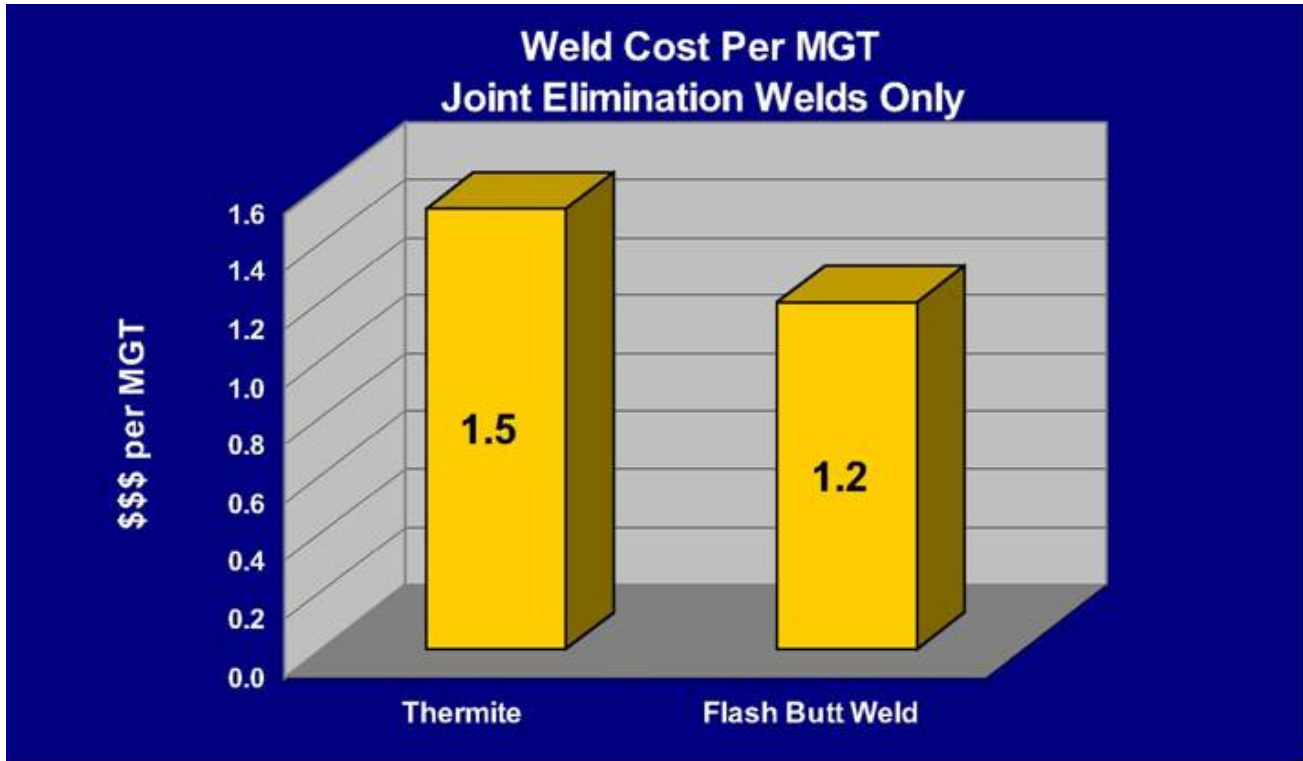




ARE JOINTS EATING UP YOUR RAILROAD CONTRACT FOR HOLLAND FLASH-BUTT WELDS



FLASH BUTT WELDING ADVANTAGES:

- Reduces maintenance costs
- Faster installation
- Lowest life cycle cost
- Saves track time
- Eliminates corrugation
- No weld filler material
- Smaller heat affected zone
- Smaller annealed zone
- Consistent hardness
- Highest fatigue resistance
- Average life equal to the rail
- 25% Savings over thermite

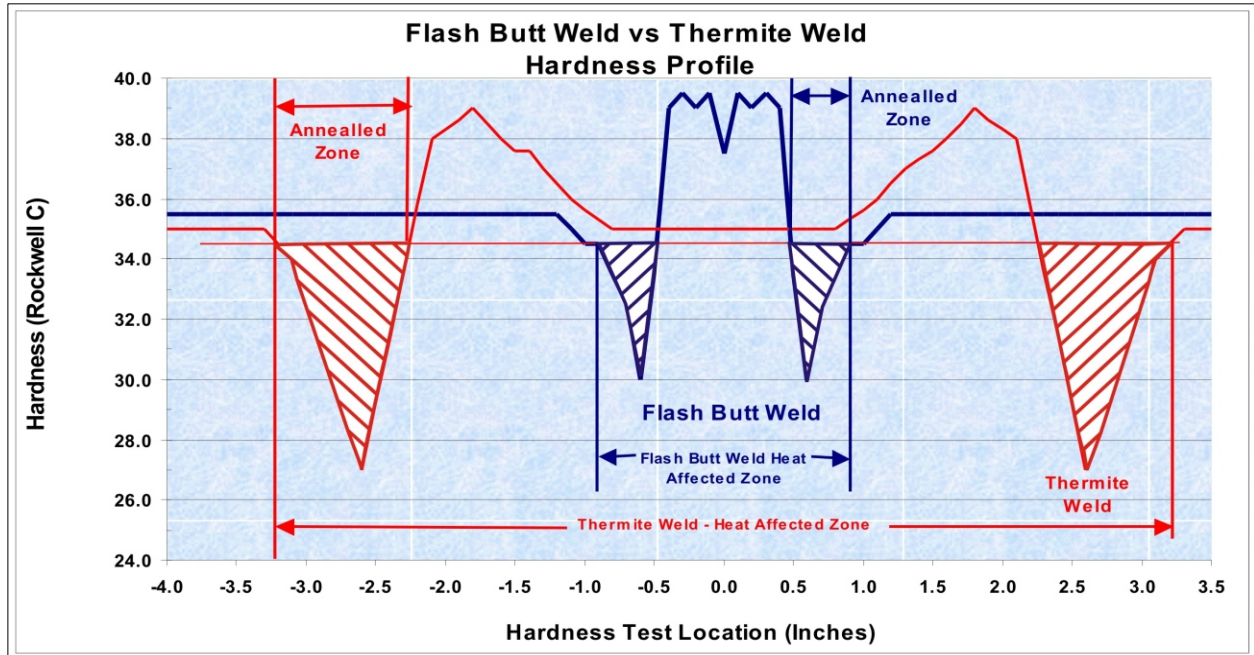
Proven Contract Service Innovative Technical Solutions

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HOLLAND FLASH-BUTT WELDS

Your Lowest Cost Solution to Rail Joints



Features	Holland Flash Butt Weld	Thermite Weld	Advantage – FlashButt
Basic Metallurgy	Forging	Casting	Joint is as good as parent material. No porosity, no voids, no inclusions. No filler material
Automated Process	YES	No	Less dependent on operator skills. Consistent higher quality.
Heat Affected Zone	40 -60 mm	145 -185 mm	Better head wear surface under traffic.
Full Rail Profile Shear	YES	No	Better fatigue life of joint. Flush rail under base – no protrusion.
Environmental Pollution	LOW	High	Less toxic gases.
Personal Hazard	LOW	High	No molten metal masses.
Failure Rate	LOW	High	Higher Efficiency and Productivity.