



## Subject: Desana DURUS™ Brick Rainscreen System Installation Guide

### I. General

The Desana Rainscreen System is comprised of kiln fired clay brick, DURUS stainless steel trays, mortar and aluminum support framing.

#### Tools and Equipment

Installers should ensure they have the correct tools to carry out the work e.g., suitable cutting equipment for steel sections and bricks, non-marking rubber mallet, lever to remove bricks, layout tools, levels, electric drill/driver fitted with torque head to prevent over/under tightening, appropriate protective equipment etc.

#### Installation Tools

- Drill gun to secure trays into position
- Power source
- Phillips drill bit
- Jig saw with 18pt metal cutting blade to make horizontal or pattern cuts in the Desana trays
- Tin snips
- Circular saw with metal cutting blade and/or chop saw with metal cutting blade NOT abrasive blade (Lennox steel cutting circular saw blade recommended) for cutting trays to exact length
- Angle bed saw (overhead type) for cutting bricks to correct degree and length
- Diamond tip wet saw or miter saw - A miter saw with a masonry blade or masonry wet saw may be used to cut bricks and special shapes. (Note: A brick guillotine cutter may also be used. This is available from a masonry supply dealer or equipment rental center. A brick guillotine cutter works well for brick straight cuts)
- 1.5 lbs. white non-marking rubber mallet
- 3/4" power drill for mixing mortar
- Mixing paddle for mixing mortar - To adequately mix Desana mortar, we recommend using mortar paddles and an electric drill.
- Mortar Pointing Gun - We recommend using a mortar pointing gun for grouting your project.
- Mortar striking tool
- Foxtail brush for brushing down brick after striking
- Mortar cleaner – if required use masonry cleaners like NMD80 strictly following manufacturer's instruction. Never use muriatic acids
- Level
- Flat head chisel/large screwdriver – for brick removal and head joint adjustment during installation
- Miscellaneous Hand Tools - hammer, nail punch, tape measure, utility knife, carpenter pencil, chalk line, caulk gun

#### Substrate

The surface of the substrate to which the system is attached should be capable of supporting appropriate loads. Vertical supports are required at 32 inches maximum horizontal centers or as indicated by shop or engineered documents.

#### Recladding or Over-Cladding

The Desana brick system is suited for attachment to existing structurally sound substrates. Please contact Desana for system details.

#### Sub framing

The Desana system comes with several different subframing designs to accommodate a variety of conditions including CMU substrates, steel framing, wood, and different levels of thermal protection. Please contact Desana directly for proper framing selection, detailing, and installation.



## II. Trays

DURUS trays to accommodate the Desana system are 304B stainless steel or alternatively hot dipped and coated to a G-90 galvanized rate. Each tray is specially profiled and forms a drainage plane behind the bricks. The profile trays are designed to permanently accept the bricks and hold them in place. Trays are supplied in 8 ft. lengths.

The system may be used below grade level only with 304B grade stainless steel trays.

The trays are generally supplied in 8 ft lengths. Trays are installed over vertical supports and should be staggered between adjacent sections. Trays should not be cantilevered without support greater than 6 inches. A 1/4" gap should be left between tray ends. Six trays will course out to 16" of wall height when installed snugly against each other. This is the ideal condition to maintain the optimum joint size and spacing. There will be times when you will spread the trays out slightly in order to adjust coursing to meet certain conditions, such as window sills. The trays should never be spaced more than 1/8" apart.

### Cutting

Lengths of DURUS trays can be cut using a ferrous metals saw blade. Do not use methods which generate high temperatures such as abrasive disc cutters as these will damage the plastisol coating and deform the trays, possibly making fitting trays together difficult. Trays should be cleaned carefully to remove all traces of cutting debris immediately after cutting before brick installation. After cutting the exposed steel edge may be coated with water based acrylic primer VpCI-386 or equal.

### Fasteners

As noted above, fasteners are positioned along the continuous horizontal scribe. Fasteners are required at the ends of all tray sections and at a maximum of 32 inch centers along their length. The bricks will not interfere with the head of the fastener (provided the maximum head size is not exceeded) as the brick is recessed accordingly. Use only Desana fasteners – EJOT® stainless steel SAPHIR self-drilling screw JT4-4-4.8.

## III. Bricks

Brick size and shape tolerances are checked at the factory however the installer should double check each consignment prior to installation and report any discrepancies to Desana. They are typically supplied shrink wrapped on pallets containing 1000 units. (approximately 142 ft<sup>2</sup>) weighing approximately 1,420 lbs. Other packaging formats are available upon request.

