む景観性・技術の汎用性も考慮して決定する。
- ・ 既存の交通や安全に配慮した施工計画とする。

##### (2) 自然環境条件に対する方針

調査対象地域は沿岸部の低湿地であり、標高は2~4m程度と低い。地質は比較的新しい年代（完新世以降）の堆積岩で、表層は粘性土と砂が相互に堆積している。平均気温は約27℃と一年を通じて温暖で、年に2度の雨季（大雨期：5~7月、小雨期：10~11月）と乾期があり、年間平均降雨量は1,300mm程度である。対象交差点付近は現況の道路排水機能が不十分であり、降雨後に道路が冠水し、通行を阻害するとともに舗装の劣化を加速している。

上記を踏まえ、主に以下の点に留意する。

- ・ 測量結果、降雨条件、現況の排水系統、地下水位、潮位等を考慮し、適切な排水計画を立案する。
- ・ 地盤調査結果に基づき、適切な支持層を推定し橋梁基礎の計画を行う。

### (3) 社会経済条件に対する方針

対象交差点は西アフリカ地域の主要路線上に位置し、交通量が多い。周辺沿道には、家屋や商店、市場、教会等が立ち並んでおり、道路と生活環境が隣接している。また、近隣にライフラインの拠点である電気と水道の供給施設があり、地下埋設管や架空線が密集している。

上記を踏まえ、主に以下の点に留意する。

- ・ 交通量調査結果と将来交通需要予測を基本として、改良効果を最大限に発揮でき、かつ土地収用や非自発的住民移転を最小化する道路・交差点計画とする。
- ・ 将来交通需要予測と軸重調査結果、特に大型車の混入状況を考慮し舗装設計を行う。
- ・ 地下埋設物の試掘結果や架空線の状況を十分に配慮する。
- ・ 交通安全に配慮し、各種安全施設（横断歩道、標識等）の計画を行う。
- ・ 現状の交通及び沿道の状況に十分配慮し、車両通行や住民の安全性、経済活動に支障を与えない施工計画を立案する。

### (4) 建設事情/調達事業（若しくは業界の特殊事情/商習慣）に対する方針

#### ① 建設事情に対する方針

「ベ」国では、工事に伴う道路使用許可等は事業主が全ての責任と権限を有しており、特別な手続きは必要としない。設計施工に係る関連法規や基準、規格等は整備中であり、慣例的にフランス法規（NF）に準拠している場合が多いが、明確に規定されていないことがほとんどである。

特筆すべきものとしては、法令にて公共建築物に関して10年瑕疵保険への加入が義務付けられている点が挙げられる。

上記を踏まえ、主に以下の点に留意する。

- ・ 「ベ」国に関連法規や規則がある場合にはその内容を尊重しつつ、日本基準や国際基準等を参照し、各種設計を行う。
- ・ 10年瑕疵保険について情報収集を行った結果を反映し、円滑に事業が実施できる体制を提案する。

#### ② 調達事情に対する方針

本事業で使用する主要な建設資材である骨材、瀝青材、セメント等は「ベ」国にて一般に流通している。鉄筋については大規模工事の場合は海外から輸入している場合が多く、PC鋼材をはじめとする橋梁用資材については海外輸入である。機材については、基本的な道路用建設機械は大手の建設業者がほとんどの機種を保有しているが、橋梁建設用機材は現地での調達が困難であるため、海外から調達する必要がある。

上記を踏まえ、主に以下の点に留意する。

- ・ 「ベ」国で調達可能なものは、できる限り現地生産品を活用する。
- ・ 現地で適切な資機材の調達が困難なものは、日本から調達することを基本とする。

### (5) 現地業者（建設会社、コンサルタント）の活用に係る方針

「ベ」国の建設業者は、生活環境・持続開発省（MCVDD）の技能促進部（DPM）に建設業登録を行った上で業務を実施している。建設業者は6段階にカテゴリー分けされ、カテゴリー別に応札できる金額の上限が設けられている。カテゴリー1、2に登録されており、道路、橋梁、貯水施設の土木関連工事の受注経験のある複数の外国籍（主にフランス）業者及び現地業者に聞き取りや工事現場の視察を行い、工事实績、機材の保有状況、現場状況などから各建設業者の技能労務者の実務技量は比較的高く、本建設工事においても十分に対応可能と判断する。

上記を踏まえ、主に以下の点に留意する。

- ・ 本無償資金協力工事では、日本企業の下請けとして現地業者の積極的な活用を図る。ただし、活用際には、工事進捗に問題が無いよう会社内容（特に技術面、資金面）や他業務の受注状況を十分に把握する必要がある。
- ・ 特に、橋梁工事は経験のある会社が少ないため、技術能力に十分配慮して業者を選定するとともに、橋梁世話役や特殊技能工は日本人技師術者を現地に派遣して施工を行う。

#### (6) 日本企業活用に係る方針

「ベ」国において運輸交通セクターの無償資金協力業務は実施されていない。また、当国はフランス領時代の影響が強く残っており、フランス語やフランス法規（NF）、10年瑕疵保険等、日本企業には比較的馴染みの薄い文化圏である。

上記を踏まえ、主に以下の点に留意する。

- ・ 設計においては、日本企業の対応が容易な基準（主に日本基準）の採用を検討する。
- ・ コミュニケーション上の問題を軽減するため、適当な通訳を配置する。
- ・ 10年瑕疵保険に対応できる体制を提案する。

#### (7) 運営・維持管理に対する対応方針

本計画の責任官庁であるインフラ運輸省は日本の無償資金業務の経験は無いものの、コトヌ市内の高架橋整備をはじめとする他ドナーによる道路・橋梁案件の実施監理経験を有している。また、道路基金を原資に道路・橋梁点検も毎年実施されており、予算、組織体制、人員、技術レベルともに基盤は整っている。ただし、現状、対象交差点では信号機が稼働していない、側溝が詰まっている、ポットホールがある等の課題も散見される。

上記を踏まえ、主に以下の点に留意する。

- ・ 適切な維持管理内容と予算案を提案する。

#### (8) 施設、機材等のグレードの設定に係る方針

本計画における施設、機材等のグレード設定に係る主要方針は以下のとおりである。

- ・ 調査対象道路の道路等級に応じた幅員構成及び設計条件を設定する。
- ・ 本邦請負業者の技術者の指導・管理の下において、基本的に「ベ」国の技術者や作業員で施工可能な工法や仕様を採用する。
- ・ 計画にあたっては現地にて維持管理が容易な構造、かつできる限り現地調達可能な資機材を選定する。

#### (9) 工法／調達方法、工期に係る方針

本計画における工法/調達方法、工期に係る主要方針は以下のとおりである。

- ・ 周辺への影響を考慮して既存の交差点を運用しながら施工可能な工種を選定することを基本とし、安全性に配慮しつつできる限り交通を阻害しない施工計画を策定する。
- ・ より早期に効果発現が可能な工法や編成数を検討し、効率的な事業実施スケジュールを立案する。

#### (10) 施工監理に係る方針

本計画における施工監理に係る主要方針は以下のとおりである。

- ・ 円滑な事業実施のため、地下埋設物の移設に関して、支援技術者を配置して進捗や移設状況を確認する。
- ・ 各種専門工種の施工時期には日本人技術者のスポット投入及び施工監理技術者（現地傭人）の配置を組み合わせることで、適切な品質管理を実施するとともに、現地技術者への技術移転を図る。

#### (11) 安全対策に係る方針

「ベ」国の治安は他のアフリカ諸国と比べ全体的に安定しているといわれており、調査対象地域において治安脅威として特筆すべき点はないが、工事中の完全対策として、以下の配慮を行う。

- ・ 上部工の施工期間中は本邦請負業者に専任の安全管理技術者を配置する。



### 3-2-2 基本計画

#### 3-2-2-1 全体計画

##### (1) 将来交通需要予測のレビュー

将来交通量需要予測の結果では、2035年時の朝ピークの交通量は2,300PCU/時（Case1-a）であり、2,000PCU/時を超過している。これは、仮に高架橋を東西方向に片道1車線で整備した場合、交通需要が高架橋の道路容量を超過し渋滞が発生してしまうことを意味する。

一方、2045年時の朝ピークは3,000PCU/時、夕ピークは2,500PCU/時となっている。これは高架橋の車線数としては片側2車線が必要十分であることを示している。長期的な視点で見ると、本プロジェクト以外の道路状況改善策も実施されるべきであり、将来の状況としてはCase2-aではなく、Case2-cやCase2-dに近い可能性がある。その場合においても、交通量は2,000PCU/時を超過しており、片側2車線で整備することが望ましいと考えられる。

表 3.1 ベドコ交差点の高架橋のピーク時の流入交通量の将来推定結果

（単位：PCU/時（ピーク）、（ ）内はCase0に対する倍率）

ケース	現況	a (ゼロ・オプション)	b	c	d	
検討内容	交通量配分の現況再現性の確認	現況道路ネットワーク、かつ公共交通転換がない場合の交通状況の検討	公共交通への転換が促進した場合の交通状況検討	道路ネットワーク完成の場合の交通状況の検討	道路ネットワーク完成かつ公共交通への転換が促進した場合の交通状況検討	
条件	北部バイパス	無し	無し	有り	有り	
	漁業通り（フェーズ1）	無し	有り			
	漁業通り（フェーズ2）	無し	無し	有り	有り	
	公共交通への転換	無し	無し	有り	無し	有り
備考		改良方針の意思決定に活用	参考の位置付け	参考の位置付け	参考の位置付け	
Case0 (2019年/ 現況)	西→東 (朝ピーク)	1,930 (1.0)	/	/	/	
	東→西 (夕ピーク)	1,125 (1.0)				
Case1 (2035年/ 10年後)	西→東 (朝ピーク)	2,300 (1.2)	2,500 (1.3)	1,600 (0.8)	1,800 (0.9)	
	東→西 (夕ピーク)	1,800 (1.6)	1,900 (1.7)	1,200 (1.1)	1,600 (1.4)	
Case2 (2045年/ 20年後)	西→東 (朝ピーク)	3,000 (1.6)	3,200 (1.6)	2,200 (1.1)	2,300 (1.2)	
	東→西 (夕ピーク)	2,500 (2.2)	2,400 (2.2)	1,700 (1.5)	1,700 (1.5)	

注：赤字は飽和交通量 2,000PCU/時以上のケースを示す。2,000PCU/時を閾値とした根拠は、（公社）日本道路協会「道路の交通容量」より、基本交通容量 2,500PCU/時（往復2車線）に対して、駐停車の影響を考慮した市街化地域の補正割合 0.8 を用い、2,500PCU/時×0.8=2,000PCU/時により算出した。

出典：JICA 調査団

##### (2) 完成4車線の計画

当初、本プロジェクトにおける「ベ」国政府の要請内容は、完成2車線高架橋の建設であったが、第一次現地調査の「ベ」国政府との協議において、「ベ」国政府の要請により完成4車線高架橋の建設となった。

一方、上述した将来交通量需要予測結果から、将来的には片側2車線（完成4車線）の高架橋が必要であること、また道路・橋梁計画の検討を進めていく中で、完成4車線化を行う場合に施工性と施工中の交通渋滞状況等の理由から、フェーズ分けによる分離施工が有利であることが確認された。次表に、完成4車線高架橋の一括施工と分離施工の比較を示す。

表 3.2 完成 4 車線高架橋の一括施工と分離施工の比較

	一括施工	分離施工
概略図	北側 南側 	北側 フェーズ 2 フェーズ 1 南側 
概要	<ul style="list-style-type: none"> <li>完成 4 車線高架橋 + 平面交差改良（一括施工）</li> <li>高架橋の通過は四輪車のみ</li> </ul>	<ul style="list-style-type: none"> <li>完成 4 車線高架橋 + 平面交差改良（フェーズ分けして上下線分離施工）</li> <li>架設の順序：フェーズ 1 は南側を建設</li> <li>高架橋の通過は四輪車のみ</li> </ul>
施工性	施工に伴う車両交通への影響が大きい	施工に伴う車両交通への影響が少ない
効果発現	交通緩和の効果発現が遅い	交通緩和の効果発現が早い
維持管理性	維持補修時の交通への影響が大	維持補修時の交通への影響が少
評価		○

出典：JICA 調査団

以上により、本調査では将来的な完成 4 車線化を見据えてプロジェクトのフェーズ分けを行い、フェーズ 1 を西→東方向の片側 2 車線の高架橋建設、フェーズ 2 を東→西方向の片側 2 車線の高架橋建設として計画し、本プロジェクトではフェーズ 1 を実施するものとした。同方針は、第二次現地調査において、「ベ」国政府と協議議事録（M/D）にて合意している。

### (3) 暫定 2 車線の計画

交通量解析によりフェーズ 1 の工事中、及びフェーズ 2 工事開始までの運用期間中の交通状況を検討した結果、フェーズ 2 で改良する東→西方向の平面部に、既存の 2 車線道路の運用を継続した場合、夕ピーク時において渋滞発生が予測される。フェーズ 1 の工事中、及び運用時の東→西の平面部の渋滞長の比較を次表に示す。

表 3.3 東→西の平面部の渋滞長比較（フェーズ 1 の工事中及び運用時）

	東→西の平面部が 2 車線の場合	東→西の平面部が 3 車線の場合
概略図	北側 フェーズ 2 フェーズ 1 南側 	北側 フェーズ 2 フェーズ 1 南側 
渋滞長	<p>西→東（朝ピーク）：約 4km ※工事期間中のみ</p> <p>東→西（夕ピーク）： 東と南方向に約 3km</p>	<p>西→東（朝ピーク）：約 4km ※工事期間中のみ</p> <p>東→西（夕ピーク）： 渋滞なし</p>

注：西→東方向（朝ピーク時）は、工事期間中は約 4km の渋滞が予測される（フェーズ 1 運用後は渋滞なし）。

出典：JICA 調査団

したがって、円滑で安全な交通運用を考慮し、フェーズ 1 の工事中、及びフェーズ 2 の工事開始までの期間、東→西方向の平面部は、フェーズ 2 側の 1 車線を利用した 3 車線化の方針とする。

#### (4) インターチェンジ化の検討

4車線高架橋建設後も平面交差点に多くの交通量が残ることを懸念し、「ベ」国政府より本格的なインターチェンジ化（複数方向のランプ整備（フェーズ3））の検討要望が出された。要望を受け、特に交通量が多く残る南→西方向専用ランプの建設の必要性と実現可能性について検討を行った。同方針は、第二次現地調査において「ベ」国政府と協議議事録（M/D）にて合意している。

複数の形式案の検討を行い、より実現可能性が高いと考えられる案を想定して、費用便益分析を実施した。その結果、経済的内部収益率（EIRR）は2029年で6.9%、2035年で10.0%、2045年で14.0%となった。検討結果を踏まえ、以下を提言する。

- ・ EIRR の評価としても、喫緊に必要なプロジェクトではないため、事業実施時期を適切に見極める必要がある。
- ・ フェーズ3の検討にあたっては、現況道路網のもと、かつ公共交通転換がない場合の交通状況（Case2-a：想定される検討ケースの最大交通量）を想定しているのので、実施されるバイパス整備や公共交通への転換など各施策の実施動向に注視し、今後の必要性、最適な形状、実施時期の状況を反映する必要がある。
- ・ フェーズ3の実施にあたっては、大規模な用地取得、施設の補償が生じることとなる。そのため、事業実施の際には、施設状況、地下埋設物を詳細に確認の上、移設計画、移設費用の算定を行い、最適な形状を決定する必要がある。

詳細に関しては、「追加ランプ（フェーズ3）のプレF/Sレベルの検討書」に記載している。

#### (5) 事業範囲

本プロジェクトの事業範囲の概要を以下に示す。



出典：JICA 調査団

図 3.1 事業範囲の概略

#### (6) 設計基準

##### 1) 適用基準

本計画では、「ベ」国政府と協議により、基本的に日本の諸基準を使用する方針とする。

- ・ 道路幾何構造設計：道路構造令（平成27年度版）
- ・ 橋梁設計：道路橋示方書（平成24年度版（英語版あり））
- ・ 排水設計：道路土工 排水工指針（平成19年度版）
- ・ 舗装設計：AASHTO Guide for Design of Pavement Structures 1993（以下、AASHTO 1993）

なお、上記基準に記載のない事項については、適宜日本基準、AASHTO、フランス基準等を比較・検討の上適用する。

##### 2) 設計条件

現地調査にて「ベ」国側と合意した、本プロジェクトの道路、橋梁、排水、舗装設計に適用する主要な設計基準は次表のとおりである。

表 3.4 主要な設計基準

項目		単位	計画内容	
<b>道 路</b>				
設計速度		km/h	60（一部、40、30）	
平面線形	最少曲率半径	m	∞	
	最小緩和曲線長	m	-	
縦断線形	最急縦断勾配	%	5.0	
	最小縦断曲線半径 凸型	m	1,500	
	最小縦断曲線半径 凹型	m	1,000	
視距	制動停止視距	m	70	
片勾配	最大片勾配	%	2.5	
標準断面（本線）	設計速度		km/h	60
	横断構成	車線幅員	m	3.25
		右側路肩	m	0.5
		左側路肩	m	0.5
		分離帯	m	可変（位置による）
		標準横断勾配	%	2.5
		建築限界	m	4.7
標準断面（連結側道）	設計速度		km/h	40
	横断構成	車線幅員	m	3.25
		右側路肩	m	0.5
		左側路肩	m	0.5
		分離帯	m	-
		歩道幅	m	可変（位置による）
		標準横断勾配	%	2.5
建築限界	m	4.7		
（従道路断面（南））	設計速度		km/h	60
	横断構成	車線幅員	m	3.25
		右側路肩	m	0.5
		左側路肩	m	0.5
		分離帯	m	1.0
		歩道幅	m	2.5
		標準横断勾配	%	2.5
建築限界	m	4.7		
（従道路断面（北））	設計速度		km/h	30
	横断構成	車線幅員	m	3.25
		右側路肩	m	0.5
		左側路肩	m	0.5
		分離帯	m	-
		歩道幅	m	3.0
		標準横断勾配	%	2.5
建築限界	m	4.7		
<b>橋 梁</b>				
桁架設時の建築限界		m	3.8	
<b>排 水</b>				
降雨確率年		-	10年	
<b>舗 装</b>				
舗装設計期間		-	20年	
舗装構造	車道（本線）	-	アスファルトコンクリート舗装	
	車道（連結側道）	-	アスファルトコンクリート舗装	
	車道（従道路（南））	-	アスファルトコンクリート舗装	
	車道（従道路（北））国管理範囲	-	アスファルトコンクリート舗装	
	車道（従道路（北））市管理範囲	-	インターロッキングブロック舗装 *工事影響の必要に応じて現況復旧	
	歩道	-	インターロッキングブロック舗装	

出典：JICA 調査団

## (7) CIM の活用

本調査では業務における課題解決や業務効率化を図るため、CIM を活用するとともに、今後の海外インフラ整備事業への CIM 導入の可能性について検討した。

### 1) 実施項目

本プロジェクトでは、CIM モデルの活用において、以下①～④の項目を実施した。

表 3.5 CIM の活用検討に向けた実施項目

項目	内容
① 計画立案	CIM モデル作成計画を立案した。
② CIM モデルの作成	CIM モデルの活用目的を踏まえ、地形等は詳細度 200、また、構造物は概略設計であることから詳細度 300 を基本とした。
③ CIM モデルの活用における効果検証と課題整理	A) CIM モデルを用いた支障物件の視覚的検証による照査の効率化 [設計照査] ・ 橋梁 3 次元モデルと地下埋設物の干渉確認 ・ 交差点計画における建築限界の確認 B) CIM モデルを用いた関係者説明による合意形成の円滑化 [合意形成] C) 施工手順を可視化した 4D-CIM モデルによる施工計画・施工条件の確認 [施工検討]
④ 報告書作成・CIM モデルの納品	報告書の作成及び CIM モデルの納品を行った。

出典：JICA 調査団

### 2) CIM 活用概要と課題・問題点

CIM の活用概要と課題・問題点を以下にまとめる。

表 3.6 CIM の活用概要と課題・問題点

項目	概要と課題・問題点
CIM モデルの作成	<p>【概要】 関係機関協議において交差点改良計画を示すことを目的に、交差点や橋梁及び埋設物の CIM モデルを作成し、プレゼン資料に反映した。CIM モデル作成範囲と詳細度は表 3.7 に示す。</p> <p>【課題・問題点】</p> <ul style="list-style-type: none"> <li>・ コンセプト変更に対する CIM モデルの変更対応： 第二次現地調査前において、コンセプト変更（4 車一括⇒2 車分離、3 径間⇒5 径間）により、急遽 CIM モデルの変更対応を行った。CIM モデルは、詳細に作成するほど変更時の対応作業量が多くなることから、事業イメージの共有段階においては、より少ない手間で変更対応が可能となるよう CIM モデルの詳細度を極力抑える（200 程度）ことが望ましい。また、概略レベルのモデルには、簡易に作成できるソフト（SketchUp など）を使用するなどの工夫も考えられる。</li> <li>・ CIM モデル作成のための各種データの受け渡し・管理方法： CIM モデル作成では、必要となる全体一般図や構造図、線形図等の各種図面類を、調査団の各担当者よりメール添付やファイル転送便等により授受したため、各図面のデータ管理が煩雑となった。海外インフラ整備のプロジェクトは関係する担当者数やその変更が多いため、情報共有システム等を活用し、組織や拠点間での情報共有や引継ぎを効率的に行うことが必須になると考えられる。</li> </ul>
CIM モデルの活用	<p>【概要】</p> <p>A) [設計照査] として、ベドコ交差点の建築限界 4.7m 及び地下埋設物の干渉状況の確認 B) [合意形成] として、関係機関協議における事業概要イメージの提示 C) [設計検討] として、施工計画に基づく 3D-CIM を用いて関係者間で施工計画の妥当性の確認</p> <p>【課題・問題点】</p> <ul style="list-style-type: none"> <li>・ 事業関係者による CIM モデルの活用： 関係機関協議では、調査団が CIM モデルを操作し事業説明を行った。今後、事業マネジメントを実施する先方政府が CIM によるメリットを得るためには、関係協議の場で先方政府自らが CIM モデルを操作・活用する事が望ましい。そのため、先方政府へ CIM モデルデータとビューワソフトを提供し、ビューワソフトの操作説明等の支援も有益と考える。</li> <li>・ 完成予想図（パース）や広報動画への CIM モデルの活用： CIM で対象構造物を 3 次元化しているため、現地の背景写真と合成するだけで比較的簡単に完成予想図を作成することができた。また、動画作成機能を有する CIM ソフトもあることから、簡易な広報動画であれば専用ソフトが無くても動画作成が可能である。ただし、パースや広報動画に CIM モデルを活用する際には完成イメージのリアリティを確保するため、詳細度 300 以上が必要である。</li> </ul>

出典：JICA 調査団




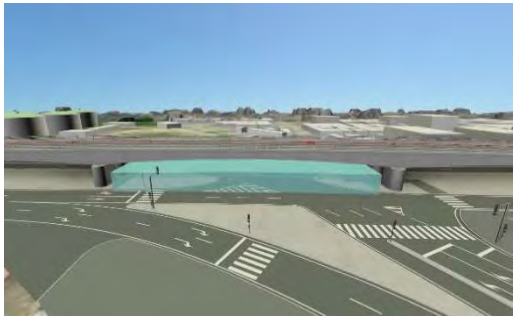


表 3.7 CIM モデル作成範囲と詳細度

構成要素	CIM モデルの構成内容	詳細度
地形	狭域) 航空写真 (UAV) と実測量による狭域地形 広域) 衛星写真を基に作成 (1:25,000~1:50,000 相当)	200
構造物	新設) コトヌ高架橋: 上部工、下部工、基礎工、付属物 既設) 現道、地中送電線、上下水道	200 (第2次現地調査) 300 (第3次現地調査)
地質	ボーリング柱状図 (4カ所)	—
構造物 (広域)	1:25,000~1:50,000 相当	100

出典: JICA 調査団

表 3.8 CIM モデル作成状況

	
橋梁 (西側: A1 橋台)	橋梁 (交差点: P3、P4 橋脚)
	
交差点全景	建築限界

出典: JICA 調査団

### 3-2-2-2 交差点計画

#### (1) 基本方針

高架橋建設後も多くの交通が交差点を通過することから、交差点形式を変則的なラウンドアバウト交差点から信号十字交差点への改良を行う。その際、現況の交差点用地を有効に活用しつつ、補償家屋等を最小化する配慮をするとともに、交通安全性にも留意する。

#### (2) 交差点需要計算

##### 1) 解析手法

ベドコ交差点へ流入する交通量をもとに交差点の需要率を算定し、必要車線数、信号現示率等を検討する。交差点の需要率は、以下の式に示すように、各信号現示の需要率の最大値を合計したものであり、解析手法については、「(改定) 平面交差の計画と設計 基礎編 応用編」(2004年：交通工学研究会)を参考とする。

$$\begin{aligned} \text{交差点需要率} & \quad \lambda = \sum_i \rho_i^* \\ \text{第 } i \text{ 現示の需要率} & \quad \rho_i^* = \max\{\rho_j\} \\ \text{流入部 } j \text{ の需要率} & \quad \rho_j = \frac{Q_j}{S_j} \\ \text{流入部 } j \text{ の設計交通量} & \quad S_j = SB \times \alpha_w \times \alpha_G \times \alpha_T \times \alpha_{RT} \times \alpha_{LT} \end{aligned}$$

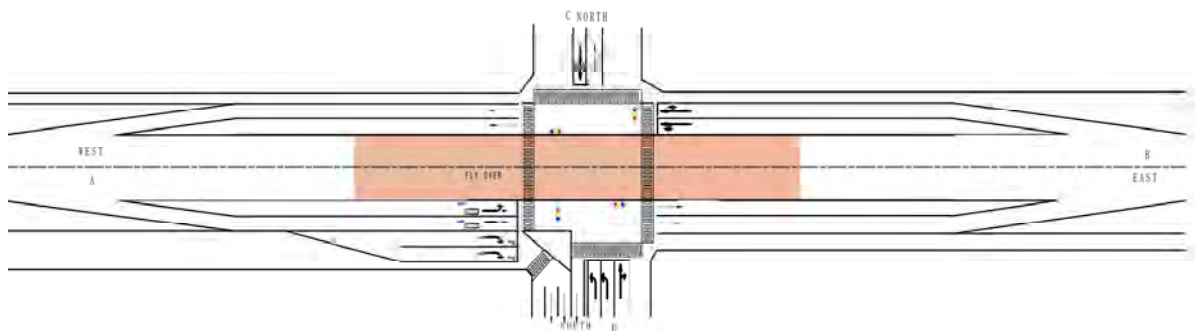
ここで、 $Q_j$ ：流入部jの設計交通量（台/1時間）、 $S_j$ ：流入部jの設計交通量（台/青1時間）

SB：信号交差点の飽和交通流率の基本値（台/青1時間）、 $\alpha_w$ ：車線幅員による補正值（-）、

$\alpha_G$ ：縦断勾配による補正值（-）、 $\alpha_T$ ：大型車混入による補正值（-）、

$\alpha_{RT}$ ：右折車混入による補正值（-）、 $\alpha_{LT}$ ：左折車混入による補正值（-）

具体的には、現況の用地幅を考慮しながら各流入部の横断面構成を図 2.5 のとおり仮定し、上記需要率が、1.0 以下となるように、交差点の必要車線数を計画する。



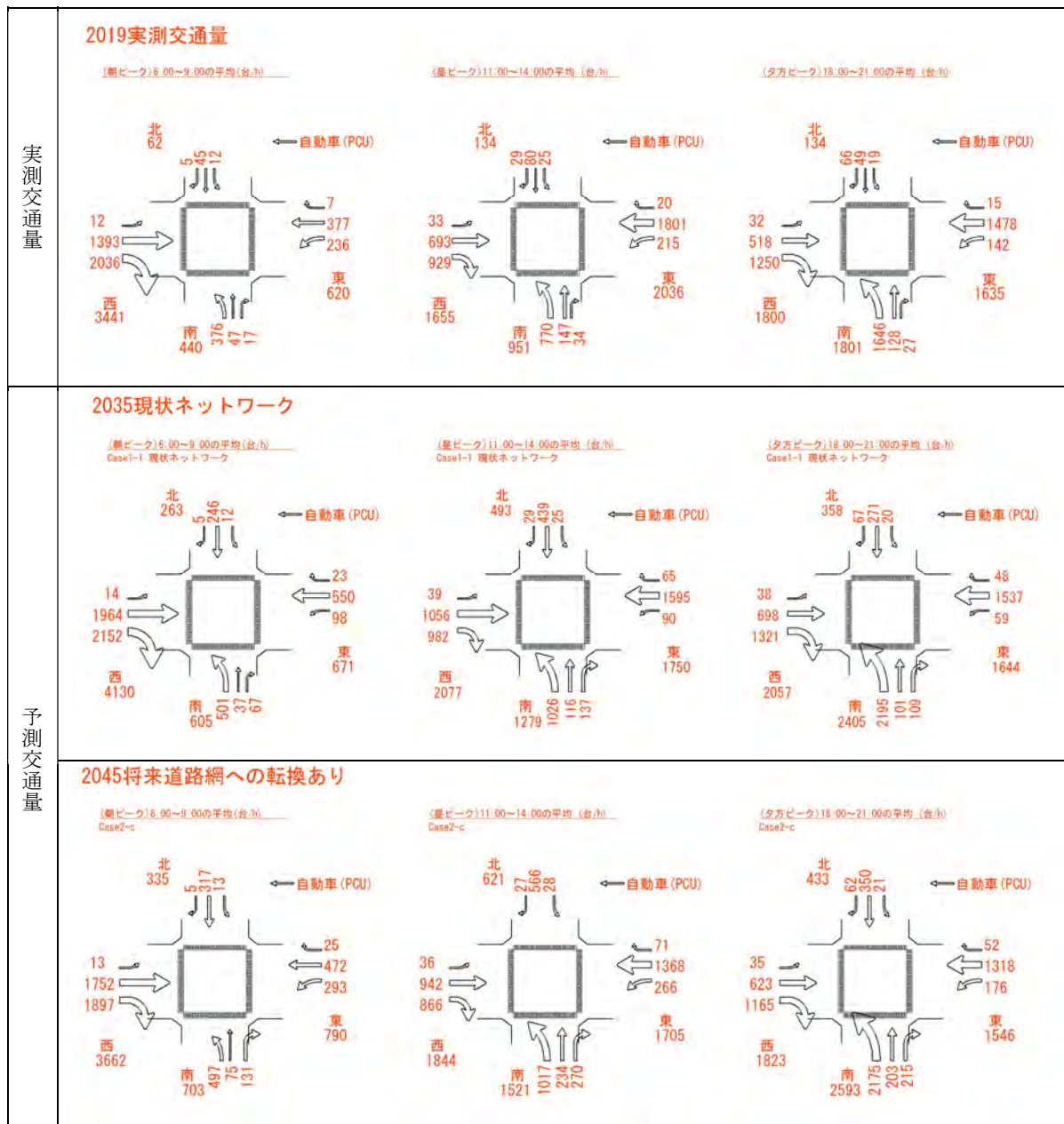
出典：JICA 調査団

図 3.2 交差点検討平面図

##### 2) 解析ケース

交差点の需要率計算に用いる交差点への流入交通量については、実測交通量その他、1-5-2 に示す将来交通量推計結果を受け、高架橋建設に伴う交差点改良 10 年後（2035 年）に、現況道路網のままの状態、かつ公共交通転換のないと考えた場合の交通状況（Case1-a）、及び将来道路網への転換を考慮した Case2-c（2045 年）とする。なお、いずれのケースについても東西方向を直進する流入交通量については、バイク交通のみが交差点を通過するものとする。交差点流入交通量の解析結果を次表に示す。

表 3.9 交差点流入交通量（解析ケース）



出典：JICA 調査団

### 3) 交差点需要率の検討結果

交差点の需要率の計算結果を次表示す。いずれのケースについても交差点の飽和度は、1.0 以下となり、交差点部での処理は可能となる。

表 3.10 交差点飽和度の計算結果

	朝ピーク (6:00~9:00) (平均台/時)	昼ピーク (11:00~14:00) (平均台/時)	夕ピーク (18:00~21:00) (平均台/時)
実測交通量 (2019 年)	0.686	0.776	0.918
Case1-a (2035 年) 現況道路網のまま推移した場合	0.616	0.729	0.898
Case2-c (2045 年) 将来道路網への転換を想定した場合	0.739	0.757	0.971

出典：JICA 調査団



#### 4) 交差点形状の比較

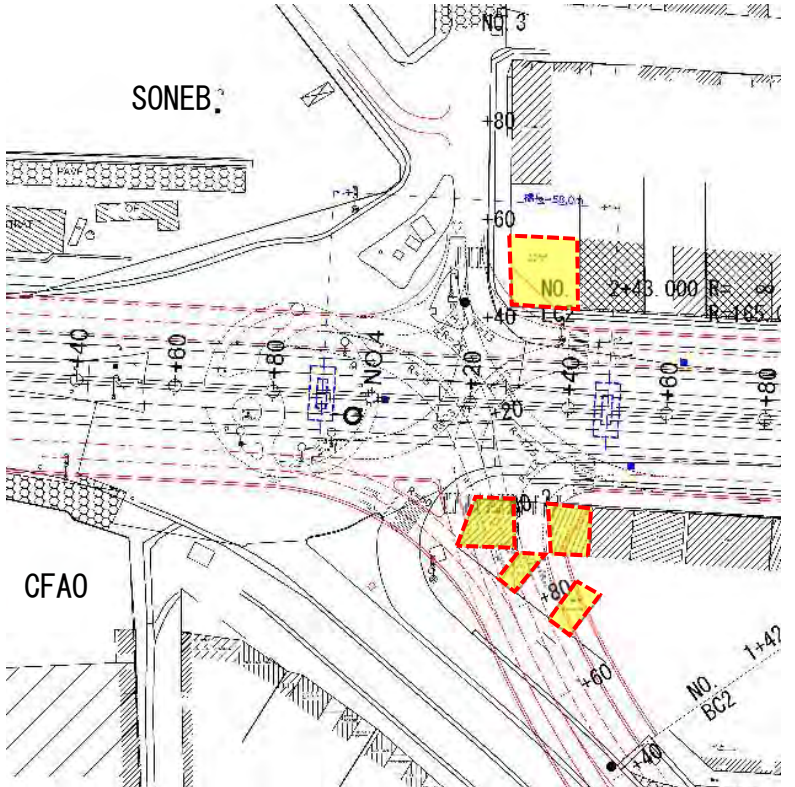
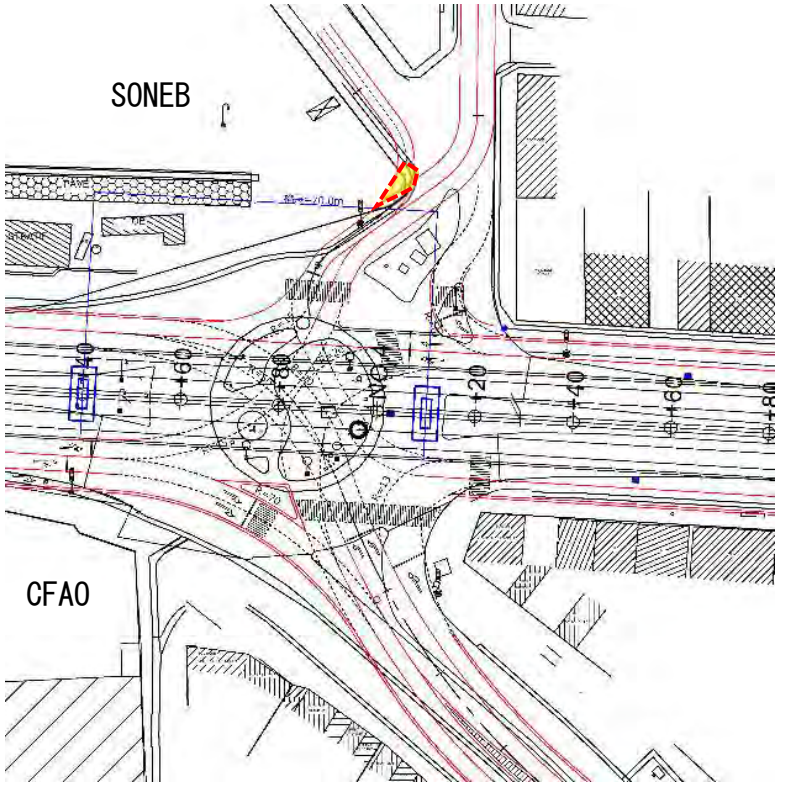
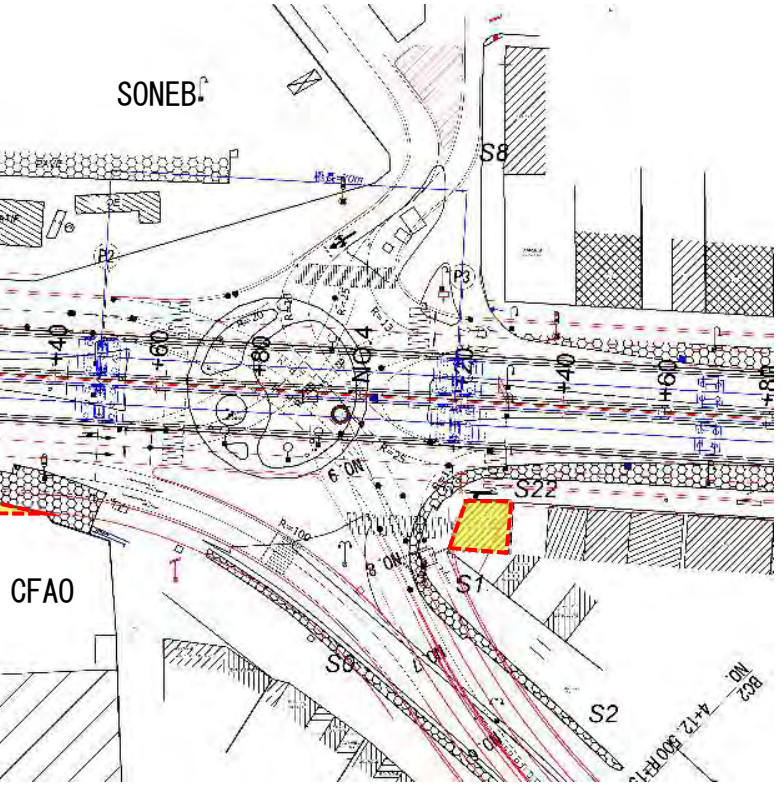
交差点需要率の検討結果を踏まえ、上記で設定された車線数によって交差点形状を検討する。なお、検討にあたって、南側道路については最適な交差点の位置、及び交差角等を検討するため、設計速度 V=60km/h で線形改良を行うことを前提とした。

以下に3案についての比較検討の結果を以下に示す。

- ・ 第1案については、交差点の形状としては、ほぼ理想に近い形状であるが、西側にラウンドアバウトの残地が生じることと、主に東側区間で多くの移転家屋が生じる。
- ・ 第2案については、残地や移転家屋等への影響は少ないが、交差角が鋭角となることに加え、現況ラウンド交差点内での橋脚設置が必要となる。
- ・ 第3案は、第1案と第2案の折衷案であり、それぞれの問題点を軽減できる。既存のラウンドアバウト交差点に橋脚を設置する必要がないことから、施工性にも優れる。

第二次現地調査時のインセプションレポートの報告会議での合意等を踏まえ、交差点形状については第3案を採用するものとした。

表 3.11 交差点形状の3案比較

	第1案	第2案	第3案
交差点図			
特徴	交差点への交差角を極力直交に近い角度で流入させた案	南東部での店舗や家屋をコントロールし、極力現況の用地内で計画に留意した案	第1案と第2案の中間案あり、なおかつ施工性に留意し、現況交差点を1径間で跨ぐ案
交差角	交差角：75°	交差角：62°	交差角：66°
橋長	中央支間長 L=58m	中央支間長 L=70m	中央支間長 L=70m
補償家屋	補償対象家屋数 5件（東側家屋）	補償対象家屋数 2件 （北側の公共用地（SONEB）の一部と、 その他は事業所（CFAO）の堀（上図より西側））	補償対象家屋数 2件 （事業所（CFAO）の一部と東側の店舗）
その他	交差点の西側に多くの残地が生じるため、処理が必要となる。	現況ラウンドアバウト交差点内に橋脚設置が必要となる。	現況ラウンドアバウト交差点を橋梁で跨ぐため、施工性に優れる。
評価			採用案

注：赤破線（黄色ハッチング）は補償家屋を示す。

出典：JICA 調査団

(3) フェーズ1及びフェーズ2 供用時における交通シミュレーション結果

1) フェーズ1 供用時における交通シミュレーション結果

- ・ 交通量の推計年次：2035年（Case1-a/夕ピーク）
- ・ 交差点信号現示：ベドコ交差点の飽和度計算に準拠

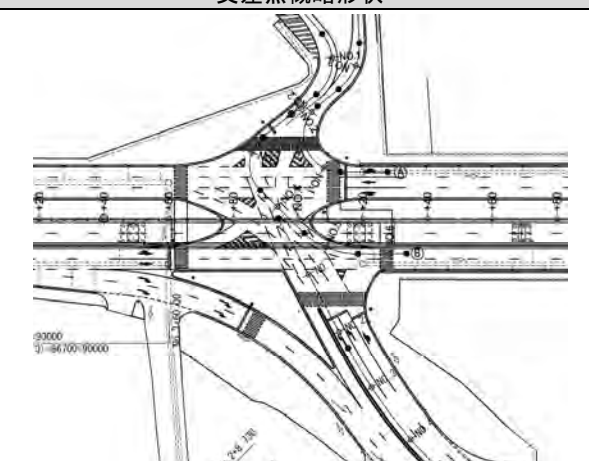
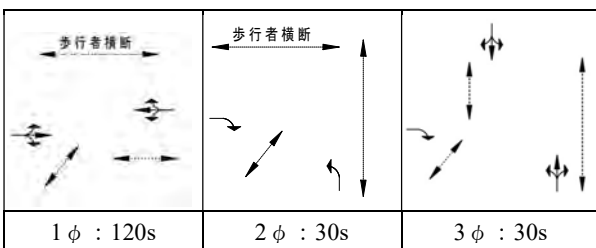
表 3.12 フェーズ1の検討ケースと交通量

(単位：PCU/時（ピーク）)

ケース	現況	a (ゼロ・オプション)	b	c	d	
検討内容	交通量配分の現況再現性の確認	現況道路ネットワーク下、かつ公共交通転換がない場合の交通状況の検討	公共交通への転換が促進した場合の交通状況の検討	道路ネットワーク完成の場合の交通状況の検討	道路ネットワーク完成かつ公共交通への転換が促進した場合の交通状況の検討	
条件	北部バイパス	無し	無し	有り	有り	
	漁業通りフェーズ1	無し	有り			
	漁業通りフェーズ2	無し	無し	無し	有り	有り
	公共交通への転換	無し	無し	有り	無し	有り
備考		改良方針の意思決定に活用	参考の位置付け	参考の位置付け	参考の位置付け	
Case1 (2035年/ 10年後)	朝ピーク	/	8,640	6,674	5,250	4,549
	夕ピーク		<u>9,083 (採用)</u>	6,856	5,147	4,542
Case2 (2045年/ 20年後)	朝ピーク	/	12,016	9,150	4,660	6,115
	夕ピーク		12,927	9,758	5,038	6,188

出典：JICA 調査団

表 3.13 交差点の概略形状と信号現示

交差点概略形状	信号現示
	

出典：JICA 調査団



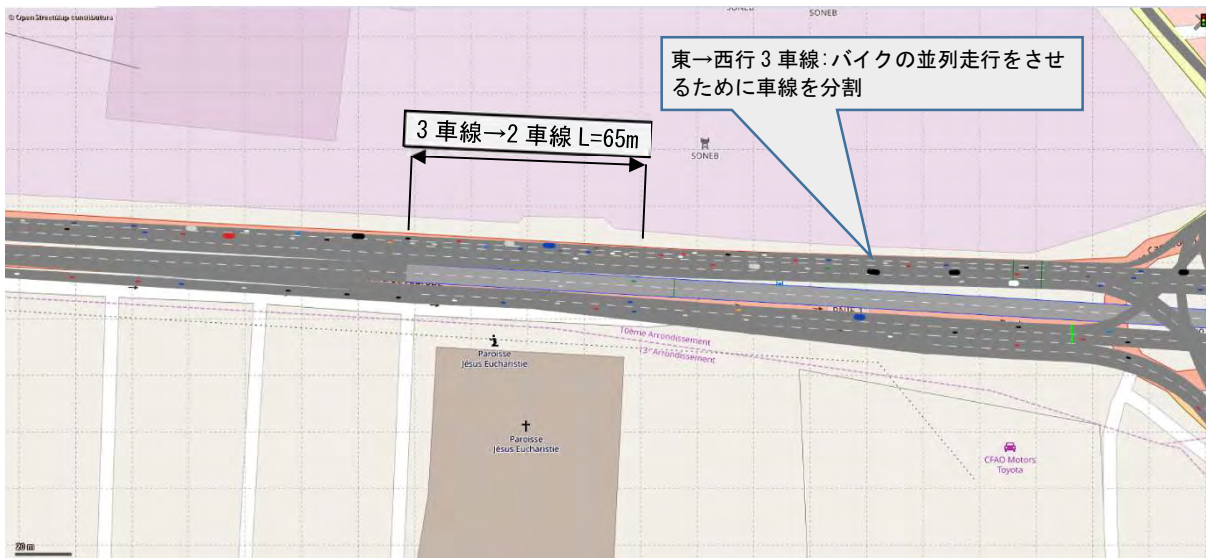


図 3.3 フェーズ1 供用時における交通シミュレーション画像（起点部側）

**起点側：考察**

- 東→西行は側道部の車線数が3車線から2車線に絞り込まれ交通が輻輳するが、特に大きな渋滞は発生しなかった。

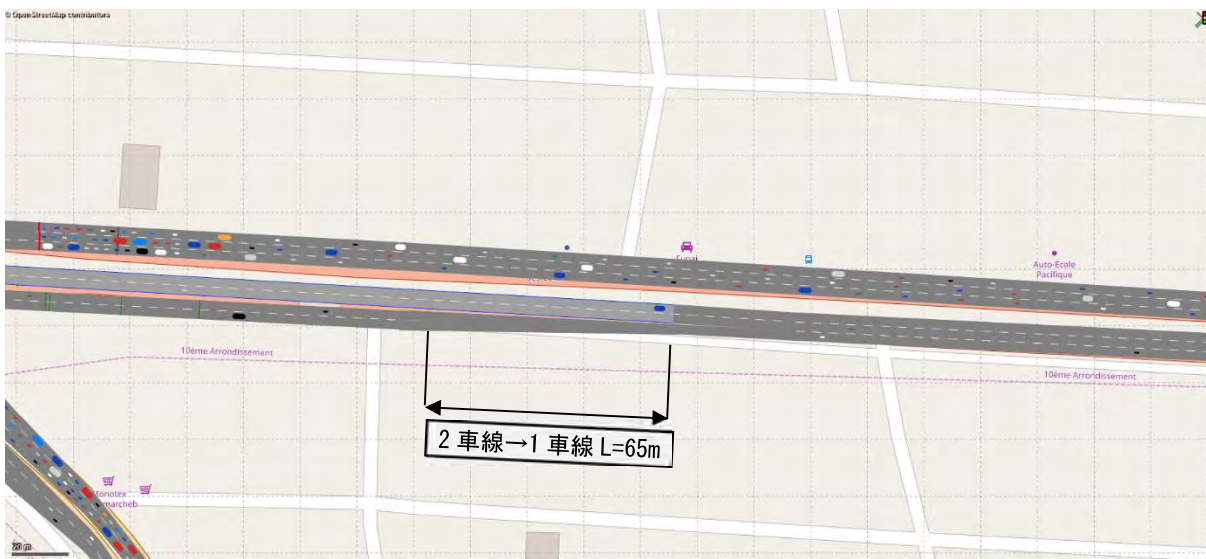


図 3.4 フェーズ1 供用時における交通シミュレーション画像（終点部側）

**終点側：考察**

- 西→東行は側道部の車線数が2車線から1車線に絞り込まれ交通が輻輳するが、特に大きな渋滞は発生しなかった。

2) フェーズ2 供用時における交通シミュレーション結果

- 交通量の推計年次：2035年（Case1-a/夕ピーク）  
全体計画の将来交通需要予測のレビューにも記載があるように、将来の状況としてはCase2-aではなく、Case2-cやCase2-dに近い可能性がある。そのため、Case2-cやCase2-dの交通量が基本となるが、道路ネットワーク構築に時間を要することリスクを考慮して、それよりも多いCase1-aの交通量を用いて検討を行った。
- 交差点信号現示：ベドコ交差点の飽和度計算に準拠

表 3.14 フェーズ2の検討ケースと交通量

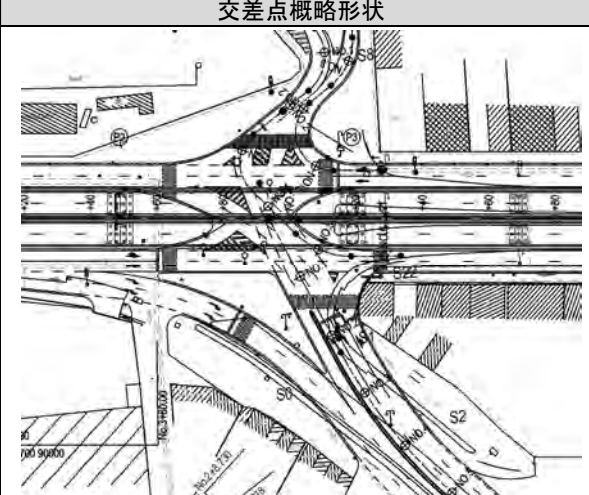
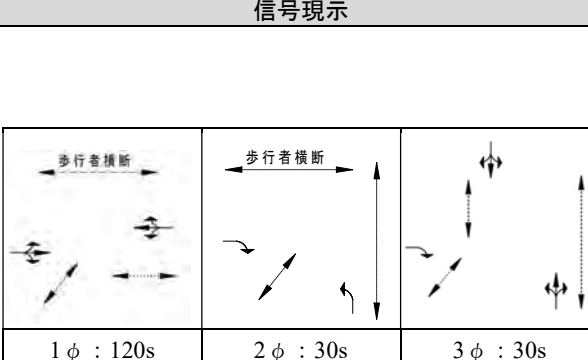
(単位：PCU/時（ピーク）)

ケース	現況	a (セロ・オーション)	b	c	d	
検討内容	交通量配分の現況再現性の確認	現況道路ネットワーク、かつ公共交通転換がない場合の交通状況の検討	公共交通への転換が促進した場合の交通状況の検討	道路ネットワーク完成の場合の交通状況の検討	道路ネットワーク完成かつ公共交通への転換が促進した場合の交通状況の検討	
条件	北部バイパス	無し	無し	有り	有り	
	漁業通りフェーズ1	無し	有り			
	漁業通りフェーズ2	無し	無し	有り	有り	
	公共交通への転換	無し	無し	有り	無し	有り
備考		改良方針の意思決定に活用	参考の位置付け	参考の位置付け	参考の位置付け	
Case1 (2035年/ 10年後)	朝ピーク	8,640	6,674	5,250	4,549	
	夕ピーク	<b>9,083 (採用)</b>	6,856	5,147	4,542	
Case2 (2045年/ 20年後)	朝ピーク	12,016	9,150	4,660	6,115	
	夕ピーク	12,927	9,758	<b>5,038</b>	<b>6,188</b>	

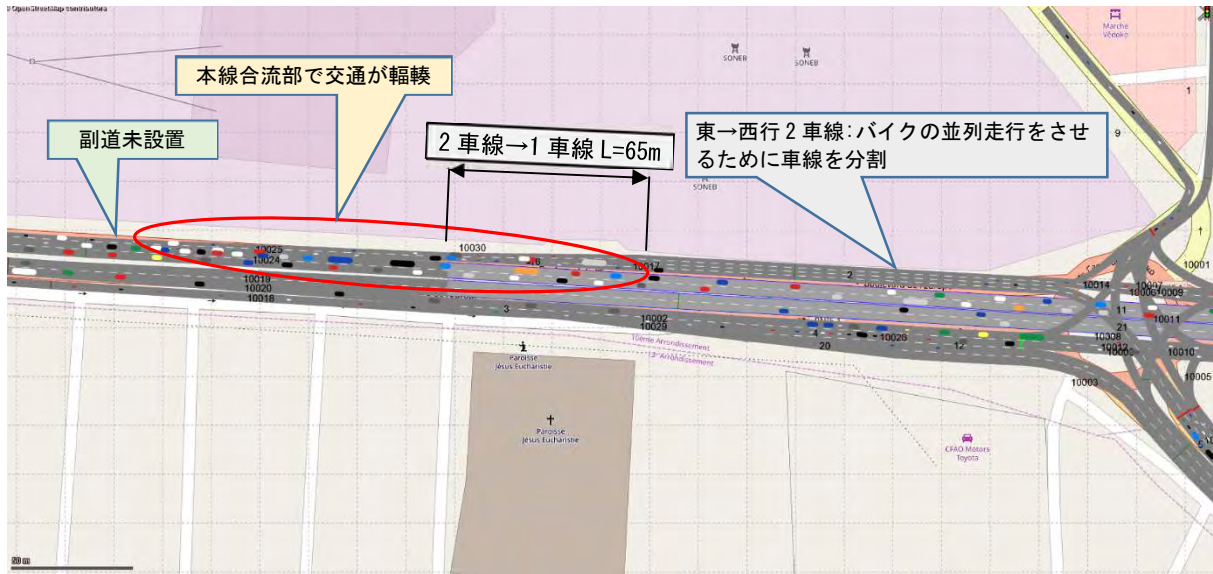
出典：JICA 調査団

交通量を比較し多い交通量を採用し検討を行った。

表 3.15 交差点の概略形状と信号現示

交差点概略形状	信号現示
	
	<p>1φ : 120s      2φ : 30s      3φ : 30s</p>

出典：JICA 調査団

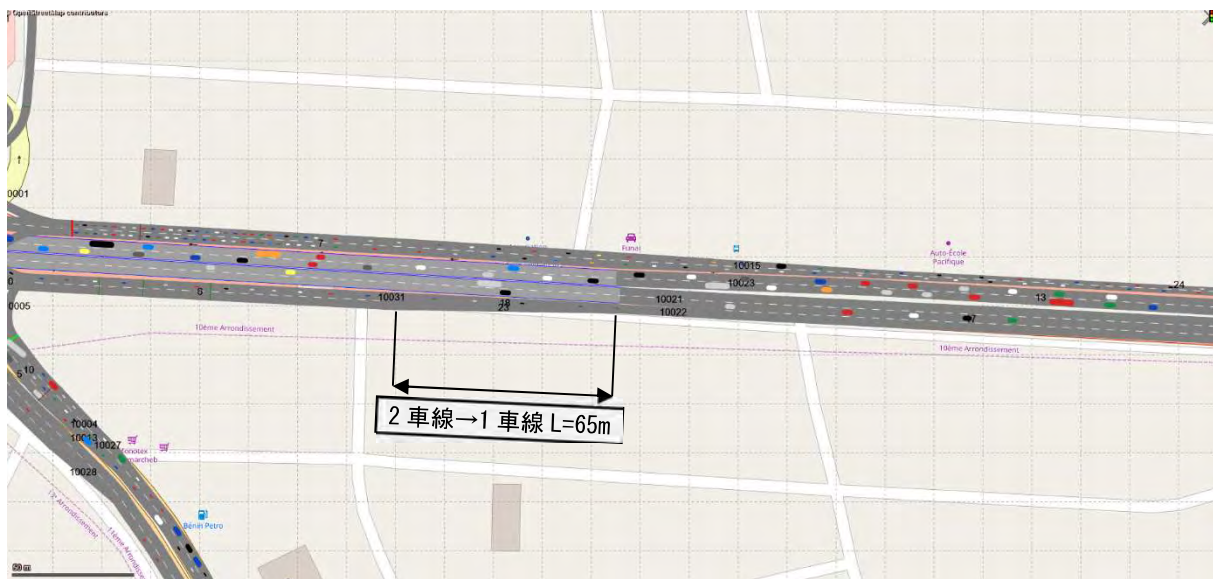


出典：JICA 調査団

図 3.5 フェーズ 2 供用時における交通シミュレーション画像（副道なし：起点部側）

**起点側：考察**

- ・ 側道部の車線数が、ノーズの手前で 2 車線から 1 車線に絞られることから、側道部及び本線部で渋滞が発生する。



出典：JICA 調査団

図 3.6 フェーズ 2 供用時における交通シミュレーション画像（副道なし：終点部側）

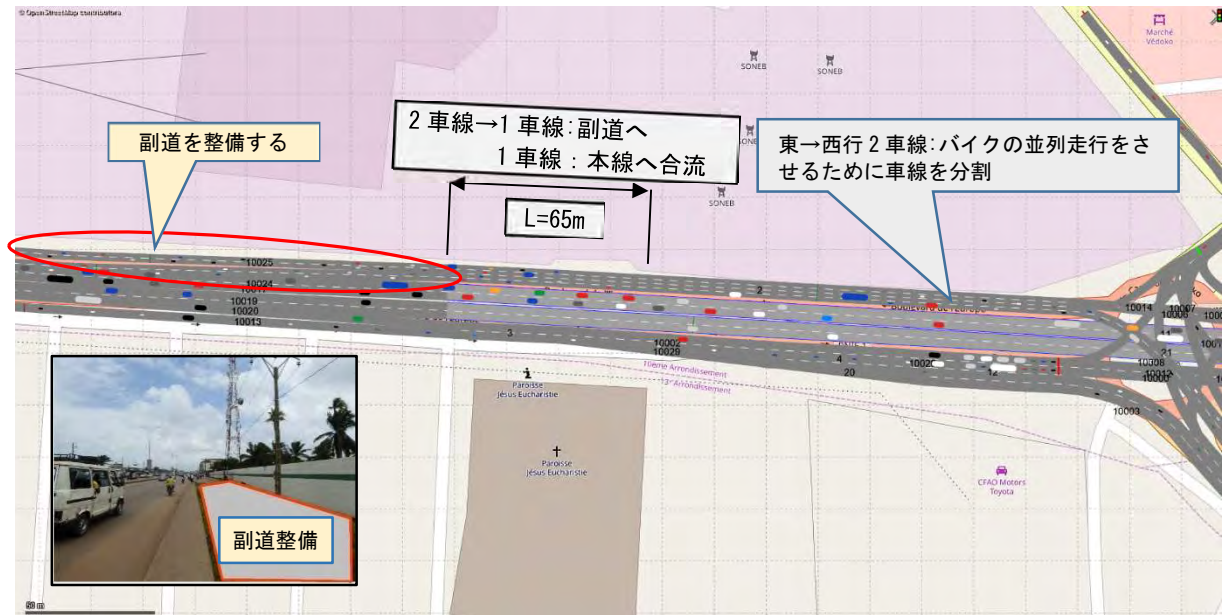
**終点側：考察**

- ・ 西→東行は側道部の車線数が 2 車線から 1 車線に絞り込まれ交通が輻輳するが、特に大きな渋滞は発生しなかった。

**起点側の対策案**

- ・ 対策案として西行車線の北側（電力公社沿い）に副道を設置し、既存の副道と接続する計画でシミュレーションを行った。



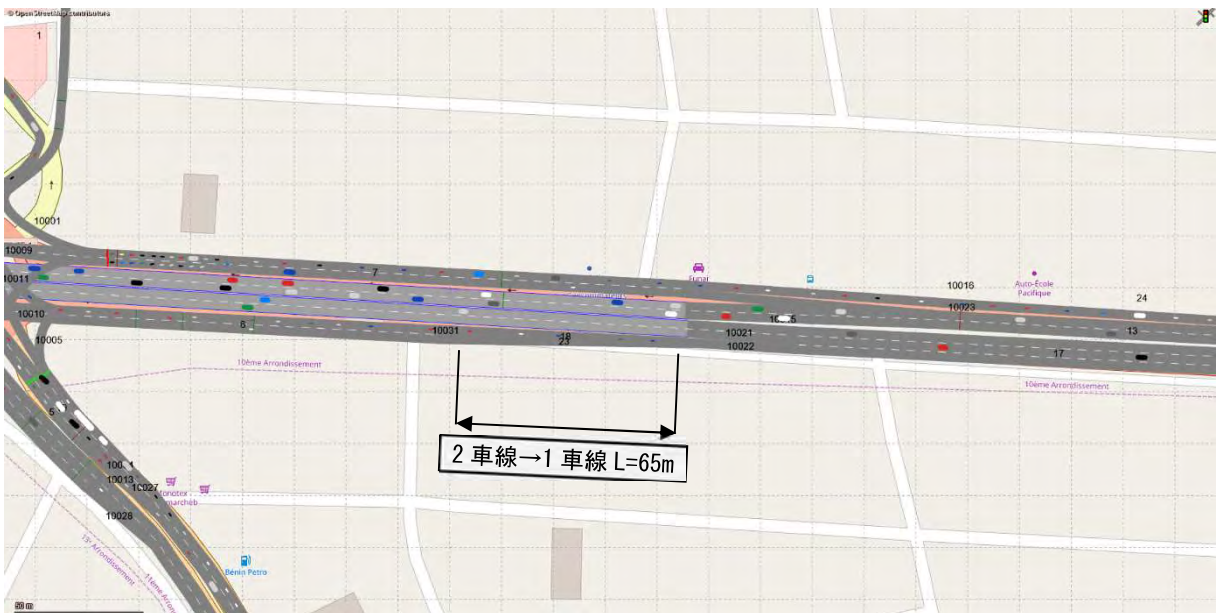


出典：JICA 調査団

図 3.7 フェーズ 2 供用時における交通シミュレーション画像（副道設置：起点部側）

**起点部：考察**

- ・ 側道部 2 車線の内、外側の車線を既存の副道とつなぐことによって、側道、本線のいずれでも渋滞は発生しなかった。
- ・ よって、フェーズ 2 を整備する際、西行の副道を設置することにより、本線合流部の渋滞軽減に効果があるため、フェーズ 2 実施時には副道設置を提案する。



出典：JICA 調査団

図 3.8 フェーズ 2 供用時における交通シミュレーション画像（副道設置：終点部側）

**終点部：考察**

- ・ 西→東行は側道部の車線数が 2 車線から 1 車線に絞り込まれ交通が輻輳するが、特に大きな渋滞は発生しなかった。

### 3-2-2-3 道路計画

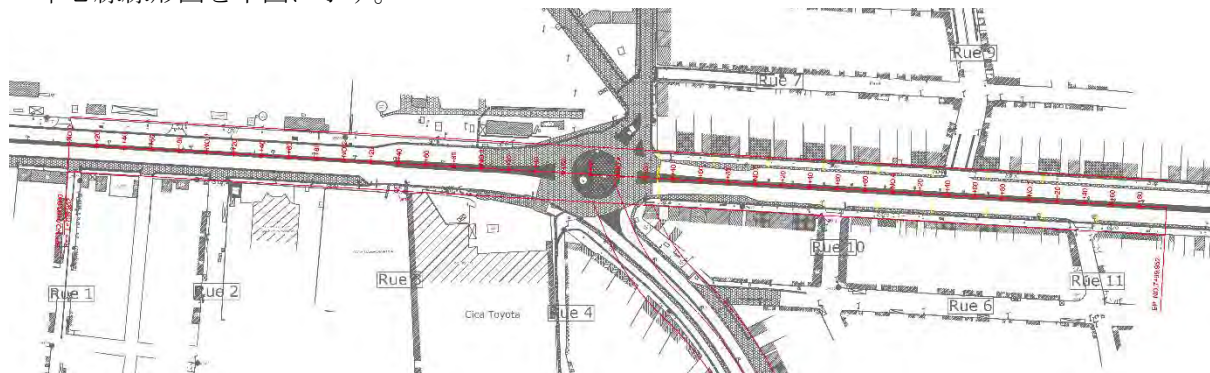
#### (1) 基本方針

「ベ」国における運用状況ならびに、フランス基準・日本基準などを総合的に判断した上で、先方政府との協議に基づいた安全性・走行性・道路規格に見合った計画を立案する。更に、沿道の使用状況などについて十分な把握を行い、利便性にも配慮した計画を立案する。

#### (2) 平面計画

平面線形の計画について、現況の本線線形をできるだけ優先する線形で中心線を設定した。なお、当該道路においては、上述したように道路用地幅として概ね40mの確保がなされており、本計画においてもそれを踏襲する計画とした。

中心線線形図を下図に示す。



出典：JICA 調査団

図 3.9 平面線形計画図

#### (3) 縦断計画

本線縦断計画について、立体交差区間におけるクリアランスを確保する計画とした。クリアランス条件を次表に示す。

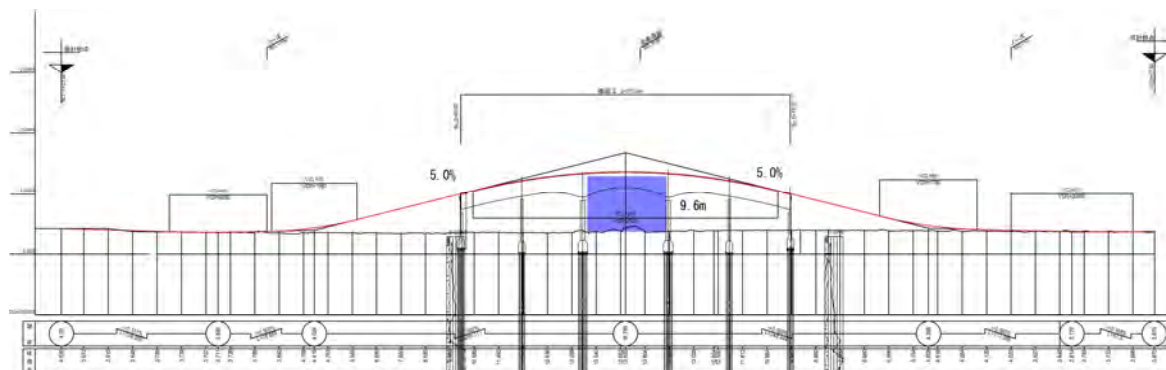
表 3.16 立体交差区間における縦断計画にかかるクリアランス条件

	【施工時必要クリアランス条件】	【供用時必要クリアランス条件】
建築限界	3.8 m（施工中のみ）	4.7 m
橋梁構造厚	4.2 m	4.2 m
施工時足場高さ/余裕幅	1.6 m	0.2 m
合計	<b>9.6 m</b>	9.1 m

出典：JICA 調査団

上述した施工時、及び供用後のクリアランス条件により、本縦断計画は9.6mのクリアランスを確保する縦断計画とした。

縦断計画図を下図に示す。

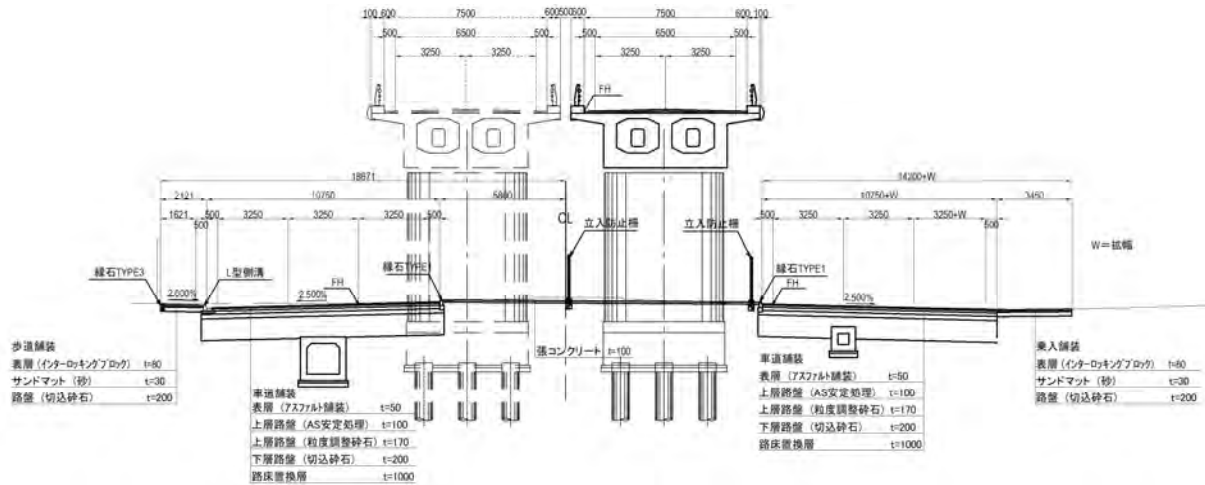


出典：JICA 調査団

図 3.10 縦断線形計画図

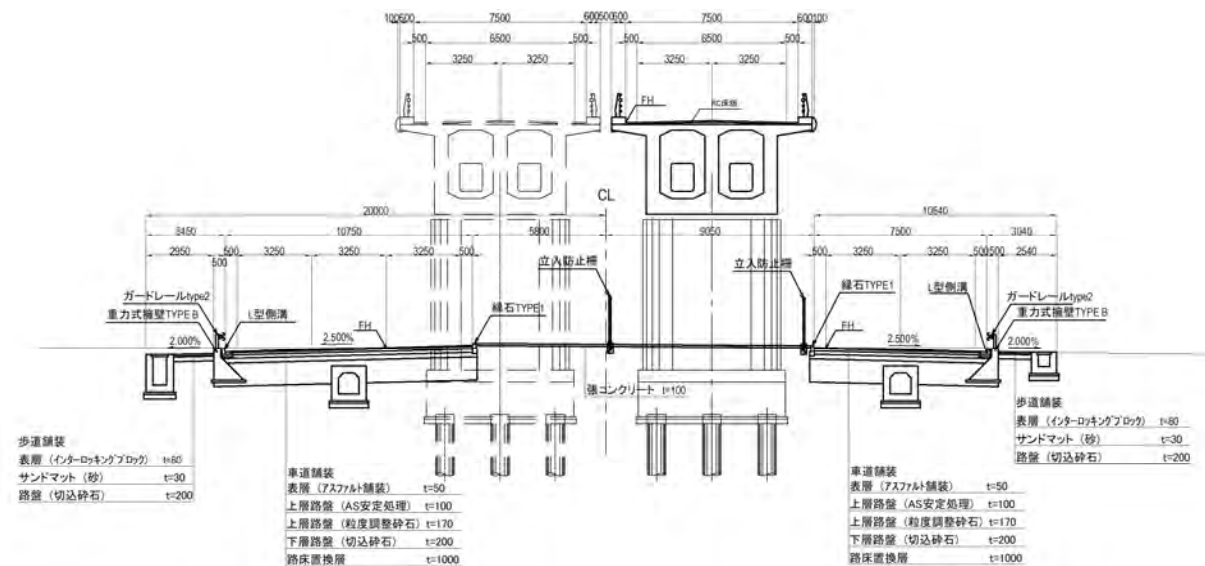
#### (4) 標準横断構成

現況沿道状況を踏まえ、交差点の西側・東側において、沿道へのアクセスを考慮して計画を行った。特に、東側区間においては多くの宅地・商店が連続している区間であるために、現況の沿道宅地高さに応じてアクセスを優先する計画とした。



出典：JICA 調査団

図 3.11 暫定 2 車線時の標準断面図（西側の本線、及び連結側道）



出典：JICA 調査団

図 3.12 暫定 2 車線時の標準断面図（東側の本線、及び連結側道）

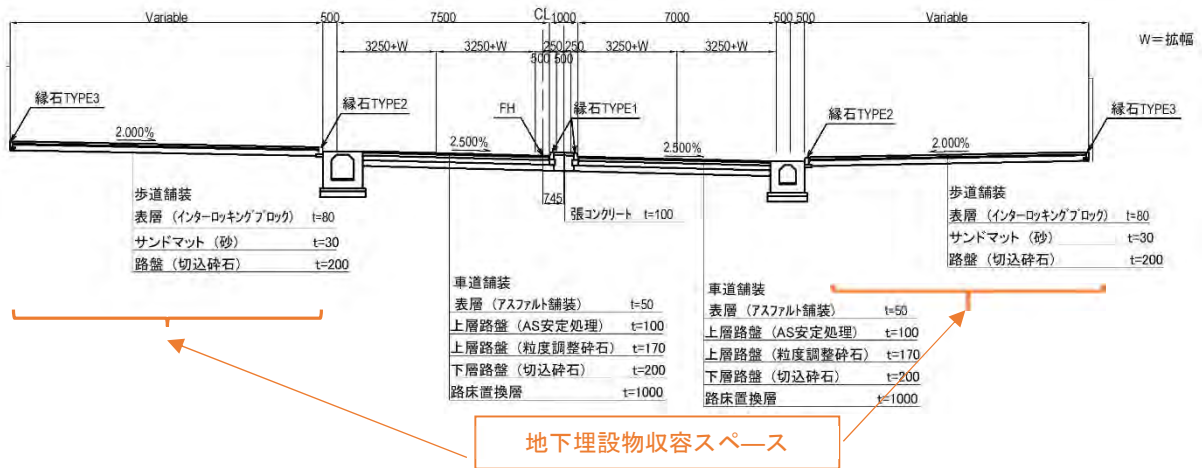
#### (5) 従道路（南）の計画

従道路（南）は、国際国道 2 号線に位置づけられていることから、東西方向と同規格の幅員を確保する。また、信号十字交差点の交差角や、橋長を短くするため、平面線形の改良を実施する。

その際、できる限り補償家屋等が生じないように、現況の道路用地幅内で計画する。また、現況用地内の歩道外側には、高圧線等の占用物が埋設されていることから、これらの収容スペースを確保し、移設等が生じないよう配慮する。また、排水側溝については、車道部に縦断側溝を設置し処理する計画とした。

次図に標準断面図（案）を示す。





出典：JICA 調査団

図 3.13 標準断面図（従道路（南））

(6) 従道路（北）の計画

1) 現状の運用形態

現在北側市道からベドコ交差点への流入は、交差点部での交通規制を避けるため、朝 6:00～9:00 まで流入規制がなされている。また、交差点へのアクセスは、Rue 10.111 からの流入に限られ、Rue 10.089 へは、流出のみとなっている。

以前は Rue 10.130 からベドコ交差点へ直接流入できたが、交通の錯綜を避けるため警察、CNSR、コトヌ市（道路管理者）が協議して、Rue 10.089 の交差点へ接続する区間を一方通行とし、さらに、交通バリアを設置し、北側へ迂回させて Rue 10.111 からベドコ交差点へ流入させることにした。



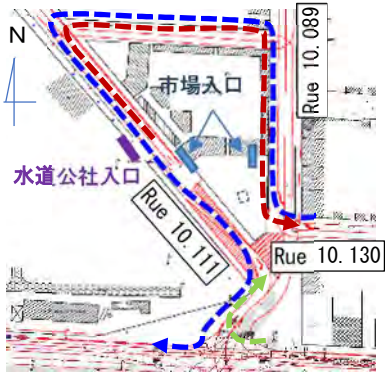
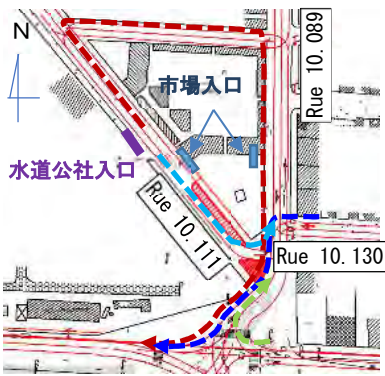

出典：JICA 調査団

図 3.14 北側市道の交通運用の状況

## 2) 運用形態の比較検討

こうした状況を踏まえ、北側市道の交差点への接続、及び交通運用形態について比較案を作成し、コトヌ市と協議を実施した。

表 3.17 北側道路運用形態の比較

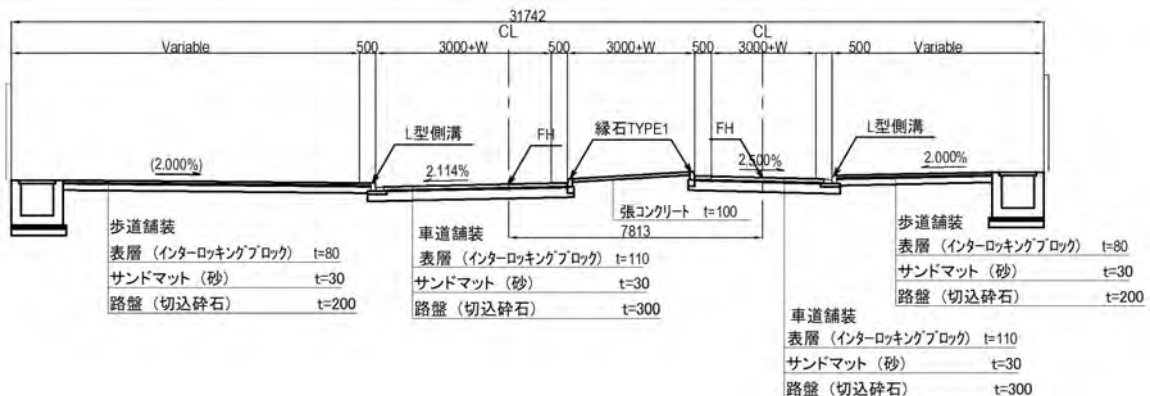
	計画案 1	計画案 2	計画案 3
平面図 (案)			
交通運用	交通運用形態については、現況と同様の形態とする。 (Rue 10.111 からのみ交差点に流入可能)	交差点へのアクセスは、東側の道路 (Rue 10.089) で集約させる。 Rue 10.111 からは、左折のみを可とする。	計画案 2 と同様に、交差点への流入は、Rue 10.089 に集約させ、Rue 10.111 からは、Uターン路を設け、流入させない (Uターン路については、小型車対応とする)。
長所・短所	・東側道路からは、交差点への流入ができないため、交通バリア等を設置して交通を分離する必要がある。	・Rue 10.130 から迂回をせずに交差点に流入することが可能となる。 ・Rue 10.111 の水道公社入口から交差点にアクセスする際に迂回が生じる。	・Rue 10.130 から迂回をせずに交差点に流入することが可能となる。 ・第 2 案に比べ、市道相互の交差が生じないため、交通の交差点への流入出がスムーズである。 ・Rue 10.111 の水道公社入口から交差点に流入する際に迂回が生じる。
評価	採用案		

出典：JICA 調査団

コトヌ市との協議結果により、現況の運用形態に最も近い計画案 1 を採用することになった。Rue 10.111 については、市場、並びに水道公社入り口の出入りを考慮し、一方通行規制を行う計画とする。

## 3) 標準断面構成

既設市道には、3.0m の歩道内に蓋付き U 型側溝が整備されており、右 (西側) については、水道施設の用地に近接し、用地補償を生じさせないようにするため、現況と同様に歩道内に側溝を設置する。



出典：JICA 調査団

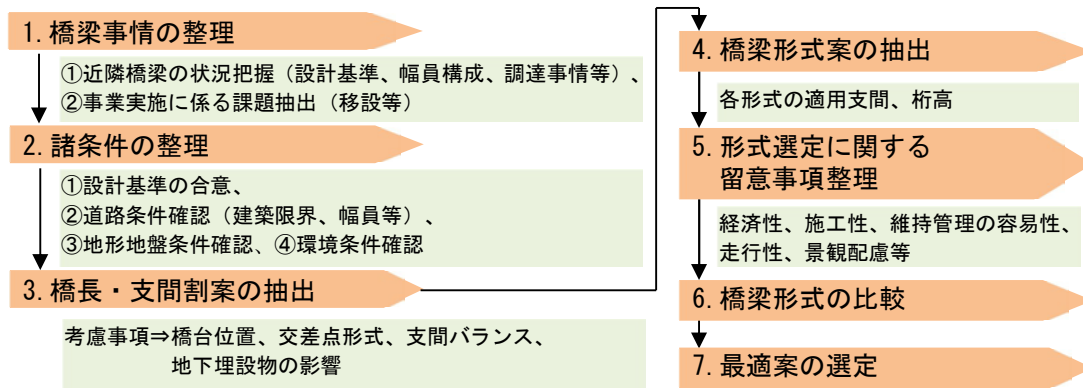
図 3.15 標準断面図 (従道路 (北))

### 3-2-2-4 橋梁計画

#### (1) 計画方針と設計ワークフロー

橋梁計画の方針として、改良後の信号交差点の交通を阻害しない中央支間長が確保できる橋梁形式を抽出した上で、比較検討を行い、支間バランス、経済性、施工性を考慮して決定する。また、基礎工は地質調査結果に基づき最適形式を決定する。

下図に橋梁形式の比較検討のフローを示す。



出典：JICA 調査団

図 3.16 橋梁設計のワークフロー

#### (2) 諸条件の整理

本橋梁計画で重要と考えられる設計条件を次表に整理する。

表 3.18 本橋梁計画で重要と考える設計条件

分類	項目	確認及び方針内容
交差条件	桁下空間	・建築限界 4.7m はテクニカルノートを交わし確定した。 ・施工時に吊り足場等の建築限界の制限を許すこととし、施工時は 3.8m にすることでテクニカルノートを交わし確定した。
	橋台位置 ⇒橋長	・高架橋による見通しの悪さを緩和するため擁壁区間の縮小化を基本とし、かつ、橋台の橋座部の点検のしやすさ等に配慮して橋台位置を決定する。 ⇒桁下高 2m 程度以上とすることをテクニカルノートに交わして確定した。
	橋脚数 ⇒支間	・下部工の工費の抑制のため、適用支間の中で支間を長くする案を基本とする。 ・交差点前後の橋脚の位置は、側道及び導流に橋脚フーチングにかからないように設定した。
施工条件	橋梁形式	・支保工による現場打ちのコンクリート橋及び片持ち架設によるコンクリート橋を比較し、支保工設置またはワーゲン設置に必要な桁下空間を確認する。 ⇒支保工架設は、交差点上で必要な構造高（支保工設置余裕＋上部構造高）を加味すると全体的に縦断が高くなり橋長が延びるため、支保工より必要構造高が小さい片持ち架設を採用した。
設計条件	活荷重	・道路橋示方書を適用する。（B 活荷重）
	地震荷重	・大きな地震がないため地震力は考慮しない。（近隣国コートジボワールと同様）
	温度変化	・日本基準（道路橋示方書）を適用する。
	制動荷重	・日本基準は 2.5t（車両 25t の 10%）、「ベ」国で汎用されるフランス基準は 30t（車両 1 台分）である。 ⇒安全側を採用し、フランス基準の 30t とする。 ⇒地震力を考慮しないためこれが下部工の決定ケースになり得る。
	衝突荷重	・交差点を跨ぐ橋梁であり交差する車両または側道を並走する車両が衝突する可能性があるため、衝突荷重を考慮する。衝突荷重、作用高さは道路橋示方書を適用する。 ⇒P1、P4 橋脚の衝突荷重は、側道進行方向（橋軸）100t、交差方向（直角）50t とする ⇒交差点を挟んで両側の P2、P3 橋脚は、並走交通／交差交通両方から衝突する可能性があるため、橋軸方向・直角方向とも衝突 100t とする。 ⇒地震力を考慮しないためこれが下部工の決定ケースになり得る。

