Resene Construction Systems

INTEGRA
LIGHTWEIGHT CONCRETE
FENCING SYSTEM

Version 1 – April 2026

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reseneconstruction.co.nz

ROCKCOTE Plaster Systems

TECHNICAL MANUAL

General System Description

The INTEGRA Fencing System is a proprietary, high-performance solution designed for boundary definition, privacy, and site separation.

The system comprises lightweight concrete panels supported by structural metal posts, delivering both strength and durability.

Panels are stacked into rebates within the posts, allowing for a simple, efficient, and streamlined installation process.

The INTEGRA Fencing System is suitable for a wide range of applications, including residential, commercial, and industrial environments.

Terminology

Below are explanations of some of the acronyms used throughout this document. For further information, refer to the Building Code Handbook, which has additional definitions and can be found at the following link.

https://www.building.govt.nz/building-code-compliance/how-the-building-code-works/building-code-handbook

AS – Acceptable Solution or Australia Standard.

AS1530.4-2005 – Methods for fire tests on building materials, components and structures, Part 4: Fire-resistance tests of elements of construction.

NZBC – New Zealand Build Code.

NZS – New Zealand Standard.

Rw – Sound Reduction Index is a number used to rate the effectiveness of a soundproofing system or material.

Sound Insulation – When sound hits a surface, some of the sound energy travels through the material. 'Sound insulation' refers to the ability of a material to stop sound travelling through it.

STC – Sound Transmission Class represents a single number system for quantifying the transmission loss through a building element. STC is based upon typical speech and domestic noises and thus is most applicable to these areas. STC of a building element is measured in approved testing laboratories under
ideal conditions.

VM – Verification Method.

Specification Reference Labelling

The specification label reference allows a quick reference to a system. For example:

INSPa

IN = 50mm INTEGRA Lightweight Concrete Panel

SP = Steel Posts

A = Acoustic

a/b/c/d/e = System Options

Product Substitution

The INTEGRA Fencing System is a proprietary system that has been carefully designed for New Zealand conditions and has been independently tested and assessed.

It is imperative to use only Resene Construction Systems proprietary products where specified and that the design and construction of the fencing system is followed to ensure the correct level of performance has been achieved onsite.

Components not supplied

Concrete:

Post hole concrete.

Coating System:

This would be supplied and installed by a Resene Construction Systems Licensed Applicator/Plasterer.

Scope of use for the INTEGRA Fencing System

The INTEGRA Fencing System can be used:

- Fencing up to 1800mm high.
- Where posts are no greater than 2350mm centres.

The designer should consider the various systems depending on the requirements. The designer should factor in the following:

- Height of the fence
- Earthquake zones
- Wind zones
- Coatings to the fence
- Neighbouring properties
- Acoustic performance
- Access through the fence

Wind Zones

The assessment was carried on the basis of test results from BRANZ and calculations in accordance with the New Zealand and Australian Standards cited in Compliance Documents B1/VM1.

The span tables have been determined using engineering first principles to evaluate the fencing material when subject to wind forces, ranging from low to extra high, as described in NZS3604.

NZS 3604 wind zone	Maximum fence post spacings
Low	2350mm
Medium	2350mm
High	2000mm
Very High	1750mm
Extra High	1600mm

Exposure to weather during construction

The INTEGRA Fencing System can be exposed to the elements for up to 3 months before the coatings are applied to the fence.

Should the wall be exposed to the weather for a longer period, we recommend applying Resene Aquapel over the entire surface of the INTEGRA Lightweight Concrete Panels.

