**Supplement to**

**STANDARD PROCUREMENT DOCUMENT**

**Output and Performance-Based Road Contracts (OPBRC)**

**Sample Specifications**

|  |  |
| --- | --- |
| **Part A** | **Basic Concept of OPBRC** |
| **Part B** | **Technical and Performance Specifications** |
| **Part C** | **Operational Procedures** |
| **Part D** | **Environmental and Social Requirements** |

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**July 2023**

**Notes for the preparation of OPBRC Specifications**

*These* ***Notes for Preparing OPBRC Specifications*** *are intended only as information for the Employer and the persons drafting the bidding document. They should* ***not*** *be included in the final bidding document.*

This document provides a template for *Part 2 (Section VII - Specifications)* of the Bidding Document for **Output- and Performance—based Road Contracts (OPBRC)** that are being prepared on the basis of the World Bank’s Standard Procurement Document for OPBRC.

The template has been prepared for use by the World Bank’s clients and is meant to facilitate the preparation of *Section VII – Specifications* to be included in the Bidding Documents for specific OPBRC’s. The use of the template will ensure that the provisions of the Specifications, as well as of the technical and contractual terms used therein, are in coherence with the concept, terms, and provisions of the OPBRC.

It needs to be kept in mind that the World Bank’s Standard Procurement Document for OPBRC is meant to be used for the multi-year management and maintenance of existing road networks (or of discrete road links) which may also require Rehabilitation Works and/or Improvement Works. This document should not be used for new road construction projects, for which other types of contracts are more appropriate, such traditional Civil Works contracts (FIDIC Red Book), Design-Build Contracts, etc.

The template provided here allows for customization and adaptation to the specific roads or road networks covered by the OPBRC. In particular, it allows to define different Service Levels for different roads included in the contract and numerous other requirements that the Employer may want to impose. In the document, the places where customized content needs to be introduced is shown in italic font and between square brackets, as follows:

*…………… [introduce customized text] …………*.

Any customization which goes beyond the introduction of text in the ……… *[square brackets] ………* is certainly possible and may often be necessary. However, this must be done with the utmost care, in order to avoid the introduction of inconsistencies and contradictions between different parts of the Bidding Document. Changes made in one part may sometimes also require changes in other parts, in order to maintain coherence between those parts and with the other parts of the Bidding Document.

The document also has many Notes and Instructions *[which are also shown within square brackets and with italic font].* These Notes and Instructions are not meant to appear in the Bidding Document. In other words, all Notes and Instructions in italic font and placed in square brackets are to be deleted during the preparation of the Bidding Document.

**Structure of the Specifications**

Precise and clear Specifications are a prerequisite for bidders to respond realistically and competitively to the requirements of the Employer without qualifying or conditioning their bids. In the context of the World Bank’s Standard Procurement Document for **Output- and** **Performance-based Road Contracts (OPBRC)**, the Specifications must cover different areas (e.g., performance criteria, technical aspects, procedures to be applied, organization, environmental and social regulations). They must be drafted to permit wide and fair competition and, at the same time, present a clear statement of the required standards to be complied with. Specifications must be written specially by the Employer to suit the specific conditions of each country and of the roads included in the contract.

The completed “Section VII – Specifications” of the finalized bidding document shall have as a minimum the following parts:

*Part A: Basic concept of Output- and Performance-based Road Contracts*

This part presents a general description of the overall concepts on which the Output- and Performance-Based Road Contract is based. It does not have any information that is specific to any particular contract. *These Sample Specifications include a standard text for this section which should not be modified or customized.*

*Part B: Technical and Performance Specifications*

This part defines (i) the General Specifications that are applicable for all road works in the country where the contract is to be executed; (ii) the list of roads included in the contract; (iii) the Rehabilitation and Improvement Works required, if any; (iv) the Service Levels specified for each road included in the contract; (v) the methods for measuring the Contractor’s performance, along with the payment reductions to be applied if performance requirements are not met; (vi) the Quality Assurance and Quality Control Framework; (vii) Reporting and Documentation requirements; (viii) Specifications for Emergency Works; (ix) Environmental and Social specifications, and (x) Construction and Design standards. Several other requirements are also defined here. *This document provides template text for Part B which nevertheless requires customization and adaptation to the specific circumstances of the contract for which the bidding document is being prepared.*

In Part B of the Specifications, the Employer must provide the potential bidders with clear information on the project requirements. This is to ensure that all bidders prepare and price their bids in full knowledge of the required Works and Services. To achieve this objective and to reduce the risk of wrongly priced bids, the World Bank strongly recommends that for any required major Rehabilitation and Improvement Works a Conceptual Design or a Detailed Design is prepared and proposed to bidders, as an Annex to the Bidding Document. It should include an unpriced Bill of Quantities (BoQ) meant to provide guidance for bidders to prepare their financial bid. The payments to the Contractor are however normally NOT based on such BoQ. Also, it is to be remembered that under OPBRC it is the Contractor’s responsibility to prepare the designs. The Contractor may therefore either adopt the proposed design as his own, or otherwise prepare his own design which must comply with all design criteria stipulated in Part B of the Specifications.

The World Bank draws the attention to the issue of affordability of Service Levels. Very high Service Levels may be desirable but may not be affordable. The selection of which Service Level should be specified for each road should consider the road agency’s strategic objectives and, to the extent possible, the objective of minimizing the total cost of road transport, i.e. the sum of construction costs, maintenance costs and road user costs. Modern pavement management tools, such as the Highway Development and Management (HDM-4) model and the Road Network Evaluation Tools (RONET) can facilitate the definition of “optimum” and affordable Service Levels for different roads or road networks.

*Part C: Operational Procedures*

Practical experience gained in the execution of OPBRC’s has shown that clear and detailed operational procedures must be defined and applied (i) for the inspection of roads, to verify the Contractor’s compliance with the specified Service Levels; (ii) for calculating payments for Maintenance Services; (iii) for applying payment reductions if the Contractor does not meet the required Service Levels or does not fulfil other requirements, such as for environmental safeguards or occupational health and safety; (iv) for calculating the payments due to the Contractor for Rehabilitation, Improvement and Emergency Works, and for verifying if the quality of those Works fulfils the requirements; and (v) for modifying the scope of the contract. The template text provided in these Sample Specifications has proven to be useful and effective and will help ensuring that the principles of OPBRC and the contract provisions are applied appropriately. *The World Bank recommends using the text suggested in the template unless there are important reasons for modification.*

*Part D: Environmental and Social Requirements*

As a general rule, the preparation of World Bank funded projects includes the elaboration of an Environmental and Social Impact Assessment (ESIA) and an Environmental and Social Management Plan (ESMP). The ESMP includes a chapter or an annex which lists the ES requirements which must be fulfilled by the contractor, and these must be reflected in Part D of the Specifications for the OPBRC contract, along with any other requirements that may be included in the Environmental and Social Commitment Plan (ESCP). Provisions against sexual exploitation and abuse (SEA), and gender-based violence (GBV) are already included in the Contract document and are not to be repeated in the Specifications. *This document provides no sample text for Part D of the Specifications.*

**Issues to be considered**

*Avoiding front-loading of bids:* Experience has shown that there is a risk that bidders may attempt “front-loading” of bids, which means that an overproportionate share of the total bid price is charged for the initial Rehabilitation Works and only a small part of the bid price for Maintenance Services. This may lead to a situation where the Contractor has little incentive for continuing contract execution after the initial Rehabilitation Works are completed and paid. Therefore, whenever the estimated cost of the initial Rehabilitation and Improvement Works is a high share of the total estimated cost of the contract (say more than 40 percent), it is recommended that the Employer defers a part of the payment for Rehabilitation and Improvement Works to the later years of the contract. The OPBRC bidding document includes provisions (ITB 34.5) under which the Employer can limit the share of the bid price for initial Rehabilitation and Improvement Works within the total contract price. If this provision is applied, the maximum share should be defined on the basis of a financial simulation, to estimate the required monthly payments during the entire contract period.

*Staggering of Rehabilitation works:* Another way to reduce the risks described above is to spread the required Rehabilitation Works over the contract period. Not all Rehabilitation Works may be needed at the very beginning of the contract and some can be programmed for later years within the contract. Under the “staggered” approach, the Contractor will be required to rehabilitate initially only those road sections that are in bad condition, while the Rehabilitation of other road sections included in the contract (which initially are still in a reasonable condition) is programmed for subsequent years. In order to accommodate this approach, the Sample Specifications define a “reduced” Service Level which can be applied for road sections where Pavement Rehabilitation is scheduled for later during the contract period and where the pavement is still good enough to be maintained, but where some of the pavement condition criteria are not applied, for example those on cracking.

*Maintenance Services throughout the contract period:* The OPBRC document deliberately discourages the idea of two separate phases within the contract, namely of the “Rehabilitation Phase” followed by the “Operation and Maintenance Phase”. Instead, the document makes clear that Maintenance Services start at the very beginning of the contract and not only after the Rehabilitation works are completed. Rehabilitation Works, if required by the contract, take place in parallel to the Maintenance Services which are the main focus of OPBRC’s. Road users must be able to enjoy certain Service Levels even at those locations where Rehabilitation Works are being executed, or scheduled to be executed. These Service Levels must be ensured either on the road itself, or on a temporary deviation at Rehabilitation work sites, where maintaining a specific “minimum” Service Level is part of the Maintenance Services, not of the Rehabilitation Works.

*Alternative contracting approaches:* For roads in very poor condition, which require complete rehabilitation or reconstruction to bring them to the required Service Level, the Employer has the alternative option of undertaking those works under a traditional contract model for civil works and based on a prescribed detailed design, a bill of quantities and unit prices. If the Employer wishes to use the OPBRC contracting modality for major road reconstruction works, this is only appropriate if the duration of the OPBRC is long enough to cover most of the expected lifetime of the pavement.

*Units:* The use of metric units is encouraged by the World Bank.

**Request for Bids**

**Output- and Performance-based Road Contract**

**PART 2**

**Works and Services’ Requirements**

**(Section VII - Specifications)**

*[insert identification of the Roads]*

**Employer:** *[insert the name of the Employer’s agency]*

**Project:***[insert name of project]*

**Contract title:** *[insert the name of the contract]*

**Country:** *[insert country where RFB is issued]*

**Loan No. /Credit No. / Grant No.:** *[insert reference number for loan/credit/grant]*

**RFB No:** *[insert RFB reference number from Procurement Plan]*

**Issued on:** *[insert date when RFB is issued to the market]*

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# Basic Concept of Output and Performance Based Road Contracts (OPBRC)

*[Part A of the Specifications is an explanatory text on the concept and nature of Output- and Performance-based Road Contracts in general. Part A is not supposed to include any data or information that is specific for the particular contract for which a bidding document is being prepared. Therefore, the text in Part A is to be used as is, without any changes. This note is to be deleted and is not to be included in the bidding document.]*

### Definitions

|  |  |
| --- | --- |
|  | **General** |
| OPBRC | Output- and Performance-based Road Contract |
| Service Level | Specific outcomes defined in the contract that are related to the expected functional and operational performance of the road |
| Operational Performance Measure (OPM) | Contractual requirement related directly to the quality of the road and therefore to the result of the Contractor’s maintenance activities. The required minimum acceptable road conditions and Service Levels are defined through several OPM’s |
| Management Performance Measure (MPM) | Contractual requirements that are not directly related to the physical condition of the road but instead relate to required tasks for managing the roads included in the contract |
| First-day Payment Reduction | A reduction in the payment to the Contractor when a non-compliance with OPM is first detected during a Formal Inspection |
| Grace Period | The time given to the Contractor to remedy a non-compliance with an OPM, without further payment reductions being applied during the Grace Period |
| Quality Assurance Plan (QAP) | Contractor’s plan defining his work methods, the procedures to be followed and activities to be undertaken in order to ensure compliance with the full range contractual requirements and provisions |
| Program of Performance | The Program of Performance states the sequence of works and operations by which the Contractor intends to attain and maintain the required Service Levels and complete the required works |
| Monthly Statement | The Contractor’s estimate of amounts owed to him by the Employer related to all works and services carried out by him during the calendar month. It is the basis for the Contractor’s monthly invoice to the Employer. |
| Monthly Progress Report | The Contractor’s estimate of progress of all Works under execution and of the volumes of works carried out during the corresponding calendar month. It is a required supporting document for the Monthly Statement. |
| Monthly Compliance Tables for Maintenance Services | The Contractor’s monthly presentation on his own compliance with contractual requirements for Maintenance Services. It is a required supporting document for the Monthly Statement. |
| OHS Management Plan (OHSMP) | Contractor’s plan for meeting the contract’s Occupational Health and Safety (OHS) requirements |
| Environmental and Social Management Plan (C-ESMP) | Contractor’s plan for meeting the contract’s environmental and social safeguard requirements |
| Site | All roads included in the contract, including their right-of-way |
| Road | The roadway and all other road-related infrastructure located within the right-of way of the road |
| Road Section | A sub-section of the road located between two identified points |
| Right-of-way | The area of the roadway and an additional area extending alongside the road, as specified by local legislation or by any provisions issued by the Employer, or by the authority in charge of the roads. |
| Traffic Management Plan (TMP) | A plan prepared by the Contractor describing the traffic management arrangements to be applied in during the typically occurring maintenance or construction activities on the road |
| Site Specific Traffic Management Plan (SSTMP) | A variation of the Traffic Management Plan which the Contractor is required to prepare for specific situations that are not adequately covered in the general Traffic Management Plan |
|  | **Roles and Responsibilities** |
| Contractor | The firm (or partnership, or Joint Venture) taking on the responsibility for carrying out the OPBRC and fulfilling its requirements |
| Employer | The organization representing the State as owner of the roads (typically the Road Agency) which enters into the OPBRC with the Contractor |
| Project Manager | The person within the Employer's organization who has been appointed to be in charge of managing the OPBRC for the Employer |
| Road Manager | The person appointed by the Contractor to represent and act for the Contractor at all times during the period of the Contract and to be in charge of the day-to-day management of the works and services. Has legal and all other faculties to take all necessary decisions related to the execution of the contract. Shall be on the Site to provide full-time supervision of the execution of the OPBRC |
| Monitoring Consultant | Consulting firm selected and appointed by the Employer to control and verify compliance by the Contractor with the provisions and requirements of the OPBRC. The Monitoring Consultant carries out responsibilities of the Employer and of the Project Manager that have been delegated to him through his Terms of Reference. The Monitoring Consultant is the Project Manager’s representative on the site |
| Self-Control Unit (SCU) | A special unit within the Contractor’s organizational structure, staffed with qualified persons, who’s role it is to ensure and verify that the Contractor correctly implements his Quality Assurance Plan and fulfils the contractual requirements. The SCU is responsible for reporting to the Project Manager the data and information that demonstrate the Contractor’s compliance (or non-compliance) with agreed Service Levels and other requirements. |
|  | **Types of Activities under OPBRC’s** |
| Routine Maintenance | Physical interventions that are frequently necessary to maintain the function of the road (such as pothole repairs, cleaning of drainage, sealing of cracks, cutting of vegetation, etc.) and to comply with the required Service Level |
| Periodic Maintenance | Larger measures of a less frequent nature designed to avoid road degradation (such as resurfacing, pavement strengthening, repairs to structures such as bridges, etc.) |
| Rehabilitation | Physical works to be undertaken by the Contractor to bring the road to the required Service Levels or as otherwise required by the contract |
| Improvement Works | Physical works adding new characteristics to the road in response to changes in traffic volumes, or to improve traffic safety |
| Emergency Works | Measures to remedy damages caused to the roads by unforeseeable events and extraordinary natural phenomena (typically weather-related) and which affect the normal use of the road or the safety and security of the users |
| Winter Maintenance | Activities undertaken to keep the road network operational during snow and ice conditions |

### Objectives of OPBRC

Output- and Performance-based Road Contracts (OPBRC’s) are designed to increase the efficiency and effectiveness of road asset management and maintenance. They are meant to be used for the multi-year management and maintenance of existing road networks (or of existing discrete road links) which may also require Rehabilitation Works and/or Improvement Works.

OPBRC’s should not be used for new road construction projects, for which other types of contracts may be more appropriate, such as traditional Civil Works contracts (FIDIC Red Book), Design-Build contracts or Design, Build, Maintain, Operate and Transfer (DBMOT) of contracts, etc.

OPBRC’s have the objective to ensure that the physical condition and operations of the roads under contract are adequate for the needs of road users, over the entire period of the contract, which is normally several years, and that the cost of maintaining the roads is predictable for the Road Agency. This type of contract significantly expands the role of the private sector (the Contractor) from the simple execution of works to the comprehensive management and conservation of road assets, applying life-cycle costing principles.

### Incentives under traditional road contracts

In traditional road construction and maintenance contracts, the Contractor is responsible for the execution of works, which are normally defined by the Employer, and the works are paid based on unit prices for different work items, which are essentially “inputs” to the works. There are often cost overruns under traditional road contracts because they provide the wrong incentive to Contractor - - the more work that is done, the more money gets paid and the more profits can be made. Also, in many cases the roads do not last as long as they should because of deficiencies in the original design, which is given to the Contractor, or in the quality of works executed, aggravated by inadequate maintenance. The Contractor is normally not held responsible for those deficiencies beyond the defect liability period (typically one year after completion of the works) and in fact often benefits from those because ultimately, they lead to more work being needed.

### Contractor’s responsibility under OPBRC’s

OPBRC’s are different from traditional civil works contracts insofar as the Contractor takes on responsibility for specific outcomes or results defined in the contract, by agreeing to meet “Service Levels” that are specified by the Employer. These Service Levels define the expected functional and operational performance of the roads covered by the OPBRC. During the bidding process, contractors compete among each other by proposing fixed lump-sum prices for assuring pre-defined Service Levels on the roads, during a relatively long period.

Besides the Rehabilitation and Improvement Works that are typically required under most OPBRC’s, this contracting modality addresses the two key elements for maintaining a road network:

* *Routine maintenance,* consisting of many different tasks that are frequently necessary to maintain the function of the road (such as pothole repairs, cleaning of drainage, sealing of cracks, cutting of vegetation, etc.).
* *Periodic maintenance,* consisting of predictable and more costly measures of a less frequent nature designed to avoid road degradation (such as resurfacing, pavement strengthening, repairs to structures such as bridges, as well as pavement strengthening through milling and overlays, etc.). The timeliness and extent of the Contractor’s maintenance interventions and the adequacy of his technical solutions are critical.

It is important to understand that under OPBRC’s the Contractors are not paid directly for “inputs” or physical works (which they will undoubtedly have to carry out), but based on outputs and outcomes:

* Rehabilitating road infrastructure to a pre-defined standard which meets the required Service Levels;
* Performing routine and periodic maintenance to ensure that the Service Level requirements continue to be met during the contract duration. This may also include winter maintenance in countries with cold climates;
* If included, specific Improvement Works to address functional and operational deficiencies, such as road safety issues; and,
* Emergency Works, to ensure that the road network remains operational under exceptional or temporary circumstances.

A monthly lump-sum remuneration paid to the Contractor will cover all *Maintenance Services* (i.e. routine and periodic maintenance) provided by the Contractor, except for unforeseen Emergency Works which are remunerated separately. The lump-sum payments for Maintenance Services also include the remuneration for complying with environmental and social safeguards requirements, and with occupational health and safety requirements.

In order to be entitled to the full amount of the monthly fixed payment for Maintenance Services, the Contractor must ensure that the roads under contract comply with the Service Levels which are specified in the bidding document and contract.

It is possible that during some months the Contractor will have to carry out a rather large amount of physical works in order to comply with the required Service Levels, but during other months there may be very little work. However, the monthly payment remains the same as long as the required Service Levels are complied with. Most Service Level indicators are defined from a road user’s perspective and may include factors such as riding comfort and safety features. Service Levels often also include requirements for the minimum strength of pavements. If the Service Level indicators are not achieved in any given month, the payment for that month may be reduced or even suspended.

If *Rehabilitation* or *Improvement Works* are explicitly required by the Employer under the contract, these are priced on the basis of measurable output quantities and paid pro-rata as work progresses.

### Role of the Contractor and the Employer

Under OPBRC’s, the Contractor has a strong financial incentive to be both efficient and effective when doing any work. Since the Contractor’s revenues are essentially fixed, he can only be profitable if he identifies appropriate and cost-effective interventions (from a technical perspective) and carries those out efficiently, ensuring at the same time that the required Service Levels are achieved and maintained over time. This type of contract makes it essential for the Contactor to have a good management capacity. Here, “management” means the capability to define, optimize and carry out on a timely basis the physical interventions which are needed in the short, medium and long term, in order to guarantee that the road network remains at or above the agreed Service Levels. Management also means ensuring that the contractual requirements for traffic management, environmental and social safeguards, and occupational health and safety are met.

In other words, within the contract limitations and those required to comply with local legislation, technical and performance specifications, and environmental and social regulations, the Contractor is generally entitled to independently define: (i) what to do, (ii) where to do it, (iii) how to do it, and (iv) when to do it.

However, in order to reduce the risk for both the Employer and the Contractor, OPBRC’s often include specific required Rehabilitation Works which must be carried out as a minimum and for which a conceptual or detailed design is proposed by the Employer in the Bidding Document.

During the execution of the OPBRC, the Contractor will generally not receive instructions from the Employer concerning the timing, type, and volume of activities to be carried out. The Contractor has to fulfil the requirements stated in the Contract, including any specifically required Rehabilitation or Improvement Works. The initiative for all activities rests with the Contractor, who must do whatever is necessary and efficient to achieve the quality levels required and fulfil the contract.

In general, under the terms of the contract, the Contractor is responsible for designing, planning and executing:

* Rehabilitation Works needed to bring the road to the pre-defined standards;
* Periodic maintenance works which may be necessary to avoid road degradation, such as pavement strengthening, overlays, etc.;
* Routine maintenance activities to ensure the functionality of the road (such as pothole repairs, cleaning of drainage, sealing of cracks, cutting of vegetation, etc.);
* Improvement Works (if required under the contract) to add new characteristics to the road in response to changes in traffic volumes, or to improve traffic safety;
* Emergency Works to remedy damages caused to the roads by unforeseeable events and extraordinary natural phenomena (typically weather-related) and which affect the normal use of the road or the safety and security of the users.

These activities must be done (i) to agreed technical/engineering standards; (ii) within agreed time frames; and, (iii) meeting the Employer’s requirements for traffic management, environmental and social safeguards, and occupational health and safety. Failure to meet these requirements leads to payment reductions and may also lead to contract termination if non-compliances persist over a longer time period.

Under the OPBRC model, the Employer appoints a “Project Manager”, who is the person within the Road Agency responsible for managing and supervising the OPBRC. The Employer will normally also hire a Monitoring Consultant firm (“Monitoring Consultant”). The Project Manager delegates many of his functions to the Monitoring Consultant who is the Project Manager’s representative on site.

The role of the Project Manager and of the Monitoring Consultant is to monitor and enforce the contract by verifying the compliance reported by the Contractor with the agreed Service Levels and all other contractual requirements (including the quality of Rehabilitation, Improvement and Emergency Works) and with all applicable legislation and regulations. The Monitoring Consultant generally does not issue instructions to the Contractor with regard to specific activities to be undertaken, as these are the responsibility of the Contractor. The main role of the Monitoring Consultant is to verify that the Contractor complies with the contractual requirements, and to calculate the amount of the relevant payment reductions and/or liquidated damages if the Contractor doesn’t.

Here the OPBRC differs very substantially from traditional works contracts, where the “Engineer” has very wide-ranging instruction powers and represents the Employer on site. The “Engineer” does not exist under OPBRC’s. Instead there is the “Monitoring Consultant” with the role described above. For the purposes of the contract, the terms “Employer” and “Project Manager” implicitly encompass the Monitoring Consultant working for them.

### Performance Measures and Indicators

OPBRC’s need to meet the strategic objectives of the Employer. To ensure this is achieved, OPBRC’s include two classes of performance measures, namely *Operational Performance Measures (OPM’s)* and *Management Performance Measures (MPM’s):*

* **Operational Performance Measures** relate directly to the quality of the road and therefore to the results of the Contractor’s maintenance activities. The required minimum acceptable road conditions and Service Levels are defined through the OPM’s, and these are used to define and measure the compliance of the Contractor with the specified requirements. In the OPBRC’s, the defined *Operational Performance Measures* and indicators are thus the accepted minimum thresholds for the quality levels of the roads for which the Contractor is responsible.
* **Management Performance Measures** describe contractual requirements that are not directly related to road conditions and performance. Most MPM’s relate to information that the Contractor needs to deliver to the Employer, so that the Employer can control certain aspects of the contract and the road asset, to operate its Road Asset Management System – RAMS (if such a system exists) and to facilitate the preparation of the next contracts for the roads. The contract also definesMPM requirements to include activities such as: (i) delivery of various types of reports to the Road Authority; (ii) inventory updates and other data sharing requirements; and, (iii) maintenance history (so subsequent tenderers can price the work).

To avoid ambiguity, all OPM’s and MPM’s must be clearly defined in the Specifications and where practicable, objectively measurable. **Defining OPMs and the methods for their measurement are a vital element of the contract.** The OPMs need to cover all essential aspects of the roads and take account of the fact that different roads within the contract area might require different Service Levels. Each contract will be unique as the OPMs need to reflect the Employer’s strategic goals for the specific roads covered by the contract.

For *paved roads*, OPM criteria refer mostly to **Road User Service and Comfort** measures, which can be expressed in terms such as:

* Road Roughness
* Road and lane width
* Rutting
* Vegetation control
* Cleanliness of the road and its Right-of-way
* Visibility of road signs and markings
* Availability of traffic lanes for vehicle traffic
* Response times to rectify defects

For *unpaved roads*, there are also other types of OPM’s that take into account the specific characteristics of such roads.

### Contractor’s Quality Control functions

Overall, Output and Performance-based Road Contracts transfer a significant burden of risk onto the Contractor. It is therefore important that the Contractor has the technical and managerial capacity necessary to deal with such risk. Intelligent management, the timeliness of interventions and the adequacy of technical solutions are critical for the Contractor’s successful implementation of the contract. If the Service Levels are not met, payments for maintenance services are reduced, based on the provisions of the contract. Payments may even be stopped, and the contract terminated entirely, if the Contractor fails during an extended period of time to achieve the minimum threshold values of Service Levels. The contract describes the formulas used to calculate payment reductions and the trigger for potential contract termination.

