



# PRE-ENGINEERED BUILDINGS (PEB)



## ABOUT US

Head quartered at Tema in Ghana, B5Plus is one of the largest iron and steel company trading in all over the West African Countries. Founded in 2002, B5 Plus Ltd has a conglomerate of business operations spread across different countries in West Africa.

Today B5 Plus group is a market leader in Iron rods, Various steel products, PEB structures, Chemicals, etc.

Today, B5 Plus Group directly and indirectly employs over Ten (10) Thousand people.



**B5 PLUS HEAD OFFICE**



## LEADERSHIP

B5 Plus leadership is founded on talented people effectively applying common sense, stewardship and sound business management. We will lead through our competence, creativity and teamwork. By demonstrating the company's values and ethics on a daily basis, our leaders set the tone for consistent behavior and successful performance.

Our leaders encourage clear, two-way communication, and foster a positive work environment that encourages growth. Safety is our chosen lifestyle. We embrace safety as an obligation. We are committed to the well-being, self-preservation and personal survival of every employee. We are brother's keeper for whom we will not falter or fail.

# QUALITY, HEALTH, SAFETY AND ENVIRONMENT POLICY

We, at B5 Plus Limited, shall strive to build and sustain an organisation par excellence where quality and enhanced customer experience is the way of life for every business process. We pledge to achieve satisfaction of all our stakeholders through creativity, innovation, development of human resources and continual improvement of products, services and business processes. We shall create and deliver 'one stop' metal solutions by fulfilling current and anticipating future needs of customers.

## To accomplish the above, our objectives are:

1. To be the world's most recognized metal industry through the excellence of its employees, its innovative approach and its overall conduct.
2. To fulfil and exceed customer needs by delivering quality in the manufactured, engineered products and services in a consistent and timely manner and in compliance with applicable contractual, regulatory, statutory requirements and other requirements to which B5 Plus subscribes to.
3. To become agile and responsive organisation through consultation, participation of stakeholders, adaptation of latest technology and by motivating and empowering employees in value creation.
4. To have an open-door policy and abide by rules of ethical conduct.
5. To be socially and environmentally conscientious by energy conservation, prevention of pollution and work-related injury and ill health, of interested parties and continually improving QHSE performance.

## ACHIEVEMENTS

1. European Quality Award
2. Outstanding Iron & Steel Entrepreneur of the Decade 2010 - 2020
3. The West African Regional Achievers Award
4. Steel Company of the Year 2019
5. Fastest & Dynamic Growing Iron & Steel Company
6. Best Corporate Governance Compliant
7. Entrepreneur of the Decade 2020
8. Best Company in Product Safety & Quality Management Practices



# C E R T I F I C A T E

## Management system as per ISO 9001 : 2015

The Certification Body TÜV NORD CERT GmbH hereby confirms as a result of the audit, assessment and certification decision according to ISO/IEC 17021-1:2015, that the organization

**B5 PLUS LIMITED**  
Site 1: Kpone Barrier,  
Kpone- Katamanso  
P.O. Box CO 853, Tema,  
Greater Accra,  
Republic of Ghana



operates a management system in accordance with the requirements of ISO 9001 : 2015 at the location

**B5 PLUS LIMITED**  
Site 2: Larkpleku, Ningo Prampram  
P.O. Box CO 853, Tema,  
Greater Accra,  
Republic of Ghana

will be assessed for conformity within the 3 year term of validity of the certificate.

Scope -

**Manufacture and Supply of Iron and Mild Steel, Galvanized Steel and Stainless Steel Products.  
Production and Supply of Industrial Oxygen and Nitrogen.  
Manufacture, Supply, Erection of Pre Engineered Building Structures and General Metal  
Fabricated Items.**

Certificate Registration No. **44 100 21393205-001**  
Audit Report No. **2.5-10336/2021**

Valid from **19.05.2021**  
Valid until **18.05.2024**  
Initial certification **19.05.2021**



Certification Body  
at TÜV NORD CERT GmbH

Mumbai, **07.04.2022**

This certificate is valid in conjunction with the main certificate.  
Validity can be verified at <https://www.tuev-nord.de/de/unternehmen/zertifizierung/zertifikatsdatenbank>.

