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# **Employment Intensive Infrastructure Programme in Lebanon (EIIP)**

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## **BID DOCUMENT Annex E2 Guidelines Routine Maintenance**

**Road Maintenance**

**Lebanon, April 2019**

# **SECTION E2**

## **ROUTINE MAINTENANCE GUIDELINES**

### ***CONTENTS***

<i>Purpose of Routine Maintenance.....</i>	<i>Section E2-1</i>
<i>Guidelines for Management of Routine Maintenance.....</i>	<i>Section E2-2</i>
<i>Routine Maintenance BoQ Items.....</i>	<i>Section E2-3</i>
<i>Technical Specifications for Routine Maintenance.....</i>	<i>Section E2-4</i>
<i>Sample Agreement between Contractor and CMG Member....</i>	<i>Annex 1</i>
<i>Monthly Inspection Form.....</i>	<i>Annex 2</i>
<i>Muster Roll/Payroll.....</i>	<i>Annex 3</i>

## 1. Purpose of Routine Road Maintenance

The basic objective of road maintenance is to ensure that the road that has been constructed is maintained to the extent possible to its original condition. It is accepted that over the life of the road it deteriorates due to factors which maintenance activities need to address. By applying preventive maintenance.

The first step of a road maintenance strategy is to understand the different types of road maintenance categories to establish an effective maintenance management system which will ensure that available funds are used in the most cost effective manner.

**Routine Maintenance:** The operations required to be carried out once or twice or more times per year on a section of road. They are typically small scale or simple, but widely dispersed, and most of them require only skilled or unskilled manpower. Routine maintenance should be carried out on the sections of the network which are in good and maintainable condition. “Good condition” is when the road section requires a minimum of preventive maintenance.

**Periodic Maintenance:** Periodic maintenance is required on a section of road after a period of several years, typically between 5-7 years. These work activities are normally larger scale and require specialist equipment and skilled resources. They are considerably more costly and require specific identification and careful planning. Periodic maintenance also includes certain spot improvement or renewal works.

**Emergency Maintenance:** Operations due to occasional, unforeseen events that require immediate attention to reopen the road, secure the stability of the road and/or to ensure the safety of the road users (eg landslides, road sections or structure washouts, large trees or debris on the road etc.)

Whilst the EIPP road maintenance strategy combines routine maintenance and spot improvements, this guideline focuses on routine maintenance. Spot improvement or periodic maintenance will be defined in the contract with quantities and specifications as necessary.

### 1.1 Routine road maintenance

By applying routine or preventive maintenance, the deterioration of the road and all its components can be slowed down and thus postpone the need for costly investments in rehabilitation. Maintenance is a preventive measure which starts from the day the road improvement works are completed. The effect of regular and timely maintenance is to ensure that the road remains serviceable or at least to sustain the life of the road by putting off the date at which it needs to be reconstructed.

- ✚ It lowers the cost of operating vehicles on the road by providing a smooth running surface;
- ✚ The road can be kept open on a continuous basis as the maintenance prevents it from becoming impassable;
- ✚ The reliable access provided on a continuous basis allows for social and economic benefits to be sustained.

The yearly cost of maintaining a road is a small fraction of the initial investment cost. Therefore the economic logic for effective preventative maintenance is undeniable. It can indeed be argued that the construction of roads, whilst consuming large amounts of money, is of limited importance if there is no effective maintenance.

The preventive or routine road maintenance will in the chosen strategy be included in a road maintenance contract which also includes repairs or spot improvement activities. Routine maintenance is a continuous activity and a contract may be issued for one year or more. Routine road maintenance typically include the following activities:

- RM-01 Road inspection and Removing Obstructions
- RM-02 Clean culverts including in/outlets

- RM-03 Clear debris from bridges and other cross drainage structures
- RM-04 Clean lined drain & earth drain (include storm water drain along the road)
- RM-05 Cut bush and clear grass on road formation.
- RM-06 Filling potholes in carriage way (for gravel road)
- RM-07 Fill rut in carriageway (for gravel road)
- RM-08 Grubbing carriage way (for gravel road)
- RM-09 Side slope repair
- RM-10 Shoulder repair

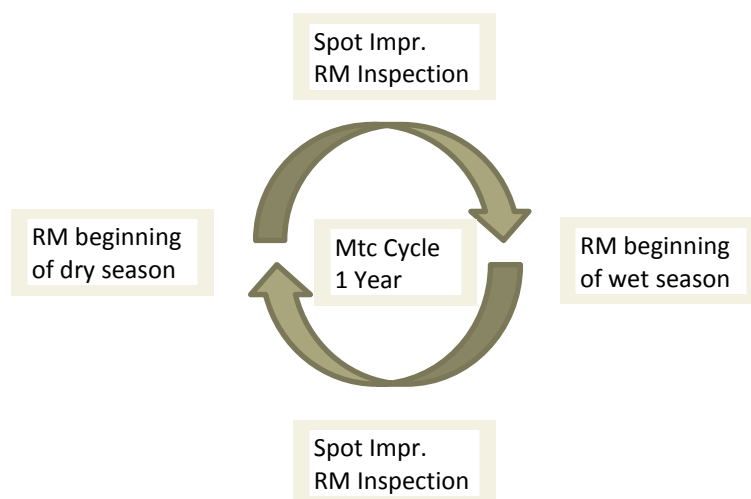
## 2. Guidelines for management of routine road maintenance

