

Summary of Accidents in FY2023

Construction accidents due to inadequate safety management measures by prime contractors, excluding the Government Buildings Department and the Port and Airport Department

Type	Category	Cases	Overview
Occupational accidents	Falls and slips	Case 1	A worker was injured when he fell from scaffolding from a height of approximately 10 m while working to dismantle the scaffolding on the bridge substructure (wing section).
		Case 2	While assembling the formwork for a cast-in-place retaining wall, a worker slipped and fell down a slope while handing a steel pipe from the flat surface above the floor excavation to another worker on scaffolding. The worker was injured when he stepped on a reinforcing bar that had been installed to assemble the formwork for backfill concrete.
		Case 3	While using a stepladder to install brackets for an underground cable of a tunnel radio rebroadcasting system, the worker lost his balance, fell from the ladder, and was injured.
		Case 4	A worker lost his balance while attaching the upper end suspension bracket of a sheet pile installation (crush piler) and fell (approximately 5 m), resulting in injury.
	Falling (heavy machinery)	Case 5	During tree-cutting operations, a backhoe overturned and fell approximately 15 m from the pilot road, injuring the backhoe operator.
	Flying/falling objects	Case 6	While clearing branches and leaves during preparation to remove a fallen tree, the tree slipped and hit the victim, causing injury.
		Case 7	A U-shaped gutter was brought in for maintenance work. As it was being lifted with a special lifting device for repositioning, it became dislodged and fell, striking a worker's foot and causing injury.
	Collisions	Case 8	While an air duct was being repaired using an elevating work vehicle, a concrete mixer truck passed underneath. The bucket of the elevating work vehicle struck the concrete mixer truck, causing the worker in the bucket to be thrown back and hit his chest on the handrail, resulting in injury.
		Case 9	One worker and one backhoe operator were filling sandbags using excavated soil. When the backhoe operator looked down to check on the progress of the work, his winter clothing became caught on the heavy equipment control lever, causing an accidental start and resulting in contact with the worker, who was injured.
	Caught between/entangled	Case 10	While servicing a crawler crane (50t) used for driving piles, a worker's right index finger was injured when it was pinched between the guide pulley and wire.
	Cuts/abrasions	Case 11	While cutting timber with a circular saw, a worker's glove became caught, injuring the fingers on the worker's left hand.

Accident overview

While dismantling of the external scaffolding for bridge substructure construction, a temporary support frame was lifted up along with the suspended load, and the victim, who tried to prevent the frame from falling, fell to the ground at almost the same time as the support frame, suffering multiple traumatic injuries. **[Victims]**

Accident incident [Floor plan]

Bridge abutment scaffold
Abutment wing
Wing scaffolding
Victim
Slinger
Major dismantling component
① Front
② Side

[Starting diagram]

① Front view

Abutment wing
Victim
Slinger

② Side view

Abutment wing
Victim
Slinger

* At the site, the tying frame, which was originally planned to be removed at the same time, was temporarily placed, the fixed flexible clamps were removed, and the ground was cut. The slingers then moved to the unloading area.

[Accident occurrence diagram]

① Front view

Insufficient removal of the swivel clamp (It becomes caught on the major dismantling component)
Abutment wing
Fall
Victim

② Side view

Abutment wing
Victim

* The special connecting pin remained unlocked.
* It is believed that no fall prevention equipment was in use at the time of the accident.

Location of the accident
Unloading location
Contents: Wing area dismantling external scaffolding

Fallen tying frame

The opening that was demolished first

450
800

Cause of accident

- Fall arrest devices were not used when working at heights.
- The safety measures were inadequate, as the scaffold floor, handrails, and other safety structures were dismantled before the work to connect the wing to the frame commenced.
- The work began without a prior review of its content, and it was performed by a single worker on the scaffolding without a signaler.

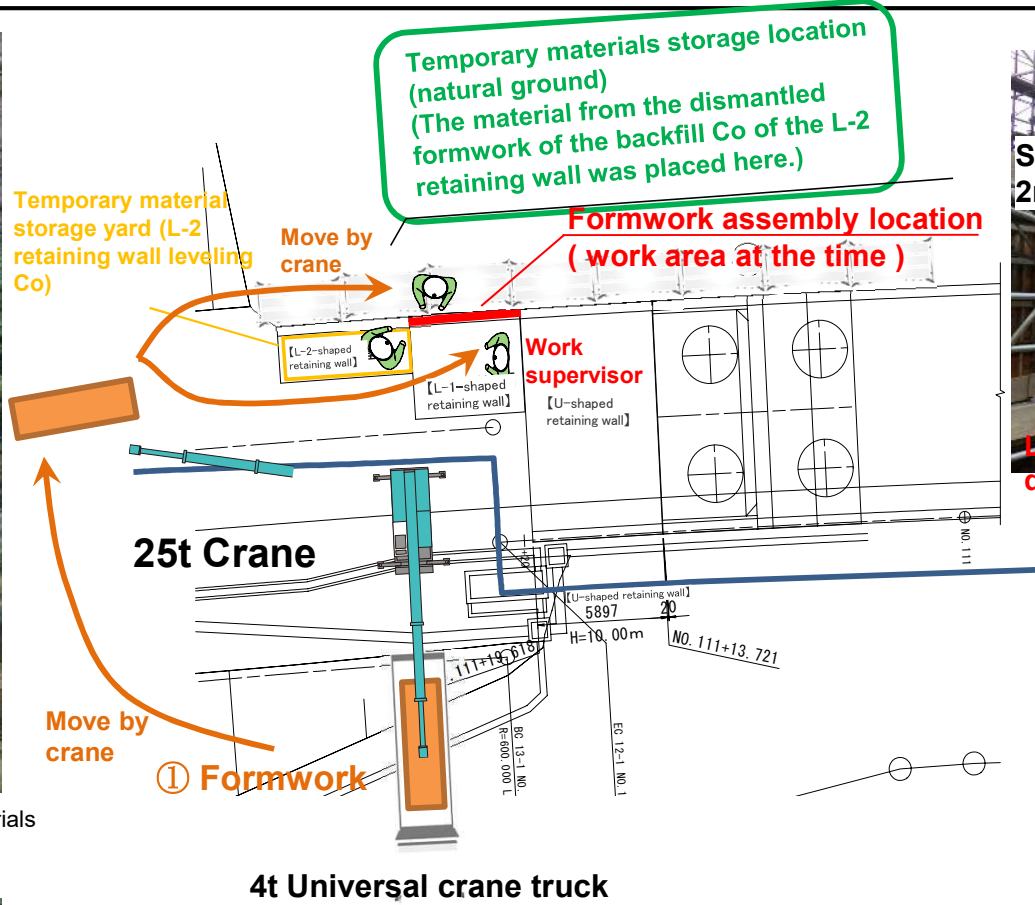
Contractor's preventive measures

- Thoroughly instruct workers to wear two pieces of fall arrest equipment (safety training)
- Have all workers wear devices that flash LED lights when fall arrest devices are in use.
- Prepare detailed work procedures and keep records before work is performed to ensure thorough safety checks.
- Ensure that two people, including a qualified worker, are stationed at ground-cutting points when scaffolding is dismantled to respond to unforeseen circumstances.

