



QCM International
Dream... Innovate... Inspire.





Quality Construction Management International (QCM) thanks you for your interest in its team of companies that have joined together in an alliance to complete projects of all kinds all over the world. We are delighted to present you with an idea of the types of projects we can execute. We are sure you will be impressed with the capabilities of the team we have assembled.

Managed by Tripler Enterprises, the consortium of QCM International is an American based enterprise headquartered in Portland, Oregon USA, with associate offices in Dana Point, California, Little Rock Arkansas, Bremen, Germany and Kassel, Germany. QCM specializes in the design, engineering, manufacturing and construction of highest quality, lowest cost housing (detached, multi-story and high rise), social (medical, community, school) and commercial (shopping, hotel, office) structures. As well as turn-key infrastructure developments, including roads, highways, bridges, airports, power plants, water treatment/sanitation facilities, sports stadiums, desalination plants, petrochemical plants, refineries, port facilities and industrial plants.

QCM also offers "full and complete" project financing through our finance partner of Census Equity Holdings Ltd, an international provider of project funding and investment banking services to Governments, mid-size to large institutions and various financial organizations. Finance amount should be no less than 100 million USD and must be backed by either sovereign government guarantees, financially backed bank guarantees and/or government buy-back programs.

Our consortium of firms, Tripler, CensusEquity, FoxLin Architecture, GarverUSA, INROS Lackner, Gtecz Engineering and FrameCad Construction represent the best civil and infrastructure team for your project. The team includes project management, finance, design, engineering, materials manufacturing, power and construction companies that have been joined to work seamlessly for the completion of your project on time, on budget and at the highest quality desired.

Following is a detail of each of their specialties and capabilities.

CONSORTIUM – Key Competencies

Building Design & Construction	Hydraulic Engineering and Port Logistics	Infrastructure Design & Construction	Energy Planning Construction & Delivery
<ul style="list-style-type: none"> • Industrial and commercial buildings • Housing estates and hotel complexes • Multi family complexes • Dormitories /barracks • Residential housing • Hospital buildings • Educational facilities • Sports facilities • Convention halls and exhibition centres • Car parks and underground parkings • Building products manufacturing: cement panels, steel panels, cladding, doors, windows, tile 	<ul style="list-style-type: none"> • Seaports and inland ports • Flood protection and dykes • Inland waterways • Flood retention basins • Locks, weirs and barrages • Marinas and piers • Shipyards • Breakwaters • Transshipment platforms • Offshore structures • Coastal protection structures 	<ul style="list-style-type: none"> • Infrastructural development • Water supply and water disposal facilities • Sewer rehabilitation • Heavy duty surfaces and special foundations • Pipeline construction • Traffic installations and traffic engineering • Traffic structures • Federal motorways and trunk roads • Railway tracks and control and safety technology • Airports 	<ul style="list-style-type: none"> • Infrastructural projects • Waterways development and extension • Photovoltaic facilities • Wind farms and offshore wind farms • Geothermal installations • Cogeneration plants • Power plants and hydro-electric power plants • Electrical distribution networks • Biogas plants
Approval and Finance Management			
Project and Construction Management			



CORPORATE PHILOSOPHY

Our Commitment

- Engage in ethically sound decisions that are aligned with the core values of the cultures in which we work
- Assure every client that the team will provide meaningful social and economic benefit to the local people through transfers of technology, jobs training, jobs creation, and mentoring programs
- Minimize financial & security risks for client & consortium
- Provide local resources as necessary to support project staffing and equipment for projects

COORDINATION SERVICES

Business Solutions

- Consortium Coordination
- Market Analysis
- Business Development
- Investment Strategies
- Legal and Contract advisory Services
- Assisting Consortium Members
 - Acquiring Operating Licenses
 - Project Cash Management
 - Legal, Tax, and Banking Consulting
 - Local Resources and personnel
 - Project Logistics





CORPORATE RESPONSIBILITY

- Responsible for identifying necessary infrastructure, oil and gas, power, tourism, housing and other projects matching the skills of our consortium
- Initiate a direct interface with key government and industry officials to clearly identify issues
- Interface with the client during the tender phase for contract clarifications
- Assist with business licenses, office set up and other services among consortium members
- Updates on changes in government, security situations, etc.



PROJECT COORDINATION

- Full working knowledge of the project contract, specifications, schedules and ongoing access to project organization
- Contractor team coordination
- Ongoing access to the project organization
- Review of partner invoicing prior to submission to the client
- Direct involvement with client project office to assure progress and payments are made according to the contract





OUR ORGANISATION & EXPERTISE

Census Equity Holdings is an international provider of project funding and investment banking services to Governments, mid-size to large institutions and various financial organisations. We bring together know how, capital and creativity on an international scale to help our clients achieve their goals and objectives.

Census Equity Holdings assists its clients in making and implementing sound strategies to benefit the future of its client companies. When the implementation of these decisions involves financial transactions, we will represent our clients at every stage, from inception to closing, from recommendation of terms to negotiations of the final agreement. Clients use our broad perspective and depth of experience to give them the edge in their corporate finance decisions, with confidence and trust inspired by our management team with many years of success in the international banking markets.

We have the knowledge and relationships necessary to access capital for project financing through high quality institutional, financial and strategic investors. Our aim is to serve as objective advisors who can present a broad range of financing options to ensure the best possible outcome of each client's specific objectives and strategies.

As specialists in facilitating mergers and acquisitions and providing access to capital markets, Census Equity Holdings plays a noteworthy role in the international middle market. Our in-depth industry knowledge, research capabilities, investment banking expertise and international reach are unmatched in this segment of the market. Our experienced team offers expertise and funding for international projects.

Census Equity Holdings is affiliated with several international banks and private equity firms all over the world.

Census Equity Holdings, primarily focuses on:

- Private equity transactions.
- Investment
- Large project finance transactions.
- Finding high quality technical partners for large construction & infrastructure projects where
- funding has been approved.

INSTITUTIONAL CLIENTS

Census Equity Holdings serves institutional investors, such as Governments, insurance companies, construction companies, pension funds and various professional financial organizations. Acting as the link between clients and banks we put forth proposals for alternative investments and project finance to qualified clients.

OTHER CLIENTS

Census Equity Holdings assists high net worth Companies, families and individuals to protect

their wealth, through the selection of specialist providers in the fields of financial advice, investment strategies, tax and estate planning, property administration and the fulfilment of philanthropic wishes.

Our objective when we begin a project or a relationship, either an internally owned or client owned is to tailor solutions that will lead to the projects optimal growth and sustainable growth. We are long term investors. We expect our investment commitments with our projects and our clients to continue for many mutually profitable years.

We consciously hire senior management who have a broad range of management experiences based on decades of work in many different disciplines.

We are particularly focused in several industries. The financings we have done and continue to do are unique in the Investment Banking world. We have developed and are particularly experienced at creating inventive structures that provide tailored capital funding and investment management solutions at very competitive and very manageable pricing levels.

We maintain three business units that are dedicated to working with clients to implement financial solutions, specifically, by providing access to international financial markets and by employing proprietary tailored financial structures to sustainable finance development programs. Our business units are divided into the three areas of services required by our current clients. They are;

- Financial Services Group, which is primarily focused on private equity transactions and large project finance transactions.
- Our Merchant Banking Group, which is focused on trading commodities
- Our third business unit is dedicated to providing services that bridge into our other units for Sovereign governments. These include fund management, project finance, and project management. We draw on all of the experience gained from all our business units in our Sovereign Consulting work where we create turn key solutions.

Census Equity Holdings has also established several strategic relationships with groups that add value to the services we offer. We have formed alliances with financial groups and several large investment management companies that provide us all with economies of scale which are very useful in negotiating the purchase of financial instruments and in issuing fresh project and asset based financial

Census Equity Holdings is currently participating in several exciting projects across the globe.

Census Equity Holdings has a number of large private and public social housing projects in Central and Western Africa that will provide better living conditions to many thousands of people, through sustainable community development. We are bringing new technology and money into this social project. For further information, info@censusequity.com

Concrete Facility Proposal



March 1, 2018

1. Summary

Quality Housing Materials is pleased to present an innovation in cement production designed by our associates at Housefabrik in Germany. Tripler is the exclusive licensed agent for Housefabrik in the Middle East and North Africa region. Together, our team of companies, along with our design and materials innovation partners, specialize in the design, engineering, manufacturing and building of high quality structural concrete building materials, which are secure, strong and cost effective.

Through the local fabrication of our proprietary building panels, we enable buildings to be erected in places where import capabilities are limited and the need for high quality, quick, durable, sustainable and economical housing is required.

This is accomplished through the development of local *licensed* concrete panel manufacturing facilities which can utilize 100% local labor for the manufacturing of building panels and the build-up of homes. The manufacturing facilities can even use concrete rubble and other debris as a raw material for the concrete produced by these facilities. This is of critical importance when considering war torn countries that need fast, high quality housing and also have concrete and other damaged debris that need to be disposed of. These facilities are containerized and can be moved with relative ease from one area to another.