### 2.1 Routine road maintenance approach

Routine road maintenance is an activity requiring small resource inputs over a large number of widely separated locations. For this reason, this activity is well suited for manual labour and the involvement of local communities. Paved roads generally require less maintenance compared to unpaved roads, however conditions vary and many factors impact on the maintenance needs. It should further be noted that routine maintenance is only useful for roads in good condition. Roads in poor condition will need to be improved or fully rehabilitated before starting routine maintenance activities.

The EIIP will prepare and contract maintenance packages for road lengths of 30-50km, including one major road link and adjoining roads, ie each package will include roads of different categories, and therefore, in addition to involving the Ministry of Public Works the involvement of local municipalities will be important. The work on these roads will include spot improvement and repair works in addition to routine maintenance.

Routine maintenance will be organized within yearly maintenance contracts (the strategy would be applicable on multi-year contracts), which also cover repair and improvement works, where the Maintenance Cycle ideally starts at the beginning of the dry season each year, ie April/May Year 1 – March/April Year 2. Routine maintenance inputs will be scheduled twice a year, at the beginning of the maintenance cycle, coinciding with the beginning of the dry season, and at the beginning of the rainy season. Inspection will be carried out in between and routine maintenance activities undertaken as needed. See Maintenance Cycle below:



## 2.2 Organisation of maintenance activities

The EIIP will tender the maintenance works to local construction companies. These contractors must however employ local community members to carry out the works. The contractor will be tasked with the planning and supervision of the maintenance activities carried out by the local communities. The responsibility of the contractor is then hence to instruct and supervise a group of communities members, which will be organized in “Community Maintenance Groups (CMGs)”, and to provide these groups with the necessary resources to carry out the works (eg quality hand tools and transport of materials as needed).

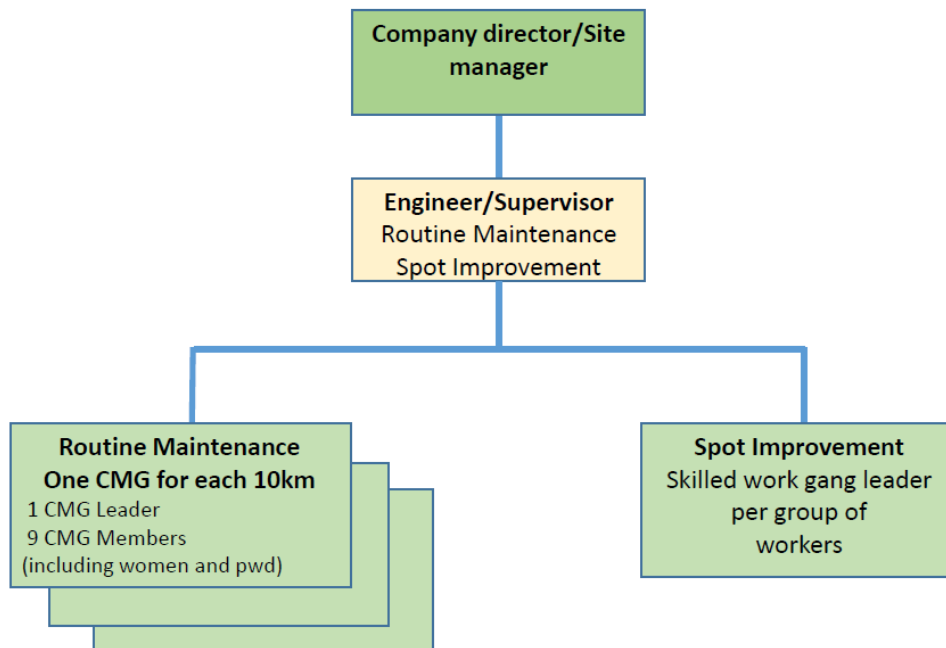
Each Community Maintenance Group should consist of 10 members where one member is assigned “CMG Leader”. Each CMG is assigned to carry out the maintenance activities for a specific road section or network of approximately 8-10 km.

Routine maintenance input in the EIIP sister project in Jordan is around 40wd per km per year, however this include only one maintenance input of around 3 months. In our calculation we estimate that 10 workers will maintain 10km during 2x40 days, which gives a labour input of 80 wd per km per year for two distinct maintenance inputs, one at the beginning of the dry season and one at the beginning of the wet season.

