

HME at Risk





Working at Height - Engineering the Change
Track Dozer D-375

Table 1.—Surface mining, mobile equipment, and injuries involving dozers, 1988-97

Category	Serious	Fatalities	Lost-time injuries	Lost-time injuries Lost workdays	Average lost workdays
Surface mining	79.601	619	78,982	2,289,152	28.98
Mobile equipment	15.601	262	15,339	507,594	33.09
Percent of surface mining	20	42	19	22	114
Injuries involving dozers	2,962	23	2,939	98,476	33.5
Percent of surface mining	3.7	3.7	3.7	4.3	116
Mine worker activity					
Getting on or off (dozer)	875	1	874	30,889	35.3
Maintenance and repair (dozer)	612	3	609	17,978	29.4
Operating dozer	921	17	904	33,793	37.4
All others (involving dozers)	554	2	552	15,816	28.7

Information Circular 9455
 An Analysis of Serious Injuries to Dozer Operators in
 the U.S. Mining Industry
 By William J. Wiehagen, Alan G. Mayton, Jasinder S.
 Jaspal,
 and Fred C. Turin

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
 Public Health Service
 Centers for Disease Control and Prevention
 National Institute for Occupational Safety and Health
 Pittsburgh Research Laboratory
 Pittsburgh, PA
 April 2001

Risk Register



Assessment	1*	2	*Hazard Type	3 *Hazard	4 *Operational	5*	6 *Sub		*7 Scenario			*8 CURRENT RISK (Risk evaluated based on current controls in place)			*9
No / ID	Work Area Description	Machine Model	Description	Description	Status Description	Category	Category	Source	Description	Cause Comment	Control Comment	* Consequence	* Likelihood	Risk Rating	Risk Comment
1	RTIO - Maintainer - Workshops and Pit Br	Track Dozer - D375	Gravity	Fall from Height	Planned Maintenance	Personnel safety	Crushing / internal injuries	C4 Working At Heights	Operator / Maintainer Pre-start walk around inspection of machine falls	Working on top of tracks at an open edge	* Dozer access system	3-Serious	C-Possible	High	Person gets injured from fall, variable heights, pinch points and surfaces
2	RTIO - Maintainer - Workshops and Pit Br	Track Dozer - D375	Gravity	Fall from Height	Planned Maintenance	Personnel safety	Crushing / internal injuries	C4 Working At Heights	Maintainer servicing and performing maintenance activities engine or radiator falls	Working on top of tracks at an open edge	* Portable A-Frame fall arrest system * Portable track access ladder * Prototype clamp & Handrail with dozer maintenance mat	3-Serious	C-Possible	High	Person gets injured from fall, variable heights, pinch points and surfaces
3	RTIO - Maintainer - Workshops and Pit Br	Track Dozer - D375	Gravity	Fall from Height	Planned Maintenance	Personnel safety	Crushing / internal injuries	C4 Working At Heights	Maintainer performing maintenance activities fuel tank or hydraulic tank falls	Working on top of track or inadequate ladder.	* Dozer access system * Service platform walkway * Portable track access ladder * Portable A-Frame fall arrest system	3-Serious	C-Possible	High	Person gets injured from fall, variable heights, pinch points and surfaces
4	RTIO - Maintainer - Workshops and Pit Br	Track Dozer - D375	Gravity	Fall from Height	Planned Maintenance	Personnel safety	Crushing / internal injuries	C4 Working At Heights	Maintainer servicing/removing/replacing engine cover and replacing light lamp falls	Working on Front/top of engine cover at an open edge	* Dozer access system * Portable A-Frame fall arrest system * Bonnet handrail group	3-Serious	C-Possible	High	Person gets injured from fall, variable heights, open edge and surfaces.
5	RTIO - Maintainer - Workshops and Pit Br	Track Dozer - D375	Gravity	Fall from Height	Planned Maintenance	Personnel safety	Crushing / internal injuries	C4 Working At Heights	Maintainer servicing/removing/replacing Power train hydraulic equipment falls	Working on behind of the Cab Cover an open edge	* Dozer access system * Service platform walkway * Portable track access ladder * Portable A-Frame fall arrest system	3-Serious	C-Possible	High	Person gets injured from fall, variable heights, open edge and surfaces.
6	RTIO - Maintainer - Workshops and Pit Br	Track Dozer - D375	Gravity	Fall from Level	Planned Maintenance	Personnel safety	Crushing / internal injuries	C4 Working At Heights	Maintainer Replacing blade Cylinder falls /Manual Greasing,	Working on top of tracks at an open edge	* Portable A-Frame fall arrest system * Portable track access ladder * Prototype clamp & Handrail with dozer maintenance mat	3-Serious	C-Possible	High	Person sustains minor injury or soft tissue damage as a result of impact with ground surface
7	RTIO - Maintainer - Workshops and Pit Br	Track Dozer - D375	Gravity	Fall from Height	Planned Maintenance	Personnel safety	Crushing / internal injuries	C4 Working At Heights	Maintainer Replace Ripper Lift Cylinder falls /Manual Greasing	Working on portable ladder	* Portable ladder	1-Minor	C-Unlikely	Low	Person gets injured from fall at level

