

HQ IMCOM started centrally funding the initial research on Composite Crossties at McAlester Army Ammunition Plant. This was necessitated by problems encountered during initial installation and improper gauge after final installation. The ADTIP/ERDC Rail Evaluation Team inspects Army track every 5 years and is currently overseeing the composite research.

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https://transportation.erc.dren.mil/imcomadti/p/rr_resources.aspx

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Proposal

Plastic or composite crossties have not been evaluated by USACE engineers and it is recommended not be used in any new construction or repair until a set of standards have been developed. The UFC does not have required specifications regarding properties of plastic or composite crossties. Due to the lack of clear specifications there is no way to effectively ensure that DOD rail owners receive a high quality crosstie that also protects the DOD's investment into track assets.

Should installations demand use of plastic or composite crossties the latest AREMA guidelines from Chapter 30 part 5 should be used. AREMA refers to plastic or composite crossties as Engineered Polymer Composite (EPC). If designing with EPC the design engineer of record should provide significant research and justification that the EPC (plastic or composite crossties) will behave as expected. In addition, field testing consistent with AREMA 5.3.3.2.1 and performance requirements outlined in AREMA 5.3.3 (AREMA 5.3.3.1 and AREMA 5.3.3.2.2) should be carried out.

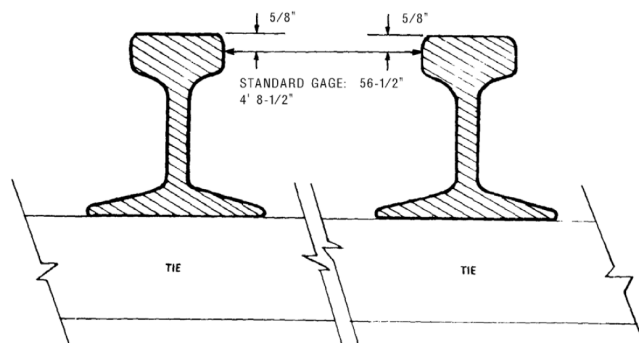
Background

Plastic and composite crossties are a relatively new crosstie material that is gaining acceptance as an effective and useful alternative to wooden crossties. Unfortunately UFC standards have not been updated to effectively govern the use of plastic and composite crossties. The results of this failure have led to issues ranging from splitting crossties during installation to gauge problems in track. Due to the highly variable and proprietary construction methods and materials one plastic or composite crosstie may behave very differently from other crossties.

Industry standards from AREMA have recently emerged and are still under development. Due to these aforementioned unknowns, Class 1 Railroads have not adopted mass integration of plastic or composite crossties into new construction or maintenance. Until these standards are uniform and there is mass adoption from Class 1 Railroads the DOD is not able to benefit from suppliers conforming to meet Class 1 material specifications and standards. Up to this point DOD has benefited from industry standard practices which ensure that crossties, rails, and F&OTM meet minimal standards allowing the UFC to lack specific project specifications.

Conclusion

Until UFC, specification is updated based on experimental research, UFC standards should not be used for specification of plastic or composite crossties. It is recommended that no new plastic or composite crossties be installed on DOD track. If plastic or composite crossties are required the latest AREMA specifications should be referenced and the design engineer of record should provide significant research and justification that the plastic or composite crossties will behave as noted and require field testing consistent with AREMA 5.3.3.2.1 and performance requirements outlined in AREMA 5.3.3.



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Maintaining proper gauge with varying temperatures and other conditions is a major concern.

Contact Us:

IMCOM ADTIP PM
210-466-0535
michael.r.andres.civ@
mail.mil

ERDC POC
601-415-4524
Ethan.Russell@usace.a
rmy.mil