**WD Example:** 1 workday = 1 worker working for 1 day  
 10 workdays = 1 worker working for 10 days or  
 2 workers working for 5 days or  
 5 workers working for 2 days

The required number of CMGs will be formed for the first maintenance input of 2 months, effectively 40 days at the beginning of the dry season, and CMGs with new members will be formed for the second input of 2 months at the beginning of the wet season, effectively 40 days. The CMG leaders will work throughout the year to carry out road inspections and light routine maintenance activities.

The **figure 1** below of the contractor's organization for the maintenance activities.



**Figure 1**

### 2.3 Selection of CMG members

The contractor must employ Lebanese and Syrians from the local community as members of the CMG, ie people who are living in the vicinity of the roads included for maintenance. Workers should in principle be able to walk to work. A CMG would normally consist of 10 members including one person assigned to be the CMG leader. The CMG leader will participate in the works as a member but will in addition help the contractor to assign members to priority activities, help manage the muster roll and account for tools and safety gear. The CMG leader will also work with the contractor throughout the year to carry out maintenance inspection. Each CMG group should include at least 2 women and 1 person with disability. Further, the contractor shall strive to involve Lebanese workers to achieve a ratio close to of 1:1vis a vis Syrian workers. Each CMG member will sign an employment contract with the contractor for at least 40 days of work. A sample of the agreement between the CMG members and the contractor is attached in [Annex 1](#).

### 2.4 Hand tools and safety gears and equipment

The contractor should provide appropriate and good quality hand tools and necessary materials to the CMG members. The CMG leader will ensure that tools are looked after and brought to site by the members, and shall inform the contractor when tools need to be replaced or added. Tools shall be returned to the contractor once the worker has completed his or her contract. A full set of hand tools and protective equipment should be provided for each CMG group as listed in the table below.

CMG with 10 members		
Hand tools	Protective equipment	
	Item	When/where to use
3 Wheelbarrows		
5 Bush knives	10 Hard hats	Risk of falling stones, etc
1 Grass trimmer	10 Reflective jackets	At all times
7 Shovels	10 Boots	Risk of falling stones, etc
2 Axes	10 Masks	Dust from traffic
4 Pick-axes	10 Gloves	Risk of damage to hands
5 Hoes	10 Raincoats	When raining
4 Rakes	1 First aid kit + replenishment (antiseptic, plasters, bandages, tape)	
8 Traffic cones		
	Additional tools, first aid kit replenishment etc (lumpsum)	
The contractor shall ensure that transport is available for disposal of the material from the maintenance activities and that materials such as gravel for minor repairs is delivered in a timely fashion.		

### 2.5 Performance based payment based on monthly inspections

The routine maintenance activity is paid based on performance. This means that the routine maintenance work is paid based on whether the road condition meets the set performance standard for each maintenance activity – ie a performance based payment. The EIIP Engineer together with Contractor Supervisor will assess the percentage completed for each maintenance activity in the Monthly Inspection Form, included in [Annex 2](#), which will determine the monthly management payment to the contractor for the routine maintenance component of the contract for that month, maximum 25% of labour cost for CMG members. The calculation for payment is illustrated below:

**Maintenance Cycle April/May Year 1 – March/April Year 2 (normal scenario)**

- ✚ RM1 = maintenance input at the beginning of the dry season (each CMG of 10 members maintains 10km for at least 40 days)
- ✚ RM2 = maintenance input at the beginning of the wet season (each CMG of 10 members maintains 10km or at least 40 days)
- ✚ RM light = inspection and light maintenance (CMG leader responsible for inspection and routine maintenance activities, at least once a week during dry season and twice a week during wet season)

**Dry season April-October**

- RM1 assessment at the end of April: A minimum of 70% meeting the set performance standard - full monthly payment of management fee can be made. Otherwise, payment will be based on actual assessment.
- RM1 assessment at the end of May: A minimum of 90% meeting the set performance standard - full monthly payment of management fee can be made. Otherwise, payment will be based on actual assessment (nil if assessed below 50%).
- RM light DRY assessment at the end of June, July, August, September and October: A minimum of 90% meeting the set performance standard - full monthly payment of management fee can be made. Otherwise, payment will be based on actual assessment (nil if assessed below 50%).

**Wet season November-March**

- RM2 assessment at the end of November: A minimum of 90% meeting the set performance standard - full monthly payment of management fee can be made. Otherwise, payment will be based on actual assessment.
- RM2 assessment at the end of December: A minimum of 90% meeting the set performance standard - full monthly payment of management fee can be made. Otherwise, payment will be based on actual assessment (nil if assessed below 50%).
- RM light WET assessment at the end of January, February, March: A minimum of 90% meeting the set performance standard - full monthly payment of management fee can be made. Otherwise, payment will be based on actual assessment (nil if assessed below 50%).