The local licensed facilities, utilizing our patented housefabrik concrete composite can manufacture building panels which are fire, moisture, sound and thermal resistant, as well as resistant to insects / vermin and when needed can meet any insulative factor and even be "bullet proof", if desired. (To date these panels have been tested up to a 45 caliber, which is stronger than a round fired from a 9 mm pistol, an AK-47, or an M-16. The panels are quickly assembled into structures, much faster and stronger than typical cement blocks, bricks, or other building materials.

Any structure type can be built. Low end social housing, high end luxury housing, apartment/condo complexes, hotels, schools, office buildings. High rise buildings - up to three floors with no steel needed – additional floors are easily added and engineered with minimal amounts of steel.

Local facilities can additionally manufacture floor/wall tiles, roofing tiles, sinks, counter tops and all types of perimeter fencing. This can all be done with little modification to existing manufacturing lines... simply switch out the proprietary molds. Additionally, our licensees can manufacture roads, runways and perimeter walls. A housefabrik concrete composite road (or runway) can be laid and ready for heavy traffic within 4 hours.

Tripler has partnered with the engineering firm Garver USA, the architecture firm FoxLin and the construction firm Ross Construction to implement any project you might have in mind.



2. Our Approach

2.1 Our Company

Our team, along with our design and materials innovation partners, specializes in the sales, design, engineering, installation, and manufacturing of UHPC (Ultra High Performance Concrete) hybrid concrete composite.

Through the local fabrication of our building panels, we enable buildings to be erected in places where import capabilities are limited and the need for quick, durable, sustainable and economical building materials is required.

This is accomplished through the development of local *licensed* panel manufacturing facilities which can utilize up to 100% local labor for the manufacturing of building panels or other concrete products.

We firmly believe in the “Train the Trainer” concept utilizing a technology knowledge transfer. Local franchise workers are trained and provided knowledge on the correct usage of our building material and the correct methods for building in accordance to International building code.

Each licensed facility creates a minimum of 300 local “living wage” jobs. ...and at full capacity has over 1,200 persons in its employ. The local licensed facilities, utilizing patented concrete composite will manufacture building panels which are fire, moisture, sound and thermal resistant, as well as resistant to insects / vermin and when needed can meet any insulative factor and be “bullet proof”. The panels are quickly assembled into structures, up to three floors with no steel needed, using our trademarked, proprietary CHIPS assembly process.

As an example of the construction speed and cost efficiency:

A basic, low cost, 100sqm (1076sqft) home can be installed and can be finished by a team of 9 persons in approximately 14 days and cost less than USD\$15,000.

2.2 Our Solution

Local manufacturing of an efficient hybrid concrete material which can have any texture, form, or strength/hardness desired.

- Eco-Friendly and made with localized labor & materials (even rubble and other “waste” materials can be used).
- Can be utilized in conjunction with any construction method, typical SIP product, block or by itself.
- Any structure type can be built. Concrete material can be utilized for low end



social housing, high end luxury housing, apartment/condo complexes, hotels, schools, office buildings. High rise buildings - up to three floors with no steel needed – additional floors engineered with minimal steels amounts.

- Local facility can additionally manufacture floor/wall tiles, roofing tiles, sinks, counter tops and all types of perimeter fencing. This can all be done with little modification to existing manufacturing lines... simply switch out the proprietary molds.
- Roads, runways and perimeter walls can also be manufactured. A road (or runway) can be laid and ready for heavy traffic within 4 hours.
- Building process is tongue and groove. Installation is simple and quick utilizing trained local labor teams.
- Fire proof (to 1700c), water proof, and when needed – bullet proof.
- Claddings (top and bottom layers) can have any different molded surfaces regarding color, feel, structure and look (pattern). Think outside walls that look like wood, stone, brick or even complete murals. All molded directly into the concrete.

2.3 Our Manufacturing Process

- The way panels are manufactured is best explained as a rectangle shaped "Oreo" cookie... extrude first layer... extrude middle layer... extrude the top layer... then cut and rack it. Product can be ready to use within ~4 hours.
- The outside layers are ULTRA strong concrete, the core has the same look and feel as "typical concrete block", but with much better insulative values and higher strength. The panel is very ecological and is made using local recycled materials. 100% ecologically rated.
- Cost to manufacture is less expensive than most any other construction method, including standard SIP and block. Installation is simple and quick.
- Panels can be made in nearly any dimension. With nearly any type of texture, color and finish.
- Uses local aggregate (water, sand, gravel, cement) and can include recycled materials (plastics, rubble etc.). The only import is proprietary powder. One 20 foot container equates to ~1200 (1.22 x 2.44 x .10) panels.
- When manufactured using locally "trained" local labor, a facility can produce ~13,000 (1.22 x 2.44 x .10) panels per month.

2.4 Expertise of design team

Experiences

- 12 years research with cementitious materials



- 14 years structural and construction engineering

Worldwide

- 150 R&D Projects realized (USA, Netherlands, New Zealand, Austria, ...)
- 42 publicly funded research projects (ZIM, AiF, Loewe, ...)

Patents and Brands

- 4 Patents in the field of materials technology
- 8 new concrete Brands (fast hardening concrete, 3D printer concrete,...)

Design

- Work in conjunction with Cal-Poly-Pomona, USC-Los Angeles, and M.I.T. as well as local urban planners, designers and engineers to create and build the safest, effective, and most efficient buildings possible, while always remaining “culturally” sensitive to the country and region.
- Every structure installed can include USA and/or European structural engineering approvals for seismic, flooding and hurricane and are built in conformance with the requirements of the 2009 International Building Code (2009 IBC) standards and parameters. All structures are inspected and certified to have met such standards prior to occupation.

2.5 Service Level Agreement

- All installed manufacturing facilities have a “first owner” lifetime support and training agreement.
- All purchased and installed equipment have a two (2) year repair/replacement warranty.

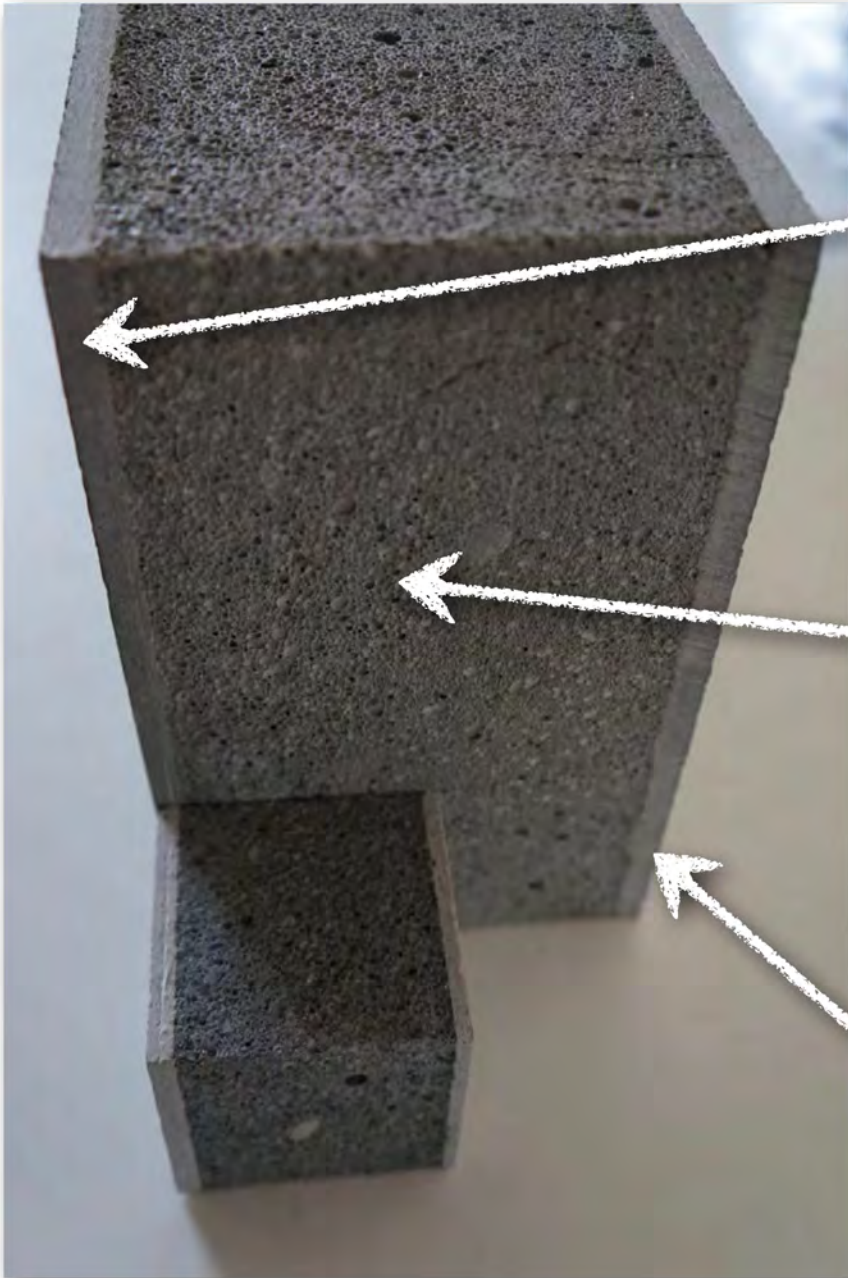
2.6 Project Delivery Timelines

Manufacturing facility, including facility building, can be built, equipment installed, team training and production started within 90-120 days from the signing of contracts and payment of deposits.