Accident overview

During the assembly of formwork for a cast-in-place retaining wall, a worker removed the safety ropes marked at dangerous points and continued to work. The worker lost his balance and fell down a slope, injuring his right leg. **[Victims]**

Accident incident



Cause of accident

- Although a work procedure manual had been prepared in advance, instructions regarding the work were given verbally to all subcontractors and detailed work content was not communicated to all workers. As a result, workers performed unplanned work at their own discretion.
- Dangerous areas were surrounded and clearly marked with safety ropes; however, despite the risk of a worker falling, the ropes were removed and materials were handed to workers on the scaffolding.

Contractor's preventive measures

- To avoid unscheduled actions, any changes work changes will be discussed with the prime contractor. The work procedures will be changed, and work will resume after a meeting is held. Explanation shall be given at the time of KY on the day of work and posted at various locations on the work site.
- The workers will be re-trained to never remove equipment that is marked as off-limits without authorization. As a further measure, single pipes will be installed in areas with a high risk of falling to prevent their easy removal. Moreover, dangerous areas will be clearly marked.

Accident overview

During installation of intermediate support hardware for laying underground cables, a worker lost his balance while using a stepladder in an unstable position, jumped from the stepladder, and fractured his right heel.
[Victims]

Working conditions at the time of the accident



Change in work plans



Use of a stepladder in an unstable position caused misalignment, and the reaction of the ratchet spinning out of alignment caused loss of balance.



The worker lost his balance and jumped off the stepladder



The worker landed on his right foot and struck his right heel.

Originally planned method of operation



Use of a portable workbench

Cause of accident

- When the subcontractor suggested changing the work to use stepladders, the prime contractor approved it without performing any safety checks or providing any guidance.
In addition, the work was carried out without reviewing the construction plan and work procedures.

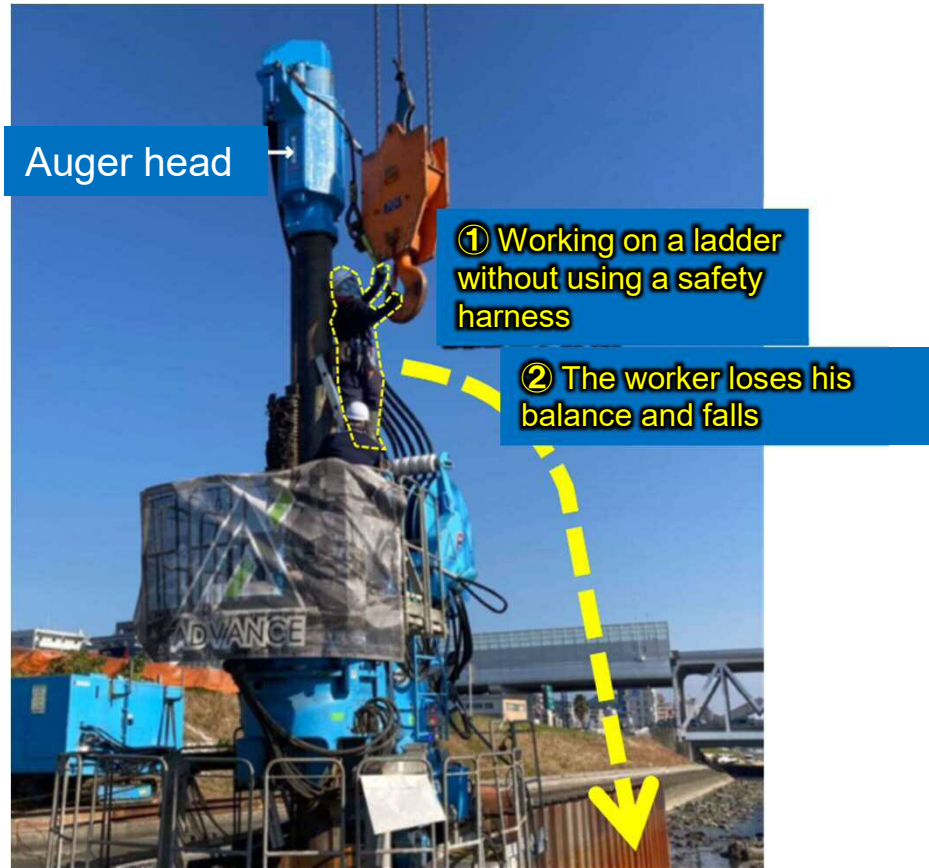
Contractor's preventive measures

Both the prime contractor and subcontractors will be thorough in not carrying out any work that is not included in the construction plan.
- Include details of the construction method for the work in the construction plan and ensure that everyone is aware of it.
- Safety education for stepladders and other scaffolding work, KY activities, new entrant education, safety training, etc.
This will be carried out to raise awareness of danger and ensure safety.
- Select a work scaffold suitable for the site to prevent work from being performed in an unstable condition, and increase the number of safety patrols and the frequency of patrols to ensure the safety of work conditions.

Accident overview

During sheet pile pressing work, when attaching the crane hook to the hoisting hardware on the auger head for hard ground, the worker lost his balance and fell without using a safety harness **[1 injured person]**

Accident incident



Cause of accident

- Working on a ladder without using a safety harness.

Contractor's preventive measures

- Shorten the auger rod and set the working height for hooking at 1.5 m from the scaffolding. Do not use a ladder.
- Re-enforce the use of safety belts.

