



**PRE-ENGINEERED
STEEL BUILDINGS**

**COMMITTED TO
EXCELLENCE**



FROM THE CHIEF EXECUTIVE OFFICER

Partners in Our Customers' Success

At Kirby, we understand the complex challenges that our customers face as they conceptualize, plan and execute their building projects. We also know how important it is to get it right the first time. As a leader in the industry, our experienced and dedicated team provides clients with innovative and proactive engineering solutions, adding value from start to finish.

We work with clients globally and have an extensive presence in the Middle East, Far East, South East Asia, the Indian sub-continent, Africa and Europe. With an annual capacity of over 515,000 MT and over 45 years of experience in Pre-Engineered Steel Building (PEB) design and manufacturing, Kirby has a proven track record of managing projects of any size or scope.

We see ourselves as partners in our customers' success, with a distinct and important role to play. Whether we are customizing engineering designs, creating precision drawings, providing efficient project planning, manufacturing, quality systems, or using SAP to track inventories and meet deadlines, our goal is always the same: to exceed our customers' expectations, every time.

At Kirby, we provide more than just steel structures; we deliver complete building solutions.

Samir Kasem
Chief Executive Officer
Alghanim Industries

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INTRODUCTION TO KIRBY

We are our customer's partners in progress. We know they have complex challenges and many responsibilities. As they are conceptualizing and executing projects, Pre - Engineered Steel Buildings (PEB) are just one part of their responsibilities, however when it comes to the Kirby PEBs, we ensure that our customers are worry-free.

From ensuring customized engineering designs that optimize efficiencies, to accurate drawings and project planning and using of SAP to plan inventories and meet targeted timelines, we are devoted to exceeding our customer's expectations every time.

Our experienced and talented team works with our client partners to give them pre-emptive solutions that go beyond ordinary specifications to ensure efficiencies for our partners. We can handle

complex requirements and often deliver innovative engineering solutions that add tremendous value for our customers.

We bring over 45 years of experience as pioneers in the category, across manufacturing, retail, transportation and logistics to create bespoke solutions for our partners.

We have worked with clients globally and have an extensive presence in the Middle East & Africa, India, South East Asia and Europe.

With an annual capacity of over 515,000 MT, we are the undisputed leaders and pioneers in the industry and are capable of handling any project. While we deliver steel structures at one level, what we truly believe we deliver at a fundamental level - is total peace of mind for our clients.

VISION

To be recognized as the global leader for the design, manufacture, supply and erection of Pre-Engineered Steel Buildings (PEB) and Structures.

MISSION

Kirby will achieve this vision by consistently delivering high-quality products to our customers, accompanied by personalized service and a commitment to excellence.

COMPANY PROFILE

Kirby Building Systems established in 1976 is a global leader in the design and manufacturing of pre-engineered steel buildings and structures, offering customers a wide range of customized, cost-effective steel building solutions. Kirby's global spread extends across Middle East, Africa, Asia, Indian subcontinent and South East Asia with production capacity of over 515,000 MT annually, operations across 70 countries and workforce of 5,000 people.

Kirby globally offers one of the most comprehensive product portfolios ranging from Pre-Engineered Steel Building, Structural Steel and Storage Solutions. We offer a wide range of steel solutions tailored to our

customers' specific needs including Pre-Engineered Steel Buildings, Storage Solutions/Industrial Racking Systems, and broad array of our steel building products that cover applications in major market segments including but not limited to heavy industry, infrastructure, high-rise buildings, warehouse, factories, oil and gas and leisure structures.

Our commitment to excellence provides unmatched product quality, coupled with speed, safety and superior sales services.

VALUES

- **Straight-talking:** We encourage open debate where the best ideas win.
- **Customer centric:** We put our customers at the center of our focus and initiatives with the objective of providing them with unmatched levels of services and products.
- **Teamwork:** We actively share information and ideas, enthusiastically working to make those around us better.
- **Diversity and respect:** The diversity of our workforce is an asset and we treat everyone with dignity and respect regardless of status, gender, education, ethnicity or religion.
- **Empowerment:** We empower people to make decisions with a bias for action.
- **Employees as core assets:** We believe that our employees are our most valuable resource, and do whatever it takes for their continuous training, development and motivation.
- **Meritocracy:** The rewards and career advancements of our people are based on their performance and capabilities, not on their wasta (influence).

MANUFACTURING FACILITIES

West Shoib Industrial Area-Kuwait

100,000 MT Annual Capacity



Hyderabad, India Plant

100,000 MT Annual Capacity



Ras Al-Khaimah, UAE Plant

75,000 MT Annual Capacity



Haridwar, India Plant

100,000 MT Annual Capacity



Ho Chi Minh, Vietnam Plant

50,000 MT Annual Capacity



Halol - India

50,000 MT Annual Capacity



Jeddah - Saudi Arabia

40,000 MT Annual Capacity



CERTIFICATONS



Manufacturing Facility
- Kuwait, UAE, India
(Hyderabad & Haridwar),
Vietnam & KSA



Manufacturing Facility
- Kuwait, India
(Hyderabad & Haridwar),
& Vietnam



Manufacturing Facility
- Kuwait, India
(Hyderabad & Haridwar),
& Vietnam



Our Key Features



Our Expertise in Varied Applications



MANUFACTURING LOCATIONS

Kuwait
 ¶ West Shuaiba Industrial Area
 UAE
 ¶ Ras Al-Khaimah
 Saudi Arabia
 ¶ Jeddah
 India
 ¶ Hyderabad
 ¶ Haridwar
 ¶ Halol
 Vietnam
 ¶ Ho Chi Minh

KIRBY REGIONS

GCC
 Middle East
 India
 Africa
 South East Asia
 Europe & CIS Countries

NETWORK

• Sales Offices - 70
 • Certified Builders - 300 across 6 Regions

PRODUCTS & SERVICES

PEB - PRE-ENGINEERED STEEL BUILDING

Pre-Engineered Steel Building is a steel structure built over a structural concept of primary members, secondary members, and the cover sheeting connected to each other. The structural members are custom designed to be lighter in weight and high in strength. It can be fitted with different structural additions like trusses, mezzanine floors, fascia, canopies and crane systems as per user requirements. Pre-Engineered Steel Buildings are ideal for use in nonresidential, wide span low rise buildings. Among the advantages of PEB is lower cost, consistent quality control, durability, longevity, environmentally friendly and faster delivery to name a few. PEB buildings are used for diverse applications such as Factories, Warehouses, Offices, Shopping malls, Aircraft Hangars, Schools, Hospitals, Shipyards, Metro Stations, community buildings and several more.

As a leading PEB manufacturer, Kirby provides the complete service of engineering and fabrication thus ensuring better quality control at every stage of the process.

STRUCTURAL STEEL

Kirby designs & supplies customized workshop fabricated Hot Rolled & Welded steel structures for Structural Steel applications such as Heavy Industries, Power Plants, Oil & Gas, Petrochemical Industry, high-rise/commercial buildings, airports and other specialized structures. We are one of the most innovative steel structures fabricators and are always looking to enhance our range of products and services including project execution.

COLD ROLL FORMED STEEL BUILDING

Cold Formed Steel members and other products are thinner, lighter, and easier to produce, and typically cost less than their hot-rolled steel members. Cold-formed steel offers versatility in building because of its lightweight and ease of handling and use. Cold Formed Steel Structures framing provides builder and consumers flexibility in design option which cannot be economically accommodated using traditional framing materials.

STORAGE SOLUTIONS

Storage Solutions help in providing effective storage to customers through maximum storage capacity with optimal floor utilization. Kirby designs & supplies steel racking systems to store materials (with or without pallets) as part of warehouse material handling storage system. These are an essential and ubiquitous element in most modern warehouses, manufacturing facilities, retail centers, and other storage and distribution facilities. Kirby product range conforms to modern modular European design.

ERECTION AND TECHNICAL ADVISORY SERVICES

Kirby has over 300 certified builders Worldwide. They have undergone intensive training on erecting buildings of varying complexity and for different applications. Kirby Certified Builders are highly competent and offer skilled expertise to clients. The local Kirby Certified Builder offers comprehensive services from construction to complete turnkey solutions.

