BAUHU

Serenity Heights

A custom designed modular home

BAUHU MODULAR HOMES

engineered to outperform

Steel Frame...

Our buildings are made of steel, which is strong and is protected by a galvanized coating generally accepted to provide a time to first maintenance of a 100 years. With this highly effective galvanization process, steel profiles resist even the most humid regions.

They are packed with insulation, reducing energy consumption. Once clad the frame is not exposed to the elements and is airtight.

The kit is made in a factory and delivered in sections, so the structure can be erected very quickly. Buildings are engineered to ASCE 7-22 (The American Society of Civil Engineers Code) and designed for high wind and seismic locations.

The building envelope is watertight and airtight. The windows and doors are fitted with impact resistant glass. All the building materials are completely termite proof.

Info...

All Bauhu steel framing is sourced and manufactured in the United Kingdom using premium grade, recycled steel.

Our walls are made in multiple layers of non-wood composite, insulation, air and moisture barriers and an ETICs façade system (External thermal insulation system)

The outer cladding protects not only against impact, but also provides fire resistance up to two hours. The multi-layer, wall panel system meets the stringent international construction standard criteria for thermal insulation, impact resistance, air and water infiltration, and wind load resistance.

All of the building components are recyclable. Each complete building fits inside standard sized shipping containers and a home can be ready for delivery in as little as ten weeks.

CONCEPT DESIGN

Standards & Codes of Practice

- *International Building Code (IBC) 2015*
- *ASCE 7-16 (22)- American Society of civil Engineers (Minimum Design loads for buildings & other structures)*
- *AISC 360-10 - American Institute of steel construction (Specification for structural steel buildings)*
- *AISI -100-16 - American Iron and Steel Institute (Design of Cold Formed steel & structural members)*
- *ASTM - American Society for Testing and materials.*
- *All CFS frame will be designed to AISI LRFD CFS design standard*

Cold Formed Steel (LGS)

EN10326:2004 S450GD+275g/sqm (Z600, 600g/sqm optional) self healing galvanisation. 450MPa (65 ksi.) This is within the range that is available (50 to 80 ksi).

Floor and roof joists are 100x41x16 typically at 600mm centers. External and main internal walls 150 x 65x1.6mm. Partition walls 70x41x1.2

LGS frames are fixed to each other and to the HRS members with specified mechanical fixings using pre-prepared punched holes to avoid any drilling on site. Cold rolled steel is formed from pre-galvanised steel coils into 'C' profiles which are then used to construct assembled frames which form walls, panels, trusses and joists dependent on individual building design.

Hot Rolled Steel (HRS)

Material Availability of Hot Rolled Steel Sections is as per European/British sections with grade of S275

Plate thickness 6, 8, 10,12mm grade S275, S355.

HRS members are hot dip galvanised and fixed to each other with specified mechanical fixings to form a portal frame.

CONCEPT DESIGN

Galvanisation

The US standard is 183g/sqm (0.6oz/sqft) sometimes 0.4 0z/sqft is used. The US higher Standard is 275g/sqm (0.9oz/sqft)
The UK standard: 275g/sqm (0.9oz/sqft)

*The standard that we use is 600g/sqm (2 oz/sqft) – this is **5 times more** than the lower US standard 0.4oz/sqft requires*

For custom buildings requiring additional galvanising we offer the higher standard Z600 which is equivalent to 40 microns. In normal internal environments where the galvanised surfaces are sheathed in outer surfaces, as is the case in our buildings, research shows 0.1microns of corrosion a year to be expected – this gives 400 years of protection. We would therefore expect the galvanisation to last beyond the design life of the structure.

Moisture and Façade degradation

Our typical buildings use a Miami Dade hurricane rated impact resistant EFIS façade system, supplied by Sto. Corporation, which provides airtight and watertight building envelope protection. This façade system is tried and tested and guaranteed by Sto. The system is supplied to Bauhu together with all of the various components required to ensure industry standard joints, connections and seals around openings as you would expect.

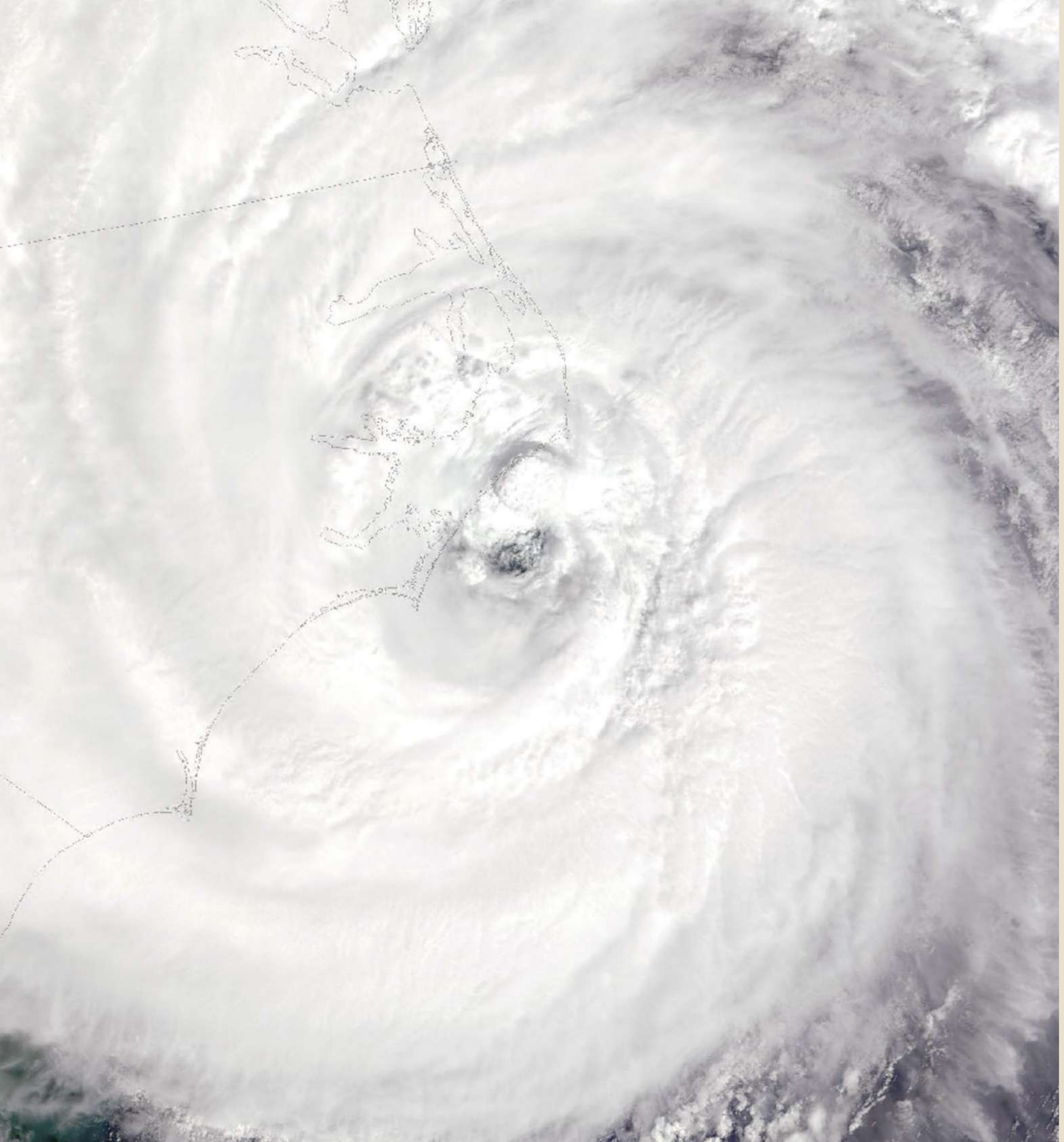
CONCEPT DESIGN

Features

At a glance...