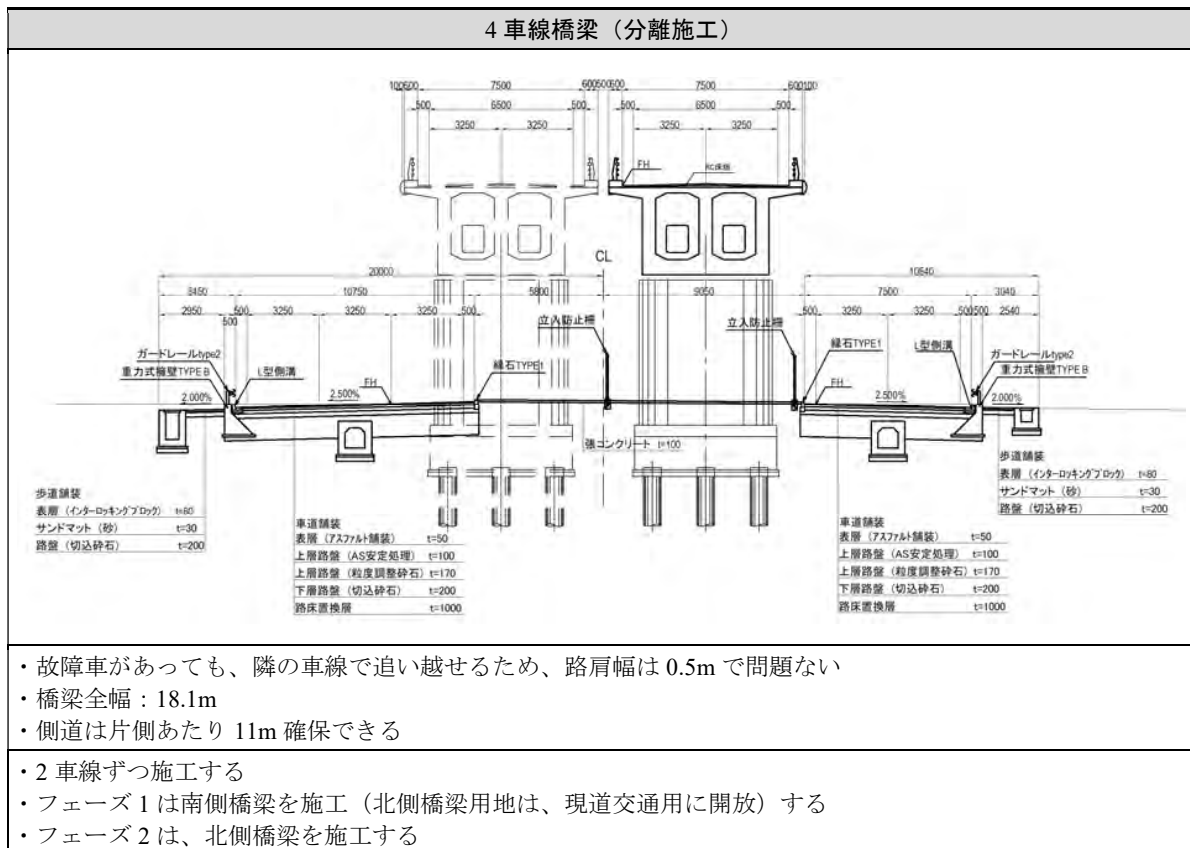
出典：JICA 調査団



設計基準は、テクニカルノートにて道路橋示方書を適用することを「ベ」国政府と合意している。道路橋示方書は、英語版が発刊されている 2012 年度版を用いる。

3-2-2-1 全体計画で示したように、本プロジェクトはフェーズ分けを行う方針である。したがって、上下線を分離構造とした橋梁の幅員構成（案）を次表に示す。上下線の間隔は、最終的に決定した橋梁形式（PC 連続箱桁）のフェーズ 2 の施工を考慮し、ワーゲン（移動作業車）の設置に必要な空間として 50cm 離している。

表 3.19 橋梁の幅員構成（案）

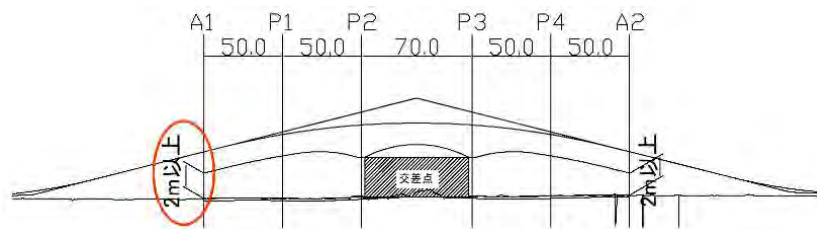


出典：JICA 調査団

### (3) 橋長・支間割案

#### 1) 橋台位置

ノーズ（本線と連結側道の合流端）から橋台背面までのアプローチ区間は、盛土によって道路両側の地域住民の視界が遮られ、往来も不可能になる。都市部の高架橋の場合、両側の見通し確保、風通しの観点から盛土区間を短くする計画が多く、本橋梁においても橋台位置はできる限り後ろに引く計画とする。ただし、橋台が低すぎると、支承部にゴミを捨てられる等、維持管理上の問題が考えられるため、桁下高 2m 程度以上とすることが多い。したがって、本橋梁も桁下高 2m 以上を基本とするが、後述する支間のバランスも考慮して決定する。橋台位置のイメージ図を下図に示す。



出典：JICA 調査団

図 3.17 橋台位置のイメージ

## 2) 中央支間長

改良後は信号交差点であり、交差点内に橋脚を設置するスペースはないため、交差点を1径間で跨ぐことになる。交差点内の停止線車両からの見通しを考慮するとともに、導流路にフーチングが掛からないように橋脚位置を決めた結果、支間長は70mとした。

## 3) 支間割計画

支間割は、中央支間長に対する側径間長の比率を0.7程度にすると、曲げモーメントのバランスが良く経済的になるため、1:0.7前後になるように以下の3案の支間割案を抽出した。

表 3.20 支間割案

	支間割案	橋台前面桁下高	採用案
支間割案①	2@50m+70m+2@50m=270m	A2で3.5m	○
支間割案②	2@52.5m+75m+2@52.5m=285m	A2で3.3m	
支間割案③	3@45m+70m+3@45m=340m	A2で1.7m	

注：A2は終点側の橋台（図3.20参照）

出典：JICA調査団

案③は橋長が長く橋脚が多いため不経済で、橋台前面桁下高が低くなりすぎるので不採用とする。案②は中央支間長を長くし支間バランスを調整した案であるが、中央径間長を長くすることで支点部の桁高が大きくなり計画高を上げる必要が生じ、案①と橋台位置の高さに違いが見られない。また、計画高が上がることで設計道路延長が長くなりメリットがないため不採用とする。案①は支間バランスが一般的な範囲に収まり、3案の中で最も橋長が短く経済的である。よって、支間割は①案を採用する。

支間割は、50m+50m+70m+50m+50m=270mとして、次項でPC連続箱桁橋（張出し架設）、鋼連続箱桁（トラッククレーン架設）の2案にて比較検討を行った。

## (4) 上部工形式の選定

### 1) 形式選定に係る留意事項

橋梁形式の選定にあたっては、構造的性、施工性、経済性等の評価を行った。評価における主な留意事項を以下に示す。

#### ① 構造的性

構造的性は、構造物の信頼性、耐久性の観点から評価する。

構造物の信頼性は、施工実績に基づいて評価する。過去に施工された同規模の橋種（施工実績）の数が多ほど構造的信頼性が高いと考えられる。

橋梁は耐久性が高いほど長期間の供用が可能となる。橋梁部位の中で、特に床版は、繰り返しの車両荷重を直接受けることによる疲労耐久性が問題となることが多い。

#### ② 施工性

施工性には、施工自体の難易度、施工時の品質管理の難易さおよび施工工期の3つの観点で評価する。

施工難易度は架設工法や橋梁の種類により異なり、比較的容易なのは固定支保工架設やクレーン架設である。難易度の高い架設工法としては、押出し工法や現場打ち張出し架設などが挙げられる。このため、適用される架設工法により評価を行う。また、現場が都市内であり、非常に交通量の多い場所であり、商業施設等も多いため、架設工法が周辺環境に与える影響を施工の難易さとして評価する。

施工時の品質管理は、工場あるいはヤード製作が可能な部材については、品質管理が容易であり、高品質なものを安定して供給することが可能となる。しかしながら、現場で製作する部材については、品質管理が難しく、高品質なものを安定して提供するためには、非常に高い品質管理を行う必要がある。このため、部材の製作場所によって評価を行う。

③ 経済性

施工工期については、慢性的に渋滞しているベドコ交差点における施工期間の短縮は周辺地区の更なる経済活動の促進を図る上で重要な指標である。

橋梁の維持管理容易性は、主桁部材の維持及び橋梁付属物の維持の2つの観点から評価を行う。

主桁部材の維持に関しては、コンクリートの劣化防止、鋼部材の防錆の観点で、再塗装は橋梁本体構造の寿命を延ばすために必要である。再塗装をしない場合、塗装が劣化した箇所から鋼材が腐食し、橋梁の補修などの大規模な修繕が必要となる。

橋梁付属物の取替えが必要な部品は伸縮装置、及び支承であり、伸縮装置は20年程度に1回、支承は40年程度に1回取り換えが必要となる。伸縮装置や支承の取り換えを行うためには費用がかかり、交通規制も伴うため、伸縮装置と支承が不要な構造を選定することが望ましい。

このため、伸縮装置・支承の有無に加えて、維持管理への配慮として、箱桁内への進入・伸縮装置や支承の点検や維持管理の容易さも含め評価する。

④ 景観性

ベドコ交差点は、沿線に商業施設も多く、コトヌにおける最も重要な道路の一つである。そのため、多くの市民が目にするようになる橋梁については、景観性について評価を行う。

2) 橋梁形式案の抽出

① コンクリート橋の形式選定

下表に、コンクリート橋における支間長と適用橋梁形式の関係を実績等からまとめた表を示す。この橋梁形式選定表を参考に、経済性と施工性を考慮し、「連続箱桁橋（張出し架設）」を選択する。

表 3.21 コンクリート橋適用橋梁形式表

橋梁形式	支間長 (m)																標準適用支間	桁高支間比 h/L (f/L)
	10	20	30	40	50	60	70	80	90	100	150	200	250					
連続桁	プレテン連結スラブ桁橋	■	■	■	■	■	■	■	■								5 ~ 24	1 / 14 ~ 24
	プレテン連結T桁橋		■	■	■	■	■	■	■								18 ~ 24	1 / 18 ~ 20
	プレテン連結Uコンボ橋			■	■	■	■	■	■								15 ~ 20	1 / 14 ~ 16
	ポステン連結T桁橋			■	■	■	■	■	■								20 ~ 45	1 / 13 ~ 18
	ポステン連結少主桁橋			■	■	■	■	■	■								25 ~ 45	1 / 14 ~ 19
	ポステン連結コンボ橋			■	■	■	■	■	■								25 ~ 45	1 / 13 ~ 17
	ポステン連結Uコンボ橋			■	■	■	■	■	■								40 ~ 60	1 / 16 ~ 18
連続箱桁	連続中空床版橋		■	■	■	■	■	■	■								20 ~ 30	1 / 22
	連続箱桁橋(固定支保工)			■	■	■	■	■	■								30 ~ 60	1 / 17 ~ 20
	連続箱桁橋(移動支保工)			■	■	■	■	■	■								30 ~ 45	1 / 17 ~ 20
	連続箱桁橋(押出し架設)			■	■	■	■	■	■	■	■	■	■	■	■	■	30 ~ 60	1 / 15 ~ 18
	連続箱桁橋(張出し架設)			■	■	■	■	■	■	■	■	■	■	■	■	■	50 ~ 110	1 / 15 ~ 35
	連続波形ウェブ箱桁橋(固定支保工)			■	■	■	■	■	■	■							30 ~ 60	1 / 17 ~ 20
	連続波形ウェブ箱桁橋(押出し架設)			■	■	■	■	■	■	■	■	■	■	■	■	■	30 ~ 60	1 / 15
	連続波形ウェブ箱桁橋(張出し架設)			■	■	■	■	■	■	■	■	■	■	■	■	■	50 ~ 110	1 / 15 ~ 35
	ラーメン橋	Tラーメン中空床版桁橋(固定支保工)		■	■	■	■	■	■	■								20 ~ 30
Tラーメン箱桁橋(固定支保工)				■	■	■	■	■	■								30 ~ 55	1 / 17 ~ 20
Tラーメン箱桁橋(張出し架設)				■	■	■	■	■	■	■	■	■	■	■	■	■	40 ~ 80	1 / 10 ~ 30
連続ラーメン箱桁橋(固定支保工)				■	■	■	■	■	■	■							30 ~ 55	1 / 17 ~ 20
連続ラーメン箱桁橋(張出し架設)				■	■	■	■	■	■	■	■	■	■	■	■	■	50 ~ 140	1 / 15 ~ 35
アーチ橋										■	■	■	■	■	■	70 ~ 250	( 1 / 4 ~ 8 )	
斜張橋										■	■	■	■	■	■	100 ~ 260	1 / 40 ~ 100	
エクストラード橋										■	■	■	■	■	■	100 ~ 200	1 / 30 ~ 60	

(注) ■ 一般的によく適用される範囲 ■ 比較的適用される範囲  
 参考文献:「11'デザインデータブック」(社) 日本橋梁建設協会、「コンクリート道路橋設計便覧」(社) 日本道路協会、「PC道路橋計画マニュアル」(社) プレストレストコンクリート建設業協会

出典: JICA 調査団

② 鋼橋の形式選定

下表に鋼橋における支間長と適用橋梁形式の関係を示す。この橋梁形式選定表を参考に、支間長 70m の適用橋梁を検討する。さらに、この橋梁形式選定表を参考に、経済性と施工性を考慮し、「連続非合成箱桁橋（トラッククレーン架設）」を選択する。

表 3.22 鋼橋適用橋梁形式表

橋梁形式	支間長 (m)																	標準 適用支間	桁高支間比 h/L (f/L)
	10	20	30	40	50	60	70	80	90	100	150	200	250						
プレ ス ト リ ト ン ガ ー ダ ー	連続非合成I桁橋																	30 ~ 60	1 / 16 ~ 22
	連続非合成箱桁橋																	40 ~ 80	1 / 20 ~ 30
	鋼床版I桁橋																	30 ~ 60	1 / 22 ~ 28
	鋼床版箱桁橋																	40 ~ 150	1 / 22 ~ 28
	少主桁単純I桁橋																	35 ~ 55	
	少主桁連続I桁橋																	35 ~ 70	1 / 15 ~ 20
	開断面箱桁橋																	50 ~ 80	
	箱桁・細幅箱桁橋(合成・PC床版)																	55 ~ 90	
鋼 橋	ラーメン橋(橋脚と剛結構造)																	50 ~ 130	
	ト ラ ス	単純トラス																55 ~ 90	1 / 7 ~ 9
		連続(ゲルバー)トラス																60 ~ 120	1 / 8 ~ 10
		合理化トラス																70 ~ 140	
	ア ー チ 系	ランガー桁橋																60 ~ 120	( 1 / 6 ~ 7.0 )
		逆ランガー桁橋																70 ~ 120	( 1 / 6.6 ~ 6.8 )
	ア ー チ 系	ローゼ桁橋																80 ~ 160	( 1 / 6.0 ~ 7.3 )
		逆ローゼ桁橋																70 ~ 180	( 1 / 6.0 ~ 7.3 )
		ランガートラス橋																120 ~ 150	( 1 / 6.8 ~ 6.9 )
		トラスランガー桁橋																80 ~ 140	( 1 / 6.8 ~ 6.9 )
		ニールセン桁橋																100 ~ 200	( 1 / 6.5 )
		無補剛アーチ橋																70 ~ 160	( 1 / 5.3 ~ 6.3 )
	斜張橋																130 ~ 400	1 / 4.7	
	吊橋(無補剛形式)																80 ~ 150		
吊橋(補剛形式)																150 ~ 1900	1 / 8.4		

(注) ■ 一般的によく適用される範囲 ■ 比較的適用される範囲

参考文献:「11」デザインデータブック(社) 日本橋梁建設協会、「コンクリート道路橋設計便覧」(社) 日本道路協会、「PC道路橋計画マニュアル」(社) プレストレストコンクリート建設業協会

出典: JICA 調査団

(5) 橋梁形式の比較

前出に抽出した「PC連続箱桁」、「連続非合成箱桁」について、構造的、施工性、経済性等の評価、比較検討を行った。下表に交差点橋梁形式比較表を示す。

表 3.23 交差点橋梁形式比較表

	PC連続箱桁 (張出し架設)	鋼連続箱桁 (トラッククレーン架設)
断面図		
構造的	<ul style="list-style-type: none"> <li>PC箱桁は、「ベ」国と周辺国を含め実績が多く、箱桁構造で耐久性も高い。</li> </ul> <p style="text-align: center;">○</p>	<ul style="list-style-type: none"> <li>鋼連続箱桁は、「ベ」国と周辺国での実績は少ないが国内の実績は多い。</li> </ul> <p style="text-align: center;">○</p>
施工性	<ul style="list-style-type: none"> <li>交差点への架設の影響を避けるために張出し式架設工法とする。交差点はワーゲン移動時のみ規制を行う。</li> <li>分離施工時、交差点の改修は南側先工施工時でも可。</li> <li>(上下分離施工) 工期：約23カ月 (片側のみ)</li> <li>* 南側開通後、北側を着工</li> </ul> <p style="text-align: center;">○</p>	<ul style="list-style-type: none"> <li>桁架設は夜間に行うものとし、北側桁架設時は、北側側道の通行止め、南側桁架設時は南側側道を交通止めにする事で対応する。</li> <li>既存交差点部に仮支柱を立てることから交差点交通に影響を及ぼす。</li> <li>既存交差点の信号交差点への改修は上下線の施工後となる。</li> <li>(上下分離施工) 工期：約24カ月 (片側のみ)</li> <li>* 南側開通後、北側を着工</li> </ul> <p style="text-align: center;">△</p>
経済性	○	△
維持管理性	<ul style="list-style-type: none"> <li>PC構造であり、施工時に品質管理を十分配慮することで維持管理性は非常に高くなる。</li> </ul> <p style="text-align: center;">○</p>	<ul style="list-style-type: none"> <li>主桁外面は重防食塗装を使用することで、少なくとも建設後30年は再塗装の必要はない。</li> <li>塗装塗替時は、足場を設置するため桁下建築限界の制限が生じる。</li> <li>RC床版の耐久性改善のため、PC床版及び合成床版があるが、コストは上昇する。</li> </ul> <p style="text-align: center;">△</p>
景観性	<ul style="list-style-type: none"> <li>変断面箱桁断面であり景観性は良い。</li> </ul> <p style="text-align: center;">○</p>	<ul style="list-style-type: none"> <li>都市内の景観に合わせた色彩が選択可能。</li> </ul> <p style="text-align: center;">○</p>
総合評価	推奨する ○	△

注：○（良い）、△（劣る）

出典：JICA 調査団



## (6) 下部工形式の検討

### 1) ユーティリティとの取り合い

下部工形式、形状寸法に係る条件として、地下埋設ユーティリティは移設を基本としており、下部工形式に制約は受けない計画である。

### 2) 橋台形式

下表に橋台形式選定の目安を示す。橋台形式は、構造高が 5m 以上で一般的用いられる鉄筋コンクリート逆 T 式橋台を採用した。

表 3.24 橋台選定の目安

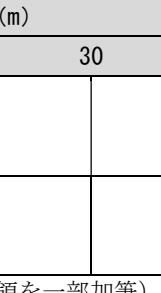
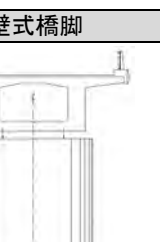
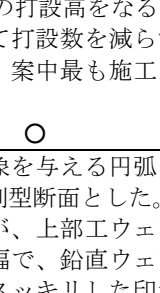
橋台形式	高 さ (m)			備考
	10	20	30	
重 力 式	3 5 			
逆 T 式	5 	15 		

出典： JICA 調査団（近畿地方整備局の設計要領を一部加筆）

### 3) 橋脚形式

橋脚は一般的な鉄筋コンクリート橋脚とする。市街地の橋梁であり、景観性も考慮して下表に示す 3 案を比較した。柱断面は市街地であり柔らかい印象を与える小判型断面を 3 案とも採用した。また柱に角が無い場合、万が一の車両衝突時にコンクリートの角落ちも防止できると考えている。経済性は柱高も低く規模的に差は無い場合、施工性等を考慮して壁式橋脚（小判断面）を採用した。

表 3.25 橋脚形式の比較

	張出し式橋脚	壁式橋脚	銀杏型橋脚
概略図			
構造的性	橋梁幅員が小さいため支承間隔も狭く、梁を設けるメリットがない。必要な柱幅を除くと張出し幅は 1m と小さい。 △	構造的にシンプルであり、弱点が無い。 ○	側面に曲線が入っているため、また壁自身が円弧断面であるため、配筋は複雑になる。 △
施工性	梁施工と柱施工を分ける必要があり、コンクリート打設回数が増える。配筋作業も複雑で、支保工も必要であり、施工日数が増える。 △	柱施工のみで、等断面であることから 1 回の打設高をなるべく大きく取って打設数を減らすことが可能。3 案中最も施工が早い。 ○	銀杏型部は特殊型枠が必要、かつ支保工が必要である。配筋作業も複雑であり、施工日数が増える。上部工張出し施工の柱頭部処理が煩雑である。 △
景観性	柔らかい印象を与える円弧を取り入れた小判型断面とした。梁の張出し幅が 1m と短く、壁幅を絞ったスレンダーなイメージが無い。梁が上下部工の一体感を邪魔している。 △	柔らかい印象を与える円弧を取り入れた小判型断面とした。壁幅が広いが、上部工ウェブ幅とほぼ同じ幅で、鉛直ウェブとマッチしてスッキリした印象である。 ○	柔らかい印象を与える円弧を取り入れた小判型断面とした。上部工ウェブが鉛直であり、脚の広がり goodness が連続しない。下部工だけ見ればきれいである。 ○
採用		採用	

注：○（良い）、△（劣る）

出典： JICA 調査団

(7) 基礎工形式の検討

1) ボーリング調査実施箇所

地質ボーリング調査（標準貫入試験）は4箇所実施されている。下表は調査概要である。（測点順に表記）

表 3.26 ボーリング調査結果一覧

番号	測点	左右離れ	孔口標高	深度	備考
SPT-3	No2+10	L14.3m（北側）	GH=3.40m	Dep.=59.55m	SONEB 給水塔付近
SPT-1	No2+40	R19.0m（南側）	GH=3.00m	Dep.=26.40m	CFAO 付近
SPT-4	No3+90	L12.8m（北側）	GH=4.00m	Dep.=59.45m	Roundabout 内
SPT-2	No5+50	R20.0m（南側）	GH=3.60m	Dep.=42.05m	支道入口

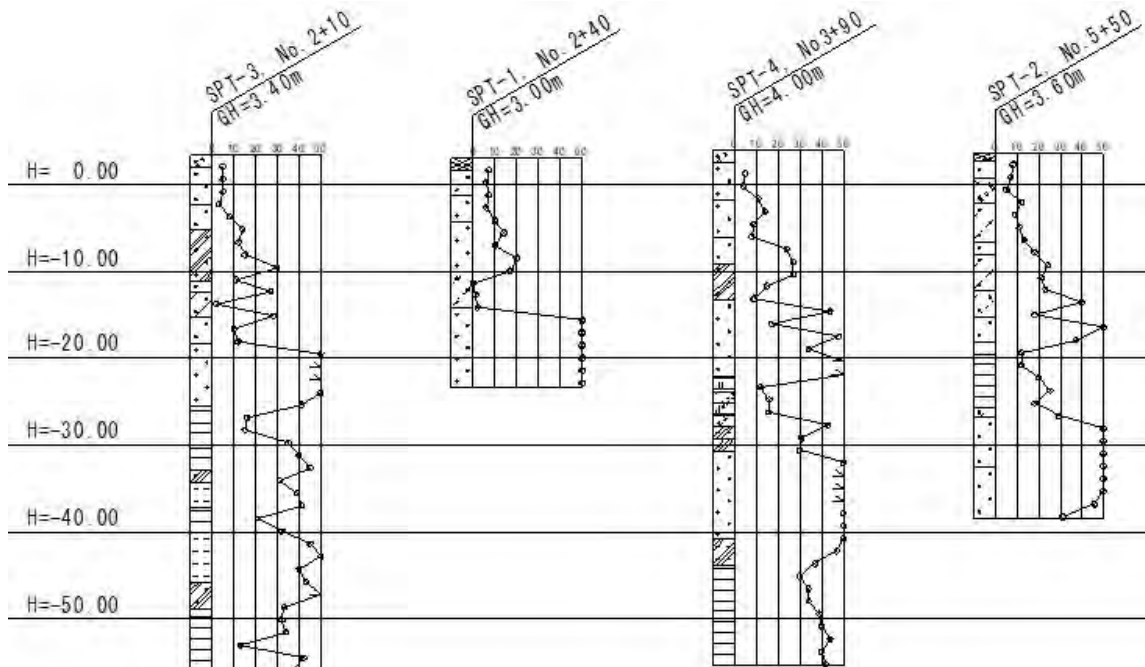
出典：JICA 調査団

2) 支持層の検討

地質調査ボーリング4本の標準貫入試験の結果を下図に示す。

これら4本のボーリング試験結果から以下のことが読み取れる。

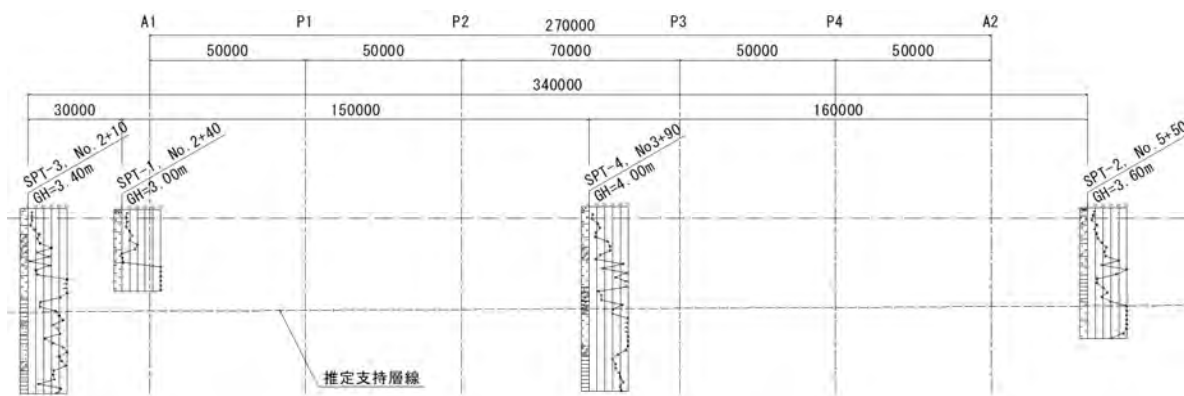
- ・ 起点側 SPT-1 及び SPT-3 では標高-15m~-20m で  $N>50$  の砂質土が存在するものの、SPT-3 によれば標高-25m 以深に弱い粘性土が存在する。  
⇒この  $N>50$  の砂質土層は、その層厚及び下位の粘性土より支持層になり得ない。
- ・ 終点側 SPT-2 及び SPT-4 では標高-15m で平均的に  $N>30$  の砂質土が存在するものの、所により  $N<30$  であるなどばらつきが大きい。また起点側同様、下位に弱い粘性土が存在する。  
⇒この砂質土層は、 $N$  値のばらつき及び下位の粘性土より支持層になり得ない。
- ・ 各ボーリングとも  $N<20$  の粘性土の下方は概ね  $N>30$  砂質土または  $N>20$  粘性土が続く。  
⇒SPT-3 では、 $H=-30m$  付近から粘性土主体の地層が続くが  $N>30$  以上（平均的には  $N\approx 35$ ）であり支持層とみなしてよいと考えられる。  
⇒SPT-4 及び SPT-2 では、 $H=-28m$  付近から  $N>30$  砂質土が続く。SPT-4 はその下に粘性土はあるが  $N>30$  以上である。よってこの砂質土層は支持層とみなしてよいと考えられる。



出典：JICA 調査団

図 3.18 地質調査結果

これらを踏まえて、設定した推定支持層線を次に示す。



出典：JICA 調査団

図 3.19 推定支持層線

### 3) 液状化

地表面より 20m までは N 値 < 20 の緩い砂地盤であり地表面水位も高いが、液状化を考慮する地震は想定されないため、液状化は考慮しない。

### 4) 杭種の選定

杭種は場所打ち杭を基本として検討を行う。鋼管杭や既成 RC・PC 杭は現地で製作できないことから輸入品となること、くい打ち機械も日本他から調達が必要である。材料だけでも現地調達可能な場所打ち杭とする。機材は日本から調達する想定で一般的なオールケーシング工法を基本として検討する。ただし、オールケーシング工法もリバース工法、アースドリル工法も設計計算上は同じである。

ベドコ交差点は交通の要衝で交通量が非常に多いため、工期短縮化は大きなテーマとしている。杭本数削減目的で高耐力、高支持力の回転杭、鋼管ソイルセメント杭が考えられるが、ボーリング調査の結果、以下の点でメリットがないことが分かったため検討から除外する。

表 3.27 杭種の選定

杭の種類	評価
回転杭	支持杭として用いられる。 杭先端支持を大きく取ることによって支持力を得、また本体が鋼管であることから高い耐力を有する。本橋では、支持層が深く中間層に N>50 層があり高い周面摩擦力が得られる。杭先端の寄与率が低くメリットがない。また、中間層が固く打ち抜けにくい。
鋼管ソイルセメント杭	支持杭として用いられる。 高い支持力の場所打ち杭と高い耐力の鋼管杭を組み合わせたもので、支持力は場所打ち杭と一緒であるが、想定される地震力が小さいため、支持力で杭本数が決まり高価な鋼管杭を入れるメリットがない。

出典：JICA 調査団

### 5) 杭径比較

比較条件として、フーチングの直角方向幅は橋梁の全幅を越えないこと及びフェーズ 2 の杭施工を考慮して杭配列を検討する。

- ・ フーチング幅は杭配列により決定される。杭間隔は道路橋示方書では、杭中心間隔で杭径の 2.5 倍以上離すこととしており、本橋は全幅が 8.7m と狭いことから  $\phi 1200$  の杭では直角方向に 2 列しか配列できない。杭配列の柔軟性からは径の小さい杭が有利である。
- ・ フェーズ 2 を実施した場合、フェーズ 1 橋梁に対して近接施工になる。土木研究所資料によれば既設杭と新設杭の杭側面間隔で杭径の 3 倍離すこととしており、径の小さい杭が配列上有利である。
- ・ また、地震力がないため、杭の応力は小さく、支持力を確保できれば良い。この点でも径の小さい杭が有利である。
- ・ 結果として、本橋では場所打ち杭  $\phi 800$  を採用する。

以下に橋台（代表して A1 橋台）の比較結果、続いて橋脚（代表して P2 橋脚）の比較結果を示す。比較は  $\phi 800$ 、 $\phi 1000$ 、 $\phi 1200$  を行った。

表 3.28 橋台の杭径比較

	φ 800	φ 1000	φ 1200
杭配列図			
杭諸元	L=33.00m N=12 本	L=33.00m N=8 本	L=33.00m N=6 本
数量	フーチング ; V= 73.1m <sup>3</sup> 場所打ち杭 ; V=199.1m <sup>3</sup> 合計 ; 272.2m <sup>3</sup> 鋼矢板数量 ; N=25 枚 (L=10.0m)	フーチング ; V= 84.8m <sup>3</sup> 場所打ち杭 ; V=207.3m <sup>3</sup> 合計 ; 292.1m <sup>3</sup> 鋼矢板数量 ; N=28 枚 (L=10.0m)	フーチング ; V=109.6m <sup>3</sup> 場所打ち杭 ; V=223.9m <sup>3</sup> 合計 ; 333.5m <sup>3</sup> 鋼矢板数量 ; N=32 枚 (L=10.0m)
考察	コンクリート数量はφ1000より少ないので経済的に有利である。 多くの杭で荷重を均等に受けるので構造的には良い。 II期線側はI期線よりの杭縁端を1500にすれば可能。	コンクリート数量はφ800より多いので経済性に劣る。 最適配列は千鳥配置になる。整列配列も可能だがフーチング長が大きく不経済になる。 II期線側はI期線よりの杭縁端を2000にすれば可能。	コンクリート数量は3案中最も多く経済性に劣る。 II期線との近接施工を考慮して杭縁端を大きく取っている。結果橋軸直角方向は2列になる。 II期線側はI期線よりの杭縁端を2300にすれば可能。
採用	採用		

出典：JICA 調査団

表 3.29 橋脚の杭径比較

	φ 800	φ 1000	φ 1200
杭配列図			
フーチング杭諸元	フーチング厚 2000mm L=32.00m N=12 本	フーチング厚 2000mm L=34.00m N=9 本	フーチング厚 2200mm L=37.00m N=6 本
数量	フーチング ; V= 89.9m <sup>3</sup> 場所打ち杭 ; V=193.0m <sup>3</sup> 合計 ; 282.9m <sup>3</sup> 鋼矢板数量 ; N=86 枚 (L=8.5m)	フーチング ; V= 91.0m <sup>3</sup> 場所打ち杭 ; V=240.3m <sup>3</sup> 合計 ; 331.3m <sup>3</sup> 鋼矢板数量 ; N=88 枚 (L=8.5m)	フーチング ; V= 99.5m <sup>3</sup> 場所打ち杭 ; V=251.0m <sup>3</sup> 合計 ; 350.5m <sup>3</sup> 鋼矢板数量 ; N=88 枚 (L=10.0m)
考察	コンクリート数量は最も少なく経済的に有利である。 交差点導流にフーチングは掛からない。 II期線側の杭配置は問題ない。	コンクリート数量が多いので経済性に劣る。 交差点導流にフーチングは掛からない。 II期線側の杭配置は問題ない。	橋軸方向フーチング長が大きく、交差点導流にフーチングが掛かる。クリアするためには、中央支間長を延ばす必要があり、経済的に明らかに不利である
採用	採用		

出典：JICA 調査団

### 3-2-2-5 排水計画

#### (1) 設計条件

##### 1) 基本方針

当該交差点部においては、集中的な降雨時に交差点内にて冠水する状況が発生している。そのために十分な気象条件の把握を基にした排水施設規模の立案と効率的な排水施設の計画を行う。また、整備範囲内より流末までの必要な排水整備においては必要に応じて先方政府へ提言する。

##### 2) 設計基準

「ベ」国カウンターパートとの協議により確認した結果、「ベ」国には設計基準は存在せず通常的设计については、フランス基準を基に行われている。

カウンターパートとの継続協議の結果、日本の排水工指針に基づいた計画実施で問題無いことを確認したため、本設計は排水工指針により実施された。

##### 3) 降雨確率年

降雨確率年の設定に関しては、排水工指針の考え方、及びフランス基準の考え方を比較し、当該地域の特性も踏まえて決定された。

決定に際しての留意点を以下に示す。

- ・ 当該地域においては、冠水被害が慢性化しており留意が必要である。
- ・ 当該道路管理者に対するメンテナンスについては十分な対応が出来ているとを言いたいために、余裕のある設計が望ましい。
- ・ 周辺の排水路・道路排水設計については、フランス基準により実施されている。

上記留意点を考慮し、下表に示すように本件の排水設計においては、**10年確率年**を採用することが望ましいと考え、採用することとした。

表 3.30 設計確率年

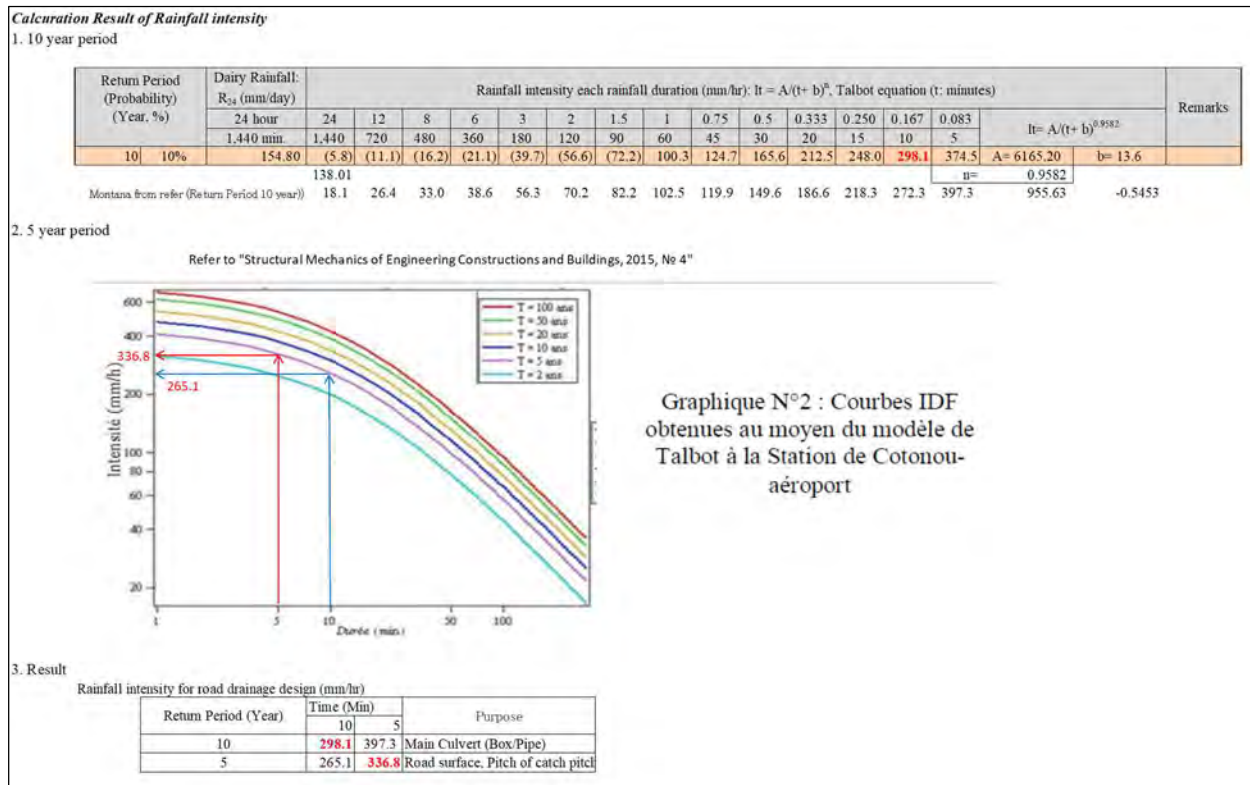
	排水工指針	フランス基準 (SETRA)
道路路面排水	3年	<b>10年</b>
道路横断施設	5年、7年、10年	
		採用

出典：JICA 調査団

## (2) 降雨強度

「ベ」国における設計ガイドラインは存在しないために、設計に必要となる設計降雨強度については、コトヌ市空港観測所により入手した過去の降雨データを基に算出する。

前述の入手したデータに基づいて、下図に示す算出方法により降雨強度を算出する。



出典：JICA 調査団

図 3.20 降雨強度の算出

上記の算出方法により、10年確率年における降雨強度を次表に示す。

表 3.31 設計降雨確率年

確率年 (年)	設計降雨強度 (mm/h)		利用施設
	到達時間 10 分	到達時間 5 分	
10	298.1	397.3	道路排水施設全般

出典：JICA 調査団



### (3) 集水域及び集水ネットワーク

現況の排水ネットワークを下図に示す。本計画では基本的に、現況ネットワークを踏襲した計画を行うこととした。



出典：JICA 調査団

図 3.21 現況排水ネットワーク図

### (4) 流末及び排水ネットワーク

本計画範囲内（及び影響範囲）における排水ネットワークを下図に示す。



出典：JICA 調査団

図 3.22 計画排水ネットワーク図

### (5) 排水計画

先に記述した基本計画を基に、当該プロジェクトエリアでの道路排水施設の配置計画を行った。

#### 1) 設計条件の整理

##### ① 流出量の算出

流出量は以下に示す合理式により算出を行った。

$$Q = \frac{1}{3.6 \times 10^6} \times C \times I \times A$$

ここで、Q：流出量（m³/s）、C：流出係数（市街地を仮定：C=0.9）、  
I：降雨強度（mm/h）、A：集水面積（m²）

② 通水量の計算式

通水量は以下の式により算出を行った。

$$Q = A \times V$$

ここで、Q：通水量（m<sup>3</sup>/s）、A：通水断面積（m<sup>2</sup>）、V：平均流速（m/sec）

なお、平均流速はマンニングの公式により求める。

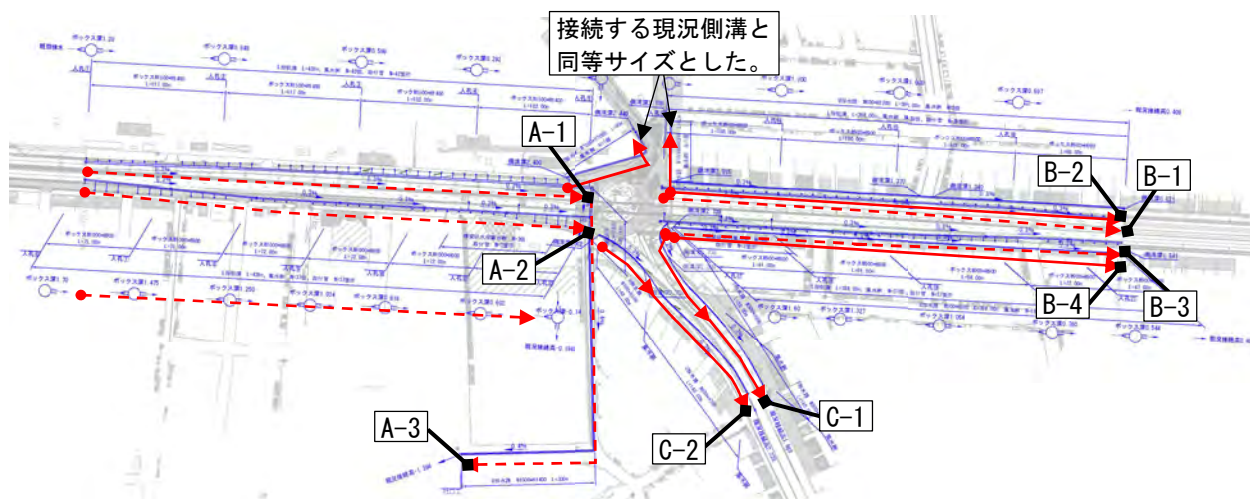
$$V = \frac{1}{n} \times R^{\frac{2}{3}} \times i^{\frac{1}{2}}$$

ここで、V：平均流速、R：径深【通水断面積÷潤辺長】（m）、

i：水面勾配、n：粗度係数（現場打ちコンクリートを仮定：n=0.015）

2) 検討結果

検討結果を以下に示す。



出典：JICA 調査団

図 3.23 検討図

表 3.32 検討結果一覧表

流末位置	照査箇所	累加集水面積	設計降雨強度	総流出量	通水断面チェック	通水断面積	径深	水路勾配	流速	満流通水量	判定	摘要
		A m <sup>2</sup>	γ mm/h	Q m <sup>3</sup> /s	W (mm) x H (mm)	A' m <sup>2</sup>	R m	i %	V m <sup>3</sup> /s	Q <sub>0</sub> m <sup>3</sup> /s	Q ≤ Q <sub>0</sub>	Q <sub>0</sub> /Q
A-1	西区間/ 北側ボックス	46,400	298.1	3.458	1,500x1,400	1.680	0.449	0.4	2.473	4.155	OK	1.2
A-2	西区間/ 南側ボックス	15,400	298.1	1.148	1,000x900	0.720	0.295	0.3	1.618	1.165	OK	1.0
A-3	西区間/ 横断ボックス	61,800	298.1	4,606	1,500x1,400	1.890	0.470	0.4	2.459	4.818	OK	1.0
B-1	東区間/ 本線ボックス	12,750	298.1	0.950	900x900	0.648	0.277	0.3	1.551	1.005	OK	1.1
B-2	東区間/ 側道 U 型側溝	10,220	298.1	0.762	600x1,200	0.576	0.229	0.3	1.365	0.786	OK	1.0
B-3	東区間/ 本線ボックス	12,750	298.1	0.950	900x900	0.648	0.277	0.3	1.551	1.005	OK	1.1
B-4	東区間/ 側道 U 型側溝	2,220	298.1	0.165	500x500	0.200	0.154	0.3	1.048	0.210	OK	1.3
C-1	交差道路/ 東側 U 型側溝	7,800	298.1	0.581	800x800 *1	0.512	0.246	0.3	1.434	0.734	OK	1.3
C-2	交差道路/ 西側 U 型側溝	3,800	298.1	0.283	600x600 *2	0.288	0.185	0.3	1.184	0.341	OK	1.2

\*1：可変側溝のために設計サイズ表記は、800×900 とする。

\*2：可変側溝のために設計サイズ表記は、600×700 とする。

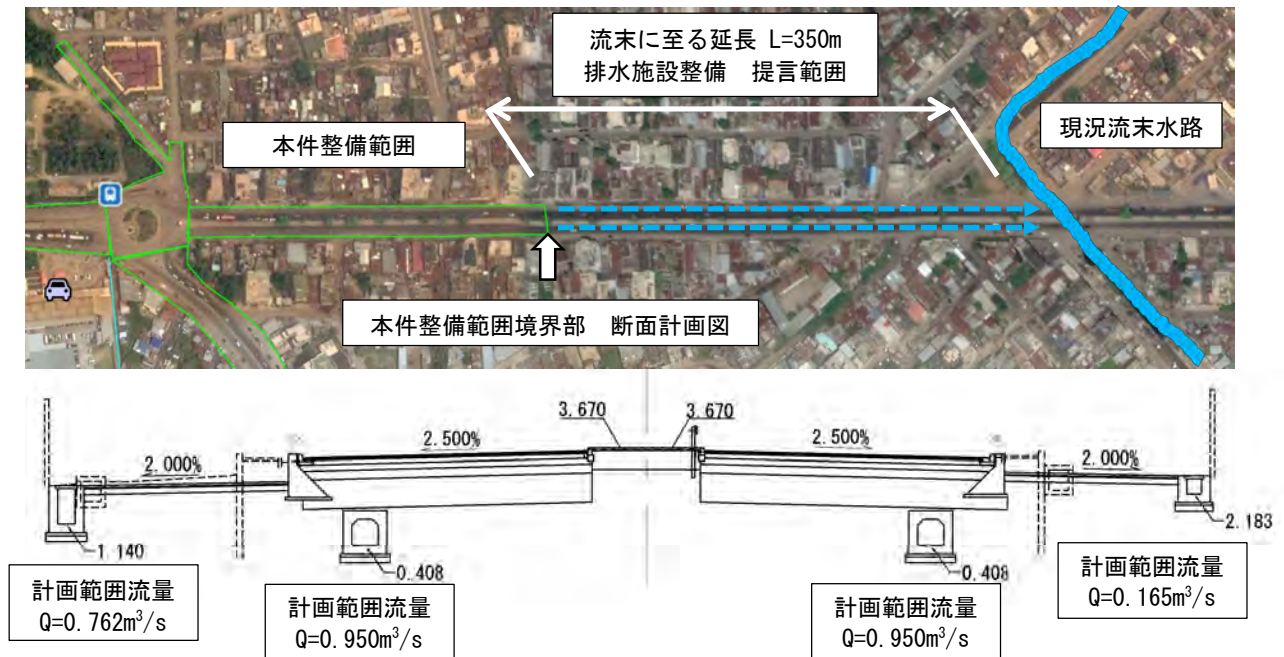
出典：JICA 調査団



(6) 本案件対象範囲外への流末処理及び排水施設整備の必要性の提言

東側流末及び南側流末への排水計画においては、流末とする現況施設までの区間が本件における整備対象範囲外となるために、本案件における計画を踏襲した上での、先方政府による整備が実施不可欠となる。

1) 東側流末



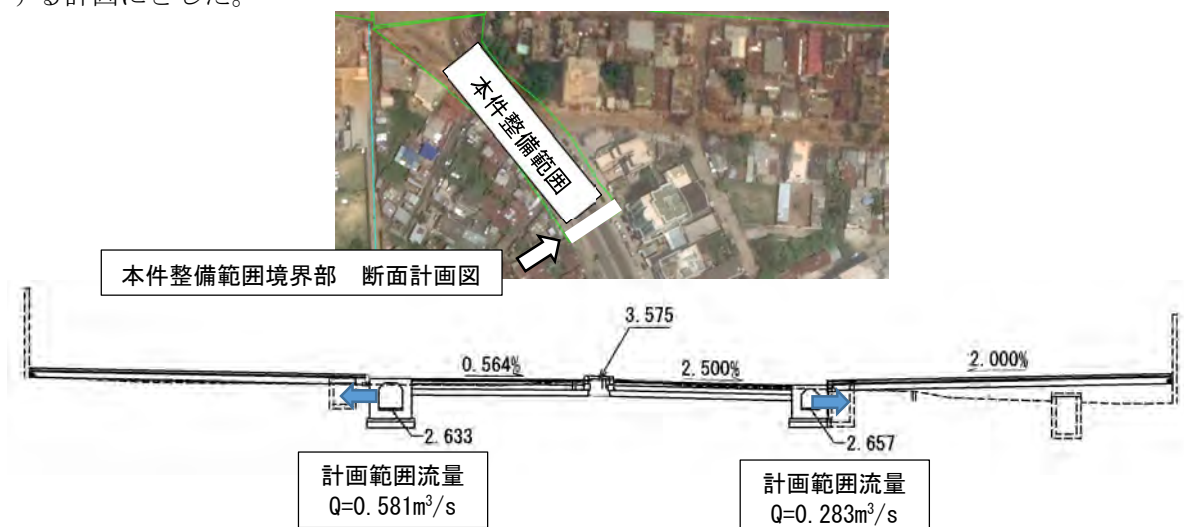
注：実線：計画、破線：現況  
出典：JICA 調査団

図 3.24 「ベ」国により必要となる排水整備計画の概要

上図のように、本件整備範囲より流末水路までの約 350m 区間については「ベ」国側負担により、本件により算出された計画範囲流量に基づく必要な排水整備の実施が不可欠である。

2) 交差点 南側流末

交差点南側における現況排水設備との接続は、以下のように現況整備済み側溝へと接続し処理する計画にとした。



注：実線：計画、破線：現況  
出典：JICA 調査団

図 3.25 排水流末接続計画

ただし、上図に示すように計画範囲内において算出された計画範囲流量を考慮した上で、「ベ」国にて整備済み排水施設に対して、流末までの処理能力が妥当であるかについての検証については、必要であり、実施を提言する。

### 3) 西側区間整備範囲 流末処理

西側範囲の路面排水に対する流末は、以下に示すように現況湿地帯へと導水することを、現況の処理系状態を踏襲し計画した。



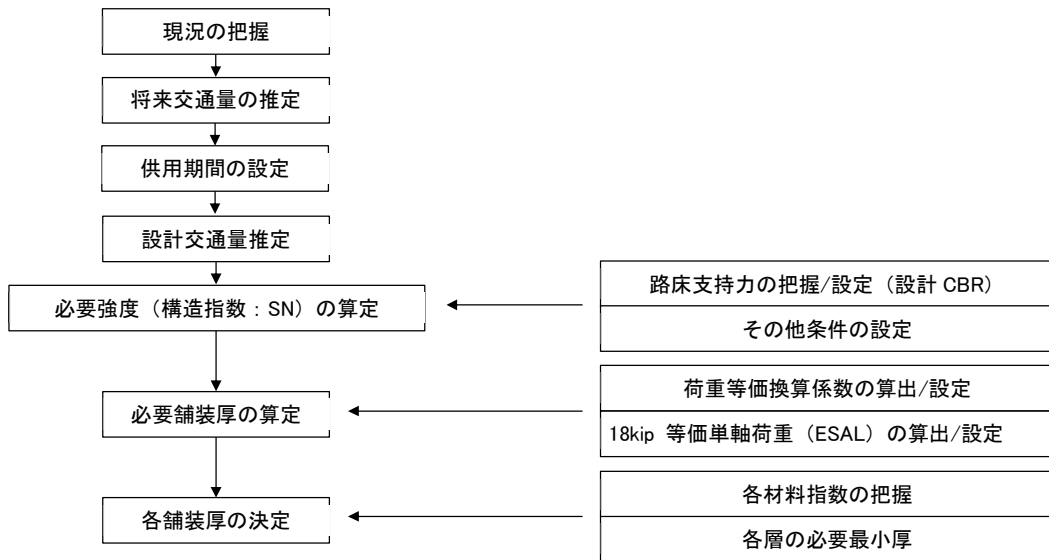
出典：JICA 調査団

図 3.26 排水流末接続計画

### 3-2-2-6 舗装計画

#### (1) 計画方針と設計ワークフロー

現況交差点部の舗装はインターロッキングブロック舗装であるが、本計画では、先方政府の要望、及び連続する単路部の舗装構成と従道路（南）の現況舗装がアスファルト舗装であるため、アスファルト舗装による整備とする。



出典：JICA 調査団

図 3.27 舗装設計のワークフロー

## (2) 舗装設計

### 1) 設計手法

舗装構造は、AASHTO 舗装設計基準に基づいて設計を行うものとする。

AASHTO 舗装設計基準においては、舗装構造に対する構造指数（Structural Number、以下「SN」という。）を定めた後、その設計 SN に対応する耐荷能力を有する舗装各層の厚さを求める。

SN は、以下の経験式により定義される。

$$\log_{10}(W_{18}) = Z_R \times S_0 + 9.36 \times \log_{10}(SN + 1) - 0.20 + \frac{\log_{10}\left(\frac{\Delta PSI}{4.2-1.5}\right)}{0.40 + \frac{1.094}{(SN+1)^{5.19}}} + 2.32 \times \log_{10}(M_R) - 8.07$$

ここで、 $W_{18}$ ：18kip（≒8.16t）等価単軸荷重の予測荷重数、 $Z_R$ ：標準偏差、

$S_0$ ：設計交通量予測及び設計終局供用性指数における交通量予測の際の全標準誤差、

$\Delta PSI$ ：初期設計供用指数  $P_0$  及び設計終局供用性指数  $P_t$  との差、

$M_R$ ：レジリエント係数（psi）、 $SN$ ：設計用構造指数

### 2) 設計期間

18kip 等価単軸荷重の予測荷重数（ $W_{18}$ ）は、フェーズ 1 の供用開始後の 2024 年から 2043 年の 20 年間で設計期間とした交通量に基づき算出される。

設計期間については、以下の理由から 20 年間とした。

- ・ アフリカ諸国において、類似案件では多くの場合 20 年間で設計が実施されている。
- ・ AASHTO において、基本となる設計期間は 20 年と記されている。
- ・ 本邦基準（舗装設計便覧）においても、標準設計期間は 20 年と記されている。

なお、C/P との協議においても、設計期間については 20 年として要請を受けた。

### 3) 将来交通量

将来交通量推計結果より整備完了から 20 年後までの累積交通量を以下に示す。

表 3.33 車種別将来交通量の推計（20 年）

(台)

方向	乗用車	バス	トラック	トレーラー	方向	乗用車	バス	トラック	トレーラー
西→東	172,646,346	1,089,525	2,599,895	7,532,505	東→西	138,814,519	1,037,330	3,321,500	8,621,300
西→南	91,297,564	187,610	995,720	328,135	東→南	14,649,207	44,530	88,330	44,530
西→北	1,313,338	0	0	11,315	東→北	900,227	0	21,535	33,580
方向	乗用車	バス	トラック	トレーラー	方向	乗用車	バス	トラック	トレーラー
南→西	94,786,508	159,505	761,390	193,450	北→西	2,560,680	0	34,310	10,585
南→東	2,946,257	10,585	22,630	0	北→東	1,358,188	0	10,950	23,725
南→北	5,476,757	0	10,585	10,585	北→南	2,173,096	0	11,315	0

出典：JICA 調査団

### 4) 等価単軸荷重係数

現地調査で実施された軸重調査の結果をもとに、トラック及びトレーラーに対する 1 台当たりの ESAL 値（Equivalent Single Axle Load）について、下図に示すように実際の交通状況により算定し、その結果を舗装設計へ反映させた。

表 3.34 等価単軸荷重係数

分類	乗用車	バス	トラック			トレーラー			
			2軸	3軸	4軸	5軸	6軸	7軸	
軸数			2軸	3軸	4軸	5軸	6軸	7軸	
サンプル数 (台)			186	137	69	267	244	83	
平均 ESAL 値			0.9542	1.7809	2.6710	5.4235	6.6832	4.6993	
ベドコ交差点の交通量 (台/日)			588	327	113	660	708	0	
採用 ESAL 値	0.0047	0.8338	1.2496			5.8157			

注：平均 ESAL 値 = (Σ (軸重 (t) / 8.16 (t) ) ^4) / サンプル数 (台)

出典：JICA 調査団

## 5) 等価単軸荷重の予測載荷数

以下に、18kip 等価単軸荷重の予測載荷数をまとめる。

表 3.35 等価単軸荷重の予測載荷数

	本線	従道路	連結側道
18kip等価単軸荷重	52,720,479	3,429,118	3,814,057

注： $W_{18} = \Sigma$ （設計交通量 \* ESAL 値 \*  $D_D$  \*  $D_L$ ）、方向別分布係数  $D_D = 1.0$ 、車線別分布係数  $D_L = 0.9$   
出典：JICA 調査団

## 6) 諸係数の設定

### ① 標準偏差 ( $Z_R$ )

標準偏差 ( $Z_R$ ) を下表に示す。

表 3.36 標準偏差 ( $Z_R$ )

	本線	従道路	連結側道
信頼性, R (%)	90	85	80
標準偏差, $Z_R$	-1.282	-1.037	-0.841

出典：AASHTO 舗装設計基準

### ② 設計交通量予測及び設計終局供用性指数における交通量予測の際の全標準偏差 ( $S_0$ )

アスファルト舗装における設計交通量予測、及び設計終局供用性指数における交通量予測の際の全標準偏差 ( $S_0$ ) は 0.45 とする。

### ③ 初期設計供用性指 $P_0$ 及び設計終局供用性指数 $P_t$ との差 ( $\Delta PSI$ )

初期設計供用性指  $P_0$ 、及び設計終局供用性指数  $P_t$  との差 ( $\Delta PSI$ ) を下表に示す。

表 3.37 初期設計供用性指  $P_0$  及び設計終局供用性指数  $P_t$  との差 ( $\Delta PSI$ )

	本線	従道路	連結側道
$P_0$	4.2	4.2	4.2
$P_t$	2.5	2.0	2.0
$\Delta PSI (P_0 - P_t)$	1.7	2.2	2.2

出典：AASHTO 舗装設計基準

### ④ レジリエント係数 (psi) ( $M_R$ )

レジリエント係数 (psi) ( $M_R$ ) は、以下の式により求められる。ここで路床土の CBR 値は、地質調査などの結果より、本計画では、「8」と設定する。

$$\text{Log}_{10} \text{レジリエント係数}(\text{psi})(M_R) = 1,500 \times \text{CBR} = 1,500 \times 8 = 12,000$$

## 7) 路床置き換え及び設計 CBR の設定

本計画箇所においては、現道拡幅車道部分の改良区間であり現地盤は十分に締め固められているとの判断もあるが、他方で地下水位が若干高い地域でもある。また現況道路より拡幅整備する範囲も多い。そこで、施工時及び施行後の維持管理に考慮した上で、路床の置き換えにより明確な地盤構築を行う事により、供用開始後の不測の事態へのリスクを低減する事が望ましいと判断した。路床の置き換え厚さは、路盤として評価される最低限の 1m を採用する事とした。

更に、置き換え後の設計 CBR8%については、当地における材料実績などを考慮し設定した。

### (3) 検討結果

以上の諸条件を基にし、道路種別・機能別に最適な舗装構成を検討した。以下に、検討結果を示す（詳細は添付資料）。

① 車道の舗装構成

表 3.38 本線及びアプローチ区間の舗装構成

アスファルトコンクリート舗装		
SN 値	5.4	
表層	AS	4 cm
基層	AS	5 cm
上層路盤	AS 安定処理	18 cm
	粒調碎石	20 cm
下層路盤	切込碎石	30 cm
舗装 総厚	77 cm	
路床置換層 (CBR=8%)	100 cm	

出典：JICA 調査団

表 3.39 連結側道、交差点部及び従道路の舗装構成

アスファルトコンクリート舗装		
SN 値	3.4	
表層	AS	5 cm
上層路盤	AS 安定処理	10 cm
	粒調碎石	17 cm
下層路盤	切込碎石	20 cm
舗装 総厚	52 cm	
路床置換層 (CBR=8%)	100 cm	

出典：JICA 調査団

連結側道・交差点部・従道路については、大きく SN 値に差異が無いことと、連続した維持管理が必要であることを考慮し、同一な舗装構成での計画とすることが望ましい。

② 歩道の舗装構成

- ・ 歩道部及び歩道乗り入れ部の表層厚さ（インターロッキングブロック厚）は、現地におけるインターロッキングブロックの調達事情を調査した結果として、調達が容易であり一般的に採用されている厚さを採用する事とした。
- ・ サンドマット及び路盤厚については、整備後の維持管理などを鑑みて、周辺細街路にて実施されている舗装構成をヒアリングより確認した上で、本計画に採用した。
- ・ 交差点北側の細街路整備範囲については、現況舗装構成との連続性及び東西道路交通との視覚的な差別化の観点より、インターロッキングブロック舗装を採用する事とした。なお、舗装構成については接続する現況インターロッキング舗装と同一として、維持管理の容易さに考慮した。

表 3.40 歩道部の舗装構成

インターロッキングブロック舗装		
表層	インターロッキングブロック	8 cm
サンドマット	砂	3 cm
路盤	切込碎石	20 cm
舗装 総厚	31 cm	

出典：JICA 調査団

表 3.41 乗り入れ部及び北側細街路の舗装構成

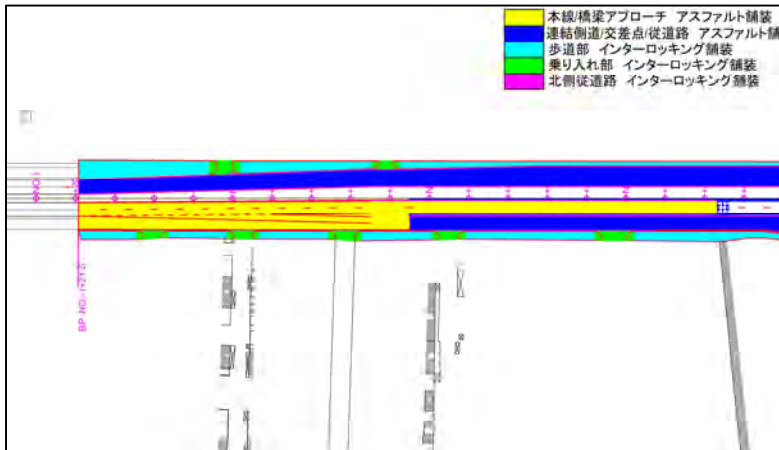
インターロッキングブロック舗装		
表層	インターロッキングブロック	11 cm
サンドマット	砂	3 cm
路盤	切込碎石	30 cm
舗装 総厚	44 cm	

出典：JICA 調査団



(4) 舗装区分図

下図に、舗装構成の区分図を示す。



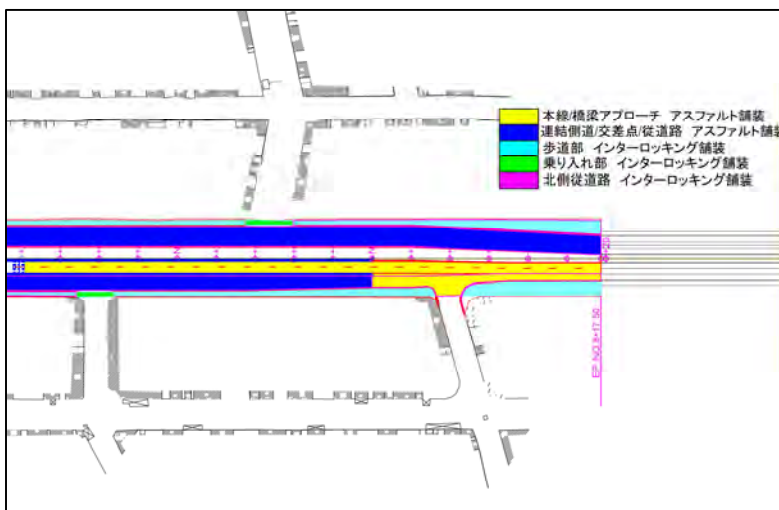
出典：JICA 調査団

図 3.28 舗装区分図 (1/3)



出典：JICA 調査団

図 3.29 舗装区分図 (2/3)



出典：JICA 調査団

図 3.30 舗装区分図 (3/3)

### 3-2-2-7 道路附带工計画

#### (1) 信号

本高架橋の下に計画される交差点については、現況のラウンドアバウトよりも交通容量の拡大を図ることを目的に、信号制御による平面交差点形式とする。

ベドコ交差点と信号機が設置されている隣接交差点との距離は、下図に示すように東側で約1.7km、西側で約2.3kmであり、交差点間の距離は離れている。そのため、本交差点では、他の交差点の状況を考慮しなくても円滑な交通流を確保できることから、交差点ごとに単独で信号機を制御する地点制御方式を基本とする。



出典：JICA 調査団

図 3.31 信号機が設置されている隣接交差点

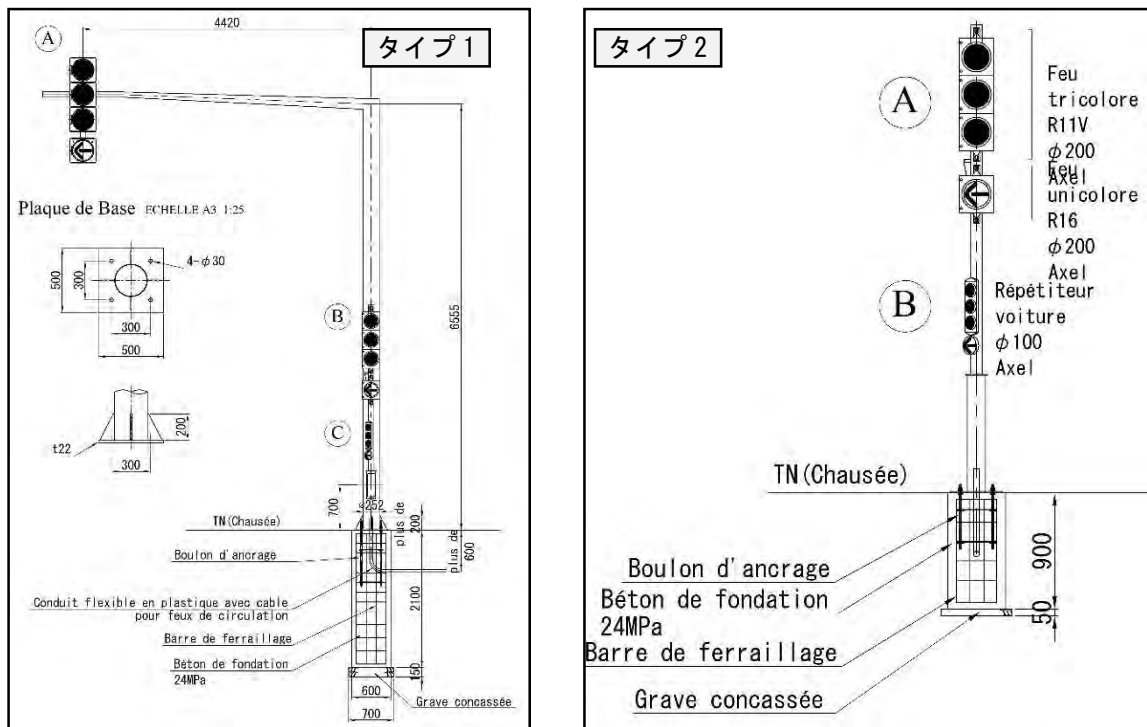
コトヌ市においては約 41 箇所（その内、点灯しているのは約 21 箇所程度）の信号機が設置されており、信号制御による平面交差点も数多く存在する。

本計画では、表 3.42、図 3.32 に示す既設、及び市内で数多く設置されている縦型の信号機を設置する計画とする。また、配置案を図 3.33 に示す。

表 3.42 現況交差点に設置されている信号機

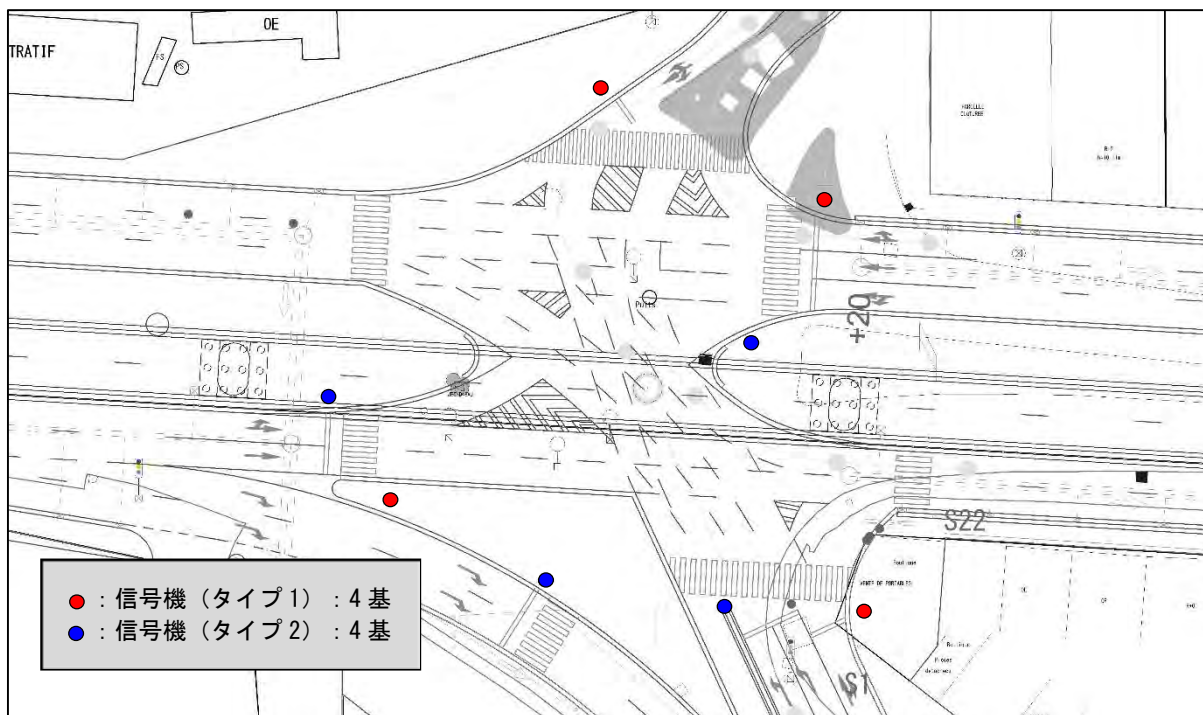


出典：JICA 調査団



出典：JICA 調査団

図 3.32 信号機構造図（案）



出典：JICA 調査団

図 3.33 信号機配置計画（案）

なお、計画にあたっては、信号機の再利用を考えたが、次表に示すよう、信号機の老朽化が見られたため、本計画においては新設で計画することとした。



表 3.43 既設信号機の老朽化状況



出典：JICA 調査団

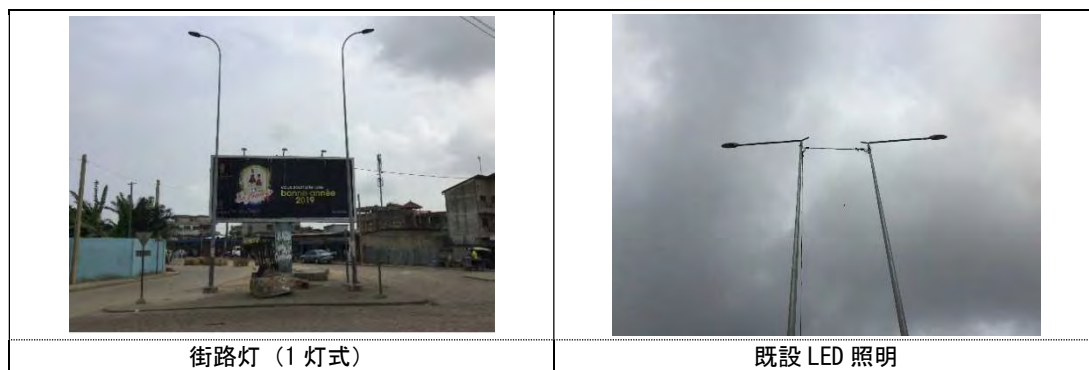
(2) 街路灯

現道、及び現況交差点には表 3.44 に示すような連続照明、及び交差点照明が設置されており、本計画においては、1 灯式が 20 基（設置間隔約 40m）、2 灯式が 6 基（設置間隔約 30m）支障になる。現況の街路灯高さは 10m と 12m の 2 タイプが設置されており、本計画南側のウェイホ立体交差橋での街路灯は、高さ 12m タイプを歩道の側道側に設置し、側道部と立体交差部を照らす方式としている。そのため、本計画においても図 3.34 に示す連結側道部に高さ 12m の 1 灯式タイプを設置し、現道の連続照明、平面交差点部の交差点照明を機能補償することを基本として計画する。

また、光源については、既設と同様、維持管理面を考慮し LED 照明とする。

なお、計画にあたっては、現況照明灯の再利用を考えたが、表 3.45 に示すよう、照明灯の損傷及び老朽化ならびに故障が見られたため、本計画においては新設で計画することとした。

表 3.44 現況交差点に設置されている街路灯



出典：JICA 調査団

表 3.45 既設照明灯の損傷状況等



出典：JICA 調査団




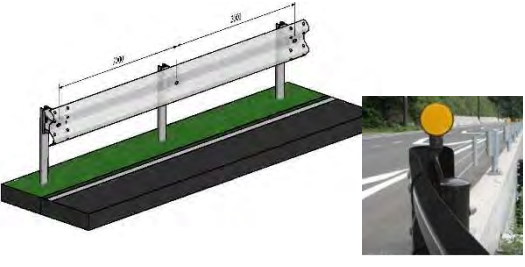



(3) 道路安全施設

高架橋区間の縦断勾配は5%であり、分合流区間は、現道と縦断が擦りついた地点で発生する。そのため、高架橋区間での速度抑制対策、及び分合流区間での視認性確保が重要となる。また、平面交差点部における交差角度は約66°であるため、各方面の導流路における視認性を確保する必要がある。さらに、道路標識、区画線、カラー舗装、段差舗装等による注意喚起施設や、防護柵、壁高欄等の事故被害軽減施設等、交通安全対策施設の検討を行う。次表に、本計画における交通安全施設とその概要を示す。

表 3.47 本計画における交通安全施設とその概要

交通安全施設	設置の概要	対策案
道路標識	現道に設置されている道路標識は破損もしくは落書きがされており、本来の機能が発揮できていない。そのため、新設される道路構造、及び交通流に必要な情報を提供し、交通事故を未然に防ぐための規制・危険箇所への警戒喚起、指示・案内による交通の円滑化を目的に、整備区間全線にわたり設置する。	
区画線	現道は車線境界線、通行方向別通行区分、横断歩道等の区画線が明示されていないため、自動車、バイク、歩行者が輻輳して交通渋滞及び交通事故が発生していると考えられる。そのため、区画線を整備区間全線にわたって設置して交通の整流化を図り、交通渋滞及び交通事故を減少させる。	
カラー舗装	交差点内においてカラー舗装により色分けし、車線を強調して道路形状を明示することにより、運転者に進行方向の道路線形を把握しやすくして車両の走行位置を安定させる。	
段差舗装	舗装面にセラミック等の骨材やシート状の素材を塗布し、意図的に段差を発生させた舗装であり、走行する自動車のドライバーに音と振動を与えることで、走行速度の抑制や、注意喚起を図るために設置される。高架橋の下り勾配部に設置する。	
クッションドラム	分流ノーズには衝撃緩和のためのクッションドラムを設置する。	

交通安全施設	設置の概要	対策案
中央分離帯 先端壁	交差点で横断歩道がある場合は、中央帯を右図に示すように横断歩道部分より突き出して設置（中央分離帯先端壁）することにより歩行者等の安全を確保する。	
防護柵+ 視線誘導標	L型擁壁の天端には車、及びバイクが運転操作ミスにより擁壁下へ転落し、重大事故につながるよう防護柵を設置する。 また、中央分離帯への誤進入（バイク及び歩行者）を防ぐため、土工区間の全線に渡り中央分離帯の内側に防護柵を設置するとともに視線誘導標（防護柵設置タイプ）を設置する。	
壁高欄	橋梁アプローチ部の擁壁設置区間について車両逸脱を目的として壁高欄を設置する。	

出典：JICA 調査団

#### （4）擁壁

##### 1) アプローチ区間

本線橋梁アプローチ区間の盛土区間は、東→西及び西→東の連結側道を設置するため、両側に約 4.5m 程度の擁壁が必要となる。擁壁の選定に当たっては施工性に優れるとともに、かつ経済性に優れた帯鋼補強土壁工形式を採用した。



表 3.48 橋梁アプローチ区間の擁壁比較表

擁壁形式	1案：帯鋼補強土壁工	2案：L型擁壁	3案：U型擁壁
断面図			
構造の特徴	 <ul style="list-style-type: none"> <li>・帯状鋼材と盛土材の摩擦力によって土留効果を発揮する。</li> <li>・補強材の摩擦抵抗に起因する見かけの粘着力が盛土材に加わり、盛土の安定を図る。</li> </ul>	 <ul style="list-style-type: none"> <li>・水平荷重(土圧)に対し、縦壁が片持ち梁として抵抗し、かかと版上の土砂重量を有効利用できる構造</li> </ul>	 <ul style="list-style-type: none"> <li>・掘削式U型擁壁と中詰め式U型擁壁がある。</li> <li>・掘削式で壁高が高い場合、側壁間にストラットを設けることがある。</li> </ul>
長所・短所	<ul style="list-style-type: none"> <li>・垂直もしくは垂直に近い壁面を有する高い盛土が構築できる。</li> <li>・基礎地盤の多少の不等沈下にも追従できる柔構造である。</li> <li>・迅速な構築が可能である。</li> <li>・埋め戻し作業とパネル設置作業を繰り返すことにより、熟練した作業者の必要はない。</li> <li>・壁背面盛土中に補強材が敷設されているため、用途は制限される。</li> <li>・使用できる盛土材は制限される。</li> </ul>	<ul style="list-style-type: none"> <li>・従来の擁壁構造。</li> <li>・コンクリート打設時の管理、養生期間の管理が煩雑で品質の均一性に劣る。</li> <li>・構造物の鉄筋作業と型枠作業に多くの時間を必要とする。</li> </ul>	<ul style="list-style-type: none"> <li>・従来の擁壁構造。</li> <li>・コンクリート打設時の管理、養生期間の管理が煩雑で品質の均一性に劣る。</li> <li>・構造物の鉄筋作業と型枠作業に多くの時間を必要とする。</li> </ul>
経済性	○ (1.00)	△ (1.35)	△ (1.40)
評価	○	△	△

出典：JICA 調査団

## 2) 連結側道（東側）区間

本計画区間の東側には、下表に示すように路面と沿道の高さに段差があり、本計画の際には沿道住民のアクセス確保のためのスペースを残す必要がある。

本計画では、車道端部に擁壁を設置し、歩道と車道を分離する計画として、沿道住民のアクセスは、歩道を利用する計画とする。

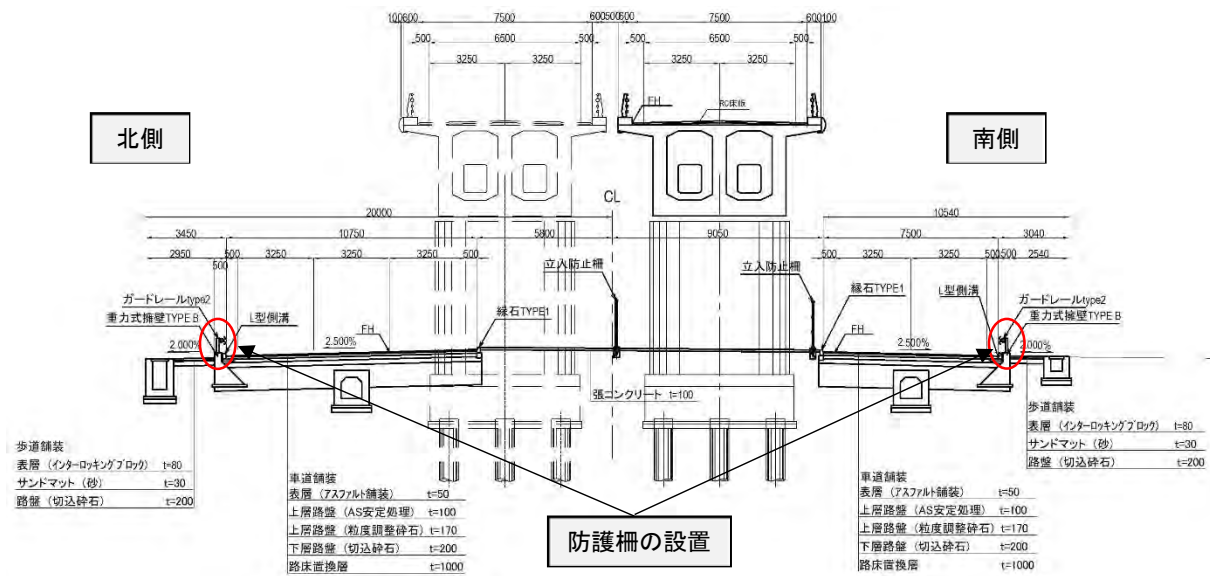
擁壁の形式選定に際し、車道内に縦断排水路を設置することから重力式擁壁を基本とする。また、重力式擁壁の天端には、車、及びバイクが運転操作ミスにより擁壁下へ転落し、重大事故につながるようにならないように防護柵を設置する計画とする。図 3.35 に東側区間における標準断面、図 3.36 にガードレール構造を示す。

