Commerce a.s.
Semenárska 6, 851 10 Bratislava, Slovak republic

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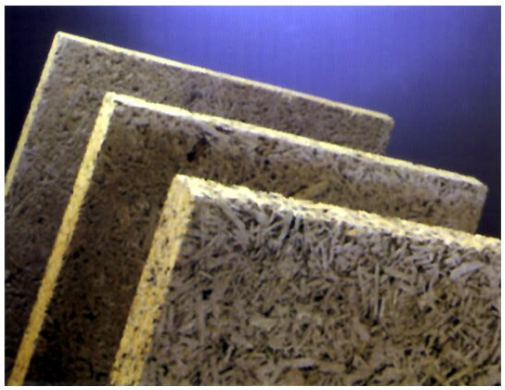
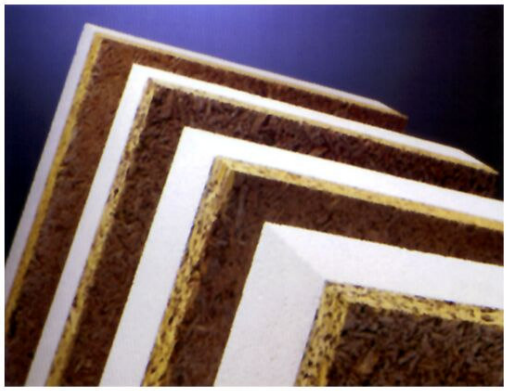
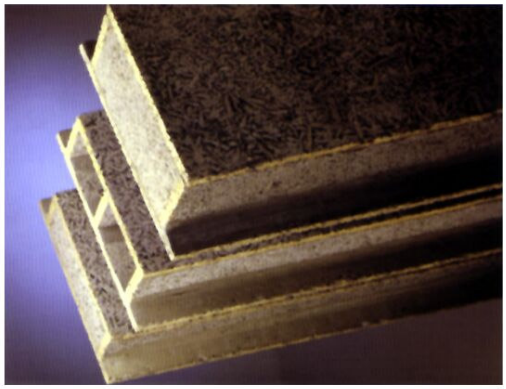


Tatralox - WS



Tatralox WS - EPS



Tatralox - Roof Elements

A. BRIEF SUMMARY – SOME BASIC INFORMATION

BRIEF CHARACTERISTIC OF THE PREPARED CONSTRUCTION SUPPORTING SYSTEM

The basic elements in production of ”the construction supporting system - TATRALOX (CSS -T)” are boards made of wood chips (cuttings) and cement (CCB) with or without heat insulation and some additional connection and brace elements. **CSS-T** will be principially used in realization process of construction works as lost boarding (forms) suitable for sheathing, partition, ceiling and staircase constructions with heat-insulating function, braced according to statistic calculations and prepared for being gradually poured with concrete mixture especially appropriate for construction in seismic territories.

CHARACTERISTICS RELATED TO THE PRODUCED ASSORTMENT

TATRALOX - a board made of wood chips and cement (hereafter we will use the abbreviation CCB) is a universal construction material applicable for all kinds of constructions. Its application in Europe has tradition longer than 40-years although its alternative ”Heraklit” made on wood-wool basis is much older and better known.

Its parameters have been stabilized mainly thanks to preferable usage of the similar material in Scandinavia and due to special requirements for heat insulation of houses in difficult weather conditions and short construction period. CCB are made on basis of two basic components. Approximately 90% of the volume is made of wood substance-chips from coniferous species (spruce, fir) and the remaining part of the volume is connection - cement binder, which forms the matrix of the cement composite and provides the firmness of the board. The technology of CCB boards production guarantees sufficient firmness chiefly in the following parameters:

- Tensile strenght in bending, volume constancy in wet surroundings, resistance against pests and rot as well as fire resistance. It has special heat and sound insulating properties and at the same time it is extremely easy so that a single worker can manage to build it into the construction object. It can be mechanically tooled, cut, drilled, willed, while its surface is specially accurate, however rough enough for application of all kinds of plaster mixture. The surface of the boards is spongy enough for optimal connection with concrete core and glues on cement basis.

To transport material for a higher standard family house is enough to have a

truck with a render (1200-1500 boards). Its application for building constructions and external claddings is realized in step by step creation of two claddings with lost form connected with steel clasps and with concrete mixture poured into gaps between them. In this way it is possible to create vertical bearing wall constructions, external and internal, with or without brace, partitions, ceilings, floors, heat and noise insulating walls etc. This construction system of CCB boards is especially appropriate for concrete-mixer transport usage by concrete agitators and concrete pumps while there is no need for heavy mechanization without any variability restrictions in architectural solution. It is possible to create arched elements from them, arcades, balconies, loggias, super-structures of houses, attics, twisty staircases etc.

Presented construction system TATRALOX, its elements and their application for horizontal an vertical constructions, is shown in appendix.

The construction systems enable realization of objects 25 floors high from this material in combination with brace. (Italy, Germany, Scandinavia).

All material is practically 100% utilized as all waste and shorts from boards can be build into floors to serve like insulation.