Materials

Fencing posts:

- 2400mm high posts
- Inline, corner and end posts

INTEGRA Lightweight Concrete Panels:

- Thermal Conductivity: 0.12 W/(mk)
- Thermal Resistivity, R: 0.42m2K/W
- Substrate Thickness: 50mm
- Weight: 26kg/m2, 34kg per panel
- 2200mm long, 600mm wide
- Non-Combustible (AS1530.1-1994)

PSL AAC Adhesive:

- Supplied in 20kg bags
- Used for bonding AAC together, patching panel, and securing the panel to a concrete foundation

Anti-Corrosion Coating:

- Use to prime any exposed steel that may be exposed when the INTEGRA Lightweight Concrete Panel is cut to length or width.
- Zinc Rich protective Coating such as Wurth Zinc Spray Light Perfect

System Variations

- Different steel posts

Installation Guidelines

General

Before commencing any work onsite:

- Ensure the site is clean, level, and free of debris
- Minimise vibration or impact during installation to prevent cracking in fresh mortar
- Confirm all materials, tools, and measurements are ready before starting

STEP 1

Setting out the fence:

Before any digging begins, we recommend carefully planning the fence layout and post positions on paper. This will help confirm measurements, identify any obstacles, and avoid unnecessary rework on site.

Start by accurately determining the boundary line where the fence will be installed. In some situations, particularly tight boundaries or uncertain property lines, it may be necessary to engage a surveyor. Once the boundary is confirmed, mark the fence line using a tight, straight string line.

Setting Out the Post Centres:

Measure the total length of the fence section from corner to corner.

Divide this length by 2200 mm (the maximum length of a panel).

Round the result up to the nearest whole number — this gives the number of spaces between posts.

Divide the total length by this rounded number to calculate the exact post centres.

Remember the posts are 250 mm across the face, so ensure they are centred correctly on the marks.

Example — 10 m Fence Section

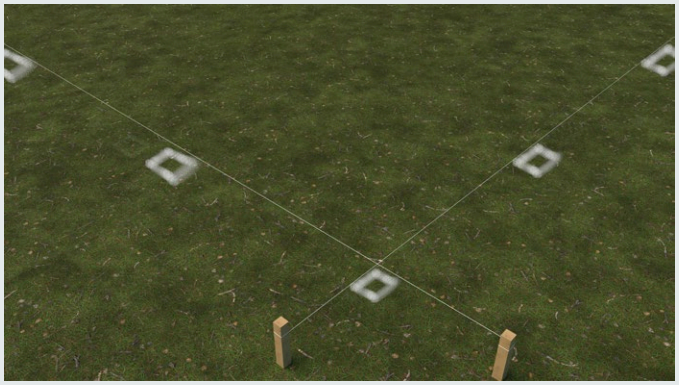
1. Total length: 10,000 mm
2. Divide by 2200 mm: 10,000 ÷ 2200 = 4.54
3. Round up: 5 spaces between posts
4. Calculate actual post centres: 10,000 ÷ 5 = 2000 mm centres

For a 10-metre straight section set the posts at 2000 mm centres.

Because the posts are 250 mm wide, place each post so the centre of the post lines up with the marks at 2000 mm increments.

With the boundary line established, measure out the locations of each post according to the fence design and panel sizes. Mark each post position clearly on the ground. Taking time during this stage to ensure accuracy will make the installation process smoother and help ensure a straight, professional-looking fence.

Install the posts, work directly off this string line to maintain alignment and consistency across the entire fence length.



Fence marked out using spray paint and stringlines each hole.

STEP 2

Post holes:

Before installing any posts, ensure all holes are dug accurately to maintain alignment, strength, and consistency throughout the fence line. Each hole should be positioned centrally on the previously marked post locations, taking care to maintain alignment with the string line at all times.

Post holes must be dug to a minimum depth of 600 mm, with a typical diameter of 300-400 mm. It is important not to over-excavate, as holes that are too large can lead to unnecessary concrete use, reduced stability during installation, and difficulty maintaining correct post alignment. Consistency in hole size and depth across the entire fence run is critical to achieving a uniform and professional finish.

All holes should be dug as straight and vertical as possible. Regular checks should be made against the string line to confirm correct positioning before proceeding further.

Before placing any posts or concrete, ensure the bottom of each hole is free from loose soil, water, and debris, and that a firm base is established. It is recommended that all holes are dug first, allowing a final check of spacing and alignment to be carried out before posts are installed.

Hole excavated approximately 600mm.