Accident overview

During tree felling work, while the felled timber was being removed using a forklift (demolition machine), the length of the timber (up to 8 m) required the boom holding the timber to move at a high position to avoid contact with the mountain slope. However, the heavy machinery work path became uneven, causing the forklift to lose balance, lean forward, and then topple over and fall approximately 15 m to the ground below, resulting in injury. **[1 injured person]**

Accident incident



1. Transporting felled timber

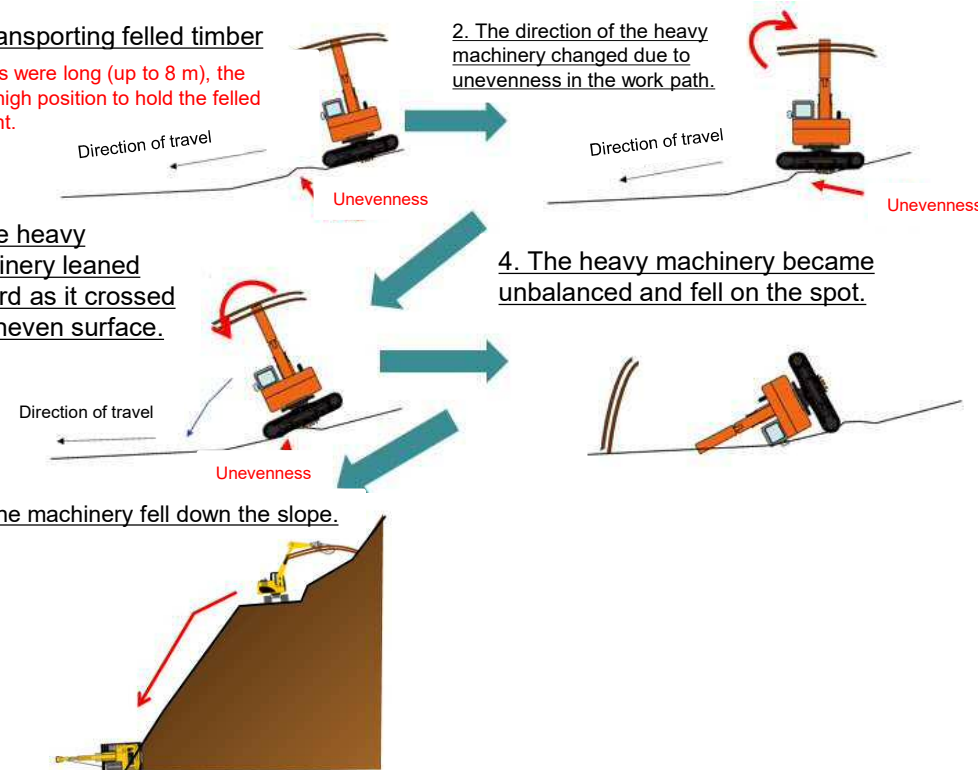
Because the felled trees were long (up to 8 m), the boom was placed at a high position to hold the felled timber during movement.

2. The direction of the heavy machinery changed due to unevenness in the work path.

3. The heavy machinery leaned forward as it crossed the uneven surface.

4. The heavy machinery became unbalanced and fell on the spot.

5. The machinery fell down the slope.



Cause of accident

- Felled trees were transported in long lengths without being cut into short logs in advance, resulting in an unstable position that made the heavy machinery prone to tipping over.
- Unevenness in the work path was overlooked and work was carried out without correcting it.
- Although the machine being used had changed and the required qualifications were for the operation of a different machine, the qualifications were not checked and unlicensed operation was overlooked.

Contractor's preventive measures

- The work procedures (plans) should include that logs should be cut such that they will not lose balance when transported using heavy machinery, and the supervisor should ensure that work is carried out in accordance with these procedures.
- During safety inspections, inspect the site together with the subcontractor's work supervisor, carefully checking for defects such as unevenness in the work passageways; these defects should be corrected to ensure a safe condition before starting work.
- Thoroughly check the qualifications for the machinery and operations to be used. If there are any changes to the planned machinery or work, promptly use the checklist to reconfirm the qualified vehicles. The foreman should directly hand over the keys to the heavy machinery to be used that day only to those who are qualified to prevent unqualified operation.

Accident overview

During removal of a fallen tree leaning against a slope, a worker was removing nearby scattered trees to allow heavy machinery to approach the fallen tree. While removing the tree's branches, the tree became unbalanced and fell on the worker, injuring him. **[1 injured person]**

Accident incident



Cause of accident

- ① A worker pruned branches without following work procedures.
- ② During the hazard prevention activities on the day, workers were advised not to enter the direction of the fallen tree, but they still performed work near the fallen tree.
- ③ Workers who had not received the safety and health training required by Article 59 of the Industrial Safety and Health Act used chainsaws to perform tree felling work.

Contractor's preventive measures

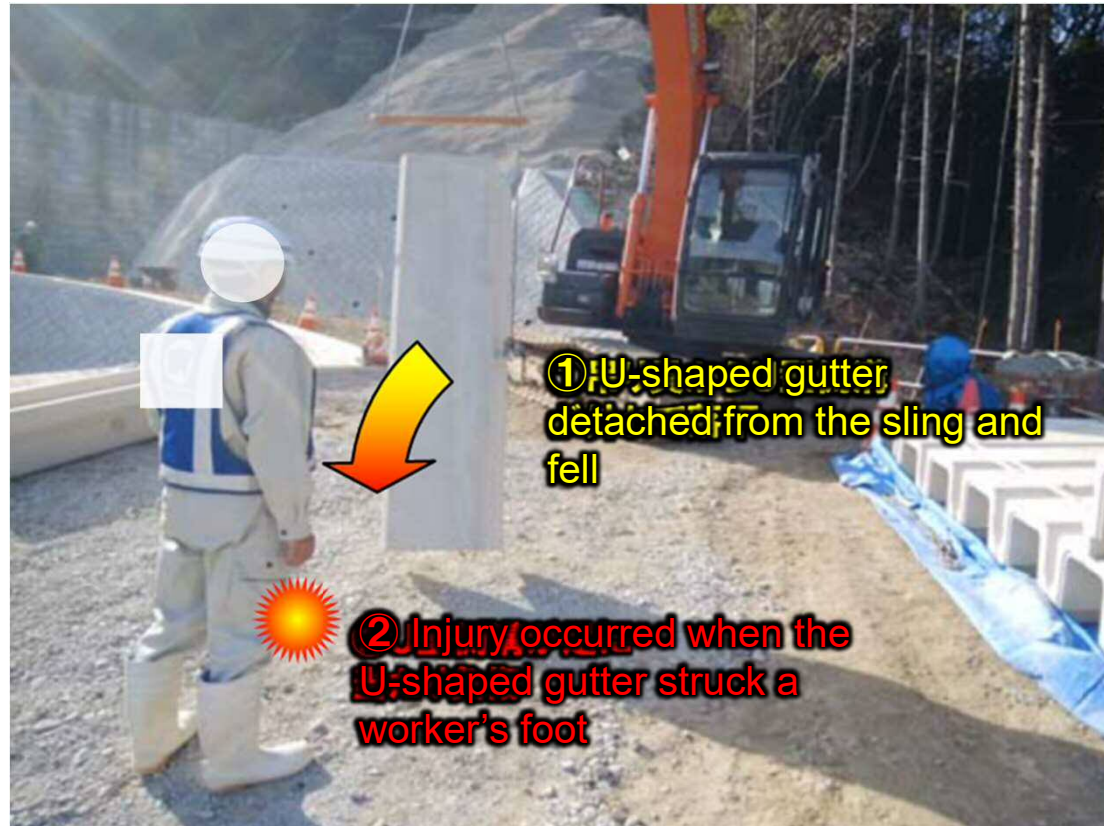
- ① Re-education on compliance with work procedures
- ② Implementation of entry ban measures
- ③ All workers are informed of their roles and the prohibition of the use of machinery and other equipment by anyone other than the scheduled workers; a control engineer will check compliance when the work is performed.