Under OPBRC’s, the Contractor carries the responsibility for *quality control and testing*, which must comply with the Contractor’s own *Quality Assurance Plan* as approved by the Employer, as well as with the Specifications. The day-to-day quality control and testing will normally be carried out by the Contractor’s engineers and technical specialists who are responsible for the execution of works. The staff of the Contractor’s *Self-Control Unit (SCU)* will verify and audit if the quality control and testing is done as required, without themselves being responsible for doing it. In that sense, the SCU functions similar to an internal audit of quality control and testing. The Employer, either directly or through the Monitoring Consultant, verifies if the Contractor has complied with his own Quality Assurance Plan and may refuse payment for Rehabilitation, Improvement and Emergency Works if the necessary tests have not been carried out, or if the test results show deficiencies.

Under the terms of the OPBRC the Contractor is also responsible for the patrolling of all roads included in the contract, to check road conditions and to verify his own compliance with the required Service Levels. This will not only be necessary to fulfil the contract requirements, but also to gather the information needed by the Contractor himself in order: (i) to know the degree of his own compliance with Service Level requirements, (ii) to detect accidents and damages to the road and (iii) to define and plan, in a timely manner, all physical interventions required to ensure that Service Level indicators do not fall below the minimum thresholds. Patrolling and gathering information on compliance with Quality and Service Level requirements is an important part of the role of the Contractor’s SCU.

# Technical and Performance Specifications

This part of the Specifications defines technical and performance requirements for the works and services to be provided under the contract.

## Applicability of country-specific General Specifications

These Technical and Performance Specifications for Output- and Performance-based Road Contracts complement other specifications that are generally applicable in …………… *[insert the name of the country]* ………………… for use in the road sector. In particular, the following General Specifications and/or manuals are to be applied by the Contractor in the execution of the contract:

* *[insert list of specifications, manuals, etc. of a general nature that are applicable for road and bridge works in the country where the contract is to be executed, and which shall also be applicable under the contract, such as those defining quality of workmanship, quality of materials, design standards, etc.]*

The documents listed above are denominated as “General Specifications”in this document and under the Contract. They are fully applicable under the system of traditional road contracts. However, given the specific nature of OPBRC’s and the important differences which exist between OPBRC’s and traditional road contracts, some aspects of the General Specifications may only be partially applicable, or not applicable at all. Therefore, these Specifications issued specifically for the OPBRC regulate those aspects that are specific for the Contract and which are not covered appropriately, or not covered at all, under the General Specifications. Whenever there is a contradiction between the General Specifications and these Specifications, the provisions of these Specifications shall prevail.

Whenever the General Specifications refer to the “Engineer”, this should be interpreted under the OPBRC’s as to mean the Project Manager, except for the quality assurance and testing of works where the functions that are traditionally assigned to the Engineer are mostly executed by (or on behalf of) the Contractor under OPBRC’s.

## Roads included and applicable Service Levels

The roads and road sections included in the Contract, as well as the applicable Service Level for each road and road section are shown in the Table below.

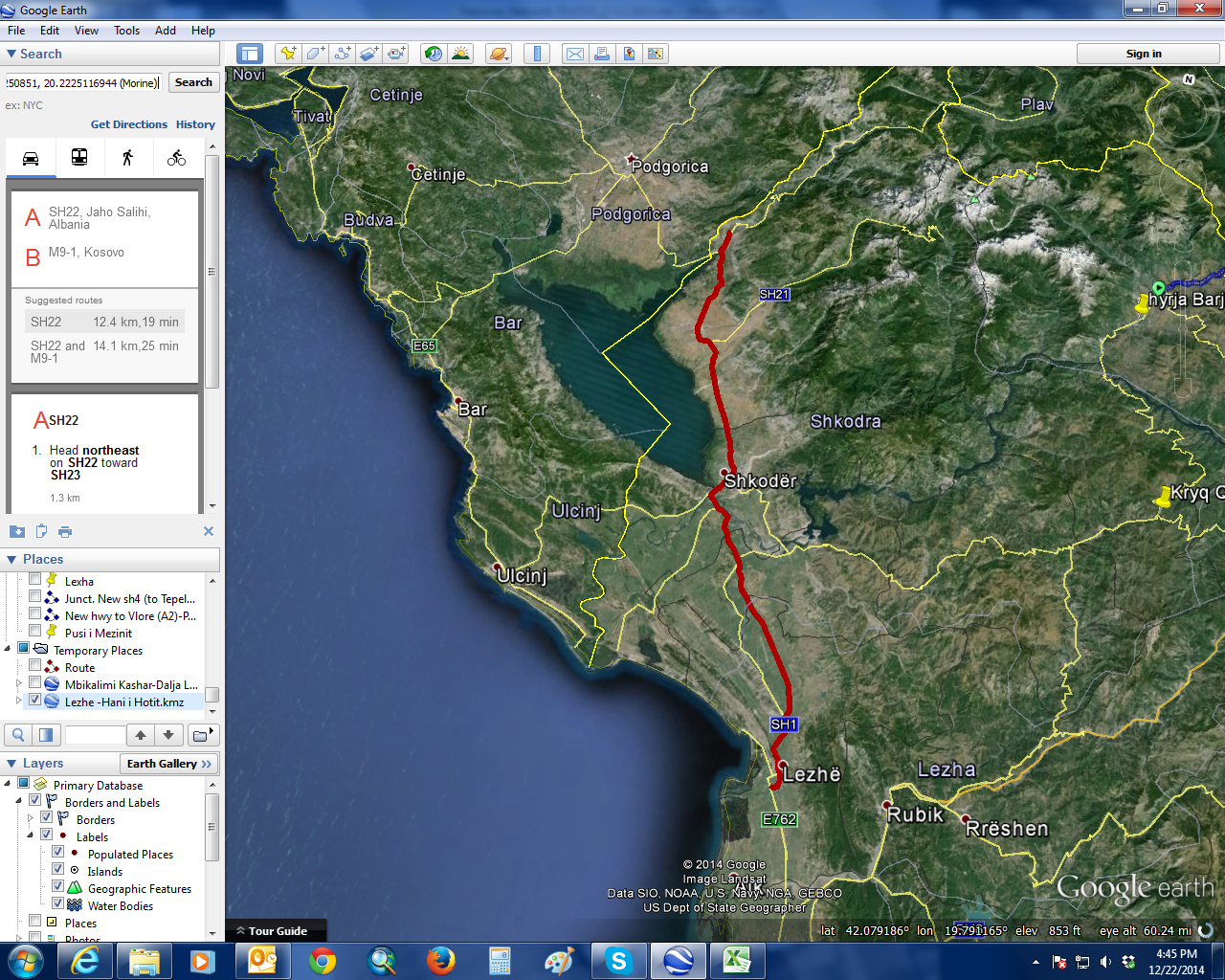
*[Insert a table showing all roads or road sections for which a specific Service Level is required under the Contract. In addition to the location names, the table* ***should ideally also include GPS location coordinates*** *of the start and end points.]*

*[Sample Table: This table should clearly identify all the road sections to be included in the contract, give information on them to the bidder, and most importantly define the Service Levels for each road or road section that will be included in Contract. It is recommended that GPS coordinates are used to define start and end points of roads or road sections.]*

|  | **Road or Road Section Starting Point - Ending Point**  **(including GPS coordinates)** | | **Length (km)** | **Current approx. Traffic (AADT range)** | **Service Levels *[such as A, B or C]*** |
| --- | --- | --- | --- | --- | --- |
|  | **Road No. X from Place A to Place B** | | **80.40** |  |  |
| X.1 | km 0 (name of place) | Km 22 (name of place) | 22.00 | above 10,000 | A |
| X.2 | km 22 (name of place) | Km 46.5 (name of place) | 44.50 | 2,500-10,000 | B |
| X.3 | km 46.5 (name of place) | Km 77.5 (name of place) | 31,00 | 2,500-10,000 | B |
| X.4 | km 77.5 (name of place) | Km 80.4 (name of place) | 2.90 | below 2,500 | C |
|  | **Road No. Y from Place C to Place D** | | **138,40** |  | |
| Y.1 | km 0 (name of place) | Km 14.34 (name of place) | 6,50 | above 10,000 | A |
| Y.2 | km 14.34 (name of place) | Km 56.70 (name of place) | 6,50 | 2,500-10,000 | B |
| Y.3 | km 56.70 (name of place) | Km 85.00 (name of place) | 3,20 | 2,500-10,000 | B |
| Y.4 | km 85.00 (name of place) | Km 92.40 (name of place) | 2,50 | above 10,000 | A |
| Y.5 | km 92.50 (name of place) | Km 134.50 (name of place) | 3,20 | 2,500-10,000 | B |
| Y.6 | km 134.50 (name of place) | Km 138.40 (name of place) | 2,50 | below 2,500 | C |

The location of the roads included in the contract is shown on the map(s) below.

*[Present one or several maps showing the location of the roads included in the contract on the general road network. A Sample Map is shown below.]*



The area of responsibility of the Contractor (“the Site”) is all roads and road sections included in the table above, including

* the Right-of-Way of the road;
* all junctions, intersections, and interchanges, including slip lanes and (unless otherwise stipulated in the Contract) the first 50 meters of the connecting roads; and
* for all river or stream beds the Contractor’s responsibilities extend (unless otherwise stipulated in the contract) for 100 meters upstream and downstream from the road or the relevant bridge or drainage structure.

Service Roads running in parallel to the road are generally not included in the contract unless they are specifically included for any road or road section under these Specifications.

If the Right-of-Way of roads is not clearly specified by local legislation or by any provisions issued by the Employer, or by the authority in charge of the roads, the Contractor shall proactively seek clarification from the Project Manager on the exact extension of the Right-of-Way of roads in general or of the roads covered by the Contract in particular.

## Duration of Contract

The duration of the Contract is defined in the Particular Conditions of Contract. The Contractor shall fulfil the contractual requirements for all roads and road sections included in the Contract and for all works and services throughout the full duration of the Contract, unless otherwise stipulated in the table below, or elsewhere in the Contract.

*[If applicable, insert here a table showing shorter durations of Maintenance Services for specific Roads or Road Sections, for example (i) for roads which are under construction through another contract and for which it is planned that they shall thereafter be incorporated into the contract, or (ii) for roads for which it is planned that they will be taken out of the contract prior to the end of the contract period, because they may become part of a separate road concession, etc. The table should also include explanations for any reduced durations and the expected start and end dates.]*

Payment for Maintenance Services for any particular Road or Road Section shall only start from the date on which the Contractor has actually started such services for that Road, which is to be demonstrated through the mobilisation of staff and equipment in the area of the road as well as the carrying out of regular patrolling of the road and reporting on the road.

For Roads or Road Sections which according to the above Table shall be included in the Contract at a later time, such inclusion shall only start after a formal written notification by the Project Manager to the Contractor of the incorporation of the road or road section, applying the procedure stipulated in the contract.

Similarly, any elimination of a Road or Road Section from the Contract prior to the end of the contract period shall only become valid after a formal written notification to the Contractor from the Project Manager, as stipulated in the contract.

The requirements for Maintenance Services shall also apply for those roads for which Rehabilitation, Improvement or Emergency Works are being executed under the Contract, or planned to be executed, unless indicated otherwise in these Specifications for any particular Road or Road Section. The contract defines special Service Levels for roads on which Rehabilitation Works are being executed, which may include temporary bypass roads.

## Contractor’s Management Framework

OPBRC’s require that the Contractor has good management capacity, in addition to the necessary technical and financial capacity. The Contractor must establish a formal and well-defined framework through which to define, optimize and carry out on a timely basis the physical interventions needed in the short, medium and long term in order to ensure that the roads included in the contract comply with the required Service Levels and with all requirements concerning the quality of works and outputs. The Contractor’s management framework has two main elements: (i) the Contractor’s *Quality Assurance Plan - QAP* and (ii) the Contractor’s *Program of Performance*. The requirements for both are described below.

### Quality Assurance Plan

The purpose of the Contractor’s QAP is to integrate the requirements of the contract and the Contractor’s quality assurance systems when delivering the Services. It shall constitute the foundation of his organizational structure established for the implementation of the contract. Through the application of the QAP the Contractor shall define what to do, where to do it, how to do it and when to do it. The QAP shall also cover issues of traffic management, occupational health and safety, environmental and social safeguards, emergency procedures, etc. The Contractor´s “Self-Control Unit” (SCU) as described elsewhere in this contract is an essential part and instrument of the QAP.

The QAP must describe the methods and procedures which the Contractor will apply for the execution of the Contract. It shall focus on how the following issues will be addressed:

1. the specific quality requirements of the contract;
2. monitoring and recording the condition of the asset and identifying any problems of the asset, including non-compliances with the Service Level requirements of the contract;
3. planning and executing the works and activities needed to satisfy the contractual requirements and remedy any problems, this includes the method statement to describe the safety precautions to put in place to control identified risks;
4. meeting the requirements for occupational health and safety, as well as environmental and social safeguards, etc.;
5. traffic management in work zones;
6. how grievances and complaints will be received, monitored, resolved and reported on;
7. inspecting and/or testing the works carried out, and the materials used, to ensure compliance with the quality requirements;
8. monitoring and recording the test results, as evidence of compliance;
9. executing surveys and collecting necessary data in the required format for the Employer’s Road Asset Inventory; and
10. ensuring that prompt action is taken to correct any non-compliance with contractual requirements.

**Organization chart and staffing.** The Contractor must mobilize and maintain all the personnel shown in his Organization Chart which forms part of the QAP. Key personnel and their responsibilities shall be in accordance with the requirements set out in the bidding documents or elsewhere in the Contract, and the approved QAP. The QAP shall be updated to reflect significant changes in the Contractor’s personnel and submitted to the Project Manager for approval.

**QAP contents.** The QAP will be used by the Contractor as a tool for delivering the works and services, and for monitoring contract execution, including the Contractor’s own performance and compliance with the contractual requirements. It must include, as a minimum:

1. A description of the systems and methods that will be used to deliver and monitor the works and services;
2. The Contractor’s personnel to be mobilized, including job descriptions, responsibilities and an Organization Chart;
3. The documented procedures for at least the following:
4. QAP implementation and internal audits;
5. Procedures for inspection and/or testing the works to ensure compliance with the quality requirements;
6. Evidence of appropriate calibration of any testing apparatus;
7. Materials supply and delivery processes;
8. Programming, including annual and rolling work programmes and the maintenance management strategy;
9. Public consultations, how grievances and complaints will be received, monitored, resolved and reported on;
10. Document control and management of contract administration documents;
11. Emergency procedures and incident response plan; and
12. Internal audits and responsibilities for addressing non-compliances;
13. Supplements to the QAP, including as a minimum:
    1. Occupational Health and Safety Management Plan
    2. Environmental and Social Management Plan
    3. Emergency Procedures and Incident Plan
    4. Traffic Management Plan

Within 60 days of the Start Date, and before any Rehabilitation and Improvement Works are undertaken, the Contractor shall submit his QAP to the Project Manager for approval. No civil works shall be undertaken before the QAP is approved by the Project Manager. The Project Manager will either approve the QAP within seven (7) days after receipt, or clearly identify within seven (7) days any shortcomings of the QAP to be corrected by the Contractor.

The timely submission of the complete QAP is one of the Management Performance Measures (MPM). The QAP will be updated regularly over the life of the contract.

Approval by the Employer of the Contractor’s QAP shall not relieve the Contractor from his responsibility for carrying out the Works and Services as per the requirements set out in the Contract. Elements of the Contractor’s QAP are used as measures for assessing the Contractor’s managerial performance and compliance with the Management Performance Measures (MPM’s).

### QAP supplements

The QAP shall have the supplements described in the following sub-sections.

*[The supplements required may be different for different contracts. The supplements required as a minimum are: (i) the Occupational Health and Safety Management Plan; (ii) the Environmental and Social Management Plan; (iii) the Emergency Procedures and Incident Response Plan and (iv) the Traffic Management Plan. For countries with cold climates, the OPBRC may need to include Winter Maintenance Services, such as snow and ice removal. A separate supplement for winter maintenance is required in such cases. Insert in the sub-section below the texts for the applicable supplements or delete if not applicable.]*

#### Occupational Health and Safety Management Plan

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the general public, the Contractor’s personnel and the personnel of sub-contractors and suppliers.

The Contractor shall prepare an Occupational Health and Safety Management Plan (OHSMP) for public disclosure which details the procedures to be adopted to ensure that occupational health and safety (OHS) requirements are met. The OHSMP forms part of the QAP. It shall establish the requirements for creating and maintaining a safe working environment for persons on Site. It shall include safety requirements for all Works activities, with particular attention being given to working in and over water, around machinery, handling hazardous materials, and exposure to the elements.

The Contractor shall not commence any civil works or physical pre-construction activities (e.g. clearance for haul roads, site access roads and work site establishment) until the Project Manager has approved the OHSMP, the required Safety Officer is mobilized and on Site, and staff have undergone appropriate safety training and are equipped with appropriate PPE.

The Works shall be implemented in accordance with the OHSMP. It is the Contractor’s responsibility to ensure compliance of persons on work sites with the OHSMP. Sub-contractors and suppliers must adhere to the Contractor’s OHSMP, including the requirements for Personal Protective Equipment (PPE) and reporting of accidents and incidents.

The OHS Management Plan shall fully consider:

* national OHS standards;
* the World Bank Group EHS Guidelines;
* the requirements of the bidding documents, including the Project ESMP;
* the nature of the civil works activities required on the project; and,
* construction industry good practice.

***Child Labor and Minimum Age:*** in accordance with the Bank’s 2017 Environment and Social Framework (ESF), a child over the minimum age of 14 but under the age of 18 will not be employed in: (i) hazardous work; or (ii) any activity that is likely to interfere with the child’s education or be harmful to the child’s health or physical, mental, spiritual, moral or social development. The minimum age for construction workers shall be 18 since construction activities are defined as hazardous by Article 3 (d) of ILO Convention concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labor, 1999 (No. 182).

***Safety Officer:*** The Contractor shall appoint a Safety Officer at the Site, with qualifications acceptable to the Project Manager, responsible for maintaining safety and protection against accidents. This person shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.

***Personal Protective Equipment (PPE):*** The Contractor shall ensure that all persons on the Site have the necessary PPE of an appropriate standard including but not limited to:

* Impact resistant safety eyewear;
* Safety foot ware with steel toe, sole and heel;
* High visibility clothing;
* Long sleeves and long pants suitable for operating environment;
* Safety helmet with provision of sun protection as necessary;
* Gloves (carried and worn when manual handling); and,
* Hearing protection when working in close proximity to noisy equipment and in all underground environments.

For Site visitors, the above equipment will be supplied as appropriate based on assessed risks and depending on the number of visitors and where they will be on Site.

***First Aid and Worker’s Health:*** In collaboration with local health authorities, the Contractor shall ensure that first aid facilities are available at all times at the Site, including having a Site vehicle available at all times that can be used to transport anyone injured at the Site to medical facilities. The Contractor shall further ensure that suitable arrangements are made for all necessary welfare and hygiene requirements, particularly at worker’s camps.

***Site Safety:*** The Contractor shall provide and maintain at its own cost all lights, guards, fencing, warning signs, watching, and other temporary works when and where necessary or required by the Project Manager or by a duly constituted government authority or any Laws, for the protection of the Works and for the safety and convenience of the public and of owners and occupiers of adjacent land or others.

***OHS Reporting:*** The Contractor shall send to the Project Manager, details of any fatal accident not later than 24 hours after occurrence. Within 5 working days of the end of the calendar month the Contractor shall report to the Project Manager on the performance for the following OHS indicators (to be confirmed in the OHSMP):

1. Number of fatal injuries (resulting is loss of life of someone associated with the project or the public);
2. Number of notifiable injuries (an incident which requires notification of a statutory authority under health and safety legislation or the Contractor’s health and safety management system);
3. Number of lost time injuries (an injury or illness certified by a medical practitioner that results in absence of work for at least one scheduled day or shift, following the day or shift when the accident occurred);
4. Number of medical treatment injuries (the management and care of a patient to effect medical treatment or combat disease and disorder excluding: (i) visits solely for the purposes of observation or counseling; (ii) diagnostic procedures (e.g. x-rays, blood tests); or, (iii) first aid treatments as described below);
5. Number of first aid injuries (minor treatments administered by a nurse or a trained first aid attendant); and
6. Number of recordable strikes of services (contact with an above ground or below ground service resulting in damage or potential damage to the service).

#### Environmental and Social Management Plan

***C-ESMP:*** The Contractor shall prepare and submit to the Project Manager for approval the Contractor’s Environmental and Social Management Plan (C-ESMP) which must provide a detailed explanation of how the Contractor shall comply with the project’s safeguards requirements stated in documents such as the Project Environmental and Social Management Plan (ESMP) that is provided as part of the bidding documents and/or has been publicly disclosed. Once accepted by the Project Manager, and the World Bank, the C-ESMP will be publicly disclosed by Project Manager through the project web site and/or other means that the Employer may deem appropriate.

The Contractor shall not commence any road rehabilitation or road improvement works or pre-construction activities (e.g. clearance for haul roads, site access roads and work site establishment) until the Project Manager has approved the C-ESMP. With the agreement of the Project Manager, a staged C-ESMP may be prepared addressing specific agreed activities (e.g. mobilization). However, activities cannot commence until they have been addressed in the C-ESMP, and full road rehabilitation and improvement works cannot commence until the final C-ESMP has been submitted, approved, and publicly disclosed.

The Contractor shall carry out the project in accordance with the approved C-ESMP.

***Grievance Resolution Mechanism (GRM):*** The Contractor shall establish a formal GRM for receiving, managing, and reporting on grievances and complaints. This GRM shall address both project (i.e. technical) issues, but also for sexual exploitation and abuse (SEA), sexual harassment (SH) and gender-based violence (GBV). The GRM shall meet the requirements of the World Bank Technical Note on Grievance Mechanisms for SEA and SH. The GRM shall clearly identify the service standards for different types of grievances within which resolution can be expected. The monthly reporting of the Contractor shall include data on:

* Grievances received and registered, and if (and how) these relate the Contractor’s works and services; and,
* Grievances responded and/or resolved within the stipulated service standards.

*[The following text should be included for projects with IDA financing: “To meet the World Bank’s commitments to citizen engagement in IDA financed projects, the GRM should publicly report through a project web site on the above two points.”].*

***Payment of Contractor’s staff:*** The Contractor shall

1. provide equal pay to men and women for work of equal value, in accordance with national laws and international treaty obligations, and shall pay women's wages directly to them;
2. not pay its employees less than the minimum wage under the relevant applicable law; and,
3. comply with applicable labor laws and abstain from using child labor, in particular the minimum age requirements of 14 for non-hazardous work and 18 for construction work defined under OHS requirements.

If requested by the Project Manager, the Contractor, within 72 hours of such request, shall provide evidence of all payments made to all its staff and labor. The Parties agree that if the Employer or the Project Manager becomes aware that the Contractor has failed to pay its staff and labor, and the Project Manager gives the Contractor written notice of at least 72 hours, the Employer may, in its absolute discretion, pay those staff and labor the amounts the Employer determines are due to the staff and labor, and the Employer may subsequently recover any such amount paid from the Contractor in the form of reduction of payments due to the Contractor.

***Discoveries and Chance Finds:*** Anything of historical or cultural value unexpectedly found on the Site shall be the property of the Employer. The Contractor shall notify the Project Manager of such discoveries and carry out the Project Manager’s instructions for dealing with them.

#### Emergency Procedures and Incident Plan

The Contractor’s QAP must include an Emergency Procedures and Emergency Incident Plan (EPP) which shall establish the roles, practices, and procedures during specific types of emergency events and incidents identified in the plans, and contingency plans associated with the closure of roads. The EPP must be developed by the Contractor and approved by the Employer and any other relevant stakeholders involved, such as the traffic police, the fire department, etc. The purpose of the EPP is to ensure the safety of the Contractor’s personnel and of road users, in cases of emergency and/or road closure. It should include:

* an effective communication and event recording system;
* the name, contact number and specific duties of the Contractor’s personnel nominated to respond to an emergency event. The contact for Emergency Calls will be the Employer’s Project Manager or alternative delegated personnel and the Contractor’s Contract Manager;
* the contact number of other parties who need to be notified in cases of emergency events, e.g. police, ambulance, fire department;
* detailed response procedures for all emergency events; and
* possible detour routes in the event of road closures.

#### Traffic Management Plan

The Traffic Management Plan (TMP) is a supplement to the Contractor’s QAP. It shall describe the procedures to be followed and the arrangements to be made whenever the Contractor carries out (on or along the roads) the various types of physical activities that are planned and foreseeable under the Contract. The TMP must have been approved by the Project Manager before the Contractor commences work that affects traffic flows or pedestrian safety. It shall show the methods to be applied to ensure (i) that traffic can continue to use the road safely and with only the inevitable degree of disturbance, (ii) the safety of road users and of people near the road. The TMP shall show the location, types and numbers of traffic safety devices, barricades, warning signs, flagmen, by-pass roads, deviations and the like to be deployed under various types of work sites and traffic restrictions, such as the partial and full closure of traffic lanes, closure of road shoulders and moving roadside activities such as grass cutting, etc. It shall also cover the removal of all necessary traffic diversions and the reinstatement of the land used for such diversions. In the preparation of the TMP the Contractor must ensure a reasonable balance between the efficiency of his work operations and the minimization of disturbances for road users, including pedestrians and non-motorized traffic.

If a particular situation arises which is not adequately foreseen in the Contractor’s *general TMP*, the Contractor must prepare a *specific TMP* for that situation and submit it for approval to the appropriate authorities (traffic police, local authorities, etc.). Such specific TMP must also be prepared whenever works are planned near schools or other places with a high concentration of pedestrians.

The cost of implementing the TMP is deemed to be included in the rates or prices for Rehabilitation Works, Improvement Works, Emergency Works, and Maintenance Services.

* + 1. [Program of Performance](#_Toc358637441)

As and when required by the General Conditions of Contract, the Contractor shall submit and regularly update his Program of Performance (POP). The POP shall indicate the methodology and sequence of works and operations by which the Contractor intends to attain and maintain the required Service Levels and complete any required Rehabilitation and Improvement Works. It shall indicate the proposed allocations of Equipment, Materials and Labour corresponding to the outputs required and the completion dates stated for each road or road section, for all works due. The POP shall reflect any milestones or completion dates imposed by the Contract.

The POP must sufficiently demonstrate the Contractor’s intention and capability to fulfil the contractual requirements. It shall assist the Project Manager in monitoring the Contractor’s progress and his future planning, and shall be used for the assessment of any requests for extensions of time that may become necessary, and of the effect of delays on the completion of the works.

The POP must be submitted both in electronic and printed form and must be prepared using a project programming software agreed with the Project Manager, such as OpenProject, MS-Project or Primavera. The software shall be capable of producing programmes and information that comply with the requirements of this clause and shall be in a format that can be read by commercially available proprietary software. Upon request, the Contractor shall supply the Project Manager with a licensed copy of the software used, free of charge.