STEP 3

Post installation:

Cutting Posts and Metal Components

Posts and other metal components can be cut using an angle grinder fitted with a cutting blade. Clearly mark the cutting line on the component before cutting, and ensure the cut follows the marked line accurately.

All cut edges must be treated with a zinc-rich coating, such as Wurth Zinc Spray Light Perfect or an equivalent product, to protect against corrosion.

Installing Posts:

Begin by establishing the boundary line using a tight, straight string line. This will act as the primary reference for post placement and fence alignment

Position the first post in the pre-dug hole and begin gradually pouring in the concrete. While filling, continuously check that the post is plumb using a spirit level. Make small adjustments as needed until the concrete begins to firm up and the post can support itself. Repeat this process for each post along the line.

The string line should sit just off the face of each post, not touching it. Maintaining a small clearance ensures the post is positioned accurately without disturbing the line. If the string line is allowed to touch the post, even lightly, the pressure can shift the line slightly and cause the fence to gradually curve as you progress along the boundary.

Diagonal Bracing:

Diagonal bracing should be used to keep each post plumb and stable while the concrete cures.

Secure temporary diagonal braces from the post to the ground or another fixed point. Adjust the braces until the post is level in both directions. Ensure the bracing is firm enough to prevent any movement caused by wind, accidental knocks, or the weight of the panels during installation.

Bracing should remain in place until the concrete has set sufficiently to hold the post rigidly, typically overnight or as site conditions require.

Where metal posts have been cut shorter, install cut ends of posts into concrete for additional protection.

Posts installed into the holes with temporary bracing.

Post Spacing During Concrete Set:

While the concrete is setting, we recommend placing spacers between the posts to ensure they remain the correct distance apart.

Use a sturdy, straight, and true material, such as wood or steel, cut to the length of the required panel gap plus 10 mm.

Example:

If the wall panel being installed is 2200 mm wide, the distance between the two post panel rebates should be 2210 mm. The spacer should therefore be cut to 2210 mm to ensure accurate and consistent spacing.

Post installed with concrete poured around it slightly below ground level.

STEP 4

Prep work prior to installing panel:

Set up the site

Before installing the INTEGRA Lightweight Concrete Panels, establish a designated cutting and mixing area in a suitable location on site. This area should be set up on level ground and positioned away from other workers where possible, in order to minimise noise exposure and disruption.

Ensure the area does not obstruct any access ways, pathways, or site operations. All materials and equipment should be positioned safely. Measures must also be taken to prevent any runoff from entering nearby waterways, in accordance with local council guidelines and environmental requirements.

If there are neighbouring residents who may be affected by noise, communicate with them in advance or notify the site supervisor to manage any concerns appropriately. Where possible, set up the work area in a shaded location during warmer months to reduce sun exposure and improve working conditions.

Once established, clearly mark and cone off the area to maintain a safe and controlled workspace.

Measure and cut INTEGRA Lightweight Concrete Panels:

Before commencing any cutting, ensure the skill saw has a current test and tag and is fit for use, with the correct size and type of blade suitable for the material being cut. All persons working in or near the cutting area must wear appropriate hearing protection, and a dust extraction unit must be operated at all times during cutting.

Appropriate personal protective equipment (PPE), including gloves, a dust mask, and hearing protection, must be worn while carrying out cutting tasks. The required mask is a P2 respirator, unless otherwise specified by the product Safety Data Sheet (SDS) or when working in poorly ventilated conditions, where higher protection may be necessary. Where appropriate, materials should be lightly wetted down prior to cutting to help minimise dust generation.

If there is any risk of the panel moving during cutting, a second person must be present to safely support and stabilise the panel. Upon completion of cutting, ensure that all material collected by the dust extraction unit is emptied into a suitable bag, sealed properly, and disposed of in accordance with site and environmental requirements.

Note that the PPE listed above is only required when undertaking tasks that involve cutting or generate dust.

Ensure INTEGRA Lightweight Concrete Panels are always carried upright. This helps prevent deflection, which could otherwise lead to cracking or fracturing of the panel.