2.7 Action Plan

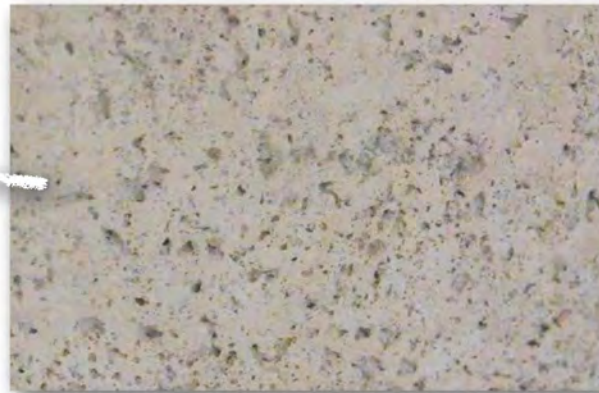
- Step 1 – Complete buy side / sale side due diligence
- Step 2 – Sign contracts / pay deposit
- Step 3 – Complete structure drawings and facility site analysis
- Step 4 – Complete second stage payments. Ship equipment.
- Step 4 – Finalize payments. Install facility.
- Step 5 – Finalize local team training. Begin production and first builds.

product sample



3-10mm

Interior
Surface High
Strength- any
texture desired



10+cm

Structural
Concrete
Aggregate High
Strength core

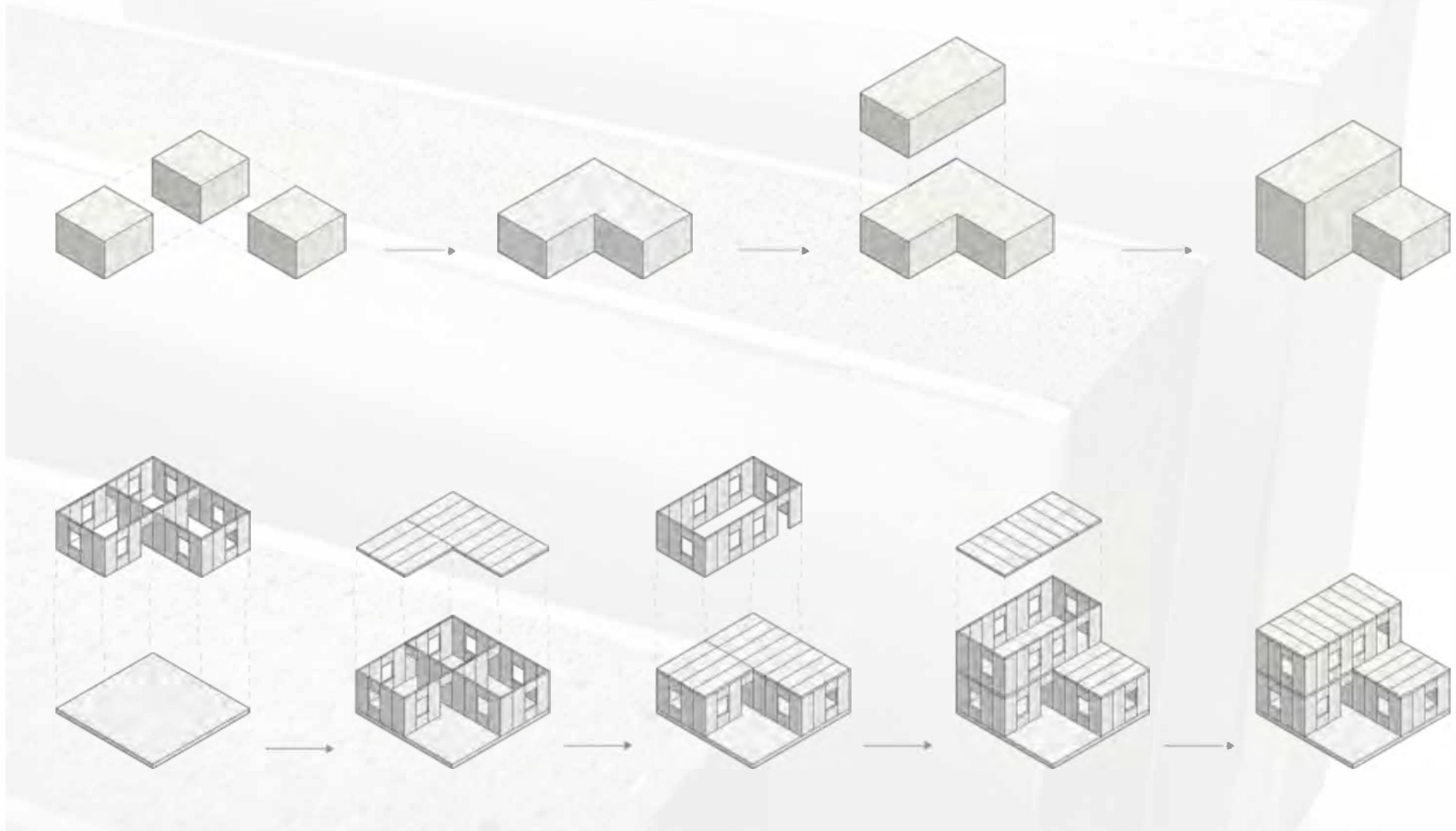


3-10mm

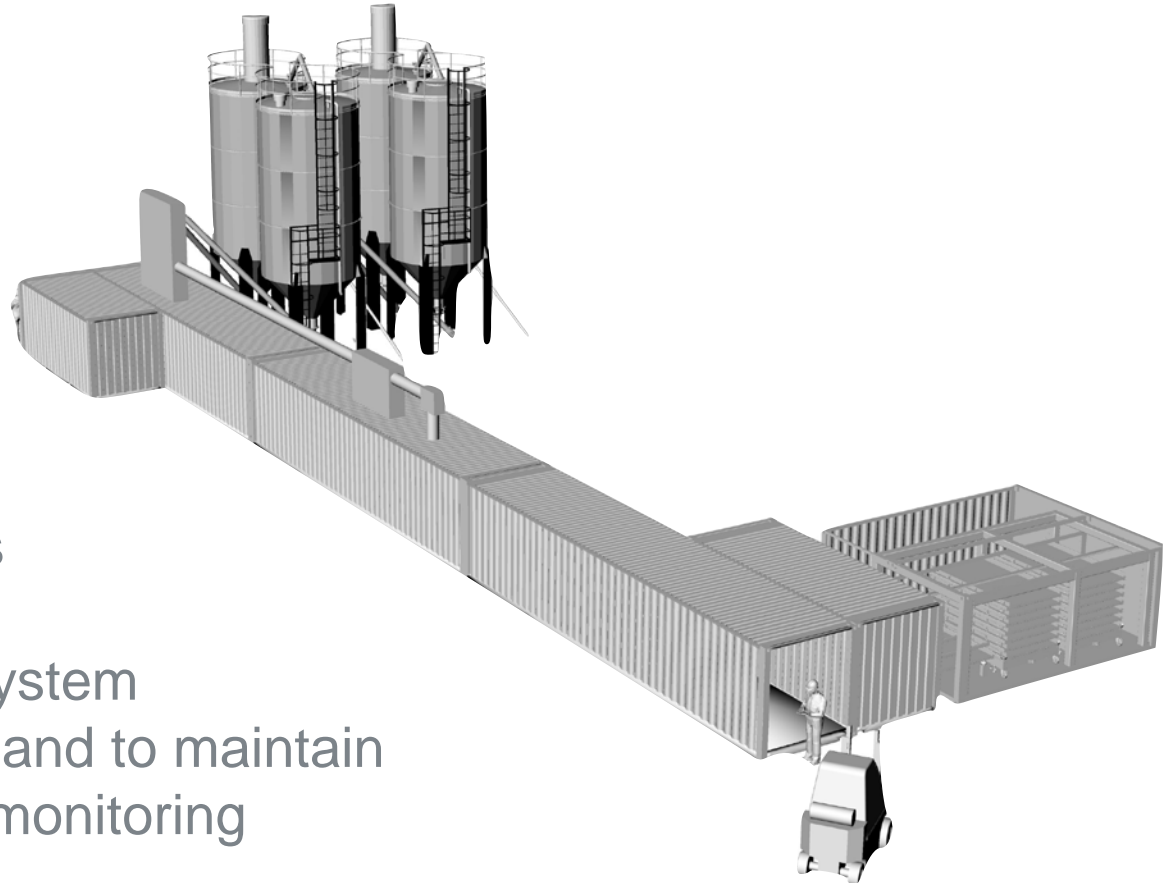
Exterior Surface
Water Proof
High Strength- any
texture desired