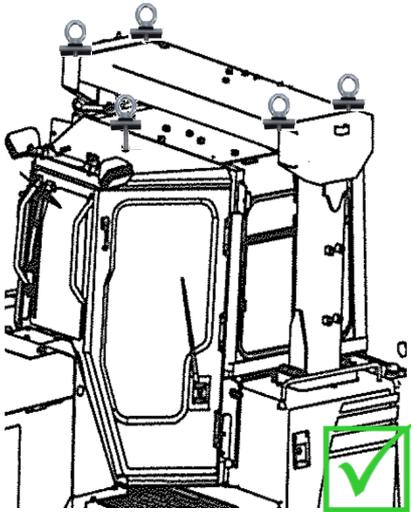
Risk Register figure



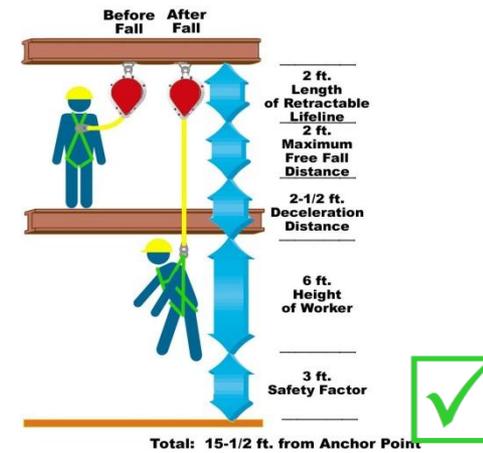
- 1 - Track shoe an open edge
- 2 - Engine section an open edge
- 3 - Near the cab section
- 4 - Top of the Engine cover an open edge

- 5 – Behind the cab an open edge
- 6 - Blade cylinder
- 7- Ripper lift cylinder

Anchor Point

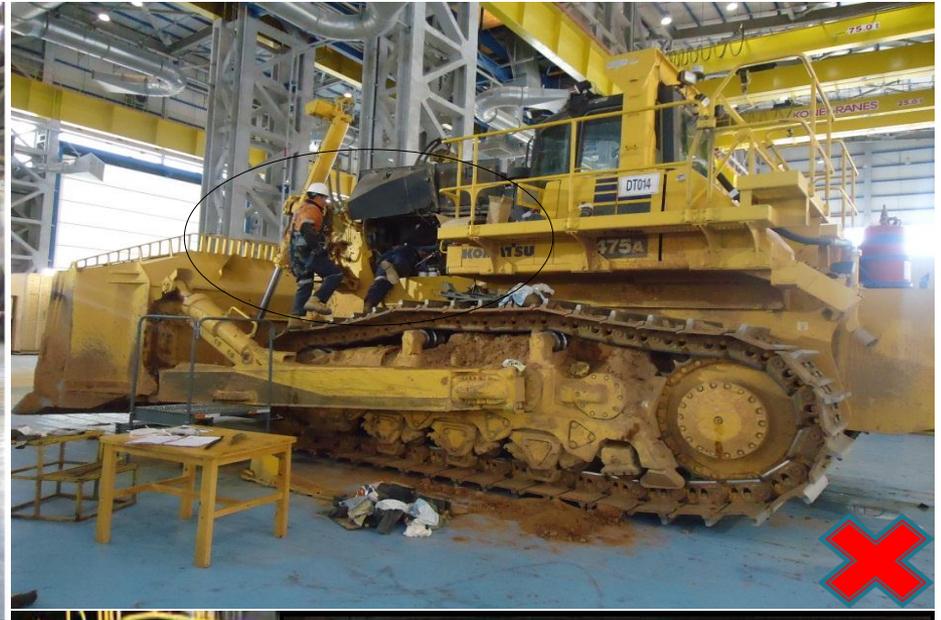


Fall Clearance Calculation (for Retractable Lifeline)



Work platform, handrail and walkways



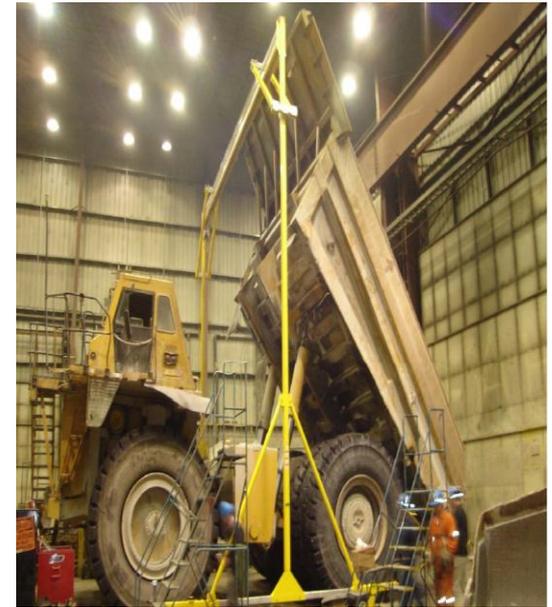


Track over truck ladder and cantilever ladder



Adjustable height platforms provide the ability to operate at a wide range of platform heights. These platforms provide the user access to various working positions.

Adjustable Anchor point



Application: Combines the security of an overhead fixed anchorage point with a portable structure. Ideal for providing fall protection to workers performing maintenance on top of large vehicles or equipment.

