(1) SPECIAL MATERIAL FOR MANUFACTURE.

The following special material is to be used for the manufacture of side and connecting rods, strap bolts, knuckle pins, little end pins, cotters, and brasses:-

Section	Specification	Blue-print
Connecting rods, side rods, and straps	B.S.S. Report No. 24, Part 4, Specification No. 9, ~~1930~~ [1941], Class "C" Steel	Group F on B.P.W. 15600.
Knuckle pins and little end pins	B.S.S. Report No. 24, Part 4, Specification No. 9, ~~1930~~ [1941], Class "A" Steel	Group E on B.P.W. 15600.
Strap bolts	Supertough "C" Steel	Group R on B.P.W. 15600.
Cotters	B.S.S. Report No. 24, Part 4, Specification No. 9, ~~1930~~ [1941], Class "D" Steel, or	Group K on B.P.W. 15600.
	Supertough "C" Steel	Group R on B.P.W. 15600.
Brasses	Phosphor bronze	(See Loco. Code Inst. No. 60, Section " C.")

(2) SIDE AND CONNECTING RODS AND STRAPS.

(a) **Manutacture.-** Side and connecting rods and straps are to be manufactured in one piece, without weld, according to the drawings and specifications supplied by the Controlling Officer.

(b) **Inspection.-** Locomotive Foremen and Officers in Charge will make arrangements for frequent examinations of all side and connecting rods under their control for possible defects.

Similar examinations are to be conducted in Workshops when engines are shopped for repairs.

When serious defects are detected the rods must be scrapped immediately, and in such cases full particulars concerning the defects must be forwarded to the Controlling Officer.

(c) **Welding.-** In Workshops only, the sections of rods that are inclined to wear, such as straps, holes in forked ends of rods, knuckle pin holes, and brass and cotter fits, may be built up by means of the electric-welding process, and machined or filed to fit new standard pins or brasses, but under no circumstances must other sections of side and connecting rods be welded without the authority of the Controlling Officer.

[(I) "Ab" and "Wab" connecting rods to drawing y6914 and coupling rods to drawing y6915 and y6916:

The strap bolt holes in these rods must <u>not</u> be welded up.

(II) "A", "Ab" and "Wab" locomotives:

The connecting and coupling rods may be reconditioned by welding up the bolt holes <u>once only</u>. (Note further restriction in subsection (1), above, of this Clause.)

(III)

"B" and "We"	- connecting rod	- Drawing	2192
"Ba"	- Driving coupling rod	- "	4990
"Bb"	- Driving coupling rod	- "	5729
"Ba" and "Bb"	- inter coupling rod	- "	4993
"W" and "Wa"	- connecting rod	- "	1044A
"Wf"	" "	- "	3340

The maximum permissible strap bolt diameter is to be limited to $^{1}/_{8}$" above the original diameter.

(IV) Connecting and coupling rods not mentioned in subclauses (I) - (III):

The maximum permissible strap bolt diameter is to be limited: to ¼" above the original diameter.

(V) Strap bolt holes:

The same limits and restrictions will apply as for the corresponding rod.]

[C.M.E.s file 44/730/13L
24/563 of 22.5.57]

(3) SIDE AND CONNECTING-ROD BRASSES

(a) **Fitting.-** Brasses are to be fitted in such a manner that when a film of locomotive bearing oil is applied to the bearing surface, the brasses will revolve freely without signs of slackness or binding.

When side and connecting-rod brasses are fitted, the side play must not exceed $^{1}/_{32}$ in., the only exception being the brass in the knuckle joints which must be a floating fit.

(b) **Tolerances of Wear.**

(i) **Spilt Brasses.-** Wear in split brasses must be taken up immediately it develops, and must not at any time exceed $^{1}/_{16}$ in.

(ii) **Knuckle Pin Bushes.-** The slack in knuckle pin bushes must not exceed $^{1}/_{16}$ in.

(iii) **Ring Brasses.-** The slack in connecting rod brasses must not exceed $^{3}/_{32}$ in. at the big end or $^{1}/_{16}$ in. at the little end, and the total lost motion must not exceed $^{1}/_{8}$ in. [slack in side rod brasses must not exceed $^{3}/_{32}$ in.]

(iv) **Eccentric Rod Bushes.-** The slack in eccentric rod bushes must not exceed $^{1}/_{16}$ in.

(v) **Side Play.-** The side play in any brass must not at any time exceed $^{5}/_{32}$ in.

(c) **Maintenance.-** Engine-drivers will be held responsible for any damage attributed to faulty lubrication, incorrect adjustment of brasses, or negligence in the maintenance of trimmings.

(d) **Grease Lubrication.-** When hard grease is used as a lubricant the following procedure is to be adopted : -

1. When hand grease-gun is used: Grease every 100 miles where possible, but do not run more than 150 miles before regreasing.
2. When power (air) grease-gun is used: Grease every 200 miles where possible, but do not run more than 225 miles before regreasing.

(4) SIDE AND CONNECTING-ROD STRAP BOLTS.

All side and connecting rod strap bolts are to be made ~~from Supertough "C" steel, and must conform~~ [of the material and] to the dimensions shown B.P.Z. 6493.

Split pins are to be fitted to all strap bolts and cotters, and strap bolts coated with a suitable lubricant when rods are finally assembled.

(5) COTTER SET SCREWS.

Cotter set screws are to be made from steel conforming to B.S.S. Report No. 24, Part 6, Specification No. 16, 1929.

All set screw heads, which must be potashed before being placed in service, must fit the ½ in. spanner "W" shown on B.P. X10181.

When tightened down on the cotters the heads of set screws must not project more than ½ in. from the face of the brasses.

The flanges of side and connecting rod brasses are to be cut to provide sufficient clearance for free movement of the set screw spanner.

(6) KNUCKLE PINS AND LITTLE-END PINS.

Little-end and knuckle pins must be case-hardened before being placed in service, and must be re-hardened and reground in a cylindrical grinding machine at each class "A " repair.

The original and condemning sizes of knuckle and little-end pins are enumerated on B.P.Y. 20803.

NOTE ON CODE 54
Alternative Side Rod Cup Grease

Coming up with the gold.
RAILFREIGHT SYSTEMS
Helping the New Zealand Olympic team come up with the gold in 1988.

PURCHASING AND SUPPLY DIVISION
FACSIMILE NO. (04) 725-599 Ext. 8113

If calling please ask for Mr Glen Ext. 8447

88/464

GLENBROOK VINTAGE RAILWAY

24 August 1988

Glenbrook Vintage Railway
P.O. Box 2429
AUCKLAND

ATTENTION: Mr J.L. Stichbury

Dear Sir

With reference to your letter dated 16 August 1988. I wish to advise that a suitable alternative side rod cup grease is available commercially, which will fulfil your requirements.

It is manufactured by Caltex Oil NZ Ltd. under their description of "Cup Grease No. 5".

Yours faithfully

for J.E. Burley
MANAGER