Kirby provides extensive technical advisory services to its clients - from selection of appropriate structures and economic design to adaptation of local building codes. To ensure excellent quality and customer satisfaction, Kirby's Technical Service representatives regularly monitor and supervise the project till completion.

SYSTEMS & PRACTICES

Kirby Building Systems has its reputation for having world class business practices. We have seamless processes across all our functions and verticals. All these are well integrated through a robust ERP system built on SAP.

Furthermore, Kirby uses the latest engineering codes and practices to design world class buildings for its customers across the globe. Kirby has the right mix of sustainable and efficient processes for planning and execution. Another initiative towards serving the delight of our customer, we source our raw materials from leading steel mills and suppliers to maintain the world class quality standards.

Putting all our processes and practices together helps us to meet ever growing demand of providing high quality and cost effective steel solutions on time.

KIRBY CENTER OF ENGINEERING EXCELLENCE

Kirby Building Systems' Engineering Center of Excellence is a world-class research and development center to enhance the company's expertise in steel for its wide range of customized and innovative products – Pre-Engineered Steel Buildings, Structural Steel and Storage Solutions.

The center provides leadership, best practices, research, support and training in focused areas to revitalize the existing products and also develop new expertise in steel.

The center addresses the significant engineering challenges associated with designing these structures to help the world develop sustainable innovations.

All the buildings are custom designed using the latest domestic / international codes and standards such as MBMA, AISC, AISI, IS, ES, BS and AWS which are most optimized & economical in nature able to meet all the customer needs. The design and detailing process is carried out using sophisticated software packages.

The centre of excellence, located in India, consists of more than 500 highly experienced structural engineers with industry domain knowledge to cater to the company's various requirements across the globe. This team ensures that all the customers receive the best of the product with very high value and minimal risk and maximize the return on investment to derive most of the benefits in each and every step of the project.



PRE-ENGINEERED BUILDINGS

PEB is a steel structure built over a structural concept of primary members, secondary members, and the cover sheeting connected to each other. The structural members are custom designed to be lighter in weight and high in strength. It can be fitted with different structural additions like trusses, mezzanine floors, fascia, canopies and crane systems as per user requirements.

There are many advantages of PEB as mentioned below

- Single source responsibility
- Faster installation
- Economical
- Factory- controlled quality (ISO 9001 Certified)
- Practically maintenance free
- Clear spans exceeding 90 M
- Flexibility in expansion
- Energy efficient roof and wall systems
- Earthquake- resistant



