प्रदेश सरकार

भौतिक पूर्वाधार, शहरी विकास तथा यातायात व्यवस्था मन्त्रालय

गण्डकी प्रदेश

पोखरा, नेपाल

प.सं. ०७९/०८०
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श्री पूर्वाधार विकास निर्देशनालय, कास्की।
श्री पूर्वाधार विकास कार्यालय, सबै ।

विषय: RMG Guideline सम्बन्धमा।

प्रस्तुत विषयमा यस मन्त्रालयबाट तयार पारिएको Road Maintenance Group (RMG) Guidelines मिति २०७९/०८/२१ को (मा.मन्त्रीस्तरिय) निर्णयानुसार स्वीकृत भएको हुँदा सो Guidelines को प्रतिलिपी यसै साथ संलग्न गरि पठाइएको व्यहोरा अनुरोध छ।

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प्रदेश सचिव

Province Government
Ministry of Physical Infrastructure, Urban Development and Transport Management

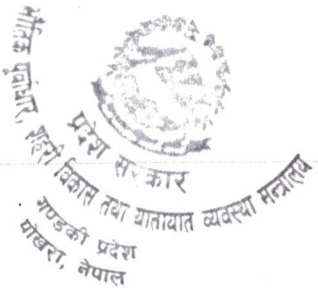
Road
Maintenance Groups (RMG)

Guidelines

(November ,2022)

प्रदेश सचिव

Contents



प्रदेश सचिव

1. INTRODUCTION

These guidelines describe the process of creating and contracting Road Maintenance Groups (RMGs) for the maintenance of the Provincial Road Network (PRN) of GandakiProvince. The RMGs form an efficient and effective means of carrying out routine, recurrent and minor specific maintenance of the PRN, ensuring that the roads stay open year round and that road deterioration is halted or slowed down. This document serves as a practical guide to the implementation of the RMG approach in the PRN .These guidelines have been prepared on the basis of the Team-based maintenance of rural roads taking into account the recent experiences of other projects and programmes implementing the RMG approach such as Rural Access Project (RAP), Strengthening the National Rural Transport Program (SNRTP), Decentralized Rural Infrastructure and Livelihood Project (DRILP), Local Roads Improvement Programme (LRIP), and Rural Reconstruction and Rehabilitation Sector Development Program (RRRSDP).

2. ROAD MAINTENANCE

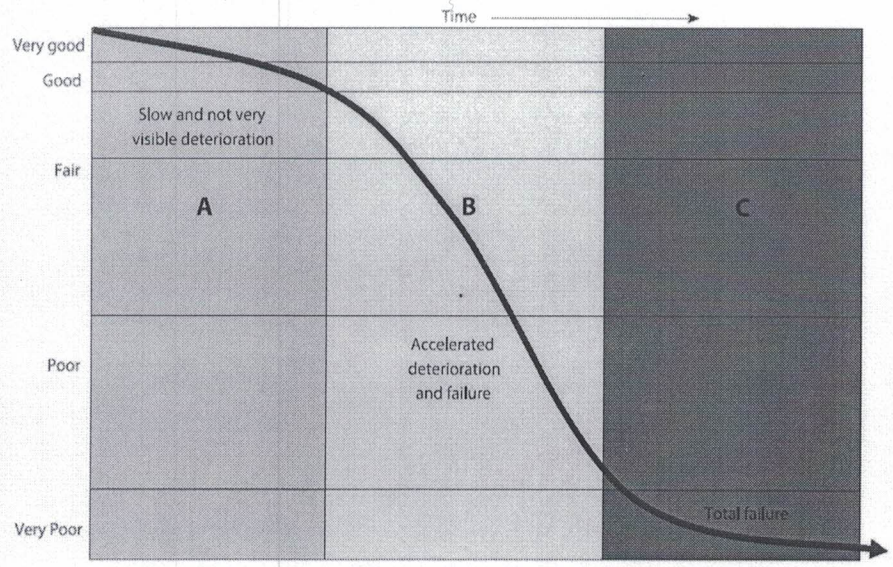
This chapter briefly explains the process of road deterioration and the role of maintenance as a cost effective means of slowing down and even stopping the deterioration process. This is followed by a description of the maintenance types distinguished in Nepal with their definitions and consideration. 2.1

2.1 ROAD DETERIORATION

Roads deteriorate over time, mainly as a result of water and traffic. Water can cause deterioration of the road surface, shoulder and the road base, as well as damage to the physical road structures. This happens either through erosion, whereby the road material is washed away and physical structures are undermined, or through stagnation, whereby the road and the base of the physical structures are weakened under the influence of water. Traffic also causes deterioration of the road through the loss of surface material and the deformation of the road surface by vehicle tyres, resulting in the road base becoming exposed and leading to ruts, potholes and corrugations. These two causes of road deterioration tend to aggravate each other, as a road weakened by water is more susceptible to damage by vehicles, whilst road deformation by vehicles can prevent the water from flowing safely away from the road, resulting in increased erosion and water stagnation.

Road deterioration is generally slow at first and not very visible, taking the form of wear and tear and minor damage to the road surface and the drainage system. , Proper maintenance may not be carried out during this phase and as a result road starts to deteriorate from a very good to a fair condition. Once the road deteriorates to a fair condition, the deterioration tends to accelerate as the road base and the foundations of the physical road structures start to become affected. This is especially due to water, which no longer flows safely away from the road as a result of deformation of the road camber and damage to the drainage system. The water causes damage through erosion or remains on the road and weakens it, resulting in greater damage being caused by vehicles. During this phase, the damage to the road quickly spreads, causing longer travel times and more damage to vehicles, until the entire road can be said to be in poor condition. As the road condition becomes very poor, fewer and fewer vehicles use the road until traffic and transport cease altogether when the road is no longer motorable.

FIGURE 1: Road deterioration



Source: RMG Guidelines,DoLIDAR , March ,2016

2.2 ROAD MAINTENACE

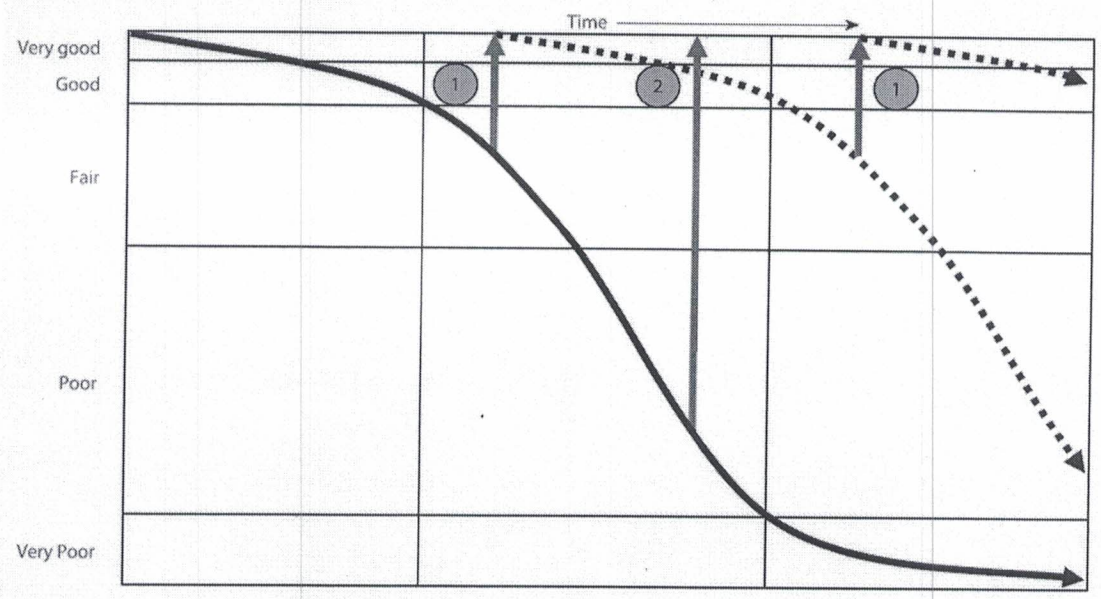
The condition of the road can be improved by carrying out corrective maintenance activities. Repairs are made to the road surface and shoulder, the drainage system and the other physical road structures. The improved road condition generally results in lower travel times and travel costs, and a decrease in the speed of road deterioration as the deterioration process starts from scratch. The more deteriorated the road is, the more intensive and costly the repairs will be. For instance, corrective maintenance activities when the road is still in good or fair condition may entail patching potholes, grading of the road surface and minor repairs to the drainage system and other road structures, whereas corrective maintenance activities carried out once the road is already in poor condition are likely to entail complete reshaping and resurfacing of large stretches of road and possible replacement of drainage and other structures. The distance from the black line indicating the road condition, to the desired good or very good condition of the road is therefore indicative of the level of corrective maintenance activities required, and of the cost of such repairs. Corrective maintenance activities need to be carried out repeatedly. Although maintenance carried out when the road is still in good to fair condition will have to be repeated more frequently, this results in lower overall maintenance costs and better overall road conditions than waiting till the road has deteriorated to a poor condition. Apart from corrective maintenance activities once the road has already deteriorated, it is possible to carry out preventive maintenance activities aimed at slowing down the deterioration of the road. Such preventive maintenance activities are often carried out on a continuous basis and consist primarily of clearing activities aimed at preventing damage to the road, but also include minor repairs to the road surface and road structures in order to prevent more serious damage from occurring.

प्रदेश सचिव

प्रदेश सरकार
भौतिक पूर्वाधार, घरेलु विकास तथा यातायात व्यवस्था मन्त्रालय
गण्डकी प्रदेश
पोखरा, नेपाल

As a result of such preventive maintenance activities, the deterioration of the road is slowed down considerably;consequently, corrective maintenance activities are required less frequently leading to reduced overall maintenance costs.

