LAYERS OF DEFENSE

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Each year, rollover or rollaway incidents with mobile equipment cause major accidents on worksites and in various industrial settings. Not only result in financial losses but also put workers' lives at great risk.

"Preventing rollovers and rollaways starts with planning, thrives on control, and succeeds with awareness—safety is no accident, it's a commitment to being Always Safe Always Ready".

Planning & Preparation

Planning and preparation are the foundation of preventing roll-over and roll-away incidents. This starts with conducting a comprehensive risk assessment to identify potential hazards, such as uneven terrain, soft ground, or steep slopes. Understanding worksite conditions is key to selecting suitable equipment.

Control & Verification

Once work has commenced, control and verification measures are essential to continuously manage risks and ensure that safety protocols are being followed. Besides physical controls, procedural checks are important, like ensuring equipment isn't overloaded. Checking and monitoring these measures are in place and effective.

Competency & Awareness

Competency and awareness ensure all operators are trained and aware of risks. Operator skills start with certification and training, covering theory and practice. Building a safety culture where workers report dangers helps prevent incidents. Encouraging skill development and awareness reduces errors.

ROLL OVER & ROLL AWAY

Safety review

Worksites involving vehicles / equipment
should include at least the following elements:

MR: Meets Requirements / **NI:** Needs Improvement

Planning & preparation

- ☐ **Terrain evaluation:** analyse the site for potential hazards like slopes, unstable ground, or uneven terrain.
- ☐ **Ground conditions:** ensure the ground is stable and capable of supporting the weight of heavy equipment.
- ☐ **Slope management:** identify areas with steep slopes and plan routes that avoid or minimize operation in these areas.
- ☐ **Appropriate equipment selection:** choose equipment that is suitable for the terrain and task. Equipment with a low center of gravity is less likely to rollover.
- ☐ **Obstruction identification:** mark and map out areas with potential obstacles such as rocks, ditches, or other equipment that could lead to rollovers if struck or encountered.
- ☐ **Route planning:** plan and establish safe routes for equipment movement, especially when transporting heavy loads or when working near slopes.
- ☐ **Emergency preparedness:** conduct rollover drills so operators and site personnel are familiar with the emergency procedures in case of a rollover.
- ☐ **Discharge of materials:** paving activities involves transporting and discharging large volumes of materials. Uneven weight distribution can make trucks more prone to rollovers, particularly on slopes, incorporating controls such as limiting articulated trucks, incline limiters, etc.

Control & Verify

- ☐ **Regular maintenance:** ensure all equipment is regularly inspected and maintained according to the manufacturer's specifications. It is necessary to have a good maintenance system (digital preferably) to identify & report faults.
- ☐ **Rollover Protective Structures (ROPS):** Ensure all applicable equipment is fitted with ROPS and that these structures are properly maintained and not modified in a way that compromises their effectiveness.
- ☐ **Load management:** ensure that equipment is not overloaded and that loads are properly secured and balanced. Follow manufacturer guidelines for load limits and distribution.
- ☐ **Pre-Operational checks:** require operators to perform pre-operational checks to ensure the equipment is in good working order and that there are no visible risks of rollover, overseen by the supervisor
- ☐ **Lighting and visibility:** ensure that operations are conducted with adequate lighting to prevent operators from encountering hazards that might cause a rollover.
- ☐ **Regular maintenance:** conduct regular maintenance checks to ensure that the equipment is in good working condition. Pay particular attention to brakes, steering systems, and tires/tracks, as failures in these areas can contribute to rollovers. Daily checklist, done onsite by the crew (supervisor, foreman).
- ☐ **Weather monitoring:** monitor weather conditions closely, as rain, snow, or ice can make the terrain more hazardous. Plan operations around adverse weather conditions whenever possible.
- ☐ **Constant vigilance:** always be aware of your surroundings, including the presence of workers, other vehicles, and obstacles. Maintain a safe operating distance from hazards and other equipment.
- ☐ **Rental / Contractor equipment:** requirements are applicable to rental / contractors equipment, ensure they have process in place to manage.