TÜV NORD CERT GmbH

Am TÜV 1

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[www.tuev-nord-cert.com](http://www.tuev-nord-cert.com)

TUV India Pvt. Ltd., 801, Raheja Plaza – 1, L.B.S. Marg,

Ghatkopar (W), Mumbai - 400 086, India [www.tuv-nord.com/in](http://www.tuv-nord.com/in)





# ABOUT PRE-ENGINEERED BUILDINGS (PEB)

In simple words, Pre-Engineered Buildings (PEB) are the buildings which are engineered at a factory and assembled at site. PEB is a modern way of all industrial developments. B5 Plus' vision behind setting up a PEB manufacturing plant in Ghana, has been to supply a quality product and a prompt service to all West African countries.

**PEB is widely used in all types of industrial and commercial buildings.**

- |                  |                  |                           |
|------------------|------------------|---------------------------|
| ■ Warehouses     | ■ Agri-Godowns   | ■ Multi-Storey Buildings  |
| ■ Factories      | ■ Garages        | ■ Multi-Level Car Parks   |
| ■ Cold-Storages  | ■ Hangars        | ■ Institutional Buildings |
| ■ Workshops      | ■ Church         | ■ Schools                 |
| ■ Shopping Malls | ■ Sports Complex | ■ Bridge Girders          |



# WHY STEEL FOR CONSTRUCTION

The benefits of using steel are that the design and fabrication are done under controlled environment within the workshop simplifying the erection, safety and speed while on site. Another benefit comes to the end of lifespan of the building whereby most of the steel can be recycled. Contrary to popular belief, steel produces an overall cheaper and smarter looking building than concrete. This is brought about by the speed of construction, less labour required, longer spans, aesthetic appeal, service integration and quality assurance.

**VERSATILE:** Steel is most versatile engineering and construction material in the world. Pre-engineered Metal Buildings can accommodate any commercial and industrial needs including offices, warehouses, agricultural, factory sheds etc.

**BUILT FASTER:** Structural steel needs a smaller and simpler foundation than other framing materials because it is lighter. This reduces both cost and time. Precise steel structures can be erected in a matter of weeks without onsite cutting, drilling or welding.

Steel requires minimal maintenance and coatings can protect against corrosion.

**FLEXIBLE:** PEB provides larger open spaces, wider spans and higher walls in single or multiple storey buildings.

**SUSTAINABLE:** Steel is recyclable and is the most recycled material in the world. Steel construction sites are also clean and dry and free of detriment (noise, dust, storage requirements etc). Building with steel preserves natural resources and creates less waste.

## WHY PEB?

PEB offers many advantages over conventional steel construction.

| No. | Description              | PEB                                       | Conventional                                                           |
|-----|--------------------------|-------------------------------------------|------------------------------------------------------------------------|
| 1.  | Structure weight         | 30% lighter                               | Heavier                                                                |
| 2.  | Design                   | Quick and Efficient                       | Slow & complicated design                                              |
| 3.  | Delivery                 | Shorter lead times                        | Longer lead times                                                      |
| 4.  | Foundations              | Easy and Light foundations                | Extensive, heavy foundations required                                  |
| 5.  | Erection                 | Easy and Fast                             | Slow and extensive                                                     |
| 6.  | Seismic zones            | High Resistance to Seismic forces         | Do not perform well in seismic zones                                   |
| 7.  | Architectural design     | Outstanding design at low cost            | Much higher cost for achieving good design                             |
| 8.  | Sourcing & Co-ordination | Single Source Supplier                    | Multiple sources leads to higher co-ordination efforts and longer time |
| 9.  | Responsibility           | Clear responsibility with single supplier | Many sources of supply complicates the ownership of responsibility     |



# OUR MANUFACTURING FACILITY

B5 Plus has a World-Class Manufacturing Plant spread in 27000sqm located at Prampram in Ghana. The plant has a capacity of producing 2500MT per month. It has all modern machinery to cater to any type of steel structures and customized fabrications. Design, Production, Erection & Construction Services available under one roof makes us a turnkey infrastructure provider.



## WHY B5 PLUS?

1. Quick response
2. Competitive Prices
3. Proposal drawings to help visualize your building
4. Engineering support for special needs
5. High quality materials and workmanship
6. Excellence after sales service
7. We believe in customer satisfaction
8. We give End-to-End solution

**YOUR INFRASTRUCTURE PARTNER...**

## CODES AND STANDARDS

We work in line with latest international codes. We have proficiency in designing under following design code:



**American  
Iron and Steel  
Institute**

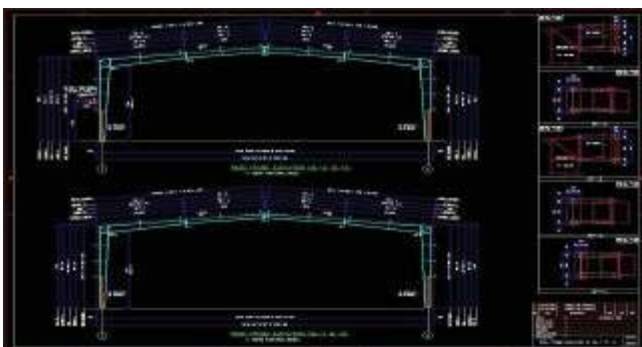
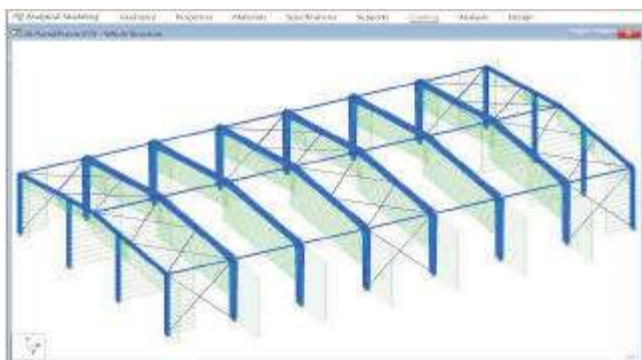
**INTERNATIONAL  
BUILDING  
CODE®**

We adhere to following standard and maintain an internationally recognized welding practice:





# ADDING VALUE TO DESIGNING & ENGINEERING



## DESIGN CAPABILITY

We have highly experienced structural designers to prepare most optimized design of PEB structure. The designing is done strictly based on international codes. Advanced software used in designing takes care of necessary safety factors. Wind speeds and Seismic Zones are part of designing criteria.

## DRAWINGS & DETAILING

Our expert team of draftmen and senior checkers ensure error free drawings. All drawings or models prepared by draftmen are thoroughly checked by our senior checkers before release.

Any modifications required by client are adopted at drawing level. Project files are well documented.

# FRAME TYPES

PEB structure is customized to suit any type of frame. Following are various sample sketches.



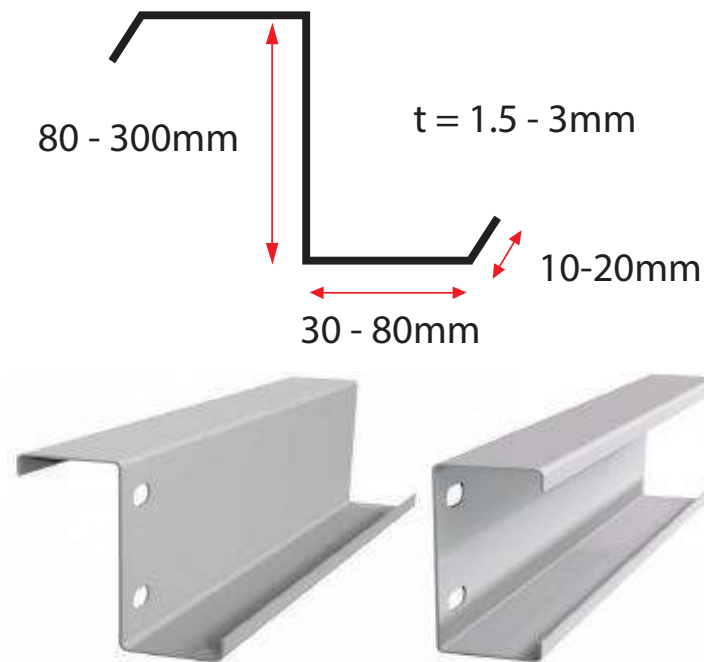
## MAINFRAME STRUCTURES

We can cater to any kind of steel structure with highly optimized design. Our automated beam welding line produces uniform quality steel members. We have in-house shot blasting and painting facility to deliver high quality main frame steel structures. 100% bolted structures ensure fast erection.



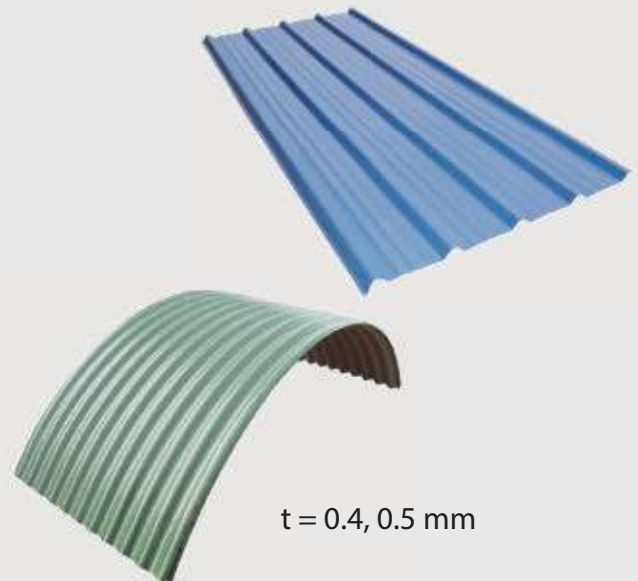


## PURLINS (PRE-GALVANIZED)



## ROOF AND WALL SHEETING

Aluzinc sheets:  
55% AL, 43.5% ZN, 1.5% SI  
ASTM A 792M  
550MPa minimum yield stress