FIGURE 2: Corrective maintenance



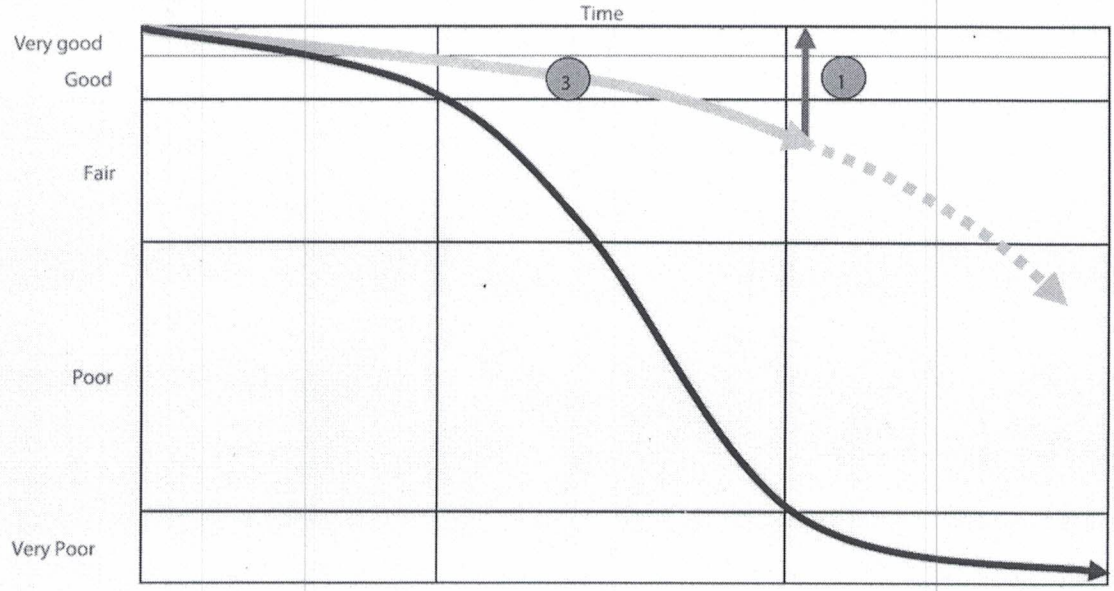
Source: RMG Guidelines,DoLIDAR , March ,2016

In addition, the road remains in better condition, resulting in lower travel times and road user costs. The additional costs of such continuous preventive maintenance activities are more than compensated by the cost savings as a result of the decreased need for costly corrective maintenance activities. There is a tendency to focus maintenance activities on those roads that are in poor condition, thus bringing them back to a better condition through periodical corrective maintenance Preventive maintenance which reduces travel costs and time.

प्रदेश सचिव

भौतिक पूर्वाधार, शहरी विकास तथा यातायात व्यवस्था मन्त्रालय
प्रदेश सरकार
गण्डकी प्रदेश
पोखरा, नेपाल

FIGURE 3: Preventive maintenance



Source: Source: RMG Guidelines,DoLIDAR , March ,2016

It is often believed that this strategy will have the highest impact on the condition of the rural road network, as those roads with major problems are being addressed. However, this point of view does not take into account that road conditions change over time, and that the higher investments required for roads in poor condition result in a shorter road length being attended. As a result of this limited maintenance coverage, the roads in good to fair condition remain unattended and deteriorate more rapidly. From an economic point of view, the best option is to priorities investments in the maintenance of roads that are in good to fair condition, applying preventive maintenance activities and slowing down deterioration. This tends to involve less costly activities that allow a greater length of roads to be maintained, resulting in a larger length of roads being in good to fair condition at the end of the intervention. Any funds remaining after investing in the preservation of the roads in good to fair condition can be spent on repairing roads in poor condition, which can subsequently enter into the preventive maintenance system. This is the main distinction between reconstruction and maintenance, that whilst for reconstruction it makes sense to focus on roads in poor to very poor condition, for maintenance the focus should lie on the roads that have not yet deteriorated and are still in maintainable condition.

2.3 MAINTENANCE TYPES IN NEPAL

Several types of maintenance are distinguished in Nepal. A definition of the different maintenance types is given below.

Routine maintenance refers to small maintenance works to be carried out in all seasons on all roads on a regular basis, comprising simple categories of maintenance works. Routine maintenance involves the cleaning and clearing of different road elements to ensure that they work properly and that damage to the road is avoided.

प्रदेश सचिव

प्रदेश सरकार

Recurrent maintenance refers to small maintenance works not falling under routine maintenance that are carried out a few times a year in all roads to repair minor damage resulting from traffic and rainfall. Recurrent maintenance involves minor repairs to the road surface and other road elements to bring them back to their proper condition.

Specific maintenance refers to all the spot improvements and repairs that do not occur every year or in every road, and which are very specific in nature and location. This involves localized repairs and improvements to the road to ensure the proper functioning of the different road elements and reduce the need for routine and recurrent maintenance.

Periodic maintenance refers to maintenance works that are to be carried out in intervals of years, that are of large-scale, and that are aimed at preserving the structural integrity of the road. This mainly involves activities aimed at rejuvenating the road surface and carrying out repairs over long stretches of road. The pavement comprises earthen, gravel and blacktopped surfaces. In earthen road periodic maintenance includes grading and reshaping of pavement with some localized repairs (retaining structures, pipe culvert and slab culvert, dry stone pitching, repair of drain, creation of earthen drain, traffic furniture) within interval of 2 to 3 years. Similarly, in gravel surface periodic maintenance includes re-gravelling with some localized repairs (retaining structures, pipe culvert and slab culvert, dry stone pitching, creation of drain, repair of drain, and traffic furniture within interval of 3 years. In case of black topped road, periodic maintenance includes surface dressing, ottaseal, patch repair with sand seal, asphalt overlays within interval of 5 to 7 years.

Emergency maintenance refers to works that are to be carried out due to unexpected and sudden blockage of roads due to natural disasters that stops vehicular movement. The aim of emergency maintenance is to quickly reopen the road, reinstate vehicular movement and protect the road from further damage. Reinstating the damaged road to its original condition after completion of emergency maintenance works is not included under emergency maintenance!

3. ROAD MAINTENANCE GROUPS

This chapter aims to introduce road maintenance groups (RMGs) as a simple and practical means of implementing preventive maintenance aimed at slowing down and even halting road deterioration. The concept of RMGs is explained, together with the maintenance activities they are responsible for, and the tools and equipment, occupational, safety and health they require.

3.1 ROAD MAINTENANCE GROUPS (RMG)

One very important characteristic of preventive maintenance is that it is continuous in nature. Damage cannot be prevented unless there is somebody there to prevent it, and as it is not known exactly when the damage will occur, a more or less continued presence is required. Although certain countries have opted for a system where at particular times of the year maintenance workers are contracted to carry out preventive maintenance of the road, this still allows road deterioration to roam freely in the intermediate periods. Many countries, including Nepal, have therefore opted for a more continuous presence of maintenance workers, generally in smaller numbers than in the case of repetitive interventions. For the strategic road network in Nepal a system of preventive maintenance based on length workers already exists, whereby each individual worker is allocated a particular length of road that he or she has to

maintain. For the rural road network a variation of the length worker system is applied whereby the workers engaged on a particular road are grouped together and are responsible as a group for the maintenance of the entire road. This has the advantage that the administrative burden is decreased enormously, with contracting, supervision, planning and inspection taking place for the road as a whole rather than separately for each section. Also, the road maintenance groups are able to reallocate their members according to need, thus allowing them to allocate additional time to the more problematic road sections. An added benefit is that working in groups increases the motivation of the workers, as they have someone to interact to during the work and the amount of work seems more achievable if done together with others. These benefits are especially important in rural roads, which are generally with an earthen or gravel surface and tend to have very located problematic areas which require additional attention. Also, the local authorities responsible for these roads tend to lack sufficient human and financial resources to cope with the requirements of a length worker system. The system of road maintenance groups has been very successful in the countries where it has been applied, and in Latin America has become the norm for preventive maintenance, being applied in national, secondary and rural roads.

3.2 MAINTENANCE ACTIVITIES OF THE RMGS

The RMGs are responsible for routine and recurrent maintenance, as well as emergency maintenance. In determining the activities of the RMGs, the criteria has not so much been assignation of any particular maintenance type, but rather the assignation of particular activities within the competence of the RMGs. The RMG maintenance activities have been determined based on the maintenance activities falling under each maintenance type, selecting those activities that can be carried out by unskilled workers (with limited training) using basic hand tools. Activities related to routine maintenance of bridges and causeways have also been included to extend the benefits to these structures that are essential in providing all-season access in Nepal. The main objective of the RMGs is to allow the trouble-free use of the road and to reduce damage to the road by ensuring the proper working of the road protection measures, particularly the drainage system and support walls. This basically consists of the routine clearing and cleaning of the road surface, shoulder and physical road structures.

ROUTINE MAINTENANCE ACTIVITIES (DAMAGE PREVENTION)

Activities in paved + unpaved roads

- Clearing of small landslides and other material on the road (<5m^3)
- Clearing of drains
- Clearing of culverts
- Clearing under bridges
- Cutting and clearing of vegetation
- Cleaning of traffic signs and road furniture
- Cleaning of weep holes in retaining walls
- Maintenance of bioengineering features

Activities in bridges and Causeways

- Clearing surface of drifts/causeways

- Clearing bridge deck and railing (including footpaths)
- Removal of vegetation from all parts of bridge and causeway structures
- Clearing spouts and weep holes in bridges
- Cleaning of bearings and expansion joints in bridges

3.3 TOOLS, SAFETY EQUIPMENT AND MATERIALS

This section looks briefly at the tools, safety equipment and materials required by the RMGs to carry out the road maintenance activities described above.

3.3.1 TOOLS

As mentioned earlier, one of the criteria used in determining the maintenance activities to be carried out by the RMGs was that these could be carried out using basic hand tools. The tools used by the RMGs are listed below, whereby certain tools are particular to the maintenance of roads in the Hills or Terai

The set of tools may be adjusted to the requirements of a specific road or district. The RMGs should receive a small allowance for the maintenance of the tools (new handles, sharpening of edges, etc.) or these costs should be reimbursed.

