Agrément Certificate 2016/510

Copyright © Agrément South Africa, March 2016

The master copy of this document appears on the website: http://www.agrement.co.za

Validity

Users of any Agrément certificate should check its status: all currently valid certificates are listed on the website. In addition, check whether the certificate is Active or Inactive.

The certificate holder is in possession of a confirmation certificate attesting to his status.

Subject:
Tensa Finger RSFD Bridge Deck Joint

Certificate holder:
mageba

Solistrasse 68, 8180 Bülach, Switzerland

Telephone: +41 44 872 4050

E-mail: mageba@mageba.ch

Quick guide

Description and use

Tensa Finger RSFD Bridge Deck Joint is a steel cantilever finger expansion joint suitable for light and heavy traffic loading, with movement range between 60 mm and 500 mm. It features noise reducing surfacing, due to the sinusoidal geometry of the interlocking fingers.

The certificate covers the use of Tensa Finger RSFD Bridge Deck Joint in all areas of South Africa. The joint is manufactured by mageba in Switzerland. It was assessed as being suitable for use in concrete bridge structures.

This certificate and Agrément South Africa's assessment apply only to Tensa Finger RSFD Bridge Deck Joints that are designed, manufactured and installed as described and illustrated in this certificate, and where the terms and conditions of certification are complied with.

P O Box 395 Pretoria 0001
Telephone 012 841 3708
Fax 012 841 2539
e-mail agrement@csir.co.za
http://www.agrement.co.za/

Design and dimensions of joints (concrete/asphalt connection)										
Type	Movement	L	LF	S	A	B	T	t_{min}	t_{max}	HA
RSFD-B 60	60	58	118	30	≥ 240	≥ 270	25	70	130	variable
RSFD-B 80	80	65	145	40	≥ 240	≥ 270	25	70	150	variable
RSFD-B 100	100	55	155	50	≥ 240	≥ 270	25	70	170	variable
RSFD-B 120	120	60	180	60	≥ 242	≥ 270	30	84	204	variable
RSFD-B 140	140	60	200	70	≥ 242	≥ 270	30	84	224	variable

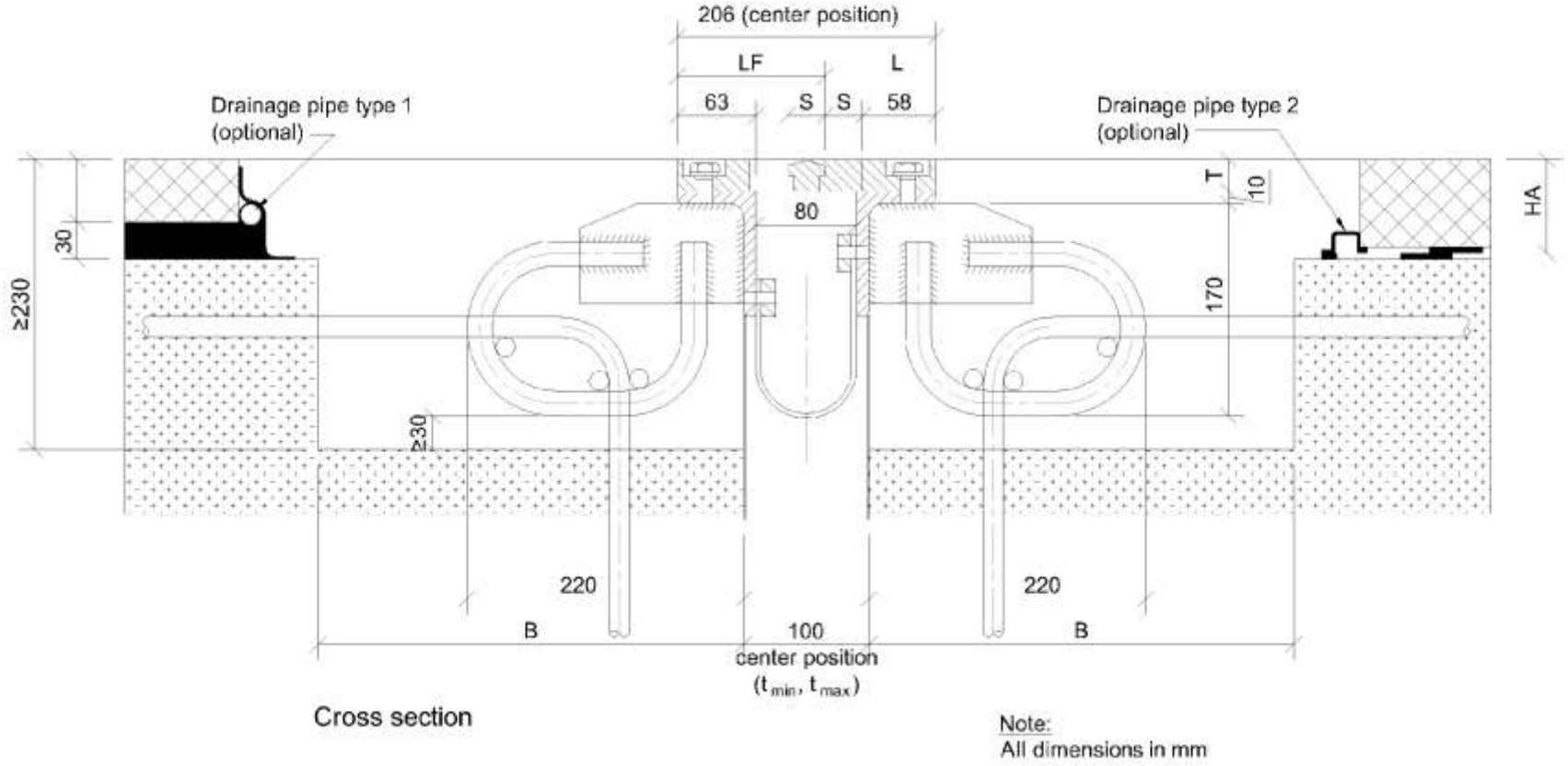

Figure 1: Typical dimensions and cross section for Tensa Finger expansion joints ranging from RSFD-B 60 to RSFD-B 140

Symbols	
L	length fingerplate support
LF	length fingerplate
S	overlap of fingerplates in centre position
A	min. recess height
B	min. recess length
T	Fingerplate thickness
$T_{min/max}$	$gap_{min/max}$
HA	height asphalt

Criteria for application of Tensa Finger RSFD Bridge Deck Joint

Tensa Finger RSFD Bridge Deck Joint is suitable for use on bridge deck joints where:

Movement range – *combination of contraction and expansion in the direction of movement*

- the maximum movement range is as follows:
  - 60 mm – 500 mm
- the reinforcement steel is installed at a spacing of 200 mm
- the ends of the finger elements are cut at an angle of 15° with a recess of 5mm
- the maximum vertical movement is 5 mm in order to maintain good rigid quality
- joints can be delivered prepared for connection to either asphalt or concrete
- where the transversal slope is 0%, the drainage channel uses a 1.5% slope (design of the EPDM channel)
- the traffic volume is either 60 km/h, 100km/h or 130 km/h
- the finger plates are stressed into position and the bolt holes are filled with high strength epoxy resin
- the cover plates are screwed at the edge profile of the deck side and slid onto the provided space of the edge profile on the abutment side
- the drainage channel is cleaned out as per the suggested construction method (once a year in urban environments)
- noise levels range between 78dB – 87dB depending on the traffic speed
- the difference between the level of the deck and the adjacent roadway must have a minimum tolerance of ≤5 mm

CONTENTS

PREAMBLE

This certificate is issued by Agrément South Africa in terms of the powers granted to it by the Minister of Public Works. This certificate:

- has been granted after a technical appraisal of the performance of Tensa Finger RSFD Bridge Deck Joint systems for the uses covered by the certificate
- is independent of any patent rights that may or may not subsist in the subject of the certificate and
- does not relieve the certificate holder from the obligation to obtain the prior approval of the building authority concerned for the use of the subject.

