

*LaMar Hi-Tech.*

**HYBRID  
CONSTRUCTION**

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**EXCELLENT ADVANTAGES  
OFFERD BY  
HYBRIT CONSTRUCTION  
TECNOLOGY**

**1**

**LAMAR HI-TECH**

**IS A NEW HYBRIT  
CONSTRUCTION  
TECNOLOGY  
BY  
LAMAR YAPI A.S.**

# HYBRID CONSTRUCTION:

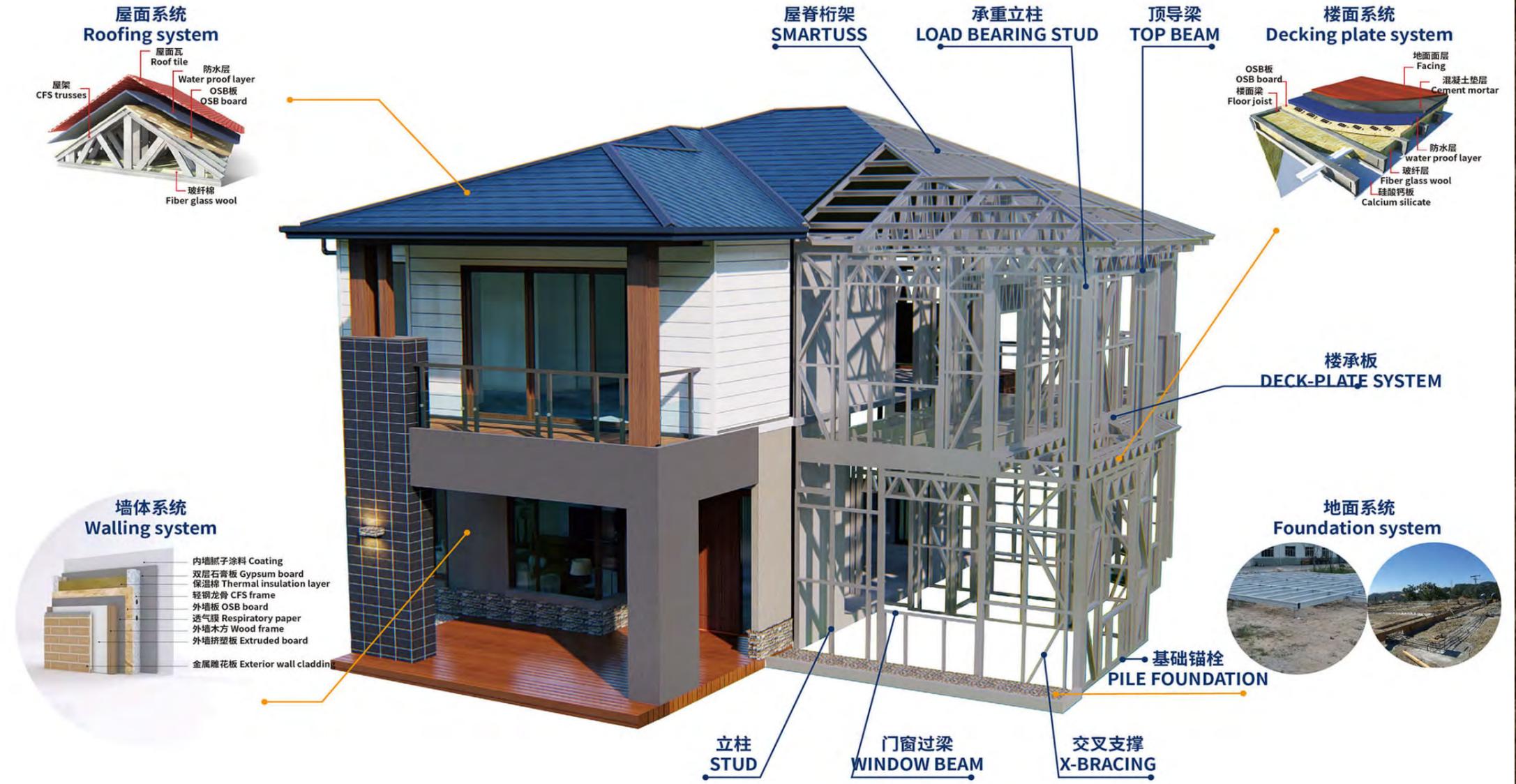
- Concrete Foundation,
- Galvanized Steel Profil Framework,
- Metal decking Floors..
- Concrete Slab
- Classic plastering facades

Hybrid Construction which represents the new age of construction engineering, breathes totally new life into the construction of living space, achieved by combining steel with aesthetic and comfort.

Hybrid construction systems provides great advantages in the construction of new living spaces. These advantages are certain to become rapidly popular by using, the agile hybrid construction system in various application areas globally. Hyid construction system

## Cold-Formed Steel building system

### 冷弯薄壁型钢结构建筑系统



# LAMAR HI-TECH

LAMAR HI-TECH is ;

A new technology has ben developed by *Lamar Yapı A. S*

*Lamar Yapı A. S* galvanized steel & concrete produces low-cost yet comfortable homes branded as Hybrid Construction, built using a lightweight

