TES INC.

TECHNICAL CASE STUDY

SPARTA
TILT & LOAD

UNDERGROUND LOADING, LIFTING AND TRANSPORT

Custom engineered for underground material-handling requirements.

WE KEEP YOUR MINE MOVING.

Illustrative underground setting

TES INC.

OPERATIONAL BACKGROUND

ORIGINAL MINE REQUIREMENT

The mine approached TES about a boom truck, with a need to move waste bins underground. The discussion shifted to a custom build that would remove the need for coordinating two machines.

OBJECTIVE | **Retain crane capability and add a loading and transport method.**

Illustrative bin-handling scene

REPORTED EQUIPMENT DEPENDENCY

BOOM TRUCK + SECOND VEHICLE ⟶ BIN MOVEMENT

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DESIGN REQUIREMENTS

MATERIAL-HANDLING REQUIREMENTS

Retain boom-truck functions while adding a loading method for suitable bin and equipment movements.

MINE REQUIREMENT	EQUIPMENT RESPONSE
Load without another machine for each movement	Tilt deck and integrated winch
Transport the loaded bin	Rear transport deck
Retain lifting and positioning	HIAB crane
Navigate travelways and set up for handling	Articulated carrier; separate travel and working envelopes

Image: illustrative underground setting

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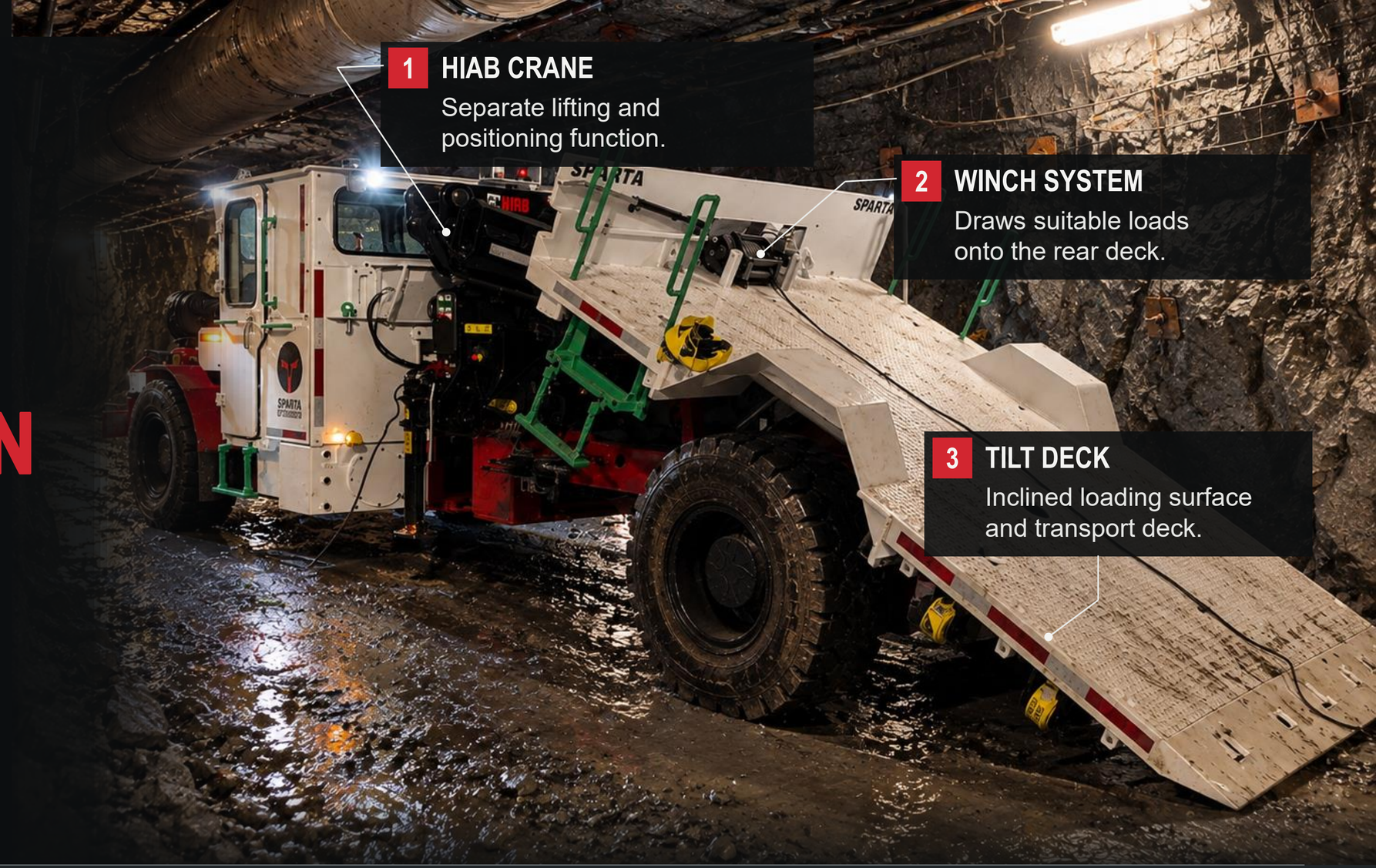
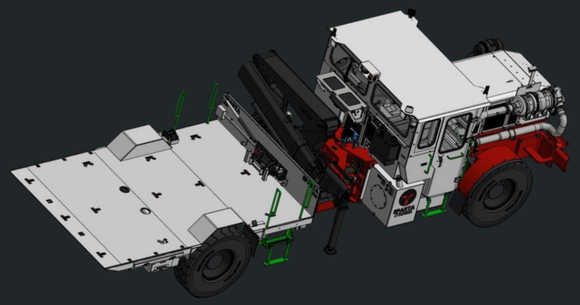
EQUIPMENT ENGINEERING