表 3.49 本計画区間の東側の沿道状況



北側（段差約 50 cm）

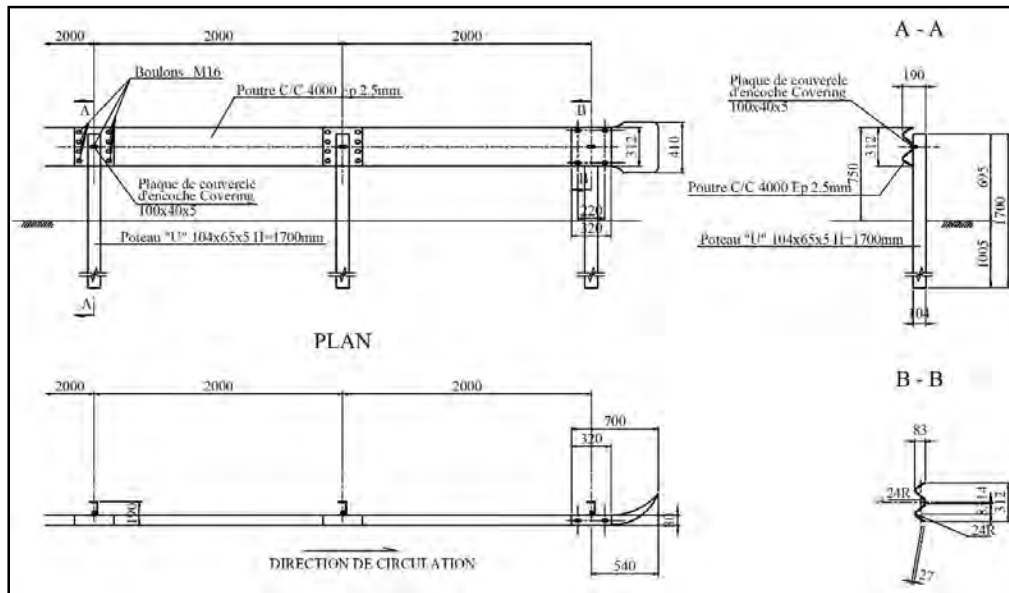
南側（段差約 80 cm）



出典：JICA 調査団

図 3.35 東側区間標準断面図





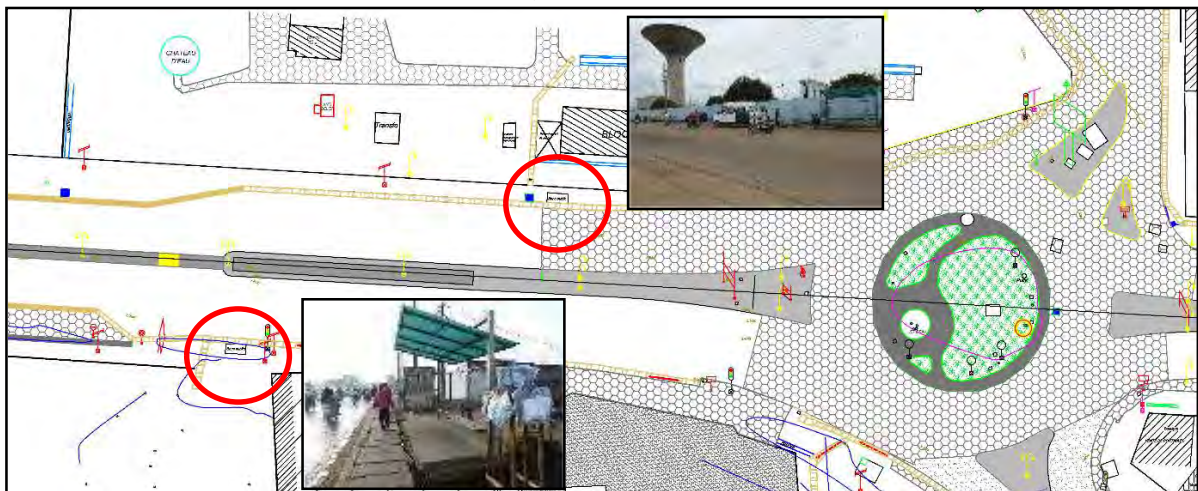
出典：JICA 調査団

図 3.36 ガードレール構造図

### (5) バス停

現況のベドコ交差点周辺に、上下線各 1 箇所（合計 2 箇所）のバス停がある。現在は休止中で利用されていないとのことであるが、道路占有地（ROW）内でこれらの機能補償を考慮しておく計画とする。

今後、事業者等との協議により最終的な位置、構造を決定することとする。



出典：JICA 調査団

図 3.37 現況のバス停位置図

### (6) 周辺交通への影響

ベドコ交差点が改良されることにより、周辺の交通容量低下地点が渋滞ボトルネックとして顕在化する可能性が考えられる。

最も憂慮されるのは、隣接する交差点であり、具体的にはベドコ交差点西側のスタジアム交差点と東側のアゴンティコ交差点である。これらについて 2035 年次における交差点飽和度を算出したところ、スタジアム交差点は 0.793、アゴンティコ交差点は 1.742 となり、特に東側のアゴンティコ交差点は渋滞のボトルネックとなる可能性が高いことを示唆している。

また、東側アプローチ直近（約 500m）のラビ交差点については、交差点の交差角が約 45° と鋭角であり、交通量が多いにもかかわらず無信号交差点であるため、横断交通に対する交通事故などの発生が懸念される。





出典：JICA 調査団

図 3.38 ベドコ交差点周辺の主要交差点

一方で、将来交通需要予測の結果によると、当該2交差点に限らず増加する交通需要に対して対策が取られない限り、市内の道路交通状況は大幅に悪化する。従って、当該2箇所のみに対策を実施するだけでは市内道路交通の根本的な円滑化策としては不十分である。また、同箇所の現況を確認すると、容量低下の要因となりうる状況が散見され、これらは短・中期的な観点での対策も考えられる。これらの要因及び対策案を次表に示す。

表 3.50 周辺交通の交通容量低下対策（案）

場所	容量低下要因と課題	対策（案）	優先度
スタジアム交差点	<ul style="list-style-type: none"> <li>・交差点上流での折り込み交通（西行きバイク車線の本線合流と右折交通の折り込み）</li> <li>・交差点直近に設置されたスタジアム出入口</li> <li>・歩行者による横断</li> </ul>	<b>【短・中期】</b> <ul style="list-style-type: none"> <li>・交差点改良（路面標示の改良、交差点のコンパクト化）</li> <li>・スタジアム出入口の付替え</li> <li>・歩行者横断箇所の適切な整備</li> </ul> <b>【中・長期】</b> <ul style="list-style-type: none"> <li>・交差点改良（信号制御、右折レーンの追加）</li> </ul>	○
ラビ交差点	<ul style="list-style-type: none"> <li>・交差点の交差角約45°（望ましい交差角75°もしくはやむを得ない場合の交差角60°以上となっていない）</li> <li>・多枝交差点となっており、本線への出入り交通が輻輳している。</li> <li>・交差点内には本線から北側道路への左折交通及北側道路から本線への右折が多いにも関わらず無信号交差点であり、横断交通に対する交通事故などの発生が懸念される。</li> <li>・交差点付近のガソリンスタンドの存在</li> <li>・従道路の路面状態の悪化</li> </ul>	<b>【短・中期】</b> <ul style="list-style-type: none"> <li>・交差点改良（交差点形状の改良、信号制御）</li> <li>・ガソリンスタンドの移設</li> <li>・従道路の路面補修</li> </ul> <b>【中・長期】</b> <ul style="list-style-type: none"> <li>・従道路の役割を確認した上で接続箇所（道路）の変更</li> </ul>	△
アゴンティコ交差点	<ul style="list-style-type: none"> <li>・流入別、方向別交通流の偏り</li> <li>・道路幅の非有効活用</li> </ul>	<b>【短・中期】</b> <ul style="list-style-type: none"> <li>・信号調整（スプリットの調整）</li> <li>・信号調整（現示の削減）※交通規制と組合せて実施</li> <li>・交差点改良（交差点のコンパクト化、本線側の直進1車線、交差点道路側の左折レーン2車線（北側）、左折レーン1車線（南側）の追加等）</li> <li>・路面標示による車線確保</li> </ul> <b>【中・長期】</b> <ul style="list-style-type: none"> <li>・交差点立体化</li> </ul>	◎
エトワルルージュ交差点	<ul style="list-style-type: none"> <li>・環道交通流の阻害</li> </ul>	<b>【短・中期】</b> <ul style="list-style-type: none"> <li>・路面標示による流入交通の流入位置の明示</li> <li>・路面標示による環道交通の整流化、優先順位の明示</li> <li>・路面状態の改善・舗装化</li> <li>・歩行者横断箇所の適切な整備</li> </ul> <b>【中・長期】</b> <ul style="list-style-type: none"> <li>・大規模交差点改良（立体交差化を含む）</li> </ul>	—
ベニノワーズ交差点	<ul style="list-style-type: none"> <li>・交通需要増に伴うラウンドアバウトの容量超過</li> </ul>	<b>【短・中期】</b> <ul style="list-style-type: none"> <li>・交差点改良（信号交差点化）</li> </ul> <b>【中・長期】</b> <ul style="list-style-type: none"> <li>・交差点立体化</li> </ul>	—

注：◎：優先度が非常に高い、○：優先度が高い、△：優先度が低い、—：判断には別途詳細調査が必要  
出典：JICA 調査団

エトワルルージュ交差点はランドアバウトの径が大きく潜在的な交通容量は大きいため、適切な交通運用がなされれば、ベドコ交差点改良に伴う影響は当面は無いものと思われる。

また、ベニノワーズ交差点はベドコ交差点から距離が離れているため交差点改良に伴う影響は無いと思われる。

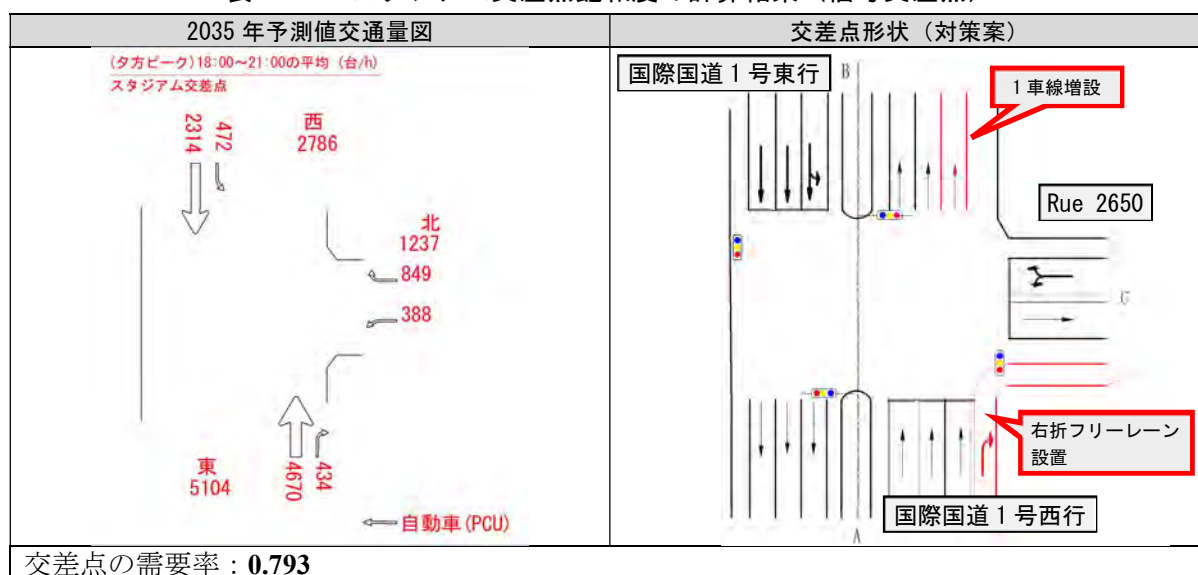
しかしながら、ベドコ交差点改良の効果を最大限発揮させるためにも、またベドコ交差点改良有無に関わらず将来的な市内の円滑な交通流を確保する意味でも、これらの対策に着手することが望ましい。なお、これらの対策の実施に当たっては、詳細な交通量調査を実施する等、交通状況を把握しつつ具体化を検討する必要がある。尚、ラビ交差点については、従道路側の位置付けを明確にした上で交差点の在り方を検討することが望ましい。一般的に、細街路を直接、幹線道路に接続することは避けるべきとされている。ラビ交差点の場合、従道路はいわゆる細街路もしくはそれに類する機能を持っていると思われ、幹線道路である国際国道に接続させるのが妥当か慎重に検討する必要がある。

参考として、以下にスタジアム交差点とアゴンティコ交差点における交差点飽和度の予測結果と対策案及びラビ交差点の対策案を示す。

### 1) スタジアム交差点

フェーズ2（完成4車線化済み：2035年予測値）時点におけるスタジアム交差点については信号制御を行い、西行き車線を1車線増設するとともにRue 2650流入部に右折フリーレーンを設置することが望ましい。

表 3.51 スタジアム交差点飽和度の計算結果（信号交差点）



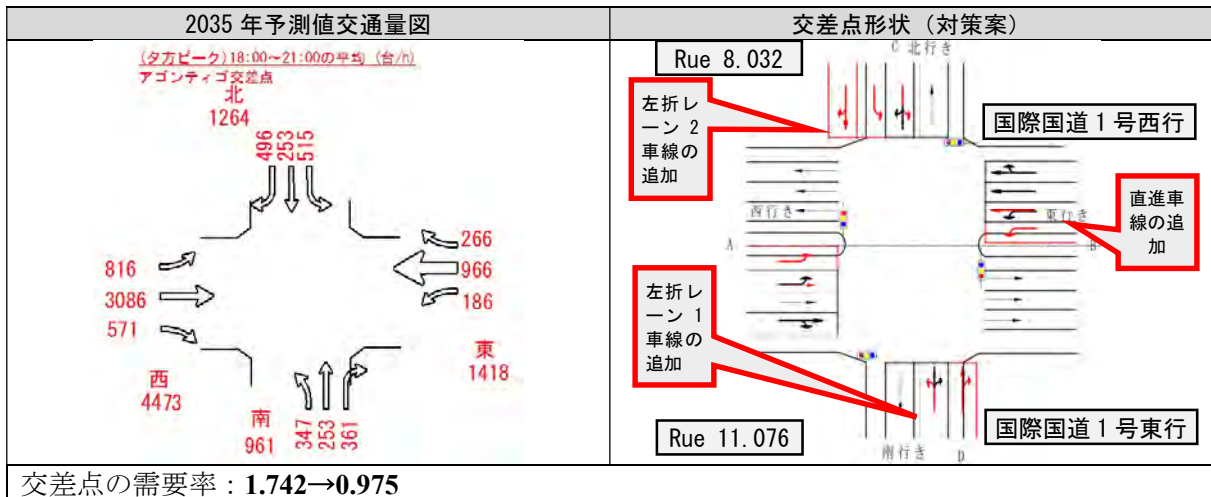
出典：JICA 調査団

### 2) アゴンティコ交差点

フェーズ2（完成4車線化済み：2035年予測値）時点におけるアゴンティコ交差点については東西交通量が増加するため、交差点需要率1.742となり捌ききれない状況となる。

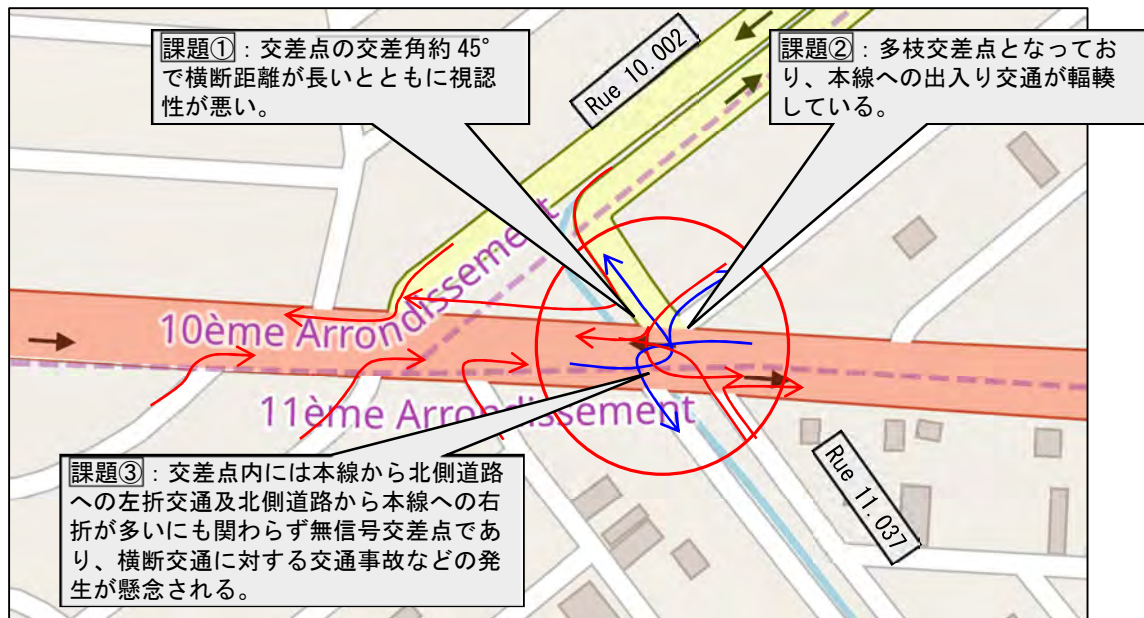
そのため、本線側の直進1車線、交差道路側の左折レーン2車線（北側）、左折レーン1車線（南側）の追加等の交差点改良が考えられる。

表 3.52 アゴンティコ交差点飽和度の計算結果（信号交差点）



出典：JICA 調査団

### 3) ラビ交差点



出典：JICA 調査団

図 3.39 ラビ交差点の交通運用と課題箇所

フェーズ2（完成4車線化済み）時点におけるラビ交差点については、現況よりも交通量が増加するとともに、本線の走行速度が向上されると考えられる。そのため、交通安全性を確保するために下記に示すよう本線に左折車線を設置するとともに信号交差点処理を行い、北側道路及び南側道路を本線と直角交差をさせることが望ましいと考えられる。また、その際には本線交通の整流化を図るために、ベドコフライオーバーの東側アプローチからラビ交差点の影響範囲まで本線の道路整備（舗装、排水施設等）を行うことが望ましいと考える。



出典：JICA 調査団

図 3.40 ラビ交差点改良案

### 3-2-3 概略設計図

以上の基本計画に基づいて作成した概略設計図を以下に示す。

表 3.53 概略設計図

No.	図面内容	枚数	No.	図面内容	枚数
1	表紙	1	6	右側側道縦断面図 (1) ~ (2)	2
2	本線平面図 (1) ~ (3)	3	7	南側道路縦断面図	1
3	南側道路平面図	1	8	北側道路縦断面図	1
4	本線縦断面図 (1) ~ (2)	2	9	標準断面図 (1) ~ (2)	2
5	左側側道縦断面図 (1) ~ (2)	2	10	橋梁全体一般図	2

出典：JICA 調査団

### 3-2-4 施工計画

#### 3-2-4-1 施工方針

##### (1) 施工上の基本方針

本プロジェクトが日本国の無償資金協力の枠組みで実施されることを考慮し、以下に本計画における施工上の基本方針を示す。

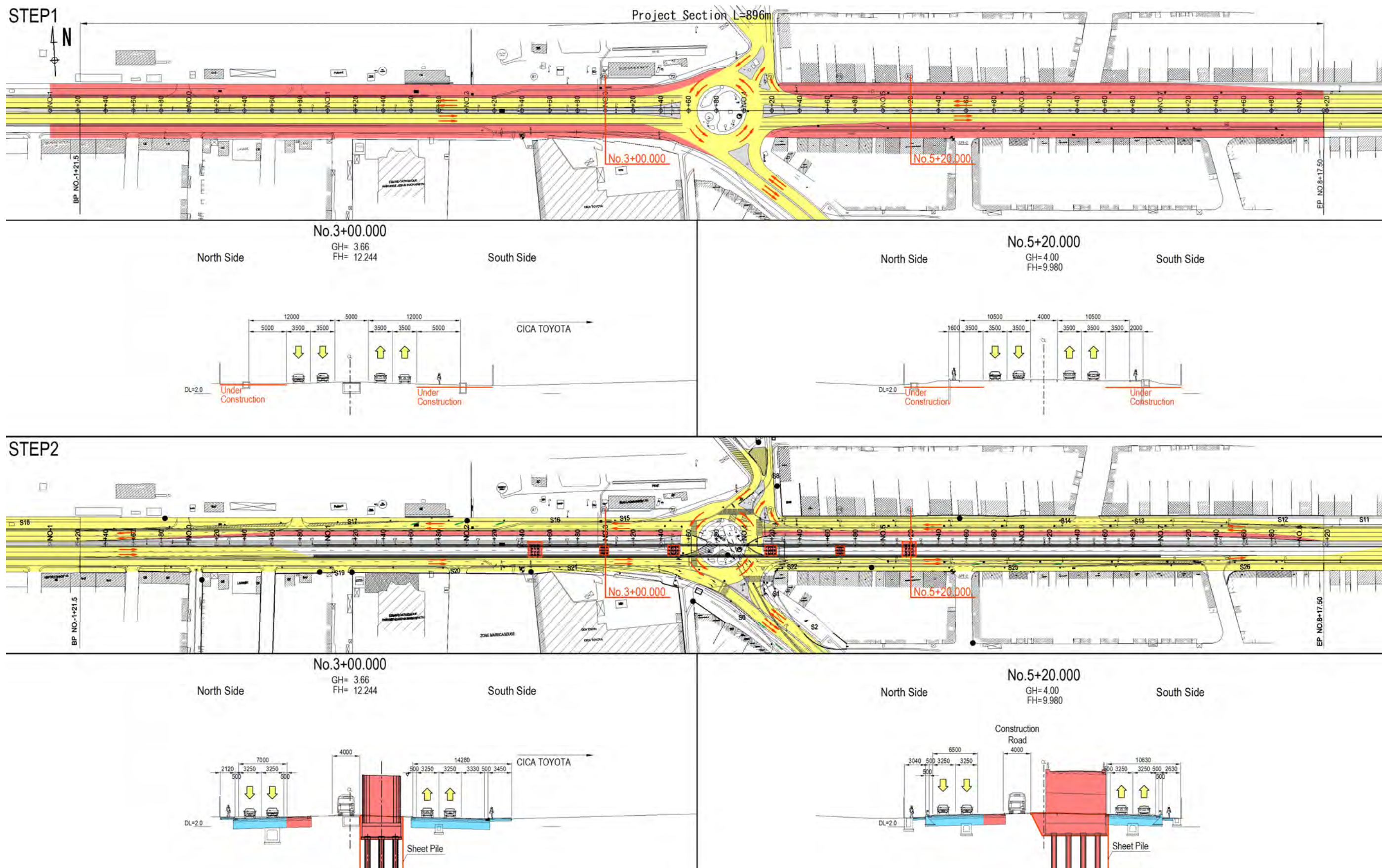
- ① 施工方法、及び工事工程は、現地の気象、地形、地域特性など自然条件、及び対象道路の現況交通の状況等を反映させ、それに適した計画を立案する。
- ② 相手国側の維持管理能力を考慮し、供用後に特殊な建設機械や技術を必要としない一般的な施工方法を計画する。
- ③ 施工計画の策定にあたっては、社会環境、及び交通安全確保に十分配慮する。
- ④ 地域経済の活性化に資するため、現地調達が可能で資機材を最大限に活用する。
- ⑤ 工事影響範囲にある支障物件は、本体工事開始前までにすべて移設されるが、移設された地下埋設物や既存家屋と事業目的物が近接施工となる部分もあるため十分配慮する。
- ⑥ 工事中の交通処理は、東西方向の連結側道を先に完成させ本線の交通をその連結側道へ切り回すことで立体交差点の工事区間を確保する。
- ⑦ 沿道へのアクセスは、歩道も含めた連結側道を先に完成させることでスムーズなアクセスを確保する。







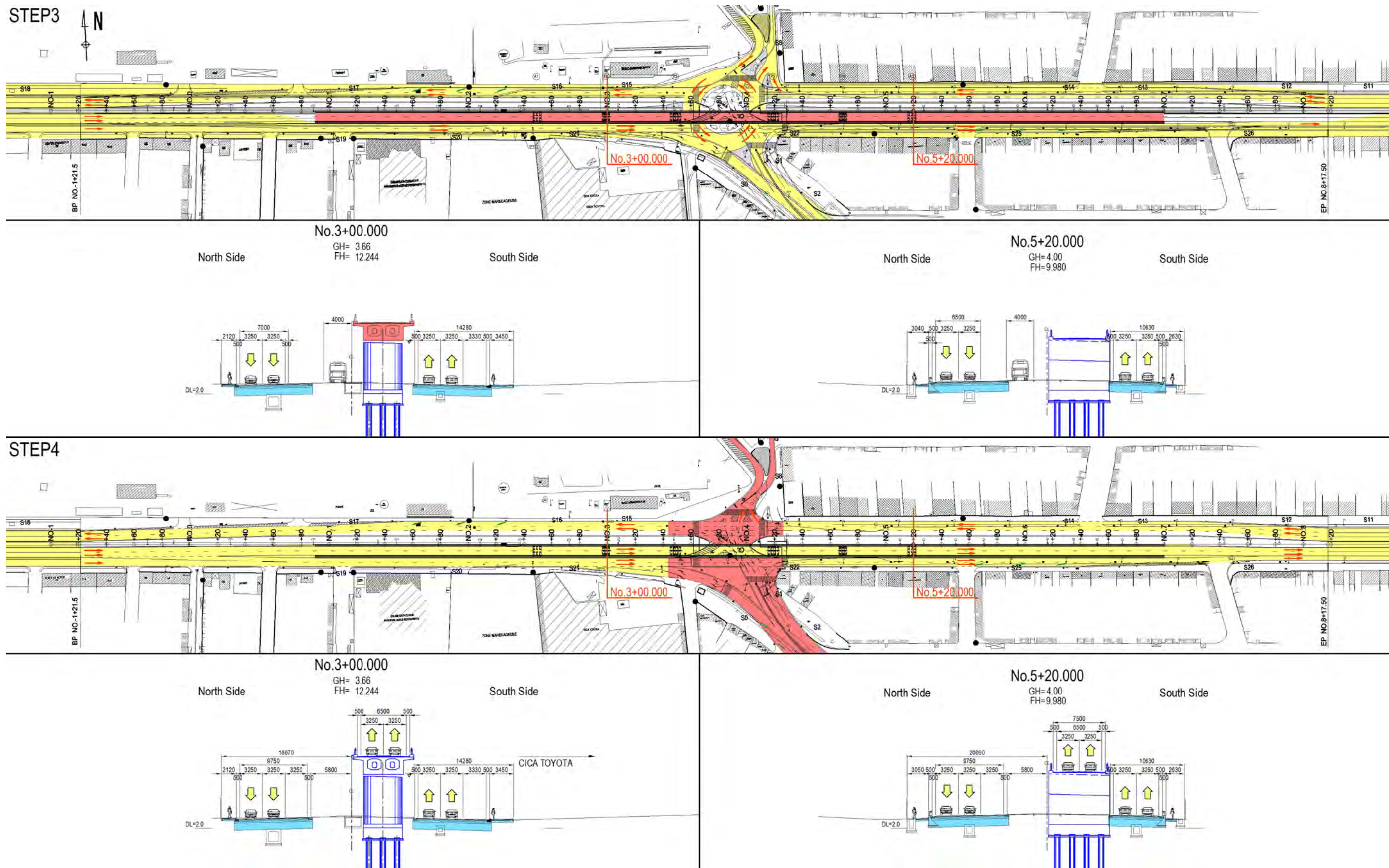




出典：JICA 調査団

図 3.44 施エステップ図 (1/3)

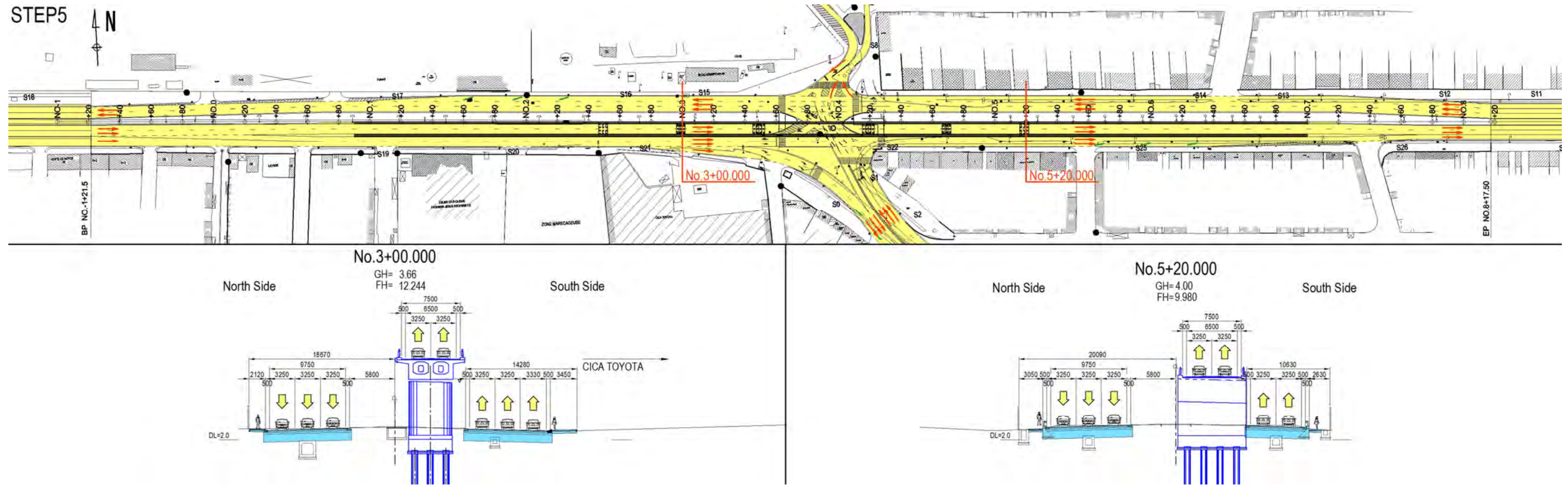




出典：JICA 調査団

図 3.45 施エステップ図 (2/3)





出典：JICA 調査団

図 3.46 施工ステップ図 (3/3)

### 3-2-4-2 施工上の留意事項

#### (1) 労働基準の順守

「ベ」国の現行建設関連法規を遵守し、雇用に伴う適切な労働条件や慣習を尊重し、労働者との紛争を防止すると共に安全が確保出来るような検討を行う。

#### (2) 工事期間中の社会環境配慮

- ① 工事で発生する廃材は、周辺環境へ影響を与えない適切な場所（「ベ」国公認の廃棄物処分場等）に運搬し、埋立て等により処分する。
- ② 工事現場、及び仮設ヤードから発生する汚水は、周辺環境への影響をできるだけ軽減、緩和するため適切な処理を行う。
- ③ 粉塵や騒音・振動の発生を軽減する対策を行うと共に、月一回のモニタリングを行い、継続的な状況の把握と改善に努める。

#### (3) 工事中の安全確保

- ① 主要な交差点には、安全設備（バリケード、カラーコーン、回転灯）、及び誘導員を配置する。
- ② 工事車両の通行が増えるため、工事現場に立ち入り禁止看板や工事案内板を設置し、地域住民に周知徹底することで、安全確保やトラブルの発生防止を行う。
- ③ 近接施工が想定されるため、適切な計画を作成するとともに、十分に安全に配慮した施工を実施する。

#### (4) 現場の通信手段の確保

- ① プロジェクト区間は、携帯電話の利用が可能であるため、工事関係者は携帯電話を所持する。
- ② 交通誘導員に携帯式のトランシーバーを所持させ、一般交通及び地域住民の安全確保を目的とした交通安全管理体制を確立する。

#### (5) 現地慣習の尊重

施工計画の立案に際し、現地慣習を考慮した作業日程を検討する。

#### (6) 交通安全の確保

安全に留意しながら、道路占有地（ROW）内での効率的で合理的な交通の切り回し計画を検討する。

#### (7) 通関事情

輸入・荷下し、及び通関手続き等の所要日数を考慮した施工計画を立案する。

#### (8) 用地確保

事前合意、保証金の支払い等が「ベ」国により適切に実施されることを確認する。

#### (9) 工程調整

「ベ」国側の負担事項の実施方針を十分に確認し調整する。

### 3-2-4-3 施工区分

日本国側と「ベ」国側の負担事項の概要を以下に示す。

#### (1) 日本側の負担範囲

- ・ 橋梁建設、及び道路改修に係る必要な仮設工事、本体工事
- ・ 仮施設（ベースキャンプ、事務所、倉庫等）の設置
- ・ 工事に必要な労務、建設資材、及び建設機械の調達
- ・ 工事実施に係る安全管理及び対策
- ・ 実施設計、入札・契約書の作成、入札の補助、及び工事の施工監理、瑕疵検査

## (2) 「ベ」国側の負担範囲

- ・ 道路占有地（ROW）の確保、及びベースキャンプ用地の確保支援
- ・ 建設に伴い発生する廃棄物、及び残土の処分のための各種許認可の取得支援
- ・ 土地収用のための費用確保、及び実施
- ・ 支障物件の移設、ならびに移設に伴う「ベ」国側監督要員の配置と関連費用の確保
- ・ 資機材の荷揚げ港における速やかな通関手続き、及び免税処置を行うための便宜供与
- ・ 本プロジェクトに従事する日本人の入国、滞在などに対する便宜供与
- ・ カウンターパートを指名し、その要員と関連費用の確保

### 3-2-4-4 施工監理計画

本プロジェクトの実施にあたっては、まず日本国、及び「ベ」国の両政府間で本事業の無償資金協力に係わる交換公文（E/N）の締結が行われ、交換公文締結後、JICA と「ベ」国政府が贈与契約（G/A）を締結することが前提となる。交換公文、及び贈与契約締結後、コンサルタントは JICA より発給される推薦状を基に、日本の無償資金協力の範囲及び手順に従い、「ベ」国政府の実施機関であるインフラ・運輸省との間でコンサルタント契約を結ぶ。契約の締結後、実施設計、入札補助業務、及び施工監理を行う。以下にコンサルタント契約に含まれる主な業務内容を示す。

#### (1) 実施設計及び入札図書作成段階

協力準備調査報告書の結果に従い各施設の実施設計を行い、設計図書を作成する。入札業務に必要な書類を作成し、「ベ」国側の承認を得る。

#### (2) 入札段階

入札公示、事前資格審査、入札図書の配布、入札、及び入札評価について「ベ」国側を補助し、契約交渉について助言等を行う。「ベ」国側と落札者間の工事契約締結に立ち会う。

実施設計から入札段階に係る要員とその役割分担を次表に示す。

表 3.54 実施設計から入札段階に係る要員と役割分担

担当分野	役割分担
業務主任	実施設計及び入札業務に係る全体総括
橋梁設計 I（上部工）	橋梁上部工に係る実施設計、入札図書の作成及び入札支援
橋梁設計 II（下部工）	橋台、橋脚、基礎工に係る実施設計、入札図書の作成
道路設計 I（道路・排水）	道路本体及び排水施設に係る実施設計、入札図書の作成及び入札支援
道路設計 II（付帯工）	道路付帯構造物に係る実施設計、入札図書の作成
道路設計 III（街路灯・信号）	街路灯、信号に係る実施設計
道路設計 IV（自然条件・支障物件調査）	地形測量及び地盤調査の管理、支障物件と移設計画の確認
道路設計 V（支障物件移設管理支援）	支障物件移設の管理支援
環境社会配慮	社会状況調査、IEE 申請手続き及び用地取得手続きの支援
施工計画/積算	調達計画、及び事業費の見直し、調査価格の整理
設計照査	実施設計に関する照査
通訳	通訳（日仏）

出典：JICA 調査団

#### (3) 施工監理体制（コンサルタントの現場監理体制）

コンサルタントは、施工業者の契約締結後に工事着工指示書を発行し、現地に常駐して施工監理業務に着手する。施工監理業務では工事進捗状況を「ベ」国側に報告するとともに、工業者に対し作業進捗、品質、安全、支払いに関わる業務及び工事に関する改善提案等を行う。また、現地日本大使館及び JICA 事務所に対し定期的に報告を行う。さらに、工事完了から 1 年後に瑕疵検査を行う。

常駐施工監理者は、無償資金協力の経験を有する土木技術者を派遣する。また、業務主任を工事段階の節目に派遣し、工事品質管理会議、業務調整及び工事監理を行う。さらに、各工種の専門技術者を、その工事開始時に派遣し、技術的な齟齬が生じないようにスポット監理を行う。施工監理に係る要員とその役割を次表に示す。

本計画では、構造物（橋梁が対象）に対して10年瑕疵保証の制度が適用される。工事完了引き渡し後10年間に発生する可能性ある瑕疵による補修費を保険で救済するために、先方政府は保険会社に認証を与える役割の監理事務所（Bureau de contrôle）を雇用する。雇用された監理事務所は、工事着工前、及び各工種着工前に構造物の安全性を確認する目的で、施工業者が作成する施工計画を照らして設計条件・設計計算・施工図を基準等の適合性をチェックし、保険会社に、リスク分析、基準の遵守の結果を報告する。

表 3.55 施工監理に係る要員と役割分担

担当分野	役割分担
業務主任	工事を円滑に遂行するための調整業務及び技術的管理
常駐施工監理	日常管理業務及び工程管理業務
施工監理技術者（上部工）	スポット監理（上部工施工時）
施工監理技術者（基礎工）	スポット監理（基礎工施工時）
施工監理技術者（舗装工）	スポット監理（舗装工施工時）
施工管理技術者（瑕疵検査）	瑕疵担保検査

出典：JICA 調査団

なお、上記の日本人技術者に加えて、常駐監理者を補助する現地傭人による施工監理技術者（上部工、下部工、基礎工、道路）、事務所の事務員、通訳及び運転手を配置する。

### 3-2-4-5 品質管理計画

コンサルタントは施工業者に対し、下表に示す分析・試験の実施を指示し、その結果を品質管理に反映させる。日本から調達するコンクリート生産プラントについては、工場検査を実施して品質及び能力を事前に確認する。

表 3.56 品質管理項目一覧表

項 目		試験方法	試験頻度	
路盤（碎石）	配合材料	液性限界、塑性指数	配合毎	
		粒度分布		
		骨材強度試験		
		骨材密度試験		
		最大乾燥密度（締固め試験）		
	敷設	密度試験（締固め率）	1回/日	
プライムコート・タックコート	材料	瀝青材	品質証明書	材料毎
			保管・散布時の温度・量	配送毎
アスファルト	材料	瀝青材	品質証明書・成分分析表	材料毎
		骨材	粒度分布	配合毎、1回/月
			吸水率	材料毎
			骨材強度試験	
	配合試験	安定度	配合毎	
		フロー値		
		空隙率		
		設計アスファルト値		
			動的安定試験	ジョブミックス
	舗設		混合時の設定温度	適宜
		敷きならし時の温度	運搬毎	
		サンプリング・マーシャルテスト	1回/日程度	
コンクリート	材料	セメント	品質証明書、化学・物理試験結果	材料毎
		水	成分試験結果	材料毎
		混和材	品質証明書、成分分析表	材料毎
		細骨材	絶乾比重	材料毎
			粒度分布、粗粒率	



項 目		試験方法	試験頻度	
コンクリート	材料	細骨材	粘土塊と軟質微片率	
			アルカリ・骨材反応性試験	原石山毎
		粗骨材	絶乾比重	材料毎
			粒度分布	
		アルカリ・骨材反応性試験	原石山毎	
	配合試験時		圧縮強度試験	配合毎
	打設時	スランプ		材料毎
		空気量		材料毎
		温度		材料毎
	強度		圧縮強度試験（7日、28日）	材料毎
鉄筋	材料	品質証明書、引張試験結果	ロット単位	

出典：JICA 調査団

### 3-2-4-6 資機材等調達計画

#### (1) 調達上の留意事項

本計画に関わる調達上の留意事項は、以下のとおりである。

- ① 工事工程に無理のない調達計画を立案する。
- ② 地域経済の活性化に資するため、可能な限り現地生産品を調達する。
- ③ 現地調達が困難な建設資機材については、品質の確実性、調達の容易性、数量の確保性、及び経済性に留意し、日本または第三国からの調達を検討する。
- ④ 日本または第三国調達品は、コトヌ自治港に荷揚げする計画とする。内陸輸送建設機械についてはトレーラー輸送、一般貨物（資材）についてはトラック輸送とする。
- ⑤ 日本から「ベ」国への一般的なルートは日本（横浜/神戸港）→南アフリカ（ダーバン）港→アンゴラ（ルアンダ港）→「ベ」国（コトヌ自治港）で約40日間を想定する。

#### (2) 建設資材

現地調査の結果から、主要な建設資材の調達区分は下記方針に基づき次表のとおり計画した。

- ① 可能な限り現地生産品を調達する。
- ② 輸入品が「ベ」国の市場に恒常的に流通している場合は、これを調達する。
- ③ 現地調達が困難な資材については、本邦または第三国からの調達とする。調達先については、価格、品質及び納期等に留意して決定する。

表 3.57 主要資材の調達区分

資材名称	調達区分			備 考
	現 地	日 本	第三国	
<一般資材>				
盛土材	●			
路盤用骨材	●			
コンクリート用骨材	●			
セメント	●			
鉄筋		●		
アスファルトコンクリート合材	●			
鋼製型枠		●		
<橋梁用資材>				
PC 鋼線		●		
伸縮装置		●		
定着装置		●		
支承		●		
架設用移動作業車		●		

出典：JICA 調査団

### (3) 建設機械

現地調査の結果から、現地大手の建設業者はほとんどの道路用建設機械を所有しておりリースも可能である。なお、橋梁桁架設用の大型クレーン、及び杭掘削機械類は、現地にないため海外から調達する必要がある。

以上から、主要な建設機械の調達区分は次表に示すとおり計画した。

表 3.58 主要な建設機械の調達区分

機械名称	規格・諸元等	調達先			備考
		現地	日本	第三国	
[道路建設機械]					
ブルドーザー	3t～21t	●			
バックホー	0.28m <sup>3</sup> ～1.6m <sup>3</sup>	●			
ホイールローダー	2.1m <sup>3</sup>	●			
クローラーショベル	1.8～1.9m <sup>3</sup>	●			
モーターグレーダー	3.1m	●			
ロードローラー	マカダム 10t-12t	●			
振動ローラー	0.8t～1.1t、3t～4t、	●			
タイヤローラー	8t～20t	●			
タンパ	40kg～100kg	●			
フィニッシャー	1.4m～3.0m、2.4m～6.0m	●			
ディストリビューター	6000l	●			
ラインマーカ	ハンドタイプ	●			
コンクリートカッター		●			
生コン車	5500l～6000l	●			
コンクリートブレイカー	20kg～1300kg	●			
コンプレッサー	3.5m <sup>3</sup> ～5.0m <sup>3</sup>	●			
ダンプトラック	10t	●			
セミトレーラー	15t～30t	●			
トラッククレーン	11t～25t	●			
クローラークレーン	50t～80t		●		
コンクリートプラント	30m <sup>3</sup> /h		●		
杭掘削機械	最大掘削径 1,500mm		●		

出典：JICA 調査団

### (4) 砕石場、土取り場、土捨て場の候補地

本建設工事で必要となる材料は、コンクリート用の砂及び骨材、路盤材、盛土材である。コンクリート用砂の採取場は、ベドコ交差点から西へ 10km 地点にあるデコンベ及びベドコ交差点から北へ 20km 地点にあるアカサトの 2 箇所が候補地となる。コンクリート用骨材及び路盤用骨材は、ベドコ交差点から北へ 160km 地点にあるダン近郊が候補地となる。盛土材は、ベドコ交差点から西へ 40km 地点にあるウィダー及びベドコ交差点から東へ 40km 地点にあるデジェグベの 2 箇所が候補地となる。

以上について次表にまとめた。なお、各候補地の材料はサンプリングを実施し、基準に適合するか確認のため現在土質試験を実施中である。







表 3.59 砕石場・砂採取場・土取場・土捨て場の候補地及びベドコ交差点までの距離

名称	採取候補地	材料	用途	ベドコ交差点までの距離
砕石場	ダン	骨材	コンクリート用骨材及び路盤材	ダンから 160km
砂採取場	デコンベ アカサト	川砂	コンクリート用砂	デコンベから 10km アカサトから 20km
土取場	ウィダー デジェグベ	シルト系砂	盛土材	ウィダーから 40km デジェグベから 40km

出典：JICA 調査団



表 3.60 砂採取場・土取場・土捨場候補地状況写真

	
アカサト（砂採取場）	デコンベ（砂採取場）
	
ウィダー（土取場）	LES 廃棄物処分場（土捨場）
	
ダン（石切り場）	ダン（骨材プラント）

出典：JICA 調査団

### (5) 仮設ヤード候補地

仮設ヤードとしては、ベドコ交差点にあるトヨタと教会の間から奥へ広がる平地（私有地）が最適な候補地となる。同候補地は、現在 AML 社（建機レンタル会社）によってリースされており、同社保有のトラック類の駐車場として使用されている。敷地面積は約 4ha、敷地内の造成地は奥まで広がっており、本仮設ヤードとして十分な広さである。同候補地の位置を下図に示す。



出典：JICA 調査団、Google Earth

図 3.49 仮設ヤード候補地位置図



表 3.61 仮設ヤード候補地状況写真



出典：JICA 調査団

3-2-4-7 初期操作指導・運用指導等計画

本計画では該当なし。

3-2-4-8 ソフトコンポーネント計画

本計画では該当なし。

3-2-4-9 実施工程

閣議（A 国債）は、実施設計として 2020 年 2 月、本体として 2020 年 10 月を想定している。実施工程表（案）を次表に示す。想定する全体工期は、実施設計、入札関連（約 12 カ月間）、及び建設工事（約 25 カ月間）で合計約 37 カ月である。

表 3.62 実施工程

項目		年度		0				1				2				3				4				5			
		(四半期)		3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
実施設計・入札	現地調査																										
	国内作業																										
	入札																										
	計																										
				← 計 12 カ月 →																							
施工	準備工																										
	東西方向の道路拡幅工																										
	高架橋工																										
	交差点及び南北方向の道路拡幅工																										
	計																										
								← 計 25 カ月 →																			
相手国負担事項	EIE の承認																										
	地下埋設物の移設・支障物件の撤去																										
	土地収用																										

出典：JICA 調査団

### 3-2-5 安全対策計画

本計画では該当なし。

### 3-3 相手国負担事業の概要

#### 3-3-1 我が国の無償資金協力事業における一般事項

「ベ」国側分担の一般事項について、両国間で合意された協議議事録において既に確認された内容を以下に既述する。

- ・ 建設の開始までに、事業の実施に要する用地を確保する。
- ・ 認証された契約に基づく製品・サービスの供給に関して、受入国で生ずる関税、国内税及びその他の公課を日本国民に対して免除する。
- ・ 認証された契約に基づく製品、サービスの供給に関して、事業実施のために受入国に入国し、または、滞在する日本国民に対し、それに必要な便宜を供与する。
- ・ 「ベ」国環境社会配慮手続き及び必要となる調査を完了する。

#### 3-3-2 本プロジェクト固有の事項

無償資金協力として求められる一般的負担事項以外の本プロジェクト特有の相手方負担事項を以下に示す。

##### (1) 地下埋設物の移転

本プロジェクト実施範囲には、複数の電気、水道、通信線が存在するため、各関係機関と移設計画を検討するとともに、プロジェクトの本工事の入札図書配布までに移設工事が完了するように予算確保や移設工事の管理を行う。

##### (2) 用地の確保、既専有物の撤去・移設

本プロジェクト実施範囲では、同時期に米国による援助であるミレニアムチャレンジアカウント（MCAII）による電力供給改善事業が計画されているので、同事業との調整を行う。

##### (3) 本計画区間沿線住民への事業説明会の実施

本プロジェクトの実施が公式に決定される交換公文の調印後、速やかに沿線住民もしくはその代表者を集めて、工事中の安全管理対策、騒音対策及び施工法等について周知徹底させるため、事業説明会を実施機関主体で実施することを要望する。

##### (4) 交通安全対策

工事中に交通整理員の指示に従うように、道路利用者への周知徹底を要望する。

##### (5) 工事中の不都合の通知の徹底

工事期間中による通過交通への不都合が多く予想されるため、テレビ、ラジオ、新聞等の広報メディアを通して、道路利用者に工事中の不都合の通知を徹底するとともに、道路利用者への啓蒙活動を要望する。

##### (6) 10年瑕疵保険への対応

本プロジェクトの橋梁部分については10年瑕疵保険が適用されるため、監理事務所（BCT）を雇用するとともに、保険会社と契約を行う。

### 3-4 プロジェクトの運営・維持管理計画

プロジェクト実施後の施設の維持管理に関して、以下の維持管理業務が必要となる。

#### (1) 日常的維持管理

通年、特に雨期明けに必要な補修等の作業を以下に示す。

- ・ 道路表面のパッチング
- ・ 必要に応じた路盤の補修
- ・ 排水側溝の掃除

#### (2) 定期的維持管理

- ・ 路盤補修
- ・ オーバーレイ
- ・ 構造物の補修
- ・ 橋梁伸縮装置交換

### 3-5 プロジェクトの概略事業費

#### 3-5-1 協力対象事業の概略事業費

(1) 「ベ」国側負担経費：約 1,523 百万 CFA（約 293 百万円）

表 3.63 「ベ」国側負担経費

項目	金額（百万 CFA）
① EIA 審査費用	25
② EIA 更新費用（モニタリング含む）	152
③ 用地取得に係る費用	287
④ 支障物件撤去に関する費用	1,000
⑤ AP 発行に関する費用	20
⑥ 維持管理費（1 年あたり）	39
合計（百万 CFA）	1,523
合計（百万円）	293

出典：JICA 調査団

#### (2) 積算条件

積算時点は 2019 年（令和元年）6 月、積算条件は以下のとおりである。

##### 1) 為替レート

- ① ユーロ対日本円 : 1 EUR = 126.22 円
- ② ユーロ対現地通貨（CFA フラン） : 1 EUR = F.CFA 655.957（固定レート）  
現地通貨（CFA フラン）対日本円 : 1 F.CFA = 0.19242 円
- ③ 第三国通貨（米ドル）対日本円 : 1 USD = 111.95 円

##### 2) 施工期間

国債による工事とし、実施設計、入札補助業務及び工事に必要な期間は、実施工程に示した 37 カ月とする。

#### 3-5-2 運営・維持管理費

本計画で整備される対象道路に対する主な維持管理業務は次表に示す日常・定期整備であり、プロジェクト完了後の維持管理費（年平均換算）の円換算額は約 7.5 百万円と推定される。これは「ベ」国の 2017 年に予算執行された維持管理費約 1,260 百万円の 0.6%に相当し、この負担額は「ベ」国にとって十分実施可能な規模と考えられる。

表 3.64 主な維持管理項目と費用

(1CFA= 0.19242 円)

形態	サイクル	維持管理内容	仕様	単位	作業量	単価 (CFA)	回数	費用 (千円)
日常	毎年	パッチング	全舗装面積の 1%	m <sup>2</sup>	359	9,540	15	9,885
		路盤補修	全舗装面積の 1%	m <sup>2</sup>	359	23,598	15	24,452
		路肩補修	歩道面積の 1%	m <sup>2</sup>	104	9,601	15	2,882
		構造物の清掃	側溝延長の 5%	m	164	60	15	28
		小計-I						
定期	5年目	路盤補修	全舗装面積の 2%	m <sup>2</sup>	718	91,968	3	38,118
		オーバーレイ	全舗装面積の 2%	m <sup>2</sup>	718	45,748	3	18,961
		構造物の補修	側溝延長の 1%	m	33	87,922	3	1,675
		小計-II						
	20年目	橋梁伸縮装置交換		m	15	35,370,128	1	6,806
小計-III							6,806	
日常・定期整備の合計-IV (I+II+III)								102,808
運営・管理費		III の 10%	式	—	—	—	—	10,281
合計 (A)								113,089
1年当たり費用 (A/15年)								7,539

出典：JICA 調査団

### 3-6 事業実施に当たっての留意事項

協力対象事業を円滑に実施し、事業効果を十分に発現・持続させるため「ベ」国側が特に留意すべき事項は次のとおりである。

#### (1) 移設工事の完了

MIT が各種関係機関を主導して移設計画を策定するとともに、本プロジェクトの入札図書配布までに移設工事の完了が確実に見込めるよう管理を行う。

#### (2) 交差点南西側の事業所 (CFAO) へのアクセス確保

交差点南西側の事業所 (CFAO) は、入出構のための大通りに面した通用門 3 か所の全てを失うことになるため、大通りから南側に迂回して仮門に至る未舗装道路を整備して使用可能な状態にする必要がある。同費用は、支障物の移設工事を行う現地施工会社の工事費に計上する必要がある。

#### (3) 免税、通関手続きの迅速化

本計画の実施が公式に決定される交換公文の調印後、速やか且つ確実な免税・通関に関連する組織・機関への MIT による働きかけを実施する。

#### (4) 本計画区間沿線住民への事業説明会の実施

本計画の実施が公式に決定される交換公文の調印後、速やかに沿線住民もしくはその代表者を集めて、事業説明会を MIT 主体で実施する。

#### (5) 交通安全

工事中に交通整理員の指示に従うように、運転手へ周知徹底する。

#### (6) 工事中の不都合の通知の徹底

工事による通過交通への不都合が予想されるため、ラジオ等の広報メディアを通して、道路利用者に工事中の不都合の通知を徹底する。

#### (7) 10年瑕疵保険

監理事務所 (BCT) による外部監理が工事工程に影響を与えないよう、MIT が前広な工程管理を実施する。



## 第 4 章 プロジェクトの評価

## 第4章 プロジェクトの評価

### 4-1 事業実施のための前提条件

「ブ」国側分担に関するプロジェクト実施の前提条件は、次のとおりである。

- ・ 日本にある銀行と銀行取極め（Banking Arrangement：B/A）を贈与契約（Grant Agreement）調印後1ヶ月以内の締結
- ・ B/Aを締結した日本の銀行に対する、支払手続きの執行権を当該銀行に授与する旨の支払授權（Authorization to Pay：A/P）をコンサルタント契約締結後に1ヶ月以内の発行
- ・ 本プロジェクトに必要なとなるEIAの承認は、本体工事G/A調印までに取得
- ・ RAPに基づき本体工事におけるPAPsに対して適正な補償、移転を本体工事開始前までに実施
- ・ 本体工事に支障となる埋設支障物（電気、水道、通信）と電力架空線等の施設は、工事入札前までに移設完了
- ・ 本体工事に必要となる仮設ヤード用地の借用、土取り場用地等について、地権者の了解を得るための支援
- ・ 本体工事に必要となる免税措置、及び日本国、第三国からの輸入品について、迅速な関税手続きの実施促進
- ・ 本体工事中の交通処理・誘導、安全管理に関する支援
- ・ 本体工事実施中、周辺住民及び他の第三者との問題が生じた場合、解決に向けた協議と支援

### 4-2 プロジェクト全体計画達成のために必要な相手方投入（負担）事項

プロジェクトの効果を発現・持続するため、「ブ」国側が取り組むべき事項を以下に列記する。

- ・ 仏圏特有の構造物に対する10年瑕疵保険に対して、「ブ」国側の負担で、また発注者として監理事務所を雇用し、保険会社と保険契約を結ぶことになる。監理事務所が実施する本プロジェクトに対する審査が、本体工事の進捗に影響しないように計画的な実施対応が必要である。
- ・ 工事完了後は、円滑な交通を保つだけでなく、橋梁や道路構造物の耐用期間を伸ばすため、「ベ」国による維持管理が速やかに必要となる。維持管理業務は日常維持管理や障害物除去、清掃等を実施するとともに、定期点検を確実にを行い、橋梁及び道路構造物に損傷が見られた場合は、早期に適切な補修を行うことが肝要となる。したがって、維持管理、及び補修に必要なとされる要員・予算を十分に確保し、継続的に維持管理を実施することが条件となる。

### 4-3 外部条件

本プロジェクト全体計画の効果を発現・持続するために「ブ」国側が取り組むべき外部条件を以下に示す。

- ・ 東側の流末までの排水側溝について、プロジェクト範囲外の既存排水側溝を新規排水側溝に置き換えて流末である水路まで本プロジェクト完了する前までに完工することが必要である。
- ・ 将来需要予測結果を鑑み、短期・中期・長期的な視点で交通施策を推進する必要がある。短期的には、隣接交差点の改修、及び立体交差化、漁業通りの改修、中・長期には、公共交通の転換、北部バイパスの実現などが挙げられる。
- ・ 維持管理、及び補修に必要な予算を配賦する道路基金（FR）の他に、別の組織としてベナン道路インフラ会社（Société des Infrastructures Routières du Bénin。以下「SIRB」という。）が大統領府に設立されている。FRとSIRBの役割のデマケを明確にするとともに、それぞれの歳入と歳出の透明性を確保し、国家の資産であるインフラ構造物の価値を維持するために適切に維持管理していくことが重要である。
- ・ ネットワークのモデル範囲については、コトヌ市周辺からの流入出及び市域の通過を考慮できるように、コトヌ市に加え周辺道路を含むよう設定した。
- ・ 周辺を出発地または到達地とする交通は、主要幹線道路を利用することとした。

## 4-4 プロジェクトの評価

### 4-4-1 妥当性

#### (1) 裨益対象

- プロジェクトの直接裨益効果は、「ベ」国経済の中心都市であり、国全体平均よりも極めて高い人口密度を示すコトヌ市の住民である約 68 万人<sup>1</sup>の一般国民に対してである。

#### (2) 住民の生活改善

- 本プロジェクト実施により渋滞が緩和され、物流や人の移動が円滑となり、国内及び西アフリカ地域全体の物流円滑化への寄与が大きく期待される。
- また、ベドコ交差点の朝と夕方へのピーク時の渋滞を避けるため、早朝に出勤し、夜遅く帰宅していた通勤層の生活が改善されることが期待される。

#### (3) 中・長期計画との整合

- 「ベ」国は、2016 年 10 月に「政府行動計画」（PAG : Programme d' Action du Gouvernement 2016-2021）が閣議決定され、「輸送インフラ強化」を重要戦略に掲げ、経済の構造改革推進、インフラセクターの開発、輸送・ロジスティクス・商業インフラの強化などを重点的に進める政策が打ち出されており、本プロジェクトの完成による意義は高い。

#### (4) 我が国の援助政策・方針との整合

- 「ベ」国は、我が国の支援による西アフリカ「成長の環」広域開発における重要なアビジャン・ラゴス回廊（東西国際回廊：国際国道 1 号線）上の重要通過地であり、内陸部を結ぶコトヌ・ニアメ回廊（南北国際回廊：国際国道 2 号線）の起点となっており、対アフリカ政策においても重要な位置付けにあることから、援助政策・方針に合致している。

### 4-4-2 有効性

#### (1) 定量的評価

本プロジェクトの実施により期待される定量的効果を下表に示す。プロジェクト実施前の基準年とプロジェクト完成 3 年後を目標年としたそれぞれの基準値、及び目標値を設定する。

表 4.1 定量的効果

指標名	基準値 (2019 年実績値)	目標値 (2026 年) 【事業完成 3 年後】
旅客数 (人/日) 注1	553,000	599,000
貨物量 (トン/年) 注2	8,774,000	10,214,000
走行時間 (分) 注3	14	3
交差点飽和度 (%) 注4	1.009	0.862

注 1 : ベドコ交差点を通過する自動車及びバイクを対象

注 2 : 各年にベドコ交差点を通過する推定トラック台数に対して、トラック 1 台当たりの輸送量 13.5 トンに乗じた値（コトヌー港取扱貨物量のうち、ベナンを含むニジェール、マリ、ブルキナファソの内陸国への貨物量を基に JICA 調査団が推定）

注 3 : スタジアム交差点からベドコ交差点（約 1.8km）の夕方ピーク時（17:00~19:00）の数値

注 4 : 朝方ピーク時（6:00~9:00）の飽和度（飽和度 1.0 は交差点内でスタックしている状態）

出典 : JICA 調査団

#### (2) 定性的評価

本プロジェクトの実施により定性的効果は、以下のとおりである。

- 交差点を立体交差化することにより大型貨物車両の交通流を確保し、物流の円滑化により輸送コスト低減に寄与する。
- 旅客や物流の安定性、速達性が確保されることにより、コトヌ市内のアクセスが向上し、地域社会・経済活性化に寄与する。
- 車両とバイク、及び歩行者との交錯が減少することによる交通事故が減少する。

<sup>1</sup> 出典 : Effectifs de la POPULATION des Villages et Quartiers de Ville du Benin (RGPH-4, 2013),

## 資 料

資料1. 調査団員・氏名

資料2. 調査行程

資料3. 関係者（面談者）リスト

資料4. 収集資料リスト

資料5. 討議議事録（M/D）

資料5-1. 第1回 英文（正）

資料5-2. 第2回 英文（正）

資料5-3. 第3回 英文（正）

資料6. その他参考資料

資料6-1. 「ベ」国と取り交わした技術覚書（Note technique）

資料6-2. 排水計算

資料6-3. 舗装計算

資料6-4. 地下埋設物

資料6-5. 追加ランプ（フェーズ3）のプレF/Sレベルの検討書

資料6-6. 設計図



## 資料 1. 調査団員・氏名

## 資料 1. 調査団員氏名、所属

表 A-1.1 調査団員氏名

担当	氏名	所属先
総括/団長	川原 俊太郎	JICA 社会基盤・平和構築部 運輸交通・情報通信グループ 第一チーム
計画管理	和地 敬	JICA 社会基盤・平和構築部 運輸交通・情報通信グループ 第一チーム
業務主任/道路計画 1	清水 伸晴	株式会社アンジェロセック
副業務主任/道路計画 2	久田 慎	株式会社オリエンタルコンサルタンツグローバル
交差点設計 /交通運用計画 (前任)	寒川 雅樹	大日本コンサルタント株式会社
交差点設計 /交通運用計画 (後任)	高城 信彦	大日本コンサルタント株式会社
橋梁設計 (上部工)	緒方 純二	株式会社アンジェロセック
橋梁設計 (下部工)	秋庭 司	大日本コンサルタント株式会社
信号・照明設計	森田 秀明	株式会社アンジェロセック
道路・舗装設計 /排水設計	前田 武始	株式会社オリエンタルコンサルタンツグローバル
交通量調査/予測	遠藤 蔵人	首都高速道路株式会社
附帯工設計	富田 学	大日本コンサルタント株式会社
施工計画/積算/ユーティリティ /防護・移設計画	古賀 功次	株式会社アンジェロセック
自然条件調査 /支障物件調査	斎藤 春佳	株式会社アンジェロセック
高圧送電線移設 /防護計画	大村 弘	株式会社オリエンタルコンサルタンツグローバル (補強：有限会社早川技術士事務所)
環境社会配慮	吉田 豪	大日本コンサルタント株式会社
環境社会配慮	中村 純	大日本コンサルタント株式会社 (自社負担)
CIM1	和泉 繁	大日本コンサルタント株式会社
CIM2	神原 由紀	大日本コンサルタント株式会社
通訳	生熊 恵美	株式会社アンジェロセック (補強：(株)ジャパנקリエイト)
通訳	保坂 清人	株式会社アンジェロセック (補強：(株)フランシール)
設計照査	中岡 和伸	大日本コンサルタント株式会社

出典：JICA 調査団

## 資料 2. 調査行程







日程	月	日	曜日	総括	計画管理	業務主任 /道路計画	副業務主任 /道路計画	交差点設計 /交通運用計画	橋梁設計(上部工)	橋梁設計(下部工)	信号・照明設計	道路・舗装設計 /排水設計	交通量調査 /予測	附帯工設計	積算/施工計画 ユーティリティ防護 ・移設検討	自然条件調査 /支障物件調査	高圧送電線移設 /防護計画	環境社会配慮	環境社会配慮 (自社負担)	CIM②	通訳	月	日	曜日	
				JICA	JICA	清水伸晴	久田 慎	寒川 雅樹	緒方 純二	秋庭 司	森田 秀明	前田 武始	遠藤 蔵人	富田 学	古賀 功次	齋藤 春佳	大村 弘	吉田 豪	中村 純	神原 由紀	生熊 恵美				
		24	金																				24	金	
		25	土																					25	土
		26	日																					26	日
		27	月																					27	月
1		28	火			1 東京～							1 東京～											28	火
2		29	水			2 コトノー		1 キガリ～コトノー					2 コトノー											29	水
3		30	木			3 事務所開設/資料整理		2 事務所開設/資料整理					3 事務所開設/資料整理											30	木
4		31	金			4 JICA「ベ」関係機関連表		3 JICA「ベ」関係機関連表	1 東京～				4 JICA「ベ」関係機関連表				1 東京～					1 東京～		31	金
5	1	1	土			5 資料整理		4 資料整理	2 コトノー	1 キガリ～コトノー			5 資料整理			2 コトノー						2 コトノー		1	土
6	2	2	日			6 現地視察		5 現地視察	3 現地視察	2 現地視察			6 現地視察			3 現地視察						3 資料整理		2	日
7	3	3	月			7 再委託会社/インフラ省との協議		6 インフラ省との協議	4 インフラ省との協議	3 現地視察			7 現地視察			4 再委託会社/インフラ省との協議						4 再委託会社/インフラ省との協議		3	月
8	4	4	火	東京～	東京～	8 資料整理		7 資料整理	5 資料整理	4 資料整理			8 資料整理	1 東京～	1 東京～	5 資料整理	1 東京～	1 東京～	1 東京～	1 東京～	3 東京～	5 資料整理		4	火
9	5	5	水	コトノー	コトノー	9 資料整理		8 資料整理	6 資料整理	5 現地調査			9 資料整理	2 コトノー	2 コトノー	6 資料整理	2 コトノー	2 コトノー	2 コトノー	2 コトノー	2 コトノー	6 資料整理		5	水
10	6	6	木	JICA打合せ、インテリムレポート/CFAD訪問	JICA打合せ、インテリムレポート/CFAD訪問	10 JICA打合せ、インテリムレポート/CFAD訪問		9 JICA打合せ、インテリムレポート/CFAD訪問	7 JICA打合せ、インテリムレポート/CFAD訪問	6 インテリムレポート説明協議/市役所打合せ		1 東京～	10 インテリムレポート説明協議	3 インテリムレポート説明協議	3 インテリムレポート説明協議	7 インテリムレポート説明協議	3 インテリムレポート説明協議	3 インテリムレポート説明協議	3 インテリムレポート説明協議	3 インテリムレポート説明協議	3 インテリムレポート説明協議	7 インテリムレポート説明協議	7 インテリムレポート説明協議	6	木
11	7	7	金	大使館/JICA/サイト視察/CFAD訪問	大使館/JICA/サイト視察/CFAD訪問	11 大使館/JICA/サイト視察/CFAD訪問		10 サイト訪問/インフラ省との協議	8 サイト訪問/インフラ省との協議	7 サイト訪問		2 コトノー	11 サイト訪問	4 サイト訪問	4 サイト訪問	8 サイト訪問	4 支障物件管理会社/インフラ省との協議	4 環境調査	4 環境調査	4 環境調査	4 現地調査	8 大使館/JICA/サイト視察/CFAD訪問		7	金
12	8	8	土	ドライブポート、2号線視察	ドライブポート、2号線視察	12 ドライブポート、2号線視察		11 ドライブポート、2号線視察	9 現地調査	8 原石山調査		3 現地調査	12 ドライブポート、2号線視察	5 ドライブポート、2号線視察	5 原石山調査	9 原石山調査	5 ドライブポート、2号線視察	5 環境調査	5 環境調査	5 原石山調査	5 ドライブポート、2号線視察	9 ドライブポート、2号線視察		8	土
13	9	9	日	団内協議	団内協議	13 団内協議		12 団内協議	10 団内協議	9 原石山調査	1 東京～	4 資料整理	13 資料整理	6 団内協議	6 原石山調査	10 原石山調査	6 資料整理	6 団内協議	6 団内協議	6 原石山調査	6 資料整理	10 資料整理		9	日
14	10	10	月	団内協議	団内協議	14 団内協議		13 団内協議	11 団内協議	10 団内協議	2 コトノー	5 団内協議	14 コトノー	7 団内協議	7 団内協議	11 団内協議	7 団内協議	7 団内協議	7 団内協議	7 団内協議	7 コトノー	11 資料整理		10	月
15	11	11	火	支障物件管理会社/インフラ省との協議	支障物件管理会社/インフラ省との協議	15 支障物件管理会社/インフラ省との協議	1 東京～	14 現地調査	12 関係機関との協議	11 現地調査	3 現地調査	6 テクニカルノート作成	15 ～バンコク	8 テクニカルノート作成	8 積算調査	12 現地調査	8 現地調査	8 関係機関との協議	8 関係機関との協議	8 ～バンコク	12 支障物件管理会社/インフラ省との協議		11	火	
16	12	12	水	ミニッツ協議	ミニッツ協議	16 ミニッツ協議	2 コトノー	15 テクニカルノート作成	13 ミニッツ協議	12 テクニカルノート作成	4 現地調査	7 テクニカルノート作成	～東京 *自社負担	9 テクニカルノート作成	9 積算調査	13 現地調査	9 現地調査	9 関係機関との協議	9 関係機関との協議	～東京 *自社負担	13 ミニッツ協議		12	水	
17	13	13	木	MCAIとの協議	MCAIとの協議	17 MCAIとの協議	3 現地調査	16 現地調査	14 現地調査	13 現地調査	5 現地調査	8 現地調査		10 テクニカルノート協議	10 積算調査	14 現地調査	10 MCAIとの協議	10 関係機関との協議	10 関係機関との協議		14 MCAIとの協議		13	木	
18	14	14	金	ミニッツ署名/大使館/大使公邸 コトヌ22:50 発一	ミニッツ署名/大使館/大使公邸 コトヌ22:50 発一	18 ミニッツ署名/大使館/大使公邸 コトヌ22:50 発一	4 現地調査	17 現地調査	15 ミニッツ署名/大使館	14 大使館、JICA報告	6 現地調査	9 現地調査		11 現地調査	11 積算調査	15 現地調査	11 現地調査	11 関係機関との協議	11 関係機関との協議		15 ミニッツ署名/大使公邸		14	金	
19	6	15	土	～バリ経由	～バリ経由	19 現地調査	5 現地調査	18 現地調査	16 コトヌ23:50AF805-	15 現地調査	7 コトヌ23:50AF805-	10 現地調査		12 現地調査	12 積算調査	16 現地調査	12 現地調査	12 関係機関との協議	12 関係機関との協議		16 現地調査		15	土	
20		16	日	～東京	～東京	20 資料整理	6 資料整理	19 資料整理	～バリ7:10	16 資料整理	～バリ7:10	11 資料整理		13 資料整理	13 資料整理	17 資料整理	13 資料整理	13 資料整理	13 資料整理	13 資料整理	13 資料整理	17 資料整理		16	日
21		17	月			21 支障物件関連会社との協議	7 現地調査	20 現地調査		17 現地調査	8 現地調査	12 現地調査		14 現地調査	14 積算調査	18 支障物件関連会社との協議	14 支障物件関連会社との協議	14 関係機関との協議	14 関係機関との協議		18 現地調査		17	月	
22		18	火			22 インフラ大臣へのプレゼン	8 現地調査	21 現地調査	バリ	18 現地調査	8 現地調査	13 現地調査		15 現地調査	15 積算調査	19 現地調査	15 現地調査	15 関係機関との協議	15 関係機関との協議		19 現地調査		18	火	
23		19	水			23 再委託会社打合せ	9 コトノー	22 現地調査	東京	19 現地調査	バリ16:20AF804 コトヌ21:45	14 コトノー		16 現地調査	16 コトノー	20 現地調査	16 コトノー	16 関係機関との協議	16 関係機関との協議		20 コトノー		19	水	
24		20	木			24 市役所面談	10 ～バンコク	23 市役所面談		20 現地調査	8 現地調査	15 移動		17 市役所面談	17 ～バンコク	21 現地調査	17 移動	17 関係機関との協議	17 関係機関との協議		21 ～バンコク		20	木	
25		21	金			25 事務所撤収準備	～東京 *自社負担	24 事務所撤収準備		21 事務所撤収準備	9 事務所撤収準備	～東京 *自社負担		18 事務所撤収準備	～東京 *自社負担	22 事務所撤収準備	18 事務所撤収準備	18 事務所撤収準備	18 事務所撤収準備		22 事務所撤収準備		21	金	
26		22	土			26 コトノー		25 コトノー～キガリ		22 現地調査	10 現地調査			19 現地調査		23 コトノー	19	19 コトノー	19 コトノー				22	土	
27		23	日			27 ～東京				23 資料整理	11 団内協議			20 団内協議		24 ～東京	20	20 ～東京	20 ～東京				23	日	
28		24	月							24 JICA報告	12 JICA報告			21 JICA報告										24	月
29		25	火							25 コトノー～キガリ	13 現地調査			22 現地調査										25	火
30		26	水								14 コトノー			23 コトノー										26	水
31		27	木								15 ～バンコク			24 ～バンコク										27	木
32		28	金								～東京 *自社負担			～東京 *自社負担										28	金
33		29	土																					29	土
34		30	日																					30	日
35	7	1	月																					1	月
36		2	火																					2	火
37		3	水																					3	水

出典：JICA 調査団

図 A-2.2 調査日程（第2次現地調査）



日程	月	日	曜日	業務主任 /道路計画	高圧送電線移設 /防護計画	自然条件調査 /支障物件調査	月	日	曜日
				清水伸晴	大村 弘	斎藤 春佳			
1	17	火	1	東京～	1 東京～	1 東京～			17 火
2	18	水	2	コトナー	2 コトナー	2 コトナー			18 水
3	19	木	3	JICA訪問/ インフラ省と支障物管理 会社合同協議	3 JICA訪問/ インフラ省と支障物管理 会社合同協議	3 JICA訪問/ インフラ省と支障物管理 会社合同協議			19 木
4	20	金	4	支障物件管理会社との個 別協議	4 支障物件管理会社との個 別協議	4 支障物件管理会社との個 別協議			20 金
5	21	土	5	現地視察/再委託会社と 協議	5 現地視察/再委託会社と 協議	5 現地視察/再委託会社と 協議			21 土
6	22	日	6	資料整理	6 資料整理	6 資料整理			22 日
7	9	23	月	再委託会社と協議/インフ ラ省打合せ	7 支障物件管理会社との個 別協議	7 支障物件管理会社との個 別協議	9		23 月
8	24	火	8	インフラ省打合せ/JICA報 告	8 支障物件管理会社との個 別協議/JICA報告	8 支障物件管理会社との個 別協議/JICA報告			24 火
9	25	水	9	コトナー	9 コトナー	9 コトナー			25 水
10	26	木	10	～バンコク経由	10 ～バンコク経由	10 ～バンコク経由			26 木
11	27	金	11	～東京	11 ～東京	11 ～東京			27 金
12	28	土							28 土
13	29	日							29 日

出典：JICA 調査団

図 A-2.3 調査日程（第2.5次現地調査）

日程	月	日	曜日	環境社会配慮	環境社会配慮 (自社負担)	月	日	曜日
				吉田 豪	中村 純			
1	13	日	1	東京～ ET1411 NRT-BKK 18:25 23:10	1 東京～ ET1411 NRT-BKK 18:25 23:10	1		13 日
2	14	月	2	コトナー ET 629 BKK-ADD 01:35 05:45 ET 917 ADD-COO 08:55 12:55	2 コトナー ET 629 BKK-ADD 01:35 05:45 ET 917 ADD-COO 08:55 12:55	2		14 月
3	15	火	3	再委託会社と協議	3 再委託会社と協議	3		15 火
4	16	水	4	再委託会社と協議	4 再委託会社と協議	4		16 水
5	17	木	5	ベナン環境局/NGO追加ヒアリン グ	5 ベナン環境局/NGO追加ヒア リング	5		17 木
6	18	金	6	ベナン環境局/NGO追加ヒアリン グ	6 補償関連情報追加収集	6		18 金
7	10	19	土	7 資料整理	7 資料整理	7	9	19 土
8	20	日	8	資料整理	8 資料整理	8		20 日
9	21	月	9	インフラ省環境課と協議	9 インフラ省環境課と協議	9		21 月
10	22	火	10	インフラ省プロジェクト担当と協議	10 インフラ省プロジェクト担当と 協議	10		22 火
11	23	水	11	コトナー ET 916 COO-ADD 13:45 21:25 ET 828 ADD 23:55 - ～バンコク経由 -BKK 13:15 ET1403 BKK 21:45 -	11 コトナー ET 916 COO-ADD 13:45 21:25 ET 828 ADD 23:55 - ～バンコク経由 -BKK 13:15 ET1403 BKK 21:45 -	11		23 水
12	24	木	12	～東京 -HND 05:55	12 ～東京 -HND 05:55	12		24 木
13	25	金	13			13		25 金

出典：JICA 調査団

図 A-2.4 調査日程（第2.6次現地調査）

日程	月	日	曜日	総括/道路計画		交差点設計/交通運用計画		橋梁設計(上部工)		附帯工設計		自然条件調査/支障物件調査		CIM②		通訳	
				清水伸晴	高城 信彦	緒方純二	富田 学(自社負担)	齋藤 春佳	神原 由紀	保坂 清人							
1	11	29	金	東京～ ET1411 18:35/23:55		東京～ ET1411 18:35/23:55		東京～ ET1411 18:35/23:55		東京～ ET1411 18:35/23:55							
2		30	土	コトヌー ET629 01:35/06:20 ET917 08:55/12:55	東京～ ET1411 18:35/23:55	コトヌー ET629 01:35/06:20 ET917 08:55/12:55	東京～ ET1411 18:35/23:55	東京～ AF293 23:50/04:50	コトヌー ET629 01:35/06:20 ET917 08:55/12:55	東京～ ET1411 18:35/23:55	東京～ ET1411 18:35/23:55						
3		1	日	現地視察/事務所設営	コトヌー ET629 01:35/06:20 ET917 08:55/12:55	現地視察/事務所設営	コトヌー ET629 01:35/06:20 ET917 08:55/12:55	コトヌー AF804 15:15/21:35	現地視察/事務所設営	コトヌー ET629 01:35/06:20 ET917 08:55/12:55	コトヌー ET629 01:35/06:20 ET917 08:55/12:55						
4		2	月	JICA挨拶/ 「ベ」国インフラ運輸省事前 打合せ	JICA挨拶/ 「ベ」国インフラ運輸省事前 打合せ	JICA挨拶/ 「ベ」国インフラ運輸省事前 打合せ	JICA挨拶/ 「ベ」国インフラ運輸省事前 打合せ	JICA挨拶/ 「ベ」国インフラ運輸省事前 打合せ	再委託会社と協議	JICA挨拶/ 「ベ」国インフラ運輸省事前 打合せ	JICA挨拶/ 「ベ」国インフラ運輸省事前 打合せ						
5		3	火	「ベ」国関係機関への報 告会	「ベ」国関係機関への報 告会	「ベ」国関係機関への報 告会	「ベ」国関係機関への報 告会	「ベ」国関係機関への報 告会	「ベ」国関係機関への報 告会	「ベ」国関係機関への報 告会	「ベ」国関係機関への報 告会						
6		4	水	JICA表敬/「ベ」国関係機 関表敬/ミニッツ協議	JICA表敬/「ベ」国関係機 関表敬/ミニッツ協議	JICA表敬/「ベ」国関係機 関表敬/ミニッツ協議	JICA表敬/「ベ」国関係機 関表敬/ミニッツ協議	JICA表敬/「ベ」国関係機 関表敬/ミニッツ協議	支障物件管理会社との個 別協議	支障物件管理会社との個 別協議	支障物件管理会社との個 別協議						
7		5	木	ミニッツ協議	ミニッツ協議	ミニッツ協議	ミニッツ協議	ミニッツ協議	支障物件管理会社との個 別協議	支障物件管理会社との個 別協議	支障物件管理会社との個 別協議						
8	12	6	金	ミニッツ署名/大使館、 JICA報告	ミニッツ署名/大使館、 JICA報告	ミニッツ署名/大使館、 JICA報告	ミニッツ署名/大使館、 JICA報告	コトヌー AF847 21:05	支障物件管理会社との個 別協議	支障物件管理会社との個 別協議	支障物件管理会社との個 別協議						
9		7	土	コトヌー ET916 13:45/21:25 ET628 23:55/13:15	コトヌー ET916 13:45/21:25 ET628 23:55/13:15	コトヌー ET916 13:45/21:25 ET628 23:55/13:15	コトヌー ET916 13:45/21:25 ET628 23:55/13:15	～05:35 パリ AF276 13:15	コトヌー ET916 13:45/21:25 ET628 23:55/13:15	コトヌー ET916 13:45/21:25 ET628 23:55/13:15	コトヌー ET916 13:45/21:25 ET628 23:55/13:15						
10		8	日	NH878 15:15/東京23:00	NH878 15:15/東京23:00	NH878 15:15/東京23:00	NH878 15:15/東京23:00		NH878 15:15/東京23:00	NH878 15:15/東京23:00	NH878 15:15/東京23:00						
11		9	月														
12		10	火														
13																	

出典：JICA 調査団

図 A-2.5 調査日程 (第3次現地調査)

