Notification No. 29

Amendment No.2/IRC:83 (Part III)/December, 2019 (Effective from 1st February, 2020)

To

IRC:83 -2018 (Part III) "Standard Specifications and Code of Practice for Road Bridges, Section IX – Bearings, Part III: POT, PIN, Metallic Guide and Plane Sliding Bearings (First Revision)"

IRC Notification No.27 dated 4th November, 2019 regarding suspension of above Code has been withdrawn and further Amendment No.2 of IRC:83 (part III) notified effective from 1st February, 2020.

Sl. No.	Page No/Para No./Clause No	For	Read
1.	3 /4 (Scope)	High performance elastomeric pressure pad in combination with specific internal seal and sliding material (e.g. UHMWPE) can be used subjected to availability of approval document from international approving bodies like ETA, FHWA or similar acceptance by other leading international Specifications.	High performance elastomeric pressure pad in combination with specific internal seal and other sliding material can be used subject to availability of approval document from acceptable national / international approving authorities. .
2.	3/7 (Scope)	Sliding surfaces with a diameter of the circumscribing circle of single or multiple PTFE sheets or other approved sliding materials e.g. UHMWPE approved through ETA, FHWA or similar acceptance by other leading international Specifications, less than 75 mm or greater than 1500 mm, are outside the scope of this code. Sliding elements for use as temporary devices during construction, for example during launching of the superstructure, are also outside the scope of this code.	Sliding surfaces with a diameter of the circumscribing circle of single or multiple PTFE sheets or other sliding material (subject to availability of approval document from acceptable national / international approving authorities), less than 75 mm or greater than 1500 mm, are outside the scope of this code. Sliding elements for use as temporary devices during construction, for example during launching of the superstructure, are also outside the scope of this code.
3.	12/3.2.2	h = projection of PTFE/UHMWPE above the recessed portion	h = projection of sliding material above the recessed portion
4.	13/3.2.5	UHMWPE = Ultra High Molecular Weight Polyethylene	Delete line
5.	13/4.2	**Low Friction Thermo-Plastic Sliding Material (PTFE or UHMWPE)** The material shall be either polytetrafluoroethylene (PTFE) free sintered without regenerated material or Ultra High Molecular Weight Polyethylene (UHMWPE) having high material strength and low frictional properties. The pattern of dimples shall be as described in Fig. 4.1.	**Low Friction Thermo-Plastic Sliding Material (PTFE)** The material shall be either polytetrafluoroethylene (PTFE) free sintered without regenerated material or any other material having requisite material strength and low frictional properties. The pattern of dimples shall be as described in Fig. 4.1.
6.	14/4.2.2	Use of modified sliding material (UHMWPE) having frictional properties superior to that of PTFE combined with enhanced load bearing capacity and ability to provide high velocity displacement with longer service life can be considered for both horizontal and vertical sliding surfaces. Use of UHMWPE shall be subjected to availability of approval document from international approving bodies like ETA, FHWA or similar acceptance by other leading International Specifications, reference of its usage in the bearing.	Use of other sliding material having frictional properties superior to that of PTFE combined with enhanced load bearing capacity and ability to provide high velocity displacement with longer service life can be considered for both horizontal and vertical sliding surfaces subject to availability of approval document from aaceptable national / international approving authorities. .

<table>
<tr><th>Sl. No.</th><th>Page No/Para No./Clause No</th><th>For</th><th>Read</th></tr>
<tr><td>7.</td><td>24/NOTE 2</td><td>NOTE 2: Elastomeric pad including internal seal having higher characteristic contact strength ($f_{e,k)}$) may be used subjected to the availability of approved documents from International Approval bodies like ETA, FHWA or similar acceptance by other leading International Specifications, reference of its usage in the bearing application, satisfactory and proven test and performance records etc.</td><td>Delete Para</td></tr>
<tr><td>8.</td><td>25/5.2.4.1</td><td>Table 5.2 Sliding Surfaces
<table>
<tr><th colspan="2">Flat Sliding Surface</th><th colspan="2">Guides</th></tr>
<tr><td>PTFE (Unfilled and dimpled) / UHMWPE (Dimpled)</td><td>Stainless Steel (SS)</td><td>PTFE (Unfilled) / UHMWPE Composite Material (CM1)</td><td>Stainless Steel (SS)</td></tr>
</table></td><td>Table 5.2 Sliding Surfaces
<table>
<tr><th colspan="2">Flat Sliding Surface</th><th colspan="2">Guides</th></tr>
<tr><td>PTFE (Unfilled and dimpled) / other sliding material subject to availability of approval document from acceptable national / international approving authorities (Dimpled)</td><td>Stainless Steel (SS)</td><td>PTFE (Unfilled)/ other sliding material subject to availability of approval document from acceptable national / international approving authorities

