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**Bharat Sarkar (Government of India)
Rail Mantralaya (Ministry of Railways)
(Railway Board)**

No2008/SIG/SGF/9/Thick Web

N.Delhi,

dt. 01/11/18

**PCSTEs
All Indian Railways**

Sub: Issues regarding Thick Web Turn outs.

Some of the railways have raised issues regarding the maintainability of the Thick Web Switch (TWS). These were also discussed during CSEs conference held in New Delhi on 29.6.2018. The issue of proliferation of TWS was also raised during the conference of CSTE/Plg. held at Mumbai on 30.10.2018

In this connection, Track & Signal Directorates of RDSO and Railway Board have jointly inspected Thick Web Switches in Delhi Division. The issues raised by N.Rly officials along with feedback received from the Railways have been examined and the joint Action Plan made out by Track & Signal Directorates of RDSO is enclosed for your information.

Encl: As above.


1.11.18

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Sub: Issue regarding Thick Web Turn outs.

Recently some of the Railways especially Western Railway, South Eastern Railway & N.C. Railway has raised certain issues regarding maintenance of Thick Web Turnout. Based on this, a joint site visit was done on 13.9.18 at Tughlakabad in Delhi division by officials from Track & Signalling side from Railway Board, RDSO and Delhi Division. The issues raised by the Railways were seen by the group at site and their probable solutions were also discussed.

The details of various issues are summarized below:

SN	Issues raised by the Railways	Observations & discussion	Action proposed
1.	Presently holes in stock rail are drilled at site on the foot of the rail for fixing lock & detection rods. With passage of time & traffic these holes get oblong. There are also problems of track circuit failure due to insulation getting crushed.	<p>1. Signal Dte. of RDSO will provide exact location of these holes & instructions can be issued by Track Dte. of RDSO to drill these holes in the factory itself.</p> <p>2. Possibility of these holes on web portion of switch can be explored so that standard arrangement of P/D bracket can be adopted. This will also solve the problem of track circuit failures in this area.</p>	<p>1. Alterations in the existing drawing can be issued by RDSO to drill the holes in the factory.</p> <p>2. Drawing of P/D bracket with hole on web can be issued if found technically suitable for trials in the field.</p>

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<p>2.</p>	<p>It is difficult to maintain gauge as there is no rigid holding of stock rail chair and the GFN liners on sleeper no-3 & 4 get broken or missing/unseated.</p> <p>As a result very frequent adjustment is required for maintaining 5 mm obstruction test.</p> <p><i>How to Add gauge?</i></p>	<p>1. If GFN lines are not fixed properly at the time of laying there are chances of their getting out or unseated from its location.</p> <p>2. The technology of bolting of stock rail with slide chair is not used internationally since the use of elastic fastenings. Holes create weak locations in the stock rail & it is our endeavor to reduce the number of holes in rails. The proposed action will be a retrograde action if additional holes are created & hence not agreed.</p>	<p>1. Instructions for laying of TWS w proper fixing of GFN lines will be reiterated to Railways / Constructi units.</p> <p>2. Instructions will be reiterated Railways for replacement broken/missing GFN lines on dai basis by Keymen. — <i>not practical</i></p> <p>3. The SRJ joints can be welded to Railways to reduce forces at the location.</p> <p>4. Signaling directorate is of view that at least on 3rd & 4th sleeper, stock rail should be bolted as is being done on normal overriding Turnouts. Further if Thick Web Switch Bolts have also been provided for stoppers. Feasibility of the same to be seen.</p> <p>5. The technology of bolting of stock rail with slide chair is not used internationally since the use of elastic fastenings. Holes create weak locations in the stock rail & it is our endeavor to reduce the number of holes in rails. The proposed action will be a retrograde action if additional holes are created & hence not agreed.</p>
<p>3.</p>	<p>In case an obstruction ballast piece is struck in between stock and switch rail near about 8th - 9th sleeper, the point gets set & locked however the gauge was getting tight.</p>	<p>1. The ballast piece will have to be intentionally positioned between the stock & tongue rail between head of the rails to create an obstruction else it slips into the foot. Moreover with the passage of wheels & lateral force on the tongue rail the tight gauge will get normalized to a large extent.</p> <p>2. This issue can be solved by providing stretcher bar. In the present design there is no provision of stretcher bars as both the switch rails move independently. Design of TWS with stretcher bar is available internationally & can be studied by RDSO for use on IR.</p>	<p>The design of the present TWS point and point machine chosen by IR is based on International design which does not have provision of stretcher bars as both switch rails move independently.</p> <p>Possible solution for this can be to go in for a design with stretcher bars, which are also present internationally.</p> <p>RDSO can revisit the design of point machine after studying the various other designs with stretcher bar available internationally. These can be put on trial on IR for its proveness.</p>