Features:

- Constructed of lightweight aluminum
- Easily moved by hand
- Provides horizontal mobility for up to 3 workers
- Overhead anchorage point for personal fall arrest systems

Freestanding Deadweight Single & Dual Point Anchors



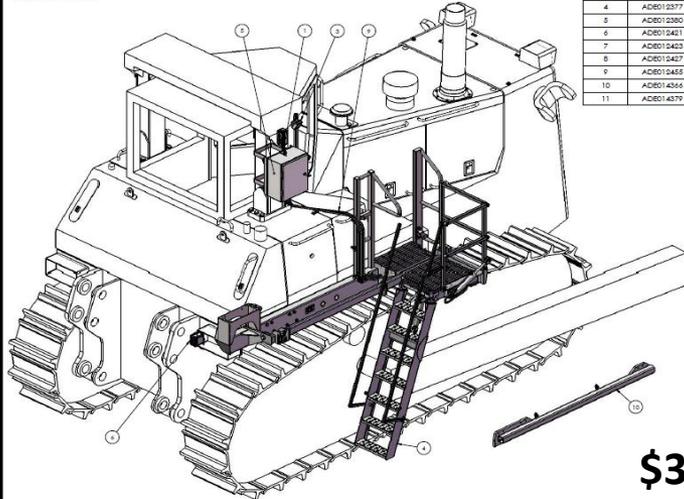
The FLS Free-Standing Deadweight Anchor System provides a fixed or portable overhead fall protection solution. With an adjustable anchor height from 15 to 24 feet, and availability in single or double anchor configurations, the system is applicable to a broad range of fall protection needs.



For work environments where an overhead anchor point is not possible and clearance is limited, Mobile Single Point Anchors (MSPA) from Flexible Lifeline Systems® provide safe access for working surfaces. The system features models with adjustable anchor point heights of up to 22 feet, as well as outriggers that enlarge the base foot print to stabilize and level the system when in use

Access system Price

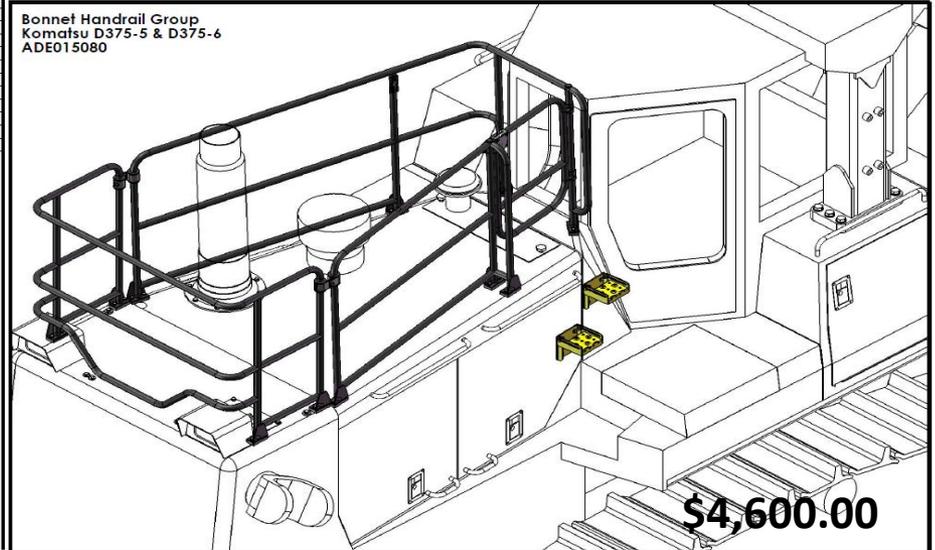
ACCESS SYSTEM RH
KOMATSU D375-5 & D375-6
ADE012000



ITEM NO.	PART NUMBER	NAME	QTY.
1	ADE007117	Cab Control Panel	1
2	ADE007558	Operation & Maintenance Manual	1
3	ADE011910	Access System Light Group	1
4	ADE012377	Access System Group	1
5	ADE012880	3 Stage Hydraulic Power Pack Group	1
6	ADE015421	Ground Level Control Panel Group	1
7	ADE015423	Electrical Harness Group	1
8	ADE015427	Label Group	1
9	ADE015455	Hydraulic Lines Group	1
10	ADE014566	Installation Tool	1
11	ADE014577	Parts Manual	1