Tools

- Wheelbarrow / Doko
- Hoe / Faruwa / Kodalo
- Pickaxe
- Shovel
- Long handled shovel (for culvert cleaning)
- Rake
- Curved knife / Sickle
- Machete / Khukuri
- Hand rammer
- Large crowbar
- Hammer
- Chisel
- Pulling rope
- Foot pump
- Plastic tubs
- Watering can

3.3.2 Safety Equipment

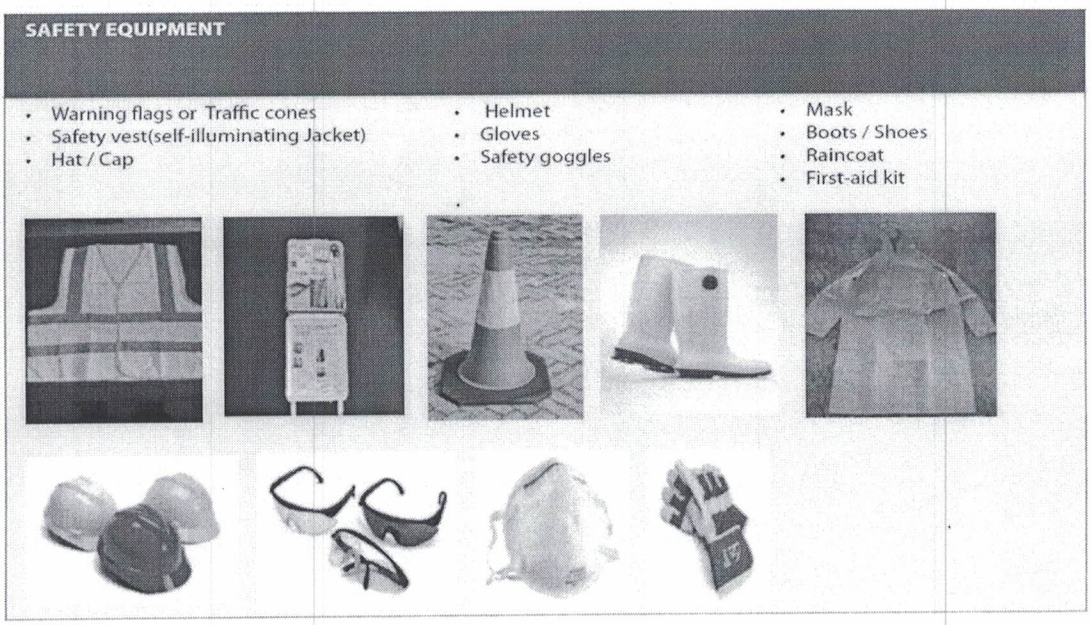
Apart from these hand tools, the RMGs also require basic safety equipment to avoid accidents and injuries as well as promoting Decent Job for Workers.

The safety vests mentioned below have the double function of making the workers visible to road users, as well as clearly identifying them as part of the RMG.

Safety Equipment

- Warning flags or Traffic cones
- Safety vest(self-illuminating Jacket)
- Hat / Cap
- Helmet
- Gloves
- Safety goggles
- Mask
- Boots / Shoes
- Raincoat
- First-aid kit

The tools and safety equipment should be purchased by the Infrastructure Development Office (IDO) or projects and provided to the RMGs at the beginning of the work, avoiding delays related to payment transfers and ensuring proper quality tools and equipment are procured. It is important to provide good quality tools in sufficient number, as this greatly influences the productivity of the RMGs. The costs of tools and equipment only form a minor part of the overall maintenance costs. The set OSH gears need to be replaced once useless duly certified by Engineers. The medicines in the First Aid boxes will be replaced and added by IDO periodically or provide a lump sum amount for replacement to RMG and evaluate at the time of monthly inspection. Typical contents of First Aid Kit are Triangular Bandage, First Aid Bandage, Instant cold pack, first aid burn cream, Fingertip bandage, wound dressing pack, Eye Wash fluid, antiseptic fluid/ Tincture Iodine, soap, thermometer.



Source: Source: DoLIDAR , March ,2016 , RMG Guidelines

प्रदेश सचिव

प्रदेश सरकार

3.3.3 MATERIALS

Materials required for the routine maintenance of roads can be obtained locally.

4 FORMATION OF THE ROAD MAINTENANCE GROUPS

Road maintenance groups can start carrying out the maintenance activities mentioned in the previous chapter after the formation of groups. Group based maintenance is found effective, efficient and self-motivated with good internal control mechanism. This entails determining the required number of RMG members, selecting the RMG members, and recording the RMG with the IDO. This chapter deals with these three aspects of RMG formation.

4.1 SIZE OF RMG

Before starting with the selection of the RMG members, the size of the RMG should be determined. This is defined by the road length, the required work input (number of person days required per kilometer of road per year) and the approximate number of person-days to be worked by an RMG member each year. The input level or number of person-days required per kilometer per year depends on the characteristics of the road, especially the road condition, topography, road surface type, traffic levels and existence of road protection structures. Roads in worse condition (with a maintenance backlog), located in steeper areas, with less durable road surfaces, with higher traffic levels or with fewer road protection measures in place, require a higher input level with more person-days per kilometer per year (there is a higher workload per kilometer).

Road Type	APPROXIMATE INPUT LEVEL
(A) Blacktop Road	
Road in good/fair condition in dry season i.e. road is passable by normal car at min road design speed (20 & 40 Km/hr for Hill &Terai respectively)	65 person-days per kilometer per year
Road in poor condition in dry season i.e. road is passable by normal car in below road design speed (less than 20 & 40 km/hr for Hills and Terai respectively)	104 person-days per kilometre per year
(B) Earthen/Gravel Road	
Road in good/fair condition in dry season i.e. road is passable by normal car at min road design speed (20 & 40 Km/hr. for Hill &Terai respectively)	80 person-days per kilometer per year
Road in poor condition in dry season, road is only passable by 4x4 Bus, Truck or tractor or normal car in below road design speed. (less than 20 & 40 Km/hr for Hill &Terai respectively)	104 person-days per kilometer per year
Road in poor condition i.e. in dry season, road is only passable by 4x4 Bus, Truck or tractor and required heavy maintenance	156 person-days per kilometer per year

Actual input levels may vary slightly depending on road condition, specific needs and funding sources. These input levels allow the RMGs to carry out routine cleaning and clearing works, recurrent minor

repairs and minor specific maintenance aimed at creating basic road protection measures. When the road conditions improve, the maintenance backlog is reduced and more and more road protection measures are created by the RMGs or by other actors. The input level may be gradually reduced.

4.2 SELECTION OF RMG MEMBERS

RMG members are selected from the communities situated along the road (sections) to be maintained, or from those communities nearest to the road. For the selection of the RMG members approved selection criteria are used to ensure the objective choice of the most suitable candidates. Suitability in this sense refers to both the ability of the candidates to perform the job well (technical criteria) as well as to social objectives of providing jobs and income to vulnerable groups in society (social criteria). Before the start of the selection process, the IDO body will conduct a meeting and approve the selection criteria and selection modality. It is recommended to use the following criteria, although these may be amended by the IDO to attain particular objectives.

Technical Criteria

- The selected maintenance workers must be above 18 years of age
- The selected maintenance workers must be physically and mentally able to work on road maintenance
- The selected maintenance workers must live near the road to be maintained (reducing travel time)

SOCIAL CRITERIA

- The selected maintenance workers must be unemployed or employed less than 25% of their time
- The priority must be given to poorest and marginalized people of the Municipality/RM.
- Preference must be given to female candidates and where possible, all 100 % selected maintenance workers should be women but not less than 33% in any case.2
- At least 40% of the maintenance workers must be from Disadvantaged Groups (Dalits, Janajati, other excluded and deprived groups).

Mainly two different methods are applied for the selection process (i) the Interview method or (ii) through a mass meeting. In case of both methods, information to be circulated will include the selection criteria, information on payments and working hours, and the means of applying for the positions (where and by when to submit an application).

Priority will be given to the RMGs who have worked for the routine maintenance of Roads under SNRTP or similar projects.

While applying mass meeting method the respective Municipality/RM will call and organize a mass gathering making sure that it has representation of at least 33% households of nominated wards adjacent to both sides of the road. All candidates should comply with the selection criteria. In doing, an attempt should be made to select as many women as possible, ensuring that at least 33% of the RMG members are women, preferably more than 50%.
Municipality Mayor/Rural Municipality Head in co-ordination with Ward Chief of the adjoining roads will play the role of unbiased facilitator for the criteria and process of selection. Selection

of the RMG members from interested candidates is to be carried out by consensus through a participatory method.

If RMG member need to replace, husband or Wife or nearest family member will be given priority. IDO can also select the workers from previously approved list for replacement of RMG members or may re start the process as per guideline depending on local situation. The required number of maintenance workers is selected from the highest ranked candidates. It is recommended to subsequently confirm the interest of the selected candidates in order to ensure they are all aware of what is required of them and what they will receive in return (remuneration, insurance, etc.). Any candidates deciding they do not wish to participate can then still be easily replaced. After the selection has been completed and the interest of the selected candidates has been confirmed, the Municipality/RM will send a list of the recommended candidates together with the minutes of the selection meeting to the IDO. Once the list of selected candidates has been approved by the IDO, the list is posted on the notice board of the IDO/Municipality/RM and the successful candidates are informed.

4.3 RECORD OF THE RMG

Once the selection of maintenance workers has been finalized, the RMG is recorded/registered with the IDO. This record also defines the name by which the RMG will be known. The RMG should also elect the representatives of the group. This generally includes a Chairperson and a Treasurer. The election of women into these functions should be promoted, and at least one of the representatives should be female.

Individual Bank accounts are opened for payments of wages to each individual member of the RMG. The IDO will be responsible for making payments to each individual RMG member based on their monthly performance and certification by technical team.

Alternatively a bank account for a RMG can be opened for payment of remuneration. The bank account will be on the name of at least two RMG member duly nominated by RMG members. This will prevent mismanagement of payments and secure timely payments to individual RMG members.