Agrément South Africa considers that the quality and performance of Tensa Finger RSFD Bridge Deck Joint will be satisfactory provided that the requirements stipulated in this certificate are adhered to. However, Agrément South Africa does not on behalf of itself, or the State, or any of its employees or agents guarantee such quality or performance.

Where required, guarantees for the product must be agreed between the client and the certificate holder.

Responsibility for the proper exercise of the quality system and compliance with the requirements of this certificate resides with the certificate holder.

No action for damages, or any other claim whatsoever, lies against Agrément South Africa, its members, the State or any of its employees should the said components and materials fail to comply with the standard set out in this certificate.

Building authorities or users who are in any doubt about any detail or variation, should contact Agrément South Africa.

The validity of this certificate is reviewed every three years. The certificate shall remain valid as long as Agrément South Africa is satisfied that:

- the certificate holder complies with the general and specific conditions of certification and the technical requirements stipulated in the certificate
- the performance-in-use of the subject is acceptable, and
- any changes in relevant standards or Agrément criteria have not invalidated the technical assessment which formed the basis of certification.

Agrément South Africa reserves the right to withdraw the certificate at any time, should reasonable cause exist.

Notices affecting the validity of this certificate will be published in the *Government Gazette*.

PART 1: CONDITIONS OF CERTIFICATION

Licensee - any person or company appointed by the certificate holder and registered with Agrément South Africa to manufacture and install Tensa Finger RSFD Bridge Deck Joint in accordance with this certificate and authorized to claim compliance with the certificate. It is the certificate holder's responsibility to ensure that the licensee carries out the work in compliance with this certificate and in accordance with the approved quality system.

This certificate covers only Tensa Finger RSFD Bridge Deck Joints that comply strictly with:

- the description set out in Part 3 of this certificate
- the certificate holder's installation manual or specifications
- the specifications and quality system of mageba and are installed by the certificate holder or a licensee appointed and trained by the certificate holder and registered as such with Agrément South Africa
- the anchorage length and size of reinforcement bars are designed as per engineer's specifications
- the Conditions of Certification.

Any change to any one aspect of Tensa Finger RSFD Bridge Deck Joints as set out in this certificate and the certificate holder's manual could result in various aspects of the performance of this product no longer complying with Agrément South Africa's performance criteria. Any change not authorised by Agrément South Africa in writing prior to its implementation will invalidate this certificate.

SANS 17050-1: Conformity assessment-Supplier's declaration of conformity Part 1: General requirements.

SANS 17050-2: Conformity assessment-Supplier's declaration of conformity Part 2: Supporting documentation.

Mageba shall be responsible for the accuracy of the information contained within the Material Data Sheets, Technical Data Sheets and Material Performance Specifications, and all other information pertaining to the supply and installation of Tensa Finger RSFD Bridge Deck Joints. Mageba shall submit a COA (Certificate of Analysis) and COC (Certificate of Compliance) in terms of the requirements stipulated in **SANS 17050-1** Suppliers declaration of conformity when requested by Agrément South Africa in accordance with the documentation requirements of **SANS 17050-2**. Should mageba change or substitute any ingredient in the formulation of the product in question, then a notification shall be addressed to Agrément South Africa immediately.

General conditions

Tensa Finger RSFD Bridge Deck Joint

Tested and approved fit for purpose when constructed as specified in

CERTIFICATE 2016/510

AGRÉMENT SOUTH AFRICA
innovative construction product assessments

Marking

All joints are delivered with a mageba type plate including the Agrément South Africa identification logo.

Validity

The continued validity of this certificate is subject to a satisfactory review by Agrément South Africa every three years.

Quality monitoring

The certificate holder is required to participate in Agrément South Africa's post-certification quality management system, which requires:

- that the certificate holder shall continue to implement and manage the quality management system approved by Agrément

South Africa in the assessment of Tensa Finger RSFD Bridge Deck Joint

- the co-operation of the certificate holder in facilitating post-certification quality monitoring by Agrément South Africa or its authorised agents.

Reappraisal

- must be requested by the certificate holder before making changes to the bridge deck joint
- will be required by Agrément South Africa if there are changes to Agrément criteria or if deemed necessary for any other reason.

This certificate may be withdrawn if the certificate holder or a registered licensee fails to comply with these requirements.

On behalf of the Board of Agrément South Africa

Signed

Chairperson
March 2016

PART 2: ASSESSMENT

Steyn, Silbernagl and Nordengen. *Guidelines for the evaluation of bridge deck joints*. CSIR Transportek, July 2001

Scope of assessment

The assessment is based on *Guidelines for the evaluation of bridge deck joints* adopted by Agrément South Africa, as applicable to cantilever finger expansion joints. The joint has been assessed as an integral part of a bridge deck structure and road surface, as described and illustrated in this certificate. Aspects of the bridge deck or road surface affected by the installation or performance of this joint, where applicable, have also been assessed.

Assessment

In the opinion of Agrément South Africa, when the materials, manufacture and installation of Tensa Finger RSFD Bridge Deck Joint comply with all the requirements of this certificate, they are suitable for the uses specified.

Agrément South Africa's detailed comments on the assessment and the various aspects of performance of Tensa Finger RSFD Bridge Deck Joint are set out in Table 1 below. Each aspect of performance was assessed by experts in that field.

Table 1: Assessment

Aspects of performance	Opinion of Agrément South Africa	Explanatory notes
Maintenance plan	Satisfactory.	Mageba's maintenance plan for Tensa Finger Bridge Deck Joint is satisfactory and the specified inspection/maintenance interval of at least once every two years including a detailed inspection every five years is considered adequate.
Movement range	Satisfactory.	Tensa Finger Bridge Deck Joints have been assessed as fit-for- purpose for applications where: • the movement range in the direction of movement of the bridge structure is not greater than 500 mm, and • the ends of the finger elements are cut at an angle of 15° with a recess of 4mm. Vertical movements at the joint are not considered critical but a maximum of 5 mm is recommended.
Strength	Satisfactory.	Dynamic tests were conducted on the Tensa Finger RSFD Bridge Deck Joint according to RVS 15.45.
Fatigue	Satisfactory.	Calculations and performance in use indicate that the fatigue resistance of all components of the joint are acceptable.
Durability and environmental resistance	Satisfactory.	Based on knowledge of the materials used in the manufacture of the joints and the in-service performance, the useful service life of the Tensa Finger Bridge Deck Joint is assessed as being not less than 20 years.
Water tightness	Satisfactory.	When manufactured and installed as specified, and when tested as described below, the joints will be within acceptable limits of permeability.
Practicality of installation	Satisfactory.	Observations of installations in progress indicate that with proper training, supervision of staff and availability and use of appropriate equipment, the joints are easily and successfully installed.
Quality management system	Satisfactory.	The certificate holder's quality management system complies with Agrément South Africa's quality management system requirements. If properly applied, it will ensure that quality in manufacture and erection of Tensa Finger RSFD Bridge Deck Joint will be maintained consistently. Agrément South Africa's requirements are based on **SANS/ISO 9001.** **SANS/ISO 9001:** *Quality management systems – Requirements.*

PART 3: TECHNICAL DESCRIPTION

General description

Tensa Finger RSFD Bridge Deck Joint is a steel cantilever finger expansion joint suitable for light and heavy traffic loading, with movement range between 60 mm and 500 mm. It is designed for connection to asphalt or concrete and features noise reducing surfacing, due to the sinusoidal geometry of the interlocking fingers.

