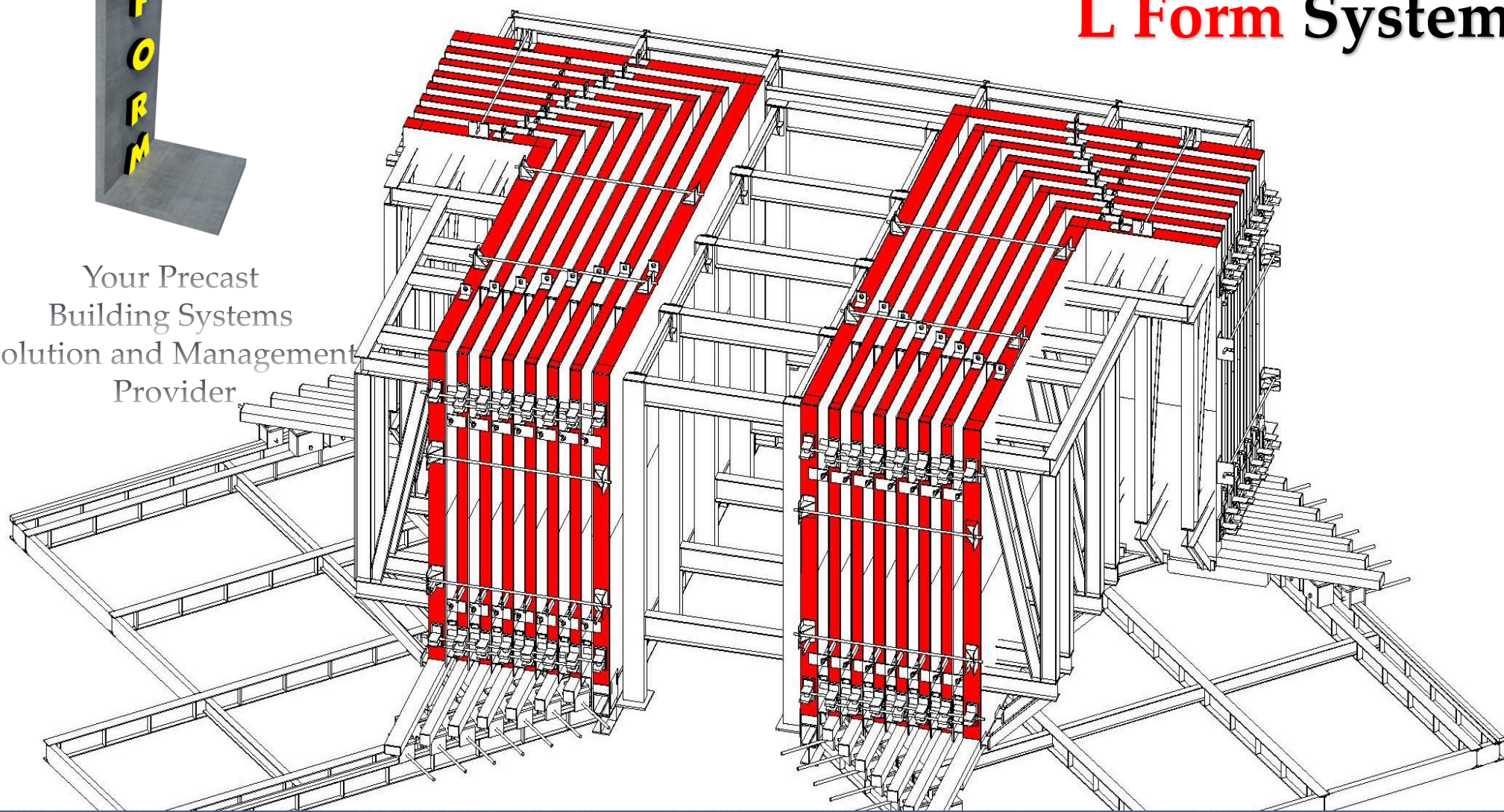


L Form System



Your Precast
Building Systems
Solution and Management
Provider



We'll get your concrete in shape.



L-Form Engineering & Construction Corporation Co Ltd Capability

- **alpi** has been building Thailand's and the world's infrastructure projects since 1992. With world-class leading experience and credentials in modularization and site-work, **alpi** is the smart choice for all your requirements.
- **alpi** traditionally builds industrial and commercial infrastructure with the highest quality controls and HSE (Health Safe and Environmental) processes proven against some of the most demanding counterparties.
- World-class leading safety record and track records with blue chip clients demonstrates execution capability
- **alpi** holds a "AAAA" contractor's license, the highest rating given by the Thailand Council of Engineers and Contractors (TCEC).