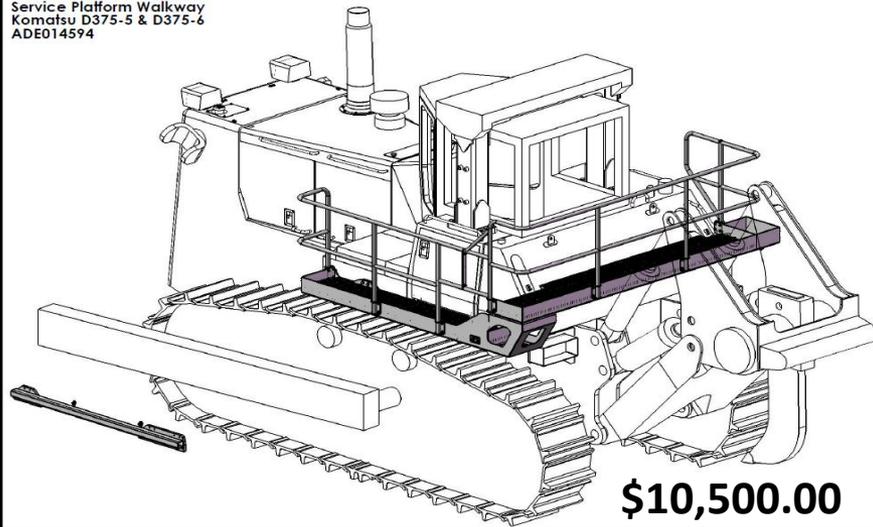
\$32,635.00

Bonnet Handrail Group
Komatsu D375-5 & D375-6
ADE015080



\$4,600.00

Service Platform Walkway
Komatsu D375-5 & D375-6
ADE014594



\$10,500.00

Prototype clamp & Handrail



LH & RH Handrail plus 2 straight handrails and
4 track clamps to suit a Dozer **4750 \$**