TECHNICAL DESCRIPTION OF THE PRODUCT ASSORTMENT

The main element in the assortment is TATRALOX board made of wood chips and cement produced with single or double layer form with parameters as shown in Chart No.1

Chart No.1-Basic assortment TATRALOX CCB boards

Identifikation of the product	*Description of the product and purpose of its application*	*Thickness [mm]*	*Weight [kg/m2]*	*Factor of the heat conductivity [W/m1K]*	*Thermal resistance R [m2k/W]*	*Minimum Tensile strenght in bending [N/mm2]*
TATRALOX-WS	*single layer, insulating, form-making bosrds made of wood chips and cement suitable for creating internal and external wall boarding and partitions*	25 35 50	21 47 34	0,11 0,11 0,11	0,23 0,32 0,45	1,8 1,3 1,0
TATRALOX-WSD	*single layer, insulating, forms-making boards made of wood chips and cement with increased volume, weight and firmness suitable for internal and external wall boardings with high claims on sound insulation*	25 35 50	23 30 42	0,145 0,145 0,145	0,17 0,24 0,38	3,9 3,2 2,2
TATRALOX-WS-EPS	*double-layer, insulating, forms-making boards composed of TATRALOX-WS boards made of wood chips and cement, thickness 35 mm and stabilized polystyrene layer suitable for external boarding of circuit walls with high claims on heat insulation*	85 95 115 135	29 29 30 30	0,054 0,052 0,050 0,048	1,57 1,82 2,30 2,81	0,5 0,5 0,4 0,4

The recommended compositions for supporting and non-supporting walls and heat and sound insulating parameters are given in Chart No.2. The suggested composition of external walls depends on different thickness of heat insulating material (polystyrene) which is dependant on the required value of the heat resistance.

Chart No.2-Composition of supporting and non-supporting walls

Thickness of the wall without plaster in mm	Composition of the external walls in mm				Heat resistance R	Factor of the heat transfer k	Index of the air soundproof Rw
	Board TATRALOX-WS-EPS		Concrete B 20	Board TATRALOX-WS			
	Board-WS	Foam polystyrene			m2K/W	W/m2K	db
270	35	50	150	35	2,035	0,454	52
280	35	60	150	35	2,242	0,415	52
300	35	80	150	35	2,762	0,341	51
320	35	100	150	35	3,205	0,296	51
	Composition of the interior carrier wall, cellar walling in mm						
220	35	-	150	35	0,727	1,024	57
	Partition panel						
70	2 x 35	-			0,64	0,91	37
Notice:Thickness of the concrete core depends on number of floors. 33							

CSS-T solves the construction problem with method of lost boarding for cutlet ceiling. Prefabricated ceiling elements are applicated in dependance on distance of supports.

Chart No 3- TATRALOX ceiling elements - review
(standard ground-plan size 2000 x 500 mm)

Hight of the fitting + concrete layer [mm]	Total thickness of the ceiling [mm]	Panel weight [kg]	Consumption of concrete [l/m2]	Standard calculation of ceiling loading [kN/m2]	Maximum span clearance at standard loading calculation [m2]	Heat resistance R [m2K/W]
155+50	205	52	75	6,73	4,80	0,70
9180+50	230	54	81	6,89	5,40	0,73
220+50	270	57	89	7,15	6,40	0,80
260+50	310	59	98	7,39	7,30	0,87
315+50	365	62	108	7,72	8,50	1,06
350+50	400	66	115	7,96	9,00	1,12
400+50	450	70	125	8,28	10,00	1,26
500+50	550	82	145	8,96	11,20	1,37
575+50	625	92	159	9,48	11,90	1,46

Concrete B 20, steel 10.505

Notice: If there is a special request from a customer it is possible to make whatever atypical size of the ceiling element

Supplementary assortment-construction clasps, edge strips, partitions, ceiling supports and wall braces

TATRALOX– construction clasps
are used for connecting external and internal wall forms. They are protected against rust by varnishing

A sort of construction clasps	Wall thickness	Simple packaging pcs
one-side, two-side	190 - 320	25
ceiling	150 - 400	25
atypical	150 - 400	25

TATRALOX– edge strips

Edge strips made of WS 50 wood chips and cement board suitable for simple window and door lining creation

Width mm	Thickness mm	Weight kg/m
up to 165	50	5
166 - 248	50	7
249 - 340	50	10

Dimensions
Width x 2000 mm

Consumption:
cca 0,5 m/m2 external wall

(width=width of concrete + insulation) **cca 0,3 m/m2 internal wall**

TATRALOX- ceiling beam
(trigon)

Hight mm	Length mm
170	3000 - 6000
220	3000 - 6000
260	3000 - 7000

TATRALOX– wall brace
(trigon)

Hight mm	Length mm
260	2500
210	2500
230	2500
250	2500

Basic formulation for 1m^3 of board is prescribed by the following composition:

- cca 350 kg of raw chips,
- 210 kg cement
- 6 kg water glass
- 5 kg separation oil
- 200 l water

cement guarantees cohesion and prescribed tensile strenght in bending. Water glass stabilizes the board against wet, mould and gnawers. The most powerful factor which constantly enlarges the number of people interested in this construction system is the heat insulating material (stabilized polystyrene), which exceeds the norm claimed heat resistance R=3,0205 m^2/kW). TATRALOX system solves the construction problem in complex, from ground to roof.