■ Case 7: Accident involving a construction worker (workplace accident) [Flying/falling objects]

Accident overview

A U-shaped gutter brought in for maintenance was being lifted using a special lifting tool to turn it over, the U-shaped gutter detached from the lifting tool and fell, striking the foot of a worker and causing injury. **[1 injured person]**

Accident incident



Cause of accident

- The screw holes of the special hanging tool were filled with soil and sand; thus, the screws could not be fully inserted and the U-shaped gutter was hung in an incomplete state.

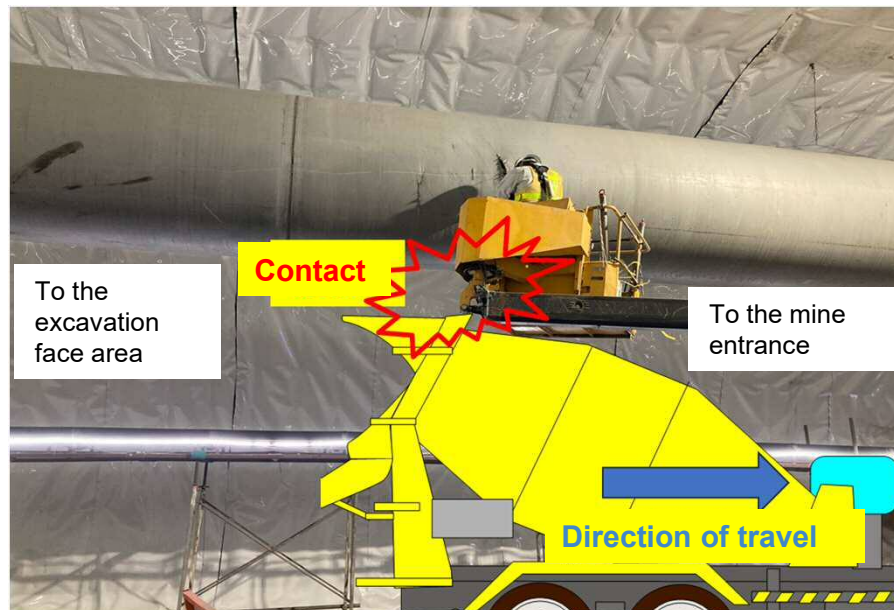
Contractor's preventive measures

- Ensure all the screws on the hanging fixtures are tightened until they are fully inserted. If the screws do not fit, do not use the U-shaped gutter and treat it as an unsuitable item.

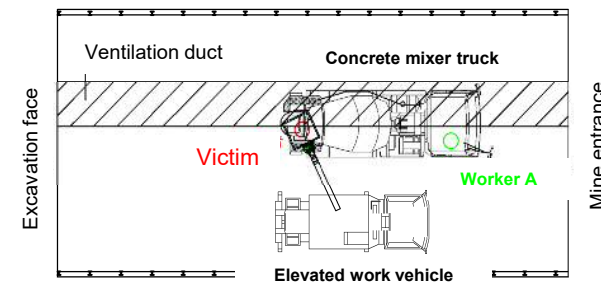
Accident overview

During tunnel construction, after supplying the first sprayed concrete load to the excavation point, a concrete mixer truck leaving the tunnel passed under the bucket of an elevating work vehicle that was performing tunnel repair work. The top of the concrete mixer truck's hopper came into contact with the bottom of the elevated work vehicle's bucket, injuring a worker in the bucket. **[1 injured person]**

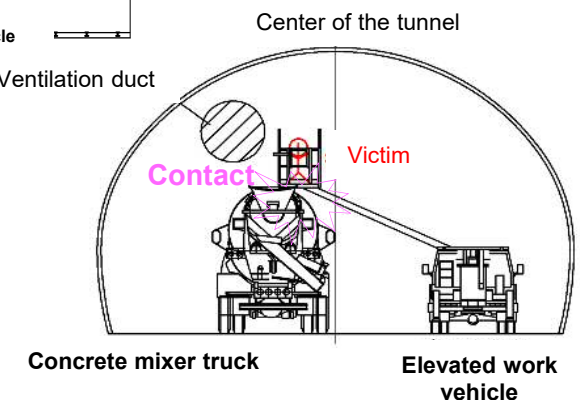
Accident incident



Floor Plan



Sectional view



Cause of accident

- ① It is known that the air duct had been damaged when the seat cart was moved; however, a repair date had not been determined. Consequently, the repairs were rushed on the afternoon of the accident, leading to inadequate safety instructions and an insufficient KY (hazard prediction) process.
- ② The driver noticed an elevating work vehicle operating ahead, honked the horn, and slowed down. However, he misjudged the vehicle's clearance under the bucket and proceeded without stopping, resulting in contact with the bucket.
- ③ It was commonly understood on-site that vehicles should not proceed until the bucket of the elevating work vehicle was retracted and a signal was given. However, this rule was not explicitly established and was not widely recognized.

Contractor's preventive measures

- ① When using an elevating work vehicle, set up traffic cones and bars before working.
- ② Install a rotating light and plastic chain on the bucket so that it can be recognized from a distance.
- ③ Establish checklists for compliance with on-site rules and strengthen company patrols (including unannounced inspections).
- ④ Revise the work procedures to clearly state the rule prohibiting passing directly under the bucket when using elevating work vehicles, and conduct retraining.
- ⑤ Install warning signs at locations where vehicle contact accidents are anticipated, such as at elevating work vehicle locations, centering, and seat trolleys.
- ⑥ Install cushioning material where the seat trolley, centering, and air duct come into contact.
- ⑦ Plan repairs. If sudden work is unavoidable, ensure that KY is performed on the additional work before carrying it out.

Case 9: Construction worker accident (workplace accident) [Collision]

Accident overview

A backhoe was supplying sand and soil to a worker making sandbags at the foundation of a block pile. When the backhoe operator stood to check on the worker, his clothes became caught on the control lever and the backhoe bucket moved, striking the worker's leg and injuring him. **[1 injured person]**

Accident incident



Cause of accident

- The zipper on the operator's winter clothing was not fastened and got caught on the operating lever, causing an unintended activation.
- The backhoe was in working condition when the operator left his seat.
- The worker also acted as the signaller and was not visible to the operator.