日程	月	日	曜日	業務主任/道路計画		道路・舗装設計/排水設計		高圧送電線移設/防護計画		自然条件調査/支障物件調査		月	日	曜日
				清水伸晴	前田 武始	大村 弘	齋藤 春佳							
				2020年										
1		7	金	1	東京～	1	東京～	1	東京～	1	東京～		7	金
2		8	土	2	コトヌー	2	コトヌー	2	コトヌー	2	コトヌー		8	土
3		9	日	3	事務所設営/社内協議/ 現地視察	3	社内協議/現地視察	3	社内協議/現地視察	3	事務所設営/社内協議/ 現地視察		9	日
4		10	月	4	インフラ・運輸省と事前打 合せ/JICA訪問	4	インフラ・運輸省と事前打 合せ/JICA訪問	4	インフラ・運輸省と事前打 合せ/JICA訪問	4	インフラ・運輸省と事前打 合せ/JICA訪問		10	月
5		11	火	5	MCAII契約企業との協議	5	MCAII契約企業との協議	5	MCAII契約企業との協議	5	MCAII契約企業との協議		11	火
6		12	水	6	支障物件管理会社との個 別協議	6	支障物件管理会社との個 別協議	6	支障物件管理会社との個 別協議	6	支障物件管理会社との個 別協議		12	水
7	2	13	木	7	支障物件管理会社との個 別協議	7	事業区域外の排水側溝 検討作業/現地視察	7	支障物件管理会社との個 別協議	7	支障物件管理会社との個 別協議	2	13	木
8		14	金	8	インフラ省打合せ/JICA報 告	8	事業区域外の排水側溝 検討作業/インフラ省打合せ /JICA報告	8	支障物件管理会社との個 別協議/JICA報告	8	支障物件管理会社との個 別協議/JICA報告		14	金
9		15	土	9	再委託会社と打合せ/コ トヌー	9	コトヌー	9	コトヌー	9	再委託会社と打合せ/コ トヌー		15	土
10		16	日	10	～	10	～バンコク経由	10	～バンコク経由	10	～		16	日
11		17	月	11	～東京	11	～東京	11	～東京	11	～東京		17	月
12		18	火										18	火
13		19	水										19	水

出典：JICA 調査団

図 A-2.6 調査日程 (第4次現地調査)

### 資料 3. 関係者（面談者）リスト



### 資料 3. 相手国関係者リスト

本調査のカウンターパートであるインフラ・運輸省及び本調査期間中に面会した関係者を以下に示す。

表 A-3.1 相手国関係者リスト

組織/Organzation	名前/Name	役職/Title
インフラ・運輸省/Ministère des Infrastructures et des Transports (MIT)		
	Roch Célestin HOUNDJE	次官/Secrétaire Général du Ministère
インフラ総局/Directions Générale des Infrastructure (DGI)		
	Jacques AYADJI	局長/Directeur général
	Arsène B. SOGLO	副局長/Directeur Général Adjoint des Infrastructures
新規工事部 Direction des Travaux Neufs (DTN)	Ismaël Gado AMADOU	プロジェクト室長/Chef de Projets
	N. Francois SENOU	プロジェクト担当
インフラ管理・モニタリング部 Direction de la Gestion et du Suivi des Infrastructures (DGSI)	Sylvain AVOTRICAN	部長/Directeur
環境社会評価課 Service des Évaluations Environnementales et Sociales (SEES)	Justin NATTA	プロジェクト担当
国立土木中央試験研究所/Centre National d'Essai et de Recherches des Travaux publics (CNERTP)		
	Raphael Comlan MOUSSOUGAN	
	Rodolphe S. AVOGBANNANON	
	AMMOUSSOU Eloi Virgile	Directeur Administratif et Financier
	SOUNOU Ferdinand	Directeur Commercial
	AVOGBANNANON Radolphe	Chef service génie civil
	MONTEIRO Wilfried	Chef projet
国立道路安全センター/Centre National de Sécurité Routière (CNSR)		
	Cariel KIKI	
ベナン気象庁/Agence Nationale de la Météorologie (METEO BENIN)		
	Félicien CHEDE	部長/Directeur de la Climatologie et de l'Agrométéologie
	OLODO Franck	担当者
生活環境・持続開発省/Ministère du Cadre de Vie et du Développement Durable (MCVDD)		
	José TONATO	大臣/Ministre
	Adam PINTO	副官房長/Directeur Adjoint de Cabinet
	Olga PRINCE-DAGNON	総局長/Directrice générale
ベナン環境庁/Agence Béninoise de l'environnement (ABE)		
	François-Corneille Kédowidé	局長/Director Général

組織/Organzation	名前/Name	役職/Title
生活環境・国土開発庁/Agence du Cadre de Vie pour le Développement du territoire (ACV-DT)		
	Moise ATTAKPA	プロジェクトチーフ/Chef projet
	Antoine UNTERSINGER	Project Asphaltage/コトヌ市舗装プロジェクト担当 (Louis Berger 所属)
経済財務省/Ministère de l'Économie et des Finances (MEF)		
税務総局 Direction Générale des Impôts (GDI)	Brice SEGNI	部長/Directeur de la mission fiscale des régimes d'exception
コトヌ市/Mairie de Cotonou		
	Isidore GNONLONFOUN	Maire/市長
	Hinde Gbeginou	技術アドバイザー
ベナン電力エネルギー公社/Société Béninoise d'Énergie Électrique (SBEE)		
	Wilfred ADJAMASSOUHON	エンジニア/Ingénieur génie électrique option Electrotechnique et réseaux
	Abel C. OUEHA	
	Thomas GODOUI	
	LANLOKOU Cyriaque	エンジニア/Technicien
ベナン水道公社/Société Nationale des Eaux du Bénin (SONEB)		
	Henri KPEHOUNTON	
	Djaffo ATACORA	
	F. Jean-Darius OUINSOU	
	Mathieu MEDJA	
	DOMINGO Cyriaque	Chef entretien réseau d'eau de cononu
ベナン通信公社/BENIN TELECOM		
	Joachim EZIN	課長/Chef Service Etudes et Planification
	A. Rene HOUNKONNOU	
	DOSSOU-YOVO Wilfried	
ミレニアムチャレンジアカウント 2/Millennium Challenge Account-BENIN II (MCA2)		
	Oswald Gbetondji ACCLASSATO	Construction Project Manager
	Melvine AHOUISSOUSSI	Distribution Specialist
AFFRICAIE DE ASSURANCES SA.		
	Gilles Christel OUENDO	Chef Bureau Direct Siège
NSIA		
	Fabrice FANOUE-ZIAKA	Producer
BOLLORE		
	Modeste A. ABIALA	Sales Director
Prosign		
	BERRUTI Tommaso	Administrator
コトヌ自治港/Port Autonome de Cotonou		
	Jan Louis M. DEVOGHT	Technical Director
SOFRECO		
	Ahmed KHATTAB	Chief of Mission
Cegelec		
	Hicham EL MGHARI IDRISSE	Chief of Agent

組織/Organzation	名前/Name	役職/Title
パリ空港公団/Aéroport de Paris (ADP)		
	Gilles HENOT	Project Director
在ベナン日本大使館		
	小西 淳文	特命全権大使
国際協力機構/Japan International Cooperation Agency (JICA)		
ベナン支所/Benin office	笹館 孝一 Koichi SASADATE	支所長/Représentant Résident
	川邊 りつ子 Ritsuko KAWABE	企画調査員 (インフラ整備) /Conseillère en Formulatio des Projet
	Benjamn MORERE	ナショナルスタッフ

出典：JICA 調査団

## 資料 4. 収集資料リスト



## 資料 4. 収集資料リスト

表 A-4.1 資料収集リスト

番号	名 称	形 態 図書・ビデオ 地図・写真等	オリジ ナル・ コピー	発行機関	発行 年
1	PROGRAMME D' ACTIONS DU GOUVERNEMENT 2016-2021	報告書 アクションプラン	ソフト コピー	PRESIDENCE DE LA REPUBLIQUE DU BENIN	2016
2	Autoponts « Toyota » et « la Béninoise » à Cotonou, Note sur l'évaluation économique	報告書	ソフト コピー	EFFAGE	2015
3	Code du travail, Loi n°98-004 du 27 janvier 1998	図書 労働法	ソフト コピー	Gouvernement de la République du Bénin.	1998
4	TRAVAUX DE CONSTRUCTION DU PONT A TOVEGBAME AU PK 28 SUR LA ROUTE AKPRO-MISSÉRÉTÉ - ADJOHOUN – KPÉDÉKPO Vol 1, 2, 3, 4, 5	報告書 詳細設計	ソフト コピー	MINISTERE DES TRAVAUX PUBLICS ET DES TRANSPORTS	2016
5	TRAVAUX DE CONSTRUCTION DU PONT A TOVEGBAME AU PK 28 SUR LA ROUTE AKPRO-MISSÉRÉTÉ - ADJOHOUN – KPÉDÉKPO, Etude d'Impact Environnemental et Social	報告書 環境社会配慮	ソフト コピー	MINISTERE DES TRAVAUX PUBLICS ET DES TRANSPORTS	2016
6	DOSSIER D' APPEL D' OFFRES POUR LA PASSATION DU MARCHE DE TRAVAUX DE CONSTRUCTION D' UN PONT A TOVEGBAME AU PK 28 SUR LA ROUTE AKPRO MISSERETE-ADJOHOUN- KPEDEKPO, Volume 1, Volume 2	入札図書	ソフト コピー	MINISTERE DES TRAVAUX PUBLICS ET DES TRANSPORTS - DIRECTION GENERALE DES TRAVAUX PUBLICS	2016
7	DOSSIER D' APPEL D' OFFRES POUR LA PASSATION DU MARCHE DE TRAVAUX DE CONSTRUCTION D' UN PONT A TOVEGBAME AU PK 28 SUR LA ROUTE AKPRO MISSERETE-ADJOHOUN- KPEDEKPO, Dossier Plans	入札図書 図面	ソフト コピー	MINISTERE DES TRAVAUX PUBLICS ET DES TRANSPORTS - DIRECTION GENERALE DES TRAVAUX PUBLICS	2016
8	DOSSIER D' APPEL D' OFFRES POUR LA PASSATION DU MARCHE DE TRAVAUX DE CONSTRUCTION D' UN PONT A TOVEGBAME AU PK 28 SUR LA ROUTE AKPRO MISSERETE-ADJOHOUN- KPEDEKPO, Dossier d'évaluation des travaux, Estimation Confidentielle des travaux	入札図書 事業費	ソフト コピー	MINISTERE DES TRAVAUX PUBLICS ET DES TRANSPORTS - DIRECTION GENERALE DES TRAVAUX PUBLICS	2016
9	REALISATION D' ETUDES SPECIFIQUES DANS LE SECTEUR DES TRANSPORTS AU BENIN, LOT N°1 - SECTION 1: ETUDE DE LA ROUTE OUIDAH - POMASSE - AVAKPA - ALLADA - GOVIE - RNIE2 Rapport de Synthèse	報告書 概略設計	ソフト コピー	Groupement Louis Berger	2015
10	REALISATION D' ETUDES SPECIFIQUES DANS LE SECTEUR DES TRANSPORTS AU BENIN, LOT N°1 - SECTION 2: EETUDE DE LA ROCADE DE PORTO-NOVO Rapport de Synthèse	報告書 概略設計	ソフト コピー	Groupement Louis Berger	2015
11	REALISATION D' ETUDES SPECIFIQUES DANS LE SECTEUR DES TRANSPORTS AU BENIN, LOT N°1 - SECTION 1 et SECTION 2: ETUDES ECONOMIQUES	報告書 経済調査	ソフト コピー	Groupement Louis Berger	2015

番号	名 称	形 態 図書・ビデオ 地図・写真等	オリジ ナル・ コピー	発行機関	発行 年
12	RESEAU ROUTIER NATIONAL, Carte Générale du Bénin Le tracé des limites administratives figurant sur cette carte n'a aucune valeur juridique	道路網地図	ソフト コピー	SBDR/DGSI/DGI	2018
13	Portant classement des voies d'intérêt économique, touristique ou stratégique	図書 交通量データ	ソフト コピー	PRESIDENCE DE LA REPUBLIQUE DU BENIN	2018
14	AGENCE BENINOISE POUR L'ENVIRONNEMENT, GUIDE GÉNÉRAL DE RÉALISATION D'UNE ÉTUDE D'IMPACT SUR L'ENVIRONNE	図書 環境調査ガイド	ソフト コピー	MINISTERE DE L'ENVIRONNEMENT, DE L'HABITAT ET DE L'URBANISME	2001
15	LOI-CADRE SUR L'ENVIRONNEMENT	図書	ソフト コピー	PRESIDENCE DE LA REPUBLIQUE DU BENIN	1999
16	PROJET DE FACILITATION DU COMMERCE ET DU TRANSPORT SUR LE CORRIDOR ABIDJAN-LAGOS PLAN D'ACTION DE REINSTALLATION DES PERSONNES AFFECTEES PAR LA RECONSTRUCTION DE LA RNIE1 TRONÇON GODOMEY-PAHOU (16,5 KILOMETRES), Volume I : RAPPORT FINAL DES TRAVAUX	図書 住民移転	ソフト コピー	PRESIDENCE DE LA REPUBLIQUE DU BENIN	2011
17	TRAVAUX D'AMENAGEMENT ET DE BITUMAGE DES ROUTES MISSESSINTO- ZINVIE-SEDJEDENOU-ZE (32 KM) ; RNIE 1 (COCOCODJI)-HEVIE-OUEDO (9 KM) ET OUEDO-CALAVI KPOTA (12 KM) REALISATION DES TRAVAUX DE DEPLACEMENT DES RESEAUX ELECTRIQUES	図書 電力線移設費	ソフト コピー	SBEE,SONEB,BIT	-
18	Portant attributions, organisation et fonctionnement du Ministère des Infrastructures et des Transports	図書 インフラ省組織	ソフト コピー	PRESIDENCE DE LA REPUBLIQUE DU BENIN	2016
19	Portant attributions, organisation et fonctionnement de la Direction Général des Travaux Publics	図書 公共事業局省 組織	ソフト コピー	PRESIDENCE DE LA REPUBLIQUE DU BENIN	2013
20	PROGRAMME D'URGENCE D'ENTRETIEN DU RESEAU ROUTIER NATIONAL Campagne 2009-2018	報告書 道路維持管理 計画	ソフト コピー	MINISTERE DES INFRASTRUCTURES ET DES TRANSPORTS (MIT) DIRECTION GENERALE DES INFRASTRUCTURES	2018
21	CAHIER DES CHARGES FISCALES DES MARCHES PUBLICS ET AUTRES REGIMES D'EXCEPTION	図書 公共調達の税 務仕様	ソフト コピー	MINISTRES DES FINANCES	1997
22	PORTANT CONTROLE DE L'OBLIGATION D'ASSURANCE DES RISQUES DE LA CONSTRUCTION EN REPUBLIQUE DU BENIN	図書 建設リスク保 険の義務	ソフト コピー	MINSTERE DE L'ECONOMIQUE ET DES FINANCES	2018

番号	名 称	形 態 図書・ビデオ 地図・写真等	オリジ ナル・ コピー	発行機関	発行 年
23	PROJET ASPHALTAGE – COTONOU PROGRAMME GLOBAL	地図 コトヌ市アスフ ァルト化計画	ソフト コピー	MAITRE D’OUVRAGE: MINISTERE DU CADRE DE VIE ET DU DEVELOPPEMENT DURABLE (MCVDD)	-
24	PROJET DE REHABILITATION ET D’AMENAGEMENT DES VOIRIES DE PRIMAIRES, SECONDAIRE ET TERTIAIRE DANS LES VILLES	図面 コトヌ市アスフ ァルト化計画	ソフト コピー	République Française ; Ministère de la Coopération et du Développement	-
25	TRAFIC DU PORT DE COTONOU : 2012-2017	統計データ	ソフト コピー	Port Autonome de Cotonou, Direction Commerciale et du Marketing	2017
26	REALISATION D’ETUDES SPECIFIQUES DANS LE SECTEUR DES TRANSPORTS AU BENIN LOT N°2 –Etudes stratégiques du réseau routier classé et de la ville de Cotonou	報告書	ソフト コピー	Groupement Louis Berger MINISTERE DES INFRASTRUCTURES ET DES TRANSPORTS DIRECTION GENERALE DES INFRASTRUCTURES	2015
27	EVOLUTION DES RESSOURCES ET DES EMPLOIS DU FONDS ROUTIERS DE 2012 A 2018	維持管理基金 資金	ソフト コピー	FOND ROUTIER	2018
28	Renforcement et réhabilitation su réseau de distribution d’électricité regional et à CotoFOLIOu: conception, supervision et suivi.	図面 電力線配電計 画図	ソフト コピー	MCAII	2018
29	PROFIL INSTITUTIONNEL DE L’ENVIRONNEMENT DU BENIN	図書 ベナン環境制 度	ソフト コピー	MINISTERE DE L’ENVIRONNEMENT, DE L’HABITAT ET DE L’URBANISME	1998
30	PLAN DE DEVELOPPEMENT COMMUNAL Deuxième Génération 2018 - 2022	図書 コトヌ市開発 計画	ソフトコ ピー	COMMUNE DE COTONOU	2017
31	Code de la route	道路法	ソフト コピー	-	2019
32	Plan d’Investissements du Port, l’espace portuaire et les gros travaux	図書 港湾投資計画	ソフト コピー、 PPT	Directeur Général (Joris Thys) et Directeur Technique (Jan De Voght) ,Port Autonome de Cotonou	2015
33	CONSTRUCTION DU NOUVEL AEROPORT INTERNATIONAL DE GLO-DJIGBE	平面図 新空港計画	ソフト コピー	MINISTERE DES INFRASTRUCTURE ET DES TRANSPORTS	-
34	STATISTIQUES DE JANVIER 2018 A JANVIER 2019 Evolution du trafic routier	交通量データ (料金所)	ソフト コピー	MINISTERE DES INFRASTRUCTURES ET DES TRANSPORTS	2019

番号	名 称	形 態 図書・ビデオ 地図・写真等	オリジ ナル・ コピー	発行機関	発行 年
35	PROGRAMME D'ASSAINISSEMENT PLUVIAL DE LA VILLE DE COTONOU	図書 コトヌ市雨水 排水計画	ソフト コピー	PRESIDENCE DE LA REPUBLIQUE DU BENIN	-
36	Prise en charge des frais de déplacement des réseaux lors de travaux routiers	図書 道路工事中に おける移設費 用	ソフト コピー	CLUB D'ÉCHANGÉ D'EXPERIENCES SUR LES ROUTES DEPARTEMENTALES	1993
37	Données de Pluie	データ 降雨データ	ソフト コピー	COTONOU_AEROPO RT	-
38	LES REGIMES D'EXCEPTION DE LA MISSION FISCALE EN 10 POINTS	図書	ソフト コピー	MINISTERE DE L'ECONOMIE ET DES FINANCES	2017
39	L'organigramme du Ministère de l'Energie, de L'Eau et des Mines (MEEM)	エネルギー省 組織図	ソフト コピー	Ministère de l'Energie, de L'Eau et des Mines (MEEM)	-
40	PORTANT CATEGORISATION DES ENTREPRISES DU BATIMENT ET DES TRAVAUX PUBLICS	施工業者カテ ゴリ	ソフト コピー	MINISTERE DU CADRE DE VIE ET DU DEVELOPPEMENT DURABLE	2018
41	DESCRIPTION DES POSTES ET PROFILS	国家道路安全 センター組織	ソフト コピー	CENTRE NATIONAL DE SECURITE ROUTIERE ((CNSR)	2015
42	潮位データ 2011-2019	データ	ソフト コピー	Port Autonome de Cotonou	2019
43	DOCUMENT DE PRESENTATION DU PROJET DE BUDGET 2020 A LA COMMISSION BUDGETAIRE DE L'ASSEMBLEE NATIONNALE	予算 2020	ソフト コピー	MINISTERE DES INFRASTRUCTURES ET DES TRANSPORTS	2019
44	Études d'aménagement du Contournement Nord- Est et des berges de la lagune de Cotonou puis l'assistance au Maître d'Ouvrage pour le recrutement d'un concessionnaire (Trafic, Géotechnique, Ouvrages d'Ar)	報告書 北バイパス	ソフト コピー	Egis, MINISTERE DES INFRASTRUCTURES ET DES TRANSPORTS	2018

出典：JICA 調査団



## 資料 5. 討議議事録 (M/D)

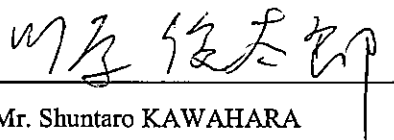
資料 5-1. 第 1 回 英文 (正)

**Minutes of Discussions**  
**on the Preparatory Survey for the Project for**  
**“The Construction of the Interchange of Cotonou”**

In response to the request from the Government of Republic of Benin (hereinafter referred to as “Benin”), Japan International Cooperation Agency (hereinafter referred to as “JICA”) dispatched to Benin the Preparatory Survey Team for the Outline Design (hereinafter referred to as “the Team”) of “The Construction of the Interchange of Cotonou ” (hereinafter referred to as “the Project”). The Team held a series of discussions with the officials of the Government of Benin and conducted a field survey.

In the course of the discussions, both sides have confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare the Preparatory Survey Report.

Cotonou, 25<sup>th</sup> January 2019



Mr. Shuntaro KAWAHARA

Leader

Preparatory Survey Team

Japan International Cooperation Agency

Japan



Mr. Roch C. HOUNDJE

Secretary General

Ministry of Infrastructures and Transports

Republic of Benin



Mr. O.H.S. Jacques AYADJI

Director General of Infrastructures

Ministry of Infrastructures and Transports

Republic of Benin

## ATTACHMENT

### 1. Objective of the Project

The objective of the Project is to decrease traffic congestion of "Intersection of Vedoko in Cotonou" by strengthening the traffic capacity, thereby contributing to enhancing quality of life in Cotonou and its suburban area, and strengthening logistics and growth of industry in Benin and West Africa.

### 2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as "Preparatory Survey for the Project for the Construction of Interchange of Cotonou".

### 3. Project site

Both sides confirmed that the site of the Project is in "Intersection of Vedoko in Cotonou", which is shown in Annex 1.

### 4. Responsible authority for the Project

Both sides confirmed that the authority responsible for the Project is The Ministry of Infrastructures and Transports represented by the General Directorate of Infrastructures (DGI), which will be the executing agency for the Project (hereinafter referred to as "the Executing Agency"). The Executing Agency shall coordinate with all the relevant authorities to ensure smooth implementation of the Project and ensure that the undertakings for the Project shall be managed by relevant authorities properly and on time. The organization chart of the Executing Agency is shown in Annex 2.

### 5. Items requested by the Government of Benin

5-1. As a result of discussions, both sides confirmed that the items requested by the Government of Benin are as follows:

- Construction of Interchange in Intersection of Vedoko in Cotonou;
- Improvement of Intersection of Vedoko in Cotonou; and
- Installation of Traffic signals and Street lights.

5-2. JICA will assess the feasibility of the above requested items through the Survey and will report the findings to the Government of Japan. The final scope of the Project will be approved by the Government of Japan. The Project will be implemented according to bilateral agreement between Government of Japan and Government of Benin through the signing of the Exchange of Notes.



## 6. Procedures and Basic Principles of Japanese Grant

6-1. The Benin side agreed that the procedures and basic principles of Japanese Grant as described in Annex 3, 4 and 5 shall be applied to the Project.

As for the monitoring of the implementation of the Project, JICA requires Benin side to submit the Project Monitoring Report, the form of which is attached as Annex 6.

6-2. The Benin side agreed to take the necessary measures, as described in Annex 7, for smooth implementation of the Project. The contents of the Annex 7 will be elaborated and refined during the Preparatory Survey and be agreed by Benin side and the mission dispatched for explanation of the Draft Preparatory Survey Report. The contents of Annex 7 will be updated as the Preparatory Survey progresses, and eventually, will be used as an attachment to the Grant Agreement.

## 7. Schedule of the Survey

7-1. The Team will proceed with further first field survey in Benin until 16th, February 2019.

7-2. The Team will conduct the second field survey in Benin from May to June 2019. The Team will explain alternative plans of interchange structure of the Project, among which the optimal plan will be determined.

7-3. JICA will prepare a draft Preparatory Survey Report in French and dispatch a mission to Benin in order to explain its contents around November 2019.

7-4. If the contents of the draft Preparatory Survey Report is accepted and the undertakings for the Project are fully agreed by the Benin side, JICA will finalize the Preparatory Survey Report and send it to Benin around January 2020.

7-5. The above schedule is tentative and subject to change.

## 8. Environmental and Social Considerations

8-1. The Benin side confirmed to give due environmental and social considerations before and during implementation, and after completion of the Project, in accordance with the JICA Guidelines for Environmental and Social Considerations (April, 2010).

8-2. The Project is categorized as "B" from the following considerations: the project is not likely to have significant adverse impact on the environment under the JICA guidelines for environmental and social considerations (April 2010) in terms of its sectors, characteristics and areas.

The Benin side confirmed to conduct the necessary procedures concerning the

environmental assessment (including stakeholder meetings, Environmental Impact Assessment (EIA) /Initial Environmental Examination (IEE) and information disclosure, etc.) and make EIA/IEE report of the Project. The EIA/IEE approval shall be received from the responsible authorities and submitted to JICA before signing of Grant Agreement.

8-3. For the Project that will result in involuntary resettlement, the Benin side confirmed to prepare a Resettlement Action Plan (RAP) and make it available to the public. In addition, the Benin side confirmed to provide the affected people with sufficient compensation and/or support in accordance with RAP, which is consistent with JICA Guidelines for Environmental and Social Considerations (April, 2010), in a timely manner.

## 9. Other Relevant Issues

### 9-1. The Inception Report

The Team explained the methodology of Preparatory Survey based on the Inception Report. The Benin side understood the contents and accepted the Report with some comments.

### 9-2. Assistance to the Preparatory Survey

The Benin side shall, at its own expense, provide the Team with the following items in cooperation with other organizations concerned.

- (1) Security-related information as well as measures to ensure the safety of the Survey Team;
- (2) Data and information necessary for the survey;
- (3) Counterpart personnel;
- (4) Identification cards if necessary;
- (5) Entry permits necessary for the Survey Team members to conduct field surveys;
- (6) Permission for the implementation of traffic survey; and

### 9-3. Major Undertaking to be taken by Benin

The Benin side agreed that the following undertaking should be taken by the Benin side at the Benin expenses under the Project;

- (1) To secure the Project site including relocation of existing utilities, buildings and obstacles ;
- (2) To arrange issuance of license, permission and other necessary procedures for the implementation of the Project ;
- (3) To obtain the royalties/permission for taking raw materials such as stone/rock/filling materials from the quarry/river-bed/borrow pit in the respect

m)



of laws and regulations in force;

- (4) To conduct traffic controls of existing road for the Project, if necessary; and
- (5) To maintain traffic on the roads around the Project site.

#### 9-4. Questionnaire

The Executing Agency shall answer to the Questionnaire, of which items are shown in Annex 8, submitted by the Team with relevant documents by the end of February 2019.

#### 9-5. Interchange Plan

Benin side insisted as follows:

- Interchange Structure should meet future traffic demand in the long run;
- Interchange with four lanes should be constructed as the intersection is located on an international highway;
- Interchange with Four lanes is necessary even if its construction needs additional Right of Way;
- The Executing Agency will be fully responsible for the relocation of people affected by the Project;
- Short and medium trip passengers will pass interchange of Vedoko to be constructed, because North Bypass will be tolled motorway;
- Benin side does not have immediate action plan of introducing public transport systems.

The Team stated that planning of interchange should be determined considering traffic demand, project benefit, cost efficiency, social and environmental effects and relevant transport policies such as introduction of Traffic Demand Management and public transport systems. The Team also explained that alternative plans of interchange structure of the Project would be proposed in the second field survey based on traffic analysis, among which the optimal plan will be determined.

#### 9-6. Improvement of relevant interchanges

Benin side requested that the Preparatory Survey would include comprehensive proposal to improve intersections of which traffic might be affected by the Project. The Team replied that the survey scope should be minimized to determine the plan of construction of the Interchange of Vedoko though basic concept of improving interchanges affected by the Project will be proposed in the draft final report.

#### 9-7. Insurance for defect liability for ten years

The Team cited that:

- Insurance for defect liability for ten years was not applied to the water supply project funded by Japanese grant; and

- The Team raised its concerns about the insurance, which led to delay of progress of Japanese assisted projects in some western African countries because of checking process of the Technical Control Bureau.

Benin side explained as follows;

- The insurance for defect liability for ten years must be applied to all major structures such as bridges and flyovers according to Decree No.2016-054 of 10 March 2016, "Obligation to insure the risks of construction in the Republic of Benin" shown in Annex 9 even if the "Cahier des Clauses Administratives Generales" (CCAG) is not applied to the Project; and
- The Bureau of Technical Control can review design drawings and results of inspection for works of the Project within reasonable period even if Japanese design codes are applied to the Project.

Both sides agreed as follows:

- The insurance is applied to the Project;
- Not CCAG but "The General Conditions of Contract for Construction Works", JICA standard contract document for Grant, is to be applied to the Project;
- The Executing Agency will bear cost for the insurance and employment of the Bureau of Technical Control ; and
- The Team will interview the Bureau to identify issues that may affect delay of approval by the Bureau.

#### 9-8. Design code

Benin side agreed that Japanese design code will be applied to the Project. And Japanese consultant will explain basic concept of the design code to the Executing Agency.

#### 9-9. Relocation of utilities affected by the Project

Benin side agreed that the Executing Agency would bear relocation cost of utilities affected by the Project. The Team requested to present cost estimate and schedule of relocation of the utilities to secure budget allocation and work schedule. The implementation of this task are conditioned by available plans of utilities affected by structure.

The Team explained that it will present utilities to be affected by the Project during the second field survey, and that the draft final report to be presented in the third field survey would include cost estimate and work schedule of utility relocation.

#### 9-10. Divergence of interpretation



Done in duplicate in English and French languages, both are equally authentic.  
Both sides agreed that they will mutually consult and amicably settle down issues,  
in case of any divergence of interpretation.

Annex 1 Project Site

Annex 2 Organization Chart

Annex 3 Japanese Grant

Annex 4 Procedures of Japanese Grant

Annex 5 Financial Flow of Japanese Grant

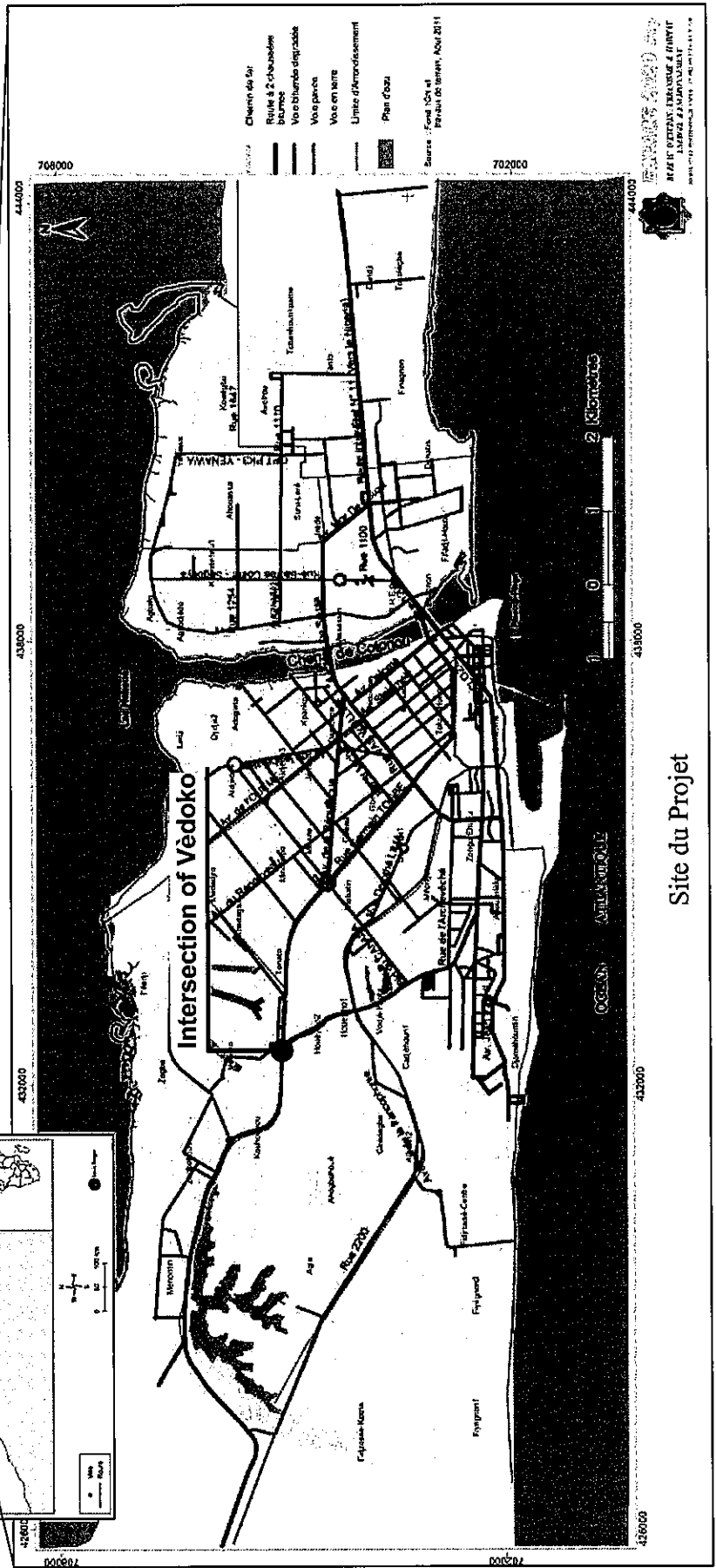
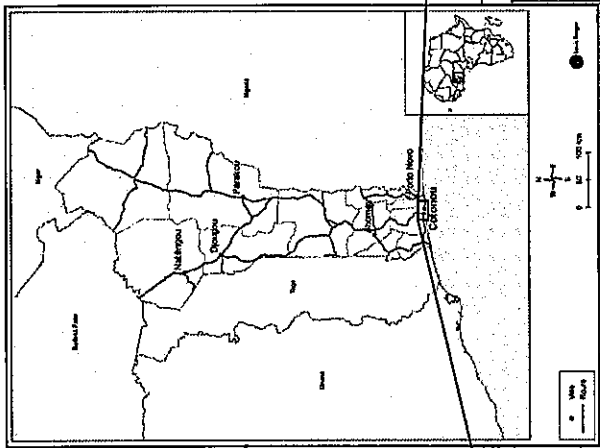
Annex 6 Project Monitoring Report (template)

Annex 7 Major Undertakings to be taken by the Government of Benin

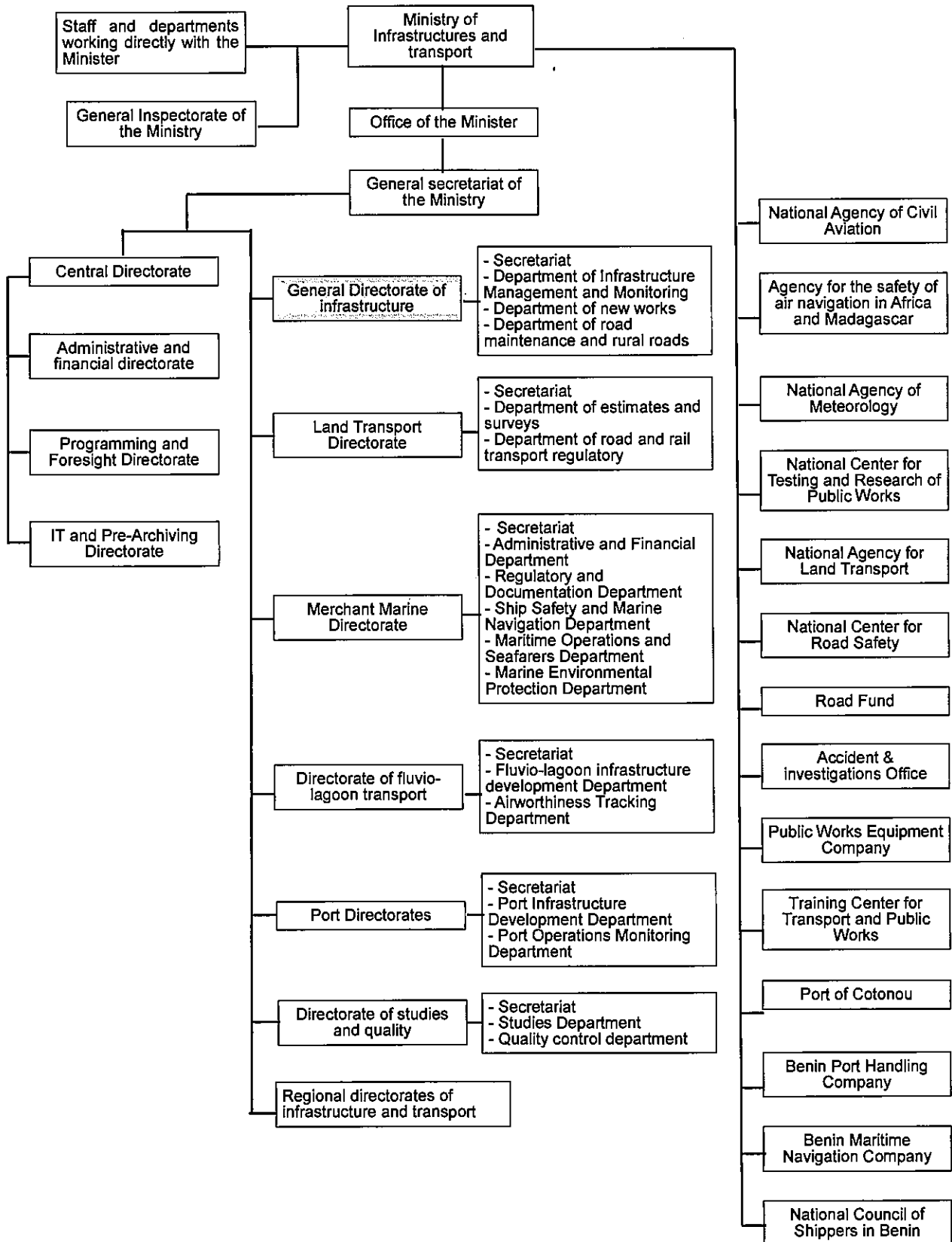
Annex 8 Questionnaire to the Ministry of Infrastructures and Transports

Annex 9 Decree No.2016-054 of 10 March 2016, "Obligation to insure the risks of  
construction in the Republic of Benin"

Annex 1



Site du Projet



Organization chart of the Ministry of Infrastructures and Transport

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## JAPANESE GRANT

The Japanese Grant is non-reimbursable fund provided to a recipient country (hereinafter referred to as “the Recipient”) to purchase the products and/or services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. Followings are the basic features of the project grants operated by JICA (hereinafter referred to as “Project Grants”).

### 1. Procedures of Project Grants

Project Grants are conducted through following procedures (See “PROCEDURES OF JAPANESE GRANT” for details):

(1) Preparation

- The Preparatory Survey (hereinafter referred to as “the Survey”) conducted by JICA

(2) Appraisal

-Appraisal by the government of Japan (hereinafter referred to as “GOJ”) and JICA, and Approval by the Japanese Cabinet

(3) Implementation

Exchange of Notes

-The Notes exchanged between the GOJ and the government of the Recipient

Grant Agreement (hereinafter referred to as “the G/A”)

-Agreement concluded between JICA and the Recipient

Banking Arrangement (hereinafter referred to as “the B/A”)

-Opening of bank account by the Recipient in a bank in Japan (hereinafter referred to as “the Bank”) to receive the grant

Construction works/procurement

-Implementation of the project (hereinafter referred to as “the Project”) on the basis of the G/A

(4) Ex-post Monitoring and Evaluation

-Monitoring and evaluation at post-implementation stage

### 2. Preparatory Survey

(1) Contents of the Survey

The aim of the Survey is to provide basic documents necessary for the appraisal of the the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of



relevant agencies of the Recipient necessary for the implementation of the Project.

- Evaluation of the feasibility of the Project to be implemented under the Japanese Grant from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of an outline design of the Project.
- Estimation of costs of the Project.
- Confirmation of Environmental and Social Considerations

The contents of the original request by the Recipient are not necessarily approved in their initial form. The Outline Design of the Project is confirmed based on the guidelines of the Japanese Grant.

JICA requests the Recipient to take measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the executing agency of the Project. Therefore, the contents of the Project are confirmed by all relevant organizations of the Recipient based on the Minutes of Discussions.

## (2) Selection of Consultants

For smooth implementation of the Survey, JICA contracts with (a) consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

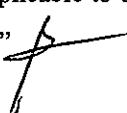
## (3) Result of the Survey

JICA reviews the report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the feasibility of the Project.

## 3. Basic Principles of Project Grants

### (1) Implementation Stage

#### 1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes (hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the Recipient to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Recipient to define the necessary articles, in accordance with the E/N, to implement the Project, such as conditions of disbursement, responsibilities of the Recipient, and procurement conditions. The terms and conditions generally applicable to the Japanese Grant are stipulated in the "General Terms and Conditions for Japanese Grant (January 2016)." 



2) Banking Arrangements (B/A) (See "Financial Flow of Japanese Grant (A/P Type)" for details)

- a) The Recipient shall open an account or shall cause its designated authority to open an account under the name of the Recipient in the Bank, in principle. JICA will disburse the Japanese Grant in Japanese yen for the Recipient to cover the obligations incurred by the Recipient under the verified contracts.
- b) The Japanese Grant will be disbursed when payment requests are submitted by the Bank to JICA under an Authorization to Pay (A/P) issued by the Recipient.

3) Procurement Procedure

The products and/or services necessary for the implementation of the Project shall be procured in accordance with JICA's procurement guidelines as stipulated in the G/A.

4) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the Recipient to continue to work on the Project's implementation after the E/N and G/A.

5) Eligible source country

In using the Japanese Grant disbursed by JICA for the purchase of products and/or services, the eligible source countries of such products and/or services shall be Japan and/or the Recipient. The Japanese Grant may be used for the purchase of the products and/or services of a third country as eligible, if necessary, taking into account the quality, competitiveness and economic rationality of products and/or services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm, which enter into contracts with the Recipient, are limited to "Japanese nationals", in principle.

6) Contracts and Concurrence by JICA

The Recipient will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be concurred by JICA in order to be verified as eligible for using the Japanese Grant.

7) Monitoring

The Recipient is required to take their initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and to regularly report to JICA about its status by using the Project Monitoring Report (PMR).

8) Safety Measures

The Recipient must ensure that the safety is highly observed during the implementation of the Project.

9) Construction Quality Control Meeting

Construction Quality Control Meeting (hereinafter referred to as the "Meeting") will be held for quality assurance and smooth implementation of the Works at each stage of the Works. The member of the Meeting will be composed by the

Recipient (or executing agency), the Consultant, the Contractor and JICA. The functions of the Meeting are as followings:

- a) Sharing information on the objective, concept and conditions of design from the Contractor, before start of construction.
- b) Discussing the issues affecting the Works such as modification of the design, test, inspection, safety control and the Client's obligation, during of construction.

(2) Ex-post Monitoring and Evaluation Stage

- 1) After the project completion, JICA will continue to keep in close contact with the Recipient in order to monitor that the outputs of the Project is used and maintained properly to attain its expected outcomes.
- 2) In principle, JICA will conduct ex-post evaluation of the Project after three years from the completion. It is required for the Recipient to furnish any necessary information as JICA may reasonably request.

(3) Others

1) Environmental and Social Considerations

The Recipient shall carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the Recipient and JICA Guidelines for Environmental and Social Considerations (April, 2010).

2) Major undertakings to be taken by the Government of the Recipient

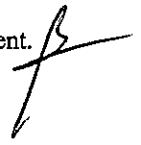
For the smooth and proper implementation of the Project, the Recipient is required to undertake necessary measures including land acquisition, and bear an advising commission of the A/P and payment commissions paid to the Bank as agreed with the GOJ and/or JICA. The Government of the Recipient shall ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the Recipient with respect to the purchase of the Products and/or the Services be exempted or be borne by its designated authority without using the Grant and its accrued interest, since the grant fund comes from the Japanese taxpayers.

3) Proper Use

The Recipient is required to maintain and use properly and effectively the products and/or services under the Project (including the facilities constructed and the equipment purchased), to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Japanese Grant.

4) Export and Re-export

The products purchased under the Japanese Grant should not be exported or re-exported from the Recipient.



## PROCEDURES OF JAPANESE GRANT

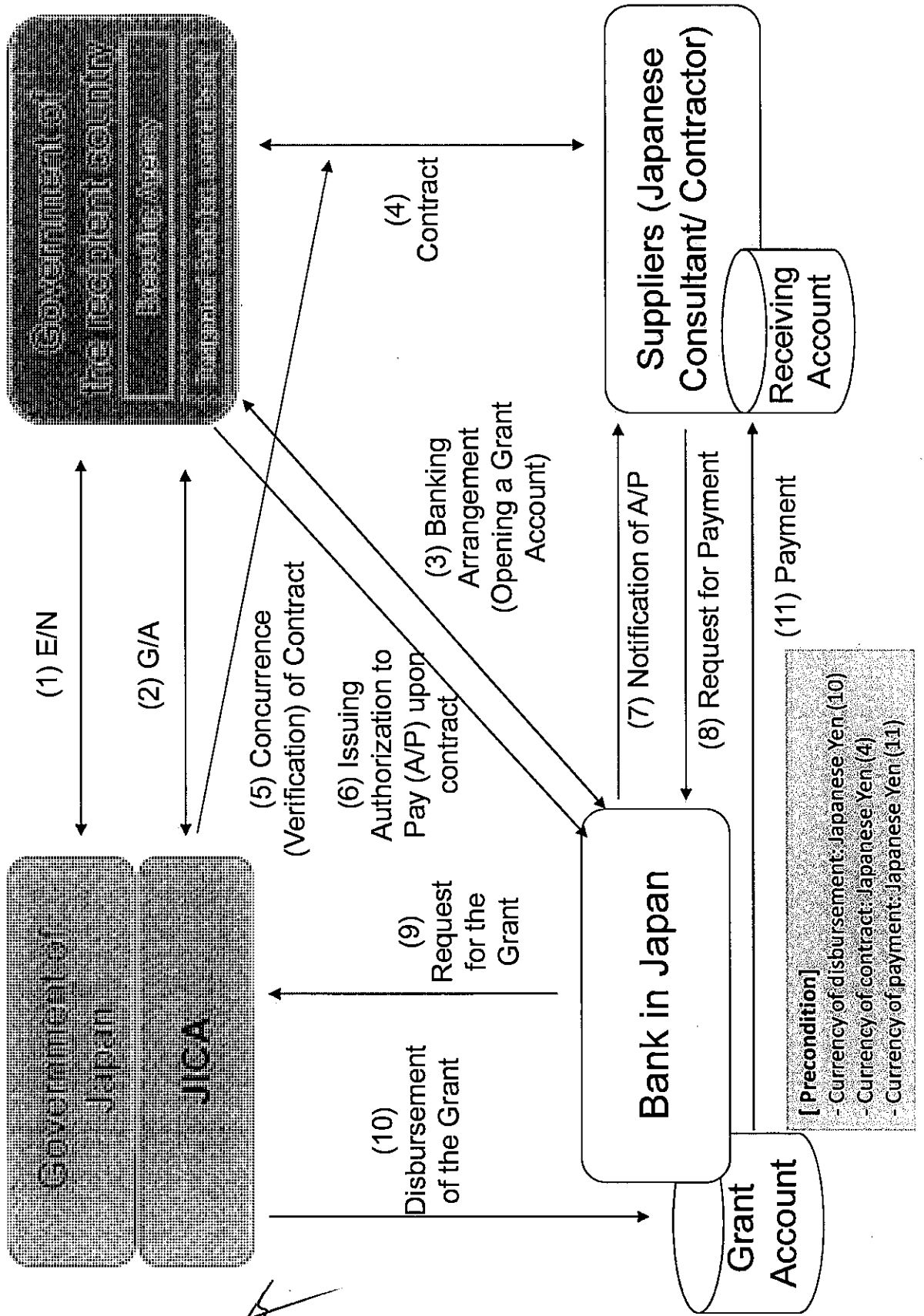
Stage	Procedures	Remarks	Recipient Government	Japanese Government	JICA	Consultants	Contractors	Agent Bank
Official Request	Request for grants through diplomatic channel	Request shall be submitted before appraisal stage.	x	x	.			
1. Preparation	(1) Preparatory Survey Preparation of outline design and cost estimate		x		x	x		
2. Appraisal	(2) Preparatory Survey Explanation of draft outline design, including cost estimate, undertakings, etc.		x		x	x		
	(3) Agreement on conditions for implementation	Conditions will be explained with the draft notes (E/N) and Grant Agreement (G/A) which will be signed before approval by Japanese government.	x	x (E/N)	x (G/A)			
	(4) Approval by the Japanese cabinet			x				
3. Implementation	(5) Exchange of Notes (E/N)		x	x				
	(6) Signing of Grant Agreement (G/A)		x		x			
	(7) Banking Arrangement (B/A)	Need to be informed to JICA	x					x
	(8) Contracting with consultant and issuance of Authorization to Pay (A/P)	Concurrence by JICA is required	x			x		x
	(9) Detail design (D/D)		x			x		
	(10) Preparation of bidding documents	Concurrence by JICA is required	x			x		
	(11) Bidding	Concurrence by JICA is required	x			x	x	
	(12) Contracting with contractor/supplier and issuance of A/P	Concurrence by JICA is required	x				x	x
	(13) Construction works/procurement	Concurrence by JICA is required for major modification of design and amendment of contracts.	x			x	x	
(14) Completion certificate		x			x	x		
4. Ex-post monitoring & evaluation	(15) Ex-post monitoring	To be implemented generally after 1, 3, 10 years of completion, subject to change	x		x			
	(16) Ex-post evaluation	To be implemented basically after 3 years of completion	x		x			

notes:

1. Project Monitoring Report and Report for Project Completion shall be submitted to JICA as agreed in the G/A.
2. Concurrence by JICA is required for allocation of grant for remaining amount and/or contingencies as agreed in the G/A.



# Financial Flow of Japanese Grant (A/P Type)



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**Project Monitoring Report**  
on  
**Project Name**  
**Grant Agreement No. XXXXXXXX**  
20XX, Month

**Organizational Information**

<b>Signer of the G/A (Recipient)</b>	_____ Person in Charge (Designation) _____  Contacts _____ Address: _____ Phone/FAX: _____ Email: _____
<b>Executing Agency</b>	_____ Person in Charge (Designation) _____  Contacts _____ Address: _____ Phone/FAX: _____ Email: _____
<b>Line Ministry</b>	_____ Person in Charge (Designation) _____  Contacts _____ Address: _____ Phone/FAX: _____ Email: _____

**General Information:**

<b>Project Title</b>	
<b>E/N</b>	Signed date: Duration:
<b>G/A</b>	Signed date: Duration:
<b>Source of Finance</b>	Government of Japan: Not exceeding JPY _____ mil. Government of (_____): _____

3

/s/

/s/

**1: Project Description**

**1-1 Project Objective**

--

**1-2 Project Rationale**

- Higher-level objectives to which the project contributes (national/regional/sectoral policies and strategies)
- Situation of the target groups to which the project addresses

--

**1-3 Indicators for measurement of "Effectiveness"**

Quantitative indicators to measure the attainment of project objectives		
Indicators	Original (Yr )	Target (Yr )
Qualitative indicators to measure the attainment of project objectives		

**2: Details of the Project**

**2-1 Location**

Components	Original <i>(proposed in the outline design)</i>	Actual
1.		

**2-2 Scope of the work**

Components	Original* <i>(proposed in the outline design)</i>	Actual*
1.		

Reasons for modification of scope (if any).

(PMR)
-------

*m*

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**2-3 Implementation Schedule**

Items	Original		Actual
	<i>(proposed in the outline design)</i>	<i>(at the time of signing the Grant Agreement)</i>	

Reasons for any changes of the schedule, and their effects on the project (if any)

--

**2-4 Obligations by the Recipient**

**2-4-1 Progress of Specific Obligations**

See Attachment 2.

**2-4-2 Activities**

See Attachment 3.

**2-4-3 Report on RD**

See Attachment 11.

**2-5 Project Cost**

**2-5-1 Cost borne by the Grant(Confidential until the Bidding)**

	Components		Cost (Million Yen)	
	<i>Original (proposed in the outline design)</i>	<i>Actual (in case of any modification)</i>	<i>Original<sup>1,2</sup> (proposed in the outline design)</i>	<i>Actual</i>
1.				
Total				

Note: 1) Date of estimation:  
 2) Exchange rate: 1 US Dollar = Yen

**2-5-2 Cost borne by the Recipient**

	Components		Cost (1,000 Taka)	
	<i>Original (proposed in the outline design)</i>	<i>Actual (in case of any modification)</i>	<i>Original<sup>1,2</sup> (proposed in the outline design)</i>	<i>Actual</i>
1.				

- Note: 1) Date of estimation:  
2) Exchange rate: 1 US Dollar =

Reasons for the remarkable gaps between the original and actual cost, and the countermeasures (if any)

(PMR)

**2-6 Executing Agency**

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

**Original** (at the time of outline design)  
name:  
role:  
financial situation:  
institutional and organizational arrangement (organogram):  
human resources (number and ability of staff):

**Actual** (PMR)

**2-7 Environmental and Social Impacts**

- The results of environmental monitoring based on Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- The results of social monitoring based on in Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- Disclosed information related to results of environmental and social monitoring to local stakeholders (whenever applicable).

**3: Operation and Maintenance (O&M)**

**3-1 Physical Arrangement**

- Plan for O&M (number and skills of the staff in the responsible division or section, availability of manuals and guidelines, availability of spareparts, etc.)

**Original** (at the time of outline design)

**Actual** (PMR)

**3-2 Budgetary Arrangement**

- Required O&M cost and actual budget allocation for O&M

**Original** (at the time of outline design)



Actual (PMR)

**4: Potential Risks and Mitigation Measures**

- Potential risks which may affect the project implementation, attainment of objectives, sustainability
- Mitigation measures corresponding to the potential risks

**Assessment of Potential Risks (at the time of outline design)**

Potential Risks	Assessment
1. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
2. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
3. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:

	Contingency Plan (if applicable):
<b>Actual Situation and Countermeasures</b> (PMR)	

**5: Evaluation and Monitoring Plan (after the work completion)**

**5-1 Overall evaluation**

Please describe your overall evaluation on the project.

**5-2 Lessons Learnt and Recommendations**


Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

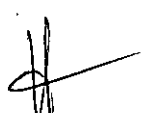
**5-3 Monitoring Plan of the Indicators for Post-Evaluation**

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.



Attachment

1. Project Location Map
  2. Specific obligations of the Recipient which will not be funded with the Grant
  3. Monthly Report submitted by the Consultant
- Appendix - Photocopy of Contractor's Progress Report (if any)
- Consultant Member List
  - Contractor's Main Staff List
4. Check list for the Contract (including Record of Amendment of the Contract/Agreement and Schedule of Payment)
  5. Environmental Monitoring Form / Social Monitoring Form
  6. Monitoring sheet on price of specified materials (Quarterly)
  7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (PMR (final) only)
  8. Pictures (by JPEG style by CD-R) (PMR (final) only)
  9. Equipment List (PMR (final) only)
  10. Drawing (PMR (final) only)
  11. Report on RD (After project)
- 



Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

Items of Specified Materials		Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=AxB	1% of Contract Price D	Condition of payment Price (Decreased) E=C-D	Price (Increased) F=C+D
1	Item 1	●●t	●	●	●	●	●
2	Item 2	●●t	●	●	●		
3	Item 3						
4	Item 4						
5	Item 5						

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

Items of Specified Materials		1st month, 2015	2nd month, 2015	3rd month, 2015	4th	5th	6th
1	Item 1	●	○	○			
2	Item 2						
3	Item 3						
4	Item 4						
5	Item 5						

(3) Summary of Discussion with Contractor (if necessary)

Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)  
 (Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	



Date:

Ref. No.

JAPAN INTERNATIONAL COOPERATION AGENCY

JICA ~~XXX~~ OFFICE

[Address specified in the Article 5 of the Grant Agreement]

Attention: Chief Representative

Ladies and Gentlemen:

NOTICE CONCERNING PROGRESS OF PROJECT

Reference : Grant Agreement, dated 署名日(signed date of the G/A), for プロジェクト名(name of the Project)

In accordance to the Article 6 (3) of the Grant Agreement, we would like to report on the progress of the Project up to the following stages:-

[Common]

- Preparation of bidding documents - result of detailed design
- Completion of final works under construction/procurement contract

[Construction]

- Monthly progress [Month/Year]

[Procurement of Equipment]

- Shipping/delivery, hand-over (take over) of equipment
- Installation works
- Operational training

- Other \_\_\_\_\_

Please see the details as per attached Project Monitoring Report (PMR).

Very truly yours,

[Signature]

[Name of the signer]

[Title of the signer]

[Name of the executing agency]


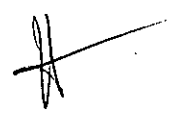
cc:

Director General

Financial Cooperation Implementation Department

Japan International Cooperation Agency

[Address specified in the Article 5 of the Grant Agreement]

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## Major Undertakings to be taken by the Government of Benin

**1. Specific obligations of the Government of Benin which will not be funded with the Grant**  
**(1) Before the Bidding**

No.	Items	Deadline	In charge	Cost (US\$)	Ref.
1	To approve IEE/EIA (Conditions of approval should be fulfilled, if any) and secure the necessary budget for implementation of countermeasures obligated in the IEE/EIA.	before signing of the G/A	MIT/ MOLESD		
2	To open Bank Account (Banking Arrangement (B/A))	within 1 month after signing of the G/A	MIT/MOEF or MOFA		
3	To issue the Authorization to Pay (A/P) to a bank in Japan (the Agent Bank) for the payment to the Consultant	within 1 month after signing of the contract with the consultant	MIT/ MOEF or MOFA		
4	To approve Resettlement Action Plan (RAP)	before signing of the G/A	MIT		
5	To secure the necessary budget and implement land acquisition and resettlement (including preparation of resettlement sites), and compensation with full replacement cost in accordance with RAP	before notice of the bidding document(s)	MIT		
6	To implement social monitoring, and to submit the monitoring results to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	till land acquisition and resettlement complete	MIT		
7	1) To secure the Project site including relocation of existing utilities, buildings and obstacles	before notice of the bidding document(s)	MIT		
8	To obtain the planning and construction permit	before notice of the bidding document(s)	MIT and related agencies		
9	To submit Project Monitoring Report (with the result of Detailed Design (DD))	before preparation of bidding document(s)	MIT		

Note : MOEF-Ministry of Economics and Finance  
MOFA-Ministry of Foreign Affairs  
MIT- Ministry of Infrastructure and Transport  
MEF- Ministry of Economy and Finance  
MOLESD-Ministry of Living Environment and Sustainable Development.

## (2) During the Project Implementation

No.	Items	Deadline	In charge	Cost (US\$)	Ref.
1	To issue A/P(s) to the Agent Bank in Japan for the payment(s) to the Supplier(s)	within 1 month after signing of the contract(s)	MIT/MOEF		
2	To bear the following commissions to the Agent Bank in Japan for the banking services based upon the B/A	during the Project	MIT/MOEF		
	1) Advising commission of A/P	within 1 month after signing of the contract(s)	MIT/MOEF		
	2) Payment commission for A/P	every payment	MIT/MOEF		
3	To accord Japanese physical persons and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the country of the Recipient and stay therein for the performance of their work	during the Project	MIT/ MOFA		
4	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	MIT		
5	1) To submit Project Monitoring Report	every month	MIT		
	2) To submit Project Monitoring Report (Final)	within one month after signing of Certificate of Completion of the Work under the contract(s)	MIT		
6	To submit a report concerning completion of the Project	within six months after completion of the Project	MIT		
7	To take necessary measure for safety construction - To conduct traffic controls of existing road for the Project, if necessary - To maintain traffic on the roads around the Project site	during the construction	MIT/		
8	To submit results of environmental monitoring to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	during the construction	MIT/		
9	To implement RAP (livelihood restoration program, if needed)	for a period based on livelihood restoration program	MIT		
10	To implement social monitoring, and to submit the monitoring results to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report - Period of the monitoring may be extended if affected persons' livelihoods are not sufficiently restored. Extension of the monitoring will be decided based on agreement between MIT and JICA.	until the end of livelihood restoration program (In case that livelihood restoration program is provided)	MIT		

## (3) After the Project

No.	Items	Deadline	In charge	Cost	Ref.
1	To monitor EMP and EMoP	for a period based on EMP and EMoP	MIT		
2	To submit results of environmental monitoring to JICA, by using the monitoring form, semi-annually - The period of environmental monitoring may be extended if any significant negative impacts on the environment are found. The extension of environmental monitoring will be decided based on the agreement between MIT and JICA.	for three years after the Project	MIT		
3	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance of structure 3) Daily and periodic inspection	After completion of the construction	MIT		

## 2. Other Responsibilities of the Government of Benin funded with the Grant

No.	Items	Amount (Million Japanese Yen)*
1	Construction of Interchange - Construction of Interchange of Vedoko	/
2	To implement detailed design, bidding support and construction supervision (Consulting Service)	
3	Provision for unforeseeable event (Contingency)	
	Total	XXX

\*The Amount is provisional. This is subject to the approval of the Government of Japan.



Preparatory Survey on the "Projet d'aménagement de l'échangeur de Cotonou " in Benin  
Questionnaire

Please kindly provide the necessary documents/ information and answer to the question listed in the following table in cooperation with related agencies before 8<sup>th</sup> January 2019. The Study Team might submit an additional questionnaire during the field survey in Cotonou from 8<sup>th</sup> January to 22<sup>th</sup> February 2019. Your prompt response together with a soft copy (or a hard copy if a soft copy does not exist) of required document/information is highly appreciated.

No.	Category	Document/Information	Necessary Items to be included
1	Upper Level Plan / Related Development Plan	Development Plan	
		Transport Sector Plan	
2	Map	Cotonou city master plan	
		The statistic and related improvement plan of port	The volume of cargo and estimated volume of cargo in the future
		International Assistance (AfDB, WB, etc.) on Road/Bridge Construction	Outline of on-going and conducted projects and plans(name, place, construction item & quantity, construction year and construction cost)
		Public Figure or Cadastral Map in the project site	Boundary, owner and use of land
		Boundary map of cities, towns, communities	Locations of boundaries, names of the cities, towns and communities
		City Planning Map	<ul style="list-style-type: none"> <li>- Current and future land use</li> <li>- Locations of public transportation centres (railway stations, bus terminal, New airport)</li> </ul>
		Road Network Map around Cotonou	Classification, road No., future development plan, administrator (1) Digital data of GIS base on whole road network including road identification number / road length / number of lanes/width of carriageway, road surface type, pavement structure/condition of surface / speed limit/topography by road link and. (2) Road classification (definition of classification, distance of each classification, road condition each classification road)

No.	Category	Document/Information	Necessary Items to be included																																								
			<p>Example table</p> <table border="1"> <thead> <tr> <th>Road category</th> <th>Status</th> <th colspan="3">Road condition (%)</th> </tr> <tr> <td></td> <td></td> <td>Good</td> <td>Fair</td> <td>Bad</td> </tr> </thead> <tbody> <tr> <td>B1</td> <td>Paved</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Unpaved</td> <td></td> <td></td> <td></td> </tr> <tr> <td>B2</td> <td>Paved</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Unpaved</td> <td></td> <td></td> <td></td> </tr> <tr> <td>C1</td> <td>Paved</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Unpaved</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Ex. Legend: Good = Maintainable by light maintenance activity Fair = Maintainable by regular maintenance activity Bad = Required more than regular maintenance</p>	Road category	Status	Road condition (%)					Good	Fair	Bad	B1	Paved					Unpaved				B2	Paved					Unpaved				C1	Paved					Unpaved			
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		Map of registered heritage sites/buildings, cultural monuments and nature conservation areas	Names, boundaries of the area, and the reason/value for the registration																																								
3	Road Design	<p>Design Standard (ECWAS etc., French Standard, National Standard)</p> <ul style="list-style-type: none"> <li>- Geometric design manual</li> <li>- Pavement design manual</li> <li>- Drainage design manual</li> </ul> <p>Standard Drawing</p> <p>Standard Technical Specifications</p> <p>Drawings, design report and tender</p>	<p>Standard Composition of Cross Section</p> <p><u>Geometric design manual:</u></p> <p>Road Classification, Design Speed, Sight Distance, Minimum Curve Radius Maximum Vertical Gradient etc.,</p> <p>Width of Carriageway, Roadside Shoulder, Pedestrian Walkway, Median Strip and Public Utilities Space</p> <p><u>Drainage design manual:</u></p> <p>Standard Hydraulic Flood Method in Benin such as;</p> <ul style="list-style-type: none"> <li>- Rational Method</li> <li>- SCS and other Unit Hydrograph Methods, etc.</li> </ul> <p>Runoff coefficient, Rainfall intensity, Return period (Yrs.) by structure type.</p> <p>Drainage structure, Ancillary structure, Sign, Marking, etc.</p> <p>Standard requirements for material and construction method</p> <p>Drawings: standard cross section, pavement type</p>																																								

No.	Category	Document/Information	Necessary items to be included
	Traffic Signal Design	document of the similar project Drawings, design report and tender document of the similar project	Design report: design criteria, traffic demand forecast, result of material test, construction period Design standard, Sample drawing, Design report, Design criteria, Specification, Tender document
	Public Street Light Design	Drawings, design report and tender document of the similar project	Design standard, Sample drawing, Design report, Design criteria, Specification, Tender document
		General climate conditions	- Rainfall intensity-duration-frequency curve, temperature (maximum and minimum) and wind as monthly averages at major meteorological stations near the project site.
		Rainfall data	Annual maximum daily rainfall (from 2000 to 2017) at the meteorological station at the airport.
		Weather data	Temperature, wind direction, wind speed, humidity etc.
		Seismic coefficient	Peak ground acceleration
		Boring data on the nearby section of target road	N-value, groundwater level, soil type
		Flood history around the project	Year, scale, area
		Traffic survey data of similar project in Cotonou	Weekly and hourly traffic data in project road and adjacent roads
		Future traffic demand forecast of similar road project in Cotonou	Forecast method, OD data (OD raw data which Lous Berger carried out), growth rate, diverted traffic, induced traffic, socio-economic condition in the forecast
		Axle load data	Actual axle load data collected in the weigh bridge in Cotonou
		Traffic accident data	Number of traffic accident, wounded party and black spot (if any) on the project road for past 10 years by accident type
		Trend of general socio-economic statistic	Evolution of population, GDP per each sector, vehicle registration number, employment in Cotonou from 1990 to 2017 and those prediction in the future
		Population	- Population by town or community - Household size by town or community
		Industry	- Workforce number and industrial types by town or community - GDP generated by industrial types by town or community - Minimum wage per month by industrial types
		Household	- Main source of household income by town or community
4	Natural Condition		
5	Traffic Data		
6	Statistics		

No.	Category	Document/Information	Necessary items to be included
		<ul style="list-style-type: none"> <li>- Household income distribution by town or community</li> <li>- Average tenant rate</li> <li>- Poverty line (National, local (Cotonou (Urban/Rural)))</li> </ul>	<ul style="list-style-type: none"> <li>- Annual Report of Cotonou port in 2016 and 2017</li> <li>- Number of street crime on the project road for past 5 years.</li> </ul>
	<p>Statistics of Cotonou port</p> <p>Street crime data</p> <p>National/Regional Transportation Statistic, Logistics Statistic ( Domestic and International)</p>		<ul style="list-style-type: none"> <li>- Necessary procedures and its timeline to get Environmental Approval for the Project such as submission of EIA report.</li> <li>- Sample of Project Outline necessary for obtaining applicable EIA Guideline</li> <li>- Whether the project outline needs to be prepared through the survey, or has been already prepared</li> <li>- Timeline after submission of the project outline, timeline for approving TOR for EIA</li> <li>- Necessary contents to be included in an EIA report such as environmental survey</li> <li>- Sample of EIA reports</li> <li>- EIA Guideline most likely to be applicable to this Project</li> <li>- Whether JICA Survey Team can be the employer of sub-consultant for EIA survey in accordance with Benin Law (or whether the employer shall be only the executing agency in Benin or not)</li> <li>- Generally how long does it take to get environmental approval after submitting an EIA report to the Environmental Authority?</li> <li>- Any specific procedure for EIA approval (ex. No Objection Certificate from the concerned Municipalities etc), if any</li> <li>- Any other documents required for Environmental Approval/ Clearance, if any</li> <li>- List of Project assisted by foreign countries or WB, AfDB</li> </ul>
7	<p>Environmental procedure</p> <p>Natural Environment, Pollution</p>	<p>Necessary procedure to get Environmental Approval for the Project.</p> <p>Environmental law and Decree,</p> <p>National Environmental Quality Standards</p> <p>Environmental baseline in Cotonou/Benin.</p>	<ul style="list-style-type: none"> <li>- Environmental protection law and etc. (English version are preferable.)</li> <li>- Including Provincial Standards, if there are any. (English version are preferable.)</li> <li>- Standard on air quality, noise, vibration, water quality, soil</li> <li>- Baseline data of existing condition such as land use, natural environmental condition (topography/geology and earthquakes, soil resource, hydrology and drainage, surface water quality,</li> </ul>

No.	Category	Document/Information	Necessary items to be included
		Recent good example of EIA report	underground hydrology, meteorology and air quality, noise and vibration level, aquatic ecosystem, terrestrial ecosystem and etc.), social-economic condition, public health and safety, archaeological/historical sites and aesthetics, tourist sites and culture and tradition around project area.
		National park, reserve and information of red list/endangered species etc.	<ul style="list-style-type: none"> <li>- Information on flora and fauna near the project site, especially in wetland south the Project Site</li> <li>- Redbook or list of endangered species</li> <li>- List and/or map of national parks and reserves</li> </ul>
		Competency of Local consultants	<ul style="list-style-type: none"> <li>- Whether local consultants can generally conduct survey on air quality, noise and vibration</li> <li>- Whether local consultants can generally have measuring equipment for the above survey</li> </ul>
		Knowledgeable Persons	<ul style="list-style-type: none"> <li>- Please kindly introduce any knowledgeable persons like professors in environmental field.</li> </ul>
		Legal and institutional framework	<ul style="list-style-type: none"> <li>- Whether any specific procedure is required for social components other than EIA/LARAP (ex. Cultural Impact Survey etc)</li> </ul>
8	Social Environment	Map of locations and types of various communities	<ul style="list-style-type: none"> <li>- Religious groups, Ethnic groups, Other cultural groups, Economically and/or socially vulnerable /disadvantaged groups</li> <li>- Important centres, schools, heritages and other facilities for above groups</li> </ul>
		Coordinating bodies of the businesses along the Project Road	<ul style="list-style-type: none"> <li>- Names and locations of the groups</li> <li>- Names and contact numbers of the representing persons</li> </ul>
		Other local social infrastructures	<ul style="list-style-type: none"> <li>- Non-governmental and/or cooperative groups active in the area along the Project Road</li> <li>- Persons or institutions local people will go when they have some problems (i.e. a chief of ethnic group, a priest, an elected person)</li> </ul>
		Other local facilities for social services	<ul style="list-style-type: none"> <li>- Hospitals, clinics, schools, religious facilities near the project site</li> </ul>
9	LARAP (land acquisition and resettlement action plan)	Legal and institutional framework	<ul style="list-style-type: none"> <li>- Legal and institutional framework for land acquisition and resettlement in Benin. (If possible English version is preferable.)</li> <li>- Land Law and Guideline of Procedures, relevant decrees (English version if available)</li> <li>- National Resettlement Policy (English version if available)</li> <li>- Gap between national Policy and JICA Guideline (It would be appreciated if gap analysis is available)</li> <li>- Procedure for land acquisition and resettlement (flow chart if available)</li> </ul>



No.	Category	Document/Information	Necessary items to be included
			<ul style="list-style-type: none"> <li>- Responsible agencies for approving LARAP</li> <li>- Responsible agencies for disbursement of compensation</li> <li>- Whether LARAP needs "prior procedure" like approval of TOR like EIA</li> <li>- Whether JICA Survey Team can be the employer of sub-consultant for LARAP survey in accordance with Benin Law (or whether the employer shall be only the executing agency in Benin or not)</li> </ul>
		<p>Provisions in land/resettlement law, guidelines etc</p>	<ul style="list-style-type: none"> <li>- Involvement of stakeholders</li> <li>- Eligibility criteria, entitlement matrix</li> <li>- Land price and other assistances applied</li> <li>- General classification of structure type and unit price (per floor area) used for value assessment by structure type</li> <li>- Any specific requirement for LARAP (ex. Cadastral map with ROW, land lot list, list of affected households, list of loss of inventory etc...)</li> </ul>
	<p>Resent good example of Resettlement Action Plan</p>		<ul style="list-style-type: none"> <li>- Compensation procedure</li> <li>- Involvement of stakeholders</li> <li>- Eligibility criteria, entitlement matrix</li> <li>- Budget for compensation</li> <li>- Record of stakeholder meeting</li> </ul>
	<p>Number of Project Affected Units (PAU) and Affected Persons (Aps)</p>		<ul style="list-style-type: none"> <li>- Estimated number of PAUs/ PAPs in the project site as of now.</li> <li>- Number of Households to be displaced (structure owner on Gov. land, structure on private land, tenants)</li> <li>- Number of Commercial and Business Enterprises to be displaced (structure owner on Gov. land, structure on private land, tenants)</li> <li>- Number of Community owned structures to be displaced including physical cultural resources</li> <li>- Number of Informal settlers to be displaced</li> </ul>
	<p>Issues specific to Benin/ Cotonu</p>		<ul style="list-style-type: none"> <li>- Issues like restriction of land acquisition/ transfer, specific land tenure like community-owned land, road reserve etc, if any</li> </ul>
<p>10</p>	<p>Public utilities</p>	<p>Map of public utilities in the project site</p>	<ul style="list-style-type: none"> <li>- Water intake for public water services</li> <li>- Locations of water and sewage pipes</li> <li>- Locations of gas supply facilities and pipes</li> </ul>

No.	Category	Document/Information	Necessary Items to be included
		<ul style="list-style-type: none"> <li>- Locations of power poles and electric cables (high tension, medium tension, low tension)</li> <li>- Locations of telecommunications facilities and cables</li> </ul>	<ul style="list-style-type: none"> <li>- Name and contact information of organization</li> </ul>
		List of public utility administrators	Unit price for the relocation and demolishment of public utilities ( power pole, electric cable, water and sewage pipe, )
		Standard unit price list	
11	Cost Estimation	BOQ Breakdown of Adjacent section Project/ Project cost of the similar project Labour Laws (latest version) Customs procedures Composite Schedule of Rates Organization chart for Ministère des Infrastructures et des Transports (MIT), Direction Général Infrastructures Organization chart for Direction of Control and Infrastructure Monitoring Organization chart for Direction of Road Maintenance Budget and expenditures of MIT for past 5 years Breakdown of the maintenance cost and method Road Maintenance Plan	<ul style="list-style-type: none"> <li>- Breakdown and precondition of each unit price</li> <li>- Completed section of Boulevard Europe, other Flyover projects and Interchange financed by China.</li> <li>- CAD data for the above sections</li> <li>- Minimum wages, Working hours, Bonus, etc</li> <li>- Required days for custom clearance, Tariff</li> <li>- Responsibility and Name of responsible person</li> <li>- Number of his/her staff on each position of MIDT including the branch offices</li> <li>- Responsibility and Name of responsible person</li> <li>- Number of his/her staff on each position of MIDT including the branch offices</li> <li>- Responsibility and Name of responsible person</li> <li>- Number of his/her staff on each position of MIDT including the branch offices</li> <li>- For construction of new road</li> <li>- For rehabilitation and improvement of existing road</li> <li>- For routine and periodic inspection</li> <li>- For maintenance</li> <li>- Unit price for each maintenance work</li> <li>- Routine and periodic</li> </ul>
12	Organization		
13	Road Maintenance		

No.	Category	Document/Information	Necessary Items to be included																																																																						
		Road maintenance manual (if any)	Technical standard and specification																																																																						
		Major work achieved and budget allocated Example table	<table border="1"> <thead> <tr> <th>Item</th> <th>2013/2014</th> <th>2014/2015</th> <th>2015/2016</th> <th>2016/2017</th> </tr> </thead> <tbody> <tr> <td>Road Fund subsidies (development, maintenance)</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Ministry of Works contribution (salaries)</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Assistance from donors</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Other</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Employee salaries</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>General administration expenses / execution management expenses</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Maintenance works costs</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Rehabilitation works costs</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Upgrading works costs</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Organizational strengthening costs</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Capital investment</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Item	2013/2014	2014/2015	2015/2016	2016/2017	Road Fund subsidies (development, maintenance)					Ministry of Works contribution (salaries)					Assistance from donors					Other					Total					Employee salaries					General administration expenses / execution management expenses					Maintenance works costs					Rehabilitation works costs					Upgrading works costs					Organizational strengthening costs					Capital investment					Total				
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14 Tax	Details of taxes, VAT and levies on fuel, bitumen and other material to be imported by the project	<ul style="list-style-type: none"> <li>(1) Fiscal levies and taxes with respect to the corporate income (Corporate tax, for Japanese and/or 3<sup>rd</sup> country firm)</li> <li>(2) Fiscal levies and taxes on their personal income (Personal income tax, for Japanese and/or 3<sup>rd</sup> country expert)</li> <li>(3) Value added tax (VAT, for Japanese and/or 3<sup>rd</sup> country firm)</li> <li>(4) Custom Duties and related fiscal charges with respect to the import and/or re-export of materials and equipment</li> </ul>																																																																							

No.	Category	Document/Information	Necessary Items to be included
		Procedure of exemption of the taxes, VAT and levies on above items	Information (name, percentage, how to calculate, basis law) Tax Exemption Procedure (procedure, application authority, required time, flow chart)
15	Laboratory Data	Existing Quarry and Borrow pit data	-
16	10 years guarantee for construction	Reliable Documentation such as the existing low	-

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Preparatory Survey on the "Projet d'aménagement de l'échangeur de Cotonou " in Benin  
Questionnaire

Please kindly provide the necessary documents/ information and answer to the question listed in the following table in cooperation with related agencies before 8<sup>th</sup> January 2019. The Study Team might submit an additional questionnaire during the field survey in Cotonou from 8<sup>th</sup> January to 22<sup>th</sup> February 2019.  
 Your prompt response together with a soft copy (or a hard copy if a soft copy does not exist) of required document/information is highly appreciated.

