



## **Slab Seal Expansion Joint**

### **TECHNICAL DATASHEET**

**SANDHYAFLEX Slab Seal Expansion Joint** is a high-performance bridge movement accommodation system designed to safely absorb expansion, contraction, rotation and dynamic movements occurring in bridges, flyovers, elevated corridors and other civil engineering structures. Manufactured using high-quality elastomeric compounds reinforced with steel sections and engineered anchorage systems, these joints are designed to provide excellent movement accommodation, watertight sealing, load distribution and long-term durability under continuous traffic loading and environmental exposure.

Designed to maintain structural continuity while allowing controlled movement between adjacent bridge sections, Sandhyaflex Slab Seal Expansion Joints provide reliable waterproofing, smooth vehicular movement and protection against water ingress, debris accumulation and premature structural deterioration. The system is widely used in highways, bridges, metro structures, railway bridges, viaducts, and infrastructure projects where dependable movement accommodation and structural protection are essential.

**SANDHYAFLEX INDIA PVT LTD** has established itself as a trusted manufacturer and supplier of quality bridge engineering products in India. Sandhyaflex Slab Seal Expansion Joints are engineered to deliver consistent performance, excellent dimensional stability, and superior resistance to fatigue, weathering, and dynamic loading conditions.

#### **Overcoming Challenges, Delivering Excellence:**

Bridge structures are continuously subjected to thermal expansion and contraction, traffic-induced vibrations, creep, shrinkage, seismic movements and environmental exposure. Without an efficient expansion joint system, these factors may lead to cracking, leakage, structural distress, corrosion of reinforcement and increased maintenance costs.

To address these challenges, SANDHYAFLEX Slab Seal Expansion Joints are manufactured using specially formulated elastomeric compounds reinforced with structural steel components. The system provides controlled movement accommodation, effective waterproof sealing and excellent resistance to wear, fatigue, impact loading, and environmental deterioration.

By delivering reliable movement accommodation and long service life, SANDHYAFLEX Slab Seal Expansion Joints have become a preferred choice for bridge engineers, infrastructure developers, highway authorities, and construction professionals.

#### **Key Features:**

- Manufactured from high-quality elastomeric compounds

- Reinforced construction for enhanced load-carrying capability
- Excellent movement accommodation performance
- Superior watertight sealing characteristics
- Smooth and safe vehicle riding surface
- High fatigue resistance under repeated traffic loading
- Excellent resistance to wear and abrasion
- Resistant to weathering, ozone, UV exposure, and moisture
- Suitable for moderate bridge movement requirements
- Reduces ingress of water, debris, and contaminants
- Easy installation and maintenance
- Available in various movement capacities and configurations
- Cost-effective and durable expansion joint solution
- Long service life under demanding operating conditions
- Reliable performance in infrastructure and transportation projects

### Applications:

- **Highway Bridges:** Accommodates thermal and traffic-induced movements.
- **Road Bridges:** Ensures structural continuity and waterproof protection.
- **Flyovers and Overpasses:** Provides smooth vehicular movement and durability.
- **Metro Rail Structures:** Suitable for elevated transportation infrastructure.
- **Railway Bridges:** Performs effectively under repeated dynamic loading.
- **Viaducts:** Accommodates structural movements between bridge spans.
- **Elevated Corridors:** Provides reliable movement accommodation and sealing.
- **Bridge Rehabilitation Projects:** Replacement and upgrading of existing joints.
- **Pedestrian Bridges:** Ensures safe movement and structural protection.
- **Airport Infrastructure:** Suitable for movement joints in transportation structures.
- **Industrial Structures:** Used where controlled movement accommodation is required.
- **Urban Infrastructure Projects:** Widely used in modern transportation developments.

## History of Slab Seal Expansion Joints:

- **Early 1900s** – Bridges utilized simple open gaps to accommodate limited movement.
- **1930s** – Steel plate expansion systems were introduced.
- **1950s** – Elastomer technology improved sealing and flexibility.
- **1960s** – Compression-type elastomeric joints gained acceptance.
- **1970s** – Development of slab seal systems improved ride quality and waterproofing.
- **1980s** – Improved elastomer formulations enhanced durability and fatigue resistance.
- **1990s** – Advanced steel reinforcement systems increased structural performance.
- **2000s** – Modern manufacturing processes improved dimensional accuracy and reliability.
- **2010s** – Enhanced elastomer compounds improved service life and environmental resistance.
- **2020s** – Modern Slab Seal Expansion Joints provide dependable movement accommodation, superior sealing performance, and reduced maintenance requirements for transportation infrastructure worldwide.

