

The Lysaght logo is positioned in the top right corner. It features the word "LYSAGHT" in a bold, white, sans-serif font. A white swoosh underline is positioned beneath the letters "AGHT". The background of the entire page is a dark blue with a complex, light blue architectural blueprint pattern. A large, diagonal, metallic-looking ribbed surface dominates the center of the image, creating a sense of depth and texture. A white diagonal line separates the dark blue background from a lighter blue area on the right side.

**LYSAGHT**

**LYSAGHT® ZIPDEK® 415**

Modern High-Ribbed  
Standing Seam  
Roof Profile

LYSAGHT® ZIPDEK® 415 profile is a high ribbed standing seam architectural roofing profile that is mechanically field-seamed for unsurpassed weather-tightness.

LYSAGHT® ZIPDEK® 415 roof system gives real design freedom and provides a choice of solutions for modern architectural requirements. LYSAGHT® ZIPDEK® 415 panels are suitable for public buildings, commercial developments and industrial buildings.

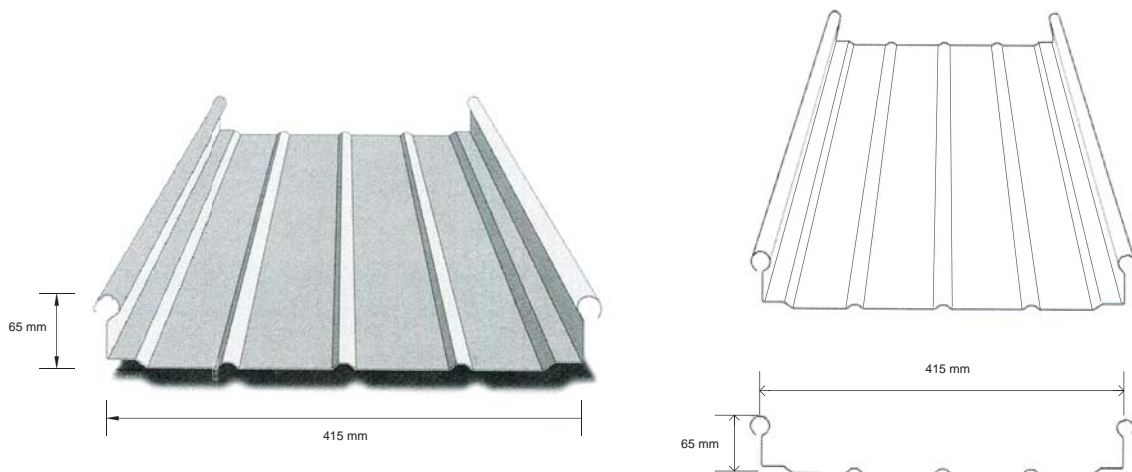
LYSAGHT® ZIPDEK® 415 profile has many benefits in addition to the extensive architectural possibilities: a specially designed concealed clip system requires no through fasteners which provide excellent weather-tightness. Due to rigidity of the seam, specially designed brackets can clamp over the formed seam to allow easy installation of flat architectural panels onto the finished roof system.

The system can be installed rapidly because LYSAGHT® ZIPDEK® 415 panels can be roll-formed on-site to achieve any length required, which avoid the need for end laps. Installation is simple and fast as the profile is pressed onto the clip system after which it is seamed in place.

Architects and designers can safely specify LYSAGHT® ZIPDEK® 415 profile as the products has been fully tested by Products Innovation Centre in Singapore and is supported by BlueScope Lysaght technical team.

LYSAGHT® ZIPDEK® 415 roof system is manufactured from COLORBOND® steel, a proprietary pre-painted steel technology from BlueScope. COLORBOND® steel delivers superior strength and performance that is comparable to other materials. It is also available in range of attractive and durable colours.

LYSAGHT® ZIPDEK® 415 profile is available in one standard width 415mm, in a range of varied material thicknesses, types and colours. BlueScope Lysaght's commitment to innovation ensure LYSAGHT® ZIPDEK® 415 can be manufactured in the most economical means.