Bauhu buildings are supplied as a complete kit ready for assembly on site and benefit from many key features and finishes

- ✓ *Light steel frame insulated roof*
- ✓ *EPDM/Elastomeric roof membrane*
- ✓ *Hurricane safe steel structure*
- ✓ *Thermal and acoustic insulated walls*
- ✓ *Low maintenance aluminium doors*
- ✓ *Double-glazed windows*
- ✓ *Impact resistant laminated glass*
- ✓ *Fiber cement / ETICs exterior siding*
- ✓ *Wall and ceiling paint finishes*
- ✓ *Natural stone style flooring*
- ✓ *White ceramic sanitary ware*
- ✓ *Polished chrome faucets*
- ✓ *Wall hung bathroom vanity units*
- ✓ *Shower closet wall tiling*
- ✓ *Base and wall kitchen cabinetry*
- ✓ *Composite panel interior doors*
- ✓ *Polished aluminium door furniture*
- ✓ *Pergola features (optional)*



EIFS Facades

Impact resistant façade systems

Hurricanes threaten The Caribbean and North America frequently, striking coastal areas. Numerous storms have endangered lives and left costly damage to the populated areas they hit.

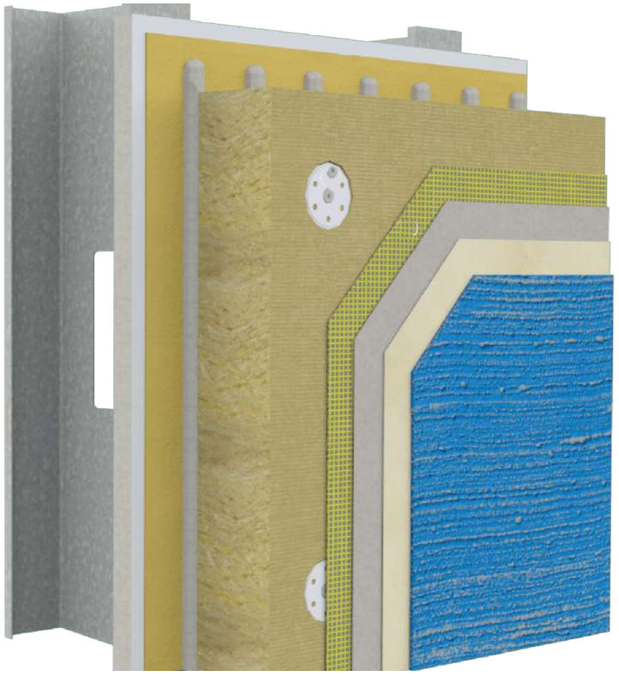
Sto Hurricane Impact (HI) Systems provide exterior cladding solutions to protect against hurricane and tropical storm winds, water intrusion, and windborne debris.

All systems meet the stringent High Velocity Hurricane Zone (HVHZ) provisions of the Florida Building Code at specified design pressures. Sto Hurricane Impact Systems have Miami-Dade County Notice of Acceptance (NOA) and Florida statewide product approval.

Insulated External wall systems

Our buildings employ a market- leading range of external wall insulation (EWI) systems to help reduce energy consumption and energy costs.
StoTherm Classic is a durable, functional and versatile choice for meeting and exceeding building insulation requirements.

- ✓ *Entirely cement-free system*
- ✓ *Highly resistant to cracking.*
- ✓ *Up to 10 times more impact resistant than cementitious systems.*
- ✓ *Excellent mineral wool thermal insulation.*
- ✓ *Fire resistant*
- ✓ *Allows for the maximum use of internal space.*
- ✓ *Protects the external wall from weathering.*
- ✓ *Through colour tinting system in 800 colours*
- ✓ *Recyclable and environmentally responsible*
- ✓ *Lightweight system for easy installation.*



- ✓ *Substrate*
- ✓ *Adhesive coat*
- ✓ *Rockwool insulation*
- ✓ *Cement-free reinforcing coat*
- ✓ *Reinforcing mesh*
- ✓ *Decorative render finish*

Bauhu home designs supplied with an EIFS façade system are delivered together with all of the components and materials required to apply the façade system which is carried out on location after the building structure has been assembled.

Acrylic rendered facades provide an impact resistant, zero maintenance option creating a contemporary architectural style. Customers can choose from several external render grain sizes an extensive range of through tint finish colours.

Roofing

The Firestone RubberCover EPDM roofing system is based on an EPDM synthetic rubber membrane with a life expectancy of over 50 years, it is one of the most durable and sustainable roofing systems on the market. EPDM also allows homeowners to make the most of their roof. The system is compatible with green, solar, blue and accessible roofs.

EDPM flat roof

Industry leading flat roof membrane system designed for flat or low pitch roofing and 'green roof' building designs.

Firestone

Firestone Building Products

Info...

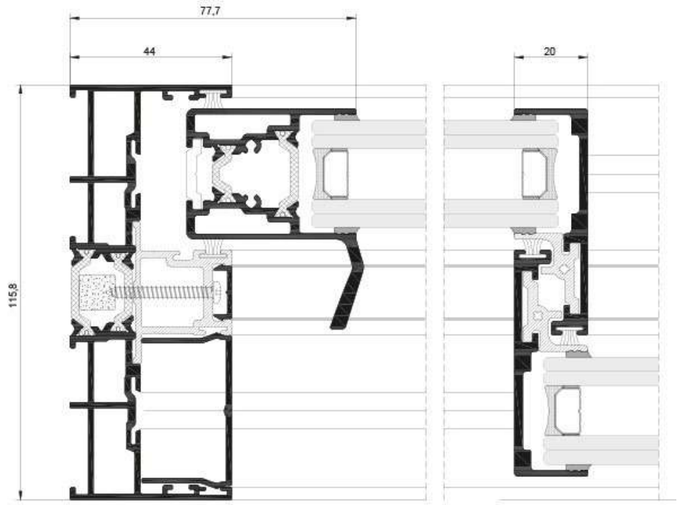
Our thin frame aluminium sliding glass doors are specially made with stainless steel reinforcing bars built into the robust frame profiles providing additional strength and security.

Windows

Sliding windows and doors

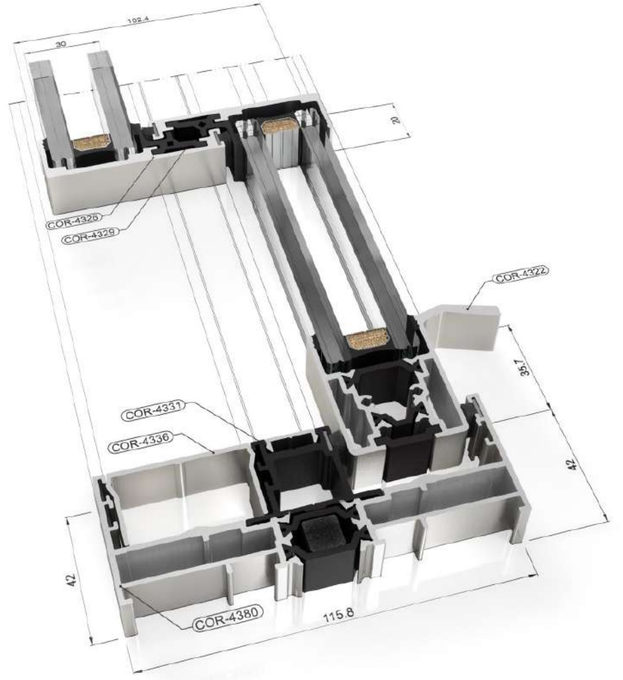
Specially designed for use in high velocity wind regions our aluminium windows and sliding doors maximise light transmission whilst controlling solar gain. Robust frame profiles are reinforced with stainless steel bars and airtight, lockable sliding systems seal all openings.

- ✓ *Air permeability*
- ✓ *Water tightness*
- ✓ *Wind resistance*
- ✓ *Insulation*
- ✓ *Security*



Premium quality aluminium windows and sliding glass doors from industry leading manufacturers provide high levels of Insulation, security and the stylish looks of an ultra slim frame. What's more, aluminium is a completely recyclable material.

