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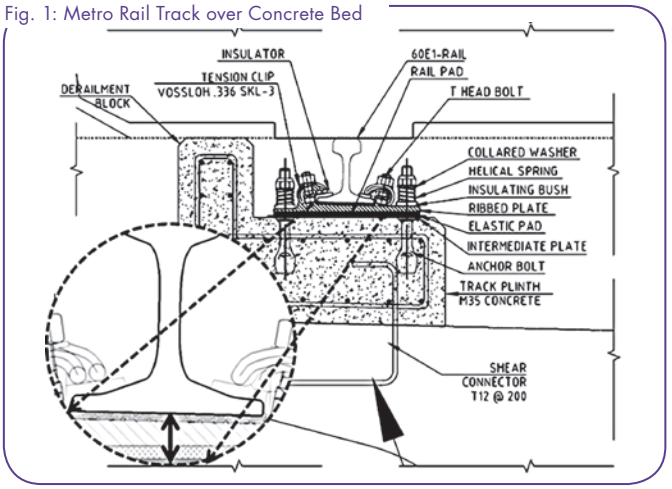
WHEEL SENSOR MOUNTING:

Which Way to Go.... Clamping or Drilling?

Fig. 1: Metro Rail Track over Concrete Bed



Clamping is not an applicable solution in some special cases, such as Metro Rail where the tracks are over concrete bed. Here often, the necessary gap beneath the rail base is either insufficient or risks further reduction over time, causing eventual misalignment or breakage of the clamp. (Fig.1)

Thales' solution, based on over 40 years of experience with axle counter technology, uses three criteria for drilling:

1. **Limiting the hole size to 13 mm diameter**
2. **Separating the holes by 296 mm, and**
3. **Developing jigs, templates & processes with Cembre, the leading rail drilling machine manufacturer.**

Rail Contacts – the wheel sensors of electronic axle counters are the only mechanical device whose physical stability of installation is of utmost importance for safe and reliable performance of the overall system. As this unit is mounted on the rail, it is subject to frequent and severe vibration, therefore its mounting arrangement has to be extremely resilient.

There are two methods of mounting wheel sensors on the rail, a) Clamping requiring access under the rail base, and b) Bolting requiring drilling through the rail web. While either solution has some advantages and limitations, the bolting method is mostly preferred as it is proven for higher reliability over time and do not require regular maintenance.

With the newly introduced wheel sensors Sk30K, it is now possible to mount either by clamping or bolting method. Clamping always has to be between the sleepers (see cover picture on the top), however for bolting it is also possible to mount above the sleeper (see cover picture on the bottom). Mounting above sleeper is advantageous where there is frequent track tamping as wheel sensor is not required to be removed during such operation. On the other hand Clamping is advantageous in temporary installation where a track layout undergoing modification in stages.

When it comes to rail drilling, infrastructure managers are sometimes faced with a question about the impact of drilling holes on the rail web. While, there is little difference for standard or a head hardened rail, the question of impact becomes more interesting for surface hardened rail. This is mainly due to the fact that any drilling operation generates significant heat which may result in a possible distortion due to residual stresses in the material.

All critical parameters of safe and accurate rail drilling viz. the hole size, spacing, height and angle of the drilling are met when the drilling process uses appropriate positioning jigs, templates, drilling machine, broach cutter and automatic lubro-cooling system (Fig.2*). The broach cutting process also reduces friction and eliminates heat built-up during the drilling operation without any material stress. (Fig.3*)

Fig. 2* Cembre Jigs and Fixtures for Drilling System

Fig. 3* Cembre Broach Cutting Technology

So "to drill or not to drill" the rail web is not a question. The "hole" fact is that with this well established drilling method, railways should no longer be "clamped" by decision when mounting wheel sensor mounting on rail of any type.

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