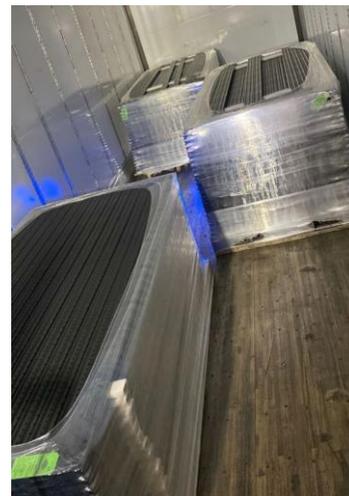
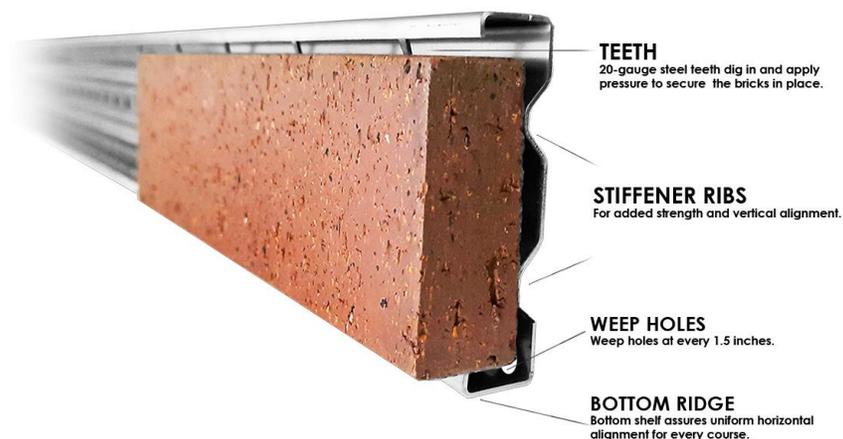
Bricks are supplied in single color packs for on-site blending. Plain bricks should be taken from a minimum of three packs simultaneously to ensure full color blending.

### Installing the First Tray

Align your first tray at Starting Point A and parallel with Chalk Line A-B, as referenced in Figure 25 on the previous page. Using a screw gun, insert a fastener through the DURUS tray and into the framing member. Tighten the screw until the screw head is flush with the tray surface. Before inserting another screw, check the alignment of the tray and make sure that it is level. Insert another screw through the DURUS tray and into the closest stud at the opposite end of the tray from Starting Point A. Check the alignment of the tray and finish inserting screws into every stud along the length of the tray.

### Determining Tray Adjustment

DURUS trays can be adjusted up to 1/8 inch for each tray, allowing installers to adjust coursing to meet window sill or other wall openings. Since each tray can be adjusted up by 1/8 inch, it is possible to gain one vertical inch for every 8 trays installed.



## Corners

DURUS trays are butt jointed into the corners over the steel corner angle accessory. The use of a laser level is recommended to align the backing sections around corners.

## Installing the Bricks

Prior to installation of bricks the tray sections should be cleaned to remove any cutting waste, dirt, rainwater etc.

Bricks are snapped into the steel by inserting the bottom of the brick first. Applying a slight cushioned blow to the top of the brick at a 45° angled hit with a rubber mallet forces the brick into the tray location. Bricks should be tight against the stiffener bumps at the back of the trays. To adjust the brick left or right, simply place the large flat screwdriver at the edge of the brick and bump it to the desired location with light taps of the rubber mallet.

Care must be taken to minimize the risk of abrasion to the trays.

Brick positions should be set out from the corners inwards on each elevation adjusting the vertical joint width to suit variations in brick lengths – minimum joint width 3/8 inch.

## Corner Bricks

Corner bricks are installed as described above. Once inserted into trays corners can be bumped into adjacent corner. The shorter length of the brick does not have kerf cuts.

For inside corners, cut bricks minimum 3 5/8" long are positioned adjacent to a full brick as per drawing. This is then alternated on each course to achieve the effect of a traditional brickwork construction.

**Always maintain a minimum 1/8 inch interlock of the flanges of adjacent trays.**

## Soldier Course Bricks

This technique uses regular bricks in a vertical position. Soldier course orientation require trays to also be in the vertical position (see drawings) to adjust sub framing to achieve vertical trays.

## Attachments to Face of Brickwork – See Drawings

Do not attach fixtures to the face of the bricks. Fasteners should be positioned to steel at the head or back joint. Best practice is to pre-drill a hole in the mortar with a masonry bit. Then with a metal drill bit drill a hole in the steel one size smaller than the fastener.

## Holes/Penetrations

Holes should be formed by first removing the brick (if already fitted) in the area of the hole and cutting through the steel with a conventional hole saw. It is recommended that a 3/4 inch deep piece of plywood or timber is screw fixed to the face of the steel to facilitate centering of the drill. Bricks should then be pieced around the penetration after sealing with polyurethane foam or other suitable sealant.