- ✓ *Smooth sliding insulated window system*
- ✓ *Double pane slide directions*
- ✓ *Stainless steel reinforced frame profiles*
- ✓ *Super slim 70mm frame depth*
- ✓ *Zero maintenance*
- ✓ *Transmittance (Uw) from 0,9 W/m2K*
- ✓ *Selection of frame colours*
- ✓ *Multi point locking systems*



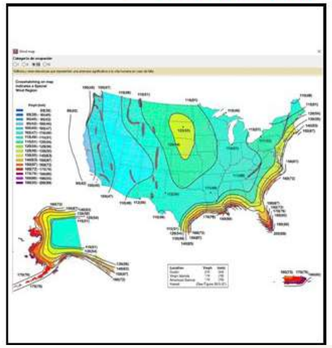
ASCE7 22

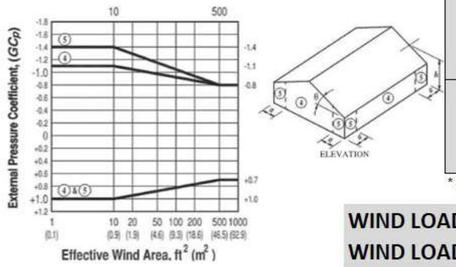
Basic wind pressure: $q_z = 0{,}613 \cdot Kz \cdot Kzt \cdot Kd \cdot Ke \cdot V^2$ (26.10-1) = **3.94 kN/m²** = **393.6 kg/m²**

Basic wind speed: Vb	80 m/s
Height of module: Z	10 m
Front width of building: B	20 m
Side width of building: L	20 m
Building categorie:	III
Exposure categorie:	EXP. D
Topografic height m.a.s.l:	0 m
Enclosed building:	YES
Location:	U.S.A. (Cat. III)

Return period:	1700 años
Height building factor Kz:	1.18
Topographic factor Kzt:	1.00
Directionality factor Kd:	0.85
Gust effect factor G:	1.00

GCp local	Compr.	Succ.	Compr.	Succ.
Zona 4	0.90	-1.00	0.90	-1.00
Zona 5	0.90	-1.21	0.90	-1.21
a=10%long	Mullion		Transom	





Wind load P = qz*(GCp) - qz*(Gcpi)

Windward facade: Cp=	0.80
Sideward facade: Cp =	-0.70
Leeward facade (L/B): Cp=	-0.50
Internal Pressure Coefficient: GCpi=	0.18
Internal Pressure Coefficient: GCpi=	-0.18

		Load ULS	Load SLS
GLOBAL LOADS	P=qh•G•Cp Windward	3.86 kN/m²	2.31 kN/m²
	P=qh•G•Cp Sideward	-3.46 kN/m²	-2.08 kN/m²
	P=qh•G• Cp Leeward	-2.68 kN/m²	-1.61 kN/m²
LOCAL LOADS MULLION	P=qh•GCp Zone 4,5 +	4.27 kN/m²	2.56 kN/m²
	P=qh•GCp Zone 4 -	-4.66 kN/m²	-2.80 kN/m²
	P=qh•GCp Zone 5 -	-5.46 kN/m²	-3.28 kN/m²
LOCAL LOADS TRANSOM	P=qh•GCp Zone 4,5 +	4.27 kN/m²	2.56 kN/m²
	P=qh•GCp Zone 4 -	-4.66 kN/m²	-2.80 kN/m²
	P=qh•G•Cp Zone 5 -	-5.46 kN/m²	-3.28 kN/m²

* Service loads for ASD method, ASCE 7-16 Chapter 2.4.1

WIND LOAD ON MULLION:	Zone 4 S	280	kg/m²
WIND LOAD ON TRANSOM:	Zone 5 S	328	kg/m²

Our window systems are specially manufactured to comply with or exceed locally required codes relating to wind loads.

Coupled with industry leading advanced architectural glass our window systems offer the lowest possible profile sizes whilst retaining the wind load resistance required by code.

CORTIZO

Glass

Impact resistant laminated glass

Advanced architectural glazing

Our laminated glass significantly improves a window's ability to withstand breakage, adds colour and sound control, provides optimum security and meets building codes in high velocity wind regions.

- ✓ *4+2+4 Laminated outer glass layer for impact protection*
- ✓ *16mm argon filled inter pane cavity for maximum insulation*
- ✓ *6 mm SNX low E solar control glass interior pane for heat control.*

GUARDIAN® GLASS
See what's possible℠

Kitchen

Customers can choose kitchen type, colour and style from our extensive catalogue (Example kitchen selection)

Floor tile

Info...

Kitchens are made to order. Customers can choose the kitchen style, cabinetry and worktop from an extensive range of designer kitchens.

Ceramics

Bauhu homes are supplied with ceramic wall and floor finishes throughout. Our ceramic selection is provided by one of Portugal's leading tile manufacturers and customers can choose from an extensive range of products

Choose your ceramics

DOMINÓ
INDÚSTRIAS CERÂMICAS S.A.

Ceramics

Wall and floor finishes are supplied according to the Bauhu neutral ceramic selection with wood look and stone look tiles.

Bathroom

Furniture

Our wall hung bathroom vanities are finished in a high gloss lacquer with a composite countertop and fully integrated basin.

Sanitary Ware

Our designers have carefully chosen a premium quality range of bathroom equipment, décor and finishes which are included with the home.

- ✓ *Wall hung vanity cabinets*
- ✓ *Composite vanity countertop and deck mounted mixer faucets.*
- ✓ *Wall mounted mirror with LED backlight*
- ✓ *Polished chrome basin mixer faucets*
- ✓ *White ceramic toilet with dual flush and soft close seat.*
- ✓ *White slimline shower tray with glass enclosure*

Faucets

Premium quality

Saving water is more than just a concern, it is an obligation.
All of our faucets are equipped with systems that save water by reducing the water flow by adding air to the water stream. While producing a soft touch and non-splashing sensation it offers the same
feeling of comfort as a large flow but using much less water.

The BRUMA AirEcoDrop system saves 30% of water.

BRUMA chrome plating process follows a rigorous quality control procedure called Brightest. This process ensures an intense brightness and a lasting, resistant finish.
The exclusive BRUMA Smooth Breeze cartridge has high quality ceramic discs at its heart, which provide a unique feeling of smoothness and precision in controlling water flow and temperature regulation.