During the course of the Contract, the Contractor´s POP shall be developed and updated as follows:

1. *Initial Program of Performance:* Describes the planned works and services for the entire duration of the contract, but providing a higher level of details for the first 12 months of the contract.
2. *Updated Program of Performance:*The Program of Performance shall be updated at least every twelve (12) months and submitted to the Project Manager for acceptance annually for the remaining period of the contract, describing the planned and required works for the remaining contract period.
3. *Additional revisions of the Program of Performance* shall be submitted (i) in case of major changes of the contract which affect the works and therefore the Contractor’s work program in a significant way, and (ii) if the Contractor’s actual progress falls behind the Program. Such revised programs shall show how the Contractor intends to complete the works on time and shall include details of additional labour, equipment, materials, and financial resources which may be needed to implement the revised program. Revised programs shall be provided by the Contractor voluntarily on his own initiative, or within fourteen (14) days of receiving a request from the Project Manager.

The Contractor shall prepare and submit the POP on the occasions and within the delays foreseen in the previous paragraphs and in the General Conditions of Contract.

Acceptance by the Project Manager of the Contractor’s POP shall not relieve the Contractor from its responsibility for executing works and services as per the Contract’s requirements and Specifications. The Contractor at all times shall remain responsible for the execution of the Works and the provision of Services in accordance with the General Conditions of Contract.

## Initial Condition Survey

The Employer may provide road condition data in the Bidding Document. This data is however only indicative and there is no guarantee as to the completeness or accuracy of any such data. The Contractor must rely on his own data in order to define the works and services needed to fulfil the contractual requirements, and to price his bid.

The Contractor at the time of preparing his bid must therefore carry out his own initial road condition survey of the road sections included in the contract, in order gain complete knowledge as to the existing road condition. The initial survey must at least collect visual condition data and may also include other data on roughness, pavement strength, rutting, etc.

The Contractor shall through his survey collect the necessary data that will enable him to define and schedule all works and services needed to reach and maintain the Service Levels required by the contract, and to satisfy any other road condition requirements. The Initial Condition Survey is an essential part of preparing the Contractor’s bid, and for the pricing of Works and Services in the bid.

## Rehabilitation Works

### Scheduling of Rehabilitation Works

***Initial Rehabilitation Works:*** Rehabilitation Works are often required to be carried out at the beginning of the contract period, to bring a road into a condition which is compliant with the Rehabilitation required Service Levels and all other contractual requirements.

***Staggered approach for Rehabilitation Works:***The contract may however also include requirements for Rehabilitation Works that are staggered over the contract period. Under the staggered approach, the Contractor will be required to rehabilitate initially only those road sections that are in bad condition, while the Rehabilitation of other road sections (which initially are still in a reasonable condition) is programmed for subsequent years. For those road sections which are to be rehabilitated later during the contract period, a *Reduced Service Level* defined in the Specifications may be applied for the time before they are rehabilitated. The staggered approach may be applied to avoid the excessive bunching of Works at the beginning of the contract and instead allows for a steadier work volume which is distributed over the contract period.

### Definitions for Rehabilitation Works

Rehabilitation Works can be separated into two types:

**Pavement Rehabilitation Works** consist of any works on any of the layers of the road structure which are needed to create a pavement of sufficient strength and compliant with the requirements. For unpaved roads (gravel roads, etc.) this definition is to be used analogue for the useable driving surface of the road.

**Non-pavement Rehabilitation Works** include all other work items, such as (but not limited to) the following:

* Construction, reconstruction, or repair of the drainage system including culverts and ditches (i.e. new drainage ditch-earth/ ditch-concrete lined, repair/reshape of earth ditches/ concrete lined ditches and new concrete pipe culvert/ box culverts, repairs in pipe/box culverts);
* Repair of erosions and landslides (i.e. re-shape cut slope in soil/rock);
* Reconstruction or stabilization of slopes and embankments;
* Repair of Bridges (i.e. expansion joints replacement, new placement /replacement of bridge safety barriers);
* Construction, reconstruction, or repair of Retaining Walls, such as construction of new concrete gravity wall/ reinforced concrete wall, or repairs of existing retaining walls (masonry, concrete, and reinforced concrete);
* Installation / Repair of guard-rails and other road safety features (i.e. new/replacement steel guardrail, road markings, guardrails, delineators, vertical traffic signs); and
* Installation / Repair of Electromechanical features (lighting and traffic lights, etc.).
* Installation of marker posts
* Speed calming and other road safety measures

### Minimum required Rehabilitation Works

Independent of the Contractor’s own determination of the scope and volume of Rehabilitation Works needed to achieve the required Service Levels, the Contractor shall be obliged to price in his bid and carry out **as a minimum** the following Rehabilitation Works:

*[Insert here the description of mandatory required minimum Rehabilitation Works, their location and their required start and completion dates. For each road section where specific Rehabilitation Works are required by the Employer, provide a separate sheet with the detailed description of the required works, including their timing during the period of the Contract. For Rehabilitation Works required later during the contract execution period, the trigger for such works may be either a fixed date or a certain minimum pavement strength threshold, whichever occurs earlier.]*

The detailed designs for the Rehabilitation Works are to be done by the Contractor at his own cost and must meet the minimum requirements in accordance with the relevant parts of these Specifications.

While the design of the Rehabilitation Works is the responsibility of the Contractor, the Employer has carried out designs for the Works described below and is making those designs available to the Contractor, for information:

*[Insert here a list and description of all designs that the Employer has prepared and is making available for the Contractor. These may either be conceptional, preliminary, or detailed designs for required Rehabilitation Works. The World Bank strongly recommends that for any required major Rehabilitation Works the corresponding designs are to be prepared by the Employer and made available to bidders as an Annex to the Bidding Document. The designs should include unpriced Bills of Quantities (BoQ) meant to provide guidance for bidders to prepare their financial bid. This is likely to reduce the risk of under-priced bids.*

*The road designs should also address the risk of road deterioration due to climate change and include works to increase the climate-resilience of the road.*

*Required Rehabilitation Works could also include works that are often called “Periodic Maintenance”, such as pavement overlays. These may also be described here and scheduled towards the end of the contract period, to extend the lifespan of the pavement beyond the contract period.]*

The Contractor may either adopt the designs made available by the Employer as his own, or otherwise prepare his own designs which must comply with all design criteria and Employer’s requirements stipulated further below in the Specifications. The Contractor’s design is subject to approval by the Project Manager. The Contractor is not entitled to make any claim based on errors or insufficiencies in the designs that may have been provided by the Employer.

## Improvement Works

The Contractor is obliged to price in his bid and carry out the following Improvement Works:

*[For each road for which Improvement Works are required (such as intersections, additional lanes, new bridges, safety improvements, etc.) insert here a separate sheet with the detailed description of the required works, including their start and completion dates. Required Improvement works could also address the risk of road deterioration due to climate change and include works to increase the climate-resilience of the road, such as increasing the capacity of culverts and other drainage features.] If the Employer provides designs for such Improvement Works, these should be presented as an Annex.]*

The detailed designs for the Improvement Works are to be done by the Contractor at his own cost and must meet the minimum requirements in accordance with the relevant parts of these Specifications.

While the design of the Improvement Works is the responsibility of the Contractor, the Employer has carried out designs for the Works described below and is making those designs available to the Contractor, for information:

*[Insert here a list and description of all designs that the Employer has prepared and is making available for the Contractor. These may either be conceptional, preliminary, or detailed designs for required Improvement Works. The World Bank strongly recommends that for any required major Improvement Works the corresponding designs are to be prepared by the Employer and made available to bidders as an Annex to the Bidding Document. The designs should include unpriced Bills of Quantities (BoQ) meant to provide guidance for bidders to prepare their financial bid. This is likely to reduce the risk of under-priced bids.]*

The Contractor may either adopt the designs made available by the Employer as his own, or otherwise prepare his own designs which must comply with all design criteria stipulated in Part B of the Specifications. If the Employer has proposed a conceptual or preliminary design which the Contractor wishes to adopt, the Contractor shall be obliged to carry out the detailed design on the basis of the conceptual or preliminary design. The Contractor is not entitled to make any claim based on errors or insufficiencies in the designs provided by the Employer.

## Maintenance Services

Maintenance Services consist of all interventions on the Roads and their right-of-way that are to be carried out on a regular or occasional basis by the Contractor in order to attain and maintain the defined Service Levels for the roads included in the contract. They also include numerous required and necessary activities related to the management and patrolling of the roads included in the Contract, throughout the entire contract duration.

Maintenance services include (but are not limited to) the following:

* Repairing road defects (such as potholes, rutting, ravelling, cracking in pavement, edge break, etc.);
* Maintenance of shoulders, verge, intersections, junctions with other roads, roundabouts, overpasses and other road surface areas;
* Repair works in embankment and cut slopes;
* Drainage system cleaning, maintenance, and repairs;
* Maintenance of bridges and other structures (such as retaining walls, culverts, etc.);
* Road cleaning and removal of trash and debris;
* Vegetation control (cutting vegetation);
* Maintenance of existing vegetation, such as trees (if required);
* Cleaning and maintenance of road signs and road markings, including their replacement needed due to wear and tear, minor damages, etc.;
* Maintaining traffic flows and road safety during Works carried out on the roads;
* Regular patrolling of the roads in line with the requirements;
* Establishing and operating the Contractor’s Self-Control Unit;
* Road condition data collection and monthly reporting;
* Other types of reporting as required by the Contract;
* Providing assistance to road users in emergency situations resulting from traffic accidents or incidents, extreme weather events, natural disaster, etc.

*[For countries with cold climates, the OPBRM may also need to include Winter Maintenance Services, such as snow and ice removal. A specific OPM for Winter Maintenance will have to be included in the Specifications and detailed specifications for Winter Maintenance added.]*

### Service Level classes applied under the contract

*[Note: This sub-section only applies if the Employer wishes to specify different Service Levels classes for different categories of roads included in the contract. This sub-section can however be deleted if the contract only stipulates one single Service Level class to be applied for all roads. In such case, the tables for specific OPM’s in sub-section B.8 ……… also need to be modified so that they show only one Service Level class.]*

Service Levels define the required minimum physical conditions of the road. Different Service Level classes may apply for different roads with different characteristics and traffic levels. Also, Service Level requirements may be different before and after required rehabilitation works (see also “Reduced” and “Minimum” Service Levels described further below).

The Service Levels classes applied under the contract are as specified below. The Contractor is responsible for achieving and maintaining the Service Levels for each class. The full amount of the monthly payment for Maintenance Services shall only be made if these Service Levels are fully complied with.

*[Insert here the Service Levels applicable under the Contract. The Sample Specifications propose and define three different Service Level classes for paved roads; these are:*

* *Service Level class “A” is the highest and is normally applicable for multi-lane Highways with high traffic volumes.*
* *Service Level class “B” is a somewhat lower level of service and normally applicable for Roads and Highways with medium traffic levels.*
* *Service Level class “C” is normally applicable for lower-traffic roads of secondary importance.*

*These Service Level classes for paved roads may either be adopted for use in the bidding document, or other Service Level classes may be defined in the Specifications, if found more appropriate for the country in which the contract is to be executed or for the particular roads included in the contract.*

*For unpaved roads, the Employer must define the required Service Levels in accordance with the specific circumstances of each road, which may vary widely. The World Bank provides guidance on the appropriate Service Levels for unpaved roads as part of the Guidance materials published along with the Standard Procurement Document.*

*When defining the required Service Levels, the Employer must also consider the aspect of affordability. While high Service Levels may be desirable, they may not be affordable and lower Service Levels may be more appropriate and financially sustainable.]*

### Payment Deductions and Grace Periods

Failure to meet the required Service Level will result in a reduction in the monthly payment for Maintenance Services. The principles to be applied for payment reductions are the following:

**“First-day” Payment Reduction:** Payment Reductions in general are meant to provide an incentive for the Contractor to continuously and proactively identify any non-compliances and to carry out quickly the necessary remedial measures. The “First-day” payment reduction in particular has the objective to ensure that the Contractor detects and remedies non-compliances quickly, without waiting for the next Formal Inspection. Therefore, the existence and detection of a non-conformance with Service Level requirements during the Monthly Formal Inspection triggers the immediate and irreversible application of the “First-day” payment reduction. The “First-day” payment reduction is the payment reduction due for one day of non-compliance. The “First-day” payment reductions are to be applied immediately at the time of the Formal Inspection and will lead to a reduction of the payment to the Contractor, for the corresponding Monthly Statement. The application of the “First-day” payment reduction can however be voided by the Project Manager on an exceptional basis if it is evident that at the time of the Formal Inspection the Contractor’s staff and equipment are already actively working on remedying the non-compliance.

**Suspension of further payment reductions through granting of Grace Period:** Payment reductions are generally applied for each day during which the non-compliance persists. However, in order to avoid overly severe payment reductions and to provide the Contractor with the opportunity to remedy the non-compliance without incurring in further payment reductions (beyond the “First-day” payment reduction already applied), most OPM’s have a “Grace Period”. The granting of the Grace Period to the Contractor does NOT avoid the “First-day” payment reduction, but suspends the further application of additional payment reductions during the Grace Period. The Grace Period will temporarily “stop the clock” for additional daily payment reductions, for the duration of the Grace Period after the “First day”. If the Contractor remedies the non-compliance within the Grace Period granted, there will not be any additional payment reduction for that same non-compliance. The duration of the Grace Period given for different types of defects is shown in the corresponding descriptions for each OPM in the Specifications. However, if the Contractor does NOT remedy the non-compliance within the Grace Period, a further payment reduction for all days of non-compliance (starting from the second day after the initial detection and until the non-compliance is remedied) will be applied in the following month and (if applicable) for any subsequent months, without a limit being applied to the length of time.

The procedures to be followed for applying those payment reductions are described in detail in Section C.1.2.1.

### Measures for assessing the Contractor’s performance

The Contractor’s performance requirements for Maintenance Services are defined and measured according to (i) Operational Performance Measures (OPM’s) and (ii) Management Performance Measures (MPM’s), as set out below.

### Operational Performance Measures (OPM’s)

OPM’s are a set of performance criteria listed below which relate to the physical condition of roads and allow to evaluate the Contractor’s compliance with Service Level requirements. OPM’s are to be monitored continuously and measured monthly by the Contractor, as defined in the Operational Procedures. Results will be expressed and reported as either being “in compliance”, or otherwise as “not in compliance” until the non-compliance has been remedied by the Contractor.

The OPM’s that are applied under the contract are the following:

*[Insert a Table listing the Operational Performance Measures (OPM’s) to be applied under the Contract. The table shown below shows the recommended OPM’s for paved roads and may be used if found appropriate by the Employer for the specific circumstances of the roads included in the contract. Some OPM’s have several sub-criteria as shown further below. The OPM’s listed in the Sample Table below are those which are specified in detail further below in these Specifications, along with their sub-criteria, if applicable. They are also in line with the provisions of the Contract and the language used therein. Note that the terms and concepts of “First Day” payment reduction and “Grace Period” as well as their mode of application are explained in Part C - Operational Procedures.]*

*[If the contract is to include Winter Maintenance, such as snow and ice removal, an additional OPM needs to be added.]*

[Sample Table: Operational Performance Measures (OPM’s) for paved roads]

|  |  |  |
| --- | --- | --- |
| *1.* | *OPM-1:* | *Usability (Availability of each lane-km for use by traffic)* |
| *2.* | *OPM-2:* | *Pavement defects (potholes, rutting, ravelling, cracking in pavement, edge break, etc.)* |
| *3.* | *OPM-3:* | *Pavement Roughness* |
| *4.* | *OPM-4:* | *Shoulder and Verge Maintenance* |
| *5.* | *OPM-5:* | 1. *Drainage* |
| *6.* | *OPM-6:* | *Bridges, Structures and Embankments* |
| *7.* | *OPM-7:* | *Incident Response and Emergency Works* |
| *8.* | *OPM-8:* | *Road signs, line-markings and road furniture* |
| *9.* | *OPM-9:* | *Vegetation control* |
| *10.* | *OPM-10:* | *Performance of the Contractor’s Self Control Unit (SCU)* |

*[Details for each particular OPM are provided in the sections below. They may either be adopted for the bidding document if appropriate for the specific circumstances of the road network included in the contract, or otherwise they may be modified as needed.]*

#### OPM-1: Usability

The Contractor must ensure that the road with all its traffic lanes and other lanes is open to traffic and free of interruptions at all times. Permitted exceptions are:

* Lane closures following serious traffic accidents (not exceeding 4 hours after release of the accident site by Traffic Police);
* Restrictions on traffic flow needed to carry out scheduled works on the road by the Contractor;
* Natural disasters; and
* Lane or road closures resulting from the direct instructions of the Traffic Police or other relevant authorities, in circumstances which are not the responsibility of the Contractor.

The above requirements are applied to all Service Level classes.

###### Method of Inspection: By driving on the road in a normal manner, utilising a vehicle type that is similar to the vehicles typically used by road users. This requirement is not complied with if one or several traffic lanes are partially or fully interrupted or blocked at any point. The requirement is complied with if the road with all its travel and turning lanes is fully open to traffic and usable as designed.

**Payment reduction for non-compliance:**

* **If all travel lanes of the road are interrupted:** One (1) percent of the monthly lump-sum for the full length of the entire road or road section that is affected (not only of the specific point or length where the obstruction is located), for each two-hour period of non-compliance.
* **If one or several travel lanes are interrupted, but at least one lane remains open in each direction:** Half (1/2) percent of the monthly lump-sum for the entire road or road section that is affected, for each two-hour period of non-compliance.

#### OPM-2: Pavement Defects

*[Note: OPM-2 as described below applies for paved roads with flexible pavements. For rigid pavements, OPM-2 need to be adapted accordingly. For unpaved roads, these Sample Specifications propose a different OPM-2 further below. In all cases, the local pavement types as well as the typical defects and distresses need to be taken into account when finalizing the criteria to be applied for OPM-2.]*

OPM-2 applies for all paved road surfaces. There are several types of pavement defects for which separate OPM’s are applied, as listed below. Repairs of pavement defects have to be carried out in line with the General Specifications. If the General Specifications do not specify methods and procedures for such repairs, good international construction practice must be applied.

It is to be noted that as part of OPM-4.2 (paved shoulders), all criteria of OPM-2 also apply for paved shoulders, but a longer Grace Period is granted for remedying defects of paved shoulders.

##### OPM-2.1: Potholes

The different values of the performance indicators for the corresponding Service Levels are given in the Table below:

[Sample Table: Pothole Service Levels]

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Service Levels** | | |
|  | **Class C** | **Class B** | **Class A** |
| Potholes (Max. allowed Diameter of any single pothole in cm) | 30 | 20 | 15 |
| Potholes (Max. number in anyone (1) km section, with a diameter greater than 10 cm) | 10 | 6 | 3 |
| Potholes (Max. allowed depth of any single pothole, in cm) | 4 | 3 | 2 |
| **Grace Period granted after “First-day” payment deduction** | | |  |
| Grace Period in **days\*** | 28\* | 7\* | 7\* |

\* For OPM-2.1, the Grace Period is the time permitted for technically appropriate repairs (patching) which must be carried out in line with the requirements of the General Specifications or good international construction practice. However, since potholes also affect road safety, the Contractor is obliged to fill potholes at least temporarily with Cold Mix or other materials approved by the Project Manager, within 24 hours of their detection.

###### Method of Inspection: Visual inspection. Measuring shall be made by using a tape measure, ruler or straightedge, transparent ruler, or calibrated steel probe.

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

##### OPM-2.2: Patching

Patching is the mandatory repair method for many different pavement defects.

[Sample Table: Patching for all Service Levels]

|  |
| --- |
| Patches (i) shall be square or rectangular, (ii) must have squared edges cut with a blade or a similar tool, (iii) shall be level with the surrounding pavement, (iv) shall be made using materials similar to those used for the surrounding pavement, and (v) shall not have cracks wider than three (3) mm. |
| **Grace Period granted after “First-day” payment deduction:** 28 days |

###### Method of Inspection: Patches shall have a smooth and regular surface, flush with the surrounding road surface. When checking with a straightedge extending across the surface of the patch in any direction, there shall be no deviation from the lower edge of the straightedge of more than 5 mm. Methods and equipment used for inspection:

* Visual inspection (for detection of shape and materials used);
* Straightedge (for patch evenness);
* Ruler (to check if patch is level with surrounding pavement); and
* Small transparent ruler (for measuring cracks).

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

##### OPM-2.3: Isolated cracking in pavement

An isolated crack is defined as a linear opening in the pavement with a width of more than three (3) mm, such as longitudinal cracks, transverse cracks, and edge cracks.

The Contractor is obliged to seal all linear isolated cracks wider than three (3) mm. Sealing must be preceded by routing of the crack (if needed) and cleaning to ensure adherence of sealant material. The seal must ensure that water cannot enter the road structure through the crack.

[Sample Table: Linear isolated cracking for all LoS]

|  |
| --- |
| Linear isolated cracks more than 3 mm wide must not exist on the pavement. |
| **Grace Period for repairs, after “First Day” payment deduction,**  **in days:** 28 |

###### Method of Inspection: Crack widths are measured with a small transparent ruler.

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

##### OPM-2.4: Multiple cracks in the pavement

OPM 2-4 applies in cases of multiple visible cracks (such as alligator cracks, or block cracking, or cracks crossing each other). For multiple cracks, the “cracked area” is equivalent to a square or rectangle, parallel to the traffic lanes, which fully encloses the cracks, and where the closest crack is at least 0.25 m away from the sides of the square.

The requirement is as follows: The cracked areas shall not exceed ten (10) percent of any 50-meter section of road. Cracked areas exceeding 10 percent of any 50-meter road section must be repaired, with the Contractor proposing the repair method to the Project Manager for approval. Repair methods are: (i) patching, with or without repair of underlying pavement layers, or (ii) applying a seal coat to the entire cracked area, or (iii) sealing of the individual cracks. For all repair methods, the repair must ensure that water cannot enter the road structure through the repaired area.

[Sample Table: Multiple Crack for all LoS]

|  |
| --- |
| For any 50-meter section of the pavement, the cracked area shall not be more than ten (10) percent of the pavement surface. Repairs must be performed as per the requirements. |
| **Grace Period for repairs, after “First Day” payment deduction,**  **in days:** 56 |

###### Method of Inspection: Detection of multiple cracks by visual inspection. Measurement of cracked areas by measuring tape, handheld measuring wheels or other appropriate measuring devices. The “cracked area” is equivalent to a square or rectangular area, parallel to the traffic lanes, which fully encloses the cracked area.

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one-km section in which a non-compliance exists, and for each day during which the non-compliance persists.

##### OPM-2.5: Cleanliness of the pavement, shoulders, and Right-of-Way

*Cleanliness* refers to the *absence* of soil, debris, trash, rubbish, dead animals, and other such objects. The terms “*cleanliness*” and “*absence*” are defined further below for the purposes of the contract.

The requirement is that the **road and shoulder surface** must always be “clean”.

Also, debris, trash, rubbish and other objects, including dead animals, must be absent from the **Right-of-Way** of the road at least up to 20 meters away from the edge of the pavement (or of the riding surface in the case of unpaved roads) on both sides of the road, unless specified otherwise elsewhere.

[Sample Table: Cleanliness Service Levels, Grace Period for removal]

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Service Level (Grace Period for removal, in days)** | | |
|  | **Class C** | **Class B** | **Class A** |
| Cleanliness\* of the **pavement surface and shoulders** when unclean conditions present a **safety risk.** (Patrol in line with required patrol frequency). | To be cleaned during patrol. No Grace Period. | To be cleaned during Patrol. No Grace Period. | To be cleaned during patrol. No Grace Period. |
| Cleanliness\* of the **pavement surface and shoulders** when there are no safety risks | 14 | 7 | 3 |
| *Absence* of trash/rubbish **from the road’s Right-of-Way\*\*,** outside the pavement and shoulder surface | 90 | 60 | 30 |

**Grace Periods (in days) for removal, after “First Day” payment deduction is applied.**

\*Definition of “*Cleanliness of pavement surface and shoulder”,* **for rural areas**: The maximum number of items on the sealed surface and shoulders, with any dimension greater than 15 cm (or smaller if posing an obvious safety hazard) within a continuous 100-meter centreline length shall be less than ………… *[insert number, recommended is 5 (five)]* …………………… .

\*Definition of “*Cleanliness of pavement surface and shoulders”,* **for built-up or populated areas**: The maximum number of items on the sealed surface and shoulders, with any dimension greater than 15 cm (or smaller if posing an obvious safety hazard) within a continuous 100-meter centreline length shall be less than ………………… *[insert number, recommended is 20 (twenty)]* ……………………...

\*\*Definition of *“Absence from the Road’s Right-of-Way”:* The maximum number of clearly visible items on the surface of the Right-of-Way, on any side of the carriageway(s) and not further than 20 meters away from the edge of the sealed shoulder, with any dimension greater than 15 cm, shall be less than ………………………… *[insert number, recommended is 20 (twenty)]* …………………… within any continuous 100 meter centreline length of the road.

**Method of Inspection:** Visual inspection.

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

##### OPM-2.6: Rutting

There are two performance criteria for rutting: (i) Rutting shall not exceed the defined maximum allowed depth at any point along any one-km road section; and (ii) Rutting of more than 75% of the maximum allowed depth shall not be present for more than the maximum allowed percentage of length within any one-km road section. Different levels are set for roads with one traffic lane in each direction (single carriageway) and for multiple carriageway roads and highways.

[Note: For areas with high rainfall, the tolerances may need to be lower to reduce the risk of aquaplaning.]

[Sample Table: Rutting Service Levels]

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Service Levels** | | |
|  | **Class C** | **Class B** | **Class A** |
| Max. allowed Rutting depth (mm) – for **multi-lane highways** | 30 | 20 | 15 |
| Max. allowed Rutting (% of any one-km length) – for **multi-lane highways** | ≤5 | ≤5 | ≤5 |
| Max. allowed Rutting depth (mm) – **Single Carriageway roads** | 35 | 20 | 15 |
| Max. allowed Rutting (% of any one-km length) – **Single Carriageway roads** | ≤10 | ≤5 | ≤5 |
| **Grace Period for Repairs, after “First Day” payment deduction:** | | |  |
| Rutting (Grace Period in days) | 56 | 56 | 56 |

###### Method of Inspection: Measured with one ruler and one straightedge. Straightedge of three (3) meters length placed horizontally and perpendicularly across lane. Rut depth is measured as the space between the lower edge of straightedge and the lowest point of rut, using a small ruler with scale in mm.

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

##### OPM-2.7: Ravelling of pavements

Ravelled pavement areas must not exist for roads at Service Level “A”. For Service Levels “B” and “C”, the maximum surface area of ravelling within any continuous one-km centreline length shall be less than two (2) percent and four (4) percent respectively.

