

Anatomy of a Railroad Backhoe

Specialty application requires specially outfitted machine

By Katie Pullen, brand marketing manager, CASE Construction Equipment

Backhoes are built for earthwork – unless you’re in the railroad business. Backhoes are one of the most versatile tools railroad contractors have at their disposal – but it’s based largely on the material handling and the hydraulic capabilities offered by the machine. In an industry where access to the work area is a challenge, having a tool that serves as a platform for numerous applications is critical. Here are key specifications that railroad contractors look for in backhoes to provide as much versatility, durability and efficiency as possible.

Quick Coupler/Universal Coupler

Backhoes typically arrive to the tracks with a bucket (for moving ballast, dirt and other materials) and a set of forks (for moving railroad ties and other supplies). A quick coupler allows for an easy transition between attachments at both ends of the machine. For additional versatility, some backhoes can be outfitted with universal couplers that allow the machine to handle attachments from other OEMs. The new Tier 4 Final CASE N Series backhoes, for instance, feature a universal mechanical coupler capable of handling John Deere and CAT buckets.

Long Forks

Many railroad contractors opt for long forks both for safety and stability reasons.

“Everything is safety driven – everything we do,” says Bill Dorris, vice president and general manager for Railworks, one of the nation’s largest railroad design, maintenance and construction contractors. “We [equip each backhoe] with a set of six-foot forks for most of the work we do on our loaders because we’re handling bundles of ties. We’ll never take a short set of forks to handle ties because they’re only banded together, and we do not want any hanging off the end of the forks.”

Extendahoe/Cribbing Bucket

Backhoes are used to help place, move and shift track. The extendahoe option is popular with railroad contractors because it provides the ability to reach further away from the base of the machine, which allows more work to get done without moving the machine, and improves access at sites where the backhoe can’t get as close to the tracks due to regulations or obstacles. By way of example, the CASE 580 Super N – a popular railroad model – achieves more than 3 feet of additional reach with the extendahoe feature.

Each railroad bucket is also outfitted with a special cribbing bucket with thumb – an ultra-narrow bucket (generally 8-inches wide) with teeth designed both for cleaning out between railroad ties and helping to lift and place ties.

“Tie spacing is 19.5 inches from center to center,” says Dorris. “You can’t put a standard bucket in there. Only a cribbing bucket will fill in that space.”

Hydraulic Tool Circuit

With access at a premium, railroad contractors bring as few pieces of equipment on site as possible. In addition to their material handling work with tracks and ties, the auxiliary hydraulics serve as a powerful platform for running hydraulic hand tools required to remove and replace tracks and ties, eliminating the need to bring compressors or other tools on site.

“We use a lot of hydraulic hand tools,” says Dorris. “Spike pullers, spike drivers, tamping guns, things of that nature. If we have a tool carrier and a hydraulic setup on our backhoe, we can pull the spikes, change the tie, use the hydraulics to drive the new spikes and put the track back in service, as well as tamp the ties off. We can cut rails with hydraulic saws, we have hydraulic-driven grinders.”

“It all plays into access. I don’t need a compressor. If I only have to get one piece there and that piece is [a backhoe], then all the tools are there, and the crew goes down the track and they go to work.”

Telematics

Many backhoes now come standard with telematics – a powerful equipment management and utilization technology that is particularly helpful for large, decentralized organizations (such as railroad maintenance contractors). Telematics provides an easy way for fleet managers to know the current location of machines and their crews. This can be helpful in many ways. It simplifies maintenance by keeping track of engine hours and maintenance alerts. It provides a record of how equipment is being used (idle vs. working mode, etc.) and helps identify underutilized pieces of equipment that may be put to use in areas where they are needed. And it provides an extra layer of security, as geofences (virtual perimeters) can be established to send alerts when a machine leaves the staging area (identifying possible theft), and unauthorized after-hour use can be easily identified.

Operating Environment

Most railroad contractors will outfit their backhoes with an enclosed cab with environmental controls. As railroad maintenance and construction is heavily dependent on rail schedules, they can’t afford to delay work due to the elements.

“You have to work when the track’s available,” says Dorris. “‘It doesn’t rain on the railroad’ is the old saying, we work in the rain unless there is lightning.”

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