There are various applications of PEB as mentioned below

Factories

Warehouses

Supermarkets

Aircraft Hangar

Metro Stations

Shipyards

Showrooms, Workshops, Offices

Schools, Hospitals, Site Offices

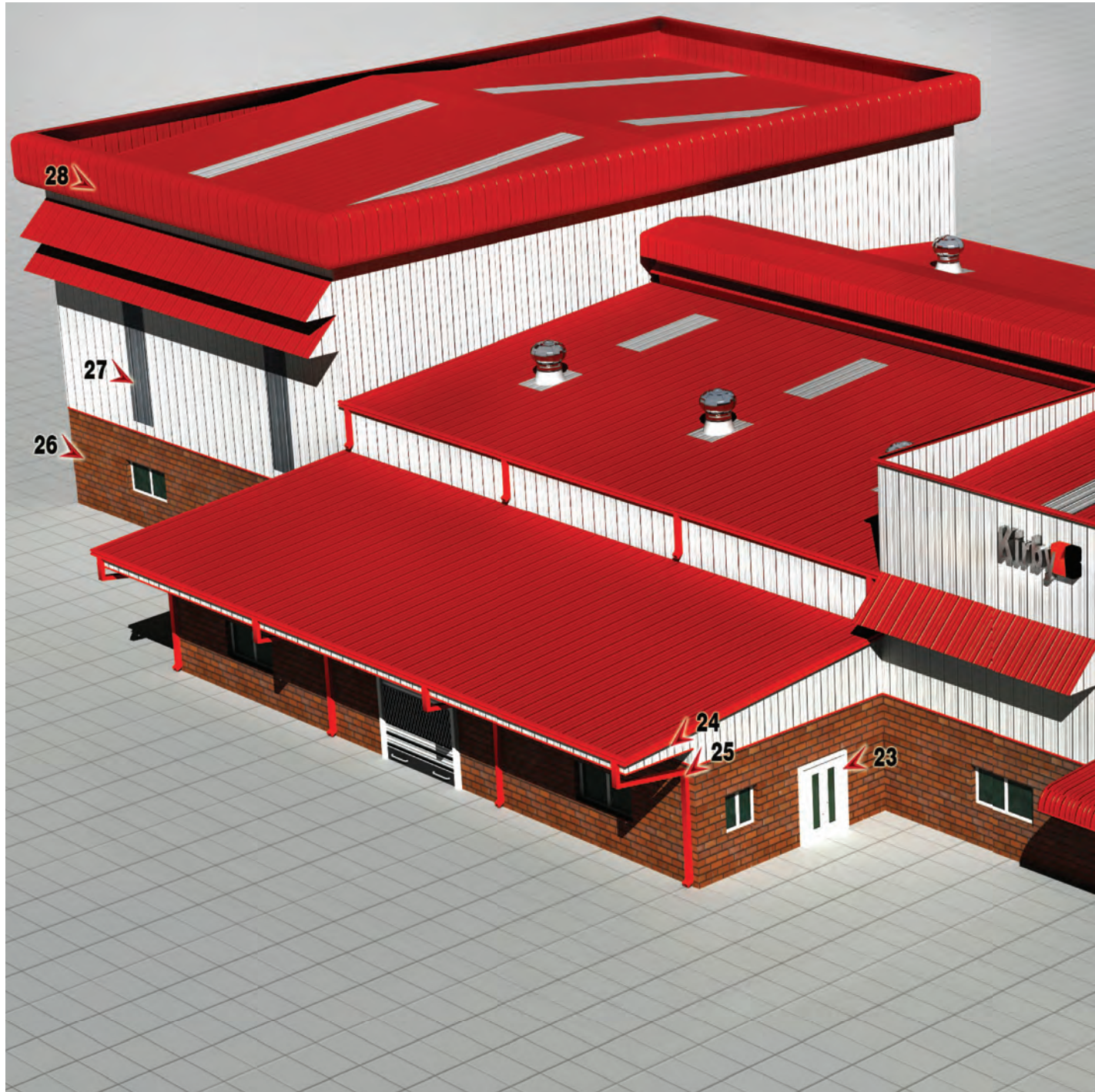
Stadiums

Fuel Stations, Bus Shelters, Car Parks

Cold Storages

Shopping Malls / Hypermarkets

Building Components



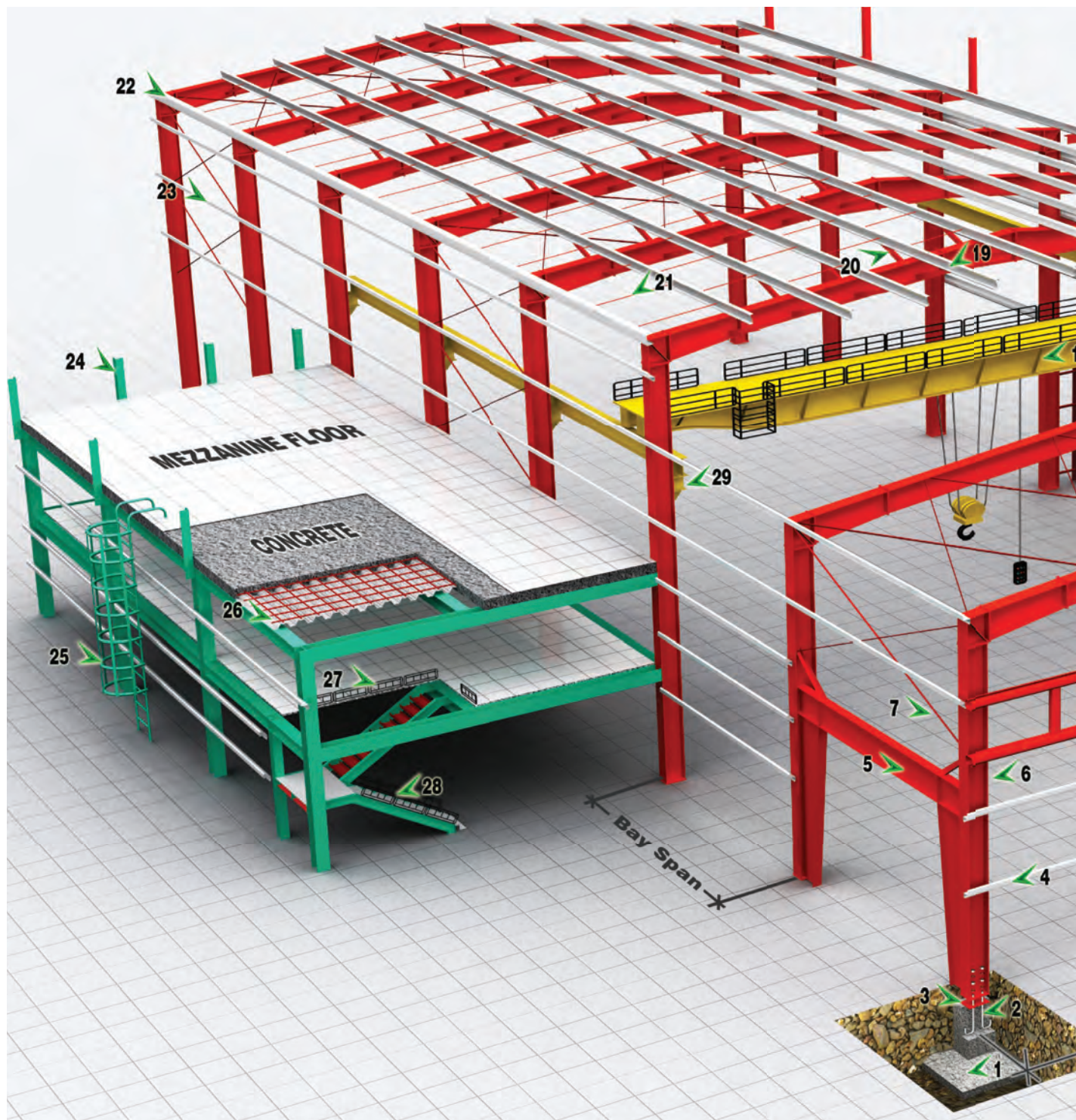
- | | |
|-------------------------------------|--------------------------------------|
| 1. Kirby Roof Panel | 8. Ridge Ventilator (With Bird Mesh) |
| 2. Kirby Wall Panel | 9. Power Ventilator |
| 3. Canopy | 10. Eave Gutter |
| 4. Roll Up Door (Manual/Electrical) | 11. Louver With Bird Mesh |
| 5. Double Slide Door | 12. Masonry Trim |
| 6. Rake Trim | 13. Window With Insect Screen |
| 7. Sky Light (Translucent Panel) | 14. Downspout |



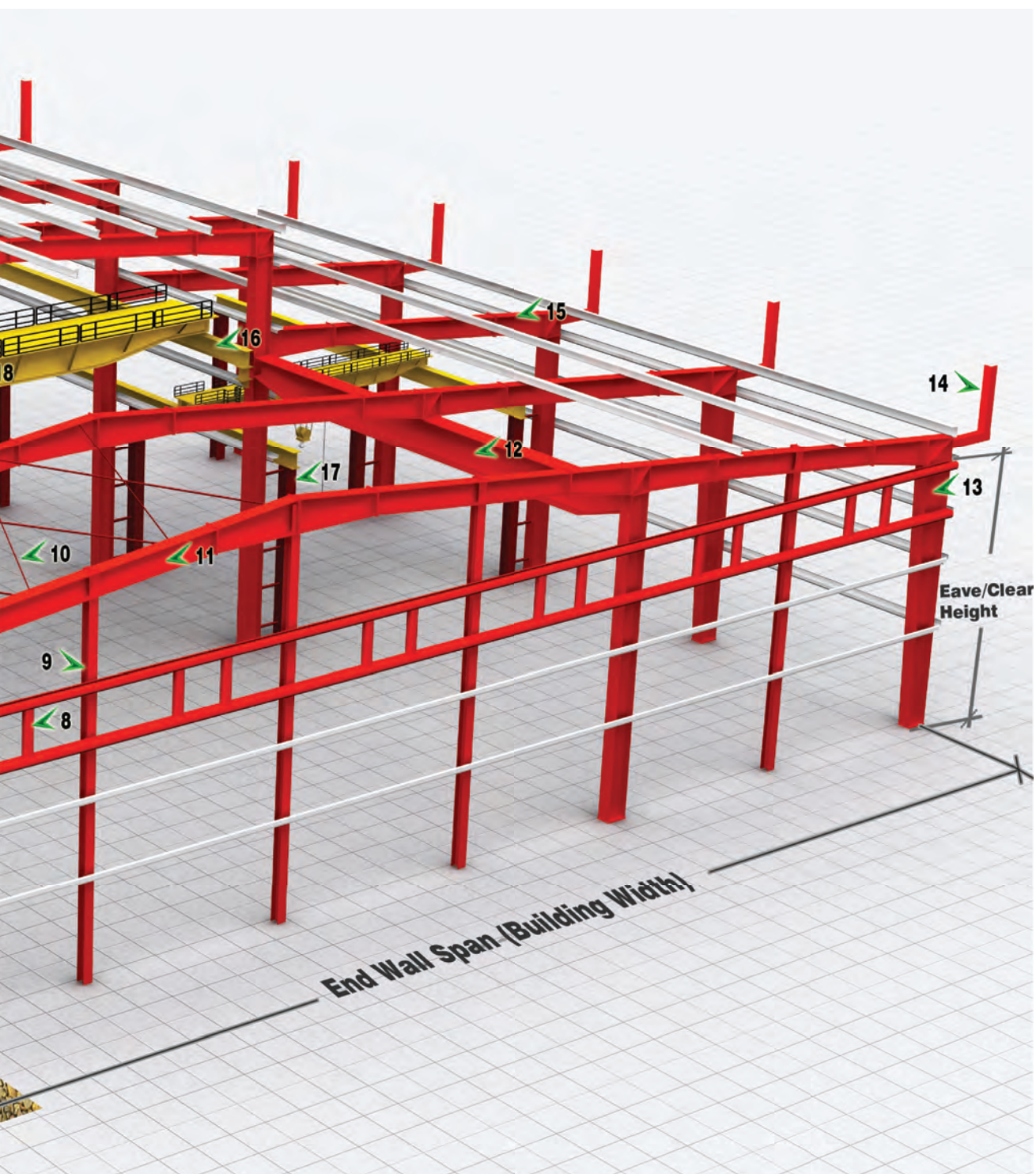
- 15. Single Walk Door
- 16. Curved Eave
- 17. Sandtrap Louver
- 18. Corner Trim
- 19. Eave Trim
- 20. Flush Fascia
- 21. Strip Skylight

- 22. Roof Monitor
- 23. Double Walk Door
- 24. Roof Extension
- 25. Return Downspout
- 26. Brick Wall
- 27. Wall Light (Translucent Panel)
- 28. Curved Cantilever Fascia

Building Components (contd.)



- | | |
|------------------------------------|-------------------------------------|
| 1. Concrete Footing | 8. Framed Opening (Window/Louver) |
| 2. Anchor Bolts | 9. End Wall Wind Column |
| 3. Base Plate | 10. Roof Bracing (Angle/Rod/Cables) |
| 4. End Wall Girt | 11. Main Frame Rafter |
| 5. Portal Bracing | 12. Jack Beam |
| 6. Main Frame Straight Column | 13. Main Frame Tapered Column |
| 7. Wall Bracing (Angle/Rod/Cables) | 14. Cantilevered Fascia Frame |



- 15. Lean To Frame
- 16. Crane Beam
- 17. Crane Column
- 18. EOT Crane
- 19. Roof Purlin
- 20. Flange Brace
- 21. Sag Rod

- 22. Eave Strut
- 23. Side wall Girt
- 24. Flush Fascia Frame
- 25. Cage Ladder
- 26. Deck Panel with Steel Mesh
- 27. Hand Rail (Steel)
- 28. Staircase(Checker plate/C channel)
- 29. Crane Bracket

STRUCTURAL SYSTEM

Structural systems are the main load carrying and support members of a pre-engineered building. The shape and size vary based on application and requirements.

