CONTENTS

PRODUCTS

PROJECT CASE

ABOUT IBEEHIVE
PRODUCTS

• prefab steel structure buildings
• steel structure building introduction
• steel structure building advantages
• steel bailey bridge introduction
• steel structure building features
What is the steel structure? The steel is characterized by high strength, lightweight, good overall rigidity, and strong deformability. Therefore, it is especially suitable for building large-span and ultra-high and super-heavy buildings. The material is homogeneous and isotropic, and it is an ideal elastomer, which is in line with the basic assumptions of general engineering mechanics. The material has good plasticity and toughness, can have large deformation, can withstand the dynamic load well, and has a short construction period. It has a high degree of industrialization and can be specialized in mechanization.
Prefab Steel Structural Buildings Advantages

1. The higher utilization rate of the area
Steel-structured houses can better meet the requirements of flexible separation between large openings in buildings than traditional buildings and can improve the area utilization rate by reducing the cross-sectional area of the columns and using lightweight wall panels. The effective indoor use area is improved by about 6%.

2. Has excellent seismic and wind resistance performance
The steel structure system can be used in residential buildings to make full use of the steel structure with good ductility and strong plastic deformation ability and has excellent seismic and wind resistance performance, which greatly improves the safety and reliability of the house. Especially in the case of earthquakes and typhoon disasters, the steel structure can avoid the collapse of the building.

3. The energy-saving effect is good
The wall adopts light-weight and energy-saving standardized C-shaped steel, square steel, and sandwich panel, which has good heat preservation performance and good earthquake resistance. 50% energy will be saved.

4. The total weight of the building is light
The steel structure residential system is light in weight, about half of the concrete structure, which can greatly reduce the basic cost.

5. Good environmental protection
The construction of steel structure houses greatly reduces the amount of sand, stone, and ash. The materials used are mainly green, 100% recycled or degraded materials. When the building is demolished, most of the materials can be reused or degraded without causing garbage.

6. The construction speed is fast
The construction period is at least one-third shorter than the traditional residential system, and only one 20-day 1000-square-meter can be completed.

7. Flexible and rich, Large open room design
Indoor space can be divided into multiple programs to meet the different needs of users.

8. Meet the requirements of residential industrialization and sustainable development
The steel structure is suitable for mass production in factories, with a high degree of industrialization, and can integrate advanced products such as energy saving, waterproofing, heat insulation, doors and windows into one, complete application, integrate design, production, and construction, and improve the level of construction industry.
Prefab Steel structure Building Feature

1. High material strength and lightweight

The steel has a high strength and a high modulus of elasticity. Compared with concrete and wood, the ratio of density to yield strength is relatively low. Therefore, under the same stress conditions, the steel structure has a small cross-section, lightweight, easy transportation, and installation, and is suitable for the large span, high height, and heavy bearing capacity. Structure.

2. Steel toughness, good plasticity, uniform material, high structural reliability

Suitable for impact and dynamic loads, with good seismic performance. The internal structure of the steel is uniform and close to the isotropic homogeneous body. The actual working performance of the steel structure is in line with the calculation theory. Therefore, the steel structure has high reliability.

3. The degree of mechanization of steel structure manufacturing and installation is high

Steel structural members are easy to manufacture at the factory and assembled on site. The mechanized manufacturing of steel structural members in the factory has high precision, high production efficiency, fast assembly speed and short construction period. The steel structure is the most industrialized structure.

4. The steel structure sealing performance is good

Especially in the environment of wet and corrosive media, it is easy to rust. General steel structures are to be rusted, galvanized or coated and regularly maintained. For the structure of the offshore platform in seawater, special measures such as "zinc block anode protection" are required to prevent corrosion.

5. The steel structure is heat resistant and not fire resistant

When the temperature is below 150 °C, the properties of the steel change little. Therefore, the steel structure is suitable for use in a hot workshop, but when the surface of the structure is subjected to heat radiation of about 150 °C, it is protected by a heat shield. When the temperature is between 300 °C and 400 °C, the strength and elastic modulus of the steel are significantly reduced. When the temperature is around 600 °C, the strength of the steel tends to zero. In buildings with special fire protection requirements, the steel structure must be protected with refractory materials to increase the fire rating.