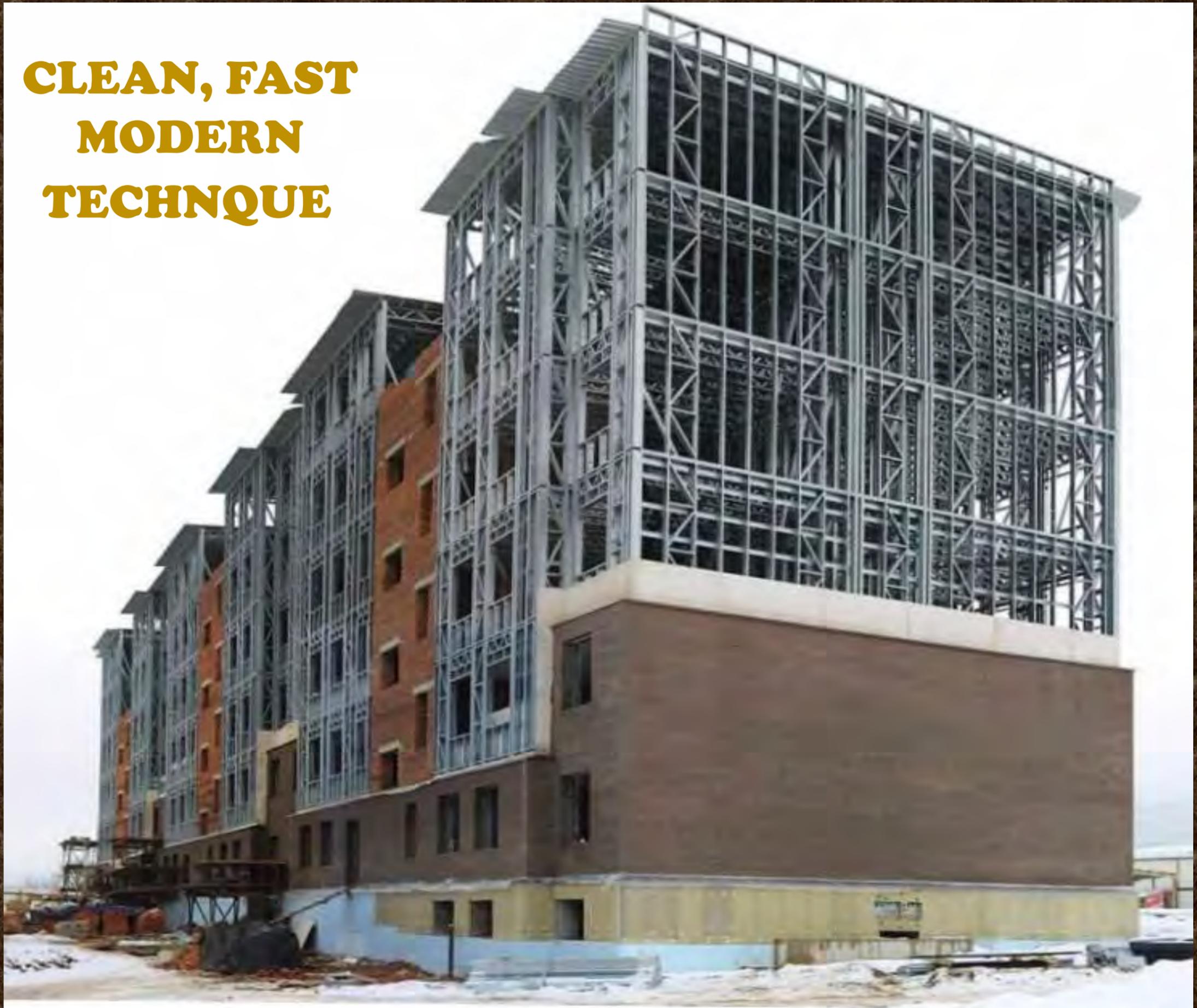
- Hybrid Construction which represents the new age of construction engineering, breathes totally new life into the construction of living space, achieved by combining steel with aesthetic and comfort.
- Hybrid construction systems provides great advantages in the construction of new living spaces. These advantages are certain to become rapidly popular by using, the agile hybrid construction system in various application areas globally.
- Hybrid construction system demonstrates fast construction speed in an incomparatable degree with classical systems. Pre-engineinnering allows the process to be managed so that the construction site is erected with imporved quality and faster.

**WE  
DESIGN**

**WE  
PRODUCE**

**WE  
BUILD**

**CLEAN, FAST  
MODERN  
TECHNIQUE**



## ADVANTAGES

- . **UNIQUE STEEL BUILDING SYSTEM**
- . **SOLID, RELIABLE, EFFECIENT**
- . **VALUE FOR MONEY**



## **OUR UNIQUE STEEL BUILDING SYSTEM**

## **SOLID, RELIABLE EFFICIENT VALUE FOR MONEY**

### **Durability**

The durability of our system's main differentiator is the speed of construction.

Our production processes focus on high quality manufacturing systems, where the pre-engineered design and assembly methodology allows faster construction and delivery of work.

The Pre - engineered building system significantly eliminates any mismatches and defects in the application area and also accelerates the installation of lightweight steel construction. Hybrid construction system is a huge advantage, especially in areas where the construction season is very short, thus reduces the cost of total investment by eliminating unnecessary labor and construction site costs.

### **Aesthetic and Comfort**

Hybrid Construction system offers flexible usage in many areas and facilitates the implementation easily in most architectural projects both classical or modern.

The engineering of Hybrid Construction displays a much more aesthetic constructions compared to classical housings by providing great freedom to architectural drawings.

### **Modular Construction**

Hybrid Construction enables the construct of buildings to any ground by reducing the building load. The framework uses steel which allows more flexibility than wood by approximately 21 times. Incorporating steel with concrete gives 10 times strength and flexibility of use; this feature is advantageous of position on the floors have different properties. Steel is a life saving construction system especially in the regions that have risk in terms of earthquake safety. Hybrid construction fabricated units has removable, portable, and reassembling features.



**"Design is not how it looks like and feels like. Design is how it works" - Steve Jobs**

# ADVANTAGES

## Ecology and Climate

*Due to the recyclable material of steel, Hybrid Construction system prevents the depletion of natural resources. Hybrid Constructions allow the ability to be removed, carried, and reassembled of the system which can make a major contribution to the construction ecology and the sustainability drive of the global construction drive to be more environmentally friendly.*

*Hybrid Construction elements are produced in an environmentally and sustainable conscious method of production which enables the design fit to different climate types and environmental regulatory requirements and standards. Providing maximum insulation, hybrid constructions prevent the waste of fuel resource by ensuring energy saving.*



## LAMARYAPI PRODUCES LOW-COST YET COMFORTABLE HOMES BRAND AS HYBRIT CONSTRUCTION, BUILT USING A LIGHTWEIGHT GALVANIZED STEEL



### HYBRID CONSTRUCTION

Hybrid construction allows buildings to be constructed according to desired quality and price levels.

### LIGHTWEIGHT

Galvanized steel construction that can be applied rapidly thanks to the optimum production speed, low cost and efficiency

### RESISTANCE

*Fire, sound penetration, thermal permeability, and earthquakes; steel construction metrics are higher than those of comparable buildings.*

### GALVANIZED LIGHT STEEL CONSTRUCTION

#### Process

*Galvanized plates are shaped as bearing walls and flooring elements with roll form machines. During forming, holes are drilled for the pipes that would pass through the wall and floor. During forming, holes are drilled for the pipes that will pass through the wall and floor. These elements are combined and turned into wall frames.*

*Frame intervals are reinforced with these bearing elements produced according to the result obtained from static calculations.*

*These reinforced frames are combined as empty wall panels according to the plan.*

*The thickness of these metal studs used is chosen as a result of static calculations*

# ADVANTAGES

## LIGHT GAUGE STEEL FRAMING

Light gauge steel framing uses advanced design and engineering software, computer-controlled manufacturing, and high-quality materials delivered efficiently and economically.



### Benefits

The benefits of steel framing include consistent quality, code compliance, lightness, resistance to termites, pests, mold, and mildew. Steel frames are non-combustible, environmentally friendly, and durable.



### Steel Houses

Finished cold-formed steel houses are indistinguishable from traditional timber homes as the framing material does not affect the architectural style. This allows for open interior spaces and dramatic architectural elements.

## LAYERS OF BUILDING MATERIALS FOR STRENGTH AND DURABILITY RESILIENT TO FIRE AND CLIMATE CHANGE

### Medium Structures

Lightweight steel framing is also a good option for low- to medium-rise structures such as schools, shopping malls, hotels, office buildings, assisted care facilities, and low-income housing.



### Structural Elements

*Lightweight steel can be used in walls, floors, and roofs in buildings up to six stories tall. Lightweight steel alone can provide all necessary structural elements for greater building diversity and scope.*

## GALVANIZED LIGHT STEEL CONSTRUCTION

### Process

Galvanized plates are shaped as bearing walls and flooring elements with roll form machines. During forming, holes are drilled for the pipes that would pass through the wall and floor. During forming, holes are drilled for the pipes that will pass through the wall and floor.