Protect any exposed steel:

Any exposed steel surfaces must be protected to prevent corrosion and maintain the durability of the fence system. Paint and protective coatings should be stored correctly at all times, kept sealed, and placed out of direct sunlight to avoid degradation or overheating.

Protect bottom edge:

Where INTEGRA Lightweight Concrete Panels are installed in close proximity to or in contact with the ground, additional protection must be applied to prevent moisture ingress and long-term deterioration. It is recommended that the bottom edge of the panel be coated with Resene Water Lockout or an equivalent waterproofing membrane prior to installation. This coating should be applied evenly to all exposed surfaces at the base, ensuring full coverage and sealing of any porous areas. Taking this step will help minimise water absorption from ground moisture, reduce the risk of staining or damage over time, and extend the overall lifespan of the fence system.

Protecting the bottom panel using Resene Water Lockout.

Setting the level for the INTEGRA Lightweight Concrete Panels:

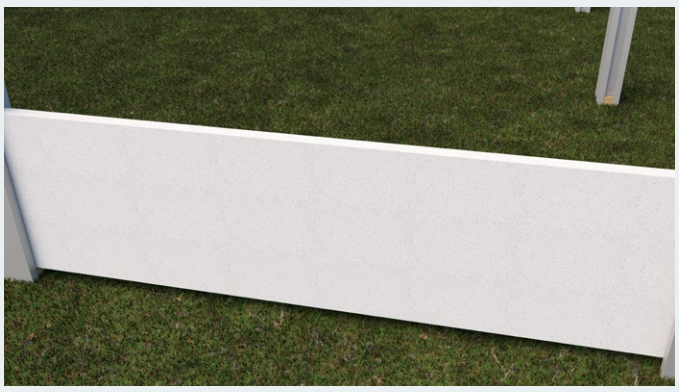
To achieve the correct installation height for INTEGRA Lightweight Concrete Panels, a small timber packer block should be installed within the rebate of each steel post. This block is fixed securely in place by screwing it into the post, ensuring it is positioned at the required height to support the panel during installation. Once installed, the INTEGRA Lightweight Concrete Panel can be carefully placed on top of the timber block, allowing it to sit consistently at the correct level across the fence line. This method not only assists with accurate positioning but also provides temporary support while the panel is aligned and fixed in place.

Install a timber block into the rebate of the column to establish the correct level for the panels.

STEP 5

Installing the INTEGRA Lightweight Concrete Panel:

The first INTEGRA Lightweight Concrete Panels can now be carefully lowered into position between the steel posts. Each panel should be inserted down into the rebates of the columns, ensuring it sits securely on the previously installed support blocks. Take care during this process to avoid chipping or damaging the panel edges, and ensure the panel is correctly aligned and seated evenly within both post rebates. Accurate placement at this stage is critical to maintaining a straight and consistent fence line as installation progresses.



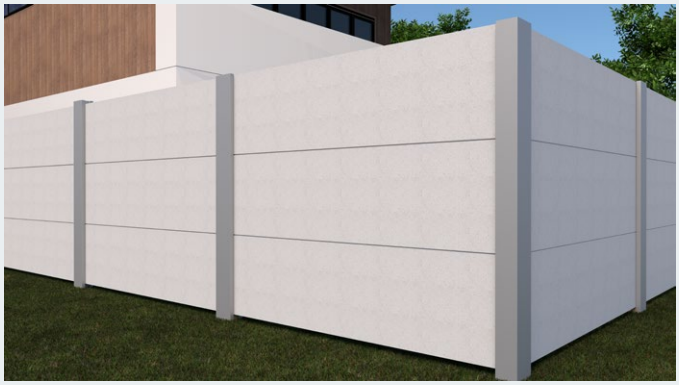
Panel slid down from the top of the post into the grooves.

Installing Subsequent Panels:

Once the first panel is in place, subsequent INTEGRA Lightweight Concrete Panels can be installed by carefully lowering them into the grooves of the steel posts. Before positioning each new panel, apply an even layer of AAC adhesive along the top edge of the previously installed panel. The next panel should then be gently slid down into place, ensuring it is fully seated within the post rebates and properly bonded to the panel below. Care should be taken to maintain alignment and avoid disturbing the panels already installed, ensuring a consistent and secure connection throughout the fence system.