modular system

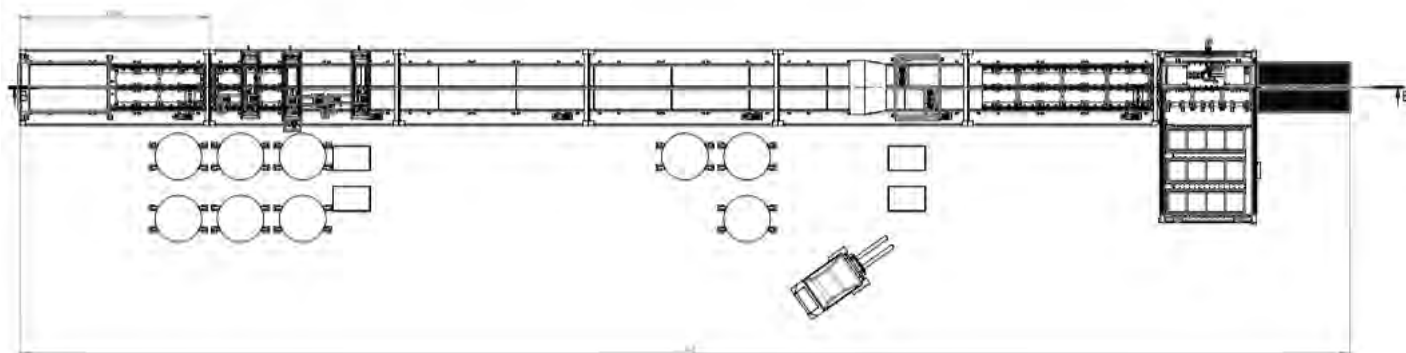
housefabrik
diagramm_1



Technical data sheet for housefabrik machinery for the production of Hybrid-Concrete-Sandwich-Pre-Fab-Elements



- One production process
- Robust technology
- Mobile 20 ft container system
- Easy to set up, operate and to maintain
- Continuous production monitoring



Local Designs

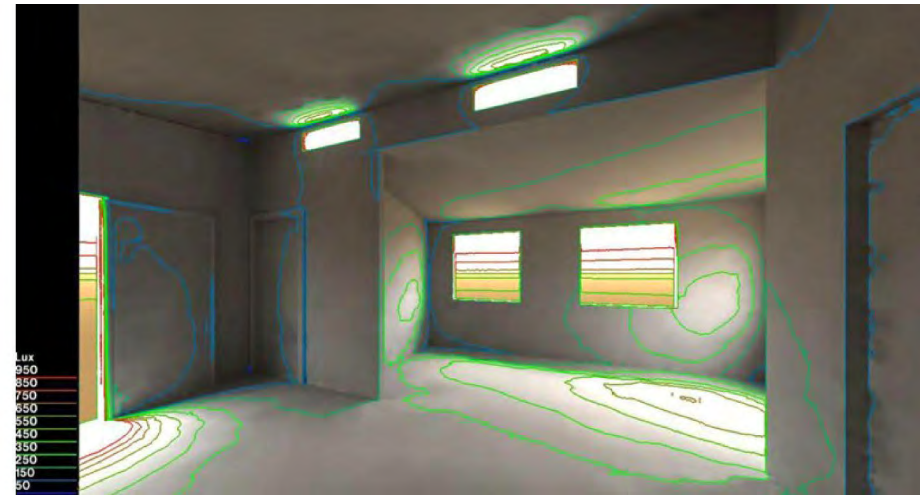
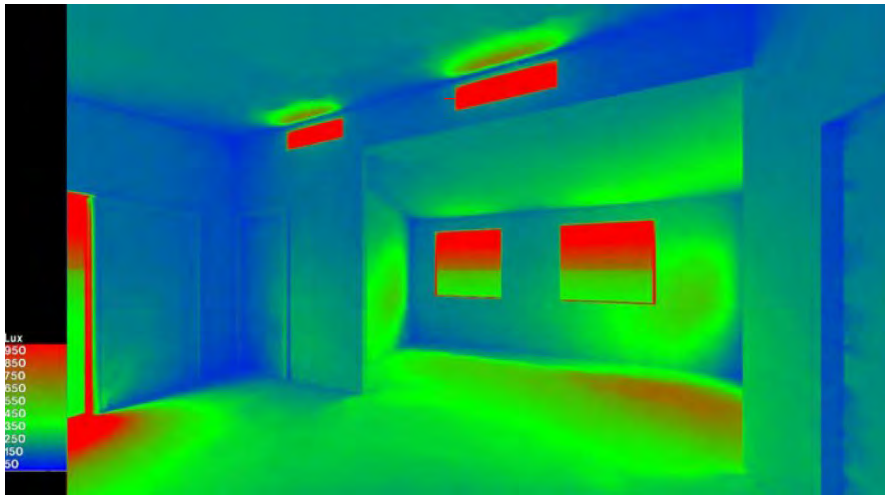
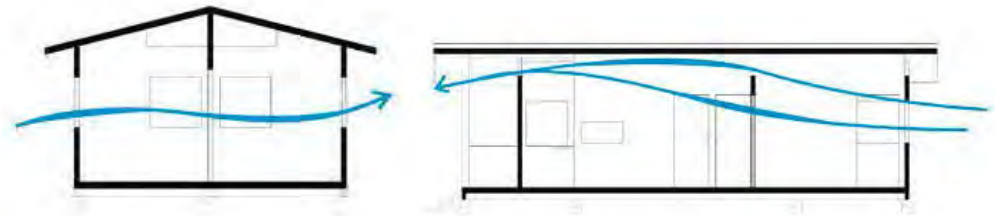
Through the utilization of housefabrik's proprietary machinery we locally create cement bonded hybrid wall panels.

Panel construction allows great freedom of design to enable cultural customization.



Design and Engineering

Every building is vetted with our architectural and engineering teams to ensure a high level of design that meets International structural standards as well as best practices with regards to orientation and ventilation.



PGI House Solar Analysis

Housing Designs



Apartment - Family

Industrial Building Designs



Office, Factory

Social Building Designs



School, Medical Center, Orphanage

Social Building Designs



Community Office, School

Framing the future

A company overview



This document is current as at September 2017 and supersedes all previous versions.

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We have offices in:

Auckland, New Zealand (Head Office)
Dubai, UAE | USA | Hong Kong | Shanghai, China
Melbourne, Australia | Johannesburg, South Africa



framecad.com

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A more intelligent way to construct



Our solutions work because we have all the knowledge we need within our team. We have building system researchers, software developers, CAD designers, engineers, machine control experts, technicians and on-site construction experts. We also have people who are good at listening to customers – we’ve always been driven by market needs, because a solution is only worthwhile if it delivers better productivity and quality to our customers.

Mark Taylor

Mark Taylor
CEO/President

The landscape of tomorrow calls for better construction today. Working side by side we can get the most out of your business, constructing a world that's brighter and more efficient than ever.

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Cutting edge construction, automated

The FRAMECAD® System is the fastest way to design and build durable steel framed buildings anywhere in the world.

The future of cold-formed steel frame design, manufacturing and construction has arrived. With FRAMECAD® technology and building products, you can turn architectural inspiration into engineered and commercial reality much faster and more cost-effectively than ever before.

The FRAMECAD® integrated design engineer-and-build solution incorporates the intelligence of FRAMECAD® software and FRAMECAD® innovative manufacturing equipment, complemented by an international building product supply chain providing steel, cladding, lining, flooring, roofing and building hardware.

FRAMECAD® is the world's most transformative end-to-end steel frame design-and-build method, allowing you to mass-produce cold-formed steel buildings with the precision and accuracy determined by our system, without relying on the highly skilled of factory workers or on-site assemblers.



Strong foundations, global transformations

FRAMECAD® has been successfully serving the world's steel building industry for 30 years, reaching global leadership through the continued support of our key customers.



At FRAMECAD®, we're passionate about strengthening communities across the globe.

Our expert team share one goal: helping customers to succeed. By developing practical solutions that streamline the steel frame design-and-build process, we can help you cut production time and increase profitability, building a better end result for your business.