- These elements are combined and turned into wall frames.
- Frame intervals are reinforced with these bearing elements produced according to the result obtained from static calculations.
- These reinforced frames are combined as empty wall panels according to the plan.
- The thickness of these metal studs used is chosen as a result of static calculations

## AFFORDABLE HOUSES IN EVERY CLIMATE

ADVANTAGES



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## Galvanized Steel

JISG 3302, SGCC, Z50-275 Galvanized Steel (Coil)  
Thickness: 0.14 - 4.5mm. - Width: 20-1500mm  
Zinc coating: 50 - 275 g/mm<sup>2</sup> Tensile strength:  
270 – 500 n/mm<sup>2</sup> Quality standard of galvanized  
steel coil: JIS G3002 GB/T251B Grade of  
galvanized steel coil: SGCC (DX51D+Z), SGCD  
(DX52D+Z) Elongation: 16-33% - Coil weight : 3-  
8MT Standard: JIS G3312 or EN 101402,  
commercial quality of the Steel base.



## Steel Rib-lath

JISG 3302, SGCC, Z50-275 Galvanized Steel  
Rib Lath provides the superior strength and exceptional  
rigidity while the addition of the strips of kraft paper limits  
the loss of plaster when used over open framing or when  
spray applied.



## Concrete Slab ( C25 )

The concrete layer laid on the steel deck eliminates the  
typical vibration effect of the steel, providing stability to the  
building as well as providing a suitable surface for any type  
of floor covering

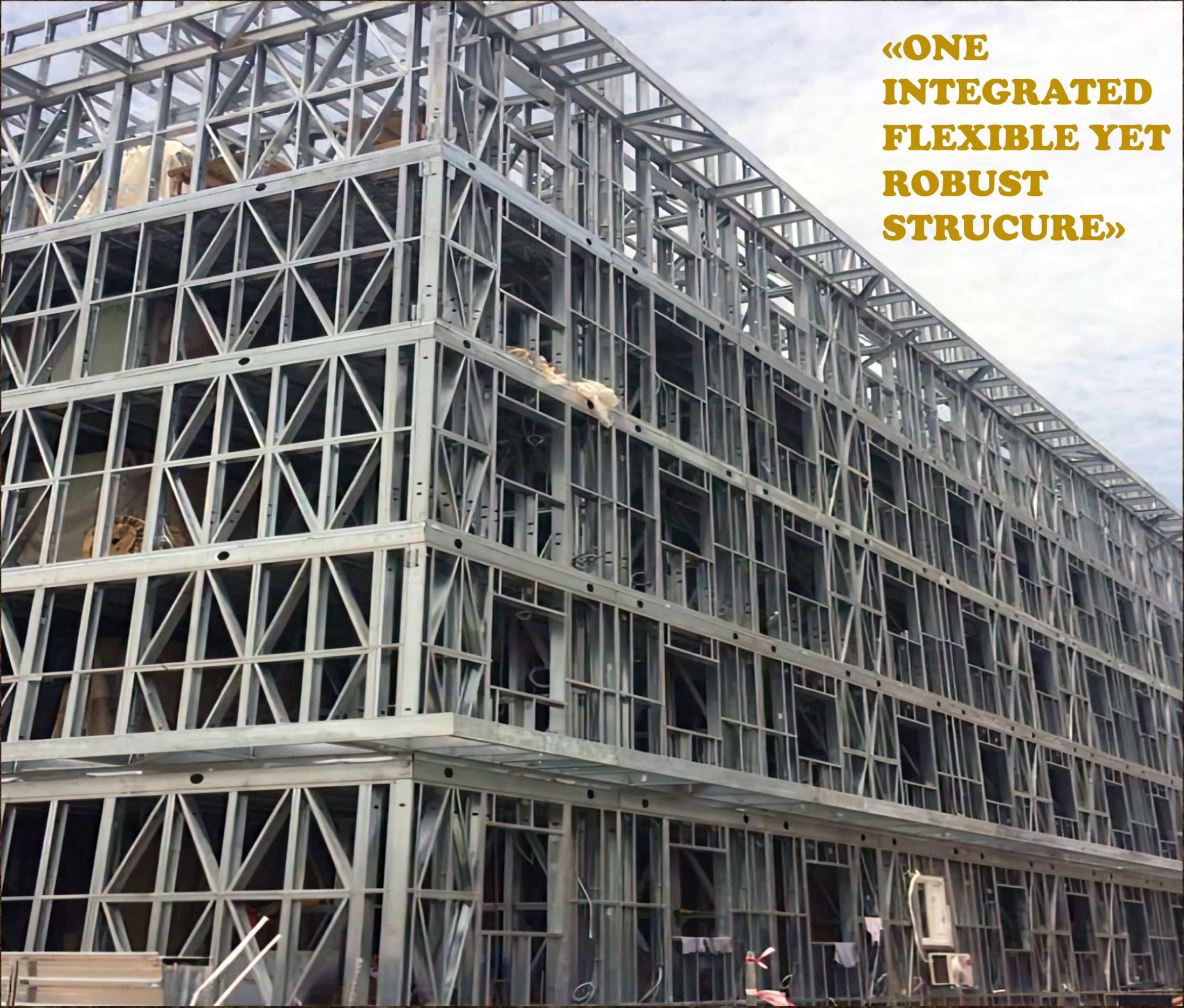


## Finishing

The materials used in Hybrid Construction technique are  
compatible with all known surface coatings. As well as plaster  
and paint can be applied on wall coverings, high quality  
surfaces can be obtained with plasterboard coating, or  
ceramic and natural stone coatings can be applied. Floors are  
finished as clean concrete surfaces and all floor covering  
materials can be applied. Unlike other steel structures,  
the fact that the floors are rigid concrete in hybrid structures  
gives superior architectural application opportunities.

3

**SPECIFICATIONS**



**«ONE  
INTEGRATED  
FLEXIBLE YET  
ROBUST  
STRUCURE»**

# Comparison of Hybrid and Concrete Construction

Weight	22,0	Tons	/100	m <sup>2</sup>	130,0	Tons	/100	m <sup>2</sup>
Construction Period	2,5	Months	/100	m <sup>2</sup>	8,0	Months	/100	m <sup>2</sup>
Heat Isolation	U	=	0,32		U	=	0,76	
Energy Consumption	1.000,0	Watt/hour	/100	m <sup>2</sup>	3.000,0	Watt/hour	/100	m <sup>2</sup>
Sound Isolation	68,0	dB			21,0	dB		
Non flammability	A1	F/120			A2	F/60		
Breathing	Very high				Medium			
Humidity	non				Medium			
Building Stability Life	100,0	Year			40,0	Year		

## MANUFACTURING TECHNOLOGY

DIN EN 10326 standards  
 S320GD+Z,+AZ Erdemir quality  
 no:1332, S350GD+Z,+AZ Erdemir  
 quality no:1335 and/or Erdemir  
 quality no: 1322 steel materials are  
 used in load bearing system.  
 Galvanized steel C ve U Profiles made  
 by Cad-Cam controlled, fully continue  
 roll-form automatic machines are  
 used  
 in manufacturing. There is no welding  
 in manufacturing.