REFERENCES

Safety Record per Job

57

M safe man-hours consecutively without Lost Time Incident (LTI) achieved through our consistent commitment to safety (@ May 2019)

88

M cumulative safe man-hours with only one minor LTI, setting world-leading safety standards (@ May 2019)



Partners in Excellence



We'll get your concrete in shape.

L-Form System animation



Presenting the **L-Form** System



alpi Development Corporation



- **alpi** owns the proprietary rights to the battery-mould system for the implementation of the **alpi** Building Systems in Thailand and in other markets throughout South East Asia.
- The **alpi** Building System utilizes their signature **L-Form** System shaped load bearing walls instead of joined flat panels.
- The main benefits of this unique and innovative technology has been appreciated the world over with the successful, trouble-free completion of many thousands of dwellings,apartments,hotels,campuses and military quarters.

What are the **L-Form** advantages ?

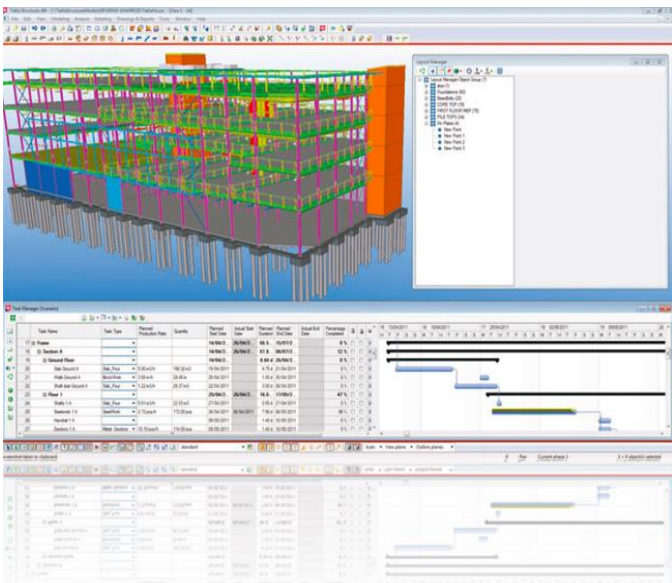


- **Speed** - quicker construction programs,
- **Economy** - major construction savings,
- **Mobility** - on-site production,
- **Efficiency** - smaller workforce,
- **Robust** - earth, wind and fire protection,
- **Superior** - finishes to any standard,
- **Maintenance** - long life in all conditions,
- **Flexibility** - continual innovation,
- **Investment** - fastest & most efficient return,

There are, of course, weaknesses inherent in any Precast System. The **L-Form** System has very few, notably as follow:

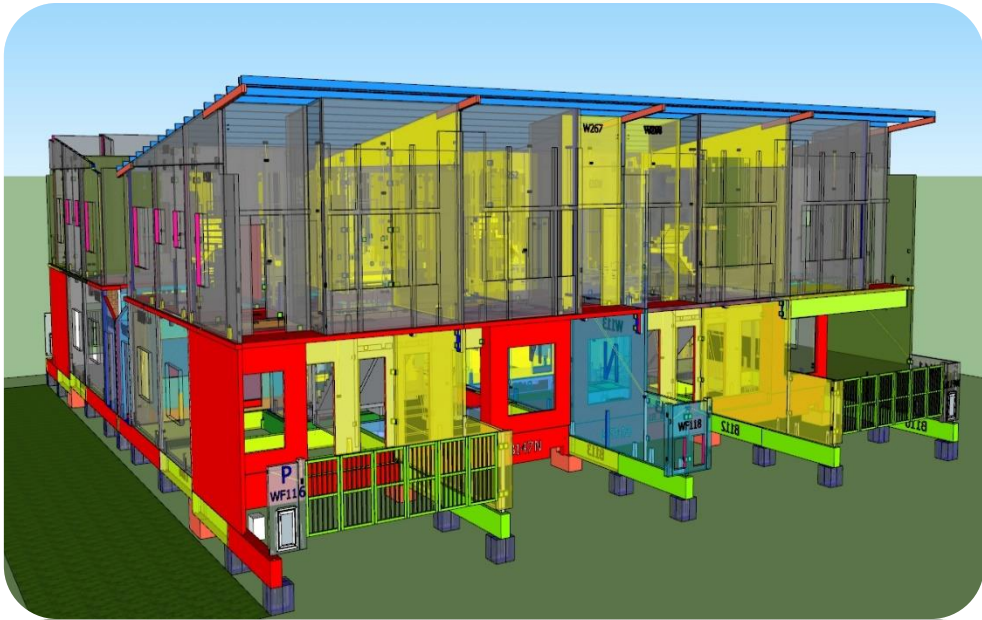
- * • No capability for IN-SITU “architectural” finishes (Grooves) ONLY by Gluing.
- * • Limited durability in transportation over long distance and rough roads.