A completed bay of panels installed between two posts.

Continue installing the remaining INTEGRA Lightweight Concrete Panels in the same manner, applying AAC adhesive to the top edge of each panel before placing the next. Each panel should be carefully lowered into the post rebates, ensuring it is fully seated, level, and aligned with the panels below. Regularly check for straightness and consistency along the fence line, making any minor adjustments as required during installation. This process should be repeated until the panel stack reaches the desired height, ensuring all joints are properly bonded and the overall finish remains clean and uniform.

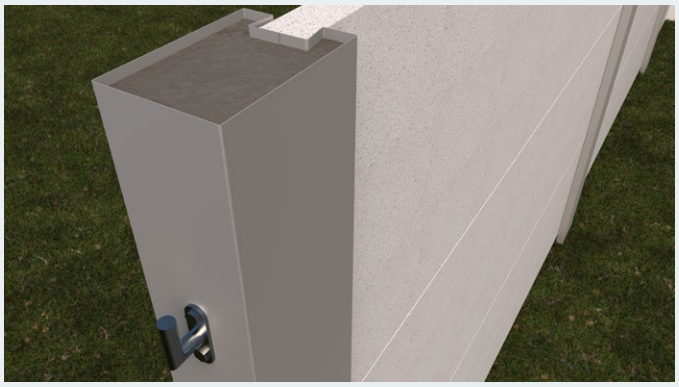


Shows all the panels installed.

STEP 6

Installing gates:

When installing a gate, it is essential that the steel column it will be attached to is structurally reinforced. Ensure the post is filled with concrete and allowed to fully cure before any gate hardware is installed. Once the concrete has cured, the gate fittings can be positioned and fixed by drilling through the steel post and into the concrete core. This provides a secure and durable fixing point capable of supporting the weight and movement of the gate. Care should be taken to ensure all fittings are aligned correctly and securely fastened to achieve smooth and reliable gate operation.



Gate fixings have been secured through into the concrete core.

Install the gate.

STEP 7

Coating the fence:

There are several options available when it comes to finishing the INTEGRA fence, depending on the desired final appearance. If a defined negative line is preferred at the panel joints, a router can be used to form a rebate along each joint prior to texturing and painting. This creates a consistent shadow line that highlights the panel layout and provides a more articulated finish. Care should be taken to ensure all rebates are clean, straight, and uniform before proceeding with the chosen coating system.

A rebate has been formed between the panels prior to applying the finish coats of plaster and paint.

Alternatively, a full render system can be applied across the entire fence to achieve a seamless, monolithic finish. When using this method, it is essential that an alkali-resistant mesh is installed over all panel joints prior to rendering. This helps to control movement, minimise the risk of cracking, and ensure a durable long-term finish. The render should then be applied in accordance with the manufacturer's specifications, ensuring consistent coverage and a high-quality appearance across the entire surface.

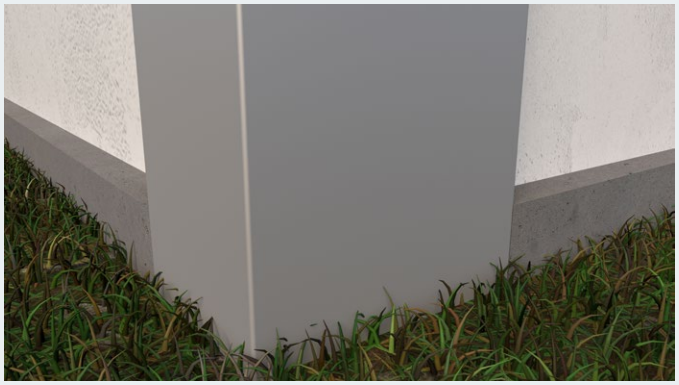
A fully rendered fence.

