



Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
Manila

097.13 DPWH
// 13-2015

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DEPARTMENT ORDER)
NO. 171)
Series of 2015)

SUBJECT: **POLICY GUIDELINES ON THE
MAINTENANCE OF NATIONAL
ROADS AND BRIDGES**

To further improve the maintenance service delivery to the public and with the preservation of government infrastructure assets being one of the main thrusts of the Department, the herein Policy Guidelines on the Maintenance of National Roads and Bridges is hereby prescribed for compliance of all concerned.

This Order includes provisions on the imposition of sanctions to erring DPWH officials found to have been continually remiss in providing not only the requisite maintenance action/s as regards the prescribed response time on defects/distresses noted along our road section, but likewise in failing to constantly assure the highest quality of maintenance works adopting compliance to existing maintenance policies and standards.

This Department Order shall take effect immediately and shall supersede:

- 1) Department Order No. 13, s. 2011: *"Revised Guidelines in the Maintenance of National Roads and Bridges"*;
- 2) Department Order No. 179 s. 1997: *"Revised Guidelines of Inspection to Rate the Physical Condition of National Roads and Bridges"*; and,
- 3) Department Order No. 31, s. 2000: *"Guidelines for the Imposition of Administrative Sanctions to Regional/District Technical Personnel Involved in the Defective Implementation of Maintenance Activities for National Roads and Bridges"*.


ROGELIO L. SINGSON
Secretary

Department of Public Works and Highways
Office of the Secretary


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- Encl. Annex 1: Detailed Policy Guidelines on the Maintenance of National Road and Bridges
Annex 2: Description of Road/Bridge Defects/Deficiencies and its corresponding response times
Annex 3: Calibrated Sanctions

5.3.2 DFR/ESGJR/RCA

DETAILED POLICY GUIDELINES ON THE MAINTENANCE OF NATIONAL ROADS AND BRIDGES

The following procedural guidelines as well as response times for rectifying noted road/bridge defects and deficiencies are hereby prescribed in order to establish and develop a yardstick in the assessment of performance in the maintenance of national roads and bridges.

1. SPECIFIC RESPONSIBILITIES

1.1 Regional Directors

- a. Shall institute all measures to ensure that DEOs are performing their assigned tasks and responsibilities under this Order;
- b. Shall closely monitor the physical condition of all national roads within his jurisdiction and shall support all DEOs to successfully achieve the DPWH objective for better and safer roads. The Assistant Regional Director and the Regional Maintenance Engineer are enjoined to faithfully assist in these tasks.

1.2 District Engineers

- a. Shall be directly responsible for the efficient and timely maintenance of all national roads and bridges within their respective jurisdictions;
- b. Shall be held accountable for the proper expenditure of maintenance funds and in the management of all other resources intended for the repair and maintenance of each road and bridge section in their area of concern;
- c. Shall promptly submit to the Undersecretary for Technical Services, copy furnished the Director, Bureau of Maintenance, the names and latest picture of the MPPs and their respective assigned road section. Any changes in the assignment shall be submitted likewise to the above Offices.

1.3 Assistant District Engineers

- a. Shall designate Maintenance Point Persons (MPPs), who are preferably a permanent staff occupying the position of Engineer II; Construction or Maintenance Foreman or Construction or Maintenance Capataz. For urban areas, each MPP will be assigned approximately 20 kms and for semi-urban to rural areas, approximately 40 kms; Assigning Maintenance Area Engineers shall henceforth be discontinued;
- b. Shall closely monitor the activities of the District Maintenance Engineer to ensure that the scheduled works (repair of defects and rectification activities) are prioritized and implemented.

1.4 Maintenance Point Persons (MPPs)

- a. Shall conduct inspection, at least twice a week, of the entire road section including the bridges subject of his/her assignment for the purpose of identifying and recording all noted defects and deficiencies;
- b. Shall log results of inspection using Form MP-1 (Daily Road Inspection Report) which contains location of noted defects/deficiencies; estimated quantity, etc, and in which MP-1 shall be submitted daily to the Maintenance Engineer, copy furnished the District Engineer.