BRUMA
FLOWINGART

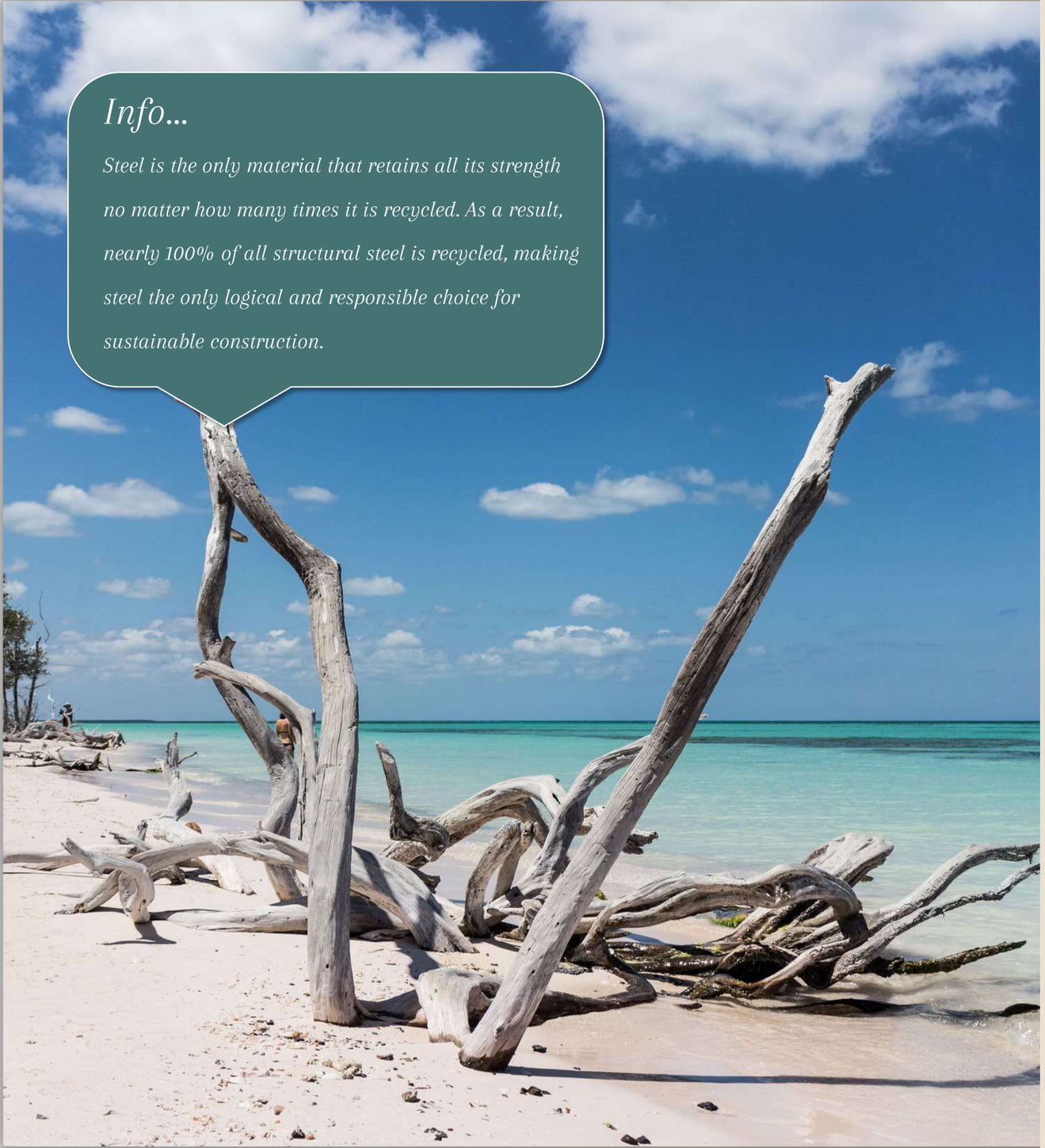
Interior Doors

Hand made to order

Our contemporary interior doors are hand made and finished in a matt white lacquer with brushed metal door furniture.

COMPINCAR®

FF&E - Innovation since 1973



Info...

Steel is the only material that retains all its strength no matter how many times it is recycled. As a result, nearly 100% of all structural steel is recycled, making steel the only logical and responsible choice for sustainable construction.

Sustainability

The Earth we share...

Bauhu Homes are manufactured entirely from 100% recyclable materials and are designed to preserve the environment by providing exceptional thermal insulation performance, minimising running costs and reducing power consumption.

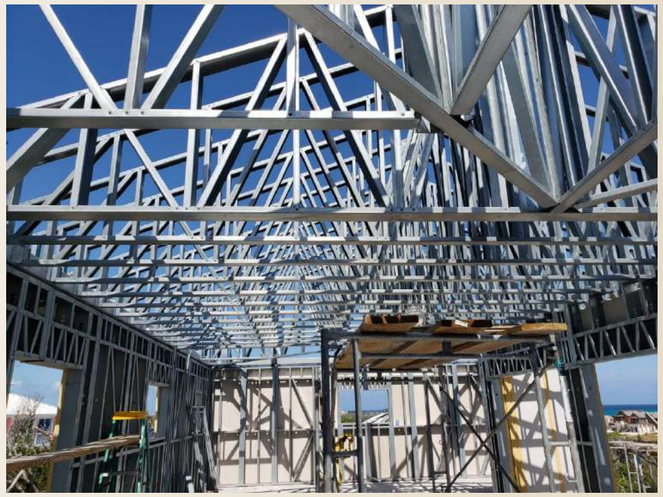
Keeping it green...

Protecting our planet one home at a time with a responsible selection of materials and sustainable architectural design:

- ✓ *Zero wastage*
- ✓ *Recyclable and recycled materials*
- ✓ *Exceptional thermal and acoustic insulation*
- ✓ *Double glazed windows*
- ✓ *Impact resistant windows and doors*
- ✓ *Bioclimatic design*
- ✓ *Zero structural timber*
- ✓ *Low VOC finishes*
- ✓ *Recycled plastics*
- ✓ *Rainwater recuperation*
- ✓ *Natural ventilation*
- ✓ *Low E solar control glazing*
- ✓ *Flat packed*
- ✓ *Inert fiber cement siding*
- ✓ *Composite kitchen counter*
- ✓ *LED lighting (option)*
- ✓ *Composite panel interior doors*
- ✓ *Solar PV (option)*
- ✓ *Solar thermal water heating (option)*

Info...

The required United States standard for light gauge steel galvanizing is 0.6oz per square foot. Our steel frame is galvanized to 0.9oz per square foot significantly exceeding US standards.

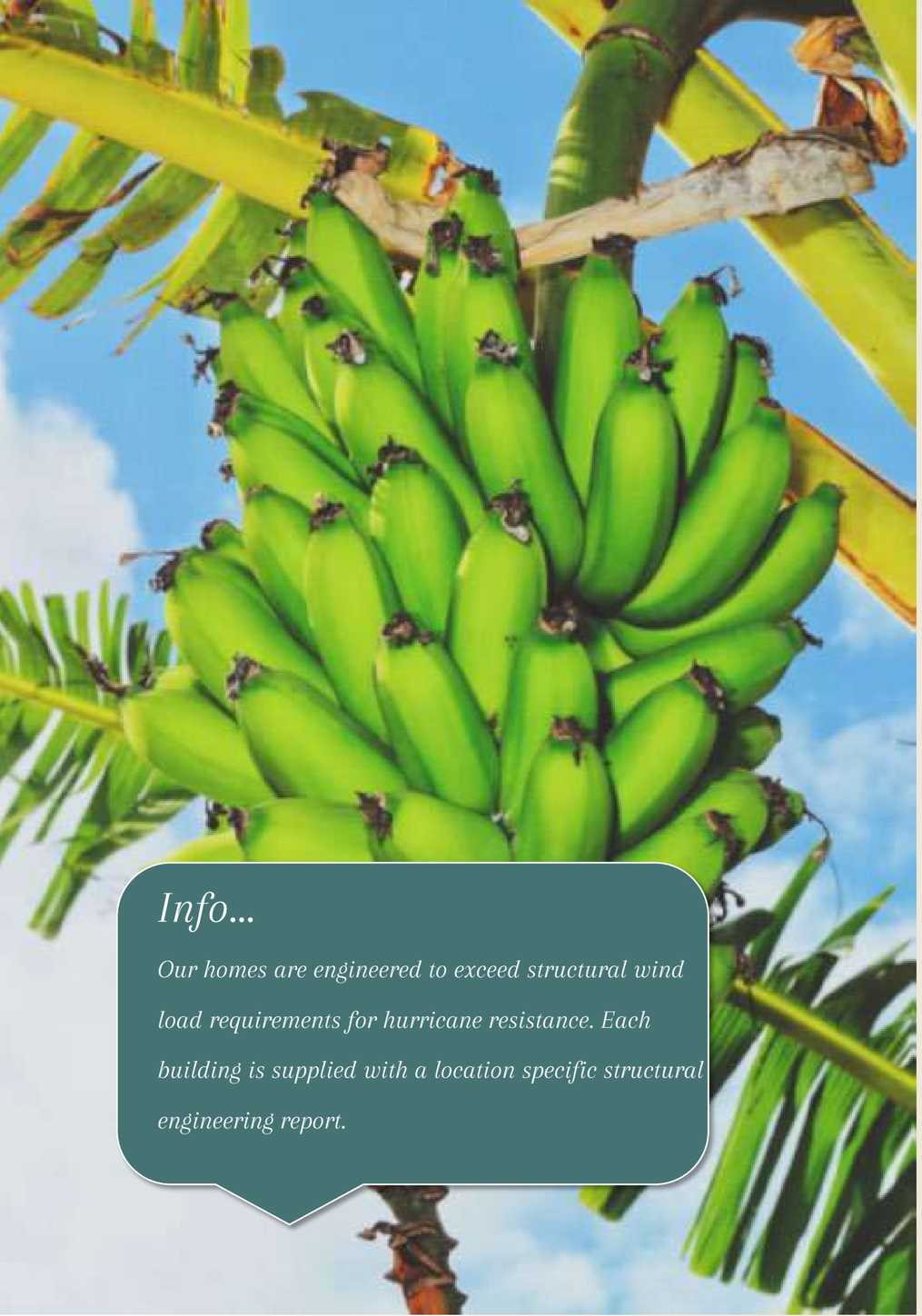


Durability

Engineered to outperform...