PARAMETERS OF THE BASIC PRODUCT

Parameter	Value	Tolerance
Length	2000 mm	-5
Width	500 mm	-5
Thickness	25/35/50 mm	-1,5
Bulk weight in dry condition	550 kg/m3	10%
Tensile strenght in bending	Min. 0,9 Pa	
Compressibility	4% of the thickness	
Factor of sound absorptio at 1000 Hz	0,041/0,55	
Inflammability	B grade of inflammability	
Volume stability	+ 1,05 index of volume change	
3 days water absorption	42%	
Number of packed pieces in a palette	31 or 62 pieces	
Color	according to a customer´s order	

PRODUCT UTILIZATION AND QUANTIFICATION

The assortment of products represents a beam multilayer heat insulating building system for building construction. Boards made of wood chips and cement fulfill the function of permanently built-in lost boarding with concrete core. Annular arch and trabeated armatures, wall reinforcements and ceiling steel beams (trigons) are built into the supporting concrete core of walls and ceilings. Wall braces pass through all hight of the floor and guarantee vertical position of walls. Ceiling created by elements and space - partition beams or joined brace creates cutlet ceiling after monolithing with concrete mixture.

Additional production:

- wire clasps with diameter 4mm, total number of pieces-4 million, which represent 80 tons of wiring
- ceiling elements represent 38% of the basic production volume; 11400m^3 of CCB boards - basic assortment will be used for their production.

Production of trabeated armatures, wall braces and ceiling partition beams of the total volume 65 tons will be realized in subcontract.

B. MARKETING STRATEGY AND PLANNING

The market territories for TATRALOX system are the Slovak republic and neighbouring countries, to begin with Poland and Ukraine.

An important market segment is the Adriatic coast from the Republic of Slovenia, to Croatia and to the Republic of Montenegro. There is an important investment flow into the urbanism and the construction in this region.

The volume realised on the domestic market will be shared by residential construction, other overground buildings and industrial constructions and insulation of buildings. The product application abroad is similar to the one on domestic market.

The main aim of the TATRALOX company a.s. according to this philosophy in brief is as follows:

- maximal satisfaction of customers with CSS-T product and complex services in the stage of preparation, realization and usage of the construction work.

The main aim of the TATRALOX a.s. transformed into supporting aims for all management levels is:

- to provide permanent production of the whole assortment of CSS-T elements in ISO 9000 quality,
- to minimize production related costs by ensuring a source of wood substance for CCB production within 50km in quantity at least 80% of the total amount.
- to ensure competitiveness with flexible tasks specification and strict check of price policy, sales units and structures of the company,
- ♦ paralelly and currently with preparation of CSS-T production it is also necessary to start preparation of promotional materials and advertising to provide realization of goods on domestic and foreign markets (contracts about future contracts) for the period of full production.
- ♦ to prepare administratively an offer of complex services for CSS-T investors-customers (starting with land reservation, design, regional statement and building permission, material delivery and realization, author´s and engineering supervision, colaudation, occupancy permission, transport services and eventually also statement about maintenance of the finished and over-given construction work).

AIM OF THE MARKETING SYSTEM

The aim of our marketing system can be defined in brief as follows:

Maximization of the customer´s satisfaction

New flat, house purchasing or self-supporting construction, as well as

obtaining new production or operating spaces, recall satisfaction of the future owners and users. We want to make psychological use of this phenomenon in our marketing system. The core of this conception is based on needs, desires and expectations of our customers aimed at their maximum satisfaction. The similar way of marketing is also used by savings building-banks. Our advantage is that CSS-T includes the offer of complex services and its final effect is fulfillment of customers´ needs.

PROCESSING OF MARKETING PLANS

Marketing plans will be processed independently for each area of market. We are convinced that our marketing direction will be oriented in attractive sphere, where the TATRALOX company should obtain competitive advantage.
To make our marketing plans successful we will implement them according to needs so that the atmosphere of managing and culture of the TATRALOX company a.s. can meet the standards of ISO 9000.

MARKETING MIX

On basis of the above mentioned intentions we state that we know our market position and with this knowledge we are approaching the creation of marketing mix.

PRODUCT

- high quality of CCB boards (good mechanical attributes and construction-physical parameters will be achieved by continuous check of formulation and by laboratory monitoring of inputs.
- statically, properly adaptable (hight of building, spans)
- ecological product for ecological housing and using of buildings
- easy mounting and shape adaptability (both ground and appearance)
- easy production and operation with complex assortment of supporting, dividing, ceiling and other construction elements
- possible application for both catalogue and original solution of housing
- complex range of services
- product guaranteed on the level of international ISO standard
- construction work – complex delivery offer
- services provided during the whole period of construction work usage

PRICE

- In comparison with the regarded technologies used in construction industry in the area of Slovak Republic (Britrerm, Hebel, Ypor, Seta, Porotherm, Durisol,

Liapor, Ytong), as well as with panel construction and poured concrete, CSS-T represents savings per one average flat from 5% to 25% so in average it is about 15%, without respect to construction complexity and construction physical parameters, it represents highly competitive price level,

- Price is the only element of the marketing mix, which brings profit; our aims will be oriented at maximization of the current profit in the above defined market share and at the achieved position of the quality of product,
- Managers and personnel of the marketing and sales area (internal and external), production, financial managers and accountants will take part in pricing and calculations,
- Price will be influenced by the discounts and terms of payment,
- We will consider possible loan conditions on the basis of sales managers´ references for clients with high credit.