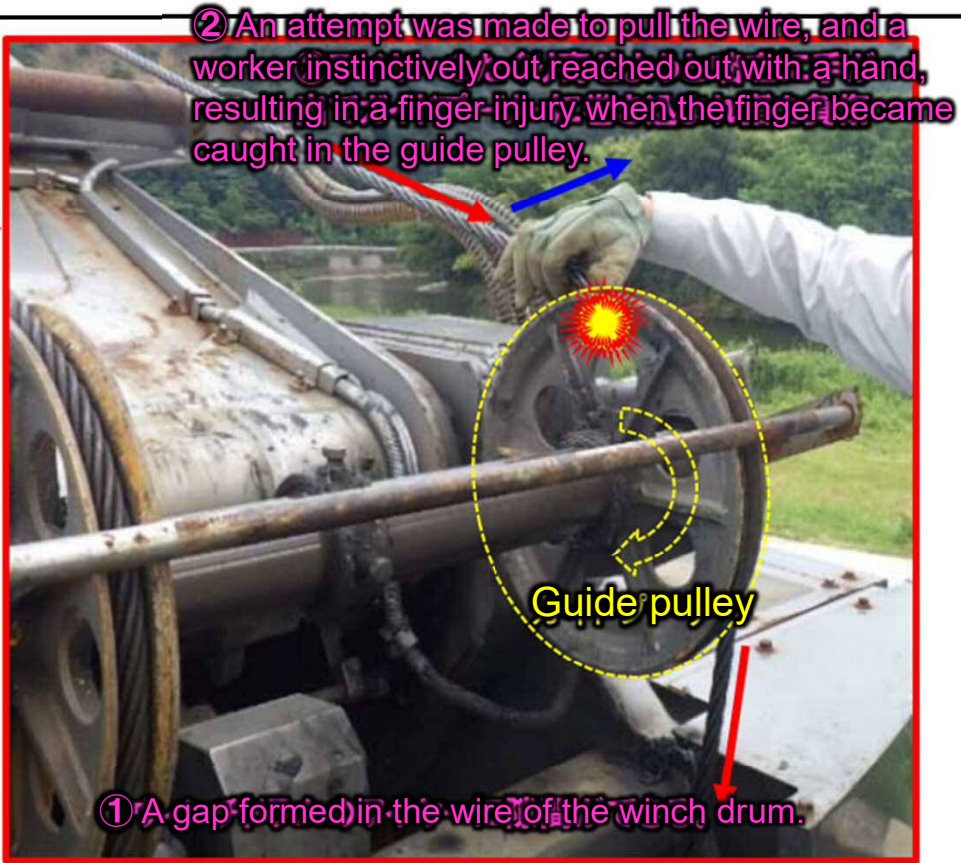
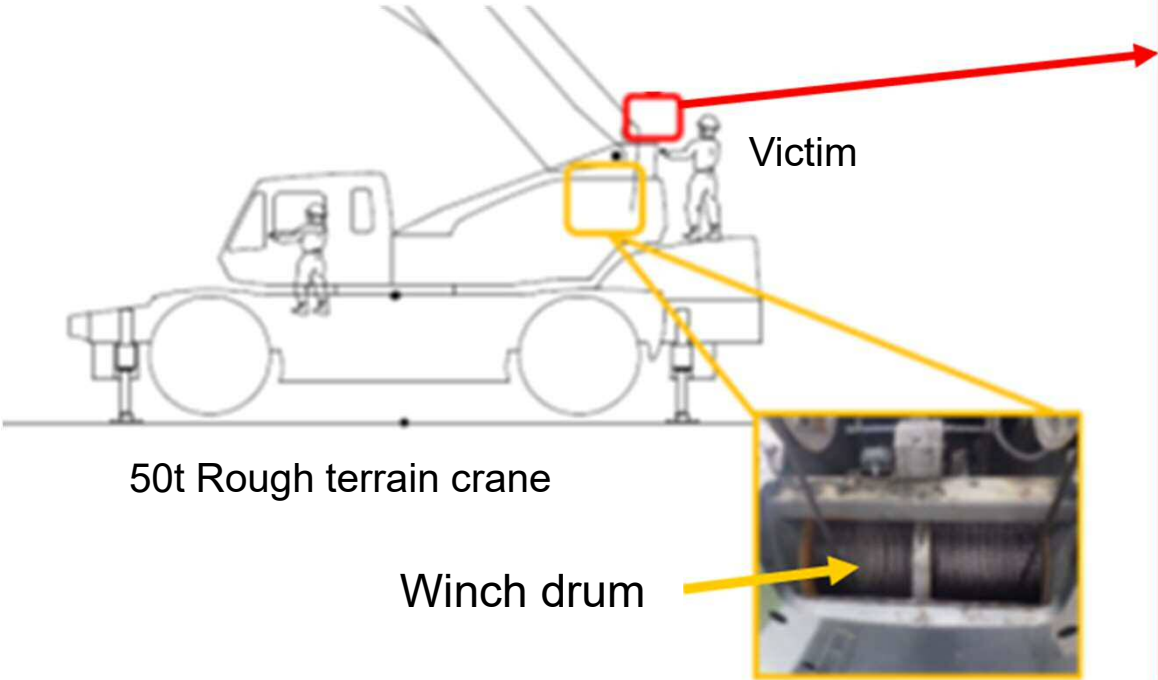
Contractor's preventive measures

- Inform employees about safe ways to wear work clothes, such as fastening zippers, and conduct checks.
- Make it known that employees should use the safety lock when standing up from the driver's seat of a backhoe.
- Install a separate signaller.

Accident overview

During crane inspection and maintenance, while visually checking the state of the wire being wound onto the winch drum, the worker noticed a gap in the wound wire and instinctively placed his hand on the wire to fix the gap, resulting in his right index finger being caught between the wire and the guide pulley and injuring the finger. **[1 injured person]**

Accident incident



Cause of accident

- The worker knew the wire should not be touched, but the worker reached out for it instinctively.
- Crane maintenance was not included in the work procedure manual, and there was insufficient awareness among workers about work procedures and safety points.