## PHYSICAL PROPERTIES

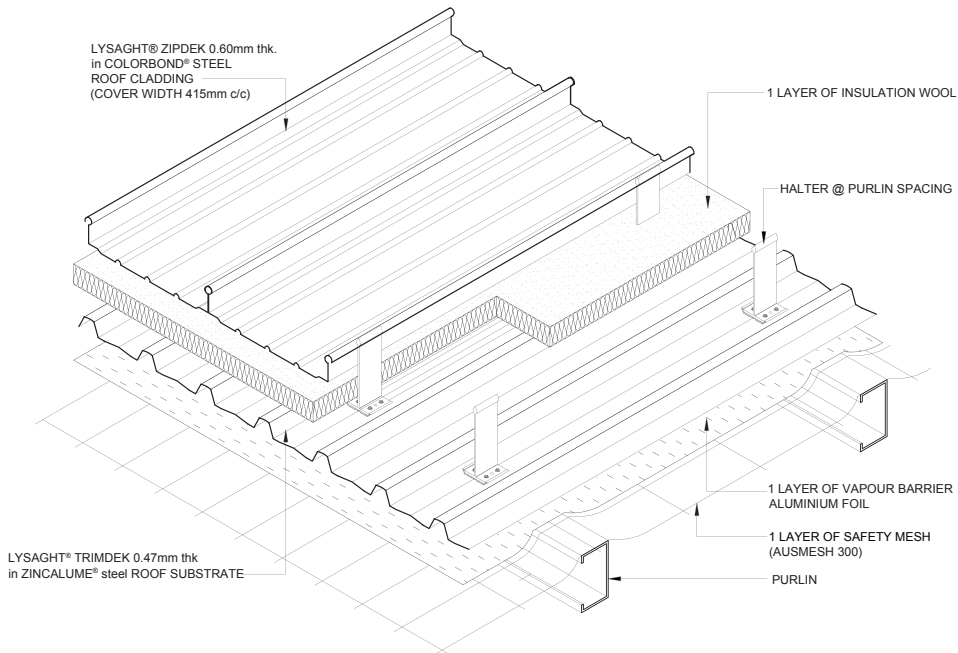
STANDARD	
Base Metal Thickness (BMT)	0.55mm
Total Coated Thickness (TCT)	0.61mm
Coating Class (min)	AZ200
Effective Cover Width	415mm
Rib Depth	65mm
Mass per Unit Area	6.57 kg/m <sup>2</sup>
Min Recommended Roof Pitch/ Slope	
• Sheet length without end lap	2° (1 in 29 approx.)
• Sheet length with end lap	3° (1 in 20 approx.)
Grade of Steel (MPa)	G300 (300N/mm <sup>2</sup> yield strength)
Tolerances	Length ± 0.75mm / Width ± 0.5mm
Packing	In strapped bundles of 1 tonne maximum mass
Custom Cut Lengths	Any measurement to a maximum transportable length

# TYPICAL LYSAGHT® ZIPDEK® 415 ROOF SYSTEM

Roof systems are dependent on specific project requirements and should be tailored to suit the thermal, acoustic, ventilation or economic requirements.

For double skin roof system, the cavity dimension can be easily altered by varying clip size or sub-purlin depth.

## LYSAGHT® ZIPDEK® 415 ROOF BUILT-UP SYSTEM



## DESIGN SPECIFICATIONS

### THERMAL EXPANSION

Long continuous sheet lengths require careful consideration of thermal behaviour. The LYSAGHT® ZIPDEK® 415 roof system considers this movement by allowing the profile panels to slide freely over the clip system. This eliminates thermal buckling of the cladding profile.

Due care should be given to the seaming process during installation, as movement of the system depends on accurate seam control. Attention should also be given to transverse flashings/ penetration to ensure longitudinal movement is not negatively affected.