PLACE

- The commercial network will be represented in every market area by a contract partner with complex offer of services,
- Distribution ways will lead straight to customers (producer-construction)
- Building material stores will be arranged on the contract basis and will be equipped with a model of TATRALOX system and with promotional documents
- A plant store at the exit from the area of the company will provide advisory services

PROMOTION

- The company will paralelly and contemporaly with preparation of CSS-T production prepare ”promotion mix” –- advertising, sales promotion and public relations
- Advertising will be realized through massmedia, by pictures (construction references), words (architectures´, designers´ and users´ attitude), in writing form (graphic letters and guiding text for wide public and the specialists)
- Sales promotion technique will accept wide scale of tools (coupons, competitions, premiums, rebates), which will tend to ”scripting” of our society and its product aiming at changing the client´s attitude from ”buy our product” to the challenge ”buy me at once”.
- We will aim public relations at clients who are avoiding advertisements enforcing the idea of ecological housing and will provide them with experience of new, better quality which guarantees comfort of housing.

From the above mentioned arguments we can express the marketing mix as follows:

At the beginning there is TATRALOX and confidence, at the end experience of ecological housing with the most advantageous price, quality, durability and heat comfort guaranted.

PLANNING AND STRATEGY

The founders of the joint-stock company have negotiated properly situated real estate for production plant in Poprad. They know technological process and know-how concerning the product, they have secured all necessary technical and technological documentation as far as the production and assembling of the machine equipement is concerned. They know total objekt composition, they relatively exactly know the volume and using of the investments according to different phases and, what is very important, they want to work creatively and are persuaded that their business intention will have success.

We have arguments for what is necessary to do to achieve our aim by real means and in reasonable period of time.

The civil engineering is seasonal activity in our region. But it is possible to mitigate this reality by development of business relations with the Arabian world.

The time necessary for coming into realisation of our intention is 18 months and it represents period needed for preparational works, project and product certification. We have prepared the financial planning for particular months.

The total investment concerning the real estate, the part of construction works, technology, marketing and promotion represents the volume of 4 167 000 USD.

C. PROCESS OF PRODUCTION, OPERATIONS AND VOLUME COMPOSITION

In this part we are introducing arguments proving that we definitely understand the process of production. We have seriously thought over the subject trying to minimize costs and inherent production problems, maximize gains and operation effectiveness.

This kind of production meats strict ecological criteria -- no additional undesirable waste requiring liquidation, and so we state that it is ecologically safe production with ecological character of product.

The production hall will be constructed in the place of crane route and will be covered with light steel construction embedded in external cladding made of

”VELOX” with air conditioning. There will be production line-machinery –for CCB boards production in the hall. The expected production capacity in two–shift operation is 30.000m^3 of CCB boards per year, eventually 22.000 CCB boards at the first year. Wood raw material will be transported to the receipt stock pile and then manipulated by traversing crane to the barker and consequently to the wood chips crusher. The cutting machine will cut the wood substance into chips, sized 50 - 70 mm. After that the chips will be pneumatically transported from the cutting machine to the cyclone separator and after chips modification in the bumping mill they will be transported through sieve sorting machine into the batching chips reservoir on the blending core.

The chips will be then mixed up with water and water glass in the temperer – and later with cement. The mixture will be transported into the layer station and consequently will be unbended in wood moulds.

After equalizing of the mixture by a roller with fitted presses the process will be continued by pressing the mixture in moulds to the required thickness of the board and the moulds will be processed in the stacking equipment and transported to the intermediate warehouse, where the process of CCB boards hardening will take place (approximately 48 hours). When the process of hardening is over the stacks in moulds will proceed to the demounting equipment, to the manipulator (turner) and to the knockout chair.

The produced CCB boards will fall onto a transporter and will be moved to a shape making saw where pieces sized 2000 x 500mm will be cut. Shortened CCB boards, joint in packages, will wait for further manipulation into the finished goods warehouse where the process of CCB boards maturing and drying will take place at 5^oC. The line will be fully automatized and only 3 workers will be needed for its operation.

MATERIAL AND CAPACITY INPUTS INTO THE PRODUCTION

It is necessary to secure the following amount of the raw material for a year production of the 30.000 pieces of CCB boards:

Chips	10500 tons/per year
Cement	6300 tons/per year
Water	6000 m^3/per year
Water glass	180 tons/per year
Separable oil	150 tons/per year

The aspect of inventory managing respects the seasonal character of building industry and posssible absorption of accidental deviations in demand as follows:

Wood substance	3-5 months
Water glass	14 days till 1 month
Cement	14 days till 1 month
Separation oil	1month

D. FINANCIAL ANALYSIS

Form of financing

Economical calculation is worked up for the financing of the project by 10 year credit at the interest rate of 8%. Surely, when the forms of financing modify (i.e. capital investment respectively combination of credit and capital investment, changing of interest rate, changing of the credit terms) it will be necessary to implement these modifications into financial analysis.

Volume of financial resources

The volume of credits – assumtion is 4 167 000 USD which represents 100% financing by credits.

Planning

The realization of construction and technology installation needs 18 months period.

The planning proposed is as follows:

November – December …..year x preparational works

January – December ……..year x+1 realization works

January – April …… year x+2 realization works & operational tests

May - ….. ……year x+3 beginning of production

Annual production

Product	Production m^3	Price per unit USD	Annual production USD
TATRALOX WS	25 000	111,5	2 786 458
TATRALOX WS EPS	17 860	99,0	1 767 396
TATRALOX Clasps	4 200 000	0,17	717 500
Total			**5 271 354**

Annual production at 100% production capacity is 5 271 354 USD. Monthly production is 439 271 USD.