**Example:** The Contractor's supervisor together with the EIIP Project Engineer have inspected the routine maintenance work at the end of the Third month and filled the Monthly Inspection Form. The actual total average meeting the set performance standard is assessed to be 80%. The **monthly payment of the management fee** for the Third month, to be included in the IPC, is then calculated as follows:

**Payment = cost of labour based on musterroll for the month x 0.25 (maximum payment) x 80% (actual assessed completion percentage). NB nil if completion is assessed below 50%**

**2.6 Muster roll**

The Muster Roll, which also serves as the Payroll (**Annex A-2**) is managed by the CMG Leader and confirmed daily by contractor's supervisor. All worker days are summarized on a monthly basis to form part of the Payment Claim. This document provides information about who worked and the number worker days (WDs) for each worker. Each CMG member including the CMG leader will be paid based on the Muster roll. ***It shall be noted that whatever the result of the assessment of road condition, as discussed above, the contractor shall pay the workers based on the signed musterroll.***

### 3. Routine Road Maintenance BoQ items

Four distinctive activities will be included in the BoQ for routine road maintenance. They are detailed below.

- (i) Item 1.1 Full Routine Road Maintenance [cost per month]
- (ii) Item 1.2 Inspection and Light Routine Road Maintenance Dry Season [cost per month]
- (iii) Item 1.3 Inspection and Light Routine Maintenance Wet Season [cost per month]
- (iv) Item 2 Haulage truck for disposal of excess material [Cost per month]
- (v) Item 3 Supply of gravel for repair works [m3]
- (vi) Item 4 Hand tools [lumpsum]

#### Item 1.1 Routine road maintenance input twice per year beginning of dry season and beginning of wet season (US\$/month)

##### 1. Description

This BoQ item is for the Community Maintenance Group (CMG) to carry out routine road maintenance activities to the performance standards mentioned in the specifications, under the overall supervision of the contractor, ensuring that the roads are brought up to good condition.

##### 2. Work method

Each CMG, comprising of 10 members including the leader, is responsible for carrying out routine maintenance activities for their assigned roads sections (approximately 10km) during two months (> 40 days) and to bring them up to good condition by meeting the performance requirement specified in **table 1** below.

The contractor will provide good quality hand tools and safety gear, supply gravel as needed and transport for disposal of excess materials as advised.

##### 3. Measurement and payment

A visual inspection will be carried out at the end of each month to assess whether the entire road meets required performance standards.

**Payment:** will be based (i) the full compensation for the labour cost - based on the agreed labour work plan (wd/month), and based on the labour unit cost (labour wage and transport) and the signed musterroll (ii) a management fee which is calculated as a percentage of the labour cost (management fee includes supervision, company costs and profit etc).

Management component will be reduced or withheld if the road does not meet the set performance standard as specified in **table 1** above.

Payment for hand tools, transport of materials and gravel stockpiles along the road for the repair of potholes, shoulders and erosion repair are paid using separate items.

#### Item 1.2 Inspection and light routine road maintenance during dry season (US\$/month)

##### 1. Description

This BoQ item is for the CMG leader to inspect and carry out light routine maintenance activities in dry season to meet the performance standards mentioned in the specifications, under the overall supervision of the contractor ensuring that the roads are kept in good condition during dry season from June to October (5 months).

##### 2. Work method

The CMG leader shall carry out inspections along the road at least once a week and report to the contractor any routine maintenance needs. Minor routine activities shall be carried out by the CMG leader, however it is the contractor's responsibility to deploy necessary resources to ensure that the road is kept in good condition and complying with the specifications in **table 1** below.



The contractor will provide good quality hand tools and safety gear, supply gravel as needed and transport for disposal of excess materials as advised.

### 3. Measurement and payment

A visual inspection will be carried out at the end of each month to assess whether the entire road meets required performance standards.

**Payment:** will be based (i) the full compensation for the labour cost - based on the agreed labour work plan (wd/month), and based on the labour unit cost (labour wage and transport) and the signed musterroll (ii) a management fee which is calculated as a percentage of the labour cost (management fee includes supervision, company costs and profit etc).

Management component will be reduced or withheld if the road does not meet the set performance standard as specified in **table 1** above.

Payment for hand tools, transport of materials and gravel stockpiles along the road for the repair of potholes, shoulders and erosion repair are paid using separate items.

## Item 1.3 Inspection and light routine road maintenance during wet season (US\$/month)

### 1. Description

This BoQ item is for the CMG leader to inspect and carry out necessary routine maintenance activities in wet season to meet the performance standards mentioned in the specifications, under the overall supervision of the contractor ensuring that the roads are kept in good condition during wet season from January to March (3 months).

### 2. Work method

The CMG leader shall carry out inspections along the road at least twice times a week and report to the contractor any routine maintenance needs. Minor routine activities shall be carried out by the CMG leader, however it is the contractors responsibility to deploy necessary resources to ensure that the road is kept in good condition and complying with the specifications in **table 1** above.

The contractor will provide good quality hand tools and safety gear, supply gravel as needed and transport for disposal of excess materials as advised.

### 3. Measurement and payment

A visual inspection will be carried out at the end of each month to assess whether the entire road meets required performance standards.

