

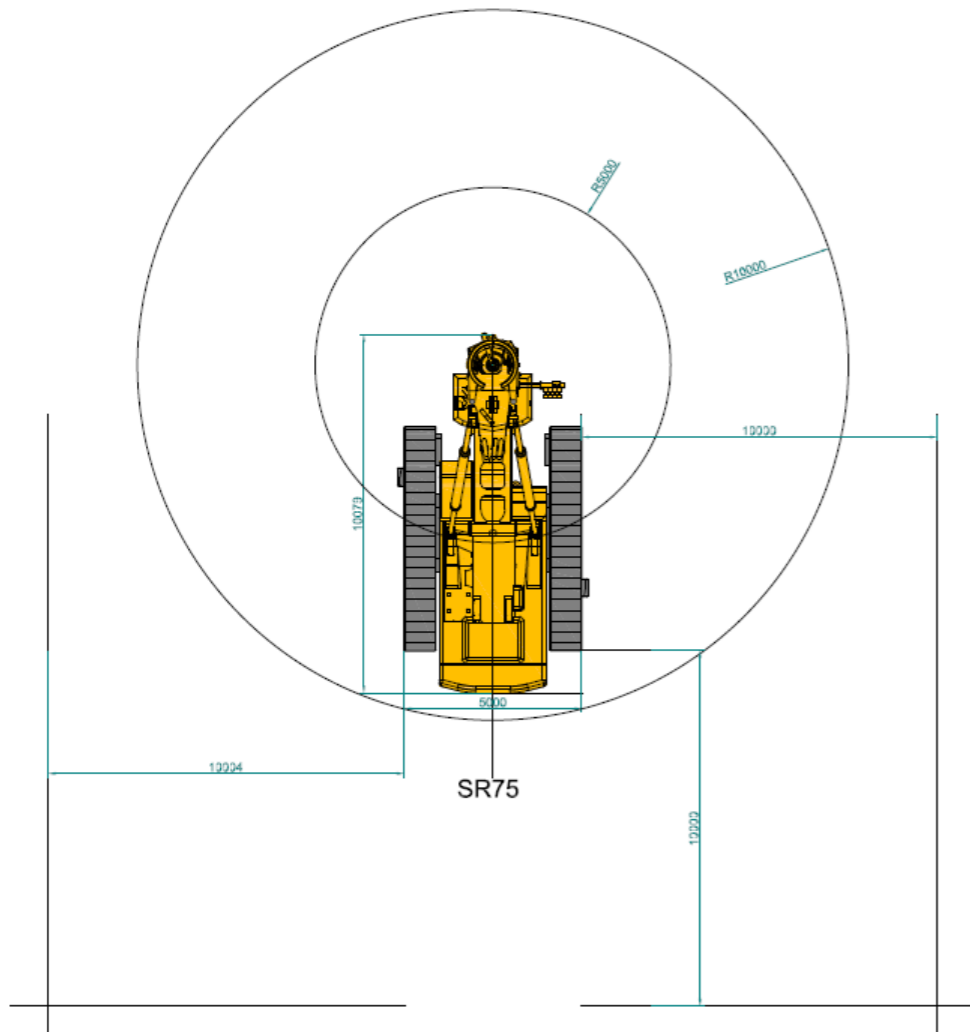


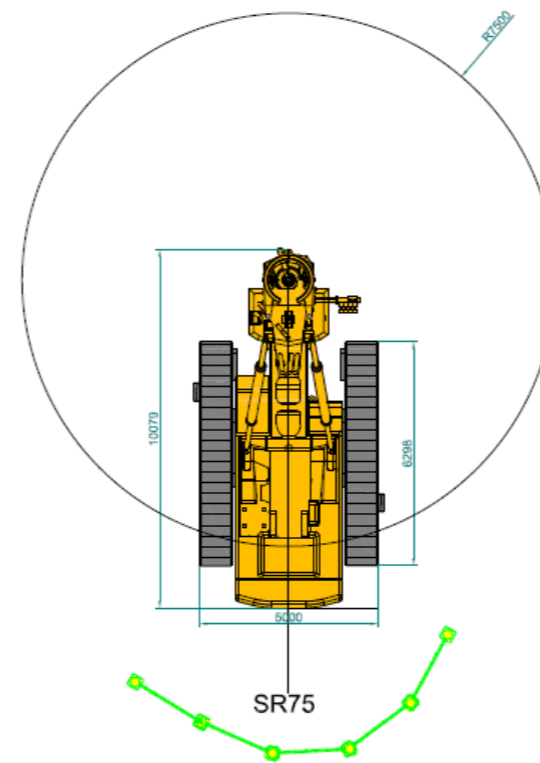
FPS	CEMENTATION	COMMENTS
<p><b>RESTRICTED ZONE</b></p> <p>The design, layout and operation of working areas are key to ensuring that people are segregated from the risk of:</p> <ul style="list-style-type: none"> <li>• Collision or entrapment from mobile plant or equipment;</li> <li>• And, the risk of falling objects striking an individual working within the working area.</li> </ul> <p>This booklet has been produced as a guide for all FPS member companies to assist them in setting up and managing effective working areas and restricted zones that may have people and various items of plant and equipment working in and around them.</p>  <p><b>FEDERATION OF PILING SPECIALISTS</b></p> <p><b>PLANNING:</b></p> <p>When planning the work, restricted zones must be considered to ensure our staff as well as others are kept out of harm's way. A restricted zone is an area where only authorised persons can enter or stand during normal operations. It is important to remember there is a serious risk of injury or death from being struck by falling objects or from moving plant and equipment within a restricted zone.</p> <p>✘ These are identified in metres (m) and by the red zones within this booklet and can only be entered by authorised persons, and only once the plant or equipment is isolated and in a safe condition. The person who wants entry can only enter from the "green zone" and following a "Thumbs up" see below.</p> <p>⚙️ Depending on the ground engineering technique, spoil may be produced and will need to be stored nearby pending removal or loaded directly into tippers etc. These areas are still classed as restricted zones and still pose a serious risk of injury. These are identified by a black and white hatched zone within this booklet.</p> <p>⚠️ On occasions, authorised personnel will need to enter a restricted zone to carry out</p> <p>various tasks that are involved in our works. Depending on the site layout there may be other hazards to consider such as overhead structures or attendant equipment such as cranes or excavators or working nearby. These areas are identified in metres (m) and by amber zones within the workbook. The person who wants entry can only enter from the "green zone" and following a "Thumbs up" see below.