Price policy is based on detailed analysis of the market competitive environment.

INPUTS:

Material and energy inputs per 1 m^3 of TATRALOX product

Desription	Price per unit USD	Consumption per 1 m^3	Consumption per 1m^3 USD
wood	53,5 per m^3	0,350 m^3	18,75
cement	33,3 per t	0,210 t	7,00
water	0,42 per m^3	0,200 m^3	0,08
agent of mineralization	93,8 per m^3	0,006 m^3	0,56
separation oil	250,0 per m^3	0,005 m^3	1,25
wire for clasps	562,5 per t	0,0034 t	1,94
polystyrene	72,9 per m^3	0,1435 m^3	10,46
electricity	0,08 per kWh	58,40 kWh	4,86
heat energy	4,6 per GJ	0,3 GJ	1,38
Total			**46,29**

Other production costs per production unit include:

- waste processing 0,83 USD / 1 m^3 of production
- other working expenses 1,42 USD / 1 m^3 of production

Item material costs (Profit and Loss Account) include also **nonproduction material costs** i.e. administration, combustibles etc. in the annual volume of 41 667 USD.

Item **services** include also **nonproduction** annual **costs** in total amount of 137 500 USD, i.e. advertisement costs, maintenance, repairs, telephones, travel costs etc.

Wages and salaries

Working position	Number	Monthly salary USD	Personal costs USD
Production employee	17	208,3	42 500
Nonproduction employee	8	312,5	30 000
Chief	5	508,3	30 500
Total	30		**103 000**

Social security costs

This item is based on the legislation being in force prescribing obligatory social security contributions representing 38% of personal costs.

Other social costs

This item include obligatory social funding, working clothes for emplyees, protective means, allowances etc. It represents a volume of 20% of personal costs.

Taxes and fees

This item include cost character taxes i.e. real property tax, road tax etc. The estimated amount representing 10 833 USD is based on maximum possible charges applicated on the known inputs.

Depreciations

Property item	Purchase price USD	Depreciations 1th year	Depreciations in next years	Depreciations period
Buildings	1368 958	20 541	34 229	40
Technology	1 498 541	50 958	103 396	15
Forms	434 583	108 646	108 646	4
Intangible assets	23 958	4 792	4 792	5
Other tangible assets	18 750	2 667	5 354	4
Total		**187 604**	**256 417**	

Tax charge

Present-day tax from the revenues represents 29% for legal entities.

The production run curve begins in May in accordance with the planning. The following characteristics are taken into consideration:

Month	05	06	07	08	09	10	11	12
Production (%)	40	45	50	55	60	65	40	40
Production (thousands USD)	175,71	197,66	219,63	241,60	263,56	285,51	175,71	175,71

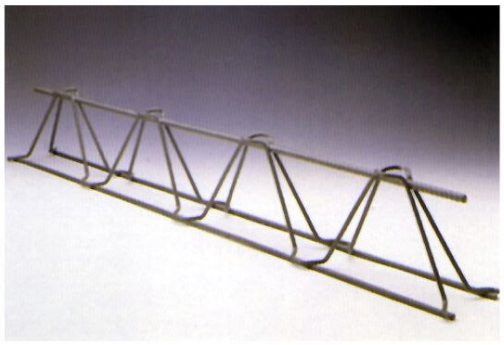
Other ratios are also calculated with regard to the above mentioned characteristics.

Principal months for production activity are the months from February to October because construction works are seasonaly influenced by the climatic conditions in considered geographical territories. And this is the reason why it is therefore supposed that production will be only on 40% level in the months from November to January. There will be reakized maintenance works in this period of time and the employees will také a part of their holidays.

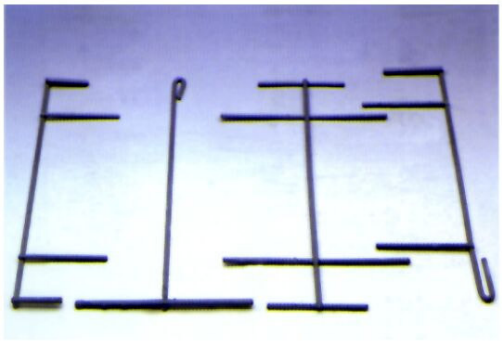
For next years and decisives months (February – October) it is established the production base in the volume of 75% at an annual increase rate of 2% which represents 81% of possible production capacity in 5th year. These

pesimistic considerations are based on taking into account the different risks. For example postponing of project realization terms, achieving of the market position, modification of the production according to the market demands (higher demand in particular months).

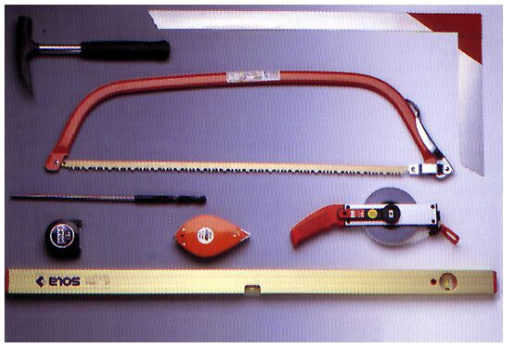
In spite of these pesimistic considerations total economical analysis sounds in advantage of the proposed project. The proof of this is formation of relatively high amount of disponible profit. As far as the distribution of profit is concerned the amount inevitable for the reproduction of working means is taken into account (108 646 USD), and also creation of lawful reserve fund, the amount necessary for reinvestment (different new investments) and dividends. Certainly, distribution of the profit depends on shareholders´ decision.