EQUIPMENT CONFIGURATION & INTEGRATION

Tilt deck, winch and crane on the SPARTA carrier.





HYDRAULIC SYSTEM

Pumps and hydraulic system identified in the TES assembly.

DECK INTERLOCKS

Separate safety and lift interlock systems are listed.

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OPERATING CONFIGURATIONS

TILT-DECK LOADING & TRANSPORT

INCLINED DECK AND WINCH / ILLUSTRATIVE UNDERGROUND SETTING

LEVEL-DECK LOAD ARRANGEMENT

The winch draws suitable loads onto the inclined deck. The deck returns to level for secured transport.

DRAWING REFERENCE	VALUE
Deck length	**3.811 m**
Level deck height	**1.092 m**

Payload, winch and restraint limits are specific to the delivered configuration.

Upper right: original surface photograph

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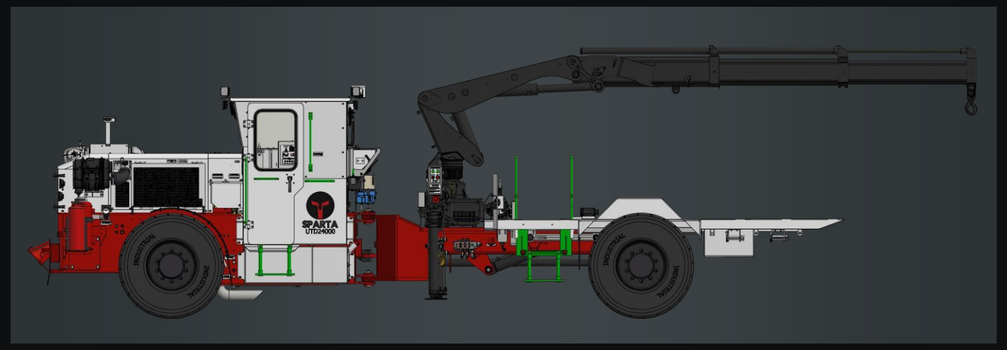
TECHNICAL REFERENCE

