

FRAMELESS STEEL

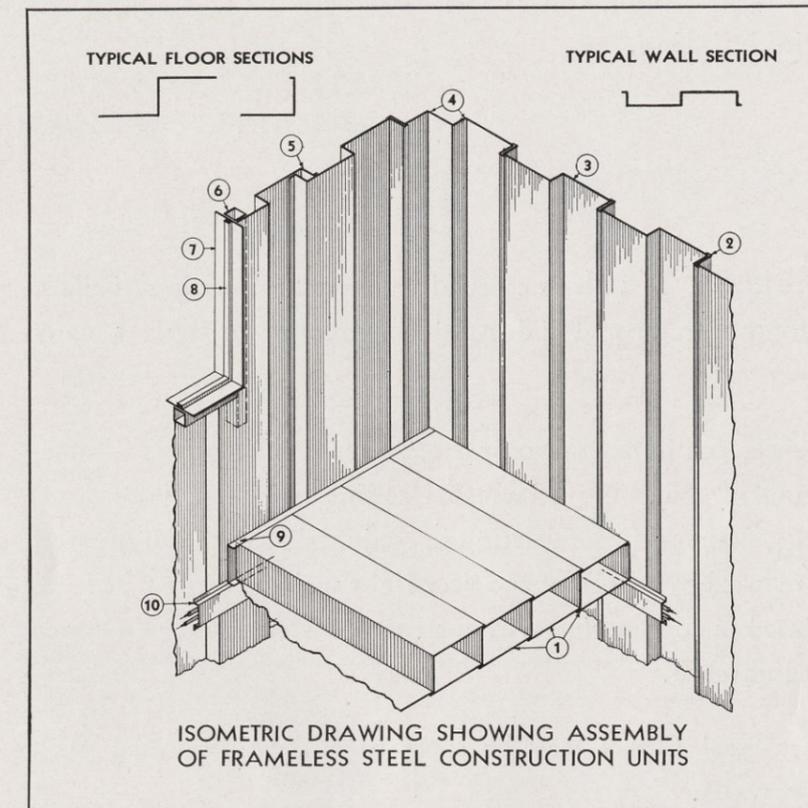
INSULATED
STEEL CONSTRUCTION COMPANY
3000 WOODHILL ROAD
CLEVELAND • OHIO

Seeing Is Believing

It was a strange experience to visit the first frameless sheet metal house at Solon (near Cleveland, Ohio) during its later construction stages and to find floors of twenty gauge metal that could be jumped upon without vibration; sheet metal walls and partitions only two inches thick to which ordinary insulating boards and other common building materials could be firmly nailed at any point without special provision of nailing blocks; walls, incidentally, that were true and plumb and rigid when pounded; and a complete assembly that seemed to go together in a perfectly orderly and normal way. Undoubtedly, the formal opening of this house, which took place in October, caused many visiting architects to revise pre-formed opinions, and to view this first experiment in all-sheet metal construction as the possible forerunner of a practical and low cost method of building dwellings. Significant are the moderate cost figures and the adaptability of the structural material to any style.

Editorial from
American Architect
November, 1932

PRODUCT



1. Floor Sections.
2. Shop Assembly Connection.
3. Wall Section.
4. Wall Section bent for corner.
5. Field Assembly Connection showing method of adjustment.
6. Steel Buck.
7. Steel Trim.
8. Steel Stop.
9. Floor Unit End Channel.
10. Floor Bearing and Electrical Conduit Channel.

FRAMELESS STEEL is a new building material, producing in itself a completely enclosed metal structural shell or "chassis," for buildings such as residences and service stations, and furnishing light-weight curtain walls, floor members and roof decking for larger structures.

Floor and wall sections formed from light gage steel sheets are assembled into large, strong and rigid erection units in the shop. In the field these units are rapidly and substantially fastened together with sheet metal screws.

Window frames, door frames and electric conduit are installed in the wall units complete before delivery to the job.

The "chassis" replaces in conventional wood frame construction, joists, studs, rafters, bracing, sheathing, window and door frames and interior

trim. It is adaptable to all standard interior and exterior finishes, including stucco, brick veneer and wood siding. It is the "economical" and "efficient" application of steel in building.

USES

F RAMELESS STEEL is especially adapted for use in residence, multi-family house, and commercial and industrial construction where its many qualities are desired.