प्रदेश सचिव

5 TRAINING OF THE RMG

After recording the RMG and opening the bank account(s), the group is ready to be contracted. Before they start work, however, they require training. This training should encompass the technical issues involved in the maintenance contract (how, when and where to implement the different maintenance activities), as well as the managerial aspects of the maintenance contract (how are the payments made, what documents need to be presented, etc.). This training can easily be carried out in two days, one day covering the theoretical introduction to maintenance and group management, and one day on the practical implementation of the different maintenance activities. It is recommended to carry out the practical training on the road the RMG will be responsible for. The theoretical training requires a suitable classroomtype location and may be given to more than one RMG at once, although it is recommended to hold it as close as possible to the road(s) concerned.

Training of the RMGs both theoretical and practical training will be organized by the IDO.

6 CONTRACTING ARRANGEMENTS

Once the RMG has been recorded with the IDO, they can sign the maintenance contract, and if it has already received its training, it will be ready to start work. The payments for the maintenance activities will be made according to performance, based on the resulting conditions of the different road elements. However, because many rural roads will be in poor condition at the start of the contract, and because the RMGs cannot fix all the defects at once, the performance-based system will need to be introduced in a phased manner. For this purpose, a work plan is prepared on a monthly basis to determine for which road elements and on which sections of the road the performance-based system will be applied. As road conditions improve, an increasing portion of the road elements and road length will be included in the work plan until the entire road is covered, at which time the work plan will no longer be necessary. Subsequent to carrying out the work plan, the work has to be inspected to ensure that the condition of the road elements and the road section included in the plan are appropriate. This inspection forms the basis of the payments to be made to the RMGs. This chapter will go into these different aspects of contracting RMGs, starting by explaining the concept of performance-based contracting.

6.1 PERFORMANCE BASED CONTRACTING

The RMGs will be contracted on a performance basis, which means that the RMGs are paid based on the compliance with a set of performance standards and not on the amount of work carried out or the amount of time spent on that work. This has advantages for both the RMG and the IDO. For the IDO it results in a lower administrative burden, as it is not necessary to control the daily attendance and productivity of the maintenance workers, or to measure the exact volume of work completed. A simple inspection of the end result of the maintenance work is sufficient to determine if this is according to the agreement. For the RMG it has the advantage that it has greater freedom to decide what part of the day to work and whether or not to work extra hard and finish early, thus allowing them to arrange their time to best suit their other responsibilities. In Nepal, the majority of rural roads are in fair to poor condition with large quantities of backlog. It is recommended to have RMG payment on performance basis by measuring the output in each month with respect to the corresponding work plan. Performance-based contracting involves a set of performance standards that determine the required condition of the different road elements by defining the allowable defects (or defining the defects that are not allowed). The RMGs need to comply with these performance standards by ensuring that the defects to the different road elements do not exceed the

allowances, fixing the defects where these exceed the allowances. A list of recommended performance standards for the different road elements is given below. Note that the performance standards relate to the different road elements and not to the individual maintenance activities. Different maintenance activities may be required to fix the defects where these exceed the allowances defined in the performance standards. Due to the simple nature of the performance standards, their compliance can easily be monitored by the RMGs prior to inspection

PERFORMANCE STANDARDS

• **Road** - There are no small landslides (less than 5 cubic meters), materials or other obstacles on the road surface, road shoulder, or side drains. In the case of large landslides (more than 5 cubic meters), these have been reported to the IDO. Vehicles are able to pass and water does not flow over the road.

• **Earthen or gravel surface** - There are no remarkable potholes (>60 x15 cm), no ruts, rills or gullies (> 15 cm deep), and no corrugation (> 7 cm deep) which disturb the traffic movement. Repairs to gravel surfaces have been made using suitable gravel material. In areas subject to longitudinal erosion, diagonal water bars have been created at regular intervals to guide the water away from the road. Where water crosses the road, stone-paved drifts have been created. In case of stone pitching, the stones are well anchored in the ground, do not stick out, and there are no missing stones. Water does not flow over or remain on the road.

• **Blacktop surface** - There are no remarkable potholes (>30 x 10 cm) which disturb the regular movement of traffic. The potholes can be repaired with locally available material. There is no significant edge break that reduces the width of the pavement. There are not any wide unsealed cracks existing in the maintained road Wider than 0.5 cm.

• **Road shoulder** - There are no remarkable potholes (> 30x10 cm) and no ruts or rills (> 10 cm deep). There are no uninterrupted banks on the road shoulder for more than 10 meters. The road shoulder is not more than 5 centimeters below the road pavement. Water does not remain on the road shoulder. • Drains - Less than one-quarter of the cross section at any point in the side drain is blocked. The drain is at least 15 centimeters wide and 10 centimeters below the road surface. There are no sharp curves in the drain and the drain has a proper outlet. Water can flow freely through the side drain, and there is no erosion of the drains. Water does not flow over the road surface or shoulder.

• **Culverts** - Less than one-quarter of the culvert height at any point in the culvert is blocked, the inlet and outlet are clear, water can flow freely through the culvert, and there is no erosion at the inlet or outlet. The backfill over the culverts is at least one-quarter of the culvert diameter.

• **Causeways and Bridges** - Drifts and causeways are free of sedimentation and are able to drain freely. Less than one-tenth of the cross section of the bridge is blocked, and the areas 5 meters on either side of the bridge are clear of obstructions. Water can flow freely under the bridge. The bridge deck, spouts and weep holes are clean. There is no vegetation growing in the crossing structures. Bridge railings are clean and covered in paint. Bridge bearings are clean and lubricated. Bridge expansion joints are clear. There is no damage to the approach road and bridge deck and cracks are sealed. Minor erosion has been repaired and protection measures are in place. Large damage to or erosion of the bridge structure has been reported to IDO

प्रदेश सचिव

• **Vegetation** - Vegetation within 1 meter of the road is less than 30 centimeters high (except trees), vegetation protruding over the road is at least 2.50 meters above the road surface, and the flow of water away from the road is not restricted. Vegetation on slopes is not removed, only cut short.

• **Traffic signs and road furniture** - All traffic signs and road furniture are clean and legible (painted where necessary). Sign posts are straight and well anchored in the ground. Any damaged or missing signs have been reported to the IDO.

• **Retaining walls and structures -** The retaining walls and structures are in good condition and the area behind them is compacted. There are no loose stones or other damage to the retaining walls, and weep holes are clear. There is no damage by erosion undermining the retaining walls and structures. Large damage to retaining walls and structures has been reported to the IDO.

• **Slopes** - The slopes and road shoulders prone to erosion have been planted with vegetative material. The plants are not dried out and well anchored to the soil. There are no loose stones or other material on the slopes and road side slope should be in stable condition.

Note 1: These performance standards are for internal control mechanism, not fully comply in monsoon season and just basis for monitoring.

Note 2: Above performance standard can be considered as basis for monitoring as defined in note 1 only on last worked or maintained section of the road by RMGs not before than 1 month.

6.2 MAINTENANCE WORK PLAN

The performance standards need to be complied with for the entire road length under contract in performance-based maintenance systems. In Nepal, where most of the roads are not in very good condition and proper drainage and road protection structures are often lacking, the RMGs cannot be made responsible for bringing the entire road up to good condition at the start of their contract. In some cases, the road will be rehabilitated or improved through other means, allowing the RMGs to start with a road in good condition, but where this is not the case, a phased introduction of the performance standards is required. Certain road elements and certain road sections need to be prioritized, which requires the preparation of a work plan. This work plan defines the road elements and road sections where the performance standards will be applied – any road elements or road sections not included in the work plan will not need to comply with the performance standards and will be excluded from the inspection.

As the conditions of the road improve as a result of the work carried out by the RMGs or through complementary maintenance activities carried out through other means, the RMGs can be made responsible for an increasing portion of the road length and road elements. As such, the work plan will partly consist of activities aimed at preventing damage to road sections and road elements repaired in previous months or through other means, and partly consist of activities aimed at repairing remaining damage in new road sections and road elements. Eventually, the entire road length under contract will be in compliance with the performance standards and the RMG will simply be responsible for ensuring that the road condition is maintained and that the performance standards continue to be complied with. At this stage a work plan is no longer required and the planning will become an internal matter of the RMGs, with the inspection covering the entire road length and all road elements.

Thus, the work plan is only required for roads that do not comply with the performance standards at the start of the contract. Once sufficient repairs have been carried out and the road complies with (almost) all performance standards, the work plan is no longer needed and the performance standards will simply be applied to the entire road section and all road elements. As mentioned above, the work plan defines for which road elements maintenance activities need to be undertaken and identifies the road sections in which these maintenance activities need to be carried out. As such it determines the quantity of work to be carried out. The work plans should be prepared on a monthly basis by the IDO in coordination with the RMGs. The RMG system assumes that the group members have to provide an average of 65 to 156 person-days per year per kilometer of road, working either full-time or half-time. These person-days do not necessarily need to be distributed evenly over the year, and generally more days are spent during the rainy season when the road is subject to damage by rainfall runoff, with fewer days spent during the dry season.

Taking into account the number of person-days available in a specific month for the RMG concerned, the work plan identifies a set of tasks to be carried out that can be completed within the available number of person-days. The supervisor (IDO) is hereby guided by task-rates quoted in section 6.2.1, which define the volume of work that may be completed in one person-day. These task rates may be adjusted based on the observed ease with which the RMG achieves the workload (i.e. whether more or less than the expected person-days are required). The supervisor will set the work load to include only part of the allocated road sections or to include only certain road elements or maintenance activities. The resulting condition of the included road elements and road sections should comply with the performance standards, allowing the RMGs to become familiar with the approach of performance standards. The ambition is to eventually transition to a full performance-based approach where the whole road is kept in compliance with the performance standards. To facilitate the planning, a simple work plan format should be used in which the maintenance activities and road sections to be covered can be easily indicated. An example work plan template is given in Annex 5. The work plan lists the different RMG maintenance activities for each of the road elements as discussed in Chapter 3, and covers the total road length divided into 500 meter sections. The general location of the road sections to be worked on are indicated in the work plan, whereas the actual location will be indicated in the field (for instance a certain 500m section is identified for the cleaning of culverts, whereas the actual culverts will be located in particular locations within this 500 m section). It is important to include the location of identifying points in the work plan to assist both the IDO and the RMG members to locate themselves on the road and on the work plan. This may be further facilitated by painting chain age indications on rocks, trees and electricity poles along the road. Based on the monthly work plans, the RMGs will need to plan their work on a weekly and daily basis. The RMGs will likely require assistance at the start of their contract to train them in organizing their monthly workload.