Composite Material (CM1)</td><td>Stainless Steel (SS)</td></tr>
</table></td></tr>
<tr><td>9.</td><td>28/5.2.4.8</td><td>When UHMWPE is used as sliding material, relevant ETA / FHWA documents shall be referred to determine the parameters described in Clause 5.2.4.1 to 5.2.4.7.</td><td>When material other than PTFE is used as sliding material, relevant approval document from acceptable national / international approving authorities shall be referred to determine the parameters described in Clause 5.2.4.1 to 5.2.4.7.</td></tr>
<tr><td>10.</td><td>35/5.3.2.1</td><td>PTFE is commonly used as plane sliding element at the interface capable to cater for translational movements. UHMWPE (if supported by independent certification like ETA / FHWA / similar certifying authority) can also be provided as may be required. Sliding assemblies should not be used to accommodate rotation other than about an axis perpendicular to the plane of sliding. To accommodate rotation about an axis in the plane of sliding additional arrangement shall be provided e.g. sliding assemblies may be combined with other types of bearings like elastomeric bearings, metallic rocker bearings, Pot bearings etc.</td><td>PTFE is commonly used as plane sliding element at the interface capable to cater for translational movements. Other sliding element, (subject to availability of approval documents from acceptable national / international approving authorities can also be provided as may be required. Sliding assemblies should not be used to accommodate rotation other than about an axis perpendicular to the plane of sliding. To accommodate rotation about an axis in the plane of sliding additional arrangement shall be provided e.g. sliding assemblies may be combined with other types of bearings like elastomeric bearings, metallic rocker bearings, Pot bearings etc.</td></tr>
<tr><td>11.</td><td>35/5.3.2.3</td><td>Sliding assemblies shall preferably have the stainless steel sliding sheet positioned above the PTFE or UHMWPE, so that the sliding surfaces are kept clean.</td><td>Sliding assemblies shall have the stainless steel sliding sheet positioned above the PTFE or other material supported with approval document from acceptable national / international approving authorities so that the sliding surfaces are kept clean.</td></tr>
<tr><td>12.</td><td>35/5.3.2.4</td><td>Surfaces mating with PTFE or UHMWPE shall always be made of Stainless Steel. The mating Stainless Steel surface shall always overlap the PTFE or UHMWPE even when the extreme movement occurs.</td><td>Surfaces mating with sliding material shall always be made of Stainless Steel. The mating Stainless Steel surface shall always overlap the sliding material even when the extreme movement occurs.</td></tr>
</table>