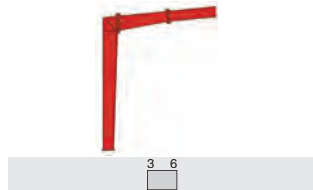
The main frame members are the main load carrying member of a structural system which include columns, endwall posts, rafters and other main support members.

All structural steel sections and welded plate members shall be designed in accordance with the applicable sections, relating to design requirements and allowable stresses, of the latest edition of the American Institute of Steel Construction "Specification for the Design, Fabrication and Erection of the Structural Steel for Buildings"

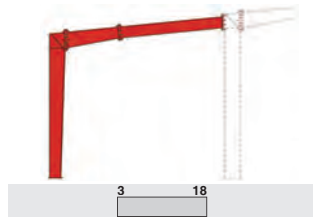
General guidelines on recommended frame types for different widths are given below:

Main Frames

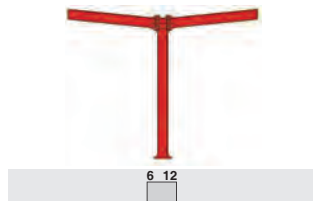
■ L - CANOPY (L-CAN)



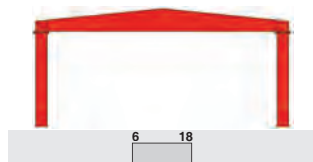
■ LEAN-TO (L-TO)



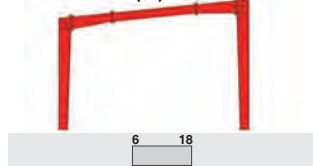
■ BUTTERFLY CANOPY (T-CAN)



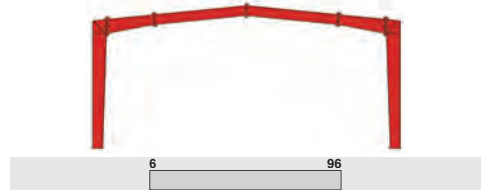
■ SPACE SAVER (SV)



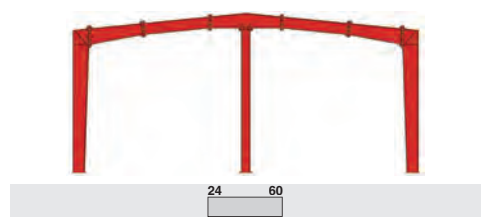
■ SINGLESLOPE (SS)



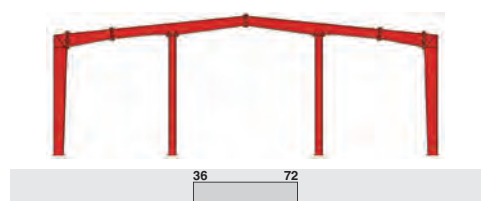
■ RIGID FRAME (RF)



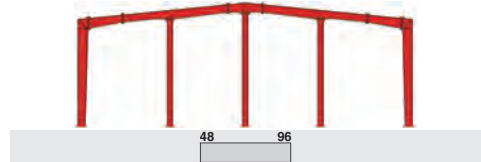
■ BEAM AND COLUMN (BC-1)



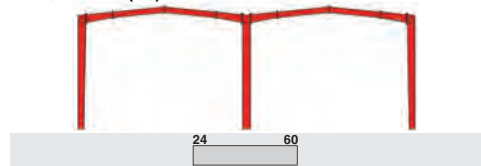
■ BEAM AND COLUMN (BC-2)



■ BEAM AND COLUMN (BC-3)



■ MULTI-SPAN (MS)



Suggested width range (meters) for most economical buildings
Standard Eave Height: 3M-8M; Std Bay Spacing: 6M/7.5M/9M;
Standard Loadings: Live Load: 0.5/0.6/1.0 KN/M², Wind load: 0.75/1.0/1.25 KN/M²

Mezannines

Standard Mezzanine Floor Systems consist of galvanized profiled steel deck, joists, beams and intermediate support columns. Main beams can span in lateral directions and joists in longitudinal directions.



Fascias

Fascias are used for architectural purposes to conceal the gable of the building. A variety of Fascias either straight or inclined can be provided. Fascias are cantilevered from the main frame columns on the sidewall and from the wind columns on the endwall. Flush Fascias or parapets Fascias can also be provided.

Kirby provides Fascias specially designed to your requirements. These Fascias can have vertical, horizontal or curved sheeting to enhance the architectural look of your building.

Crane Support Systems

Buildings can be designed to support any required crane system. Generally, overhead travelling cranes up to 15 MT are supported on brackets. For higher capacities, an independent support system is provided. Crane support for overhead travelling cranes includes brackets, beams and bracings. In addition, buildings can be designed to carry JIB-Carnes, Mono Rail Cranes, Wall Travelling Cranes, Semi-Gantry Cranes as well.



Canopies

Wall canopies over doors and windows at sidewall or endwall are available.

Sidewall canopies are supplied without soffit panel and endwall roof extension canopies are supplied with K.R. soffit panel unless noted otherwise.

Endwall roof extension canopies are not to be supplied with soffit panel if the building remains open all around. Canopy brace angle should be supplied for bay spacings over 7000 mm or as required.

Trusses

The KIRBY Truss System is one of the company's most popular and highly economical products. It is a rigid structure, ideal for large span roof systems, multiple bay buildings and as mezzanine floor framing.

Significant reductions in building heights are possible by running service pipes/ducts through the trusses. Foundation costs also are reduced due to fewer columns being required to support larger spans.



The KIRBY Truss System structures are individually designed to meet the specific requirements of each building and are fabricated utilizing high quality efficient fixtures. The system allows for easy erection as all connections are field bolted. Except for field splices on very large spans, no site welding is required.



Curved Beams (Segmental or Continuous)

Kirby provides curved sections with variable depth and tapered members and capability of providing the curvature in 3 dimensions.



Flange ranges from 125mm x 5mm to 400 mm x 16mm, and Depth ranges from 200mm to 1200mm



SECONDARY MEMBERS

Secondary structural framing refers to purlins, girts, eave struts, wind bracing, flange bracing, base angles, clips and other miscellaneous structural parts.

Purlins, girts and eave struts are cold form steel members which have a minimum yield strength of 345 MPa (50,000 psi) and will conform to the physical specifications of ASTM A1011 (Grade 50) or ASTM A-653 (Grade 50).

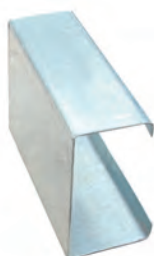
Purlins & Girts

Purlins and girts are roll formed Z sections, 200 mm deep with 64 mm flanges shall have a 16 mm stiffening lip formed at 45° to the flange



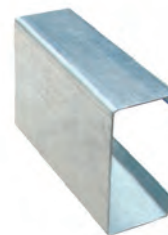
Eave Strut

Eave struts are 200 mm deep with a 104 mm wide top flange, a 118 mm wide bottom flange, both are formed parallel to the roof slope. Each flange has a 24 mm stiffener lip. Structural members are located along the sidewall; at the intersection of the planes of the roof and wall. It is constructed from cold formed 'C' sections and is rolled to suit the roof slope. This member transmit longitudinal wind force on the end walls from roof brace rods to wall brace rods.



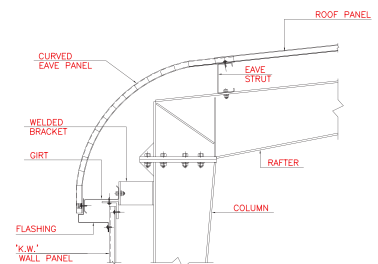
C - Section

C- Sections are 200mm deep with a 100mm flange. The flanges are perpendicular to the web and have a 24mm stiffening lip.

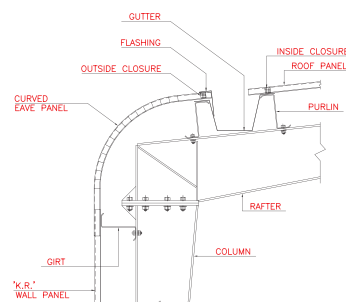


Curved Eaves

Curve Eaves can transform the look of any building. Curved canopies and walkways provide an inviting entryway into commercial establishments. Curved eaves eliminate seam lines and provide a smooth line for the eye to follow. Our crimping-curving process increases the rigidity of the Curved panels making this choice of panels not only visually appealing but also practically durable.