6.3 INSPECTION OF THE MAINTENANCE WORK/SUPERVISION AND MONITORING

During the inspection, supervision and monitoring, both the scope and the quality of work are evaluated. The scope of work is defined in the work plan in terms of the road sections, road elements and maintenance activities to be covered, whereas the required quality of the work is defined by means of the performance standards.

The supervision and monitoring of the work will be carried out by assigned technicians or by the IDO Engineers / Sub Engineers of the projects and programme on weekly basis to supervise the quality and performance of the RMGs as per agreed work plan. The non-compliance work performed by the RMGs need to address in the instruction book and area of improvement shall be noted on the instruction book. Besides, supervision team need to ensure the OSH gears to RMGs as well as appropriate construction tools in the site. The supervision team need to check the RMG daily attendance sheet and require certification of attendance in comparison to work perform on weekly basis. The Engineers and sub engineers need to ensure the supply of required construction materials for the repair pot holes, ruts and rills which are not available in sites.

The inspection is carried out on a monthly basis and coincides with the work plan period. At the same time that the inspection is carried out, the new work plan can also be discussed and agreed upon. The inspection should be carried out by the IDO Engineer/Sub-Engineer or a trained technician. In case of road projects, project staff may be involved in the inspections on behalf of the IDO. All inspections should be carried out together with representatives of the RMG.

During the inspection the road sections indicated in the work plan are inspected with respect to the road elements and maintenance activities indicated in the work plan, and the resulting road conditions are compared to the performance standards and allowable defects. The rest of the road sections and road elements that are not included in the work plan do not need to be inspected. However, a general inspection of the road is required to make sure that there are no major problems (especially blockages), and where these exist, that they are being resolved by the RMG or have been reported to the IDO.

For the inspection use is made of a simple Inspection Form (an Inspection Form template is given in Annex 8), in which the (non-)compliance with the work plan and performance standards is indicated for each road element. Road elements that are not included in the work plan and have not been carried out are checked as being "not applicable". For the road elements that do not comply in quantity or quality with respectively the work plan and the performance standards, the nature of the non-compliance should be described.

Based on the degree of non-compliance, it may be decided to apply a deduction to the monthly payment. It is recommended that a warning be given the first time, and that upon repetition a deduction may be applied. The deduction is applied to the payment for the entire RMG and should be based on the amount of work not completed satisfactorily, applying the task rates discussed earlier to determine the number of person-days payment to be deducted. Using the daily wage rate, this can be converted into a deduction amount.

The application of deductions can be unpleasant, but may be necessary to ensure that the RMGs work according to standard. Care should be taken, however, that the lack of compliance is not a result of overzealous work plans instead of underachievement by the RMGs. In the case a deduction is applied, the amount is indicated in the Inspection Form, together with the final amount to be paid to the RMG. The results of the inspection as well as any deductions to be applied should be discussed with the RMG members, and the RMG chairperson and maintenance inspector are both required to sign the inspection report. Whenever practicable it is recommended that a photographic record before and after each month's maintenance work is recorded. This will help in verification of outputs.

प्रदेश सचिव

The number of person-days spent by the RMG during the month concerned will also be recorded in the Inspection Form. This will have no effect on the payment, and only serves for monitoring purposes to check whether the payments made in the different roads are appropriate, and to develop more appropriate payment categories based on road characteristics. For this purpose, the RMGs will be required to keep an Attendance Sheet of the number of person-days spent each month (daily record of the number of RMG members that worked). A template for an Attendance Sheet is provided in Annex 9. The RMG Chairperson should use the Attendance Sheet to record every day how many hours each RMG member worked.

During the inspection, the total number of person-days spent by the RMG members in the month concerned is calculated and copied into the Inspection Form. Possible deductions together with the approved monthly payment are in turn copied from the Inspection Form to the Attendance Sheet. Based on the approved payment and the number of days worked by the different RMG members, the distribution of the approved monthly payment amongst the RMG members is calculated and entered into the Attendance Sheet. Where the monthly payment is made into a joint bank account for the RMG as a whole, the Attendance Sheet with the calculated payment distribution is left with the RMG as the basis for distributing the monthly payment amongst the RMG members. Where individual payments are made, a copy of the Attendance Sheet is made and taken to the IDO as the basis for making the individual payments. This ensures transparency regarding the approved monthly payment and its distribution amongst the different RMG members.

6.4 PAYMENTS

The payments to be made to the RMGs consist of wage payments for the maintenance workers and in some cases also allowances. Accident insurance is also provided for the RMG members by the IDO or road project.

6.4.1 MONTHLY WAGE PAYMENTS

For the wage payment, it is recommended to use the updated district rate for unskilled labor multiplied by the input level (number of person-days per kilometer per year), multiplied by the road length. This annual wage payment is then divided into fixed equal monthly wage payments. These monthly wage payments should be paid out at the end of each month after inspection of the work, and any deductions should be applied only to these monthly wage payments. The timeliness of these wage payments is very important, as these are used by the group members to cover the costs of living for themselves and their families. Delays in receiving these payments may force them to leave the RMGs in search of other income opportunities to allow them to purchase their daily needs. Due to the administrative processes generally required for these payments, which can only be started once the payment amount has been approved in the inspection report, delays in transferring these payments on a monthly basis are difficult to avoid, and it is therefore necessary to ensure that the payment procedures are simplified and streamlined as much as possible. IDO will insure the RMG monthly payment within 1st Week of next month after completion of the work of previous month. Example Payment of RMG for month of Mangshir should not later than 1st week of Poush. Ministry of Physical Infrastructure, Urban Development and Transport Management will ensure the funds for the payment of RMGs. Wage payments may be made on an individual basis. This requires each individual RMG member to have a bank account. The IDO or road project are then responsible for determining the distribution of the monthly wage payment (after possible deductions).

amongst the different RMG members based on the number of days worked by each member as recorded in the Attendance Sheet

In the case of payments to group bank accounts for the RMG as a whole, the distribution of the wage payments amongst the individual members is the responsibility of the RMG members and should be based on the Attendance Sheet. The proper distribution of wage payments based on the Attendance Sheet should be monitored regularly by the IDO or road project staff to avoid misuse of funds by certain RMG members. The RMGs may also be required to present their accounts for public audit

प्रदेश सचिव

प्रदेश सरकार
भौतिक पूर्वाधार, शहरी विकास तथा यातायात व्यवस्था मन्त्रालय
गण्डकी प्रदेश
पोखरा, नेपाल

ANNEXES

ANNEX 1 : RMG MAINTENANCE ACTIVITIES

ROAD ELEMENT	RMG MAINTENANCE ACTIVITIES
Road	Clearing landslides and obstacles - Clearing of obstacles, materials and landslides up to 5m3 from the road surface, shoulder and the drainage system in order to allow normal vehicle transit and proper drainage of runoff water.
Earthen or gravel surface	Repairing ruts, rills, gullies, potholes, corrugations - Filling ruts and potholes formed by traffic as well as rills and gullies formed by water erosion with compacted earth, stones and gravel (where applicable), and restoring the uniform road surface in order to allow normal vehicle transit and avoid damage to the road base. This includes basic reshaping of the road to ensure a proper camber to drain water away from the road surface. • Creating water bars - Creation of simple diagonal ditches to catch any water flowing over the road and guide this to the downhill side of the road. These measures are often temporary in nature, and created only for the rainy period. • Creating dry stone pitching - Placement of paving stones on a short section of the road surface to provide better grip and carrying capacity in muddy areas or steep slopes. • Creating stone-paved drifts - Creation of small drifts (dips in the road) to safely guide water from one side of the road to the other, with stone paving to protect against damage by traffic and water. • Graveling - Placement of a gravel layer on a short section of road to provide better grip and carrying capacity where the road surface material is slippery or muddy.
Blacktop surface	Repairing potholes and edge breaks - Removing loose material and creating vertical edges, filling and compacting the underlying base course up to the bottom of the pavement to provide proper support for the pavement, placing and compacting bitumen mixes or asphalt in layers to repair the pavement, filling and compacting the road shoulder to the level of the pavement to avoid new edge breaks. • Sealing cracks - Removing any loose material from the cracks, filling the cracks with bitumen or sealant to avoid water penetrating into the pavement and weakening it.
Road shoulder	Repairing ruts, rills, gullies, potholes - Filling ruts and potholes formed by traffic and rills and gullies formed by water erosion with compacted earth, stone and gravel (where applicable) in order to restore a uniform surface. Filling up the road shoulder to the level of the pavement (where applicable). • Repairing cuts and improving shoulders - Filling and compacting cuts or depressions in the road shoulders to ensure that the road is not undermined. This is often complemented by the creation of basic dry stone retaining walls or the planting of vegetation to avoid damage from happening again. • Removing banks - Removal of raised road shoulders where these restrict runoff water from flowing away from the road.
Drains	Clearing drains - Clearing the side drains and other drainage ditches of sediment and other material that may obstruct the free flow of water, in order to ensure