**Payment:** will be based (i) the full compensation for the labour cost - based on the agreed labour work plan (wd/month), and based on the labour unit cost (labour wage and transport) and the signed musterroll (ii) a management fee which is calculated as a percentage of the labour cost (management fee includes supervision, company costs and profit etc).

Management component will be reduced or withheld if the road does not meet the set performance standard as specified in **table 1** above.

Payment for hand tools, transport of materials and gravel stockpiles along the road for the repair of potholes, shoulders and erosion repair are paid using separate items.

## Item 2 Haulage truck

### 1. Description

This item is the supply or rent light dump truck (3-5 tons capacity) for transporting the debris or other dump material resulting from the routine maintenance activity to dispose to a safe place as approved by the EIIP project engineer.

## 2. Method

The contractor should provide a light dump truck for each CMG [two months in Dry season and two months in Wet season] for transporting debris, or any dump material to dispose to a safe place as approved by the EIIP project engineer.

## 3. Equipment

This activity requires one light dump truck per CMG (3-5 tons capacity).

## 4. Checking

The dump truck should be visually checked and in good condition before delivering on site.

## 5. Measurement and payment (AWD)

**Payment:** will be based on the unit rate and no of months in the BoQ. However usage shall be recorded and signed on a time sheet, which should be submitted with the monthly payment claim. The unit cost shall include daily rate of the truck + overhead (overhead should be calculated as a percentage of the daily cost of the truck to cover supervision fee, company cost and profit etc.)

## Item 3 Gravel for repair of road shoulder and slope erosion (m<sup>3</sup>)

### 1. Description

This item is the supply of good quality of gravel (tout-venant) comprising of a mix of crushed stone and stone dust materials. The selected material shall meet the requirements in the specification and shall be free of lumps of organic, or other deleterious materials.

### 2. Materials

The selected gravel (tout-venant) for filling of road shoulders and patching of potholes (for gravel road) should meet required specifications as mentioned in (gravel surface specification for road works)

### 3. Method

The selected material (tout-venant) shall be delivered on site and stock piled along the road sections that need repairing.

### 4. Equipment

This activity requires dump truck for delivering the gravel.

### 5. Checking

A simple laboratory tests shall be carried out to test the gravel for grading, particle strength, particle shape and plasticity before approving the material.

### 6. Measurement and payment (AWD)

This item will be paid by the volume of gravel delivered and stock piled on site, measured in m<sup>3</sup>.

**Payment:** The unit rate shall be the full compensation for materials on site, equipment for transporting and any other incidentals that may be required for this work item.

## Item 4 Hand tools

### 1. Description

This item is the supply of good quality of hand tools for each CMG member for carrying the routine maintenance activities. Each CMG group consists of 8-12 members to be equipped with a mix of hand tools.

### 2. Materials

Type and quantity of handtools for a group of 10 workers listed below:

Type of hand tools	Unit	Qty per group of 10 workers
Wheel barrow	No	3
Hoes	No	5
Shovels	No	7
Pick axes	No	4
Bush knives	No	5
Axes	No	2
Rake	No	4
Plastic bag	Ls	1
Traffic cones	No	8

### 3. Method

The hand tools shall be delivered on site and received by the CMG leader. The CGM leader shall distribute the hand tools to each member in the team. The CMG member should be responsible for taking care of his/her assigned hand tools including the maintenance of the hand tools.

### 4. Checking

Before procuring the hand tools the contractor shall visually check quality of the hand tools avoiding poor quality that might reduce productivity of the work.

### 5. Measurement and payment (AWD)

This item will be paid as a lumpsum. However quantity and quality will be checked.

**Payment:** The unit rate shall be the full compensation for hand tools delivered on site, equipment for transporting and any other incidentals that may be required for this work item. The unit cost shall include cost of the hand tools delivered on site + overhead (overhead should be calculated as a percentage of the hand tools cost to cover supervision fee, company cost and profit etc.)

## 5. Technical Specifications for Routine Road Maintenance

### 5.1 Road terminology

Below is a list of road terms often referred to when planning for road maintenance followed by a descriptions of each work items which will be further used in these specifications.

<i>Road Terms</i>	
<b>Formation Width</b>	Full width of the road including side drains and embankments
<b>Roadway</b>	Full width of the road including the shoulders
<b>Carriageway</b>	Paved width of the road
<b>Road Centre-line</b>	The centre-line of the roadway

