RAILWAY SYSTEMS
by voestalpine

CONCRETE CROSSTIES

voestalpine Railway Sytems Nortrak LLC
www.voestalpine.com/nortrak

voestalpine
ONE STEP AHEAD.

STANDARD CONCRETE CROSSTIES

Description

We offer a complete line of concrete railroad crossties. Our catalog of concrete ties includes:

- Standard track
- Turnout
- Gantry
- Specialty Ties including guard rail, restraining rail, and grade crossing ties

All concrete ties are designed in accordance with AREMA specifications and can be customized to meet customer requirements in heavy haul, industrial, transit systems, and high speed applications.

Our concrete ties are engineered to require minimum maintenance to maintain track gauge in the harshest conditions over long periods of time.

Our concrete ties will:

- Improve reliability of existing tracks
- Build long-term performance and provide longer in-track life
- Reduce maintenance with opportunities to reduce costs

Our concrete crossties are manufactured at strategically located facilities in Spokane, Washington and Cheyenne, Wyoming in ISO 9001:2015 certified plants.

Benefits

- Ease of Installation: Using any fastening system with a pre-set gauge, can be installed at rates of up to 1,200 ties per day.
- Greater Efficiency: fewer concrete ties per track mile are required versus timber or other types of ties.
- Greater Life Expectancy: Nortrak concrete ties outlast other types of ties.
- Reduced Maintenance: A stiffer foundation for the track system reduces required lining and surfacing maintenance and provides accurate track gauge.
- Greater Fuel Economy: Less friction and stiffer track structure allow rolling stock to move with less resistance and decreases fuel consumption.
- Environmentally Safe: Concrete ties contain no hazardous chemicals that harm the environment.
- Excellent Gauge Holding: Our elastic fastening system increases resistance to longitudinal rail movement developed by thermal stress and traffic loads.
- Safety: Limited lateral and longitudinal movement of rail reduces derailments and minimizes derailment damage.

Improved performance

Improved Reliability

Reduced Maintenance & Reduced Life-Cycle Costs

CONCRETE TIES – SUSTAINABILITY

Sustainable Concrete Ties

A sustainable alternative to other types of ties currently used in the North American rail industry, concrete ties provide superior environmental and energy benefits in their manufacturing and use.

Environmentally Friendly Product Design

- Not treated with any chemicals that could leach into the ground.
- Steel clips, castings and inserts, as well as steel wire reinforcement, are manufactured using upwards of 90% recycled scrap steel.
- Concrete ties can be crushed and all components can be recycled.

Reduced Greenhouse Gas (GHG) Emissions

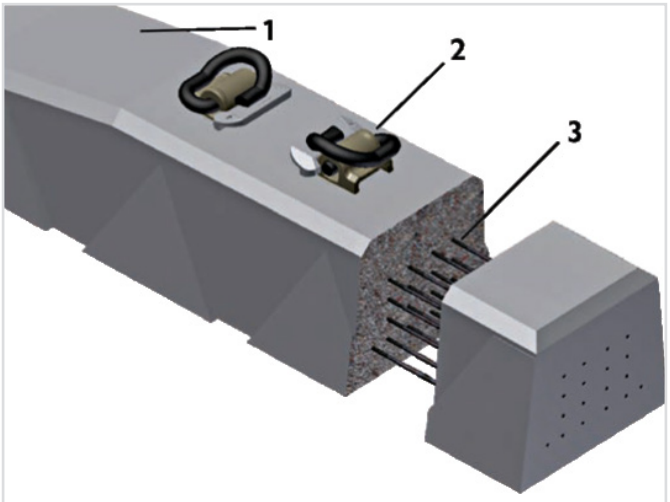
- Including the manufacturing process, concrete ties can result in one-half to as little as one-sixth the amount of GHG emissions wood ties emit over their expected life.
- A variety of factors provide this advantage:
  - Depletion of critical natural resources
  - Greater track strength (requiring fewer ties per length of track)
  - Mining and use of raw materials to produce concrete ties vs. timber harvesting
  - Lower maintenance requirements

Energy Savings

- Track constructed using concrete ties is stiffer, providing a higher track modulus.
- Higher track modulus results in reduced rolling
- resistance.
- Reduced rolling resistance allows railroads to improve their fuel efficiency.
- Up to a 7% reduction in rolling resistance provides a 1.2% to 4.5% reduction in fuel consumption.