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4.	It was reported that spring loaded keys on slide chairs are missing at certain locations. This lead to loss of toe load on rails.	It was reported that at isolated locations the keys come out & holding of rails get poor. This is basically due to faulty laying of slide chairs in the layout.	<ol style="list-style-type: none"> 1. Instructions for proper fixing of at the time of initial laying of TWS be reiterated to Railways/Construction units. 2. Suitable Performa for inspection of TWS can be issued based on the Performa's vogue on various Zonal Railways monitor such missing/loose fittings replacing them in position. 4. A workshop to sensitize/train field staff of Engg. & Signal department can be organized by Zonal Railway. One complete set of TWS Turnout with SSD can be laid on each division training center with accomplishments so as to educate field staff of the new features advantages of TWS.
5.	Rubber Pads getting relocated from its seat leading to wear & tear in pads.	It is seen that in stock rails & on bearing plates, old design of rubber pads without horns are being used by Railways. Drawings with horns in Pads have been issued by RDSO.	Instructions will be reiterated by RDSO to all Railways to follow drawings with horns in Pads.
6.	Insulation of SSD gets crushed leading to track circuit failures.	The insulation is provided in present SSD in the form of a plastic ferrule with washers, which gets crushed due to movement of SSD with passage of time.	New drawing by providing insulation one arm of SSD can be issued by RDSO jointly with Signal Dte. & put on trial on zonal railways before making a regular design.
7.	Bolts provided in SSD don't have check nuts leading to these getting loose sometimes with passage of time.	It is seen that there are no check nuts in the present design of SSD & as a result the bolts & nuts may get sometime loose with passage of traffic & time.	Alterations in the drawing of SSD can be done by RDSO in consultation with signal Dte. to provide check nuts.
8.	The length of spring in SSD varies when it is set for left & right rail. This leads to varying force/thrust on tongue rail.	The SSD is to be laid on sleeper symmetrically wrt the center line of the track. When the laying is not as per the drawing this problem can arise.	<ol style="list-style-type: none"> 1. Inspection of SSD can be jointly done by Engg. & Signal dept. as per the present frequency of once in a month. Suitable Performa for joint inspection of TWS including SSD can be jointly issued based on the Performa's in vogue on various Zonal Railways. 2. Present instructions for regular maintenance of SSD can be reiterated to field staff. 3. A workshop to sensitize / train the field staff can be organized by Zonal

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			<p>Railways. One complete set of TV Turnout with SSD can be laid (Divisional training center with accomplishments so as to educa field staff of the new features advantages of TWS.</p> <p>4. Internationally 2nd drive/2nd pull being used in TWS. Use of secon drive replacing SSD shall have to b explored by RDSO. in a time boun manner. It will require change in Poir Machine and sleeper design & trials i the field.</p>
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 (Sandeep Mathur) 11/2/12
 Executive Director/Signal/Cood./RDSO


 (Sandeep Sharma) 04/10/12
 Executive Director/Track-2/RDSO