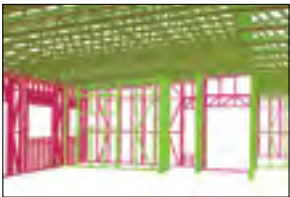
Our unique combination of award-winning technology and personal service gives construction businesses all over the world the confidence to advance, setting the tone for a stronger and more unified future.

Advanced construction from start to finish

FRAMECAD® is a fully integrated design-and-build process that allows you to optimise productivity and return on investment.



1
Architects Rendition / FRAMECAD® Design Library
The process begins with an architect's design or a selected design from our FRAMECAD® design library which can be transferred to the FRAMECAD® solutions design, detailing and engineering software.



2
FRAMECAD® Software
The entire frame is then designed and detailed using FRAMECAD® software. The completed file, then ready for production, is sent electronically to the FRAMECAD® manufacturing equipment.



3
Materials Optimisation
FRAMECAD® Steel and FRAMECAD® Building Products provide a range of specially selected products to optimise production.



4
Production
The FRAMECAD® manufacturing equipment then creates each component of the building frame individually, labelling them according to their location in the frame for error-free assembly.



5
Individual Components
Every individual component is produced and detailed with individual characteristics according to its position in each panel. Cut to length, service and fastening holes are pre-punched, swaged, notched and ready for assembly.



6
Assembly
The assembly process can take place either at the factory or on-site. The frames are assembled and screwed together to form the panels, trusses and joists.



7
Frame Erection
Once at the construction site, the panels, trusses and joists are positioned for rapid and accurate erection.



8
Construction
The frame is complete using FRAMECAD® building materials and FRAMECAD® sub-assemblies. Then the exterior and interior walls, flooring and ceiling are brought together to envelop the building, providing the most advanced end-to-end steel frame building solution.

FRAMECAD® intelligent software makes the process of designing, detailing and engineering faster and more accurate, giving you a competitive advantage.

FRAMECAD® Structure

FRAMECAD® Structure is a comprehensive detailing and design software package with advanced computer-aided engineering capability. FRAMECAD® Structure makes real time engineering calculations as the designs are created, analysing loads, deflections and other forces, making it an easy process to check for compliant engineering.

FRAMECAD® Factory 2

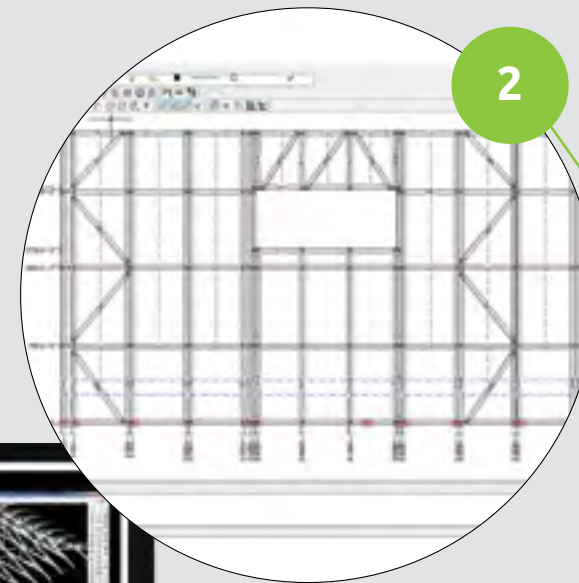
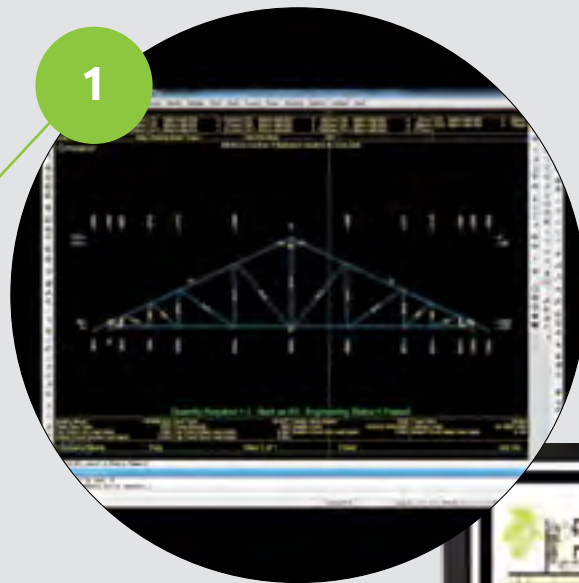
The future of machine control integration and light gauge steel technology is here.

Rebuilt from the ground up, FRAMECAD® Factory 2 offers an enhanced drag and drop user experience. Developed to improve manufacturing and production efficiency, FRAMECAD® Factory 2 is unmatched in its user capability.

Seamless Integration

As your factory control systems are created by the same company that makes the machinery, you get a fully integrated system where everything works together perfectly.

FRAMECAD® Factory 2 is a powerful machine control system that drives the FRAMECAD® manufacturing equipment. Data is transferred directly from FRAMECAD® Detailer for automated production of every component. FRAMECAD® Factory 2 is fully networkable and internet enabled, a feature that offers outstanding opportunities for maximising productivity and remote diagnostics.



FRAMECAD® Detailer

FRAMECAD® Detailer is a totally versatile detailing package with world-leading design flexibility, making it possible to adhere to local building codes, standards and practices.

Simply enter (or import) the dimensions and the type of frame you need, then FRAMECAD® Detailer will convert the information into detailed framing plans that are transferred directly to the FRAMECAD® manufacturing equipment.

FRAMECAD® Detailer allocates tooling functions for each component for FRAMECAD® Factory 2. With FRAMECAD® Detailer, design, quoting and manufacturing processes are seamlessly integrated.

MyFRAMECAD Customer Portal

Our cloud-based customer service portal gives you instant access to a range of handy tools anywhere in the world. Better manage your business, improve productivity and benefit from FRAMECAD's full support network quickly and easily.

Features include account and product management applications, useful design and marketing resources, interactive engineering tools and a fully stocked Knowledge Centre to help you become more efficient.

Rapid construction the smart way

Heavy duty, precision-orientated manufacturing equipment for the high-volume production of residential and commercial buildings.



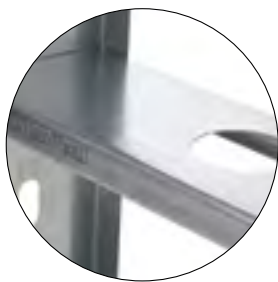
By integrating FRAMECAD® Factory 2 machine control systems on the FRAMECAD® manufacturing equipment with advanced FRAMECAD® design, detailing and engineering software, we have achieved a building system that is automated in the most intelligent way.



The FRAMECAD® suite of design, detailing and factory management software, combined with the speed, efficiency and reliability of the FRAMECAD® manufacturing equipment, offers you new levels of productivity and profitability.



FRAMECAD® manufacturing equipment automatically produces pre-cut profile for trusses and panel assembly for roofs and floors, as well as the framing for a wide variety of building designs, all from cold-formed steel.



Every piece is accurately formed, cut, punched, dimpled and individually labelled, ready for screw-together assembly by an economical workforce.



FRAMECAD® equipment is manufactured from leading components, for international serviceability. Essential spare parts are supplied with your plant to maximise production uptime.



All FRAMECAD® manufacturing systems are commissioned on-site by our technicians ensuring our client a perfect start. FRAMECAD® will ensure the client is fully operational and confident to use the FRAMECAD® system at the commissioning stage.

Our manufacturing systems include:

Single profiles

Residential & light commercial, and mid rise

- | | |
|--------|---------|
| F325iT | F450iT |
| J325iT | TF550H |
| P325iT | TM300iT |



FRAMECAD® F325iT
Residential to light commercial

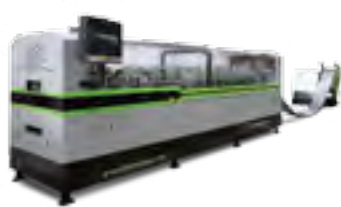


FRAMECAD® F450iT
Heavy residential & light commercial buildings

Multi profiles

Heavy walls, trusses, flooring and mid rise

- | | |
|--------|---------|
| FL650 | ST800iT |
| FB150 | ST900iT |
| PEB300 | ST1000 |
| | ST1200H |



FRAMECAD® ST900iT
Multi-profile system for flooring and framing



FRAMECAD® FL650
Flooring system, multi-level, residential, commercial buildings

MyFRAMECAD

Cloud-based customer portal

MyFRAMECAD is available to all of our customers and can be accessed anywhere in the world.

What's included

- Account and product management apps
- Useful design and marketing resources
- Interactive engineering tools
- Knowledge Centre
- Always adding new features and apps



My Tools

Interactive Engineering Toolkit

Get instant access to design tools and tables for accurate structural design calculations quickly and easily.