[Sample Table: Ravelling Service Levels]

|  |
| --- |
| Service Level “A” - Ravelled areas must not exist at all. |
| Service Level “B” - Maximum allowed Ravelled areas: Two (2) percent of surface in each one km section of road. |
| Service Level “C” - Maximum allowed Ravelled areas: Four (4) percent of surface in each one km section of road. |
| **Grace Period for Repairs, after “First Day” payment reductions, in days:** 56 |

###### 

###### Method of Inspection: Detection of Ravelling by visual inspection. Measurement of ravelled areas by measuring tape, handheld measuring wheels or other appropriate measuring devices. The “ravelled area” is equivalent to a square or rectangular area, parallel to the traffic lanes, which fully encloses the ravelling.

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

##### OPM-2.8: Loose pavement edges

[Sample Table: Pavement Edges, for all Service Levels]

|  |
| --- |
| There shall not be loose pavement edges, or pieces of pavement breaking off at the edges. A one-km section is non-compliant if pavement edges are loose or broken off for a combined length of more than 5 meters. |
| **Grace Period for Repairs, after “First Day” payment reductions, in days:** 56 |

###### Method of Inspection: Visual inspection.

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

##### OPM-2 for unpaved roads

*[Note: The Service Level criteria described below are suggested for unpaved roads, but may need to be adjusted to the specific needs and conditions in the country and area where the contract is to be executed.]*

OPM-2 for unpaved roads includes three sub-criteria:

* OPM-2.1: Travel Speed
* OPM-2.2: Road User Comfort
* OPM-2.3: Durability

OPM-2.1 Traffic Speed on unpaved roads

The Contractor is obliged to ensure that a vehicle of the type defined further below is able to circulate in a safe manner (i) at the average speed indicated below, and (ii) that road surface conditions never constrain the vehicle speed below the minimum speed indicated below. The average speed is measured by driving normally for 15 minutes anywhere along the road and multiplying the distance covered by a factor of 4 (four).

**Vehicle:** ……………… *[indicate vehicle, including* ***brand and model****] ………………*

*[Note: The vehicle selected should be the most typical vehicle used by road users on the road in question. This will also allow road users to participate informally in the inspection of compliance of the Contractor with this Service Level criterion.]*

**Average traffic speed:** ..................... *[insert average speed] ……………………*

**Minimum constrained speed:** *………… [insert minimum constrained speed, typically half the average speed] …………………*

*[Note: (i) There may be more than one speed defined if there are different requirements for different classes of roads in the network. (ii) The speed requirement may increase over time if the Contractor is expected to gradually improve the Service Level of the road. (iii) In area with very pronounced rainy seasons and difficult soil conditions, it may be advisable to reduce the average speed requirement during the rainy season.]*

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

**Grace Period for Repairs, after “First Day” payment reductions, in days:** 28

OPM-2.2 Road User Comfort on unpaved roads

The road user must be able to circulate at a certain level of comfort and safety, which depends on several criteria which are defined below.

| **Type of defect** |  | **Service Level** | | |
| --- | --- | --- | --- | --- |
| **Class C** | **Class B** | **Class A** |
| Road Corrugation Amplitude | Permitted maximum value (in cm) at any single point of road:  *[insert* ***value*** *for each Service Level, the recommended maximum is between 2.5 cm and 4.5 cm]* | 4.5 | 3.5 | 2.5 |
| Rut Depth | Permitted maximum value (in cm) at any single point of road:  *[insert* ***value*** *for each Service Level, the recommended maximum is between 3.5 and 5 cm]* | 5.0 | 4.0 | 3.5 |
| Other Surface Degradations (potholes, erosions, and similar types of degradations, other than corrugation and rutting) | a. Permitted maximum dimension (in cm) of any single degradation**:**  *[insert values for each Service Level, the suggested value is between 30 cm to 50 cm diameter]*  and  b. Permitted maximum number of accumulated degradations in any 1 km section with any dimension greater than[*insert value, the suggested value is between 15 cm and 30 cm]* | 50  30 | 40  20 | 30  10 |

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

**Grace Period for Repairs, after “First Day” payment reductions, in days:** 28

OPM-2.3 Durability of Unpaved Roads

The activities of management and maintenance of the road carried out by the Contractor during the entire period of the contract must not endanger the long-term sustainability of the road, which depends on the criteria defined below.

*[Note: “Durability of the Road” is a group of criteria most of which do not directly and immediately affect the usage of the road in the short term, but which are nevertheless very important for the long-term “survival” of the substance of the road. In essence, OPM-2.3 for unpaved roads avoids a maintenance strategy in which the Contractor “consumes” the road through repeated grading without adding gravel to the surface. The required longitudinal profile to be maintained by the Contractor should be established as part of the technical preparation of the project, through a topographical survey. It must be part of the Specifications. At a minimum, it must be specified that the road surface must be higher than the surrounding terrain.]*

|  |  |
| --- | --- |
| **Required longitudinal profile** | Accepted maximum negative vertical tolerance**:**  *[insert* ***value,*** *recommended value is minus five (5) centimeters (5.0 cm below the height of the required longitudinal profile); no limit on the positive side]* |
| **Useable Road Surface width** | Road 1: …… *[insert* ***value****]* meters  Road 2: *…… [insert* ***value****]* meters  Road 3: ……etc.……  Accepted maximum negative tolerance:  *[insert* ***value****, recommended is a value in the order of minus 20 centimeters (20 cm less than the width of the required useable road surface]* |

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

**Grace Period for Repairs, after “First Day” payment reductions, in days: 56**

OPM-2.4 Gradual Compliance with Service Levels for unpaved roads

In order to respect the Contractor’s initial mobilization period, compliance with any of the Service Level criteria is not expected until: ………………… *[insert* ***number*** *of days after signature or full legal notification of contract, recommended are between 60 and 90 days]* ………………………

The following table summarizes the variations and gradual compliance requirements with Service Levels over time: ……………… *[insert* ***table****] …………………*

*[Note: The following table is an example from a 4-year contract which may be adapted to the specific needs of the contract and the roads included therein.]*

**SAMPLE TIMETABLE for unpaved roads**

|  | **Timetable of compliance with Service Level requirements** | | | |
| --- | --- | --- | --- | --- |
| No. months since Start Date of Contract | **Usability of the road(s)**  Compliance required on  *(% of total length of roads under contract)* | **Average Traffic Speed**  Minimum safe traffic speed which can be maintained  *(in Km/h)* | **Road User Comfort**  Compliance required on  *(% of total length of roads under contract)* | **Durability of the road(s)**  Compliance required on  *(% of total length of roads under contract)* |
| 1 and 2 | No minimum set | No minimum set | No minimum set | No minimum set |
| 3 | 100 | 40 | 3 | 2 |
| 4 | 100 | 40 | 8 | 4 |
| 5 | 100 | 50 | 13 | 7 |
| 6 | 100 | 50 | 18 | 11 |
| 7 | 100 | 50 | 24 | 15 |
| 8 | 100 | 60 | 30 | 20 |
| 9 | 100 | 60 | 36 | 25 |
| 10 | 100 | 60 | 42 | 30 |
| 11 | 100 | 60 | 50 | 35 |
| 12 | 100 | 60 | 60 | 40 |
| 13 | 100 | 60 | 70 | 45 |
| 14 | 100 | 60 | 80 | 51 |
| 15 | 100 | 60 | 90 | 57 |
| 16 | 100 | 60 | 100 | 63 |
| 17 | 100 | 60 | 100 | 69 |
| 18 | 100 | 60 | 100 | 75 |
| 19 | 100 | 60 | 100 | 81 |
| 20 | 100 | 60 | 100 | 87 |
| 21 until End of contract period | 100 | 60 | 100 | 100 |

*[Note: If the contract includes several groups of roads with different Service Level requirements, a separate table must be presented for each group. In countries with very pronounced rainy seasons, it may not be reasonable to request full compliance with all criteria during the rainy season, and different tables may be presented for the dry and rainy seasons. These and other potential limitations must be carefully evaluated when preparing the Specifications.]*

#### OPM-3: Pavement roughness

*[Note: OPM-3 may be applied by the Employer for certain high-traffic roads or expressways, but is not used for all contracts. It is applicable for paved roads only. For unpaved roads, this OPM-3 should be omitted.]*

Independent of the applicable specifications on roughness for newly built or rehabilitated pavements, the maximum allowed roughness of existing pavements may not exceed the values shown in the table below. Non-compliance must be remedied by the Contractor through pavement overlays or other appropriate pavement rehabilitation measures in line with the General Specifications and good international construction practice. The remedial measures must be based on a design to be prepared by the Contractor and approved by the Project Manager.

[Note: There are different methods and types of equipment used for measuring road roughness. The measurement method to be used must be indicated here.]

[Sample Table: Maximum allowed pavement roughness]

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Service Levels** | | |
|  | **Class C** | **Class B** | **Class A** |
| Max. allowed Roughness (IRI) in m/km – Single Carriageway (2-lane) roads | ≤5.00 | ≤4.00 | ≤3.20 |
| Max. allowed Roughness (IRI) in m/km – Dual or multiple Carriageway highways: **Right-most traffic lane** | ≤6.00 | ≤4.80 | ≤4.00 |
| Max. allowed Roughness (IRI) in m/km – Dual or multiple Carriageway highways: **Other traffic lanes** | ≤4.50 | ≤3.80 | ≤3.20 |
| **Grace Period for Repairs, after “First Day” payment deduction:** | | |  |
| Roughness (Grace Period in days) | 180 | 180 | 120 |

**Method of Inspection:** Measurementfor each traffic lane, using the methods described in the Specifications.

**Payment reduction for non-compliance:** One (1) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

#### OPM-4 Shoulder and Verge Maintenance

##### OPM 4-1: Height of Shoulders vs. Height of Pavement

There should not be a drop between the pavement and the shoulder (Shoulder drop) greater in depth than the values stated in the following table. The height of the shoulder shall also not extend above the level of the sealed road surface more than the values stated in the table (Shoulder rise).

*[Sample Table: Shoulder drop/rise Service Levels]*

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Service Levels** | | |
|  | **Class C** | **Class B** | **Class A** |
| Max. allowed Shoulder drop: Height of pavement vs. Height of Shoulder (difference in **mm**), over any lengths of 10 meters or more | 65 | 50 | 40 |
| Max. allowed Shoulder rise (in mm), over any lengths of 10 meters or more | 4 | 2 | 2 |
| **Grace Period for Repairs (in days) granted after “First-day” payment deduction:** 56 | | | |

###### Method of Inspection: Measured at any location with a 3m straightedge placed vertically to centreline and a ruler with scale in mm. The distance measured is between the straightedge and the level of the shoulder (for shoulder drop) or the level of the pavement (shoulder rise).

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

*[Note: Shoulder drop and Shoulder rise are both traffic safety issues. Shoulder rise may cause accumulation of water on the road and result in aquaplaning.]*

##### OPM 4-2: Paved Shoulders

The shoulder is defined as the width from the edge of the paved traffic lane to the end of the verge or the start of the side drain. The shoulder must be maintained (i) to support the pavement edge, (ii) to allow for the occasional use by traffic, (iii) to ensure its function as the drainage path for water runoff from the carriageway and (iv) to ensure the elimination of an edge drop off at the edge of the sealed pavement.

Sample Table: Paved Shoulder for all LoS

|  |
| --- |
| The criteria of OPM-2 (Pavement Defects) also apply for paved shoulders. In addition, paved shoulders shall always be adequately sealed to prevent water penetration, without deformations or erosions in excess of 15mm under a 3-meter straightedge in any direction. |
| **Grace Period for Repairs (in days) granted after “First-day” payment deduction:** 90 |

###### Method of Inspection: Visual inspection to detect defects. Straightedge and ruler (for measuring evenness).

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

##### OPM 4-3: Unpaved Shoulders

[Sample Table: Unpaved Shoulder for all Service Levels]

|  |
| --- |
| Unpaved (gravel) shoulders shall be maintained compacted and graded to a smooth condition across the full width, with no depression or hump in excess of 75mm under a 3-meter straightedge in any direction. |
| **Grace Period for Repairs (in days) granted after “First-day” payment deduction:** 90 |

###### Method of Inspection: Visual inspection to detect defects. Straightedge and ruler (for measuring evenness).

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

#### OPM-5: Drainage

*[Sample Table: Drainage for all Service Levels]*

|  |
| --- |
| The Contractor must ensure that all drainage elements are structurally sound, clean and without obstructions (due to sediment or debris) which may reduce their normal cross-section and impede the free flow of water. The basic principle used to determine the cleanliness of drainage structures or devices is “the percentage of the theoretical cross-section of the structure or device which is obstructed”. The obstructed percentage shall not exceed 20% of the theoretical cross-section. Also, erosion caused by runoff from drainage elements must be mitigated in order for (i) the structure itself to be protected against future structural failure and (ii) to avoid any significant damage and erosion to adjacent areas. Drainage elements include (but are not limited to) manholes, sumps, slot drains, catch pits, soak holes, flumes, outlets to subsoil drains, and access way/driveway culverts) and other drainage structures such as culverts (pipes and boxes), side drains, Irish crossings, vented fords or drift structures, etc. |
| **Grace Period for cleaning and/or repairs (in days) granted after “First-day” payment deduction:** 30 |

###### Method of Inspection: Inspection is done visually to detect obstructions or defects. The percentage of obstruction is calculated for each type of drainage element, based on the measurement, or estimate of obstructed cross-section areas. Compliance requires that drainage fulfils the requirements stated above. Determination of structural soundness is based solely on the judgment of the Project Manager.

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

#### OPM-6: Bridges, Structures and Embankments

The Contractor is responsible for the normal routine maintenance of all bridges, structures and embankments along the roads and road sections included in the contract. In particular, he is responsible for the correct functioning of the structures (including the paint of metallic structures if not galvanized, road surfaces on structures, condition and presence of guardrails, etc.) and the safety and comfort of road users while using the structures at normal speeds.

The Contractor must immediately notify the Project Manager in case of any condition which may threaten the structural integrity of any structure. However, the reconstruction, structural repair, and improvement of bridges (but not of culverts, retaining walls and embankments) is excluded from the Contractor’s obligations, unless specified elsewhere in the contract or required under Rehabilitation, Improvement or Emergency Works.

##### OPM-6.1 Bridges and structures

The maintenance requirements are as set out in the table below.

[Sample Table: Service Levels for Bridges and other structures]

| Item | Requirements  (for all Service Levels) | Measurement/ Detection | Grace Period granted after “First-day” payment deduction |
| --- | --- | --- | --- |
| Bridges and structures generally | Road surface, kerbs, guard rails and barriers must be in sound condition. Guardrails on bridges and access ramps must be present, painted, or galvanized, and not deformed.  There shall be no erosion or undermining of bridges and structures. | Visual inspection | Damages and defects must be repaired within twenty-eight (28) days. |
| Steel or other metal parts and structures | All metal parts of the overall structure shall be painted or otherwise protected and free of corrosion. | Visual inspection | Any corrosion must be cleaned and overpainted using a paint system approved by the Project Manager, within twenty-eight (28) days. |
| Concrete structures (minor or non-structural repairs | Beams and all other structural parts must be in good conditions and fully functional. Minor and non-structural repairs must be carried out by Contractor as part of his normal Maintenance Services. | Visual inspection | Minor repairs within 28 days.  Structural damage to be notified to Project Manager immediately. Proposals for rectification submitted to Project Manager within fourteen (14) days. |
| Retaining walls | Contractor must ensure presence and adequate condition of retaining walls and their drainage. | Visual inspection | Damages and defects must be repaired within twenty-eight (28) days. |
| Riverbeds | Contractor must ensure free flow of water under bridges and through culverts, and a clear, unobstructed channel at least equal to the structure opening for at least 100 meters upstream and downstream. Contractor must maintain design clearance under bridge. The Contractor shall take all reasonable measures to control erosion around bridge abutments and piers. | Visual inspection | Causes for non-compliance must be eliminated within fifty-six (56) days after water has sufficiently receded to allow minimum working conditions. |
| Level of expansion joints | The upper surface of the pavement shall not be more than 5 mm below the upper surface of the expansion joint, measured with a 1m straightedge put on top of the expansion joint in the direction of the road. | Straightedge and ruler measurement | Damages and defects must be repaired within fifty-six (56) days. |
| Expansion joints | Expansion joints shall be operating properly, be watertight if designed to be so, without any loose parts or visible wear and tear. The new expansion joint should have the same or better specifications as compared with the existing expansion joint. | Visual inspection | Temporary replacement of a non-compliant joint part with cold sand-asphalt must be made within fourteen (14) days. Damages and defects must be repaired within fifty-six (56) days. |

**Method of Inspection:** Visual inspections will be undertaken as part of the Formal and Informal Inspections. Bridges, structures, and other items listed in the table above will be checked during Inspections at points selected by the Project Manager based on visual appearance. The Project Manager shall be the sole judge of compliance. If a specified criterion is not met, the one-kilometre section in which the defect occurs will be judged non-compliant.

**Payment reduction for non-compliance:** Twenty-five (25) percent of the monthly Lump-sum rate for one km, to be applied for the one km section where the non-compliant bridge, structure or item is located, for each day during which the non-compliance persists.

##### OPM-6.2 Embankments, Slopes and Retaining walls

The Contractor is responsible for the maintenance of all embankments, slopes and existing retaining walls along the roads included in the contract. Embankments and slopes must be kept stable, well compacted and without deformations and erosions. All existing retaining walls or other stabilization measures must be maintained stable and fully functional. Major construction or reconstruction of retaining structures and slope stabilization, or major improvements to those, is to be done within the scope of Rehabilitation, Improvement or Emergency Works (and remunerated separately), if and when there is structural failure and/or risk of collapse or major slides, or if the Project Manager requests such works.

The regular maintenance and stabilization, including preventive maintenance and minor repairs of slopes and retaining walls is a part of the Contractor’s routine maintenance obligation. The Contractor shall inspect slopes regularly and inform the Project Manager if he detects a risk of slope failure which would require major Rehabilitation or Improvement Works to be remunerated separately, along with the proposed remedial measures.

If major repair or rehabilitation of slopes or retaining walls becomes necessary because of the Contractor’s negligence in carrying out routine and preventive slope maintenance, then the Contractor shall carry out any necessary repairs or rehabilitation without being entitled to separate payment for such works.

The requirements for all cut and embankment slopes are shown in the Table below.

[Sample Table: Embankment and Slopes, for all Service Levels]

| Item | Service Level  (applied to all Service Levels) | Measurement/  Detection | Grace Period granted after “First-day” payment deduction |
| --- | --- | --- | --- |
| Cut and Embankment slopes | Shall be stable and without deformations and erosions. | Visual inspection | Repairs must be completed within twenty-eight (28) days after the detection of the defect. |
| Retaining walls | Contractor must ensure presence and adequate condition of retaining walls and their drainage. | Visual inspection | Damages and defects must be repaired within twenty-eight (28) days. |
| Emergency removal of slides | Slides of slope material onto the road are considered an Emergency if the quantity of the material slipped (in m3) in any one occurrence or event is above the threshold for Emergency Works. If below threshold, removal is part of general maintenance obligations. | If the Contractor intends to invoke the contract provisions for Emergency Works, he must estimate the quantities and immediately inform the Project Manager. | Traffic flow to be re-established within a maximum of 24 hours, unless stipulated differently in Emergency Work Order.  Period for removal of slide material is set by Project Manager in Emergency Work Order. |
| Removal of slides (not classified as Emergency) | Fallen slope material must be removed. | Visual inspection for fallen slope material on shoulders or pavement | Fallen slope material must be removed.  For quantities below 50 m3:   * from pavement within 6 hours after detection * from shoulders and side drains within 48 hours after detection.   Above 50 m3   * from pavement within 24 hours after detection * from shoulders and side drains within fourteen (14) days after detection   For slides classified as “Emergency” different rules apply. |

###### Method of Inspection: Visual inspection of cut and fill slopes and of retaining walls will be undertaken as part of the Formal and Informal inspections. Compliance with the criteria for slopes and retaining walls will be based on visual appearance. The Project Manager shall be the sole judge of compliance. If a specified criterion is not met, the one-kilometre section in which the deficit occurs will be judged non-compliant.

**Payment reduction for non-compliance:** Twenty-five (25) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

#### OPM-7: Incident Response and Emergency Works

**Incident response** is defined as:

1. The response to all storm damage and to other weather-related incidents;
2. Carrying out special road patrols in advance of and during
   * Announced storms and other extreme weather-related events;
   * Major public events on road or adjacent to the road;
3. Responding to accidents, incidents and other events that may affect:
   * the safety of road users or people adjacent to the road;
   * the safety and integrity of the road.

Incident response includes:

* Assisting police and other emergency service providers at accident sites with traffic management, detours, and site clean-up; or clean-up of the accident debris including oil, fuel, or other spillages, sufficient to maintain the safe passage of vehicles and pedestrians.
* Repairing any damage caused by the accident or incident and reinstating the road.
* Attending any other incident that may affect road user safety, road availability and integrity, and completing temporary works to make the site safe. This includes activities such as eliminating obstructions to the free flow of traffic and removing unauthorized deposits of materials and abandoned vehicles from the road and its Right-of-Way.
* The Contractor is not responsible nor liable for salvaging vehicles which have been damaged in accidents and is not required to assist the owners of such vehicles except where necessary for the safety of the public or to eliminate obstructions to traffic.
* During wet weather the Contractor shall pay particular attention to sections of road which are likely to be inundated by water. The Contractor shall provide signs on inundated sections of road, clear waterways, pit entrances and culverts of obstructions, and divert water from the roadway when possible and necessary.
* The Contractor shall remove all blockages from bridges and culverts immediately after water levels permit such work to proceed. In case of flood, the highest level reached by the water on both sides of the road shall be recorded and the Project Manager advised within fourteen (14) days.

**Response Time:** This is the time within which the Contractor must be on site with at least basic equipment for the clean-up, traffic control and site securing, after becoming aware or receiving notification of an incident. The Contractor is required to record and report his own conformance with the Response Times. Where the Project Manager becomes aware of a failure to achieve the response time requirement, a non-conformance will be recorded by the Project Manager unless the Contractor can provide clear and verifiable evidence to the contrary or any other justifications judged acceptable by the Project Manager.

The term **Time of Notification** is defined as the time when the Contractor is advised of the incident, accident or emergency; by the Employer or by the Contractor’s personnel, or by a third party such as the Police or a member of the public.

**Supplementary Resources.** The Employer reserves the right to engage additional resources to supplement those provided by the Contractor if the Contractor is unable to provide adequate resources to manage the Incident or Emergency Work.

**Temporary Warning Signage.** Where required, the Contractor shall provide and install all necessary temporary warning signage, cones, high visibility netting etc.

###### Incident Response Site Boundaries. In certain circumstances during an incident the Contractor may be required to undertake work outside the Contract boundary, or another Contractor may be required to undertake work within the Contract’s boundary. In either circumstance, undertaking of such work by a third party shall not constitute a breach of this Contract. In such instances of working outside the Contract boundaries, the provisions of the Contract shall nevertheless apply. The Project Manager will confirm in writing any specific cross boundary protocols that may apply during large scale emergency events.

###### Incident Response - prior programming requirements. To facilitate conformance with the required response times, the Contractor shall identify in advance all such high-risk locations or road sections within the Contract and the travel times required from the nearest Contractor’s camp. He shall have developed and instituted adequate systems and measures to ensure that timely response to any incident is achievable. The Contractor shall also develop and maintain an up to date a list of relevant contact numbers for the local Police, Hospitals, and utility providers. This information shall be readily available to the Contractor’s personnel and to the Project Manager at all times and included in the Contractor’s Quality Assurance Plan (QAP).

**Incident and Emergency Response Activities - Response Times**

Maximum response time taken (from the Time of Notification):

* + 1. to contact and inform appropriate authorities: One (1) hour
    2. to secure the site: Four (4) hours
    3. remove materials, vehicles and any other obstructions etc. to re-establish normal traffic flow: twelve (12) hours, unless the volume of materials obstructing the road is such that it cannot be reasonably be expected that the Contractor can remove them within 12 hours, with the Project Manager being the sole judge if this condition is applicable.

###### Method of Measurement:

For Incident and Emergency response times: Contractor’s and other parties’ communication records and confirmation of actions taken by the Contractor provided to the Project Manager in writing, or through on-site observations by the Project Manager or others. The Contractor’s resources provided to manage emergencies and incidents must be considered satisfactory by the Project Manager.

**Payment reduction for non-compliance:** A Payment reduction of ………… *[insert amount, recommended is US$ 1,000 equivalent]* ………… is to be applied for each case of non-compliance.

#### OPM-8: Road signs, line-markings, and road furniture

##### OPM-8.1: Signalling, Lighting and Road Safety

The Contractor is responsible for ensuring that all horizontal and vertical signalling, as well as lighting, traffic lights, electrotechnical equipment, guardrails and road safety devices are fully functional and comply with the Specifications. The Service Level requirements for signalling, lighting and road safety devices are as shown in the Table below.

[Sample Table: Signalling, lighting, and road safety devices - all Service Levels]

| **Item** | **Service Level**  **(applied to all Service Levels)** | **Measurement/**  **Detection** | **Grace Period granted after “First-day” payment deduction** |
| --- | --- | --- | --- |
| Vertical signs (Information signs, warning signs, traffic rule signs, etc.) | Signal has to be present, complete, clean, legible, structurally sound, and clearly visible day and night. | Visual inspection | Absent\* or defect signs must be replaced within fourteen (14) days. |
| Horizontal Road markings | | Have to be present, clearly legible during day and night, and firmly attached to the pavement. | Visual Inspection | Non-compliant parts must be repainted or replaced within fifty-six (56) days. |
| Delineators and additional road furniture | | Have to be present, clean, structurally sound, firmly attached to the surface and clearly visible day and night. | Visual inspection | Non-compliant items must be replaced within twenty-eight (28) days. |
| Mileposts, guidance posts and similar markers | | Have to be present, visible, complete, clean, legible, and structurally sound; surface painted or otherwise covered. | Visual inspection | Absent\* or defect elements must be replaced within fifty-six (56) days. |
| Guardrails | | Have to be present, clean, without any structural damage, without corrosion. | Visual inspection | Damaged guardrails must be replaced within twenty-eight (28) days |
| Road and Street lighting, traffic lights and lighted signs | | The Contractor is responsible that all installed street and road lighting, and traffic lights, including power supply systems (cables, transformers, switching equipment, etc.) is functional at all times. | Visual inspection | Non-functioning lights and equipment shall be made functional within fourteen (14) days |
| Light posts | | All posts shall be present, vertical, functional and without any damage or corrosion at the main body and its foundation (bolts and anchors) | Visual inspection | Damaged light posts must be replaced within twenty-eight (28) days. The new light posts should have the same specifications or better specifications as compared with the existing light post. |

\* ***“Absence”*** refers to the signs and elements that are either listed on the initial road inventory or that have been installed by the Contractor as part of Rehabilitation, Improvement or Emergency works.