In residences and in most two or three-story buildings it is "frameless." In higher buildings or buildings of unusual ceiling height or floor span, it is used for curtain walls, floors and roof decking in conjunction with a light steel frame. Dead loads are reduced by reason of the very light weight of the Frameless Steel Structure. When used in conjunction with a structural steel frame, the frame may be correspondingly lightened.

Frameless Steel Floors may be specified and readily used with wood frame or masonry walls.

QUALITIES

F RAMELESS STEEL has the following predominant qualities:

It is unusually strong and rigid, yet light in weight.

Structures built with these materials are storm and lightning safe.

It is vermin-proof and is not subject to the attack of termites.

When used with standard insulating materials, Frameless Steel makes fire safe walls and floors of very high insulation value (both heat and sound.)

The time of field erection is materially reduced by the use of these materials.

The finished walls and floors produced with Frameless Steel are thin, (See Architectural Data) giving increased interior areas for the same outside dimensions (as compared with standard construction).

The materials are competitive in price with other building materials having similar advantages.

ENGINEERING DATA

CELLULAR FLOOR

TABLE OF SAFE LOADS AND DEFLECTIONS

CAPACITY OF STANDARD FLOOR

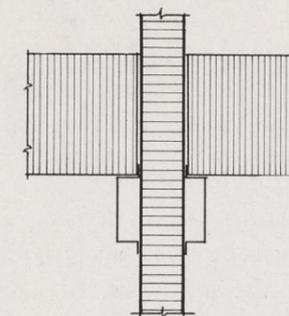
Working Stress 12,000 lb. sq. in.

Gage	No. 20		No. 19		No. 18		No. 16	
	4.6		5.3		6.1		7.6	
Weight per Square Foot, Lbs.								
Span	Safe Load	Def. Lim.	Safe Load	Def. Lim.	Safe Load	Def. Lim.	Safe Load	Def. Lim.
	LBS. PER SQ. FT.	1/360 Span LBS. PER SQ. FT.	LBS. PER SQ. FT.	1/360 Span LBS. PER SQ. FT.	LBS. PER SQ. FT.	1/360 Span LBS. PER SQ. FT.	LBS. PER SQ. FT.	1/360 Span LBS. PER SQ. FT.
8'	166	166	250	250	330	330	...	...
10'	107	107	160	160	222	222	...	...
12'	74	74	111	111	147	147	216	216
14'	54	52	81	78	108	103	159	152
16'	42	36	62	52	83	69	122	102
18'	...	...	49	37	65	48	96	72
20'	...	...	...	...	...	...	78	51
22'	...	...	...	...	...	...	64	38

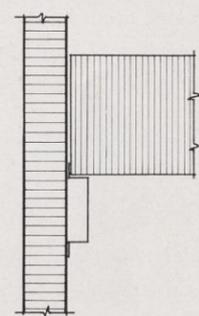
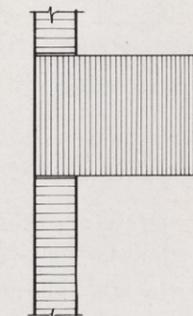
NOTE: Specially formed floor units of higher load bearing capacity will be furnished on special order.
Added strength of walls may be secured by telescoping the channel sections, thereby forming a series of columns. (See Isometric Drawing.)

STRENGTH OF STANDARD WALL NO. 20-GAGE

UNSUPPORTED HEIGHT	CAPACITY PER LIN. FT.	
	CASE "A"	CASE "B"
7'-0"	4650 lbs.	1770 lbs.
8'-0"	4240	1630
9'-0"	3860	1470
10'-0"	3520	1340
11'-0"	3200	1220
12'-0"	2900	1100
13'-0"	2660	1010
14'-0"	2420	920



CASE "A"



CASE "B"

ARCHITECTURAL DATA

FFRAMELESS STEEL is adaptable to all architectural styles but finds its most efficient application in the so-called "modern sundeck" or "functional" types.

Frameless Steel is entirely flexible as to strength and dimension.

No special steel drawings are required but architectural drawings should show steel dimensions (walls 2" thick—floors 5½" deep as shown by Plate A) and should be made to scale (½" equals 1 foot.)