6. The steel structure is poor corrosion resistance

Especially in the environment of wet and corrosive media, it is easy to rust. General steel structures are to be rusted, galvanized or coated and regularly maintained. For the structure of the offshore platform in seawater, special measures such as "zinc block anode protection" are required to prevent corrosion.

7. Low carbon, energy saving, green and environmentally friendly, reusable

The demolition of steel structures will produce almost no construction waste, and the steel can be recycled and reused.
Steel Structure Building Introduction
Steel Structure Type

FRAME CROSS SECTION

EAVE STRUT

GIRT

WALL SHEETING

COLUMN

RAINTER

PURIN

RIDGE LINE

ROOF SHEETING

FINISHED FLOOR LEVEL

BUILDING WIDTH

EAVE HEIGHT

200mm.

200mm.

1500mm.

(TYPICAL)

300mm.
Steel Structure Type

CLEAR SPAN (CS)

MULTISPAN “1” (MS-1)
(1 Interior Column)

MULTISPAN “2” (MS-2)
(2 Interior Columns)

LEAN - TO (LT)
# Steel building comprise component

<table>
<thead>
<tr>
<th>Main frame steel</th>
<th>Steel Welded H Section or hot rolled H section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purlin</td>
<td>C or Z Section Channel for roof and wall</td>
</tr>
<tr>
<td>Cladding system</td>
<td>Sandwich Panel or Corrugated Steel Sheet with Fiber Glass Wool for wall and roof</td>
</tr>
<tr>
<td>Tie Rod</td>
<td>Circular Steel Tube</td>
</tr>
<tr>
<td>Brace</td>
<td>Round Bar</td>
</tr>
<tr>
<td>Column &amp; Transverse</td>
<td>Angle Steel or H Section Steel or Steel Pipe</td>
</tr>
<tr>
<td>Knee Brace</td>
<td>Angle Steel</td>
</tr>
<tr>
<td>Roof Gutter</td>
<td>Color Steel Sheet</td>
</tr>
<tr>
<td>Rainspout</td>
<td>PVC Pipe</td>
</tr>
<tr>
<td>Door</td>
<td>Sliding Sandwich Panel Door or Metal Door</td>
</tr>
<tr>
<td>Windows</td>
<td>PVC/Plastic Steel/Aluminum Alloy Window</td>
</tr>
<tr>
<td>Connecting</td>
<td>High Strength Bolts</td>
</tr>
<tr>
<td>Main steel material</td>
<td>Q345, Q235, Q345B, Q235B, Q355 etc</td>
</tr>
<tr>
<td>Packing</td>
<td>Decided by you, loaded into 1X 40ft GP, 1X 20 ft GP, 1X 40 ft HQ</td>
</tr>
<tr>
<td>Drawing</td>
<td>We can make the design and quotation according to your require or you</td>
</tr>
<tr>
<td>Crane</td>
<td>Decided by you</td>
</tr>
</tbody>
</table>
Steel Frame - H beam (H Section)
Steel Secondary - C&Zpurlin Angle
Cladding System - Sandwich /Steel Panel