We have in-house profiling line for producing quality purlins and sheeting.

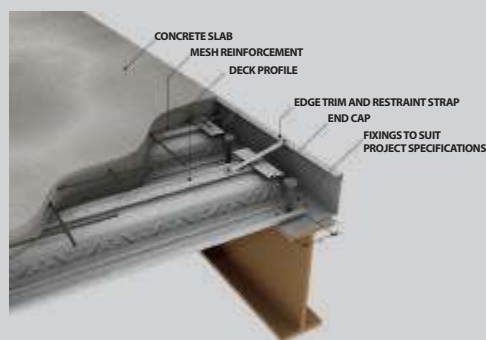
- Purlins are used to support roof sheet and wall cladding. Galvanized steel allowed for rust protection and hence does not need to be painted over. All purlins can be overlapped end-to-end which makes it ideal for long runs in very large roofing applications.
- Our sheeting is an angular trapezoidal ribbed corrugated profile, that is made from pre-painted coils. Effective width is  $1000 \pm 5\text{mm}$ . Standard thickness is 0.4, 0.5mm. Higher thickness is available on request.

## DECK SHEETS



### ADVANTAGES

- Prop Free Shuttering
- Faster Construction
- Floor casting can be carried out simultaneously on many floors.
- Decking sheets provide a platform for movement of construction crew.
- Full-floor covered with steel decking enables high speed slurry pumping and reduce manpower deployment
- Saving in labour cost