<b>Shoulders</b>	Paved / unpaved width of road between the edge of the carriageway and the edge of the ditch / embankment slope
<b>Camber</b>	Cross-fall of the carriageway and shoulders facilitating efficient drainage of rainfall from the roadway into the road side drains
<b>Gravel Course</b>	Layer of compacted gravel forming the surface of the carriageway for gravel road
<b>Ditch Slope</b>	Inside slope from the shoulder to the road side drain
<b>Road Slope</b>	Slope from road shoulder to the road toe slopes
<b>Mitre Drains</b>	Drains leading water away from the road side drains to areas of safe dispersal
<b><i>Drainage Terms</i></b>	
<b>Road Side Drains</b>	Drains running alongside and parallel to the roadway to collect water running off from the roadway, these can be earth drains or lined with concrete and they can open or closed etc
<b>Culvert</b>	Medium-level drainage structure built under the roadway to collect and drain water from the road side drains to areas of safe dispersal; the culvert opening(s) may be single or multiple lines of concrete pipes, steel pipes or concrete boxes
<b>Inlet/Outlet</b>	Openings in a culvert that safely direct water into and out of the structure
<b>Bridge</b>	Medium to high-level drainage structure allowing large volumes of water to pass safely under the roadway
<b>Drift</b>	Low-level drainage structure allowing water from natural streams, roads side drains and catch-water drains to safely cross the roadway
<b>Vented Drift</b>	Medium-level drainage structure combining both the features of a standard drift and those of a multiple pipe culvert allowing provision for the normal seasonal flow of water to pass safely under the roadway, yet at the same time allowing for un-seasonal flows during periods of heavy rain to pass safely under and over the structure

## 5.2 Routine Maintenance Specifications

### RM-01 Road inspection and Removing Obstructions

The work includes daily inspection during raining season of the whole of the road section(s) included in the Contract, including identification and removal of all obstructions including standing water from the roadway, road side drains (including storm water drain) and other drains, inlets and outlets of culverts and other structures, including their waterways, and disposal to a safe place as instructed by the EIIP Project Engineer.

The performance standard required shall be that all obstructions and standing water are continuously removed.

### **RM-02 Clean culverts including in/outlets**

The work includes clearing all debris, silt and vegetation together with the safe disposal thereof outside the formation width to a safe place as instructed by the EIIP Project Engineer and to maintain the culverts in a clean and free-draining condition at all times. This work also includes the clearing from all culvert inlets and outlets for a minimum of 10 m from the end of the pipes or boxes and all debris, silt and vegetation together with the disposal to a safe place as instructed by the EIIP Project Engineer.

The performance standard required shall be culverts including their inlets and outlets are cleared and free-draining at all times.

### **RM-03 Clear debris from bridges and other cross drainage structures**

The work includes clearing all bridges and other cross drainage structures (not culverts) including their inlets and outlets of all debris, silt and vegetation together with the disposal to a safe place as instructed by the EIIP Project Engineer and to maintain the structures and their inlets and outlets in a clean and free-draining condition at all times.

This work also includes the clearing of all waterways, for a distance not less than 25 metres both upstream and downstream unless directed otherwise by the EIIP Project engineer. All debris and other materials shall be removed well clear of the river and the drainage system to prevent it from being washed back and once again obstructing the river flow.

The performance standard required shall be all structures (not including culvert) including their inlets and outlets and waterways are cleared and free-draining at all times.

### **RM-04 Clean lined drain & earth drain (and storm water drain along the road)**

The work includes clearing all road side drains (lined drain, earth drains and storm water drain along the road) of all debris, silt and vegetation together with the disposal to a safe place as instructed by the EIIP Project Engineer and to maintain all the drains in a clean and free-draining condition at all times. The material from the drains shall be taken to a safe dump site identified by the EIIP Project Engineer.

The performance standard required shall be all drains cleared and free-draining at all times and the material from the structure clearing disposed in a safe place.

### **RM-05 Cut bush and clear grass.**

Grass and Bush growing on the carriageway, shoulders, side drain and road slopes shall be cut to a height not exceeding 10 cm and for a width of minimum 1 m outside of the side drain. On curves, the width may be increased to improve 'sight-distance on the instruction of the EIIP Project Engineer.

Where the width limits require trees to be cut, this work shall only be undertaken following approval by the local community and on instruction from the EIIP Project Engineer.

The performance standard required shall be grass and/or bush cut to the height and width limits as instructed by the EIIP Project Engineer.

All debris removed from the road, ditches and slope will be cleared away from the road and disposal to a safe place as instructed by the EIIP Project Engineer.

### **RM-06 Filling potholes in carriage way (for gravel road)**

Includes the excavation of the potholes to rectangular shape all unsuitable/degraded material to a minimum depth of 15 cm. Fill the holes with the selected gravel, watered and compacted using a mechanical compactor or pedestrian roller. Make sure that there is no water in the pothole when it is filled. If the pothole / severe rut

is deep the materials should be filled and compacted in layers not thicker than 15 centimeters. The surface level of the filled hole after compaction should be a minimum of two centimeters higher than the adjacent pavement surface level.

The performance standard required shall be that potholes have been filled with suitable approved materials and compacted, unsuitable/degraded materials shall be disposed to a safe place as instructed by the EIIP Project Engineer.

### **RM-07 Fill rut in carriageway (for gravel road)**

Where in the area of severe rutting, it is treated as pothole which the activity is also treated using the same work methods as when filling potholes. The ruts should then be excavated to form vertical edges in a rectangular shape and the fill with selected gravel, watered and compacted in layers by mechanical compactor or roller. The thickness of each layer should not exceed 15 centimeters.

