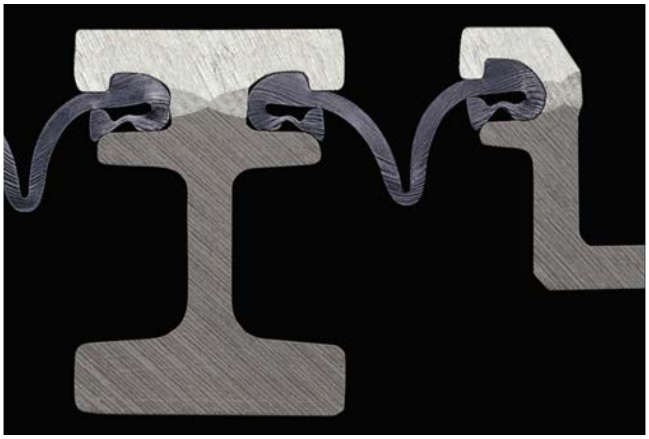
MAURER Expansion Joints type SW

Expansion Joints with hybrid profile type SW



MAURER Expansion Joints with hybrid profile type SW

MAURER Expansion Joints with hybrid profile type SW are of renowned modular type, equipped with edge profiles whose heads are made from stainless steel.

MAURER expansion joints are manufactured from structural steel with particular attention given to durability and fatigue resistance. The problem of corrosion is compensated for by the paint system, the lifespan of which is limited. The surface of the steel elements, which is trafficked, does not corrode but the flanges and surfaces connecting into the footways especially where water may lay at the low point near the kerb unit, are a problem.:

- Damage to surface due to utility vehicles such as snow ploughs or during construction
- Damage to flanges when striking structural concrete shutter
- Rusting of edge beam noses by aggressive media

Factors one and two do not cause any functional impairment but sometimes lead to complaints regarding appearance. Modular expansion joints with more than one sealing element are designed for a fatigue resistance of approximately forty years.

- **Fatigue-resistant for min. 40 years**
- **Corrosion-resistant upper part in weathered area**
- **High grade , hot-rolles steel profiles**
- **Durable submerged arc welding in clamping area**

This is the same for the corrosion protection treatment systems applied to the structural parts (that are not directly trafficked but are subject to weathering). Today, life expectancy of MAURER expansion joints with one sealing element would – with the use of steel concrete anchorage with anchor plates and edge seals with sealing connection – correspond to the life expectancy of the structure with the exception of ageing and wear of the sealing elements which are easily replaced.
In Germany the sealing element is replaced approximately every twenty years. At the second replacement, corrosion of the edge element in the clamping reach will have advanced to such an extent that replacement of at least the upper steel part is necessary.
For quality reasons, MAURER modular expansion joints are hot-rolled and not extruded. They are produced from two parts: a welding seam connects the “upper part of the claw” to the “lower part of the claw”. Heat development and distortion during welding make it necessary to weld these profiles from upper and lower parts of the same material.
Through intensive co-operation with one of the leading European manufacturers of special rolled profiles and strictly adhering to the customary demands of quality, MAURER has developed a hybrid profile with its surface clamping and connecting flange made of stainless steel

(white = W) and for the remainder of the beam to be made from structural steel (black = S) of grade S235. The black-white connection (SW) is achieved by an optimised UP-welding in the clamping reach. The welded longitudinal connection of conventional edge profiles from S235 and the hybrid profile type SW can be produced both in the works or on site. Manufacture of the hybrid profile is done in the rolling mill under supervision of the MPA Dortmund. This provides an economic solution and makes use of the individual beneficial material properties e.g. corrosion resistance at the surface and fatigue resistance in the anchorage reach, with an additional price of not exceeding 20%.

Fig. 1 – Upper part of the claw - non-corrosive steel

Material for the upper part of the claw is rustproof austenitic steel of material No. 1.4571, which is structurally approved for inaccessible structural parts. It will keep its corrosion resistance when handled appropriately, even during welding usually without the heat treatment being necessary. For protection against corrosion in the area of the weld seam, the stainless steel will be given the same corrosion protection system as the remaining edge profile. Only a primer coat is used in the claw reach. One further advantage of the hybrid profile presents itself here. The upper reach of the claw that is inaccessible with a spraying nozzle will be durable even if it is unprotected. The durable and watertight clamping of the sealing element is improved with no paint thickness tolerances to consider.

MAURER offers expansion joints with the new edge profile in three variants, depending on the client's requirement:

- MAURER single-seal expansion joints with SW edge profiles
- MAURER multi-seal expansion joints with SW edge profiles
- MAURER expansion joints with SW-edge profiles in footways

In future, for long term economical reasons, expansion joints with one sealing profile should be used with the SW edge profiles. When used with the MAURER D80G sealing profile (Tubeseal) a highly functional and aesthetic expansion joint is provided. The use of SW edge profiles with multi seal joints is also an advantage as these joints can be reconstructed using the original edge profiles and anchorages, which remain in the structure.

Fig. 2 - Sealing profile

Suggestion tender documents

Watertight expansion joint of steel in lamellar design according to static and structural requirements including kerb unit and fascia formation according to drawing to be installed in total width of superstructure. Steel surfaces subject to corrosion to be adequately prepared in the factory to Sa2½.

Corrosion protection treatment according to ZTV-KOR. Expansion profile as folding profile, footways with MAURER special strip profile D80G or similar, guide of profile flush to upper edge of footway up to lower edge of fascia.

Steel edge profiles as hybrid profiles of type MAURER SW or similar. At least 20mm high edge profile head of full material in refined steel, material No. 1.4571 reaching from surface of carriageway to level of sealing profile. Welding to the sub-structure made of S235JR by full seam.

Selected references

- Aischbrücke Ühlfeld B 470/SBA Ansbach:
  D80 Übe1 (14 m), DT160 (13 m)
- BW 806 over DB at Senden A 43 FR Münster:
  redevelopment D80, (60 m)
- Donnersbergerbrücke München:
  150 m Hybrid-Joints XW1, XL200, XL300, D160, D320