Tensa Finger RSFD Bridge Deck Joint makes use of conventional anchoring and double-sided sealing connection flanges. The joint is designed to facilitate longitudinal movements of one structure relative to the other and vertical movements up to 5 mm of one structure relative to the other.

The individual finger elements are pre-tensioned into the sub-structure using a double row of hot-dipped galvanized M12 to M24 (depending on finger element size) hexagon head screws (pre-tensioned according to the plans) after which the bolts holes are filled with epoxy.

The ends of the finger elements are cut at an angle of 15°, resulting in a recess of 5 mm. This reduces the risk of the finger elements projecting dangerously into the driving surface as a result of deck rotation or substructures that subside.

The expansion joint is anchored to the bridge along the edges of the joint by a strong edge profile with tested anchors.

Water tightness of the joint is provided by a 5 mm thick flexible EPDM drainage channel. This is installed along the whole length of the expansion joint beneath the finger plates, and is attached watertight on both sides to the drainage channel attachments fixed to the chrome-steel underhanging clamp device. Water tightness between the chrome-steel clamp device and the drainage channel attachment can additionally be ensured by an anti-corrosion sealing compound (Tectyl).

The steel, traffic-bearing surface can be provided with a durable rhombic structure with machined grooves 2 mm deep and 16 mm wide. Alternatively, the expansion joint can also be surfaced with a special non-slip coating.

Manufacture

Tensa Finger RSFD Bridge Deck Joints are manufactured by mageba in Switzerland. Mageba is the sole manufacturer and supplier of the expansion joint.

The joints are internationally manufactured in one of the following mageba-owned production places: Austria, China, Germany, Hungary, India, Slovakia, Switzerland or Turkey.

SANS 1431: *Weldable structural steel*

All steel construction is manufactured from **S235 JRG2** / **S355 J2** steel that meets the requirements of **SANS 1431**.

Handling, transportation and storage

Handling

The expansion joint shall be delivered with appropriate transportation and installation beams, and suitable protection to ensure the safe transportation and as-new condition of the joint until it is installed.

Transportation

The expansion joints are fitted with steel plates on the surface which determine the pre-setting of the joints. If the joint has been pre-fitted with drainage plates beneath, it may have been delivered on standing frames to support until time of installation, at which point they must be removed.

NB. In case of any doubt, mageba should be contacted to ensure correct and safe lifting of the joint.

Storage

If the expansion joint is not to be installed directly after unloading at the installation site, it should be stored on a flat surface in a dry area and evenly supported, in order to avoid stresses and torsions.

When storing over a longer period, the whole expansion joint should be covered with suitable canvas covers to protect the joint from the environment and damage. However, attention should be paid to ensure sufficient ventilation, in order to avoid condensation from air humidity, and corrosion of exposed surfaces.

Design guidelines

Anti-corrosion protection for steel parts

Only mild steel with a suitable corrosion protection system shall be used for the joints (no weathering steel shall be used). The following corrosion protection shall be applied:

- primer coat – Section 9-08. 1(2)C
- intermediate coat – Section 9-08. 1(2)G
- top coat – Section 9-08. 1(2)H.

The dry film thickness for the primer coat shall not be less than 80 µm (3.15 mils) nor greater than the paint manufacturer's maximum recommended thickness.

The minimum dry film thickness for the intermediate coat shall be 80 µm (3.15 mils).

The minimum dry film thickness for the top coat shall be 80 µm (3.15 mils).

EN ISO 12944: *Paints & varnishes – corrosion protection of steel structures by protective paint systems (Parts 1-8) (1998).*

The client has the option of using one of the following mageba standard anti-corrosion methods in accordance with **EN ISO 12944**:

Category	**Total minimum layer thickness**
C3	160 µm
C4	240 µm
C5-M	320 µm

Anchoring

The cantilever joints are constructed with standard Mageba anchoring.

Design of flush nozzles

The flush nozzles are attached to the outside ends of an expansion joint and are fixed directly to the underhanging sheet, allowing the drainage channel to be cleaned easily and effectively. The use of flush nozzles is not mandatory.

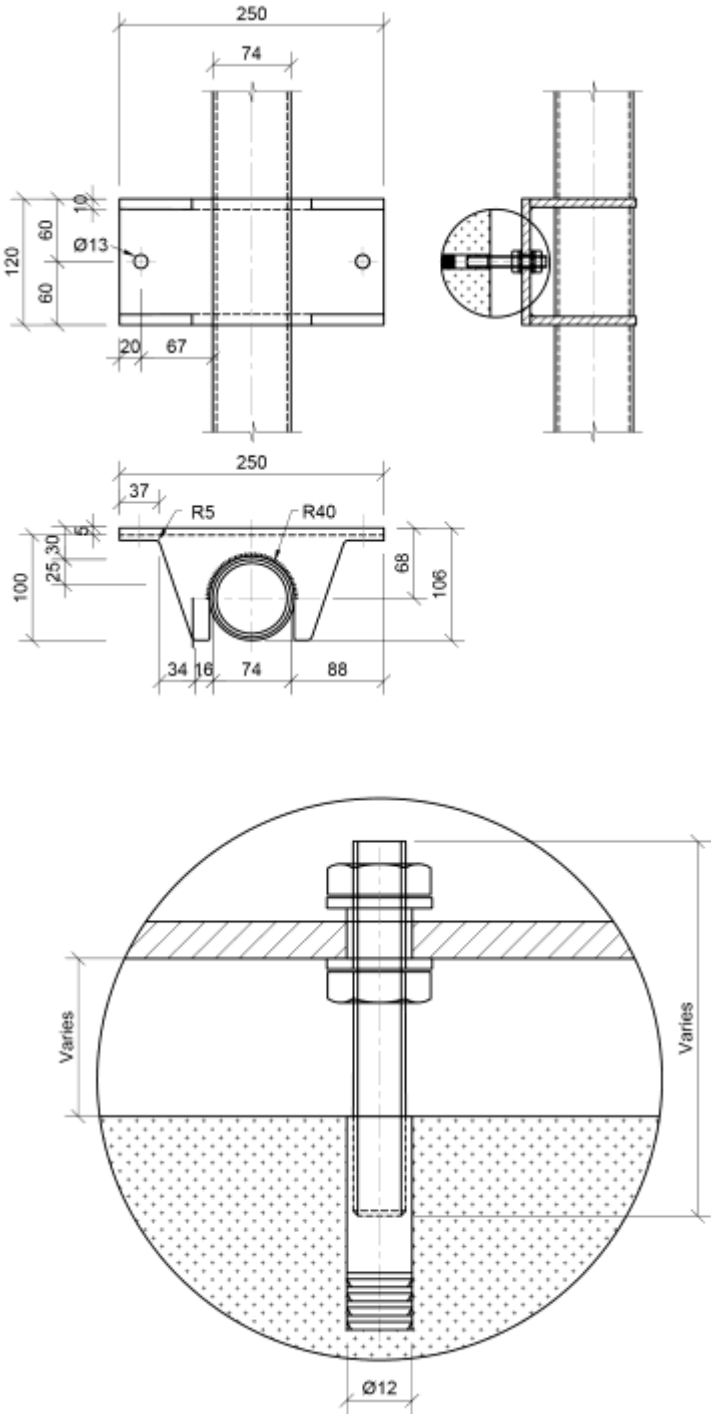

Image 1 – Design of flush nozzles

Design of drainage channels

Optimal water tightness is guaranteed by fastening the PVC drainage channel on both sides to the steel drainage channel attachments. Flexible EPDM rain channels have a comparatively high mass which provides additional and effective noise reduction below the joint.