The performance standard required shall be that the severe ruts have been filled with suitable approved materials and compacted, unsuitable/degraded materials shall be disposed to a safe place as instructed by the EIIP Project Engineer.

### **RM-08 Grubbing carriage way (for gravel road)**

Grass growing on the edge of the carriageway can prevent rainwater from draining off the road surface. It can also start growing into the carriageway.

Grass and roots should be removed from the carriageway. A string line showing the exact position of the start of the side slope provides a good guidance when removing grass and grubbing the shoulders. Debris should be removed well away from the road to avoid the removed material being washed back into the drainage system. The material removed from the drains will be taken and disposal to a safe place as instructed by the EIIP Project Engineer.

The performance standard required shall be grubbing in strict accordance with the instructions of the EIIP Project Engineer including limits and disposal.

### **RM-09 Side slope repair**

This activity includes the excavation of soils to establish a proper bench on to which new soils are added. Soils are excavated from nearby borrow pits and placed in layers not thicker than 0.10 metres and compacted with hand rammers at optimal moisture content. After final shaping of the slope, it is covered by grass to prevent future soil erosion (grass planting covered by a separate activity).

The performance standard require that road shoulder and side slope erosion damage are repaired and compacted to a satisfaction of the EIIP Engineer.

### **RM-10 Shoulder repair**

Erosion gullies are formed by water running over the edge of the carriageway and road shoulders. These gullies need to be filled with gravel and properly compacted. Erosion gullies on the side slope can be repaired using soils borrowed from the adjacent areas next to the road. Although no vegetation is allowed on the carriageway, grass should be established on the sloping shoulders to protect against erosion. After repairing shoulders, it is important that the slide slope is immediately covered with grass turfing.

The performance standard require that road shoulder and side slope erosion damage are repaired and compacted to a satisfaction of the EIIP Engineer.

### **Table 1 Summary of performance requirements**

<i>Criteria</i>	<i>Routine maintenance performance specification</i>
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Carriageway	The carriageway and shoulder surface must be free of loose debris, such as soil, stones and sticks. All the removed materials are disposed to a safe place.
	<p><b>For gravel road</b></p> <p>Small defects in gravel surfaces must be repaired using gravel stockpiled along the road</p> <p>The pothole are patched by using the gravel stock pile along the road</p>
Side drains and storm water drain	Side drains and storm water drain are free of all obstruction (silt, grass, rubbish, and other material). All obstruction materials are disposed to a safe place.
Culverts, etc.	Culverts and other cross drainage structure include inlets and outlets are free of all obstruction. All obstruction materials are disposed to a safe place.
Vegetation	All vegetation within 1.5 meters of the edge of the shoulder or within 1 meter of the outside of the side drain or on the inside of tight bends are cleared and cut to a lower than 10 cm. All cleared materials are disposed to a safe place.
Landslides	Small landslides on the carriageway, shoulders and side drain are removed and disposed to a safe place.
Shoulder and slope erosion	<p>Road shoulder and side slope erosion damage are repaired and compacted to a satisfaction of the EIIP Engineer</p> <p>The repair of erosion damage with a volume greater than 1 m<sup>3</sup> will be instructed using other items in the BoQ</p>

## **Annex 1 Sample agreement between the CMG member and the contractor. Employment Contract for Rental of Service for Daily Workers**

### **Between the two parties**

**Contractor** (First Party): \_\_\_\_\_

Registry of Commerce Number: \_\_\_\_\_

Contract Name: \_\_\_\_\_

Contract Code: \_\_\_\_\_

**Worker** (Second Party): \_\_\_\_\_

Nationality: \_\_\_\_\_ ID Number: [ID number or civil extract registry number and place – for registered refugees include progress number] \_\_\_\_\_

Phone Number: \_\_\_\_\_ Residence: \_\_\_\_\_

Gender: \_\_\_\_\_ Disability: \_\_\_\_\_

This contract is for daily task based delivery of services within “**Employment Intensive Infrastructure Programme, in Lebanon (EIIP)**”. Within this contract the second party will undertake as required by the Contractor, numerous task work activities in group or individual tasks.

### **Terms of Employment**

The Location of project workplace is: [insert location - address of the locality]

This Contract begins on: [insert date] and ends on: [specify date after 40 working days later]

Actual End Date: [Insert actual date in which the individual stopped work]

The Worker is informed and is aware of the limited period of this contract and that this is not a trial period for a permanent job and that daily wage will be paid only for daily tasks accomplished to satisfaction. The Worker is required to deliver the services required to complete the requested task in the time allocated for the project.

The contract may be terminated for one of the following reasons:

- a) If the Contractor contract with EIIP is discontinued,
- b) Funding for the programme in the location of the project workplace is discontinued,
- c) The Worker is frequently absent or repeatedly do not perform in terms of the tasks set out in the work programme.