**ASSEMBLY:** The  
 assembly of all panels,  
 trusses (Framework  
 supporting roof),  
 purlins and framework  
 between floors  
 are joined together by  
 bolts and nuts without  
 the need of welding.  
 This enables us to  
 assembly and  
 disassembly of system  
 many times.

**STATISTIC CALCULATIONS:**  
 Meets the requirements  
 of Turkish and/or  
 International standards  
 stated at item2; Sap2000,  
 CFS, STA4CAD, BRICSCAD,  
 HAYESCAD programs are  
 used to make seismic and  
 static calculations  
 depending on the  
 purpose of the building  
 and where the building is  
 located.

**ENDURANCE :**  
 Outer covering  
 is done by certified  
 (resistant to fire,  
 water and sound )  
 Riplath+plastering  
 or fibre cement  
 board, Inner  
 covering are done  
 by certified  
 (resistant to fire,  
 water and sound )  
 gypsum board.

TS ENV1998-1: (Euro code 8) Design of buildings that have high earthquake resistance - Part 1 - General rules, seismic causes and rules for buildings

TS EN 10326: Hot dip galvanized steel plates and band -technical drawing rules

TS EN 10327: Hot dip galvanized and cold formed steel plates and band -technical drawing rules

## STANDARDS

TS 11372: Steel buildings - Made by light and cold formed profiles  
-Calculation rules

TS 648: Calculation and building rules of steel buildings

TS 498: Calculation values for dimensioning of the member of the buildings

TS ENV 1993-1-2: (Euro code 3) Design of steel building Section  
1-2: General rules - Design criteria against fire

TS 4561: Calculation rules for steel buildings according to plastic theory

TS ENV 1090-1: Steel building regulations - Part 1 - General rules

TS ENV 1090-3: Steel Building regulations - Part 3 - Additional rules for soft steel

TS ENV1998-1: (Euro code 8) Design of buildings that have high earthquake resistance - Part 1 - General rules, seismic causes and rules for buildings

Test No.	Stud Size (mm)	Stud Spacing (mm)	Insulation		Gypsum Board		Fire Endurance (min.)
			Type	Thickness (mm)	Type	Thickness (mm)	
F-07	31 x 92	610	None	-	Type X	12,7	65
F-09	31 x 92	610	Glass Fibre	90	Type X	12,7	65
F-10	31 x 92	610	Mineral Fibre (584 mm W.)	90	Type X	12,7	60
F-10B	31 x 92	610	Mineral Fibre (615 mm W.)	90	Type X	12,7	100
F11	31 x 92	610	Cellulose (Sprayed)	90	Type X	12,7	62

Test No	Joist			Sub-Floor		Insulation		Fire Endurance Min. )
	Depth ( mm )	Thickness (mm)	Spacing (mm)	Type	Thickness (mm)	Type	Thickness (mm)	
FF27	203	1,22	406	Gypsum Board	15,9	-		60

TS EN 10326: Hot dip galvanized steel plates and band -technical drawing rules

TS EN 10327: Hot dip galvanized and cold formed steel plates and band -technical drawing rules

TS EN 10162: Steel profiles Cold rolled - Size and cross- sectional tolerances

TS EN 20898: Mechanical specifications of fastening devices

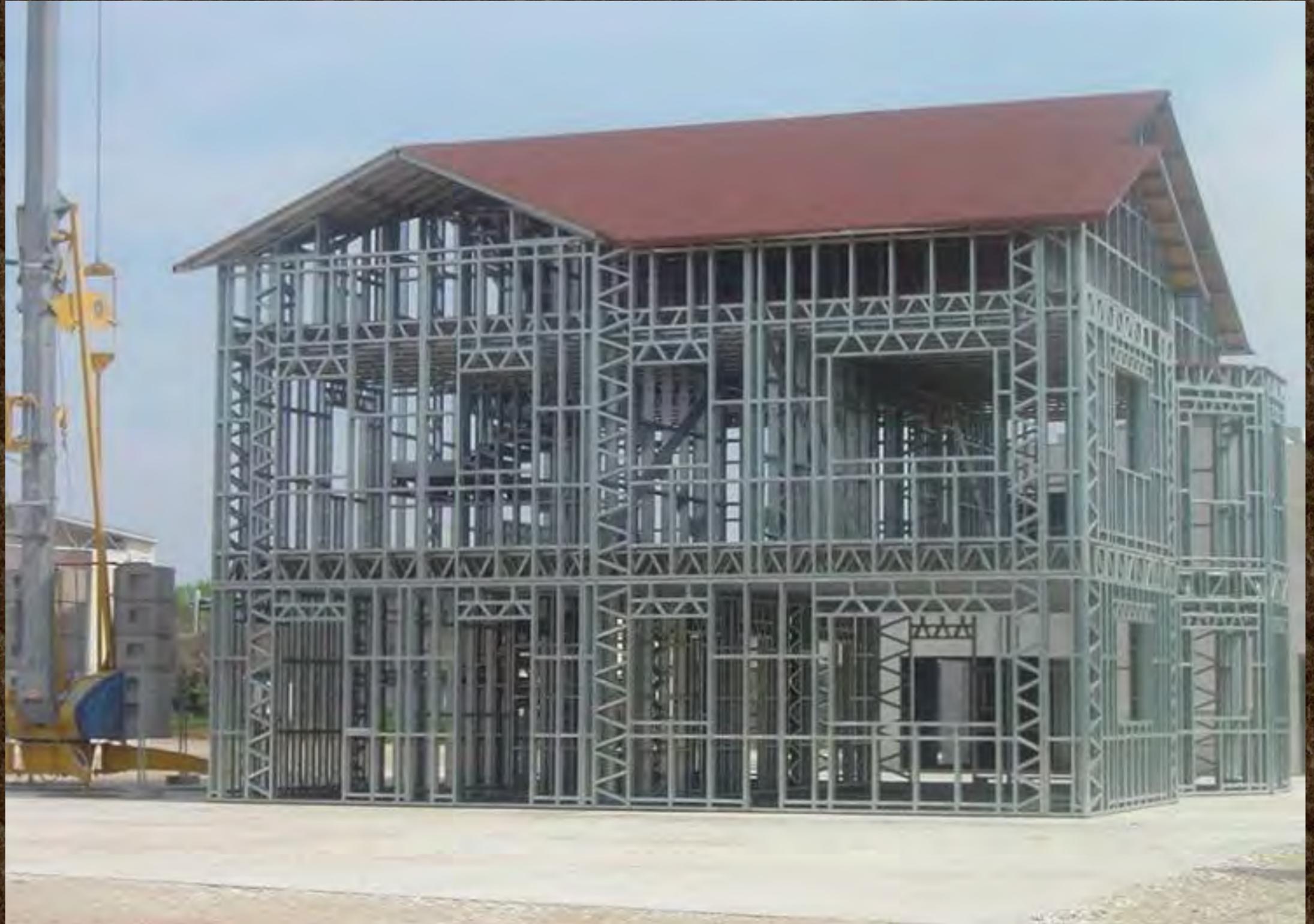
TS 3611EN 20898 - 2: Mechanical specifications of fastening devices Section 2 - load standard screw