The drainage channel can be replaced quickly and easily at any time as a result of the suggested construction method.

Drainage is either via a run-off tube located at a lowest point or via a gutter and down-pipe attached to the edge of the bridge.

The drainage channel can be flushed from above on a regular basis by use of aforementioned flush nozzle or by hosing between the fingers.

Design of section joints

Section joints are performed as suggested in the specifications.

Connecting point for waterproofing/coating

The bridge sealing layer can be attached to both sides of the finger expansion joint using specially attached angle profiles. This guarantees a watertight connection to the expansion joint at all times.

Movement

All expansion joints must facilitate the project specified movement, in the most unfavorable combinations possible. The full specified longitudinal movements must be facilitated by the joint.

Design and dimensions of joints (concrete/asphalt connection)

	Units	RSFD-B 60	RSFD-B 80	RSFD-B 100	RSFD-B 120	RSFD-B 140	RSFD-B 160	RSFD-B 180
Movement	mm	60	80	100	120	140	160	180
L	mm	58	65	55	60	60	75	75
LF	mm	118	145	155	180	200	235	235
S	mm	30	40	50	60	70	80	90
A	mm	≥240	≥240	≥240	≥242	≥242	≥250	≥284
B	mm	≥270	≥270	≥270	≥270	≥270	≥270	≥305
T	mm	25	25	25	30	30	35	40
t_{min}	mm	70	70	70	84	84	88	108
t_{max}	mm	130	150	170	204	224	248	288
HA	mm	variable	variable	variable	variable	variable	variable	variable
Weight	kg/m	75	82	93	102	120	143	176

	Units	RSFD-B 200	RSFD-B 250	RSFD-B 300	RSFD-B 350	RSFD-B 400	RSFD-B 450	RSFD-B 500
Movement	mm	200	250	300	350	400	450	500
L	mm	77	85	85	100	100	105	115
LF	mm	277	335	385	450	500	555	615
S	mm	100	125	150	175	200	225	250
A	mm	≥284	≥296	≥306	≥320	≥325	≥335	≥350
B	mm	≥305	≥305	≥305	≥305	≥305	≥318	≥368
T	mm	40	50	60	70	80	85	90

t_{min}	mm	102	132	142	190	240	174	144
t_{max}	mm	302	182	442	540	640	624	644
HA	mm	variable	variable	variable	variable	variable	variable	variable
Weight	kg/m	203	250	290	328	382	443	504

Installation

Preparation of the joint gap (recess)

The recess (or blockout) at each side of the bridge gap must be checked to ensure it suits the size and shape of the expansion joint, and adapted if necessary. It is advantageous to check the following items in order to avoid difficulties with setting out the expansion joint:

- check the rough dimensions of the recess
- check the geodetic points/levels
- check the transverse and longitudinal inclination
- check that the bridge gap is as anticipated (that the distance between the bridge and the abutment or between the bridge sections is as planned)
- check that the reinforcement in the recess is according to drawings. As a rule, the reinforcement steel is installed at a spacing of 200 mm, but this may vary. Missing reinforcement should be replaced by rods drilled to a suitable depth and bonded to secure.

Reinforcement that interferes with the installation of the expansion joint must be bent away sufficiently to make space. Large reinforcing bars should preferably be heated before bending in order to avoid breaking or decrease in ductile limit values.

NB. Reinforcement may only be removed or impacted in consultation with the responsible bridge engineer.

The recess must be thoroughly cleaned. If required, the surface must be roughened by picking in order to ensure proper bonding of the fresh concrete. All loose material must be removed, e.g. using compressed air.

Adjustment of pre-setting

The pre-setting value of the joint must be determined first by the responsible bridge engineer in order to:

- ensure that the expansion joint, when installed, will fit into the bridge gap correctly (with steel plates of the drainage channel making contact, without being bent or forced) with the concrete of the bridge deck at each side; and
- ensure that the installed joint will facilitate the full range of opening and closing movements of the bridge gap.

The joint must be adjusted to the required pre-setting dimension by mageba specialists. This can be done directly in any mageba workshop prior to shipment or on-site under supervision of a mageba installation supervisor. Transportation fixings must also be considered, and must be adapted or removed either prior to or during installation.

Positioning of the expansion joint

Level marks must be set next to the recess by the installation engineer to enable a controlled levelling of the expansion joint. Before lifting the joint into position, ensure that the expansion joint will fit into the recess as planned, and that shuttering will be suitable or can be placed.

Beams can be placed across the joint in order to support it (welded via connecting steel to the pre-setting plates on top of the joint).

The joint is then lifted into the blockout, ensuring that it is in the correct location and will not have to be moved horizontally. Jacks or steel winches beneath the ends of each support beam are used to adjust the joint to ensure that it will have the correct level, and will have the same inclines in longitudinal and transverse directions, as the final road surfacing at each side of the joint, to ensure a smooth ride for traffic.

The surface of the joint must remain flat (in a single plane), right across the joint, and the fingers of each side must be parallel to the fingers of the opposite side in vertical and horizontal planes.

The bridge reinforcement is connected using anchor loops of the joint starting with the side of the joint where less longitudinal movement is expected. The pre-setting of the joint is then checked for the last time. Depending on the size of the expansion joint and the expected movement during installation, the most suitable time for fixing of the second (opposite) side must be determined. This normally takes place in the early morning when the smallest temperature deviations are generally experienced. The joint is then provisionally fixed to the reinforcement at the second side. At the same time, the bolts at one end of each pre-setting plate on top of the joint must be loosened to allow the bolts to slide along the slotted holes of the pre-setting plates, to ensure that no constraint forces build up if the bridge deck moves.

When drainage is present, the shuttering/vertical steel sheets of the drainage must remain stable while concrete is poured against them and vibrated. After recording of the correct positioning of the joint the concrete is poured (with suitable consistency and flowability), ensuring that it completely fills the void beneath the joint. The recess should first be watered to prevent too much water being lost from the fresh concrete; however no standing water should remain. The quality of the concrete must be a minimum of 35N/mm^2 (at least concrete quality C30/37 or equivalent) and should be compacted/vibrated and cured as appropriate.

Wearing course (road surfacing)

If applicable (expansion joint with asphalt connection), the bridge's isolation membrane is glued to the horizontal flange of each edge profile prior to application of the wearing course (asphalt etc).

Where the surface is asphalt, the surface must be 1-3 mm higher than the expansion joint's top level. The surfacing adjacent to the joint must be particularly flat and even in the area of any cover plates for pedestrians or cyclists, as the cover plates will slide on the road surface at one side of the joint in this area. At this side of the joint (at the end of the joint where the cover plate will be connected) the surfacing must be placed so that it is flat and even, with no holes or recesses, in a plane which is obtained by extrapolating the surface plane of the finger plates of the expansion joint away from the joint, for an appropriate distance (depending on the dimensions of the cover plates and movement of joint). The distance must extend as far as the cover plate is liable to extend over the surfacing, even when the joint is fully closed. The tolerance for this levelness is ±1 mm.