Knowledge Centre

Resource Hub

A unique online valuable source of information and learning material to support your business growth

My Support

Global Support Centre

Receive instant support, manage tickets and request spare parts.

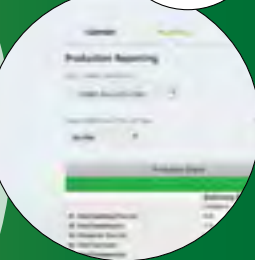


My Production

Production Reporting App

Monitor key production metrics for powerful business insights.

- Increase production output
- Reduce downtime
- Improve workforce productivity
- Boost efficiency



All the tools and applications you'll need to better manage your business and improve productivity.

FRAMECAD®

training programs

We put people first. That's why we've developed a series of valuable training courses guiding you through software, manufacturing and construction.

One of the most valuable FRAMECAD® training programs is our 'Best Practice' training. This course is specifically designed to advise on a system policy, process and procedures which, when implemented delivers an optimal solution for manufacture, assembly and the construction of cold-formed steel frames.

The benefits of FRAMECAD® best practice training are fundamental to an effective operation and ultimately ensures your productivity and profitability as well as:

- Improves business knowledge, values and expectations
- Incorporates high performance with low and manageable overhead costs
- Helps manage strict timeline schedules
- Offers long term reliability with production efficiency
- Ensures quality planning, quality assurance and quality control



FRAMECAD® training can be delivered in-house or on-site depending on your needs.

FRAMECAD® care

Behind FRAMECAD®'s leading combination of software, production and building products is a support team of worldwide leaders in their respective fields, providing you with the knowledge and advice you need for success, as well as the technology required to enable your business to perform.

FRAMECAD® supports our customers with a proven training system, consultants and around-the-clock access to technical expertise. Our unique combination of award-winning technology and personal services gives our customers confidence that using FRAMECAD® for construction around the world is the right choice.

FRAMECAD® believes strongly in the principles of continuous improvement and reinvests substantially into on-going research and development. Regular customer interaction is an essential component to our future development.



FRAMECAD® Mobile Factory

With mobile on-site factory options, FRAMECAD® offers flexibility for high volume projects with transportable manufacturing capability – anywhere in the world.

The FRAMECAD® Mobile Factory is a complete, secure, self-contained steel frame production factory that can be instantly located anywhere, even in remote areas with little or no infrastructure.



Building efficiency into construction

Assembling and erecting of cold-formed steel frame.

The assembly process can take place either at the factory or on-site. The frames are assembled and screwed together to form the panels and trusses. At the construction site, the panels and trusses are positioned for rapid and accurate erection.

Offsite & portable construction is growing, taking into account cost efficiency and ease. By building offsite, the process is the same every time. The work can be guaranteed to be delivered on time and to the highest quality, as mitigating circumstances such as bad weather do not delay the project.

FRAMECAD® System offsite steel framing solutions have been designed to be lightweight, durable, quickly assembled and to suit a range of specific projects – from transportable buildings, to temporary accommodation and portable offices, barracks or cabins, office work space and urban housing.



Offsite construction benefits



Safer: moving the building process away from the physical site into a controlled and predictable factory environment



Faster to build and built to last: an essential component of prefabricated or pre-engineered building



Less labour: in a factory setting using common tools and less skilled local labour



Simpler and faster: ideal for remote areas, disaster relief housing and for highly repeatable designs



Sustainability: less heavy machinery, less energy and less transport




Cost-effective: speed, method of construction and less trained local labour required


FRAMECAD® building products

Using FRAMECAD® building materials and our global supply chain, our customers can access all the building components needed to finish a building.


Our product range includes:




Steel




Specially designed fasteners




Specially designed connectors




Cladding and linings




Metal siding & roofing



Insulation / wraps



Metal roofing tiles



Composite floors (metal deck)

FRAMECAD® has specifically targeted a range of sub-assemblies that include exterior & interior walls, flooring and ceiling to envelop the building, providing you with the most advanced end-to-end steel frame design build solution.



Fibre cement/ render




Brick/ stone masonry




Weatherboard




Panelling




Metal




Framing the future of construction across the globe













About FoxLin

FoxLin, Inc, is an award-winning multidisciplinary architecture, design and consulting office led by principals Michael Fox and Juintow Lin. At FoxLin, we believe that changes in conventional thinking about architecture can ultimately revolutionize the way we design buildings. Our primary goal is solving client needs within their framework including schedule, budget, function and aesthetics. We offer clients innovative, yet practical and realizable options and solutions.

FoxLin has experience at a vast range of scales including urban planning, housing and commercial as well as interiors and interaction design. The firm also provides consultancy and energy/environmental analysis for sustainable architectural projects. The firm has local and international experience working on projects in Southern California, New York, the Midwest, Haiti, England, China, and Argentina.

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www.facebook.com/foxlinarch
<https://twitter.com/FoxlinArch>



About the Principals



Michael Fox, LEED AP

Michael Fox is a founding principal of FoxLin. Prior to FoxLin, he served as an assistant to engineer and inventor Chuck Hoberman in New York and as a design team leader for Kitamura Associates in Tokyo, Japan. In 1998, Fox founded the Kinetic Design Group at MIT as a sponsored research group to investigate interactive architecture. Fox directed the group for three years. He is the author of the book "Interactive Architecture" by Princeton Architectural Press and the upcoming book "Adaptive: bio-robotic architecture. His practice, teaching and research are centered on interactive and bio-mimetic architecture. He has won numerous awards in architectural ideas competitions. Fox's work has been featured in many international periodicals and books, and has lectured and been exhibited worldwide. He has taught on the subject matter of interactive, behavioral and kinetic architecture at MIT, The Hong Kong Polytechnic University, the Art Center College of Design, and SCI_ARC in Los Angeles. He is currently an Associate Professor of Architecture at Cal Poly Pomona and the President of ACADIA. Michael received his undergraduate degree from University of Oregon and his graduate degree from MIT.



Juintow Lin, R.A, LEED AP

Juintow Lin is founding principal of FoxLin. Prior to FoxLin, she worked in the offices of Marmol Radziner and Associates in Los Angeles, Foster and Partners in London, and Pei Cobb Freed and Partners in New York. She is also an Associate Professor at Cal Poly Pomona, where she teaches design and sustainability courses. She created and maintains the website toolsforsustainability.com, an online community for students and young practitioners to learn about and discuss energy and environmental simulation tools. Lin has given lectures on her professional and academic work, and organizes the annual Building Enclosure Sustainability Symposium held at Cal Poly Pomona and is a LEED Accredited Professional and Registered Architect. Lin also served as a Research Fellow at MIT working on "Sustainable Urban Housing in China" and co-edited and co-authored a book of the same title. While at MIT, Lin worked with Design Institutes from Tsinghua and Tongji Universities on housing projects in Beijing, Shanghai, and Shenzhen. Juintow received both her undergraduate and graduate degrees from MIT.

About FoxLin

The partnership of FoxLin combines the "sustainable" expertise of Juintow Lin with the "technological" expertise of Michael Fox to formulate a truly optimistic outlook on the integration of technology and architecture. The partners of Fox and Lin are both MIT-educated (Massachusetts Institute of Technology), and are both Professors of Architecture at Cal Poly Pomona. Philosophically, FoxLin is interested in using building technology that can be affordable, realistic and in and provide people with a better quality of life. We believe that technological advance and ecological responsibility are not necessarily a contradiction in terms.

FoxLin's work has been published in several magazines, journals, and books. The following pages highlight projects designed by FoxLin except where noted otherwise.



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houzz.com/pro/foxlin



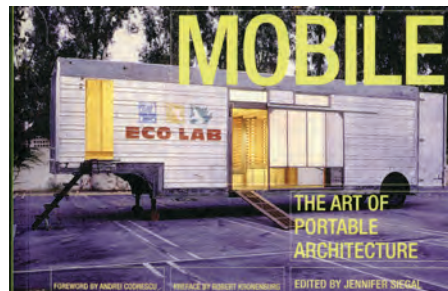
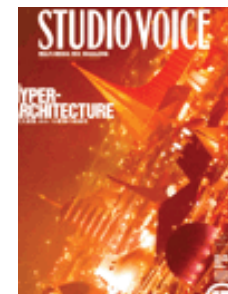
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949-325-3001



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Low-Density Residential



Triton Residence

Design: 2008

Location: Carlsbad, California

Total Floor Area: 3,700 sf

Total Site Area: 0.5 acre or 2,023 m²

Status: Complete

This ground-up residence sits on a beautiful bluff with panoramic distant ocean views in Carlsbad, California. The design is a simple, open floor plan in which every room has views to the ocean. It is geared towards outdoor living with the large living, dining and bedrooms with views and access to large adjacent outdoor deck that sits atop a bluff. The house is very light and airy inside due to floor to ceiling windows along the entire west side and the pure white main living area. To further accentuate the openness of the interior, the central stair is a single stringer stair with open treads that allow for greater views towards the ocean from the entry. The design takes advantage of the indoor-outdoor California lifestyle and includes outdoor barbeque areas, large expansive decks off of every room and a spa pool with spectacular views. The landscaping features lush sub-tropical planting to shelter the house from its neighbors and the street and features an entry garden with bamboo and a 9-foot tall water feature. The entry continues the garden theme with rock garden with steps to cross to enter the main living space.







