

Installation

These instructions should be read in conjunction with:

- CSP Pacific drawings - WR STD 01 to WR STD 07
- Safence™ General Details

Installation Sequence

Concrete Works

1. Check that the intended location of the fence is within the Road Authorities Specification
2. Check wire rope installation location, both laterally and longitudinally, ensuring there are no services affecting anchor blocks or footings. Check curvatures; concave, convex, sag and crest. Minimum 200m radius is 15mm offset by sight at third post.
3. Review materials required check lists; CSP Pacific Supply and Loan and Installer provide.
4. Mark out anchor block and footing locations. Excavate anchor block holes, set anchor Bracket and Hookbolts at specified angle and R.L. above pavement R.L. Fit reinforcement Mesh and edge formwork.
5. Clean excess concrete from finger plate to ensure nuts and washers can bear onto finger plate.
6. Excavate footing holes. First and last footings are to be poured earlier than intermediate footings to allow for at least 7 days curing before tensioning.
7. Pour anchor blocks and at least the first and last footings, other footings as well if possible. Place the Plastic Sleeve into the concrete and ensure they are in the correct depth and are in the correct location. Check the construction tolerances in Safence™ General Details. Place the **Reinforcing Ring** 50mm below the surface.
8. **Footings**
 - Footings can be formed using either the Plastic Sleeve or a timber former ensuring that the recess is plumb and in correct alignment both laterally and longitudinally.
 - Allow minimum 7 days curing for the anchor blocks and at least the first and last footings in any fence.
 - Remaining footings should have a minimum of 24 hours curing.

Safence™ Assembly

9. Once all anchor blocks and footings are cured, fit Dust Covers to Post and stand in footing recess.
10. Check heights of Posts and make adjustments as needed by dropping 16mm sieve size gravel into post holes then agitating post until desired height is attained.
11. At the first anchor (start at the uphill end if the fence is on a gradient), fit Safety Check Rope onto the end of the main wire rope before fitting any End Fittings. Note that the thimble fits over the wire rope.

12. Swage an End Fitting to the end of the main wire rope.
13. Fit one washer and two nuts to the threaded end fittings and leave 4 threads only, protruding.
14. Fit end fitting into the Anchor Bracket finger plate slots with washers bearing up to finger plate which **MUST** be clean of any concrete splatters.
15. Run out the reel by driving the reel-carrying truck away towards the other end anchor. Fit the Spreaders in the slots of each post after the first rope. Remember: Steel Spreaders should be used on the first and last posts of the fence only. Plastic Spreaders should be used on all other posts.
16. Ensure as much slack as possible is removed from the system as the rope is laid out.
17. Stop the truck when you arrive at a section where a tension bay is to be installed. See Note.

Location of Tension Bays

- In the case of installations less than 300m a single tension bay would normally be located near the middle.
 - In the case of installations longer than 300m space, the first tension bay is a maximum of 150m from first post to first tension bay then maximum of 300m spacing between subsequent tension bays until the last tension bay, 150m from the last post.
18. Cut the wire rope and swage end fittings onto both ends of the rope. Ensure you cut the rope at approximately the correct place to ensure that the tension bay is roughly halfway between the 2 posts. Avoid cutting too close to a post as the tensioning unit will not fit over wire rope less than 100mm from a post.
 19. Join the two end fittings together with a stainless turnbuckle and two stainless nuts. Ensure that the nuts are on the ends of the end fitting, leaving only 1 or 2 threads showing to provide for maximum tensioning.
 20. Continue driving and laying out the rope and stopping wherever a tension bay is required and repeat steps 17 and 18. **TIP - Laying out two ropes at once will be quicker.**
 21. At the end of the fence, cut the rope to the correct length and attach the end of the rope to the Anchor Bracket using an end fitting, two nuts and a washer. The rope will have to be pulled tight before cutting the rope at the correct place. Again, ensure that no less than about 4 threads is showing from the end of the fitting as in Step 12 and 13.
 22. Repeat Steps 9 to 19 for each of the other 3 ropes. In between each place a plastic spreader (steel spreaders for each of the end posts). After the 3rd rope fit a stainless steel stiffening frame with the third spreader.
 23. After all ropes, spreaders and stiffening frames are fitted, install the post caps.