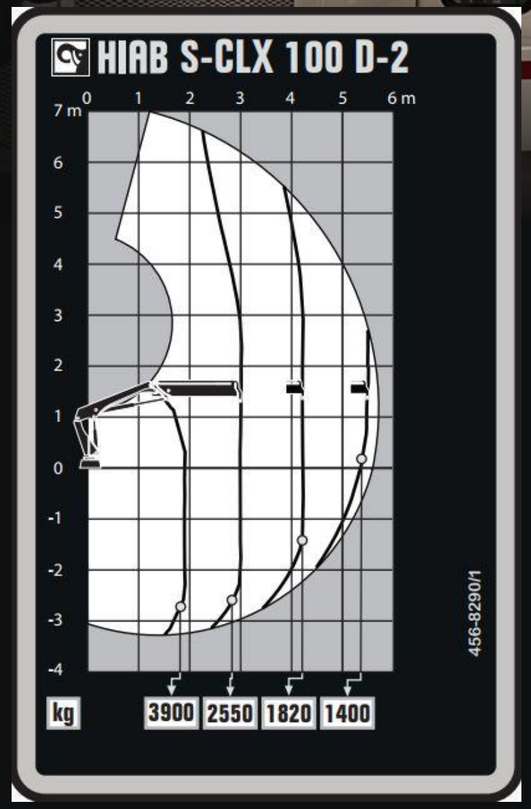
HIAB CRANE CAPACITY

S-CLX 100 D-2

Crane lifting capacity is separate from the deck transport rating.



TES CRANE-DEPLOYED REFERENCE VIEW



ORIGINAL HIAB LOAD DIAGRAM

WORKING RADIUS	RATED CAPACITY
1.9 m	3,900 kg
3.0 m	2,550 kg
4.2 m	1,820 kg
5.5 m	1,400 kg

5.7 m MAXIMUM HYDRAULIC OUTREACH

Use the installed load chart and approved stabilization conditions.

Upper image: illustrative underground setting

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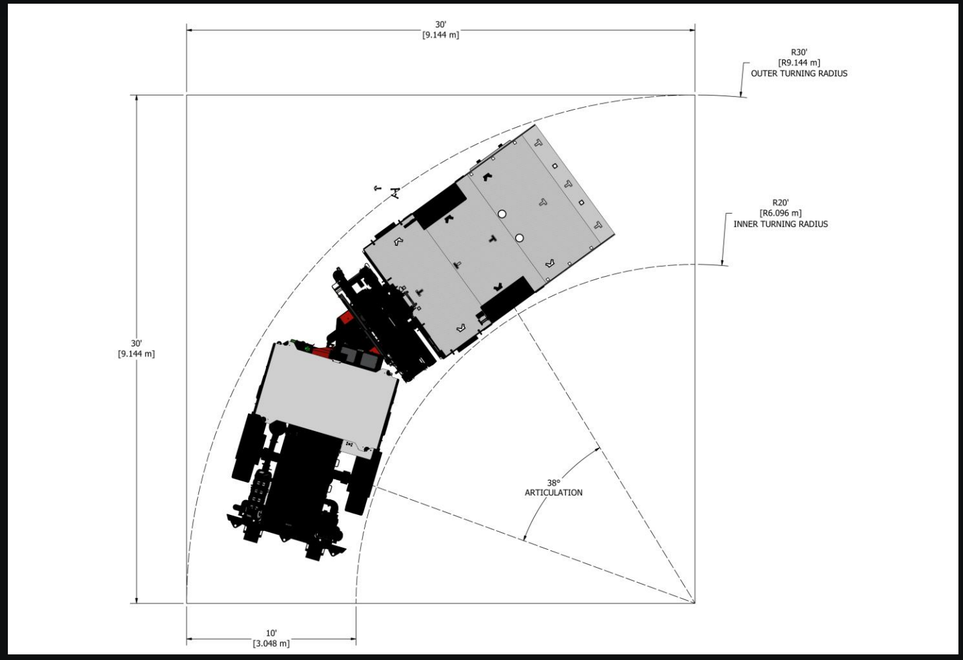
VEHICLE GEOMETRY

UNDERGROUND ACCESS & WORKING ENVELOPE

Travelway clearance and handling space are separate checks.

REFERENCE CONFIGURATION 811351000	VALUE
Tramming height	**2.554 m**
Overall width	**2.588 m**
Overall length	**8.723 m**
Outer turning radius	**9.144 m**
Inner turning radius	**6.096 m**
Steering articulation	**±38°**

Load height, tilted-deck movement and crane setup require separate clearance assessment.