DETAIL AT EAVE WITHOUT GUTTER
(WITH PROJECTION)



DETAIL AT EAVE WITH GUTTER
(WITHOUT PROJECTION)

Open Web Joists

The Open Web Steel Joist is a secondary steel truss member fabricated from crimped angles welded onto top and bottom chords. The elements of the open web joist are made of hot rolled as well as cold formed Grade 50 steel. Open Web Steel Joists are used as mezzanine joists, roof purlins, among others.

Advantages

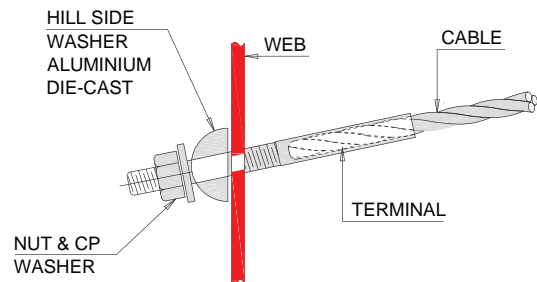
1. Offers an economical solution for long span carrying heavy load or light load compared to conventional steel structure.
2. Allows more clearance to the building by minimizing the mezzanine overall depth by designing beam at the short direction and the joists at the long direction without increasing the weight.
3. Ducts and mechanical accessories can be installed in between the web openings.
4. Cambering prevents tiles, partitions or any other delicate finishing from cracks by maintaining the finish floor level straight.



Cross Bracing Systems

Cable Bracing

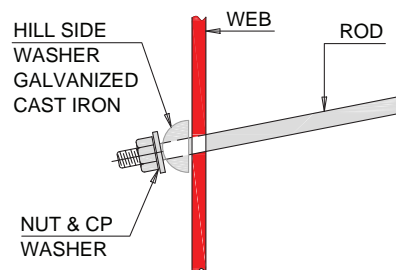
This member is designed to ensure the stability of the building against forces in the longitudinal and lateral direction due to wind, cranes, and earthquakes. It is made of a cable which is forged into a rod terminal and this arrangement is then fixed on a structure using a hill side washer, nut washer and a nut.



CABLE END CONNECTION

Rod Bracing

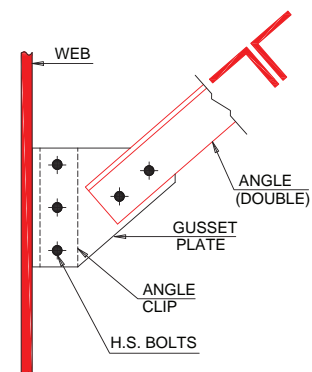
Rod bracing shall have a minimum yield strength of 250MPa (36,000 psi) and will conform to the physical specifications of ASTM A-36 or equivalent.



BRACE ROD CONNECTION

Angle Bracing

Angle Bracings are used to withstand the actions of longitudinal forces (tension only). These angles shall have minimum yield of 250 Mpa(36,000 psi) or 345 Mpa(50,000 psi)



ANGLE BRACE CONNECTION

CLADDING SYSTEMS

Available in all regions

Panel Profiles

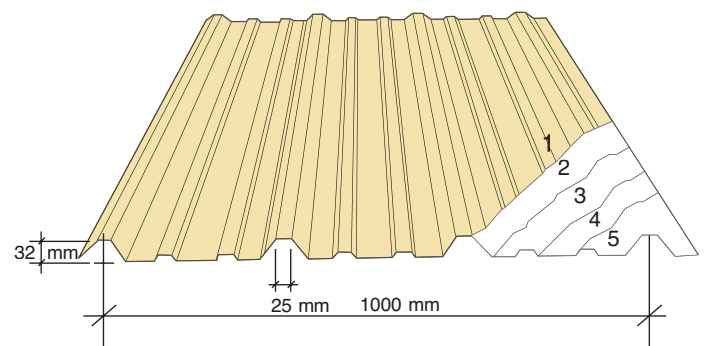
Kirby offers five types of affordable, durable and easy -to-install cladding panels to enhance the visual appearance of our customers buildings.

Kirby Roof (KR)

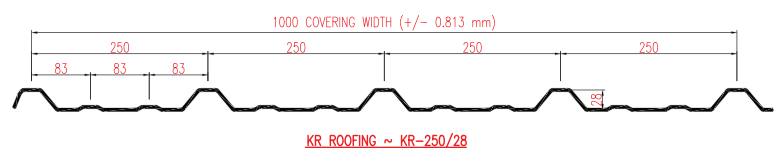
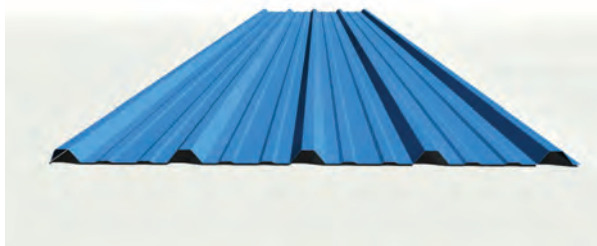
Kirby Roof profile is strong and cost effective and was developed specifically for roofing applications. The bearing leg design permits easier installation and maintenance, supports thicker layers of insulation and allows easier curvature for a visually appealing finish.

Coverage Area: 1000mm

Rib Depth: 32mm



KR 250/28 with 28mm depth (India region only)

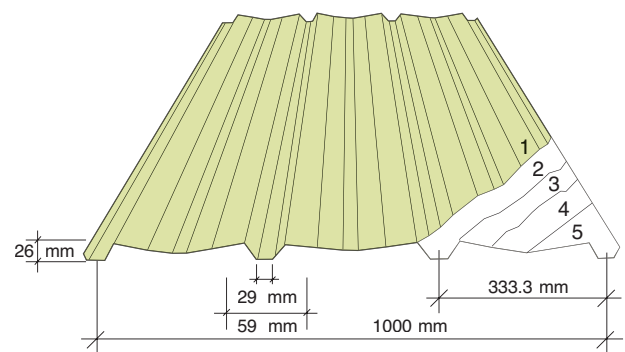


Kirby Wall (KW)

Kirby Wall is a cost effective, partially concealed fastener panel with a sculptured valley shape between the major ribs for a superior architectural look for external walls.

Coverage Area: 1000mm

Rib Depth: 26mm

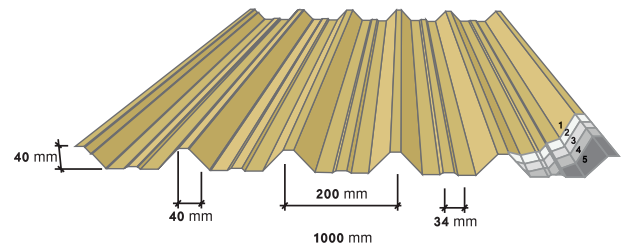


Kirby Cladding Systems (KCS) (Middle East & Africa region only):

KCS profile offers extra strong resistance to wind & gravitational loads and can be used for roofing, wall and decking applications. KCS was developed by Kirby specifically to meet more stringent design load requirements.

Coverage Area: 1000mm

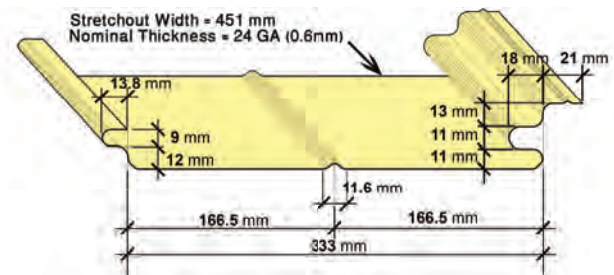
Rib Depth: 40 mm



Kirby Concealed Fastener (Middle East & Africa region only)

The concealed fastener single skin cladding type KC is used for exterior wall cladding and internal wall and roof liners. The panels have interlocking tongue and groove joints.