The production process



1. Flexibility in our Battery Mould **L-Form** System Shape panel production ensures that the moulds can be configured as a MINI (on-site) production facility or even up to an INDUSTRIAL sized factory established directly into a production line to allow large volumes for a project's requirements.
2. We have our own in-house architectural, engineering and design experts that are fully equipped with Alpi's state-of-the-art cloud-based SAS (Software As a Service) systems that integrate our Building Information Modeling Applications (BIM), Tekla Structures and 3D modeling software such as SketchUp Pro and CadCam etc. These systems combined with our SAS architecture allow us to both model and follow all the technical and specification requirements from clients and/or their consultants towards optimum outcomes all the way through from concept to completion of the project, saving the client time resources and money.

We'll get your concrete in shape.



3. The design and manufacturing of the Moulds takes into consideration worst-case-scenarios, ease of operations and structures, tolerance to endure all the conditions during the castings that affect the 'Battery Mould System' such as transportation, vibration, curing/heating, and to erect in excess of 5,000 casting uses or up to 5 years of operations.
4. The operation of the Moulds and placement of concrete panels can be easily managed with very Low skilled labor.
5. A production casting capacity of 2-3 castings per-day-per Mould allows a production schedule of 1.5 to 2 units per day or 40 units per month per Mould.



6. Production is literally unlimited as we can add as much as many MINI production Moulds as may be needed to achieve the client's requirements or to establish an INDUSTRIAL sized production plant anywhere suitable that can reach several thousand units per year (5,000 - 10,000 or more if required).
7. Easy to operate and highly user-friendly as compared to more traditional construction methods.
8. Wall thicknesses can be adjusted as per the client's project requirements from 100mm up to 300mm depending of the nature of the project, such as multiple story building for example.
9. **alpi**'s Engineering Design Team and system evolves throughout the client's design requirement process and adapts their Battery-Mould layouts accordingly, often proposing alternative cost and time saving solutions that improve efficiencies.

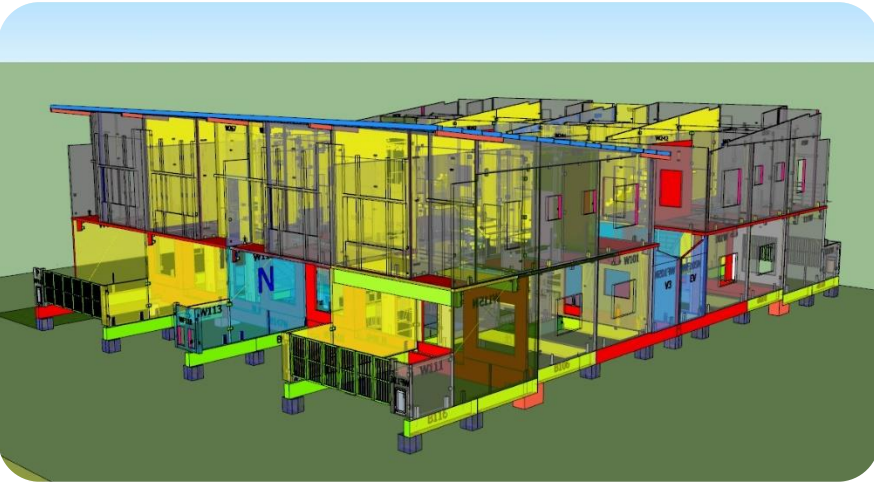
The Structural Advantages



1. **L-Form** System Shaped walls are designed and constructed to become a self supporting structure which doesn't required any additional concrete load bearing column(s) into the structure to support the roof or upper which provides a space, time and cost savings.
2. **L-Form** System Shaped walls are designed and constructed to become a self balanced structure during the on-site installation and doesn't require the need of any transverse props to hold up the panels during the construction stage.
3. **L-Form** System Battery Moulds are specifically design with a VERTICAL casting method, both sides of the L-Shaped panels are perfectly finished once striking and dismantling is complete and have a surface finishing as per standard CLASS F3 which do not require any finishing work such as rendering or plastering etc...