Steel Panel

FRP Sheet

polycarbonate sheet

Sandwich Panel
Steel / Sandwich Panel

<table>
<thead>
<tr>
<th>Section Type</th>
<th>Effective Coverage Width (mm)</th>
<th>Expanded Width (mm)</th>
<th>Plate Thickness (mm)</th>
<th>Section Moment of Inertia (mm^4)</th>
<th>Section Resistance Moment (mm^3)</th>
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</thead>
<tbody>
<tr>
<td>LDR-66-578 Metal Roof Panel</td>
<td>430</td>
<td>600</td>
<td>0.5</td>
<td>12.26</td>
<td>10.44</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>0.6</td>
<td>14.31</td>
<td>12.45</td>
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<td></td>
<td></td>
<td>0.8</td>
<td>16.12</td>
<td>16.72</td>
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<tr>
<td>LDR-125-520 Metal Roof Panel</td>
<td>750</td>
<td>1000</td>
<td>0.4</td>
<td>10.44</td>
<td>5.08</td>
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<td></td>
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<td>0.6</td>
<td>13.85</td>
<td>7.48</td>
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<tr>
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<td>0.6</td>
<td>6.18</td>
<td>4.7</td>
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<tr>
<td>LDR-73-769 Metal Roof Panel</td>
<td>760</td>
<td>1000</td>
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<td></td>
<td>0.6</td>
<td>37.27</td>
<td>12.29</td>
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<td></td>
<td>0.8</td>
<td>49.69</td>
<td>16.39</td>
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<td>LDR-54-629 Metal Roof Panel</td>
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<td>1000</td>
<td>0.5</td>
<td>22.62</td>
<td>15.06</td>
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<td></td>
<td></td>
<td>0.6</td>
<td>27.14</td>
<td>18</td>
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<tr>
<td>LDR-62-695 Metal Roof Panel</td>
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<td>0.5</td>
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<td></td>
<td></td>
<td>0.6</td>
<td>24.18</td>
<td>14.58</td>
</tr>
</tbody>
</table>

Version Features:

1. 50 years of wind, snow, & rain exposure to real panels and wall panels
2. High strength, suitable for large scale housing and buildings, has been recognized and praised by researchers
3. EPS SANDWICH PANEL

LYW-160-950/1150 Wall panel
LYR-40-960 Roofing panel (hidden)
LWR-40-970 SANDWICH PANEL, LAP JOINT TYPE
LER-49-960 SANDWICH PANEL (hidden type)
Connecting

Bolt

Galvanized bolt  Expansion bolt  Self-tapping screw

High strength bolt  Anchor bolt  Stud
Production Process

Profuction process

Step 1—Cutting:
The raw material steel plate will be cut according to drawing. Check the quality of cutting components, cutting surface shall not have stratification, slag, cracks and any other defect.

Step 2—Assembly:
Check on the steel components surface curvature, height and flatness, the burr, dirt, and dross should be cleaned up to ensure the assembly of steel components.

Step 3—Welding:
Choosing reasonable welding current and electrode according to the welding conditions such as groove form, welding position, thickness of steel plate.

Step 4—Straighten:
Checking on the surface of steel components before straightening, there should not be severe depression, dents and any other damage.

Step 5—Blasting:
Remove the rust on the surface of the components with the blasting machine to prepare for the surface treatment.

Step 6—Inspection:
Check the quality of the weld to ensure the products meet the standard requirements.
Quality control
General fabrication main process of steel structure is divided into: material preparation → cutting → assembling → welding → drilling → assembly → correction → shot blasting and rust removal → painting → number → component acceptance ex-factory. In the steel structure production, according to the steel structure production process flow, grasp the key processes for quality control, such as control of key parts processing, main components of the process, measures, processing equipment, process equipment, etc. Each processing part, we can have strict inspection specifications. Welding engineering is the most important link in steel structure fabrication and installation engineering. For the welding,

We have our qualified CWI welding inspector to control the quality according to AWS-D1.1/D1.5 welding quality system. Spot welding strictly weld according to ASW welding quality system.
The Bailey bridge is a type of portable, pre-fabricated, truss bridge. It was developed by the British during World War II for military use and saw extensive use by British, Canadian and US military engineering units. A Bailey bridge has the advantages of requiring no special tools or heavy equipment to assemble. The wood and steel bridge elements were small and light enough to be carried in trucks and lifted into place by hand, without requiring the use of a crane. The bridges were strong enough to carry tanks. Bailey bridges continue to be used extensively in civil engineering construction projects and to provide temporary crossings for foot and vehicle traffic.
Prefab Steel Bailey Bridge Features

1. Additional panels can be added to create Double and Triple panel bridges.
2. Cost effective to own and re-use in different length bridges
3. Damaged parts can be easily and quickly replaced from stock
4. All steel is precision CNC machined and laser cut components
5. Additional sections can be added to increase the length of the bridge
6. Faithfully replicates the key component of the original Bailey Bridge including the Panels, Transoms, Stringers, Cheeses, Ribands, Rakers, Bracing Frames, End Posts and Sway Braces.
7. Easy – to handle, transport, assemble, install and reuse
8. Speed construction- pre-engineered components
The Usage Of The Bailey bridge?