A lightweight galvanized steel structure is used for external walls and internal partition walls (frames) according to structural calculations for the building type. These models incorporate a steel (HRS) structure which is hot dipped galvanized to eliminate corrosion in salty environments.

Our modular buildings are supplied in ‘kit’ format having been pre-assembled and checked prior to delivery. Each building is provided with an extensive ‘step by step’ assembly guide to ensure quick and simple erection on site.



Info...

Our homes are engineered to exceed structural wind load requirements for hurricane resistance. Each building is supplied with a location specific structural engineering report.

Climate Control

The Caribbean...

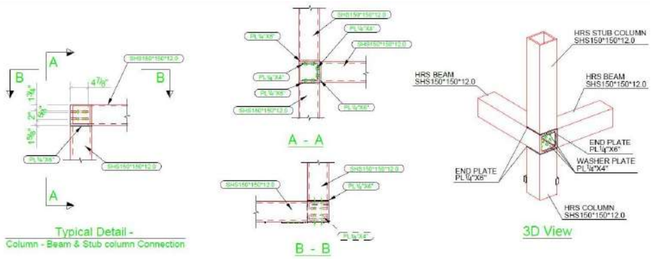
All buildings are engineered for use in hurricane prone locations. They are made with a robust steel frame structure which is engineered according to the building code that applies in the build location.

For hurricane prone locations the steel construction system is designed for 200MPH wind loadings in full compliance with ASCE7-22 codes, and based on the precise build location and terrain type.

Each Bauhu home is supplied with a full structural engineering report and detailed architectural and construction plans

Structural Engineering

*Our hybrid steel frame modular construction system is designed for **200MPH** wind loadings exceeding compliance with ASCE7-22 codes.*



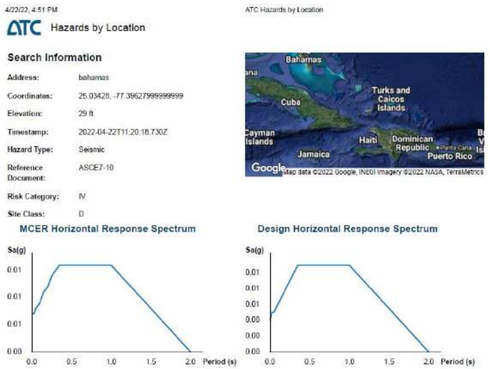
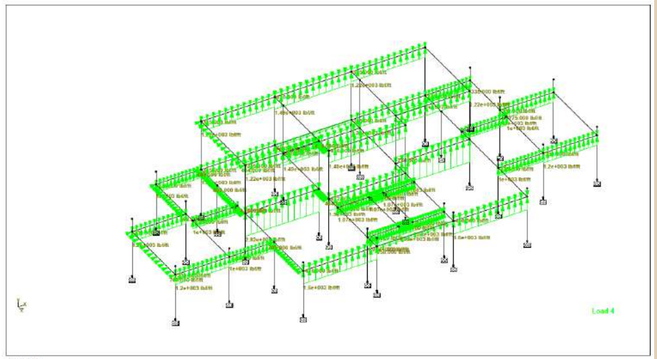


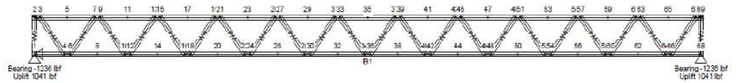
TABLE 11.8-1 Site Coefficient F_{PGA}

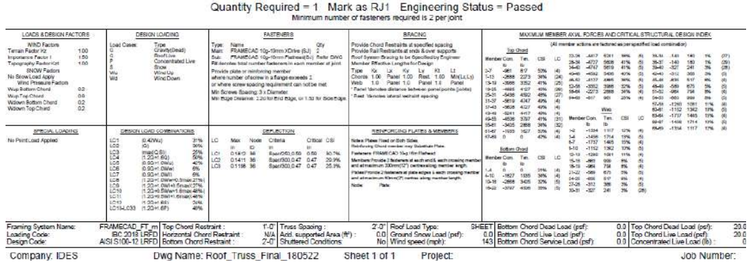
Site Class	Mapped Maximum Considered Geometric Mean (MCE_G) Peak Ground Acceleration, PGA					
	PGA ≤ 0.1	PGA = 0.2	PGA = 0.3	PGA = 0.4	PGA = 0.5	PGA ≥ 0.6
A	0.8	0.8	0.8	0.8	0.8	0.8
B	0.9	0.9	0.9	0.9	0.9	0.9
C	1.3	1.2	1.2	1.2	1.2	1.2
D	1.6	1.4	1.3	1.2	1.1	1.1
E	2.4	1.9	1.6	1.4	1.2	1.1
F	See Section 11.4.8					

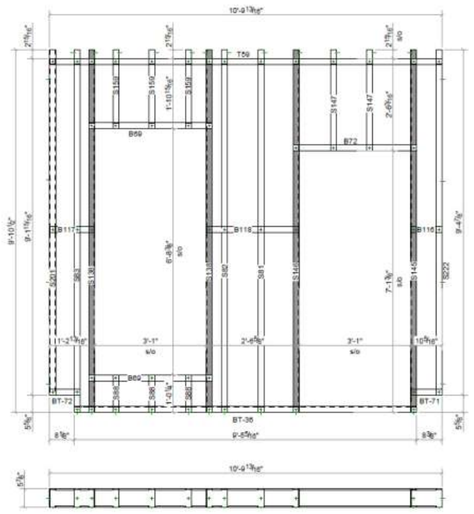
Note: Use straight-line interpolation for intermediate values of PGA.

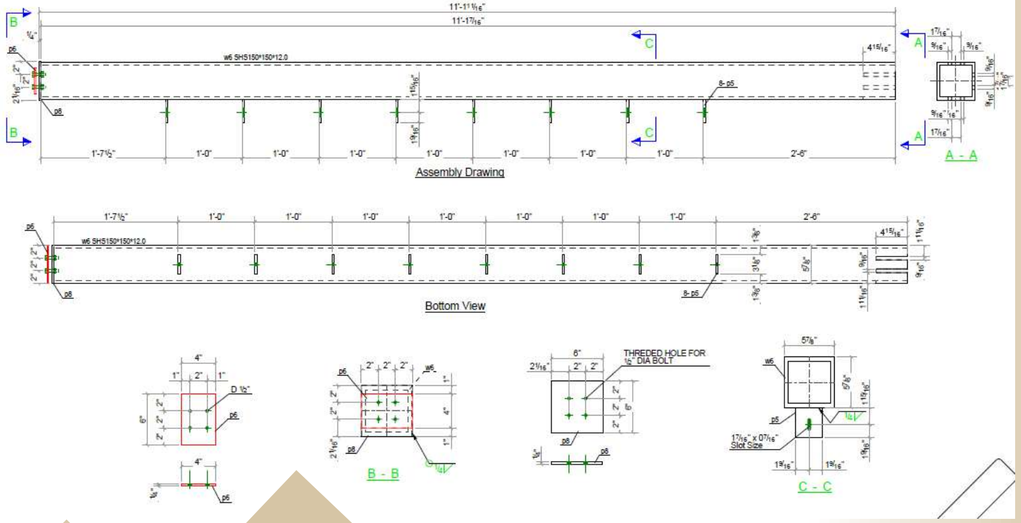


Wind X









Shipping

Bauhu homes are supplied in a flat packed 'kit' format allowing all materials and building components to be packed and transported by sea in standard containers, any where in the world.

All materials are packed for maritime transportation and loaded into containers for transit. A comprehensive inventory and packing list are provided. Customers can track goods in transit in the customer portal.

Bauhu provide full extended 'replacement value' transit insurance for all goods up to hand over to the customer at the destination port.