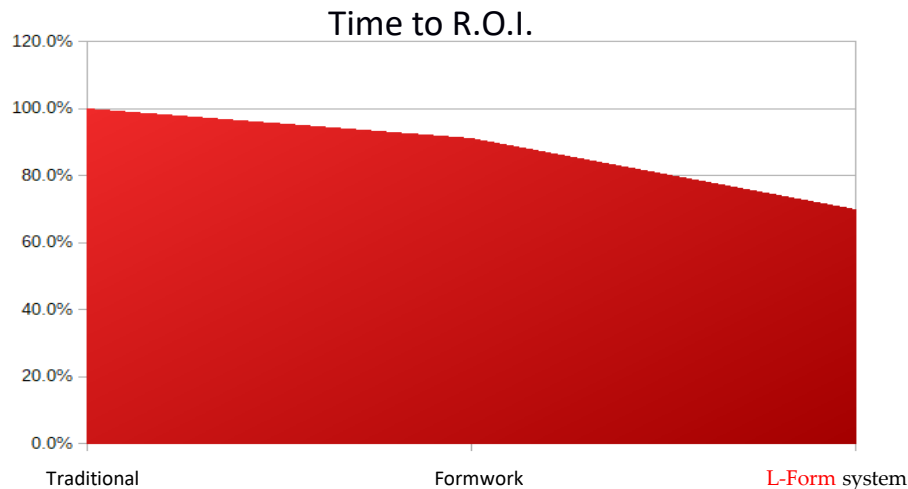
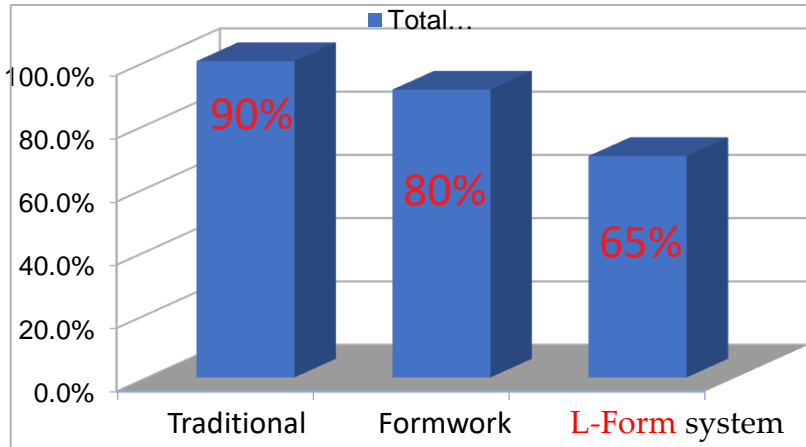
4. All openings such as doors, windows and all electrical conduits are cast directly into the walls.
5. **L-Form** System can be used in all types and designs of residential, commercial and/or industrial building requirements.
6. **L-Form** System Concrete design ensures OPTIMUM durability for the lifetime of the structure and also eliminates cracking due to shrinkage and does not necessarily require any finishing/plastering or maintenance work (except for cosmetic requirements such as painting etc) and provides significant maintenance cost savings to the client's project milestones.
7. **alpi** also designs and manufactures the custom made Moulds for all types of staircases if and where required by the client.
8. **L-Form** System Shaped walls are designed to international standards to withstand earthquakes, cyclones and can also be provided with thermionic and sound proofing directly cast into the walls.
9. We also provides different design alternatives for the ROOF structures (if required) using our 'Meccano steel profile' which can be configured to any roofing design and shape.



10. **alpi's L-Form** System Battery Mould technologies are designed and delivered with **alpi's** own in-house software and data-set(s) which provides all the mould configurations and calculation reports & alignments as per the client project design.
11. **L-Form** System's on-site technical support through our in-house experts, engineers, and technicians provide full technical assistance, backup, training and after sales support which brings both safety & security to our client's project and provides an on-time delivery schedule.
12. **L-Form** System solution(s) are for the provision/production & installation of the building's **CONCRETE STRUCTURE(s) ONLY** which doesn't include such secondary and tertiary work such as tiling, painting, electricity, water systems, plumbing, kitchen, including the building main foundation/basement/ground slab etc. If those secondary and tertiary work or items are required, We can offer and provide them as a separate package



The Financial Details



1. The direct cost for **L-Form** System Battery Mould Technology provides significant time and cost savings to a project compared to other traditional and/or horizontal precast construction methodologies.

2. A 100% ROI (return on investment) can be readily achieved in a single project over a very short period of time depending on the total quantities of units required and the numbers of Battery Moulds needed to achieve the client's project schedule. Generally, the minimum units required to break-even for the investment do not normally exceed 20-30 units.