Single non slip mat x 2 = **\$1,737**
Folding non slip mat x 2 = **\$ 2,454**

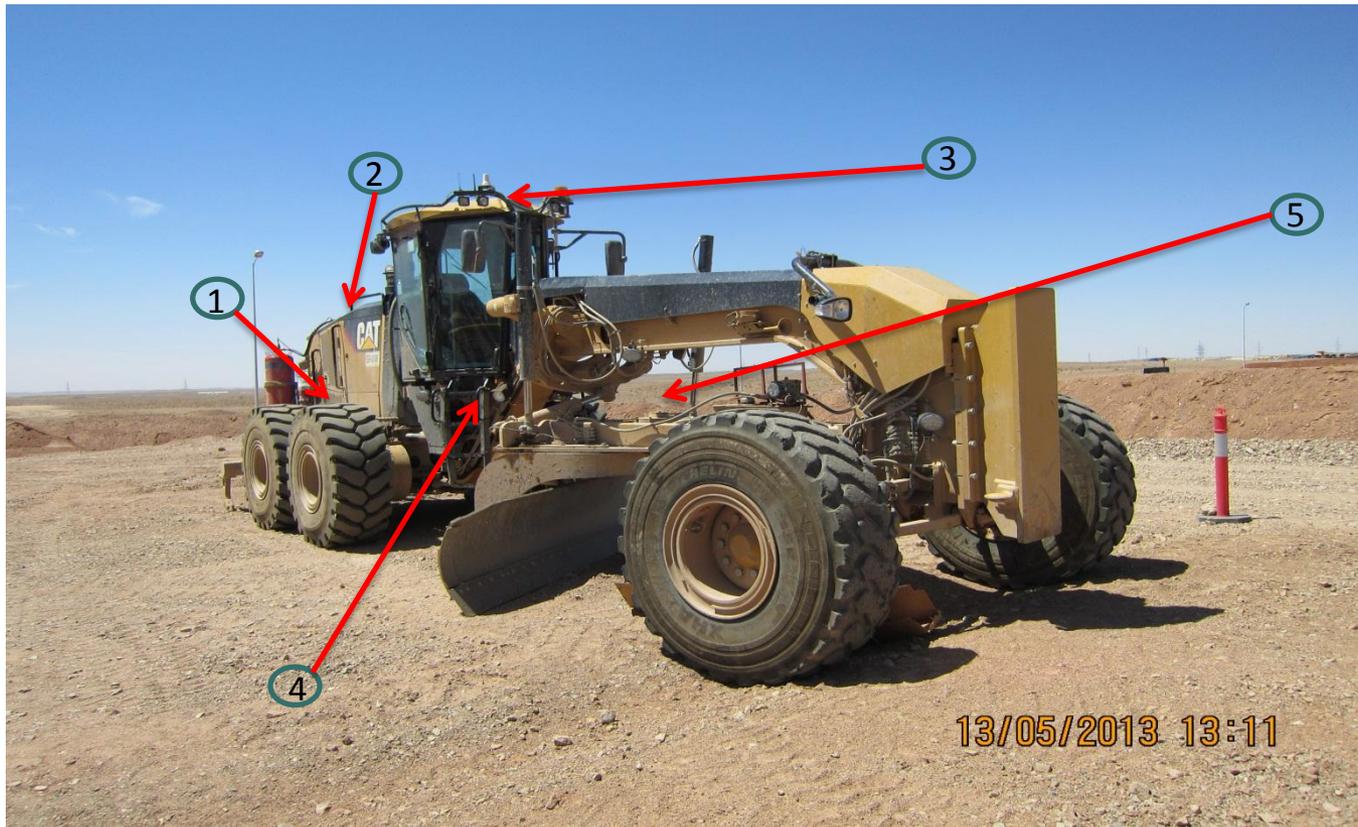


Working at Height - Engineering the Change
Grader 16M

Risk Register

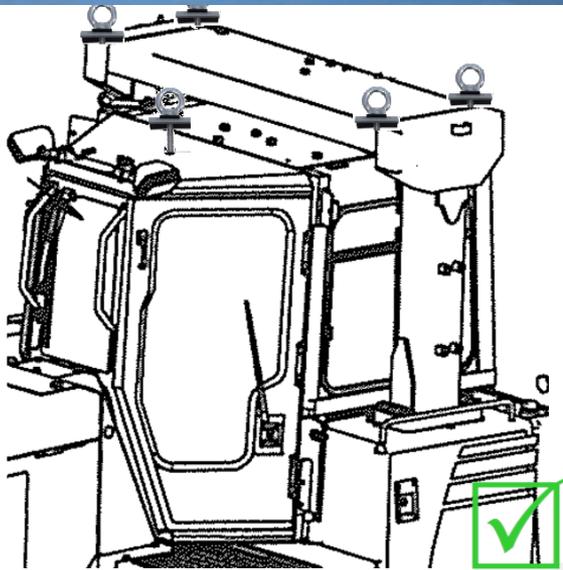
Assessment	1* Hazard Type	2* Hazard Type	3* Hazard	4* Operational	5*	6* Sub	7 Scenario	8 CURRENT RISK (Risk evaluated based on current controls in place)	9						
No / ID	Work Area Description	Machine Model	Description	Description	Status Description	Category	Category	Source	Description	Cause Comment	Control Comment	Consequence	Likelihood	Risk Rating	Risk Comment
15	RTIO - Maintainer - Workshops and Pit Br	Grader 16M	Gravity	Fall from Height	Planned Maintenance	Personnel safety	Crushing / internal injuries	C4 Working At Heights	Operator / Maintainer pre-start walk around inspection of machine, and performing maintenance falls /PM01, PM02, PM03/	Working around engine cover and open edge	* Designed work platform with handrail * Adjustable anchor point	2- Unlikely	C- Possible	Moderate	Personal injuries sustained from falling at height including sprains and strains
16	RTIO - Maintainer - Workshops and Pit Br	Grader 16M	Gravity	Fall from Height	Planned Maintenance	Personnel safety	Crushing / internal injuries	C4 Working At Heights	Maintainer performing maintenance activities falls /PM01, PM02, PM03/	Working on Top of engine cover at an open edge	* Hard barricading/handrail inadequate * Adjustable anchor point	3- Serious	C- Possible	Moderate	Person gets injured from fall, variable heights, open edge and surfaces including potentially resulting.
17	RTIO - Maintainer - Workshops and Pit Br	Grader 16M	Gravity	Fall from Height	Planned Maintenance	Personnel safety	Crushing / internal injuries	C4 Working At Heights	Operator/Maintainer inspection for cab falls	Working on Top Of Operation Cab	* Hard barricading/handrail inadequate * Adjustable anchor point	3- Serious	C- Possible	High	Personal serious injuries sustained from falling at height
18	RTIO - Maintainer - Workshops and Pit Br	Grader 16M	Gravity	Fall from Height	Planned Maintenance	Personnel safety	Crushing / internal injuries	C4 Working At Heights	Operator/Maintainer accessing/egressing vehicle, inspection for cab area falls	Working around Operation Cab and uncomfortable work platform ladder	* Designed work platform with handrail and access * Access way is inadequate * Adjustable anchor point	2- Unlikely	C- Possible	Moderate	Personal serious injuries sustained from falling at height
19	RTIO - Maintainer - Workshops and Pit Br	Grader 16M	Gravity	Fall from Height	Planned Maintenance	Personnel safety	Crushing / internal injuries	C4 Working At Heights	Maintainer replacing blade lift cylinder	Working in circle and blade cylinder section	* Incomplete work platform, use portable ladder or platform	3- Serious	C- Possible	Moderate	Person gets injured from falling at level such as sprains and strains result in FAC

Risk Register figure

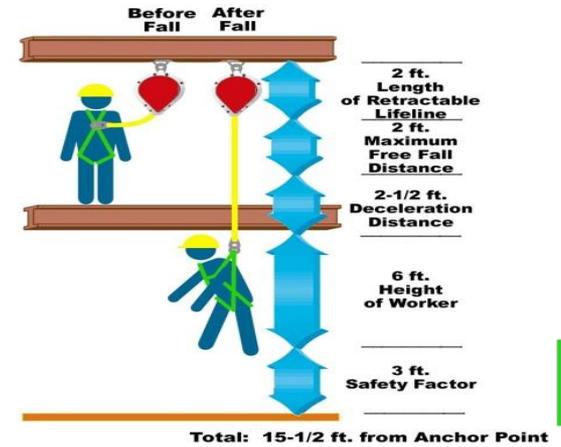


- 1 – Engine cover at an open edge /Right and lift/
- 2 – Top of engine cover at an open edge
- 3 – Top Of Operation Cab at open edge
- 4 – Operation Cab
- 5 – Circle and Blade cylinder section /Right and lift