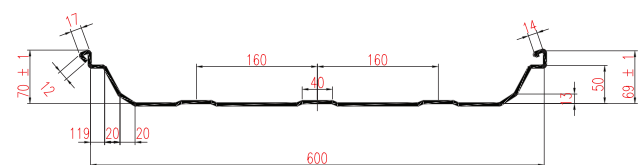
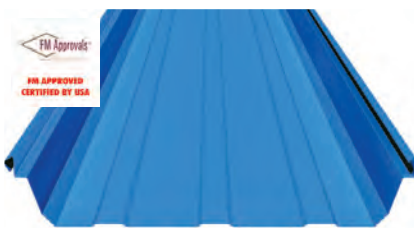
Coverage Area: 1000mm



Standing Seam Roof Systems KSS 600 (India region only)

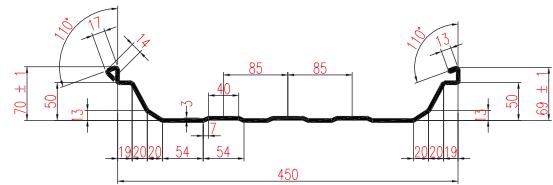
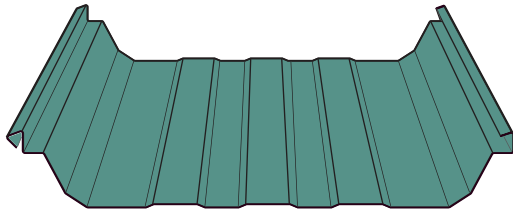
Kirby Standing Seam Panel systems (KSS-600), with double lock standing seam, eliminates the risk of leakage at fasteners at side and end laps due to the concealed fastening system and provides excellent protection in all weather conditions. It assures consistent weather tightness with virtually maintenance free performance for many years. The

KSS-600 roof system is the most specified standing seam roof system in the market since many years. Kirby's KSS-600 Standing Seam Roof System has received the prestigious Factory Mutual Approval (FM approval) from USA. The FM approval is a certification for the high product quality and reliability of these roof systems.



KIRBY STANDING SEAM PANEL ~ KSS600

KSS 450 (India & South East Asia region only)

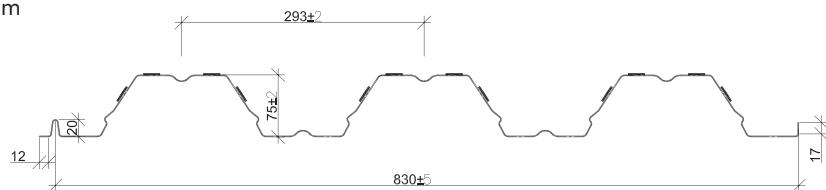
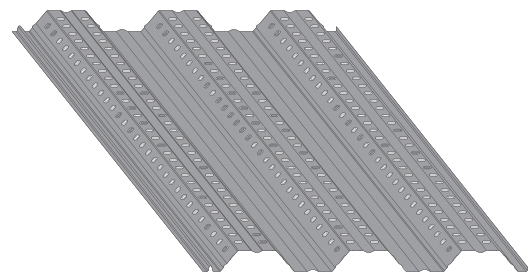


KIRBY STANDING SEAM PANEL ~ KSS450

Kirby Deck

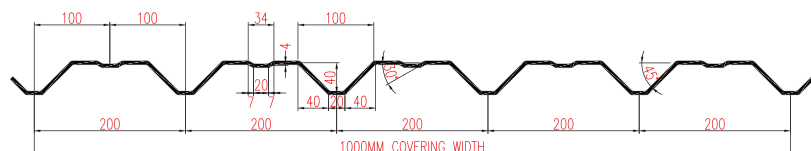
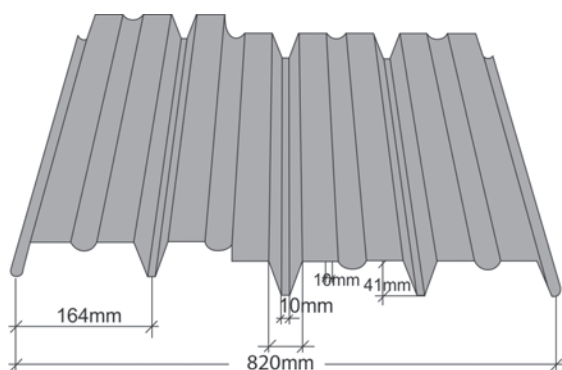
Kirby Deck Panels are used in high rise buildings, office buildings and mezzanine floors in industrial buildings and warehouses. These decks can be used as a permanent shuttering to support the wet concrete and help in creating composite slabs and floor beams. The continuous flange stiffeners and deep embossments increase the load carrying capacities. They provide for a stable and rigid working platform without any need of propping. These panels are roll formed from hot dip galvanized coils of 345 MPa with thickness starting from 0.5 mm to 1.2 mm.

With 75 mm depth (Middle East & Africa region only)

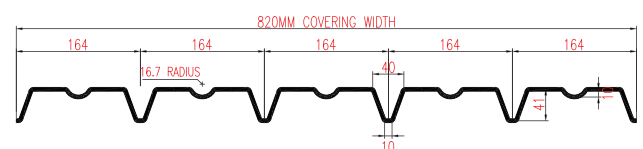


KIRBY DECK Panel ~ KD 75-293

With 40mm and 41mm depth (Middle East & Africa region only)

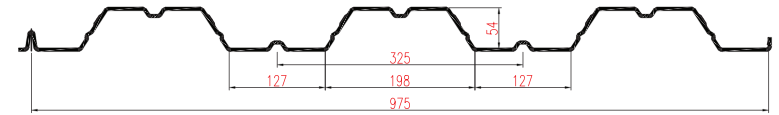


KIRBY DECK PANEL ~ KD 40-200

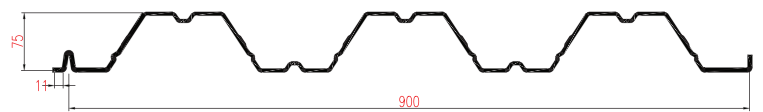


KIRBY DECK PANEL ~ KD 41

With 54 mm depth & Kirby Deck with 75 mm depth (India region only)



KIRBY DECK PANEL ~ KCD- 54



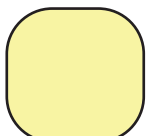
KIRBY DECK PANEL ~ KCD-75

Kirby Standard Colors

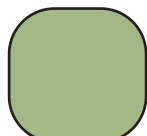
Kirby offers a wide range of top coats including polyester, silicone-modified polyester and

Polyvinylfluoride (PVF2) in six standard color options. We can support requirements for RAL colors on request.

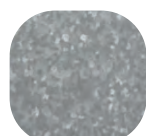
Middle East & Africa/Southeast Asia region



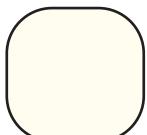
Sun Gold



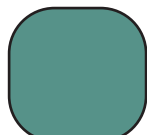
Autumn Green



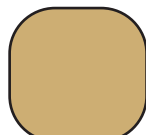
Galvalume/AluZinc



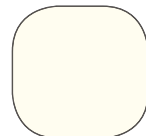
Arctic White



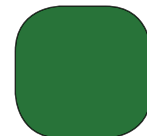
Caribbean Blue



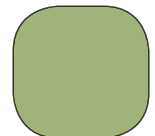
Desert Beige



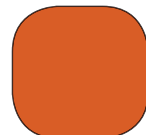
Arctic White



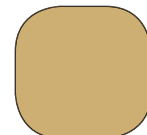
Cottage Green



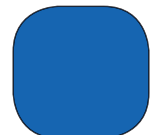
Autumn Green



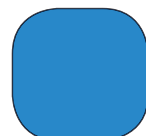
Tile Red



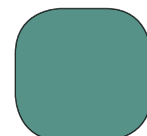
Desert Beige



Traffic Blue
(RAL 5017)



Sky Blue
(RAL 5012)



Caribbean Blue

Insulation

Mineral Wool

Mineral wool is supplied in 2 types i.e. Glass Mineral Wool and Stone Mineral Wool. They are produced by our associate company under KIMMCO-ISOVER brand.

Glass Mineral Wool also known as Ecobuild contains natural resources such as sand, soda etc, and up to 80 % post-consumer recycled glass cullet and has a unique natural color. It is a big contributor in reducing

energy consumption of buildings, either in winter or summer, for cooling or heating.

Stone Mineral Wool products are made from natural stone (Basalt + Dolomite). Stone Mineral wool offers superior thermal, acoustic and fire safe properties. The products are ideally suitable for all types of Pre-Engineered Buildings which demand high fire safety & product rigidity.