### THERMAL EXPANSION OF MATERIALS

The changes in length depend on the material type, and its corresponding coefficient. The change in length can be calculated using the following equation:

$$\Delta L = L_0 \times \Delta T \times \alpha \text{ where:}$$

$\Delta L$  = change in length (m)

$L_0$  = original length of sheet (m)

$\Delta T$  = change in temperature (C°)

$\alpha$  = linear expansion coefficient of material (refer to table 1)

Table 1: Linear Expansion Coefficient of Materials

MATERIAL	EXPANSION COEFFICIENT, $\alpha$ (m/(m C°))
Steel	$12 \times 10^{-6}$
Aluminium	$24 \times 10^{-6}$

## SUPPORT POINTS

Particular attention should be given to the impact thermal movement has on the overall roof system. LYSAGHT® ZIPDEK® 415 profile behaves as a floating cladding free to move longitudinally on the clips during temperature changes. To control this movement and prevent sections of the roof moving out of place or becoming misaligned, support points must be established for each individual sheet run. This is normally located at the 'ridge' or 'high' end where it can be concealed below the ridge capping or flashing, allowing deflections towards the gutter end.

If the thermal expansion is too large, the fixed point can be placed at the center of the roof. This method allows the movement to go in both directions, reducing the amount of movement at eave end by half.

## CLIP SYSTEM

LYSAGHT® ZIPDEK® 415 clips are extruded from structural grade aluminium. The shape of the clip has been carefully designed to maximize strength, in both upward (wind uplift) and downward (deadload) conditions.

The head of the clip accurately matches the LYSAGHT® ZIPDEK® 415 roof sheeting, to ensure the sheets slide freely during thermal movement.

## MATERIAL SPECIFICATIONS

LYSAGHT® ZIPDEK® 415 clip is made from Aluminium Alloy 6005.A to AS/NZS 1866 or Aluminium Alloy 6063-T5.

## THERMAL PAD

Specially engineered thermal pad slides neatly onto base of the clip which can reduce or eliminate thermal bridging effects.

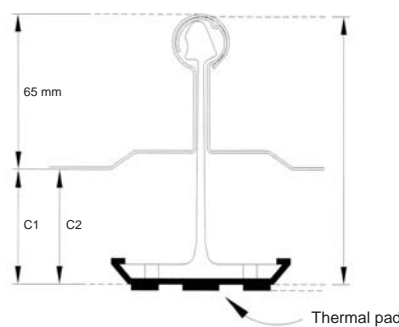
Table 2: LYSAGHT® ZIPDEK® 415 Clips

CLIP TYPE	CLIP HEIGHT (mm)	C1 (mm)	C2 (mm)
H85	85	20	25
H140	140	75	80
H190	190	125	130

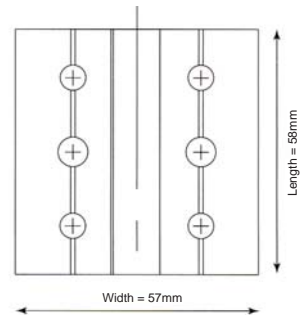
ZIPDEK® 415 CLIP



SECTION VIEW



PLAN VIEW



Thermal barrier pad 5mm thick

H = Height of clip without thermal pad  
 C1 = Cavity without thermal pad (between LYSAGHT® ZIPDEK® 415 panel and bottom edge of clip)  
 C2 = Cavity with thermal pad (between LYSAGHT® ZIPDEK® 415 panel and bottom edge of thermal pad)

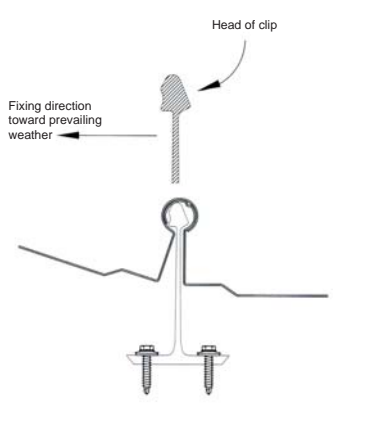
Clip base accommodates up to 6 fixing positions depending on the substrate fixing.