Installation options

- Installation of joint prior to placing of wearing course on bridge (in case of asphalt connection):
    - The expansion joint is installed.
    - The joint is precisely positioned and levelled to the proposed level of wearing course.
    - The joint is connected to the reinforcement through the process of welding.
    - Concrete is placed in the recess.
    - A waterproofing membrane and wearing course is applied.
- Installation of joint after placing of wearing course (if programme demands):
    - The bridge gap in the recess is covered.
    - The recess is filled with compact (wet) sand.
    - A continuous wearing course layer is placed right across the joint location.
    - The wearing course paving is cut and removed from the recess. The sand filling material is removed from the recess.
    - The expansion joint is precisely positioned and levelled to the actual level of wearing course.
    - The joint is connected to the reinforcement through the process of welding.
    - Concrete is placed in the recess.
    - A waterproofing membrane and wearing course is applied.
- Placing concrete to road surface in area of joint (in case of concrete connection):

- The expansion joint is installed.
- The expansion joint is precisely positioned and levelled to the correct height.
- The joint is connected to the reinforcement through the process of welding.
- The concrete is placed up to the top edge of the edge profile, providing a trafficable surface.

Placing of cover plates for pedestrians or cyclists

If cover plates for pedestrians or cyclists were delivered loose, these must be positioned and secured to the joint using the pre-drilled holes in the specifically designed edge profile at the concerned section. The cover plate will then slide across the bridge gap at the other side of the joint, and on the road surfacing beyond the end of the joint. Alternatively, the edge profile can be provided with a horizontal steel sheet accommodating the sliding movement.

Therefore it is essential that the road surfacing in the area of the cover plate, beyond the edge of the expansion joint, must be flat and even. Specific sliding pads installed on the lower side of cover plates allow an almost wear-free sliding. When the cover plate has been installed, it must be flat and evenly supported, without any bends or torsion stresses, and should be the case when the joint is open to any degree or fully closed.

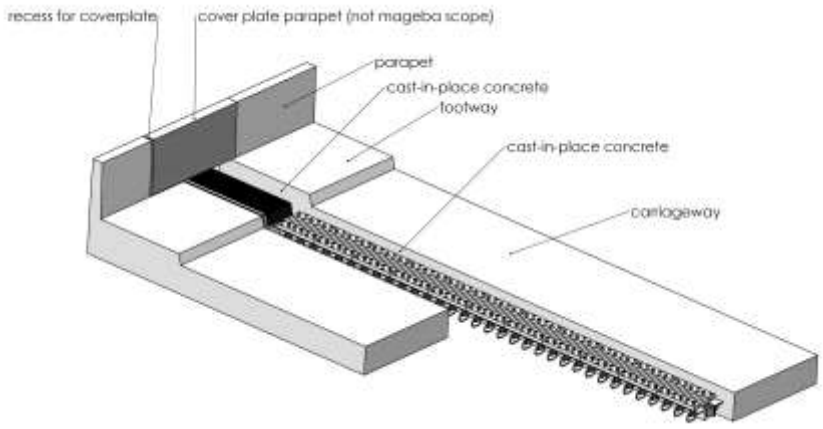

Image 2 – Axonometric view of cover plate

Repair of damage to corrosion protection

The condition of the corrosion protection must be checked carefully after installation. Parts and elements not covered (and thus not protected from corrosion) by concrete should be corrosion protected in accordance with the design drawing.

- Superficial damages: Grinding of damaged area with a fine grinding paper. The dust must be removed with a clean cloth. One coat of an appropriate paint is applied (clients to refer to joint's design drawings or consult with mageba for guidance).
- More serious damages: Grinding of damaged area down to the metal. The surface is repaired with a primer coat (epoxy-resin

basis unless otherwise specified) and then two surface coats are applied immediately. Each coat should have a dry film thickness of approximately 40-50 µm (refer to the joint's design drawings or consult with mageba for guidance).

Maintenance and inspection

Mageba specifies that the first inspection of the joint should take place shortly after the joint has been put in service but no later than one year after installation. Thereafter the joint should be inspected at least once every two years which includes a detailed inspection every ten years.

In general the expansion joints of mageba require minimal maintenance. There are no defined wearing parts which are intended to be replaced during a defined time period.

Cleaning of the drainage channel should be carried out as often as necessary to prevent troublesome build-up of debris in the channel, which could cause blockages or damage to the channel.

Smaller repair work can be done by skilled workers who are familiar with such expansion joints.

NB. Any repair work having an influence on the function of the joints must be carried out or supervised by mageba or their appointed expansion joint experts.

Checklist for Joint Inspections			
Client:		Manufacturer:	
Order No:		Inspector (Name):	
Drawing No:		Date:	
	Regular 2-Yearly Inspection * (2.1)		
	Element of inspection	**Action**	**Results / Comments**
(1)	Condition of Drainage Channel		
(2)	Evenness of Gap width		
(3)	Alignment of Joint		
(4)	Evidence of Noise		
(5)	Condition of Corrosion Protection		
(6)	Condition of Cover Plates		
(7)	Condition of Adjacent Bridge Structure		
	General 10-Yearly Inspection * (2.2)		
	Element of Inspection	**Action**	**Results / Comments**
(8)	Condition of Welds		
(9)	Condition of Bolts		
(10)	Condition of Nosing of Road Surfacing		
General Comments:			
Issued: _____ Place Date _____ Signature		Issued: _____ Place Date _____ Signature	

Watertightness

The sealing function in Tensa Finger RSFD Bridge Deck Joint is performed by a 5 mm thick EPDM drainage channel. This is installed along the whole length of the expansion joint beneath the finger plates, and is attached watertight on both sides to the drainage channel attachments fixed to the chrome-steel underhanging edge.

Watertightness between the chrome-steel sheet and the drainage channel attachments is additionally ensured by an anti-corrosion sealing compound (Tectyl).

Time between installation and first use

The required time for the curing process varies with the type of connection (whether road surfacing is asphalt or concrete) and depends solely on the indications of the site engineer. It is recommended by mageba to allow for at least 2 days before traffic is open.

Materials

The following materials are used in the manufacture of Tensa Finger RSFD Bridge Deck Joints:

Item	**Specification**	**Standard**
Steel Substructure	Grade 50	SANS 1431
Finger plates	Grade 50	SANS1431
Bolts	Grade 8.8	SANS1431
Drainage channel	EPDM	