SPECIFICATIONS	GLASS MINERAL WOOL (Eco Build)	STONE MINERAL WOOL
Density (kg/m ³)	10 - 64	30 - 200
Thickness (mm)	25 - 100	25 - 220
Length (mm)	1000 - 45000	500 - 10000
Width (mm)	1200	1200
Fire Class (Core material)	Euro class 'A1'	Euro class 'A1'
Service Temperature Range (°C)	-50 to 232	-50 to 650
Water Vapor Sorption (%)	< 1 (by volume)	< 1 (by volume)

Air Bubbles (South East Asia region only)

Air bubbles is made of typical polyethylene bubbles warps sandwiched between two layers of pure aluminum. The light silver surfaces reflect radiant heat while the bubbles prevent heat conduction and

support fast heat emittance. Besides, the bubble warps system sound wave, simultaneously get rid of reflective sound wave due to the hill surfaces and unstable shapes.

SPECIFICATIONS	
Thickness	4 mm
Thermal Insulation (FIB)	46.6°C / 25.2°C
Sound Insulation (FIB)	94 dB/ 48.1 dB (1000 Hz)
Temperature Range	- 50°C - 110 °C
Roll Width	155 cm
Roll Length	40 m (*)
Water Vapor Permeability	0.0 g/m ² /24hrs
Tensile Strength	23 (Min) - 29 (Max) Kg/mm ²
Elongation	90% (Min) - 130% (Max)
Thermal Shrinkage	1.1% (Min) - 1.7% (Max)

* Customer can order long of roll

Polyethylene Foam

South East Asia region only

Polyethylene foam is an elastic product consisting all properties: thermal insulation (with three modes: blocking heat, reflecting 97% radiant heat, convection heat), noise insulation and strong.

It is produced from polymerization processing and MDI as main ingredients, they have closed cell structure.

Dimension of closed cell is very small and this leads to excellent thermal and sound insulation, negligible water absorption.

This closed cell have more outstanding thermal insulation properties in comparison with glasswool, air bubbles, vulcanized rubber or other insulation.

SPECIFICATIONS	
Thickness	3mm - 100mm
Density	31.2 Kg/m ³
Dissipation of smoke	30m
Thermal conductivity	0.032 W/mK
Temperature range	-50 °C +/- 100 °C
Ability to ignite	500 °C
Roll width	100cm
Roll length	50 - 100m
Water vapor permeability	0.0 g/m ² /24hrs
Tensile strength	325kPa
Elongation	90% (min) - 130% (max)
Thermal shrinkage	1.1% (min) - 1.7% (max)

Polyurethane Foam

Polyurethane Foams (PUR or PU) are used worldwide as insulation against temperature extremes. In the Middle-East, the building industry has adopted polyurethane insulation as one of the best materials to resist heat on building interior and to save energy. Polyurethanes are used in the manufacture of nonflexible, high resilience foam seating such as Kirby's insulated sandwich panels.

Kirby's rigid polyurethane foam is manufactured by combining polyol mixture and di- or polyisocyanate components by the press injection method between facings. It has excellent thermal conductivity and very high compressive strength as compared to other insulation materials.

POLYURETHANE FOAM PROPERTIES	UNIT	B3 CLASS	B2 CLASS
Moulded density	kg/m ³	40-42	42-44
Compressive stress @10% relative deformation	kPa	> 100	> 90
Thermal conductivity (K-Value) @ 25 °C	W/m ² K	0.020	0.022
Dimensional stability +70°C & -30°C for 24 Hours	%	1% max	1% max
Flammability (Fire Rating)	As per DIN 4102-1	Class B3	Class B2

Kirby Insulated Sandwich Panels

Kirby insulated sandwich panels are a cost effective solution for long lasting, modular construction of roofing, exterior wall and internal partitions.

Strong and versatile, Kirby insulated sandwich panels allow for fast on-site assembly and simple retrofit of existing buildings. Further, Kirby Insulated Sandwich

Panels deliver substantial savings on equipment and operation for the heating and cooling of buildings.

Finally, Kirby insulated sandwich panels are durable and resistant to harsh weather conditions, reducing the recurring maintenance cost of the building.

Polyurethane Insulated Panel

Kirby sandwich panels use high pressure injected polyurethane foam that is CFC free, self-extinguishing, can withstand intense heat, contains extreme low temperature and offers very low rates for water absorption and vapor transmission.

The injected foam also provides excellent adhesion to the panel's sheeting.



Insulation Material - Properties and Performance

INSULATION DATA: THERMAL CONDUCTIVITY AT 25 °C MEAN TEMPERATURE		
	POLYURETHANE	FIBERGLASS
Density	40 Kg/m ³	12 Kg/m ³
BTU/ft ² h.°F	0.140	0.284
KCAL/m ² h.°C	0.017	0.035
W/m.K	0.0198	0.041

Product Range

Kirby Insulated Sandwich Panels offer highly durable, light weight, sound proof panels which are quick to install or re-arrange.

Kirby Insulated Sandwich Panels can be applied to new metal building constructions, to existing substructures, or over an existing roof or wall that is in need of repair and also provide higher insulation values.

It provides smooth visual finish for your external and internal walls.

We offer five profiles of insulated sandwich panels - Kirby Roofing Insulated Panel (KRIP), Kirby Wall Insulated Panel (KWIP), Kirby Concealed Fastener Insulated Panel (KCIP), Kirby Fiber Glass Insulated panel (KFGIP) and Kirby Cladding & Sheeting Insulated panels (KCSIP).

The insulated sandwich panels use the regular Kirby panel profiles, and are available in Aluminum and Steel material and Kirby standard colors.

Kirby Roof Insulated Panel (KRIP)

This panel offers long life, low maintenance and excellent weather tightness. Overlap joints eliminates the possibility of water leakage along side joints. Larger panel size reduces the number of joints. These

can be applied on new metal building construction or even applied on a substructure, over an existing conventional roof.



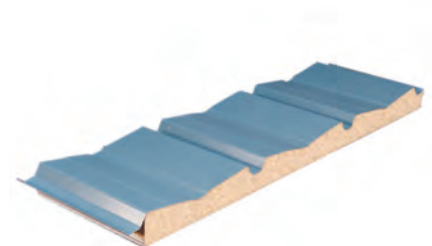
THERMAL HEAT TRANSMISSION (U-VALUE)
FOR POLYURETHANE INSULATED PANEL

	KRIP 40	KRIP 50	KRIP 60	KRIP 75	KRIP 100
BTU/ft ² h. °F	0.085	0.070	0.059	0.048	0.037
KCAL/m ² h. °C	0.414	0.340	0.288	0.234	0.179
W/m ² .K	0.482	0.396	0.335	0.273	0.208

Kirby Wall Insulated Panel (KWIP)

These are used where creation of a cost efficient controlled environment is valued. KWIP can be used as external walls for commercial buildings or industrial applications, with new metal building

construction or overlaid on to existing conventional construction to produce a renovated appearance and provide additional higher insulation values.



THERMAL HEAT TRANSMISSION (U-VALUE)
FOR POLYURETHANE INSULATED PANEL

	KWIP 40	KWIP 50	KWIP 65	KWIP 75
BTU/ft ² h. °F	0.071	0.060	0.049	0.043
KCAL/m ² h. °C	0.347	0.293	0.238	0.211
W/m ² .K	0.404	0.341	0.277	0.246

Concealed Fastener Sandwich Panel Cladding Type 'KCIP'

The Kirby concealed fastener insulated panel cladding system 'KCIP' consists of insulated panels with generally flat outer and inner facings. The panels have interlocking tongue and groove joints with fasteners concealed within the joints. The specification of the panel facings is same as for

single skin KC panels. This system has very low heat transmission values, a high strength to weight ratio and are quick to assemble, hence provide a cost effective solution on a wide range of cladding applications.



THERMAL HEAT TRANSMISSION (U-VALUE)
FOR POLYURETHANE INSULATED PANEL

	KCIP 50	KCIP 60	KCIP 100
BTU/ft ² h. °F	0.077	0.065	0.038
KCAL/M ² K	0.378	0.315	0.189
WATT/M ² .K	0.440	0.367	0.220

Trims / Flashing

Kirby Standard trims & flashing match the same specification as panel materials. They are furnished for rakes, corners, eaves, and framed openings to provide weather tightness and a smooth finished appearance.