</p> <p>⚠️ There may also be a requirement for authorised personnel to stand close to piling equipment, so they can assist in the connection of tooling or casings etc. These areas are identified in metres (m) and by a hatched amber and red zone in the workbook. The person who wants entry can only enter from the "green zone" and following a "Thumbs up" see below.</p> <p>✅ As a reminder, before entering any of the areas above the authorised person must always approach and stand in an area with optimum visibility and receive a "thumbs up" off the plant operator before entering. These areas are identified as green within this book.</p>	<p><b>PLANNING:</b></p> <ul style="list-style-type: none"> <li>• We use a different terminology – "exclusion zone" rather than "restricted zone"</li> <li>• In our RAMS the exclusion zone is identified by the rotating string/drilling/excavation tool in almost all the scenarios and then we've got a mandatory system to barrier off the slewing radius of the Rig/Crane</li> <li>• We do not clearly establish specific restricted zones (red, amber, auger spin/spoil, green)</li> </ul>	<ul style="list-style-type: none"> <li>• Not sure which is the more convenient terminology "restricted zone" or "Exclusionzone"?</li> <li>• Black and white for spoil is interesting, if it was adopted by all companies it could be useful (In Skanska we have to align with other OUs for colour keys at the moment.)</li> <li>• The pictorial style of the posters is user friendly and clear</li> </ul>
<p><b>GENERAL GUIDANCE:</b></p> <p>The pictures depicted within this guidance booklet have been produced by the Federation of Piling Specialists (FPS) with the intention of highlighting the minimum standards for managing plant restricted zones around plant and equipment generally used within a normal piling worksite.</p> <p>It is the responsibility of the geotechnical contractor working in collaboration with the client to ensure that appropriate measures are in place, that consider the site-specific logistics, site layout and the impact of other operations being undertaken on a worksite that may have an impact on the piling works.