STEP 8

Additional Extras for a fence:

Mowing strips, protecting the fence

To help protect the finished fence, it is recommended to install a mowing strip along the base of the fence line. Ideally, this strip should be the same width as the columns to maintain a consistent and tidy appearance. The mowing strip should be boxed up and concrete poured in place to form a durable and permanent edge. This provides a solid barrier that helps prevent damage to the plastered or rendered finish caused by line trimmers and lawn mowers, reducing maintenance requirements and extending the lifespan of the coating system.



A concrete moving strip installed against the panel to prevent damage when mowing lawns.

Raking the fence to the contour of the site:

Where the fence follows a sloping site, it is recommended that the INTEGRA Lightweight Concrete Panels are cut to suit the contour of the ground. This approach allows the fence to follow the natural fall of the site while maintaining a consistent and visually appealing finish. Care should be taken to ensure a suitable clearance is maintained between the bottom of the panels and the finished ground level to prevent moisture ingress and potential damage. Timber support blocks should still be installed within the base of the columns to correctly seat each panel, ensuring they are level and properly aligned during installation.

As an alternative to cutting panels to follow the ground, the fence can be installed using either a stepped or raked approach to the top of the wall. A stepped installation maintains all panels level, with the fence height changing in increments to follow the slope, creating a tiered appearance. Alternatively, the top of the wall can be raked to follow the angle of the site, providing a more continuous visual line along the fence. The preferred method will depend on the site conditions and desired finish, however care should be taken in both cases to ensure consistent panel alignment, adequate ground clearance, and a clean, professional appearance.

A fence that has been cut to rake up the contour of the ground.

Installing Infill Panels:

An alternative option is to terminate the INTEGRA Lightweight Concrete Panels at a lower height, typically after one or two panels, and complete the solid portion of the fence with a full plaster and paint finish before installing a lightweight infill above. In this case, the upper section of the column can be infilled with a trellis-style fence to achieve the desired overall height while maintaining a more open appearance. The trellis should be fabricated to the required width and then carefully slid down into the column grooves, ensuring a secure and neat fit. This approach can provide a balance between privacy, airflow, and visual appeal, while also reducing the overall weight and material use of the fence

An infill panel installed to the top section of the fence.

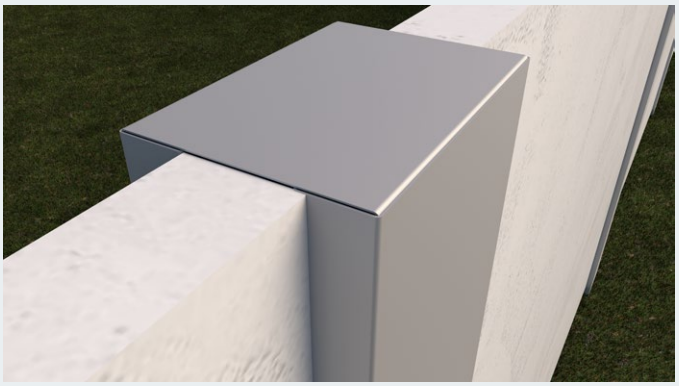
Installing a Exposed Post Cap:

For an exposed post cap, begin by fixing the two post-cap clips to the top of the steel post using appropriate tek screws, ensuring they are securely fastened and correctly aligned. Once the clips (flanges) are in place, position the exposed cap over the tabs and press down firmly until it clips securely into position. For additional support and long-term durability, it is recommended to apply a bead of Liquid Nails or a similar construction adhesive to the flat tops of the flanges prior to installing the cap. This will help ensure a secure fit and minimise movement over time.

An exposed capping installed to the columns.