	proper drainage and the protection of the road. • Repairing erosion and other damage - Affecting minor repairs to the drainage system to ensure their continued and proper working, including the placement of scour checks and the filling of areas undermined by erosion. • Creating earthen drains – Excavating basic side drains in areas prone to erosion or the stemming of water, in order to guide water safely away from the road surface and avoid undermining of the road.
Culverts	Clearing culverts - Clearing rocks, branches, sediment and other debris that may obstruct the free flow of water in the culverts, in order to ensure proper drainage and the protection of the road. • Repairing backfill over culverts - Placement of additional soil and/or gravel on the road surface over existing culvert pipes where these are close to the surface, in order to avoid them becoming damaged by traffic.
Bridges and causeways	Clearing drifts and causeways - Removing material on the drift or causeway as well as any blockages at the inlet or outlet to ensure water can flow freely over the causeway and away from the road. • Clearing bridges - Clearing rocks, branches, sediment and other material that may obstruct the free flow of water below the bridges, in order to ensure proper drainage and the protection of the road and bridge. Clearing the bridge deck to allow traffic to pass unobstructed. Cleaning spouts and weep holes to allow water to drain away freely. Removing vegetation from the bridge structure to avoid it causing damage. • Maintaining expansion joints and bearings - Cleaning any material from expansion joints to ensure these can work properly. Cleaning bearings and lubricating them to ensure they do not become jammed. • Maintaining railings and safety barriers - Cleaning, painting and repairing bridge railings and safety barriers to ensure these are easily visible and protect pedestrians and vehicles from falling off the bridge. • Repairing erosion damage - Repairing damage and placing minor protection works to avoid bridge structures from being undermined
Vegetation	Cleaning signs and road furniture - Cleaning existing signs and other road furniture so that they are legible and ensuring that sign posts are straight and properly anchored in the ground. Repairing and painting signs and road furniture - Repairing or painting signs and other road furniture, ensuring that sign posts are properly anchored in the ground and are easily legible.
Retaining walls and structures	Cleaning weep holes - Clearing any material in the weep holes of retaining walls so that water behind the wall can drain out and does not cause damage to the wall. • Creating retaining walls - Installing basic dry stone walls or gabions against slopes to avoid cuts in road shoulders and landslides. Such walls may complement existing retaining walls. • Repairing minor damage - Replacement of loose stones and/or repair of gabion wiring in retaining walls, and small repairs to other structures. • Repairing erosion damage - Placement of rocks and compacted earth where retaining walls and other structures are undermined by erosion to avoid them from collapsing. This is often complemented by the planting of vegetation to avoid damage from happening again.
Slopes	Maintaining bioengineering features - Providing water to recently planted vegetative material and ensuring that it is properly rooted in the soil.

प्रदेश सचिव

	• Planting bioengineering features - Placing grass turf or other vegetative material obtained from areas close to the road on the shoulders and slopes of the road in order to avoid erosion and stabilize the soil. • Removing hanging rocks - Removal of loose stones and soil from slopes above the road to avoid that these fall onto the road or result in landslides. • Trimming side slopes – Trimming of sharp vertical slopes and irregular shaped bends in order to create a smooth and stable slope

ANNEX 2 : TOOLS AND SAFETY EQUIPMENT

Tools	Purpose	Workers Sharing	
		Terai	Hills
Wheelbarrow / Doko	Transporting material to and from the	2-4	2-4
Hoe / Faruwa /	worksite Excavating loose or soft soil or	2-3	2-3
Kodalo Pickaxe	gravel	3-5	3-5
Shovel Long handled	Loosening hard soil	1	1
shovel Rake Curved	Loading and throwing loose soil or gravel	1 per RMG	1 per RMG
knife / Sickle	Cleaning culverts	2-3	2-3
Machete / Khukuri	Spreading material	2-3	2-3
Hand rammer	Cutting vegetation	2-3	2-3
Large crowbar	Cutting thick vegetation	1 per RMG	1 per RMG
Large Hammer +	Compacting soil and gravel	1 per RMG	1 per RMG
Chisel	Loosening, breaking or moving larger rocks	-	1 Per RMG
Pulling rope	Breaking larger rocks	1 kg per	1 kg per RMG 1
Foot pump	Assisting the worker with the shovel	RMG 1 per	per RMG
Plastic tubs	Pumping wheelbarrow tyre	RMG	-
Watering can	Removing water	2-3	1 per RMG
	Carrying and spreading water	1 per RMG	

Safety Equipment	Purpose	Workers Sharing	
		Terai	Hills
Warning flags or	Indicating the presence of workers ahead	1 set per RMG	1 set per RMG
safety cones	Identifying workers as RMG members	1	1
Safety vest	Protecting against the sun	1	1
Hat / Cap	Protecting against head injuries	1	1
Hard hat Gloves	Protecting hands against injuries	1	1
Safety goggles	Protecting eyes from dust and injuries	1	1
Mask	Protecting against dust	2	2
Boots / Shoes	Protecting against sharp objects	1	1
Raincoat	Protecting against rain	1	1
First-aid kit	Treating injuries	1 set per RMG	1 set per RMG

प्रदेश सचिव

प्रदेश सरकार
भौतिक पूर्वाधार, शहरी विकास तथा यातायात व्यवस्था मन्त्रालय
गण्डकी प्रदेश
पोखरा, नेपाल

ANNEX 3 : RMG FORMATION NOTICE

NOTICE

For the formation of Road Maintenance Group

The IDO of [Enter name of IDO] intends to form a Road Maintenance Group (RMG) for the maintenance of [Enter name and description of road]. The following numbers of maintenance workers are required to form the Road Maintenance Group.

Muncipality/RM	Start	End	Length	Number of workers
Total				

The members of the Road Maintenance Group will be required to work together to maintain the road in good condition, carrying out basic cleaning and clearing works as well as minor repairs. The work will be [Enter full-time or half-time] and will be for a period of one year. The Road Maintenance Group will be paid a fixed monthly amount of NPR [Enter monthly payment] for the entire road if the road is in good condition. If certain parts of the road are not in good condition, deductions will be applied to the monthly payment. Selection of the members of the Road Maintenance Groups will be according to the following selection criteria. It must be noted that previous experience with road works is not required, but is an advantage in the selection process. Ability to read and write and completed primary school are also not required, but are an advantage.

Priority will be given to the RMGs who have worked for the routine maintenance of Roads under SNRTP.

TECHNICAL CRITERIA

- The selected maintenance workers must be between 18 and 60 years of age
- The selected maintenance workers must be physically and mentally able to work on road maintenance
- The selected maintenance workers must live near the road to be maintained (reducing travel time)

SOCIAL CRITERIA

- The selected maintenance workers must be unemployed or employed less than 25% of their time
- The selected maintenance workers must be from the poorest people of the Munciplaity/RM.
- Preference must be given to female candidates and participation of women should be promoted. At least 33% of selected maintenance workers must be women. Where possible, all selected maintenance workers should be women.
- At least 40% of the maintenance workers must be Dalits or Janajati, or be from other excluded and deprived groups

For more information, please contact the Muncipality/RM or the Infrastructure Development Office. Interested candidates should contact the Respective Ward Chief and fill in the RMG Application Form before [Enter date by which the RMG Application Form should be submitted]. Within one week after the final application date, the RMG Application Forms will be evaluated and the RMG members will be selected.

ANNEX 4: RMG APPLICATION FORM

RMG APPLICATION FORM	
Name	.....
Surname	.....
Identity Document	.....
Age	.....
Place of Residence	.....
Gender	Male ☐ Female ☐
Ethnicity/caste	☐ Dalit ☐ Janajati ☐ Other
What sources of income does the candidate currently have?	☐ None ☐ Temporay (e.g. migrant work, hired labour) ☐ Fixed (e.g. agricultural land, permanent employment)
Does the candidate own any property?	☐ None ☐ Temporay (e.g. migrant work, hired labour) ☐ Fixed (e.g. agricultural land, permanent employment) ☐ Shop or Other Business premises
How many family members does the candidate support?	☐ 0-3 ☐ 4-6 ☐ More than 6
What is the education level of the candidate?	☐ Primary Incomplete ☐ Primary Complete ☐ Secondary Complete or Higher
Can the candidate read and write?	Yes ☐ No ☐
What work experience does the candidate have?	☐ Construction activities ☐ Agricultural activities ☐ Commercial activities ☐ Other Activities
Does the candidate have experience working on roads? If yes, what type of experience?	Yes ☐ No ☐
Has the candidate ever worked as part of a team or group? If yes, what kind of team?	Yes ☐ No ☐
Has the candidate ever filled leadership positions? If yes, what kind of positions	Yes ☐ No ☐

प्रदेश सचिव

प्रदेश सरकार
भौतिक पूर्वाधार, शहरी विकास तथा यातायात व्यवस्था मन्त्रालय
गण्डकी प्रदेश
पोखरा, नेपाल

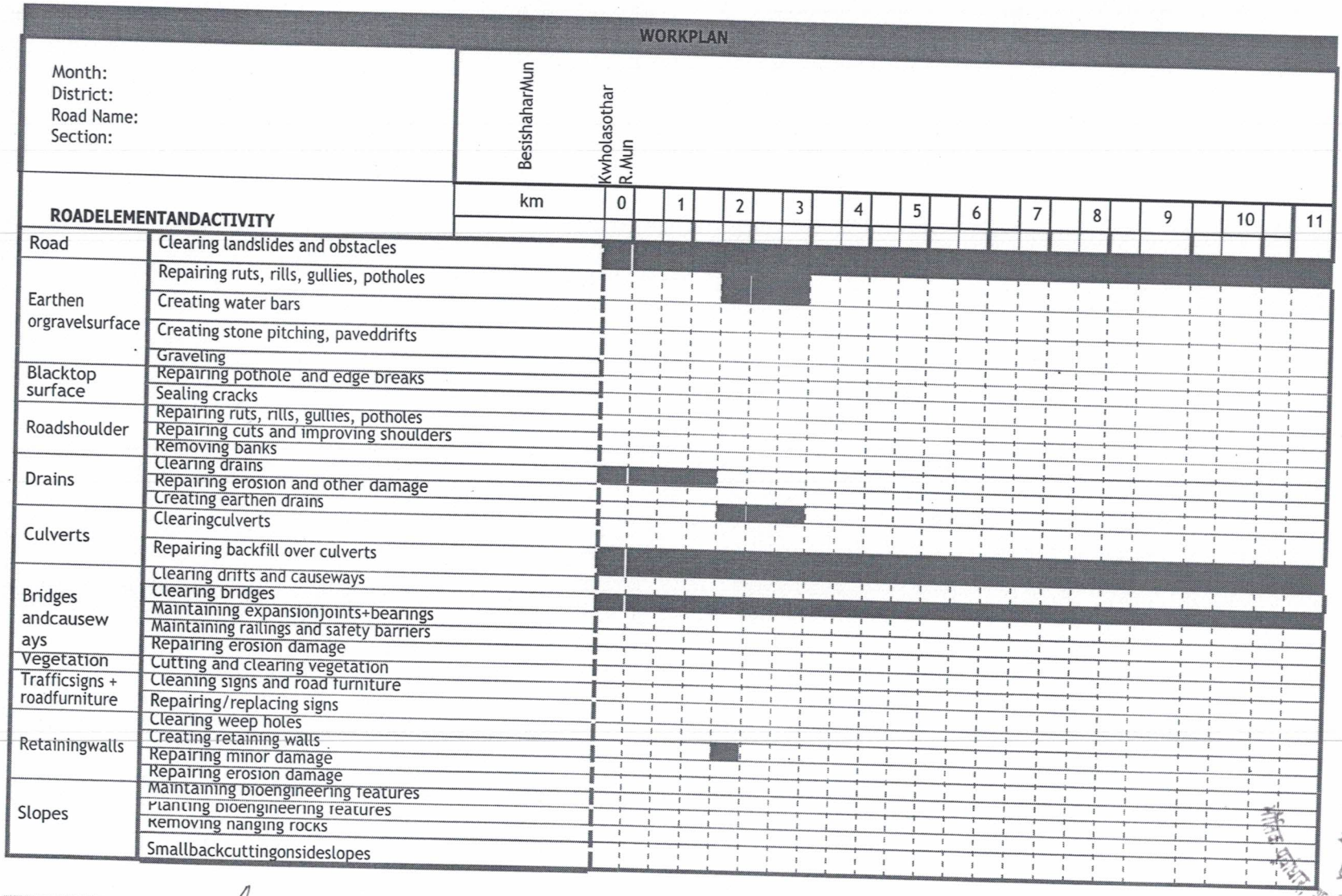
ANNEX 5 : RMG APPLICATION FORM - SCORING CARD