## OTHERS

TS6793, TS7046, TS825, TS13162, EN12088, DIN4109, TS2381-2 EN ISO 717-1, TS2381-2 EN ISO 717-2, EN29052-1, TS 7316 EN1 3163, TS EN 13500, DIN 4102, TS1263, DIN1365-2, TS EN 13501-1, TS EN520, TS1475, TS EN 12369-1 TS EN 300, TS EN 12369-1



# PRECISION



Since steel building materials are fabricated, thousands of residences are built with faultless dimensions

## TECNICAL DATA 1 FROM CANADIAN SHEET STEEL BUILDING INSTITUTE LIGHTWEIGHT STEEL FRAMING DESIGN GUIDE

STC and Fire Performance Ratings for LSF Wall and Floor Assemblies

### Fire Endurance Periods

#### Loadbearing Walls

- 1 layer gypsum board • Steel studs
- Insulation
- Resilient channels (R.C.)

1 layer gypsum board

#### Loadbearing Walls

- 50 mm concrete
- 1 layer sub-floor sheathing
- Steel floor joists
- Resilient channels (R.C.) at 406 mm o.c. • 1 layer 12.0 mm Type X gypsum board

### Acoustic Tests

#### Loadbearing Walls

- 1 layer gypsum board
- Steel studs
- Insulation
- Resilient channels (R.C.) • 1 layer gypsum board

#### 1. Floors

- 50mm concrete • 1 layer OSB
- Steel floor joists
- Resilient channels (R.C.) at 610 mm o.c. • 1 layer 12.7 mm Type X gypsum board

Test No	Stud		R.C Spacing (mm)	Insulation		STC Rating
	Thickness (mm)	Spacing (mm)		Type	Thickness (mm)	
			41 X 92 Loadbearing Studs			
TLA-105	0,91	406	406	Glass Fibre (G1)	90	Type X 12,7 45
TL-022	0,91	406	610	Glass Fibre (G1)	90	Type X 12,7 48
TLA-095	0,91	406	610	Glass Fibre (G1)	90	Type X 12,7 47
TLA-025	0,91	406	610	Glass Fibre (G1)	90	Type X 15,9 49
TLA-089	0,91	406	610	Glass Fibre (G1)	90	Type X 15,9 49
TL-354	1,22	406	610	Glass Fibre (G1)	90	Type X 15,9 50
TL-365	1,52	406	610	Glass Fibre (G1)	90	Type X 15,9 49
			41 X 152 Loadbearing Studs			
TL-363	1,22	406	610	Glass Fibre (G1)	90	Type X 15,9 50

Test No	Joist		Sub-Floor		Insulation		STC Rating	IIC Rating
	Depth (mm)	Thickness (mm)	Spacing (mm)	Type	Thickness (mm)	Type		
TLF-079/0,39	203	1,22	406	Concrete	50	None	-	55 24
TLF-079/0,40	203	1,22	406	Concrete	50	None	-	60 28



**FLOOR COVER**  
Vynil, Wood, Ceramic Exct.  
Concrete Screedindg  
Metal deck



**INSIDE VIEW**  
Gypsum board or  
Riplath + Plaster

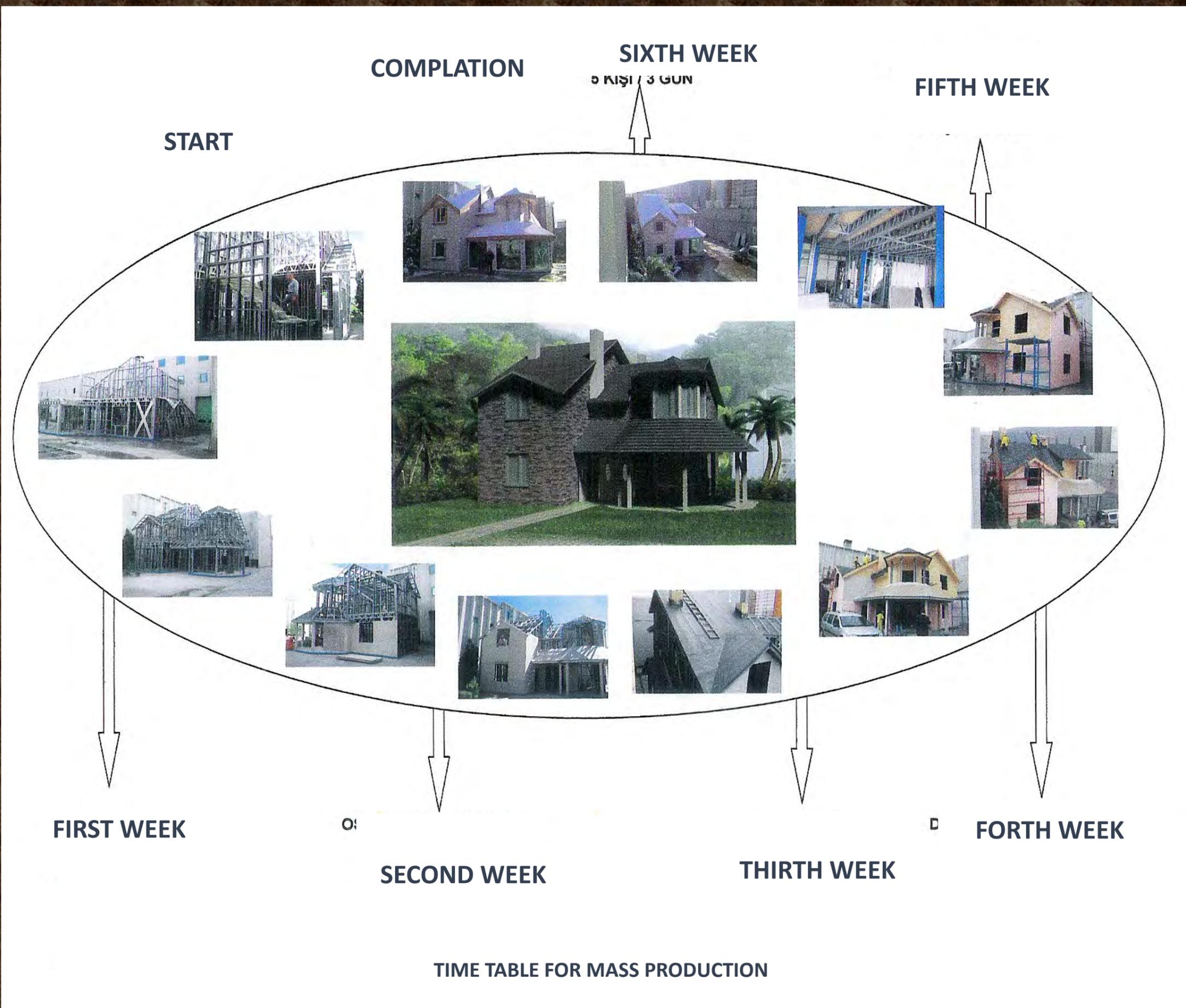


**CEILING FROM UNDERSIDE**  
Metal deck  
Gap (for electrical & plumbing)  
Gypsum board ceiling



**OUTSIDE VIEW**  
Riplath + Plaster

# SPECIFICATIONS



**"next-generation"** adjective [ before noun ]

used to describe a system that has been developed using the latest technology and will probably replace an existing one;