The following further applies:

i) **Road Markings:** Road markings must include all carriageway markings required by the General Specifications, including edge lines, centre lines, double centre lines, etc. together with markings on intersections (give way line, side road centre line, pedestrian crossings, etc.), hazardous locations, parking and the markings on kerbs. All road marking should conform to the design standards stated in the Specifications. If the Specifications do not cover the Road Markings, the provisions of the General Specifications are to be applied.

Unless specified differently elsewhere in these Specifications, the use of thermoplastic reflective road marking materials is mandatory for:

* all lines in the primary road network; and
* the central line of the secondary road network.

However, for roads or road sections scheduled for pavement Rehabilitation Works to be completed within 24 months after the Start Date, other reflective road marking paint can be used until the Rehabilitation Works are completed. For all other road markings, the relevant parts of the General Specifications must be respected.

ii) **Road Signs:** Unless otherwise specified in the General Specifications, road signs to be installed by the Contractor shall conform to the design standards defined in the Specifications. If the Specifications do not cover the standards for Road Signs, the provisions of the General Specifications are to be applied. A sign must be considered ineffective when it can no longer be detected or easily read by day and night from a vehicle travelling at the average speed of traffic on the road on which the sign is placed, or when the luminosity is 70% of the minimum values stated in the relevant standards. Ineffective signs must be replaced. For all roads with posted speed ≤ 80 km/h medium size signs will be used and for posted speed > 80 km/h large size signs shall be used.

iii) **Distance Marker Posts (mileposts):** The Contractor’s bid for Maintenance Services must allow for the provision and maintenance of distance marker posts on one side of the project road (at least one post per km) unless otherwise indicated in the Contract. The design and specifications of distance marker posts must conform to the relevant standards. Posts that are absent at the beginning of the contract must be installed within the first 12 months of contract execution. *[Note: delete this provision if distance marker posts are not required under the contract.]*

**Method of measurement:** Visual Inspection. The Project Manager shall be the sole judge as to the compliance with the requirements.

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each case of non-compliance and for each day during which the non-compliance persists. If there are multiple cases of non-compliance on a one-km section, the payment reduction shall be applied separately for each case of non-compliance.

##### OPM-8.2: Retro-reflectivity of Road Signs and Markings

*[Note: The Employer may or may not apply requirements for the retro-reflectivity of Road Markings. If requirements are to be applied, these should take into account the applicable part of the General Specifications and/or the particular needs of the road.]*

[Sample Table: Retro-reflectivity of Road Signs, Road Markings and Road Safety devices - all Service Levels]

| **Item** | **Service Level**  **(applied to all Service Levels)** | **Measurement/**  **Detection** | **Grace Period granted after “First-day” payment deduction** |
| --- | --- | --- | --- |
| Vertical signs (Information signs, warning signs, traffic rule signs, etc.) | Reflectivity >70% of the values in the relevant design standard | Visual inspection | Non-compliant items must be replaced within fourteen (14) days. |
| Horizontal road markings | | Luminance (Qd) or Retroreflectivity (RL) is greater than or equal to 80 mcd/m2/lx | Visual Inspection | If non-compliant, must be repainted or replaced within fifty-six (56) days. |
| Delineators and additional road furniture | | Retro reflective items must have retained at least 70% of their original reflectivity. | Visual inspection | Non-compliant items must be replaced within twenty-eight (28) days. |
| Mileposts, guidance posts and similar markers | | Retro reflective parts must have retained at least 70% of their original reflectivity. | Visual inspection | Absent or defect reflective elements must be replaced within fifty-six (56) days. |

**Method of measurement:** Inspection with testing apparatus. Contractor shall propose appropriate testing apparatus to Project Manager for approval. For those items for which a specific reflectivity or luminance is not defined, the Project Manager shall be the sole judge as to the compliance with the requirements.

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

#### OPM-9: Vegetation Control

Vegetation growth is to be limited to the heights, at the locations and with the restrictions as set out in the table and in the diagram shown below. The grey shaded area in the diagram represents the cross section from which all protruding or overhanging branches or other vegetation must be removed by cutting back, or by removal of the parent plant.

*[In some contracts the Employer may also wish to introduce a requirement for the Contractor to create and maintain certain specified vegetation, such as roadside trees, slope vegetation, etc. These requirements may vary considerably and must be defined on a case-by-case basis. This document does not provide sample text for this item.]*

[Sample Table: Vegetation growth control for all Service Levels]

| Type | Maximum permitted height (cm) | Applied to: |
| --- | --- | --- |
| 1 | *[suggested maximum average permitted height is 25 cm]* | Urban highway shoulders, medians, traffic islands and highway verges, grass in rest areas (including around rest area furniture). |
| 2 | *[suggested maximum average permitted height is 40 cm]* | Non-urban roads and large vegetated areas, including surface water channels with longitudinal gradient ≥ 3%. |
| 3 | *[suggested maximum average permitted height is 25 cm]* | Vegetation control around:   * Edge marker posts * Signposts * Bridge end and culvert markers * Guardrails * Sight rails * Lighting Columns * Bridge abutments |
| 4 | Vegetation-free or near Vegetation-free | Applies to vegetation control around:   * Culvert ends * Culvert headwalls * Side drains * Culvert waterways * Surface water channels with gradient < 3% (except where nominated for mowing in the specific contract requirements) * Weigh pits * Kerb and channel * Lined channels * All sealed surfaces * Metalled shoulders * Bridge decks. |
| 5 | Growth must be removed when it encroaches into the Vegetation-free Zone from the side or top. | Applies to vegetation control in the envelope (grey shaded area in Figure below), including trees, scrub or branches hanging into the Vegetation Free Zone (within 0.5m of the line of the edge marker posts or to within 6.0m above the pavement).  (See Figure below) |

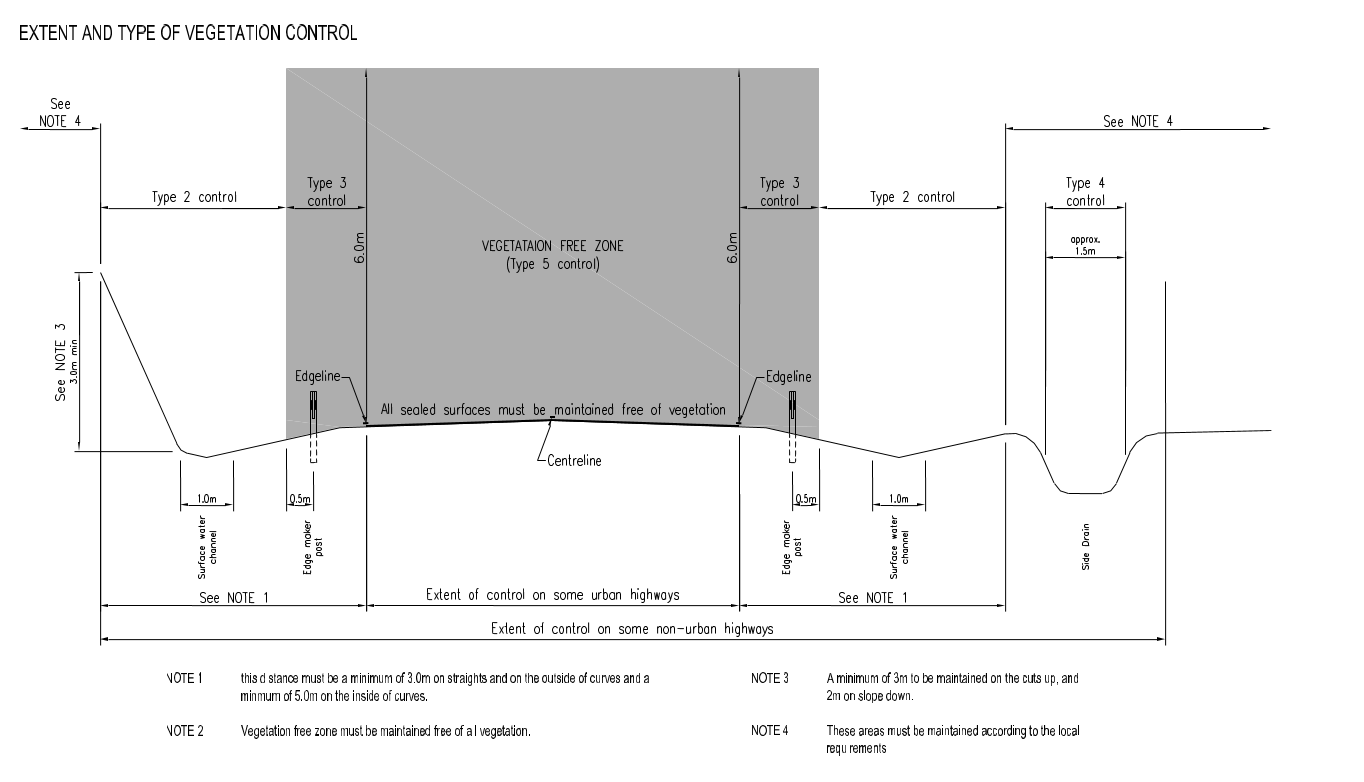
**Grace Period in days for vegetation control after application of “First-Day” payment reduction:** 14

###### Method of Inspection: The height of vegetation it is defined as the vertical distance between the ground and the highest point of the plant. It is measured by using a ruler or measuring tape. Clearance is also measured with a ruler or tape; it is defined as the distance between the lowest point of the tree (or other plant) above the road surface.

###### The average height of vegetation in a one km section will be equal to the average of five values measured at points selected by the Project Manager, with each point being at least 10 meters apart from the next.

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for one km, to be applied for each one km section that does not comply and for each day during which the non-compliance persists.

Sample Figure: Extent and Type of Vegetation Control



#### OPM-10: Performance of the Self-Control Unit

The correct execution of OPBRC’s depends to a large degree on the adequate functioning of the Contractor’s Self-Control Unit – SCU (as defined in the Specifications) and on the accuracy of the data provided by the SCU to the Project Manager. The Project Manager will assess the performance of the SCU by comparing the data provided by the SCU in the Monthly Compliance Tables for Maintenance Services with the data measured or observed during the Formal Inspection.

The Contractor must ensure that the data included in the Monthly Compliance Tables for Maintenance Services prepared by the SCU and provided to the Project Manager prior to the Formal Inspection is accurate and based on actual measurements or observations carried out by the SCU staff. The Project Manager will verify the data provided by the SCU in the Monthly Compliance Tables through Formal and Informal Inspections.

If the Project Manager finds that the data provided by the SCU for any road or road section is incorrect for more than 20% of the individual data on OPM´s 1 to 9 for a road or road section, this will be considered as a non-compliance with OPM-10 and will trigger the application of the corresponding payment reduction under OPM-10 for the same road.

Furthermore, if a situation of non-conformance with OPM-10 continues for more than six months, the Employer will have sufficient grounds to terminate the contract as stipulated in the General Conditions of Contract, Clause 59 on “Termination” if he so desires.

###### Method of assessment: The assessment is done on the basis of the verification by the Project Manager of the 20 performance criteria and sub-criteria included under OPM-1 to OPM-9. The 20% threshold limit corresponds to four (4) criteria. If for any road or road section the information provided by the Contractor’s SCU in the Compliance Tables for five (5) or more criteria is incorrect, then this constitutes non-compliance with OPM-10 for that road or road section. An example for calculation is provided in the Operational Procedures.

**Payment reduction for non-compliance:** Ten (10) percent of the monthly Lump-sum rate for the entire road or road section, to be applied for each road or road section for which incorrect information was provided by the Contractor in the Monthly Compliance Tables for Maintenance Services for five (5) or more of the OPM criteria or sub-criteria.

*[Note: The figures in the above text for the “Method of Assessment” and “Payment reduction for non-compliance” must be adjusted if the number of OPM criteria and sub-criteria is either reduced or increased. The OPM’s proposed in these Sample Specifications result in a total of 20 criteria and sub-criteria, but this number will be different if additional OPM’s are added or the number of OPM’s is reduced.]*

#### Gradual compliance with Service Levels

In order to respect the Contractor’s initial mobilization period and taking into account the time needed by the Contractor to establish full compliance with all the OPM’s over the entire road network included in the Contact, a schedule of gradual compliance with OPM’s is established, as per the Table shown below.

During the period of phasing-in the full compliance with all OPM’s as per the table below, the Contractor shall inform at the end of each month, as part of his Monthly Compliance Tables for Maintenance Services, the list of roads or road sections for which OPM’s 1 to 9 are to be applied. The length of those roads or road sections must correspond to at least the percentage of the network indicated in the Table below for that month.

OPM-10 must be complied with fully from the beginning of the contract (gradual compliance does not apply).

*[Sample Table: Gradual compliance with Service Levels during initial contract period]*

*[Note: the percentages shown in this table, as well as the timeframe for gradual compliance, need to be adjusted in accordance with the condition of the roads at the time of the preparation of the bidding documents.]*

| No. months after Start Date  *(at the end of the month)* | **OPM-1 Usability of the road(s)**  Compliance required on  *(% of total length of roads under contract)* | **OPM’s 2 to 9**  Compliance required on  *(% of total length of roads under contract)* |
| --- | --- | --- |
| 1 and 2 | 100 | 60 |
| 3 | 100 | 70 |
| 4 | 100 | 80 |
| 5 | 100 | 90 |
| 6 | 100 | 100 |
| Remaining contract period | 100 | 100 |

#### Reduced Service Levels prior to Pavement Rehabilitation

For paved roads (or road sections) for which Pavement Rehabilitation Works are programmed to be carried out under the contract, the OPM´s listed below shall not apply until such time when the Pavement Rehabilitation Works have been completed, as follows:

*[Note: Even those roads that are to be rehabilitated as part of the Contract have traffic and therefore require maintenance services. The pavements of those roads are however likely to be in a condition which does not allow the application of all the criteria applicable for the normal Service Level. The OPM’s listed below can typically not be complied with by the Contractor before the Pavement Rehabilitation Works are completed.]*

* OPM-2 Pavement Defects shall not be applied, except OPM-2.1 “Potholes” and OPM-2.5 “Cleanliness of Pavement Surface and Shoulders” which shall apply even before the Pavement Rehabilitation Works are carried out.
* OPM-3.2 Paved Shoulders.
* Road Marking under OPM-8: Thermoplast markings shall not be required for roads or road sections which are programmed for Pavement Rehabilitation. In those cases, reflective paint can be used instead. *[Note: It would not be reasonable to require the rather expensive reflective pavement markings if the pavement is to be removed as part of the required pavement rehabilitation.]*

#### Minimum Service Level

A “Minimum Service Level” will be applied

* for specific road sections defined in the contract where (i) Pavement Rehabilitation Works are scheduled under the contract and (ii) where the pavement has deteriorated to such a poor condition that it cannot be maintained normally as a pavement prior to the Rehabilitation works being completed; and
* for road sections where Pavement Rehabilitation works are actively underway, such as traffic deviations established as part of the Rehabilitation Works.

Under the “Minimum Service Level”, the following provisions apply:

• OPM-2 Pavement Defects with all its sub-criteria (OPM-2.1 to OPM-2.8) are not applied at all.

• The contractor shall establish and maintain road conditions ensuring that light and heavy vehicles can travel with at least a minimum speed of 40 kilometers per hour along its entire length, and without the need anywhere to slow down to less than 25 kilometers per hour due to the state of the road surface.

• The contractor must ensure that there are no potholes and depressions more than 15 cm deep on the road surface.

**Method of Assessment:** Compliance with the minimum speed requirement is verified during formal and informal inspections, while driving in a normal and safe manner, in the vehicle normally used for the inspection. Nowhere along the road shall the speed of traffic be restricted or limited by the condition of the road surface to less than 25 km/h. The average travel speed which can be maintained without difficulty on the road section should generally be at least 40 km/h. In any event, the safety and well-being of the passengers in the vehicle, as well as the safety of other road users and the integrity of the vehicle must never be endangered during the inspection. The Project Manager will be the sole judge of whether or not the minimum speed requirement is respected.

Compliance with the requirement for potholes and depressions is verified by placing a 3-meter straightedge on the road surface, in any place and in any position, and by measuring with a small ruler the distance between the lower edge of the 3-meter ruler and the road surface.

**Payment reduction for non-compliance:** 20 (twenty) percent of the monthly flat rate for each non-compliant kilometer, for the first day of non-compliance.

**Grace Period after application of “First-Day” payment reduction:** seven (7) days.

*[NOTE: The last page of these Sample Specification presents, as an attachment, an example of an EXCEL table (in A3 format) for the calculation of the volume of maintenance services, for* ***normal, reduced*** *and* ***minimum*** *service levels, as a function of the required progress of Rehabilitation works. Such a table should be included in the Specifications provided to bidders, to facilitate their understanding and the preparation of the Bill of Quantities for Maintenance Services.]*

### Management Performance Measures (MPM’s)

MPM’s are a set of performance criteria to be fulfilled by the Contractor that relate to the management of the road assets under contract. They include the quality and testing requirements to be fulfilled by the Contractor, as well as the collection and reporting of various types of data and timely information to the Project Manager, which may be needed as input to the Employer’s Road Asset Management System (RAMS). The applicable MPM’s for this contract are summarized in the table below. The specific requirements under each MPM item are defined elsewhere in the Specifications.

Compliance with MPM’s is measured either monthly or as otherwise defined in the Contract. Results are to be expressed as either being “in compliance” or “non-compliant”. In case of non-compliance, such non-compliance will continue to be recorded until compliance has been established by the Contractor to the satisfaction of the Project Manager.

In case of non-compliance with MPM’s, the monthly lumpsum payment to the Contractor for Maintenance Services shall be reduced by the amounts stated in the table below, multiplied by the duration (in calendar days) of the non-compliance.

*[It is strongly suggested to not modify the MPM items shown in the table below, because these are critical for the correct implementation of the OPBRC contract under most circumstances. Additional MPM items may be created if needed.]*

[Sample Table: Management Performance Measures (MPM’s) applied under the contract]

| MPM # | Item | Compliance criteria | Payment reduction  (US$ equivalent per day)  [insert amount; recommended amounts are shown below] |
| --- | --- | --- | --- |
| MPM-1 | Quality Assurance Plan (QAP)  with its Supplements *[define supplements]* | Must be complete and submitted by due date as per the Specifications.  In case of comments, the revised document must be resubmitted within *fourteen (14) days* after the issuance of written comments by Project Manager. | 1,000 |
| MPM-2 | Programme of Performance | Must be complete and submitted by due date as per the Specifications.  In case of Comments, the revised document must be resubmitted within *fourteen (14) days* after the issuance of written comments by the Project Manager. | 1,000 |
| MPM-3 | Works Completion Reports | Must be complete and submitted by due date. Revision must be completed within *twenty-one (21) days* after the issuance of written comments by the Project Manager. | 500 |
| MPM-4 | Asset Inventory Reports and updates  (all reports listed under Section B.10.1) | Must be complete and submitted by due date. Revision must be completed within twenty-one (21) days after the issuance of written comments by the Project Manager. | 250 |
| MPM-5 | Submission of Designs | Initial Submission of complete design by due date.  Revisions must be completed within fourteen *(14) days* after the issuance of written comments by the Project Manager, or as agreed in writing with the Project Manager. | 500 |
| MPM-6 | Monthly Compliance Tables for Maintenance Services | Submission of complete Compliance Tables by due date. | 1,000 |
| MPM-7 | Monthly Progress Report for Rehabilitation, Improvement and Emergency Works | Initial Submission by due date. Revision and resubmission must be completed within *seven (7) days* after the issuance of written comments by the Project Manager. | 500 |
| MPM-8 | Road Asset Damage and Emergency Incident report | Submission by due date. | 250 |
| MPM-9 | End of Contract Handover Report | Initial Submission of complete report by due date. Revision and resubmission must be completed within *fourteen (14) days* after the issuance of written comments by the Project Manager. | 500 |
| MPM-10 | Compliance with requirements in the areas of Environment, Social, Health and Safety of workers, and Traffic Management Plans | Contractor has to be in compliance at all times. Payment reduction is applied for each separate non-compliance, and for each day during which non-compliance persists. | 250 |

## Facilities and equipment to be provided by Contractor

*[If applicable, insert here a detailed description of any facilities, equipment and vehicles which the Contractor shall be obliged to provide for the use of others, such as the Project Manager, Monitoring Consultant and/or other parties, including the duration of such provision. Note that the equipment needed by the contractor for the works and maintenance services is not to be included here.]*

*[If the Employer shall provide any facilities and/or land for the use of the Contractor, such as existing base camps, the title of this section should be modified accordingly, and the facilities listed and described.]*

## Data collection, reporting and documentation

Under OPBRC’s, the role of the Contractor extends much beyond the execution of works and includes important activities related to Road Asset Management. This requires that the Contractor must

* continuously collect different types of data and information on the roads included in the contract;
* organize and store such data and information in an electronic database;
* prepare various types of reports presenting the data and information, in formats to be agreed with the Project Manager, for the Contractor’s own use and for the use of the Project Manager and the Employer; and
* submit those reports to the Project Manager in accordance with deadlines defined in the contract.

The timely collection of data and presentation of reports are part of the Management Performance Measures (MPM’s). Some of the reports must be prepared periodically (typically monthly) while others are one-time reports to be submitted at specific times or at special occasions during the duration of the contract. The reports are listed in the table below and described in the sub-sections further below.

*[Sample Table for required reports. The reports listed in the table are being referred to in other parts of the Specifications and the Contract. If changes are made in the reporting requirements, these may result in other changes becoming necessary elsewhere in the Specifications and/or the contract.]*

|  |  |
| --- | --- |
| **Report Title** | **Frequency / Periodicity** |
| **Road Asset Inventory Database and Condition Reports (MPM-4):**  [Note: This type of reports is applicable if the Employer operates a Road Asset Management System which needs regularly updated data. Delete if not applicable.] | * Initial Report * Periodic updates as specified |
| **Road Asset Damage Reports (MPM-8)** | These are reports due each time when damages to road assets occur which require repairs for which the Contractor may be entitled to claim separate payment. |
| **Design Reports (MPM-5)** | These are required for all works requiring a detailed engineering design. |
| **Monthly Compliance Tables for Maintenance Services (MPM-6)** | Monthly self-reporting by the Contractor on his own compliance with Service Level requirements which is the basis for the part of the Contractor Monthly Statement which relates to Maintenance Services. |
| **Monthly Progress Report and Statement for Works (MPM-7)** | Monthly report on progress of Rehabilitation, Improvement and Emergency Works, which is the basis for monthly invoicing by the Contractor for those works. |
| **Works Completion Reports (MPM-3)** | Separate reports for each specific Rehabilitation, Improvement and Emergency Works. |
| **Contract Completion Report (MPM-9)** | One-time report. |
| **Project Final Completion Report (MPM-9)** | One-time report (update of Contract Completion Report) |

The requirements for each of those reports are stated in the following sections.

### Road Asset Inventory and Condition reports

*[Note for the preparation of the Specifications: The Road Asset Inventory and Condition Reports only apply if the Employer operates a functioning Road Asset Management System (RAMS) and wishes that the Contractor collects the information needed by the Employer to keep the corresponding RAMS database updated. The requirements described in this section assume that the Employer operates a comprehensive Road Asset Management System, including a Pavement Management System. However, in many countries such systems are either not implemented at all or are only partially implemented. In such cases, the requirements for Road Asset Inventory and Condition reporting should either be dropped entirely or should be reduced to the type of data that the Employer can actually use. It should be kept in mind that the collection of reliable data may be expensive and requires technical capabilities that many Contractors do not have.]*

*[Sample requirements for Road Asset Inventory and Condition reports are shown below.]*

The Contractor shall carry out several types of surveys for assessing the condition of the Road Assets included in the contract. The surveys will cover in particular

* Pavement condition
* Road Furniture condition
* Large Structures condition

The Contractor will record the results of the surveys in an **electronic database** and shall report the Asset Inventory and Condition in

an **Initial** **Road Asset Inventory and Condition Report,** which is to be submitted within ……………… *[insert No. of days, recommended are between 90 and 120 days*] ………………… after the Start Date; and

**Updated** **Road Asset Inventory and Condition Reports**, to be submitted every …………………………… *[insert periodicity of the updated reports, recommended are every 24 months]* ………………… after the due date of the Initial Road Asset Inventory and Condition Report. The updated reports are to be based on new survey data collected by the Contractor within 120 days prior to the due date of the updated reports.

The information collected by the Contractor during those surveys shall be used both for the Contractor’s own purposes and for the continuous updating of data used by the Employer for his Road Asset Management System (RAMS).

**Electronic Road Asset Inventory Database:** The Contractor shall record the information collected during the various surveys (and other information, which may be furnished by the Employer or by other third parties) in an electronic Road Asset Inventory database. In order to ensure compatibility of the electronic database with the Employer’s Road Asset Management System, the Contactor will propose the specific electronic format of the database for approval by the Project Manager. If the Project Manager does not stipulate a specific format, the Contractor shall use an online database which can be accessed in real time by the Project Manager.

The Contractor shall also provide hardcopies (printouts) of the information from the database to the Project Manager as reasonably requested. If so requested, the Contractor shall liaise with the Project Manager and arrange for the delivery of hardcopies.

The electronic Road Asset Inventory Database shall include asset data and condition data verified by the Contractor, covering the following:

* Pavements, including shoulders (Hard Shoulder / Emergency Lane)
* Slopes, Embankments and Cuttings
* Drainage facilities, gullies, culverts, lined channels, sumps etc.
* Signs, traffic signals and lighting installed
* Pavement markings
* Bridges and Major Structures
* All other road furniture (i.e. Safety Barriers, Lighting Points)

In the Road Asset Inventory database, the Contractor shall

* accurately record road asset data, which shall include the measurement of roughness (IRI) as well as pavement strength data obtained through FWD or Benkelman Beam measurements (for paved roads);
* update the data following completed Rehabilitation, Improvement or Emergency works affecting the asset inventory;
* take into account any changes resulting from maintenance interventions altering the inventory characteristics and condition data;

The Contractor shall transmit the updated Road Asset Inventory database to the Project Manager after each update or at least once annually.

The required surveys to be carried out and the data to be collected are described in the sub-sections below.

#### Pavement Condition Surveys

Pavement Condition Surveys must cover all the roads / road sections included in the contract, in order to obtain the following information:

* Road pavement strength, through deflection surveys, using either Benkelman Beam or FWD (on paved roads only)
* Pavement Roughness in terms International Roughness Index, IRI
* General road condition description

**Requirements for measuring pavement strength:** Road Strength (deflection) data are required as input to the Employer’s Road Asset Management System and for the Contractor to know the pavement condition and plan the needed interventions on the roads. If for any road there is no reliable data on its pavement structure, the deflection measurements shall be complemented with pavement structure data obtained by trial pits every one (1) km to evaluate pavement construction and subgrade conditions. Output of the deflection measurements shall be the basis for the calculation of the residual life of the pavement in years, based on the expected total number of typical standard axles.