No.	Category	Document/Information	Necessary items to be included
1	Upper Level Plan / Related Development Plan	Development Plan	
		Transport Sector Plan	
		Cotonou city master plan	
1	The statistic and related improvement plan of port		The volume of cargo and estimated volume of cargo in the future
		International Assistance (AfDB, WB, etc.) on Road/Bridge Construction	Outline of on-going and conducted projects and plans(name, place, construction item & quantity, construction year and construction cost)
		Public Figure or Cadastral Map in the project site	Boundary, owner and use of land
2	Map	Boundary map of cities, towns, communities	Locations of boundaries, names of the cities, towns and communities
		City Planning Map	<ul style="list-style-type: none"> <li>- Current and future land use</li> <li>- Locations of public transportation centres (railway stations, bus terminal, New airport)</li> </ul>
		Road Network Map around Cotonou	Classification, road No., future development plan, administrator (1) Digital data of GIS base on whole road network including road identification number / road length / number of lanes/width of carriageway, road surface type, pavement structure/condition of surface / speed limit/topography by road link and. (2) Road classification (definition of classification, distance of each classification, road condition each classification road)



No.	Category	Document/Information	Necessary Items to be included																																																		
			<p>Example table</p> <table border="1"> <thead> <tr> <th>Road category</th> <th>Status</th> <th colspan="3">Road condition (%)</th> </tr> <tr> <td></td> <td></td> <th>Good</th> <th>Fair</th> <th>Bad</th> </tr> </thead> <tbody> <tr> <td>B1</td> <td>Paved</td> <td></td> <td></td> <td></td> </tr> <tr> <td>B2</td> <td>Unpaved</td> <td></td> <td></td> <td></td> </tr> <tr> <td>C1</td> <td>Paved</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Unpaved</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Paved</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Unpaved</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Paved</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>Unpaved</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>                     Ex. Legend: Good = Maintainable by light maintenance activity                      Fair = Maintainable by regular maintenance activity                      Bad = Required more than regular maintenance                 </p>	Road category	Status	Road condition (%)					Good	Fair	Bad	B1	Paved				B2	Unpaved				C1	Paved					Unpaved					Paved					Unpaved					Paved					Unpaved			
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		<p>Map of registered heritage sites/buildings, cultural monuments and nature conservation areas</p>	<p>Names, boundaries of the area, and the reason/value for the registration</p>																																																		
<p>3</p>	<p>Road Design</p>	<p>Design Standard (ECWAS etc., French Standard, National Standard)</p> <ul style="list-style-type: none"> <li>- Geometric design manual</li> <li>- Pavement design manual</li> <li>- Drainage design manual</li> </ul> <p>Standard Drawing</p> <p>Standard Technical Specifications</p> <p>Drawings, design report and tender</p>	<p>Standard Composition of Cross Section</p> <p>Geometric design manual;</p> <p>Road Classification, Design Speed, Sight Distance, Minimum Curve Radius Maximum Vertical Gradient etc.,</p> <p>Width of Carriageway, Roadside Shoulder, Pedestrian Walkway, Median Strip and Public Utilities Space</p> <p>Drainage design manual;</p> <p>Standard Hydraulic Flood Method in Benin such as;</p> <ul style="list-style-type: none"> <li>- Rational Method</li> <li>- SCS and other Unit Hydrograph Methods, etc.</li> </ul> <p>Runoff coefficient, Rainfall intensity, Return period (Yrs.) by structure type.</p> <p>Drainage structure, Ancillary structure, Sign, Marking, etc.</p> <p>Standard requirements for material and construction method</p> <p>Drawings: standard cross section, pavement type</p>																																																		

No.	Category	Document/Information	Necessary Items to be included
		document of the similar project	Design report: design criteria, traffic demand forecast, result of material test, construction period
	Traffic Signal Design	Drawings, design report and tender document of the similar project	Design standard, Sample drawing, Design report, Design criteria, Specification, Tender document
	Public Street Light Design	Drawings, design report and tender document of the similar project	Design standard, Sample drawing, Design report, Design criteria, Specification, Tender document
4	Natural Condition	General climate conditions	- Rainfall intensity-duration-frequency curve, temperature (maximum and minimum) and wind as monthly averages at major meteorological stations near the project site.
		Rainfall data	Annual maximum daily rainfall (from 2000 to 2017) at the meteorological station at the airport.
		Weather data	Temperature, wind direction, wind speed, humidity etc.
		Seismic coefficient	Peak ground acceleration
		Boring data on the nearby section of target road	N-value, groundwater level, soil type
		Flood history around the project	Year, scale, area
5	Traffic Data	Traffic survey data of similar project in Cotonou	Weekly and hourly traffic data in project road and adjacent roads
		Future traffic demand forecast of similar road project in Cotonou	Forecast method, OD data (OD raw data which Lous Berger carried out), growth rate, diverted traffic, induced traffic, socio-economic condition in the forecast
		Axle load data	Actual axle load data collected in the weigh bridge in Cotonou
		Traffic accident data	Number of traffic accident, wounded party and black spot (if any) on the project road for past 10 years by accident type
6	Statistics	Trend of general socio-economic statistic	Evolution of population, GDP per each sector, vehicle registration number, employment in Cotonou from 1990 to 2017 and those prediction in the future
		Population	- Population by town or community - Household size by town or community
		Industry	- Workforce number and industrial types by town or community - GDP generated by industrial types by town or community - Minimum wage per month by industrial types
		Household	- Main source of household income by town or community

No.	Category	Document/Information	Necessary Items to be included
		<ul style="list-style-type: none"> <li>- Household income distribution by town or community</li> <li>- Average tenant rate</li> <li>- Poverty line (National, local (Cotonou (Urban/Rural)))</li> </ul>	<ul style="list-style-type: none"> <li>- Annual Report of Cotonou port in 2016 and 2017</li> <li>- Number of street crime on the project road for past 5 years.</li> </ul>
		Statistics of Cotonou port Street crime data	
		National/Regional Transportation Statistic, Logistics Statistic ( Domestic and International)	
7	Environmental procedure Natural Environment, Pollution	Necessary procedure to get Environmental Approval for the Project.	<ul style="list-style-type: none"> <li>- Necessary procedures and its timeline to get Environmental Approval for the Project such as submission of EIA report.</li> <li>- Sample of Project Outline necessary for obtaining applicable EIA Guideline</li> <li>- Whether the project outline needs to be prepared through the survey, or has been already prepared</li> <li>- Timeline after submission of the project outline, timeline for approving TOR for EIA</li> <li>- Necessary contents to be included in an EIA report such as environmental survey</li> <li>- Sample of EIA reports</li> <li>- EIA Guideline most likely to be applicable to this Project</li> <li>- Whether JICA Survey Team can be the employer of sub-consultant for EIA survey in accordance with Benin Law (or whether the employer shall be only the executing agency in Benin or not)</li> <li>- Generally how long does it take to get environmental approval after submitting an EIA report to the Environmental Authority?</li> <li>- Any specific procedure for EIA approval (ex. No Objection Certificate from the concerned Municipalities etc), if any</li> <li>- Any other documents required for Environmental Approval/ Clearance, if any</li> <li>- List of Project assisted by foreign countries or WB, AfDB</li> </ul>
		Environmental law and Decree, National Environmental Quality Standards Environmental baseline in Cotonou/Benin.	<ul style="list-style-type: none"> <li>- Environmental protection law and etc. (English version are preferable.)</li> <li>- Including Provincial Standards, if there are any. (English version are preferable.)</li> <li>- Standard on air quality, noise, vibration, water quality, soil</li> <li>- Baseline data of existing condition such as land use, natural environmental condition (topography/geology and earthquakes, soil resource, hydrology and drainage, surface water quality,</li> </ul>

No.	Category	Document/Information	Necessary Items to be included
		Recent good example of EIA report	underground hydrology, meteorology and air quality, noise and vibration level, aquatic ecosystem, terrestrial ecosystem and etc.), social-economic condition, public health and safety, archaeological/historical sites and aesthetics, tourist sites and culture and tradition around project area.
		National park, reserve and information of red list/endangered species etc.	<ul style="list-style-type: none"> <li>- Information on flora and fauna near the project site, especially in wetland south the Project Site</li> <li>- Redbook or list of endangered species</li> <li>- List and/or map of national parks and reserves</li> </ul>
		Competency of Local consultants	<ul style="list-style-type: none"> <li>- Whether local consultants can generally conduct survey on air quality, noise and vibration</li> <li>- Whether local consultants can generally have measuring equipment for the above survey</li> </ul>
		Knowledgeable Persons	<ul style="list-style-type: none"> <li>- Please kindly introduce any knowledgeable persons like professors in environmental field.</li> </ul>
		Legal and institutional framework	<ul style="list-style-type: none"> <li>- Whether any specific procedure is required for social components other than EIA/LARAP (ex. Cultural Impact Survey etc)</li> </ul>
		Map of locations and types of various communities	<ul style="list-style-type: none"> <li>- Religious groups, Ethnic groups, Other cultural groups, Economically and/or socially vulnerable /disadvantaged groups</li> <li>- Important centres, schools, heritages and other facilities for above groups</li> </ul>
8	Social Environment	Coordinating bodies of the businesses along the Project Road	<ul style="list-style-type: none"> <li>- Names and locations of the groups</li> <li>- Names and contact numbers of the representing persons</li> </ul>
		Other local social infrastructures	<ul style="list-style-type: none"> <li>- Non-governmental and/or cooperative groups active in the area along the Project Road</li> <li>- Persons or institutions local people will go when they have some problems (i.e. a chief of ethnic group, a priest, an elected person)</li> </ul>
		Other local facilities for social services	<ul style="list-style-type: none"> <li>- Hospitals, clinics, schools, religious facilities near the project site</li> </ul>
9	LARAP (land acquisition and resettlement action plan)	Legal and institutional framework	<ul style="list-style-type: none"> <li>- Legal and institutional framework for land acquisition and resettlement in Benin. (If possible English version is preferable.)</li> <li>- Land Law and Guideline of Procedures, relevant degrees (English version if available)</li> <li>- National Resettlement Policy (English version if available)</li> <li>- Gap between national Policy and JICA Guideline (It would be appreciated if gap analysis is available)</li> <li>- Procedure for land acquisition and resettlement (flow chart if available)</li> </ul>

No.	Category	Document/Information	Necessary Items to be included
			<ul style="list-style-type: none"> <li>- Responsible agencies for approving LARAP</li> <li>- Responsible agencies for disbursement of compensation</li> <li>- Whether LARAP needs "prior procedure" like approval of TOR like EIA</li> <li>- Whether JICA Survey Team can be the employer of sub-consultant for LARAP survey in accordance with Benin Law (or whether the employer shall be only the executing agency in Benin or not)</li> </ul>
		<p>Provisions in land/resettlement law, guidelines etc</p>	<ul style="list-style-type: none"> <li>- Involvement of stakeholders</li> <li>- Eligibility criteria, entitlement matrix</li> <li>- Land price and other assistances applied</li> <li>- General classification of structure type and unit price (per floor area) used for value assessment by structure type</li> <li>- Any specific requirement for LARAP (ex. Cadastral map with ROW, land lot list, list of affected households, list of loss of inventory etc...)</li> </ul>
		<p>Resent good example of Resettlement Action Plan</p>	<ul style="list-style-type: none"> <li>- Compensation procedure</li> <li>- Involvement of stakeholders</li> <li>- Eligibility criteria, entitlement matrix</li> <li>- Budget for compensation</li> <li>- Record of stakeholder meeting</li> </ul>
		<p>Number of Project Affected Units (PAU) and Affected Persons (Aps)</p>	<ul style="list-style-type: none"> <li>- Estimated number of PAUs/ PAPs in the project site as of now.</li> <li>- Number of Households to be displaced (structure owner on Gov. land, structure on private land, tenants)</li> <li>- Number of Commercial and Business Enterprises to be displaced (structure owner on Gov. land, structure on private land, tenants)</li> <li>- Number of Community owned structures to be displaced including physical cultural resources</li> <li>- Number of Informal settlers to be displaced</li> </ul>
		<p>Issues specific to Benin/ Cotonu</p>	<ul style="list-style-type: none"> <li>- Issues like restriction of land acquisition/ transfer, specific land tenure like community-owned land, road reserve etc, if any</li> </ul>
<p>10</p>	<p>Public utilities</p>	<p>Map of public utilities in the project site</p>	<ul style="list-style-type: none"> <li>- Water intake for public water services</li> <li>- Locations of water and sewage pipes</li> <li>- Locations of gas supply facilities and pipes</li> </ul>

No.	Category	Document/Information	Necessary Items to be included
		<ul style="list-style-type: none"> <li>- Locations of power poles and electric cables (high tension, medium tension, low tension)</li> <li>- Locations of telecommunications facilities and cables</li> </ul>	<ul style="list-style-type: none"> <li>- Name and contact information of organization</li> </ul>
		List of public utility administrators	Unit price for the relocation and demolition of public utilities ( power pole, electric cable, water and sewage pipe, )
		Standard unit price list	
11	Cost Estimation	BOQ Breakdown of Adjacent section Project/ Project cost of the similar project	<ul style="list-style-type: none"> <li>- Breakdown and precondition of each unit price</li> <li>- Completed section of Boulevard Europe, other Flyover projects and Interchange financed by Chaina.</li> <li>- CAD data for the above sections</li> </ul>
		Labour Laws (latest version)	Minimum wages, Working hours, Bonus, etc
		Customs procedures	Required days for custom clearance, Tariff
		Composite Schedule of Rates	
		Organization chart for Ministère des Infrastructures et des Transports (MIT), Direction Général Infrastructures	<ul style="list-style-type: none"> <li>- Responsibility and Name of responsible person</li> <li>- Number of his/her staff on each position of MIDT including the branch offices</li> </ul>
12	Organization	Organization chart for Direction of Control and Infrastructure Monitoring	<ul style="list-style-type: none"> <li>- Responsibility and Name of responsible person</li> <li>- Number of his/her staff on each position of MIDT including the branch offices</li> </ul>
		Organization chart for Direction of Road Maintenance	<ul style="list-style-type: none"> <li>- Responsibility and Name of responsible person</li> <li>- Number of his/her staff on each position of MIDT including the branch offices</li> </ul>
		Budget and expenditures of MIT for past 5 years	<ul style="list-style-type: none"> <li>- For construction of new road</li> <li>- For rehabilitation and improvement of existing road</li> <li>- For routine and periodic inspection</li> <li>- For maintenance</li> </ul>
13	Road Maintenance	Breakdown of the maintenance cost and method	<ul style="list-style-type: none"> <li>- Unit price for each maintenance work</li> </ul>
		Road Maintenance Plan	<ul style="list-style-type: none"> <li>- Routine and periodic</li> </ul>



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		Road maintenance manual (if any)	Technical standard and specification																																																																						
	Achievement of the road maintenance for the past 5 years	<p>Major work achieved and budget allocated</p> <p>Example table</p> <table border="1"> <thead> <tr> <th>Item</th> <th>2013/2014</th> <th>2014/2015</th> <th>2015/2016</th> <th>2016/2017</th> </tr> </thead> <tbody> <tr> <td>Road Fund subsidies (development, maintenance)</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Ministry of Works contribution (salaries)</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Assistance from donors</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Other</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Employee salaries</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>General administration expenses / execution management expenses</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Maintenance works costs</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Rehabilitation works costs</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Upgrading works costs</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Organizational strengthening costs</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Capital investment</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Item	2013/2014	2014/2015	2015/2016	2016/2017	Road Fund subsidies (development, maintenance)					Ministry of Works contribution (salaries)					Assistance from donors					Other					Total					Employee salaries					General administration expenses / execution management expenses					Maintenance works costs					Rehabilitation works costs					Upgrading works costs					Organizational strengthening costs					Capital investment					Total					
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14	Tax	Road Maintenance Fund (Fond Routier)  Details of taxes, VAT and levies on fuel, bitumen and other material to be imported by the project	<p>- Adhesive terms and conditions</p> <p>- Revenue</p> <p>- Organization</p> <p>(1) Fiscal levies and taxes with respect to the corporate income (Corporate tax, for Japanese and/or 3<sup>rd</sup> country firm)</p> <p>(2) Fiscal levies and taxes on their personal income (Personal income tax, for Japanese and/or 3<sup>rd</sup> country expert)</p> <p>(3) Value added tax (VAT, for Japanese and/or 3<sup>rd</sup> country firm)</p> <p>(4) Custom Duties and related fiscal charges with respect to the import and/or re-export of materials and equipment</p>																																																																						

No.	Category	Document/Information	Necessary Items to be included
		Procedure of exemption of the taxes, VAT and levies on above items	Information (name, percentage, how to calculate, basis law) Tax Exemption Procedure(procedure, application authority, required time, flow chart)
15	Laboratory Data	Existing Quarry and Borrow pit data	-
16	10 years guarantee for construction	Reliable Documentation such as the existing low	-

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AECKV  
REPUBLIQUE DU BENIN  
Fraternité-Justice-Travail

PRESIDENCE DE LA  
REPUBLIQUE

LE MINISTRE DE L'ECONOMIE, DES FINANCES ET DES PROGRAMMES DE DENATIONALISATION  
SECTION DES AFFAIRES  
le 14/03/16  
N° S/N° 0003

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*Power attribution*  
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**DECRET N° 2016-054 DU 10 MARS 2016**  
portant obligation d'assurance des risques de la  
construction en République du Bénin.

**LE PRESIDENT DE LA REPUBLIQUE,  
CHEF DE L'ETAT,  
CHEF DU GOUVERNEMENT,**

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- Vu la loi n° 90-32 du 11 décembre 1990 portant Constitution de la République du Bénin ;
- Vu la proclamation, le 29 mars 2011 par la Cour Constitutionnelle, des résultats définitifs de l'élection présidentielle du 13 mars 2011 ;
- Vu le décret n°93-262 du 05 novembre 1993 portant ratification du Traité Instituant une Organisation Intégrée de l'Industrie des Assurances dans les Etats Africains ;
- Vu le décret n°2015-370 du 18 juin 2015 portant composition du Gouvernement ;
- Vu le décret n° 2012-191 du 03 juillet 2012 fixant la structure-type des Ministères ;
- Vu le décret n°2014-757 du 26 décembre 2014 portant attributions, organisation et fonctionnement du Ministère de l'Economie, des Finances et des Programmes de Dénationalisation ;
- Vu le décret n°2014-782 du 31 décembre 2014 portant attributions, organisation et fonctionnement du Ministère de l'Urbanisme, de l'Habitat et de l'Assainissement ;
- Vu le décret n°2012-376 du 06 novembre 2012 portant attributions, organisation et fonctionnement du Ministère des Travaux Publics et des Transports ;
- Vu l'arrêté n°3258/MEFPD/DC/SGM/DGAE du 05 août 2015 portant attributions, organisation et fonctionnement de la Direction Générale des Affaires Economiques ;
- Sur rapport du Ministre d'Etat chargé de l'Economie, des Finances et des Programmes de Dénationalisation ;
- Le Conseil des Ministres, entendu en sa séance extraordinaire du 22 janvier 2016,

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*[Signature]*

## D E C R E T E :

### TITRE I : DEFINITIONS – PERSONNES ASSUJETTIES ET CONSTRUCTIONS CONCERNEES

Article 1<sup>er</sup> : Au sens du présent décret, il faut entendre par :

- **Constructeur** : tout architecte, entrepreneur, technicien ou autre personne liée au maître de l'ouvrage par un contrat de louage d'ouvrage ;  
Toute personne physique ou morale qui vend après achèvement, un ouvrage qu'elle a construit ou fait construire ;  
toute personne qui, bien qu'agissant en qualité de mandataire du propriétaire de l'ouvrage, accomplit une mission assimilable à celle d'un locateur d'ouvrage ;

- **locateur d'ouvrage** : personne qui exécute un ouvrage dans le cadre d'un contrat de louage d'ouvrage ;

- **louage d'ouvrage** : contrat par lequel une personne physique ou morale s'engage à réaliser un ouvrage au profit d'une autre moyennant un certain prix ;

- **ouvrage** : ensemble immobilier (barrages, routes, ponts, habitations, bureaux, entrepôts, usines...) ou fraction d'un ensemble (les ouvrages de viabilité, de fondation, de clos, d'ossature ou de couvert) qui résulte de l'exécution d'un contrat dans le cadre d'un même chantier ;

- **maître d'ouvrage** : personne physique ou morale désignée par ce terme dans les documents contractuels et pour le compte de qui les travaux ou ouvrages immobiliers sont exécutés ;

- **maître d'ouvrage délégué** : mandataire exclusif du maître d'ouvrage, il assure la direction de l'exécution des travaux depuis la conception du projet jusqu'à la réception définitive desdits travaux ;

- **maître d'œuvre** : personne physique ou morale désignée par ce terme dans les documents contractuels.  
Il veille, selon l'étendue de la mission qui lui a été confiée par le maître d'ouvrage, à la réalisation des projets immobiliers établis et en contrôle l'exécution.  
Il a la responsabilité de la livraison des travaux ou ouvrages immobiliers ;

- **promoteur immobilier** : personne physique ou morale de droit public ou privé agréée par le Ministère en charge de l'Habitat et de l'Urbanisme qui réalise ou fait réaliser des opérations d'urbanisme et de construction (opérations d'urbanisme et d'aménagement, édification, amélioration,

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réhabilitation ou extension de construction sur des terrains aménagés) au profit d'accédants à la propriété foncière et/ou immobilière.

Il a la responsabilité de procéder ou de faire procéder à la réalisation d'un programme de construction d'un ou de plusieurs édifices.

Il procède lui-même ou fait procéder à l'exécution de tout ou partie des opérations juridiques, administratives et financières concourant au même objet.

Il est tenu au respect du contrat de promotion immobilière qui le lie au maître d'ouvrage.

**Article 2 :** Toute personne physique ou morale intéressée par un chantier, notamment le promoteur, le maître d'ouvrage, l'entreprise principale de construction et tout autre intervenant doit souscrire, avant le démarrage des travaux, une assurance garantissant les dommages subis par l'ouvrage dans la phase de construction ou causés à autrui par l'activité du chantier.

**Article 3 :** L'obligation d'assurance des risques de la construction visée par le présent décret doit être satisfaite auprès des entreprises d'assurance agréées sur le territoire de la République du Bénin.

**Article 4 :** Tout constructeur d'ouvrage est tenu, à l'ouverture de tout chantier, de souscrire les assurances garantissant les risques de responsabilité encourus et définis à l'article 8 ci-après.

**Article 5 :** Toute personne physique ou morale qui, agissant en qualité de propriétaire de l'ouvrage, de vendeur ou de mandataire du propriétaire de l'ouvrage fait réaliser des travaux de construction d'un ensemble immobilier, doit souscrire avant l'ouverture du chantier, pour son compte ou pour celui des propriétaires successifs, une assurance garantissant les dommages subis par l'ouvrage pendant les dix (10) premières années suivant sa réception définitive.

**Article 6 :** Les ouvrages dont le coût de réalisation est inférieur ou égal à cent millions (100.000.000) de francs CFA ne sont pas soumis à l'obligation d'assurance visée dans le présent décret à l'exception des bâtiments ou ouvrages socio communautaires. Le seuil ci-dessus fera l'objet de révision périodique par arrêté du Ministre en charge du secteur des Assurances.

Par coût de réalisation de l'ouvrage, il faut entendre, le montant du marché auquel s'ajoute la valeur des matériaux de construction et/ou des prestations fournies, le cas échéant, par le maître d'ouvrage.

Il s'agit, dans tous les cas, de la valeur prévisible main d'œuvre comprise, de l'ensemble des éléments physiques destinés à faire partie intégrante de l'ouvrage.

**Article 7 :** Les ouvrages devant servir à un usage socio communautaire tels que les écoles, les collèges, les lycées, les centres de santé et hôpitaux, les maisons du peuple, les lieux de spectacles, les centres de conférences, les centres de loisirs, les églises, les bâtiments administratifs et tous autres ouvrages publics sont assujettis à l'obligation d'assurance quel que soit leur coût de réalisation.

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## TITRE II : ASSURANCES OBLIGATOIRES

**Article 8** : L'obligation d'assurance des risques de la construction porte sur l'assurance tous risques chantier, l'assurance de responsabilité civile, l'assurance de responsabilité civile décennale et l'assurance dommages à l'ouvrage.

L'ASSURANCE TOUS RISQUES CHANTIER est souscrite pour compte commun par l'une des personnes visées à l'article 2. Elle couvre les dommages subis par l'ouvrage, tant dans la phase de construction ou de montage que pendant les périodes d'essais ou de maintenance à la fin de la construction.

L'ASSURANCE DE RESPONSABILITE CIVILE est souscrite en raison des dommages causés à autrui du fait de la réalisation de l'ouvrage. Elle peut également être souscrite par tout intervenant sur base annuelle et se rapporte à ses activités relatives aux Bâtiments et Travaux Publics (BTP) déclarés dans le contrat d'assurance.

L'ASSURANCE DE RESPONSABILITE CIVILE DECENNALE est souscrite par tout constructeur d'ouvrage pour les dommages, même ceux résultant d'un vice du sol, qui compromettent la solidité de l'ouvrage ou qui, l'affectant dans l'un de ses éléments constitutifs ou l'un de ses éléments d'équipement indissociables, le rendent impropre à sa destination.

L'ASSURANCE DOMMAGES A L'OUVRAGE est souscrite par le maître d'ouvrage ou toute personne visée à l'article 4 pour la garantie des dommages à l'ouvrage en dehors de toute recherche de responsabilité ou des travaux de réparation rendus nécessaires par la résiliation, avant réception, du contrat de louage d'ouvrage pour inexécution des obligations du constructeur. La souscription de cette garantie d'assurance est obligatoire lorsqu'il s'agit des constructions relevant du patrimoine de l'Etat.

**Article 9** : Tout contrat d'assurance de responsabilité souscrit est, nonobstant toute stipulation contraire, réputé comporter une clause assurant le maintien de la garantie pour la durée de la responsabilité pesant sur la personne assujettie à l'obligation d'assurance.

## TITRE III : MODALITES DE SOUSCRIPTION DES ASSURANCES DE CONSTRUCTION OBLIGATOIRES ET DE REGLEMENT DES SINISTRES

**Article 10** : Pour l'application des obligations d'assurance prévues au présent décret, l'Association des Sociétés d'Assurance du Bénin (ASA-Bénin) en rapport avec l'Association des Courtiers d'Assurance du Bénin (ACAB) met en place des clauses types de contrats soumises au visa de l'Autorité de Tutelle. Dans ce cadre, des arrêtés d'application fixeront d'une part les documents nécessaires à fournir par les souscripteurs pour la mise en place des contrats d'assurance, d'autre part les limitations tarifaires à observer par les sociétés d'assurance.

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**Article 11** : Nonobstant les dispositions ci-dessus, la détermination des tarifs de souscription de l'assurance des risques de construction par chaque assureur est libre en tenant compte de l'encadrement tarifaire fixé par le Ministre en charge du secteur des Assurances et doit respecter le jeu de la concurrence.

**Article 12** : Dans le cas de l'assurance d'un risque dont la valeur dépasse la capacité de la société d'assurance attributaire de l'affaire, les dispositions du Code des assurances de la Conférence Interafricaine des Marchés d'Assurances (CIMA) relatives à la coassurance communautaire sont applicables, notamment sous son aspect d'intéressement prioritaire des autres acteurs du marché national.

**Article 13** : Tout constructeur ou maître d'ouvrage qui se voit opposer un refus à la souscription d'une assurance des risques de la construction sur le marché est habilité à saisir le Ministre en charge des Assurances.

Dans ce cas, le dossier est confié à un comité spécial permanent de tarification dont la composition, les modalités d'instruction des requêtes sont précisées par arrêté du Ministre en charge des Assurances.

**Article 14** : L'obligation d'assurance des risques de la construction est instituée dans l'intérêt du souscripteur, des assurés et bénéficiaires de contrats d'assurance. En conséquence, l'étude des sinistres déclarés et les dédommagements doivent se faire avec célérité et équité, dans les délais fixés par la procédure spéciale de règlement des sinistres établie par l'Association des Sociétés d'Assurances du Bénin (ASA BENIN) et validée par le Ministre en charge du secteur des Assurances.

**Article 15** : La procédure spéciale de règlement des sinistres est communiquée à tout souscripteur de contrat à la conclusion de ce dernier.

#### TITRE IV : CONTROLE DU RESPECT DE L'OBLIGATION D'ASSURANCE, ORGANES DE CONTROLE - SANCTIONS

**Article 16** : Le constructeur, avant le début des travaux, doit présenter au maître d'ouvrage ou au maître d'ouvrage délégué, en guise de contrôle, les attestations d'assurance ainsi que les quittances de paiement des primes..

**Article 17** : Le contrôle est aussi exercé pour toutes les assurances obligatoires, même sans avis préalable, conjointement ou individuellement par le Ministère en charge des assurances, le Ministre en charge de l'Urbanisme, de l'Habitat et de l'Assainissement et celui des Transports et des Travaux Publics. L'Association des Sociétés d'Assurances du Bénin (ASA BENIN) peut être associée au contrôle.

**Article 18** : La présomption qu'il a été satisfait à l'obligation d'assurance telle qu'évoquée ci-dessus, résultera de la présentation aux organes de contrôle, des attestations d'assurance en cours de validité.

**Article 19** : Le refus manifeste de justifier que les obligations d'assurances sont satisfaites est considéré comme un non respect desdites obligations et passible de la sanction prévue aux articles 20 et 21 ci-dessous, selon le cas.

**Article 20** : Toute personne qui contrevient aux dispositions du présent décret en souscrivant à l'étranger les assurances obligatoires des risques de la construction est passible d'une amende de 50% du montant des primes émises à l'extérieur. En cas de récidive, l'amende est portée à 100%.

**Article 21** : Toute personne qui réalise ou fait réaliser des ouvrages concernés par le présent décret sans souscrire les assurances obligatoires des risques de la construction sera contrainte de procéder à une régularisation de la situation pour les souscriptions encore possibles à la date du constat.

De plus, elle est passible d'une amende de 100% du montant total des primes qu'elle aurait payé si les assurances avaient été normalement souscrites.

L'amende est de 150% de l'assiette ci-dessus définie, si aucune souscription n'est encore possible à la date du constat.

**Article 22** : Toute entreprise d'assurance qui maintient son refus de garantir un risque dont les conditions de souscription ont été fixées par l'autorité de tutelle est considérée comme ne fonctionnant plus conformément à la réglementation en vigueur et encourt les sanctions prévues par le Code des assurances à cet effet.

#### TITRE V : DISPOSITIONS FINALES

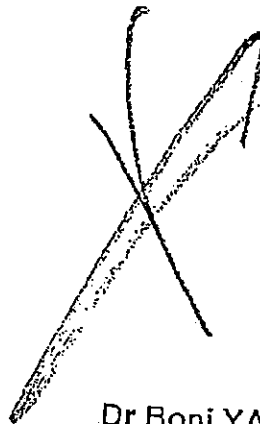
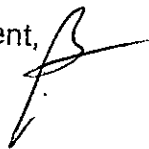
**Article 23** : Les ouvrages en cours de construction avant l'entrée en vigueur du présent décret ne sont pas soumis à l'obligation d'assurance des risques de la construction ci-dessus définie.

**Article 24** : Le Ministre d'Etat chargé de l'Economie, des Finances et des Programmes de Dénationalisation, le Ministre de l'Urbanisme, de l'Habitat et de l'Assainissement et le Ministre des Travaux Publics et des Transports sont chargés, chacun en ce qui le concerne, de l'exécution du présent décret qui sera publié au Journal Officiel de la République du Bénin.

**Article 25** : Le présent décret entre en vigueur pour compter de la date de sa signature.

Fait à Cotonou, le 10 mars 2016

Par le Président de la République,  
Chef de l'Etat, Chef du Gouvernement,



Dr Boni YAYI.-

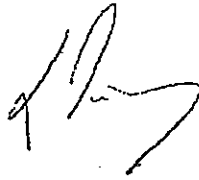
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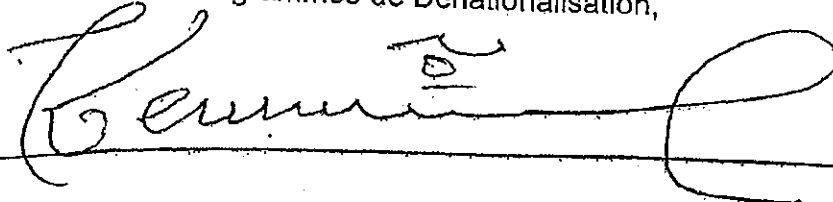


Le Premier Ministre Chargé du Développement Economique, de l'Evaluation des Politiques Publiques et de la Promotion de la Bonne Gouvernance,



Lionel ZINSOU

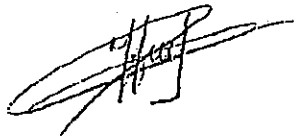
Le Ministre d'Etat Chargé de l'Economie, des Finances et des Programmes de Dénationalisation,



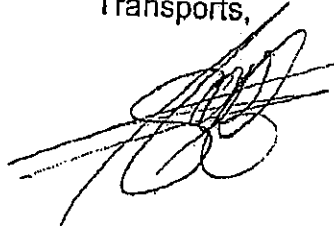
Komi KOUTCHE

Le Ministre de l'Urbanisme, de l'Habitat et de l'Assainissement,

Le Ministre des Travaux Publics et des Transports,

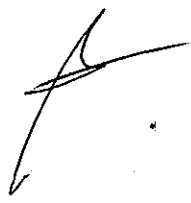


Noël FONTON



Gustave Dépo SONON

Ampliations: PR: 6 SGG: 4 AN: 4 CS: 2 CC: 2 CES: 2 HAAC: 2 HCJ: 2 PM/DEEPPPBG: 2 MEEFPD: 2 MUHA: 2 MTPT: 2  
AUTRES MINISTERES: 24 DGBM-DCF-DGTCP-DGID-DGDDI: 5 BN-DAN-DLC: 3 GCONB-DGCST-INSAE-BAG: 2 BCP-CSM-  
IGAA: 3 UAC-ENAM-FADESP: 3 UP-FDSP: 2 JORB: 1.



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資料 5-2. 第 2 回 英文 (正)

**Minutes of Discussions**  
**on the Preparatory Survey for the Project for**  
**“The Construction of the Interchange of Cotonou”**

On the basis of discussions and field survey in Republic of Benin (hereinafter referred to as “Benin”) in January, 2019 and subsequent technical examination in Japan, Japan International Cooperation Agency (hereinafter referred to as “JICA”) prepared an Interim Report (hereinafter referred to as “the Report”) on the Project for the Construction of the Interchange of Cotonou (hereinafter referred to as “the Project”) to Benin. The Preparatory Survey Team (hereinafter referred to as “the Team”) headed by Shuntaro KAWAHARA, Senior Advisor, Infrastructure and Peacebuilding Department, JICA, explained the Report, held a series of discussions with the official of the Government of Benin (hereinafter referred to as “the Benin side”) and conducted a field survey. In the course of the discussions, both sides have confirmed the main items described in the attached sheets, the Team will stay in the country from May 29 to June 24, 2019 and proceed with further studies and prepare the Preparatory Survey Report.

Cotonou, 14<sup>th</sup> June 2019



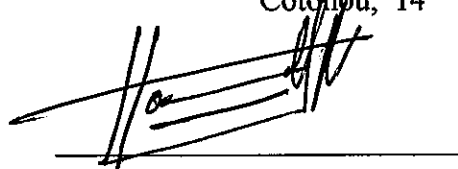
Mr. Shuntaro KAWAHARA

Leader

Preparatory Survey Team

Japan International Cooperation Agency

Japan

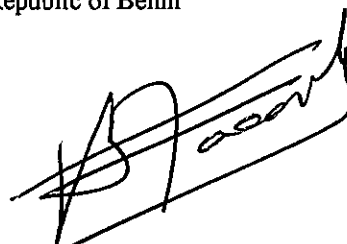


Mr. Roch C. HOUNDJE

Secretary General

Ministry of Infrastructures and Transports

Republic of Benin



Mr. O.H.S. Jacques AYADJI

Director General of Infrastructures

Ministry of Infrastructures and Transports

Republic of Benin

## ATTACHMENT

### 1. Scope of the Project

Because the Team recognizes necessity of construction of four-lane flyover in the future according to traffic demand forecast (Annex 2), the Survey will cover outline design of four-lane flyover. The Team also recognizes necessity of phasing the Project into two phases since the road width is limited and encroachment by the construction of flyover should be minimized.

In this connection, the Team proposed that the scope of the Project granted as the first phase should be construction of a two-lane West-East flyover and improvement of the intersection, and that the second phase would be construction of a two-lane East-West flyover. An Annex1 shows an outline of the plan of the phase 1. The Team will also consider issues cited in Article 8 and 9.

Benin side agreed to this proposal and the scope of the Project.

### 2. Contents of the Report

The Benin side agreed on and accepted in principle contents of the Report explained by the Team, which includes the Minutes of Discussions on the Preparatory Survey for the Project signed on February 25, 2019 by both sides.

### 3. Undertakings of the Project

Both side confirmed the undertakings of the Project as described in Annex3. With regard to the exception of customs duties, internal taxes and other fiscal levies as stipulated in (2) 4 of Annex3. Both sides confirmed that such customs duties, internal taxes and other fiscal levies will be clarified in the bid documents approved by the Ministry of Infrastructures and Transports during the implementation stage of the Project.

The Benin side assured that the measures will be taken to meet the preconditions for the implementation of the Project, including allocation of the necessary budget.

Both sides also confirmed that the Annex3 will be used as an attachment of Grant Agreement.

### 4. Relocation of Existing Public Utilities

The Team would provide the existing utility drawing by the end of June, 2019. For the smooth implementation for utility relocation, the Team requested that Benin side take necessary actions for the implementation, e.g. cost estimation for the budget



arrangement, procedures for the utility relocation, negotiation with relevant organization responsible for public utilities.

5. Timeline for the Project Implementation

The provisional timeline for the Project implementation is as Annex4. The Benin side requested strongly that the construction works of the phase 2 should start as soon as possible, and that duration to prepare detailed design of the phase 2 should be minimized since the detailed design of the phase 1 could be utilized.

6. Operation and Maintenance of the Facilities

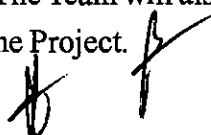
The Team explained the importance of operation and maintenance of facilities constructed by the Project considering that proper asset management impacts greatly on life-span of the facilities and its maintenance cost. The Benin side shall secure enough staff and budgets necessary for appropriate operation and maintenance of the facilities.

7. Completion Date of Utilities Relocation

Both sides confirmed the importance of smooth relocation of the utilities to be affected by the Project. The Team stated that the completion of the relocation of existing utilities is a precondition for the commencement of work by a contractor of the Project. The Team also stated that the Benin needs to take the necessary measures so that the works planned under the Millennium Challenge Account II program (MCA II) do not encroach on the Project's ROW. The Benin side will ensure coordination among relevant authorities. The Team will provide necessary drawings, information and proposal to avoid interference between the Project and the program. To ensure smooth implementation of the Project, the utilities is expected to be preferably relocated until April 2021.

8. Further Traffic Analysis and Traffic Safety

The Team explained that it would calculate saturation rate of the neighboring intersections to examine effects of the Project on them and necessity of their improvement. If necessary, the Team will propose countermeasures to mitigate negative impact of the Project on them. The Team will also propose necessary measures to ensure traffic safety with respect to the Project.



9. Necessity of South-West Flyover

In response to the request of Benin side, the Team agreed to study necessity and possibility of a south-west bound flyover with preprimary outline design.

10. Procedure of Tax Exception

The Ministry of Economy and Finance explained procedure of tax exemption as is described in Annex 5. Ministry of Infrastructures and Transports understood it and agreed to take necessary actions according to it.

Annex 1 Draft of Outline design drawing

Annex 2 Intersection traffic demand forecast result

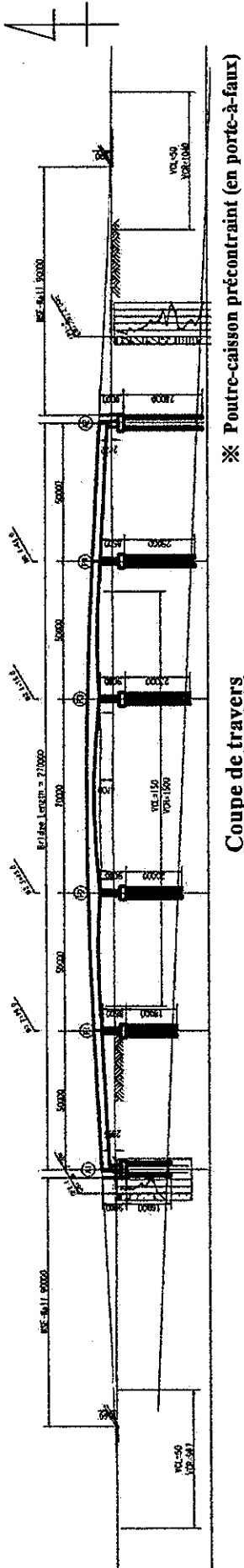
Annex 3 Major Undertakings to be taken by the Government of Benin

Annex 4 Project Implementation Schedule

Annex 5 Exemption Procedures in Benin



Avant-projet de l'aperçu du dessin de conception



Coupe de travers

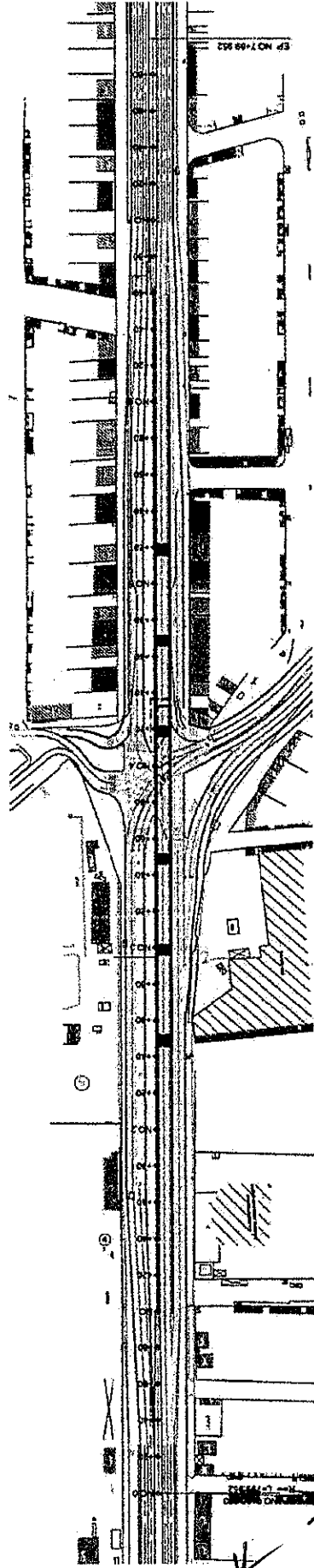
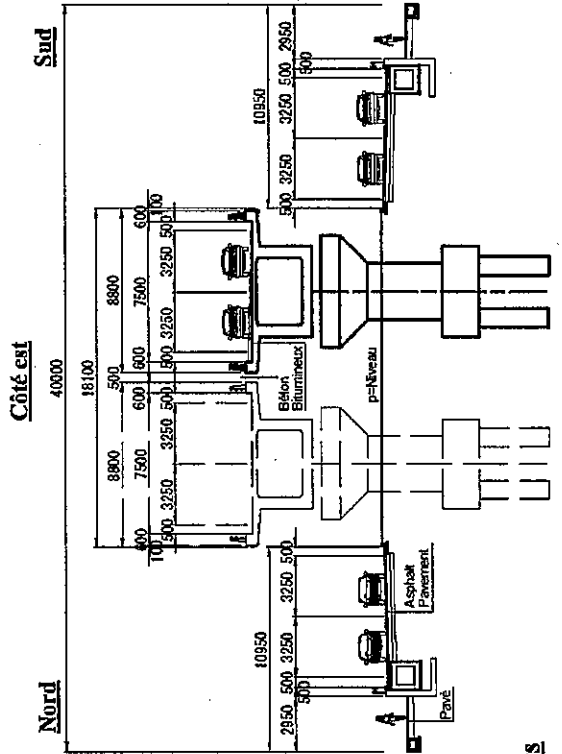
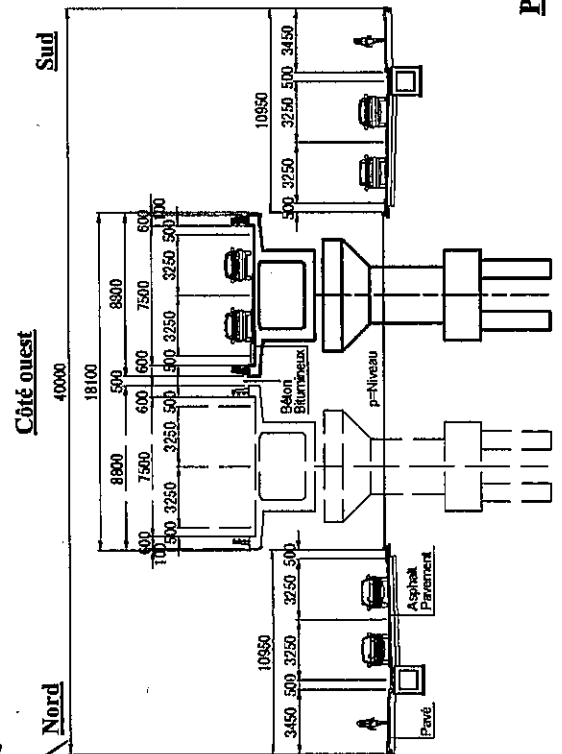


Figure plane



Profil en travers



## Intersection traffic demand forecast result

Case	Case0	Case1-a	Case1-h	Case1-c	Case1-d	Case2-a	Case2-h	Case2-c	Case2-d
<b>Condition</b>									
Estimated Year	2019 (Actual)	2035				2045			
Content of Study (Road Network and Condition of OD)	—	—	Public Transportation —	— Raod Network	Public Transportation Raod Network	—	Public Transportation —	— Raod Network	Public Transportation Raod Network
North Bypass	No	No	No	Yes	Yes	No	No	Yes	Yes
Route of Pêche (Phase 1)	No	Yes							
Route of Pêche (Phase 2)	No	No	No	Yes	Yes	No	No	Yes	Yes
Public Transportation Mode	No	No	Yes	No	Yes	No	Yes	No	Yes
<b>Result</b>									
<b>Whole Cotonou City</b>									
Total Distance Vehicle in km (Year of 2019=100)	100	181	139	158	125	256	199	224	181
Ave. of Degree of Saturation	1.2	More 2.0	1.6	1.5	1.2	More 3.0	More 2.0	More 2.0	1.8
Ave. of Speed (km/h)	App. 20km/h	Under 5km/h	App. 10km/h	App. 30km/h	App. 45km/h	Under 5km/h	Under 5km/h	App. 15km/h	App. 25km/h
<b>Intersection of Vedoko</b>									
Inflow (1,000 PCU/day)	121 1.0	149 1.2	115 0.9	90 0.7	80 0.7	210 1.7	158 1.3	144 1.2	104 0.9
From West	60 1.0	72 1.2	57 0.9	42 0.7	38 0.6	99 1.6	77 1.3	65 1.1	50 0.8
From South	18 1.0	25 1.4	17 0.9	10 0.6	8 0.4	40 2.2	28 1.5	29 1.6	15 0.8
From East	41 1.0	50 1.2	40 1.0	36 0.9	34 0.8	69 1.7	51 1.2	48 1.1	37 0.9
From North	2 1.0	2 1.0	1 0.6	2 1.0	1 0.5	2 1.2	2 1.0	3 1.3	2 0.9

Note: The numbers at the bottom right of the Volume of Flow at the intersection of Vêdoko represent the percentage relative to Case 0

**Result of Predictions of the flow of vehicles entering the intersection of Vêdoko  
(on the Flyover) at rush hour**

(Unit : pcu/h. The figures in the lower right represent the percentage compared to Case 0.)

Case	Case 0	Case 1-a	Case 1-b	Case 1-c	Case 1-d
West → East (peak hour/morning)	1 930 1,0	2 300 1,2	2 500 1,3	1 600 0,8	1 800 0,9
East → West (peak hour/evening)	1 125 1,0	1 800 1,6	1 900 1,7	1 200 1,1	1 600 1,4

Case	Case 2-a	Case 2-b	Case 2-c	Case 2-d
West → East (peak hour/morning)	3 000 1,6	3 200 1,6	2 200 1,1	2 300 1,2
East → West (peak hour/evening)	2 500 2,2	2 400 2,2	1 700 1,5	1 700 1,5

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## Major Undertakings to be taken by the Government of Benin

## 1. Specific obligations of the Government of Benin which will not be funded with the Grant

## (1) Before the Bidding

No.	Items	Deadline	In charge	Cost (US\$)	Ref.
1	To approve IEE/EIA (Conditions of approval should be fulfilled, if any) and secure the necessary budget for implementation of countermeasures obligated in the IEE/EIA.	before signing of the G/A	MIT/ MOLESD		
2	To open Bank Account (Banking Arrangement (B/A))	within 1 month after signing of the G/A	MIT/MOEF or MOFA		
3	To issue the Authorization to Pay (A/P) to a bank in Japan (the Agent Bank) for the payment to the Consultant	within 1 month after signing of the contract with the consultant	MIT/ MOEF or MOFA		
4	To approve Resettlement Action Plan (RAP)	before signing of the G/A	MIT		
5	To secure the necessary budget and implement land acquisition and resettlement (including preparation of resettlement sites), and compensation with full replacement cost in accordance with RAP	before notice of the bidding document(s)	MIT		
6	To implement social monitoring, and to submit the monitoring results to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	till land acquisition and resettlement complete	MIT		
7	To secure the Project site including relocation of existing utilities, buildings and obstacles	before notice of the bidding document(s)	MIT		
8	To obtain the planning and construction permit	before notice of the bidding document(s)	MIT and related agencies		
9	To submit Project Monitoring Report (with the result of Detailed Design (DD))	before preparation of bidding document(s)	MIT		

Note : MOEF -Ministry of Economics and Finance

MOFA -Ministry of Foreign Affairs

MIT -Ministry of Infrastructure and Transport

MOLESD -Ministry of Living Environment and Sustainable Development

SONEB - Société Nationale des Eaux du Bénin

SBEE - Société Béninoise d'Énergie Électrique



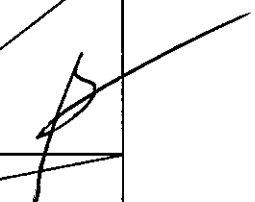
## (2) During the Project Implementation

No.	Items	Deadline	In charge	Cost (US\$)	Ref.
1	To issue A/P(s) to the Agent Bank in Japan for the payment(s) to the Supplier(s)	within 1 month after signing of the contract(s)	MIT/MOEF		
2	To bear the following commissions to the Agent Bank in Japan for the banking services based upon the B/A	during the Project	MIT/MOEF		
	1) Advising commission of A/P	within 1 month after signing of the contract(s)	MIT/MOEF		
	2) Payment commission for A/P	every payment	MIT/MOEF		
3	To facilitate prompt customs clearance and to facilitate the Supplier(s) with internal transportation in the country of the Recipient	during the Project	MIT/MOEF		
4	To ensure that custom duties, internal taxes and other fiscal levies for the project which may be imposed in the country of the Recipient with respect to the purchase of the products and /or the services be exempted	during the Project	MIT/MOFA		
5	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	MIT		
6	1) To submit Project Monitoring Report	every month	MIT		
	2) To submit Project Monitoring Report (Final)	within one month after signing of Certificate of Completion of the Work under the contract(s)	MIT		
7	To submit a report concerning completion of the Project	within six months after completion of the Project	MIT		
8	To facilitate distribution of electricity, water supply and drainage and other incidental facilities necessary for the implementation of the Project outside the site				
	1) Electricity The distributing line to the temporary site	before start of the construction	MIT and SBEE		
	2) Water Supply The city water distribution to the temporary site	before start of the construction	MIT and SONEB		
	3) Primary Electric Power Source Primary electric power source up to the distribution boards of traffic signal system and street light system	before start of the construction	MIT and SBEE		
9	To take necessary measure for safety construction - To conduct traffic controls of existing road for the Project, if necessary - To maintain traffic on the roads around the Project site	during the construction	MIT		
10	To submit results of environmental monitoring to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	during the construction	MIT		
11	To implement RAP (livelihood restoration program, if needed)	for a period based on livelihood restoration program	MIT		
12	To implement social monitoring, and to submit the monitoring results to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report - Period of the monitoring may be extended if affected persons' livelihoods are not sufficiently restored. Extension of the monitoring will be decided based on agreement between MIT and JICA.	until the end of livelihood restoration program (In case that livelihood restoration program is provided).	MIT		

**(3) After the Project**

No.	Items	Deadline	In charge	Cost	Ref.
1	To monitor EMP and EMoP	for a period based on EMP and EMoP	MIT		
2	To submit results of environmental monitoring to JICA, by using the monitoring form, semi-annually - The period of environmental monitoring may be extended if any significant negative impacts on the environment are found. The extension of environmental monitoring will be decided based on the agreement between MIT and JICA.	for three years after the Project	MIT		
3	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance of structure 3) Daily and periodic inspection	After completion of the construction	MIT		

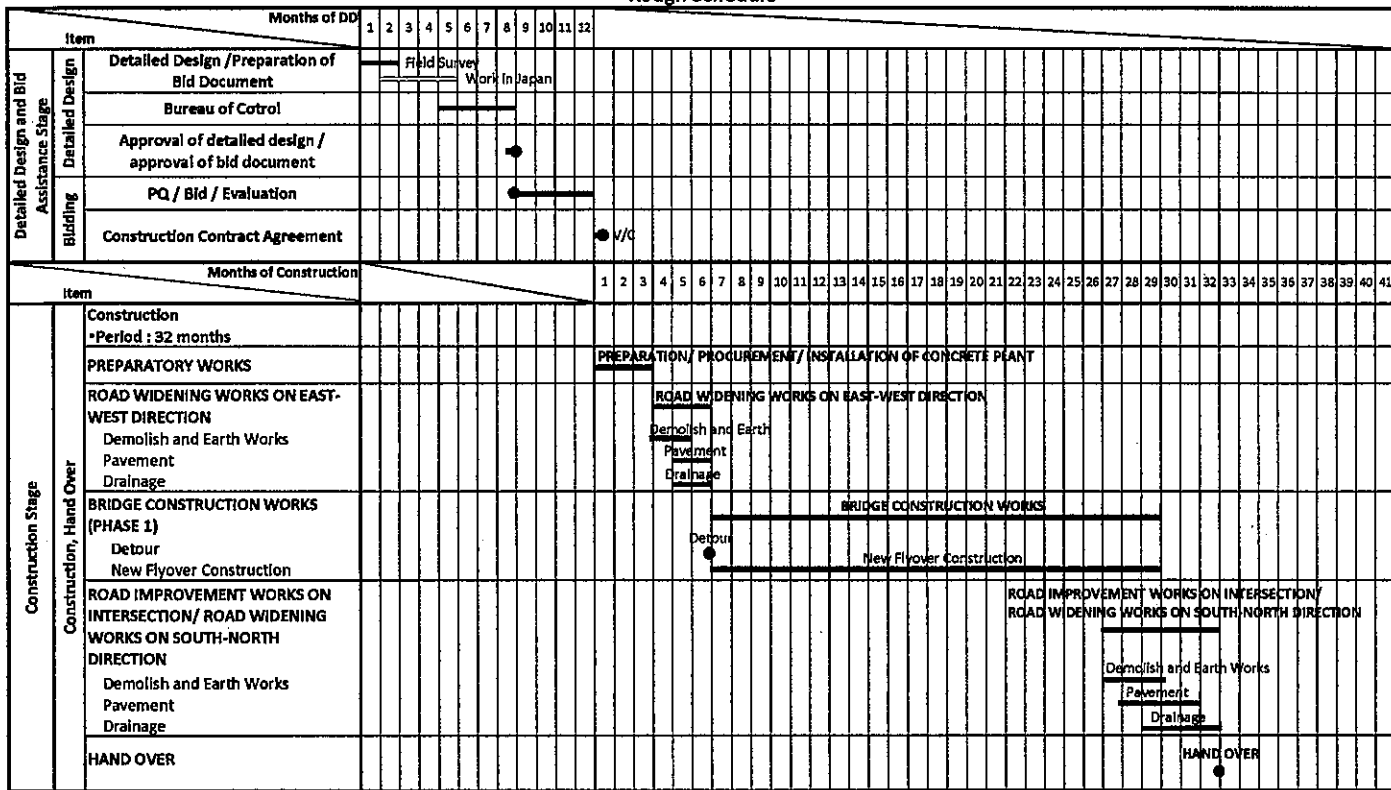
**2. Other Responsibilities of the Government of Benin funded with the Grant**

No.	Items	Amount (Million Japanese Yen)*
1	Construction of Interchange - Construction of Interchange of Vedoko	
2	To implement detailed design, bidding support and construction supervision (Consulting Service)	
3	Provision for unforeseeable event (Contingency)	
	Total	XXX

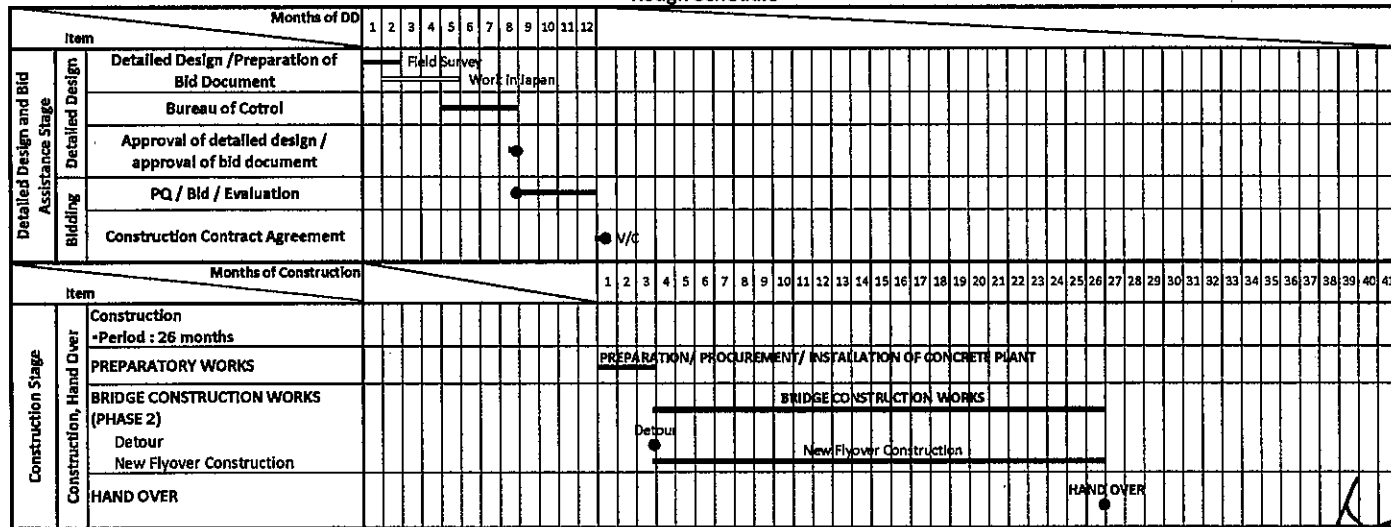
\*The Amount is provisional. This is subject to the approval of the Government of Japan.



Project Implementation Schedule (Phase 1)  
Rough Schedule



Project Implementation Schedule (Phase 2)  
Rough Schedule



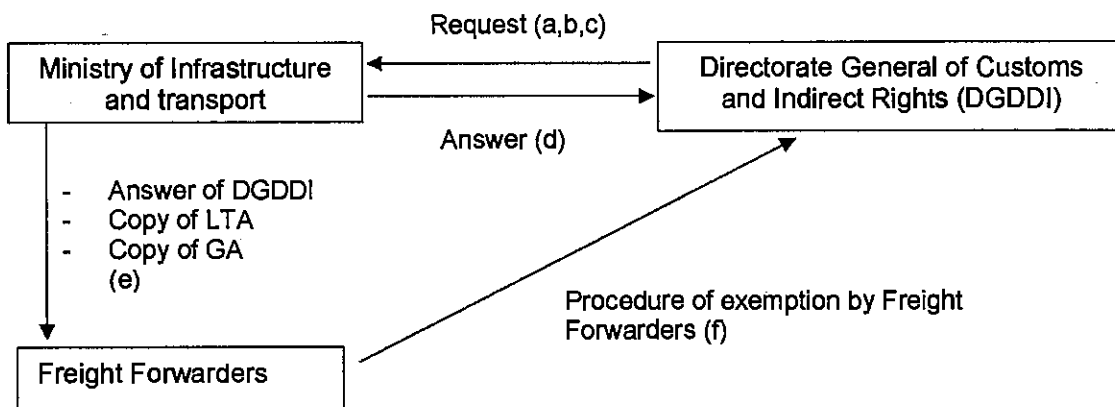
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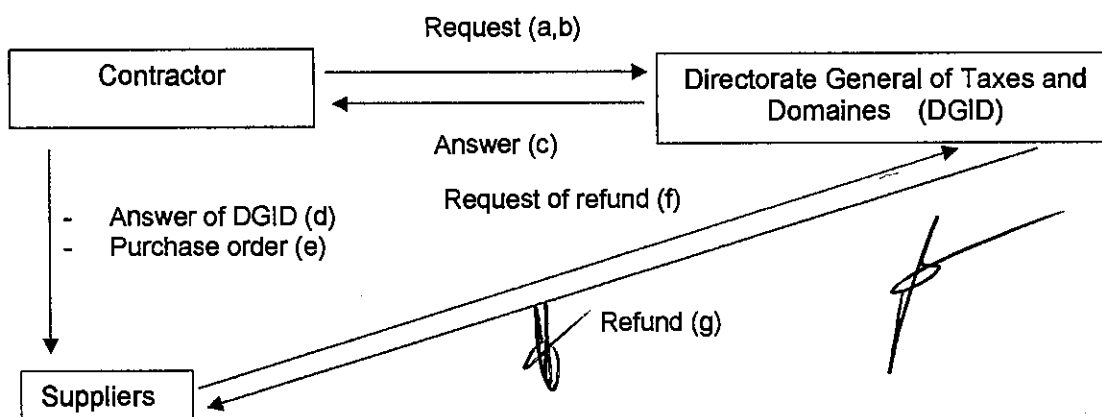
**EXEMPTION PROCEDURES IN BENIN**

1) Imported materials



- a. Have LTA or BL
- b. Have the grant agreement (GA)
- c. Address an exemption request letter to the Directorate General of Customs and Indirect Rights (DGDDI)
- d. Receive the response of the DGDDI, which specifies if a procedure of simplified removal is authorized or if it is necessary to make the procedure of exoneration by the tax exemption office
- e. Transmit the various documents to freight forwarders (letter of DGDDI + LTA + BL + ID card of responsible)
- f. the freight forwarders will make the exemption process in the account of the project and the project will pay him

2) Products purchased on places



*MZ*

- a. Receive the Quotation of the Company with the details of the things to buy
- b. Send a letter to the Director General of Taxes and Domains (DGID) to request authorization for a duty-free purchase
- c. Receive the response from the DGID, which is normally addressed to the supplier
- d. Transmit the response to the supplier
- e. Proceed to the purchase
- f. The supplier will make the rest of the procedure
- g. DGID will refund taxes with a tax credit

NB: No exemption can be done at 100% of taxes and duties. Each letter specifies which taxes to pay depending on the equipment or products.

LTA: Flight transport letter

BL: Delivery slip

*yz*

資料 5-3. 第 3 回 英文 (正)

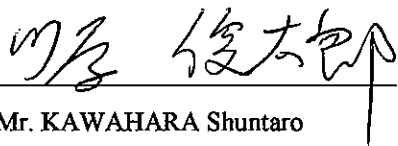


**Minutes of Discussions**  
**on the Preparatory Survey for the Project for**  
**The Construction of Interchange of Cotonou City**  
**(Presentation and Discussion on Draft Preparatory Survey Report)**

With reference to the minutes of discussions signed between Ministry of Infrastructures and Transports (hereinafter referred to as "MIT") and the Japan International Cooperation Agency (hereinafter referred to as "JICA") on January 25<sup>th</sup> 2019 and June 14<sup>th</sup> 2019, JICA dispatched the Preparatory Survey Team (hereinafter referred to as "the Team") for the presentation and discussion on Draft Preparatory Survey Report (hereinafter referred to as "the Draft Report") for the Project for The Construction of Interchange of Cotonou City (hereinafter referred to as "the Project").

As a result of the discussions, both sides agreed on the main items described in the attached sheets.

Cotonou, 5<sup>th</sup> December, 2019



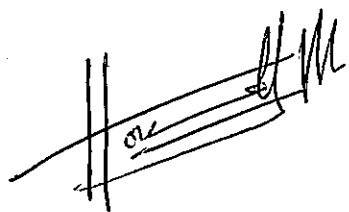
Mr. KAWAHARA Shuntaro

Leader

Preparatory Survey Team

Japan International Cooperation Agency

Japan

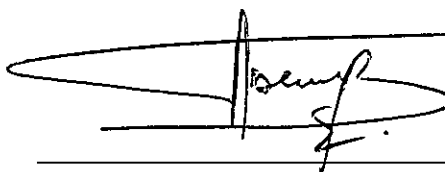


Mr. Roch C. HOUNDJE

Secretary General

Ministry of Infrastructures and Transports

Republic of Benin



Mr. Arsène B. SOGLO

Deputy Director General of Infrastructures

Ministry of Infrastructures and Transports

Republic of Benin

## ATTACHEMENT

1. Title of the Project

Both sides confirmed that the title of the Project is “the Project for the Construction of Interchange of Cotonou City”.

2. Project site

Both sides confirmed that the site of the Project is located at Vêdoco Intersection in Cotonou City shown as Annex 1.

3. Contents of the Draft Report

After the presentation and discussion on the contents of the Draft Report by the Team, the Benin side agreed to its contents. JICA will finalize the Preparatory Survey Report based on the confirmed items. The report will be sent to the Benin side around February 2020.

4. Cost estimate

Both sides confirmed that the cost estimate including the contingency explained by the Team is provisional and will be examined further by the Government of Japan for its approval. The contingency would cover the additional cost to cope with physical unexpected events, unexpected natural conditions, etc.

5. Confidentiality of the cost estimate and technical specifications

Both sides confirmed that the cost estimate and technical specifications of the Project should never be disclosed to any third parties until all the contracts under the Project are concluded.

6. Timeline for the project implementation

The Team explained to the Benin side that the expected timeline for the project implementation is as attached in Annex 2.

7. Expected outcomes and indicators

Both sides agreed that key indicators for expected outcomes are as follows. The Benin side will be responsible for the achievement of agreed key indicators targeted in year 2026 and shall monitor the progress for Ex-Post Evaluation based on those indicators.



[Quantitative indicators]

Index	Current Value (as of 2019)	Estimated Value (as of 2026)
Volume of Passenger <sup>1</sup>	533,000 person/day	599,000 person/day
Volume of Cargo <sup>2</sup>	8,774,000 ton/year	10,214,000 ton/year
Traveling time <sup>3</sup>	14 minutes	3 minutes
Saturation flow rate <sup>4</sup> (Traffic volume/Traffic capacity)	1.009	0.862

Note1: Vehicles and motorcycles passing through the Vêdoco Intersection

Note2: Value is calculated by multiplying “estimated traffic volume of tracks passing through the Intersection in the respective year” by “average cargo volume per track: 13.5 ton”, which is estimated by the Survey Team based on cargo volume to and from Benin, Niger, Mali, Burkina Faso handled at Cotonou Autonomous Port

Note3: Value in the evening peak hour between the Stadium Intersection and Vêdoco Intersection

Note4: Value in the morning peak hour at the Vêdoco Intersection

[Qualitative indicators]

(1) The traffic flow of a large cargo vehicle is improved by being diverted to a new flyover. As a result, transportation costs can be reduced.

(2) As a result of ensuring the stability and timeliness of passengers and logistics, access to the city of Cotonou will be improved, contributing to the development of local communities and the economy.

(3) Traffic accidents are reduced by reducing the complexity of traffic flow of vehicles, motorcycles and pedestrians.

8. Ex-Post Evaluation

JICA will conduct ex-post evaluation after three (3) years from the project completion, in principle, with respect to five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact, and Sustainability). The result of the evaluation will be publicized. The Benin side is required to provide necessary support for the data collection.

9. Undertakings of the Project

Both sides confirmed the undertakings of the Project as described in Annex 3. With regard to exemption of customs duties, internal taxes and other fiscal levies as stipulated in (2) 4 of Annex 3 and Annex 4, both sides confirmed that such customs

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duties, internal taxes and other fiscal levies, which shall be clarified in the bid documents by MIT during the implementation stage of the Project.

The Benin side assured to take the necessary measures and coordination including allocation of the necessary budget which are preconditions of implementation of the Project. It is further agreed that the costs are indicative, i.e. at Outline Design level. More accurate costs will be calculated at the Detailed Design stage.

Both sides also confirmed that the Annex 3 will be used as an attachment of G/A.

#### 10. Monitoring during the implementation

The Project will be monitored by MIT and reported to JICA by using the form of Project Monitoring Report (PMR) attached as Annex 5. The timing of submission of the PMR is described in Annex 3.

#### 11. Project completion

Both sides confirmed that the Project completes when all the facilities constructed and equipment procured by the Grant are in operation. The completion of the Project will be reported to JICA promptly, but in any event not later than six months after completion of the Project.

#### 12. Environmental and Social Considerations

##### 12-1 General Issues

##### 12-1-1 Environmental Guidelines and Environmental Category

The team explained that ‘JICA Guidelines for Environmental and Social Considerations (April 2010)’ (hereinafter referred to as “the Guidelines”) are applicable for the Project. The Project is categorized as B because the Project is not considered to be a large-scale road project, is not located in a sensitive area, and has none of the sensitive characteristics under the Guideline, hence it is not likely to have a significant adverse impact on the environment.

##### 12-1-2 Environmental Checklist

The environmental and social considerations including major impacts and mitigation measures for the Project are summarized in the Environmental Checklist attached as Annex 6. Both sides confirmed that in case of major modification of the content of the Environmental Checklist, the Benin side shall submit the modified version to JICA in a timely manner.

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## 12-2 Environmental Issues

### 12-2-1 Environmental Impact Assessment (EIA)

Both sides confirmed the EIA report will be approved by Benin Environment Agency by April 2020.

### 12-2-2 Environmental Management Plan and Environmental Monitoring Plan

Both sides confirmed Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP) of the Project is as Annex 7, respectively. Both sides agreed that environmental mitigation measures and monitoring shall be conducted based on the EMP and EMoP, which may be updated during the detailed design stage.

## 12-3 Social Issues

### 12-3-1 Land Acquisition and Resettlement

Both sides confirmed the 0.05 ha of land would be acquired and 111 people would be relocated/affected due to the implementation of the Project.

Such land acquisition and resettlement shall be implemented based on the Resettlement Action Plan (RAP) as Annex 8, which was prepared in line with the Guidelines and would be authorized by the Benin side by April 2020.

### 12-3-2 Autochthonous People

Both sides confirmed that the Project does not affect autochthonous peoples.

## 12-4 Environmental and Social Monitoring

### 12-4-1 Environmental Monitoring

Both sides agreed that the Benin side will submit results of environmental monitoring to JICA by using the monitoring form attached as Annex 7. The timing of submission of the monitoring form is described in Annex 3.

### 12-4-2 Social Monitoring

Both sides confirmed that the Benin side will implement social monitoring about land acquisition and resettlement plan proposed in the RAP. The Benin side and the Team agreed that MIT will submit results of social monitoring to JICA by using the monitoring form attached as Annex 9.

### 12-4-3 Information Disclosure of Monitoring Results

Both sides confirmed that the Benin side will disclose results of environmental and social monitoring to local stakeholders in their field offices.

The Benin side agreed JICA will disclose results of environmental and social monitoring submitted by the Benin side as the monitoring forms attached as Annex 9 on its website.

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### 13. Other Relevant Issues

#### 13-1. Disclosure of Information

Both sides confirmed that the Preparatory Survey Report excluding the project cost will be disclosed to the public after completion of the Preparatory Survey. The comprehensive report including the project cost will be disclosed to the public after all the contracts under the Project are concluded.

#### 13-2. Operation and Maintenance of the Facilities

The team emphasized the importance of operation and maintenance of the facilities constructed by the Project, since proper asset management affects greatly on durability and maintenance cost of them. The Benin side explained that MIT will appropriately operate and maintain the facilities.

#### 13-3. Completion date of utility relocation

Both sides confirmed that it is important to relocate the utility for the implementation of this project. Both sides confirmed that the relocation of the affected utilities be completed before notice of the prequalification.

#### 13-4. Safety Measures

To avoid accidents on site during the implementation of the Project, the Benin side agreed to cause the consultant and the contractor to enforce safety measures such as setting safety assurance to the site, providing information for security control to public, and deploying adequate security personnel, based on “The Guidance for Management of Safety for Construction Works in Japanese ODA Projects” which has been published on JICA’s URL below.

[http://www.jica.go.jp/activities/schemes/oda\\_safety/ku57pq00001nz4eu-att/guidance\\_en.pdf](http://www.jica.go.jp/activities/schemes/oda_safety/ku57pq00001nz4eu-att/guidance_en.pdf)

#### 13-5. Insurance for defect liability for ten years

Both sides agreed that the checking process by Bureau of Technical Control should not affect the progress of the construction schedule.

#### 13-6. Drainage collector out of the project section

Benin side requested that the improvement of the drainage collector between the east end of the Project Section and the canal (Annex 10) would be included in the Project or the phase 2 project (construction of westbound flyover). The Team explained that integration into the Project is difficult because of constraint of budget and timeline for the project approval process. Both sides confirmed that the improvement of the drainage collector should start as early as fund is mobilized.





**【Annex 1 Project Site】**

**【Annex 2 Implementation Schedule】**

**【Annex 3 Major Undertakings to be taken by the Government of Benin】**

**【Annex 4 Tax Exemption Procedure in Benin】**

**【Annex 5 Project Monitoring Report (template)】**

**【Annex 6 Environmental Check List】**

**【Annex 7 Environment Management Plan/Environment Monitoring Plan】**

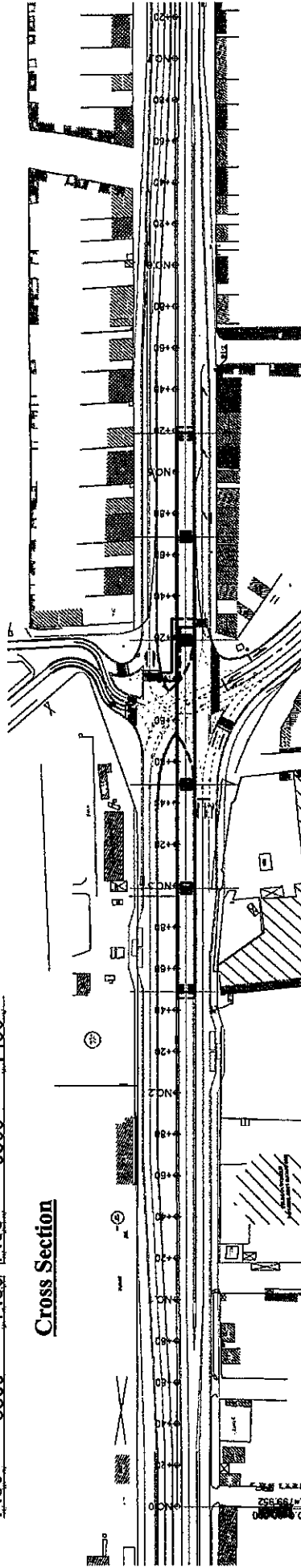
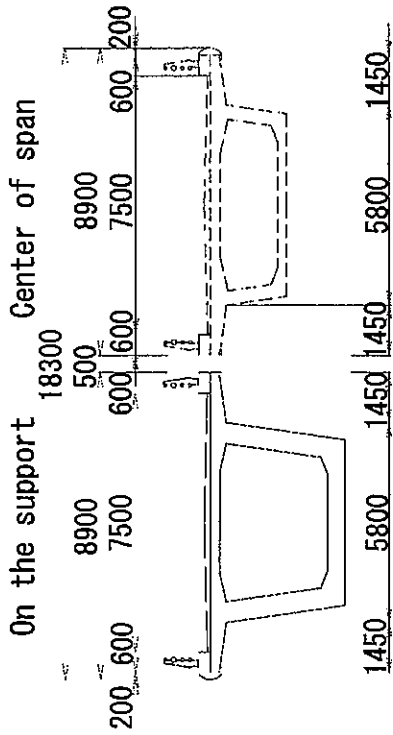
**【Annex 8 Resettlement Action Plan】**

**【Annex 9 Environmental and Social Monitoring Form】**

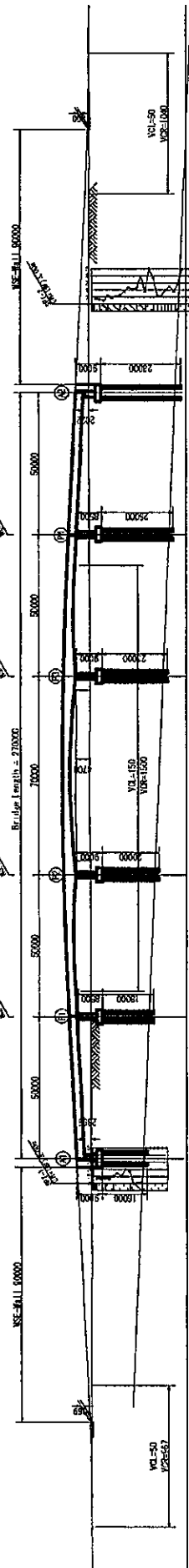
**【Annex 10 Drainage collector out of the project section】**



Draft of Outline design drawing



PC BOX GIRDER (CANTILEVER METHOD)



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Project Implementation Schedule (Phase 1)  
Rough Schedule

Item		Months of DD																																								
		1	2	3	4	5	6	7	8	9	10	11	12																													
Detailed Design and Bid Assistance Stage	Detailed Design /Preparation of Bid Document	Field Survey Work in Japan																																								
	Bureau of Control	●																																								
	Approval of detailed design / approval of bid document	●																																								
	PQ/ Bid / Evaluation	●																																								
Bidding	Construction Contract Agreement	● V/C																																								
Item		Months of Construction																																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
Construction Stage	Construction	- Period : 32 months																																								
	PREPARATORY WORKS	PREPARATION/ PROCUREMENT/ INSTALLATION OF CONCRETE PLANT																																								
	ROAD WIDENING WORKS ON EAST-WEST DIRECTION	Demolish and Earth Works Pavement Drainage																																								
	BRIDGE CONSTRUCTION WORKS (PHASE 1)	BRIDGE CONSTRUCTION WORKS New Flyover Construction																																								
	ROAD IMPROVEMENT WORKS ON INTERSECTION/ ROAD WIDENING WORKS ON SOUTH-NORTH DIRECTION	ROAD IMPROVEMENT WORKS ON INTERSECTION/ ROAD WIDENING WORKS ON SOUTH-NORTH DIRECTION Demolish and Earth Works Pavement Drainage																																								
	Demolish and Earth Works	Demolish and Earth Works																																								
	Pavement	Pavement																																								
	Drainage	Drainage																																								
	HAND OVER	HAND OVER																																								
	Construction, Hand Over																																									

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## Major Undertakings to be taken by the Government of Benin

## 1. Specific obligations of the Government of Benin which will not be funded with the Grant

## (1) Before the Bidding

No.	Items	Deadline	In charge	Cost (US\$)	Ref.
1	To approve EIA(Conditions of approval should be fulfilled, if any). Administrative cost for activities related to EIA, EMP and EMoP, for which Benin side is responsible, will be attributed to Benin side.	before signing of the G/A	MIT/ MOLESD		
2	To open Bank Account (Banking Arrangement (B/A))	within 1 month after signing of the G/A	MIT/MOFA/ MOEF	*1	
3	To issue the Authorization to Pay (A/P) to a bank in Japan (the Agent Bank) for the payment to the Consultant	within 1 month after signing of the contract with the consultant			
4	To bear the following commissions to the Agent Bank for the banking services based upon B/A				
	1) Advising commission of A/P	within 1 month after signing of the contract with the consultant			
	2) Payment commission for A/P	every payment			
5	To approve Resettlement Action Plan (RAP)	before signing of the G/A	MIT		
6	To secure the necessary budget and implement land acquisition and resettlement (including preparation of resettlement sites), and compensation with full replacement cost in accordance with RAP	before notice of the bidding document	MIT	406,124	
7	To implement social monitoring, and to submit the monitoring results to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	till land acquisition and resettlement complete	MIT		
8	To secure the Project site including relocation of existing utilities, buildings and obstacles	before notice of the prequalification	MIT	1,604,331	
9	To obtain the planning and construction permit	before notice of the bidding document	MIT and related agencies		
10	To submit Project Monitoring Report (with the result of Detailed Design (DD))	before preparation of bidding document	MIT		

Note : MOEF -Ministry of Economics and Finance

CAA- Autonomous Amortization Fund

MOFA -Ministry of Foreign Affairs

MIT -Ministry of Infrastructures and Transports

MOLESD -Ministry of Living Environment and Sustainable Development

SONEB - Société Nationale des Eaux du Bénin

SBEE - Société Béninoise d'Energie Electrique

\*1 Procedure and Cost for item 2- 4 will be confirmed by MOFA and MOEF.

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## (2) During the Project Implementation

No.	Items	Deadline	In charge	Cost (US\$)	Ref.
1	To issue A/P(s) to the Agent Bank in Japan for the payment(s) to the Contractor	within 1 month after signing of the contract	MIT/MOFA/MOEF	*1	
2	To bear the following commissions to the Agent Bank in Japan for the banking services based upon the B/A	during the Project			
	1) Advising commission of A/P	within 1 month after signing of the contract			
	2) Payment commission for A/P	every payment			
3	To facilitate prompt customs clearance and to facilitate the Contractor with internal transportation in the country of the Recipient	during the Project	MIT/MOEF		
4	To accord Japanese physical persons and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the country of the Recipient and stay therein for the performance of their work	during the Project	MIT/MOFA		
5	To ensure that custom duties, internal taxes and other fiscal levies for the project which may be imposed in the country of the Recipient with respect to the purchase of the products and /or the services be exempted	during the Project	MOFA/MOEF		
6	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	MIT		
	1) To submit Project Monitoring Report	every month	MIT		
	2) To submit Project Monitoring Report (Final)	within one month after signing of Certificate of Completion of the Work under the contract	MIT		
7	To submit a report concerning completion of the Project	within six months after completion of the Project	MIT		
8	To facilitate distribution of electricity, water supply and drainage and other incidental facilities necessary for the implementation of the Project outside the site				
	1) Electricity The distributing line to the temporary site	before start of the construction	MIT and SBEE		
	2) Water Supply The city water distribution to the temporary site	before start of the construction	MIT and SONEB		
9	To take necessary measure for safety construction - To conduct traffic controls of existing road for the Project, if necessary To maintain traffic on the roads around the Project site	during the construction	MIT		
10	To implement Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP)	during the construction	MIT and Contractor		
11	To submit results of environmental monitoring to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	during the construction	MIT		
12	To implement RAP (livelihood restoration program, if needed)	for a period based on livelihood restoration program	MIT		

No.	Items	Deadline	In charge	Cost (US\$)	Ref.
13	To implement social monitoring, and to submit the monitoring results to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report - Period of the monitoring may be extended if affected persons' livelihoods are not sufficiently restored. Extension of the monitoring will be decided based on agreement between MIT and JICA.	until the end of livelihood restoration program (In case that livelihood restoration program is provided)	MIT		
14	Cost for Insurance for defect liability for ten years and employment of Bureau of Technical Control	until conclusion of the Contract	MIT	244,000	

### (3) After the Project

No.	Items	Deadline	In charge	Cost (US\$)	Ref.
1	To monitor EMP and EMOp	for a period based on EMP and EMOp	MIT		
2	To submit results of environmental monitoring to JICA, by using the monitoring form, semi-annually - The period of environmental monitoring may be extended if any significant negative impacts on the environment are found. The extension of environmental monitoring will be decided based on the agreement between MIT and JICA.	for three years after the Project	MIT		
3	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance of structure 3) Daily and periodic inspection	After completion of the construction	MIT	62,851/year	

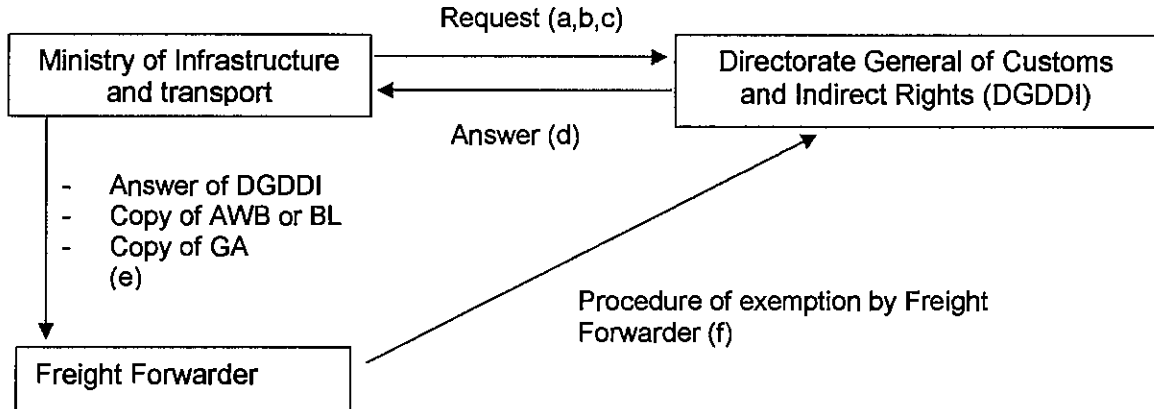
## 2. Other Responsibilities of the Government of Benin funded with the Grant

No.	Items	Deadline	Amount (Million Japanese Yen)*
1	Construction of Interchange	March 2023	
2	To implement detailed design, bidding support and construction supervision(Consulting Service)		
3	Provision for unforeseeable event (Contingency)		
	Total		

\*The Amount is provisional. This is subject to the approval of the Government of Japan.