## **HYBRID CONSTRUCTION**



## NOTES FROM CANADIAN SHEET STEEL BUILDING INSTITUTE

### 1. Low Cost

LSF construction has historically been less expensive than the competing forms of construction. Specific cost comparisons are not provided here due to the variability in construction costs that occur in different geographic regions, and due to the market demand.

### 2. Mass Produced

The basic building blocks of LSF are cold formed channels manufactured from zinc or 55% aluminum-zinc alloy coated sheet steel. The coated sheet steel is purchased by the manufacturer in the form of a coil, which is subsequently slit into various widths as required by the geometry of the final products. The slit coil of flat steel sheet is fed into one end of the roll forming mill and the cold formed channel member is cut to length as it emerges from the other end. (On some mills the sheet steel is cut to length before it enters the roll forming mill.)

Unlike structural steel shapes that are hot rolled into shape, manufacturing of lightweight steel framing is carried out at ambient temperature, hence the term cold formed. A single typical mill in one working shift can produce 20 km of straight, highly uniform, accurate product. Because the manufacturing process is fast, there is no need to carry manufactured product in stock. LSF can therefore be custom manufactured to fit specific job requirements including precise cut-off lengths and web cut-out locations.

Panelization of LSF, done off-site, gives the advantages of mass production (speed and quality control) to the fabrication of complete assemblies

### 3. Energy Efficient

Energy efficient buildings are well insulated and well sealed to retard air and moisture leakage. Insulating an LSF building is relatively easy because the space between the studs (or roof rafters/ joists) can be filled with batt insulation. Typically, rigid insulation is added on the outside face of stud walls to further enhance the overall R value and to control thermal bridging and the dew point location.

### 4. Reliable and Durable

LSF is a reliable product with no shrinking, warping, swelling, rotting, creep, nail-popping or termite problems. Durability of LSF products is assured with corrosion resistant metallic coatings in combination with well designed and built rain screens, air barriers and vapor retarders.

### 5. Non-Combustible and Fire Resistant

LSF meets all the requirements for non-combustible construction required of certain building components by the provisions of the National Building Code of Canada and the various provincial building codes.

A fire-resistance rating is based on the time taken in a standard fire test for an assembly to fail the established criteria. The National Building Code of Canada requires buildings with certain occupancies and size to have some of the assemblies fire rated. Generally, these assemblies require the protection of gypsum drywall to achieve the necessary rating.



## 6. Resistant to the Transmission of Sound

The National Building Code of Canada requires that separations between dwelling units be designed for a sound transmission class (STC) rating of 50.

For separations between a dwelling unit and an elevator shaft or a refuse chute, an STC rating of 55 is required. For increased occupant privacy, an STC rating from 55 to 60 may be specified. The necessary STC ratings can be achieved with LSF by using combinations of resilient channels, layers of drywall, insulation, or staggered studs.

## 7. Pre-Punched for Services

LSF is manufactured with regularly spaced holes in the webs of studs, joists and rafters to serve as raceways for electrical and plumbing lines. Electricians and plumbers do not have to drill or cut to install their work, minimizing construction time, cost and the possibility of inadvertent damage to the LSF members. Plastic grommets are available to fit the standard stud hole sizes.

## 8. Quickly and Easily Erected

Construction projects do not bring a return on the owner's investment until the building is finished and occupied. With LSF buildings the construction process can be accelerated.

Mass production at the manufacturing level assures a ready supply of product. Erection can proceed quickly even in temperatures below freezing allowing the interior trades to begin their work sooner. Contractors can choose either panelized or stick-built construction - whichever is the more expedient for the particular project.

## 9. Structurally Efficient

The high strength-to-weight ratio of LSF translates into significant construction savings: longer clear spans are possible; member spacing can be increased to minimize the number of pieces and the number of connections; axial loadbearing studs, joists and rafters can combine into a complete structural system up to six storeys high

LSF can support significant dead load without the problems of creep inherent in many other construction materials.

For example, concrete floor slabs on LSF joists are a logical marriage of materials. The characteristics of steel make it a suitable back-up for brittle masonry veneers.

In walls built entirely of unreinforced masonry, flexural cracking represents ultimate structural failure and means the end of the useful life of the wall. In LSF construction, flexural cracking of the veneer represents a serviceability limit state rather than ultimate structure failure.

## 10. Architecturally Attractive and Flexible

With LSF the Designer has extensive flexibility in the choice of finishes to achieve the desired aesthetics for the project.

Some of the exterior wall finishes commonly combined with LSF are: Prefinished metal panels (single skin panels, combined panels, sandwich panels); Portland cement plaster (stucco) on metal lath; EIFS, brick veneer; stone, ceramic tile, or concrete veneer; prefinished plywood; from large flat surfaces to small curved or angular projections and recesses, LSF framing can accommodate most building shapes and detail requirements.

## 11. Adaptability

LSF integrates successfully with many different structural systems. Axial loadbearing studs supporting steel or wood trusses, open web steel joists, or precast slabs; floor joists bearing on masonry or concrete are common examples.

## 12. Knowledge

LSF is part of the family of cold formed steel products whose structural performance has been extensively researched over the past 50 years. The necessary tools for structural design are contained in CSA3-S136 North American Specification for the Design of Cold Formed Steel Structural Members, a referenced document in the National Building Code of Canada.

## CANADIAN SHEET STEEL BUILDING INSTITUTE

### Lightweight steel-framing Details

The width of flexural cracks can be controlled through the selection of an appropriate deflection criterion for the LSF back-up member. Substantial additional load can be carried before the wall reaches ultimate structural failure. In addition, when the load is removed the flexural cracks tend to close and the wall returns to its unloaded configuration. Reinforced concrete and reinforced masonry design standards also recognize cracking and the need to control crack widths. This cracked design approach to masonry veneer steel stud is formally recognized in CSA S304.1, Masonry Design for Buildings (Limit Stats Design) where structural rules are provided for both the strength and serviceability limit states for the system.