Contractor's preventive measures

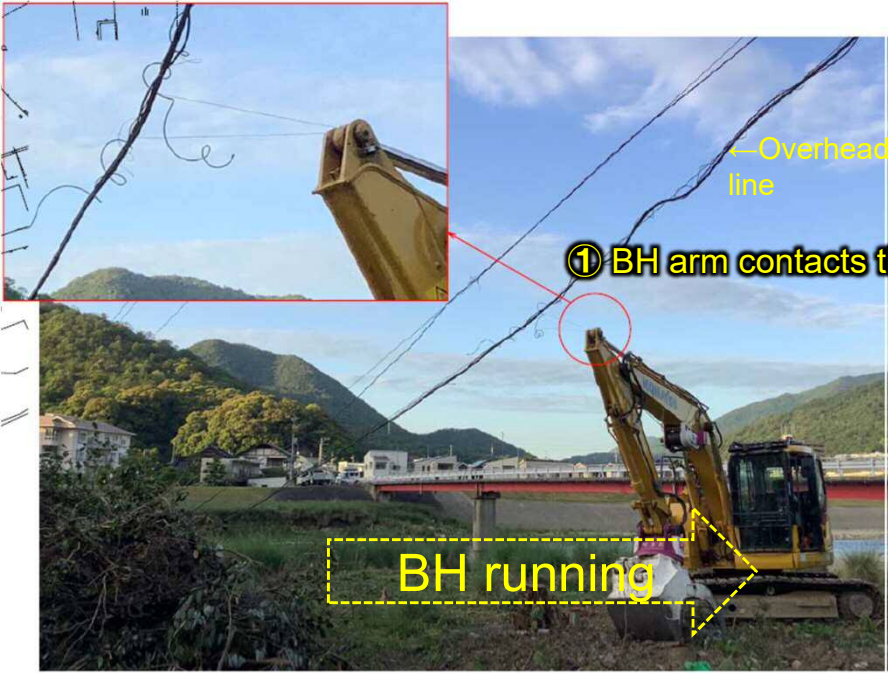
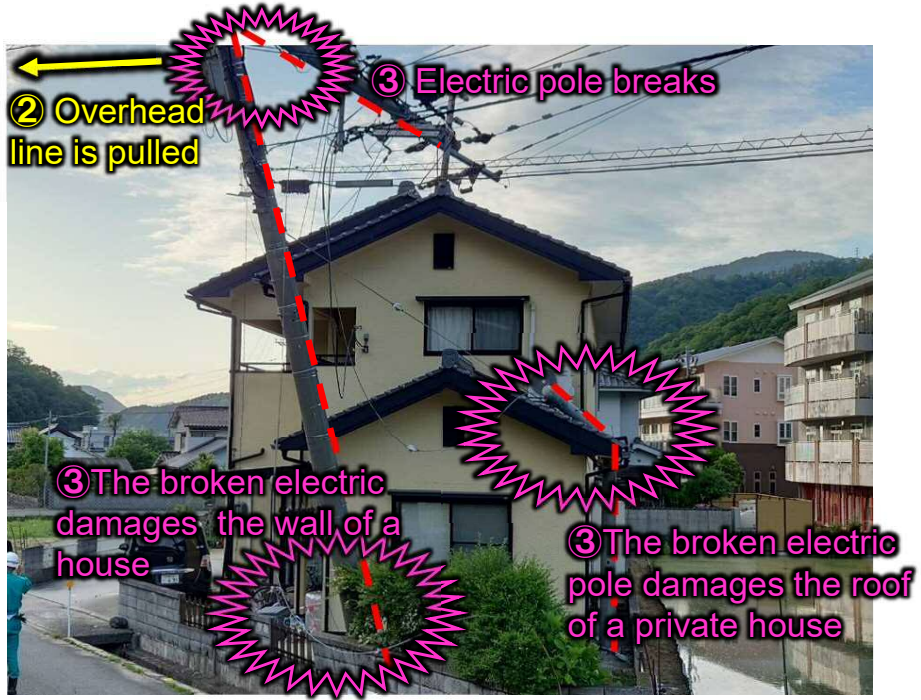
- Be sure not to touch any moving parts of the machine, and ensure the wire winding status is visually inspected from the ground where the wire cannot be touched.
- Establish work procedures and safety measures for machine inspection and maintenance.

Accident overview	While cutting wooden stakes with an electric circular saw in preparation for setting stakes, the worker attempted to hold the cut pieces with his left hand to prevent them from being displaced. However, the glove he was wearing became caught in the saw blade, resulting in an injury to the middle finger of his left hand. [1 injured person]		
Accident incident	<div><div>① A hand was placed instinctively to prevent the cut piece from flying off.</div><div><div><div>Working with gloves on</div><div>Electric circular saw</div><div><div>② The glove became caught in the teeth of the circular saw, injuring the middle finger of the left hand.</div></div></div></div></div>		
Cause of accident	<div><div><div>- The worker instinctively placed a hand close to the circular saw.</div><div>- The worker was wearing gloves when operating the circular saw.</div></div><div>Contractor's preventive measures</div><div><div>- Be sure to keep hands away from the blade of the circular saw.</div><div>- In principle, wearing gloves is prohibited when using a circular saw.</div></div></div>		

12

Public accidents, Other accidents

Type	Category	Cases	Overview
Public accident	Damage to overhead lines	Case 1	After tree-cutting work, a backhoe came into contact with an NTT overhead line, causing a pole on the opposite bank to break, damaging a private home and affecting the NTT communication line.
		Case 2	While loading grass clippings with a backhoe during embankment weeding work, the vehicle accidentally came into contact with a Chugoku Electric Power overhead line along the embankment, cutting one of the overhead lines.
		Case 3	A 10t dump truck was transporting crushed rock to a temporary yard for storage. As the truck moved forward approximately 50 cm to dump the rock remaining on the bed, the bed of the dump truck came into contact with an electrical wire, cutting the wire.
Other	Falling (heavy machinery)	Case 4	During installation work on a street drain apron using a backhoe (0.1 m ³), the heavy equipment turned and lost its balance on the difference in height between the asphalt and the ground, causing the backhoe to fall over.