ORIGINAL TES TURNING-ENVELOPE DRAWING

Upper image: illustrative setting

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REPORTED MINE APPLICATIONS

DEPLOYMENT & ADDITIONAL USE

MULTIPLE APPLICATIONS REPORTED

The mine purchased multiple units and extended their use beyond the original waste-bin requirement.

Surface photograph illustrates the load arrangement; it is not a customer recovery record.

ORIGINAL APPLICATION

Movement of waste bins underground.

ADDITIONAL REPORTED USE

Transport of disabled forklifts and other equipment.

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PROJECT ASSESSMENT

OPERATIONAL ASSESSMENT

EQUIPMENT ALLOCATION

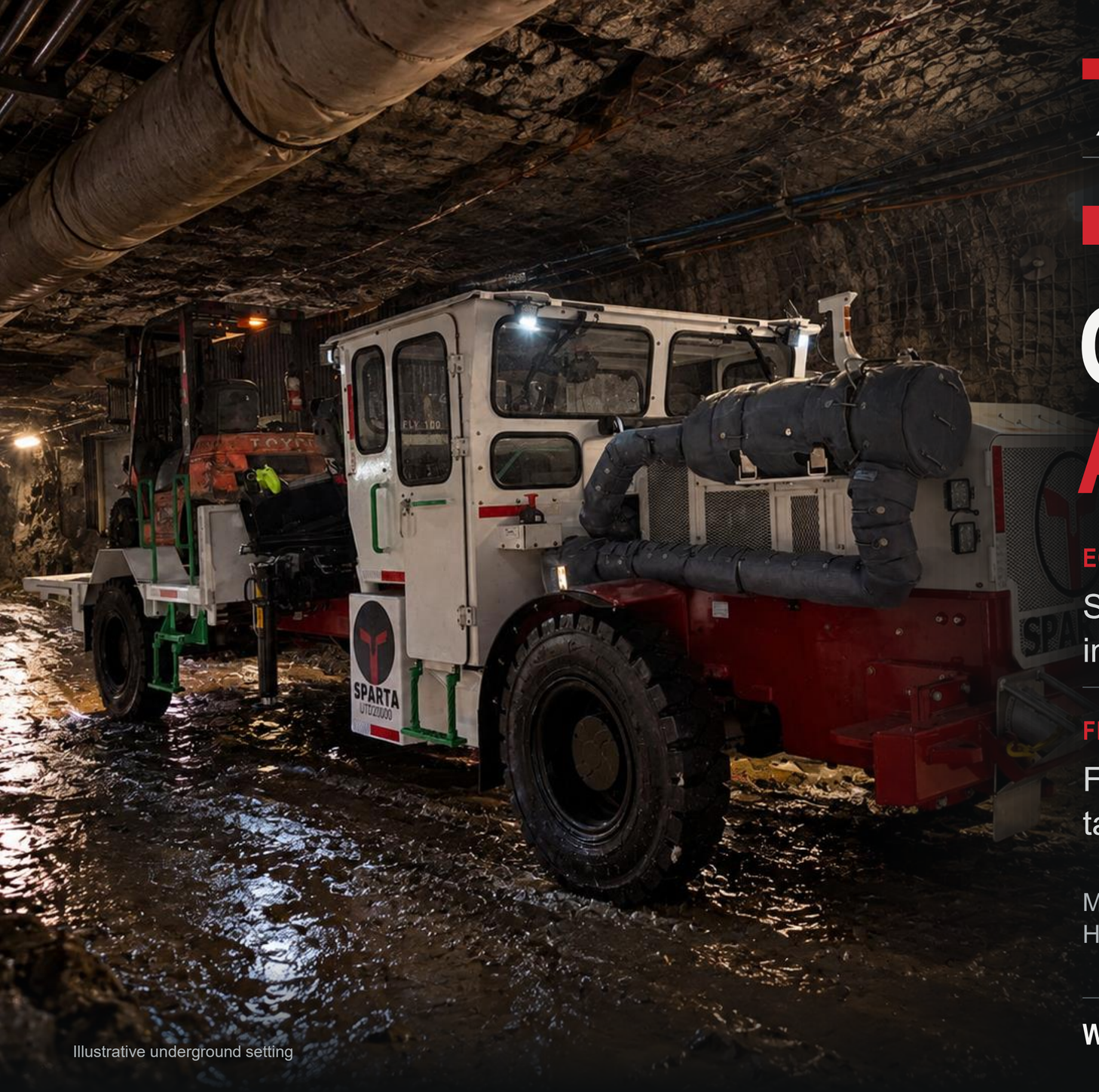
Suitable movements can be assigned to one integrated loading and transport vehicle.

