CANADIAN SHIELD
A DIVISION OF SIG | SUSTAINABLE INFRASTRUCTURE GROUP

GROUND · CS-250

IT DOESN'T OUT-MUSCLE THE GROUND. IT OUTLASTS IT.

Tracked. Battery-electric. An anchored winch pulls roughly seven times what the tracks alone can.

ROUTE CLEARANCE · BERM & TRENCH WORK · WIRE & OBSTACLE REDUCTION · ANCHORED RECOVERY

PATENT PENDING

EXPORT-CONTROLLED — INTERNATIONAL TRANSFER SUBJECT TO CANADIAN GOVERNMENT PERMITS

COORDINATED CARRIER — EVERY TOOL MECHANICAL, NEVER A STRIKE PLATFORM

600 KG	20 KN	~7 ×	0
GROSS VEHICLE MASS	ANCHORED WINCH CLASS	WINCH PULL VS UNANCHORED DRAWBAR	RADIO OR GPS LINKS IN ANY TIER

OVERVIEW

THE GROUND FAMILY'S FIELD ENGINEER. GRIZZLY-COMMON, REWORKED TO WORK.

Part of the **6-system Ground line** — shares its envelope and doctrine with Grizzly, Moose, Wolf.

600 KG	20 KN	~7 ×	0
GROSS VEHICLE MASS	ANCHORED WINCH CLASS	WINCH PULL VS UNANCHORED DRAWBAR	RADIO OR GPS LINKS IN ANY TIER

Beaver CS-250 is a tracked, battery-electric field-engineering carrier — the machine that opens the route rather than moving the load over it. Route clearance, berm shaping, wire and light-obstacle reduction, and anchored recovery are the job; a person's judgment stays on the fibre for every one of them.

It shares the ground family's chassis logic — welded frame, twin electric track drives, low-slung battery bay — but the Beaver's version is reworked at three stations to react working loads instead of just carrying them: a push/tool frame forward, a winch bed and fairlead amidships, and anchor hard-points with a rear spade that hold the hull while the winch works. A front quick-coupler swaps the mission tool — blade, winch and earth-anchor rig, wire/obstacle cutter, trencher/auger, or bridging/matting — the same way Grizzly swaps a cargo module.

The heritage is the same lineage as the family anchor: three decades of the parent group building and operating heavy mobile rigs, carried into a tracked-chassis line that has been in continuous field service since 2017. The Beaver is not a clean-sheet earthmover — it is that lineage, uprated at the stations that see the biggest forces on the vehicle.

THE CLAIM

GRIZZLY CARRIES. BEAVER WORKS.

A dozer works because it is heavy. A 600 kg robotic sapper cannot out-muscle the ground with installed power alone — so the Beaver borrows its force from the ground itself, through an anchored winch, and spends its patience on shallow, repeated passes instead of one heavy one.

HOW IT WORKS

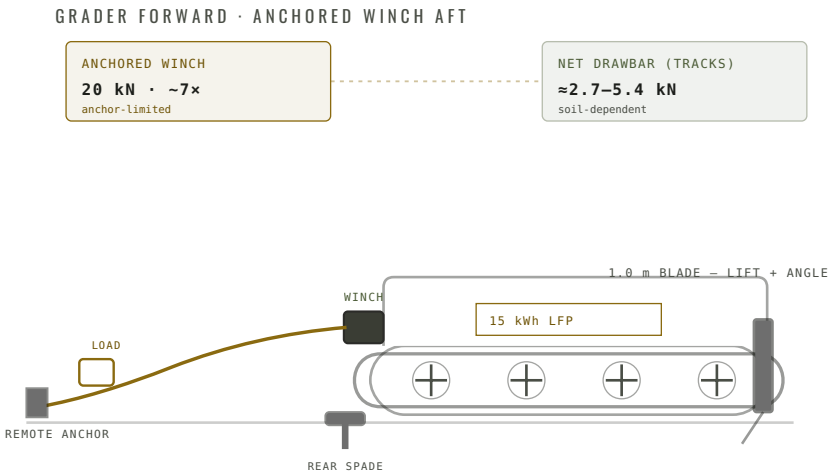
MECHANISM

THE FORCE COMES FROM THE ANCHOR, NOT THE MOTOR

Weight is the tool in earthmoving, and a light robotic sapper can't cheat that with installed power. So the Beaver's blade does the shallow work directly, and its signature system — a 20 kN-class winch, fairlead, rear spade and a portable earth anchor set forward of the vehicle — does the heavy work by pulling against the ground itself.