</p>  <p><b>FEDERATION OF PILING SPECIALISTS</b></p> <p><b>KEY ROLES AND RESPONSIBILITIES</b></p> <p><b>Rig Operator:</b> Responsible for operation of the rig, the isolation (isolation means – the rig is in a safe condition and cannot be moved, operated or slewed) and giving the "thumbs up" to the front man (FM) / banksman (BM) / authorised person (AP) thus allowing safe access into the restricted zone. Under no circumstances should the operator attempt to move or operate the rig when people are stood in the restricted zone unless they are under the direct control of the FM/BM.</p> <p><b>Plant Operator:</b> Responsible for operation of the plant equipment, the isolation (isolation means – the plant equipment is in a safe condition and cannot be moved or slewed) and giving the "thumbs up" to the front man (FM) / banksman (BM) / authorised person (AP) thus allowing safe access into the restricted zone. Under no circumstances should the operator attempt to move or operate the plant when people are stood in the restricted zone unless they are under the direct control of the FM/BM.</p> <p><b>Front Man/Banksman:</b> Is the person in control of all rig and plant movements within the piling areas. Before entering the restricted zone, the FM/BM/AP must receive a "thumbs up" acknowledgement from the rig or plant operator that it is safe to enter.</p> <p><b>Authorised Person:</b> An authorised person is a member of the piling crew who has been authorised to work within the piling works area.</p>	<p><b>R&amp;R:</b></p> <ul style="list-style-type: none"> <li>• CSL Only establish a R&amp;R for the Banksman that owns/maintain the exclusion zone and the interface managed by the Contract Supervisor</li> </ul>	<ul style="list-style-type: none"> <li>• Not sure if we need to bring more R&amp;R to manage the exclusion zone?</li> <li>• They are fully on board with the thumbs up, seen used widely by excavator and lorries, it is a good idea that it is used more in the same way around rigs but we don't state it at the moment in any CSL internal docs</li> </ul>