Warranty

A System providing excellent efficiencies and warranty.

1. **L-Form** System Battery Mould Technologies have been designed on the back of **alpi**'s nearly 4 decades of experience in the construction business which warrants the highest standards of quality and efficiencies in the building construction industry.
2. **L-Form** System Battery Mould Technologies provides a multitude of environmental benefits such as greatly lowering environmental impacts such as lower energy used on site, much lower waste and packing, much lower transport impacts and much lower time and turn around used by all participants involved in the construction process.



Speed and Mobility



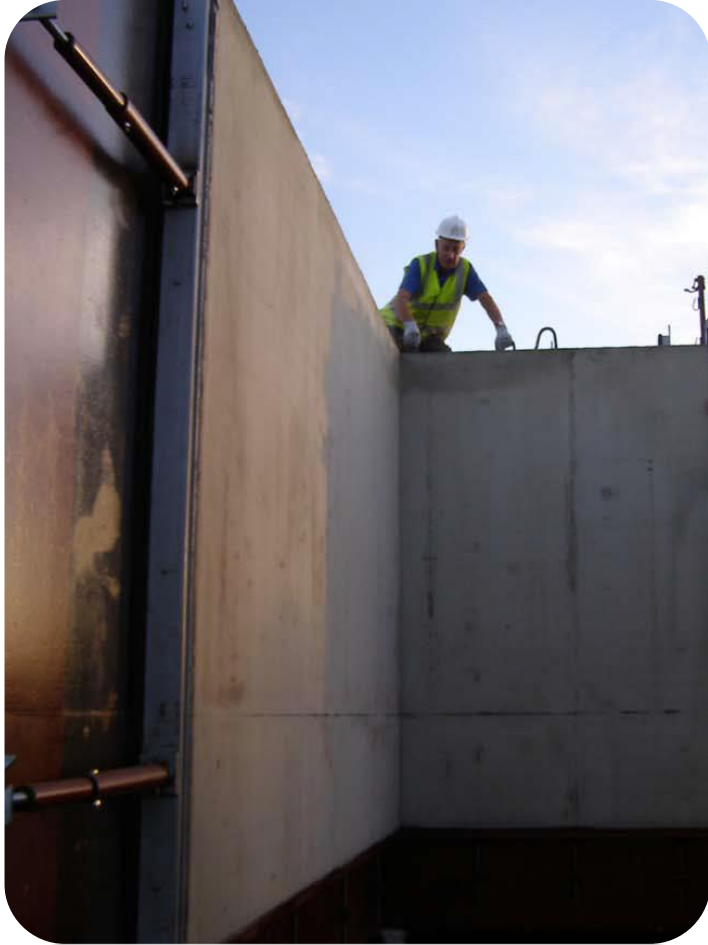
- The **L-Form** System shape means the panels are self-supporting and so in addition to the benefit of effectively placing two panels at the same time, the panels do not have to be propped during the installation process, which makes the erection process is far quicker than with any other precast panel system.
- A 3-man team and a crane can place around 30 **L-Form** System shaped panels in a day, whilst a typical three bedroom apartment may have around 10 **L-Form** System shaped panels depending on room configuration, which means that three apartment structures can be erected in just one day per team.

Economy and Efficiency

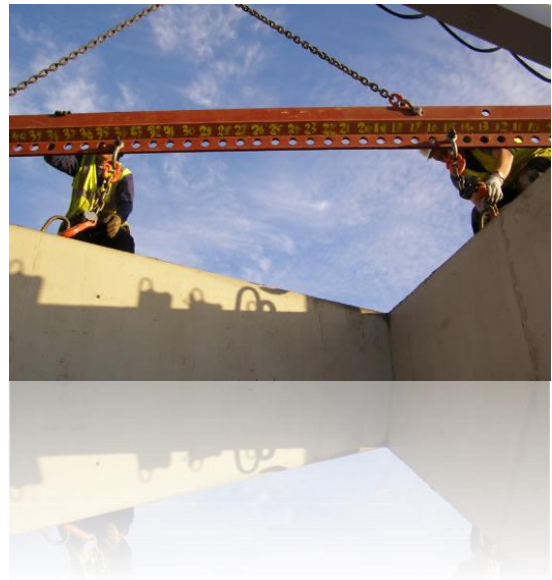
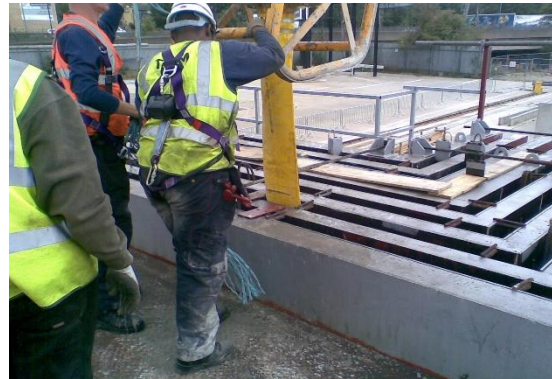