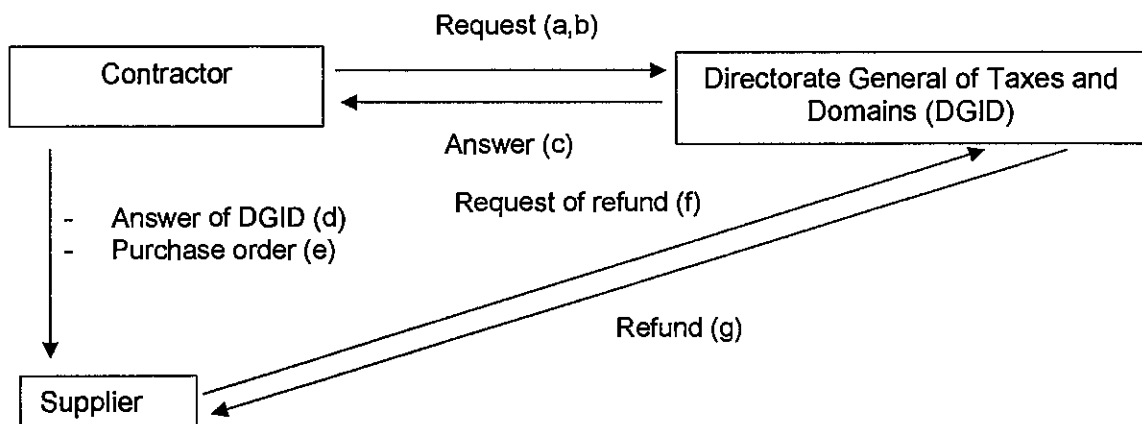
## TAX EXEMPTION PROCEDURES IN BENIN

### 1) Imported materials



- a. Have LTA or BL
- b. Have the grant agreement (GA)
- c. Address an exemption request letter to the Directorate General of Customs and Indirect Rights (DGDDI)
- d. Receive the response of the DGDGI, which specifies if a procedure of simplified removal is authorized or if it is necessary to make the procedure of exoneration by the tax exemption office
- e. Transmit the various documents to freight forwarder (letter of DGDDI + LTA (or BL) + ID card of responsible)
- f. the freight forwarder will make the exemption process in the account of the project and the project will pay him

### 2) Products purchased on places



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- a. Receive the Quotation of the supplier with the details of the things to buy
- b. Send a letter to the Director General of Taxes and Domains (DGID) to request authorization for a duty-free purchase
- c. Receive the response from the DGID, which is normally addressed to the supplier
- d. Transmit the response to the supplier
- e. Proceed to the purchase
- f. The supplier will make the rest of the procedure
- g. DGID will refund taxes with a tax credit

NB: No exemption can be done at 100% of taxes and duties. Each letter specifies which taxes to pay depending on the equipment or products.

**AWB**: Air Way Bill

**BL**: Bill of Landing

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## 1: Project Description

### 1-1 Project Objective

The Republic of Benin (hereinafter referred to as "Benin") has a territory from north to south, and the southern part overlooks the Gulf of Guinea. The city of Cotonou, where located in the south, the target of the study, is the largest city in the country and has one of the main ports of West Africa. The port of Cotonou is a logistic hub for imports and exports of landlocked countries such as Niger or inland areas of Nigeria. The volume of cargo handled at the Port of Cotonou is 9.94 million tonnes per year.

The President Patrice Talon who has come to power in April 2016, , the "Government Action Program 2016-2021 (PAG)" was passed in October by the Council of Ministers such as "Strengthening transport infrastructure" is one of the strategic axes, focusing on the structural transformation of the economy, the development of infrastructure, the strengthening of transport, logistics and trade infrastructures.

Benin is an important passage in the Abidjan-Lagos corridor (an international east-west corridor) that plays a key role in the regional development of the "growth ring" in West Africa. It is also located at the starting point of the Cotonou-Niamey corridor (international south-north corridor). These factors explain the essential place of this country in Japan's African policy.

### 1-2 Project Rationale

- Higher-level objectives to which the project contributes (national/regional/sectoral policies and strategies)
- Situation of the target groups to which the project addresses

#### 1-2-1 Pertinence

##### (1) Beneficiaries

- The direct beneficiaries of the Project are about 680 thousand inhabitants of the city of Cotonou, central city of the Beninese economy with a population density well above the national average.

##### (2) Improvement of the lives of the inhabitants

- The Project will contribute significantly to the reduction of traffic congestion, the fluidification of the movement of goods and people and the fluidification of freight transport at national level but also throughout Africa.
- The Project will help improve the lives of those who leave early and return late to avoid the traffic jams in the morning and late afternoon at the Védoko junction.

##### (3) Consistency with medium and long-term plans

- The Government Action Program 2016-2021, approved in October 2016 by the Council of Ministers, highlights the "development of transport infrastructure" as a strategic axis, and promotes, among other things, economic structural reform , development of the infrastructure sector, strengthening of transport, logistics and trade infrastructure. The realization of the project will be very significant.

##### (4) Consistency with Japanese ODA Policies and Guidelines

- Benin is located on the important passage of the Abidjan-Lagos corridor (the international east-west corridor, the Inter-State National Road 1), a key factor in the development of the West Africa Growth Ring, supported by Japan. It is also located at the starting point of the Cotonou-Niamey corridor (the north-south corridor, the Inter-State National Road 2). Benin occupies an important place in the Japanese policies of Africa. As a result, the Project is consistent with Japanese policies and lines of ODA.

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**1-3 Indicators for measurement of "Effectiveness"**

<b>Quantitative indicators to measure the attainment of project objectives</b>		
Indicators	Original (Yr 2019)	Target (Yr 2026)
Number of Passengers (persons/day)	533	599
Freight Volume (ton/year)	8 774	10 214
Travel Time (Minutes)	14	3
Saturation at the intersection (%)	1.009	0.862
<b>Qualitative indicators to measure the attainment of project objectives</b>		
The expected results of the Project in quality are as follows: <ul style="list-style-type: none"> <li>- Heavy goods vehicles move smoothly thanks to the newly developed grade-separated intersection and transport costs are reduced by the smooth of logistics flows ;</li> <li>- Access to the city of Cotonou is improving and local society and economy are boosted by the stability and speed of movement of people and goods;</li> <li>- The number of road accidents is decreasing thanks to reduced crossings between vehicles, two-wheelers and pedestrians.</li> </ul>		

<b>2: Details of the Project</b>
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**2-1 Location**

Components	Original <i>(proposed in the outline design)</i>	Actual
1.Védoko intersection	Védoko intersection	

**2-2 Scope of the work**

Components	Original* <i>(proposed in the outline design)</i>	Actual*
1. Construction of Interchange and improvement of Intersection		

Reasons for modification of scope (if any).

(PMR)
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**2-3 Implementation Schedule**

Items	Original		Actual
	DOD	<i>(at the time of signing the Grant Agreement)</i>	
Cabinet Approval	02/2020		
E/N	03/2020		
G/A	04/2020		

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Detailed Design	05/2020-02/2021		
Tender Notice	12/2020		
Tender	02/2020		
Construction Period	04/2020-03/2023		
Project Completion Date	04/2023		
Defect Liability Period	04/2024		

Reasons for any changes of the schedule, and their effects on the project (if any)

**2-4 Obligations by the Recipient**

**2-4-1 Progress of Specific Obligations**

See Attachment 2.

**2-4-2 Activities**

See Attachment 3.

**2-4-3 Report on RD**

See Attachment 11.

**2-5 Project Cost**

**2-5-1 Cost borne by the Grant(Confidential until the Bidding)**

Components			Cost (Million Yen)	
	Original <i>(proposed in the outline design)</i>	Actual <i>(in case of any modification)</i>	Original <sup>(1),2)</sup> <i>(proposed in the outline design)</i>	Actual
	1.			
Total				

Note: 1) Date of estimation: June 2019

2) Exchange rate: 1 EUR = 126,22 JPY, 1 US Dollar = 111.95 JPY, 1 EUR = 655,957 FCFA (fixed exchange rate) , 1 FCFA = 0,19242 JPY

**2-5-2 Cost borne by the Recipient**

Components			Cost (1,000 FCFA)	
	Original <i>(proposed in the outline design)</i>	Actual <i>(in case of any modification)</i>	Original <sup>(1),2)</sup> <i>(proposed in the outline design)</i>	Actual
	1. A/P (Authorization to pay) Charges		20,023	
	2. EIA Approval Charges		24,600	
	3.EIA upgrade Charges including Monitoring		151,620	

	4. Land acquisition, compensation and Expense/compensation for removal of buildings		286,830	
	5. Relocations of underground obstacles		1,000,101	

Note: 1) Date of estimation: June 2019  
2) Exchange rate: 1 EUR = 126,22 JPY, 1 US Dollar = 111.95 JPY, 1 EUR = 655,957 FCFA (fixed exchange rate), 1 FCFA = 0,19242 JPY

Reasons for the remarkable gaps between the original and actual cost, and the countermeasures (if any)

(PMR)

**2-6 Executing Agency**

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

**Original** (at the time of outline design)

name: Infrastructure Directorate General (DGI)

role: DGI is responsible for this project and comprises three directorates: infrastructure management and monitoring directorate, road maintenance and rural roads directorate and new construction management. The department responsible for this project is the new works department. The missions of the DGI are the development and implementation of MIT policies on roads and public works infrastructure of the road sector.

financial situation:

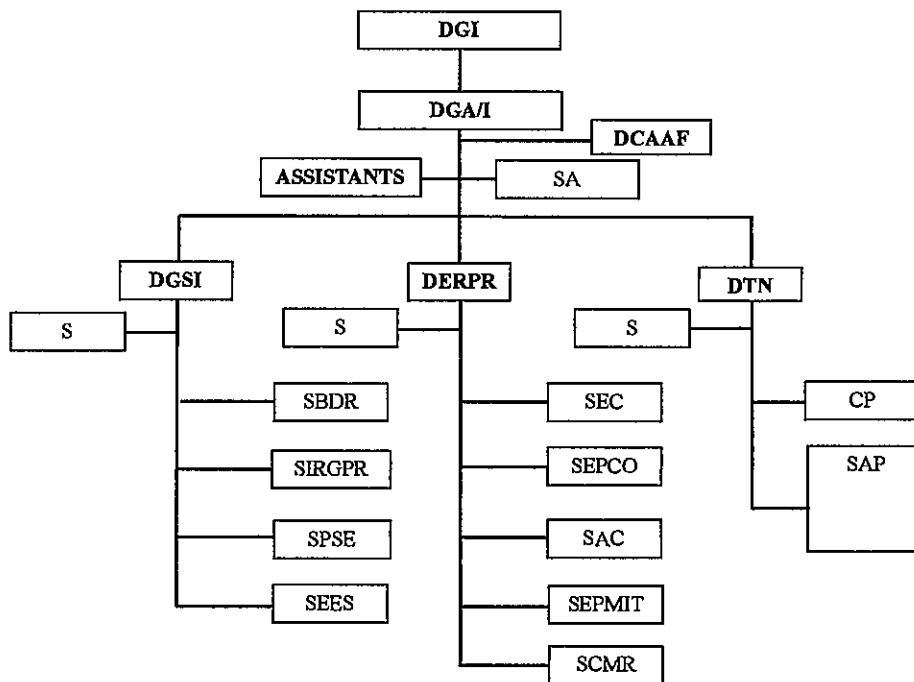
Unité : mille yens (converti en JPY)

	2015	2016	2017	2018
Budget of new works	13 579 516	8 942 020	18 837 600	14 357 632

Source : MIT/DIG/DGSI

institutional and organizational arrangement (organogram): see below organogram.

human resources (number and ability of staff): Composed of a staff of 352 agents



Légende :

\*DGI : Direction générale des infrastructures

DGA/I : Directeur générale adjoint des infrastructures

SA : Secrétariat Administratif de la DGI

\*DGSI : Direction de l'entretien routier et des pistes rurales

S : Secrétariat

SBDR : Service de la banque de données routières

SIRGPR : Service de l'inspection, de la réglementation et de la gestion du patrimoine routier

SPSE : Service de la programmation et du suivi-évaluation

SEES : Service des évaluations environnementales et sociales

\*DTN : Direction des travaux neufs

S : Secrétariat

CP : Chefs de projets

SAP : Service de l'audit des projets

\*DERPR : Direction de l'entretien routier et des pistes rurales

S : Secrétariat

SEC : Service de l'entretien courant

SEPCO : Service de l'entretien périodique et construction des ouvrages d'assainissement

SAC : Service assistance aux communes

SEPMIT : Service des études et promotions du MIT

SCMR : Service communication et mobilisation des ressources



**Actual (PMR)**

**2-7 Environmental and Social Impacts**

- The results of environmental monitoring based on Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- The results of social monitoring based on in Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- Disclosed information related to results of environmental and social monitoring to local stakeholders (whenever applicable).

**3: Operation and Maintenance (O&M)**

**3-1 Physical Arrangement**

- Plan for O&M (number and skills of the staff in the responsible division or section, availability of manuals and guidelines, availability of spareparts, etc.)

**Original (at the time of outline design)**

**Actual (PMR)**

**3-2 Budgetary Arrangement**

- Required O&M cost and actual budget allocation for O&M

**Original (at the time of outline design)**

**Actual (PMR)**

**4: Potential Risks and Mitigation Measures**

- Potential risks which may affect the project implementation, attainment of objectives, sustainability
- Mitigation measures corresponding to the potential risks

**Assessment of Potential Risks (at the time of outline design)**

Potential Risks	Assessment
1. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:

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	Action required during the implementation stage:
	Contingency Plan (if applicable):
2. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
3. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
<b>Actual Situation and Countermeasures</b>	
(PMR)	

**5: Evaluation and Monitoring Plan (after the work completion)**

**5-1 Overall evaluation**

Please describe your overall evaluation on the project.

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**5-2 Lessons Learnt and Recommendations**

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

**5-3 Monitoring Plan of the Indicators for Post-Evaluation**

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

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Attachment

1. Project Location Map
  2. Specific obligations of the Recipient which will not be funded with the Grant
  3. Monthly Report submitted by the Consultant
- Appendix - Photocopy of Contractor's Progress Report (if any)
- Consultant Member List
  - Contractor's Main Staff List
4. Check list for the Contract (including Record of Amendment of the Contract/ Agreement and Schedule of Payment)
  5. Environmental Monitoring Form / Social Monitoring Form
  6. Monitoring sheet on price of specified materials (Quarterly)
  7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (PMR (final) only)
  8. Pictures (by JPEG style by CD-R) (PMR (final) only)
  9. Equipment List (PMR (final) only)
  10. Drawing (PMR (final) only)
  11. Report on RD (After project)

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1. Initial Conditions (Confirmed)

Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment	
					Price (Decreased) E=C-D	Price (Increased) F=C+D
1 Item 1						
2 Item 2	●●t	●	●	●	●	●
3 Item 3	●●t	●	●	●		
4 Item 4						
5 Item 5						

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

Items of Specified Materials	1st month, 2015	2nd month, 2015	3rd month, 2015	4th	5th	6th
1 Item 1	●	●	●			
2 Item 2						
3 Item 3						
4 Item 4						
5 Item 5						

(3) Summary of Discussion with Contractor (if necessary)

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Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)  
 (Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	

## Environmental Checklist

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	<p>(a) Have EIA reports been already prepared in official process?</p> <p>(b) Have EIA reports been approved by authorities of the host country's government?</p> <p>(c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied?</p> <p>(d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?</p>	<p>(a) N</p> <p>(b) N</p> <p>(c) -</p> <p>(d) N</p>	<p>(a) The EIA report is being prepared and will be presented at the EBA December 2019. It will be approved in May 2020. The approval procedures will be carried out by MIT.</p> <p>(b) Same as above; not yet approved.</p> <p>(c) Same as above; not yet approved. In November 2019, the conditions of approval are not yet known.</p> <p>(d) Any tree cutting is subject to authorization issued by the MCVDD.</p>
	(2) Explanation to the Local Stakeholders	<p>(a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders?</p> <p>(b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?</p>	<p>(a) Y</p> <p>(b) Y</p>	<p>(a) Public consultations were held with local stakeholders more times than required by Benin's law, in which the understanding consent of the citizens and affected persons was obtained.</p> <p>(b) The project incorporates comments and opinions expressed during meetings held with residents, such as EIA public consultations and LARAP consultations.</p>
	(3) Examination of Alternatives	<p>(a) Have alternative plans of the project been examined with social and environmental considerations?</p>	<p>(a) Y</p>	<p>(a) Alternatives of structures ((1) Construction of a 2-lane flyover + upgrading of at-grade intersection, (2) Construction of a 4-lane flyover + upgrading of at-grade intersection, (3) Construction of a 4-lane flyover (phased construction) + improvement of at-grade intersection) had been examined, taking into account socio-environmental aspects. After this review, an explanatory meeting was organized for residents.</p>
2 Pollution Control	(1) Air Quality	<p>(a) Is there a possibility that air pollutants emitted from the project related sources, such as vehicles traffic will affect ambient air quality? Does ambient air quality comply with the country's air quality standards? Are any mitigating measures taken?</p> <p>(b) If air quality already exceed country's standards near the route, is there a possibility that the project will make air pollution worse?</p>	<p>(a) Y</p> <p>(b) N</p>	<p>(a) (b) In carrying out this project, the air quality will be improved compared to the case without project, because of the mitigation of the traffic congestion and the increase of the speed of travel of the vehicles. In addition, as the source of the emission of gases will be raised, it is expected that the quality of the air after the work will meet the environmental standards.</p>
	(2) Water Quality	<p>(a) Is there a possibility that soil runoff from the bare lands resulting from earthmoving activities, such as cutting and filling will cause water quality degradation in</p>	<p>(a) N</p> <p>(b) N</p>	<p>(a) As the earthworks in this project is limited to excavation for the construction of the bridge piers, little surface of the land will be</p>

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Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		downstream water areas? (b) Is there a possibility that the project will contaminate water sources, such as well water?		exposed without protection; thus, the loss of site soil and the worsening of the water quality at downstream will not be concerned. (b) As the project site is located in an urbanized area, there are no wells in service around it.
	(3) Noise and Vibration	(a) Do noise and vibrations from the vehicle and train traffic comply with the country's standards? (b) Do low frequency sound from the vehicle and train traffic comply with the country's standards?	(a) — (b) —	(a) The current noise level exceeds the environmental standards. At the completion of the project, less noise will be expected as the most of the flow of cars will take the road bridge. In addition, due to reduced congestion, other sources of noise such as horn will be mitigated. However, it is not certain that this improvement will lead to satisfy the standards. (b) In Benin, the level of infrasound is not regulated and the source of infrasound emissions is not expected in the project. Consequently, this item has been omitted from the check items.
	(1) Protected Areas	(a) Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) Y	(a) The project site is registered in Ramsar convention but not core area. The project will neither conflict with Ramsar convention nor Benin's law.
3 Natural Environment	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? (b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? (c) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem? (d) Are adequate protection measures taken to prevent impacts, such as disruption of migration routes, habitat fragmentation, and traffic accident of wildlife and livestock? (e) Is there a possibility that installation of bridges and access roads will cause impacts, such as destruction of forest, poaching, desertification, reduction in wetland areas, and disturbance of ecosystems due to introduction of exotic (non-native invasive) species and pests? Are adequate measures for preventing such impacts considered?	(a) N (b) N (c) N (d) N (e) N	(a) At the project site, there are no such areas. (b) At the project site, there are no such areas. (c) Since the project site is in the city, the project will not have a significant impact on the ecosystem. (d) Since the surrounding areas of the project are urbanized, there are very few wild animals or livestock. (e) Since the surrounding areas of the project are urbanized, such impacts on nature are not expected.

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Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(3) Hydrology	(a) Is there a possibility that hydrologic changes due to the installation of structures will adversely affect surface water and groundwater flows?	(a) N	(a) As the earthworks in this project is limited to excavation for the construction of the bridge piers, these works will not have a significant impact on the water. As for the runoff at a rainfall, they will be evacuated quickly by drainage to be designed in detailed design.
	(4) Topography and Geology	(a) Is there any soft ground on the route that may cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides, where needed? (b) Is there a possibility that civil works, such as cutting and filling will cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides? (c) Is there a possibility that soil runoff will result from cut and fill areas, waste soil disposal sites, and borrow sites? Are adequate measures taken to prevent soil runoff?	(a) N (b) N (c) N	(a) (b) There is no site with poor geology. There is no risk of landslide. (c) As the earthworks provided for in this project is limited to excavation for the construction of bridge piers, there is no risk of instability and loss of significant soils.
4 Social Environment	(1) Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement? (b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement? (c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement? (d) Is the compensations going to be paid prior to the resettlement? (e) Is the compensation policies prepared in document? (f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples? (g) Are agreements with the affected people obtained prior to resettlement? (h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan? (i) Are any plans developed to monitor the impacts of resettlement? (j) Is the grievance redress mechanism established?	(a) N (b) Y (c) Y (d) Y (e) Y (f) Y (g) N/A (h) Y (i) Y (j) Y	(a) Involuntary resettlement of residential houses will not be caused though 562m <sup>2</sup> of private land and relocation of 1 shop will be required. (b) Explanations are given to affected people on the compensation policy at consultation meetings during the preliminary survey phase. (c) RAP study was implemented according to the JICA Guidelines, in which the policy of compensation on the basis of replacement cost is examined. (d) Payment of compensation will be in accordance with JICA Guidelines prior to relocation. (e) The compensation policies are mentioned in the RAP which will be made public. (f) The poor class, household heads with persons over 61 years of age, the handicapped, female were regarded as vulnerables which needs special assistance. (g) The implementation of this project does not involve the resettlement of the residents. (h) The executing agency and the local municipalities shall establish a technical resettlement committee. MIT will secure the necessary budget for resettlement.

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Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
				(i) Internal Monitoring and External Monitoring will be implemented according to monitoring program on the impact of resettlement established in the RAP. (j) Grievance Redress Mechanism is provided in RAP.
	(2) Living and Livelihood	(a) Where bridges and access roads are newly installed, is there a possibility that the project will affect the existing means of transportation and the associated workers? Is there a possibility that the project will cause significant impacts, such as extensive alteration of existing land uses, changes in sources of livelihood, or unemployment? Are adequate measures considered for preventing these impacts? (b) Is there any possibility that the project will adversely affect the living conditions of the inhabitants other than the target population? Are adequate measures considered to reduce the impacts, if necessary? (c) Is there any possibility that diseases, including infectious diseases, such as HIV will be brought due to immigration of workers associated with the project? Are adequate considerations given to public health, if necessary? (d) Is there any possibility that the project will adversely affect road traffic in the surrounding areas (e.g., increase of traffic congestion and traffic accidents)? (e) Is there any possibility that project will impede the movement of inhabitants? (f) Is there any possibility that bridges will cause a sun shading and radio interference?	(a) N (b) Y (c) Y (d) N (e) Y (f) N	(a) The impacts on existing transportation and those working for its operation are not considered. (b) During the period of execution of the work, some of street stalls will have to be relocated. Compensation for these stalls has been provided according to the RAP. Mitigation was examined in EIA as access to some shops along the project road would be restricted which will cause decrease of sales amount. (c) Preventive measures have been formulated in the EIA against infectious disease of construction workers (d) The work schedule has been established so as not to block the traffic during the works. (e) During the works, the access to the execution area of the works to be restricted, causing an inconvenience to the passage of residents; it will be necessary to design the work plan to ensure the access of the residents. (f) Project works, such as the road bridge, do not cause a sun shading and radio interference.
	(3) Heritage	(a) Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) N	(a) There is no cultural heritage in the project affected area.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N	(a) In the vicinity of the project site, there are no landscape conservation areas.
	(5) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	(a) N (b) N	(a) There is no ethnic minorities or indigenous people living in the project affected area. (b) <i>Ditto</i>
	(6) Working	(a) Is the project proponent not violating any	(a) Y (b) Y	(a) In Benin, the work environment is

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Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	Conditions	<p>laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project?</p> <p>(b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials?</p> <p>(c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.?</p> <p>(d) Are appropriate measures taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?</p>	(c) Y (d) Y	<p>protected in accordance with <i>Convention sur l'abolition du travail forcé de 1968</i> and the IFC Standard, paragraph 23 "Occupational Health and Safety, Labor and Work Conditions".</p> <p>(b) Ditto (c) Ditto (d) Ditto</p>
	(1) Impacts during Construction	<p>(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wasts)?</p> <p>(b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts?</p> <p>(c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?</p>	(a) Y (b) Y (c) Y	<p>(a) Mitigation measures are elaborated in the Environmental Management Plan of EIA.</p> <p>(b) There is little natural environment (ecosystem) in project affected area; however, re-forestation will be considered for cutting of street trees.</p> <p>(c) The social impact of the land acquisition is treated according to the RAP compensation policy. Mitigation measures are elaborated in Environmental Management Plan for other social impacts not covered in RAP (such as local economic impacts).</p>
5 Others	(2) Monitoring	<p>(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts?</p> <p>(b) What are the items, methods and frequencies of the monitoring program?</p> <p>(c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)?</p> <p>(d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?</p>	(a) Y (b) — (c) Y (d) Y	<p>(a) Monitoring will be implemented on Environmental Monitoring Plan defined in EIA.</p> <p>(b) There is no legislation in Benin that regulates the items, methodology and frequencies required for the environmental monitoring. Generally, as part of the environmental assessment, the consultant proposes these elements, which are examined by ABE.</p> <p>(c) The monitoring structure is defined by the MIT/ SEES and implemented according to the procedure. The budget is included in the project costs. The environmental consultant hired by contractor shall implement monitoring, which will be further checked by construction supervision consultants. The</p>

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Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
				monthly reports will be submitted to MIT/SEES, which will be further submitted to ABE. (d) MIT and SEES submit the monthly report to ABE for monitoring.
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Roads, Railways and Forestry Projects checklist should also be checked (e.g., projects including large areas of deforestation). (b) Where necessary, pertinent items described in the Power Transmission and Distribution Lines checklist should also be checked (e.g., projects including installation of power transmission lines and/or electric distribution facilities).	(a) — (b) —	(a) There is no significant deforestation. (b) The project does not plan any electrical works including transmission and distribution line.
	Note on Using Environmental Checklist	(a) If necessary, the impacts to transboundary or global issues should be confirmed (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) —	(a) The present project will not have any transboundary or global impact.

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Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP)

Environmental Management Plan (EMP)

Category	N°	Items	period Impact-generating activities	Key Mitigation Measures Planned for Environmental Impacts		Implementing and guardianship bodies			cost for mitigation measures
				measures	Indicators	Executing Body	Supervisory Body	Follow-up body	
Natural environment	1	Ecosystem	Clearance Right of Way	Develop an afforestation program for the intersection and roadsides as needed.	Geometry of the road Choice and layout of fixed installation sites	Contracting Consultant	SEES and the authorities concerned	Cotonou Town Hall  ABE	FCFA 200,000  20 person-days will be needed for tree planting
	2	Land Acquisition and Resettlement	Clearance Rights of Way	The holding of an explanatory meeting on the policy of compensation provided for the Right-of-Way. The residents to be resettled, will be invited there all for the understanding of the policy, and to obtain their consent. Taking the measures prescribed in the resettlement action plan, including compensation and livelihood restoration assistance.  The implementation of the monitoring of living standards of resettled residents, following the resettlement action plan.	conformity with PAR	Technical Resettlement Committee	SEES and the authorities concerned	Cotonou Town Hall  ABE	included in the RAP budget

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Category	N°	Items	period of impact-generating activities	Key Mitigation Measures Planned for Environmental Impacts		Implementing and guardianship bodies			cost for mitigation measures
				measures	Indicators	Executing Body	Supervisory Body	Follow-up body	
	3	The Poor	Clearance of Right of Way	<p>The holding of an explanatory meeting on the policy of compensation provided for the Right-of-Way. The residents to be resettled, will be invited there all for the understanding of the policy, and to obtain their consent. Taking the measures prescribed in the resettlement action plan, including compensation and livelihood restoration assistance.</p> <p>The implementation of the monitoring of living standards of resettled residents, following the resettlement action plan.</p>	conformity with PAR	Technical Resettlement Committee	SEES and the authorities concerned	Cotonou Town Hall  ABE	included in the RAP budget
	4	Local economy such as employment and livelihood	Clearance of Rights of Way	<p>The holding of an explanatory meeting on the policy of compensation provided for the Right-of-Way. The residents to be resettled, will be invited there all for the understanding of the policy, and to obtain their consent.</p> <p>Taking prescribed measures on the resettlement action plan, including compensation and livelihood</p>	Geometry of roads  Information and public consultation (for the record)	Technical Resettlement Committee	SEES and the authorities concerned	Cotonou Town Hall  ABE	included in the RAP budget



Category	N°	Items	period Impact-generating activities	Key Mitigation Measures Planned for Environmental Impacts		Implementing and guardianship bodies			cost for mitigation measures
				measures	Indicators	Executing Body	Supervisory Body	Follow-up body	
				restoration assistance.	Preservation of constructions on Right-of-Way  Informing people about network interruptions				
Pollution	5	Air pollution	Realization of infrastructures: - works on Right-of-way, earthworks, pavement and coating  - transport of fine materials (silty sands)  - operation of the asphalt plant	[Measurement against fine particles in suspension] - Watering in construction areas and temporary facilities; - Anti-dust screens will be placed around the demarcation lines as required.	Transport truck cover  Implantation of the asphalt plant  Compliance with gas emission standards  Measurements of gas emissions according to standards	Contractor (Construction Company)	SEES	Cotonou Town Hall  ABE	included in the construction cost
	6	Water pollution	Discharge of construction wastewater	- Installation of a temporary sand trap as needed, - Appropriate treatment and disposal of hydrocarbons	Cleaning and refurbishment of stream beds	Contractor (Construction Company)	SEES	Cotonou Town Hall	included in the construction cost

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Category	N°	Items	period Impact-generating activities	Key Mitigation Measures Planned for Environmental Impacts		Implementing and guardianship bodies			cost for mitigation measures
				measures	Indicators	Executing Body	Supervisory Body	Follow-up body	
				<ul style="list-style-type: none"> <li>-Laying latrines at the base of the project;</li> <li>-Appropriate treatment and disposal of human excrement collected at the base of life;</li> </ul>	<ul style="list-style-type: none"> <li>Management of liquid pollutants and solid waste</li> <li>Wastewater analysis results</li> </ul>			ABE	
	7	Waste	Discharge of construction waste	<ul style="list-style-type: none"> <li>[waste of construction site]</li> <li>- Waste of construction site (felled trees, surplus soil, excavated material) will be managed appropriately, depending on the nature of the waste to be reused or disposed of at the landfill, in accordance with the regulations in force in the country;</li> <li>- Proper management, treatment and disposal of waste from the life base;</li> <li>- The human excrements will be evacuated to the designated wastewater treatment plant after temporary storage within the project in a dump tank.</li> </ul>	<ul style="list-style-type: none"> <li>Management of liquid pollutants and solid waste</li> <li>Presence of latrines on the building site</li> </ul>	Contractor (Construction Company)	SEES	Cotonou Town Hall  ABE	included in the construction cost
	8	Noise and vibrations	Realization of infrastructures: - works on right-of-way, earthworks,	<ul style="list-style-type: none"> <li>- Use of construction machinery and low-noise equipment, limitation of the work schedule;</li> <li>- If necessary, the installation of a barrier against noise (sheet piles or tarpaulins)</li> </ul>	Adjustment of working hours	Contractor (Construction Company)	SEES	Cotonou Town Hall  ABE	included in the construction cost

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Category	N°	Items	period Impact-generating activities	Key Mitigation Measures Planned for Environmental Impacts		Implementing and guardianship bodies			cost for mitigation measures
				measures	Indicators	Executing Body	Supervisory Body	Follow-up body	
Natural environment	9	Protected Area	<i>Ditto</i>	Refer to Air Pollution, Water Pollution, Waste, Noise and Vibration	-	-	-	-	-
	10	Ecosystem	<i>Ditto</i>	Program implementation by planting trees.	Reforestation actions  Preservation of alignment plantations  Alignment Plantations	Staff awareness of environmental protection as contracted	SEES and the authorities concerned  ABE	Cotonou Town Hall  ABE	included in the construction cost
Social environment	11	Local economy such as employment and livelihood	Realization of infrastructures: - works right-of-way, earthworks,	of in order to ensure traffic on the avenue François Mitterrand, a load shedding on route will be set up and, if necessary, other routes giving access to commercial facilities located along the	Income level	Contractor (Construction Company)  Compensation	SEES  Cotonou Town Hall  ABE	included in the construction cost	

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6

Category	N°	Items	period Impact-generating activities	Key Mitigation Measures Planned for Environmental Impacts		Implementing and guardianship bodies			cost for mitigation measures
				measures	Indicators	Executing Body	Supervisory Body	Follow-up body	
			pavement layers and coating	road. Public car parks will be built which will be used during the works. The shortfalls suffered by riparian traders will be compensated, if applicable.		for loss of profits			
	12	Existing social infrastructure and services	<i>Ditto</i>	The transfer of utilities and public facilities through consultation with the authorities concerned. Provide in the schedule of works road traffic to maintain during the work. The traffic management plan to ensure the smooth flow of traffic	access to infrastructure	Contractor (Construction Company)	SEES and the authorities concerned  ABE	Cotonou Town Hall  ABE	included in the construction cost
	13	Misdistribution of benefit and damage	<i>Ditto</i>	Provide in the schedule of works road traffic to maintain during the work. The traffic management plan to ensure the smooth flow of traffic.	Income level access to houses / shops / infrastructure	Contractor (Construction Company)	SEES and the authorities concerned  ABE	Cotonou Town Hall  ABE	included in the construction cost
	14	Gender	Employment of construction workers	equal pay between men and women facilities for women workers	Salary amenities	Contractor (Construction Company)	SEES and the authorities concerned  ABE	Cotonou Town Hall  ABE	included in the construction cost
	15	Rights of Children	Employment of construction	The ban on child labor will be stipulated in the construction market.	inding of child labor	Contractor (Construction Company)	SEES	Cotonou Town Hall	included in the construction cost

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Category	N°	Items	period Impact-generating activities	Key Mitigation Measures Planned for Environmental Impacts			Implementing and guardianship bodies			cost for mitigation measures
				measures	Indicators	Executing Body	Supervisory Body	Follow-up body		
			workers	The possible presence of working children will be monitored and strictly controlled.		Company		ABE		
	16	Infectious disease such as HIV/AIDS	Influx of construction workers	The site will be equipped with a proper drainage system in order to eliminate any mosquito habitat. Sanitary facilities (latrines) will be made available to workers. The implementation of medical examinations and the obligatory periodic medical examination. For the prevention of infectious diseases, organize educational activities not only for construction workers, but also for local people.	Sensitization of staff to STI / AIDS	Contractor (Construction Company)	SEES	Cotonou Town Hall ABE	included in the construction cost	
	17	Work environment (including work safety)	Realization of infrastructures: - works on right-of-way, earthworks, pavement layers and	Ensure the work environment in accordance with the IFC Standard (SFI) (Performance Standard 2 Workers and Working Conditions)	The emergency plan is implemented Monthly IEC reports Annual internal audit report	Contractor (Construction Company)	SEES	Cotonou Town Hall ABE	included in the construction cost	

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Category	N°	Items	period Impact-generating activities	Key Mitigation Measures Planned for Environmental Impacts		Implementing and guardianship bodies			cost for mitigation measures
				measures	Indicators	Executing Body	Supervisory Body	Follow-up body	
			coating - transport of fine materials (silty sands) - operation of the asphalt plant		Respect for the rules of occupational safety				
Other	18	Accidents	Passage of construction vehicles	<ul style="list-style-type: none"> <li>- Establishment of traffic controllers</li> <li>- Installation of safety signs</li> <li>- Buoyage of the work area, by means of road signs and safety barriers</li> <li>- Lighting for night work</li> <li>- Development of car parks and waiting places for construction equipment</li> <li>- Traffic speed limitation on site</li> <li>- Organization of safety training for construction workers.</li> <li>- Establishment of deviation routes, during the period of the works, for the safety of local inhabitants, commuters and schoolchildren.</li> </ul>	Specific road signs and traffic control agents are visible Weekly awareness reports Activity reports Number of awareness sessions conducted Signaling of construction sites and maintenance circulation	Contractor (Construction Company)	SEES	Cotonou Town Hall ABE	included in the construction cost

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Category	N°	Items	period Impact-generating activities	Key Mitigation Measures Planned for Environmental Impacts		Implementing and guardianship bodies			cost for mitigation measures
				measures	Indicators	Executing Body	Supervisory Body	Follow-up body	
Pollution	19	Air Pollution	Passage of increased vehicles	- Proper maintenance of vehicles	Compliance with gas emission standards Measurements of gas emissions according to standards	Road operator	SEES ainsi que les autorités concernées	Cotonou Town - les Hall ABE	-
	20	Water Pollution	Discharge of road drainage	- Proper road drainage	Management of liquid pollutants	Road operator	SEES ainsi que les autorités concernées	Cotonou Town - les Hall ABE	-
	21	Noise and vibration	Passage of increased vehicles	- As needed, noise barriers will be installed.	Vibration and noise level	Road operator	SEES ainsi que les autorités concernées	Cotonou Town - les Hall ABE	FCFA 250,000
Other	22	Accidents	Passage of more vehicles	Laying safety signs (Speed limit, prohibition to cross, except at the passage provided for this purpose, etc.)	Number of accidents	-	SEES	Cotonou Town - Hall ABE	-

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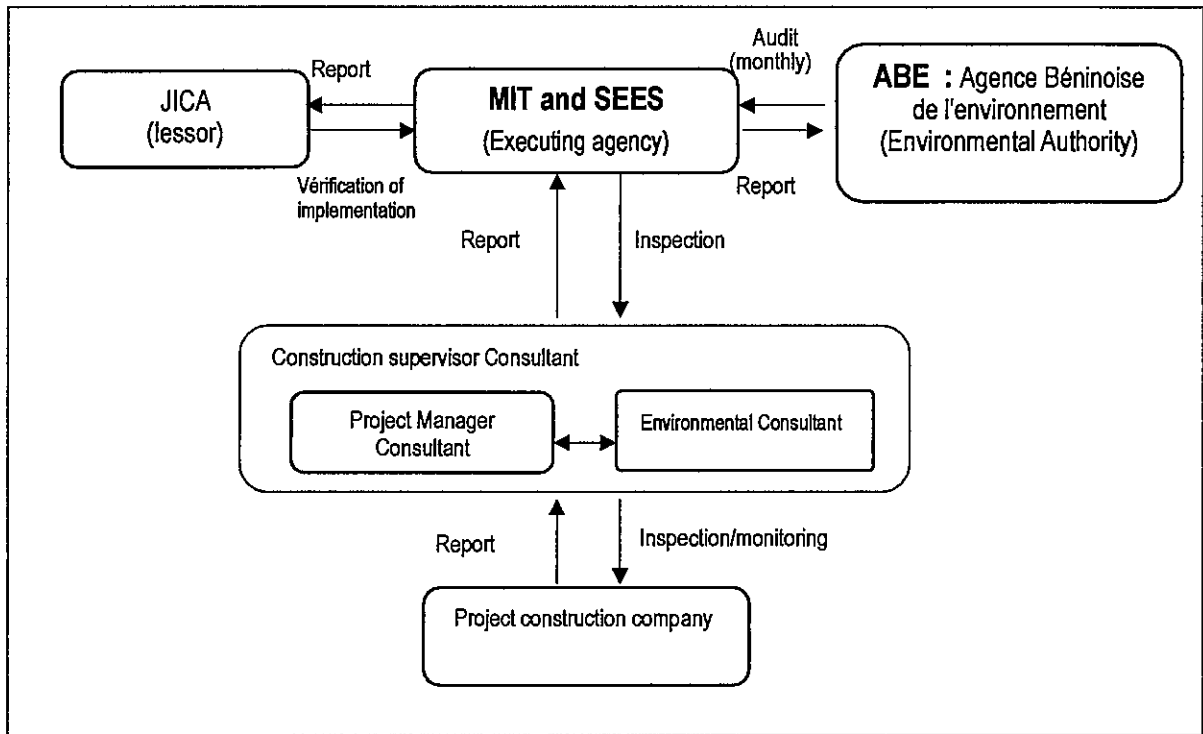


## Environmental Monitoring Plan (EMoP)

No	Environmental elements	Elements	Location	Frequency (the duration after commissioning is also indicated)	Supervising Agency	Monitoring Agency	Cost
<b>Pre-Construction Phase</b>							
1	Ecosystem	<ul style="list-style-type: none"> <li>• Reforestation</li> </ul>	Project Area	Before the work	SEES	Cotonou Town Hall ABE	Included in design cost
2	Land Acquisition and Resettlement	<ul style="list-style-type: none"> <li>• Payment situation of compensation costs</li> </ul>	Project Area	Before the work	SEES	Consultant	Included in RAP budget
3	The Poor	<i>Ditto</i>	<i>Ditto</i>	<i>Ditto</i>	<i>Ditto</i>	<i>Ditto</i>	<i>Ditto</i>
4	Local economy such as employment and livelihood	<i>Ditto</i>	<i>Ditto</i>	<i>Ditto</i>	<i>Ditto</i>	<i>Ditto</i>	<i>Ditto</i>
<b>Construction Phase</b>							
5	Air quality	<ul style="list-style-type: none"> <li>• NO<sub>2</sub></li> <li>• SO<sub>2</sub></li> <li>• PTS</li> </ul>	Establishments to be preserved such as the school and the church located near the site	Once a month	SEES	Cotonou Town Hall ABE	Included in construction cost
6	Water quality (superficial)	<ul style="list-style-type: none"> <li>• pH</li> <li>• SS</li> <li>• Oil</li> </ul>	Swamp located southeast of the site	Once a month	SEES	Cotonou Town Hall ABE	Included in construction cost
7	Waste	<ul style="list-style-type: none"> <li>• liquid pollutants and solid waste</li> </ul>	Project Area Disposal Site	Once a month	SEES	Cotonou Town Hall ABE	Included in construction cost
8	Noise	<ul style="list-style-type: none"> <li>• Leq (A)</li> </ul>	Preserving institutions such as school, church and housing near the site	Once a month	SEES	Cotonou Town Hall ABE	Included in construction cost
9	Protected Area	Refer to Air Pollution, Water Pollution, Waste, Vibration reforestation					
10	Ecosystem/ Landscape		Project Area	After the work	SEES	Cotonou Town Hall ABE	Included in construction cost
11	Local economy such as employment and livelihood	<ul style="list-style-type: none"> <li>• Access situation</li> <li>• Grievance</li> </ul>	Project Area	1 time / 3 months	SEES	Consultant	Included in RAP budget
12	Existing social infrastructure and services	<ul style="list-style-type: none"> <li>• Traffic jam</li> <li>• Access situation</li> <li>• Grievance</li> </ul>	Project Area	1 time / 3 months	SEES	Consultant	Included in RAP budget
13	Misdistribution of benefit and damage	<ul style="list-style-type: none"> <li>• Traffic jam</li> <li>• Access situation</li> <li>• Grievance</li> </ul>	Project Area	1 time / 3 months	SEES	Consultant	Included in RAP budget
14	Gender	<ul style="list-style-type: none"> <li>• Salary</li> <li>• Installation of facilities</li> </ul>	Construction site	1 time / 3 months	SEES	Cotonou Town Hall ABE	Included in construction cost
15	Rights of Children	<ul style="list-style-type: none"> <li>• Child labour in</li> </ul>	Construction site	1 time / 3 months	SEES	Cotonou Town Hall	Included in

	construction site	construction site	Construction site	1 time / 3 months	SEES	ABE	construction cost
16	Infectious disease such as HIV/AIDS	<ul style="list-style-type: none"> <li>Number of awareness sessions conducted</li> </ul>	Construction site	1 time / 3 months	SEES	Cotonou Town Hall ABE	Included in construction cost
17	Work environment (including work safety)	<ul style="list-style-type: none"> <li>Safety training</li> <li>Safety equipments</li> </ul>	Construction site	Once a month	SEES	Cotonou Town Hall ABE	Included in construction cost
18	Accidents	<ul style="list-style-type: none"> <li>Specific road signs and traffic officers</li> <li>Number of awareness sessions conducted</li> <li>Worksite signage and traffic maintenance</li> </ul>	Construction site	Once a month	SEES	Cotonou Town Hall ABE	Included in construction cost
Operation Phase :							
19	Air quality	<ul style="list-style-type: none"> <li>NO<sub>2</sub></li> <li>SO<sub>2</sub></li> <li>PTS</li> </ul>	Preserving institutions such as the roadside hospital and church	1 time / 3 months (2 years after commissioning)	SEES	Cotonou Town Hall ABE	FCFA 350,000
20	Water quality (superficial)	<ul style="list-style-type: none"> <li>pH</li> <li>SS</li> <li>Oil</li> </ul>	Swamp located southeast of the site	1 time / 3 months (2 years after commissioning)	SEES	Cotonou Town Hall ABE	FCFA 350,000
21	Noise and vibration	<ul style="list-style-type: none"> <li>Leq (A)</li> </ul>	Preserving institutions such as hospital, church and roadside housing	1 time / 3 months (2 years after commissioning)	SEES	Cotonou Town Hall ABE	FCFA 350,000
22	Local economy such as employment and livelihoods, etc.	<ul style="list-style-type: none"> <li>Incomes</li> </ul>	Area concerned by the Project	2 years after commissioning	SEES	Consultant	Included in RAP budget

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**Bodies involved in the implementation of environmental management and monitoring (provisional)**

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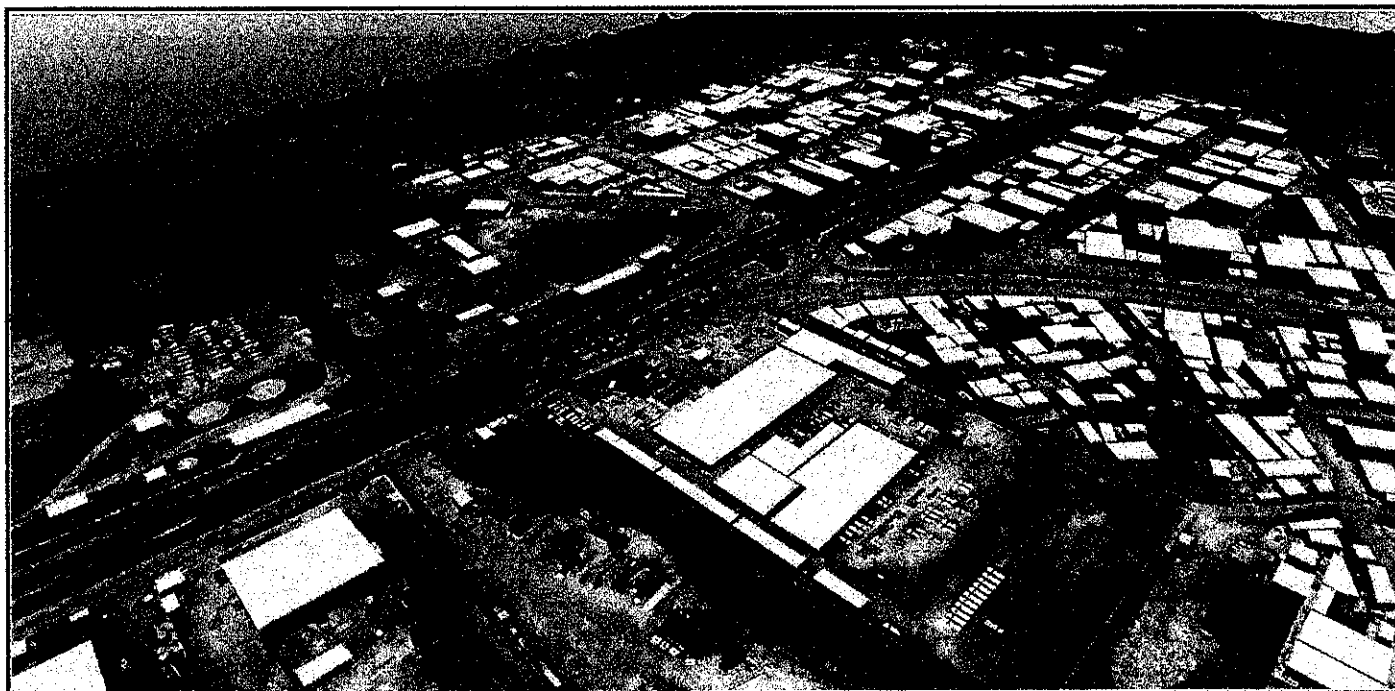


**MINISTRY OF INFRASTRUCTURES AND TRANSPORT**

(MIT)

**THE PROJECT FOR  
THE CONSTRUCTION OF  
THE INTERCHANGE OF COTONOU**

**RESETTLEMENT ACTION PLAN (RAP)  
(Draft)**



**December 2019**

**BANCA CORPORATE**

- BANCA ENGINEERING
- BANCA EXPERT
- CONSEILLERDUBTP (APPLICATION MOBILE)
- CENTRE DE COMPETENCE
- CENTRE DE REPROGRAPHIE

CLIENT SATISFACTION OUR PRIORITY

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<b>ABBRE</b>	<b>ACRONYMS AND VIATIONS</b>
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<b>ABE</b>	Benin Environmental Agency
<b>AGR</b>	Income Generating Activity
<b>ANDF</b>	National Agency of Domain and Land
<b>APS</b>	Preliminary Draft Summary
<b>BAD</b>	African development bank
<b>BM</b>	World Bank
<b>CA</b>	District Manager
<b>CC</b>	Town Council
<b>CCE</b>	Certificate of Environmental Compliance
<b>CDQ</b>	District Development Committee
<b>CFA</b>	African Financial Community
<b>CTN</b>	Technical Negotiation Committee
<b>CEB</b>	Benin Electrical Community
<b>SONEB</b>	National Water Company of Benin
<b>CFD</b>	Land Code and Domanial
<b>CGES</b>	Environmental and Social Management Framework
<b>CLR</b>	Local Resettlement Committee
<b>CTR</b>	Technical Resettlement Committee
<b>DB</b>	Deadline
<b>DLE</b>	Eligibility Limit Date
<b>DDCVDD</b>	Departmental Direction of Life and Sustainable Development
<b>DST</b>	Director of Technical Services
<b>DUP</b>	Declaration of Public Utility
<b>EIES</b>	Environmental and Social Impact Assessment
<b>FED</b>	European Union Financing
<b>FDL</b>	Land Compensation Fund
<b>JICA</b>	Japan International Cooperation Agency
<b>IIP</b>	Public Interest Investment
<b>Km</b>	Kilometer
<b>m<sup>2</sup></b>	Square meter
<b>MCVDD</b>	Ministry of the Environment and Sustainable Development
<b>MIT</b>	Ministry of Infrastructure and Transport
<b>ml</b>	Linear meter
<b>MOD</b>	Delegated project master
<b>OEV</b>	Orphans and Vulnerable Children
<b>ONG</b>	Non Governmental Organization
<b>PAG</b>	Government Action Program
<b>PAP</b>	Person Affected by the Project
<b>PAPC</b>	Pluvial Sanitation Project of the City of Cotonou
<b>PAR</b>	Resettlement Action Plan
<b>PGES</b>	Environmental and Social Management Plan
<b>PPD</b>	Physically Displaced Persons
<b>PM</b>	For memory
<b>PO</b>	Operational Policy
<b>PSR</b>	Abbreviated Resettlement Plan
<b>PUGEMU</b>	Environmental Emergency Management Project in Urban Environment

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<b>SAIC</b>	Support Service for Community Initiatives
<b>SBEE</b>	Beninese Electric Power Company
<b>Qté</b>	Quantity
<b>RGPH</b>	General Census of Population and Housing
<b>SIDA/IST</b>	Acquired Immunodeficiency Syndrome and Sexually Transmitted Infections
<b>SMIG</b>	Guaranteed Minimum Interprofessional Salary
<b>SONEB</b>	National Water Company of Benin
<b>U</b>	Unit
<b>UGP</b>	Project Management Unit
<b>W</b>	Watt

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## CONCEPTS AND KEY WORDS

**Relocation Allowance:** This is a form of compensation provided to eligible persons who are displaced from their homes, whether they are landowners or tenants, and who require a transitional allowance, paid for by the project. Offshoring allowances can be graduated to reflect differences in income levels.

**Resettlement Assistance:** Support provided to persons whose project involves physical displacement. This may include transportation, food, housing and social services provided to affected people as part of their relocation. This support may also include the amounts allocated to those affected as compensation for the inconvenience caused by their resettlement and to cover the costs associated with their relocation (moving expenses, lost work days, etc.).

**Beneficiary:** Any natural or legal person whose living and working conditions will be directly or indirectly improved as a result of the project outputs.

**Compensation:** Full replacement, by cash payment or replacement in kind, of property or resource acquired or affected by the Project.

**Replacement cost:** Gross cost used to define the economic replacement value of an asset. This is the amount of money that should be paid now to replace a property affected by the project

**Conflicts:** These are divergent points of view that may arise from the logic and stakes between several actors during expropriation and / or resettlement. These are situations in which multiple actors express conflicting intentions / claims or adhere to divergent values in an inconsistent manner and so they compete (negative) or negotiate and agree (positive). In both (2) cases, the project must have a conflict management mechanism.

**Deadline for eligibility (DLE) or deadline (DB):** Official announcement date of the start of the declaration of public utility process. It triggers the freezing / cessation / total cessation of any land transaction or new investment in the area subject to expropriation. Thus, those who acquire land and / or settle in the area indicated by the official announcement of the start of the DUP are neither eligible for compensation nor any assistance for resettlement; immovable property (such as buildings, crops, fruit or forestry trees) set up in the designated area after the eligibility period is not compensated if it is demolished.

**Involuntary displacement:** Displacement, without alternative, of a population outside a geographical area for the realization of a Public Interest Investment (IIP); the involuntary nature is due to the lack of alternative unserved / occupied space that would host IPI or the fact that the space to be expropriated has the least negative social impact in view of the congestion of the geographical area of direct beneficiaries of the project.

**Economic displacement:** Loss of sources of income or livelihood due to the acquisition of land or restriction of access to certain resources (land, water, forest) as a result of the construction or operation of the Project or its ancillary facilities. The economically displaced people do not necessarily need to move because of the project.

**Physical displacement:** It intervenes in case of involuntary land grabbing resulting in: relocation or loss of shelter; loss of property or access to property; loss of access to sources of income or livelihoods, if the affected people have to move to another location.

**Expropriation of land:** Process by which a public authority, usually in exchange for compensation, causes an individual, household or community group to surrender rights to the land it occupies or otherwise uses.

**Vulnerable person/ groups :** Persons who, by reason of their sexual orientation or gender, their belonging to an ethnic or minority and fragile age group, because of a physical or mental handicap or factors of economic or social marginalization, may be more affected and others through the process of displacement

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and resettlement, or whose ability to access or benefit from resettlement assistance and related benefits may be limited.

**Replacement cost:** Gross cost used to define the economic replacement value of an asset. This is the amount of money that should be paid now to replace a property affected by the project

**Expense:** Assessment, in monetary terms, of the real estate affected by the Project. This is the cost of acquiring, repairing or rebuilding an immovable that may be partially or wholly affected by a project. This assessment allows monetary compensation of real estate affected to rights holders. It must, in principle, be equivalent to the expenses necessary for the acquisition, repair or reconstruction of the immovable property affected.

**Household:** It consists of all persons related or not, who usually live in the same dwelling, share the meal, jointly manage all or part of their resources and recognize the authority of the same person called head of household. It usually consists of the husband, his / her wife (s) and their child (ren), with or without other dependents (family members, friends, servants, etc.).

**Affected household:** According to the SFI RAP manual, the theme "household affected" refers to all members of a household, whether they are related or not, who function as a single economic unit and who are affected by a project.

**Vulnerable households:** Vulnerable households are those with vulnerable people or whose level of poverty is likely to be higher following the resettlement process.

**Formal PAP:** A PAP legally considered as civilly capable and responsible, that is to say of age to engage by the bonds of a contract or a legal act.

**Informal PAP:** A PAP who has not reached the age of legal majority set by law for full civilian exercise capacity and criminal responsibility.

**Project Affected Person(s) (PAP):** These are people (individual, household, community, etc.) whose livelihoods are negatively affected on a permanent or temporary basis as a result of the implementation. project because of (i) involuntary displacement or loss of place of residence or economic activities; (ii) the loss of some or all of the immovable or movable property; (iii) loss of income or sources of income temporarily or permanently, and / or (iv) loss of access to such income or sources of income.

**Economically Displaced Persons:** Persons who have suffered a loss of livelihood or livelihood due to land acquisition or restricted access to certain resources (land, water, rangelands, forests), construction or the operation of the project or its ancillary facilities. Economically displaced people do not necessarily need to move because of project actions.

**Physically Displaced Persons:** Persons who have lost housing and property due to land acquisition by the project, requiring the affected person to move to a new site. People who are physically displaced have to move because of the implementation of the project.

**Resettlement:** Transfer of Project Affected Persons to another site as a result of involuntary displacement. This transfer is accomplished according to a dynamic and participative plan conceived and agreed with the Affected Persons by the Project.

**Involuntary Resettlement:** Resettlement that occurs without the informed consent of displaced persons or without the consent of such persons to refuse to be resettled.

**Economic Rehabilitation:** the steps to be taken when the Project affects the livelihoods of PAPs. World Bank policy requires that after resettlement, all affected persons be able to earn income again at least at a level equivalent to pre-project income. The themes of income restoration, quality of life standards and the

levels of productivity of the affected people are the core of the policy.

**Squatter:** Person occupying land over which he has neither legal nor customary rights.

## EXECUTIVE SUMMARY

No.	Variable	Data
1	Project country	Benin
2	Department	Littoral
3	Municipality	Cotonou
4	Districts	10th, 11th, 13th
5	City district	Ahogbouhouè, Houeyiho, Vèdokò
6	Activity inducing relocation	Construction of a Interchange
7	Project Budget	
8	PAR budget	414 513 000 F CFA
9	Number of Project Affected Persons (PAPs)	112
10	Owner of the shops with the land/ attachment affected	01
11	Owner of the shops on roadside	71
12	Employees of the shops on roadside	16
13	Number of vulnerable PAPs	04
13	Owner occupying the public domain	16
14	Employee occupying the public domain	02
15	Landowner	02
16	Household members	326
17	Shops to be relocated	01
18	Fence to be removed	01
19	Total area of lost land (ha)	565

Source : BANCA,  
2019

### • Introduction

The realization of major urban projects and the improvement of the living environment of the populations is conceived by the Beninese Government as a lever for economic development. Also, the Government Action Program (PAG) provides for several priority projects, including the "Project for the Construction of the Vedoko Interchange in Cotonou", which aims to significantly improve the urban environment and the mobility of people, people and property in the economic capital and then ensure the security and stability of traffic on the Abidjan-Lagos corridor. This project will help reduce major traffic problems around this axis by 2035.

### • Purpose and Objectives of PAR

The main purpose of the resettlement action plan is to ensure that people who have to leave their living environment and lose some or all of their property as part of the implementation of the project of construction of this infrastructure (Vedoko interchange) are deprived of their property only for reasons of public utility. They will be treated in a fair way against just and prior compensation.

The general objective of this RAP is to prepare a plan for the displacement and compensation of affected persons in accordance with national legislation and in accordance with JICA's Guidelines for Environmental and Social Considerations (hereinafter referred to as "JICA Guidelines") and World Bank Operational Policy 4.12. This RAP must improve the project concerned by reinforcing the positive impacts and transforming some negative impacts into development opportunities.

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- **Presentation of the site and description of the project components**

- ✓ **Presentation of the project site**

The commune of Cotonou is located on the coastline stretching between Lake Nokoué and the Atlantic Ocean, consisting of alluvial sands about five meters high. It is the only commune in the Littoral Department and is bounded on the north by the commune of Sô-Ava and Lake Nokoué, on the South by the Atlantic Ocean, on the East by the municipality of Sèmè-Kpodji and on the West. by that of Abomey-Calavi. It covers an area of 79 km², of which 70% is located west of the channel. Eastern neighborhoods are connected to the West by three bridges.

- **Description of the project components at the construction phase**

Toyota junction is a nerve center of traffic, the volume is intense. This is why shortening the lead time is a key issue for the project. The declination of work is specified in Table 1.

**Table 1: Description of Construction Phase Activities**

<b>Work phases and facilities</b>	<b>Work description</b>
Site installation / company signage	The installation of the site consists of putting on an area reserved for this purpose the equipment, materials and infrastructures to be used for the construction works.  The signage of the company is the set of practical and visual arrangements put in place to indicate the space to be developed or occupied. Its purpose is to warn and guide the user in order to ensure his safety and that of the personnel working on the site, to promote the fluidity of the traffic and to reduce the nuisances to the residents.
Topographical work	This is the set of geodetic works for technical studies
Clearance of rights of way	It is the action of making available after the implementation of the PAR the space to be built of all constraints and obstacles.
Moving networks various (water, electricity and telephone)	This is a sensitive activity that involves moving the entire buried network and (miscellaneous cables belonging to various dealers such as the SBEE, CEB, SONEB, OPT, etc.)
Arrangement of deviations	To facilitate the circulation and to isolate the traffics of the zones in development during the work, joint ways are opened or arranged for the displacement of the people and the goods. The company will ensure the regular maintenance of the diversion to avoid any risk of accident caused by the poor condition of the tracks.
Management of the basic life of company	Base-lives are installed in public or private urban spaces which will be rented by the companies. There will be no deforestation specific to these areas.
Site waste management (solid and liquid)	The various works on the bases-lives will generate solid and liquid waste which deserve particular attention during the works.  It is also the waste resulting from the work of masonry, reinforcement, infirmary, carpentry, etc.

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Circulation of equipment and materials of building sites / transport of materials	The construction and supply activities of the building sites in materials require traffic of machines (heavy and light) and vehicles (trucks and others).
Stripping / Demolition	This involves removing the existing substrate to reach the ideal layer that will support the earthworks.
Excavation work	This is the excavation work to open the trenches to bring out all the buried objects that would be found on the route of the collector or gutter to build.
Large purge and deposit of products	It is the removal of waste, silt and dirt of bad tenure or quality.
Earthworks for landscaping	It is the removal or disbursement of the existing within the limits prescribed by the specifications of the company and the demolition of the various works existing in the roadway.

• **Methodological approach to PAR implementation**

The methodological approach adopted in this study is based on a participatory approach aimed at achieving the expected results and enshrined in the terms of reference. Thus, for the drafting of this RAP, the following activities were carried out in the field for the collection of data:

- ❖ working session with the municipal authorities, the project stakeholders and the consultant for the presentation of the project, the definition of the course of action and definition of the project footprint;
- ❖ inventory of the site where the construction of the sanitation works is planned;
- ❖ taking note of service carrying public inquiry, by the communal authorities;
- ❖ carrying out public inquiries relating to the release of rights of way;
- ❖ socio-economic data collection;
- ❖ inventory and inventory of PAPs and affected assets (including economic activities);
- ❖ display of the results of PAP inventories;
- ❖ collection of PAP complaints and orientations;
- ❖ design of the institutional mechanism for implementing the RAP;
- ❖ evaluation of the types of losses and the related compensations with the related matrix during a public consultation;
- ❖ signing of commitment and consent forms by PAPs;
- ❖ development of the legal framework based on documentary reviews, exchanges with relevant institutions, collection of texts and national and international policy documents.

Municipal by-laws specifying, among other things, the deadline for eligibility, were taken and public consultations were conducted following a participatory process. For work efficiency, licensed level surveyors composed of geographers and sociologists, and supervisors holding master's or master's degrees were recruited, trained and organized into teams for data collection. A database in Excel was created with the complete list of PAPs, losses suffered by each, compensation and support.

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## **Social and economic impacts of the project on affected people**

### **✓ Land requirements for the project**

For land requirements for the construction of the Vèdokò heat exchanger, expansion of the junction is planned in the project design. For this purpose, its implementation requires the need for soil. Thus part of the fence of CFAO Motors on an area of 419 m<sup>2</sup> and 146 m<sup>2</sup> of the area occupied by a shop selling laptops and a restaurant will be expropriated.

### **✓ Profile of people affected by resettlement**

The in-depth analysis of the collected data resulted in a total population of 112 project-affected people (PAPs) divided into 58.93% men and 41.07% women.

A second analysis of PAPs indicates that men whose observed age range varies from 20 to 40 years are the most numerous (37.50%), compared to 23.21% for women in this age group. On the other hand, among the 41.07% of women, widows account for 10.87%, single women (26.08%). We do not notice the presence of disabled people among the PAPs surveyed. On the men's side, of the 58.93%, 78.89% are married compared to 65.22% of women.

On the socio-cultural level, nine (9) sociolinguistic groups have been registered, including a group of neighboring countries and other countries. The most dominant sociolinguistic groups are the *Fon* (53.57%) followed by *Adjias* (29.46%). Vulnerable people account for 4.50% of the total number of PAPs, of which 100% of women are registered.

### **✓ Impacts and indirect effects of temporary or permanent loss of land and sources of livelihood.**

The construction and layout of the interchange will have positive cumulative effects with a view to improving the social and economic situation of the populations of the neighborhoods benefiting from the structures.

One can retain as positive impacts:

- ❖ the development of income-generating activities;
- ❖ the creation of temporary and permanent jobs for local populations;
- ❖ securing the transport of people and goods;
- ❖ improving the landscape aspect of the area;

The main negative social impacts of the project consist of losses of property, sources of income and livelihoods mainly due to the space required for the right of way of the works. Table 2 presents impacts and measures.

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**Table 2: Summary of Negative Social Impacts and Mitigation Measures**

No	Component/activities that result in resettlement	Activity Impact Zone	Impacts	Alternatives	The mechanisms put in place
1	Moving various networks (electricity and telephone)	Project Site	Power outage and telephone line, Restriction of access	Set up new networks before disruption of existing networks	Informing people about periods of disturbance Meet contractual deadlines for the execution of work
2	Stripping, excavation and detour layout	Project Site	<ul style="list-style-type: none"> <li>• Disruption of economic activities</li> <li>• Loss of land</li> <li>• Loss of trees and planting</li> </ul>	Operate in a half-way or by section	Compensation based on affected property Meet contractual deadlines for the execution of work Compensation based on affected property
3	Construction of the interchange	Project Site	<ul style="list-style-type: none"> <li>• Restriction of access</li> <li>• Disruption of economic activities</li> </ul>	Operate by section and half-way	Compensation based on affected assets and activities Meet contractual deadlines for the execution of work

Source: Analysis Results, July 2019

• **Legal and institutional framework for resettlement**

The activities leading up to the drafting of the RAP and the various measures and recommendations formulated were inspired by the directives and standards defined by the national and international laws and regulations relating to the resettlement and compensation of affected persons, as well as the protection of the environment. Their implementation is therefore in accordance with national legislation and the requirements of the World Bank and JICA.

• **PAP compensation plan**

The compensation plan defines the procedures that made it possible to identify the rights holders (Affected Persons by the Project) through a defined period of census according to the eligibility criterion, the type of property and the treatment granted. The categories of PAPs identified are as follows:

- PAPs affected economically,
- PAPs having lost private buildings and commercial facilities
- PAPs having lost land built for commercial use,
- PAPs that have lost trees.

Thus, in the case of this RAP, the different assets have been registered. Table 3 below presents the category of different PAPs.

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**Table 3: Number of Affected Persons in the Work ROW**

The stores that face the project road in the project area		
Store owners		
Store employees		
Shop owner	71	235
Shop employees	16	19
Occupants of the public domain		
owner	16	62
Employees	2	0
Mobile shop on the southeast corner of the IC		
owner	1	4
Employees	4	0
Landowner	1	6
Shops with the land/ attachment affected		
Shopowner	1	0
		326

Source: Field Survey, August 2019

The inventory of affected assets made it possible to inventory the goods listed in Table 4.

**Table 4 : Inventory of affected places of business in the right-of-way**

Types of property	Affected property	quantity	%
Private infrastructure for commercial use (place of business)	land	2	50
	Shop	1	25
	fence	1	25
total		4	100

Source : Enquête de terrain, Août 2019

To accompany all the people affected by the project, the valuation of the property was made according to the scales recorded in table 5.

**Table 5 : Compensation and support matrix**

No.	Type of loss	applying	Eligible person	compensation - straight	striking
1	land	Loss of part or all of the land	Owner with the right to own the land, or Person who occupies the land whose right is recognized by State	Cash compensation in the re-acquisition price	

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2	Building (house, shop, etc.)	Loss of part or all of the building	Building owner	<ul style="list-style-type: none"> <li>• Compensation for the affected structure, including materials, labour and transportation, in cash in the re-purchase price</li> <li>• Transportation allowance</li> </ul>	<ul style="list-style-type: none"> <li>• When part of the building is affected, the owner has the right to ask to purchase the entire building.</li> <li>• Compensation for lost structures in cash</li> </ul>
			Building tenant	<ul style="list-style-type: none"> <li>• 3 months rent</li> <li>• Transportation allowance</li> </ul>	
3	Other structures	Loss of some or all other structures	Owner of these structures	<ul style="list-style-type: none"> <li>• Compensation of the allocated cash structure in the re-acquisition price</li> </ul>	
4	Access to homes	Restricting access to homes	Inhabitants	<ul style="list-style-type: none"> <li>• Temporary ramps for people</li> <li>• Meeting work deadlines</li> </ul>	
5	Trees	Loss of trees	Tree owner	<ul style="list-style-type: none"> <li>• Tree market price</li> </ul>	
6	Business activities	Loss of business activities	Commercial operator whose store is affected	<ul style="list-style-type: none"> <li>• Compensation for temporary income loss: Cash compensation for 3 months of income</li> </ul>	
7	Used in business activities	Loss of an employee in business activities	Employee in affected business activities	<ul style="list-style-type: none"> <li>• Compensation for temporary wage loss: Cash compensation of 3 months' salary for temporary unemployment or stoppage of business activities</li> </ul>	<ul style="list-style-type: none"> <li>• Compensation is paid directly to employees.</li> </ul>
8	Moveable structure (boutique)	Loss of a moveable structure (boutique)	Commercial operator of a moveable structure (boutique)	<ul style="list-style-type: none"> <li>• Compensation for temporary income loss: Cash compensation for 3 months of income</li> </ul>	
9	Vulnerable person (vulnerable diaper)	Impacts on Vulnerable People (Vulnerable Areas)	Affected people in a category defined as below: (1) The head of the household is a woman, (2) The head of the household is a person with a disability, (3) The head of the household is an elderly person (over 61 years of age), (4) The head of the household is a poor layer, and (5) The household includes a person with a disability.	<ul style="list-style-type: none"> <li>• Support for the allowance per household for a category of a vulnerable layer: 6 months of the poverty line</li> </ul>	

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- **Compensation budget**

The compensation budget is presented as shown in Table 6.

**Table 6 : Compensation budget**

Budget Item		Amount (EGFA)
Compensation measures	Compensation for loss of private land for commercial use	169 500 000
	Registration fees	1 200 000
	Compensation for loss of commercial infrastructure	29 400 000
	Compensation for commercial income	83 790 000
	Support measures for vulnerable PAPs	1 440 000
	Travel Assistance	1 500 000
<b>TOTAL</b>		<b>286 830 000</b>
Consultant / Social NGO	Assistance for the implementation of PAR	60 000 000
	Dissemination of RAP	1 500 000
	Capacity building of actors	6 000 000
	Monitoring and evaluation	18 000 000
External Tracking		4 500 000
<b>Total 1+2</b>		
<b>Total</b>		

Source : BANCA, 2019

- ✓ **Time schedule for payment and physical relocation**

The establishment of the RAP implementation schedule is done taking into account the different stages of resettlement which include preliminary activities, negotiations and communications with the PAPs, the payment of compensation, the reconstruction of the affected infrastructure and the follow-up, evaluation of RAP implementation.

- **Grievance Redress Mechanism**

The following mechanisms are proposed to resolve the conflicts that may arise as a result of the implementation of this project. The process involves two steps. The process of amicable settlement and the judicial process. As regards the out-of-court settlement process, it includes four (04) levels:

**1st level:** Anyone who feels aggrieved by the implementation of the project or grievances against the company responsible for the realization of the works must file a request with the Local Resettlement

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Committee (CLR) which sits at the level of the Arrondissement for the settlement of the dispute.

**2nd level:** If the dispute is not settled, the applicant or the complainant resorts to the Technical Committee of Resettlement (CTR) which sits at the level of Cotonou City Council.

**3rd level:** If the dispute is not resolved, the applicant or the complainant makes use of the Prefect.

**4th level:** If the dispute is not settled, the complainant or the complainant resorts to the Minister of Infrastructures and Transport.

- **Monitoring and evaluation of RAP implementation**

The main purpose of the Monitoring and Evaluation process is to ensure that the main objectives of the Resettlement Action Plan are achieved. In this perspective, the process will have to prove that PAPs have indeed received fair and equitable compensation, that they have been compensated before releasing or that their property is demolished or lost, and that their standard of living is at least equivalent if not better than the one before the project. The Monitoring and Evaluation process is also aimed at the timely detection of any problematic situation, whether it has escaped the project at the time of planning or occurred as a result of changes in local conditions, so that this situation is rectified accordingly, for further implementation of the RAP. It is important that RAP monitoring and evaluation activities are properly funded, undertaken by qualified specialists and integrated into the overall project management process. For this purpose, a subcontractor of control, audit and external evaluation must be appointed by the project promoter. This is a consultant who will be responsible for, among other things: monitoring the implementation of the CTR / CLR, verifying compensation payments, and monitoring the management of complaints. The Monitoring and Evaluation of this RAP is organized around three (3) axes including :

- a first dealing with the surveillance carried out by the MOD and the General Directorate of Infrastructures;
- a second dealing with the internal monitoring of the execution of the RAP. It will be led by the PMU;
- a third on the evaluation which is an external monitoring of the execution of the RAP and which will be carried out by an external Consultant. The resettlement plan evaluation can be conducted once the compensation and resettlement activities are complete. The purpose of the evaluation is to establish that all PAPs are properly resettled and their livelihoods restored.

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# 1. INTRODUCTION

## 1.1. CONTEXT AND JUSTIFICATION OF THE PROJÉT

In Benin, the state of play is marked, among other difficulties, by the lack of attractiveness of the main agglomerations of the country, the low level of services to the populations, the inadequacy and the poor quality of the stock of urban infrastructures. Faced with this challenge, the vision and the will of the Government revolve around a strong principle: to quickly commit the necessary investments for a sustainable urban development which guarantees the satisfaction of the needs of the populations.

The Government Action Program (GAP) aims to profoundly transform the economy of Benin while strengthening the social protection and living conditions of the population. The PAG is based on three pillars:

*Pillar 1 - the consolidation of democracy, the rule of law and good governance;*

*Pillar 2 - the structural transformation of the economy;*

*Pillar 3 - improving the living conditions of the people.*

"Strengthening transport infrastructure" is one of the strategic axes, focusing on the structural transformation of the economy, the development of infrastructure, the strengthening of transport, logistics and trade infrastructures.

Benin is an important part of the Abidjan-Lagos corridor (an international east-west corridor) that plays a key role in the regional development of the "growth ring" in West Africa. It is also located at the starting point of the Cotonou-Niamey corridor (south-north international corridor). These factors explain the essential place of this country in Japan's African policy.

Ensuring the safety and stability of traffic on the Abidjan-Lagos corridor, is an important issue for wider regional development, in order to promote the structural transformation of the economy, including the logistical improvement in the city of Cotonou, Benin in West Africa and strengthening industries with high potential. The city is served by the RNIE (Interstate National Road) 1 (linking east and west), urban road, RNIE 2 (west of RNIE 1, departing from from the port of Cotonou to the north passing through the city) and from the RNIE 3 (located to the east and passing through Porto-Novo the capital to the north).

The doubled sections of RNIE 1 and RNIE 3 are subject to charges. In addition, the development of the northern ring road is planned, considered an important measure to lighten the concentration of traffic in the heart of the city where not only do the traffic pass between the center and the suburbs of the city but also transport international freight.

According to the report of the study of the French company EIFFAGE, dated December 2015 and the study of traffic in the framework of the development of the national road master plan, implemented as an EU project (report of March 2017 written by the American company Louis Berger), the composition of urban traffic in Cotonou is as follows: 17% car, 1% heavyweight and 82% motorcycle (two wheels). The share of both wheels is very high. This observation was confirmed by the preliminary study carried out at the initiative of our group.

The study of the development of the master plan on the Beninese circulation network carried out by Louis Berger presents the projected traffic on the axes of the city of Cotonou for the years 2020, 2026 and 2035.

As for the 2020 forecast for the vicinity of the target intersection, traffic will be concentrated on the Toyota junction road going to the Place de l'Etoile Rouge to the east and Nokoué Lake; in 2035, the overburdened two-lane roads in each direction will be multiplied. This forecast is based on the commissioning scenario in 2020 of the northern ring road, currently under project, the current situation of the project of the ring road, the traffic increase trends as well as the policies of the Beninese government among others. should be carefully checked during this study, in order to obtain a relevant forecast. The forecast studies above mention a concentration of traffic on the Toyota junction and four intersections in the city.

This mission, which concerns the construction of the Vedoko interchange, will evaluate the coordination effect of the traffic lights (distance between the intersections, auxiliary infrastructures, etc.) and develop a project to optimize the effect of the rehabilitation of Toyota junction, so that said rehabilitation does not aggravate the congestion of these intersections. The selected site presents two strong constraints:

- The target intersection is a roundabout (consisting of a central ring) with four roads entering from the four cardinal points: the east-west road draws a straight line; the northern road enters at a right angle slightly east of the center of the roundabout; the southern route is approximately 290 m in radius of curvature and intersects with the east-west road at a bevel angle of approximately 40 degrees.
- The four roads are lined with shops, housing and a market. The signs and the furniture store located at the southeast corner of the roundabout may pose obstacles to the rehabilitation of the intersection.

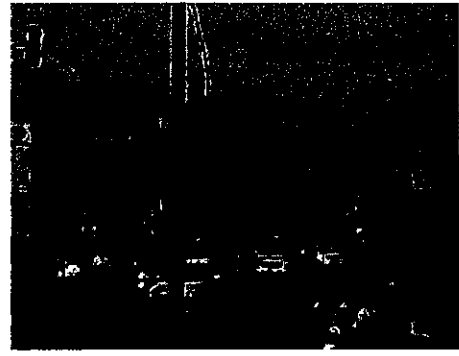
The Framework Law on the Environment No. 98-030 of 12 February 1999 establishes the principle of environmental protection in Benin. Article 88 of the Act provides that "no person shall undertake any development, operation, facility, plan, project, program or construction of works without following the environmental impact assessment procedure, where the latter is required by the laws and regulations. This will include an inventory of the project site, an overview of the project activities, an analysis of the likely risks associated with the implementation of its activities and the development of a Resettlement Action Plan ( PAR), taking into account the requirements of the Japan International Cooperation Agency (JICA) and the texts in force in Benin.

In accordance with the texts in force in Benin, Decree No. 2017-332 of July 6 on the organization of environmental assessment procedures in the Republic of Benin, provides details on the main lines of implementation of ESIA and the procedures to be followed. For JICA, we will consider guidelines for environmental and social considerations.

Thus, the present Cotonou Interchange Development Project has been subjected to a thorough ESIA (see Titles XIII.2 and XIII.6) of the General Guide for ESIA in Benin; ABE, 2001). Plate 1 presents a view of the current state of the project site.

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Picture 1 : View of the current state of the project site  
Source: BANCA, 2019

The redevelopment of this intersection is necessary in view of the congestion observed during peak hours. It is in this context that the project of construction of the Védoko interchange was established.

## 1.2. BACKGROUND AND JUSTIFICATION OF THE RESETTLEMENT ACTION PLAN

The construction project of the Vedoko Interchange has noble goals of sanitation, hygiene, public health and decongestion at the crossroads Védoko. However, it will run in the city center so a densely populated area where land rights are not necessarily cleared and where economic activities take place, not to mention the occupations of the public domain. It is to notify the presence of the market of Védoko, the site of CEB, SONEB site, the Catholic Church Jesus Eucharist, and the company SICA TOYOTA in the grip of said project.

Article 22 of the Constitution of the Republic of Benin states that "everyone has the right to own property. No one may be deprived of his property except in the public interest and against just and prior compensation". Moreover, article 5 of the law n ° 2013-01 of 14 August 2013 on the land and land code in the Republic of Benin clearly stipulates in its last paragraph that: "In the framework of the implementation of the development policies and for reasons of public utility, the State and local authorities, with just and prior compensation, have the right to expropriate any owner of land right". The operational policy (OP 4.12) of the World Bank will be applied as part of this project.

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## **2. PURPOSE AND OBJECTIVES OF RAP**

### **2.1. PURPOSE OF RAP**

The main purpose of the Resettlement Action Plan is to ensure that people who have to leave their living environment and lose some or all of their property as part of the implementation of the project of construction of this infrastructure ( Vedoko interchange) are deprived of their property only for reasons of public utility. They will be treated in a fair way against just and prior compensation.

### **2.2. OBJECTIVES OF RAP**

The general objective of this RAP is to prepare a plan for the displacement and compensation of affected persons in accordance with national legislation and in accordance with the Operational Policy 4.12 of the World Bank. This RAP must improve the project concerned by reinforcing the positive impacts and transforming some negative impacts into development opportunities.

#### **2.2.1. SPECIFIC OBJECTIVE**

In particular, it will be:

- to analyze the inventory of the site hosting the project;
- to present the project through its activities and by phase;
- to analyze the probable risks during the implementation of project activities;
- to identify the people affected
- to draw up a report of the Resettlement Action Plan (RAP) taking into account OP 4.12 and the texts in force in Benin.

This RAP will also have to meet the following objectives:

- to minimize, as far as possible, involuntary resettlement and land expropriation, by studying viable alternatives in the design of the project;
- ensure that affected people are consulted and have the opportunity to participate in all the key stages of the process of developing and implementing involuntary resettlement and compensation activities;
- determine the compensation based on the impacts suffered, in order to ensure that no person affected by the project is penalized disproportionately;
- establish a fair, transparent, effective and reassuring compensation process;
- assist affected people in their efforts to improve their livelihoods and standard of living, or at least restore them, in real terms, to their pre-displacement or pre-implementation level the project, whichever is most beneficial to them;
- Design and implement involuntary resettlement and compensation activities as sustainable development programs, providing sufficient investment resources to ensure that the people affected by the project have the opportunity to share the benefits;

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- give special attention to the needs of the most vulnerable people among the displaced populations;
- etc.