Measurement shall be either by Benkelman Beam or alternatively by Falling Weight Deflectometer (FWD - Impulse Load Device). The FWD shall be equipped with air and surface temperature sensors and a GPS location device. The equipment to be used by the Contractor must be approved by the Project Manager. Deflection measurements shall be taken at 250m intervals for each traffic lane throughout the paved network.

**Requirement for measuring road roughness:** The Contractor shall measure the road roughness in terms of the International Roughness Index (IRI). The data is needed by the Employer for use under his Road Asset Management System (RAMS) and by the Contractor for planning any needed interventions on the road. The equipment and data required must comply to the following standards:

*[The proposed standards are listed below. Prior to issuing the bidding document, it needs to be verified with the operator of the Employer’s Road Asset Management System (RAMS) if these Standards are appropriate or if other standards should be applied to ensure compatibility of data. The required format of electronic data files should also be agreed.]*

* ASTM E950 (longitudinal profile);
* AASHTO PP37 (pavement roughness);
* ASTM E1845 (pavement macrotexture);
* ISO 13473 (mean profile depth);
* World Bank Technical Paper 46, class 1 laser profiler;
* The laser profiler should be able to perform the following measurements: (i) Longitudinal profile with an accuracy of +/-0,5mm in min 100 mm intervals; (ii) express the IRI in m/km.

The measure of roughness is to be made in a continuous way in the wheel tracks of each lane of the carriageway. The measuring equipment must be calibrated/validated as per the manufacturer’s recommendations and further calibration using several reference road sections is also to be carried out in coordination with the Project Manager. All roughness measurements shall be executed under the supervision of the Project Manager, utilizing a Class 1 precision Profile (ASTM E-950). They shall be reported as International Roughness Index (IRI) in m/km.

#### Road Furniture Condition Survey

This survey will record all existing road furniture and its current condition. It will cover all types of road furniture, such as horizontal and vertical traffic signs, guardrails, safety barriers and any other road safety equipment, traffic signals, road and street lighting, electrical installations, and equipment, etc. It will highlight any defects requiring replacement or repair and will also indicate all cases and locations where road furniture should be present according to applicable norms and legislation, but is in fact absent.

#### Large Structures Condition Survey

For bridges and other structures (such as culverts) with spans longer than 5 meters, the condition surveys to be conducted must at least be based on a visual inspection, for evaluating and rating their structural and functional condition, and describing existing defects and shortcomings. *[Note: In countries with pronounced rainy seasons, the requirement should be that the survey is to be done during the dry season, so that foundations and piers are exposed and clearly visible.]*

### Design Reports

The Contractor shall prepare Design Reports for all Rehabilitation and Improvement Works. For Emergency Works, Design Reports are also required, unless the corresponding Work Order states otherwise. The Design Report shall accompany any engineering design elaborated and submitted for approval. It must provide information on the design standards applied, the main assumptions used, and the calculations made for the design of individual road sections, structures or works.

The Design Reports shall be submitted as attachments to each final detailed design, on the dates indicated in the Contractor’s approved program. The quality and the on-time submission of the Design Report is a Management Performance Measure (MPM).

### Monthly Compliance Tables for Maintenance Services

As described elsewhere in the contract, the Contractor’s Self-Control Unit shall continuously verify the Contractor’s own compliance with the Service Level and other requirements. On the last working day of each calendar month, the Contractor’s Self Control Unit shall submit to the Project Manager the Monthly Compliance Tables for Maintenance Services for the same calendar month, reflecting road conditions and the Contractor’s compliance with Service Level requirements at the end of the month. The Monthly Compliance Tables for Maintenance Services are the basis for the monthly Formal Inspection. They are also the basis for the part of the Contractor’s Monthly Statement (invoice) which relates to Maintenance Services. The Monthly Compliance Tables for Maintenance Services shall be comprised of:

* Standardized EXCEL tables in a format to be approved by the Project Manager, showing separately for each road or road section the degree of compliance with Service Level requirements, representing accurately the situation at the end of the previous calendar month, and identifying any non-compliances that may exist. *[NOTE: The World Bank can provide examples of EXCEL spreadsheet files which have been developed and used in other projects.]*
* A brief description of the most important maintenance activities carried out during the month, including the locations.
* Information on any formal complaints received and how these were responded to (if applicable).
* Details of any major vehicle accidents that have occurred on project roads, in particular of all accidents involving death or injury (if applicable).

The quality and the on-time submission of the Monthly Compliance Tables for Maintenance Services is a Management Performance Measure (MPM).

### Monthly Progress Report for Works

This is the Contractor’s monthly report as per GC Clause 17.3 on the progress of Rehabilitation, Improvement and Emergency Works carried out. It shall be the basis for the part of the Contractor’s Monthly Statement which relates to those works. Submission of the Monthly Progress Report shall be a prerequisite for the acceptance of a payment claim for Rehabilitation, Improvement and Emergency Works. The Monthly Progress Report shall describe the works executed during the month, as well as the Quality and Quantity Control procedures applied and their results (testing, etc).

The Monthly Progress Report shall also cover the Contractor’s activities in response to contractual requirements for (i) environmental and social safeguards, and (ii) occupational health and safety. The Monthly Progress Report for any month must be submitted by the 10th calendar day of the following month as a supporting document to the Monthly Statement which is due on the same day.

The minimum information that the Monthly Progress Report must include is as follows:

* A description of the Progress achieved during the preceding month of all Rehabilitation, Improvement and Emergency Works, framed so as to enable the verification of any work to be claimed for payment.
* The proposed Interim Payment Certificate (IPC) for Rehabilitation, Improvement and Emergency Works.
* All required Quality and Quantity Control reports on the works completed during the month clearly indicating, if applicable, any non-conformances with the Contractor’s Quality Assurance Plan or any other requirements.
* Copies of correspondence between the Contractor and other agencies, if any.
* Minutes of all meetings held during the month between the Contractor and Project Manager and with any other stakeholders, including also the status of actions taken on complaints received and grievances brought forward at such meetings, if any.
* Detailed information on the Contractor’s activities in response to contractual requirements for (i) environmental and social safeguards, and (ii) occupational health and safety.
* The status of all grievances that have been submitted to the Contractor, along with resolution rates.

### Road Asset Damage Reporting

The Contractor shall report to the Project Manager any event such as vehicle accident, theft, act of vandalism, third-party intervention or any other event having caused damage to the road assets and requiring repairs or replacement. The report may have the form of a letter to the Project Manager and may be combined with a request for Emergency Works. It shall be submitted within 96 hours of occurrence of the event, or of the Contractor having gained knowledge of such event. The report shall

* describe the event and its circumstances;
* describe the nature and extent of damage to road assets, including photographs;
* estimate the cost of repairs, or state the cost if repairs have already been carried out and costs are known;
* describe the actions taken by the Contractor, such as inspections and investigations carried out, notifications made to the police and to other relevant authorities;
* recommend measures to be taken to avoid similar events in the future;
* indicate if the contractor proposes Emergency Works to repair the damage.

For damages not already repaired by the Contractor, the Contractor shall propose the needed repairs, including any designs if necessary, and a program for carrying out the repairs.

It is also the Contractor’s responsibility to report any event or incident of this nature to the relevant authorities (Police, local Municipality and/or other public authorities concerned) as soon as possible and to follow up on any actions taken by the police or other relevant public authorities. If the damage is caused by third party intervention on the road, the Contractor must also actively try to stop such intervention by informing the intervening party in writing (or verbally if writing is not feasible) of the damage being caused and the potential physical and legal consequences of the intervening party’s action.

The Contractor’s risk limitation for bearing the cost of necessary repairs after such events are stated in the Particular Conditions of Contract, as follows:

* Small-scale restorations or repairs of such damage are to be carried out and paid for by the Contractor, up to the maximum cost per event and a maximum total amount per year as stated in the PC.
* Larger-scale restoration and repairs exceeding the limits stated in the PC are the Employer’s Risk, provided that the Contractor has performed his obligations as described above. In such cases the Contractor shall submit to the Project Manager a cost estimate with a breakdown of the cost for repair. The Employer may instruct the Contractor to repair the damage under a Change Order or a Work Order, as either Rehabilitation, Improvement or Emergency Works.

The quality and the on-time submission of the “Road Asset Damage Report” is a Management Performance Measure (MPM).

### Works Completion Reports

The basic principle under the OPBRC contracts is that there is a two-step process for completing and handing over the Works by the Contractor to the Employer:

* **Substantial completion:** The first step is the “Taking-Over” of the Works by the Employer, which is meant to occur when the works (or a road section) are “substantially completed” and can be used safely for the intended purpose, and opened for traffic without risks of damage to the road structure and without safety or other risks to road users. The Defects Liability Period starts at the time when the Contractor notifies “substantial completion” of the works to the Project Manager, unless the Employer objects in writing to “Substantial Completion” having been achieved. If payments for the works have already been made and payment retentions were applied, the first half of the Retention Money is to be released to the Contractor by the Employer after the “Taking-Over” is formalized through the issuance of the “Taking-over Certificate” by the Employer. At the time of “Substantial Completion”, the Contractor is required to issue a “Substantial Completion Report” (see descrition further below). The “Substantial Completion Report” shall also list the items that are yet to be completed by the Contractor (“snag list”). It must be part of the Contractor’s application for the Taking-Over of the works by the Employer as per GC 28.
* **Certificate of Completion:** The second step is when all items of the “snag list” have been completed by the Contractor. At that time, he shall notify the Project Manager accordingly. Not later than 56 days afterwards, the Contractor must present a “Full Works Completion Report” and may also request the “Certificate of Completion”. The Project Manager shall review the Full Works Completion Report. The Certificate of Completion cannot be issued if the Full Works Completion Report has not been submitted by the Contractor and accepted by the Project Manager. The Contractor can also agree with the Project Manager that a Full Completion Report may cover several works or road sections for which separate “Substantial Completion Reports” were issued.

*Difference between “Substantial Completion Report” and “Full Completion Report"*: The “Substantial Completion Report” shall include those parts of the information required (and listed below) for the “Full Works Completion Report” which are already available at the time of substantial completion. In other words, the “Full Works Completion Report” is essentially a supplement to the “Substantial Completion Report”. It must present the information listed below, except those parts which have already been included in the “Substantial Completion Report” for the same Works. The “Full Works Completion Report” may make reference to the “Substantial Completion Report” previously issued by the Contractor, for all the information that was already presented there, without having to present it again.

The Full Works Completion Report shall include as a minimum:

* Site location and details;
* Construction start and end dates;
* As built Drawings and photographs;
* Details of all Quality and Quantity Control measures carried out by the Contractor;
* Details of any works carried out after substantial completion to remedy pending items on the “snag list”;
* Design Calculations;
* Topography survey results;
* Setting out data and control points;
* Hydrology of the site (if applicable);
* Structures; description of original and rehabilitated condition, (if applicable);
* Pavement design and results of IRI measurements, (if applicable);
* Geology and Geotechnical features (if applicable);
* Environment Management Compliance Report; and
* Summary of future inspection and maintenance requirements e.g. required frequency of inspections, environmental monitoring needs, specific routine, and periodic maintenance needs, etc.

The Project Manager shall review the “Substantial Completion Report” and the “Full Works Completion Report” within 14 days after receipt and provide comments, if any. If there are comments requiring changes to the Report, a revised Report shall be submitted by the Contractor within 14 days of receiving the comments. The “Certificate of Completion” cannot be issued if the Full Works Completion Report has not been submitted and approved. The “Full Completion Report” is also a prerequisite for the repayment of the second half of the retention money at the end of the Defects Liability Period.

### End of Contract - Handover Report

The Contractor must provide an End of Contract Handover Report on the first day of the sixth month prior to the end of the contract. The purpose of the Handover Report is to provide a smooth transition to the next contract and ensure that the next Contractor and the Employer are aware of any outstanding issues. This report shall provide:

**For the contract as a whole:**

A summary of the activities carried out (works and services), outcomes achieved, lessons learnt, suggested good practices and recommendations to the Employer for improvements for any future maintenance contracts covering the same roads.

**For each road included in the contract:**

A history of the works carried out during the contract period; this shall include information on

Site location and details;

Construction start and end dates;

As built Drawings and photographs;

Details of all Quality Control Tests;

Design Calculations;

Topography survey results;

Setting out data and control points;

Hydrology of the site;

Structures; original and rehabilitated condition;

Pavement design;

Traffic data, if available;

Geology;

Geotechnical features;

Environmental and Social issues encountered and how they were dealt with; and

Summary of future inspection and maintenance requirements e.g. required frequency of inspections, on-going environmental monitoring needs, specific on-going maintenance needs etc.

(ii) A brief description of the current condition of the road, including the expected remaining service life of the pavement, and (iii) suggestions on the works that are considered necessary to be executed in the next years in order to keep the road asset at the same Service Level. The assessment of the pavement residual life of the contract roads must be supported by information on the results of the pavement deflection and roughness (IRI) surveys executed during the contract.

The quality and the on-time submission of the “End of Contract - Handover Report” is a Management Performance Measure (MPM).

### Project’s Final Completion Report

On completion of the entire Contract and after the end of any remaining Defects Liability Period for works or parts thereof, the Contractor shall prepare a Final Completion Report which will essentially be an updated version of the End-of-Contract Handover Report described in the previous section, including any additional information which has become available since the issuing of the End-of-Contract Handover Report.

The report shall accompany the Contractor’s request to the Project Manager for releasing the Performance Security. Submission and Approval of the above report is a prerequisite for issuing by the Project Manager of the Final Payment Certificate and release of the Contractor’s Performance Security.

## Specifications for Emergency Works

### Justification for Emergency Works

Emergency Works are works carried out to repair damages to the roads included in the Contract which are caused by unforeseeable events such as accidents or unusual natural phenomena against which an experienced contractor could not reasonably have been expected to take precautions. The damages may have occurred either on the road itself, in the Right-of-Way of the road or elsewhere, but with a direct impact on the road.

Damages due to unforeseeable events or natural phenomena do however not include “normal” damages, such as trees falling on the road, normal erosions of the road and embankments due to normal rain and minor flooding (less than specified in this document), pavement deterioration that may result from periodic inundation of adjacent field crops due to seasonal rains, or irrigation practices, or any consequential pavement deterioration that may arise beyond the actual period of flooding, minor damages caused by traffic accidents, blockages from landslides where the volume of material requiring to be moved is less than the threshold indicated in these Specifications, or snowfall of any amount; those damages must be remedied by the Contractor as a part of the normal maintenance obligations under the contract.

Natural Phenomena or unforeseeable events may include such as:

1. Traffic accidents, unless these are caused by road damages which the contractor failed to remedy as part of his contractual obligations;
2. Localised rainfall events within the contract area exceeding once in ten years 24-hour rainfall duration intensity;
3. Flood events within the Right-of Way, defined as being either (i) submersion of the carriageway by at least 20 cm of water for a minimum of 12 hours extending over the carriageway centreline; and/or (ii) a breach/washout due to flooding of the carriageway extending over the carriageway centreline.
4. Earthquakes sufficient to cause serious damage to buildings.
5. Oil and Chemical Spill situations (unless the spillage is related to any action or inaction by the Contractor himself), defined as those situations occurring due to abnormal spillage in terms of quantity of the discharge, and/or the severity of hazard presented to the safe operation of the roads, to road users, local communities or the general environment. Such spillage may be from a structure, pipe, vehicle, or container.
6. Slope and Embankment Failure Emergency Situations, defined as being (i) a subsidence or complete failure that restricts the safe passage of vehicles, (ii) landslides causing a blockage of the road and requiring the removal of more than the threshold volume of material to restore the road to a safe operating and maintainable condition, except where the washouts or slides are the result of insufficient maintenance by the Contractor of that system or of drainage structures.
7. Sandstorms or moving sand dunes, resulting in accumulations of sand or soil on the road or within the road’s Right-of-Way, with the accumulated monthly quantities above the threshold quantities applicable for Slope and Embankment failure.

Other Situations may also qualify as requiring Emergency Works and the Project Manager will have the sole decision-making power on accepting other works proposed by the Contractor as Emergency Works. An event requiring Emergency Works may also be notified by the Project Manager to the Contractor, jointly with a request to the Contractor to propose Emergency Works.

### Procedure for Requesting Emergency Works

The procedure described below is to be applied.

1. As soon as practicable after such an Emergency event occurring, the Contractor shall submit to the Project Manager his formal request to carry out works under the category of “Emergency Works”, along with any information needed to justify such request, including documentation on the circumstances of the event and the damages caused, through photographs, video and other suitable means. Such a request may be combined with the Road Asset Damage Report as specified under section B.10.5.
2. The Project Manager will evaluate the request made by the Contractor. The evaluation may include a site visit which should ideally take place jointly with the Contractor.
3. Within seven (7) days after having received the Contractor’s request, the Project Manager shall inform the Contractor in writing if his request to classify the damages as requiring Emergency Works is accepted or not.
4. If the request to classify the works as Emergency Works is accepted, the Contractor is required to submit to the Project Manager within seven (7) calendar days a “Proposal for Emergency Works” which must include (i) the Design of the proposed Emergency Works, (ii) a priced Bill of Quantities showing the estimated quantities, (iii) the estimate of the total cost of the Emergency Works and (iii) the proposed time for completion of the works. The Project Manager may extend the seven-day period if the scale and scope of the Emergency Works require a more time-consuming design.
5. Within 14 calendar days of the receipt of the Contractor´s Proposal for Emergency Works, the Project Manager shall review the Contractor´s Proposal for Emergency Works and shall either (i) issue a Work Order to the Contractor, or (ii) explain to the Contractor in writing any shortcomings of the Proposal which the Contractor needs to remedy, along with the time granted to the Contractor for submitting a revised Proposal.

Emergency Works will be carried out on the basis of a Work Order issued by the Project Manager. The Work Order will (i) specify and describe the works, including design drawings, (ii) include the Bill of Quantities showing the estimated quantities and corresponding unit rates, and the total estimated cost, (iii) include any specific instructions which may be applicable, such as for the quality of materials to be used and the testing of the works, and (iv) indicate the time allowed for their execution. The order may also indicate a requirement for an engineering/geotechnical assessment of the options for the permanent repairs to the site, for a detailed design of the permanent works and for the preparation of a priced Bill of Quantities.

### Obligations during Emergency Events

Given the nature of this contract and the fact that Emergency Works are remunerated separately, the Contractor will, during the execution of Emergency Works, continue to be responsible for assuring the normal Service Levels on all roads included in the contract. In particular, the Contractor will do everything reasonably possible to ensure the normal use of all the roads under contract, including the sections affected by emergencies.

If road traffic has been interrupted because of an emergency, the Contractor will follow the provisions of the Traffic Management Plan included in his Quality Assurance Plan and take the measures necessary (i) to reopen the road to traffic in the shortest time possible, and (ii) to maintain the road open during emergency works, without being entitled to a specific compensation for those measures. This relates particularly to trees or other objects which may have fallen on the road, damage to access ramps to bridges, erosion of embankments, collapse of slopes, traffic accidents, flooding, etc.

The Contractor will not be subject to payment reductions for the partial or full traffic interruption on roads that are caused by events necessitating the use of Emergency Works for rectification, provided that he acts according to these Specifications.

### Repair of minor damages

If the works needed to remedy damages caused by events classified as Emergency situations are below the specified threshold volumes, the Contractor shall carry out those works as part of his normal Maintenance Service obligations and without having the right to invoke the provisions of the contract concerning Emergency Works. In these cases, the consent of the Project Manager and a Work Order is not needed, and the Contractor will simply carry out the works on his own initiative. He will nevertheless inform the Project Manager of the damages that have occurred, the remedial measures taken, and the cost incurred. The threshold values for minor repairs resulting from any single individual unforeseeable event and natural phenomenon are as shown in the Table below. Only repairs in excess of these thresholds and resulting from a single event will be eligible for classification as Emergency Works.

[Sample Table: Threshold values for Emergency Works]

*[Suggested values are shown in the table. These are to be modified as appropriate, taking into account local conditions.]*

|  |  |  |
| --- | --- | --- |
| Activity | Unit | Quantity per emergency event |
| Removal of slides material from road and side drains | (Cubic Meter)  (m3) | 200 |
| Road formation scour/subsidence | (Cubic Meter) (m3) | 100 |
| Repair of surface water channels | Linear Meter | 500 |
| Replacement of damaged or washed out pipe culverts of up to 600mm diameter | Number | 2 in any 5-kilometre section of road |
| Replacement of damaged or washed out culverts or pipes above 600mm diameter | Number | 1 in any 5-kilometre section of road |
| Reinstatement of Road Pavement | (Square Meter)  (m2) | 1000 |
| Reinstatement of washed out Embankment | (Cubic Meter)  (m3) | 200 |

## Construction Standards

The delivery of road construction works in the required quality is essential for realising the expected service life of the road asset. The Contractor is required to demonstrate through the implementation of his Quality Assurance Plan and the required quality control testing that all construction works meet the relevant standards indicated in the Specifications. In case that the Specifications do not appropriately cover any needed construction works, the Contractor and the Project Manager may agree the use of other standards in use elsewhere. Such agreement must be in writing.

### Construction and Rehabilitation of Pavements

Pavement works are to be executed by the Contractor in accordance with the Specifications. If at any time during the contract period there is a failure of a pavement that has been built or rehabilitated by the Contractor as part of his contractual obligations, the Contractor shall be obliged to repair or reconstruct the pavement to the extent required, at his cost and without the right to claim payment for such repair or reconstruction. The repair or reconstruction shall be undertaken as soon as practicable following a request from the Project Manager. Resealing of a failed pavement is not permitted unless otherwise agreed with the Project Manager as a short-term maintenance measure, prior to repair or reconstruction. Any such maintenance measure shall also be at the Contractor’s cost.

A pavement which has been rehabilitated or rebuilt under this contract shall be considered as failed when:

* there are visible interconnected multiple cracks extending over the greater part of the wheel-path and there is rutting with exceedingly a maximum rutting depth of 20mm or less;
* there is no cracking, but rutting exceeding a maximum of 20mm in depth exists in any wheel path;
* there is a single crack greater than 3.0 mm in width extending over less than half the width of the wheel path and rutting exists, exceeding a maximum of 20 mm in depth in any wheel-path;
* interconnected multiple cracking is visible over the greater part of the wheel path width and rutting greater than a maximum of 20 mm in depth exists in any wheel-path; or
* any level of pavement deterioration exists that, in the opinion of the Project Manager results in an unacceptable level of roughness, or if safe travel by road users is compromised in the opinion of the Project Manager.

All pavement construction and Rehabilitation Works are to be executed in accordance with the intent and scope of the designs that are to be elaborated by the Contractor, for each of the road sections that require Rehabilitation, Improvement and/or Emergency works. In particular, compliance must be achieved in respect of the following:

* Thickness of layers must not be less than shown in the design drawings.
* Compaction rates must not be less that stated in the design.
* The construction or rehabilitation of pavements is to be executed in such a manner that the average roughness of the completed pavement over any continuous length of one kilometre is not greater than ………………………… *[insert maximum allowed roughness in IRI, suggested are IRI 2.2 m/km for asphalt concrete pavements and 3.0 m/km for bituminous surface treatments] ………………………* and over any continuous length of 100 meters is no greater than ……………………………… *[insert maximum allowed roughness in IRI, suggested are IRI 2.5 m/km for asphalt concrete pavements and 3.5 m/km for bituminous surface treatments] ………………………………* ;
* The constructed surface profile must comply with all applicable requirements of the Specifications unless otherwise agreed in writing with the Project Manager; and
* All materials must comply with all applicable requirements of the Specifications unless otherwise agreed in writing with the Project Manager.

### Construction of works other than pavements

Construction of other-than-pavement works shall be carried out in compliance with the General Specifications, unless other Standards or Specifications are agreed in writing between the Contractor and the Project Manager.

## Quality control and verification

The Contractor is required carry out quality control and verification as specified in his Quality Assurance Plan. This includes the testing of materials and works and the recording of testing procedures used and testing results obtained. If the testing requirements in the QAP are inferior to those required in the General Specifications, the Project Manager may impose that the testing requirements stated in the General Specifications are applied.

### Quality of Materials to be used

Notwithstanding the provisions of the General Conditions, the materials used by the Contractor shall comply with, or exceed, the quality criteria set in these Specifications. In case the Specifications do not cover a needed material, the Contractor shall propose the material or product properties to the Project Manager for approval prior to implementation. A list of existing or suggested borrow pits or extraction sites *…………… [is / is not] …………* provided under this contract. In any case, the Contractor is required to locate material sources and make all necessary arrangements for the supply or extraction of materials for use in the works. Prior to the extraction of materials for use on the roads included in the contract, the Contractor is obliged to:

* carry out the laboratory tests necessary to determine the quality of the materials; and
* to satisfy himself that the quality of the materials is sufficient for the purpose intended and fulfils the requirements.

The Contractor may procure materials from any sources, provided that (i) the extraction is in conformity with the legislation, (ii) he has informed the Project Manager of his intention to utilize the material, and (iii) he has satisfied himself as to the sufficiency of the technical characteristics and the quality of the materials he intends to use for the intended purposes. Under no circumstances may the Contractor make any claims based on the insufficient quality or quantity of any of the materials he has proposed, used, or planned to use.

### Testing of Materials and Works

In conformity with the General Conditions of Contract Clause 20, the Contractor shall inform the Project Manager in advance of his schedule for materials testing and the Project Manager shall have the right to be present at all materials tests.

Testing shall be in accordance with the requirements of these Specifications. To the extent that tests may be required which are not specified in these Specifications, they shall be conducted in accordance with the provisions of …………………… *[insert applicable Standards or Norms, suggested are Euronorms (EN), ASTM or AASHTO] …………………………….* In case that the above Standards or Norms do not cover the design or construction requirements, any other appropriate Standards shall be agreed in writing between the Contractor and the Project Manager. The Contractor shall be responsible for the carrying out of all tests of materials and work required to under this contract. All materials, construction operations, workmanship, and the surface finish and quality of completed construction for all works of whatsoever nature shall conform to the specified requirements. For both on site- and laboratory-based testing of construction materials, the Contractor is required to maintain the record of every test carried out, including the specimen data showing:

* the precise location from which the materials tested were drawn; and
* the precise location in which the materials represented by the test materials were placed.

The above requirement for specimen data is not applicable for generic tests on items such as stockpile material.