Anchor Point

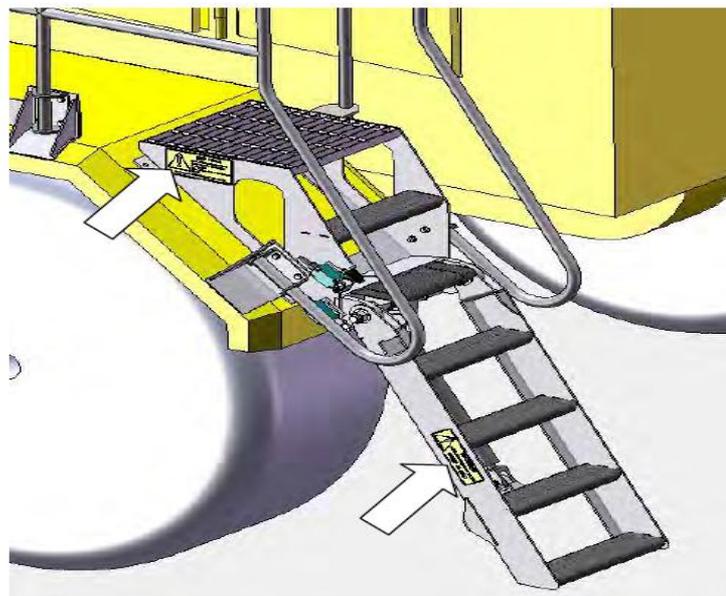
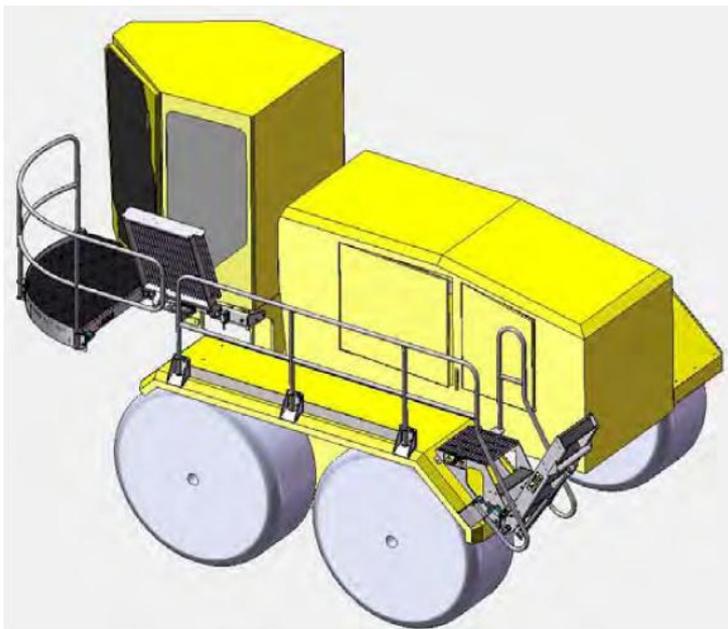


Fall Clearance Calculation (for Retractable Lifeline)