Technical drawings

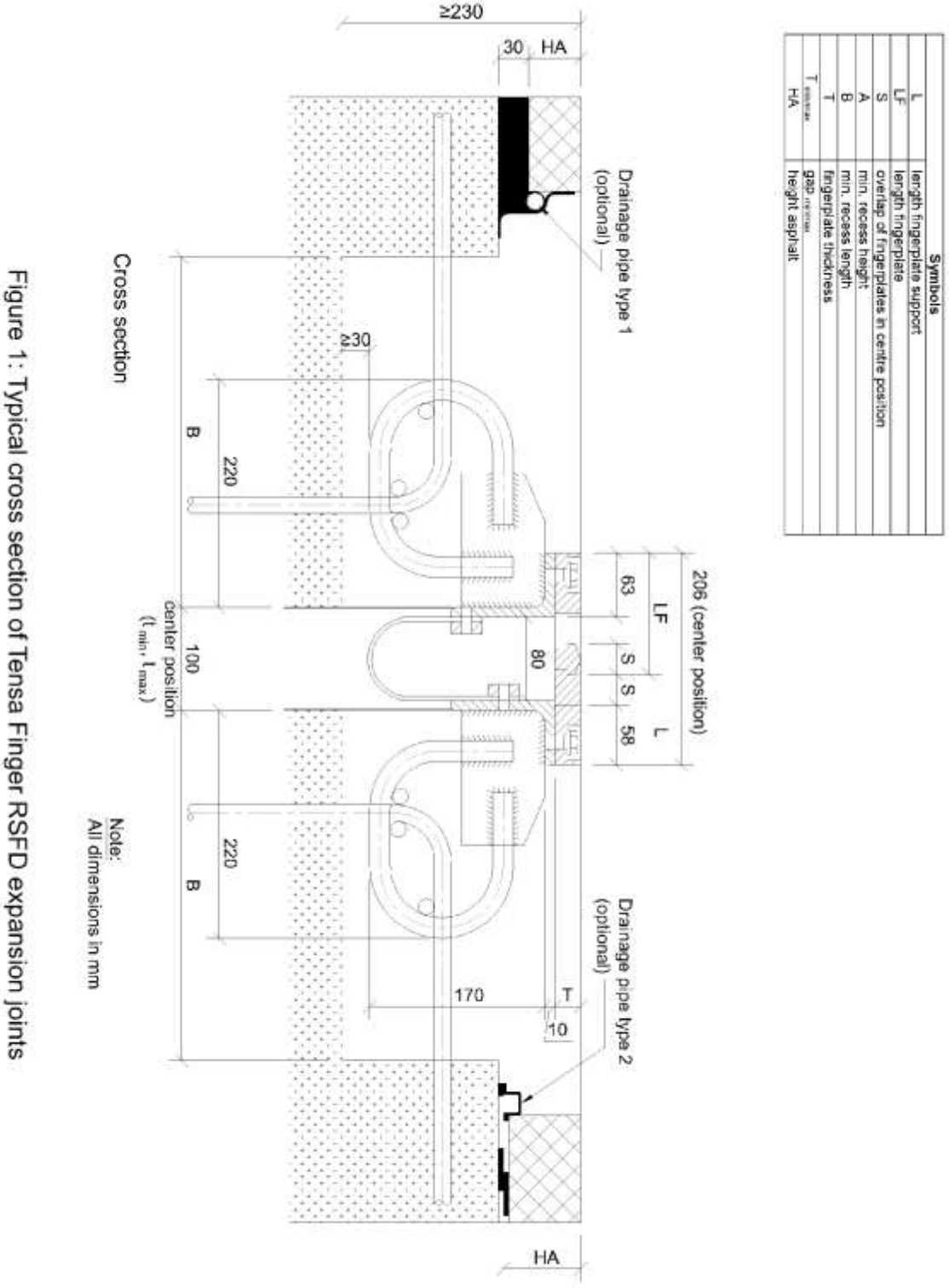

Figure 1: Typical cross section of Tensa Finger RSFD expansion joints

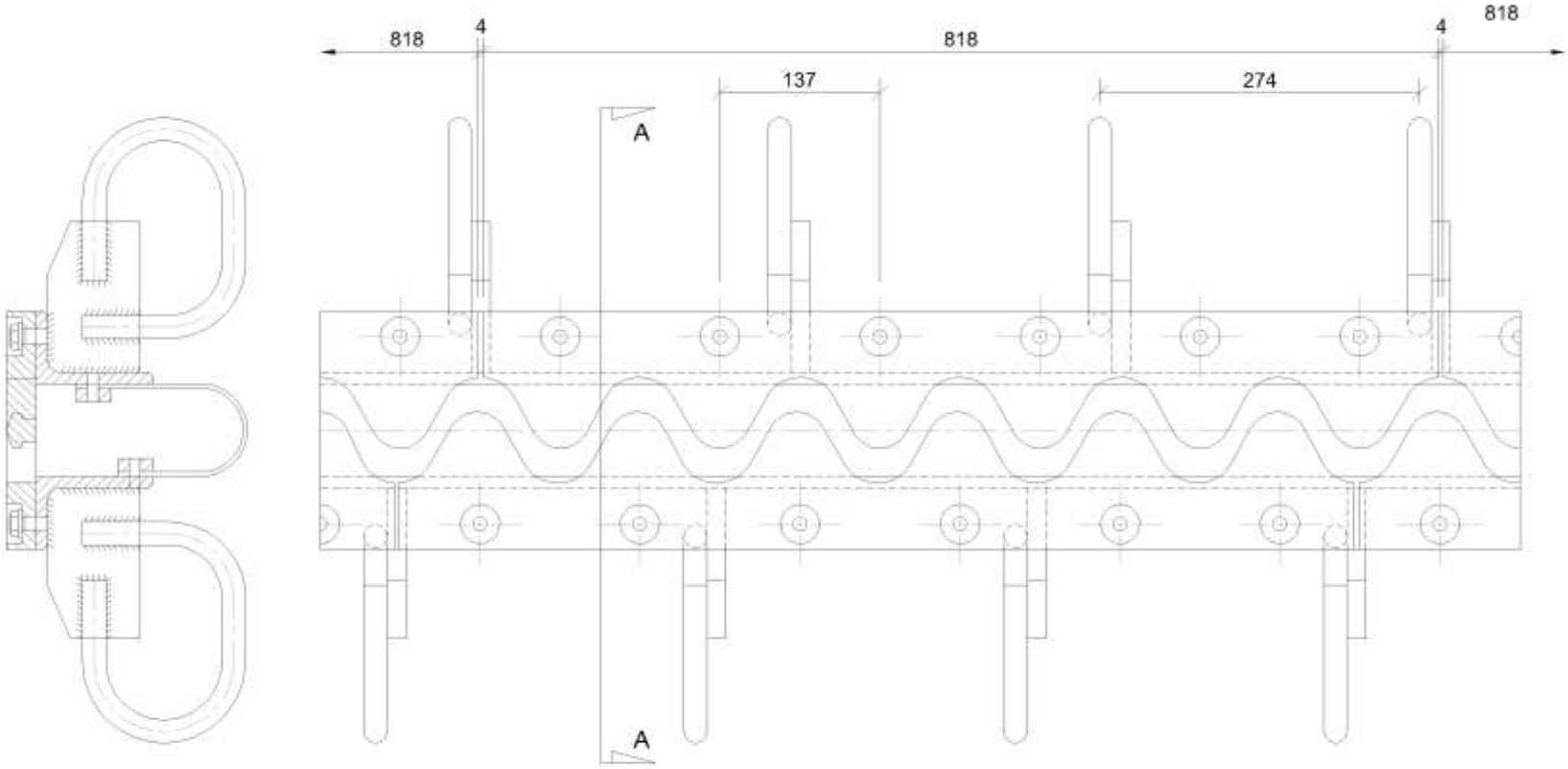

Figure 2: Typical section A-A and top view for Tensa Finger expansion joints ranging from RSFD-B 60 to RSFD-B 140

Design and dimensions of joints (concrete/asphalt connection)										
Type	Movement	L	LF	S	A	B	T	t_{min}	t_{max}	HA
RSFD-B 160	160	75	235	80	≥ 250	≥ 270	35	88	248	variable