Tatralox - Wall Brace

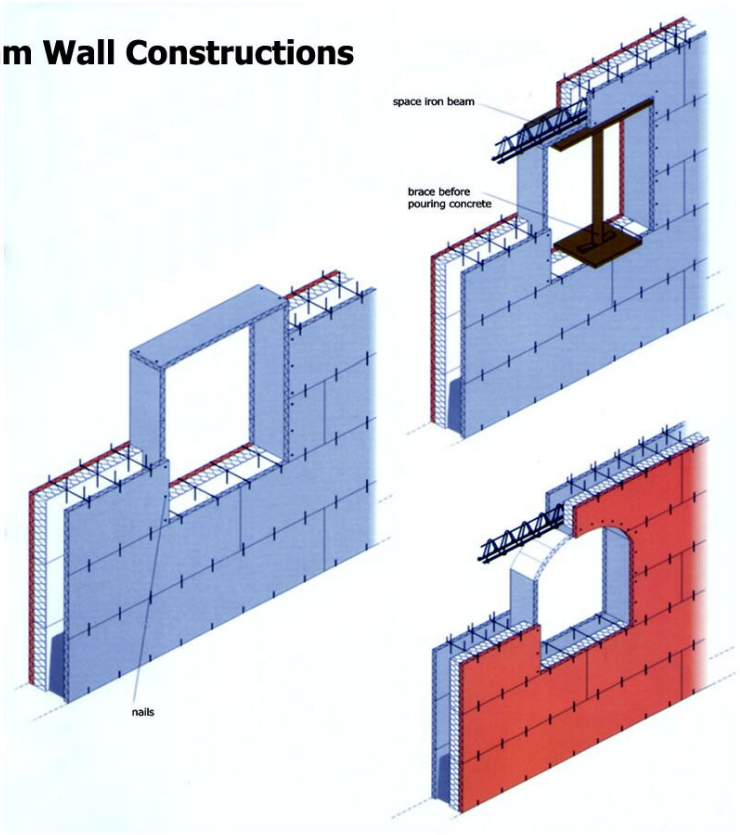


Tatralox - Construction Steel Clips

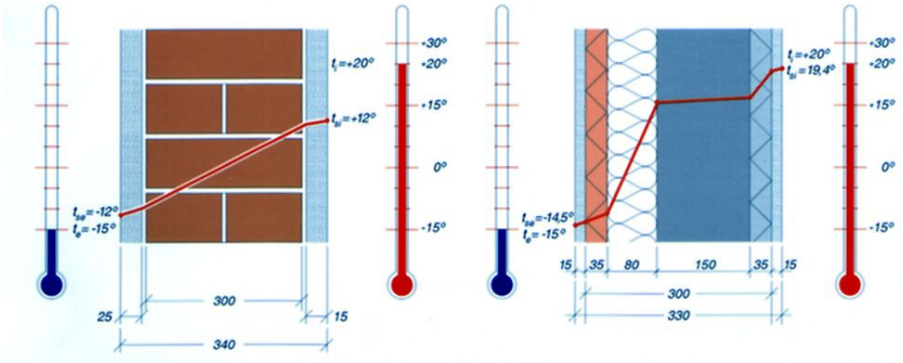


Correct equipment of the building ground