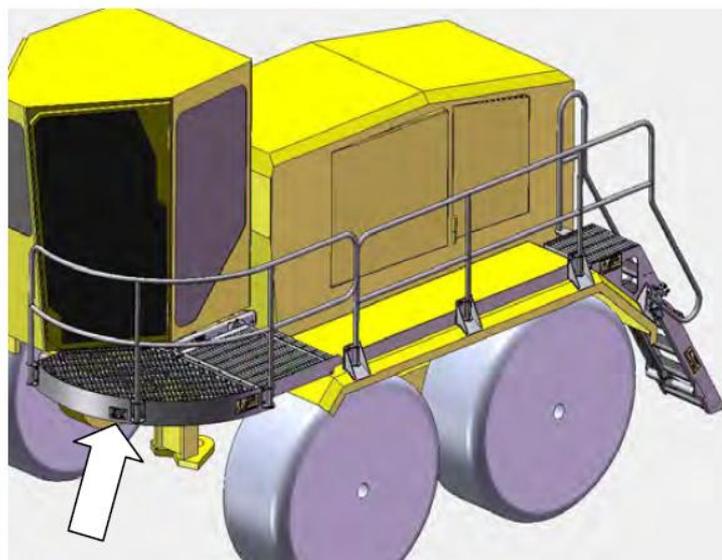


Grader access 16M

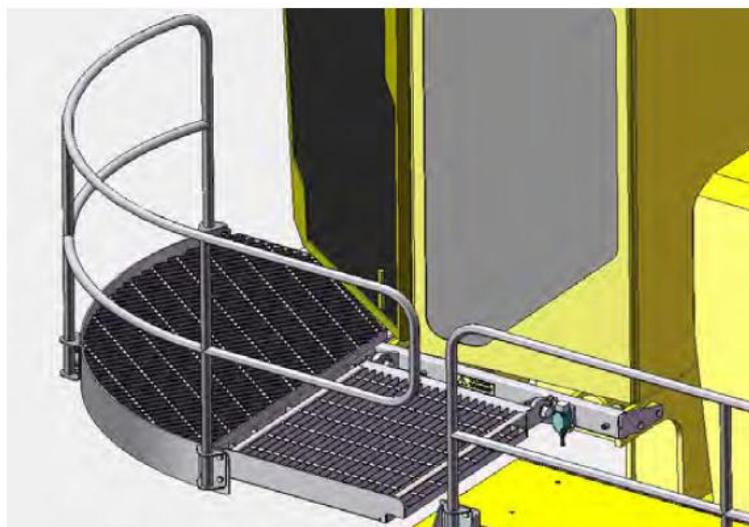




These signs are located on the rear access ladder

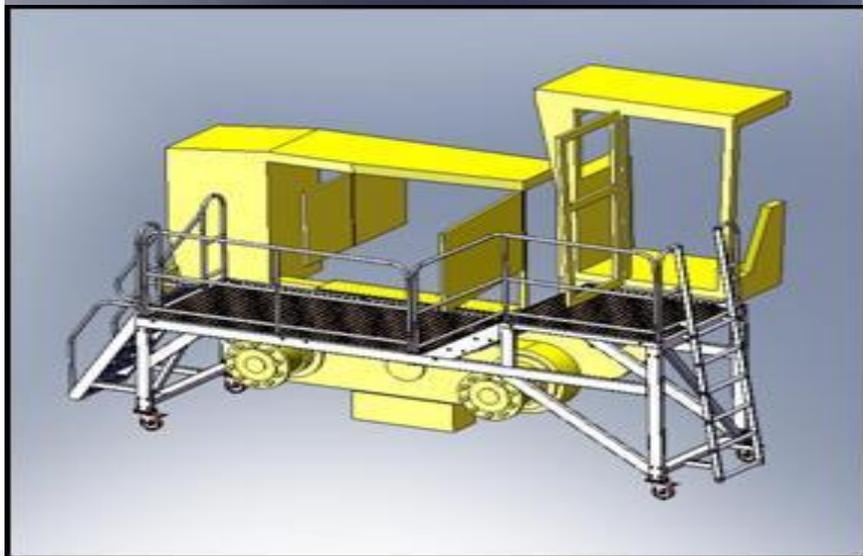
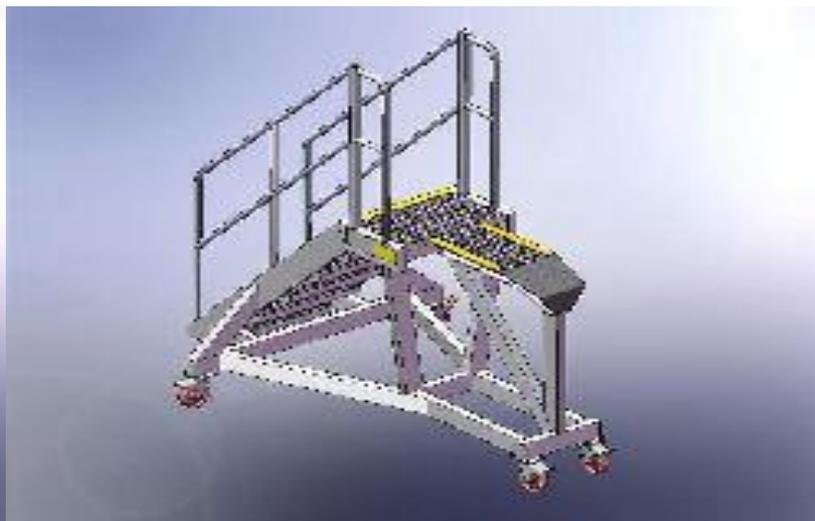
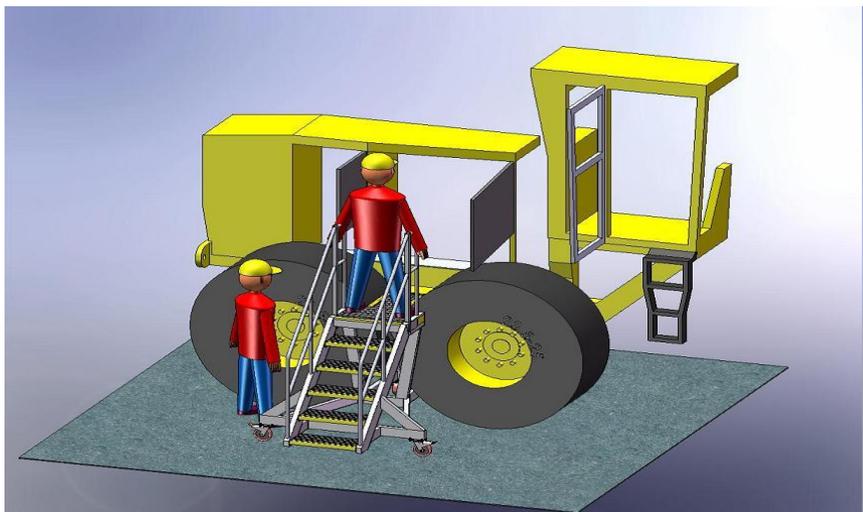


Data plate located on the side of the cab platform



Platform to the left of the cab with rotating platform
lowered

Grader access ladder



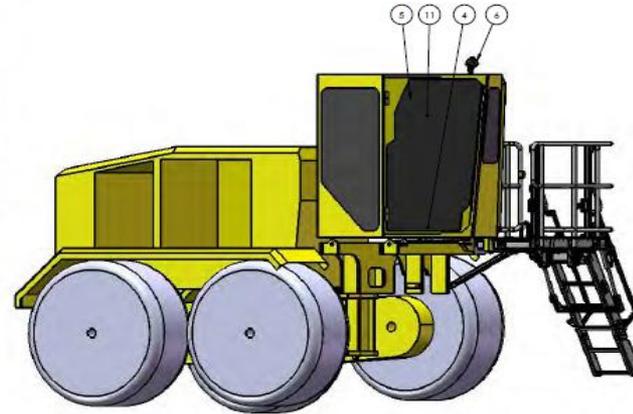
Grader Access System

Access System - ADE011218
CAT 16M Motor Grader



\$ 33,750.00

ITEM NO.	PART NUMBER	PART DESCRIPTION	QTY.
1	ADE005447	Hydraulic Power Pack	1
2	ADE007040	Ground Level Control Panel	1
3	ADE010965	Access System	1
4	ADE011085	Operation & Maintenance Manual	1
5	ADE011164	Label Group	1
6	ADE011190	Access System Light Group	1
7	ADE011335	Electrical Harness (Not Shown)	1
8	ADE011344	Access System Mount Group	1
9	ADE011426	Lines Group	1
10	ADE012208	Access System Circuit Breaker Group - 120 Amp	1
11	ADE012270	Cab Control Panel Group	1
12	ADE015277	Door Handle Relocation Group	1