RMG APPLICATION FORM (SCORING CARD)		Max
Name	.....	
Surname	.....	
Identity Document	.....	
Age	.....	
Place of Residence	.....	
Gender	Male ☐ Female (5) ☐	**5**
Ethnicity/caste	☐ Dalit (10) ☐ Janajati (5) ☐ Other	**10**
What sources of income does the candidate currently have?	☐ None (10) ☐ Temporay (e.g. migrant work, hired labour) (5) ☐ Fixed (e.g. agricultural land, permanent employment)	**10**
Does the candidate own any property?	☐ None (10) ☐ Temporay (e.g. migrant work, hired labour) (5) ☐ Fixed (e.g. agricultural land, permanent employment) ☐ Shop or Other Business premises	**5**
How many family members does the candidate support?	☐ 0-3 ☐ 4-6 (5) ☐ More than 6 (10)	**10**
What is the education level of the candidate?	☐ Primary Incomplete ☐ Primary Complete (5) ☐ Secondary Complete or Higher (5)	**5**
Can the candidate read and write?	Yes(5) ☐ No ☐	**5**
What work experience does the candidate have?	☐ Construction activities (10) ☐ Agricultural activities (5) ☐ Commercial activities ☐ Other Activities	**10**
Does the candidate have experience working on roads? **If yes, what type of experience?**	Yes (30) ☐ No ☐ If relevant work experience	**30**
Has the candidate ever worked as part of a team or group? **If yes, what kind of team?**	Yes (5) ☐ No ☐ If relevant work experience	**5**
Has the candidate ever filled leadership positions? **If yes, what kind of positions**	Yes ☐ No ☐ If relevant work experience	**5**

प्रदेश सचिव

प्रदेश सरकार
भौतिक पूर्वाधार, शहरी विकास तथा यातायात व्यवस्था मन्त्रालय
गण्डकी प्रदेश
पोखरा, नेपाल

ANNEX 6: SAMPLE WORK PLAN



प्रदेश सचिव

प्रदेश सरकार
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गण्डकी प्रदेश
पोखरा, नेपाल

ANNEX7:BASIS FOR WORK VOLUME CALCULATION

WORKVOLUMECALCULATIONSHEET	
Month	
Road	
Road length(km)❶	
RMG name	

CALCULATION							
Road element	Maintenance activity	Task rate unit	Proposedtask rate range (units/personday)	Applied task rate (units/personday) ❷	Planned volume (check units) ❸	Required person days ❹=❸/❷	Location(chainage)
Road	Clearing landslides and obstacles	m^3	3-4				
Earthen or gravel surface	Repairing ruts, rills, gullies, potholes	m^2	10-15				
	Creating water bars	m	20-40				
	Creating stone pitching, paved drifts	m^2	2-3				
	Graveling	m^2	6-8				
Paved surface	Repairing potholes or fixing edge break	m^2	5-10				
	Sealing cracks	m	100-150				
Road shoulder	Repairing ruts, rills, gullies, potholes	m^2	10-15				
	Repairing cuts and improving shoulders	m^3	2-3				
	Removing banks	m^3	3-4				
Drains	Clearing drains	m	100-200				
	Repairing erosion and other damage	m^3	2-4				
	Creating earthen drains	m	20-40				
Culverts	Clearing culverts	unit	1-3				
	Repairing backfill over culverts	m^3	2-3				
Bridges and causeways	Clearing drifts and causeways	m^3	3-4				
	Clearing bridges	unit	½-1				
	Maintaining expansion joints+bearings	unit	1-2				
	Maintaining railings and safety barriers	unit	¼-½				
	Repairing erosion damage	m^3	2-4				
Vegetation	Cutting and clearing vegetation	m^2	300-400				
Traffic signs + road furniture	Cleaning signs and road furniture	unit	10				
	Repairing/replacing signs	unit	5				
Retaining walls	Clearing weep holes	unit	50				
	Creating retaining walls	m^3	1-1½				
	Repairing minor damage	m^3	1-1½				
	Repairing erosion damage	m^3	2-4				
Slopes	Maintaining bioengineering features	m^2	50-100				
	Planting bioengineering features	m^2	15-25				
	Removing hanging rocks	m^2	2-3				
	Small back cutting on side slopes	m^3	1.4-2.0				
Other	Other activity						

CONCLUSION		
Average number of person days per month	❺=❶*input level/12	
Total person days required in this month	❻=sum❹	

Note1: The total number of person days for a particular month may differ from the average number of person days per month, as long as the total person days for a year are equal to the road length* input level.

Note2: This sheet serves to ensure that the work volumes assigned to the RMG are in line with the available person days/km/year. The RMG is responsible for completing the assigned work plan and work volumes .This sheet is not to be provided to the RMG.

ANNEX8:TIMING OF MAINTENANCE ACTIVITIES

BEFORETHERAINYPERIOD
• Clearing drains • Clearing culverts • Clearing drifts and causeways • Clearing under bridges • Clearing bridges, spouts and weepholes • Repairing drains • Creating earthen drains • Creating stone-paveddrifts • Creating drystone retainingwalls • Cutting and clearing vegetation • Sealing pavement cracks • Removing hanging rocks • Removing shoulder banks • Creating water bars
DURINGTHERAINYPERIOD
• Clearing of landslides and obstacles • Clearing drains • Clearing culverts • Clearing drifts and causeways • Clearing under bridges • Clearing bridges, spouts and weep holes • Repairing drains • Removing shoulder banks • Creating earthen drains • Creating water bars • Creating stone-paved drifts • Creating dry stone retaining walls • Removing hanging rocks • Planting bioengineering features • Repairing ruts, rills, gullies, potholes, corrugations-in major problem are as • Repairing pavement potholes and edge breaks-in major problem are as • Repairing cuts and improving shoulder-in major problem are as • Cutting and clearing vegetation-in major problem are as
AFTERTHERAINYPERIOD
• Clearing of landslides and obstacles • Repairing ruts, rills, gullies, potholes, corrugations • Repairing cuts and improving shoulder • Cutting and clearing vegetation • Repairing the backfill over culverts
DURINGTHEDRYPERIOD
• Repairing ruts, rills, gullies, potholes, corrugations • Repairing pavement potholes and edge breaks • Repairing pavement raveling and stripping • Sealing pavement cracks • Repairing cuts and improving shoulder • Maintaining expansion joints and bearings • Maintaining railings and safety barriers • Repairing erosion damage to bridges • Repairing retaining walls and structures • Repairing the backfill over culverts • Creating dry stone retaining walls • Stone pitching and graveling • Smallback cutting side slopes • Cleaning signs and road furniture • Repairing and painting signs and road furniture

प्रदेश सचिव

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भौतिक पूर्वाधार, शहरी विकास तथा यातायात व्यवस्था मन्त्रालय
गण्डकी प्रदेश
पोखरा, नेपाल

ANNEX9: MAINTENANCE WORK INSPECTION FORM

INSPECTION FORM GENERALINFORMATION				
Inspection period(month)				
Name of inspector				
Date of inspection				
Road name and length				
Road section start and end				
Name of RMG				
RMG chairperson's name				
RMG chairperson's phone number				
INSPECTIONRESULTS				
Road element	Inorder	Deficient	Not applicable	Problems to be corrected
Road (obstructions)				
Earthen or gravel surface				
Blacktop surface				
Road shoulder				
Drains				
Culverts				
Bridges and causeways				
Vegetation				
Traffic signs and road furniture				
Retaining wall sand structures				
Slopes				
CONCLUSION				
Standard Monthly Payment including allowances as per contract(NPR)❶				
Deduction (NPR) (copy to Attendance Sheet)❷	None NPR_____			
Approved Monthly Payment (NPR)(copy to Attendance Sheet)❸=❶-❷				
Number of person-days spent(copy from Attendance Sheet)				
Signature inspect or				
Signature RMG chairperson				

Note: The amount of deduction is calculated by determining the volume of work not completed in accordance with the work plan and the performance standards, and multiplying this by the task rate for the

प्रदेश सरकार
भौतिक पूर्वाधार विकास तथा यातायात व्यवस्था मन्त्रालय
गण्डकी प्रदेश
पोखरा, नेपाल
प्रदेश सचिव

activity concerned and the daily wage for the district concerned: (deduction=uncompleted work volume x task rate x daily wage rate