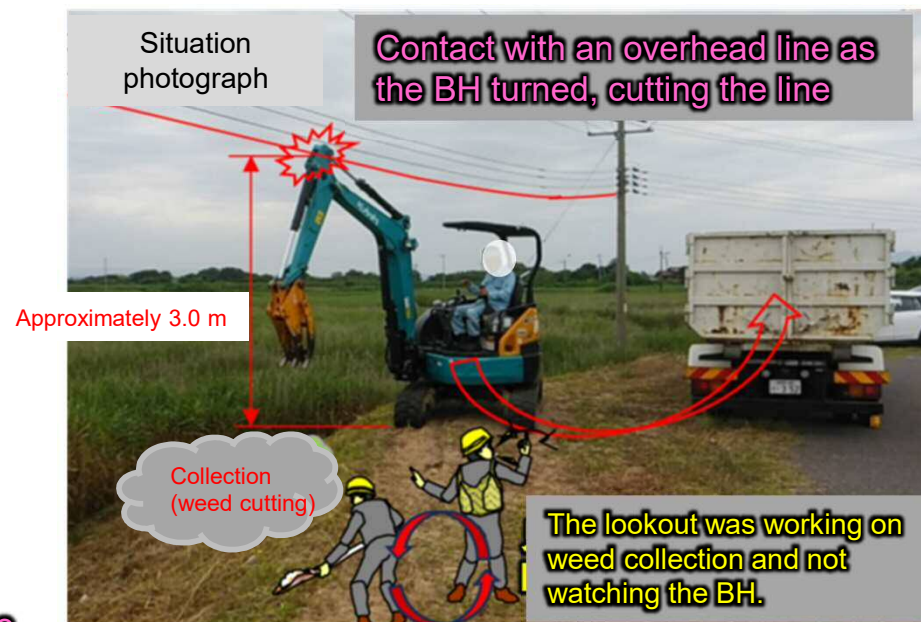
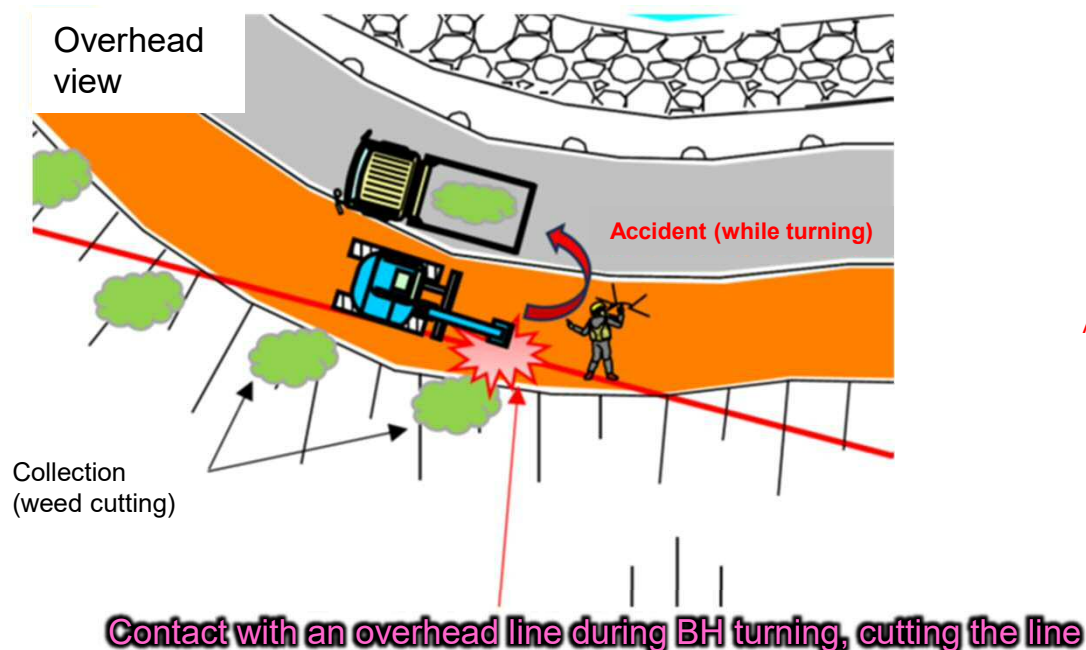
<div> <div>Accident overview</div> <div>Overhead line contact [Property damage]</div> </div>			
<div> <div>Accident incident</div> <div> <div>  <div> <div>① BH arm contacts the wires</div> <div>Overhead line</div> <div>BH running</div> </div> </div> </div> </div>	<div> <div> <div>After felling work was completed, a backhoe passed under overhead wires while moving, and the arm of the backhoe came into contact with the wires while the vehicle continued to move, pulling the wires and breaking two electric poles on the opposite bank. The broken poles then struck the walls and roofs of private homes, damaging the homes.</div> <div>  <div> <div>② Overhead line is pulled</div> <div>③ Electric pole breaks</div> <div>③ The broken electric damages the wall of a house</div> <div>③ The broken electric pole damages the roof of a private house</div> </div> </div> </div> </div>		
<div> <div>Cause of accident</div> <div> <div>- Protective measures such as height limit gates were not in place.</div> <div>- Procedures for working near overhead lines to prevent contact had not been established.</div> <div>- The driver did not remember the overhead wires and drove off without lowering the boom.</div> </div> </div>	<div> <div>Contractor's preventive measures</div> <div> <div>- Install protective measures for overhead lines (such as height restriction gates).</div> <div>- Establish rules for operation near overhead lines.</div> <div>- Hold a meeting to inform all workers before restarting work; the information will also be disseminated during training for new entrants and KY activities to ensure thorough implementation.</div> </div> </div>		

Accident overview

Overhead line contact **[Property damage]**

Accident incident

During weed removal, a BH turned to load the weeds onto the truck. The arm of the BH came into contact with the overhead line, cutting the line.




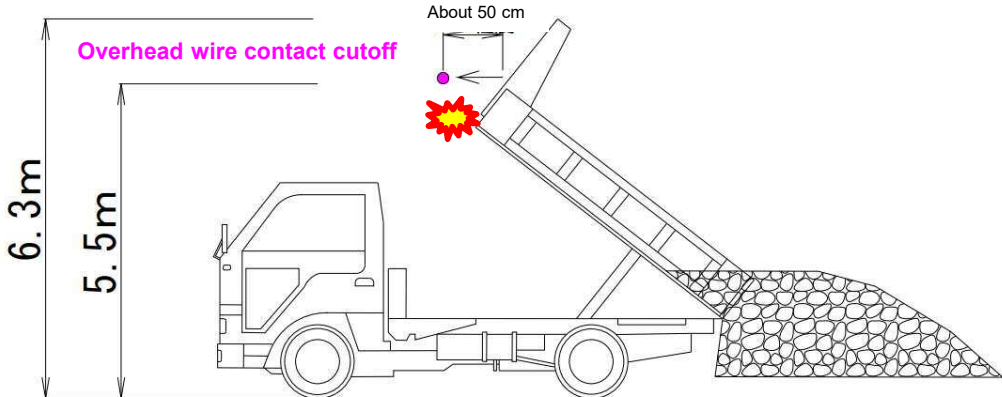
Cause of accident

- No specific contact prevention measures were implemented.
- The lookout was performing another task and not keeping watch.

Contractor's preventive measures

- When the height of the overhead lines is less than 4.5 m, work should be carried out manually.
- Appoint a dedicated lookout officer and ensure that they do not perform any other tasks besides watching the work.