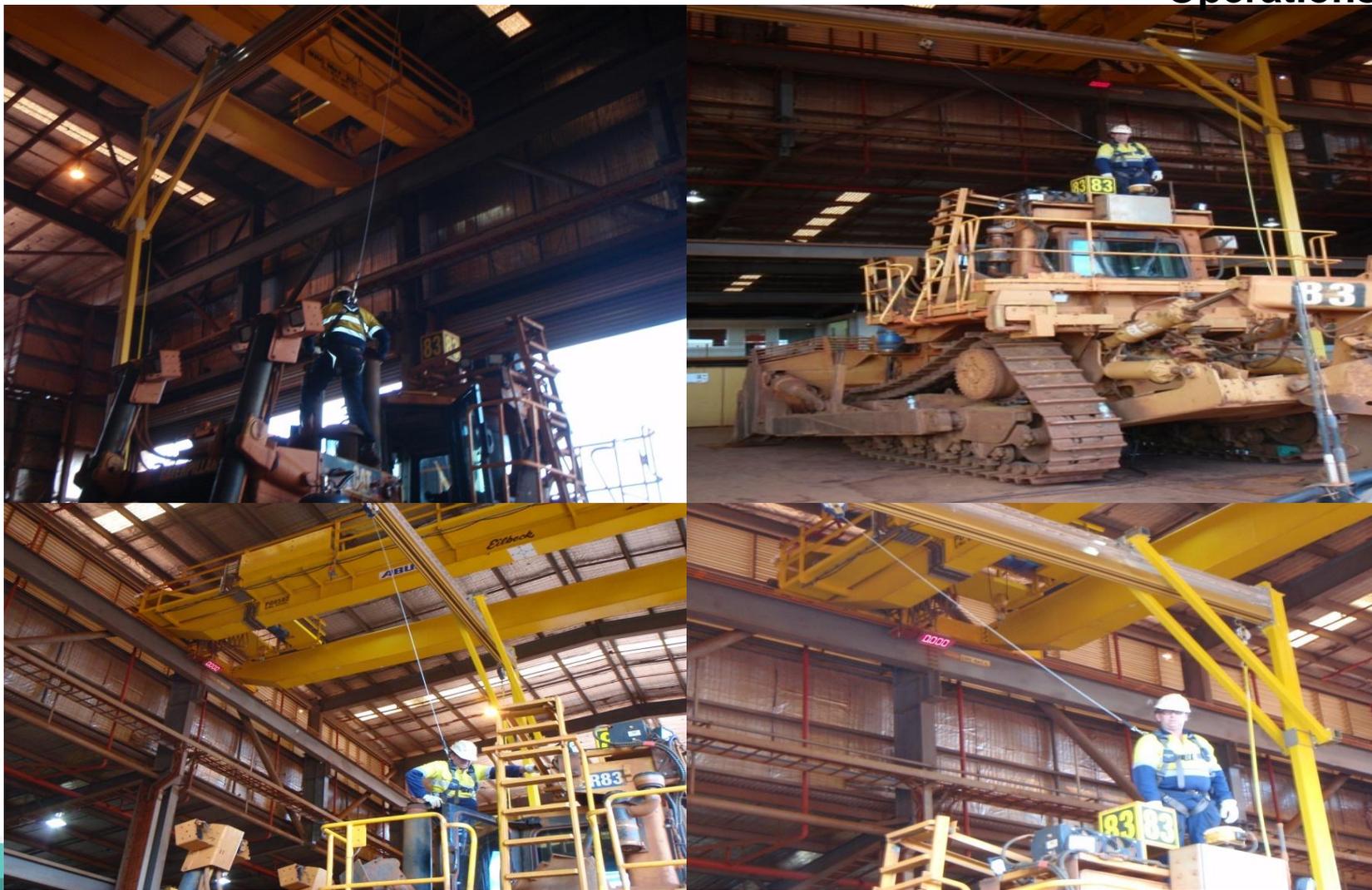
concept to reality

www.ade.net.au

Work platform, handrail and walkways

A-Frame

Robe Valley Operations



Mount Thorley Coal Operation

Dozer 829 Walkway & Handrail



Dozer 829 Swing away Ladder



Coal Australia: Grader 16M



- Maximize reliability
- Minimize maintenance requirements
- Minimize cost
- Maximize visibility
- Minimize pinch points
- Access system cannot be inadvertently damaged by machine operation.
- Designed to maintain 3 points of contact when using ladders

Cost effective and safe access system that does not impede normal operation of the machine.

How many times have you heard "If only we had of ..." stories after an accident has occurred?