FLEET APPLICABILITY

Fleet requirements still depend on concurrent tasks, load limits, access and machine availability.

Multiple-unit purchasing and broader use are reported.
Handling-time and cost savings have not been quantified.

WE KEEP YOUR MINE MOVING.

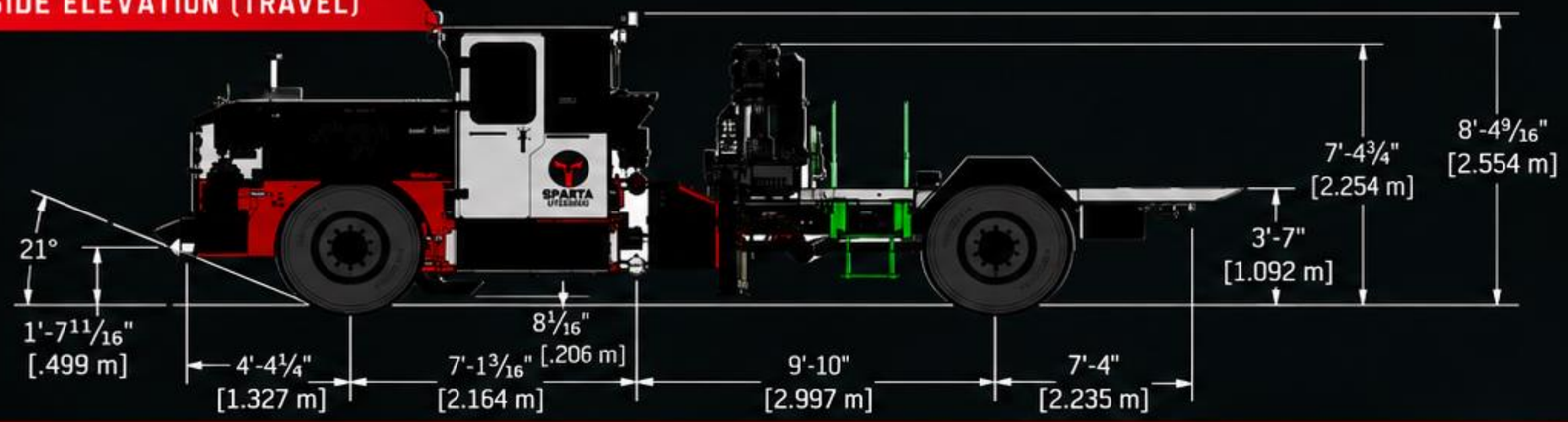


Illustrative underground setting

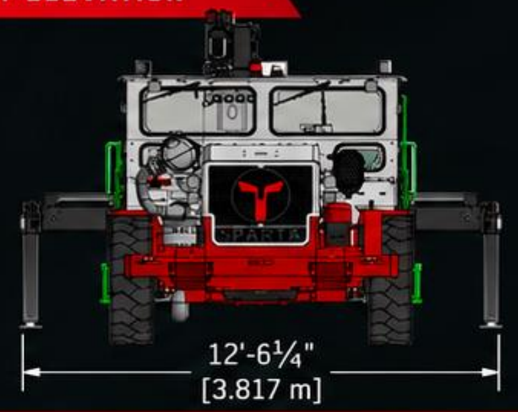
DIMENSIONS & SPECIFICATIONS

Key dimensions, capacities and major system specifications for the SPARTA UTD20000 Tilt & Load.