Info...

Every building component has a unique reference code making parts fully traceable.

Component codes are used in detailed shipping inventories and are referenced in assembly guides and technical drawings.

Bar coding allows our architects to quickly identify components and assist with technical questions during the site assembly process.

Warranty

Our strict factory-based quality control ensures that completed buildings are thoroughly inspected prior to delivery. Nevertheless, our buildings are fully guaranteed for two years in the case of manufacturing defects. Third party supplier's component failure varies from two to thirty years. Detailed limited warranty terms are available on request.

Compliance

THE BAHAMAS MINISTRY OF PUBLIC WORKS

ECS
ORGANISATION OF EASTERN CARIBBEAN STATES

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

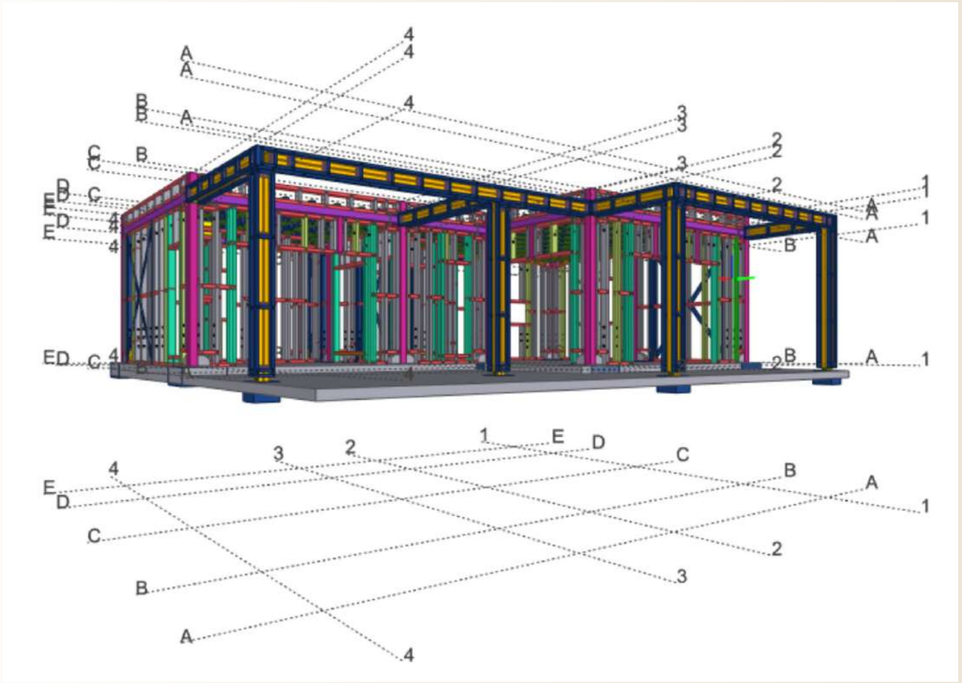
ETABS®

IBC®
INTERNATIONAL
BUILDING
CODE®

Documentation

- Architectural floorplans, elevations, section drawings and roof plan.
- Structural general assembly drawings, beam and column layout, wall plan layout.
- Building structural reactions plan and column base plate layout.
- Recommended sub-structure plan and slab fixing specification.
- Door and window schedule.
- Structural design document to ASCE7-16 (or ASCE7-22) as building code applicable to site location.

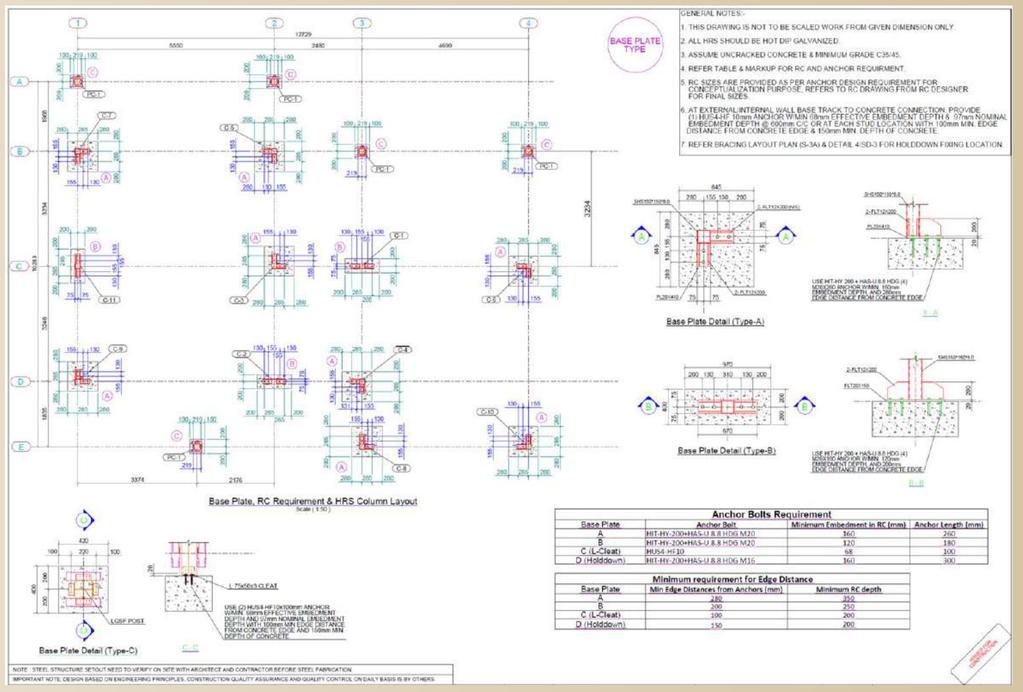
General Structural Assembly Drawings

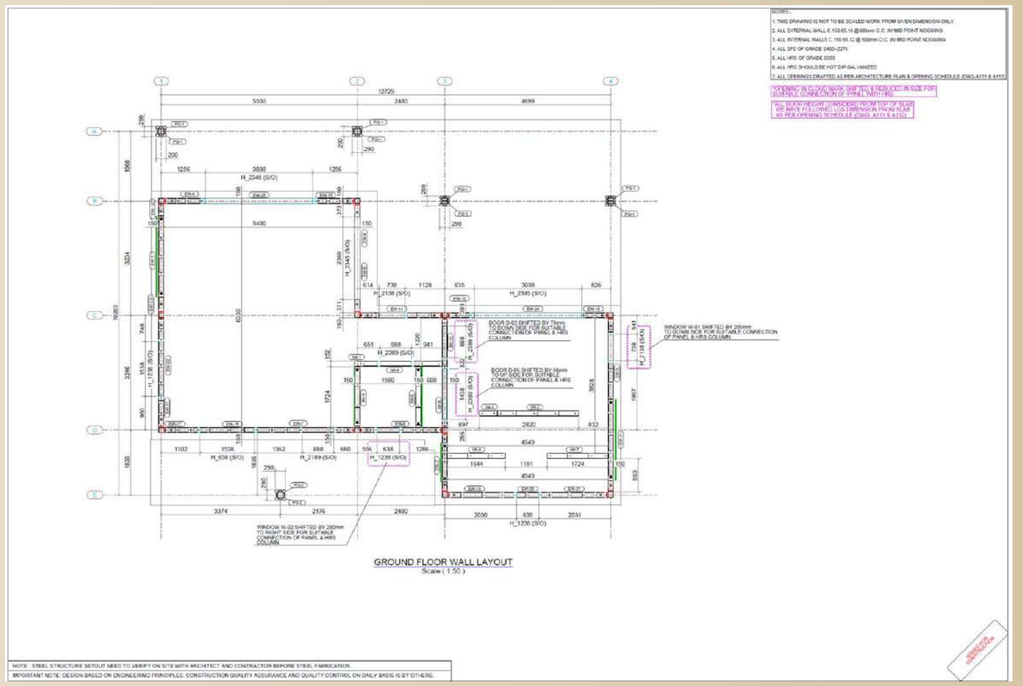


The IFC file (above) is an interactive 3D model of the building structure

The GA drawing file (right) provides detailed setting out information for structural columns, recommended concrete footing minimum dimensions and column placement. Each structural column and beam is numbered according to these drawings. Similar drawings detail the location of each structural beam.