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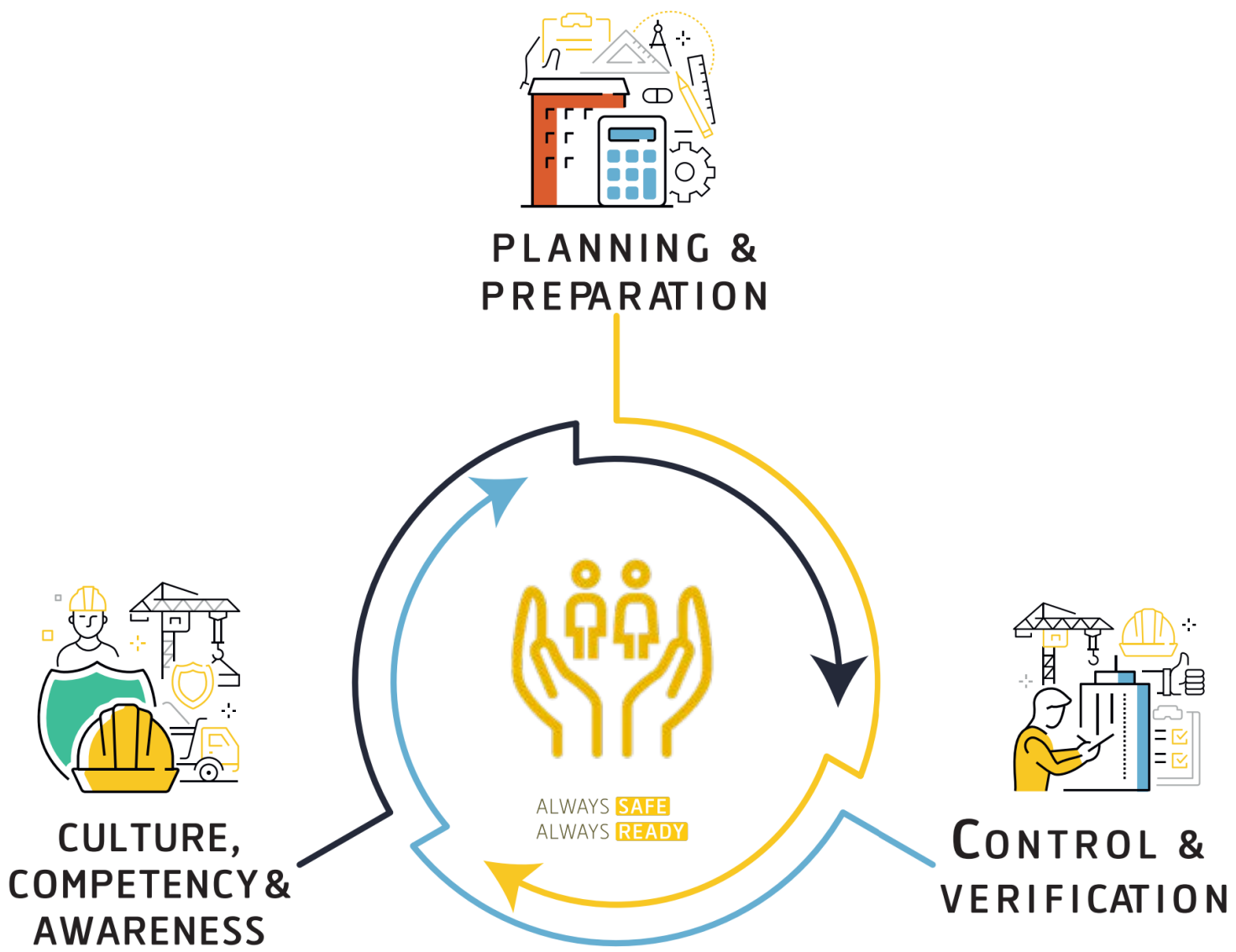
for further information