Vertical Beam Wall Constructions

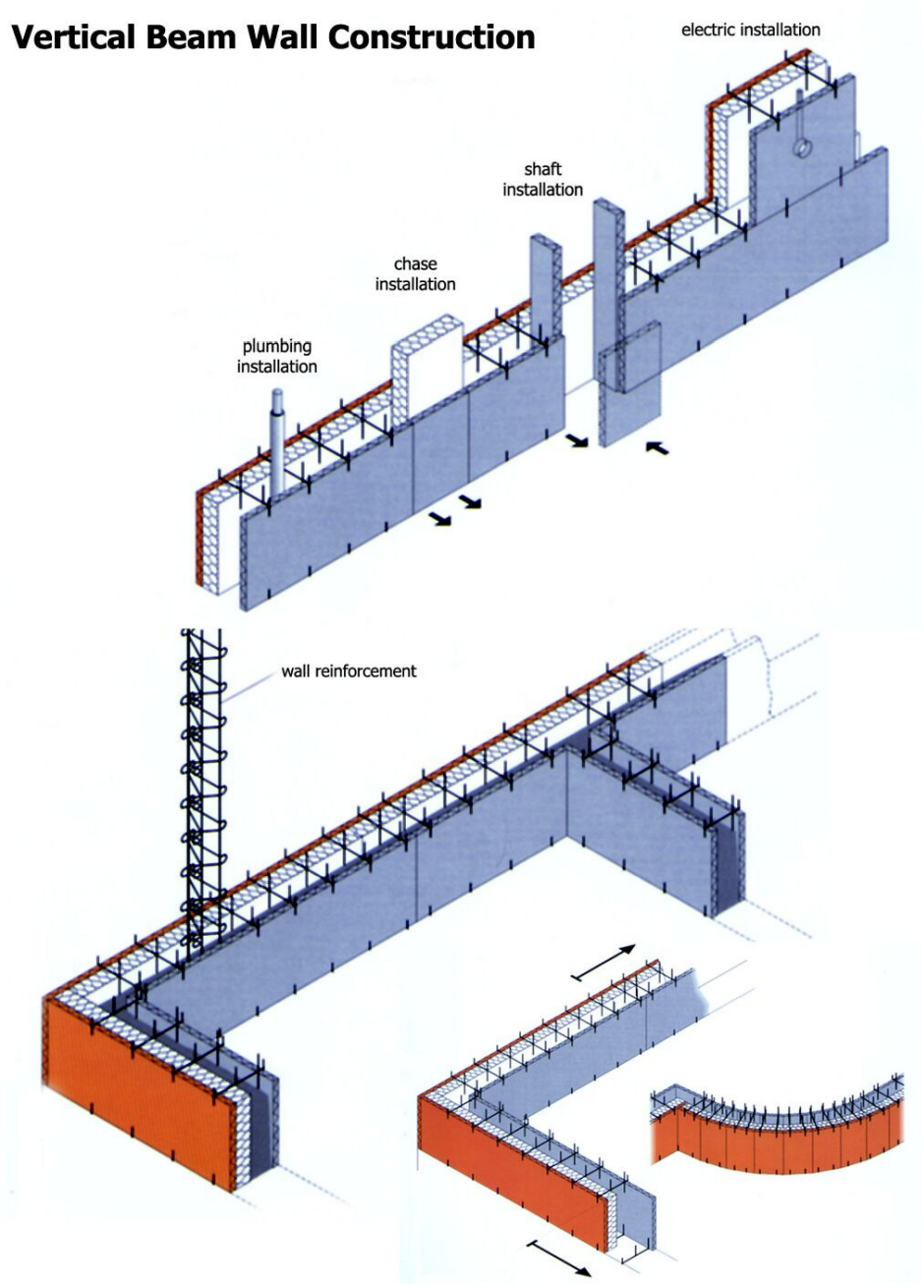


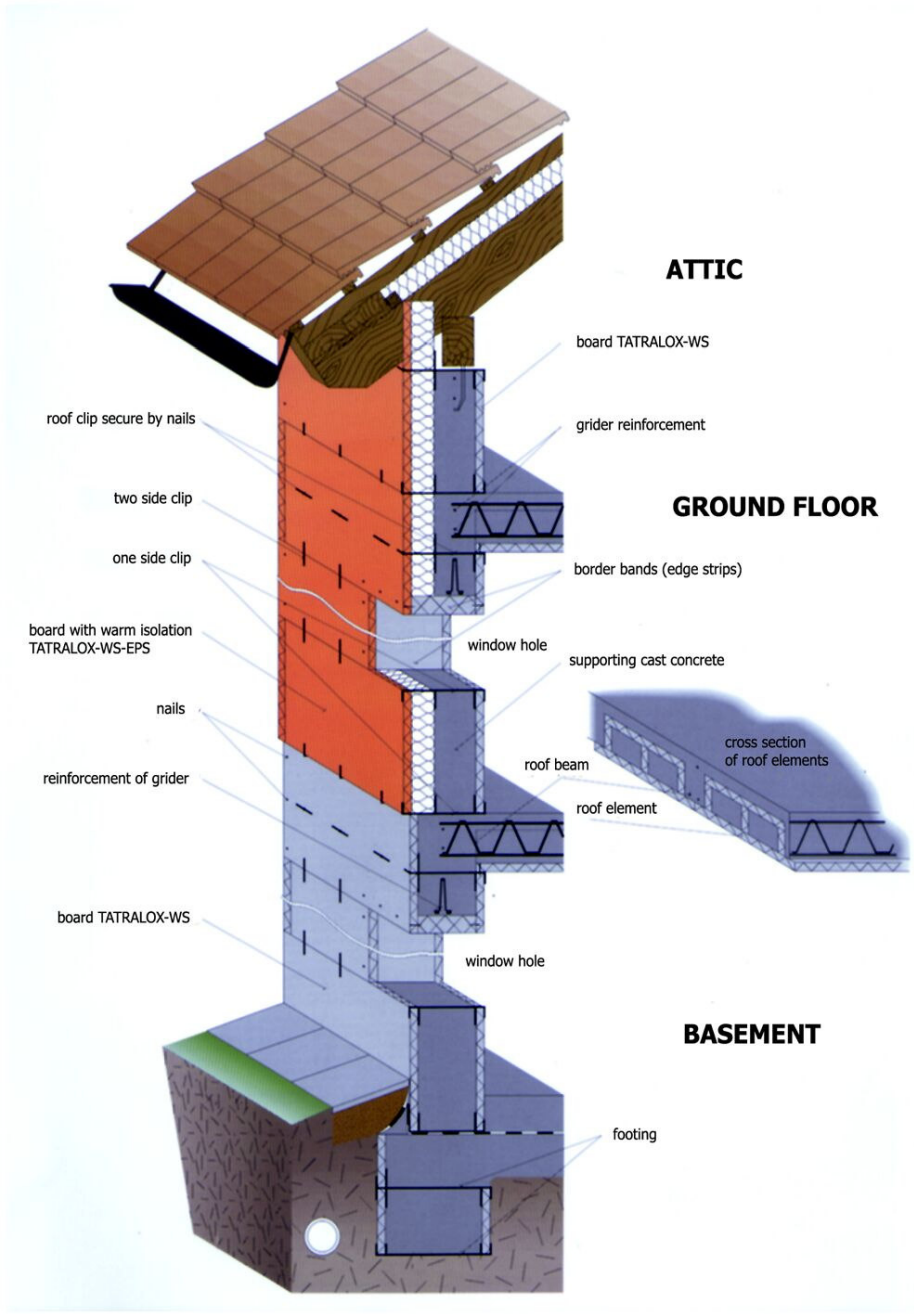
Graphical course of temperature in outer wall - comparative