### FPS CFA RESTRICTED ZONE



- FPS establish a significant restricted zone on the back and sides of the tracks of 10 m;
- FPS clearly states “the rig must be isolated” if someone access red zone

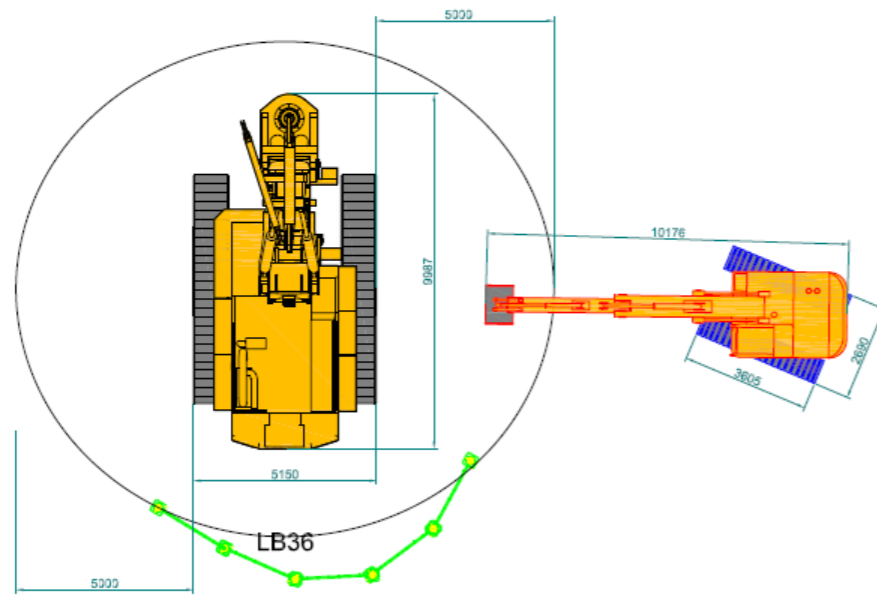
### CSL CFA EXCLUSION ZONE



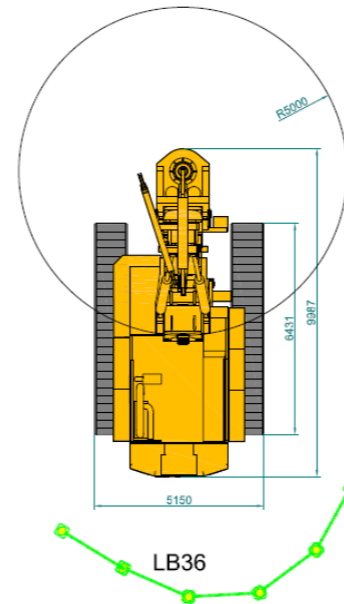
- CSL RAMS identify 7.5 m exclusion zone from the centre of the rotating digging tool and mandatory system to demarcate exclusion zones around piling rigs by “pole and cone” type barrier system.
- We do not clearly state rig “isolation” when access the exclusion zones

- 10 m restricted zone for the back and side of the tracks seems a bit too much?
- Might be worth a bit of though when the attendant excavator access the red area to clean the spoil before installing the cage if piling rig single line is in use to plunge the cage, if it is not the case Rig will be sufficiently from the bore when excavator is clearing the spoil
- Zones classification seems to be too complicated to be fully engaged by the Ops
- CSL New rig sensors will immobilise the rig if anyone goes within 500 mm

### FPS ROTARY RESTRICTED ZONE



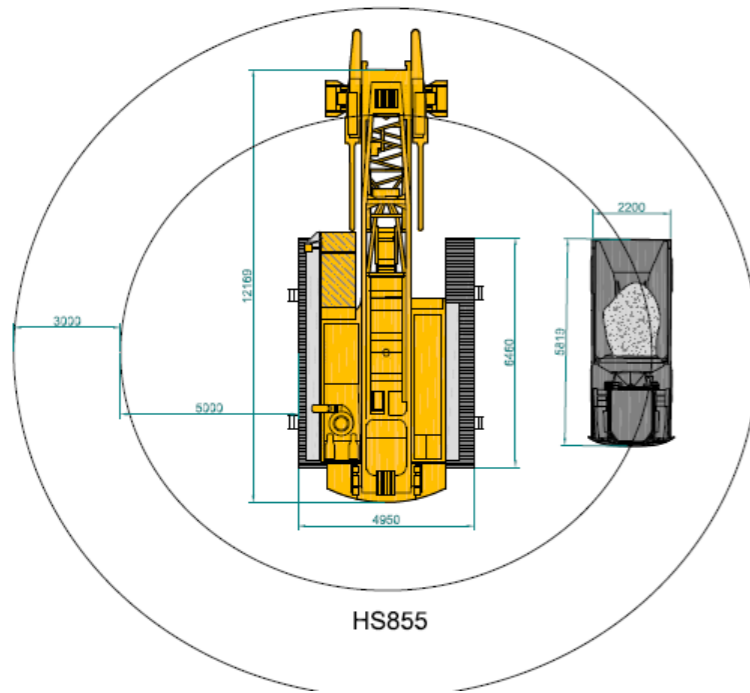
### CSL ROTARY EXCLUSION ZONE



- CSL RAMS identify 5 m exclusion zone from the centre of the rotating digging tool and mandatory system to demarcate exclusion zones around piling rigs by "pole and cone" type barrier system.