The front blade lifts and angles for shallow, multi-pass cuts — grading, snow, berm shaping and light rubble, not single-pass dozing. Net drawbar on its own tracks runs roughly 2.7–5.4 kN depending on soil, worth a 5–11 cm cut per pass. Planted and anchored, the same 20 kN winch line pulls roughly seven times that — the honest number behind “a grader and a winch, not a dozer.”

Guidance runs the fleet's three no-radio ground tiers, but the work itself stays on Tier 2: fibre-tethered teleop with a human in the loop, because judgment calls at an active worksite are not an autonomy task — SLAM is scoped to transit and survey. Tool interlocks sit outside the autonomy stack entirely: no blade or auger motion without an armed, deliberate command, and a defined line-safety zone around any loaded winch line.



CS-250 · THE ANCHOR TAKES THE LOAD THE TRACKS ALONE CAN'T

SPECIFICATIONS

CAPABILITIES & SPECIFICATIONS

BEAVER CS-250

DIMENSIONS & MASS

Gross vehicle mass	**600 kg**
Track contact patch	**0.55 m²**
Nominal ground pressure	**≈10.7 kPa (~1.6 psi) — light-tracked class**
Mass residual	**~380 kg of 600 kg gross — frame, tracks and drives**

PERFORMANCE

Work speed (blading)	**~0.5 m/s**
Transit cruise	**~2.5 m/s (9 km/h)**
Net drawbar — loose soil	**≈2.7 kN**
Net drawbar — firm cohesive soil	**≈5.4 kN**
Drawbar power @ 0.5 m/s	**≈1.7 kW electrical — force-limited, not power-limited**

DRIVE & ENERGY

Configuration	**Tracked skid-steer · twin electric track drives — Grizzly-common platform**
Energy storage	**15 kWh LFP (~100 kg) — force-limited, not energy-limited**

WINCH & ANCHOR

Winch	**20 kN-class COTS · fairlead, rear spade, portable earth anchors**
Winch line speed / power	**0.1 m/s · 2.0 kW electrical**
Anchored-winch multiplier	**≈7× unanchored drawbar — anchor-limited; holding capacity is a soil-class question**

TOOLS & INTERFACE

Front blade	**1.0 m · lift + angle · shallow multi-pass**
Blade cut depth per pass	**~5 cm loose · ~11 cm firm cohesive**
Front tool interface	**Quick-coupler mount · electric/hydraulic tool power · data/feedback · shock-rated**
Mission tools	**5 — blade, winch + anchor, wire/obstacle handling, trencher/auger, bridging/matting**

GUIDANCE & SIGNATURE

Guidance tiers	**Preset waypoint · fibre-tethered teleop for work · autonomous SLAM for transit and survey**
Emissions	**None in any tier — no radio, no GNSS**
Design environment	**Muskeg · snow · freeze–thaw · to −40 °C**

COMPLIANCE

Patent status	**Patent pending**
Export control	**Export-controlled — international transfer subject to Canadian government permits; export posture is counsel-first**
Munitions classification	**Carrier for mechanical engineering tools, not a munition — no warhead, fuze or energetic material in any tool or variant**
Tool governance	**No blade or auger motion without an armed, deliberate command — a human on the fibre for every working task**
Scope	**The Beaver opens the route; heavy haul over it is Grizzly CS-210 scope**

EVERY CUT-DEPTH AND DRAWBAR FIGURE STATES ITS SOIL CLASS, AND THE ANCHORED-WINCH MULTIPLIER IS ANCHOR-LIMITED — HOLDING CAPACITY IS A SOIL-CLASS QUESTION, STATED WITH THE PULL RATHER THAN ASSUMED. A 600 KG SAPPER DOES NOT OUT-MUSCLE THE GROUND; IT BORROWS ITS FORCE FROM THE ANCHOR AND SPENDS PATIENCE ON SHALLOW, REPEATED PASSES.

THE TRADES, STATED

NO RADIO. NO GPS. THE WORKSITE DOESN'T GET A SIGNAL EITHER.

The fleet's thesis is that the link is the vulnerability — so the Beaver carries none. Preset routes and fibre-tethered work emit nothing; SLAM senses passively for transit and survey and calls home never. A parted winch line is the worst failure mode on this platform, not a jammed one, and the safety chain — hardwired e-stops, a wired stop over the fibre, a defined line-safety zone, and tool interlocks that require an armed, deliberate command before any blade or auger moves — is built for exactly that.