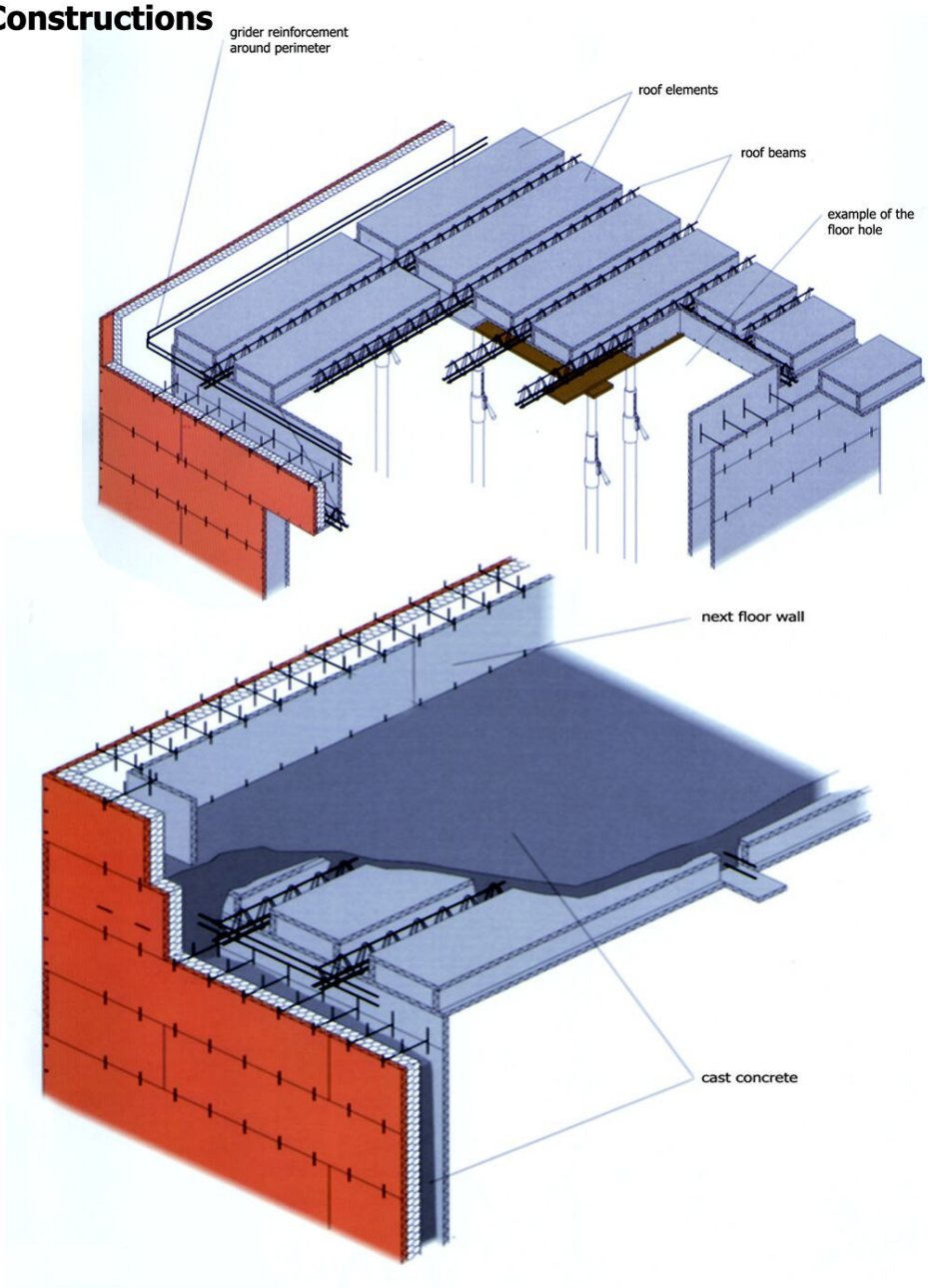
Condensation is in the masonry **Condensation is out of the masonry**

Vertical Beam Wall Construction




ATTIC
board TATRALOX-WS
roof clip secure by nails
grider reinforcement
two side clip
GROUND FLOOR
one side clip
border bands (edge strips)
board with warm isolation
TATRALOX-WS-EPS
window hole
supporting cast concrete
nails
cross section
of roof elements
roof beam
reinforcement of grider
roof element
board TATRALOX-WS
window hole
BASEMENT
footing

Horizontal Reinforced Concrete Structure Monolithic Constructions



Counter - noise Wall