- **Low Capital Cost** – Your costs are much lower than conventional pre-casting, which makes for low fixed overheads.
- **Mobility** – **alpi** factories can be easily and quickly established near project sites, which means transport costs can be reduced.
- **Smooth finish** – **alpi** panels are smooth-finished so no plaster or render is required.
- **Frameless structures** – **alpi** wall panels do the job of building frames such as columns and beams.
- **Financing** – Fast construction times mean earlier completions, which means less financial exposure and reduced construction funding.
- **Construction simplicity** – The simple production process means that the required work force is mainly low-skilled and semi-skilled labor.

Robust and Superior



- No corner joints and fewer connections in the **L-Form** System shaped panels makes for superior strength, and because it is solid reinforced concrete further demonstrates this. The strength of the **L-Form** system means it is one of the few precast systems in the world that can be used in seismic environments in a multi-story format.
- Concrete is a very durable material with negligible maintenance requirements, and it is inherently fire resistant and watertight, a factor of interest for insurance companies and building warranty providers.



L-Form System construction process is very Environmentally Friendly & Sustainable.

Compared to other traditional/conventional building systems, **L-Form** system is far superior in their environmental impact, without waste, low power use, fast turn around, low local impact whilst building. (No trees are harmed or have to die to “Get Your Concrete in Shape !”)

There’s no remedial work meaning such as finishing/plastering/masonry work or plaster scrap to contaminate the site and concrete is an excellent insulator so therefore more it is much more energy efficient than alternative building products.

We'll get your concrete in shape.

Maintenance and Flexibility



- Concrete has exceptional thermal mass properties, which means that it is a great store of warmth in the winter and maintaining coolness in the summer.
- Externally insulating – **L-Form** external walls with cladding systems means a very energy efficient building can be built, as this effectively isolates the structure from external ambient temperatures, so rooms stay cool in hot climates and retains heat within the concrete structure in cold climates.
- Concrete is also a very dense material that makes it extremely resistant to the transmission of airborne sound, and so houses and apartments built with the **L-Form** System Technology system provide a quieter environment for occupants.

Alpi Battery Mould System Solutions unique feature is the L-Form System shaped wall panel



We'll get your concrete in shape.



To manufacture wall panels to this profile at a required rate to achieve economic viability means that casting has to be made vertically using time for fast casting concrete.

Optimum performance is required for much of the time which means that two casts per day are invariably needed.



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Therefore, each day the steel leaves have to be opened twice and closed twice, yet still retaining the required dimensional accuracy in the cast product.

To achieve this, the batteries have to be designed and constructed to remain very rigid which entails using heavy steel sections forming a framework, covered both sides with heavy steel plate which forms the smooth vertical surface against which the concrete is poured.

In opening and closing, the leaf is moved by a rack and pinion device which rolls the leaf along steel tracks with the aid of machined steel wheels, housed into the bottom member of the leaf.

Projects world wide



China – Daxing Apartment Project

- A project of two apartment blocks each with 42 apartments, completed in 2002

Malaysia -Taman Mutiara, Sungei Bedaun Development, Labuan

- The project comprised over 1,000 low and medium cost apartments in five story blocks each containing 20 apartments

United Kingdom - Silk Gardens Development, Parmiter Street, Bethnal Green, London

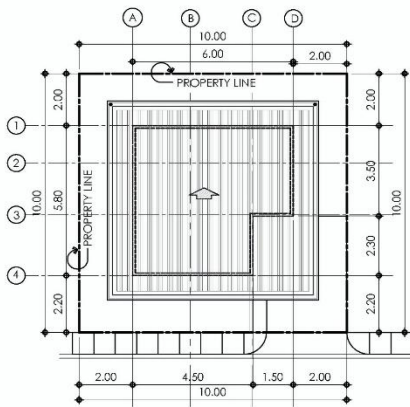
- The project comprised 106 units of townhouses and apartments built to Code level 4 of the Code for Sustainable Homes