## Colours and Their Applications:

For Slab Seal Expansion Joints, colours are primarily used for product identification, project specifications, maintenance requirements, and customer-specific preferences. The movement accommodation capability, waterproofing performance, and structural reliability are governed by the elastomer compound formulation and reinforcement design rather than colour.

Colour	Typical Application
<b>Black</b>	Standard bridge and highway expansion joint applications
<b>Grey</b>	Urban infrastructure and architectural projects
<b>Red Oxide</b>	Protective-coated steel anchorage components
<b>Silver</b>	Galvanized steel assemblies and corrosion-protected components
<b>Blue</b>	Project-specific identification and infrastructure coding
<b>Yellow</b>	Safety marking and maintenance identification
<b>Custom Colours</b>	Available as per project specifications and customer requirements

## Materials:

The Sandhyaflex Slab Seal Expansion Joint shall be manufactured using high-quality elastomeric compounds and reinforcement components to provide superior movement accommodation, watertight sealing, load transfer capability, fatigue resistance, and long-term durability under continuous traffic loading and environmental exposure.

The system shall consist of elastomeric slab seals, structural steel anchorages, reinforcement members, fastening assemblies, and protective coatings manufactured from quality materials to ensure excellent structural performance, wear resistance, impact resistance, weather resistance, and operational reliability throughout its service life.

RAW MATERIALS OF PURE RUBBER SLAB SEAL EXPANSION JOINT BY SANDHYAFLEX				
S. No.	Raw Material	Image	Typical Grade / Example	Function / Purpose
1	Neoprene Rubber (CR)		<ul style="list-style-type: none"> <li>Neoprene (Polychloroprene)</li> <li>Grade: CR-244 / CR-232</li> <li>High elasticity &amp; resilience</li> </ul>	<ul style="list-style-type: none"> <li>Provides elasticity</li> <li>Movement accommodation</li> <li>Excellent weather &amp; ozone resistance</li> </ul>
2	Carbon Black (Reinforcing Filler)		<ul style="list-style-type: none"> <li>N330 / N550 / N660</li> <li>ASTM Grade</li> <li>High reinforcing grade</li> </ul>	<ul style="list-style-type: none"> <li>Improves tensile strength</li> <li>Enhances wear resistance</li> <li>Improves fatigue life</li> </ul>
3	Silica / Mineral Filler (Reinforcement)		<ul style="list-style-type: none"> <li>Precipitated Silica</li> <li>Calcium Carbonate</li> <li>High purity mineral filler</li> </ul>	<ul style="list-style-type: none"> <li>Improves mechanical strength</li> <li>Enhances dimensional stability</li> <li>Reduces cost</li> </ul>
4	Processing Oil (Plasticizer)		<ul style="list-style-type: none"> <li>Paraffinic Oil</li> <li>Aromatic Oil</li> <li>Rubber Process Oil</li> </ul>	<ul style="list-style-type: none"> <li>Improves processability</li> <li>Enhances flexibility</li> <li>Improves flow during manufacturing</li> </ul>
5	Antioxidant (Ageing Protector)		<ul style="list-style-type: none"> <li>6PPD / TMQ / IPPD</li> <li>High performance antioxidant</li> </ul>	<ul style="list-style-type: none"> <li>Protects from oxidation</li> <li>Enhances service life</li> <li>Reduces ageing &amp; cracking</li> </ul>
6	Antiozonant (Ozone Protector)		<ul style="list-style-type: none"> <li>Wax Based</li> <li>Amine Based</li> <li>High efficiency grade</li> </ul>	<ul style="list-style-type: none"> <li>Protects from ozone attack</li> <li>Prevents surface cracking</li> <li>Improves durability</li> </ul>
7	Vulcanizing Agent (Curing System)		<ul style="list-style-type: none"> <li>Sulphur</li> <li>Organic Peroxide</li> <li>High cure efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Provides cross-linking</li> <li>Improves strength &amp; elasticity</li> <li>Enhances durability</li> </ul>
8	Accelerator (Cure Accelerator)		<ul style="list-style-type: none"> <li>MBTS / CBS / TMTD</li> <li>High activity grade</li> </ul>	<ul style="list-style-type: none"> <li>Controls curing time</li> <li>Improves processing</li> <li>Ensures uniform vulcanization</li> </ul>
9	Zinc Oxide (Activator)		<ul style="list-style-type: none"> <li>Zinc Oxide</li> <li>High purity grade</li> </ul>	<ul style="list-style-type: none"> <li>Activates curing process</li> <li>Improves strength</li> <li>Enhances heat resistance</li> </ul>
10	Pigment (Optional) (Colouring Agent)		<ul style="list-style-type: none"> <li>Iron Oxide / Carbon Black</li> <li>Organic Pigments</li> <li>As per requirement</li> </ul>	<ul style="list-style-type: none"> <li>Provides colour</li> <li>Identification</li> <li>Enhanced appearance</li> </ul>



