CASE STUDY HOT ROLLED Q&T ALLOY BAR STOCK

SUMMARY

MATERIAL: **KROMITE® #3 H.R. Q&T ALLOY BAR STOCK (1 ¼"Dia & ¾"Dia)**
APPLICATION: Heavy Plow Attachment Shaft & Salt Spinner Mounting Shaft
REPLACED: Carbon Steel, Alloy Steel, Stainless Steel

FAILURE MODE: Shafts fail (bend) under load & "jarring" impact from potholes, requiring plows to be pulled from service when needed most.

APPLICATION: The bar stock is cut to lengths of 32" to 35". Holes are drilled perpendicular to bar length, to accept 1/8" and ¼" cotter (hair pins) for securing. Those bars then support the weight of the plow. The bouncing of the truck, while in service, causes the shaft to bend. During removal it must be straightened sufficient to facilitate removal. Kromite® #3 provides the strength to resist bending as well as the ductility to allow for easier shaft removal.

TESTIMONY: Firsthand from customer, Mr. Joe Williams; "I became aware of Kromite® #3 at a previous job. When I started here (State of Pennsylvania Highway Department) we were having a serious problem with downtime due to bent Plow-Bars, and Salt Spinner attachment shafts. Both support heavy weight and encounter severe bouncing due to the jarring effect of potholes during the winter months. The trucks cannot be out of service during that time. We resolved the problem by changing to Kromite® #3 hardened clean steel shaft material. By using Kromite® #3 we have increased service-life by a factor of 3 to 4 times".

Joe further advised; "When the Kromite® #3 Plow Bars are eventually removed, we are still able to salvage parts by slicing them into 8" long pieces which we use as "drop-pins; a retainer type of application where strength and durability is also required.

Customer advised that previous materials used were carbon steels, 4130, 4140, and 304, 316 Stainless. All materials failed by bending. The stainless would actually bend and work-harden, requiring heating and torch cutting for a difficult removal.

"Toughness resists twist, bending, and fatigue failure. Kromite® #3 and Mirraloy® TG&P are made to "Clean-Steel-Technology" to promote toughness."