**ORIENTATION OF CLIPS**

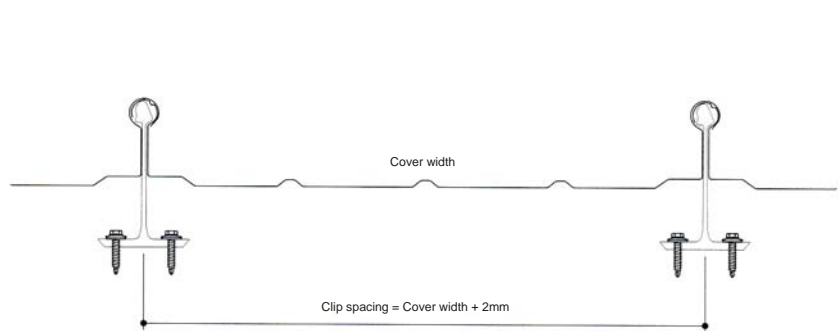
Wherever possible, the direction of installation should be towards the prevailing weather conditions to ensure that the overlap locates on the leeward side. The orientation of the ZIPDEK® 415 clip shall be in accordance with the diagram shown i.e. the notch side of head faces in the direction of laying. Correct orientation of the clip ensures that the sheets will expand and contract smoothly during temperature changes.

**LATERAL SPACING OF CLIPS**

Lateral spacing of clips depends upon the LYSAGHT® ZIPDEK® 415 profile being used. For best results, clips should be spaced at cover width plus 2.0mm.



Orientation of Clips

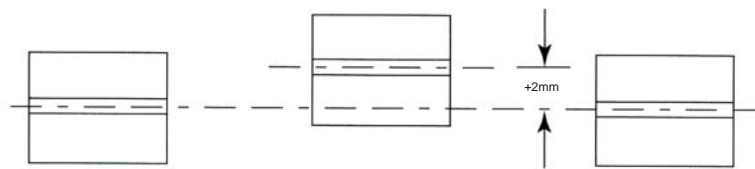


Clip Spacing = LYSAGHT® ZIPDEK® 415 cover width +2mm (Tolerance +3mm/ -0mm).  
The clip spacings for each individual panel should be the same.

Lateral Spacing of Clips

**LONGITUDINAL SPACING OF CLIPS**

Longitudinal spacing of clips to ensure the adequate thermal movement of the system is maintained, longitudinal spacing of clips must be carefully aligned during installation.



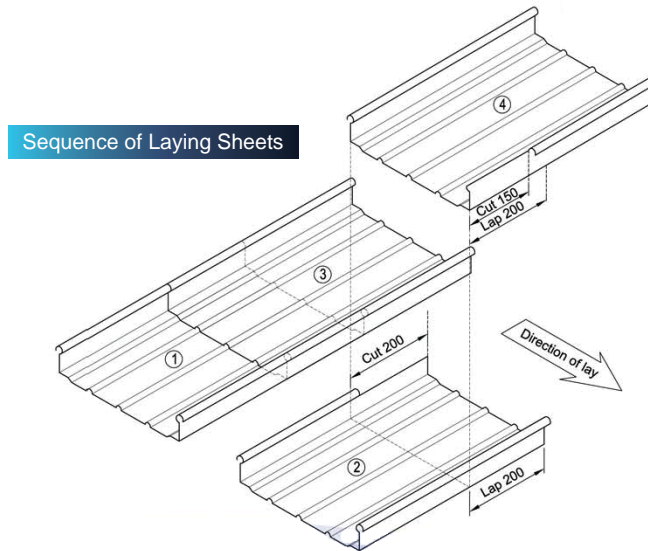
# INSTALLATION OF LYSAGHT® ZIPDEK® 415 PROFILE

## END LAPS

It is always preferred and desired to manufacture and install long continuous sheets of roofing. However, this is not feasible due to site conditions or building's geometry. In cases when sheets are factory made, the maximum sheet length is normally governed by transport.

Continuous eave to ridge runs can no longer be achieved with a single sheet. Instead, a series of shorter sheets are end lapped as required to make up the roof run.

End lapping is an extremely critical step to ensure water tightness. The illustration below describes the recommended method of end lapping the LYSAGHT® ZIPDEK® 415 roof system.