Our Commitment to Sustainability

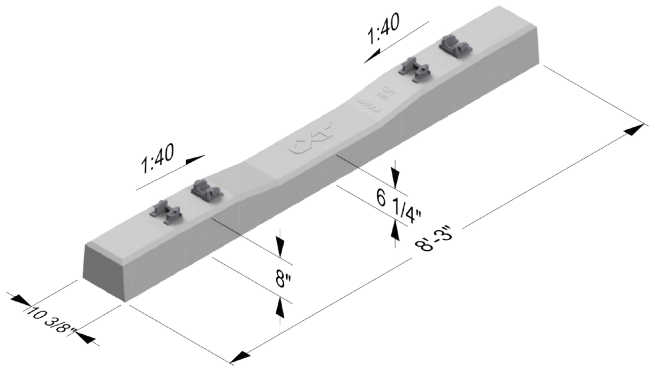
- We are currently transitioning our production process to use electricity to heat production beds eliminating our reliance on natural gas and improving the environment al footprint of manufacturing concrete ties in Spokane.
- Conserve lighting needs through the use of high efficiency lighting to illuminate facilities.
- Minimize contaminants in waste water by increased use of filter presses.
- Minimize hazardous waste by controlling the use of toxic chemicals during manufacturing and investigate the use of other alternative chemicals.
- Reduce electrical demand by installing high efficiency motors.
- Continuously focus on developing and implementing new sustainability initiatives.



1. Produced with environmentally friendly concrete.
   - No creosote or residue
   - Lower carbon footprint compared to wood
2. Castings, clips and inserts are made from recycled scrap steel.
3. Reinforcing steel wires are made from recycled scrap steel.

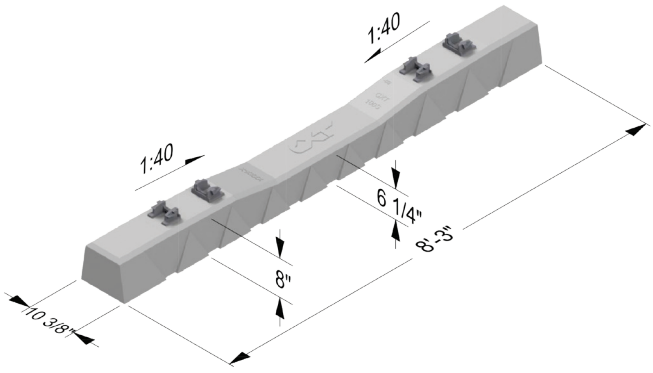
CONCRETE CROSSTIES

100-06 Concrete Tie



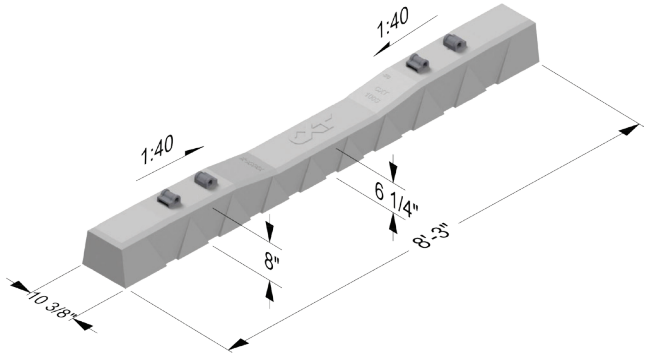
Elastic Fastener System	Fastclip
Design Weight	610 lbs
Length	8'3"
Flexural Strength	Railseat positive 278 in-kips Center negative 153 in-kips
Tie Spacing	Meets AREMA structural performance criteria or tie spacing from 24" to 30" on center
Concrete	7,000 psi minimum 28 day compressive strength with air entrainment
Pad	6.5 mm pad
Rail Seat Cant	1:40
Rail Section	115 lb rail or other 5½" base rail sections