1.5 District Maintenance Engineer (DME)

- a. Shall assign technical personnel within his Office to regularly conduct actual field inspections to validate if the MPPs had correctly logged and reported the location of the noted defects/deficiencies;
- b. Shall immediately schedule rectification/repair works on the defects/deficiencies noted by the MPPs, mindful of the response time allowed for each defect;
- c. As the DME's assigned technical personnel will conduct actual field inspections to regularly monitor the rectification/repair works to ensure quality and economic practicality of completed works, the DME shall among others, order such works to be redone if the same is not to standards.

2. FREQUENCY OF VALIDATION BY THE BUREAU OF MAINTENANCE (BOM)

Validation to assess the Regional/District Engineering Office as to compliance to this Order shall be regularly conducted by the BOM at least four (4) times a year within the National Capital Region (NCR) and at least twice a year for the rest of the Regional Offices;

3. PROCEDURES FOR INSPECTION/VALIDATION

- a. One (1) technical personnel from the BOM accompanied by the District Maintenance Engineer concerned, the Maintenance Point Persons (MPPs) assigned in the area and the Regional Maintenance Division representative/s knowledgeable in the area to be inspected (collectively called: the Team) shall conduct the actual field inspection based on coverage and frequencies detailed above;
- b. Each member of the Team shall attest and affix their respective signature on the daily inspection report prepared by the BOM to certify as to the correctness of the same.

- c. BOM's inspection/assessment shall be based, among others, on the following RESPONSE TIMES prescribed below to rectify noted defects/deficiencies. Past records of Forms MP-1 and MP-2 within the 10-day period before the conduct of assessment shall be submitted by the DEOs to the BOM personnel;

3.c.1 Prescribed response time for rectifying each defect/deficiency

Code	Defects/Deficiencies	Response Time
01	Potholes	3 days
02	Alligator Cracks	3 days
03	Major Scaling	30 days
04	Shoving and Corrugation	10 days
05	Pumping and Depression	30 days
06	No/Faded Road Markings	15 days
07	Low/Inverted Shoulders	7 days
08	Lush Vegetation	3 days
09	Clogged Drains	3 days
10	Open Manhole	10 days
11	No/Inadequate Sealant in Joints	3 days
12	Cracks	3 days
13	Ravelling	7 days
14	Unmaintained Road Signages	3 days
15	Unmaintained Bridges	3 days

3.c.2 Description of each defect/deficiency is detailed in Annex "2", hereof.

- d. A 24-hour weather chart shall be prepared to indicate the prevailing weather condition at the time of inspection/assessment;
- e. Inspection shall be done preferably by "walking-the line" to ensure that a thorough road assessment is conducted to determine not only the degree of performance of each DEO in the maintenance of their respective road network but likewise their adherence to the response time prescribed for each defects noted and the quality of the completed rectification works;
- f. The BOM technical personnel shall submit the result of his tasks to the BOM Director within five (5) working days from the date of his/her arrival.

4. POINT SYSTEM FOR THE IMPOSITION OF SANCTIONS

The BOM shall adopt a "Point System" in calculating sanctions which shall cover, the following factors:

- 4.1 Based on the outcome of the actual field validation/inspection by the Bureau of Maintenance the following percentage points shall be determined:

Degree / Level of Maintenance of National Roads **60%**

Quantity and Quality of Completed Rectification Works

Adhering to Prescribed Response Time **25%**

Submitted Justification on the Remaining Rectification Works **15 %**

TOTAL **100%**

4.2 Applicable sanctions, discussed under Annex "3", hereof, shall be imposed when the total percentage points as determined above is **lower than seventy-five percent (75%)**.

5. REWARD AND SANCTION MECHANISM

As applicable Sanction shall be imposed, a Reward (in the form of a Citation for maintenance works well implemented/promptly executed) will be issued to personnel/officials specifically named in Annex "3" of this Order, based on the factors likewise detailed therein.