For pavements, testing activities shall include confirmation of the pre-construction condition of the existing pavement, including but not limited to pavement deflection surveys, actual subgrade foundation strength, the depth and condition of the existing pavement materials and surfacing layers, water table levels and existing ground moisture conditions.

Following construction, testing shall assess the acceptability of all outcomes by comparison with the specified values and tolerances, including but not restricted to compacted depths of layers, compacted densities for all materials, dimensions, finished surface texture, roughness and pavement strength in accordance with the Specifications.

### Testing Laboratory

The Contractor shall establish or have full access to a fully equipped laboratory with appropriately calibrated apparatus in line with the manufacturer’s recommendations. The laboratory must be able to carry out all required tests and quality control work for soils, aggregates, bitumen, pavement, concrete, reinforcement, galvanising, and field tests, including the necessary equipment for pavement deflection and roughness surveys. The Contractor shall permit full access to the laboratory and to all testing records for the Project Manager or any authorised representative. The Contractor shall also allow the Project Manager and personnel authorized by the Project Manager to use the laboratory, and the deflection and roughness testing equipment, for executing any required tests.

### [Sampling and Testing](#_Toc358637478)

All sampling and testing, whether by the Contractor or the Project Manager, and executed either on site or in the laboratory, shall be carried out in the presence of an authorised representative of the other party, if requested by the other party. At least (24) twenty-four hours (this time can be reduced only by mutual agreement) notice is required for both parties to attend any sampling for testing purposes. Where the Contractor’s representative fails to attend, the results of such sampling will be notified to the Contractor and will be deemed as authentic.

In the event that the frequency of testing is not detailed in the Specifications or the approved Quality Assurance Plan for any specific item of materials or works, the Contractor shall request confirmation of the frequency from the Project Manager.

The Contractor shall bear the full expense of all sampling and testing, including the testing establishment, management, and incidental costs, and also including any testing performed by the Project Manager. All such costs shall be deemed to be included by the Contractor in his overall prices.

### Employer’s Testing

In addition to the Contractor’s quality control program, the Project Manager is free to identify and undertake independent Random Verification Testing, to verify the Contractor’s conformance with all quality requirements for Materials and Works. The Project Manager is obliged to inform the Contractor of any such testing and allow the Contractor’s staff to witness such testing. The outcomes of any such testing undertaken by the Project Manager shall be provided to the Contractor as soon as reasonably practicable following its completion. The Contractor shall make available the necessary laboratory facilities, materials, equipment, and personnel to assist the Project Manager in such a program if requested. To the extent that the tests undertaken are tests required by or implied in the Specifications, the costs of such testing shall be borne by the Contractor.

### Test Results

The Contractor shall provide to the Project Manager a copy of all test results within ten (10) days following testing.

The Contractor shall include in his Monthly Progress Reports for Works a list of all tests executed during the month. The report shall also include all relevant post-construction quality assurance test results including verification that the construction has been executed in accordance with the design and the Specifications, including pavement deflection test results if required. The Contractor and the Project Manager shall use the results of the construction quality control and quality testing to verify the quality of the works and services. The failure to submit test results, or the submission of partial, incomplete or incorrect test results will be recorded as a non-conformance with Management Performance Measures and may impede payment for the works by the Employer until such time when the required quality can be verified or ascertained appropriately. The Project Manager may take action to verify compliance of the submitted results on-site at any time after notifying the Contractor.

## Self-Control Unit

In conformity with GC 25, the Contractor is obliged to establish, within his own organizational structure, a specific Self-Control Unit (SCU) staffed with qualified personnel. The SCU staff shall

* be responsible for maintaining at all times a detailed and complete knowledge of the condition of the roads included in the contract;
* provide to the Contractor’s own management all the information needed in order to efficiently manage and maintain the roads included in the contract, without the SCU staff themselves having direct management responsibilities, or responsibilities for works execution;
* frequently patrol the roads included in the contract. The minimum required frequency of patrolling is as follows: ……………………… *[insert frequency; there may be different frequencies for different road, ranging from daily for high-traffic roads to once a week for very low-traffic roads]* ……………………… unless other patrolling frequencies are agreed in writing with the Project Manager;
* prepare in a timely fashion the Monthly Compliance Tables for Maintenance Services;
* carry out the Formal Inspections scheduled by the Project Manager in accordance with the Operational Procedures;
* verify and audit the correct application by the Contractor’s staff and subcontractors of the Contractor’s Quality Assurance Plan and of all contractually required testing methods and other procedures related to the quality of works executed, and of materials used. The staff of the SCU shall however not be responsible for carrying out themselves the testing and the tasks of quality assurance and control for works, which must instead be handled by other specialized staff of the Contractor.

An experienced Civil Engineer shall be the head of the Self-Control Unit which shall be staffed with the adequate number of qualified engineers and/or technicians.

## Communications Equipment

The Contractor shall operate and maintain the equipment necessary to allow constant communication among all parties involved, including his Central Office, Self-Control Unit, Field Offices, Working Teams, Managers and Field Inspectors as well as with the Project Manager and his appointed representatives. To this end the Contractor shall provide all necessary equipment for all parties. As a minimum, the required equipment is smart mobile phones with data plans. Additional equipment is ………………………………… *[insert any other equipment to be supplied and maintained by the Contractor] ………………………………*. All charges relating to communications shall be at the Contractor’s expense and is deemed to be included in the monthly rate for Maintenance Services or overhead costs.

The Contractor shall ensure that he is reachable 24 hours a day, 7 days a week, and shall establish an emergency (SOS) phone line, free of charge, for emergency contact purposes. This number shall appear in the Contractor’s Emergency procedures, as well as in the Emergency and Incident Response plan and will be provided to the Police, Emergency Services and to the heads of local community organizations.

## Design of Works

This section B.16 sets the requirements under the contract for designing Rehabilitation, Improvement and Emergency Works.

### General

As a general principle, any design chosen by the Contractor for the implementation of works should minimize the life-cycle cost of the investment in the road asset. This is of particular importance for pavement design, but also for other large-scale investments such as bridges and other large structures. As part of the design process for any road asset valued at or above ………………… *[insert amount, recommended amount is US$ 2 million equivalent]* ………………… , the Contractor is required (i) to explore different design options, (ii) estimate the total life-cycle cost of each option and (iii) select the design option with the lowest life-cycle cost.

All Rehabilitation, Improvement and Emergency Works shall be designed in compliance with the general design criteria stipulated in …………………………………………… *[insert the title of any documents which define general design criteria for road infrastructure that are applicable in the country where the contract is to be implemented]* …………………………………………… . In case the above stated documents do not cover the required standards or design criteria, or do not conform to the OPBRC contracting modality, the Contractor shall propose to the Project Manager the design criteria to be applied, for approval in writing by the Project Manager, prior to implementation. The general design criteria are complemented by specific design criteria indicated in these Specifications that are applicable to the specific works to be executed under the contract.

All designs are to be prepared by the Contractor at his own cost and submitted for approval to the Project Manager. The cost of preparing designs is deemed to be included in the Contractor’s rates or prices for works. Notwithstanding the above, the Contractor is entitled to be reimbursed for the reasonable cost of designs that are specifically requested by the Employer but for which the corresponding works are subsequently not implemented by unilateral decision of the Employer.

Detailed Designs are for two main categories of Works:

1. *Pavement Works*, for which a detailed pavement design is to be prepared, taking into account the deflection and roughness (IRI) data collected prior to carrying out the design (f required), as well as other information;
2. *Other-than-Pavement Works* (also called non-pavement works) which include works on embankments, cuts, drainage, retaining structures, other structures, road furniture, etc.

### Scope of Detailed Designs

Prior to carrying out any detailed designs, the Contractor shall carry out all necessary inspections, surveys, testing and investigation to ensure that the design and the works meet all relevant standards and requirements, including those for:

* Shoulder width, shape and construction;
* Drainage works, culvert repairs or construction/reinstatement of lateral drains etc. needed to ensure adequate surface water runoff (safety) and protection of the pavement and formation structures;
* Retaining structures needed to support the road formation or associated drainage structures;
* Bridge repairs, in terms of expansion joints and guardrails replacement or construction;
* Traffic and pedestrian safety at all junctions, intersections, bridges etc., including all necessary crash protection, signage, pavement marking, lighting, delineation, foot paths, pedestrian crossings and guard rails etc.;
* Identification of applicable design criteria for pavements and other works;
* General signage and delineation requirements, including all new signage and delineation necessary to achieve currently applicable design standards and requirements;
* Road and Traffic Safety;
* Road diversions and detours needed to adequately manage the traffic throughout the duration of the construction phase; and
* Where appropriate, protection of pedestrians and other vulnerable road users.

The final design drawings and associated construction details must include the following as a minimum:

* A scale to ensure the drawing details are clearly legible;
* Topographical Survey plan indicating all relevant features, position of known services, and the required interventions to the carriageway;
* Details of all bridge repair works related to expansion joints and guardrails;
* Pavement design details clearly indicating the depths / thickness of the various asphalt and other layers, and materials specifications;
* Identification of the Technical Specifications which have been applied, clearly detailing all required material tests, control tests, acceptance values and test frequencies to be applied. The design documents shall further describe the actions to be taken if actual conditions on site are different from those assumed during the design; and
* The location, layout, and signage of all required traffic diversions.

### Road Safety Audits

Designs for any major road works covering elements that may affect traffic safety (pavements, signalling, intersections, walls, etc.) must be reviewed and cleared by a road safety specialist who shall issue a *Road Safety Audit Statement* which confirms that the audit was carried out and that the design is complying with applicable road safety standards and/or international good practice. In order to avoid a conflict of interest when carrying out the Road Safety Audit, the person carrying out the Road Safety Audit shall not be part of the design team used by the Contractor and must not otherwise be involved in the preparation of the detailed design. The Project Manager may reject a design which does not include a Road Safety Audit Statement if in his view the planned works either do affect road safety or provide an opportunity to improve road safety.

The Project Manager may require the Contactor to carry out a post-construction road safety audit for the works executed.

### Design Requirements for Pavement Works

*[Note to Employer: It is important that all bidders prepare their bids based on clear pavement design requirements. These must be developed by the Employer as part of the technical preparation of the project, on the basis of a detailed traffic study (traffic counts, traffic composition, axle load surveys to detect the degree of overloading and the Traffic Aggressivity Factor, etc. Without such a traffic study, the design requirements cannot be determined adequately and different bidders may use different assumptions.]*

**Design Life:** The design for any pavements to be built or rehabilitated under the contract must guarantee a minimum pavement (residual) life expressed in terms of the expected number of Accumulated Standard Axles (ESALs). The design requirement to be fulfilled by the contractor is as follows:

**Type of Standard Axles:** ……… *[indicate if 13 tons, 11 tons, 80 kN or other]* …..

**Number of accumulated Standard Axles during 20-year period:** *…….[indicate the number, in millions of Standard Axles]* ……

**Traffic Aggressivity Factor (or Vehicle Damage Factor) used**: ….[insert factor] ….

**Ambient temperature equivalent**: …. [insert equivalent ambient temperature to be used for design] …..

**Pavement Materials:** All new pavement materials shall comply with the requirements of the Specifications or as agreed in writing with the Project Manager. Where recycling of pavement materials is considered in the Contractor’s design, he shall propose specifications for the work, based on the General Specifications or, if those are not applicable, on international good practice, for the approval of the Project Manager. If any new material is proposed to be incorporated into the recycled pavement, this shall be described in the Contractor’s pavement design, including the specifications for the new material.

**Local conditions:** Pavement designs shall be developed by considering local and regional conditions and experience. They shall take into account the particular local climate and the availability of materials in the area near the road, the predicted traffic load using specific local factors and circumstances (including persistent overloading of trucks, if prevalent). Pavement designs shall always be based on site-specific investigations to confirm the actual design subgrade CBR and the existing pavement structures, including an assessment of the contribution that the existing pavement can make to the rehabilitated pavement.

**Reconstruction versus Rehabilitation:** Pavement design may either be based (i) on the construction of a completely new pavement designed to carry the design life traffic loading on the existing subgrade materials, or (ii) may make use of the existing pavement materials and build on them, utilizing the residual strength of the existing pavement. In either case the proposed design shall be supported by the appropriate calculations and materials data. The Contractor shall pay particular attention to the following aspects when developing pavement design solutions:

* Design subgrade CBR, and the likely range of subgrade conditions for each site, including the effect of climate on subgrade conditions. Normally the design subgrade CBR shall be based on “soaked” (4 day) CBR test results;
* The strength of the existing pavement shall be determined using either a Benkelman Beam or a Falling Weight Deflectometer (FWD). The deflection measurements shall be used for back-calculation of E-moduli of each layer of the pavement structure. Back-calculation of E-moduli shall be carried out using the ELMOD programme or similar, or as otherwise agreed with the Project Manager in writing.

**Homogeneous Sections:** The Contractor shall define homogeneous sections based on a combination of traffic loading and residual pavement strength. Different acceptable methods exist to define homogeneous sections, such as the CUSUM Method. The CUSUM Method establishes monogenous sections by analysing one parameter at a time. The method plots the cumulative sum of differences from the average value. Homogeneous sections are identified on the plot by a change in slope.

**Overlay Design / Strengthening Requirements:** ……………………… *[if applicable, insert the appropriate requirement in line with the engineering practice in the country where the contract is located.]* ……………………………… .

When preparing the overlay design, attention shall also be given to the evenness of the existing surface and the routine maintenance requirements, for avoiding excessive rutting and roughness. This may result in thicker asphalt layers than warranted by the strength analysis.

For the asphalt mix designs, the Contractor shall use the provisions in the General Specifications and these Specifications. However, the Contractor may propose to the Project Manager for his approval the use of any other internationally recognised alternative Standards or specifications which he considers suitable and applicable to the design requirements of this contract.

**Other pavement design criteria:** The following additional design criteria are to be applied:

* All designs and material specifications shall conform to the general design standards adopted in the country where the contract is implemented, unless otherwise agreed in writing with the Project Manager;
* The lines and levels of the rehabilitated pavement shall match those of adjacent access ways or intersections, with a smooth transition and no disruption to drainage or run-off;
* The identification and planned correction of any minor geometric deficiencies such as inadequate cross-fall or super-elevation on horizontal curves will be undertaken during the execution of the pavement Rehabilitation Works;
* The reinstatement of any existing pavement markings or all new pavement markings must meet the requirements of the General Specifications for the applicable road category and the required Service Level;
* The design must describe any needed traffic diversions or modifications. If those are not adequately covered in the Contractor’s general Traffic Management Plan in the QAP, a site-specific Traffic Management Plan will have to be prepared and presented for approval by the Project Manager.

**Pavement Design Report:** The Pavement Design Report shall have the following structure and content:

1. Design Methodology applied;
2. Existing Pavement Strength
   * 1. Determination of subgrade strength from test pits, lab data;
     2. Determination of layer thicknesses;
     3. Results from pavement deflection tests;
     4. Back-calculation of representative E-moduli for each layer and justification for percentile used;
     5. Determination of homogeneous sections based on existing strength;
3. Combination of homogeneous traffic load sections with homogeneous road strength sections;
4. Pavement design
   * 1. Decision / Description of transfer functions (TF) used;
     2. Presentation of assumptions made when performing the mechanistic modelling of the pavement (layer thicknesses, E-moduli, Poisson);
     3. Description of assumptions made for input to the TF when different from what is detailed in these specifications;
     4. Description/justification of TF’s used for unbound layers and choice of reliability level for these layers;
     5. Determination of residual strength of the existing pavement represented as ESAL’s;
     6. Calculation of required pavement strength for the forecast future traffic (note that strengthening need is difference between required strength and residual strength).
5. Documentation that the design assumptions are representative for the materials used/available for actual pavement overlay/construction; and
6. Document optimisation by analysing actual strains and permissible strains for all layers.

### Design Requirements for other Works

The following general design requirements shall be taken into consideration for Other-than-pavement works:

**Rehabilitation of Bridges, including expansion joints and guardrails:** Bridge design shall be performed according to the general design specifications applicable in the country where the contract is executed, or otherwise according to design standards agreed in writing with the Project Manager. Design issues not covered in those specifications shall be treated according to European/International design codes. Bridges shall not be modified unless there is a danger for the stability of the bridge (e.g. extensive scour in foundations or repeated indications of unsatisfactory hydraulic capacity etc). In that case, the Contractor’s designers must indicate to the Project Manager the extent of modifications which would be needed to bring the structure to the required standard and avoid damages to the bridge.

**Roadside Furniture:** Road Signs and Markings design shall be designed and performed, as appropriate, according to the general design specifications applicable in the country where the contract is executed, or otherwise according to design standards or criteria agreed in writing with the Project Manager.

1. **Road Marking**: Allowance for road markings must include all carriageway markings including edge lines, centre lines and double centre lines, together with markings on intersections (give way line, side road centre line, pedestrian crossings, etc.), hazardous locations, parking and the markings on kerbs. The use of thermoplastic reflective road painting materials is mandatory for (i) all markings in the primary network; and (ii) in the center-line of the secondary network, unless otherwise specified elsewhere in the Contract or agreed otherwise in writing with the Project Manager.
2. **Road Signs**: Allowance for road signs must be made, where necessary, including for the installation of missing, destroyed, or damaged road signs.
3. **Crash Barriers (Guardrails)**: The design must include Crash Barriers where necessary or required by Specifications, including the installation of missing, destroyed or damaged guardrails. Special areas of consideration are bridge approaches and bridge decks, high embankments (3 meters and more) and any other location where significant safety enhancements will be achieved with their installation.
4. **Distance Marker Posts**: The design shall include the provision of kilometre posts on one side of the project road, unless stated otherwise in the Specifications or as otherwise directed by the Project Manager.
5. **Road Delineators/Cat eyes**: The Contractor’s design shall ensure the presence of delineators, bollards, and other safety devices on specific horizontal curves on either side of the carriageway, or as otherwise determined in the Specifications or agreed in writing with the Project Manager.

**Design of Road Safety Enhancements:** The Contractor is required to identify and to include in the design the appropriate road safety enhancements in line with the General Specifications, the Specifications and/or good road safety practice. In particular, the following types of enhancements are to be foreseen as appropriate for any specific location:

* Appropriate crash barriers for the protection of both drivers and other vulnerable road users, including pedestrians and non-motorized traffic;
* Appropriate road markings for all junctions and sensitive areas like schools, hospitals, beginning and end of towns etc. including pedestrian crossings;
* Appropriate traffic calming devices and warning signage;
* Installation of retro-reflective Aluminium foil backed diamond grade flexible prismatic sheeting on road furniture and other surfaces to increase night-time visibility; and
* The installation of reflective prismatic conspicuous sheeting on the vertical posts of all new and existing metal beam crash barriers within the network.

**Drainage Design:** Drainage design shall follow a detailed site inspection to identify the drainage problems and needs which have to be addressed along the road. The normally occurring drainage sediment deposition and the subsequent reduction of the active cross section of the bridge, culvert or other drainage structure shall be taken into account in the design.

**Culvert design:** As far as possible, the provision of new culverts is to be avoided. The intention is that all existing culverts should be retained, cleaned and repaired as necessary to bring them into a condition ensuring adequate drainage. Wherever the existing culverts are inadequate in number or capacity, the drainage design shall address such insufficiencies, either through the provision of additional new culverts or the replacement of existing culverts with larger ones. New culverts shall be in accordance with the types and shapes already in use in the area, if appropriate. In any location where the existing culvert is not long enough to accommodate the width of the rehabilitated road, it shall be extended using the same form of construction as the existing culvert. The widening shall use pipes of comparable diameter and shall be provided with new headwalls of a design similar to the original. Pipes, bedding, materials and methods of construction shall conform to the requirements of the Specifications. Detailed design calculations for both hydraulic and structural capacity must be provided to the Project Manager to support the detailed design in all situations.

**Retaining Walls Design:** As far as possible, the provision of new retaining walls is to be avoided. Nevertheless, where the stability of the road and the safety of the users is at stake, the Contractor should include in his detailed designs the provision of new retaining walls. Existing walls shall be maintained whenever possible and must be rehabilitated where necessary.

# Part C: Operational Procedures

The Operational Procedures described in this Section are to be applied in the implementation of Output- and Performance-based Road Contracts.

*[The methods and procedures described below are applicable if the Contractor’s billing is monthly, which is generally assumed in these Sample Specifications and in the Contract. If other billing periods are stipulated, the text of this section and of many other parts of the Specifications and of the Contract must be modified accordingly. Billing periods other than monthly are however not recommended.]*



## Inspection and Payment of Maintenance Services

The Contractor’s compliance with Operational Performance Measures (OPM’s) is to be assessed and verified through Formal Inspections, Informal Inspections, and other inspections. This section specifies (i) the procedures to be applied for scheduling and carrying out Inspections and (ii) the application of payment reductions in cases of non-compliance of the Contractor with required Service Levels or other requirements.

### Inspections

This section specifies the various types of inspections to be carried out and the procedures to be followed for those.

#### Formal Inspections

The main purpose of the regular Formal Inspections is to verify the correctness of the information presented by the Contractor in his Monthly Compliance Tables for Maintenance Services about his own compliance with the Service Level requirements. The results of the Formal Inspections are used for finalizing the monthly Interim Payment Certificate.

Formal inspections are scheduled in advance by the Project Manager and carried out by the Contractor through his Self-control Unit (SCU) with participation of the Project Manager (who shall usually be represented by the Monitoring Consultant). The regular Formal Inspections are to take place at the very beginning of each month, but additional Formal Inspections may be scheduled by the Project Manager at any time.

The Project Manager must inform the Contractor’s Self-Control Unit of the date and hour of the beginning of the Formal Inspection at least 24 hours in advance. The scheduling of inspections between the Project Manager and the Contractor’s Self-Control Unit (SCU) must be in writing, which may include the use of e-mail. The Project Manager shall use the official e-mail address of the SCU which the Contractor must indicate in writing to the Project Manager at the beginning of the Contract period.

The normal start date for the regular Formal Inspections is on the first workday of each month. This is to avoid any important time gap and change of physical road conditions between the date of the Contractor´s Monthly Compliance Tables for Maintenance Services and the actual road conditions during the regular Formal Inspection.

Formal Inspections shall typically take between 1 and 3 full days. The share of the network to be covered by the monthly Formal Inspection is at least ………………………… *[insert percentage, recommended are at least 40% every month]* ………………………. This percentage is however not an upper limit or a maximum. If the Project Manager suspects widespread non-compliances along the network, he should expand the length of roads to be covered during the Formal Inspection which could reach up to 100% percent of the roads included in the contract. In such cases the Formal Inspection may take longer than 3 days. The Formal Inspection can be done for one continuous stretch of road, or for separate road sections scattered over the network covered by the contract. Each formal inspection will normally (but not necessarily) cover mostly sections which were not inspected during the previous Formal Inspection, but it may also cover places where non-compliances were detected during the previous Inspection.

Formal Inspections may also be scheduled for any necessary follow-up site visits, whose purpose is to verify if the Contractor has remedied the causes of earlier non-compliances within the time frame (Grace Period) granted by the Project Manager. Failure to correct non-compliances within the specified Grace Period will lead to further payment reductions for those non-compliances in the following Interim Payment Certificate.

The specific roads or roads sections to be covered by the Formal Monthly Inspection are to be selected by the Project Manager, but only **after** having received the Contractor´s Monthly Compliance Tables for Maintenance Services. They are **not to be defined or agreed prior to the Contractor having issued and transmitted to the Project Manager the Monthly Compliance Tables for Maintenance Services**.

The Contractor is obliged to be present at the date, hour and location specified by the Project Manager, providing the physical means (including equipment) needed for the inspection. Both must have a signed hardcopy of the Contractor’s Monthly Compliance Tables for Maintenance Services in hand (which shall cover the entire road network included in the contract). The main purpose of the Formal Inspection is to verify the information provided by the Contractor in his Compliance Tables, on his on compliance with Service Level requirements.

Should the Contractor fail to appear for (or participate in) a scheduled Formal Inspection, having been requested to do so with at least 24 hours’ notice, then the Project Manager may carry out the Formal Inspection without participation of the Contractor´s SCU staff. In such case, the determination of the Project Manager as to the nature and extent of the defects and non-compliances detected shall be final and binding, with no possibility of appeal or objection by the Contractor.

Also, should the Contractor fail to submit his Monthly Compliance Tables for Maintenance Services at the end of the calendar month, the Project Manager may nevertheless schedule the corresponding Formal Inspection to be carried out in order to establish the degree of compliance of the Contractor with the Operational Performance Measures (OPM’s). Such failure to submit the Monthly Compliance Tables is also a non-compliance with the corresponding Management Performance Measure.

During the Formal Inspection the Project Manager and the staff of the SCU **shall travel in the same vehicle** along the road and stop as necessary, while verifying the information provided by the SCU in the Standard EXCEL Compliance Tables. This is to ensure that the Contractor is immediately aware of any non-compliances identified by the Project Manager. During the Formal Inspection any errors, discrepancies or misrepresentations in the Compliance Tables presented by the Contractor, as well as their locations and length, must be noted by the Project Manager, communicated verbally to the Contractor, and corrected on the Compliance Tables for Maintenance Services. The Project Manager shall also indicate in the corrected Monthly Compliance Tables any Grace Periods granted in accordance with the Specifications for remedying the various non-compliances and inform the contactor accordingly.

In addition, the Project Manager shall also record any existing non-compliances which had already been recorded during the previous month(s) and which have not been remedied by the Contractor within the Grace Period granted by the Project Manager, and apply the corresponding payment reductions for the full duration of the non-compliance.

Within three (3) days following the Formal Inspection, but not later than the 7th day of the calendar month, the Project Manager will prepare a brief Memorandum in which he shall (i) describe the general circumstances of the Formal Inspection, including date, road sections inspected, persons present, etc., (ii) show a list of all non-compliances detected during the Formal Inspection and (iii) show the Grace Periods granted by the Project Manager to the Contractor for remedying each non-compliance. The specific Grace Period for each non-compliance shall count from the last day of the Formal Inspection during which the non-compliance was detected.

The Project Manager shall use the corrected Monthly Compliance Tables for Maintenance Services for calculating the payment reductions for OPM’s (and MPM’s if applicable), and the total amount to be paid for Maintenance Services. The Project Manager will then immediately transmit his Memorandum and the corrected Compliance Tables to the Contractor, as input for the Contractor’s Monthly Statement.

If the Project Manager does not send his Memorandum and the corrected Compliance Tables to the Contractor by the 7th day of the calendar month, the delay in sending the Memorandum shall be added to the Contractor’s deadline for submitting his Monthly Statement, which is normally due on the 10th day of the calendar month as per the General Conditions.