The LGS wall panels and trusses are similarly numbered and the GA drawings indicate each panel and truss location.





Architectural Drawings

Highly detailed architectural drawings are provided with each building.

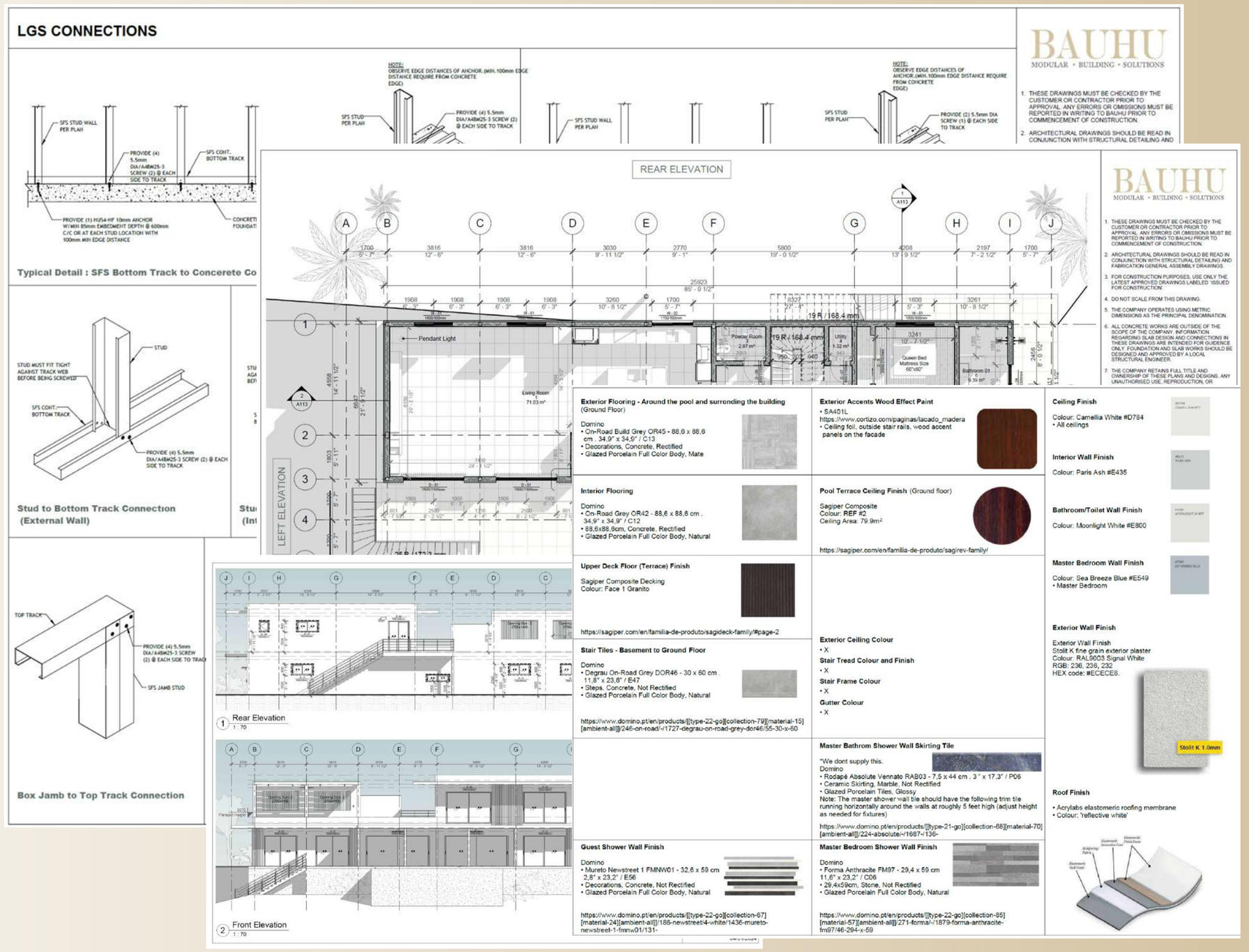
The architectural drawing set includes:

Floor plans, elevations and building section drawings.
3D visuals and axonometric images.

Construction detailing, recommended electrical and plumbing drawings.

Opening schedules and door types and sizes.

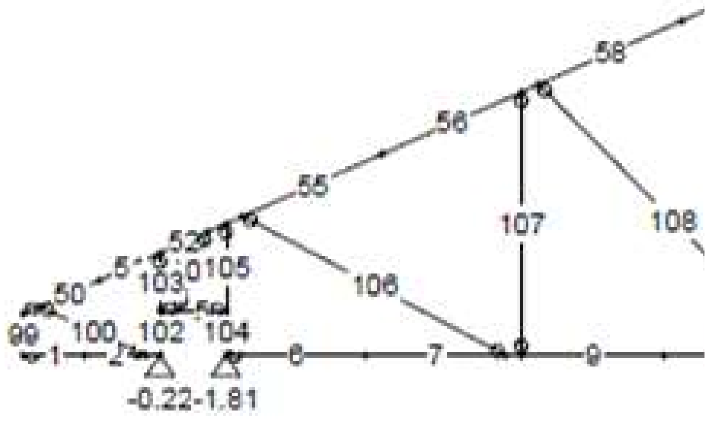
Room and decor finishes, kitchen and bathroom selections, and individual room dimensions and areas to assist in contractor bids.