**PRODUCT DESCRIPTION**

Sandhyaflex Pure Rubber Slab Seal Expansion Joint is manufactured from high-quality elastomeric compounds without any steel reinforcement. It is designed to accommodate bridge movements, provide watertight sealing and offer smooth vehicular movement. These joints are suitable for bridges, flyovers, viaducts and other structures where moderate movements and reliable sealing performance are required.

**MANUFACTURING PROCESS**





100% PURE RUBBER CONSTRUCTION



EXCELLENT WATERTIGHT SEALING



HIGH ELASTICITY & MOVEMENT CAPACITY



WEATHER, OZONE & UV RESISTANT



LOW MAINTENANCE & LONG SERVICE LIFE



ECO-FRIENDLY & SUSTAINABLE

The components shall possess adequate resistance to moisture, water ingress, de-icing salts, abrasion, temperature variations, repeated traffic loading, UV exposure, ozone attack, and harsh atmospheric conditions. Protective coatings and corrosion-resistant treatments further enhance pure rubber service life and minimize maintenance requirements.

Manufactured from quality elastomeric and steel materials, Sandhyaflex Slab Seal Expansion Joints provide reliable movement accommodation, effective waterproof sealing, and long-term structural protection across a wide range of bridge and infrastructure applications.

## Physical and Mechanical Properties – Sandhyaflex Slab Seal Expansion

### Joint:

S. No.	Property / Test	Requirement
1	Product Type	Slab Seal Expansion Joint
2	Material Composition	Reinforced Elastomeric Slab with Steel Anchorage System
3	Colour	Black / Grey / Custom Colours
4	Joint Type	Elastomeric Slab Seal Joint
5	Shape	Linear Expansion Joint Assembly
6	Surface Finish	Smooth
7	Movement Accommodation	As per Design Requirements
8	Expansion Gap Range	Project Specific
9	Elastic Recovery	Excellent
10	Tensile Strength	High
11	Elongation at Break	High
12	Compression Resistance	Excellent
13	Fatigue Resistance	Excellent
14	Impact Resistance	High
15	Abrasion Resistance	Excellent
16	Wear Resistance	High
17	Water Resistance	Excellent
18	Moisture Resistance	Excellent
19	Weather Resistance	Excellent
20	UV Resistance	Excellent
21	Ozone Resistance	Excellent
22	Corrosion Resistance	Excellent
23	Temperature Resistance	Suitable for Extreme Climatic Conditions
24	Vibration Resistance	Excellent
25	Dimensional Stability	High
26	Watertight Performance	Excellent
27	Load Carrying Capacity	Suitable for Highway and Bridge Traffic Loads
28	Noise Reduction Performance	Good
29	Service Life	Long-Term Durable Performance
30	Typical Applications	Bridges, Flyovers, Viaducts, Metro Structures and Elevated Corridors
31	Country of Origin	Made in India
32	Availability	Standard and Custom Sizes Available
33	Maintenance Requirement	Low

Sr No.	Test	Unit	Specification and Testing Method	Specimens
1	Hardness	IRHD	IS: 3400 (Part II) Cl.5.1.2.2	4.0mm (min ) thickness of Test specimen
2	Tensile Strength	MPa	IS:3400 ( Part I)	Thick- 2.0 +.0.20mm
3	Elongation at Break	%	Table 1 Type -1	Width 6.0 + 0.40mm Bench Mark- 25..0mm(max)
4	Adhesion Strength (Metal to Rubber)	KN/M	IS:3400 ( Part XIV) Cl.3.3	Length -125mm Width-25mm  Width-25mm 1 g (min)
5	Ash Content	%	IS:3400 (Part XXII)	1 g (min)
6	Polymer Identification	Chemically	Cl. A-8.3.1 IS	0.5 g (min)
7	Percentage of Polymers	%	IS	1 g (min)
8	Compression Set	%	IS: 3400 (Part X) Cl. 5.1	Thick -12.5 + 0.50mm Dia-29 + 0.50mm