DECK SLAB



MEZZANINE FLOOR STRUCTURE



# BUILDING COMPONENTS



Foundation Bolts with Template



Skylights



Turbo Vents



Ridge Vents

PIR Sandwich Panels



Insulation



Downspout



Ridge



Eave Gutter



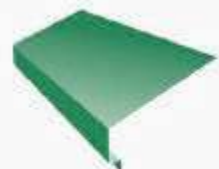
End Trim



Gable End Flashing



Corner Flashing



Eave End Flashing

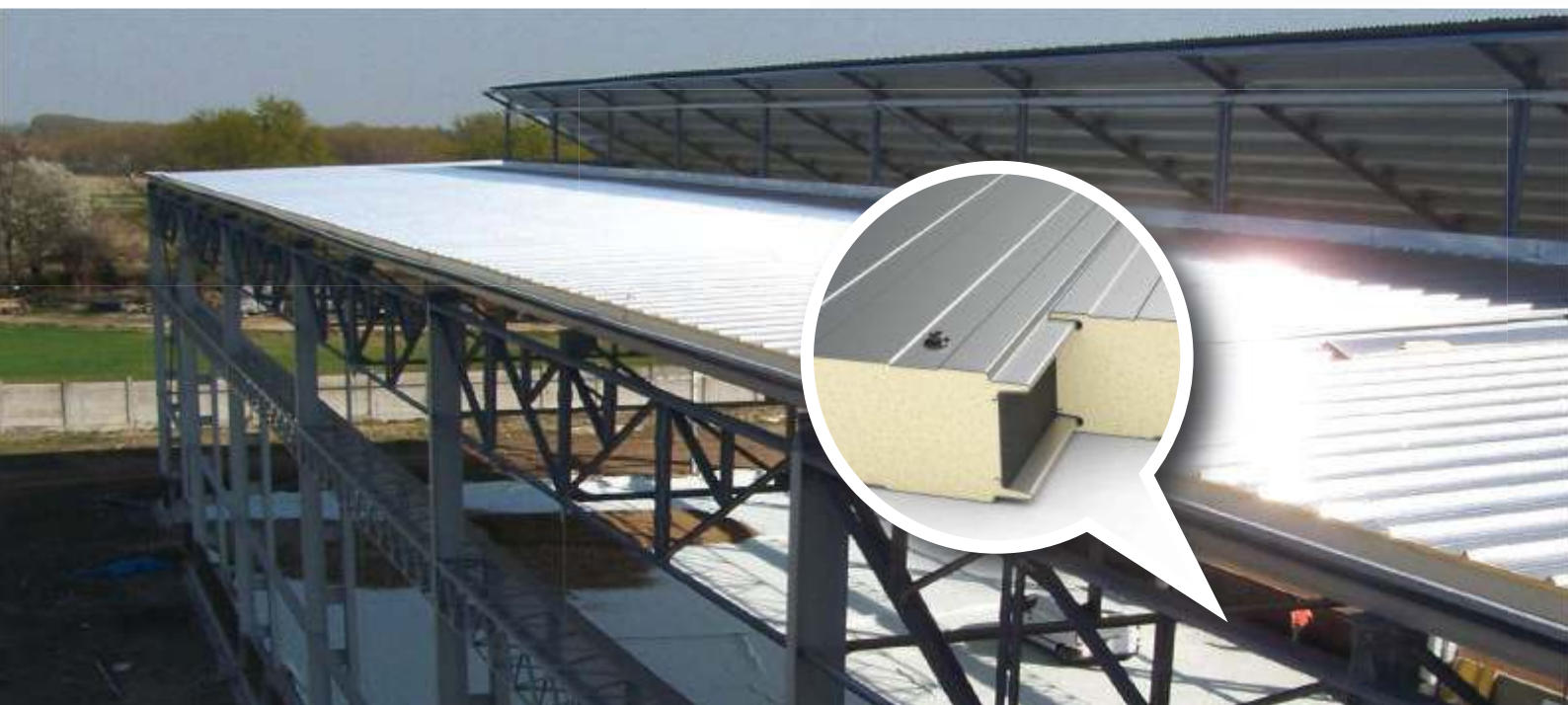
# SANDWICH PANELS

In the last few decades, sandwich panels have proved to be a revolutionary solution in the construction industry. By definition, this material is a self-supporting component that serves two concurrent purposes – partitioning (roof or wall) and thermal insulation.

## 6 Reasons to Choose Sandwich Panels

The sandwich panels vary by:

- Length (2 to 18 m)
- Thickness (40 to 230 mm)
- Core Type (EPS, mineral wool, polyurethane)
- Profile (smooth, micro-profile, clear line, grooved etc.)
- Protective coatings (polyester SP, SP polyester Mat Pearl, Cesar PUR 55, aluzinc), with panels also used with stainless steel cladding
- Cladding colors (both external and internal)



Every panel consists of several layers: core with thermal insulation, steel claddings (external and internal) and coatings protecting from mechanical damage and corrosion.

### **TIME IS MONEY**

Panels are finished components, suitable for easy installation, e.g. to a steel structure. Considering the present situation on the construction services market, working time plays a key role in the cost optimization process. The quicker the structure is completed, the less we spend on construction service costs, which have increased significantly in recent years.

### **THREE CORES OR SOLUTIONS DEDICATED TO SPECIFIC NEEDS**

Sandwich panels are available in three basic variants. Each uses a specific panel core. Thus there are materials with cores made of polyurethane, mineral wool and EPS. Each of these solutions is intended to meet specific needs.

### **POLYURETHANE-CORE SANDWICH PANELS**

Polyurethane is the best and most commonly used thermal insulation material on the market. Sandwich panels with this core are primarily distinguished by better thermal insulation properties. The lambda of 0.022 W/mK has no equal, meaning that this type of material is selected by



project owners seeking to reduce the total heating costs. Better thermal insulation of the partitions translates to lower wall thicknesses, compared to other types of panels or masonry, while maintaining the same thermal insulation parameters. Another equally important benefit is the lower density of the material from which the core is made (40 kg/m<sup>3</sup>). This simplifies installation significantly, because no special tools or equipment are required on the project site.

#### **SANDWICH PANELS WITH A MINERAL WOOL CORE**

The second type of panel has two advantages – fire resistance and soundproofing efficiency. One feature of mineral wools is their behavior in fires. Selected panels manufactured by B5 Plus Sandwich Panels are EI 240- rated, meaning that both the sealing and the fire rating of the partition is maintained for 240 minutes. The best panel versions feature good soundproofing capabilities, which in practice translates to a soundproofing effectiveness of up to 33db.

#### **PANELS WITH AN EPS CORE**

EPS lies between the mineral wool and the polyurethane in terms of thermal insulation properties; however it is inferior to mineral wool in its reaction to fire. Sandwich panels with an EPS core are, in turn, a budget solution that can be used successfully whenever there are no stringent requirements for fire resistance or thermal insulation.