1 PERSPECTIVE
AR-02 SCALE NTS



2 VICINITY MAP
AR-01 SCALE NTS



3 SITE DEVELOPMENT PLAN
AR-02 SCALE 1:150MTS



4 LOCATION MAP
AR-01 SCALE NTS

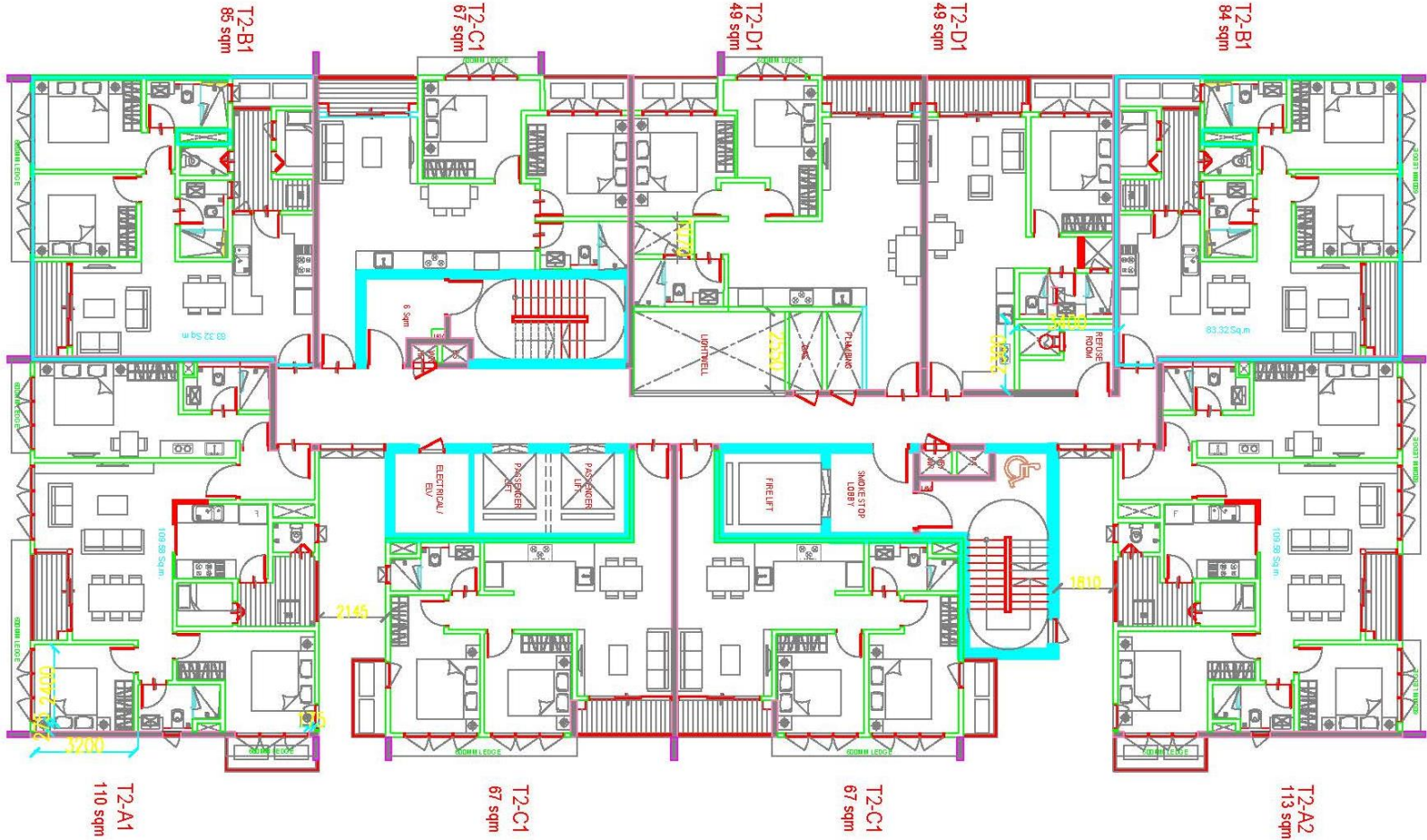
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DEVELOPER PH VECTOR ONE INC. <small>1111 LA VERGNE DRIVE, SUITE 100, BOSTON, MA 02128, USA</small>		CIVIL ENGINEER [Blank]		ARCHITECT [Blank]		PROJECT TITLE PROPOSED SINGLE DETACHED GAIA MODEL - CORE <small>101A KEN ENDA DASARUMAS, BUKIT SAN AGURIN 1, DASARUMAS CAVU</small>		DESIGNER PH VECTOR ONE INC.		DATE [Blank]		REVISIONS [Blank]		DRAWING NO. AR-01	
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Thalapathpitiya Housing Project - 3D Images Colombo, Sri Lanka.