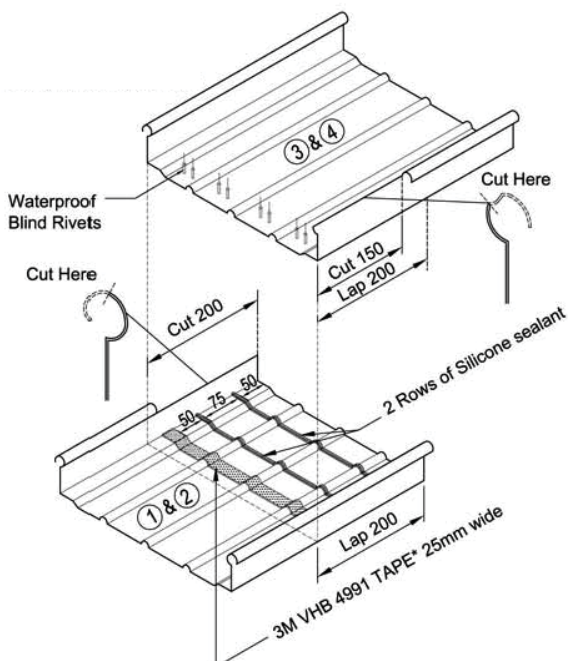
## SEALED AND STITCHED LAPS

Sealed and stitched laps can only be installed on roof pitches of 3° or greater. The integrity of the lap is highly dependent on the workmanship, so care must be taken during installation.

The illustrated sequence should be followed for best result.

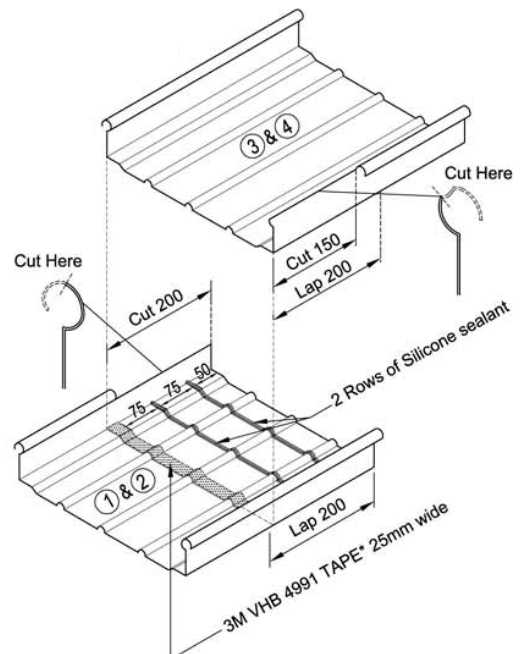
### Stitched Lap

Sealed, riveted joint at end lap.  
Rivets go through sealant type.



### Sealed Lap

High strength tape at end lap.



## SEAMER

LYSAGHT® ZIPDEK® 415 roof system is seamed onto the clips using a mechanical seaming process. The seamer consists of two seaming rollers that are clamped onto the LYSAGHT® ZIPDEK® 415 panel, and four-wheel guides to ensure the correct height is maintained.

## HAND SEAMING TOOL

The first 200-300mm should be hand crimped to enable the seamer to be clamped onto the sheet, running along the ribs. The hand tool is used by squeezing the handles inward to close the seam.

## SEAMING LYSAGHT® ZIPDEK® 415 ROOF SHEETS

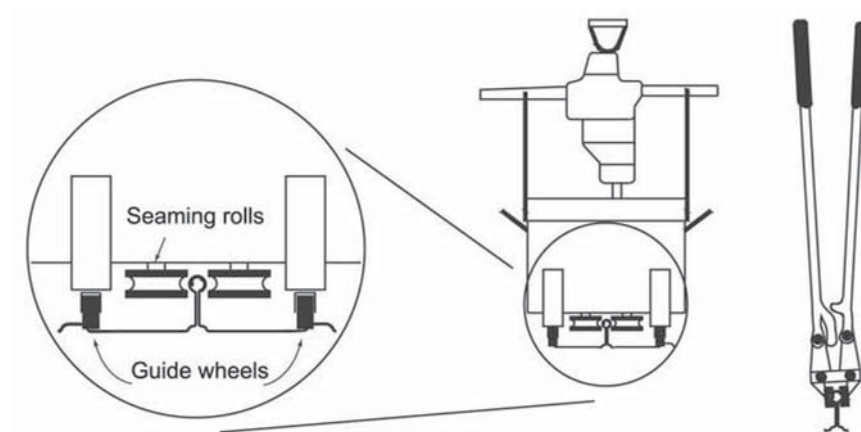
Prior to seaming, ensure the unit is set up for the correct material type and thickness. Some units have calibrated settings, while others require manual adjustment. For the latter, careful control should ensure that the seamed dimensions shown in Table 3 are achieved.