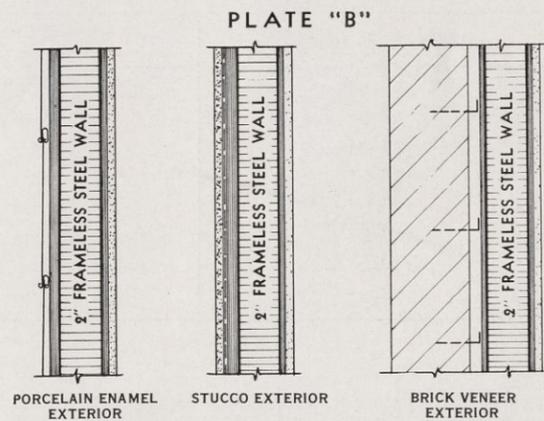
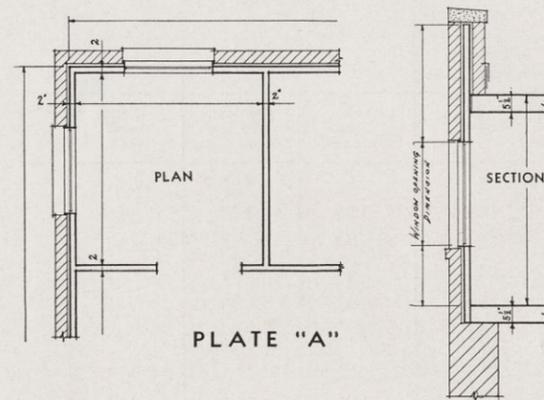
Finishing materials are attached in the usual way by the use of nails, screws and other fastenings (see Plate B.) "Helyx" nails are used to attach other materials to the steel "chassis" and are driven into the light steel with the same facility that ordinary nails are driven into wood.

SPECIFICATIONS

When indicated in the drawings, the floors, walls and roof shall be of "Frameless Steel" construction, as manufactured by Insulated Steel Construction Company, Cleveland, Ohio, of such gage and spacing of web, as to develop sufficient rigidity and strength to carry a uniformly distributed load of.....pounds per square foot, without exceeding a fibre stress of 12,000 pounds per square inch.

All sections and units to be protected by recommended paint or other rust resisting material.

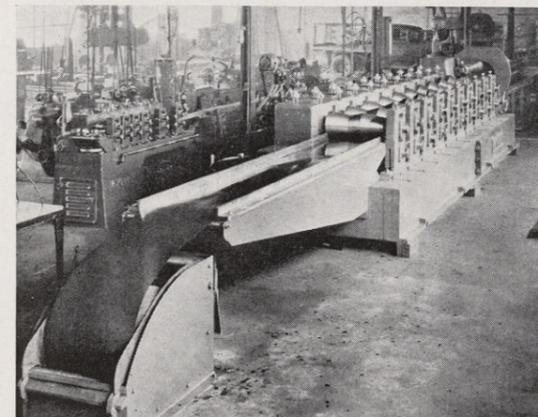
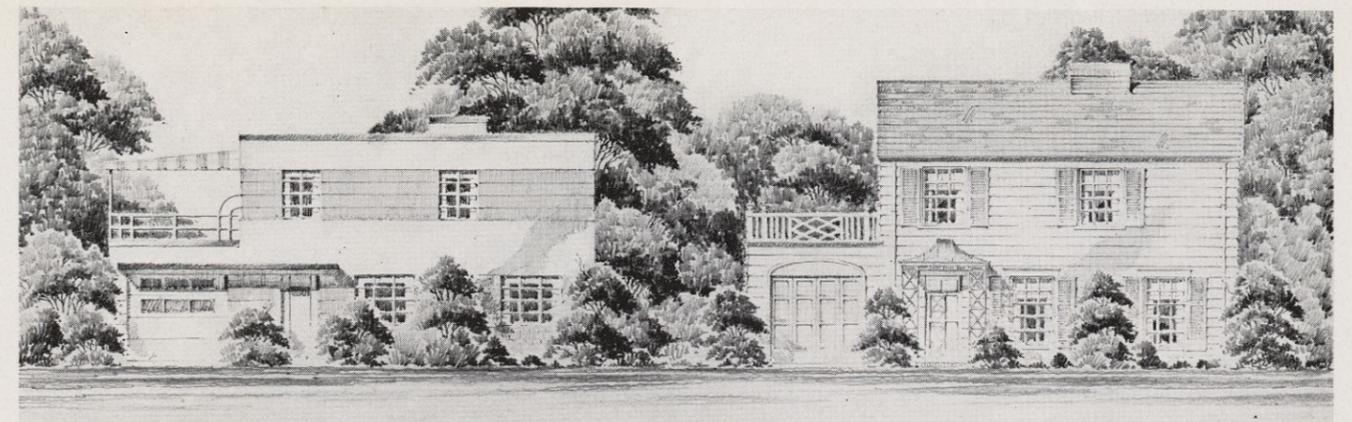
Wall, floor and roof assembly units to be securely fastened together with sheet metal screws of sufficient strength and of correct type.