100S-09 Concrete Tie



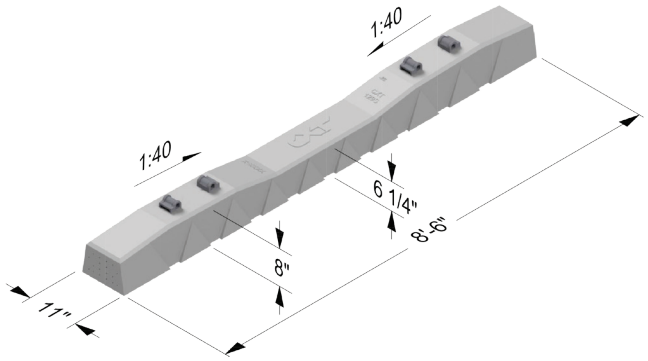
Elastic Fastener System	Fastclip
Design Weight	610 lbs
Length	8'3"
Flexural Strength	Railseat positive 278 in-kips Center negative 153 in-kips
Tie Spacing	Meets AREMA structural performance criteria or tie spacing from 24" to 30" on center
Concrete	7,000 psi minimum 28 day compressive strength with air entrainment
Pad	6.5 mm pad
Rail Seat Cant	1:40
Rail Section	136 lb rail or other 6" base rail sections

100S-20 Concrete Tie



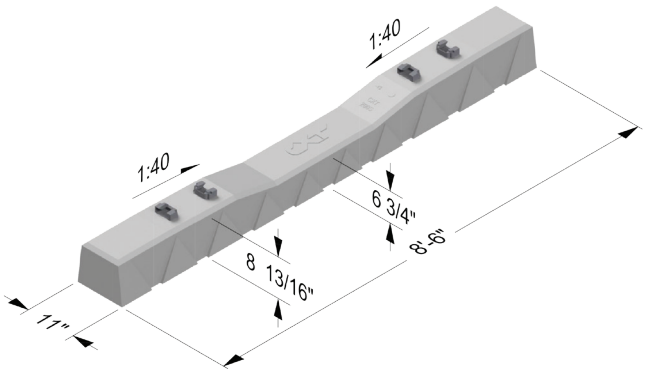
Elastic Fastener System	e-clip
Design Weight	610 lbs
Length	8'3"
Flexural Strength	Railseat positive 278 in-kips Center negative 153 in-kips
Tie Spacing	Meets AREMA structural performance criteria or tie spacing from 24" to 30" on center
Concrete	7,000 psi minimum 28 day compressive strength with air entrainment
Pad	6.5 mm pad
Rail Seat Cant	1:40
Rail Section	115 lb rail or other 5½" base rail sections

129S-22 Concrete Tie



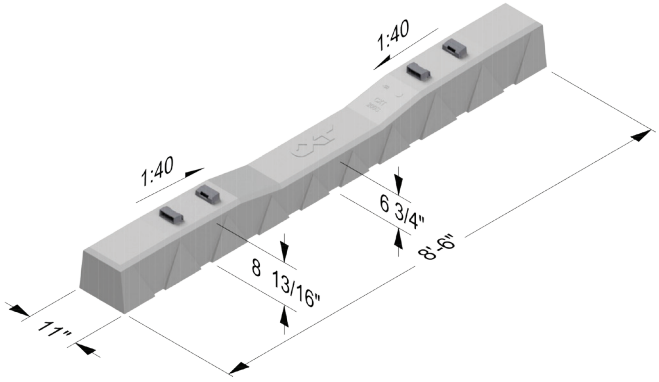
Elastic Fastener System	e-clip
Design Weight	610 lbs
Length	8'6"
Flexural Strength	Railseat positive 278 in-kips Center negative 153 in-kips
Tie Spacing	Meets AREMA structural performance criteria or tie spacing from 24" to 30" on center
Concrete	7,000 psi minimum 28 day compressive strength with air entrainment
Pad	6.5 mm pad
Rail Seat Cant	1:40
Rail Section	136 lb rail or other 6" base rail sections