### **Duties**

The Worker will be delivering basic services as assigned by the contractor independently but in coordination with other workers in the same workplace.

The tasks assigned to the workers are safe, the worker is required to follow the safety measures.

### **Remuneration**

The Worker will be paid a daily wage for a daily task completed to satisfaction at the rate of [minimum of **30,000 Lebanese Pound, LBP**]. A daily task should be accomplishable in 8 hours or less.



The expected quantity of work completed each day should be compatible with the timeframe allocated for the completion of all tasks by all the workers assigned to it. The work quantity required for the agreed rate of pay will vary from activity to activity. The Worker will be informed at the beginning of each task or group of tasks how much work is expected to be completed per day. The Worker will be paid the daily rate even when work is finished before the time or after the estimated time of completion.

The Worker will only be paid for daily tasks completed to satisfaction. The Worker will not be paid if absent, for whatever reason.

The Contractor will provide transport in and out of the workplace from the place of residence of the Worker. Payment is made on a bi-weekly basis at the place of work.

### **Conditions**

The regularization of Legal Stay and complying with applicable Lebanese legislations is the responsibility of the Worker.

In case of any conflict in the interpretation of the terms of the contract and the roles and responsibility of the Worker or bad working conditions, the worker should inform the MoL Social Safeguards Officers designated for the location of the project. In this respect, the Worker has been advised of the availability of a Complaints Mechanism, including a Grievance Form, for any issue or comment regarding the working conditions, the project site, or the project in general.

The Worker hereby authorizes the contractor to screen his/her name against UN and EU sanctions lists and to share his/her personal information with ILO and KfW only in all confidentiality for the sole purpose of accountability by keeping a record of their work for a period of 10 years.

In addition to the conditions above all terms and conditions of the Lebanese Code of Obligation and Contracts and ILO Decent Work Standards are applied to this delivery of services.

### **Signatures**

Signed in [indicate location]

On behalf of the Contractor: \_\_\_\_\_ Date: \_\_\_\_\_

The Worker: \_\_\_\_\_ Date: \_\_\_\_\_

## Annex 2 Monthly Inspection Form (Example)

Chainage	Assessment for payment (%)							Remarks	
	Debris removal from road carriage way	Clean side drain (lined drain and earthdrain)	Clear culvert/small bridge	Clear vegetation and cut bush from road shoulder	Repair minor slope and shoulder erosion	Removal minor land slide	Patching pothles (for gravel road)		
<b>Performance standard</b>	Carraige way and road shoulders free of debrish	Drain clear of silt, rubish and crass. No evidence of ponding water	No silt in inlet or outlet of ther culvert and small bridges. Vegetation cut to less than 10 cm at the inlet and outlet. No evidence of ponding water, no erosion	Vegetation 10cm or less in hiegh. No wastematerial visible in drains and road shoulders	No evidence of erosion damage	No evidence of minor land slide on road carriage way or shoulders	No pothole on the road surface		
0+000 to 1+000	90	90	90						
1+000 to 2+000	100	--	--						
2+000 to 3+000	100	100	70						
3+000 to 4+000	--	--	--						
4+000 to 5+000	--	--	--						
5+000 to 6+000	100	100	80						
<b>Actual average Total</b>	<b>97.5</b>	<b>96.7</b>	<b>80.0</b>						
<b>Target performance permonth</b>						<b>Performance summary (from 2nd month):</b>			
<b>Month</b>		<b>Mimimun Target %</b>				<b>(a) Actual average total performance (%)</b>		<b>91.4</b>	
First month		70				<b>(b) Target performance per month (%)</b>		<b>90</b>	
Second month		90				<b>(c) Adjustment factor</b>		<b>&gt; 90%</b>	<b>1.0</b>
Third month until end of contract		90						<b>50-90%</b>	<b>0.5-0.9 (actual)</b>
								<b>&lt; 50%</b>	<b>0</b>
<b>Name and signature Contractor:</b>		<b>Name and signature EIIP Senior engineer:</b>		<b>Name and signature MPW's engineer</b>		<b>Name and signature CTA of EIIP</b>			

## Annex 3 Muster Roll/Payroll

قائمة العمال Muster Roll																											
										القضاء: Casa						المحافظة: Governorate		المتعهد: Contractor									
										من: of		كشف رقم Sheet Number				المنطقة العفرية: Locality		رقم العقد: Contract Number									
التوقيع Signature	مجموع الأجرور (ليرة لبنانية) Total Amount (LBP)	الأجر اليومي (ليرة لبنانية) (LBP)Daily Wage	مجموع أيام العمل Total Workdays	فترة العمل Work Period																الجنسية Nationality			الاسم الكامل (الثلاثي) Full Name	الرقم المتسلسل Serial number			
				16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	سوري Syrian		لبناني Lebanese					
																				رقم تسجيل المفوضية UNHCR registration number	رقم الهوية ID Number	رقم الهوية ID Number					
																								1			
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