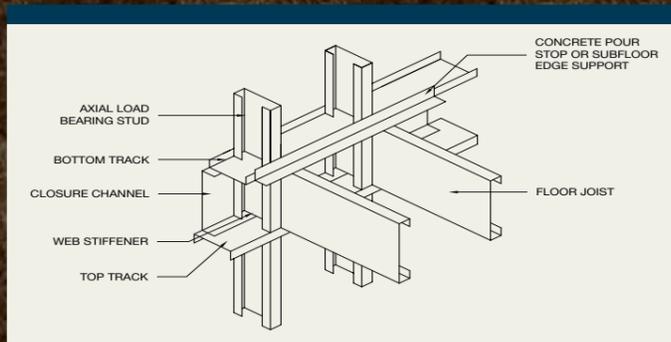


Figure 4: Typical platform framing detail.

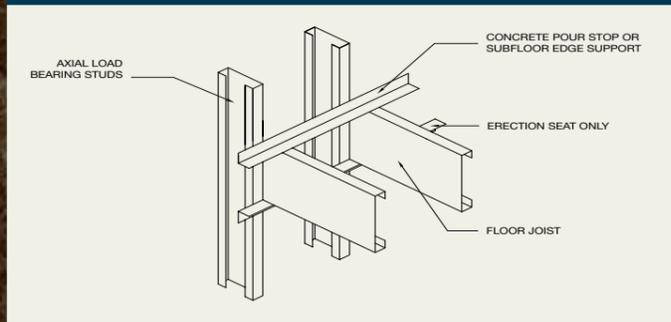
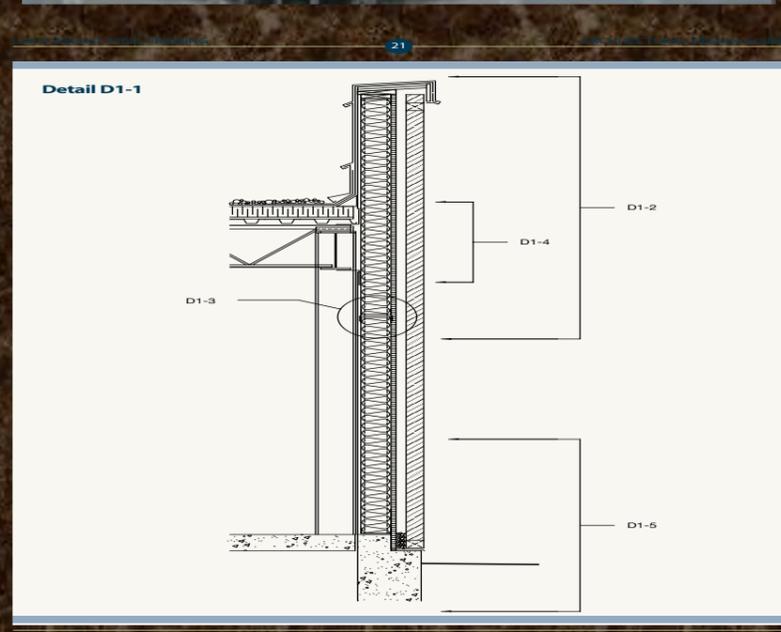
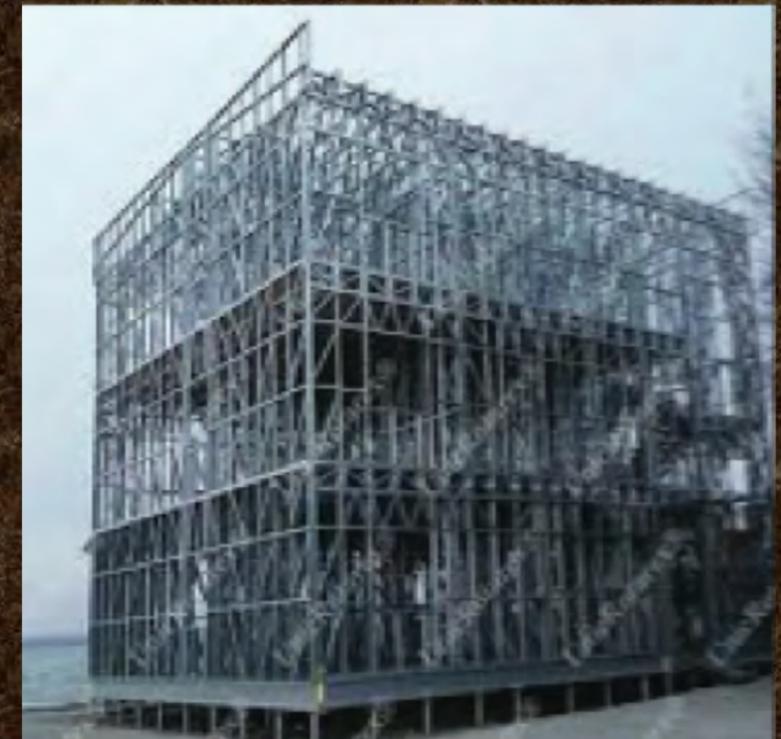
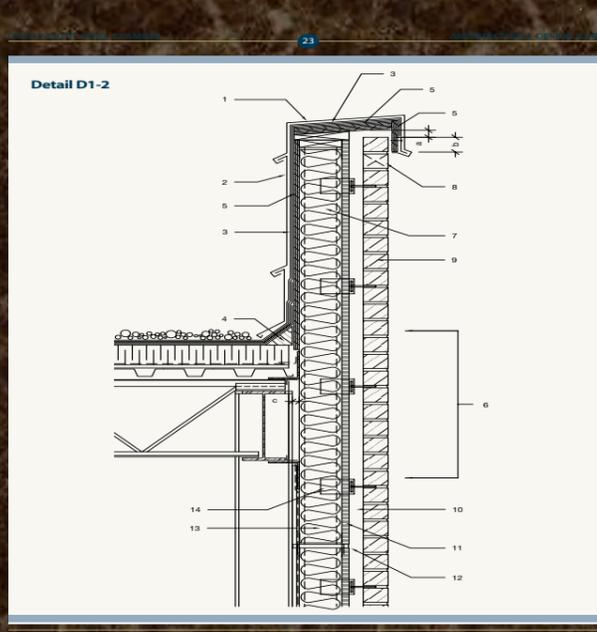
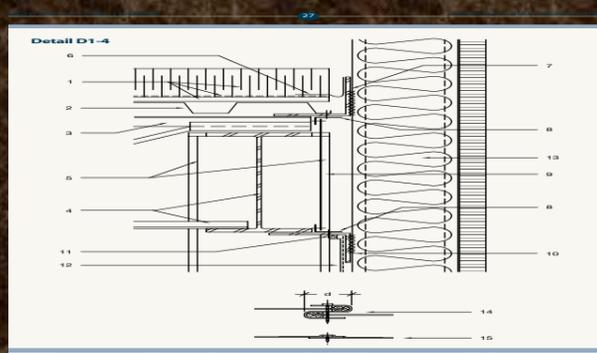
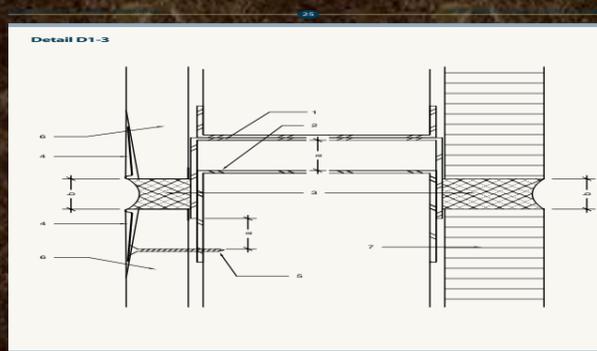
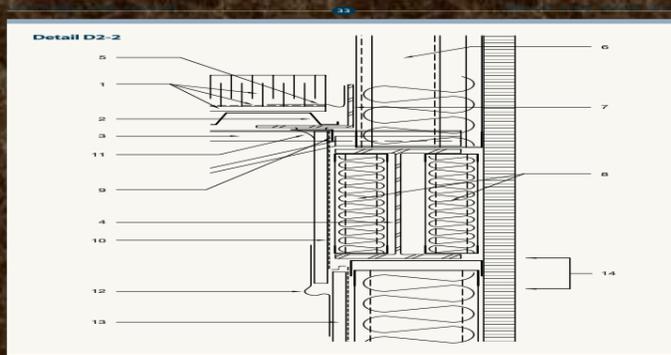
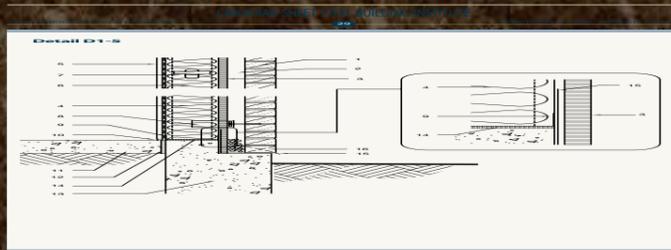