### Usage Tips:

- Select the appropriate slab seal joint size and movement capacity based on bridge span, expected thermal movement, traffic loading, and structural requirements.
- Ensure compatibility between the joint system, bridge deck geometry, anchorage details, and supporting structure.
- Verify that the expansion gap and movement range conform to approved design specifications and project requirements.
- Inspect elastomeric slabs, steel anchorages, fasteners, and reinforcement components before installation for damage, distortion, or manufacturing defects.
- Ensure accurate alignment, level adjustment, and anchorage positioning during installation to provide smooth vehicle movement and uniform load transfer.
- Use recommended fixing systems, grouting materials, and installation procedures specified by the design engineer.
- Keep the joint opening clean and free from debris, dust, and contaminants during installation.
- Avoid improper handling, excessive bending, impact loading, or deformation of elastomeric components during transportation and installation.
- Follow applicable IRC bridge engineering standards, project specifications, and safety procedures throughout installation.
- Installation should be carried out by qualified bridge engineers and trained technical personnel using suitable tools and equipment.

## Maintenance and Care:

Maintaining Sandhyaflex Slab Seal Expansion Joints helps ensure reliable long-term performance and structural safety.

- **Regular Inspection:** Periodically inspect elastomeric slabs, anchorage systems, fasteners, and adjacent concrete surfaces for wear, damage, cracking, deformation, or deterioration.
- **Keep Clean:** Remove accumulated dirt, debris, stones, and foreign materials from the joint area to maintain free movement and watertight performance.
- **Monitor Elastomer Condition:** Check for excessive wear, aging, tearing, hardening, or loss of elasticity and replace damaged components when necessary.
- **Inspect Steel Components:** Examine anchorages, fasteners, reinforcement elements, and steel assemblies for corrosion, loosening, or damage.
- **Maintain Drainage Systems:** Ensure adjacent drainage arrangements remain functional to prevent water accumulation and structural deterioration.
- **Prevent Impact Damage:** Avoid overloading, improper construction activities, or concentrated impacts that may damage the expansion joint assembly.
- **Protect Against Corrosion:** Maintain protective coatings and repair damaged surfaces where required.
- **Timely Replacement:** Replace worn or damaged components promptly to preserve bridge safety and serviceability.

## Applications by Countries:

### **India**

- Widely used in highway bridges, flyovers, metro structures, railway bridges, and elevated corridors.
- Commonly specified for moderate movement bridge applications and rehabilitation projects.
- Strong demand driven by expanding transportation infrastructure and bridge modernization programs.

### **China**

- Extensively used in bridge networks, expressways, urban transportation systems, and railway infrastructure.
- Preferred for reliable waterproofing and long-term durability.

- High adoption in large-scale infrastructure projects.

### **United States**

- Commonly installed in highway bridges, transportation structures, and bridge rehabilitation programs.
- Strong emphasis on durability, ride quality, and waterproof performance.
- Widely used in state and federal transportation projects.

### **Europe**

- Widely utilized in bridges, viaducts, railway structures, and urban infrastructure projects.
- Strong focus on structural reliability, noise reduction, and long-term performance.
- Preferred for compliance with stringent engineering standards.

### **Middle East**

- Applied in highways, flyovers, metro systems, and transportation infrastructure developments.
- Suitable for high-temperature environments and demanding climatic conditions.
- Growing demand from urban expansion and infrastructure investment.

### **Africa**

- Used in bridge construction, highway development, and transportation infrastructure projects.
- Increasing adoption due to expanding road networks and public infrastructure investment.
- Preferred for durability and low maintenance requirements.

### **Southeast Asia**

- Widely used in highways, flyovers, railway bridges, and urban transportation projects.
- Strong demand driven by rapid infrastructure development and urbanization.
- Suitable for tropical climates and high rainfall conditions.

### **Australia**

- Commonly installed in highway bridges, railway infrastructure, and transportation networks.
- Preferred for long-term durability under varying climatic conditions and traffic loads.
- Strong demand in bridge maintenance and infrastructure modernization programs.

## **Get in touch:**

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