#### **PANEL JOINTS**

It is also possible to join the panels. This applies to the panel types featuring polyurethane or mineral wool cores. This is possible both for panels with exposed fasteners (standard type) and concealed fasteners (type plus).

#### **HOW ABOUT CONNECTING MULTIPLE COLOURS?**

B5 Plus provides many interesting solutions, with a range of profiles, coating types (e.g. mat) and cladding colours (more than 30 different colours). A range of selected designs can be connected freely, which can give spectacular results that attracts attention and highlights the type of business, whether the style is more classical or modern. Due to the non-porous surface, sandwich panels are quick and easy to clean. Standard pressure washers are perfect for this purpose.

#### **ALL MATERIALS FROM ONE MANUFACTURER**

B5 Plus panels are available with a full range of accessories. These include flashings (in any colour, including the panel colour) and all kinds of fasteners to allow panels to be fitted to any substrate (steel, reinforced concrete or wood). The project owner can also choose from a wide range of seals and gaskets to ensure the highest sealing of the partitions. When choosing sandwich panels, the best possible access by light should also be considered. This can be provided by small windows made of polyester, which are also available with dedicated flashings. Thanks to this, the result is an appealing and well-protected structure that protects against external conditions.



#### **VERSATILE APPLICATION**

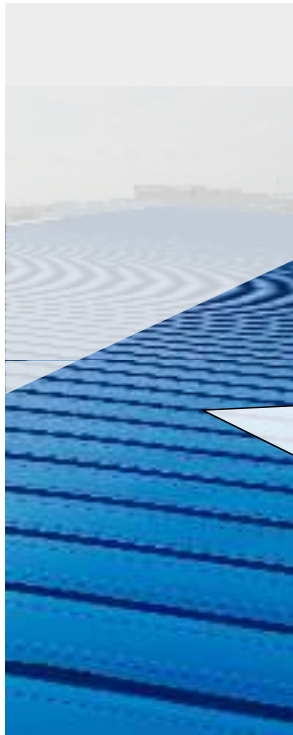
In travelling the length and breadth of Europe, you cannot miss the hundreds of structures made using sandwich panels. Interestingly, today these are not only industrial structures. Residential projects are becoming increasingly popular, with many design offices even creating ready concepts based on such applications. Sandwich panels are available in wall and roof versions, which are typical for the following types of structures:

- Warehouses and Logistic Hubs
- Production Facilities & Workshops
- Cold Stores & Freezers (dedicated PU-F cold storage panels)
- Car Showrooms
- Stores
- Sports and Recreational Facilities (swimming pools, arenas, and halls).





# STANDING SEAM ROOF INNOVATIVE. ANTI-LEAK



## Salient features of Standing Seam Roof

- ✓ A joint free roofing system
- ✓ Highly beneficial for long span buildings
- ✓ Gives clean, sleek lines, unique aesthetic effect
- ✓ No exposed screws
- ✓ Watertight solution
- ✓ Continuous seam positive locking
- ✓ Mechanically seamed in field on project site

Panel side-laps are seamed by a special seaming machine.

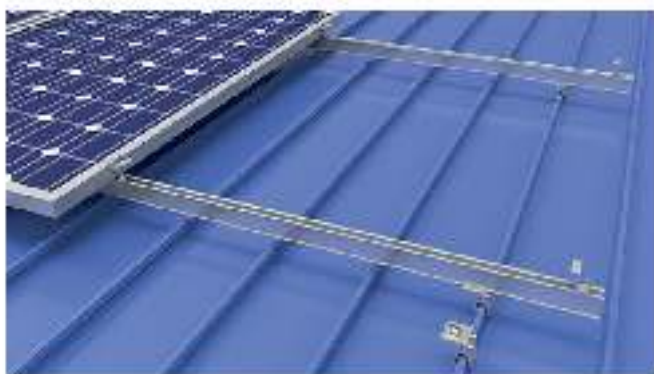
All panels are seamed together, creating 360-degree double lock



Seaming

Actual site photo  
SSR roofing

**Solar panels can be fixed to SSR without fixing screws or puncturing the roof sheets**



Clamp for fixing  
solar panels supports

Actual photos and drawings are not intended to be construed as a warranty. All products are subject to change without notice.



Regular /  
Screw-down  
roof

# QUALITY ASSURANCE

Today B5 Plus name is synonym with Quality in steel and iron. Quality is a continuous process at B5 Plus. All products manufactured must pass stringent quality testing procedures, a standard inspection and testing plan is followed for all jobs.