NOTE - At any point along a fence, expect that the reel will run out. When a reel is finished, join two ropes together using two end fittings, two stainless nuts and a turnbuckle. Some cutting of the end of the rope may need to occur to ensure that the join falls between 2 posts.

Notes on Tensioning

- Tensioning always starts and finishes on the middle tension bay.
 - Tensioning is always done on the middle tension bay first and then tension bays to the left and right of this.
 - When tensioning in a tension bay, the bottom rope is always done first
 - **Safety Tip:** Before Tensioning always check the hydraulic tensioning unit for twists or snags in the hydraulic hose.
 - **Safety Tip:** Always ensure hands are clear before activating the tensioning equipment.
24. Using the Tensioning Report Document and the thermometer read the temperature at site then read off the corresponding Tension Force Required in "kg" and the Dial Gauge reading in "Bar". This is the desired tension for the fence.
25. Fit the tensioning unit to the bottom rope first. This will require a person either end of the unit to support it until the unit is fitted around the end fittings.
26. Call out to Gang members to check their fingers are clear.
27. Tension the rope up until either:
- a. the desired tension has been reached or
 - b. approximately two-thirds of the thread is now showing on the end of the end fitting. Generally, the first time that the rope is tensioned, the desired tension will not be reached. This is because slack from the rope is being pulled out.
28. If the desired tension is not reached, screw the nuts up finger tight on the end fittings to leave approximately two-thirds of the thread showing. At least one-third of the thread should be left to allow for final tensioning.
29. Remove the tensioning unit from the bottom rope and repeat steps 24 to 27 for the 2nd, 3rd and 4th rope.
- Each tension bay will have to be done in the above way.
 - The first tension bay is always the middle one and then subsequent tension bays moving out towards the Anchors.
 - Generally, most tension bays will not reach the desired tension on the first go and most will require a 2nd attempt once all the slack is gone from the fence.
 - You should always finish by checking the tension on the middle tension bay.
 - Tensioning will be complete when all ropes in all tension bays are at the desired tension force required.

Construction Tolerances

- Anchor blocks are to be located parallel to the road shoulder or pavement edge. The R.L. of the anchor block relative to the pavement R.L. is important to the wire rope tensioning and the performance of the releasable end fittings on the wire ropes. A tolerance of plus or minus 50mm is considered acceptable in this dimension.



Installation Manual : Safence™ Wire Rope System

- Distance between posts - plus/minus 100mm.
- Distance of post from the centreline of the barrier - plus/minus 10mm.
- Post height - plus/minus 5mm.

For curved fences, the 200 metre minimum radius means that the "offset" from any post in the curve to the second then third post can not exceed 16mm, plus or minus 1mm.

CAD Drawings

Drawings of CSP Pacific's products are available in PDF format. [Click here](#) to view our extensive CAD library.

Maintenance and Repair

There is virtually no maintenance required with the Safence™ system except when a vehicle impact occurs. In the event of a crash, the maintenance contractor will need to order from CSP Pacific some or all of the following items if stock is not currently held.

- Posts
- Ground covers
- Plastic caps
- Plastic spreaders
- Stainless steel stiffening frame

Then, it is just a simple matter of removing the old posts and replacing with new ones. First, remove the old posts and place new posts and ground covers in the post hole. If the plastic spreaders and caps are in good condition, they can be used again. Then lift the bottom wire rope into the slot. This will require at least two people to lift the rope. Place a spreader in the post slots and then lift the second rope into the slot. Continue until all ropes, spreaders, stiffening frames and plastic caps are in place.