ADAPTATION OF EXTERIOR AND INTERIOR FINISHES

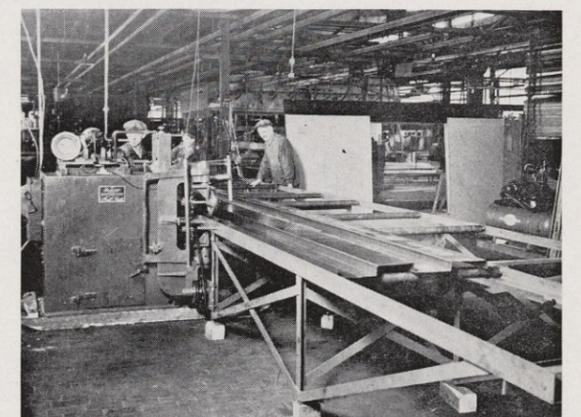
Extra webs shall be provided under bearing partitions running parallel with webs.

Drawings showing method of applying interior and exterior finish are to be submitted by the manufacturer and approved by the architect and engineer.

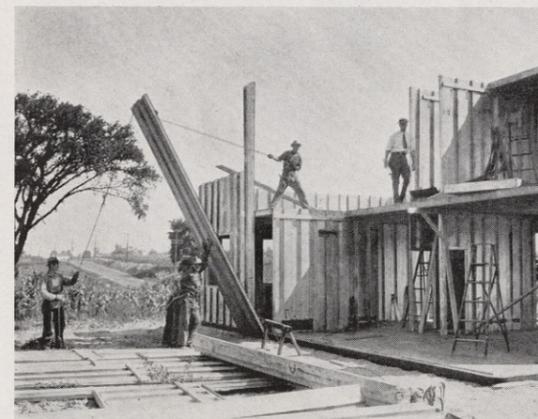


Design Variations for Typical Frameless Steel Houses.

Rolling Machine for forming various sections.

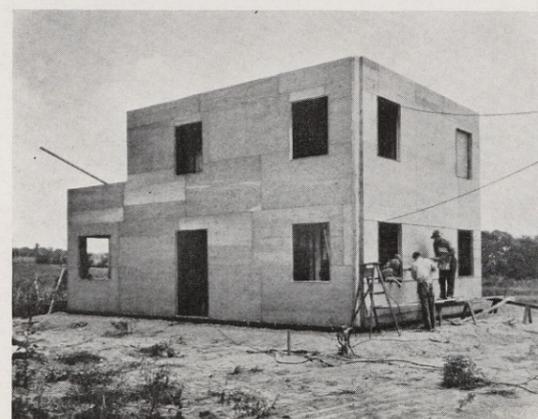
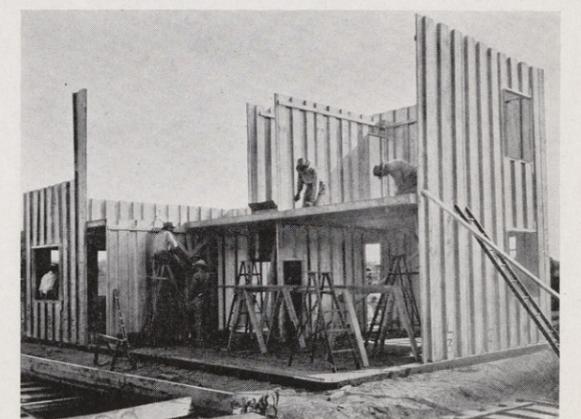


Welding Machine for assembling erection units.



Wall Unit Erection.

Floor Unit (19' 6" Span) in place. (See cover.)



Sheathing which forms protective covering for steel.

Armco-Ferro House—"A Century of Progress"—Frameless Steel "Chassis"—Porcelain Enamel Exterior Finish.



GENERAL INFORMATION

FFRAMELESS STEEL is supplied directly by the Company or through its local dealers, who furnish and erect the steel "chassis" as sub-contractors, in the same manner that structural steel is furnished and erected.

The Company and its dealers invite the further inquiry of architects and general contractors for estimates and specification details.

Frameless Steel is erected and finishing materials applied by regular building trades labor, without special training.

When used with standard insulating materials, recommended by the Company, walls and floors of extremely high insulation value are secured, making a very desirable form of construction where air conditioning is to be used.

I N S U L A T E D
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