This RAP covers the persons affected in the rights-of-way of the construction works of the said interchange (see situation plan in chapter 3 below). It follows a series of studies already conducted including:

- the preliminary draft summary (APS);
- real estate and property assessment of project sites;
- The Environmental and Social Impact Assessment (including the Environmental Management Plan and Social (PGES)).

The preparation of the RAP was conducted in accordance with national legislation, with additional provisions ensuring that the World Bank's requirements are met. The PAR took into account all the ways, approaches and provisions that guarantee at least the maintenance of the standard of living conditions of the PAPs, although the improvement is difficult to quantify.

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### 3. PRESENTATION OF THE SITE AND DESCRIPTION OF THE COMPONENTS OF THE PROJECT

#### 3.1. PRESENTATION OF THE COMMUNE OF COTONOU

The commune of Cotonou is located on the coastline stretching between Lake Nokoué and the Atlantic Ocean, consisting of alluvial sands about five meters high. It is the only commune in the Littoral Department and is bounded on the north by the commune of Sô-Ava and Lake Nokoué, on the South by the Atlantic Ocean, on the East by the municipality of Sèmè-Kpodji and on the West by that of Abomey-Calavi. It covers an area of 79 km<sup>2</sup>, of which 70% is located west of the channel. Eastern neighborhoods are connected to the West by three bridges.

West of Cotonou are the Port Autonome and the International Airport, which make the city the most important gateway to and from Benin, while the East has a vast industrial zone.

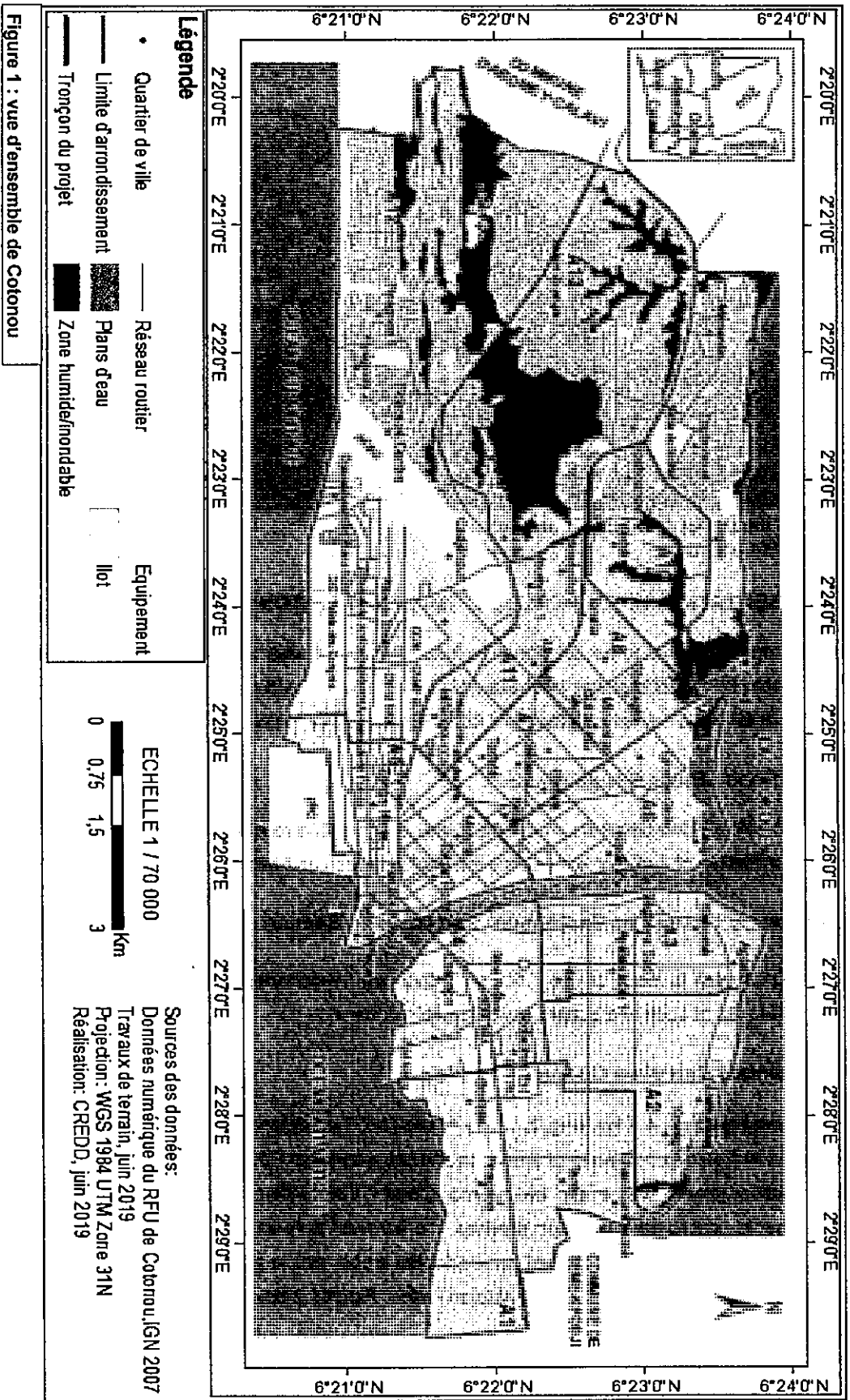
Most of the economic activities in the city of Cotonou are carried out in the main sectors of urban agriculture, SMEs and SMIs, trade and various trades.

Transport occupies an important place in the urban economy of Cotonou. Indeed its contribution to the GDP which was of the order of 8% in 1991 is today in constant increase. In this particular context of the commune of Cotonou characterized in particular by a concentration of the bulk of the economic apparatus and an agglomerate population of more than one million inhabitants, transports allow on the one hand to ensure the internal traffic essential for the supply of consumer goods, particularly food products, and secondly to ensure transit traffic favored by the particular situation of the city, the configuration of the road network and the relative stability of our country in a subregion plagued by political difficulties. All Cotonou tracks are estimated at more than 600 km .... In addition, the city of Cotonou is also served in terms of transport infrastructure by a port, an international airport, four railway stations and 12 bus stations (monograph of the commune of Cotonou, 2006).

The commune of Cotonou has important infrastructure for boosting commercial activities such as the international market of Dantokpa, the commercial area of Ganhi and 24 secondary markets with a reliable banking system. There is also a port, an airport and a chamber of commerce. Figure 1 and photo 1 present respectively an overview and the urban fabric of the commune of Cotonou.

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Picture 1: Urban plot (Downtown Cotonou)  
Source : PDC - Cotonou

### 3.2. PRESENTATION OF THE PROJECT IMPLEMENTATION SITE

The crossroads Védoko, to be developed is located at the intersection of four branches including three branches of the National Highway Inter-State No. 1 and an axis to the market Védoko. Geographically, this junction is at  $02^{\circ} 22'37.5''$  of longitude and  $06^{\circ} 23'23.2''$  of latitude. It's about :

#### ✓ Akosombo - Etoile Rouge Section

This length of 2,300 km develops on a right of way of 40 m. The roadway was built in 2x2 lanes of 3.5 m each with a median of 4 m, two emergency lanes of 3 m each and two sidewalks of 1.80 m each.

#### ✓ Akosombo - Carrefour Cadjèhoun (Bon pasteur) Section

This 2.6 km stretch is made of two 7.00 mx 2 (2x2 lane) wide lanes, with a 1.6m central median, two sidewalks of 1.80 m each and gutters covered with 1 , 00m x 2.

#### ✓ Akosombo - Carrefour Godomey Section

This motorway section, 4.4 km long, is made of two (3 x 3 lane) lanes of 3.5 m each with a 4 m central reservation, two emergency lanes of 3 m each and two sidewalks 1.80 m each.

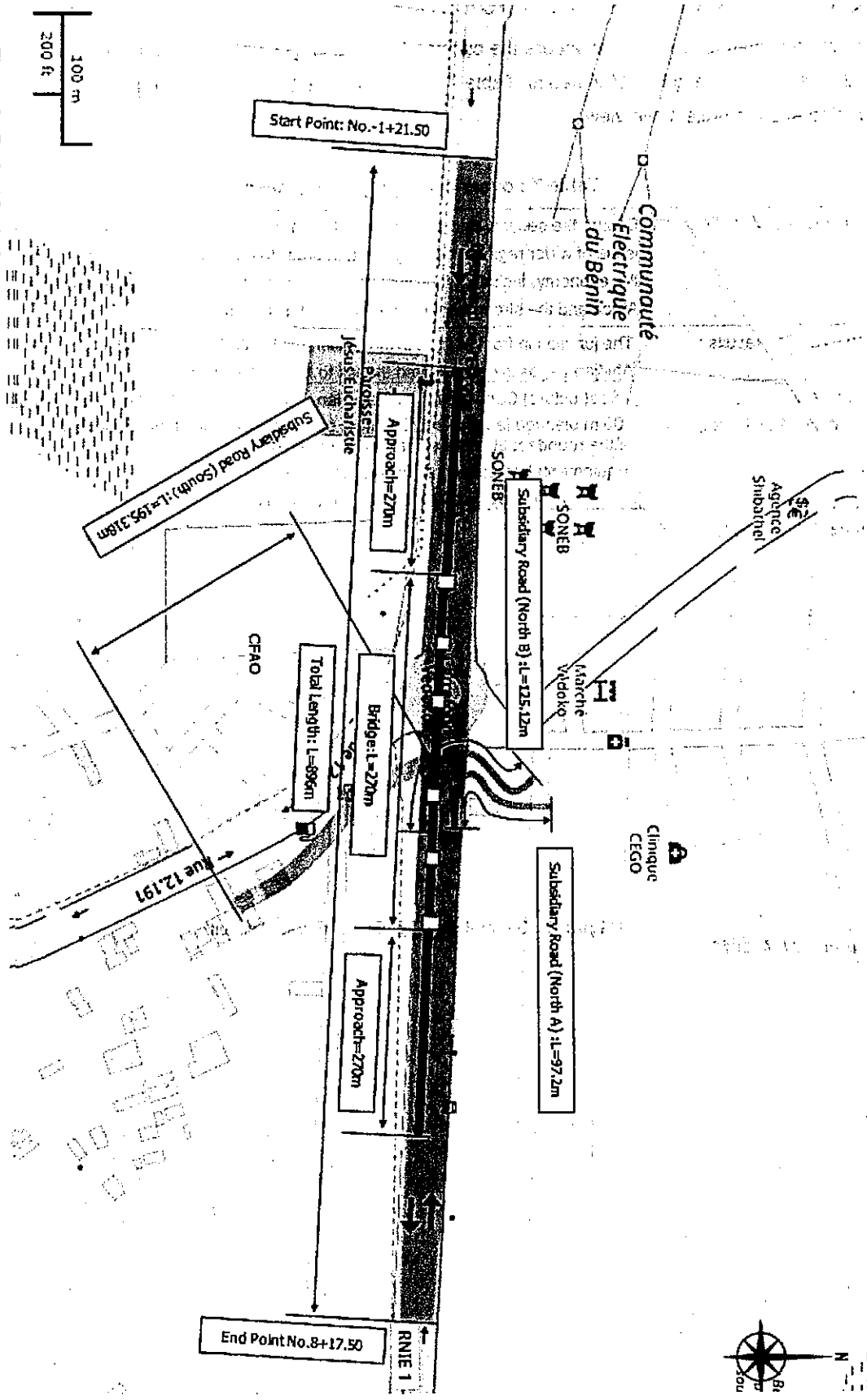
These sections, made with traffic taking into account data with congestion serving the main urban markets, banks, public administration services, the administrative and commercial sector around Ganhi, posts and telecommunications as well as residential areas; aim to improve the circulation in the city of Cotonou and the transit on the Corridor Abidjan Lagos. Figures 2 below show the area of influence of the project.

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Figure 2 : Project footprint  
 Source : JICA, 2019



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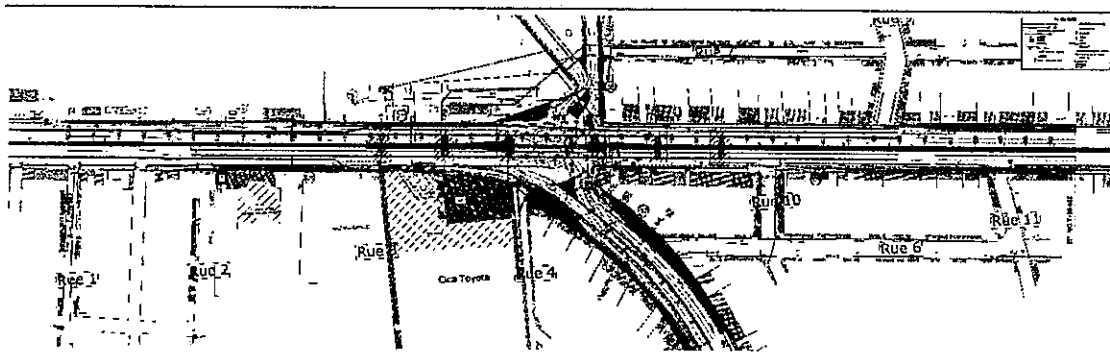
### 3.3. PRESENTATION OF PROJECT ACTIVITIES

The activities planned for this project are the construction of a single-lane viaduct projected in the North-South direction of a length of 500 meters. Table 7 below indicates the objective, the results expected and the project overview.

**Table 7 : overview of project activities**

1) Project Objective:	Ensure the security and stability of traffic on the Abidjan-Lagos Corridor, an important issue of wider regional development, in order to promote the structural transformation of the economy, including logistical improvement in the city of Cotonou, Benin and in West Africa and the strengthening of high potential industries.
2) Expected results :	The junction in front of the Toyota dealership located on the corridor Abidjan-Lagos is decongested thanks to its rehabilitation.
3) Overview : (content of the request)	[Infrastructure] Construction of a one-lane viaduct in both directions (approximately 500 m planned length), improvement of the intersection at ground level (Transformation of the roundabout into a signalised intersection) [Equipment] Intersection signaling system, etc. (study the details in the preparatory study)

Source : JICA, 2019



**Figure 3 : General drawing of the integrated circuit**

Source : JICA, 2019

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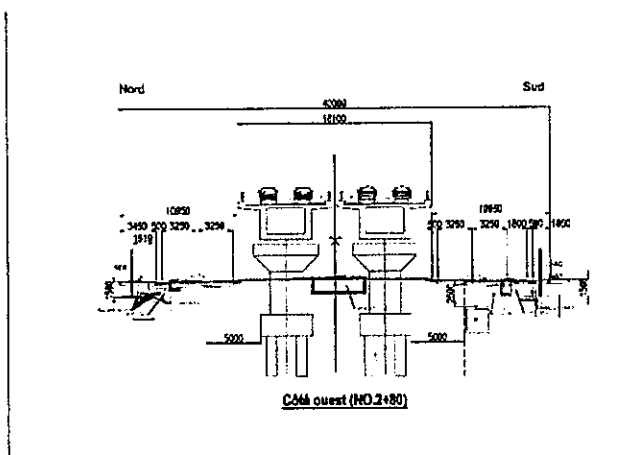
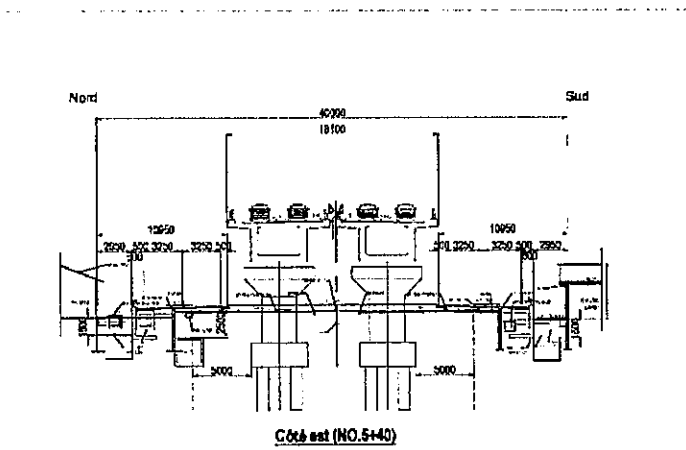
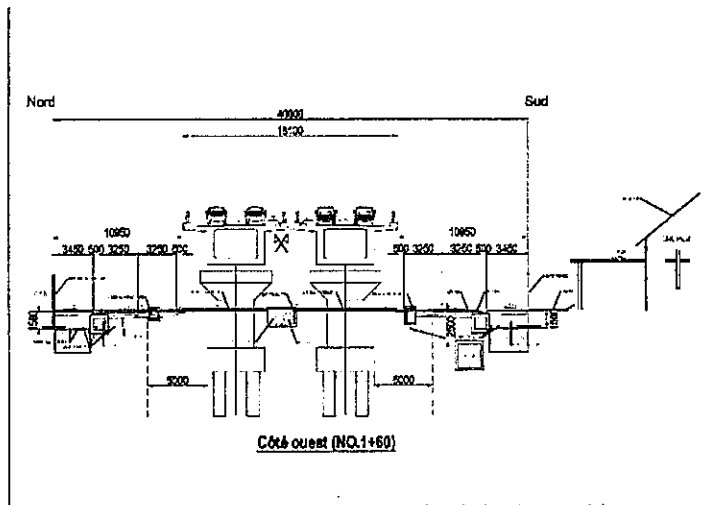


Figure 4 : Drawings in cross section  
 Source : JICA, 2019

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#### **4. SOCIO-ECONOMIC CHARACTERISTICS OF THE AREA OF MEMBERSHIP AND PAP**

For socio-economic characteristics, a literature search and field surveys were conducted. The documentary research has collected data and information on the site where the construction of the structures is planned. For the survey, the collection of socio-economic data in the field provided a profile of the PAPs. The survey started on July 10 2019 and ending on July 26, 2019 with some raking from August 28 to August 30, 2019;

As a prelude to the collection of socio-economic data, the populations were informed about project implementation and census operations. The municipal authorities have taken appropriate measures to support the public inquiry into the liberation of the rights-of-way from the construction of the infrastructure. The end date of the public inquiry is 08 July 2019.

Socio-economic studies, after the identification of PAPs and the inventory of affected properties, is one of the most important steps in the development of this RAP. They concern the surveys and the socio-economic analysis of the area of influence of the project thus making it possible to establish a baseline that will serve as a basis for evaluating the success of RAP implementation. Their purpose is:

- exhaustively list the people affected;
- Categorize the affected people in order to seek the appropriate compensatory measures appropriate to each category;
- identify vulnerable groups and formulate the specific support and assistance actions necessary for them;
- to make an inventory of existing assets, infrastructure and social services in the project area as well as local cultural institutions;
- to study the production activities of the affected people;
- Conduct any survey of land tenure and other social interactions among affected populations.

This chapter presents, i) Socio-economic aspects / issues of the area of influence, ii) Regime / status / constraints of land in the area of influence of the project, iii) Profiles of actors located in the area of influence influence of the project.

##### **4.1. EVOLUTION OF THE POPULATION OF THE COTONOU COMMUNE**

The city of Cotonou includes since the advent of decentralization, 13 districts subdivided into 144 districts. Its population estimated at 320,348 inhabitants in 1979 according to the 1st General Census of Population and Housing (RGPH1), rose to 536,827 inhabitants in 1992, an intercensal growth rate of 4.05%. In 2002 and according to the RGPH3, the population of Cotonou was evaluated at 665,100 inhabitants, thus showing a growth rate of 2.07%. According to the RGPH4 census in 2013, the population is 678,874 inhabitants and estimated at 1,190,141 inhabitants in 2020.

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The sex structure of this population is close to the national average: 51.4% women versus 48.6% men. The sex ratio, that is the number of men per hundred women, is estimated at 94.5; which proves that the population of Cotonou has a deficit in men.

The distribution of the population by broad age groups reveals a large proportion of the population aged 15-59 (62.7%).

The commune of Cotonou concentrates more than 45% of the assets of the 10 main cities of Benin. It appears that more than 6 out of 10 Cotonois are active. The activity rate is 67.7%. A striking fact is the increase in the activity rate observed in the female population, which went from 37.2% in 1979 to 54.7% in 1992, an annual increase of 3%.

#### 4.2. REGIME / STATUS / CONSTRAINTS OF LAND IN THE AREA OF INFLUENCE OF THE PROJECT

Cotonou being a megalopolis, it concentrates a large number of goods and services. This concentration of goods and services causes a migration of inhabitants of the peripheries to the agglomerations of Cotonou causing a high density of the population. This density creates an ever-increasing need for habitable spaces and opens the door to the conquest of floodplains, which poses on the one hand the problem of planning the city of Cotonou and, on the other hand, the land problem.

For this purpose in the area of influence of the project, it is noted that the plots are totally sold according to the urbanistic standards and relocate the PAP which would constitute a major challenge to be taken up.

Table 8 shows the occupation status in the area of influence of the project.

**Table 8 : Household occupancy status of the households in the Project Affected Area**

Statutes of households	Proportion (%)
Owned households with land title	6,9
Households without land title	11,6
Family owned households with land title	6,8
Households in family property without land title	14,5
Housed by the Employer (State, private)	0,9
Housed by a parent / friend	6,2
Proportion of households rented	52
Other	0,7
Total	100

Source of data : INSAE/RGPH-4, 2013

By examining the data in Table 8, you can see the highest occupancy status in the Borough. From the analysis, it appears that land-owning households represent only 6.9% of the total, compared to 11.6%, 6.8% and 14.5% respectively for non-titled households, in family property with land title and those in family property without land title. Overall, rented households (52%) are the majority in the geographical area of the project.

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#### 4.3. PROFILES OF ACTORS LOCATED IN THE AREA OF INFLUENCE OF THE PROJECT

Within the area of influence of the project, a significant number of actors contribute to the socio-economic and cultural development of the area. Many of these actors are engaged in income-generating activities, which will affect people's livelihoods.

These populations are occupied in different sectors of economic activity. Table 9 below presents the profile of the actors in the area of influence of the project by sector of activity.

**Table 9 : Profile of the active population by sector of activity**

Profession	Effective	%
Merchant	277	49,9
Official	46	8,3
Engineer	5	0,9
Contractor	19	3,4
Artisan	105	18,9
Student	10	1,8
Technician	60	10,8
Household	11	2,0
Restated	12	2,2
Other	10	1,8
Total	555	100,0

Source Field survey, july, 2019

The actors in the area of influence of the construction project of the Vèdokò heat exchanger concerned are the riparian populations of the three (3) districts (the 10th, the 11th and the 13th) of Cotonou. These actors are distributed in all sectors of activity. Overall, the secondary and tertiary sectors occupy more of the labor force than the primary sector. The data in the table shows that commercial activities occupy more population (49.9%) followed by crafts (18.9%).

The commercial activities carried out by the population of the area of influence of the project are characterized largely by the sale of the various, the sale of household appliances, sale of food products, the sale of spare parts, etc. Table 10 shows the different types of products sold.

**Table 10 : Type of commercial activity in the area of influence of the project**

Type of business	Effective	%
Sale of spare parts	14	5,1
Sale of fabrics, clothes, shoes	10	3,6
Sale of Sobebra products	6	2,2
Sale of Gsm products	8	2,9
Sale of food products	61	22,0
Sale of tire	2	0,7
Sale of motorcycles	2	0,7
Sale of furniture	1	0,4
Sale of household appliances	12	4,3

Sale of various things	73	26,4
Retailer (s) various	79	28,5
Lotto service	2	0,7
Other	7	2,5
<b>Total</b>	<b>277</b>	<b>100,0</b>

Source : Field survey, July, 2019

Among the actors occupying the commercial sector, 64.62% are women. These carry out small income-generating activities (small business, retail and wholesale).

The majority of these women exhibit their products, articles or goods along the RNIE 2 and in the projected deviations. The most developed shops in the streets planned for diversions concern the restoration and sale of various. For this purpose, hangars and apatam are built on both sides to serve as a place of business. On the other hand, in the vicinity of the RNIE 2 near the area of influence of the project, these women rent shops and / or workshop to expose their various items and the catering service. Men exert much more in the field of service delivery and the sale of electronics, motorcycle and furniture. Table 11 shows the type of trade of actors in the area of influence of the project by sex.

Table 11 : Distribution of Types of Business Activity by Sex

Type of business // Gender	Female		Male	
	Effective	%	Effective	%
Other	3	1,08	4	1,44
Retailer (s) various	61	22,02	18	6,50
Sale of various	46	16,61	27	9,75
Sale of household appliances	1	0,36	11	3,97
Sale of furniture	0	0,00	1	0,36
Sale of motorcycles	0	0,00	2	0,72
Sale of tire	1	0,36	1	0,36
Sale of food products	54	19,49	7	2,53
Sale of Gsm products	2	0,72	6	2,17
Sale of LNB products	2	0,72	0	0,00
Sale of Sobebra products	3	1,08	3	1,08
Sale of fabrics, clothes, shoes	5	1,81	5	1,81
Sale of spare parts	1	0,36	13	4,69
<b>Total</b>	<b>179</b>	<b>64,62</b>	<b>98</b>	<b>35,38</b>

Source : Field Survey, July, 2019

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## **5. SOCIAL AND ECONOMIC IMPACTS OF THE PROJECT ON AFFECTED PEOPLE**

The ESIA identified the potential impacts of the project and proposed an Environmental and Social Management Plan to manage them. Thus, the necessary steps were taken to ensure that all environmental and social measures and their management and monitoring costs are systematically incorporated into the contract of the contractor responsible for the works, in particular in price schedules and Estimated quotes. This resettlement action plan, which deals with displacement / resettlement of populations, complements the Environmental and Social Impact Assessment (ESIA).

However, in order to minimize the movement / resettlement of people and / or property, specific measures have been incorporated into the project design prior to the identification of affected persons. The following sections describe respectively (i) activities that are sources of displacement / resettlement impacts, (ii) alternatives included in the project design to reduce the impact on displacement / resettlement and (iii) land requirements for the project; (iv) Impacts and indirect effects of temporary or permanent loss of land and livelihood sources.

The project will also displace the SBEE medium voltage and voltage networks. It is important that arrangements are made to minimize the travel time of these networks. It would also be interesting to inform PAPs in advance. This measure is also valid for telecommunication networks and water.

### **5.1. SOCIO-ECONOMIC ASPECTS / CHALLENGES IN THE INFLUENCE ZONE**

As part of the development of this RAP, a socio-economic study of the area of influence of the project identified the various socio-economic issues. For this purpose, an inventory of assets was made throughout the project area and identified individual assets and public goods.

Tentative cut-off-date was declared on 10th July, 2019, which was notified to residents by district leader both verbally and in writing (circular). This tentative Cut-off-date will be effective for those who are not eligible for compensation in Benin's law, while DUP after approval of RAP will be effective for those eligible for compensation in Benin's law.

#### **5.1.1. INDIVIDUAL PROPERTY AFFECTED WITHIN THE PROJECT**

The individual assets affected in the project area concern the closure of CFAO MOTORS and the mobile phone sales shop located at the corner of the junction towards « Etoile rouge »

### **5.2. EARTH NEEDS FOR THE PROJECT**

For land requirements for the construction of the Vèdokò heat exchanger, expansion of the junction is planned in the project design. For this purpose, its implementation requires the need for soil. Thus part of the fence of CFAO Motors on an area of 419 m<sup>2</sup> and 146 m<sup>2</sup> of the area occupied by the shop selling laptops and a restaurant will be expropriated. So for the land requirement, the project will require an additional area of 565 m<sup>2</sup> on the current right-of-way.

### **5.3. PROFILE OF PEOPLE AFFECTED BY REINSTALLATION**

#### **5.3.1. PAPs SOCIO DEMOGRAPHIC PROFILE**

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The identification of the people affected by the project focused on the people eligible for compensation, that is to say those who are in the grip of works and deviations. In-depth analysis of the collected data resulted in a total of 112 Project Affected Persons (PAP). This census included owners, employees and household members. The number of Dependents were included in the census.

They constitute all individuals, minors or not, including the person directly assigned to the charge of providing vital needs (food, shelter, education, schooling, health, ...). This group includes children under age, spouses or spouses of the PAP, children in the care of the PAP, senior dependents, and house employees who are entirely dependent on the PAP etc. The number of registered household members is 326. Table 12 illustrates this.

Table 12 : Presentation of the people affected by the project (formal/ Informal)

Statut/Don/PAP	Statut des PAP			Total
	Formal	Informal	Total	
Stores facing the project road in the project area				
Shop Owners/ employees (subject to temporary income decrease)				
Shop owners	71	0	71	235
Shop employees	16	0	16	19
Occupants of the public domain (to be displaced)				
Owners	0	16	16	62
Employees	0	2	2	0
Mobile shop at the southeast corner of the IC (to be displaced)				
Owners	1	0	1	4
Employees	4	0	4	0
Land owners	1	0	1	
Shops with the land/ attachment affected				
Shopowner	1	0	0	0

Source : Field Survey, July 2019

### 5.3.2. DISTRIBUTION OF PAPS IN THE PROJECT

In-depth analysis of the collected data resulted in a total population of 112 project-affected persons (PAPs) plus CAD / CAM. The analysis took into account only the 112 PAPs divided into 58.93% of men and 41.07% of women.

A second analysis of PAPs indicates that men whose observed age range varies from 20 to 40 years are the most numerous (37.5%), compared to 23.21% for women in this age group. What underlies the fact that PAPs are mostly young and contribute to the development of the secondary and tertiary sector in the city of Cotonou is the most important age group. Table 13 shows the range of PAPs according to the male-female ratio.

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**Table 13 : Distribution of PAPs by age group**

Age group//Sex	Female		male		Total	
	Effectif	%	Effectives	%	Effectives	%
Under 20 years	0	0,00	1	0,89	1	0,89
20 to 30 years	11	9,82	21	18,75	32	28,57
30 to 40 years	15	13,39	21	18,75	36	32,14
40 to 50 years	7	6,25	12	10,71	19	16,96
50 to 60 years	6	5,36	9	8,04	15	13,39
60 to 70 years	6	5,36	2	1,79	8	7,14
70 years and more	1	0,89	0	0,00	1	0,89
<b>Total</b>	<b>46</b>	<b>41,</b>	<b>58,</b>		<b>100,00</b>	

Source: Field Survey, August 2019

On the other hand, among the 41.07% of women, widows account for 8.67%, single women (26.08%). We do not notice the presence of disabled people among the PAPs surveyed. On the men's side, of the 58.93%, 78.79% are married compared to 65.22% of women. Table 14 presents the distribution of PA

**Table 14 : Distribution of PAPs by marital status**

Status/Gender	Female		MEN		Total	
	Effectivo	%	Effectivo	%	Effectivo	%
Single	12	10,71	14	12,50	26	23,21
Married	30	26,79	52	46,85	82	73,21
Widow	4	3,57	0	0,00	4	3,57
<b>Total</b>	<b>46</b>				<b>112</b>	<b>100,00</b>

Source: Field Survey, August 2019

On the socio-cultural level, nine (9) sociolinguistic groups have been registered, including a group of neighboring countries and other countries. The most dominant sociolinguistic groups are the FON (53.57%) followed by adjas (29.46%). Table 15 below shows the distribution of PAPs by sociolinguistic group.

**Table 15 : Distribution of PAPs by sociolinguistic group**

Sociolinguistic/Gender	Female		Male		Total	
	Effective	%	Effective	%	Effective	%
Adja and apparent	12	10,71	21	18,75	33	29,46
Bariba and apparent	2	1,79	2	1,79	4	3,57
Dendi and apparent	0	0,00	1	0,89	1	0,89
Fon and apparent	28	25,00	32	28,57	60	53,57
Yoa & Lokpa Apparent	3	2,68	0	0,00	3	2,68
Fulani and apparent	0	0,00	1	0,89	1	0,89
Yoruba and apparent	1	0,89	0	0,00	1	0,89
Neighboring countries	0	0,00	6	5,36	6	5,36
Other countries	0	0,00	3	2,68	3	2,68
<b>Total</b>	<b>46</b>					

Source: Field Survey, August 2019

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The majority of PAPs are from the Catholic religious denomination (55.36%). Evangelists account for 18.75% and Muslims 10.71%. Table 16 below shows the distribution of PAPs by religion.

Table 16 : Distribution of PAPs by Religion in the right of way

Religion/Gender	Female		Male		Total	
	Effective	%	Effective	%	Effective	%
animist	0	0,00	3	2,68	3	2,68
No religion	1	0,89	1	0,89	2	1,79
Catholic	30	26,79	32	28,57	62	55,36
Celestial	3	2,68	3	2,68	6	5,36
Evangelist	10	8,93	11	9,82	21	18,75
Muslim	1	0,89	11	9,82	12	10,71
Methodist Protestant	0	0,00	1	0,89	1	0,89
Jehovah's Witness	0	0,00	1	0,89	1	0,89
Voodoo	1	0,89	3	2,68	4	3,57
<b>Total</b>						

Source: Field Survey, August 2019

Regarding the level of education, a rate of 13.39% of illiterates is recorded of which 8.93% is observed in the women with 10.71% in the elementary course. In the men, among 58.93%, 22.32% of PAPs reached the higher level. Table 17 presents.

Table 17 : Distribution of PAPs by level of education in the right of way

Level/Gender	Female		Male		Total	
	Effective	%	Effective	%	Effective	%
literate	3	2,68	4	3,57	7	6,25
illiterate	10	8,93	5	4,46	15	13,39
Primary	12	10,71	12	10,71	24	21,43
Secondary	13	11,61	25	22,32	38	33,93
University	8	7,14	20	17,86	28	25,00
<b>Total</b>		46				

Source: Field Survey, August 2019

### 5.3.3. PAP INCOME GENERATING ACTIVITIES

The area of influence of the project, because of its geographical location, constitutes a main axis that serves Cotonou of the neighboring agglomerations (Abomey-Calavi, Ouidah, Sèmè-Kpodji and surroundings). Being the National Inter-State Road N° 1. For this purpose, it is a point of business where a variety of activities are concentrated. These various activities carried out by the PAPs are summarized in financial and communication services and other services, sales of household appliances, automobiles, furniture, etc. But, the most represented activities are the sales of various occupying 22,32% followed of the workshops of welding, mechanics, sewing and hairstyle). Table 18 below illustrates the proportion of PAPs by occupation that indicates the sectors of income-generating activities.

**Table 18 : Distribution of PAPs by activities**

Occupation / Sex	Female		male		Total	
	Quantity	%	Quantity	%	Quantity	%
Workshop (welding, mechanics, sewing, hairdressing)	5	4,46	16	14,29	21	18,75
Other	0	0,00	4	3,57	4	3,57
Retailer (s) various	14	12,50	11	9,82	25	22,32
Lotto service	1	0,89	0	0,00	1	0,89
Society	3	2,68	10	8,93	13	11,61
Sale of computer equipment and consumables	2	1,79	4	3,57	6	5,36
Sale of real estate	0	0,00	2	1,79	2	1,79
Sale of motorcycles / cars	0	0,00	5	4,46	5	4,46
Cell phone sales	5	4,46	3	2,68	8	7,14
Sale of food products	13	11,61	5	4,46	18	16,07
Sale of Gsm products	2	1,79	1	0,89	3	2,68
Sale of SOBEBRA products	0	0,00	2	1,79	2	1,79
Sale of fabrics, clothes	1	0,89	0	0,00	1	0,89
Sale of fabrics, clothes, shoes	0	0,00	1	0,89	1	0,89
Sale building materials	0	0,00	1	0,89	1	0,89
Sale of spare parts	0	0,00	1	0,89	1	0,89
<b>Total</b>	<b>46</b>				<b>112</b>	<b>100,00</b>

Source : Field survey, August 2019

Through these different activities, PAPs earn an average daily income ranging from 700 CFA to 6700 FCFA. Table 19 shows the average daily income of PAPs by sex.

**Table 19 : Income Level of PAP**

Income (FCFA)	Female		Male		Total	
	Quantity	%	Quantity	%	Quantity	%
From 700 to 1000	5	4,46	1	0,89	6	5,36
From 1001 to 1500	6	5,36	8	7,14	14	12,50
From 1501 to 2500	9	8,04	1	0,89	10	8,93
From 2501 to 4000	9	8,04	10	8,93	19	16,96
From 4001 to 6500	6	5,36	15	13,39	21	18,75
From 7000 to 10000	5	4,46	9	8,04	14	12,50
From 10000 to 50000	6	5,36	20	17,86	26	23,21
From 50000 +	0	0,00	2	1,79	2	1,79

Source : Field survey, August 2019

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### 5.3.4. VULNERABLE GROUPS

In the right-of-way, the vulnerable people affected identified on the basis of the socio-economic surveys are as follows:

- ❖ persons in a household headed by a woman, widowed, divorced or unmarried, who can hardly provide for her dependents because of lack of means of production or skills to carry out income-generating activities;
- ❖ elderly people and orphans whose livelihood may depend on other people
- ❖ (children, brothers, cousins, uncles, etc.);
- ❖ people, men and women who can not take part, for physical or cultural reasons, in production, consumption or cohabitation with the household.

The number of vulnerable PAPs in the project area is 05 and their list is given in Annex 2. The activities carried out by the project are: sale of various; sale of food; sale of objects of piety etc. These activities generate low incomes that do not allow the effective care of persons under their guardianship, whose number varies between 2 and 7. Among these people is a 77-year-old woman with a daily income of 2000 F CFA and having dependents 05 people. Due to their vulnerability, discussions were held with these PAPs to agree on complementary financial support measures.

Table 20 presents the type of vulnerability of these PAPs by sex.

**Table 20 the type of vulnerability of these PAPs by sex**

Type of vulnerability	Male		Female		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Widow	4	100	0	0	4	0

Source : Field survey, August 2019

### 5.4. IMPACTS AND INDIRECT EFFECTS OF TEMPORARY OR PERMANENT LOSS OF LAND AND SOURCES OF MEANS OF EXISTENCE

#### • Positive impacts

The construction and development work on the interchange was the subject of an Environmental and Social Impact Assessment (ESIA) conducted as part of the preliminary project plan. The ESIA identified the potential impacts of the project and proposed an Environmental and Social Management Plan to manage them. This Resettlement Action Plan, which deals with the compensation or resettlement of populations, complements the Environmental and Social Impact Assessment (ESIA).

However, in order to minimize compensation or the resettlement of persons and / or property, specific measures have been incorporated into the project design even before proceeding with the identification of affected persons. The following sections describe respectively (i) activities that are sources of displacement / resettlement impacts, (ii) alternatives included in the project design to reduce the impact on displacement / resettlement and (iii) the specific impacts of the project on the people and their property.

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The construction of the interchange will produce cumulative positive effects with a view to improving the social and economic situation of the populations of the beneficiary districts and towns. One can retain as positive impacts:

- ❖ the development of income-generating activities;
- ❖ the creation of temporary and permanent jobs for local populations;
- ❖ securing the transport of people and goods;
- ❖ improving the landscape aspect of the area;

• **Negative impacts and mitigation measures**

The main negative social impacts of the project consist of losses of property, sources of income and livelihoods mainly due to the space required for the right of way of the works. Table 21 presents impacts and measures.

**Table 21: Summary of negative social impacts and mitigation measures**

N°	Component / activities causing relocation	Impact area of the activity	Impacts	Alternatives considered	Mechanisms in place
1	Moving various networks (electricity and telephone)	Site of implantation	Power outage and telephone line, Restriction of access	Establish new networks before disruption of existing networks	Inform people about the periods of disruption Comply with the contractual deadlines for the execution of works
2	Stripping, excavation and deviation	Site of implantation	<ul style="list-style-type: none"> <li>• Disruption of economic activities</li> <li>• Loss of land</li> <li>• Loss of trees and planting</li> </ul>	Operate in halfway or by section	Compensation according to the goods affected Respect the contractual deadlines for the execution of the works Compensation
3	Construction of the exchanger	Site of implantation	<ul style="list-style-type: none"> <li>• Restriction of access</li> <li>• Disruption of economic activities</li> </ul>	Operate by section and half-floor	Compensation according to the goods and activities affected Respect the contractual deadlines for the execution of works

Source : Analysis result, July, 2019

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The implementation of the RAP will limit the negative social impacts resulting from the acquisition of land, improve, or at least restore, the livelihoods and living conditions of those affected. Table 22 presents the impacts and measures.

**Table 22: Impacts and mitigation measures**

<b>Impact</b>	<b>Reduction measures</b>	<b>Integration into the PAR</b>	<b>Responsible for the application</b>
<b>Quality of life</b>			
Involuntary displacement of populations	Take into account during the preparation of the RAP, the expectations of the people affected by the project and plan the best ways to meet them	Participation	Delegated contracting authority, under the supervision of the Resettlement Committee
	Respect the deadlines of the resettlement action plan and ensure its full implementation	Schedule of execution	Delegated project master
	Pay allowances or resettlement aids before starting work	Approche d'indemnisation	Delegated project master
		Implementation of RAP	Delegated project master
<b>Livelihoods</b>			
Loss of income	Compensate PAPs with compensations equivalent to income losses, so as to improve the standard of living of those affected	Compensation approach	Delegated project master
Potential loss of many vulnerable people	Assist vulnerable people during the compensation or compensation process	Participation and Compensation Approach	Delegated project master
Disruption of population activities	Put in place a complaint mechanism allowing men and women to express the difficulties inherent in their involuntary displacement in order to find adequate solutions Apply the provisions of the RAP	Participation	Delegated project master
<b>SECURITY</b>			
Insecurity of the affected people	Provide secure parking areas for vehicles that can not access their garage	Implementation of RAP	Delegated project master

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<b>Habitations</b>			
Perte de bâtiments, de puisards, de fosses	Compensate losses of buildings, sumps, pits according to replacement value at nine at market price	Compensation approach	Delegated project master
<b>Woody resources (vegetation)</b>			
Loss of trees	Take charge of compensatory reforestation costs	Implementation of RAP	Delegated project master

Source : BANCA, 2019

The impacts of the project often affect an income-generating activity of the PAPs and for some PAPs this activity is their main source of income. In the socio-economic survey, the PAPs indicated that the loss of the property (s) impacted by the project could cause them various problems. The work will be conducted in such a way as to affect as little PAP as possible with OP 4.12 which requires, when displacement / resettlement becomes unavoidable in the implementation of a project, to examine all alternatives with a view to minimizing the magnitude of the project. and the impacts of the project.

In order to reduce the nuisance suffered by the populations of the districts benefiting from the works, technical options will have to make it possible to reduce the duration of the works in order to deliver the works to the populations as soon as possible. With regard to the populations residing on the edges of the RNIE 2 on the corners of the junction and who have means of displacement that can not reach their home, the construction company, the project management unit and the MOD, in conjunction with local elected officials will make available space to serve as parking during the period of work. More concretely, this measure amounts to installing a secure public car park in a radius close to the crossroads that is free and freely accessible to residents who can not access their homes.

To minimize resettlement, a number of measures have been incorporated into the design of the project to minimize population displacement while ensuring the sustainability of the works. These are mainly:

In addition to these measures, the project will continue to make maximum effort during the work to reduce the impact on travel / relocation. It is for this reason that the contract with the company will include specific requirements that govern the valuation and compensation of persons and goods for losses not taken into account in the context of this RAP and which could be work (eg for sand needs the company will buy from existing quarries, etc.).

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## 6. LEGAL AND INSTITUTIONAL FRAMEWORK OF RESETTLEMENT

The legal and institutional framework for the implementation of the RAP is drawn up on the basis of documentary reviews, exchanges with the institutions concerned, collection of texts and policy documents. This chapter is divided into: (i) Constitutional, legislative and regulatory provisions relating to land and expropriation procedures, (ii) Institutional framework of expropriation / payment of public interest expenses, (iii) National protection policy Vulnerabilities, iv) World Bank Resettlement Requirements, v) Analysis of gaps in national legislation in relation to World Bank requirements.

### 6.1. CONSTITUTIONAL, LEGISLATIVE AND REGULATORY PROVISIONS RELATING TO LAND AND EXPROPRIATION PROCEDURES

The implementation of the construction project of the Vedoko interchange must be carried out according to the legislation that regulates and regulates the protection of the environment in Benin and land management. To this end, the promoter will ensure that all its activities comply with the texts (laws and regulations) in force in Benin. The main legislative elements that guarantee the protection of the environment and impose its systematic consideration in human actions are:

The Constitution of the Republic of Benin

Law No. 90-32 of 11 December 1990 on the Constitution of the Republic of Benin enacts certain principles relating to the environment and the living conditions of citizens:

- **Article 22: Everyone has the right to property. No one may be deprived of his property except for reasons of public utility and against just and prior compensation.**
- **Law No. 2016-06 of May 26, 2016 on a framework law on spatial planning in Republic of Benin**

Article 40 of Law No. 2016-06 on the framework law on spatial planning in the Republic of Benin specifies that a Certificate of Spatial Coherence (CCS) issued by the authority in charge of the spatial planning after a spatial coherence study carried out for all national and regional projects. The methods of preparation and issuance as well as the content of the Certificate of Spatial Coherence are specified by the application texts.

- **Law on the code of public hygiene, supplemented by its implementing decree N ° 097-616 of 18 December 1987 on the code of public hygiene**

The law on the code of public hygiene, supplemented by its decree of application N ° 097-616 of December 18, 1987 describes the rules of public hygiene to be respected and serves as a basis for the definition of the devices to be implemented in each component of sanitation and the adoption of adapted behaviors. The chapters concern:

- hygiene on public roads;
- the hygiene of the houses;
- the hygiene of foodstuffs;
- hygiene of classified establishments, markets and outdoor commercial activities;
- hygiene of public places and beaches;

- water hygiene for various uses;
- hygiene related to the fight against noise and pollution of the natural environment

The Public Health Code defines the animal health rules that may be exercised by officials of the Ministry of Health or other sworn and commissioned agents to investigate and record violations of the law. However, only the competent hygiene and sanitation service officer or the judicial police officer are authorized to draw up a report. The proceedings are carried out by the person responsible for hygiene and sanitation or his representative in court.

• **Law No. 97-029 of January 15, 1999 on the organization of Communes in the Republic of Benin**

The State and the Commune are public authorities with a heritage in which one distinguishes: a public domain and a private domain. In fact, the public domain is subject to a public law regime, falling within the jurisdiction of the administrative courts, whereas the property belonging to the private domain is a mixed system, but traditionally it is subject to the rules of private law, thus falling under the jurisdiction of the courts.

Included in the national public domain are properties (property and movable and immovable property of the State that are not susceptible to private property by reason of their nature or their destination) considered as dependencies of the national domain. However, for a property to be considered as part of the public domain:

- It must, in the first place, belong to a public collectivity, that is to say either to the national collectivity (State) or to the decentralized territorial collectivity (Commune).
- It must, secondly, receive a certain allocation or be specially adapted for the operation of a public service.

In accordance with Article 110 of Law No. 97-029 of 15 January 1999 on the organization of Communes in the Republic of Benin, are recognized as part of the municipal public domain:

- the lands belonging to the Commune and which have received, in law or in fact, a local assignment such as streets, roads, public squares and public gardens;
- the lands belonging to the Commune, which support works of public interest whenever the burden falls on the Commune;
- the lands belonging to the Commune and constituting the base of a work provided for in development or urban planning plans which have been the subject of a declaration of public utility and earmarked for the realization of equipment or services public;
- all other property included in the public domain when it has been transferred to the Municipality in accordance with the laws and regulations relating to the public domain.
- In addition, private property includes movable and immovable property of public authorities that have not been classified as dependencies in the public domain. But in the composition of the private domain, it is necessary to distinguish the movable goods and the real estates. Thus, are part of the private domain of the Commune:
  - real estate not allocated to a public service but which the Municipality intends to keep on its own, with a view to subsequent developments such as buildings or land reserves;
  - heritage assets.

The management of the public domain of the Commune, like that of the public domain of the State, is subject to special rules such as: i) inalienability; (ii) imprescriptibility; (iii) the maintenance obligation; iv)

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criminal protection. The legal framework thus defined is recently supplemented by the provisions of Law No. 2013-01 of 14 August 2013 on the Land and Land Code in the Republic of Benin.

In application of these legislative provisions, the Cotonou City Council should not allow the occupation by the populations of the public domain, even less proceed to subdivisions there. The consequence of this situation is the outbreak of the World Bank's operational policy 4.12 concerning the involuntary displacement of populations, during the design phase of the Vedoko Interchange Construction Project.

- **The law n ° 2017-15 modifying and completing the law n ° 2013-01 of August 14th, 2013 bearing the land and land code in the Republic of Benin**

It is necessary to refer to Law n ° 2013-01 Bearing Land Code and Domianial in the Republic of Benin (CFD) and to the Law n ° 2017-15 Modifying and Complementing the Law n ° 2013-01 of August 14th, 2013 Bearing Land Code and in the Republic of Benin (CFD Modified), the main laws concerned in Benin, for the acquisition of land necessary for the project. Their overview is presented below. Moreover, in case of discrepancy between the Beninese legislation and the JICA Environmental Guidelines, these will be authoritative and appropriate measures will be taken.

- In accordance with Article 211 of the CFD, "The expropriation of immovables, in whole or in part, or of immovable real rights for reasons of public utility takes place, failing amicable agreement, by court order and against the payment of a fair and prior compensation".
- Section 212 specifies that the amount of restitution and its method of payment must reflect the balance between the public interest and the special interests of the persons affected by the expropriation and take into account circumstances such as :
  - the current use of the property;
  - the history of the property, its method of acquisition and / or its use;
  - the market value of the property;
  - the importance of the direct investment of the State or the local authority, subsidies or capital increases in connection with the purpose of the expropriation.
- At the national or regional level the expropriation power is attributed to the President of the Republic or to the Regional Manager who may delegate it to a Minister. At local level, it is the Mayor who has jurisdiction to expropriate. (Article 216).

However, according to information obtained in the context of a field study, it is the responsibility of the expropriation committee placed between Cotonou countries to approve expropriation plan, which will be verified in future studies. The expropriation procedure defined by the CFD is as follows:

**Table 23: Summary of the stages of the ordinary procedure of expropriation for reasons of public utility**

N°	Steps	Deadline/ duration	Responsible
01	Declarative act of public utility	12 mnths	
	national level		President of the Republic or General Assembly
	regional level		Prefect or ou ministry
	local level		Mayor

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02	Investigation and investigation report of commodo and incommodo (ECLc) containing a parcel of land and property rights to be expropriated and a provisional general plan of properties	1 month	Investigative committee
03	Display and publicity of the preliminary general plan of expropriation resulting from the investigation of commodo and	1 month	Chairman of the commission of inquiry Mayor
04	Notification of Parcel Survey Report to Owners, Assumed Occupants and Known Users	Without delay	
05.1	Transmission to the competent administrative authority of the names of the tenants and the alleged owners mentioned in the ECLc report.	2 months	Owners of the buildings
05.2	Demonstration of any interested party to the commission in charge of the investigation of commodo and incommodo		Presumed owners
06	Taken and published in the OJ or in any other newspaper of legal announcements of a decree of transmissibility of the buildings to be expropriated (if the properties to be expropriated are not designated by the declarative act of public utility)	6 months	President of the Republic
07	Taken and published in the OJ or in any other newspaper of legal announcements of a transfer order of the buildings to be expropriated (if the buildings to be expropriated are not designated by the declarative act of public utility)	6 months	Maor
08	Taking the act of transmissibility to the owners, occupants and known users	6 months from the declarative act of UP	Administrative Authority
09	Notification of Transmissibility to Owners, Occupants and Known Users	Without delay	Administrative Authority
10	Sending notices to the mayor	15 days before date of arrival of the commission	Evaluation Commission
11	Public information on the date of adoption of the Compensation Assessment Commission	Upon receiving notice commission	Mayor

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12	Evaluation of the expropriation indemnities by the commission assisted by an expert surveyor	Without delay	Evaluation Commission
13	Signature of the minutes of the agreement or disagreement on the amount of compensation	Without delay	Evaluation Commission

Source : CFD, Ministère de l'Energie, de l'Eau et des Mines, « Projet d'Amélioration du Service Energétique », Cadre de Politique de Réinstallation des Populations (2017)

## 6.2. INSTITUTIONAL FRAMEWORK FOR EXPROPRIATION / PAYMENT OF IMPENSES FOR PUBLIC USE

Several actors intervene in the process of expropriation for reasons of public utility in Benin. These are both public and private. The role and responsibilities of these actors depend on the nature and location of the project to be carried out. The institutional actors in expropriation for reasons of public utility in Benin are:

- The Project Promoter (the Beninese State represented by the sectoral Ministry concerned)
- The Project Promoter is usually the initiator or promoter of the project requiring the acquisition of land. This promoter may be a legal entity of public law or private law. In the second case, the promoter must substitute his responsibility for that of a public person or make him bring the project. Otherwise, it would be difficult to justify the "public utility" nature of the expropriation. Sector ministries and local authorities are public persons. Legal persons governed by private law include, in particular, private law organizations or companies.

As part of the implementation of a project, the proponent carries out or has had a preliminary design done with:

- the identification of the lands affected by the project (buildings affected by the project);
- the list of suspected owners of the impacted land;
- the parcel plans indicating the perimeters concerned by the project, as well as the lands subject or not of contestation;
- a sheet indicating the main characteristics of the equipment and specifying in particular:
  - the approximate area of the land;
  - a summary assessment of the cost of the project including compensation costs;
  - the probable start date of the works;
  - the availability of compensation credits with an indication of the budgetary allocation.

Once completed, the preliminary project file is sent to the Commission in charge of the commodo and incommodo surveys previously set up by the Minister in charge of the Domain and Land or the Mayor depending on the geographical area covered by the Project (Article 5 of the CFD).

### Ministry in charge of Economy and Finance and Denationalization Programs

The Ministry of Economy and Finance and denationalization programs are involved in the planning and approval of resettlement plans. It provides the resources necessary for compensation and / or compensation for those affected. He is responsible for the management of the estate and supervises the National Estate

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and Land Agency (ANDF) and the Land Reclamation Fund (FDF), which are not yet operational. Thus, for the time being, the roles and responsibilities devolved to these bodies are provided by the relevant departments of the Project Promoter in liaison with the Ministry in charge of the project.

Domain and Land (Treasury).

#### Ministry in charge of Decentralization, Local Governance

This Ministry intervenes on several levels, notably through the Prefectures. These play a vital role in the process of expropriation for reasons of public utility, in particular for the taking of the administrative acts required..

#### Ministry in charge of Justice, Legislation and Human Rights

The intervention of this ministry manifests itself in the courts of law. Thus, through the Courts, the Ministry ensures the taking of actions essential to the success or completion of the expropriations. The Courts receive and know litigation, make judgments and issue orders.

#### The cities

Municipalities, represented by town halls, boroughs, villages and city districts, intervene in various ways in the process; as a promoter, beneficiary or simply as a third party.

#### The Commission in charge of the investigations of commodo and inconvenience

This commission is chaired by the minister, the prefect, the head of the region, the mayor or their representative, as the case may be. It is also composed of a representative of the populations concerned by the expropriation and a representative of the ministry concerned by the operations. The commission in charge of the investigation of commodo and incommodo has for mission to:

- identify and limit the land affected by the expropriation procedure;
- identify the beneficial owners of the said lands;
- mark the perimeter with panels;
- demarcate properties;
- Clearly list the property that is subject to dispute or litigation.

At the end of the survey (lasting a maximum of one month) a report is produced which includes:

- minutes mentioning disputed properties, recorded incidents and observations of affected persons;
- a report of the contradictory demarcation of the perimeter concerned;
- a parcel plan of the perimeter established by an expert surveyor;
- a statement of individual areas;
- a statement of buildings and cultures;
- a statement of property titles;
- a report of verification to the competent structures of the claims of the property rights with supporting documents.

This provisional general plan of the properties is deposited in the offices opened for this purpose to be consulted by all interested persons for one month from the posting. The observations of the persons

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concerned are recorded in a register. These comments may be addressed in writing to the Commission. Consequently, the statements of the alleged owners who can neither read nor write are transcribed in the same register.

The mayor is responsible for the establishment of a certificate of confirmation of the fulfillment of this dual formality of advertising and deposit. The results of the commodo and inconvenience inquiry are forwarded to the expropriating authority, ie, on behalf of the State of Benin, the Minister in charge of the Estate and Land. The latter then transmits it to the Compensation Assessment Board.

#### The Compensation Assessment Board

This administrative commission provided for by Article 228 of the Land and Domanial Code (CFD) is responsible for assessing the compensation granted to owners and other persons affected by the Project. It visits the premises and, after hearing the duly appraised PAPs, proceeds to the assessment of the expropriation indemnities and the value of the immovables that may be subject to the capital gain tax.

The clearly identified persons must receive their convocations at least eight (08) days before the meeting. Unidentified persons, through the Mayor of the locality, must receive it at least fifteen (15) days in advance. The Commission listens to each affected person, also visits the land and sets the amounts of compensation. At the end of the discussions, the Commission draws up a detailed report of the operations including:

- indication of the claims of the alleged owners;
- the amounts of the indemnities agreed or decided by the commission by a majority of the members;
- the details of the discussions;
- a state of expertise of the crops and plantations listed on the site including the value of the latter;
- a state of expertise of constructions or any other enhancement.

The minutes signed by all members of the Commission shall be sent to the Minister in charge of the Domain and Land who is the Expropriating Authority on behalf of the State. The latter transmits the file to the Court of jurisdiction for homologation. This homologation decision orders the payment of compensation. Once the expropriation order has been taken by the District Court, the expropriator (State or Commune) can then take possession of the property, provided that he has paid the indemnity or has had it recorded. .

#### Associations of Persons Affected by the Project

During the sensitization and information phases, the inhabitants of the Project intervention zones, in particular those potentially affected, are encouraged to form an association in order to (i) have access to any information relating to the Project, (ii) serve as a relay of information between the community and the Project, and (iii) be able to defend the interests of the people and the affected community. Constituted of representatives of affected people, these associations are not only bodies defending the interests of the victims, but also effective bodies of accompaniment and support to the smooth running of operations. The reader will find a description of the process of expropriation for reasons of public utility in Chapter 6 on the framework legal.

### **6.3. NATIONAL POLICY ON THE PROTECTION OF VULNERABLE**

The Constitution of 11 December 1990 of the Republic of Benin, in article 8, stipulates that:

"The human person is sacred and inviolable. The state has an absolute obligation to respect and protect it. He guarantees her full development. To this end, it provides its citizens with equal access to health, education, culture, vocational training and employment ". Conscious of its duty, the Government has made social protection one of its priorities. This is materialized in the various policy documents and strategies including the National Long-Term Perspective Studies, Benin 2025 Alafia, the Strategic Orientations of Development (OSD) and the Growth Strategies for the Reduction of Poverty (SCRIP). As part of the implementation of these policies and strategies, several initiatives have been taken by the State in the field of health, social security, education, microcredit to the poorest, etc.

Benin has a holistic social protection policy developed in 2013 that analyzes the ability of vulnerable people to respond to shocks and various types of risks. It defines vulnerability as the more or less inability of an individual, a household or a population to face a risk. It varies according to the nature of the risks and the capacities of households and individuals. We must understand vulnerability on several dimensions: the economic status of the household, geographical residence, gender, stages of the life cycle, level of education and knowledge, chronic diseases, disabilities, etc.

Risks related to development work are classified as environmental risks. Indeed, the environmental risks are of several kinds: risks related to hygiene and sanitation

the risks associated with rapid urbanization and the risks of climate change. The risks associated with urbanization are due to the precarious environment and income instability of households living in peri-urban areas and poorly equipped peripheral neighborhoods, leaving these segments of the population Existing development strategies and policies rarely do.

With regard to the risks related to climate change, the country has regularly faced, during the past 25 years, major disasters affecting the food security of vulnerable groups. There is also an important geographic dimension to vulnerability because of the large disparities by residence in terms of income poverty, access to services and markets, and biophysical risks. Vulnerability also varies by level of education. More educated people have better chances of getting better paying jobs and better know how to protect themselves (and their children) from risks. This reality underscores the importance of a social protection approach that places a strong emphasis on the development of human capital as a strategy for breaking the intergenerational cycle of poverty.

In this project, the vulnerable PAPs identified are people living in non-aedificandi areas and people engaged in income-generating activities along the streets to be developed.

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## 6.4. OPERATIONAL POLICIES OF JICA

The key principle of JICA policies on involuntary resettlement is summarized below.

- I. Involuntary resettlement and loss of means of livelihood are to be avoided when feasible by exploring all viable alternatives.
- II. When, population displacement is unavoidable, effective measures to minimize the impact and to compensate for losses should be taken.
- III. People who must be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported, so that they can improve or at least restore their standard of living, income opportunities and production levels to pre-project levels.
- IV. Compensation must be based on the full replacement cost as much as possible.
- V. Compensation and other kinds of assistance must be provided prior to displacement.
- VI. For projects that entail large-scale involuntary resettlement, resettlement action plans must be prepared and made available to the public. It is desirable that the resettlement action plan include elements laid out in the World Bank Safeguard Policy, OP 4.12, Annex A.
- VII. In preparing a resettlement action plan, consultations must be held with the affected people and their communities based on sufficient information made available to them in advance. When consultations are held, explanations must be given in a form, manner, and language that are understandable to the affected people.
- VIII. Appropriate participation of affected people must be promoted in planning, implementation, and monitoring of resettlement action plans.
- IX. Appropriate and accessible grievance mechanisms must be established for the affected people and their communities.

Above principles are complemented by World Bank OP 4.12, since it is stated in JICA Guideline that "JICA confirms that projects do not deviate significantly from the World Bank's Safeguard Policies". Additional key principle based on World Bank OP 4.12 is as follows.

- X. Affected people are to be identified and recorded as early as possible in order to establish their eligibility through an initial baseline survey (including population census that serves as an eligibility cut-off date, asset inventory, and socioeconomic survey), preferably at the project identification stage, to prevent a subsequent influx of encroachers of others who wish to take advance of such benefits.
- XI. Eligibility of Benefits include, the PAPs who have formal legal rights to land (including customary and traditional land rights recognized under law), the PAPs who don't have formal legal rights to land at the time of census but have a claim to such land or assets and the PAPs who have no recognizable legal right to the land they are occupying.
- XII. Preference should be given to land-based resettlement strategies for displaced persons whose livelihoods are land-based.
- XIII. Provide support for the transition period between displacement and livelihood restoration.
- XIV. Particular attention must be paid to the needs of the vulnerable groups among those displaced, especially those below the poverty line, landless, elderly, women and children, ethnic minorities etc.
- XV. For projects that entail land acquisition or involuntary resettlement of fewer than 200 people, abbreviated resettlement plan is to be prepared.

In addition to the above core principles on the JICA policy, it also laid emphasis on a detailed resettlement policy inclusive of all the above points; project specific resettlement plan; institutional framework for implementation; monitoring and evaluation mechanism; time schedule for implementation; and, detailed Financial Plan etc.

## 6.5. COMPARISON BETWEEN JICA'S ENVIRONMENTAL GUIDELINES AND BENIN

### LEGISLATION ON POPULATION REINSTALLATION AND EXPROPRIATION

The differences between the JICA Environmental Guidelines and Beninese legislation on resettlement and

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expropriation are shown in the following pages. In the event of a discrepancy between Beninese legislation and JICA's Environmental Guidelines on implementation of the abbreviated resettlement plan, the second will be authoritative and appropriate measures will be taken.

Table 24 compares the guidelines of the national legislation with JICA's environmental guidelines.

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Table 24 : Differences Between JICA's Environmental Guidelines and Beninese Law on Resettlement and Expropriation

No	JICA Environmental Guidelines (2010)	Beninese legislation (this CFDP, 2013 and the amended CFDP Decree No. 2017-332)	Differences between the JICA Environmental Guidelines and Beninese legislation	Measures taken in the project
1	Involuntary resettlement and loss of means of livelihood are to be avoided when feasible by exploring all viable alternatives. (JICA GL)	Not described	No provision in Beninese legislation	Avoid impacts as far as possible
2	When population displacement is unavoidable, effective measures to minimize impact and to compensate for losses should be taken. (JICA GL)	The development of the Action Plan of Resettlement of Populations (PARP) is mandatory as a means of minimizing impacts according to Article 4 of Decree No. 2017-332	No particular difference	Take minimization measures impacts
3	People who must be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported, so that they can improve or at least restore their standard of living, income opportunities and production levels to pre-project levels. (JICA GL)	Without provision	No provision for restoration of the socio-economic situation in Beninese legislation	Take compensation measures and support for improving and restoring the socio-economic situation
4	Compensation must be based on the full replacement cost as much as possible. (JICA GL)	Article 212 specifies that the amount of the compensation and its method should reflect the balance between the public interest and the special interests of those affected by the expropriation and take into account circumstances such as (a) the current use of the property; (b) the history of the property, its acquisition mode and / or its use.	The prohibition of depreciation is not described. The cost shown here may not correspond to the replacement cost	Compensate up to the cost of replacement

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	<p>(c) the market value of the property;  d) the importance of the direct investment of the State or the local authority, subsidies or capital increases in connection with the purpose of the expropriation. (Article 212, CFD)</p> <p>The allowances granted must cover all the direct, material and certain damage caused by the expropriation. They are fixed according to the consistency of the goods, taking into account their value and, possibly, the surplus value or the loss of value which results, for the part of the building not expropriated, the execution of the proposed work. (Article 234, CFD)</p>		
<p>5</p> <p>Compensation and other kinds of assistance must be provided prior to displacement. (JICA GL)</p>	<p>The expropriation of immovables, in whole or in part, or of immovable real rights for reasons of public utility takes place, failing amicable agreement, by court order and against the payment of a fair and prior compensation. (Article 210, CFD). In case of disagreement, the indemnity is recorded and the payment is made after the decision of the court or after the decision of the Court of Cassation (Article 249, CFD).</p>	<p>No provision on other types of assistance than compensation. In case of disagreement, compensation may not be provided before moving.</p>	<p>Provide compensation and other types assistance before moving</p>
<p>6</p> <p>For projects that entail large-scale involuntary resettlement, resettlement action plans must be prepared and made available to the public. (JICA GL)</p>	<p>Following the declarative act of public utility, an investigation of commodo et incommodo is carried out under the authority of a commission of inquiry, presided over</p>	<p>The development of the resettlement plan is mandatory according to the CFD and the regulations related to the EIA.</p>	<p>Develop and publish the plan Resettlement or the Resettlement Policy Framework</p>

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<p>7</p> <p>In preparing a resettlement action plan, consultations must be held with the affected persons and their communities based on sufficient information made available to them in advance. (JICA GL)</p>	<p>The report identifying the parcel survey is published by any suitable means of dissemination, posting, extension, community radio, town crier, in addition to publications or notifications (Article 220, CFD). Within the period of two (02) months from the notifications referred to in the previous article, the owners of the immovables subject to the expropriation procedure must transmit to the authority competent administrative names</p>	<p>No particular difference</p>	<p>Organize a consultation with the populations and communities affected on the basis of the publication of prior and satisfactory information.</p>
	<p>by the minister, the prefect, the person in charge of the region or the mayor or their representative as the case may be (Article 218, CFD). This report determines the parcels of land and all the real estate rights to be expropriated, their owners and all persons eligible for compensation according to a provisional general plan of properties attached (Article 219, CFD)</p> <p>The report observing the parcel survey is published by any suitable means of diffusion, posting, popularization, community radio, crier public, besides the publications or notifications (Article 220, CFD)</p> <p>The development of the Action Plan of Resettlement of Populations (PARP) or Population Resettlement Policy Framework (CPRP) is defined (Articles 3, 22 to 23 and 37-38, Decree No. 2017-332).</p>		

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		tenants and the names of all holders of rights in rem in the buildings in question (Article 221, CFD). The reference on consultation with the population is mandatory in the Population Resettlement Policy Framework (CPRP) and the Resettlement Action Plan (PARP) (Articles 22 and 22), 38, Decree No. 2017-332).		
8	When consultations are held, explanations must be given in a form, manner, and language that are understandable to the affected persons. (JICA GL)	Without provision	No language provision of explanation in the Beninese legislation	Explain in the official language
9	Appropriate participation of affected persons must be promoted in planning, implementation, and monitoring of resettlement action plans. (JICA GL)	The reference on consultation with the population is mandatory in the Population Resettlement Policy Framework (CPRP) and the Resettlement Action Plan (PARP) (Articles 22 and 22). 38, Decree No. 2017-332) However, there is no detail on the participation of the population in the planning, implementation and control measures ensuring the maintenance of their livelihoods.	There is no clarification in Beninese legislation on the participation of people and communities in the planning, implementation and monitoring of measures guaranteeing the maintenance of their livelihoods.	Encourage the participation of people and communities in the planning, implementation and monitoring of measures to ensure their livelihoods following forced displacement.
10	Appropriate and accessible grievance mechanisms must be established for the affected persons and their communities. (JICA GL)	Judicial phase if there is disagreement on compensation (Article 237 of the CFD). At the request of one of the parties, a commission consisting of 3 approved experts chosen by the court is created (Article 240, CFD).	No particular difference	Establish a management system for complaints (GRM) of affected populations and communities.

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	<p>The owner of a building fit in part of expropriation may require the public authority the total acquisition by a request addressed to the president of the court having pronounced the expropriation order and notified to the public person concerned (Article 241, CFD).</p> <p>A compensation and mediation system must be mentioned in the Resettlement and Compensation Action Plan (PARC). (Articles 22 and 38, Decree No. 2017-332).</p>		
<p>11</p>	<p>Affected persons are to be identified and recorded as early as possible in order to establish their eligibility through an initial baseline survey (including population census that serves as an eligibility cut-off date, asset inventory, and socioeconomic survey), preferably at the project identification stage, to prevent a subsequent influx of encroachers of others who wish to take advantage of such benefits. (WB OP4.12 Para.6)</p>	<p>The CFD provides for the taking of a declaratory act of Public Utility as a starting point for the expropriation procedure (Article 216, CFD). Moreover, it provides that modifications to buildings beyond the date of declaration of Public Utility will not be taken into account in the compensation (Article 235, CFD).</p>	<p>The date of DUP is the deadline. There is no provision on the deadline for irregular populations.</p> <p>Declare the deadline, before the start of the census, for regular and irregular populations</p>
<p>12</p>	<p>Eligibility of benefits includes, the PAPs who have formal legal rights to land (including customary and traditional land rights recognized under law), the PAPs who don't have formal legal rights to land at the time of census but have a claim to such land or assets and the PAPs who have no recognizable legal right to the land they are occupying. (WB OP4.12 Para.15)</p>	<p>Without provision</p>	<p>Burmese law does not recognize not eligible are people who do not have a formal right to land and whose rights are not verified.</p> <p>Recognize as eligible for the compensation and other types of assistance to the holders of a right land, ②people who do not have a formal right to the land but who have land titles or other - provided that such titles are recognized by the laws, those which have neither formal law nor any titles likely to be recognized on the lands they occupy.</p>

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13	Preference should be given to land-based resettlement strategies for displaced persons whose livelihoods are land-based. (WB OP4.12 Para.11)	Without provision	No provision on strategies for resettlement on land in Beninese legislation.	Focus on resettlement strategies on land with respect to displaced populations whose livelihoods are derived from the land.
14	Provide support for the transition period (between displacement and livelihood restoration). (WB OP4.12 Para.6)	Without provision	No provision on support during the transition period in Beninese legislation.	Provide support during the transition period.
15	Particular attention must be paid to the needs of the vulnerable groups among those displaced, especially those below the poverty line, landless, elderly, women and children, ethnic minorities etc. (WB OP4.12 Para.8)	Without provision	No specific provision on special attention to the needs of vulnerable groups in Beninese legislation.	Pay special attention to the needs of vulnerable groups.
16	For projects that entail land acquisition or involuntary resettlement of fewer than 200 people, abbreviated resettlement plan is to be prepared.	L'élaboration du Cadre Politique de Réinstallation des Populations (CPRP) pour la mise en œuvre d'un projet impliquant une réinstallation des populations et celle du Plan d'Action de Réinstallation des Populations (PARP) quand il s'agit d'une réinstallation physique et économique de plus de 100 personnes (articles 22 et 37, Décret n° 2017-332).	Developing a resettlement plan (detailed version) is mandatory when relocation concerns more than 200 people according to the JICA Environmental Guidelines, and more than 100 people according to Beninese legislation.	Elaborate the CPRP, the equivalent of the plan of abridged relocation.

Source : JICA Study Mission

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#### **6.6. OF THE PROJECT COORDINATION UNIT**

The PMU will periodically review the RAP as soon as it is implemented, based on the results of the monitoring and evaluation consultant to be recruited and on the basis of the reports submitted by the local NGOs engaged in support of the resettlement.

The updating of the RAP will take place each year with a first update before its implementation. Detailed plans, procedures, protocols, and other documents put in place for RAP implementation will also be revised. Global or partial revisions may also be made whenever new elements deemed important or changes (design, regulations, socio-environmental conditions, etc.) make such revisions necessary, or at the request of the Beninese authorities and the JICA or people affected by the project.

#### **6.7. ROLES AND RESPONSIBILITIES OF THE AUTHORITIES AND STRUCTURES INVOLVED IN THE IMPLEMENTATION OF THE RESETTLEMENT ACTION PLAN**

Several actors intervene in the process of involuntary displacement of populations. It is mainly:

##### **6.7.1. MINISTRY OF INFRASTRUCTURE AND TRANSPORT**

He represents the State as Promoter and Owner. It is supported in these functions by the other sectoral Ministries. It has under its supervision the Directorate General of Infrastructures which is in charge of:

- manage all aspects of the installation, layout and maintenance of all public works at the expense of the Ministry;
- develop and implement long-term maintenance and development strategies for the road network according to the government's political and macroeconomic orientations, in collaboration with the structures concerned;
- perform the role of prime contractor for all road construction works, drainage network, dam, engineering structure and water retention and all civil engineering works not assigned to other specific structures;
- ensure the realization of public works infrastructure at the expense of the State and control the work carried out on its behalf;
- participate in the development, application and adaptation of standards and regulations in public works and road traffic;
- Provide technical control of toll and / or weighing facilities;
- Contribute to the preservation of the areas of public works services and track rights at the Ministry's expense

##### **6.7.3. MINISTRY OF ECONOMICS AND FINANCE**

It will provide facilitation in the procedures for mobilization, disbursement and provision of funds for compensation to those affected. He is responsible for the management of the public domain of the State and supervises the National Estate and Land Agency (ANDF) and the Land Reclamation Fund (FDF).

The National Agency of the Domain and the Land (ANDF) is a public institution of technical and scientific nature which has a mission of security and coordination of the land management and domaniale at the national level.

#### 6.7.4. NATIONAL AGENCY OF DOMAIN AND LAND (ANDF)

The agency ensures the confirmation of the lists of the affected people, the payment of the allowances and the treatment of the complaints following the investigations commodo-incommodo.

To ensure equitable access to land, secure investments, effectively manage land conflicts, to contribute to poverty reduction, the consolidation of social peace and the achievement of integrated and sustainable development, in accordance with the law (Law No. 2013-01 of 14 August 2013 on the Code Foncier et Domanial) created the National Agency of the Domain and Land (ANDF) and its communal offices spread throughout the national territory as a single land bank it is a major lever to operationalize the ongoing reform to facilitate access to land.

The National Agency of the Domain and the Land (ANDF) is a public institution of technical and scientific nature which has a mission of security and coordination of the land management and domaniale at the national level.

According to the decree 2015-010 of January 29th, 2015 attributing, organization and functioning of the ANDF, it is in charge of implementing policies, strategies and programs of the State of Benin in land and domain.

#### 6.7.5. MINISTRY OF JUSTICE, LEGISLATION AND HUMAN RIGHTS

The intervention of this Ministry manifests itself in the courts of first instance. Thus, through the Courts, the Ministry ensures the taking of actions essential to the success or completion of the expropriations. It should be noted that the Courts receive and hear disputes, make judgments and issue orders.

#### 6.7.6. MINISTRY OF DECENTRALIZATION AND LOCAL GOVERNANCE

##### ✓ Prefecture

The prefectural authority:

- Establishes the Technical Resettlement Committee;
- Participate in PAP information / awareness
- Participates in the management of conflicts amicably (in support of the CTR);
- Participate in the monitoring of RAP implementation

##### ✓ Cotonou Town Hall

The Mayor of Cotonou sets up by order at the level of the 10th district the Local Resettlement Committee. The existence of a commission in charge of the public affairs which follows in general the activities related to the displacements of populations in the locality. Also, the Technical Services Department of the City Council has the skills in social monitoring of resettlement activities through projects already carried out in the Municipality.

##### ✓ Local Resettlement Committee (CLR)

It is installed at the level of the 10th district by municipal decree a Local Resettlement Committee (CLR) under the chairmanship of the head of the district and where the representatives of the people affected by

the project sit. This committee regulates minor conflicts at the level of the affected neighborhoods. He is also responsible for the management of vehicle assembly parks, the safety of the population and facilitates the execution of work by the company. The CLR is composed as follows:

**President:** District Chief

**1st Protactor:** Head district of Ahogbouhou Cité Eucharistie

**2nd Protactor:** Chief Védokó district

**3rd Protactor:** Neighborhood Headquarter

**Members:**

1. Representative of the PAPs of the 10th arrondissement
2. Representative of PAPs in the 11th arrondissement
3. Representative of PAPs in the 13th arrondissement
4. Representative of Youth Associations of the Borough
5. President District Development Committee (QCD)

✓ **Technical Resettlement Committee (CTR)**

The main mission of the CTR will be to negotiate with the affected populations to determine the amounts of compensation to be granted in respect of the property and activities; the results of its work must lead to concrete proposals.

The composition of the Technical Resettlement Committee is as follows:

**President:** Coordinator of the PMU of the interchange construction project

**Vice President:** Technical Adviser for Legal Affairs of

1. **1st Reporter :** Mayor of the city of Cotonou or his Representative
2. **2nd Reporter:** Director of Technical Services of the Cotonou City Council
3. **3rd Reporter:** Representative of the MOD;

**Members :**

- i. Chief Service of State Affairs of Cotonou City Council;
- ii. Chief Service Support to Communal Initiatives (SAIC);
- iii. President of the Quartier Development Committee (CDQ);
- iv. President of the Committee of Riverains;
- v. The representative of the consulting firm responsible for monitoring the implementation of measures resulting from the Environmental and Social Impact Assessment (ESIA), including the Environmental and Social Management Plan and the Resettlement Action Plans;
- vi. The representative of the consulting firm responsible for the technical control of the works.

The Committee will draw on the expertise of the social intermediation NGOs recruited for this purpose for the preparation of the RAP and will send reports and reports to the MOD.

The Technical Committee may appeal to the competence of any other resource person in case of necessity. The operating procedures of the Resettlement Technical Committee will be specified by ministerial order, on the proposal of the PMU of the project.

This committee is also responsible for receiving objections and settling them at first instance. He will also

ensure the correct granting of the compensation that has been retained. The successful implementation of the resettlement operation requires the establishment of an efficient and effective organization. It must have a synergy of action between the various stakeholders (Project Management Unit, Delegated Contracting Authority, Administration, local elected representatives and affected populations). A consultation framework led by the Project Management Unit in collaboration with the concerned State structures will be set up.

This framework will basically bring together the Director of National Affairs, the Director of Technical Services of the Municipality of Cotonou as well as the NGO, the Prefecture of Littoral, the MOD recruited for the implementation of the RAP and the CAs of the 10th, 11th and 13th.

In addition to the involvement of CAs in the consultation framework, the skills and experiences of the three (3) neighborhood chiefs (Eucharistic City, Vedoko, Houeyiho II) and other structures such as QCDs can be used. The various stakeholders in the RAP implementation process and their accountability are recorded in Table 25.

**Table 25 : Organizational Arrangements for RAP Implementation**

N°	Actors/Organisation	Responsibilities
1	Ministry of Infrastructure and Transport (Promoter and Project Manager)	Represents the Beninese Government in the implementation of the Project; Set up the Project Management Unit Follows the compensation of the PAPs; Follows and evaluates the execution of the RAP.
2	Ministry in charge of finances	Mobilize the necessary funds to compensate the PAPs;
3	Delegated project master	Recruit the consultant responsible for implementing RAP Record and finalize the list of PAPs; Participate in the monitoring of RAP implementation;
4	Technical Committee of reinstalling	Participate in the evaluation of the cost of compensation for PAPs; Negotiates with PAPs the costs of compensation; Reports to MIT on the results of the different negotiations Participate in PAP information / awareness Participate in monitoring RAP implementation
	Local Committee of reinstalling	Participate in the evaluation of the cost of compensation for PAPs; Negotiates with PAPs the costs of compensation; Reports to the TRC the results of the various negotiations; Participate in PAP information / awareness Participate in monitoring RAP implementation
5	ABE	Validate the ESIA report with a copy of the PAR report Facilitates the issuance of the EAC Oversee the implementation of RAP and social measures of the PGES;
6	Prefecture	Set up the Technical Resettlement Committee; Participate in PAP information / awareness Participate in the management of conflicts amicably (in support of the CTR); Participate in the monitoring of RAP

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7	Town hall	Fix by decree the deadline of census of the PAPs; Proposes to the prefectural authority the officers of the Mairie to be members of the CTR; Participate in PAP information / awareness; Notes the effectiveness of the liberation of the rights of way and reports to the Prefect; Support the dispute resolution process amicably; Set up the Local Resettlement Committee at the level of the 10th district Participate in the monitoring of RAP implementation;
8	Borough	Participate in PAP information / awareness; Notes the effectiveness of the liberation of the rights of way and reports to the Mayor; Regulates minor conflicts; Provides the report of the Local RAP Resettlement Committee; Participate in the monitoring of RAP implementation.
9	Court	Conflict management as a last resort
10	Consultant responsible for monitoring and external evaluation	Follows the establishment of the CTR / CLR Follow the signing of the memoranda of understanding Follows the payment of compensation Follows complaints management

Figure 5 presents Institutional Arrangement for RAP.

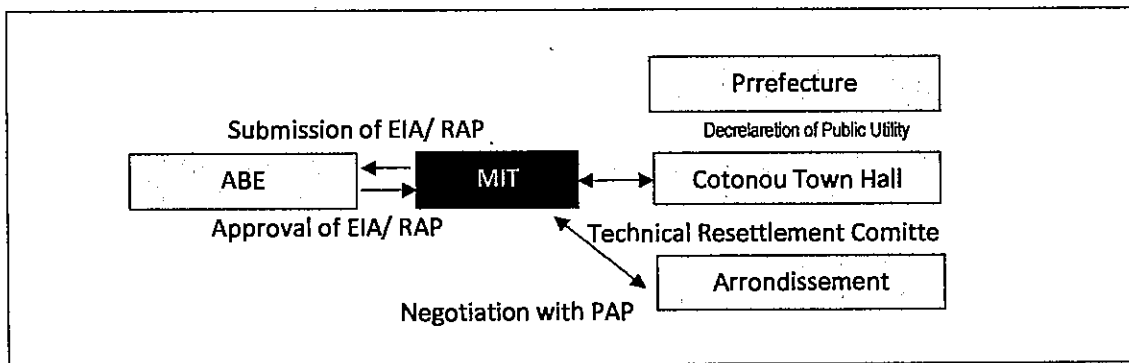


Figure 5 : Institutional Arrangement for RAP  
Source: JICA, 2019

#### 6.7.7. DELEGATED WORK MASTER (MOD)

The MOD intervenes in the implementation of the RAP and reports its diligences to the Client who is the State of the good execution of the said project.