Care should be taken to ensure the building structure or substrate within the structure is not damaged in drilling such holes.

## Movement Joints

Vertical movement joints to allow for horizontal movement should be provided through brick, mortar, trays and vertical sections at each floor line and at approximately 30 ft centers in the brick cladding. They should extend throughout the full height of the building including parapets etc. Movement joints in the structure of the building should be carried through to the face of the cladding.

Provision for movement is the responsibility of the project designer/engineer and must be confirmed by the Approved Installer before proceeding with installation.

The joint should be filled with proprietary sealant. Please refer to Desana Typical Details DP-216.



## IV. Mortar

If the mortaring process is done neatly the wall will not need cleaning, however if the striking is begun too early and the mortar is too wet when the brush down is done there will be mortar smeared on the face of the brick and additional cleaning will be necessary.

Inspect all wall areas for any defects prior to starting the grouting process. Remove and replace any damaged bricks before grouting.

Read and follow completely the mortar mixing instructions contained on each mortar bag. Desana mortar is available in 80 lb. bags which will cover approximately 27 square feet. It is recommended to mix small batches of mortar.

If the mix is too dry add only 1/2 cup of water. Be careful not to add too much water, which will make the mortar too thin and it may slump during application resulting in sloppy walls that will require cleaning after grouting.

### Preparing the Mortar Pointing Gun

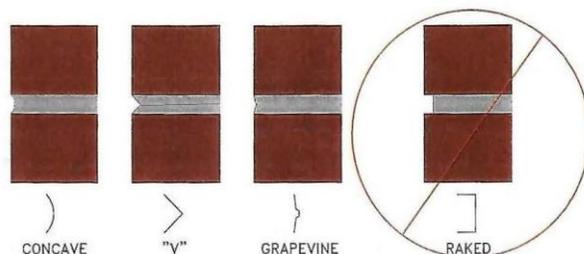
- Once assembled, lightly spray WD40 or a similar lubricant into the gun's tube. Also lightly coat the rubber gasket attached to the gun's plunger.
- Using the garden trowel, fill the pointing gun cartridge completely with mortar.
- Begin filling the joints by starting with the vertical head joints. Work carefully to prevent excess mortar from dripping on the brick faces.
- After two rows of vertical head joints, begin filling the adjacent horizontal bed joints.

Make sure that all head joints are completely filled. If some joints are not completely filled, take mortar from a joint that has been overfilled. Simply scrape the excess off with the striking tool and apply the mortar to the joint that is under filled.

If you spill mortar on the face of the bricks, wait until striking is completed before trying to remove the mortar. If you immediately try to remove the droppings, the mortar will smear, and cleaning will be required when finished grouting.

### Striking the Joints

- Joints are ready to strike once the mortar is thumbprint hard and will not stick to your thumb when pushing down into the joint.
- Once the mortar is ready to be struck, begin by striking the vertical head joints.
- After striking several courses of head joints, begin striking the horizontal bed joints. When striking a bed joint corner, always pull back away from the corner; never push the striking tool towards the corner.
- To complete the tooling process, re-strike the vertical head joints after striking the bed joints.
- Three acceptable mortar joint styles are shown in photo.



### Brushing the Wall

The last step to the grouting process is brushing the wall and removing any excess mortar from the brick faces. Use a mason's soft bristle brush to brush the wall.

If the mortaring process is done neatly the wall will not need cleaning, however if the striking is begun too early and the mortar is too wet when the brush down is done there will be mortar smeared on the face of the brick and additional cleaning will be necessary.

If the mortar begins to smear or the joints show brush marks, the mortar is too wet to brush.

Desana mortar is a product that should be mixed and installed according to the latest instructions. Mortar is applied using manual, mechanical or peristaltic pumps with controlled nozzle applicators.

### Pointing Profile: See Mortar and Pointing Process for the Desana Brick Rainscreen System (Technical Bulletin DP-212)

Flush or slightly bucket-handled profiles are acceptable.



## V. Mockup Panel

Before proceeding a mock up panel should be agreed by all parties. A three stage quality check should be carried out as work proceeds.

1. Firstly, the attachment of the steel sections should be checked to ensure adequate securement, alignment of corners, and spacing.
2. The second check is made when bricks are installed but prior to mortar installation to ensure brick placements, bond patterns, joint spacing, acceptable color blend, chipped edges etc.
3. The final check is made after the pointing has been carried out to ensure correct mortar color and joint profile have been used and that the overall appearance is acceptable in relation to the site reference panel. A viewing distance of 10 ft is recommended.

## VI. Waste

A brick cutting and waste factor of 5% should be expected. Other waste factors must be assessed and allowed for by the Approved Installer.

If there are any questions, please contact Desana Partners.

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