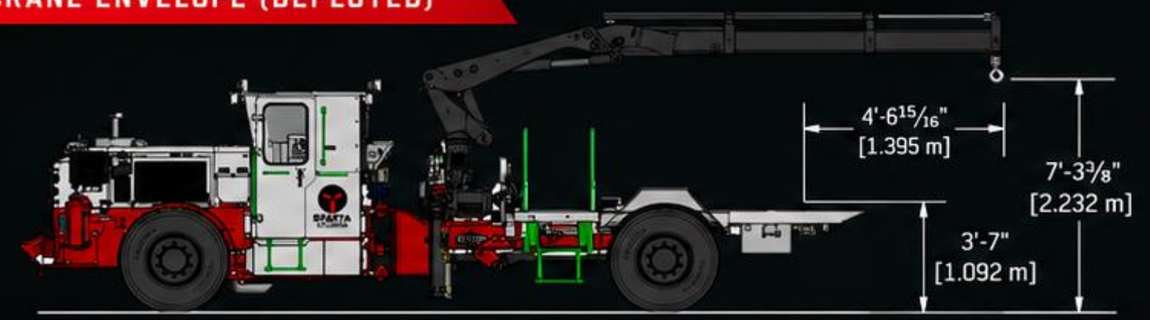
SIDE ELEVATION (TRAVEL)



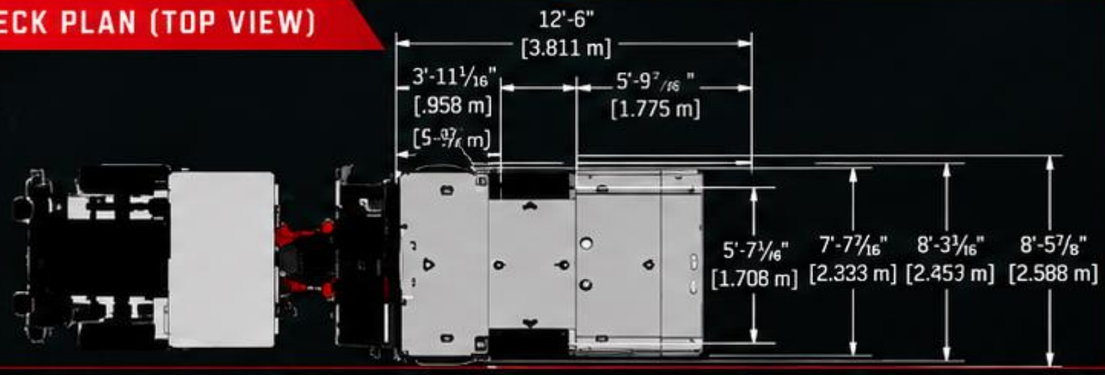
FRONT ELEVATION



CRANE ENVELOPE (DEPLOYED)



DECK PLAN (TOP VIEW)



CRANE

Model	HIAB S-CLX 100 D-2
Hydraulic outreach	5.7 m (18 ft 8 in)
Stabilization	boom stabilizer
Lifting capacity at 1.9 m	3,900 kg (8,600 lb)
Lifting capacity at 3.0 m	2,550 kg (5,620 lb)
Lifting capacity at 4.2 m	1,820 kg (4,010 lb)
Lifting capacity at 5.5 m	1,400 kg (3,090 lb)

POWERTRAIN & CHASSIS

Engine	Volvo TAD582VE (Stage V / Tier 5 equivalent)
Transmission	DANA 32000 Series
Axles	Spring Applied Hydraulic Release (SAHR)
Braking	integrated SAHR wet disc brakes (6 disc)
Tires	12.00-20 pneumatic
Frame	heavy-duty construction frame
Driveline	four-wheel drive articulated steer carrier

DECK & TRANSPORT

Deck dimensions	2.44 m (96 in) × 3.81 m (150 in)
Deck capacity, level	9,070 kg (20,000 lb)
Tilt angle	33°
Deck capacity, tilted	9,070 kg (20,000 lb)
Empty weight	13,600 kg (30,000 lb) estimate, confirm on scale

MOBILITY

Tramming height	2.553 m (100.5 in)
Inside turning radius	6.096 m (240 in)
Outside turning radius	9.144 m (360 in)

ELECTRICAL & SAFETY

- 24V electrical system
- Audio back-up alarm
- Engine oil pressure switch
- LED lighting installed
- Lock out on master switch
- White strobe light included

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CONTACT US

MineReach - Compact Design. Expanded Capability

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