Sl. No.	Page No/Para No./Clause No	For	Read
13.	35/5.3.2.5	Load distribution through the bearing components and the adjacent structures shall be calculated considering the effective contact area after one vertical to one horizontal (1V:1H) of dispersion from confined PTFE / UHMWPE sheets. Effect of eccentricities shall be applied as per **Annexure B.**	Load distribution through the bearing components and the adjacent structures shall be calculated considering the effective contact area after one vertical to one horizontal (1V:1H) of dispersion from confined sliding material sheets. Effect of eccentricities shall be applied as per **Annexure B**.
14.	38/5.3.5.1	Sliding surfaces for guides of pot bearings with sliding assemblies shall be made of stainless steel sliding on either confined PTFE or UHMWPE or Composite Material (CM1). The coefficient of friction at the sliding interface of guides shall be considered as per Table 5.5.	Sliding surfaces for guides of pot bearings with sliding assemblies shall be made of stainless steel sliding on either confined PTFE or other sliding material subject to availability of approval document from acceptable national / international approving authorities or Composite Material (CM1). The coefficient of friction at the sliding interface of guides shall be considered as per Table 5.5.
15.	41 / 3.3.6.3.1	In case of dynamically loaded structures where extreme load fluctuations can occur, e,g. railway bridges, structures in high seismic zones (Zone IV and V), contribution due to friction shall not be taken into consideration while designing the anchorage i.e. $\mu_k = 0$	While designing the Bearing anchorages for seismic forces, contribution due to friction shall not be taken into consideration i.e. $\mu_k = 0$
16.	41/5.3.6.4.2	$F_{Rdu} = D \times L \times f_{cd}/\sqrt{3}$ F_{Rdu} = resistance offered by concrete in ULS f_{cd} = Permissible direct compressive strength of concrete, calculated as: $f_{cd} = \frac{0.67 \times f_{ck}}{1.5}$	$F_{Rdu} = 1.33\ D \times L \times f_{cd}/\sqrt{3}$ F_{Rdu} = resistance offered by concrete in ULS f_{cd} = Design Value of compressive strength of concrete, calculated as: $f_{cd} = \frac{0.67 \times f_{ck}}{1.5}$
17.	44/6.2.3	PTFE/ UHMWPE shall be secured and confined in the recesses preferably by shrinking fit method only for confinement. Glue may be used for vertical surfaces e.g. Guide/Guide bearing. For large PTFE/ UHMWPE sheets subdivided into parts, each individual part shall be confined into separate recess.	Sliding material shall be secured and confined in the recesses preferably by shrink fit method only. Glue may be used for vertical surfaces e.g. Guide/ Guide bearing. For large sliding material sheets subdivided into parts, each individual part shall be confined into separate recess.
18.	60	M_{Rd} = Reduced bending resistance $= \frac{k_u^2 \times L_{eff} \times f'_y}{\gamma_m}$	M_{Rd} = Reduced bending resistance $= \frac{(k_u^2 \times L_{eff} \times f'_y)}{(4 \times \gamma_m)}$
19.	66/Annexure G UHMWPE	UHMWPE– Valid approval document from international approving bodies like ETA, FHWA or similar acceptance by other leading international Specifications in the name of Bearing Manufacturer-	For material other than PTFE, approval document from acceptable national /international approving authorities in the name of Bearing Manufacturer

Notification No. 30
Amendment No.2/IRC:83 (Part IV)/December, 2019 (Effective from 1st February, 2020)
To
IRC:83 -2014 (Part IV) "Standard Specifications and Code of Practice for Road bridges, Section IX–Bearings (Spherical and Cylindrical)" Part IV

IRC Notification No.27 dated 4th November, 2019 regarding suspension of above Code has been withdrawn and further Amendment No.2 of IRC:83 (part IV) notified effective from 1st February, 2020.