5.3.2 DFR/ESGJR/RCA

Department of Public Works and Highways
REPORT ON THE INSPECTION OF DEFECTS/ DEFICIENCIES

Date of Inspection: _____

Region: _____

District: _____

Form MP-1

BOM-MPP-INS

[illegible]

Prepared by:

Engineer

***Defects/Deficiencies:**

01 Potholes

02 Alligator Cracks

03 Major Scaling

04 Shoving/Corrugation/Rutting/Depression

05 Pumping and Depressions

06-E No/Faded Edge Line

06-C No/Faded Center Line

06-Y No/Faded Yellow Line

06-P No/Faded Pedestrian Lane

07 Low/Inverted Shoulder

08 Lush Vegetation

09 Clogged Drainage

10 Open Manhole

11 No/Inadequate/Excess Sealant on Joints

12 Cracks

13 Raveling

14 Unmaintained Traffic Signages

15 Unmaintained Bridges

Department of Public Works and Highways
REPORT ON THE INSPECTION/VALIDATION OF DEFECTS/DEFICIENCIES

Date of Inspection: _____

Date of Validation: _____

Region: _____

District: _____

Form MP-2

BOM-MPP-VAL

[illegible]

Prepared by:

Engineer

***Defects/Deficiencies:**

01 Potholes

02 Alligator Cracks

03 Major Scaling

04 Shoving/Corrugation/Rutting/Depression

05 Pumping and Depressions

06-E No/Faded Edge Line

06-C No/Faded Center Line

06-Y No/Faded Yellow Line

06-P No/Faded Pedestrian Lane

07 Low/Inverted Shoulder

08 Lush Vegetation

09 Clogged Drainage

10 Open Manhole

11 No/Inadequate/Excess Sealant on Joints

12 Cracks

13 Raveling

14 Unmaintained Traffic Signages

15 Unmaintained Bridges

List of Defects and Deficiencies

Code Description and Associated Defects	Unit	Recommended Corrective Measure/Treatment	Response Time
<p>01 - Potholes</p> <p>Any of the following defects can be recorded under Code 01:</p> <p>Bowl-Shaped Depression in the pavement surface resulting from the loss of wearing course or base materials</p> <p>Delamination - loss of a discreet area of the wearing course layer, due to poor bonding between the surface and lower layer.</p> <p>Slippage cracking - often occurs as a result of poor bonding or adhesion between layers.</p> <p>Edge Break - edge of the bituminous surface fretted, broken or irregular.</p> <p>Spalling - breakdown or disintegration of slab surface at edges, joints, corners or cracks (spalls ≥ 50mm wide, measured from the face of the joint or crack, with loss of material, or broken into two or more pieces)</p> <p>Chuck-hole or Punch out, a depressed or broken part of a slab resulting from pavement cracking and disintegration of concrete.</p>	sq.m.	<p>On bituminous pavement, bituminous premix (hot) or penetration patching of the affected area; adding base materials, if needed, is included if no subgrade repair is required.</p> <p>On concrete pavement, bituminous premix (hot) or penetration patching.</p>	3 days
<p>02 - Alligator Cracks are interconnected or interlaced cracks forming a series of small polygons resembling an alligator hide.</p>	sq.m.	Bituminous premix (hot) or penetration patching; adding base materials, if needed, is included if no subgrade repair is required.	3 days
<p>03 - Major Scaling is the deterioration of the upper concrete slab surface of more than 10mm.</p>	sq.m.	<p>Reblocking of slabs</p> <p><i>(Patching using Item 310, "Grading E" may be allowed for correcting functional defect)</i></p>	7 days
<p>04 - Shoving/Corrugations/Rutting/Depression</p> <p>Shoving is the bulging of the road surface generally parallel to the direction of traffic and/or horizontal displacement of surfacing materials, mainly in the direction of traffic where braking or acceleration movement occur.</p> <p>Corrugations refers to transverse undulations, closely and regularly spaced, with wavelengths of less than 2 meters.</p> <p>Rutting, a longitudinal deformation in a wheelpath. May occur in one or both wheelpaths of a lane; and</p> <p>Depressions, localized area within the pavement with elevations lower than the surrounding area. May not be confined to wheelpaths and could extend across several wheelpaths.</p>	sq.m.	Half or full width replacement of defective pavement. Frequent recurrence of the defect in a section must be investigated to determine a more appropriate intervention such as : (a) Program road section for reconstruction; (b) Based on engineering judgment, consider removal and replacement of the affected area.	10 days
<p>05 - Pumping and Depressions</p> <p>Pumping, seeping or ejection of water from beneath the pavement through cracks causing rocking, faulting and slab cracking.</p> <p><i>Rocking</i> is the vertical movement at a joint or crack under traffic.</p> <p><i>Faulting</i> is the difference in elevation across a joint or crack creating a "step" deformation.</p> <p><i>Slab cracking</i> under this code refers to shattered slab.</p> <p>Depression, a dip in the pavement surface almost invariably across a crack or joint.</p>	sq.m.	Re-blocking / replacement of concrete pavement, including base correction	10 days