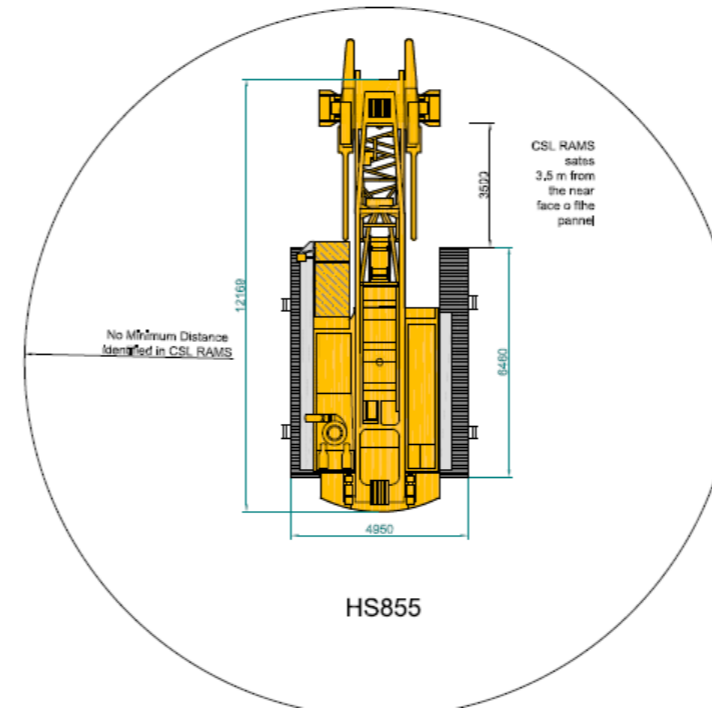
- Shall the spin-of zone be on the same side of the rig cabin and in line of sight of rig operator/banksman/excavator?
- Not sure about the practicality to barrier off the plant spin off area. Instead identify the spin off area as an amber zone for the excavator bucket? Different clients also already asking for this and all have different rules on this
- Zones classification seems ok

## FPS DWALL RESTRICTED ZONE



HS855

## CSL DWALL EXCLUSION ZONE



HS855

- CSL RAMS identify 3.5 m from the rear face of the panel and mandatory system to demarcate exclusion zones around piling rigs by "pole and cone" type barrier system.

- Not sure about the practicality to barrier off the plant tipper loading area versus access of the muck away wagon/hydruma to clear the spoil?
- Zones classification seems ok
- Wording for the green zone does not seem right.
- Amber zone should include the trench/panel and correspondent proprietary edge protection.

<div data-bbox="201 310 439 409" data-label="Section-Header"> <h3>MINI RIG RESTRICTED ZONE</h3> </div> <div data-bbox="1003 262 1044 310" data-label="Text"> <p>4</p> </div> <div data-bbox="836 325 1003 493" data-label="Image"> </div> <div data-bbox="201 472 608 766" data-label="Image"> </div> <div data-bbox="652 504 1023 672" data-label="List-Group"> <ul style="list-style-type: none"> <li><b>Red Zone:</b> Keep out of this area at all times. 2m to the sides and rear of the rig for all personnel apart from authorised persons (second/spanner man) and 4m to the front of the mast (increase the distance around the rig to at least height of mast plus 1.5m when tracking to new position).</li> <li><b>Green Zone:</b> Always signal 'thumbs up' response before entering. Operator to make safe prior to allowing personnel to enter the area.</li> </ul> </div>	<div data-bbox="1246 304 1914 766" data-label="Image"> </div>	<ul style="list-style-type: none"> <li>We would not think to not have a green zone at the back of the rig operator if he is on the handles. Driller should not be approached unless you are in his eyesight.</li> </ul>
<div data-bbox="252 835 667 913" data-label="Section-Header"> <h3>FPS CRANE RESTRICTED ZONE</h3> </div> <div data-bbox="222 955 697 1575" data-label="Diagram"> </div>	<div data-bbox="1276 850 1676 924" data-label="Section-Header"> <h3>CSL CRANE EXCLUSION ZONE</h3> </div> <div data-bbox="1380 976 1587 1564" data-label="Diagram"> </div>	<ul style="list-style-type: none"> <li>FPS does not establish the need barrier off the slew radius of the crane which is not good</li> <li>Extension of the red zone seems more relevant to protect the slew radius for the crane body rather than establish a specific distance</li> <li>Zones classification seems ok</li> </ul>