Reade Street Loft Renovation

Design: 2003

Location: Tribeca, Manhattan, New
York City

Total Area: 1,500 sf

This renovation of a 1,500 square foot loft in Tribeca New York combines clean lines and a soft material palate. Use of the high ceilings within the small space is maximized with a second floor office and additional guest bedroom. The open kitchen serves as the centerpiece of the project that opens to the living and dining area. The goal was to provide a design that could maximize the flexibility and use of this small top-floor loft. Several transformable strategies were employed that included sliding semi-transparent walls and partitions. To further articulate the spaciousness of the design, the main stair includes open steel treads with a single stringer. Partition walls of various opacities were used so that even when closed, the space can read as an open loft from any room. The material palate was a conscious composition of dark woods and black painted steel to contrast the clean whites of the walls to create a contemporary feel for entertaining clients.







Jerry Seinfeld Auto Lift

Design: 2002

Location: Upper West
Side, Manhattan,
New York City

This project includes all aspects of design related to a small automobile museum. It includes a fully automated interior large-scale vehicle elevator connecting several floors for collector vehicle access and display. This project for a car collector exists in a 9-story building in the heart of Manhattan. The trajectory of the electrically operated trackless doors is controlled by a set of actuators, synchronized with the movement of the gates on the platform. This project is uniquely tailored to the history and character of these rare Porsche race cars, one that pushes existing elevator technology to its edge and uses materials in innovative and distinctive ways. Expanding the boundaries of its original concept, operating and riding this lift becomes a ritual that is part of the pleasure of collecting and personalizing such vehicle collections. The moving floor is a checkerboard of glass with each square illuminated by LED lights. Encased in the glass are glass engravings of drivers at full scale who were participants in the 1950's La Mans race.