The manufacturing thesis sharpens here rather than softens: every ground-engaging tool — blade edge, auger flight, anchor spade, winch structure — is steel, welded and machined in the owned 5-axis shop, not moulded. Abrasion, point loads and −40°C impact are exactly where polymer fails, and earthwork finds that failure fast. Beaver is a coordinated carrier within the ground family — a support platform for engineering tasks, never a strike platform — and every one of its five tools is mechanical: no warhead, fuze or energetic material anywhere in the lineup.

FAMILY CONTEXT

SIX PLATFORMS. ONE CHASSIS LOGIC.

Grizzly anchors CS-210 through CS-260: Grizzly hauls the heavy load, Moose hauls bulk, Wolf coordinates in numbers, Lynx scouts ahead, Beaver works the ground, Wolverine carries the access tools. The anchor's deck standard, console and safety chain are engineering the family buys once — Beaver spends that budget on the three stations that let a light carrier react a heavy force.

DEPLOYMENT

A ROUTE-CLEARING LEG, WALKED THROUGH.

One leg, walked end to end — illustrative of how the carrier is used, not a mission record.

01 · ARRIVAL

BY SURFACE, TOOL ON THE NOSE

The Beaver self-deploys on tracks, or arrives by road, rail or sling. At the worksite the blade or the winch-and-anchor rig lands on the front quick-coupler — mechanical mount, power and data in one motion — and the fibre spool is seated for the tethered leg ahead. No link check — there is no link.

02 · WORK

SHALLOW CUTS, ANCHORED PULLS

On a route-clearing or berm leg, the blade takes shallow, multi-pass cuts at a steady work speed, patient where a single-pass dozer can't be. Where the job is a pull — an obstacle, a bogged load, a recovery — a remote earth anchor goes down forward of the vehicle, the rear spade sets, and the 20 kN winch takes the strain the tracks alone couldn't. A human stays on the fibre for every armed command; uncertain ground still means stop, hold, wait.

03 · RECOVER

LINE IN, TOOL SWAPPED, OUT AGAIN

The winch line reels in, the spade lifts, and the tool swaps at the quick-coupler for the next task — the same interface whether it lands a blade, an auger or a matting rig. If a leg ends early, the vehicle is exactly where it stopped — holding, silent, waiting for a person. Recovery is a tow point, not a search.

THE FAMILY

RELATED SYSTEMS

CS-210 · FAMILY ANCHOR

GRIZZLY

Hauls the heavy load — the anchor whose deck standard, console and safety chain the whole family buys once.

CS-220 · BULK HAULER

MOOSE

Hauls bulk on the family's shared chassis logic.

CS-230 · COORDINATED NUMBERS

WOLF

Coordinates in numbers — many carriers on the same doctrine.

CS-240 · FAST SCOUT

LYNX

Scouts ahead of the family's heavy movers.

CS-260 · ACCESS TOOLS

WOLVERINE

Carries the access tools to the work face.

Beaver CS-250 · patent pending · export-controlled — international transfer requires Canadian government permits; export posture is counsel-first. A ground carrier for mechanical engineering tools — never a strike platform. No warhead, fuze or energetic material in any tool or variant; every effector is a blade, winch, auger, cutter or manipulator; no radio and no GPS in any guidance tier. No blade or auger motion without an armed, deliberate command — a person's judgment stays on the fibre for every working task.

IT DOESN'T OUT-MUSCLE THE GROUND. IT OUTLASTS IT.

BEAVER · GROUND · CS-250

Six platforms. One chassis logic.

01

REQUEST A TECHNICAL EXCHANGE

A working session with engineering, not sales — bring your engagement problem, we bring the mechanism.

02

REQUEST THE GROUND FAMILY DATA PACK

Drawings, tolerances and test basis for Beaver and its siblings, gated behind export screening.

03

DISCUSS A TRIAL QUANTITY

Tell us end-user, jurisdiction, quantity band and timeline — we respond against your program, not a price list.

SALES
sales@cdnshield.ca

GENERAL
info@cdnshield.ca

WEB
cdnshield.ca

Direct lines, named points of contact and facility details are shared with qualified programs following screening — not withheld, sequenced.

Canadian Shield is a defence and industrial drone company, backed by SIG: four-domain uncrewed systems built for jammed, GPS-denied environments — no-radio by design, manufactured for cost and salvo depth.

Beaver CS-250