This means that we continuously concentrate on improving our own performance to ensure that you -the client- benefit. Our aim is to meet your expectations every time. We take a proactive stance towards quality moving beyond Quality Control to provide Quality Assurance, so you can be confident that your requirements will be met with predictable quality - consistently. Our stringent process ensures that high quality standards are reflected as results in your business, guaranteeing your satisfaction every time.

Quality is maintained in all stages starting from design, drawings, raw materials, production and erection. Quality Assurance Plan is available on request.



**Quality Welding Wires**



**Quality Welding Flux**



**RM Lab Test**

B5 Plus  
Quality Assurance  
We are committed to  
achieve and enhance  
customer satisfaction  
by continually  
improving our Quality  
Management System.



**DFT Meter for Paint Thickness**



**Checking Physical Dimension**



**Dye Penetrant Test for Welding Porosity**



**Fillet Welding Check**





**Factory building with Overhead EOT Cranes**

# **PRE-ENGINEERED BUILDINGS**



**Exhibition Hall**



**Workshop Building**



**Logistics Warehouse**



# PROJECTS



**Factory Shed 1**



**Factory Building**



**Logistic Warehouses**



**Factory Shed 2**



**Storage Warehouse**



**Food Processing Unit**









Mezzanine Floors



Factory Building



Church Structure



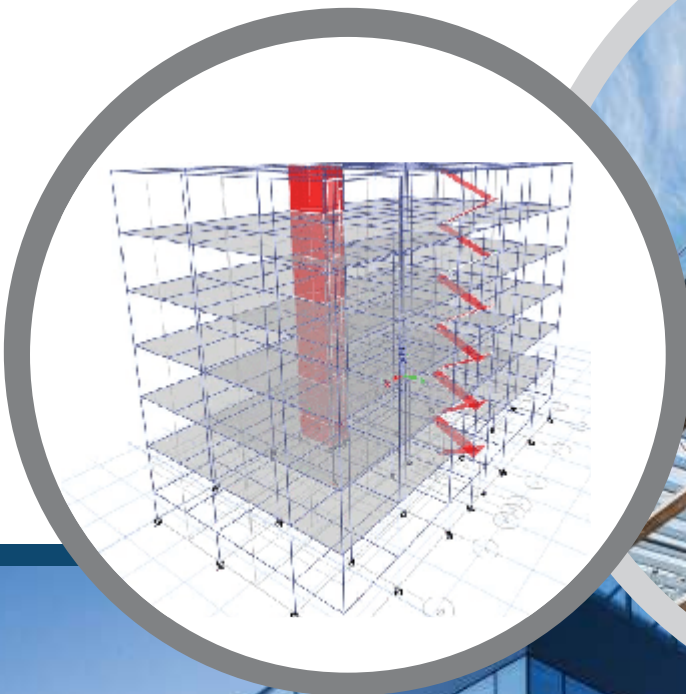


# MULTI-STOREY STEEL BUILDINGS

We have high expertise in design, supply and erection of Multi-storey Steel Buildings. It is exciting time to be in the modular construction industry. This innovative technique is poised to revolutionize the way our society approaches large-scale buildings. We offer a complete suite of services built on our enthusiasm for guiding clients through all phases of commercial modular construction.

Steel buildings for multi-storey structure has following advantages:-

- Fast Completion
- More Space
- Easy to Modify
- Value for Money
- Lighter Foundations
- Large Spans



# MULTI-STOREY STEEL BUILDINGS



**Multi-Storey Steel Building for Residential Apartment**

Commercial buildings such as offices, shops and mixed residential-commercial buildings, account for 20% of construction output. The commercial sector demands buildings that are rapid to construct, of high quality, flexible and adaptable in application, and energy efficient in use.

Steel and composite construction has achieved over 60% market share in this sector in some countries of Europe where the benefits of long spans, speed of construction, improved quality and reduced environmental impact have been recognized.

A wide range of steel technologies may be used in commercial buildings. Specific technologies are chosen to match client requirements. Many long span steel solutions provide service integration within their depth, which saves on building height. Cellular beams combine an efficient manufacturing process with opportunities for service integration. Integrated beams minimize the floor zone while allow maximum value from steel construction.



**Shopping Mall from Steel Structure**



**Single Girder**



## **ELECTRIC OVERHEAD TRAVELING (EOT) CRANES**

- Designed and manufactured in accordance with IS code considering adequate factor of safety with respect to appropriate duty classifications.
- Structural components designed in accordance design codes.
- B5 Plus cranes use standard components and controls to ensure reliability.
- Rapid access to spare parts of the cranes for minimum inconvenience to end user.
- Reduced scheduled maintenance and emergency downtime.
- Load tested to 125%.
- Easily adjustable limit-switches.
- High quality structural assembly ensures compliance with ISO.