List of Defects and Deficiencies

Code Description and Associated Defects	Unit	Recommended Corrective Measure/Treatment	Response Time
06 - No/Faded Pavement Markings Absence of pavement markings or as visually assessed, less than 50% visibility; lane markings are classified into: 06-E - Edge Line 06-C - Center Line 06-Y - Yellow Line (includes Yellow Box Lines in major intersections with traffic light; Red Box Lines for Metro Manila area) 06-P - Pedestrian Lane (in schools, hospitals, government offices and major intersections)	l.m.	Application or re-application of pavement markings using either Thermoplastic Paint <i>Carriageway width \geq 6.10m must be provided with Edge and Center Line markings</i> b) Repainting of faded strips	3 days
07 - Low/Inverted Shoulder This defect refers to the loss of or excess shouldering materials resulting on shoulder level being lower or higher than the pavement level, which also include any of the following: Lane-to Shoulder Drop-off which is the difference in elevation between the edge of slab and shoulder; typically occurs when the outside shoulder settles. Uneven finished grade level between an AC overlaid pavement and existing sealed shoulder.	l.m.	Resurfacing or reshaping of unpaved shoulder; Reinstatement of dropped/settled shoulder For purposes of minimizing danger, provide lane-to-shoulder transition	7 days
08 - Lush Vegetation - growth of grass, weeds and shrubs or any kind of vegetation within the mowing limits reaching an average height of 0.60 meters. This will include trimming/pruning of trees in compliance with DO 93 s. 2014	l.m.	Vegetation control <i>Growth of grass on shoulders along secondary roads may be allowed provided that the shoulder is stable and grasses are trimmed to a height that would allow water to drain from the pavement surface.</i>	3 Days
09 - Clogged Drainage - obstructed flow of surface run-offs in the drains due to accumulated materials such as construction spoils, soil, garbage, leaves, rocks etc.. Any of the following defects is covered under this code: Silted/clogged line/barrel culverts, lined or unlined canals Damaged lined canal/culvert Obstructed ditches (lined or unlined) and inadequate flow lines	l.m.	Manual cleaning/declogging of canals/drainage culverts Repair damaged lined canal / replace damaged individual culvert pieces Manual ditch cleaning and reshaping of unlined ditch	3 Days
10 - Open Manhole , is not limited to uncovered drainage/utility manhole but also includes the following defects/deficiencies on these structures: Damaged curb inlets and missing gratings Damaged drainage/utility manhole edges and covers Unlevelled drainage/utility manhole covers Missing drainage steel gratings	no.	Repair damaged drainage & utility manhole covers & opening edges, curb inlets, and drainage gratings Replace missing drainage & utility manhole covers, curb inlets/drainage gratings	2 Days