200S-13 Concrete Tie



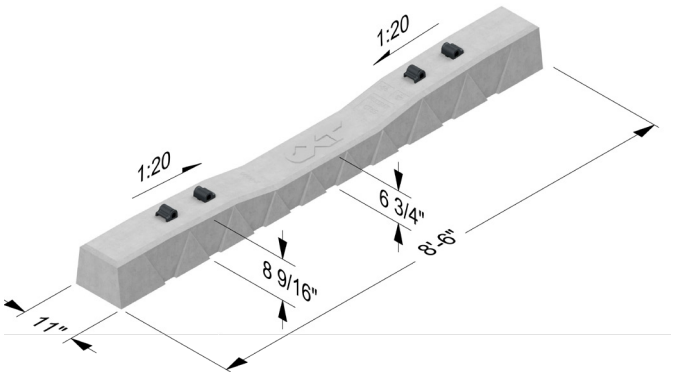
Elastic Fastener System	Safelok I
Design Weight	700 lbs
Length	8'6"
Flexural Strength	Railseat positive 319 in-kips Center negative 218 in-kips
Tie Spacing	Meets AREMA structural performance criteria or tie spacing from 24" to 30" on center
Concrete	7,000 psi minimum 28 day compressive strength with air entrainment
Pad	8.0 mm pad
Rail Seat Cant	1:40
Rail Section	136 lb rail or other 6" base rail sections

200S-50 Concrete Tie



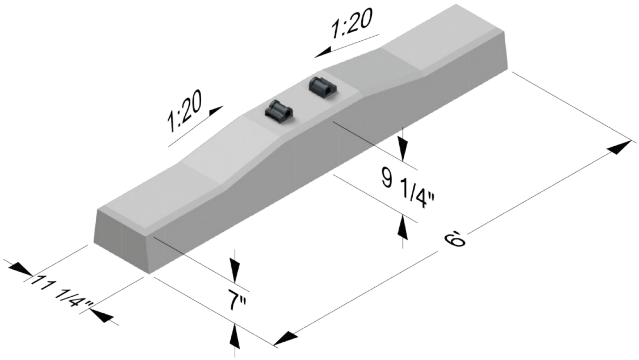
Elastic Fastener System	Safelok III
Design Weight	700 lbs
Length	8'6"
Flexural Strength	Railseat positive 319 in-kips Center negative 218 in-kips
Tie Spacing	Meets AREMA structural performance criteria or tie spacing from 24" to 30" on center
Concrete	7,000 psi minimum 28 day compressive strength with air entrainment
Pad	7.5 mm - 3 part pad
Rail Seat Cant	1:40
Rail Section	141 lb rail or other 6" base rail sections

CT6S-66 Concrete Tie



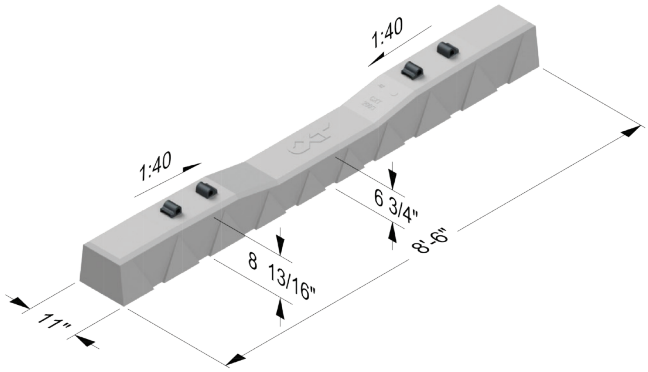
Elastic Fastener System	e-Clip
Design Weight	700 lbs
Length	8'6"
Flexural Strength	Railseat positive 312 in-kips Center negative 217 in-kips
Tie Spacing	Meets AREMA structural performance criteria or tie spacing from 24" to 30" on center
Concrete	7,000 psi minimum 28 day compressive strength with air entrainment
Pad	5.0 mm pad
Rail Seat Cant	1:20
Rail Section	136 lb rail or other 6" base rail sections