Sl. No.	Page No/ Para No./ Clause No	For	Read
1.	2/2 SCOPE	The provisions made in this code are based on an assumed working life of the Spherical Bearing upto 30 years with PTFE and of 50 years with UHMWPE.	Delete this sentence .
2.	5/3.1 Backing Plate	Steel Plates confining the low friction sliding material like PTFE/UHMWPE, etc.	Steel Plates confining the low friction sliding material.
3.	5/ Sliding Surface	PTFE or UHMWPE low friction thermoplastic material mounted on flat or curved backing plate providing low friction sliding to the mating surface.	A low friction thermoplastic material mounted on flat or curved backing plate providing low friction sliding to the mating surface.
4.	5/Approval Documents e.g. ETA,FHWA or similiar	**Approval Document e.g. ETA, FHWA or Similar** The special approval documents acceptable under this code shall be that from International reputed approving bodies having proven experience of research and Testing in the field of Structural Bearings and covering within the approval document all aspects incl. design, material, manufacturing, tolerances and acceptance. Isolated approvals or qualification of individual components separately that proposed to be used inside the Bearing shall not be treated as approval document referred in this specification.	**Approval Document** The special approval documents under this code shall be that from acceptable national / International approving authorities having proven experience of research and Testing in the field of Structural Bearings and covering within the approval document all aspects incl. design, material, manufacturing, tolerances and acceptance. Isolated approvals or qualification of individual components separately that proposed to be used inside the Bearing shall not be treated as approval document referred in this specification.
5.	6/3.2	B_s width of sliding surface (PTFE/UHMWPE/others) strip	B_s width of sliding surface strip
6.	6/3.2	f_k characteristic compressive strength of Sliding Surface (PTFE/UHMWPE)	f_k = characteristic compressive strength of Sliding material
7.	6/3.2	L_s Length of Sliding surface strip (PTFE/UHMWPE/ others)	L_s Length of Sliding surface strip
8.	7/3.2	u force free perimeter of PTFE/UHMWPE free to bulge	u force free perimeter of sliding surface free to bulge
9.	7/3.2	U UHMWPE (Ultra High Molecular Weight Polyethylene)	Delete Line
10.	8/3.2	UHMWPE Ultra High Molecular Weight Polyethylene	Delete Line
11.	8,9/4.2	**4.2 Low Friction Thermo-Plastic Sliding Material (PTFE or UHMWPE).** The material shall be either pure polytetrafluoroethylene (PTFE), free sintered, without regenerated materials and fillers or Ultra High Molecular Weight Polyethylene (UHMWPE) having high material strength and low frictional properties. The pattern of dimples shall be as described in **Annexure-A** "Properties of Low Friction Sliding Material". The sliding surface shall be recessed in the metal backing plate compulsorily.	**4.2 Low Friction Thermo-Plastic Sliding Material .** The material shall be pure polytetrafluoroethylene (PTFE), free sintered, without regenerated materials and fillers having requisite material strength and low frictional properties. The pattern of dimples shall be as described in **Annexure-A** "Properties of Low Friction Sliding Material". The sliding surface shall be recessed in the metal backing plate compulsorily.