Floor Plan

Projects world wide





Commercial & residential buildings







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Conventional Building Method



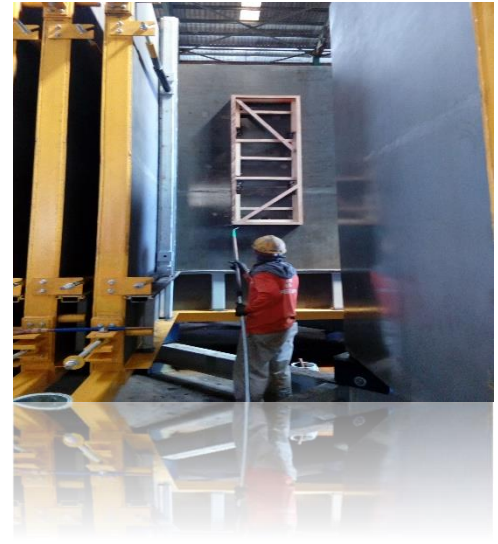
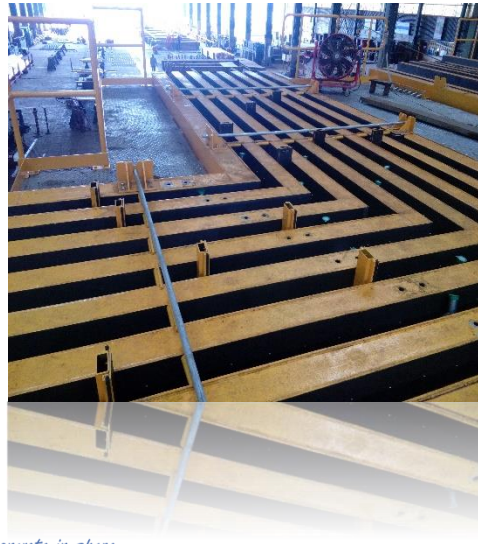
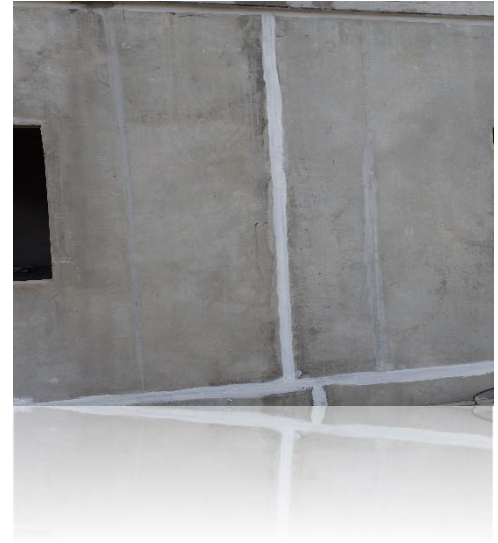
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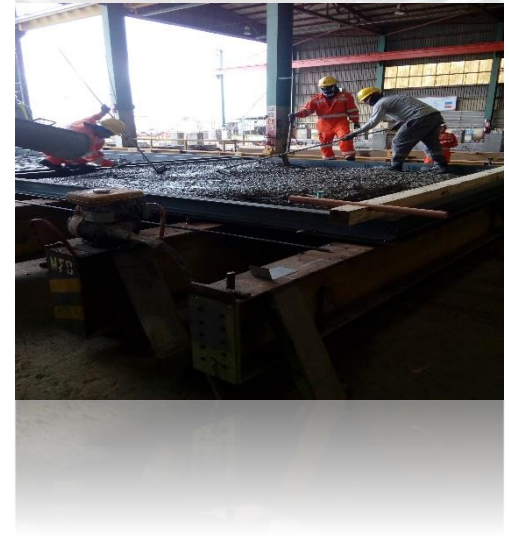
Horizontal Precast Building Method



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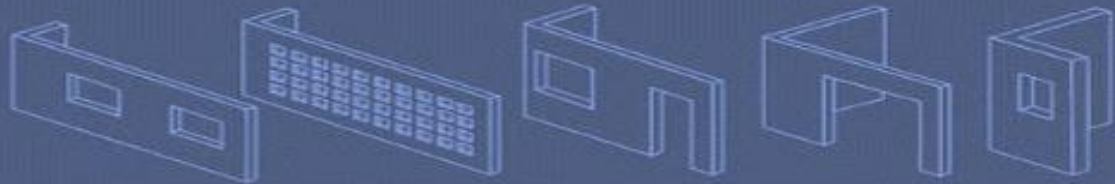
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