Installing a Flush Post Cap:

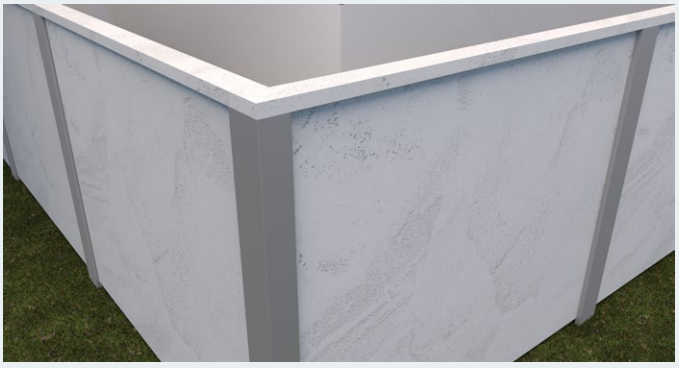
For a flush cap finish, begin by applying a small bead of silicone to each side of the cap to assist with positioning and sealing. Carefully slide the cap into place over the top of the post, ensuring it is correctly aligned. Once positioned, gently tap the cap with a rubber mallet to seat it firmly and evenly. Any excess silicone should be wiped away immediately to maintain a clean finish. Complete the installation by sealing around the top seams with a paintable MS sealant to ensure a weather-tight and professional result.



A flush capping installed to the column.

Installing a Continuous Capping:

Another option is to install an INTEGRA Lightweight Concrete Panel capping that matches the width of the columns and runs continuously along the length of the fence. This method provides a more integrated and solid appearance by tying all posts and panels together visually. Once the capping is installed, a full render and paint system can be applied over the entire surface to achieve a seamless, uniform finish. Care should be taken to ensure the capping is straight, securely fixed, and properly prepared prior to applying the render system.



An INTEGRA Lightweight Concrete Panel that is cut down to the width of the columns and is installed as a continuous cap.

Acoustic Performance

Acoustic fencing reduces noise by blocking the direct line of sight between the noise source and the receiver, while also increasing the distance sound must travel. The maximum acoustic performance of any fence is primarily determined by its geometry, specifically, the height of the fence, source, and receiver, as well as their relative distances, rather than the fencing material itself.

In situations where material performance is critical, the INTEGRA Fencing System provides excellent acoustic attenuation across both low and high frequencies. This makes it well-suited for reducing noise from sources such as road traffic, air-conditioning units, and neighbouring properties, particularly when installed with a solid base plate and a full plaster render.

The INTEGRA Fencing System also meets technical "acoustic fence" criteria as defined in acoustic reports, provided the installation is continuous, with no gaps or cracks, and includes a solid base plate.

Due to the mass of the INTEGRA Lightweight Concrete Panels, very little sound passes through the fence. As a result, overall noise reduction is largely influenced by fence height and positioning, which determine how much sound travels over the top of the barrier.

Typical performance examples include:

- A 1800 mm high fence can provide approximately a 10 dB reduction in road traffic or carpark noise for single-level houses and outdoor areas. A 10 dB reduction is generally perceived as halving the sound level. Some minor reduction may also be experienced at upper levels.
- A 1800 mm high fence extending at least 500 mm above nearby mechanical plant (such as air-conditioning units) can achieve approximately a 10 dB noise reduction from those sources.

These figures are indicative only. Acoustic performance will vary depending on site-specific conditions, and specialist advice should be sought — particularly where compliance or consenting requirements apply.

The reduction in noise with an Integra Fence in relation to a house.

Maintenance

Most external maintenance is completed in the summer as this is generally the best weather for drying and general outside work such as gardening.

It can become complex and costly if maintenance is never undertaken. Other issues may have arisen that could have been acted upon sooner through regular general maintenance.

Check the fence periodically to ensure that there has been no damage to the surface.

If it has been damaged contact your local Resene Construction Systems Licensed Plasterer and they will be able to review and repair accordingly.

The finished render system should be cleaned every 12-18 months. Use Resene Paint Prep and House Wash liquid concentrate for the best results. Apply a diluted solution with a pressure sprayer and use a soft broom for difficult-to-remove dirt. Then wash with a low-pressure wash to remove the residue.
Most detergents have a detrimental effect on aquatic life, so avoid letting the washings run off into the stormwater system. DO NOT use harsh solvent-based cleaners.

Notes

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For all other information
see our website or call
one of our team to assist.

0800 50 70 40 reseneconstruction.co.nz

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