<table>
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<tr><td></td><td></td><td>Use of Modified sliding material (UHMWPE) having frictional properties superior to that of PTFE combined with enhanced load bearing capacity and ability to provide high velocity displacement with longer service life can be considered for both Primary (flat or curved) and secondary (guides) sliding interfaces. However, this shall be subject to the availability of approval documents from International approving bodies like ETA, FHWA or similar, acceptance by other Leading International Specifications, references of its usage in the Bearings application, satisfactory and proven test and performance records etc.</td><td>Use of other material can be considered. However, this shall be subject to the availability of approval document from acceptable national / international approving authorities.</td></tr>
<tr><td>12.</td><td>9/4.3</td><td>The characteristic compressive strengths of PTFE/ UHMWPE are given in Table 1 and valid for effective bearing temperatures upto 30°C for PTFE and 35°C for UHMWPE. For bearings exposed to maximum effective bearing temperature in excess of above mentioned respective values, the aforementioned values shall be reduced by 2 percent per degree above 30^0C/35^0C in order to reduce creep effects of the PTFE/UHMWPE respectively.</td><td>The characteristic compressive strengths of PTFE are given in Table 1 and valid for effective bearing temperatures upto 30°C. For bearings exposed to maximum effective bearing temperature in excess of above mentioned respective values, the aforementioned values shall be reduced by 2 percent per degree above 30^0C in order to reduce creep effects of the PTFE. For other material, similar properties shall be mentioned in the approval documents from acceptable national / international approving authorities.</td></tr>
<tr><td>13.</td><td>9/4.3
Table 1</td><td>Compressive Strength (f_k) of Sliding Materials
<table>
<tr><th>Material</th><th>Application Condition</th><th>Loading Condition</th><th>f_k (MPa)</th></tr>
<tr><td rowspan="5">PTFE</td><td rowspan="4">Main Bearing Surface</td><td>Permanent and Variable Loads</td><td>90</td></tr>
<tr><td rowspan="3">Guides</td><td>Variable Loads</td><td>90</td></tr>
<tr><td>Temperature, Shrinkage and Creep</td><td>30</td></tr>
<tr><td>Permanent Loads</td><td>10</td></tr>
<tr><td rowspan="3">UHMWPE</td><td rowspan="2">Main Bearing Surface</td><td>Permanent and Variable Loads</td><td>180</td></tr>
<tr><td rowspan="2">Guides</td><td>Variable Loads</td><td>180</td></tr>
<tr><td>Permanent Loads, Effects of Temperature, Shrinkage and Creep</td><td>60</td></tr>
<tr><td>CM1</td><td>Guides</td><td>Permanent and Variable Loads</td><td>200</td></tr>
<tr><td>CM2</td><td>Guides</td><td>Permanent and Variable Loads</td><td>120</td></tr>
</table></td><td>Compressive Strength (f_k) of Sliding Materials
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<tr><td>Permanent Loads</td><td>10</td></tr>
<tr><td>CM1</td><td>Guides</td><td>Permanent and Variable Loads</td><td>200</td></tr>
<tr><td>CM2</td><td>Guides</td><td>Permanent and Variable Loads</td><td>200</td></tr>
</table></td></tr>
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<table>
<tr><th>Sl. No.</th><th>Page No/ Para No./ Clause No</th><th>For</th><th>Read</th></tr>
<tr><td>14</td><td>10/4.6</td><td>Table 2 Permissible Combination of Materials for Permanent Application as Sliding Interfaces for Spherical Bearings
<table>
<tr><th colspan="2">Plane Surface</th><th colspan="2">Curved Surface</th><th colspan="2">Guides</th></tr>
<tr><td rowspan="4">PTFE/ UHMWPE (dimpled)</td><td rowspan="4">Staniless Steel</td><td rowspan="4">PTFE/ UHMWPE (dimpled)</td><td>Stainless Steel</td><td>PTFE/ UHMWPE</td><td rowspan="4">Stainless Steel</td></tr>
<tr><td>Hard chromium plating</td><td rowspan="3">Composite Material (CM1 and CM2)</td></tr>
<tr><td>Aluminium Alloy*</td></tr>
</table>
* Use of Aluminum alloy is permitted as mating surface for curved sliding interface only. The alloy shall be Al-Mg6M or Al-Si7MgTF in accordance with the requirements of ISO 3522 or as covered in the special approval documents like ETA, FHWA or similar.</td><td>Table 2 Permissible Combination of Materials for Permanent Application as Sliding Interfaces for Spherical Bearings
<table>
<tr><th colspan="2">Plane Surface</th><th colspan="2">Curved Surface</th><th colspan="2">Guides</th></tr>
<tr><td rowspan="4">PTFE/ other sliding material (dimpled)</td><td rowspan="4">Staniless Steel</td><td rowspan="4">PTFE / other sliding material (dimpled)</td><td>Stainless Steel</td><td>PTFE / other sliding material</td><td rowspan="4">Stainless Steel</td></tr>
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<tr><td>15.</td><td>17/5.4.3.1</td><td>(b) Coefficient of friction for UHMWPE
For curved sliding interfaces combined with dimpled and lubricated UHMWPE sheets and stainless steel/ hard chromium plating, the coefficient of friction is determined as a function of the average pressure σ_{UHMWPE} [MPa] under maximum vertical load in ULS condition, as follows:
Notes:
i) For zones where the minimum effective bearing temperature doesn't fall below - 5°C, the co-efficient of friction values for PTFE and UHMWPE sliding surfaces as worked out from the above expressions may be reduced by 30 percent and 25 percent respectively.
ii) In case aluminium alloy used as mating surface for curved sliding interface, the stated limits and also the actual value worked out from the expression above in a) and b) shall be enhanced by a factor of 1.5.</td><td>(b) Coefficient of friction for other material
For curved sliding interfaces combined with dimpled and lubricated other material sheets and stainless steel / hard chromium plating, the co-efficient of friction is determined as a function of the average pressure under
maximum vertical load in ULS condition, as mentioned in the approval document from acceptable national / international approving authorities.
Notes:
i) For zones where the minimum effective bearing temperature doesn't fall below - 5°C, the co-efficient of friction values for PTFE sliding surface as worked out from the above expressions may be reduced by 30 percent.
ii) In case aluminium alloy used as mating surface for curved sliding interface, the stated limits and also the actual value worked out from the expression above in a) shall be enhanced by a factor of 1.5.</td></tr>
<tr><td>16.</td><td>18</td><td>Table 4 Co-efficient of Friction (μ_{fr}) for Secondary Sliding Surfaces
<table>
<tr><th>Application</th><th>Sliding Interface</th><th>(μ_{fr})</th></tr>
<tr><td rowspan="2">Guided Bearings</td><td>SS PTFE/UHMWPE</td><td>0.10</td></tr>
<tr><td>SS Composite Material (CM1/CM2)</td><td>0.20</td></tr>
<tr><td>Fixed Bearing</td><td>Steel Steel</td><td>0.20</td></tr>
</table></td><td>Table 4 Co-efficient of Friction (μ_{fr}) for Secondary Sliding Surfaces
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<tr><th>Application</th><th>Sliding Interface</th><th>(μ_{fr})</th></tr>
<tr><td rowspan="2">Guided Bearings</td><td>SS PTFE/other sliding material subject to availability of approval document from acceptable national / international approving authorities</td><td>0.10</td></tr>
<tr><td>SS Composite Material (CM1/CM2)</td><td>0.20</td></tr>
<tr><td>Fixed Bearing</td><td>Steel Steel</td><td>0.20</td></tr>
</table></td></tr>
<tr><td>17.</td><td>19/5.4.4</td><td>With the exception of guides, it shall be verified that the edge pressure "σ" over PTFE/UHMWPE ≥ 0