List of Defects and Deficiencies

Code Description and Associated Defects	Unit	Recommended Corrective Measure/Treatment	Response Time
11 - No/Inadequate/Excess Sealant in joints	l.m.	Apply sealant on open and under sealed joints and scrape off excess sealant	2 days
<p>12 - Cracks, breaks on pavement occurring in variety of patterns ranging from isolated single crack to an interconnected pattern extending over the entire pavement surface. This defect includes the following crack types:</p> <p>Transverse Crack - unconnected crack running transversely across the pavement/slab.</p> <p>Longitudinal Crack - unconnected crack running longitudinally along the pavement; can occur singly or as a series of nearly parallel cracks.</p> <p>Block Crack - interconnected cracks forming a series of blocks approximately rectangular in shape, commonly distributed over the full pavement. Cell sizes are usually greater than 1m.</p> <p>Corner Crack - a crack extending diagonally from longitudinal edge to transverse joint.</p> <p>Diagonal Crack - unconnected crack diagonally across a pavement/slab</p> <p>Meandering Crack - unconnected irregular winding crack usually singular</p> <p>Reflection Cracks - cracks on asphalt mirrored from the unsealed concrete weakened plane joint</p>	l.m.	<p>Seal working cracks with asphalt sealant or pressurized concrete epoxy.</p> <p>For cracks on concrete, consider cross-stitching (Type 1: Staple tie bar or, Type 2 diagonal tie bar). See DO 4, s. 2006: Interim Guidelines for the maintenance and rehabilitation of unreinforced concrete roads.</p>	2 days
13 - Ravelling - progressive disintegration of the pavement surface by loss of both binder and aggregates	sq.m.	Removal/replacement or resealing of the affected road section or if a large area is affected, monitoring to the period of reconstruction	7 days
14 - Unmaintained Traffic Signages - broken, damaged, vandalized and dirty traffic signages, comprising of Regulatory Signs, Warning Signs and Information Signs	no.	Repair/replacement of broken /damaged or vandalized signages; cleaning of dirty signages	3 days
<p>15 - Unmaintained Bridges, refers to any of the following commonly noted defects:</p> <p>Clogged bridge deck water drain Accumulated sand, gravel, dirt and grass/weed on bridge deck Damaged expansion joint Damaged curbs, sidewalk, wingwall, railing</p> <p>No/faded bridge paint and bridge name Absence of warning sign (load limit) Obstruction on bridge waterway Scaling, spalling and cracking on bridge deck</p> <p>Note: It takes a minimum combination of two from the listed defects in order to classify a bridge as unmaintained.</p>	sq.m.	<p>Cleaning of bridge deck and water drain; repair damaged expansion joint, curbs, sidewalk, wingwall and railing; bridge painting / repainting; installation of signages and bridge name; and clearing of bridge waterway.</p> <p>Repair moderate to severe spalling, scaling and cracking by full or partial depth replacement (includes concrete decks with bituminous wearing surfaces)</p>	3 days

CALIBRATED SANCTIONS
(REWARD AND SANCTION MECHANISMS)

MECHANISMS FOR IMPOSITION OF SANCTION and ISSUANCE OF REWARD

5.1 Calibrated Sanction shall be imposed to Maintenance Point Persons, District Maintenance Engineers, Assistant District Engineers, District Engineers, and Regional Maintenance Engineers once total percentage points of a specific District Engineering Office, under the Point System for calculating sanctions, (*as indicated under Section 4 "Point System for the Imposition of Sanctions", Annex "1" of this Order*) is **lower than seventy-five percent (75%)**.

Attached under Annex "3-A" is an illustrative sample on how the point system works/is calculated.

Although the schedule of sanctions was patterned after the relevant provisions of the December 2011 Revised Rules on Administrative Cases in the Civil Service (RRACCS), the inclusion of an issuance of WARNING was inserted under this Order to provide the concerned officials the option/chance to further correct his actions. A repeat of the offensive action shall be covered by the Schedule of Penalties under the relevant provisions of the RRACS.

Sanction/Penalties shall be issued to either the Official who was reinstated after serving the suspension or to his replacement. If the official suspended is transferred during the pendency of his/her suspension, such suspension shall nonetheless still be in effect.

For sanctions/penalties involving SUSPENSION and DISMISSAL FROM THE SERVICE, due process in accordance with the applicable provisions of the RRACS shall be observed.

5.1a Maintenance Point Persons (MPPs)

1st Offense: WARNING shall be issued to MPPs who failed, based on the absence of the required documents showing specific sections where road defects/deficiencies are needing repair, to promptly report the same (within a reasonable time to effect response) to the District Maintenance Engineer and/or the Assistant District Engineer.

2nd Offense: SUSPENSION for one (1) month and one day, if a repeat of the above-mentioned offense was committed.

3rd Offense: SUSPENSION for a period of six (6) months, if another repeat of the above-mentioned offense was committed.

5.1b District Maintenance Engineer (DME)

1st Offense: WARNING shall be issued to the DME if the percentage points

obtained by the District Engineering Office during a rating period is lower than seventy-five percent (75%).