Case 3: Public disaster accident (property damage) [Damage to overhead line]

Accident overview	<p>A10t dump truck was transporting crushed stone to a temporary yard for storage. When the truck moved forward about 50 cm to dump the remaining crushed stones, the truck's loading platform came into contact with an electric wire, cutting the wire. [Property damage]</p>
Accident incident	<div data-bbox="389 320 692 352">[Photos from the site]</div> <div data-bbox="163 357 958 927"><p>The photograph shows a road with a guardrail on the right. A yellow line indicates the path of the overhead wire. A red starburst marks the 'Wire cutting point' where the wire was severed. Another red starburst marks the 'Dump contact point' where the truck's loading platform touched the wire. A blue box labeled 'Temporary yard 2' is visible in the background. A distance of 'H=0.5m' is indicated between the cutting point and the contact point.</p></div> <div data-bbox="1368 389 1877 421">[Accident occurrence circumstances]</div> <div data-bbox="987 443 2168 501"><p>Overhead lines (electric lines) were cut by a 10t dump truck moving forward about 50 cm to remove the crushed stones remaining on the bed the dump truck.</p></div> <div data-bbox="1025 517 2024 916"><p>The diagram shows a side view of a 10t dump truck with its bed raised. The truck's height is marked as 5.5m. The overhead wire is at a height of 6.3m. The truck's loading platform is shown making contact with the wire, with a distance of 'About 50 cm' indicated between the truck's bed and the wire. A red starburst marks the 'Overhead wire contact cutoff' point.</p></div> <div data-bbox="197 938 2051 1145"><p>① Because the crushed stone could not be stored in the temporary yard originally planned, it was transported by a 10t dump truck to the temporary yard on the opposite side of the site, which was designed for 4t use.</p><p>② Although the company had prepared a prior investigation report and a plan for measures to prevent accidents such as collisions and cuts on the main line, it had not prepared a prior investigation report or plan for measures to prevent accidents such as collisions and disconnections on the temporary yard and had not clearly indicated the overhead lines.</p></div>
Cause of accident	<div data-bbox="264 1171 931 1506"><p>- There was no thorough awareness or clear guidance given regarding the prohibition on subcontractors delivering using the dump truck. Furthermore, the general contractor was not aware of the stock situation in the temporary yard.</p><p>- For unplanned work, do not rely solely on the workers to make decisions, but ask for the contractor's decision.</p><p>- Although the company had prepared a prior investigation report and a plan for measures to prevent accidents such as collisions and disconnections on the main site, it had not prepared a prior investigation report or plan for measures to prevent accidents such as collisions and disconnections on the temporary yard and had not clearly indicated the overhead lines.</p></div> <div data-bbox="943 1171 1133 1289">Contractor's preventive measures</div> <div data-bbox="1155 1171 2204 1560"><p>- Re-educate workers on the use of 10t dump trucks for delivery and install signs reminding them that large vehicles are not allowed to enter certain areas. In addition, an item will be added to the safety patrol inspection list requiring checking and understanding the status of temporary yards.</p><p>- All work procedures shall include a description of procedures in the event of unscheduled work, and the prime contractor and subcontractors shall be re-educated and made thoroughly aware of the situation. In addition, the response to unscheduled work will be posted at the work site, and daily education will be provided during morning meetings.</p><p>- Prepare a plan for a preliminary survey report on publicly occupied properties and other relevant items and an accident prevention plan for contact, severing, and other incidents for temporary yards and construction vehicle transportation routes. Implement security measures to prevent accidents involving collisions and cutoffs (clear signs and warning signs). Increase the number of company safety patrols to at least twice a month, and evaluate the status of daily checks, including written reports.</p></div>

Case 1: Others (construction-related parties) [Falling (heavy machinery)]

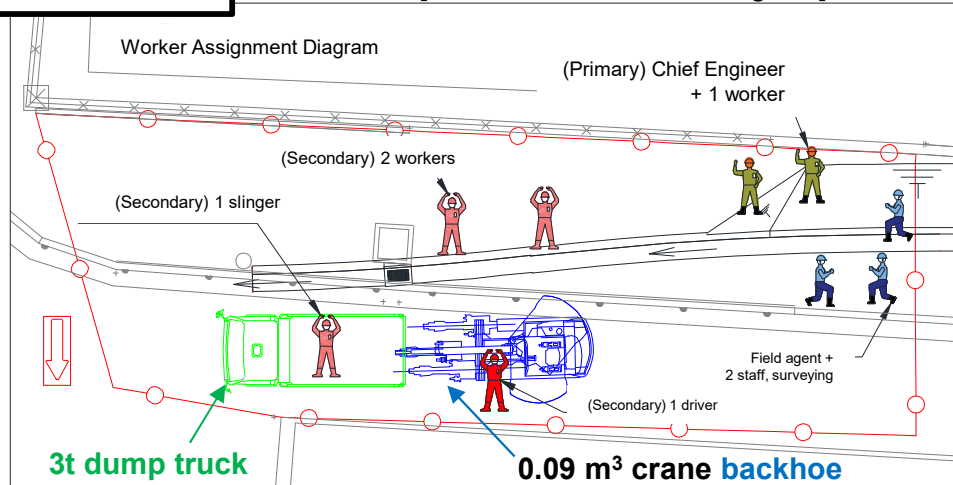
Planning Department, Chugoku Regional Development Bureau

Accident overview

During road improvement work, a secondary concrete product (street culvert apron W750 x H200 x L2000 , W = 594 kg) was unloaded from a dump truck by a crane backhoe, causing the load to swing and the heavy equipment to overturn. **[No casualties]**

Accident incident

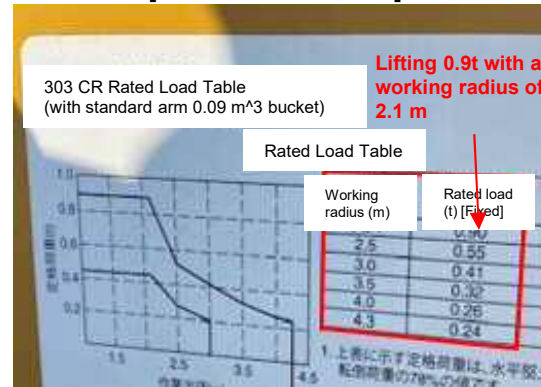
[Accident occurrence diagram]



[Recreation of the accident]



[Rated load table]



[Photo of the accident]



[Reference material: Ministry of Health, Labor and Welfare, Workplace Safety Website]

As for all machines, lifting operations at right angles to the caterpillar are more unstable than those in the parallel direction, and the probability of tipping over in the process is very high, especially when turning.



Cause of accident

- The work continued despite the warning buzzer sounding.
- No one stopped the dangerous work.
- The rotation was so fast that the load swung, causing the arm to return to the opposite direction.
- There was no extra capacity in the performance of the machines used.
- The sling was long and the arm was raised to its maximum extent.

Contractor's preventive measures

- If the alarm buzzer sounds, stop the work (do not proceed), review the work procedures, and inform everyone of the procedures.
- Implement re-education to improve safety awareness and provide education for new entrants based on this accident; perform on-site demonstration training.
- Keep engine output (rpm) below 80% and limit turning speeds.
- Improved performance with 0.15 m³ crane backhoe (rated load is increased by 60%).
- The length of the sling is half that used at the time of the accident (L = 1 m x 4), and measures are taken to prevent the arm from being raised more than necessary.