We also supply a wide range of coordinated accessories for complete insulated panel roof and

walls installations, consists of translucent panels, ventilators, roof curbs, roof jacks, doors (personnel, sliding and roll-up), windows and louvers.

Panels can be specially ordered to meet a wide range of base metal specification, coating, finish, color and thickness.



ACCESSORIES

Roofing Accessories



ROOF JACKS

Enclosure for pipes or stacks projecting from the roof; 2mm thick GRP to fit Kirby roof panel.

Available in opening sizes for 50 mm to 300 mm diameter.



ROOF CURBS

Enclosure for ducts or other roof projections. 2 mm thick glass fibre reinforced plastic fitting Kirby Roof panels.

Available in opening sizes 600 mm, 900 mm and 1200 mm squares.

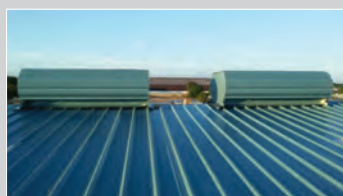


SKYLIGHTS AND WALL LIGHTS

Made of translucent GRP to match Kirby roof and wall panels, with an estimated light transmitting capacity of 60%.



KRV - 300



KRV - 600

RIDGE VENTILATORS

These are available with bird screen and with a standard length of 3000mm and can be supplied as single or continuous modules.

Throat widths are available in 300mm with mechanical damper and 600mm without damper.



POWERED VENTILATORS

Kirby 'C' whirlwind low silhouette extract ventilator with spun aluminum non-return shutter and one piece base and throat. Mounted on GRP roof curb moulded to suit Kirby Roof panels.

Windows and Louvers



LOUVERS

Adjustable louvers are with overlapping blades allowing free air flow. Size is 1 m x 1 m. incorporating insect screen, hand crank and blade adjustment lever.



SAND TRAP LOUVERS

This louver consists of different form of flashings arrangement in a predetermined manner in order to create a sand trap. The dual advantage of the sand trap louver is not only to help in natural ventilation but also act as a sand trap at the same time sizes is 1 m x 1.0 m and 2 m x 1.0m



ALUMINIUM WINDOWS

Designed for installation with Kirby wall panel, double slide, self flashing with pre-glazed clear glass and removable half insect screen. Standard size is 1 m x 1 m. Multiple windows can be formed by joining the jamb fins together.

Doors



SLIDING DOORS (SINGLE OR DOUBLE LEAF)

3 m, 4 m and 5 m wide and 3 m to 5.5 m high. Other sizes are available on special order.



WALK DOORS(SINGLE OR DOUBLE)

915 mm or 1830 mm wide x 2134 mm high made of 20 gauge electrogalvanised steel with a core of polyurethane insulation. Door fixture is provided.



AIRCRAFT HANGAR DOORS

Kirby provides solutions for special applications such as aircraft hangars, customized hangar doors and framing, customized support systems for special equipment and maintenance cranes.

Other Accessories



PRIMARY & SECONDARY BOLTS

High strength bolts used for main connections are manufactured as per ASTM A-325M. Material finish is Electro-Galvanized, yellow passivated. Mild steel bolts used for secondary connections are as per ASTM A-307, provided in plain finish.



SHEETING FASTENERS

Self-drilling screws are No.14 Type A, with 19mm EPDM sealing washers with hardened drill points. Screws are available in carbon steel or stainless steel (bi-metal). Material specification for the steel wire is as per ASTM A510 -minimum grade 1018.



SEALANTS

Silicon sealant and rope sealants are used to provide a weather seal and has excellent gap-filling properties. These offer excellent adhesion, long life, airtight and water tight sealing solutions to all our accessories.

PROJECTS

INDUSTRIAL









COMMERCIAL





COMMUNITY



INFRASTRUCTURE AND UTILITY



YEMEN AIRCRAFT HANGAR

Location - YEMEN

Area - 5,000 m²



AL ADAN HOSPITAL

Location - KUWAIT

Area - 12,500 m²



MARINA MALL PEDESTRAIN BRIDGE

Location - KUWAIT

Area - 1000 m²



CAR PARK FOR KOTC

Location - KUWAIT

Area - 2,500 m²



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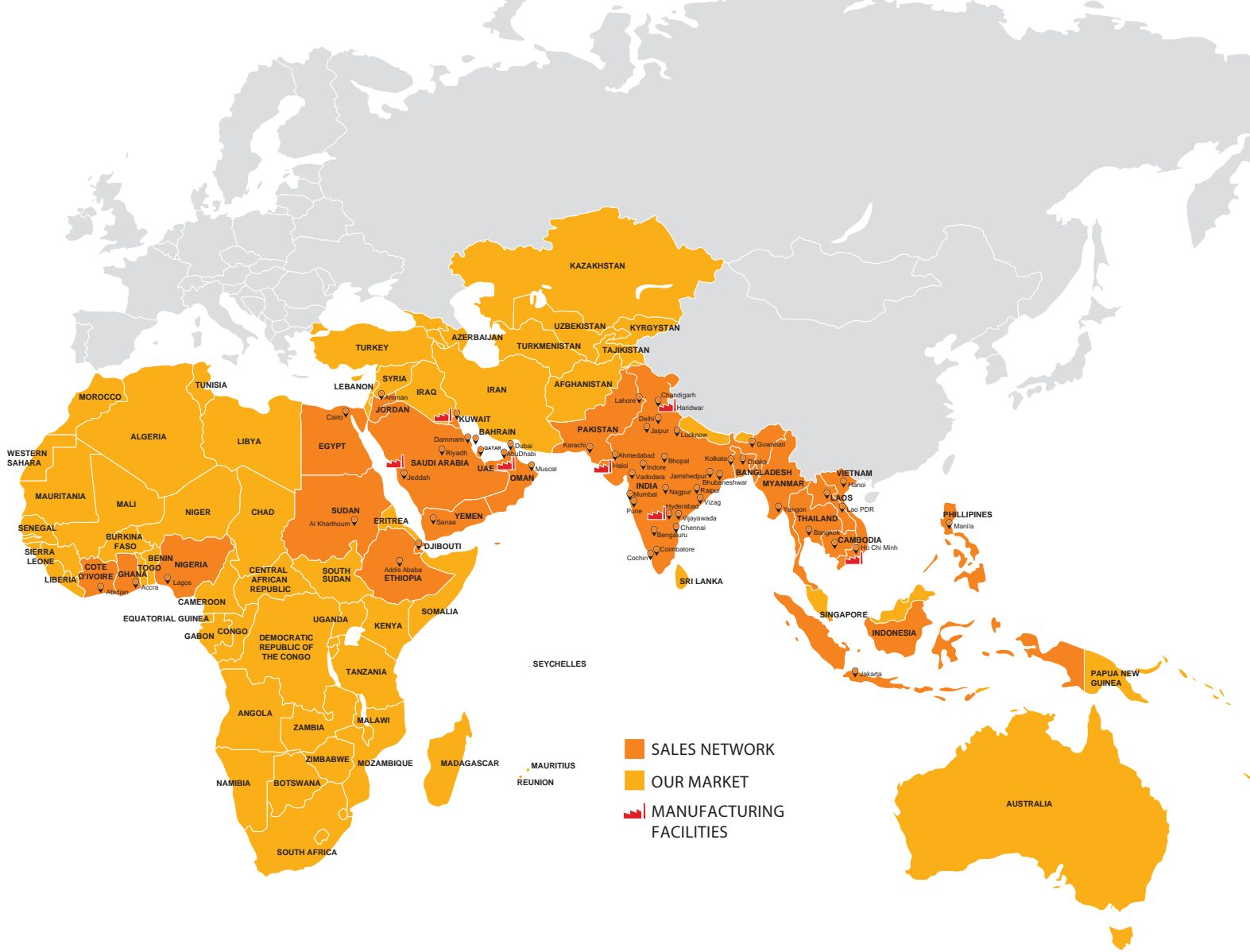
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-502 307, Telangana, India

Haridwar Plant, India

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Gujarat Plant, India

Kirby Building Systems & Structures India (Gujarat) Pvt Ltd
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Southeast Asia Corporate Office & Vietnam Plant

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