399-21 Concrete Tie



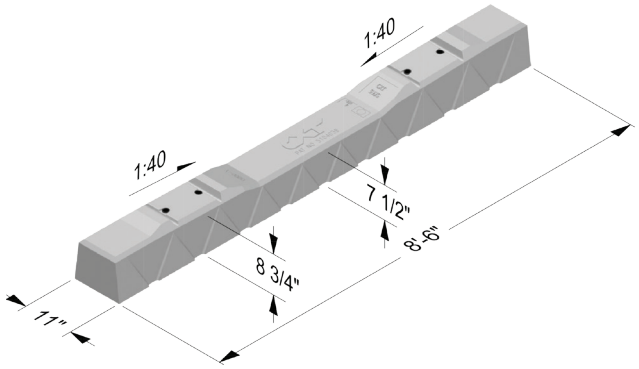
Elastic Fastener System	e-Clip
Design Weight	530 lbs
Length	6'
Flexural Strength	Railseat Positive 390 in-kips
Tie Spacing	24" on center
Concrete	7,000 psi minimum 28 day compressive strength with air entrainment
Pad	Thickness depends on rail section
Rail Seat Cant	Flat
Rail Section	135 lb crane rail 171 lb crane rail 175 lb crane rail

200S-67 Concrete Tie



Elastic Fastener System	e-Clip
Design Weight	700 lbs
Length	8'6"
Flexural Strength	Railseat positive 319 in-kips Center negative 205 in-kips
Tie Spacing	Meets AREMA structural performance criteria or tie spacing from 24" to 30" on center
Concrete	7,000 psi minimum 28 day compressive strength with air entrainment
Pad	5.0 mm pad
Rail Seat Cant	1:40
Rail Section	136 lb rail or other 6" base rail sections

509S-110 SKL Concrete Tie



Elastic Fastener System	SKL
Design Weight	710 lbs
Length	8'6"
Flexural Strength	Railseat positive 319 in-kips Center negative 240 in-kips
Tie Spacing	Meets AREMA structural performance criteria or tie spacing from 24" to 30" on center
Concrete	7,000 psi minimum 28 day compressive strength with air entrainment
Pad	6" base rail pad
Rail Seat Cant	1:40
Rail Section	115 lb rail or other 5½" base rail sections 136 lb rail or other 6" base rail sections

CONCRETE CROSSTIES

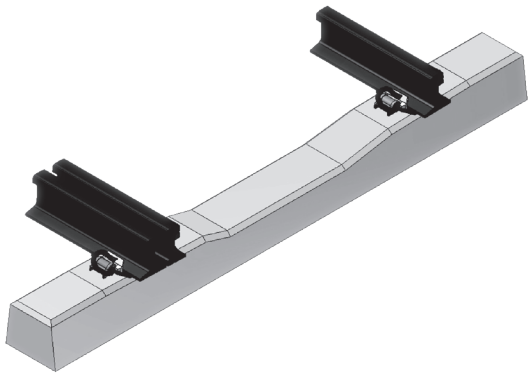
Concrete Tie Specifications

APLICATIONS					FASTENING SYSTEMS					
Tie	Transit	Industrial/ Port	Mainline (Low Density)	Mainline (Heavy Haul)	Gantry	e-Clip	Fastclip	Safelok I	Safelok III	SKL
100-06	•	•	•				•			
100S-09	•	•	•				•			
100S-20	•	•	•			•				
129S-22	•	•	•			•				
200S-13		•	•	•				•		
200S-50			•	•					•	
CT6S-66		•	•	•		•				
399-21					•	•				
200S-67		•	•	•		•				
509-110	•	•	•	•						•