#### 6.7.8. NGOs THAT CAN INTERVENE IN THE IMPLEMENTATION OF THE PROJECT

In the context of this study, an identification of NGOs intervening in the sectors of social intermediation in the city of Cotonou was carried out. This NGO will be solicited and selected according to the needs of accompaniment for the implementation of the RAP. In addition to the training planned for the NGOs that will be selected during the implementation of the RAP, their capacity building needs will be identified and met. Table 26 lists these NGOs.

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**Table 26 : List of NGOs working in the project area**

N°	IDENTIFICATION OF THE NGO	PEOPLE TO CONTACT	ADDRESS
1	CISE Afrique	AKOHO Etienne	95 40 11 22 / aketienne2@yahoo.fr
2	COGEDA	GUINDEHOU Luc	97 60 32 82 /luguins@yahoo.fr
3	JSF Bénin Environnement	ALLODJI A. Florentin	95 91 83 15/ aigbejsf@gmail.com
4	Mieux vivre ici	OLORY Gédéon	97 32 83 51 /ong.mvi.be@hotmail.com
5	Wildaf Bénin	AGBAHOLOU Françoise (Coordinator)	96 75 75 36
		Scholastique ASSOGBA (Program Officer)	95 86 20 69
6	JVE BENIN	HOUNTONDI Mawusé	97 55 59 28 jve.bj@jve-benin.org
7	AMEM		95-96-82-84/odaguia@yahoo.fr

Source : BANCA, 2019

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## 6.8. EVALUATION OF INSTITUTIONAL CAPACITY AND CAPACITY BUILDING OF ORGANIZATIONS AND NGOS

To enable adequate implementation of measures in line with environmental and social requirements, it is essential to evaluate and strengthen the capacities of certain key actors involved in the implementation, through training, sensitization and other capacity building. EBA is the body responsible for monitoring RAP implementation of all projects at national level. It will therefore play the role of technical support for the training of implementation actors.

### 6.8.1 TARGET ACTORS FOR CAPACITY BUILDING

Key actors involved in capacity building are:

- The Department of Technical Services (DST) of the Cotonou City Council;
- The Departmental Direction of Infrastructures and Transport of the Atlantic;
- the local committee;
- NGOs involved in the problem of population displacement and intermediation
- MOD executives.

The institutional landscape of the coastal department is quite complex and involves several categories of institutional actors with diverse environmental and social management capacities. Although the institutional framework is well provided, it is characterized by several weaknesses that could affect its effectiveness. These include: (i) weak functional capacity of environmental institutions, (ii) lack of strategic and organizational coherence, (iii) lack of capacity for information gathering and stakeholder participation, and (v) insufficient capacity for awareness, dissemination and access to information.

The Town Hall, which is the ultimate beneficiary of the infrastructure planned for completion, has an Environmental Department within the Technical Services Department, which counts 04 environmentalists. It also has social scientists in the Population Services Branch responsible for community and social issues. However, even though this staff is often involved in the construction and maintenance process of structures similar to that for this interchange construction project, they do not have the skills and experience in implementing the instruments. specific safeguards (ESMP, PAR) even less in the realization of those documents.

There is a weakness in the capacity of the Beninese Environment Agency to oversee the development and monitoring of the implementation of the safeguarding instruments. This lack of capacity is reflected in terms of the insufficient quantity and quality of the staff of the agency (03 senior managers) or the staff often asked to ensure the quality of the instruments submitted to the Agency for validation and their implementation.

Apart from these targets, it is proposed to set up a technical team at MIT to monitor the implementation of the RAP. This team will consist of four (04) experts namely:

- an environmentalist Geographer;
- a sociologist;
- a land lawyer;
- an Engineer in Civil Engineering.

## 6.8.2. STRENGTHENING MEASURES

Technical strengthening measures are foreseen and relate to capacity building in monitoring and follow-up as well as reporting of environmental and social monitoring and monitoring activities.

- **Strengthening monitoring, monitoring and evaluation of Program activities**

The program will need to strengthen the technical capacity for ongoing monitoring, supervision, mid-term evaluation and annual evaluation.

- **Proximity monitoring** of the implementation of environmental and social measures will be done by the SSES of the program while supervision of the execution of the construction works will be entrusted to control and technical verification offices.
- **Proximity monitoring** (internal monitoring) will be done under the supervision of the SSES of the PMU.
- **External monitoring** will be done by the EBA
- **Capacity building** of NGOs

In addition, the program should include **mid-term, annual, and final evaluations** that will be assigned to specialist consultants. Monitoring, supervision and evaluations will also need to be budgeted to enable the different actors to play their roles fully. Table 27 shows the numbers per target for capacity building..

Table 27 : Number of targets for capacity building

No	Entity (Don)	Number
1	DST	02
2	MIT	02
3	Local committees	04
4	NGO	02
5	MOD works	02
6	Technical Relocation Committee	04

Source : BANCA, 2019

The training aims to strengthen the capacity of the actors responsible for implementing and monitoring RAP implementation. It will also familiarize the actors with the operational policies of the donors, the control mechanisms and the national regulations with regard to the implementation of the RAP. Training consultants qualified in population resettlement will be recruited by the PMU to conduct these trainings. The proposed training topics will be centered around: (i) the implementation of the work of the and of the PAR; (ii) monitoring the implementation of the RAP; (iii) the complaints

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management mechanism.

The following modules will have to be developed during these trainings:

❖ ***Training on RAP implementation***

- knowledge of RAP implementation monitoring procedures and tools;
- knowledge of the procedures for preparing the implementation reports;
- Identification and management of vulnerability cases

❖ ***Training on monitoring RAP implementation***

- monitoring methodology;
- monitoring indicators / environmental and social assessment;
- respect and enforcement of laws and the principle of resettlement;
- Effectiveness of gender mainstreaming.

❖ ***Training on the complaints management mechanism***

- typology of complaints;
- organization of complaints management;
- establishment of a complaints and claims management committee.

Training needs vary by target group category.

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## 7. PAP COMPENSATION PLAN

The compensation plan defines the procedures that made it possible to identify the rights holders (Affected Persons by the Project) through a defined period of census according to the eligibility criterion, the type of property and the treatment granted.

Thus, in the case of the present project to build the V&dok& interchange, a census was carried out on the site intended to house the said infrastructure. Identified properties and affected persons will be compensated according to World Bank Operational Policy 4.12 and national legislation.

### 7.1. WITH RIGHTS, RIGHTS EVALUATION AND ELIGIBILITY

In order to facilitate the identification of the PAPs that will receive the compensation and will be entitled to support or accompaniment measures for resettlement, the eligible persons have been divided into categories. The categories have been established based on both the occupation status of the site and how the lost property is used. These categories are:

#### 1. Natural persons;

- a. owner who operates or occupies residential land;
- b. operator / occupant who does not own a residential land (tenant);
- c. owner operating or occupying a place of business (shop).

#### 2. Vulnerable people.

#### 7.1.1. STANDARDS FOR THE ELIGIBILITY OF PAP

Beninese law recognizes formal property and customary property. Anyone affected by the project, who is the owner, who has been identified, is considered eligible for compensation. In addition, OP 4.12 describes the eligibility criteria for resettlement of projects as follows:

- people who have formal legal rights over land or other property, recognized by the laws of the country and who are within the scope of the project;
- persons who do not have formal legal rights to land or other property at the time of the census, but who can prove their rights under the customary laws of the country.

As part of the project, customary landowners encompass two types of property:

- o property acquired on the basis of aboriginal rights over the land (non aedificandi area);
- o the property acquired through acts of sale recognized by the community.
- persons who, by reason of their sex, physical or mental disability or economic or social factors, are likely to be more affected than others by the process of displacement and resettlement or whose ability to availing or receiving resettlement assistance and related benefits may be limited.

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- persons who have no rights, legal or otherwise, to be recognized on the lands they occupy, and which are not included in the two (02) categories described above.

Persons belonging to the first two (02) categories receive full compensation for the land, structures and assets and assets they lose.

Persons in the third category are entitled to resettlement assistance to enable them to improve their living conditions (compensation for loss of income-generating activities, livelihoods, crops, etc.), provided that they occupied the project site before the eligibility deadline.

In addition, according to OP 4.12, persons eligible for resettlement are those for whom the involuntary removal<sup>1</sup> of land<sup>2</sup> causes:

- relocation or habitat loss;
- loss of property or access to these assets; or
- a loss of income or livelihood sources, whether or not the affected people have to move to another site.

Census surveys indicate that PAPs are predominantly those who have lost income sources. Only one person and CFAO Motors lost their land.

In this study, the following categories of PAPs were identified:

- PAPs that have lost commercial infrastructure and land;
- PAPs having lost private buildings for commercial use;
- PAPs that have lost income-generating activities;
- PAPs that have lost trees.

### 7.1.2. DEADLINE

The cut-off date is the eligibility deadline for assistance, compensation and resettlement. In general, the completion of the census represents the eligibility deadline. It has therefore been imperative in the framework of the RAP to ensure that the public is sufficiently informed of this date. Once the census is completed and the target date set, arrangements will have to be made with local authorities to avoid the influx of new people into the project footprint for compensation.

As part of the elaboration of this PAR, the deadline for eligibility was 10 July 2019 by the Mayor in the decree establishing a public inquiry into the liberation of the rights-of-way for the construction of the Vedoko interchange. This deadline was chosen after consultation with the PAPs and the politico-administrative authorities.

<sup>1</sup> For the purpose of this policy, "involuntary" means actions that can be undertaken without the informed consent of the displaced persons, or the option to exercise a choice.

<sup>2</sup> "Lands" includes anything that grows or is permanently erected, such as buildings or crops.

Beyond this date, the occupation and / or exploitation of a land or resource covered by the project can no longer be compensated. It is important that the eligibility deadline and process for becoming eligible after this date be defined in an appropriate legal text. Finally, the eligibility procedures are made public and clearly explained to the people affected by the project, because people who will settle without authorization on the right-of-way, after **July 10, 2019**, will not be entitled to any form of assistance, relocation and compensation. It shall be noted, however, that, DUP will be the official cut-off-date- effective for those eligible for compensation in Benin's law.

To this end, sensitization sessions were organized by the chiefs and chiefs of the 10th, 11th and 13th Arrondissement prior to the launch of the official census operations (see the launching statement in Annex 1).

### 7.1.3. CENSUS OF PAP

The census operations concerned all the people who find themselves in the grip of the works that are eligible. There is a high rate of tenants (40.54%), ie 9.01% of women and 31.53% of men. On the owner's side, among the 36.04%, 18.92% are women

17.12% represents men. It is also recorded in the right-of-ways of the works of employees. For homeowners, there are two categories of homeowners, the owners of the places of business (shops, hangar, shacks and others) and the landowners housing these infrastructures. On the side of private land properties for commercial use is added the head of CFAO Motors. Table 28 shows this size.

Table 28 : Number of people affected in the work area

The stores that face the project road in the project area Shop owners/ employees		
Shop owner	71	235
Shop employees	16	19
Occupants of the public domain		
owner	16	62
Employees	2	0
Mobile shop on the southeast corner of the IC		
owner	1	4
Employees	4	0
Landowner	1	6
Shops with the land/ attachment affected		
Owner	1	0
		326

Source : Field survey, August 2019

As for the owners of private land for commercial use, only one has been identified followed by the head of CFAO Motors which is specifically treated for its peculiarity (representing legal personality) Commercial infrastructures and / or places of business are also included in the works' right-of-way. They concern the terraces, apatam, shed, a commercial building. These infrastructures are associated with that of CFAO

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Motors whose evaluation was specific. Table 29 below shows the various places of business affected in the right-of-way.

**Table 29 : Inventory of affected places of business in the right-of-way**

Type of Goods	Affected goods	Quantity	%
Private infrastructures for commercial use (place d'affaire)	Land	2	50
	Shop	1	25
	Fenced	1	25
Total		4	100

Source : Field survey, August 2019

#### 7.1.4. PUBLIC AFFECTED SOCIAL INFRASTRUCTURE SERVICES, AND THE SOCIAL AND CULTURAL CHARACTERISTICS OF DISPLACED COMMUNITIES

The loss of social and community infrastructure results in the loss of access to public social services. In the project area, no sociocommunal or collective infrastructure was assessed for destruction. On the other hand, a church, a mosque, a primary school and a private institute are identified in the area of influence of the project. Users of these infrastructures will be subject to restricted access and noise. Arrangements must be made during the implementation of the project to minimize disturbance.

The construction of the interchange will also cause displacements of various networks (water, electricity and telephone). In order to limit disturbances in the provision of public services related to these trips, it is expected that the company, together with the deconcentrated services of SONEB, SBEE and Telecommunications, will limit the duration of interventions and inform beforehand the populations of the said disturbances.

#### 7.2. PRINCIPLES AND RATES APPLICABLE FOR COMPENSATION

As part of the implementation of the Resettlement Action Plan, the compensation approach for those affected by the project is based on the following principles:

- ❖ indemnify losses incurred at replacement cost;

Affected persons must be compensated before starting work. The bases of the compensation must be negotiated with the people affected during the public meeting under the authority of the Mayor, the chief of district supported by the heads of quarters and the MIT.

On the basis of eligibility criteria and compensation principles, compensation and support measures were proposed, depending on the types of assets affected and the category of PAPs according to their status. These measures concern the following compensations:

- ❖ Compensation for the loss of land built for commercial use.
- ❖ Compensation for the loss of private buildings and commercial facilities
- ❖ Compensation for temporary loss of income
- ❖ Compensation for the loss of trees

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In addition to property compensation, support can be provided to vulnerable people. The compensation costs for the various goods were determined from the provisions of the texts particularly with regard to the land in the construction zones loties. Other costs relating to individual goods such as: House, shop, fence were determined from the market price on the date of the censuses. The different prices provided by real estate agencies are in annex others.

Support to vulnerable PAPs will be made after discussion with them to agree on the type of treatment to be given to them. Compensation for PAPs having temporarily lost their income generating activities and employees, compensation equivalent to three (3) months of average monthly income will be granted. Tree losses have been assessed with the relevant services of the Ministry of Agriculture, Livestock and Fisheries and the Water and Forest Service and a compensation scheme has been developed for this purpose.

### 7.2.1. ESTIMATED EFFECTIVE LOSSES AND COMPENSATION

To accompany all the people affected by the project, the valuation of the property was done according to the matrix recorded in Table 30.

**Table 30 : Entitlement matrix**

No.	Type of loss	Application	Eligible person	Law	note
1	Land	Loss of part or all of the land	Owner having the right of ownership of the land, or Person who occupies the land whose right is recognized by the State	• Cash compensation in the re-purchase price	
2	Building (dwelling house, shop, etc.)	Loss of part or all of the building	Owner of the building	• Compensation of the affected structure, including materials, labor and transport, in cash in the re-acquisition price • Transportation allowance	• When part of the building is affected, the owner has the right to ask to buy the entire building. • Compensation of structures lost in cash
			Tenant of the building	• 3 months rent • Transportation allowance	

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No.	Type of loss	Application	Eligible person	Law	Note
3	Other structures	Loss of some or all of others structures	Owner of these structures	<ul style="list-style-type: none"> <li>• Compensation of the affected structure in cash in the re-acquisition price</li> </ul>	
4	Access to housing	Restriction of access to housing	Inhabitants	<ul style="list-style-type: none"> <li>• Provision of temporary access ramps for people</li> <li>• Respect of deadlines</li> </ul>	
5	Trees	Loss of trees	Owner of trees	<ul style="list-style-type: none"> <li>• Market price of trees</li> </ul>	
6	Commercial activities	Loss of commercial activities	Commercial operator whose store is assigned	<ul style="list-style-type: none"> <li>• Compensation for temporary loss of income: Cash compensation corresponding to 3 months of income as</li> </ul>	<ul style="list-style-type: none"> <li>• actual impact on each shop on roadside will estimated to be 3 months considering construction schedule</li> </ul>
7	Employed in commercial activities	Loss of an employee in commercial activities	Employed in Affected Business Activities	<ul style="list-style-type: none"> <li>• Compensation for temporary loss of wages: Cash compensation corresponding to 3 months salary for temporary unemployment or business interruption</li> </ul>	<ul style="list-style-type: none"> <li>• Compensation is paid directly to employees</li> <li>• Other livelihood restoration assistance will not be considered as the current livelihood can be continued near the Project site.</li> </ul>
8	Moveable structure (shop)	Loss of a movable structure (shop)	Commercial operator of a movable structure (shop)	<ul style="list-style-type: none"> <li>• Compensation for temporary loss of income: Cash compensation corresponding to 3 months of income</li> <li>• Assistance for finding new sales location</li> </ul>	<ul style="list-style-type: none"> <li>• considering transitional period</li> </ul>
9	Vulnerable person (vulnerable layer)	Impacts on vulnerable people (vulnerable layers)	Persons assigned a category defined as below: (1) The head of the household is a woman, (2) The head of the household is a disabled person, (3) The head of the household is a senior (over 61), (4) The head of the household is a poor person, and (5) The household includes a disabled person.	Support of the household allowance corresponding to a category of a vulnerable layer: 6 months of the poverty line	

Source : BANCA, 2019

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#### 7.2.2. COMPENSATION FOR LOSSES OF LAND FOR RESIDENTIAL USE

The losses concern private homes built for residential use. An estimated cost schedule has been established for this purpose for PAPs whose infrastructure is in the right of way. But as part of this project, trying to minimize as much as possible the potential impacts of the project. No major housing infrastructure has been identified.

#### 7.2.3. INDEMNIFICATION OF LOSS OF INFRASTRUCTURE FOR COMMERCIAL USE

The commercial infrastructure will be compensated in cash (option chosen by the PAPs) according to an amount evaluated per square meter or the linear meter, validated by the PAPs. On the right of way, two infrastructures were evaluated. These include the fence of CFAO MOTORS and a shop. The price per square meter retained in the zone is 300,000 F CFA.

#### 7.2.4. INDEMNIFICATION OF TEMPORARY LOSS OF INCOME

Due to the release of rights-of-way for the construction of the interchange, PAPs engaged in income-generating activities will suffer a temporary loss of income. In fact, the time required for travel and relocation will result in loss of income. The compensation for each PAP in this category is based on the average monthly income.

This income is granted to PAPs for a period of three months. This compensation makes it possible to restore the livelihoods of the PAPs and to improve their living conditions in relation to their initial situation. At the same time, compensation will be made to employees recruited for business places they do not own.

#### 7.2.5. COMPENSATION FOR THE LOSS OF LOGIS (PAP TENANT)

The release of rights of way for the implementation of the project will cause the relocation of the tenants in the same way as the owners. To this end, a resettlement support measure is also planned for tenant PAPs and for owners under certain conditions (building demolition). In the case of this project the registered tenants are managers and owners of places of business or shops also taken as employers. Some of these tenants will be displaced along with their employees. Most will be disturbed by the works only by the restriction of access. This restriction will cause losses of their income. Compensation for daily income will be made for a period of three (3) months for economic relocation.

The owners of the buildings will receive a compensation on the value of the infrastructure and a support of the compensation of the expenses of hiring. At this level, only one PAP will benefit from this compensation. The remains of the owners are not eligible, tenants likely to be disturbed may for the duration of the project bear the cost of renting. Since the works will be carried out in half-floor disturbances will be limited in time and will not affect them.

#### 7.2.6. SUPPORT FOR VULNERABLE PEOPLE

Vulnerable PAPs are identified according to the following criteria: (i) age; (ii) the number of dependents; (iii) disability; (iv) widowhood and (v) income level (below SMIG). Compensation will be made after discussion



with PAPs of the type of arrangements to be made to support them.

#### 7.2.7. INDEMNIFICATION FOR LOSS OF TREES

On the site planned for the construction of infrastructure fewer trees will be affected. Some trees in the Project RoW that will be destroyed will be replanted at the end of infrastructure construction. This concerns trees in public areas. Those located in the household holdings will be offset against the cost of compensation offered by the services concerned (Ministry of Agriculture and the Department of Water and Forests). These include:

- ❖ fruit species;
- ❖ ornamental plants

#### 7.2.8. TRAVELLING EXPENSES

Travel expenses will be made available to PAPs. This compensation will be made in cash to PAPs who will move to settle in another environment.

#### 7.2.9. DEMOLITION EXPENSES

Demolition costs are not included in the RAP, as they will be included in the Bidding Document (CAD) resulting from the ODA of this study.

#### 7.2.10. CONSULTATIONS AND NEGOTIATIONS HELD / IMPLEMENTED

The compensation costs for the various properties were determined from the provisions of the regulatory texts, particularly with regard to land in the buildable construction zones. Other costs for individual assets are defined accordingly.

Tree losses were assessed together with the PAPs and with the relevant services of the Ministry of Agriculture, Livestock and Fisheries and the Water and Forestry Service. A copy of the estimated and quantitative estimate of the individual properties is attached as Annex (Annex 7).

PAPs have been consulted from the beginning on the fundamental principles underlying all compensation decisions, and it is possible to significantly reduce future litigation. The estimated budget after consultation with the PAPs will be improved according to their expectations and a grid will be retained and transmitted to the chief districts for signature and dissemination. The establishment of a broad consensus on basic assumptions when they are considered fair and equitable, facilitates the acceptance of indemnities estimated from these assumptions.

In addition to the public nature of the meetings, the identified target groups were formally invited through district and neighborhood chiefs who were actively engaged in public engagement. The supervisory authority has initiated texts to cover all meetings and fieldwork to facilitate our work. It appears from the various public consultations that the participants and especially the local populations are aware of the relevance of the project. They are aware of the causes of traffic jams and its consequences.

They also recognize their role in the implementation of projects, but sometimes take the politico-administrative authorities as responsible. However, concerns have been recorded elsewhere elsewhere,

including:

- informing affected people before the demolition work;
- the compensation of the affected people;
- pollution problems and various nuisances;
- recruitment of local staff;
- raising workers' awareness of bad behavior;
- the safety of the users during the works;
- traffic problems during the works;
- the risks of accidents;
- the involvement of the town hall, local elected representatives and local residents (riparian committee) to raise awareness and monitor work;
- etc.

The summary of the public consultations (Table 38-39) presents the categories of people who participated in these meetings, the topics covered, the issues raised by the PAPs, the responses provided by the consultant and the civil engineering technician. Suggestions and recommendations were made by participants.

#### 7.2.11. ACCEPTANCE BY EACH PAP OF CHARACTERISTICS OF THE AFFECTED PROPERTY

This step is very important and allows each PAP to ensure that all their affected assets have been taken into account and well described. It is also an opportunity for each PAP to check if his photo ID, photos of his property and dimensions and other features are consistent. It is for this purpose that the lists of persons affected with their property will be displayed in the offices of the 10th, 11th and 13th district and the Cotonou City Council with the opening of the claim registers from November 18th to December 20th, 2019.

#### 7.2.12. CONCLUSION OF AGREEMENTS OR ATTEMPT OF MEDIATION

Following negotiations with the PAPs, a Memorandum of Understanding will be drawn up with each person concerned.

### 7.3. PHYSICAL REINSTALLATION MEASURES

The resettlement plan, in accordance with Beninese legislation and World Bank Operational Policy 4.12, must ensure that displaced persons:

- be informed about their options and rights regarding resettlement,
  - be consulted on technically and economically feasible options for resettlement, and ensure that they can choose between these options,
  - receive quick and effective compensation at full replacement cost for goods lost as a result of the project.
- If a physical displacement of the population is to occur as a result of the project, the resettlement plan must also include measures to ensure:

1. that displaced persons receive assistance (such as travel allowances) during displacement,

2. That they may benefit or be compensated for the loss of residential houses, or residential or commercial land at least equivalent to the acquired and recognized benefits of the area of influence of the project.

The resettlement plan should also include measures to ensure that displaced persons:

- receive post-displacement support during a transition period based on an estimate of the time needed to restore their standard of living,
- receive development assistance, in addition to compensation, such as land preparation, credit, training or employment opportunities.

But in the case of this PAR, there is no physical relocation.

### 7.3.1. ASSISTANCE AND ACCOMPANYING VULNERABLE PAPERS

Vulnerable persons or groups within affected persons should be given special attention. They must be paid for first among the compensation process and may have specific project support to set up IGAs to better support them.

These vulnerable persons have been taken into account in determining the support measures of this RAP and will be given special attention when implementing the RAP. Assistance measures were discussed and agreed with each vulnerable PAP.

Assistance to vulnerable groups could be provided through the support of specialized NGOs with competent staff and experience in effective care of vulnerable people based on the gender approach.

### 7.3.2. DISSEMINATION OF PRESS RELEASES ON THE PROJECT.

In order to better popularize the project with local populations and to encourage its ownership and ownership of the project, the Ministry of Infrastructure and Transport (MIT), as Contracting Authority) and the Cotonou City Council (as beneficiary Project Manager and Territory Manager) are expected to disseminate press releases. These press releases will also be aimed at sensitizing the local population to free up the rights of way of works and will thus come in support of the implementation of the Resettlement Action Plan (RAP) of the Populations Affected by the Project. Communication actions took place within the framework of the elaboration of this RAP and made it possible to share with the population through the taking and the diffusion of municipal by-laws information of the starting of the project, these stakes and the date stopper.

### 7.3.3. HOLDING A REGISTER OF DOLEANCES

It is planned to hold a register of grievances at the level of Cotonou City Council and the three (3) districts concerned by the project. The registry will identify the concerns of those affected. These concerns will be assessed by the Resettlement Technical Committee.

### 7.3.4. PUBLICATION OF PAR

It will be clearly displayed at the level of the neighborhoods concerned by the works that the PAR relating to the construction project of the Védokô interchange is available at the level of the Cotonou City Council and the 10th, 11th and 13th district that records of the grievances are put in their disposition in these three points to file their complaints and possible claims. The deadline for receiving complaints about RAP will be clearly

posted and posted on the project site.

### 7.3.5. CHOICE AND PROTECTION OF THE RESETTLEMENT SITE

The option for physical relocation has been carefully studied and avoided, which is why people affected by this project will not be displaced from their communities. Most are not affected only by restriction of access and loss of income-generating activities. So support for the restoration of income will be put in place. The only affected person who has to lose part of his land wants compensation in cash so the choice of the host site has been eliminated. This decision results from exchanges with the latter who want financial compensation instead of resettlement.

### 7.3.6. GENDER CONSIDERATION

Generally speaking, according to Beninese tradition, the social and family order recognizes the authority of men over women. The woman in the villages is the linchpin in family maintenance. She is in charge of a personal field whose food production is intended for the food of the family. She also intervenes in the field of her husband whose crops are generally used only in winter season. In the city of Cotonou, which houses the construction of the interchange, she enjoys a relative freedom: that of choosing her spouse, to join associations and groups of women who aim at their development.

The results of the census of PAPs account for 36% of women. Of these, 100% are engaged in the sale of food and various small-scale products and hold the sewing and hairdressing shops.

The concern expressed by young people is about the jobs that will be created at the time of the work. Thus, priority will be given to local labor for unskilled jobs. Also, the project will provide specific assistance to women in the implementation of the PAR: This assistance will result in:

- Support for understanding, filling and signing documents;
- Assistance during the period following payment, so that the allowance is secured and can be used to develop IGAs; this assistance will be provided through sensitization to self-employment assistance during the period following payment to secure compensation, reduce the risk of misuse or protect against theft.

Regular progress point meetings will be held with the PAPs to ensure the proper use of funds through the production of evidence.

### 7.3.7. PAYMENT OF INDEMNITIES

When a compensation agreement is concluded, the Technical Resettlement Committee set up at the level of the Cotonou City Council pays the compensation promptly. Any compensation must be paid before the affected person loses possession of the property covered by the agreement or has to move. For traceability and security measures, each PAP will receive their compensation by

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The PAPs will sign a release acknowledging that they have been compensated according to the established agreement.

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## 8. COMPENSATION OF LOSSES AND BUDGET OF COMPENSATIONS

The compensation values proposed take into account Beninese practices in force while respecting the requirements of the World Bank. The fixed numerical values are fixed by type of damage and the compensation is made according to the scale discussed and accepted with the PAPs.

### 8.1. COMPENSATION OF LOSSES

In this section, the purpose is to highlight the results of the compensation assessments of all asset categories and the compensation costs of each PAP as well as the specific support measures granted to PAPs in the context of this Action Plan. Resettlement.

The total cost of compensation is estimated at 286,830,000 CFA francs (Two hundred and eighty came six million eight hundred and thirty thousand francs). A forecast of 1500 000 CFA will be allocated for travel expenses and is included in the compensation budget This budget includes the following compensation:

- Compensation for loss of private land for commercial use
- Compensation for the losses of private buildings for commercial use
- Compensation for temporary loss of income
- Compensation for tree losses
- Support to vulnerable PAPs

#### 8.1.1. COMPENSATION FOR THE LOSS OF PRIVATE LOTS FOR COMMERCIAL USE

The total area of private commercial land assessed in the right-of-way is 565 m<sup>2</sup>. Its compensation cost is estimated at CFAF 169,500,000 (one hundred and sixty-nine million five hundred thousand francs). The square meter in this zone varies between 300,000 CFA francs. Table 31 below presents the two (2) evaluated lands.

Table 31 : Commercial land assessed in the right of way

Typology	Place	Unit	Unit price (en F CFA)	Total area m <sup>2</sup>	Total costs
Plot / Affected land (private land)	CFAO Motors	m <sup>2</sup>	300 000	419	125 700 000
	Shop of Phones	m <sup>2</sup>	300 000	146	43 800 000
Total				565	169 500 000

Source : BANCA, 2019

The registration fee of the real estate agency is 1 200 000 F CFA (one million two hundred thousand francs) because of 600 000 francs per plot. Lease land for commercial purpose will be used for construction yard, whose cost is not included in the above compensation.

#### 8.1.2. COMPENSATION OF LOSSES OF PRIVATE BUILDINGS FOR COMMERCIAL USE

The private commercial buildings evaluated in the right-of-way of the works consist of a commercial building and the fence of CFAO Motors with a dimension of 419 linear meters. Tables 32 below show the valuation of these properties.

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**Table 32 : Commercial Infrastructure Assessed in Works ROW**

Type of goods	Affected Goods	Unit	Unit price	Quantity	Total area (m <sup>2</sup> )	Total costs
Place of business / commercial infrastructure	Shop	m <sup>2</sup>	150000	1	146	21 900 000
	Fence	m <sup>2</sup>	150000	2	150	7 500 000
<b>Total</b>						<b>29 400 000</b>

Source : BANCA, 2019

### 8.1.3. COMPENSATION FOR TEMPORARY LOSS OF INCOME

The compensation values obtained by type of income covered are :

#### ❖ FOR LOSS OF COMMERCIAL INCOME

Compensation for loss of commercial income is estimated at 83,790,000 CFA francs (Eighty-three million seven hundred and ninety thousand francs). Table 33 shows the monthly compensation by category of PAPs.

**Table 33 : Loss of commercial incomes of PAPs**

Status of PAPs	Number	Cost (F CFA)/month	Duration (90 days)	Compensation costs
the shops that face the project road in the Store Owners project area				
Store employees				
Shops owners	71	300 000	3 months	63 900 000
Shops employees	16	65 000	3 months	3 120 000
Occupants of the public domain				
Owners	16	200 000	3 months	9 600 000
Employees	2	65 000	3 months	390 000
Mobile Shop at the southeast corner of the IC				
Owners	1	1 500 000	3 months	4 500 000
Employees	4	65 000	3 months	780 000
Owner built	1	500 000	3 months	1 500 000
Shops with the land/ attachment affected				
Owner	1	-	-	-
<b>Total</b>	<b>112</b>			<b>83 790 000</b>

Source : BANCA, 2019

### 8.1.4. COMPENSATION FOR LOSS OF PLANTS

For the plants, none belonging to the PAPs were registered against those located in the right of way of the project are taken into account in the PGES from where for a felled tree, two trees planted.

### 8.1.5. SUPPORT FOR VULNERABLE PAPs

The cost of support to vulnerable people is estimated at 1,440,000 F CFA (One million four hundred and forty thousand francs). Table 34 shows the compensation modality of these PAPs.

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**Table 34 : Cost of support for vulnerable PAPs**

Status of PAPs	Number	Cost (F CFA)/month	Duration (90 days)	Compensation costs
Vulnerable PAPs	4	60 000	6 months	1 440 000

Source : BANCA, 2019

### 8.1.6. DISPLACEMENT ASSISTANCE

For the movement of equipment and installations of the PAPs in the company, a fixed cost of 1,500,000 CFA francs (One million five hundred thousand francs) will be allocated for this purpose.

### 8.2. COMPENSATION BUDGET

The total indicative amount of compensation is estimated at 286,830,000 CFA francs (Two hundred and eighty-six million eight hundred and thirty thousand francs). Table 35 summarizes the values by type of compensation.

**Table 35 : Offset budget**

Budget item	Amount (FGFA)	Source of funding
Compensation for loss of private land for commercial use	169 500 000	Beninese State
Registration fees	1 200 000	
Compensation for loss of commercial infrastructure	29 400 000	
Compensation for loss of business income	83 790 000	
Support measures for PAPs vulnerable	1 440 000	
Travel Assistance	1 500 000	
<b>TOTAL</b>	<b>286 830 000</b>	

Note : Lease land for commercial purpose will be used for construction yard, whose cost is not included in the above compensation

Source : BANCA, 2019

### 8.3. CALENDAR OF EXECUTION OF PAYMENTS AND PHYSICAL REINSTALLATION

The establishment of the RAP implementation schedule is done taking into account the different stages of resettlement which include preliminary activities, negotiations and communications with the PAPs, the payment of compensation, the reconstruction of the affected infrastructure and the follow-up. evaluation of RAP implementation. Table 36 shows the implementation schedule.

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## 9. GRIEVANCE REDRESS MECHANISM

The following mechanisms are proposed to resolve the conflicts that may arise as a result of the implementation of this project. The process involves two steps. The process of amicable settlement and the judicial process. As regards the out-of-court settlement process, it includes four (04) levels:

**1st level:** Anyone who feels aggrieved by the implementation of the project or grievances against the company responsible for the realization of the works must file a request with the Local Resettlement Committee (CLR) which sits at the level of the Arrondissement for the settlement of the dispute.

**2nd level:** If the dispute is not settled, the applicant or the complainant makes use of the Technical Resettlement Committee (CTR) which sits at the level of the Cotonou City Council.

**3rd level:** If the dispute is not resolved, the applicant or the complainant makes use of the Prefect.

**4th level:** If the dispute is not settled, the complainant or the complainant resorts to the Minister of Infrastructures and Transport.

In the event of unsatisfaction at these four levels, the claimant can go to court, as he can seize without going through these levels.

Complaint processing times at these levels must not exceed fifteen (15) days from the date of receipt of the complaint. Specifically, the Resettlement Technical Committee installed at the Cotonou City Council will provide affected persons with the telephone numbers of its Administrative Secretary or Rapporteur.

A register will be opened for this purpose to collect the complaints that will be processed. Complaints and grievances will be counted in session by the CTR. Proposed answers will be sent to the complainants through the representatives of affected CTR members or District Chief. Complainants may be required to meet the TRC at periodic meetings to voice their concerns. Affected persons will be informed of the existence of all these provisions.

In addition, a similar system is installed at the level of the Local Resettlement Committee, which is located at the district level. This is the grievance management mechanism. Recourse to justice is possible in the event of failure of the way of amicable settlement. It begins with a complaint lodged either at the district police station or directly at the level of the public prosecutor at the Court of First Instance of Cotonou.

The resolution of potential complaints will be diligent during the implementation of the RAP and will rely on various adjudication procedures and a formal grievance system. A Resettlement Technical Committee (TRC) will be established to implement the activities of this RAP. For the settlement of grievances, this committee will rely on a local mediation committee (district level) and a conciliation commission (borough level).

The composition of the committees, as well as their main responsibilities, are described in the following chapter, relating to organizational responsibilities. The options are as follows:

- amicable settlement with the Local Mediation Committee or the conciliation board;

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- arbitration in case of non-satisfaction with the Resettlement Technical Committee or the Regional Representative of the Mediator of the Republic;
- Negotiation: In case of unsatisfaction the Minister of the Living Environment and Sustainable Development intervenes through the Agency of the Framework of Life for the Development of the Territory;
- recourse to justice: In the event of non-satisfaction at these three (03) levels, the applicant may appeal to the courts. But in the context of this RAP, all steps must be taken to ensure that recourse to justice is not an option.

Figure 6 presents the steps for handling complaints or grievance management. This section of the RAP sets out the mechanism for monitoring and resolving these complaints and claims. This framework is defined so that affected persons can express their grievances or claims without incurring costs and are assured that their complaint will be received and dealt with in a timely manner. In many cases, special provisions may be needed to ensure that the interests of women and other vulnerable groups are taken into account in this framework.

The wish is that all complaints and claims can be managed by negotiation and amicable conciliation. Priority will be given to the use of local bodies to enable PAPs to easily access this local remedy. This mechanism is also intended to promote the diligent handling of various complaints and disputes.

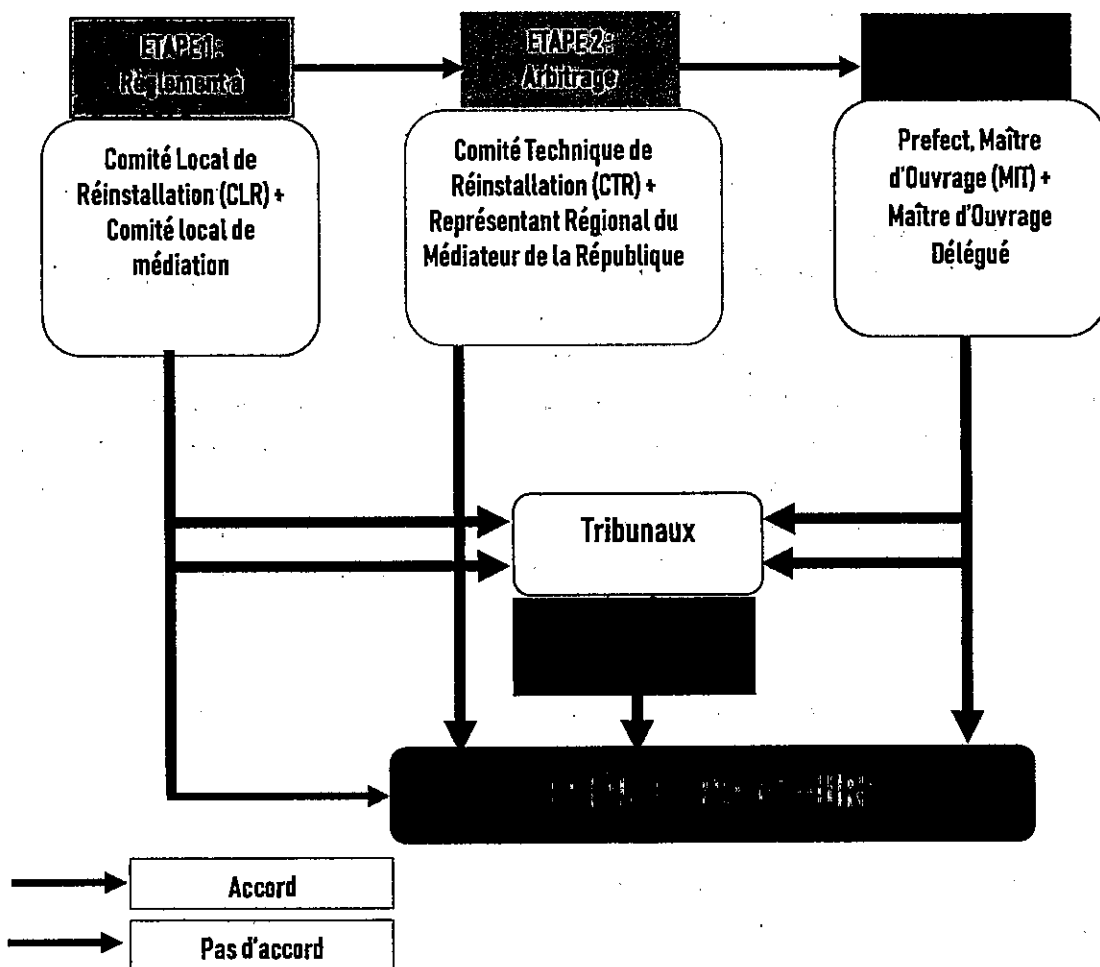


Figure 6: Major Steps in Managing a Complaint

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The full process of handling complaints and claims is the responsibility of existing or established bodies. The process is as follows:

### **9.1. REGISTRATION OF COMPLAINTS**

The PAPs will be informed by the usual information channels of the existence of a conflict management mechanism at district, district, municipal and PMU level. The conflict management mechanism will include a process and procedures for complaints to be formulated anonymously. In addition, the mechanism will clearly define the process of registering complaints either by registering in the registry, in writing, by SMS, by phone call, etc., giving PAPs several alternatives to submit their complaints. PAP claims are processed and registered at the level of the local resettlement committee composed of the Local Mediation Committee or the conciliation commission.

In the case of the construction project of the Vedoko interchange, a register will be kept by the secretariat of the Conciliation Commission or its representative at the level of the local mediation committee.

### **9.2. TREATMENT OF COMPLAINTS**

The Local Resettlement Committee (CLR), which has the Local Mediation Committee and the Conciliation Commission, is the first complaint management body in this project. Thus, a complainant who believes that he or she has been omitted or harmed by the project, seizes any of these instances who formally record the complaint or claim and take all the necessary steps to settle the claim. amicable within five (05) working days.

In the absence of being able to give satisfaction to the PAP, the Local Mediation Committee will forward the complaint to the Conciliation Commission to which the PAP belongs, for amicable settlement. If the complaint is well-founded, arrangements are made to compensate the complainant. Thus, the project proceeds with the calculation of the indemnities and communicates the amount to the president of the CTR Resettlement Technical Committee in the presence of the complainant and representatives of the CLR. It specifies the date of payment. On the other hand, if the complaint is ruled out of order, and the arguments are presented to the complainant by the committee and the complaint is extinguished at this level. In case the complainant does not share the arguments of the CLR, the complaint is referred to the CTR; where appropriate, it may appeal to the competent courts. In all cases, a report is produced, a copy of which is sent to the Mayor of Cotonou, one to the CTR, one to the MOD, one to the PMU and another copy given to the complainant.

### **9.3. ROLE OF THE TECHNICAL REINSTALLATION COMMITTEE**

The CLR receives and transmits the complaints to the CTR, the CTR has five (05) working days from the date of the registration or receipt of the Local Resettlement Committee minutes to initiate a settlement with the complainant. Thus, the CTR examines the complaints and the PV and then hears the complainant or his representative before deciding on the follow-up. After verification of the information giving rise to the complaint, the committee decides and draws up a report, a copy of which is given to the complainant, with an extension to the CLR, the MOD and the PMU. In case of agreement, the complainant is either compensated, or the complaint is extinguished for non-admissible complaint; where appropriate, the

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complainant may refer to the competent courts.

The main mission of the CTR will be to negotiate with the affected populations to determine the amounts of compensation to be granted in respect of the property and activities; the results of its work must lead to concrete proposals. This committee is also responsible for receiving objections and settling them at first instance. He will also ensure the correct granting of the compensation that has been retained.

Before resorting to the courts, the representative of the mediator of the Republic may always be seized for the purpose of amicably settling the dispute, before the commencement of legal proceedings before the courts.

#### **9.4. AT THE JURISDICTION LEVEL**

At the end of the treatment at the local level and at the Commune level, the unsatisfied complainant may resort to an arbitration of the Court of First Instance of Cotonou.

The project will invest in putting in place procedures allowing PAPs to express themselves in the best conditions (without loss of time and without financial costs). It will need to develop a strategy to enable women and other disadvantaged PAPs such as older PAPs to access and participate in the process of resolving their complaints and grievances.

#### **9.5. ADMINISTRATIVE PROVISIONS AND RECOURSE TO JUSTICE**

Recourse to justice is possible in the event of failure of the way of amicable settlement. But, it is often a way that is not recommended to avoid the loss of time related to the complexity of the procedures.

In sum, decisions rendered at first instance are not subject to opposition. This means that the order can not be appealed. The expropriation order and any decision on expropriation are enforceable notwithstanding any remedy. They can only be attacked by cassation. The appeal in cassation is not suspensive. The appeal in cassation takes place within thirty (30) days from the notification of the order including the delay of distance, by declaration with the registry of the court which ruled.

It is notified by the latter within the same thirty (30) days to the opposing party, either real home or elected home, or the Mayor if it is communal work. In the fortnight following the notification of the appeal, the documents are sent to the Supreme Court, which rules within one month of receiving them.

However, disputes should not block the work. In case of persistent disagreement, the amounts of compensation are recorded while waiting for the court to give its verdict. This allows the work to continue normally

Specifically, the Resettlement Technical Committee will make available to affected persons the telephone numbers of its Administrative Secretary or Rapporteur. A register will be opened for this purpose to collect



the complaints that will be processed. Complaints and grievances will be counted in session by the CTR. The proposed answers will be sent to the complainants through the representatives of the affected persons (members of the CTR).

Complainants may be required to meet the TRC at periodic meetings to voice their concerns. Affected persons will be informed of all these provisions.

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## 10. MONITORING AND EVALUATION OF THE IMPLEMENTATION OF PAR

The main purpose of the Monitoring and Evaluation process is to ensure that the main objectives of the Resettlement Action Plan are achieved. In this perspective, the process will have to prove that PAPs have indeed received fair and equitable compensation, that they have been compensated before releasing or that their property is demolished or lost, and that their standard of living is at least equivalent if not better than the one before the project.

The Monitoring and Evaluation process is also aimed at the timely detection of any problematic situation, whether it has escaped the project at the time of planning or occurred as a result of changes in local conditions, so that this situation is rectified accordingly, for further implementation of the RAP.

It is important that RAP monitoring and evaluation activities are properly funded, undertaken by qualified specialists and integrated into the overall project management process. For this purpose, a subcontractor of control, audit and external evaluation must be appointed by the project promoter. This is a consultant who will be responsible for, among other things: monitoring the implementation of the CTR / CLR, verifying compensation payments, and monitoring the management of complaints. The Monitoring and Evaluation of this RAP is organized around three (3) axes including:

- a first on the monitoring carried out by the MOD and the General Directorate of Infrastructures;
- a second dealing with the internal monitoring of the implementation of the RAP. It will be led by the PMU;
- a third on evaluation which is an external monitoring of the implementation of the RAP and which will be carried out by an external consultant. The resettlement plan evaluation can be conducted once the compensation and resettlement activities are complete. The purpose of the evaluation is to establish that all PAPs are properly resettled and that their livelihoods are restored.

**Monitoring whose objectives are**, inter alia, to ensure that implementation takes place in accordance with the validated document.

Monitoring consists of ensuring that the proponent complies with its commitments and obligations to take into account the social and application of mitigation measures for the negative impacts required throughout the duration of the project.

**Internal Monitoring is designed to:**

- ensure that all information collected is managed through the implementation of an information management system in accordance with the models and requirements of monitoring and evaluation;
- ensure at all times that the activity and budget planning is carried out in line with the forecasts;
- constantly check the qualitative and quantitative achievement of expected and achieved results within the prescribed deadlines;
- identify any unforeseen factors and developments that may influence RAP planning, identification

- of measures, negatively affect efficiency, or constitute opportunities to be exploited;
- o Identify and recommend appropriate eradication and mitigation measures to the responsible authorities concerned in regular or exceptional programming procedures as soon as possible;
- o Coordinate RAP monitoring and evaluation with the World Bank's evaluation activities.

Internal monitoring of the implementation of the RAP will be done by the PMU or MOD in collaboration with the RAP implementation bodies created and put in place by the Mayor and the Prefect at the request of the MOD and the PMU. External monitoring of RAP implementation will be carried out by an independent consultant hired by the Directorate General of Infrastructure.

JICA will carry out checks to ensure that compensation has been paid in accordance with the procedure and scales set out in the RAP and that the whole process is conducted in accordance with its requirements contained in the financing agreement.

**The expected results of this Internal Monitoring are:**

- Indicators and milestones (including specific targets and deadlines) are identified to track the progress of the RAP's main RAP implementation activities,
- an information management system integrating all data collected on PAPs, and compatible with those developed by the project management unit and JICA, is in place and is functional,
- Indicators and performance objectives are identified to assess the results of the main activities of the RAP Implementation Consultant.

**Finally, the Evaluation or External Monitoring aims to:**

- establish and interpret the basic socioeconomic profile of the affected populations. Basic survey data can be used to establish this baseline.
- monitor the indicators of the socio-economic profile of PAPs over time and assess and understand their evolution,
- establish, at the end of the project, a new socio-economic profile of PAPs that will be compared to the baseline situation to judge and assess the social and economic impacts of the RAP.

**The follow-up measures concern both the actual implementation of the RAP and its results.**

Monitoring of implementation verifies that actions in the work programs of the Project Management Unit, on the one hand, and the RAP Implementation Consultant, on the other hand, are carried out in deadlines and cost of work programs are in line with budgets. As for the monitoring of results, it ensures the achievement of both intermediate objectives (each PAP has a complete file, each PAP has the administrative documents required for the clearing procedure) and final (all PAPs have been cleared in accordance with the RAP, all PAPs are relocated, in line with RAP forecasts).

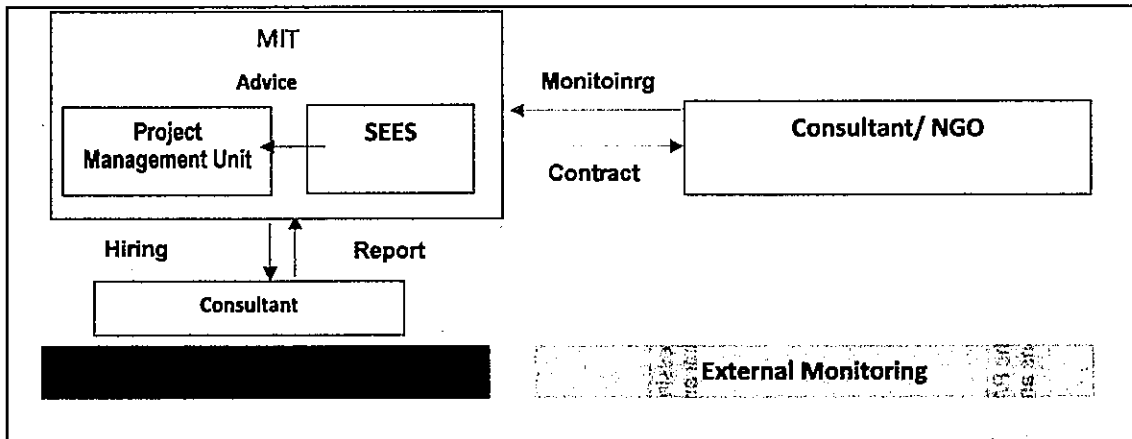
PAPs will be an important component of the PAR Monitoring and Evaluation process. They will participate in the Follow-up by providing data on their activities. In addition, the members of the Steering Committees will participate in the programming meetings and the monitoring and evaluation of RAP activities. PAPs will also have the opportunity to question their representatives in case of grievances against the quality of work or against contractors and other operators involved in the implementation of RAP.

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The RAP Implementation Consultant will provide internal monitoring reports every fifteen (15) days prior to the commencement of his / her benefits until the relocation of all PAPs. From this date, the internal monitoring reports will be provided on a monthly basis. In the case of resettlement NGOs, the internal monitoring reports will be produced every fifteen (15) days during their term of office. Figure 7 represents Institutional arrangement for monitoring.



**Figure 7: Institutional arrangement for monitoring**

Evaluation reports (external monitoring) will be provided after each household survey or other activity carried out to collect data on the selected indicators. Table 37 below outlines the main indicators for monitoring the implementation of the RAP that must be included in the Follow-up program of the Consultant in charge of the RAP implementation.

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Table 37 : RAP internal monitoring measures

Evaluation of the establishment of the means for the implementation of the RAP						
Establishment of the necessary means for the implementation of PAR	Check that the RAP implementation structures are effective and have the necessary qualified human resources to carry out the activities.	Before the start of negotiations with PAPs	Signature of the Decree of the Prefect of the Littoral on creation, attributions, organization and functioning of the Technical Committee Resettlement. - Number of capacity building sessions of CTR members.	UGP		
Establishment of the complaints mechanism	Check the effective implementation of the different levels of handling of complaints / disputes.	Before the start of negotiations with PAPs	Mechanisms for handling complaints are popularized.	MOD, Consultant, ONG		
<b>Measure of the execution of the different activities of PAR</b>						
Establishment and signing of individual agreements with PAPs (Commitment documents)	Verify that individual agreement documents have been produced and signed by both parties	Before moving	- The model of act of commitment is produced. - Number of PAPs that have signed an individual agreement (and percentage compared to total number of PAPs benefiting from aid to economic rehabilitation). - Number of complaints expressed and recorded by type. - Number of complaints handled successfully by the Warden. - Number of complaints successfully handled by the Local Settlement Committee	CTR, Consultant		
Complaints handling	Verify that the mechanism for expressing, registering and handling complaints is functional and efficient.	Before and during the trip	- Number of complaints successfully dealt with by the Technical Resettlement Committee. - Number of complaints registered at the level of the Courts.	UGP		
Payment of compensation to PAPs	Check that the compensations of the PAPs have been paid and that the payment conditions are respected	Before and during the compensation	- Number of PAPs having received compensation (before displacement). - Number of PAPs having received their compensation (after displacement).	ABE, Colonus Town hall		

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Measuring the impact of resettlement activities and the level of achievement of PAR objectives				
Accompanying vulnerable people	Check that the measures provided for vulnerable people have been implemented.	Before, during and after the trip	Number of PAPs assisted during the compensation procedure. - Number of PAPs assisted during displacement.	ABE; Cotonou Town hall
Rehabilitation economic: restoration (or improvement) of the standard of living of resettled households	Check that the resettlement has led to an improvement in the standard of living of PAPs (verification by socio-professional category).	After the displacement	- Number of PAPs whose living conditions have improved and level of improvement. - Number of PAPs whose monthly income has increased and whose standard of living has improved after resettlement, compared to their pre-relocation situation.	UGP
Restoration (improvement) of standard of living and income of vulnerable people	Check that the measures implemented for the benefit of vulnerable people have led to the improvement of their situation. Verify that vulnerable people are satisfied with their situation after resettlement.	After the displacement	- Number of vulnerable people whose monthly income and standard of living improved after resettlement. - Number of vulnerable people satisfied with their situation after resettlement.	UGP

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It is important that RAP monitoring and evaluation activities are properly implemented by qualified specialists and integrated into the overall project management process. For this purpose, a subcontractor organization for control, audit and external evaluation (Consultant) will be appointed and will be responsible for monitoring the implementation of the CTR / CLR, the verification of compensation payments and the follow-up of complaints management. The Monitoring and Evaluation of this RAP will focus on three areas, including:

- a first dealing with the surveillance carried out by the MOD and the General Directorate of Infrastructures;
- a second dealing with the internal monitoring of the execution of the RAP. It will be led by the PMU and
- a third one on the evaluation which is an external follow-up of the execution of the RAP and which will be carried out by an external consultant. The resettlement plan evaluation can be conducted once the compensation and resettlement activities are complete. The objective of the evaluation is to establish that all PAPs are properly resettled and their livelihoods restored.

#### **10.1.DISSEMINATION OF PERIODIC REPORTS AND COMPLETION AUDITS**

After approval, in the Council of Ministers by the Government of Benin and JICA, the summary of the present RAP will be published in the official journal of Benin which constitutes a national archive and certification by and for the stakeholders. It will also appear on the JICA website. The Project Management Unit will publish the document on its website. Then the consultant for the implementation of the RAP under the supervision of the PMU will proceed with the preparation of the RAP dissemination activities. The dissemination activities of the RAP that will remain to be carried out during its implementation are as follows:

- verification of the vulnerability of each PAP based on predetermined criteria and through a complementary survey to be carried out with all PAPs, in order to better identify the need for assistance. Technical Addendum to the Final RAP to be produced by the RAP Implementation Consultant at the end of this activity for posting on the PMU website;
- definition of the detailed program for implementation and monitoring of livelihoods compensation and restoration, economic rehabilitation and capacity building measures for PAPs. Technical addendum to the final RAP to be produced by the NGOs in charge of the implementation of the compensation measures following the deepening of these measures in relation with the PAPs for posting on the PMU website;
- Definition of the detailed follow-up program, with personnel and logistics required, to be implemented by the Project Management Unit to evaluate the results of the restoration measures. Final technical addendum to be produced by the RAP Implementation Consultant at the end of this activity for posting on the PMU website.

## 11. SUMMARY OF PUBLIC CONSULTATIONS

To involve the general population and the target groups directly concerned by the project in particular, several public consultations were conducted.

In addition to the public nature of the meetings, the identified target groups were formally invited through district and neighborhood chiefs who were actively engaged in public engagement. The supervisory authority has initiated texts to cover all meetings and fieldwork to facilitate our work.

It appears from the various public consultations that the participants and especially the local populations are aware of the relevance of the project. They are aware of the causes of traffic jams and its consequences.

They also recognize their role in the implementation of projects, but sometimes take the politico-administrative authorities as responsible. However, concerns have been recorded elsewhere elsewhere, including:

- informing affected people before the demolition work;
- the compensation of the affected people;
- pollution problems and various nuisances;
- recruitment of local staff;
- raising workers' awareness of bad behavior;
- the safety of the users during the works;
- traffic problems during the works;
- the risks of accidents;
- the involvement of the town hall, local elected representatives and local residents (riparian committee) to raise awareness and monitor work;
- ect.

The summary of the public consultations (following table) presents the categories of people who participated in these meetings, the topics covered, the questions raised by the PAPs, the answers provided by the consultant and the civil engineering technician. Suggestions and recommendations were made by participants.

Table 38 shows the categories of people, the topics of discussion, the issues raised, the approaches to solutions and suggestions during the public consultations.

### 11.1. OVERVIEW OF THE IMPLEMENTATION OF PUBLIC CONSULTATIONS

The broad outlines of the public consultations held during this preparatory study are as follows:

Table 38 : outlines of the public consultations

Objectives of meetings	Agenda	Main participants	Disclosures of information
<p>Share with local residents and municipal authorities information on the project and to collect their opinions, perceptions and suggestions (Meeting room of the 11th district of Cotonou on July 08, 2019 from 09 H 52 to 11H 30).</p>	<ul style="list-style-type: none"> <li>• Current situation of the intersection of Vedoko;</li> <li>• Volume of recorded traffic;</li> <li>• Traffic volume analysis in the vicinity of the Vedoko intersection;</li> <li>• Comparison of different scenarios;</li> <li>• Analysis of variants of the Upper Passage (2 ways or 4 ways);</li> <li>• Panoramic view of the overpass;</li> <li>• Presentation of the project area;</li> <li>• Project impacts (environmental and social);</li> <li>• Schedule of completion of construction works.</li> </ul>	<p>Under responsibility CA of the 11th  <b>Mr RAYMOND Georges</b>  <b>Main participants: 75 (56 men, 18 women)</b>  <b>Citizens: 35</b>  <b>Locals elected: 14</b>  <b>Banca: 8</b></p>	<p>Notification method: An invitation letter was issued to the communal authorities by the Banca Cabinet and the populations were notified by the district chiefs, the district chiefs and the councilors.                      Language :                      The document was produced in French and the presentation was made in French and in French.</p>
<p>Share information on the project with local communities and communal authorities and gather their opinions, perceptions and suggestions (Public Primary School Ahogbohoue in the 13th district of Cotonou on July 08, 2019 from 15:30 to 17:05).</p>	<p>Present situation of the intersection of Vedoko;</p> <ul style="list-style-type: none"> <li>• Volume of recorded traffic;</li> <li>• Traffic volume analysis in the vicinity of the Vedoko intersection;</li> <li>• Comparison of different scenarios;</li> <li>• Analysis of variants of the Upper Passage (2 ways or 4 ways);</li> <li>• Panoramic view of the overpass;</li> <li>• Presentation of the project area;</li> <li>• Project impacts (environmental and social);</li> <li>• Schedule of completion of construction works.</li> </ul>	<p>Under the responsibility CA of the 13th Mr. Da SILVA Isaac  <b>Main participants: 76 (53 men, 23 women)</b>  <b>Citizens: 57</b>  <b>Locals elected: 12</b>  <b>Banca: 7</b></p>	<p>Method of notification: A letter of invitation was issued to the communal authorities by the Banca cabinet and the populations were notified by the district chiefs, the district chiefs and the councilors.                      Language :                      The document was produced in French and the presentation was made in French and in French.</p>

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<p>Share with local residents and municipal authorities information on the project and to collect their opinions, perceptions and suggestions (Meeting room of the 10th district of Cotonou on July 09, 2019 from 11H 04 to 12H 02).</p>	<ul style="list-style-type: none"> <li>• Current situation of the intersection of Vedoko;</li> <li>• Volume of recorded traffic;</li> <li>• Traffic volume analysis in the vicinity of the Vedoko intersection;</li> <li>• Comparison of different scenarios;</li> <li>• Analysis of variants of the Upper Passage (2 ways or 4 ways).</li> <li>• Panoramic view of the overpass;</li> <li>• Presentation of the project area;</li> <li>• Project impacts (environmental and social);</li> <li>• Schedule of completion of construction works.</li> </ul>	<p><b>Sous la responsabilité CA du 10<sup>ème</sup> M. TCHAHOU A. Florentin,</b> Principaux participants : 66 (45 hommes, 27 femmes) Citoyens : 33 Elus locaux : 26 Banca : 8</p>	<p>Méthode de notification : Une lettre d'invitation a été délivrée aux autorités communales par le cabinet Banca et les populations ont été notifiées par les chefs d'arrondissement, les chefs quartiers et les conseillers. Langue : Le document a été réalisé en français et la présentation a faite en français et en langue nationale fon.</p>
<p>Share with the market users the information related to the project and collect their opinions, perceptions and suggestions (Vedoko Cotonou market on July 09, 2019 from 16:05 to 4:45 pm).</p>	<ul style="list-style-type: none"> <li>• Options for planned developments;</li> <li>• Project activities;</li> <li>• Project impacts (environmental and social) and proposed mitigation measures;</li> <li>• Presentation of the structural and architectural plan of the infrastructure to be built;</li> <li>• Project duration.</li> </ul>	<p><b>Under the responsibility of the Board of the 10th M. TCHAHOU A. Florentin</b> Main participants: 110 Citizens: 91 Locals elected: 03 Banca: 8</p>	<p>Method of notification: A letter of invitation was issued to the communal authorities by the Banca cabinet and the populations were notified by the district chiefs, the district chiefs and the councilors. Language : The document was produced in French and the presentation was made in the national language.</p>

Source : Banca study mission

## 11.2. OVERVIEW OF POINTS OF VIEW

Les principaux points de vue, réponses et résultats reflétés dans le présent projet sont les suivants. Les points abordés n'ont reçu aucune opposition de mise en œuvre du projet de la part de la population.

Table 39 : Overview of the points of view gathered during the public consultations

Stakeholder meeting	People asking questions	Overview of points of view and questions	Replies	Reactions from people asking questions	Reflections in this project
Meeting of 11th district of Cotonou / July 08, 2019	M. AYOSSO Séraphin M. SABADAGBO Nazaire M. AHOU Gérard M. TOHOUN Cyriaque M. OGBONI David M. HOUNGNIBO Euphrem M. KASSA Rosaire M. KPOGBA Christophe M. AMADOU Fatoumatou M. FAGNON Ignace M. SEGBEDJI Rémi M. ADJANONHOUN	<ul style="list-style-type: none"> <li>The importance of deviation management, the non-taking into account would worsen the disruption of the movement of users (prior development of deviations before the start of works) ;</li> <li>The conditions of compensation of the shop of sale of cellphone which is found in the right of the project;</li> </ul>	<ul style="list-style-type: none"> <li>Channels have already been identified for deviation management with the support of District Chiefs (CA).</li> <li>However, the team will be able to get closer to the population to identify any new diversion routes. Reflections are still being made for deviations.</li> <li>The panoramic view of the infrastructure was re-projected to show that all intersection flows were well accounted for.</li> <li>Reflections on the issue of sanitation (management of</li> </ul>	Satisfaction of participants with suggestions for a successful project	<ul style="list-style-type: none"> <li>Ensure the involvement populations in the monitoring of the project. In other words, set up monitoring committees in the neighborhoods concerned to ensure good management of the rubble and for issues related to the safety of local residents.</li> <li>-To make sure that this project does not become a white elephant with the change of regime.</li> </ul>



	<ul style="list-style-type: none"> <li>• The taking into account of all the flows on all the axes of circulation in particular the flow on the axis Houéyihou-védoko;</li> <li>• Integration of stormwater management into the project to prevent flooding in the surrounding streets of the project area;</li> <li>• Clear precision on all the infrastructure affected by the project (housing, shops, etc.) and the compensation plan;</li> <li>• The question about bike lanes (are bike lanes planned?);</li> <li>• Concern about the safety of schoolchildren during the work;</li> </ul>	<p>rainwater in the area) are integrated into the project to solve flood problems.</p> <ul style="list-style-type: none"> <li>• The cell phone shop and the closing of the Toyota company are the only infrastructure that will be affected by the project. None of the houses along the road will be touched.</li> <li>• The overall cost of the project will be known after the integration of all aspects related to the project.</li> <li>• There is a synergy of actions between the project and the MCA-Benin II project to avoid double disruption of populations. In fact, the project to renovate the SBEE network lines is an opportunity for the relocation of networks as part of the construction of the overpass; in doing so disturbances will be somewhat limited.</li> </ul>	<p>-Accord a great importance to stormwater management in the project to relieve the population of the project area from flooding problems.</p>
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		<ul style="list-style-type: none"> <li>• The question of access to dwellings along the road during construction;</li> <li>• The question on access to homes and shops;</li> <li>• The question about the overall cost of the project;</li> <li>• The guarantee of the final execution of the project even if a change of regime occurs;</li> <li>• The link between the MCA-Benin II project on the relocation of SBEE networks and this project.</li> </ul>	<ul style="list-style-type: none"> <li>• Measures will be taken to accompany the people affected by the project.</li> <li>• Men will be positioned on the roads to regulate traffic and to ensure the safety of schoolchildren and access to their schools and homes.</li> </ul>		
<p>Meeting of 13th district of Colotonou / July 08, 2019</p>	<p>M. DJEME Hilaire M. AGLI Jeanne M. DOSSA Alain M. AVIMADJE Fortuné M. AHO G. D. Adrien</p>	<ul style="list-style-type: none"> <li>• The multiplication of diversions and inform users in order to facilitate the circulation. Taking into account a deviation</li> </ul>	<ul style="list-style-type: none"> <li>• The media-production path is already taken into account in deviations. However, the team is ready to go on the ground with the population to analyze</li> </ul>	<p>Satisfaction of the participants</p>	

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	<p>M. AZON Epiphane M. DAVAH Honoré M. NOBIME Norbert M. CAKPO Sylvain Charles M. OUNSAVI Léopold M. BOYA Fatai M. AKOGBETO Brice M. ODUNLAMI Brice M. LAMODI Victor</p>	<p>who goes through the path of</p> <p>Media production would also be interesting. The involvement of the population in the identification of deviations;</p> <ul style="list-style-type: none"> <li>• The importance of deviation planning before work starts;</li> <li>• Reinforcement of existing roads in the area by excavated material from work on the site and avoid that these excavations are conveyed elsewhere;</li> <li>• Integrating stormwater management into the project to improve the sanitation of the area and relieve the population suffering from the flood.</li> </ul>	<p>together the paths to be developed to serve as a deviation;</p> <ul style="list-style-type: none"> <li>• Project monitoring committees will be set up to take care of the management of the excavations and for the smooth running of the site;</li> <li>• Sanitation will be taken into account in the project, however, there is the Cotonou Plenum Sewerage Project (PAPC) which will resolve flooding issues (construction of ponds to evacuate rainwater either to the sea or to Lake Nokoué);</li> <li>• The general rule is the prioritization of the local labor force provided that young people are willing to work properly;</li> <li>• Surveys will be launched during the week to gather information on people affected by the project in order to analyze the compensation measures to be proposed;</li> </ul>		
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		<p>The layout of gutters for the good management of rainwater has been suggested for this purpose.</p> <ul style="list-style-type: none"> <li>• Consideration of the local workforce during the works;</li> <li>• The compensatory measures planned for shop owners and artisans who are located along track and whose activities will be hampered during the works;</li> <li>• Access to homes and shops along the way.</li> </ul>	<ul style="list-style-type: none"> <li>• Arrangements will be made to allow shops to be somewhat accessible.</li> </ul>		
<p>Meeting of 10th district of Cotonou / 09 July 2019</p>	<p>Mme d'Almeida Hortense M. KIKI Pierre ; M. HOUNTONDJI Eric ; M. KPEGAN Modeste;</p>	<ul style="list-style-type: none"> <li>• The duration of the project (start and end);</li> <li>• The importance of deviation management, which will not be taken into account</li> </ul>	<ul style="list-style-type: none"> <li>• The total duration of the project is 4 years including the phase of all necessary studies; 1 year has already passed with the studies but by the end of the year, the work will start last year and a half to 2 years;</li> </ul>	<p>Satisfaction of the participants</p>	

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	<p>M. KPATENON Thomas.</p>	<p>aggravate the circulation users;</p> <ul style="list-style-type: none"> <li>• The streets to be developed in the project area, especially the layout of the road that passes near the Commissariat Hospital at SETOVI level;</li> <li>• Consideration of stormwater management to avoid flooding in the project area, especially at the CEB where rainwater is discharged on the road.</li> </ul> <p>The installation of the gutters at this point to ensure drainage of water;</p> <ul style="list-style-type: none"> <li>• Walk around the neighborhood to detect where runoff is stagnating;</li> <li>• The prioritization of the local workforce.</li> </ul>	<ul style="list-style-type: none"> <li>• Pathways have already been identified for deviation management in the project area, but reflections continue to improve the options selected;</li> <li>• The team in charge of the studies will approach the CEB to solve the problem of management of the rainwater of their site in order not to degrade the way of deviation which will be arranged at this level;</li> <li>• The general rule is prioritizing the local workforce as long as the youth are willing to work well</li> <li>• The sanitation issue will be extensively reviewed as part of the project to find a solution to flooding problems in the project area;</li> <li>• Measures will be taken to accompany the people affected by the project.</li> </ul>		
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<p>Meeting of Vedoko Market of Cotonou / 09 July 2019</p>	<p>-Mme d'ALMEIDA Hortense -Mme ATCHADE Marie -M. QUENUM Jean de la croix</p>	<ul style="list-style-type: none"> <li>• The concern related to the safety of schoolchildren during the work (the safe management of children when crossing the tracks to get to school):</li> <li>• Is the Vedoko market physically or physically affected by the project? Because there would be a project to rebuild the market that requires the destruction of the entire market. Clearly state what it is.</li> </ul>	<ul style="list-style-type: none"> <li>• Since access to the market will be difficult, the access roads to the market will be changed, deviation routes have already been identified, including the street passing by the store Funat and falling on the market. Reflections continue to settle some market access during the works.</li> <li>• The work will last 1 year and a half to 2 years and during this time arrangements will be made to ensure the safety of children to cross the tracks. Men will be positioned on the tracks to regulate traffic and to ensure the safety of schoolchildren and access to their schools and homes.</li> <li>• The market will not be dislodged or broken as part of the project</li> </ul>		
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			<p>construction of overpass</p> <p>However, there will be disturbances related to noise and vibrations, the movement of machinery and the difficulty of access to the market. Also economic activities in the market are likely to slow down because of the works. However, the persons whose property will be destroyed by</p> <p>Project activities for example the owner of the mobile phone sales shop and the Toyota company will be compensated.</p>		
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## 12. COST OF COMPLETE IMPLEMENTATION OF RAP

The budget for the implementation of the RAP is estimated at 407,363,000 CFA francs (Four hundred and seven million three hundred and sixty thousand francs). This budget includes costs related to the dissemination of information, resettlement measures including compensation offered to the different categories of PAPs, support measures for vulnerable PAPs, costs related to capacity building of the actors of the implementation implementation and monitoring and evaluation of the RAP, costs related to the operation of the local resettlement committee, costs related to the NGO's intervention to support the implementation of the RAP and the costs of monitoring and evaluation. The budget does not include the costs related to the payments of any damage caused to the third party during the works. It is up to the company that caused this damage to repair them.

Concerning the dissemination of the RAP, it is a question of making three informative sessions for the PAPs to inform them about the content of the RAP and about the measures of the support program put in place and the capacity building of the vulnerable people. with a view to sustainable management of their activities.

The amount of these sessions is estimated at 1,500,000, ie an amount of 500,000 F CFA per session.

A provision of 37 033 000 F CFA is made for the management of litigation.

The compensation costs for direct losses on the assets and activities of the PAPs incorporating the allowances described in the compensation matrix are presented below. These compensations are evaluated. Table 40 presents the estimated overall cost of implementing RAP.

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Table 40 : Estimated total cost of RAP

Budget item		Amount (FCFA)
Compensation measures	Compensation for loss of private land for commercial use	169 500 000
	Registration fees	1 200 000
	Compensation for loss of commercial infrastructure	29 400 000
	Compensation for commercial income	83 790 000
	Support measures for vulnerable PAPs	1 440 000
	Travel Assistance	1 500 000
	<b>TOTAL</b>	<b>286 830 000</b>
Consultant / Social NGO	Assistance for the implementation of PAR	60 000 000
	Dissemination of RAP	1 500 000
	Capacity building of actors	6 000 000
	Monitoring and evaluation	18 000 000
External Tracking		4 500 000
<b>Total 1+2</b>		
<b>Total</b>		

Source : BANCA, 2019

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## CONCLUSION

The land concern in the city of Cotonou is very complex. It is more complex in the neighborhoods of the 10th district where construction is planned to significantly reduce the congestion problems of the crossroads Vedoko-stage friendship. Strategies have been developed for the work to be conducted in such a way as to affect as little PAP as possible. The OP 4.12 requires that where displacement / resettlement becomes unavoidable in the implementation of a project, consider all alternatives with a view to minimizing the scale and impacts of resettlement.

It will then reflect on the actual area to remember and release along the right of way. It is therefore necessary to retain a consultation framework led by the Cotonou City Council in conjunction with MIT to:

- set up a surveillance status for the defined right-of-way to prohibit any new installation
- follow the zone for a period of at least 01 year to ensure its stabilization (precise monitoring indicators are to be defined);
- Organize interpersonal consultation sessions with landowners or suspected property owners in these areas to increase their attention to the importance of the project.

As regards the work related to this RAP, a number of preliminary activities are necessary to facilitate the start of the work. These will include:

- put in place the consensual process management mechanisms described in this RAP: Riverains Committees to interface the project with the affected populations; Technical Negotiation Committee (TNC);
- increase information and communication activities with neighboring populations and affected people so that they are involved in or make decisions on their decisions;
- respect the principles of demolition, reconstruction or resettlement of affected persons;
- ensure that the grievances of women and vulnerable persons are taken into account

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## NOTES

- PV signs of consultations and attendance list;
  - List of PAPs and list of vulnerable people,
  - Individual clearing sheets and assigned assets (with PAP photo, full identity, contact, losses incurred, compensation and support measures, corresponding amounts, etc.)
  - PAP database: summary of compensation / support, in the form of an Excel table with the complete list of PAPs, the losses incurred by each, the geographic coordinates of the property keys (buildings, trees, ...), compensation and the support, the evaluation of corresponding amounts (unit considered, quantity, unit cost, amount),
  - Claim form and a summary of the complaints collection and processing system with the names and contacts of contact persons
  - Other annexes
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- ToR
  
  - Replacement cost sheet
  
  - Collection tools

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**Monitoring Form**  
**(in draft)**

[Authorization / approval and public consultation]

Tracking station	Date	Result of monitoring
Approval of the EIA (Pre-construction: MIT)		
Tree-cutting Permit (Pre-construction: MCVDD)		
Public consultation		

[Measures against pollution]

Air Quality (Surrounding air quality)

Indicator	Unit	Date	Location	Measured value (1 hrs)	Measured value (24 hrs)	Local standard	International reference standard	Note (place of measurement, frequency, etc.)
NO <sub>2</sub>	µg/m <sup>3</sup>					150 (24 h)	IFC 200 (1h)	Controlled point during the work (1 point) Point checked after commissioning (1 point) Once a month
SO <sub>2</sub>	µg/m <sup>3</sup>					1300 (1 h) 200 (24 h)	IFC 350 (1hr) IFC 125 (24 h)	
TSP	µg/m <sup>3</sup>					230 (24 h)	WHO 230(24 h)	

Water quality

Indicator	Unit	Date	Location	Measured value (average)	Measured value (maximum)	Local Standard	International reference standard	Note (place of measurement, frequency, etc.)
pH	—					6<pH<9	Japan : 6,0<pH<8,5 (Preservation of the river environment)	Controlled point during the work (1 point) Point checked after commissioning (1 point) Once a month
SS	mg/l					Inf. à 35	Japan : No debris on swimming (Preservation of the fluvial environment)	
Oil	mg/l					Inf. à 30	Japan : No trace (normal hexane extract) (in the marine area)	

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Noise

Indicator	Unit	Date	Location	Measured value (L <sub>Aeq</sub> )	Measured value (L <sub>max</sub> )	Local Standard	International reference standard	Note (place of measurement, frequency, etc.)
Noise Level	dB (A)					L <sub>Aeq</sub> day 55 Night 55dB(A) In the commercial zone L <sub>Aeq</sub> Night (0 am to 5am) Inf. to 70dB(A)	L <sub>Aeq</sub> Day 70 / Night 70 dB(A)	Control during the work (3 points) After commissioning (3 points)  Once a month

Waste

Controlled point	Date	Location	Evolution during the monitoring period
Maintenance of a waste treatment register (volume generated, method of treatment)			Summarized through studies

[Natural environment]

No specific interventions

[Social environment]

Community Consultation meetings

No	Date and hour	Venue	Content of the consultation and the main comments of the PAPs and answers
1			
2			

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**Land Acquisition / Resettlement**

Activities	Number planned	Unit	Date	Progress (number)			Rates of progress (%)		Completion (planned)	Supervising body
				During the present quarter	Until the previous quarter	Until the present quarter	Until the previous quarter	Until the present quarter		
Procurement of Consultant		M/M								MIT
Execution of the census (including socio-economic studies)										MIT
Approval and Authorization of RAP (Resettlement Action Plan)				Date of approval and authorization						Technical Resettlement Committee
Finalization of the list of PAPs										MIT
Progress of the land acquisition		ha								Technical Resettlement Committee
Progress of the relocation of shops		Number of households								Technical Resettlement Committee
Progress of compensation		Number of households								MIT

**Livelihood Status**

Indicator	Unit	Date	PAPs surveyed	Studies results (3 years later)	Before project completion
Household income	FCFA				
Occupation	-				

**Complaint of the Affected Persons**

Date	Number of complaints	Contents of the complaints	Measures taken to respond

**[Other]**

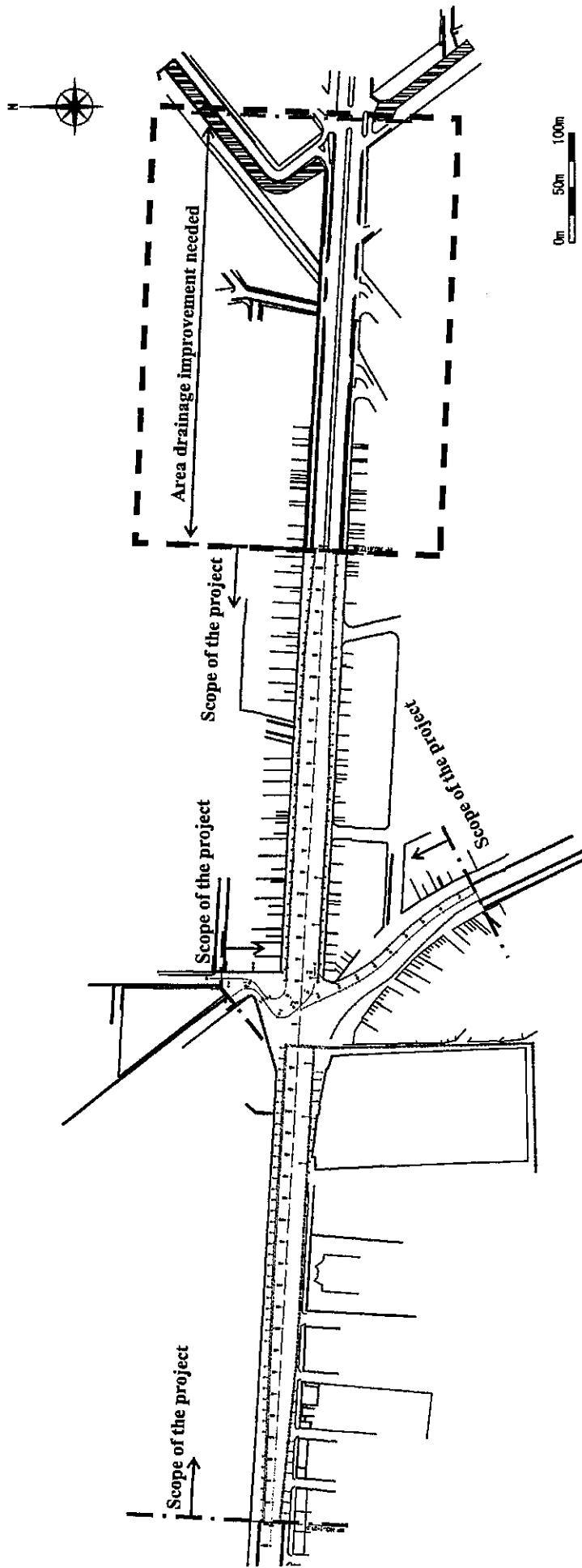
Date	Controlled point	Status during the monitoring period
	Records of road accidents	Summarized through studies

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Drainage collector out of the project section



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