- Bailey bridge is used when there is a need to cross an obstacle for a certain time period. This is often in case of military operations, during or after natural disasters replacement or renovation of consistent bridges or in unusually areas like the movie industry.

- Thereby the function also differs on different users of the bridge which could be pedestrians, common vehicles (cars, buses, trucks), heavy military equipment (tank) or the railway.

**Key Applications**

**Rural Bridges**
Permanent rural bridging to connect communities

**Temporary Bridges**
Temporary bridging for a variety of engineering and industrial applications

**Emergency Bridges**
Emergency bridging to help restore vital lifelines in disaster-stricken areas
<table>
<thead>
<tr>
<th>Type</th>
<th>Moudle</th>
<th>Lanes</th>
<th>width</th>
<th>Bridge Deck</th>
<th>Steel Grade</th>
<th>Corrosion</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>3.042m</td>
<td>Single Lane/Double lane</td>
<td>4.2m/7.35m</td>
<td>steel</td>
<td>Q345B</td>
<td>Painting/Hot-dip Galvanized ASTM A123 BS EN ISO14713&amp;1461</td>
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<td>DS</td>
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</tr>
</tbody>
</table>
Steel Bailey Bridge Main Component

- Vertical frame
- Panel
- Male end post
- Female end post
- Two lane transom
- Chord reinforcement
- Decking
- Seat

- Bailey bolt
  - Panel pin
  - Safety clip
  - Transom bolt
  - Swaybrace bolt
  - Vertical frame bolt
  - Bracing bolt
Quality control
General fabrication main process of steel structure is divided into:
material preparation → cutting → assembling → welding →
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system.
PROJECT CASE

- prefab steel structure buildings
- steel bailey bridge
Prefab steel structure factory for Israel
Steel Structure Quantity: 56.08mt
Area: 1505sqm
Project time: 2017-12-20

<table>
<thead>
<tr>
<th>Design Loads</th>
<th>Dead Load(Kn/m²)</th>
<th>Live Load(Kn/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rigid Frame</td>
<td>0.3+O.W</td>
<td>0.3</td>
</tr>
<tr>
<td>Purline</td>
<td>0.2+O.W</td>
<td>0.5</td>
</tr>
<tr>
<td>Mezzanine</td>
<td>1.0+O.W</td>
<td>2</td>
</tr>
</tbody>
</table>

Wind Speed: 140Km/h
Design Loads

<table>
<thead>
<tr>
<th>Item</th>
<th>Dead Load(Kn/㎡)</th>
<th>Live Load(Kn/㎡)</th>
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<tbody>
<tr>
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<td>0.2+O.W</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Wind Speed: 130Km/h

Prefab steel structure warehouse in Pakistan

Steel Structure Quantity: 133.8mt
Area: 7290sqm
Project time: 2018-08-27
Prefab steel structure workshop with office for Holland
Steel Structure Quantity: 22.64mt
Area: 446sqm
Project time: 2017-12-04

Design Loads

<table>
<thead>
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</tr>
<tr>
<td>Mezzanine</td>
<td>1.0+O.W</td>
<td>2</td>
</tr>
</tbody>
</table>

Wind Speed: 140Km/h
Steel Structure Multi-storey building for America
Prefab Steel structure hotel
Project size: 21*17.2*11.8M (3 floors)
Steel Structure Quantity: 1084tons