- Standard concrete tie railseats can be coated with epoxy or polyurethane at customer's request.
- Flexural strength is determined by AREMA specifications based on speed, tonnage and tie spacing.
- The Fastclip, Safelok III and SKL are fully captive (clip, pad and insulator are pre-installed by the manufacturer prior to shipment).
- The Safelok I is semi-captive (clip and pad are pre-installed by the manufacturer prior to shipment).
- Custom ties made to your design application.
- Nortrak can customize our concrete ties for most rail sections using specialized insulators.

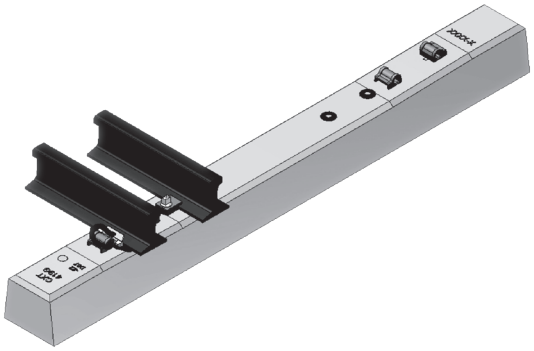
SPECIAL CONCRETE CROSSTIES

Restraining Rail Concrete Tie



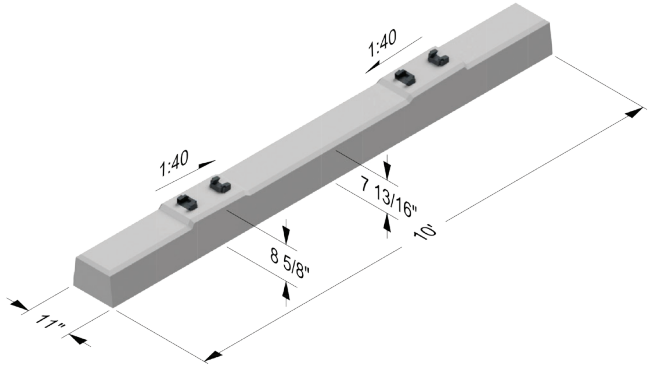
Elastic Fastener System	e-Clip, Fastclip, or Safelok
Rail Base	5½” or 6”

Guard Rail Tie



Elastic Fastener System	e-Clip, Fastclip, or Safelok
Rail Base	5½” or 6”