#### Informal Inspections

The Project Manager will also carry out Informal Inspections of the roads covered by the Contract. The Project Manager may do so on his own initiative, at anytime and anywhere on the roads included in the contract. The Project Manager must use his own means for those inspections. If the Project Manager detects any road sections where the Service Level criteria are not met, he shall promptly inform the Contractor in writing (which may be by e-mail) of the defect identified, including its location, in order to enable the Contractor to take remedial action as soon as possible. The Project Manager will however not apply “First-day” payment reductions (for explanation see further below) based on the results of an Informal Inspection. Where Informal Inspections identify defects which the Contractor has failed to rectify within Grace Periods granted earlier, such identified defects may however be used by the Project Manager for correcting the Contractor’s next Monthly Compliance Tables and applying payment reductions accordingly.

The conduct of Informal Inspections by the Project Manager and the notification of any identified non-compliances in no way affects the requirement for the Contractor to continuously monitor road conditions and his own compliance with required Service Levels, and to rectify all defects. It is the duty of the Contractor’s SCU, not of the Project Manager, to identify defects and ensure their rectification in a timely manner.

#### Other Inspections

**Commencement of the Contract – initial hand-over Inspection:** The Project Manager and the Contractor shall both actively seek to undertake a joint inspection of the roads included in the contract when handing over the site to the Contractor, unless agreed otherwise between the Contractor and the Project Manager. The purpose of this Hand-over Inspection is to provide the Contractor with the opportunity (i) to eliminate jointly with the Project Manager any uncertainties over the precise location of the Contract boundaries and the start and end points of any road or road section, and (ii) to highlight any locations or areas where significant deterioration or damage has occurred between the time of bid submission and possession of the site, as a direct result of unforeseeable events and/or natural phenomena which have occurred during that time period (but not due to normal wear and tear resulting from road traffic). If such deterioration or damage has occurred, the Contractor shall include a detailed description of the damage and a price quotation for its repair, for consideration of the Employer.

The initial hand-over Inspection shall also be used to take time-lapse (or “hyper-lapse”) video footing for all roads included in the contract, to establish a record of the road and its immediate environment at the beginning of the Contract. This can be done using the time-lapse video function available in all modern smartphones. *[Note: It is recommended that this is made a requirement for the Contractor to fulfil at the beginning of the Contract.]*

If the joint hand-over inspection is not carried out for any reason, the Contractor must nevertheless inform the Project Manager within 45 days after the Start Date of any damages or defects which may have occurred during the time period between the submission of the Contractor’s bid and the Start Date, for the remedying of which the Contractor plans to seek compensation from the Employer. Failure of providing such information within 45 days after the Start Date shall be interpreted as such damages or defects being non-existent.

The Contractor shall also highlight any other impediments to the Contractor’s program that are the result of encroachments, the actions of other contractors, or social or environmental issues and grievances requiring the Employer’s intervention. The Project Manager and the Contractor may also take video and/or pictures of the roads during this Inspection to record the condition at the time of Handover.

**Inspections for Environmental and Social Assessment:** The Contractor shall carry out the inspections required under the relevant legislation, these Specifications, and the Contract, and submit any required assessment reports.

**Other Joint Inspections:** The Project Manager or the Contractor may ask the other party at any time to undertake other joint inspections, including during nighttime, with the objective to:

* Seek solution of Contract-related issues affecting all parties;
* Identify and investigate any necessary works which were not previously identified;
* Confirm actual progress on site towards the Contractor’s current Programme of Performance; and
* Confirm that the social and environmental requirements have been complied with during the execution of the Contract.

**End-of-Contract Inspections:** The Project Manager and the Contractor shall undertake joint inspections as needed, at the following times:

1. No later than six (6) months before the end of the contract, with the purpose of determining the extent of works and activities required to be completed before the end of the contract execution period;
2. No later than three (3) months before the end of the contract, with the purpose of identifying any additional remedial works that need to be completed before the end of the contract period; and
3. No later than one month before the expiration of the Defects Liability Period, in order to confirm that all required remedial works have been adequately completed.
4. Any other inspections found necessary by the Project Manager.

#### Physical means needed for Inspections

The physical means needed for the various types of inspections will generally be provided by the Contractor, with the exception of the means needed for Informal Inspections, which the Project Manager will carry out using his own means.

The physical means will generally be the same as those normally used by the Contractor’s Self-control Unit for their continuous self-evaluation of the Contractor’s compliance; in particular:

1. Vehicles: The following type and number in good mechanical order …………… *[insert vehicle type and number; recommended are two SUV’s with comfortable seating for 5 persons]* …………………………………………;
2. Staff: As a minimum, the head of the Self-control Unit plus at least one qualified SCU staff member;
3. Any tools and instruments needed for carrying out the inspection.

### Payment Reductions for Maintenance Services

#### Payment Reductions for OPM’s

Payment Reductions for non-compliance with Operational Performance Measures (OPM’s) are normally expressed and calculated as a percentage of the monthly lumpsum payment due for one km of road. This percentage is applied for each day during which a non-compliance persists, and for the length of road, which is non-compliant, with the minimum length being one (1) km. The **basic** **principles to be applied for payment reductions** are the following:

**“First-day” Payment Reduction:** Payment Reductions in general are meant to provide an incentive for the Contractor to continuously and proactively identify any non-compliances and to carry out quickly the necessary remedial measures. The “First-day” payment reduction in particular has the objective to ensure that the Contractor detects and remedies non-compliances quickly, without waiting for the next Formal Inspection. Therefore, the existence and detection of a non-conformance with OPM requirements during the Monthly Formal Inspection triggers the immediate and irreversible application of the “first-day” payment reduction. The “first-day” payment reduction is the payment reduction due for one day of non-compliance. The “First-day” payment reductions are to be applied immediately at the time of the Formal Inspection and will lead to a reduction of the payment to the Contractor which is due for corresponding month. The application of the “first-day” payment reduction can however be voided by the Project Manager on an exceptional basis if it is evident that at the time of the Formal Inspection the Contractor’s staff and equipment are already actively working on remedying the non-compliance.

**Suspension of further payment reductions through granting of Grace Period:** Payment reductions are generally applied for each day during which the non-compliance persists. However, in order to avoid overly severe payment reductions and to provide the Contractor with the opportunity to remedy the non-compliance without incurring further payment reductions (beyond the “first-day” payment reduction already applied), most OPM’s have a “Grace Period”. The granting of the Grace Period to the Contractor does NOT avoid the “First-day” payment reduction, but suspends the further application of additional payment reductions during the Grace Period. The Grace Period will temporarily “stop the clock” for additional daily payment reductions, for the duration of the Grace Period after the “first day”. If the Contractor remedies the non-compliance within the Grace Period granted, there will not be any additional payment reduction for that same non-compliance. The duration of the Grace Period given for different types of defects is shown in the corresponding descriptions for each OPM in the Specifications. However, if the Contractor does NOT remedy the non-compliance within the Grace Period, a further payment reduction for all days of non-compliance (starting from the second day after the initial detection and until the non-compliance is remedied) will be applied in the following month and (if applicable) for any subsequent months, without a limit being applied to the length of time.

**Contractor’s obligation to inform Project Manager about completed remedial measures:** As soon as the Contractor has remedied the causes of a non-compliance with an OPM, he is obliged to inform the Project Manager accordingly in writing (which can be by e-mail) and to attach any supporting evidence, such as photographs or video. The Project Manager shall then decide if a follow-up inspection must be scheduled to verify if the Contractor has remedied the non-compliance, or otherwise if the Project Manager accepts the evidence provided by the Contractor as proof for the non-compliance having been remedied. If the Contractor fails to provide such information to the Project Manager in writing, the Project Manager shall continue to apply the further payment reduction until such time when he receives the information from the Contractor on the remedial action having been taken.

**Correct reporting by the SCU (OPM-10):** As explained above, it should not be the Project Manager having to point out non-compliances with OPM’s to the Contractor. Instead, it is the Contractor’s Self-Control Unit (SCU) who must proactively identify any non-compliances and report those in the Monthly Compliance Tables for Maintenance Services. The incentive for doing so is provided through OPM-10 titled “*Performance of the Contractor’s Self Control Unit*”. If for any road or road section the SCU has reported incorrectly more than 20% of the individual data for OPM-1 to OPM-9, then there is non-compliance with OPM-10 and the corresponding payment reduction will be applied. A Sample Calculation is provided further below.

**Non-recoverability of payment reductions:** Payment reductions that have been applied cannot be recovered later, even after the non-compliance which has been the cause of the payment reduction has been remedied.

**No time limit for payment reductions:** If the Contractor fails to remedy a non-compliance for which a payment reduction has already been applied during a Formal Inspection, the respective payment reduction will continue to be applied in the same way to the following Monthly Statement(s) for that particular cause of non-compliance, until the non-compliance has been remedied, without a time limit being applied.

**Multiple non-conformances and application of payment reductions:** Payment reductions due to specific non-conformances are cumulative. If a one-km section of road has several non-compliances, then the payment reduction to be applied is the sum of the payment reductions for each individual non-conformance. When an OPM (such as OPM-2) includes a group of Sub-Measures (e.g. patching, cracking in Pavement, Potholes, etc.), then if the road suffers from several of these defects, the overall Payment Reduction is equal to the sum of each individual payment reduction per type of defect. If in any given month the payment reductions for accumulated OPM non-conformances exceed the total monthly payment amount for maintenance services, then the part not covered may be applied as a reduction to the payments due in future months, or may be deducted from any other payments due to the contractor, at the discretion of the Project Manager.

**The calculation of Payment Reductions for OPM’s** is to be carried out as described below:

After the Formal Inspection, the Project Manager shall apply the payment reductions for Maintenance Services in the following way:

* For any non-compliances which were newly detected during the Formal Inspection for the first time, the day of the Formal Inspection is considered to be the “first day” of non-compliance. The corresponding “First-day” payment reductions must be applied immediately for the current month.
* For any non-compliances which had already been detected and notified earlier (either during the previous Formal Inspection or as a result of Informal Inspections during the previous months) and which were not remedied during the Grace Period given to the Contractor, the Project Manager shall apply the payment reductions for the entire period (number of days) during which the non-compliance has persisted.

The calculation of payment reductions due to non-compliances with OPM’s will be based on the following data:

* For the part of road network for which the Formal Inspection has been carried out under the supervision of the Project Manager, payment reductions are to be based on the data verified during the Formal Inspection.
* For the part of the road network which was not covered by the Formal Inspection, payment reductions are to be based on the data provided by the Contractor in his Monthly Compliance Tables for Maintenance Services.

#### Sample calculation for OPM-10

OPM-10 refers to the correctness of the information provided in the SCU´s Monthly Compliance Tables for Maintenance Services. Non-compliance with OPM-10 is triggered if the data set supplied by the Contractor´s SCU in the Monthly Compliance Tables for Maintenance Services for a road or road section is incorrect for more than 20% of the individual data on OPM´s. Compliance with OPM-10 is calculated by comparing the data supplied by the Contractor in the Compliance Tables with the verified and corrected data on OPM´s provided through the Formal Inspection. The payment reduction is calculated as follows:

*[Insert the Table for Calculation of payment reduction for OPM-10. The Sample Table below applies if the OPM’s stated in these Sample Specifications are applied. If the number of OPM’s is either reduced or increased, the Sample Calculation must be modified accordingly.]*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | ***Sample Calculation - Payment Reduction for OPM-10*** | | | |
|  |  |  |  |  |
|  | Road Section Length (Km): | | | 35 |
|  | Unit rate per Km. per month (US$) | | | 300 |
|  | Monthly Full Payment amount for road Section (US$) | | | 10,500 |
|  | OPM-10 Unit rate for Non-compliance (%) | | | 10 |
|  |  |  |  |  |
| **Data No.** | **OPM List** | **Non-compliant length (km)** | |  |
| Data from SCU Monthly Compliance Tables | Data from Monthly Inspection | Incorrect Data supplied by SCU\* |
| 1 | OPM-1 | 0 | 0 | No |
| 2 | OPM-2.1 | 2 | 4 | **YES** |
| 3 | OPM-2.2 | 0 | 0 | No |
| 4 | OPM-2.3 | 0 | 0 | No |
| 5 | OPM-2.4 | 0 | 0 | No |
| 6 | OPM-2.5 | 0 | 4 | **YES** |
| 7 | OPM-2.6 | 2 | 2 | No |
| 8 | OPM-2.7 | 0 | 0 | No |
| 9 | OPM-2.8 | 1 | 1 | No |
| 10 | OPM-3 | 0 | 0 | No |
| 11 | OPM-4.1 | 0 | 0 | No |
| 12 | OPM-4.2 | 0 | 0 | No |
| 13 | OPM-4.3 | 0 | 0 | No |
| 14 | OPM-5 | 0 | 0 | No |
| 15 | OPM-6.1 | 0 | 0 | No |
| 16 | OPM-6.2 | 1 | 3 | **YES** |
| 17 | OPM-7 | 0 | 0 | No |
| 18 | OPM-8.1 | 0 | 1 | **YES** |
| 19 | OPM-8.2 | 1 | 1 | No |
| 20 | OPM-9 | 3 | 5 | **YES** |
|  | Total No. of Data: **20** |  | No. of "Yes": | **5** |
|  |  |  |  |  |
|  | 20% of 20 OPM´s would be 4 OPM’s, which means that if the number of "Yes" is | | | |
|  | higher than 4 then the Payment reduction is triggered and to be applied. | | |  |
|  |  |  |  |  |
|  | Amount of payment reduction: 10% of Monthly Payment Amount for the | | | |
|  | full road section, resulting in US$ | **1,050** |  |  |
|  |  |  |  |  |
|  | \* Only applies if road condition is "worse" than reported by SCU, not if better. | | |  |

## Payment Procedures

*[The methods and procedures described below are applicable if the Contractor’s billing is monthly, which is generally assumed in the Contract and the Sample Specifications. If other billing periods are stipulated, the text must be modified accordingly in this section and many of the other sections.]*

### Payment for Rehabilitation Works

The Contract describes the required Rehabilitation Works which the Contractor has to carry out as a minimum. The Contractor’s bid states the fixed lump sum amount for all required Rehabilitation Works. The Contractor can only claim payment for those Rehabilitation Works that are specifically required under the Contract.

There may be situations where the Contractor wishes to carry out other Rehabilitation Works that are not specifically required by the Contract, with the objective of reducing the subsequently needed maintenance interventions and thus the longer-term cost of Maintenance Services. The Contractor can however not claim payment for such other Rehabilitation Works carried out on his own initiative and for his own strategic reasons.

Payments for the required Rehabilitation Works shall be made based on actual progress achieved in their execution, as follows:

* For those Rehabilitation Works that are executed in accordance with the Contractor´s bid, payments will be monthly, on a lumpsum basis and paid prorata for the length of road that has been completed during the previous month and verified by the Project Manager to be in accordance with the contractual requirements.
* For those Rehabilitation Works that are executed on the basis of a Change Order (see further below), the applicable prices and the applicable payment mechanism are to be indicated in the corresponding Change Order. Payments can be either (i) monthly, on a prorata basis for the length of road that has been completed during the previous month and verified by the Project Manager to be in accordance with the contractual requirements, or (ii) monthly, on the basis of priced Bills of Quantities (if thus stipulated in the Change Order) for the quantities of works which have been executed in the previous month and verified by the Project Manager to be in accordance with the contractual requirements.

*[Note: The text above assumes that payments are to be done for completed road sections, for example, whenever a one-km section is completed the Contractor can claim payment for that km. Depending on the type of Rehabilitation Works, this may however not be the most appropriate payment scheme. Another option is to allow payment for completed road layers. For example, the first payment (50%) could be made when the lower layers up to the base course (including prime coat) have been completed for a road section. The second payment (50%) would be made when the road is substantially completed and opened for traffic. The above text would need to be modified to allow for such “milestone” payments. If such prorata payments are to be allowed for completed road layers, the percentage of the total lumpsum price per km of rehabilitated road which is attributable to each completed road layer is to be defined in the Specifications.]*

The maximum amount payable for Rehabilitation Works is stated in the Letter of Bid**.** This amount must not be exceeded unless the volume and/or scope of Rehabilitation Works is modified through a Change in the Contract (see further below).

The Contractor shall request payment for Rehabilitation Works in his Monthly Statement, which must be supported by the Monthly Progress Report. The payment due to the Contractor is to be adjusted for repayment of Advance Payment and Retention Moneys (if applicable).

*Rehabilitation Works executed on the basis of Change Orders.* Although not normally foreseen under Output- and Performance-based Road Contracts, Rehabilitation Works can also be executed based on Change Orders issued by the Project Manager, following the procedures described in the General Conditions of Contract. This may occur if during the execution of the Contract, the Employer and the Contractor agree that additional Rehabilitation Works are needed that could not have been foreseen during the technical preparation of the project despite reasonable care and due diligence. The execution and payment of such additional Rehabilitation Works require a Change of the Contract in accordance with the respective clauses of the General Conditions.

If the nature of such additional Rehabilitation Works is substantially different from the required Rehabilitation Works stated in the Contract, then the option of using the ad-measurement payment method based on traditional priced Bills of Quantities (stating quantities of works and materials, and their unit rates) may also be used under the OPBRC, provided that it is clearly stipulated in the Change Order.

### Payment for Improvement Works

Payments for Improvement Works shall be made for the outputs (or products) defined in the Contract which have been fully completed and verified by the Project Manager to be in accordance with the contractual requirements. *[This text assumes that Improvement work items or “products” are relatively minor and payment is done when one item or product is fully completed. If the contract includes large-scale Improvement works for which milestone payments for partial completion are to be allowed, the text needs to be modified accordingly.]*

The maximum amount payable for Improvement Works is stated in the Letter of Bid. This amount must not be exceeded unless the volume and/or scope of Improvement Works is modified through Change Orders issued by the Employer. If Improvement Works are agreed through Change Orders which are substantially different from those works originally foreseen in the Bidding Documents, then the option of using the ad-measurement payment method based on traditional priced Bills of Quantities, stating quantities of works and materials, may also be stipulated in the Change Order.

The Contractor shall reflect Improvement Works carried out in his Monthly Progress Report for Works and in his Monthly Statement, when such works have been satisfactorily completed and such completion has been verified by the Project Manager.

The amount payable shall be adjusted for repayment of advance payment and for retention monies (if any) and shall be certified by the Project Manager.

### Payment for Emergency Works

Emergency works are remunerated on the basis of traditional Bills of Quantities. Payments are based on contractual rates stated in the Contractor's bid for the execution of emergency work items. The contractual unit prices for emergency work items include the provision of materials, labour, and equipment. Payments due for Emergency Works shall be calculated on the basis of (i) quantities executed by the Contractor and verified by the Project Manager to be in line with requirements, and (ii) the unit prices stated in the Bill of Quantities, and (iii) in accordance with the relevant clauses of the GC and these Specifications. The Work Order issued by the Project Manager may also stipulate specific requirements for quality control and the verification of quantities of works executed.

## Adjustments to the scope of the contract

### Adjustments to Rehabilitation Works

The Employer and the Contractor may agree on the execution of Rehabilitation Works that differ from those originally foreseen in the Contract. Such Rehabilitation Works will be executed based on Change Orders in line with the relevant clauses of the General and Particular Conditions of Contract, and following the procedures stipulated therein.

### Adjustments of Improvement Works

The Employer and the Contractor may agree on the execution of Improvement Works that differ from those originally foreseen in the Contract. Such Improvement Works will be executed based on Change Orders in line with the relevant clauses of the General and Particular Conditions of Contract, and following the procedures stipulated therein.

### Adjustments to Road Network under contract

The General Conditions stipulate that the Employer may add new roads to this contract or delete roads. Eliminating or adding road length to an existing OPBRC contract should be done using the provisions of GC 63 and sub-clauses, for Changes in Assignments to Contractor. These clauses allow the Employer “to propose and subsequently require, that the Project Manager order the Contractor to make any change, modification, addition or deletion to, in or from the Assignments to the Contractor.”

The procedure for making a change to the contract which is described in GC sub-clause 63.2 could however take several weeks until it takes effect. The Employer may at times wish to exclude a road length with immediate effect, for reasons not related to the Contractor. In this case, it is appropriate to apply both GC Clause 58 (Suspension) and GC Clause 63 (Change in Assignment) simultaneously. This means that the Employer, through the Project Manager, would (i) issue a “Notice of Suspension”, specifying exactly which road section or segment is to be suspended with immediate effect, as per GC Clause 58, and at the same time (ii) issue a “Request for Change Proposal” as per GC sub-clauses 63.2.1 to 63.2.4, initiating thereby the process for introducing the change in the contract.

In accordance with GC sub-clause 63.2.4 the Contractor is bound to calculate the reduction in the contract price (in case of eliminating road length) on the basis of the actual rates and prices stipulated in the contract which are applicable to the services and works on the specific road lengths (sections or segments) which are to be eliminated.

### Prices to be applied under Change Orders

In the event that Rehabilitation or Improvement Works are to be executed under Change Orders, the prices/unit rates to be applied are as follows:

* The prices/unit rates included in the Contractor´s bid for the same or similar type of works are to be applied. If lumpsum rates were offered, the minimum required works quantities indicated in the bidding documents shall be used to calculate unit rates. If the application of this method is not possible or reasonable, then
* the prices/unit rates for similar items included in the Schedule for Emergency Works of the Contractor’ s bid are to be applied. If this is not possible or reasonable, then
* prices/unit rates are to be established based on the breakdown of prices for labour, equipment and materials provided by the Contractor which shall be subject to Project Managers review and approval.

## Part D: Environmental and Social Requirements

*[This part of the Specifications is very project- and country-specific. It needs to be drafted by the Employer to reflect the relevant requirements of (i) the national Legislation and Regulations, (ii) of the World Bank, if the contract is funded fully or in part by the World Bank, and (iii) of any other funding agency providing funding for the project.* *The Employer’s team preparing the Environmental and Social (ES) requirements should include suitably qualified Environmental and Social specialists.*

*As a general rule, the preparation of World Bank funded projects includes the elaboration of an Environmental and Social Impact Assessment (ESIA) and an Environmental and Social Management Plan (ESMP). The ESIA/ESMP document normally includes a chapter or an annex which lists the ES requirements which must be fulfilled by the contractor. These requirements must be reflected in Part D of the Specifications for the OPBRC contract, along with any other requirements that may be stated in the Environmental and Social Commitment Plan (ESCP) for the project. Provisions against sexual exploitation and abuse (SEA), and gender-based violence (GBV) are already included in the Contract document and are not to be repeated in the Specifications.*

*This document provides no sample text for Part D of the Specifications.*

*The ES requirements should be prepared in a manner that does not conflict with the relevant General Conditions of Contract (and the corresponding Particular Conditions of Contract, if any), and other parts of the Specifications.*

*The following is a non-exhaustive list of Sub-Clauses of the Conditions of Contract that make reference to ES matters stated in the Specifications.]*

| **Sub-Clause/Clause No.** | **Sub-Clause/Clause** | **Remarks** |
| --- | --- | --- |
| *18.7* | *Security of the Site* | *State any additional requirements for the security arrangements (ESS4 of the ESF states the principles of proportionality, GIIP and applicable laws. Include any other requirement set out in the ESCP.* |
| *19.2.1, 19.2.2, 19.2.6* | *labor* | *State applicable requirements in accordance with the labor management procedure.* |
| *19.2.5* | *Facilities for Staff and Labor* | *Indicate if access to (or provision of) services that accommodate physical, social, and cultural needs of Contractor’s personnel is required.* |
| *19.2.19* | *Training of Contractor’s Personnel* | *As set out in the ESCP, specify details of any training to relevant Contractor’s Personnel to be provided by the Employer on environmental and social aspects (whom, what, when, where, how long etc.).* |
| *26.2* | *Health and Safety* | *Indicate any additional requirements for the health and safety manual* |
| *26.3* | *Protection of the Environment* | *Specify any values for emissions, surface discharges, effluent and any other pollutants from the Contractor’s activities that shall not be exceeded.* |
| *26.4* | *Archaeological and Geological Findings* | *Specify other requirements if any in accordance with the ESF – ESS8* |

**Payment for ES Requirements**

*[Note: The Employer’s ES and procurement specialists should consider how the Contractor will cost the delivery of the ES requirements. In the majority of cases, the payment for the delivery of ES requirements shall be a subsidiary obligation of the Contractor covered under the prices quoted for other cost items or activities. For example, normally the cost of implementing workplace safe systems of work, including the measures necessary for ensuring traffic safety, shall be covered by the Bidder’s rates for the relevant works. Alternatively, provisional sums could be set aside for discrete activities for example for HIV counselling service, and SEA/SH awareness and sensitization or to encourage the Contractor to deliver additional ES outcomes beyond the requirement of the Contract.]*

**Key Personnel**

*[Note: Part D of the Specifications should indicate the specific Key Personnel that the Contractor’s team must include to ensure implementation of fulfilment of the Environmental and Social requirements. These should be suitably qualified Environmental and Social specialists. Insert in the following table the key ES specialists required as a minimum, taking into account the nature, scope, complexity, and risks of the contract.]*

**Contractor’s Representative and** **Key Personnel**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item No.** | **Position/specialization** | **Relevant academic qualifications** | **Minimum years of relevant work experience** |
| *1* | *[Environmental]* | *[e.g. degree in relevant environmental subject]* | *[e.g. [years] working on road contracts in similar work environments]* |
| *2* | *[Health and Safety]* |  |  |
| *3* | *[Social]* |  |  |
| *4* | Sexual Exploitation, Abuse and Harassment  *[Where a Project SEA risks are assessed to be substantial or high, Key Personnel shall include an expert(s) with relevant experience in addressing sexual exploitation, sexual abuse, and sexual harassment cases]* |  | *[e.g. 5 years of monitoring and managing risks related to gender-based violence, out of which 3 years of relevant experience in addressing issues related to sexual exploitation, sexual abuse and sexual harassment]* |

ATTACHMENT : Example of an EXCEL table (A3 format) for the calculation of the volume of maintenance services, for normal, reduced, and minimum service levels, as a function of the required progress in road rehabilitation works. Such a table should be included in the Specifications given to bidders to facilitate their understanding and the preparation of the Bill of Quantities for Maintenance Services.]. **(See section B.8.4.11 et B.8.4.12)**

**CALCULATION TABLE FOR MONTH\*KM FOR DIFFERENT SERVICE LEVELS**

**(Basis for Bill of Quantities for Maintenance Services)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **months** | **months\*km** | **Definition of Service Levels** |
| 3 | 120 | 9960 | Normal Service Level (for road section already in good condition at the beginning of the contract |
| 3 | 2812 | 11248 | Normal Service Leve (on road sections being rehabilitated as part of the contract) |
| 2 | 1330 | 5320 | Reduced Service Level (on road sections that are initially in fair/bad condition, prior to rehabilitation works being carried out) |
| 1 | 340 | 1360 | Minimum Service Level (on road sections in very bad condition, prior to rehabilitation works being carried out) |