SAFE
READY

CHECKLIST REVIEW

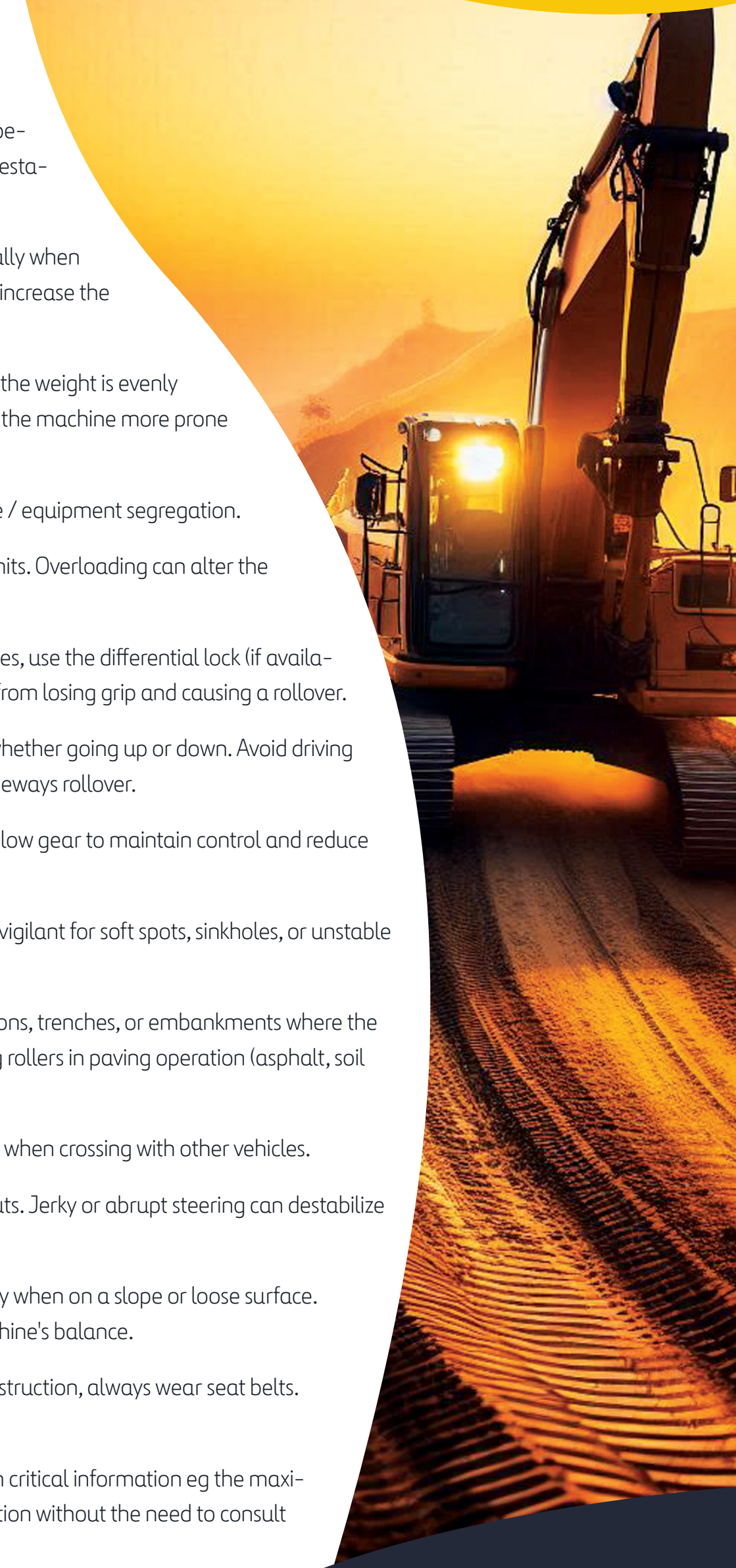
Competency & Awareness

- ☐ **Comprehensive training:** provide operators with thorough training on the specific equipment they will be using, emphasizing the risks of rollover and proper handling techniques.
- ☐ **Continuous training:** regularly update training programs and safety procedures based on the latest industry standards, technology advancements, and incident learnings.
- ☐ **Hazard awareness:** train operators to recognize hazardous conditions such as soft ground, steep slopes, or sharp turns that increase rollover risks.
- ☐ **Trained spotters:** in areas with limited visibility or space, use a spotter to help guide equipment and avoid hazards that could lead to a rollover.
- ☐ **Emergency arrangements:** understand and patriciate in rollover drills to be familiar with the emergency procedures in case of a rollover.
- ☐ **Situational awareness:** always pay attention to the works area, there may have been changes, when operating equipment focus on width, type of material, cross traffic, existence of barriers or side ditches etc.



OPERATIONAL BEST PRACTICES

- **Reduce speed on slopes and turns:** always reduce speed when approaching and navigating slopes, turns, or uneven terrain. High speeds can cause instability!
- **Respect the speed limits on the jobsite.** There can be several vehicles and equipment in the same path. Fully loaded trucks are difficult to control, specially with high speed.
- **Avoid sharp turns:** make wide, gradual turns whenever possible, especially on slopes or when traveling at higher speeds. Sharp turns can destabilize the roller or compactor, leading to a rollover.
- **Gradual deceleration:** avoid sudden stops or sharp braking, especially when moving downhill, as this can shift the machine's center of gravity and increase the risk of a rollover.
- **Balanced loading:** when loading or carrying materials, ensure that the weight is evenly distributed across the machine. Uneven weight distribution can make the machine more prone to tipping.
- **Exclusion zones:** identify safe tipping area, maintain suitable people / equipment segregation.
- **Avoid overloading:** stay within the manufacturer's specified load limits. Overloading can alter the machine's center of gravity, making it more susceptible to rollovers.
- **Use of differential lock (if Equipped):** on slippery or uneven surfaces, use the differential lock (if available) to maintain better traction and prevent one side of the machine from losing grip and causing a rollover.
- **Ascend and descend straight:** always approach slopes head-on, whether going up or down. Avoid driving across the face of a slope as this significantly increases the risk of a sideways rollover.
- **Use low gear on slopes:** when climbing or descending slopes, use a low gear to maintain control and reduce the need for sudden braking or acceleration.
- **Check for soft spots or sinkholes:** before and during operation, be vigilant for soft spots, sinkholes, or unstable ground that could cause the roller to tip or sink, leading to a rollover.
- **Avoid operating near the edge:** stay clear of the edges of excavations, trenches, or embankments where the ground may be less stable and prone to collapse. Similar , when using rollers in paving operation (asphalt, soil cement, CGBM, etc), avoid the border of the paving width.
- **Passing other vehicles:** leave at least 1.5 meters to the borders and when crossing with other vehicles.
- **Smooth steering inputs:** apply smooth and controlled steering inputs. Jerky or abrupt steering can destabilize the machine, particularly on loose or uneven surfaces.
- **Use brakes carefully:** avoid unnecessary or harsh braking, especially when on a slope or loose surface. Braking should be smooth and controlled to prevent shifts in the machine's balance.
- **Operator manual:** understand and operate as per manufactures instruction, always wear seat belts. Don’t use mobile phones whilst operating equipment.
- **Equipment information:** apply the placement of visible stickers with critical information eg the maximum load of the machine. To easily inform personnel of this information without the need to consult the equipment manual.



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