**Double Girder**

# STORAGE RACKS

- Our storage racks offers a wide range of options and components to accommodate as per specialized needs.
- Maximizes space use in any warehouse configuration while retaining optimum product accessibility.
- Rapid handling of almost all types of palletised goods.
- Strength and rigidity prevents compression damage to goods.





# WEIGH BRIDGES

We supply and install all types of weigh-bridges.

## OUR ADVANTAGES

- Durable
- Proven structural design
- Premium materials
- Fast to install
- Reliable
- Accurate



## CUSTOMIZED FABRICATION

We undertake all types of heavy metal fabrication work. We manufacture customized fabricated steel structures as per client's requirement.

We have all types of facility under one roof to complete any challenging fabrication job:

- Cutting
- Grinding
- Bending
- Drilling
- Punching
- Welding



# TANKERS AND TRAILERS



Oil tank semi trailer is mainly used for transporting fuel oil, diesel, water, etc. The capacity is optional, also we accept customized semi trailers. Material of Oil tanker semi trailer can be carbon steel, aluminum alloy, stainless steel (SS304), which is optional. Some trailers are made for personal (or small business) use with practically any powered vehicle having appropriate hitch, but some trailers are part of large trucks called semi-trailer truck for transportation of cargo.

## **ADVANTAGES:**

Tri-axle tank trailer, adopt advanced design concept. We can customize the tankers for you according to your request. For this tanker trailer, the volume is 18000-70000 liters, 3 axles/4 axles/5 axles tank trailers, used to load all kinds of liquid oils.

We provide customers will the most economical design according to the loading equipment and the payload. ODM & OEM customize, professional and technical team provide you the best design, free logo print. Trailers are assembled under strict quality control.

## **WHEEL BARROWS**

We manufacture and supply wheel barrows in large quantities.





# SOLAR SYSTEM SUPPLY AND INSTALLATION



## SOLAR SYSTEMS

Photovoltaic modules use light energy (photons) from the Sun to generate electricity through the photovoltaic effect. The majority of modules use wafer-based crystalline silicon cells or thin-film cells. The structural (load carrying) member of a module can either be the top layer or the back layer. Cells must also be protected from mechanical damage and moisture. Most modules are rigid, but semi-flexible ones based on thin-film cells are also available. The cells are connected electrically in series, one to another to a desired voltage, and then in parallel to increase amperage. The voltage and amperage of the module are multiplied to create the wattage of the module.

Module electrical connections are made in series to achieve a desired output voltage or in parallel to provide a desired current capability (amperes) of the solar panel or the PV system. The conducting wires that take the current off the modules are sized according to the ampacity and may contain silver, copper or other non-magnetic conductive transition metals. Bypass diodes may be incorporated or used externally, in case of partial module shading, to maximize the output of module sections still illuminated.



# CIVIL WORKS: DESIGN & BUILD

We undertake turnkey projects with civil construction. We have team of experienced and senior civil engineers. We cater to all types of buildings.



We undertake turnkey civil contracts. We have competency in all areas of construction involving following activities:-

- **Land Survey**
- **Site cleaning**
- **Excavation**
- **Filling and compaction**
- **Earth work**
- **Form work**
- **Concrete production**
- **Blocks**
- **Flooring**
- **Finishing work**
- **MEP (Mechanical, Electrical & Plumbing)**





# PROJECTS EXECUTED



**G+2 Shopping Mall**



**Automobile Workshop and Service Centre**



**Plastic Processing Unit**



**Manufacturing Unit**



**Steel Manufacturing Unit**



**PVC Processing Unit**



**Cashew Processing Unit**



**Storage Warehouse**





## OVERSEAS PROJECTS





# OUR PRESENCE IN AFRICA



■ Our Plant distance from  
Sea port  
(Tema, Ghana = 30km)

## WE EXPORT TO ALL AFRICAN COUNTRIES

📍 **HEAD OFFICE**  
B5 Plus Ltd.  
Kpone, Off Tema-Aflao Road  
Tema, Ghana

**WORKS**  
Larkpleku Ningo-Prampram,  
Tema, Ghana

📍 **BRANCHES IN GHANA**  
Accra  
Kasoa  
Kumasi  
Takoradi  
Tamale

**BRANCHES IN WEST AFRICA**  
Ivory Coast  
Senegal  
Mali  
Gambia  
Guinea

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Telephone +233 (0)24 433 1634

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