Figure 5a: Typical balloon framing detail.



# MORE INFORMATIONS



**Eurocodes**  
Background and Applications

Design of **Steel Buildings**  
with worked examples

**Cold-formed Steel Design**

16-17 October 2014  
Brussels, Belgium

**EUROCODE 3: Design of Steel Structures**  
**PART 1-3 – Design of Cold-formed Steel Structures**

Organised and supported by

European Commission  
DG Enterprise and Industry  
Joint Research Centre

European Convention for Constructional Steelwork  
European Committee for Standardization  
CEN/TC250/SC3

Professor D.eng. Dan DUBINA  
Politehnica University Timisoara  
Romania



ANSI S100-16



**AISI STANDARD**

**North American Specification  
for the Design of Cold-Formed  
Steel Structural Members**

2016 Edition

Approved in Canada by CSA Group  
Endorsed in Mexico by CANACERO

3

4

PRODUCTION



# PRODUCTION AREA

Our current production facility has an annual capacity of 20.000 units and has expansion possibilities.



## Residential

Hybrid construction technology provides an excellent quality building structure. The finishing materials to be used on this structure determine the character of the buildings; "Affordable, Contemporary or Luxury".



Detached Houses



Affordable Houses



Office Buildings

## Professional

The different application names exemplified below describe the broad use of Hybrid Construction technology. It offers unique opportunities especially for projects where time and budget are important.



Health Centers



Industrial Buildings



Educational Buildings

## Hybrid Construction represents our innovative perspective.

In this dynamic world, Lamar Yapı A.Ş. have strong tools and methods for improving business efficiency. High competition in the global market dictates the need to find ways to be agile, efficient and competitive. For this purpose, we use advanced achievements and Technologies in business execution and management. New management methods, including a process driven approach, is our aim.

The dynamic and competitive business world of the twenty-first century creates new targets for Lamar Yapı AŞ. We know the new opportunities need to be evaluated and used for sustainable success. Although the existing business tasks are extremely complex, our modern management concepts and technologies make us strong.

### Production Capacity.

In situ production, materials can be provided for >20,000 houses per year at per production plan



We provide services in many parts of the world by using local human resources through our training plan.

Our goal is to integrate this dynamic with production and expand local production facilities.

**Lamar Yapı A.Ş.'s hybrid construction technology is the right choice for housing needs in a large geography of the world.**

# APPLICATION



## FOUNDATIONS

The method is same as the ordinary method. The foundation can be classical concrete foundation or raft foundation. However, in the Hybrid Construction method, it is not necessary to leave iron bars stemming out of the concrete floor.

The structure of the building is installed on the foundation by anchoring bolts in a very short period.



## ERECTION

Base concrete is poured at least one step higher than the pavement code which will be done around the building. Wall panels are prepared in advance. Each location is determined on the concrete. The panels are fixed to the ground and to each other by doing the screwing method. This assembly forms the walls. The upper parts of the walls are connected by beams (horizontally). On top of these beams, the beams of the upper floor's base are fixed. The same method is applied for each floor.

## WALLS

### EXTERNAL OPTIONS

- . Fibro cement board is covered before heat insulation and paint are applied to it
- . Metal studs are covered with riplath and plastered
- . Ripath and plaster are applied to the external facade



### INTERNAL OPTIONS

- . Glass wool is filled between metal studs
- . Metals studs are covered with gypsum board (sheetrock)
- . Metal studs are covered with riplath and plastered



### EXTRA INSULATIONS

Walls are fillied with foam concrete for extra heat,sound and fire insulations

## FLOORS

Carrier beams with special sections are produced for the floors. According to the drawings, they are placed on the walls. Corrugated base sheets are screwed into these beams. L-shaped profiles with wall edge closures are placed on to the base plates.

**Generally, the floors of the rooms are covered in two ways:**

### 1st Method

- One layer of sound-proof glass wool
- Two layers of fibro cement boards (10mm + 10mm thickness)
- Finishing cover (such as Vinyl, parquet, ceramic)

### 2nd Method

- Screeding on metal lath
- Finishing cover (such as Vinyl, parquet, ceramic)
- In this method, the floor heating pipes can be placed inside the concrete.



## ROOF

The roof carrier frame can be designed as a flat roof or a classic rain slope roof.

Bearing plywood panels and bitumen membrane are placed for waterproofing.

It is used painted aluminium panel or a special roof sheets on the upper part of roof (Onduline panels)



## APPLICATION

**SOLID STATE LUXURY...**  
**Our technology is usable for any design**



### BUILDING

All materials to be used at brought to the site

### TIMING

The time between the beginning and completion of the construction of one villa takes 36 days

### SKILLS

Expert staff is used for every job. After doing his own work in the first building, he goes to the second building. In this way, the production is completed in a very short time by experts.

### FAST

The average manufacturing time of a building is shown in the picture



## TECHNOLOGY

*1322 steel materials are used in the load bearing system; roll-form machines are used in manufacturing; no welding is necessary*



## ASSEMBLY

All panels, trusses, purlins, and frames are joined by nuts and bolts; this enables assembly and disassembly of the building



## STANDARDS

Meets or exceeds Turkish and international building standards including Sap2000, CFS, STA4CAD, BRICSCAD, and HAYESCAD



## DURABILITY

*Materials are resistant to fire, water, and sound; exterior made from riplath and plaster on fibrocement board; internals made from gypsum board*