Also, the average pressure “σ” over PTFE/UHMWPE for
calculating “u_{max}” for eccentricity “e_1” shall be worked out using minimum vertical load ($N_{sk,min}$) in SLS condition.</td><td>With the exception of guides, it shall be verified that the edge pressure "σ" over PTFE / other sliding material subject to availability of approval document from acceptable national / international approving authorities ≥ 0

Also, the average pressure “σ” over sliding material for calculating “u_{max}” for eccentricity “e_1” shall be worked out using minimum vertical load ($N_{sk,min}$) in SLS condition.</td></tr>
</table>

Sl. No.	Page No/ Para No./ Clause No	For	Read
18	20/5.5.2	PTFE/UHMWPE strip dimension shall satisfy $V_{y,sd} \leq L_s \times B_s \times k \times f_k / \gamma_m$	Sliding material strip dimension shall satisfy $V_{y,sd} \leq L_s \times B_s \times k \times f_k / \gamma_m$
19.	21/5.5.6	L_S Length of Sliding surface (PTFE/UHMWPE/ Others) Strip in mm B_S Width of Sliding surface (PTFE/UHMWPE/ Others) Strip in mm	L_S Length of Sliding surface Strip in mm B_S Width of Sliding surface Strip in mm
20.	27/6.4	where, h Projection of PTFE/UHMWPE above the recessed portion u Perimeter of PTFE/UHMWPE free to bulge A_p Area of the sliding surface (PTFE/UHMWPE) in contact i.e. under load	where, h Projection of sliding material above the recessed portion u Perimeter of sliding material free to bulge A_p Area of the sliding surface in contact i.e. under load
21.	39/A.0	Properties of Low Friction Thermo-plastic Sliding Material (PTFE or UHMWPE)	Properties of Low Friction Thermo-plastic Sliding Material
22.	39/ Annexure A.1 Fig A.1	Fully molded sheets with cavities or dimples for lubrication shall be used for flat/curved sliding surfaces. The dimples shall be formed by hot pressing or molding and strictly not by machining or drilling. Where dimples are produced by hot pressing, the temperature during the pressing process shall not exceed 200°C for PTFE and 80 percent of the melting temperature in case of UHMWPE. The pattern of dimples shall be as shown in Fig. A.1 1. Main direction of sliding Fig. A.1 Pattern of Dimples in Recessed PTFE/ UHMWPE Sheet Note : The information for UHMWPE as given in this annexure and elsewhere in this code are the gist only and merely to serve as a information guide to the Design and Accepting Authorities about the availability of such materials as an option. The manufacture and use of UHMWPE material inside the Bearings may be governed by Patent Control Rights. The responsibility of acquiring such materials legally for use in the Bearing applications and if required, proving the license rights to use such materials within the offered product shall be solely of the supplier/manufacturer of Bearings.	Fully molded sheets with cavities or dimples for lubrication shall be used for flat/curved sliding surfaces. The dimples shall be strictly formed by hot pressing or molding and not by machining or drilling. Where dimples are produced by hot pressing, the temperature during the pressing process shall not exceed 200°C for PTFE and for other material, the temperature will be mentioned in the approval documents from acceptable national/international approving authorities. The pattern of dimples shall be as shown in Fig. A.1 Fig. A.1 Pattern of Dimples in Recessed PTFE / other material Sheet Deleted Deleted