I. The steel structure frame including the following materials
- Main steel structure frame: Q345B
- Floor Secondary beam: Q345B
- Secondary steel frame: Q235B
- Steel stair: Q345B
- Bolt: High strength bolt and common screw and nuts
- Anchor bolt: M24 anchor bolt + 3 nuts black

II. Cladding & floor sheet including the following materials
- Roofing sheet: 50mm/0.4mm/0.5mm PU Sandwich panel & Accessories
- Wall sheet: 50mm/0.4mm/0.5mm PU Sandwich panel & Accessories
- Decking sheet: 1.0mm decking sheet and accessories
- Door: Aluminum alloy window
- Window: Revolution door
Bridge length: 18m
Bridge width: single-4.2m
Span: Clear span
Load: 40t
Type: 200-type DS
Treatment: galvanized
Steel structure quality: 22t
Size: 30.48*18.28*9.14m
ABOUT IBEEHIVE

• factory capacity

• our service
• 19 years focus on steel structure

• Nearby two state-owned steel mills

• Annual capacity 50,000 tons

• AWS-D1.1/D1.5 CWI inspectors
  ISO 9001:2008

• Total area 100,000 m²

3520 complete projects

intime service

• Technique department 20 engineers, total 380 employee
2000
Company ESTABLISHED.

2004
First expansion of production

2006
Second Expansion of the Scale, with an Area of 100,000 square meters

2009
3520 projects with annual output of 50,000 tons
We provide customers with full steel structures such as factory, warehouse, high-rise building, heavy industry, shopping mall, exhibition centers, infrastructure (railway stations, airports...), a variety of steel structure projects such as Nest-type Beijing Olympic Stadium, Gome Logistics Park, Shenyang DongTa Over-river bridge etc.

Our Purpose is to help customers deliver their projects more quickly, safely and efficiently. We achieve this by providing our value-adding engineering expertise, services and products in the right way to our customers.

iBeehive is a professional manufacturer of steel structure, bridge with 19 years experience, finished 3520 projects total 17600000 square meter. We have 2 modern factories with a total area of 21000 m². iBeehive has served the pre-engineered building industry with the highly trained crews, specialized equipment, CWI inspector, and the team of professional engineers. Our factories are among the largest and most advanced steel structure production facilities in the world.

iBeehive specializing in providing complete solutions including consulting, design, fabrication and erection of high-quality pre-engineered steel building and steel structure products.

Ansteel
Top 3 steel enterprises in China
1/4 of China’s total iron and steel output
State-owned large-sized enterprises
the most resource advantages in China
39 million tons of raw steel
3,000 steel grades
60,000 specifications

Benxi steel group
Top 10 in China, Top 20 in the world
Capacity of 20 million tons
CCS from United Kingdom, United States, Norway and other nine countries
Widest and highest strength for the entire automobile

Nearby two state-owned steel mills

long-term partnership with two state-owned steel enterprise and the short distance advantages help us to

GUARANTEE
- LEAD TIME
- PRODUCTION QUALITY
- COST SAVING
Construction Standard

- Enterprise Management
- Follow Quality Control Requirement
- AWS Welding Standard
- Ability of America Standard Product
We can design the complex industrial building for clients by using AutoCAD, PKPM, MTS, 3DS, Tekla Structures (Xsteel) and etc.

2. Steel Structure Building Fabrication
2 fabrication factory total area 18000 Sqm!
5 heavy steel structure production lines!
1 assembly workshop that can assemble steel bridge!

3. Delivery Goods On Time:
The production capacity of steel structure components: 50000 tons per year
The total area of finished steel structure projects: 17600000 m2
We have enough strong production space and production capacity to deliver the goods on time.

4. Quality control
Our own qualified CWI welding inspector to control the quality according to AWS-D1.1/D1.5 welding quality system. Spot welding strictly welds according to AWS welding quality system.
- The quality inspector or the third party are all acceptable in our factory.
CONTACT IBEEHIVE

Email: sales@ibeehivesteelstructures.com
Website: www.ibeehivesteelstructures.com