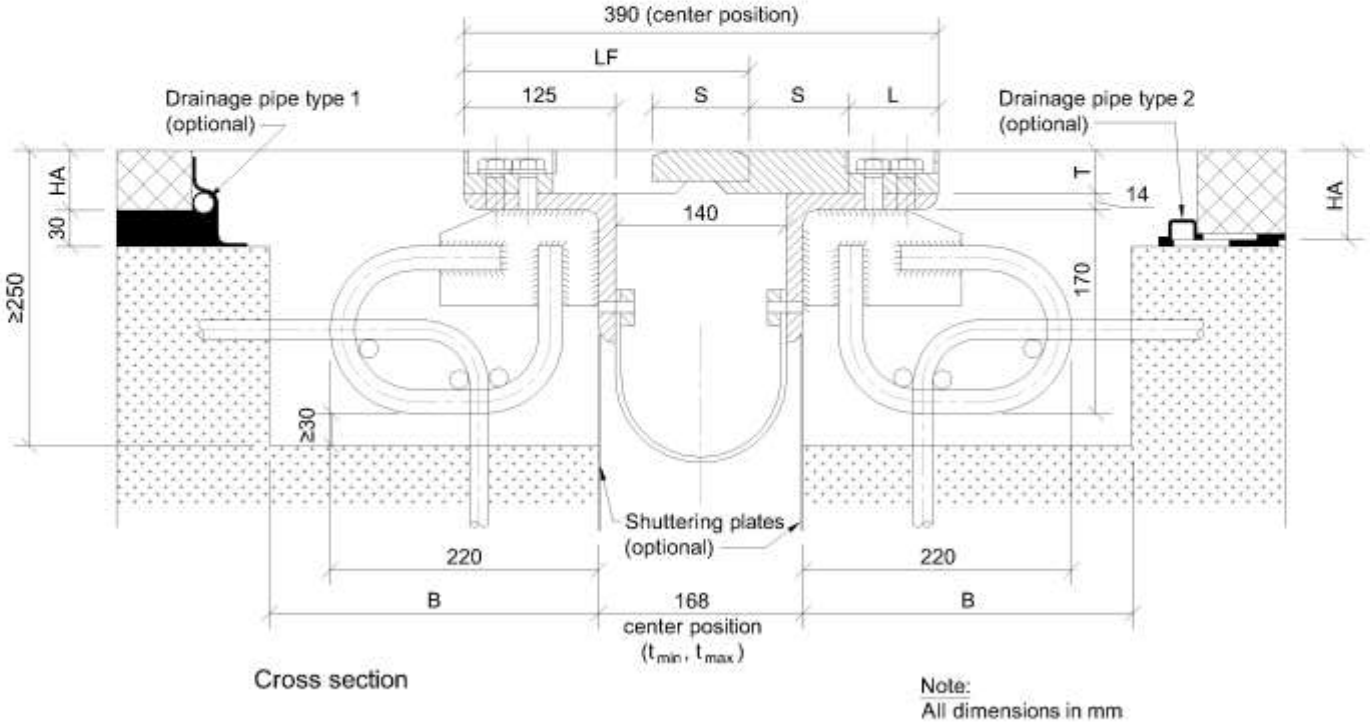

Figure 3: Typical dimensions and cross section for RSFD-B 160 Tensa Finger expansion joint

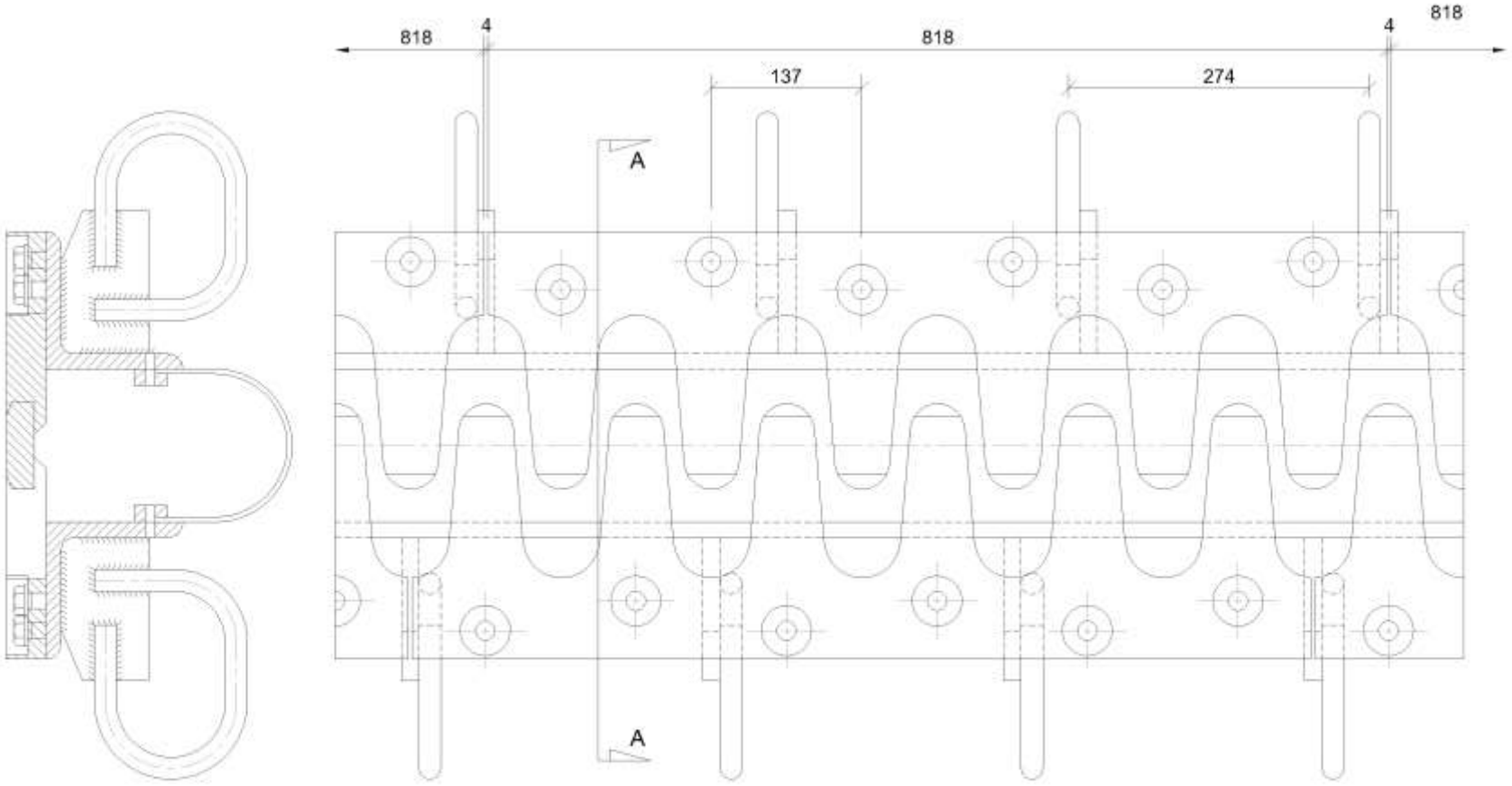

Figure 4: Typical section A-A and top view for RSFD-B 160 Tensa Finger expansion joint

Design and dimensions of joints (concrete/asphalt connection)										
Type	Movement	L	LF	S	A	B	T	t_{min}	t_{max}	HA
RSFD-B 180	180	75	255	90	≥ 284	≥ 305	40	108	288	variable
RSFD-B 200	200	77	277	100	≥ 284	≥ 305	40	102	302	variable
RSFD-B 250	250	85	335	125	≥ 296	≥ 305	50	132	182	variable
RSFD-B 300	300	85	385	150	≥ 306	≥ 305	60	142	442	variable
RSFD-B 350	350	100	450	175	≥ 320	≥ 305	70	190	540	variable
RSFD-B 400	400	100	500	200	≥ 325	≥ 305	80	240	640	variable
RSFD-B 450	450	105	555	225	≥ 335	≥ 318	85	174	624	variable
RSFD-B 500	500	115	615	250	≥ 350	≥ 368	90	144	644	variable