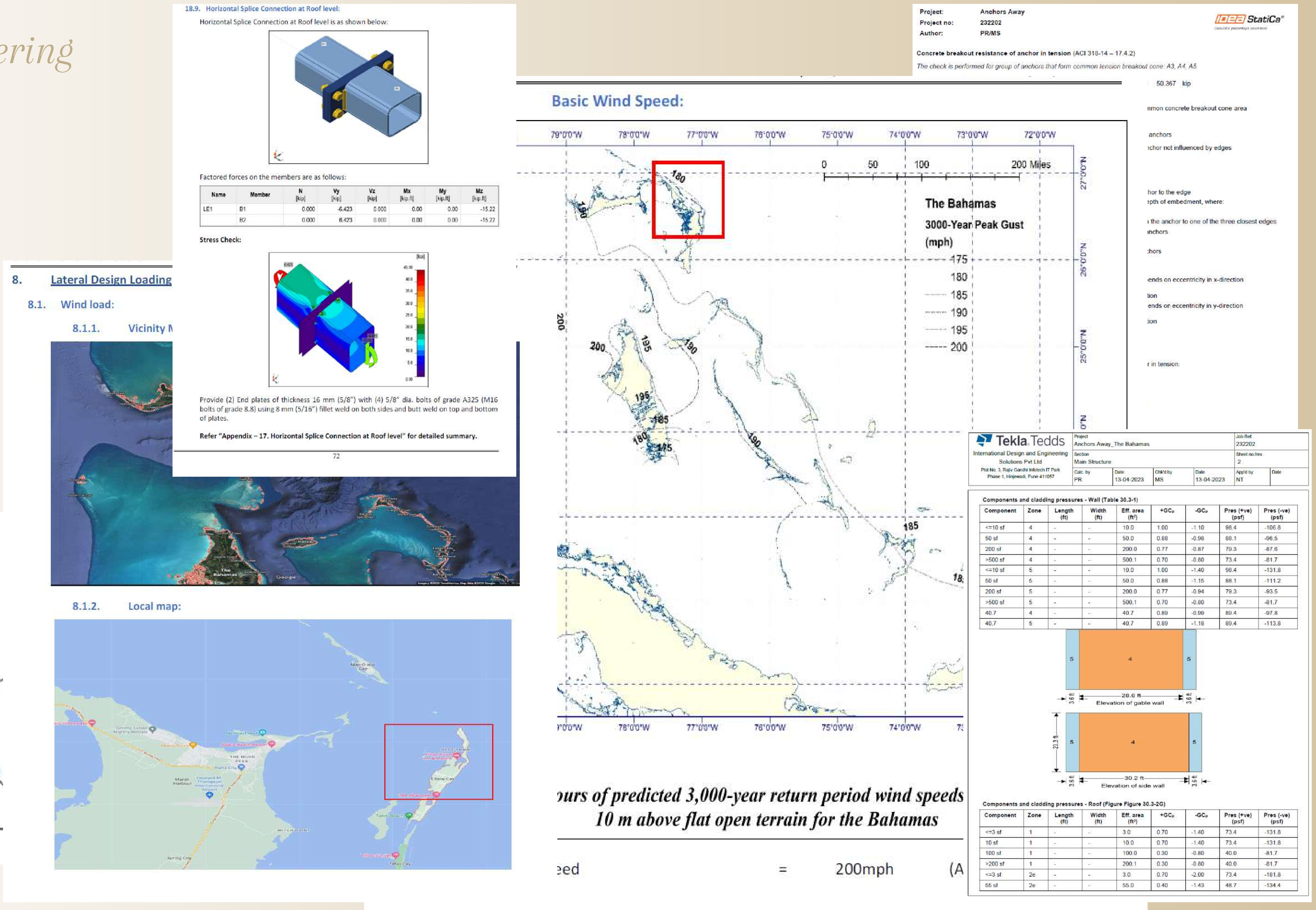


Structural Engineering Design Document

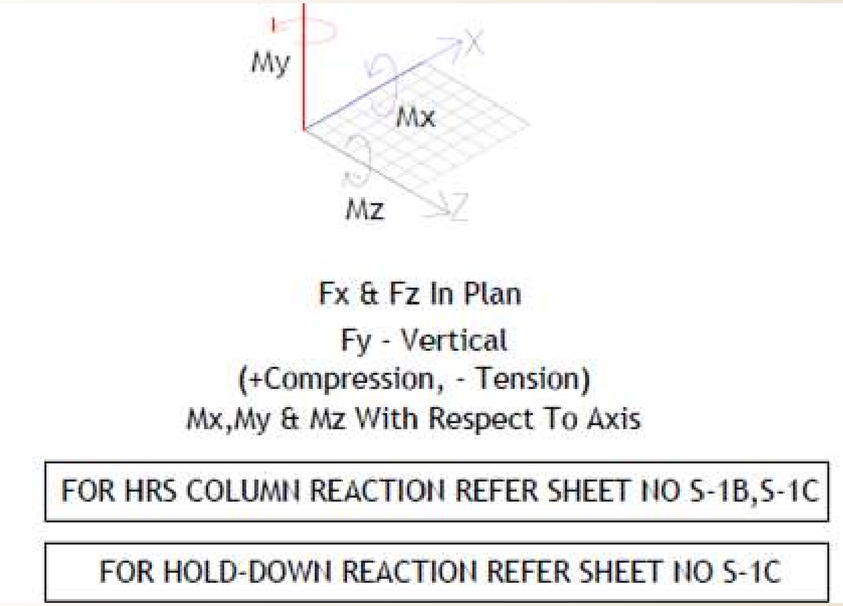
The structural engineering design document is specific to each building and the site location.

This is typically a 1000+ page document which details the structural integrity of the building together with the appropriate supporting calculations and analysis.



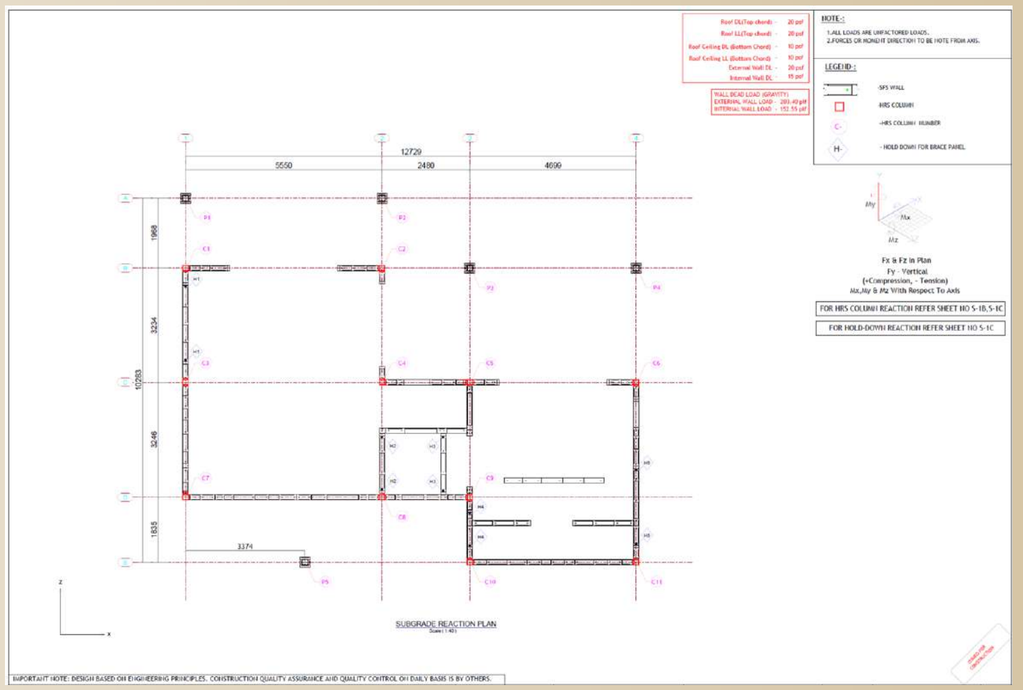


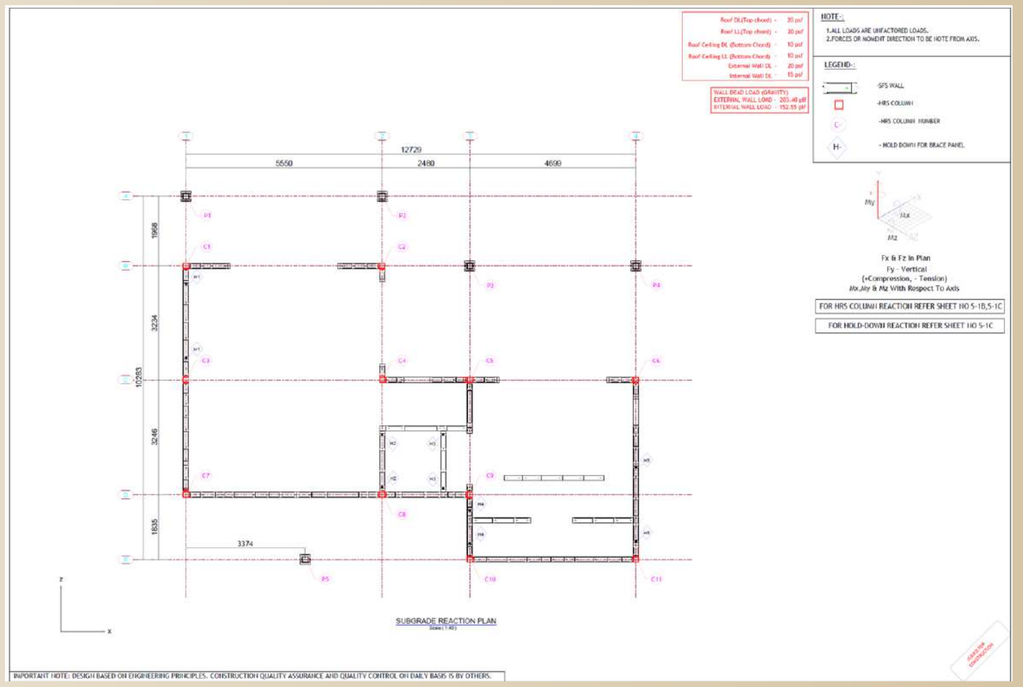
Building Reaction Plans



Reaction plans are provided with each building

The reaction plans are prepared by a structural engineer and indicate the calculated loads on each of the buildings structural columns. Reaction plans should be used by contractors engineers to establish the design of the reinforced concrete footings.





Contact

BAUHU

Email: contact@bauhu.com
Website: https://bauhu.com
Telephone: (+44) 7949 345 478