Table 3: LYSAGHT® ZIPDEK® 415 Clips

Material	Thickness	Seam Size Dimension
Steel	0.55	20.0mm
Aluminium	0.90	22.0mm
	1.00	22.5mm

The seamer is clamped onto the end of the rib which has previously been hand crimped 200-300mm. The unit is tightened, and the button pressed. The seamer then travels along the lap, mechanically seaming it.

Only correctly seamed sheets will provide water tightness properties as well resistance to wind uplift and foot traffic.



### Note:

#### Safe walking during installation

Avoid excessive concentrated point loads on the pan of the panel. The seams must be seamed before any unsupported roof traffic is permitted. The space between the brackets repeats in a cycle specified by manufacturer.

### **Aluminium**

The principal application of aluminium roofs is for highly aggressive environments where other materials may not offer the best solution. Typical applications include water storage, aggressive industrial environments and near coastal applications. However, it can also be applied to any application where corrosion is a concern and/or failure is of major consequence. Increased thermal movement of aluminium should be carefully considered when detailing such projects.

### **Stainless Steel**

Stainless steel combines good corrosion resistance and strength of steel. Stainless steel is suitable for highly aggressive environments where design considerations require the strength for longer spans. Stainless steel is suitable for use high corrosive environments.



# REFERENCES

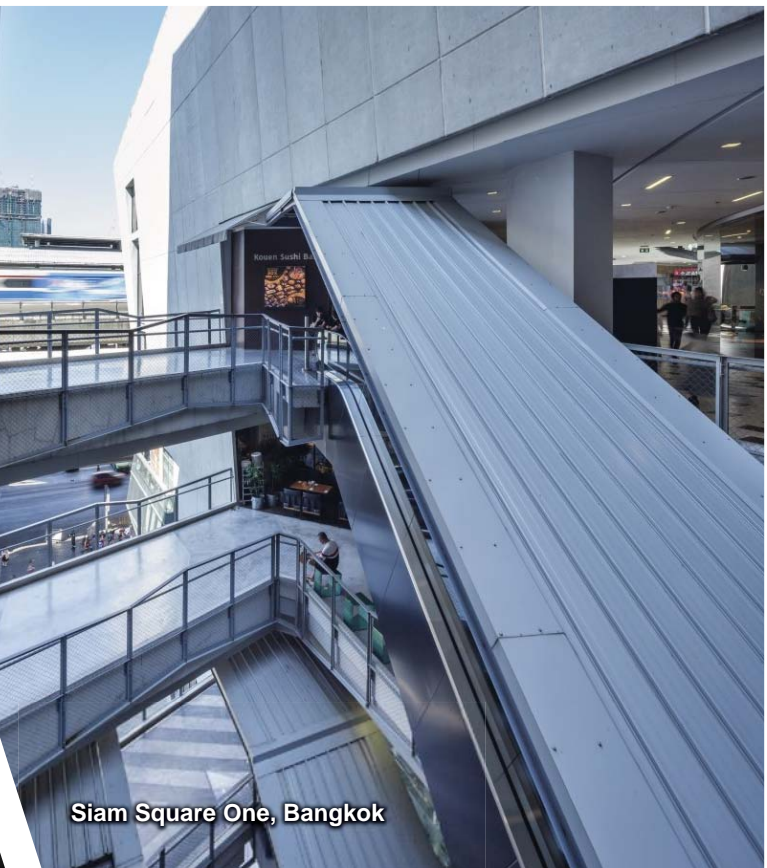


MRT Blue Line Station, Bangkok

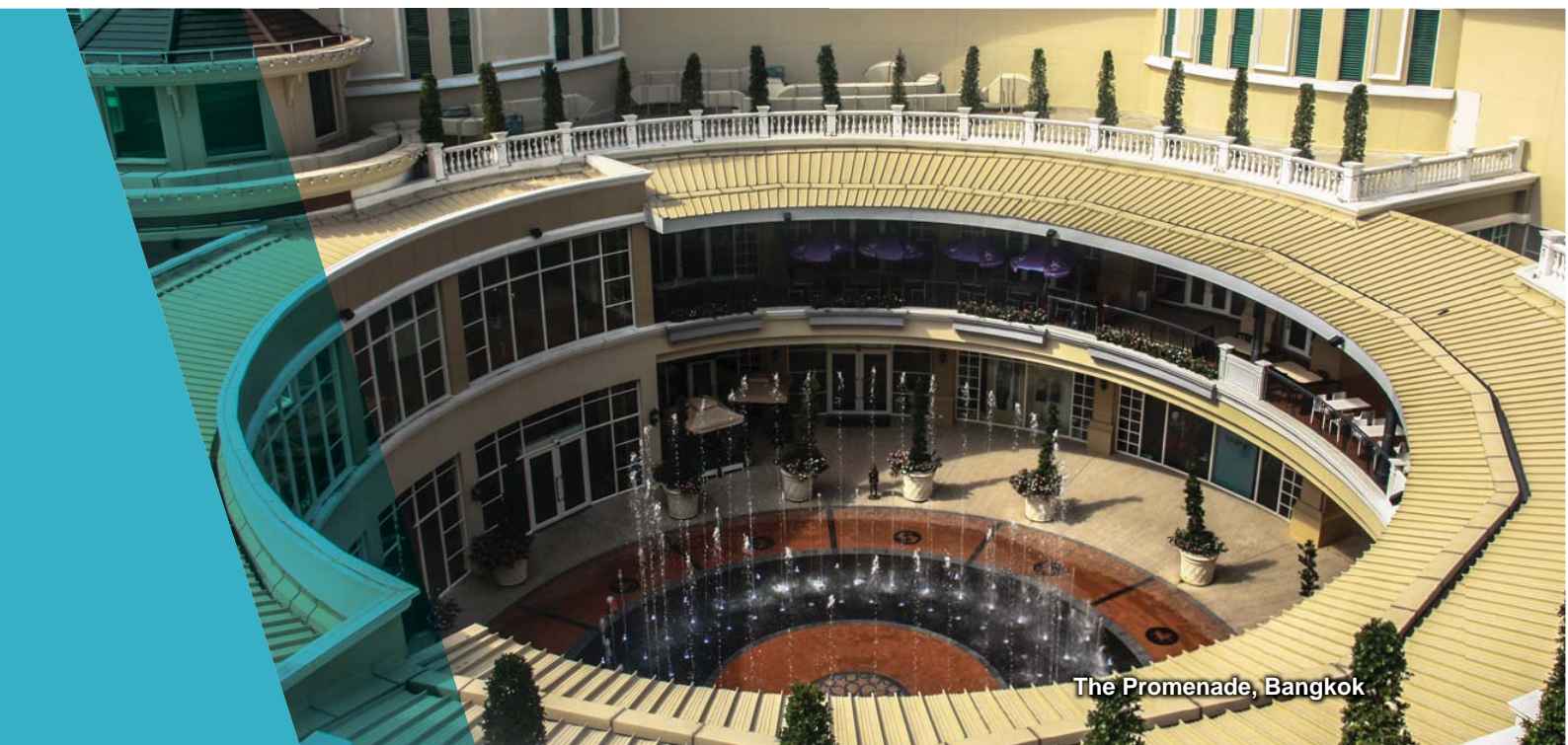
# REFERENCES



Siam Square One, Bangkok











Siam Square One, Bangkok



The Promenade, Bangkok



-  COATING
-  COLOUR CHOICES
-  DESIGN FLEXIBILITY
-  DURABILITY / SECURITY
-  HI-TECH PRODUCTION
-  RECYCLING
-  TERMITE PROOF
-  THERMAL EFFICIENCY
-  WARRANTY



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Jan 2021