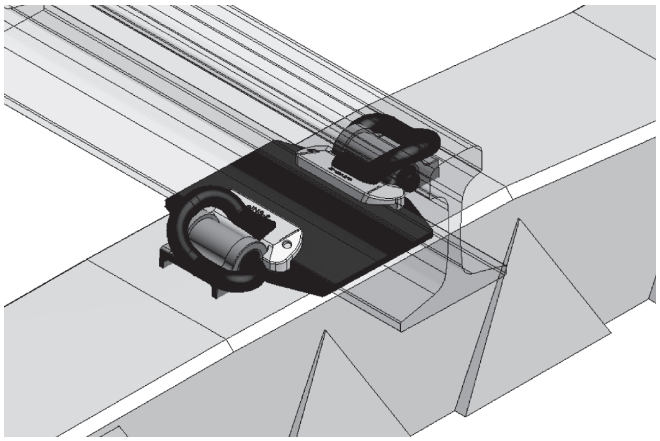
Crossing Rail Tie



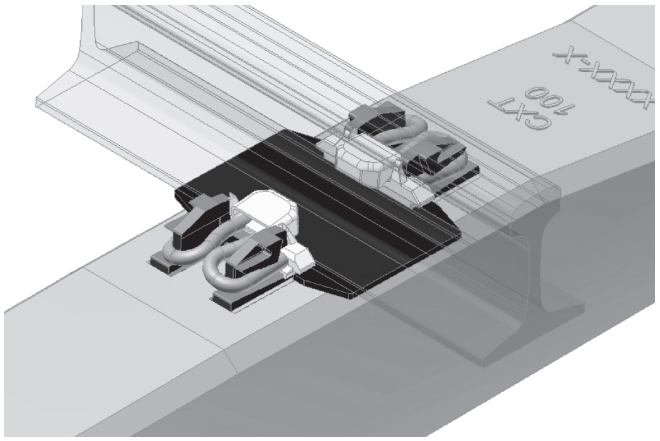
Elastic Fastener System	e-Clip, Fastclip, or Safelok
Rail Base	10’

FASTENING SYSTEMS

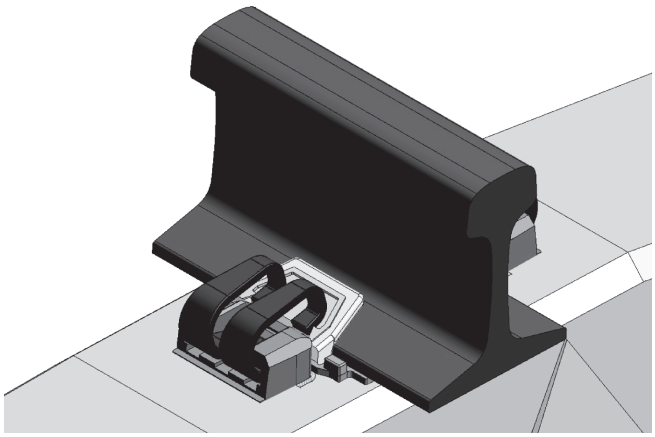
e-Clip
Standard Elastic Fastening System



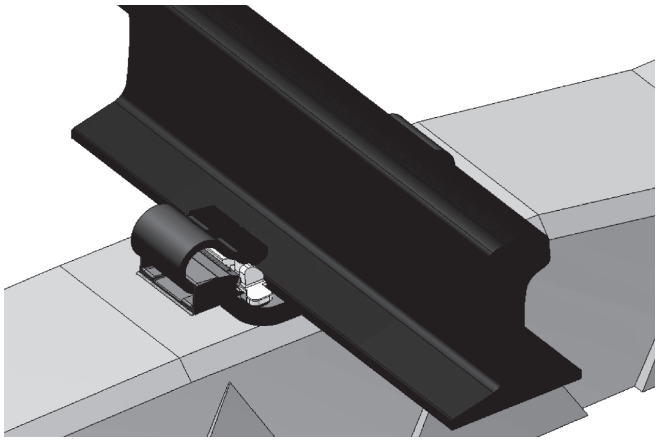
Fastclip
Fully Captive Fastening System



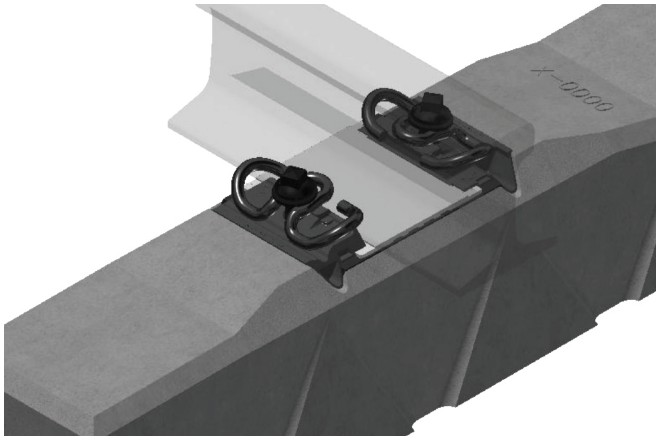
Safelok I
Semi-captive Fastening System



Safelok III
Fully captive fastening system



SKL Fastening System



09-2023

Thank you very much for your interest.
Please contact a Nortrak sales professional if you have any questions or if you need assistance.

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