Notification No. 31

Amendment No.2 /IRC:SP:73-2018 /December 2019 (Effective from the 1st February, 2020)
To
IRC:SP:73-2018 "Manual of Specifications & Standards for Two Laning of Highways with Paved Shoulder" ***(Second Revision)***

Clause No. (Page No.)	For	Read
5.4 (Page No. 47)	**5.4 Design Requirements for New Pavement Sections** **5.4.1** *Flexible Pavement - Design Period and Strategy* i) Flexible pavement shall be designed for a minimum design period of 15 years, subject to the condition that design traffic shall not be less than 20 msa. ii) Stage construction shall not be permitted.	**5.4 Design Requirements for New Pavement Sections** **5.4.1** *Flexible Pavement - Design Period and Strategy* i) Flexible pavement shall be designed for a design period of 20 years for National Highways, State Highways and Urban Roads. For other categories of roads, a design period of 15 years is recommended. Pavements for very high density corridors (more than 300 msa) and expressways shall preferably be designed as long-life pavements. Otherwise, for such corridors, the pavement shall be designed for a minimum period of 30 years. ii) Stage construction shall not be permitted.

Notification No. 32

Amendment No.1 /IRC:SP:84-2019 /December 2019 (Effective from the 1st February, 2020)
To
IRC:SP:84-2019 "Manual of Specifications & Standards for Four Laning of Highways"
(Second Revision)

Clause No. (Page No.)	For	Read
5.4 (Page No. 46)	**5.4 Design Requirements for New Pavement Sections** **5.4.1** *Flexible Pavement-Design Period and Strategy* i) Flexible pavement shall be designed for a minimum design period of 15 years, subject to the condition that design traffic shall not be less than 20 msa. ii) Stage construction shall not be permitted.	**5.4 Design Requirements for New Pavement Sections** **5.4.1** *Flexible Pavement - Design Period and Strategy* i) Flexible pavement shall be designed for a design period of 20 years for National Highways, State Highways and Urban Roads. For other categories of roads, a design period of 15 years is recommended. Pavements for very high density corridors (more than 300 msa) and expressways shall preferably be designed as long-life pavements. Otherwise, for such corridors, the pavement shall be designed for a minimum period of 30 years. ii) Stage construction shall not be permitted.

Notification No. 33

Amendment No.1 /IRC:SP:87-2019 /December 2019 (Effective from the 1st February, 2020)
To
IRC:SP:87-2019 "Manual of Specifications & Standards for Six Laning of Highways"
(Second Revision)

Clause No. (Page No.)	For	Read
5.4 (Page No. 42)	**5.4 Design Requirements for New Pavement Sections** **5.4.1** *Flexible Pavement-Design Period and Strategy* i) Flexible pavement shall be designed for a minimum design period of 15 years, subject to the condition that design traffic shall not be less than 20 msa. ii) Stage construction shall not be permitted.	**5.4 Design Requirements for New Pavement Sections** **5.4.1** *Flexible Pavement - Design Period and Strategy* i) Flexible pavement shall be designed for a design period of 20 years for National Highways, State Highways and Urban Roads. For other categories of roads, a design period of 15 years is recommended. Pavements for very high density corridors (more than 300 msa) and expressways shall preferably be designed as long-life pavements. Otherwise, for such corridors, the pavement shall be designed for a minimum period of 30 years. ii) Stage construction shall not be permitted.