2nd Offense: SUSPENSION of six (6) months and one (1) day to one year if the percentage points of the District Engineering Office for two (2) consecutive rating periods is lower than seventy-five percent (75%).

3rd Offense: DISMISSAL from the Service if the percentage points of the District Engineering Office for four (4) consecutive rating periods is lower than seventy-five percent (75%).

5.1c **Assistant District Engineer (ADE) and District Engineer (DE)**

1st Offense: WARNING shall be issued to the ADE and the DE if the percentage points obtained by the District Engineering Office for two (2) consecutive rating periods is lower than seventy-five percent (75%).

2nd Offense: SUSPENSION of six (6) months and one (1) day to one year, if the percentage points of the District Engineering Office for three (3) consecutive rating periods is lower than seventy-five percent (75%).

3rd Offense: DISMISSAL from the Service if the percentage points of the District Engineering Office for four (4) consecutive rating periods is lower than seventy-five percent (75%).

5.1d **Regional Maintenance Engineer (RME)**

1st Offense: WARNING shall be issued to the RME if fifty percent (50%) of the District Engineering Offices MEs under the Regional Office's jurisdiction obtained a percentage points lower than seventy-five percent (75%) during a rating period.

2nd Offense: SUSPENSION of six (6) months and one day to one (1) year once fifty percent (50%) of the District Engineering Office under the Regional Office's jurisdiction obtained percentage points lower than seventy-five percent (75%) for two (2) consecutive rating periods.

3rd Offense: DISMISSAL from the Service once more than fifty percent (50%) of the District Engineering Offices under the Regional Office's jurisdiction obtained percentage points lower than seventy-five percent (75%) during four (4) consecutive rating periods.

The sanctions shall apply to those appointed and/or designated to the above positions, whether in a permanent or Officer-in-Charge status.

The Head of Office or the Appointing Authority shall assign a temporary/permanent replacement (Officer-in-Charge) whenever an official is suspended or dismissed.

5.2 Issuance of REWARD (*in the form of Citation for maintenance works well implemented/promptly executed*)

All the above-named personnel and officials shall each be issued a Citation if, for two (2) consecutive inspection/validation periods, their Office (DEO) got a total percentage point of **more than seventy-five percent (75%)**.

COMPUTATION (CRITERION 1)

Length of Asphalt Inspected (km):	<u>29.85 km</u>
Length of Concrete Inspected (km):	<u>217.09 km</u>
Total Length of Paved Road Inspected (km):	<u>246.94 km</u>
Date of Inspection:	<u>August 22 to 25, 2014</u>
Date of Validation:	<u>September 05 to 06, 2014</u>
Date of Justification Letter (by the DEO):	<u>November 07, 2014</u>

Criterion 1: Degree / Level of Maintenance of National Roads

Inspected (Ins): Quantity of Inspected Defects based from BOM-MPP-INS (Form PM-1)

Defect		Quantity of Defect		Defect	Quantity of Defect	
01		13.39	sqm	07	23,341.00	lm
02		16.56	sqm	08	6,342.98	lm
03		3,022.88	sqm	09	1,405.00	lm
04		No noted defects		10	1.00	pc/s
05		1,688.60	sqm	11	20,124.00	lm
06	E	87,538.02	lm	12	16,178.00	lm
	C	13,581.55	lm	13	8,000.00	sqm
	Y	470.00	lm	14	24.00	pc/s
	P	160.00	lm	15	3.00	no

From the total quantity of the noted defects indicated in BOM-MPP-INS (Form MP-1) and the entire length of paved roads inspected, the **Summary of Defects per Kilometer** will be derived as follows:

For Code 01, Code 06-E, 06-C 06-Y, 06-P, Code 07, Code 08, Code 09, Code 10, and Code 12

$$\text{Ins/Km, Inspected Defects per Kilometer} = \frac{\text{Ins: Quantity of Defects}}{\text{Total Length of Paved Roads}}$$

$$\begin{aligned} \text{For Code 01} &= \frac{13.39 \text{ sq.m}}{246.94 \text{ km}} \\ &= 0.0542 \text{ sq.m / km} \end{aligned}$$

$$\begin{aligned} \text{For Code 06-E} &= \frac{87538.02 \text{ sq.m}}{246.94 \text{ km}} \\ &= 354.4911 \text{ sq.m / km} \end{aligned}$$

$$\begin{aligned} \text{For Code 06-C} &= \frac{13581.55 \text{ sq.m}}{246.94 \text{ km}} \\ &= 46.9003 \text{ sq.m / km} \end{aligned}$$

$$\begin{aligned} \text{For Code 06-Y} &= \frac{470.00 \text{ sq.m}}{246.94 \text{ km}} \\ &= 1.9033 \text{ sq.m / km} \end{aligned}$$

For Code 02, Code 04, and Code 13

$$\text{Ins/Km} = \frac{\text{Ins: Quantity of Defects}}{\text{Total Length of Asphalt Roads}}$$

$$\begin{aligned}\text{For Code 02} &= \frac{16.56 \text{ sq.m}}{29.85 \text{ km}} \\ &= 0.5548 \text{ sq.m / km}\end{aligned}$$

$$\begin{aligned}\text{For Code 13} &= \frac{8000 \text{ sq.m}}{29.85 \text{ km}} \\ &= 268.0067 \text{ sq.m / km}\end{aligned}$$

For Code 03, Code 05, and Code 11

$$\text{Ins/Km} = \frac{\text{Ins: Quantity of Defects}}{\text{Total Length of Concrete Roads}}$$

$$\begin{aligned}\text{For Code 03} &= \frac{3022.88 \text{ sq.m}}{217.09 \text{ km}} \\ &= 13.9245 \text{ sq.m / km}\end{aligned}$$

$$\begin{aligned}\text{For Code 05} &= \frac{1688.60 \text{ sq.m}}{217.09 \text{ km}} \\ &= 6.5139 \text{ sq.m / km}\end{aligned}$$

$$\begin{aligned}\text{For Code 11} &= \frac{20124 \text{ l.m}}{217.09 \text{ km}} \\ &= 92.6988 \text{ l.m / km}\end{aligned}$$

For Code 14

$$\text{Ins/Km} = \text{No. of unmaintained road signages}$$

$$\text{For Code 14} = 24 \text{ pcs.}$$

For Code 15

$$\text{Ins/Km} = \frac{\text{Total number of Defective Bridges}}{\text{Total Number of Bridges}} \times 100 \%$$

$$\begin{aligned}\text{For Code 15} &= \frac{3}{22} \times 100 \% \\ &= 13.64 \%\end{aligned}$$

Note: The Inspected Defects per Kilometer will not be computed for codes with no noted defects/deficiencies.

Step 2: Ins. GRADE (%), Get the corresponding rating of Inspected Defects per Kilometer using Table 1.1

COMPUTATION (CRITERION 2)

Criterion 2: Quality and Quantity of Completed Rectification Works based on the Noted Defects

Step 1: Response time needed in the calculation will be computed by getting the difference of end date of inspection from the start of validation.

Response Time, RT = number of days between the end date of inspection and start of validation

RESPONSE TIME (1) = August 25 to September 05

RESPONSE TIME (1) = 10 days

Step 2: From the total quantity of each accomplished defect indicated in the BOM-MPP-VAL (Form MP-2), prepared by the concerned technical personnel from the BOM during the assessment period, will be the basis for getting the **Summary of Actual Output per day**.

Validated (VAL):Quantity of Rectified Defects based from BOM-MPP-VAL (Form MP-2)

Defect		Quantity of Defect		Defect	Quantity of Defect	
01		10.34	sqm	07	19,963.00	lm
02		8.23	sqm	08	3,405.00	lm
03		2,742.28	sqm	09	Rectified	lm
04		No noted defects		10	Rectified	pc/s
05		0.00	sqm	11	10,502.00	lm
06	E	3,770.00	lm	12	12,345.00	lm
	C	1,956.98	lm	13	2,450.00	sqm
	Y	Rectified	lm	14	Rectified	pc/s
	P	Rectified	lm	15	Rectified	pc/s

Computation:

$$\text{Actual Output per day (OUTPUT/DAY)} = \frac{\text{Val: Quantity of Defects}}{\text{Response Time (1)}}$$

$$\text{For Code 01} = \frac{10.34 \text{ sq.m}}{10 \text{ days}} = 1.034 \text{ sq.m / day}$$

$$\text{For Code 02} = \frac{8.23 \text{ sq.m}}{10 \text{ days}} = 0.823 \text{ sq.m / day}$$

$$\text{For Code 03} = \frac{2742.28 \text{ sq.m}}{10 \text{ days}} = 274.228 \text{ sq.m / day}$$

Same formula will apply for Code 04 to Code 15.