प्रदेश सचिव

ATTENDANCEANDPAYMENTDISTRIBUTIONSHEET

Reporting period(month):	
Road name and length:	
RMG name:	

HOURSWORKED

Name of member	Date (enter the number of hours worked each day byeachRMG member)																													Total hours❶	Total standarddays❷	Wage payment ❷=❶ / ❸* ❷	Signature
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				
Total person days by RMG members❸=sum❷																																			

CONCLUSION

Monthly wage payment as per contract(NPR) ❹	
Deduction as per Inspection Form (NPR)❺	
Approved wage payment as per Inspection Form(NPR)❻=❹-❺	
Signature RMG chairperson	
Signature inspector	

प्रदेश सचिव

भौतिक पूर्वाधार विकास तथा यातायात व्यवस्था मन्त्रालय
गण्डकी प्रदेश
पोखरा, नेपाल

ANNEX11: SAMPLE CONTRACT TEMPLATE

MAINTENANCE

Contract Between

[Entername of IDO]

and

[Entername of RMG]

This contract describes the road maintenance activities to be undertaken in [Enter road name or description] over a totallengthof[Enterlengthofroad]kmfromchainage[Enterstartchainage]tochainage[Enterendchainage],involvingatotalof[Enternumberofmaintenanceworkersin RMG]maintenanceworkers.Thedurationofthiscontractis[Enternumberofmonths] months starting from [Enter start date] up to [Enter end date].

Maintenanceactivities

The maintenance activities to be carried out under this contract consist of routine cleaning and clearing activitiescomplementedbyminorrecurrentrepairsandminorspecificmaintenanceaimedatthecreationofbasicroadprotectionmeasures. As part of this contract, the following maintenance activities may be carried out:

ROADELEMENT	RMGMAINTENANCEACTIVITIES
Road	Clearing landslides and obstacles
Earthen or gravel surface	Repairing ruts, rills, gullies, potholes ,corrugations Creating water bars Creating dry stone pitching, stone-paveddrifts Graveling
Blacktop surface	Repairing potholes and edge breaks Sealing cracks
Road shoulder	Repairing ruts, rills, gullies, potholes Repairing cuts and improving shoulder Removing banks
Drains	Clearing drains Repairing erosion damage Creating earthen drains
Culverts	Clearing culverts Repairing back fillover culverts
Bridgesand causeways	Clearing drifts and causeways Clearing under bridges, bridge deck, bridge spouts, weepholes and vegetation Cleaning expansion joints and lubricating bridge bearings Cleaning, painting and repairing bridge railing and safety barriers Repairing erosion damage and placing minor protection works
Vegetation	Cutting and clearing vegetation
Traffic signs and road furniture	Cleaning signs and road furniture Repairing/replacing signs and road furniture
Retaining walls and structures	Cleaning weep holes Creating retaining walls Repairing minor damage Repairing erosion damage
Slopes	Maintaining bioengineering features Planting bioengineering features Removing hanging rocks Trimming side slopes

Any repairs required to the road that are beyond the scope of the maintenance activities listed above,must be reported to the IDO. The RMGs will receiv tools and safety equipment from the IDO to carry out the maintenance activities. Accident insurance will also be provided for the RMG members.

Monthly work plan

At the start of each month a work plan is prepared together with the IDO that indicates which activities will be carried out and in which sections of the road these will be .The road maintenance group is responsible for planning and organizing its members to carry out the activities indicated in the work plan during the course of the month, ensuring that all work indicated in the work plan is completed by the end of the month. The work plan forms the basis for the activities to be undertaken, although additional activities may come up according to need. Increasingly, the road maintenance group will be made responsible for working out the work plan, which will need to be approved by the IDO.

Inspections and performance standards

The work carried out is assessed during monthly inspections. The quantity of work carried out is compared to the work plan for that month. The quality of the work carried out is compared to the performance standards that are defined below. If the quantity and quality of work complies with the work plan and performance standards, the full monthly payment as indicated at the end of this contract is approved. Where quantity or quality do not fully comply with the performance standards or work plan, a deduction may be applied to this monthly payment. The amount of this deduction is based on the amount of work estimated to be unsatisfactory. During each monthly inspection, an Inspection Form will be filled in, identifying any deficiencies found in the road, as well as the exact amount of any deduction applied and the resulting monthly payment approved for the RMG.

PERFORMANCE STANDARDS
Road - There are no small landslides (less than 5 cubic metres), materials or other obstacles on the road surface, road shoulder, or sided rains. In the case of large landslides (morethan5cubicmetres),these have been reportedtotheIDO. Vehicles are able to pass and water does not flow over the road. Earthen or gravel surface -There are no remarkable potholes (>60x15 cm), no ruts, rills or gullies (>15cm deep), and no corrugation (>7 cm deep) which disturb the regular movement of traffic. Repairs to gravel surfaces have been made using suitable gravel material. In areas subject to longitudinal erosion, diagonal diversion ditches have been created at regular intervals to guide the water away from the road. Where water crosses the road, stone-paved drifts have been created.In case of stone pitching , the stones are well anchored in the ground, donot stick out, and there are no missing stones. Water does not flow over or remain on the road. Blacktop surface - There are no remarkable potholes (>30x10cm) which disturb the regular movement of traffic. Thepotholescanberepairedwithlocallyavailablematerials.Thereisnosignificantedgebreakthatreducesthewidthofthepavement. Thelengthofunsealedcracksislessthan5metresperkilometreofroad.Therearenounsealedcrackswiderthan 0.5 centimetres. The area affected by stripping or ravelling is less than 50 square metres per kilometre of road. Road shoulder - There are no remarkable potholes (>30x10cm) and no ruts or rills (>10 cm deep). There are noun interrupted banks on the road shoulder for more than 10 metres. Water does not flow over or remain on the roadshoulder. Drains - Less than one-quarter of the cross section at any point in the side drain is blocked. The drain is at least 15centimetres wide and 10 centimetres below the road surface. There are no sharp curves in the drain and the drain hasa proper outlet. Water can flow freely through the side drain, and there is no erosion of the drains. Water does not flow over the road surface or shoulder. Culverts-Lessthanone-quarter of the culvert height at Any point in the culvert is blocked, the inlet and outlet are lear, water can flow freely through the culvert, and there is no erosion at the inlet or outlet.The backfill over the culverts is at least one-quarter of the culvert diameter. Causeways and Bridges-Drift sand causeways are free of sedimentation and are able to drain freely. Less than one-tenth of the cross section of the bridge is blocked,and the areas 5metres on either side of the bridge are clear of obstructions.Water can flow freely under the bridge.The bridge deck, spouts and weep holes are clean.There is no vegetation growing in the crossing structures. Bridge railings are clean and covered inpaint. Bridge bearings are clean and ubricated. Bridge expansion joints are clear.There is no damage to the approach road and bridge deck and cracks are sealed.Minor erosion has been repaired and protection measures are in place. Large damage to or erosion of the bridge structure has been reported to IDO. Vegetation-Vegetation within 1 metre of the road is less than 30 centimetres high (except trees), vegetation protruding over the road is at least 2.50 metres above the road surface, and the flow of water away from the road is not restricted. Vegetation on slopes is not removed, only cut short. Traffic signs and road furniture- All traffic sign sand road furniture are clean and legible (painted where necessary).Sign posts are straight and well anchored in the ground. Any damaged or missing signs have been reported to the IDO. Retaining wall sand structures- The retaining wall sand structures are in good condition and the area behind the mis compacted. There are no loose stones or other damage to the retaining walls, and weep holes are clear. There is no damage by erosion under mining the retaining wall sand structures. Large damage to retaining walls and structures has been reported to the IDO. Slopes-The slopes and road shoulders prone to erosion have been planted with vegetative material.The plants are not dried out and well anchored to the soil. There are no loose stones or other material on the slopes and road side slope should be in stable condition.

Note1: These performance standards are for internal control mechanism, not fully comply in monsoon season and just basis for monitoring.

Note2:Above performance standard can be considered as basis for monitoring as defined in note 1only on last worked or maintained section of the road by RMGs not before than 1 month.

Payment sand allowances

The RMG will receive monthly wage payments. These are fixed monthly amounts as indicated below. The payment is made as one single monthly payment.

DESCRIPTIO N	AMOUNT(NPR)
Monthly wage payment	Enteramount

At the discretion of the IDO ,payments may be made either to the road maintenance group as a whole or to individual members. In case of group payments, the road maintenance group is responsible for the correct distribution of wage amongst its members and this will be monitored by the IDO based on the Attendance Sheet. In case of individual payments, the distribution of the payment to the members of the road maintenance groups will be determined by the IDO based on the days worked by each group member as recorded in the Attendance Sheet. By signing this contract, the RMG agrees to present its accounts for public audit if so required by the IDO.

Employment status

This contract forms a procurement contract between a public entity (the IDO) and a service provider (the RMG) fora fixed duration of time. It does not give any entitlement to extension or renewal of the contract beyond the stipulatedduration,nordoesitgiveanyentitlementtotheRMGmembersforcontinuedemploymentbytheIDOoranyotherpublicentity.Underthiscontract,theRMGisconsideredtobeaserviceproviderfortheIDO.RMGmembersarenotconsidered government employees, nor do they qualify for any entitlements related to government employees.

RMG members

The RMG in thi scontract includes the following members:

1. [Enter full name and address of RMG Chairperson] (Chairperson)
2. [Enter full name and address of RMG Treasurer] (Treasurer)
3. [Enter full name and address of RMG member]
4. [Enter full name and address of RMG member]
5. [Enter full name and address of RMG member]
6. [Enter full name and address of RMG member]
7. [Enter full name and address of RMG member]

On behalf of the Employer:

(IDO)

Name:

Name:

On behalf of the RMG:

(Chairperson)

Name:

(Treaser)

Name:

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भौतिक पूर्वाधार, सहरी विकास तथा यातायात व्यवस्था मन्त्रालय
गण्डकी प्रदेश
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प्रदेश सचिव