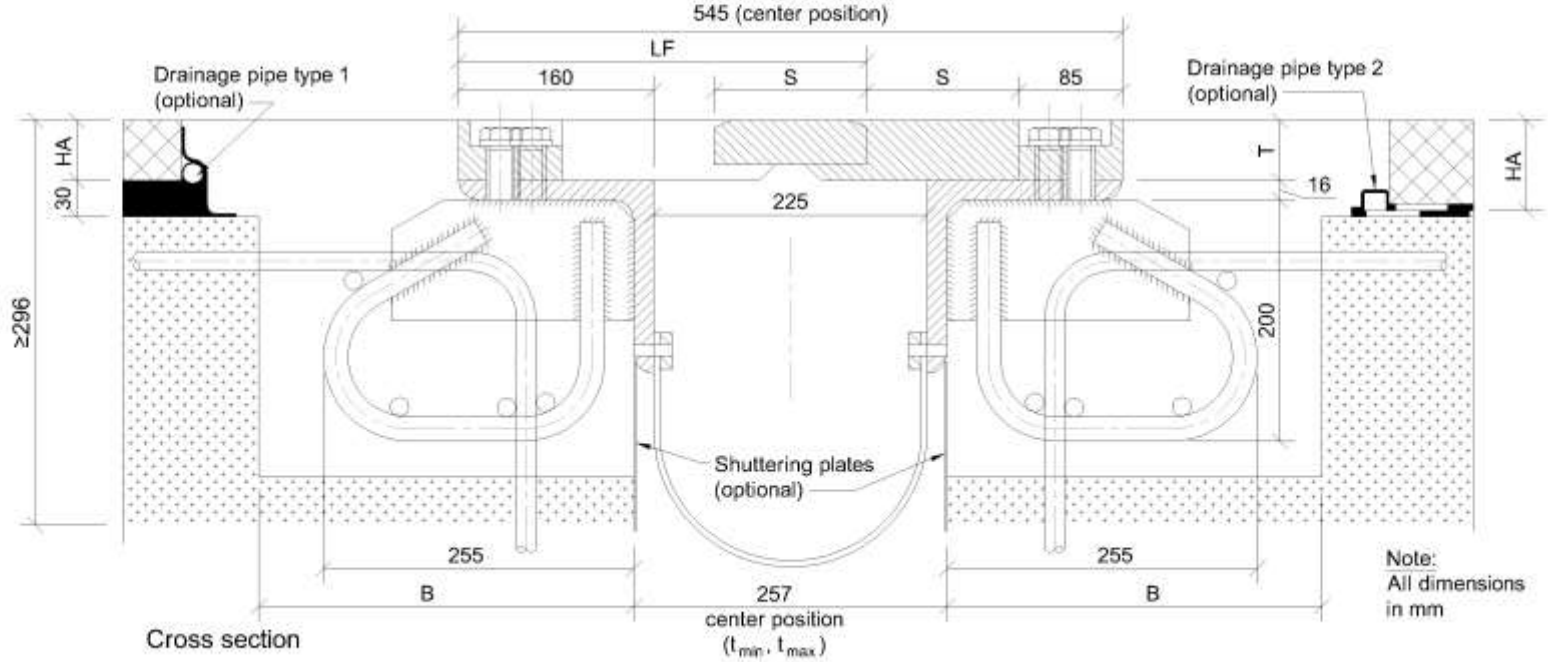

Figure 5: Typical dimensions and cross section for Tensa Finger expansion joints ranging from RSFD-B 180 to RSFD-B 500

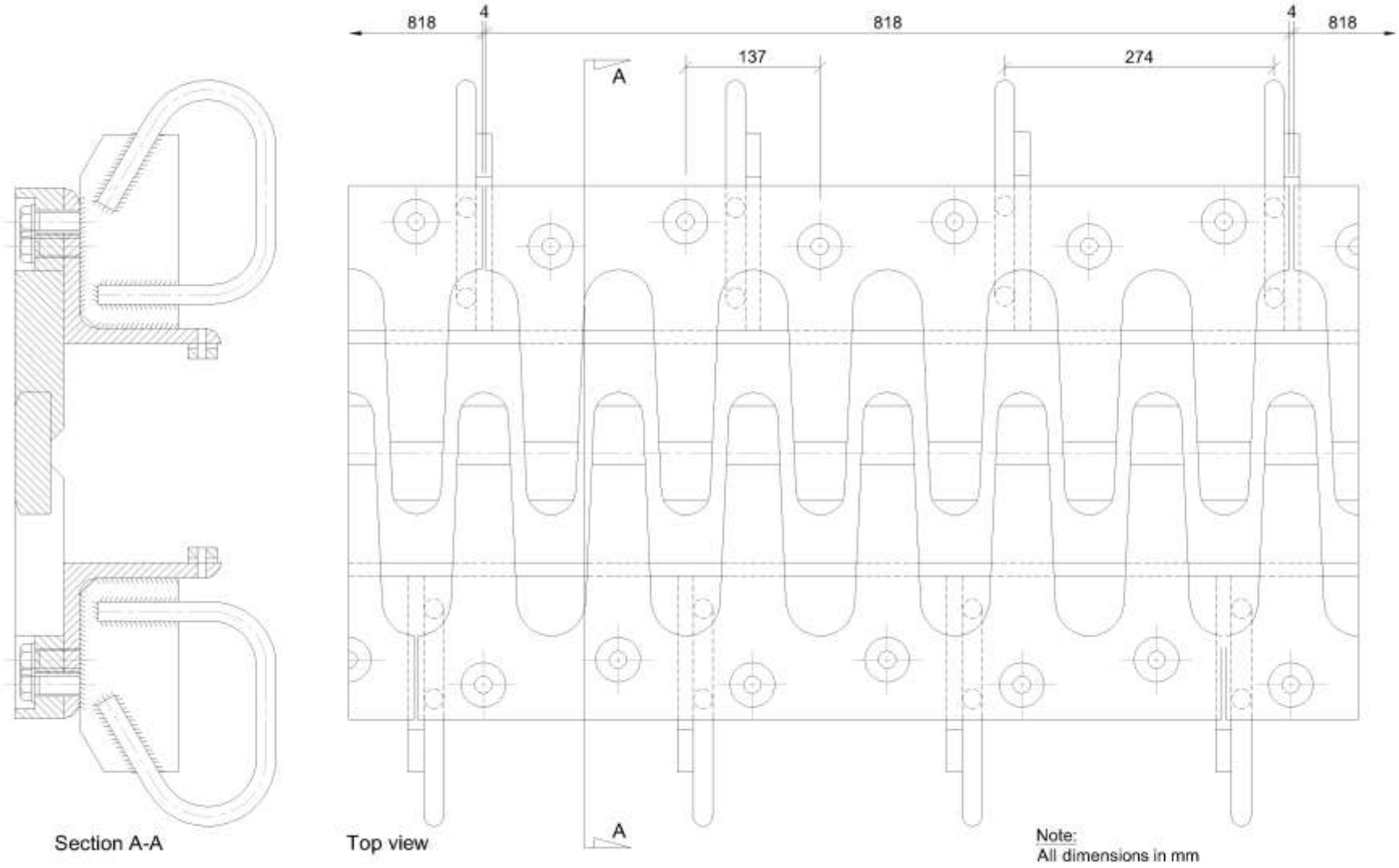

Figure 6: Typical section A-A and top view for Tensa Finger expansion joints ranging from RSFD-B 180 to RSFD-B 500