Note: The defect per day will not be computed for codes already 100% rectified upon validation. Likewise, this applies for codes with no noted defects/deficiencies during inspection.

Step 3: Time needed in the calculation will be computed by getting the difference of the issued date of justification letter from the end date of validation minus 5 days. Illustrative sample are as follows:

Response Time, RT = number of days between the end date of validation and start of validation – 5 days

(Holidays, Saturdays, Sundays and days with supporting documents such as PAGASA report will be deducted)

RESPONSE TIME (2) = September 06 to November 07

RESPONSE TIME (2) = 39 days

Step 4: From the Additional Acceptable Rectification Works (based on D.E.O's Justification Report), prepared by the concerned technical personnel from the BOM, the **Summary of Acceptable Rectified Defects per day** will be computed.

Justification (Jus): Additional Acceptable Rectification Works

Defect		Quantity of Defect		Defect	Quantity of Defect	
01		1.66	sqm	07	4,200.00	lm
02		8.33	sqm	08	2,937.98	lm
03		0.00	sqm	09	-	lm
04		-		10	-	pc/s
05		0.00	sqm	11	9,622.00	lm
06	E	2,000.00	lm	12	3,833.00	lm
	C	7,317.67	lm	13	5,550.00	sqm
	Y	-	lm	14	-	pc/s
	P	-	lm	15	-	pc/s

Computation:

$$\text{Acceptable Rectified Defects per Day (OUTPUT/DAY)} = \frac{\text{Jus: Quantity of Defects}}{\text{Response Time (2)}}$$

$$\text{For Code 01} = \frac{1.66 \text{ sq.m}}{39 \text{ days}} = 0.04 \text{ sq.m / day}$$

$$\text{For Code 02} = \frac{8.33 \text{ sq.m}}{39 \text{ days}} = 0.19 \text{ sq.m / day}$$

$$\text{For Code 03} = \frac{0}{39 \text{ days}} = 0$$

Same formula will apply for Code 04 to Code 15.

Note: *Additional Acceptable Rectified Defects per Day will not be computed for codes with no noted defect(s) during inspection, 100% Acceptable defect(s) upon justification, and codes with no needed justification.*

Step 5: Compute for the **Val GRADE and Jus GRADE**. Get the corresponding grades of the computed actual output per day and acceptable rectified defects per day using Table 1.2.

Step 6: Compute for the average rating of each criterion.

*Note: The corresponding rating of Code 06 is the **average** of 06-E, 06-Y, 06-C, and 06-P*

Ave. Rating for Criterion 1: Ins

$$= \frac{75+100+25+100+25+62.5+0+75+50+100+100+100+0+100+100}{15}$$

$$= 67.500\%$$

Ave. Rating for Criterion 2: Val

$$= \frac{0+0+100+100+0+100+25+0+100+100+100+100+75+100+100}{15}$$

$$= 66.67\%$$

Ave. Rating for Criterion 2: Jus

$$= \frac{0+100+0+100+0+81.25+0+100+100+100+100+100+100+100+100}{15}$$

$$= 72.07\%$$

Step 7: Compute the percentage weight for each criteria. The passing rating is 75%.

CRITERIA		RATING		PERCENTAGE WEIGHT
C1	Ins	67.500 %	x 0.60	40.5000
C2	Val	66.670 %	x 0.25	16.6675
	Jus	72.070 %	x 0.15	10.8105
FINAL RATING				67.9792 %

67.9792% < 75.00%, therefore the concerned D.E.O. will be issued appropriate sanction.

Step 8: The concerned D.E.O. will be issued appropriate sanction if they obtain a score lower than 75%.