Lemon Heights Remodel

Design: 2012

Location: Lemon Heights, Santa Ana,
California

Total Floor Area: 6,621 sf

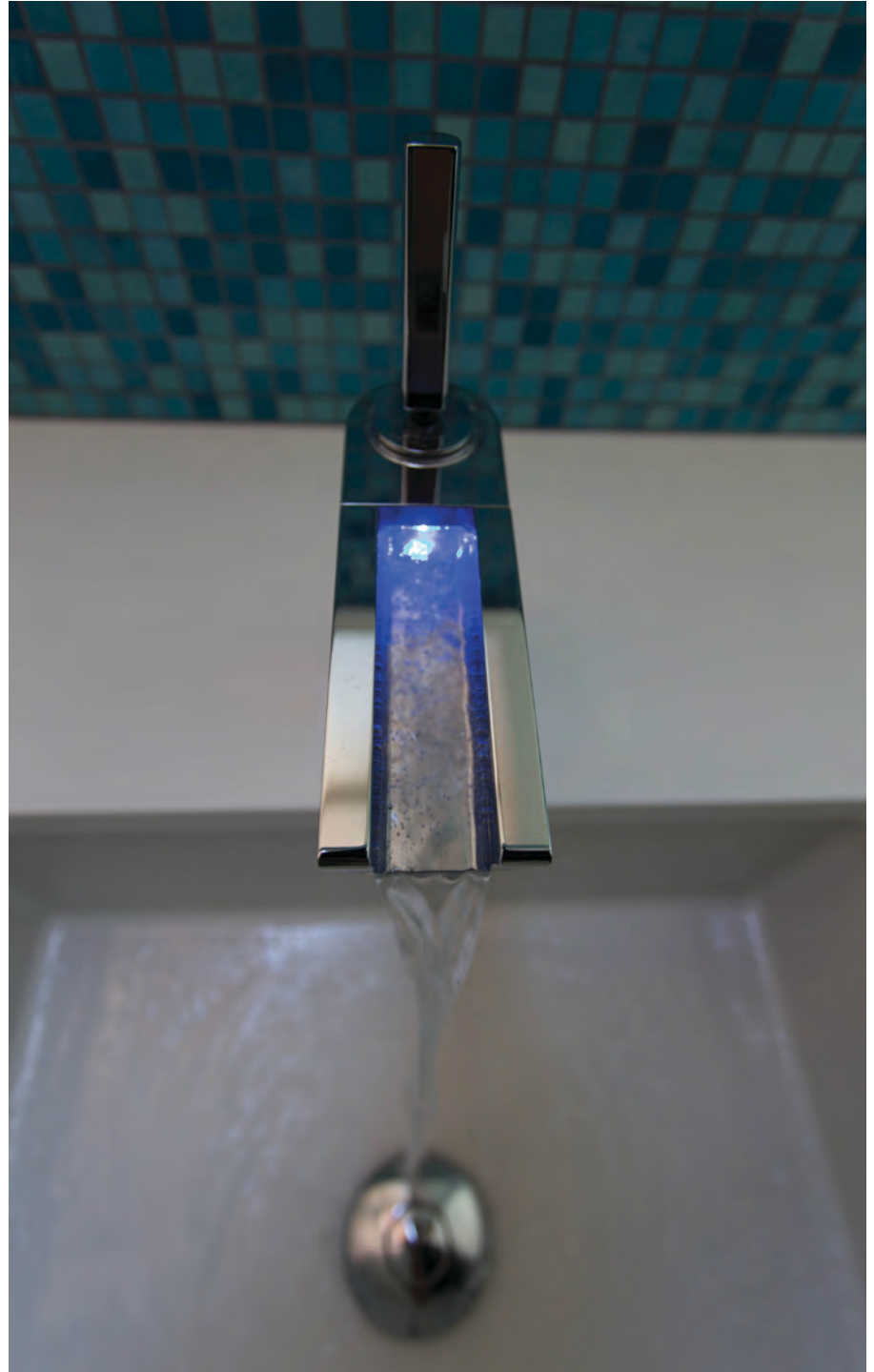
Total Floor Area Remodeled: 768 sf

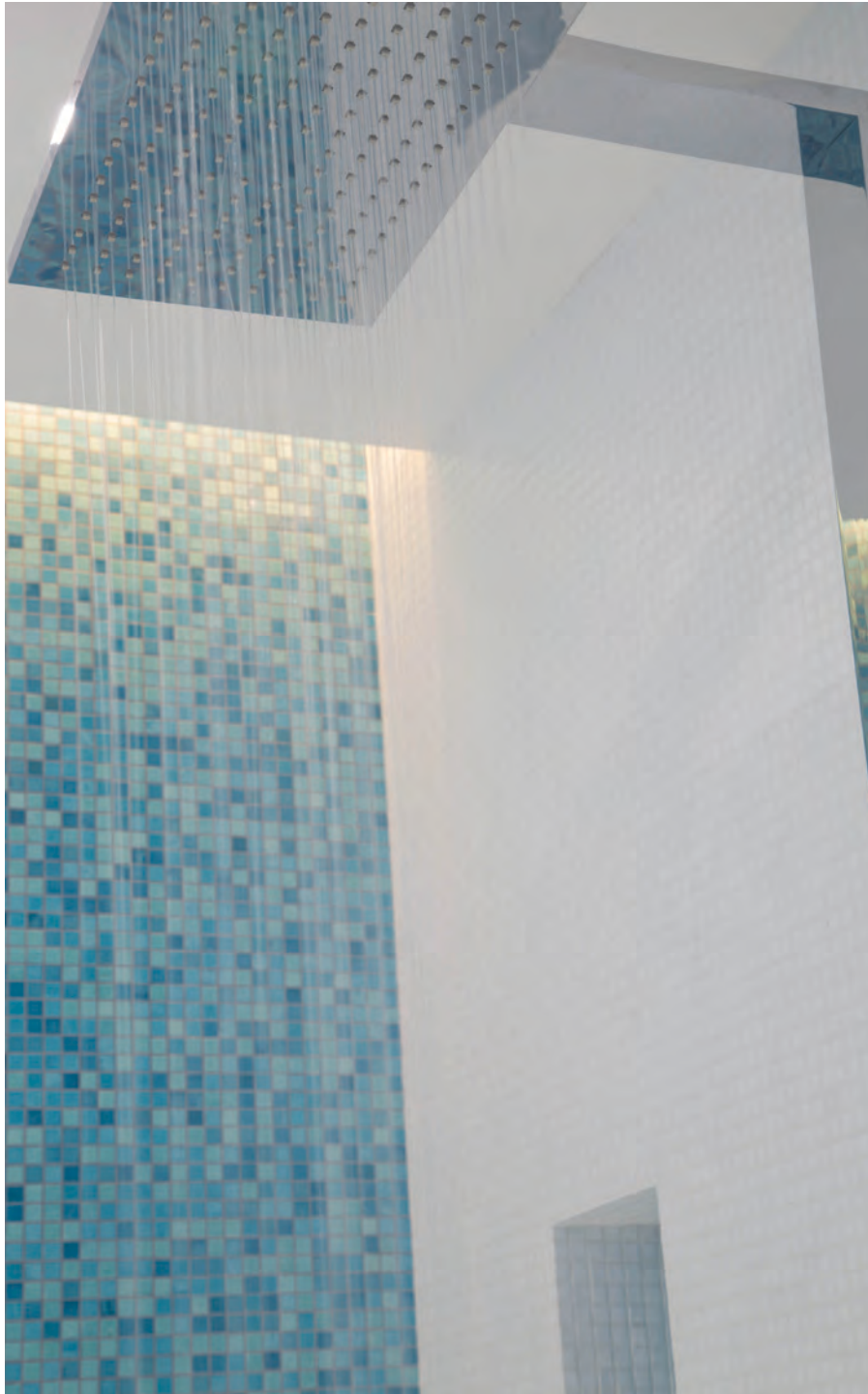
Total Addition Area: 370 sf

Status: Under Construction

This six-story house floats like a treehouse over a sloping site. The design encompasses the remodeling of three bathrooms and the primary guest suite. The project also included the preliminary design for a basement addition, guest suite, boy's bathroom and master bath. The design takes on a number of contemporary strategies while still fitting with the classic wooded nature of the original design. Minimal detailing and floating horizontal lines are used throughout to complement the natural warm color palate. Curving playful forms are also used to counter the rigid geometries of many of the spaces in to break down the scale of the spaces. The project was on a fast-track delivery which included the specifications for all materials and finishes.











Residential Remodel



Laven Residence

Design: 2013

Location: Fox Point, Wisconsin

Status: Design Development

The goals of the design were to add a larger master bedroom and bathroom with views of the lake and create a warm and spacious kids suite. In addition, the design includes a kitchen remodel, new open stair design, and addition of a conversation room.



Low-Cost Prefabricated Modular Housing

Design: 2010 - current

Location: Haiti, Angola, Mozambique,
and Nigeria

Total Units: 200 - 5,000 units

Total Floor Area: 7 - 50 acres

Note: Design carried out in
conjunction with Cal Poly
Pomona Architecture Students

The prefabricated modular housing includes a number of designs at a wide range of scales that are based exclusively on a patented **panel technology** under global rights for development. The **concrete composite** panel is created from 100% recyclable materials. Development efforts are being carried out with **Quality Home Materials** which is **establishing** complete manufacturing and fabrication facility **globally**. The designs include permanent housing ranging from 250 to 5,000 square feet as well as master planning. The pre-fabrication nature of the design strategy includes a high integration of local labor by manufacturing the panels locally. The design also prioritizes a very fast erection time that allows a house to be constructed on site in only a few days.









Qing-Su Vocational School New Campus – 青苏职中新校区

设计时间：2014

地址：中国成都

总建筑面积：103,832平方米

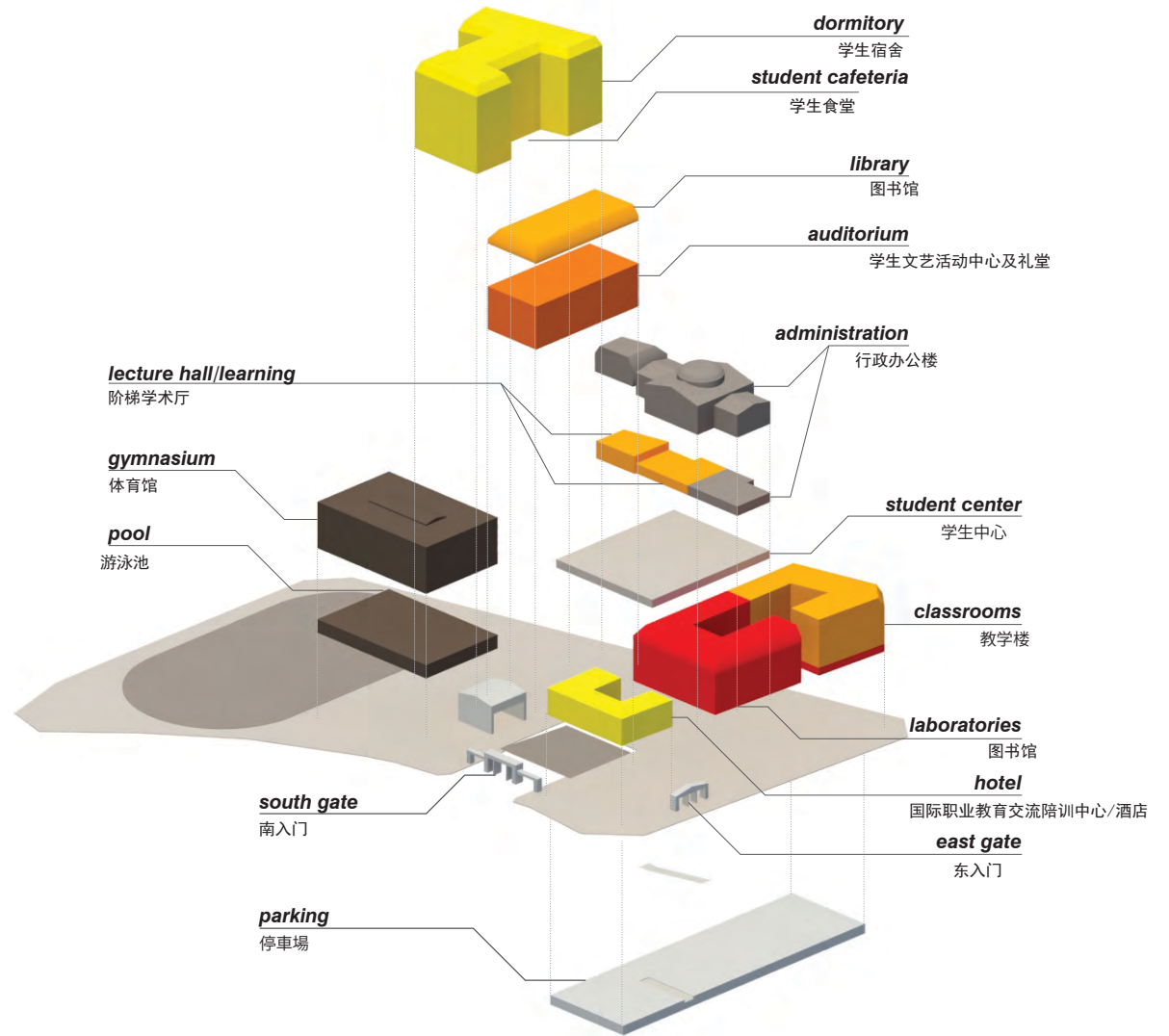
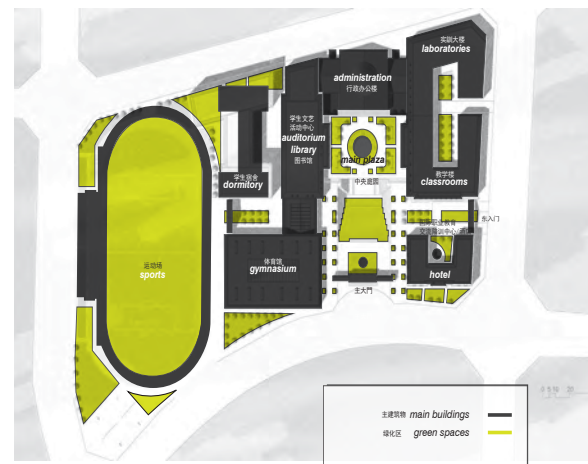
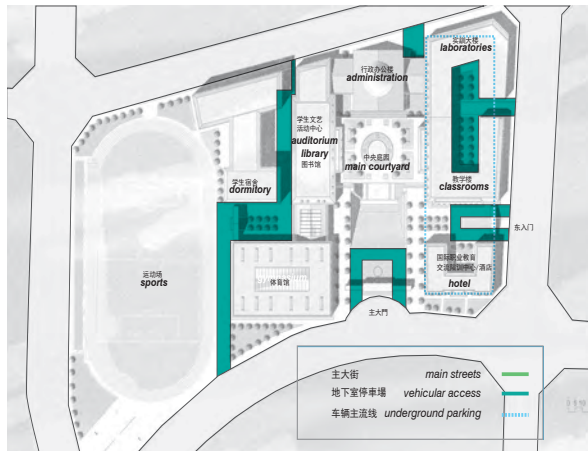
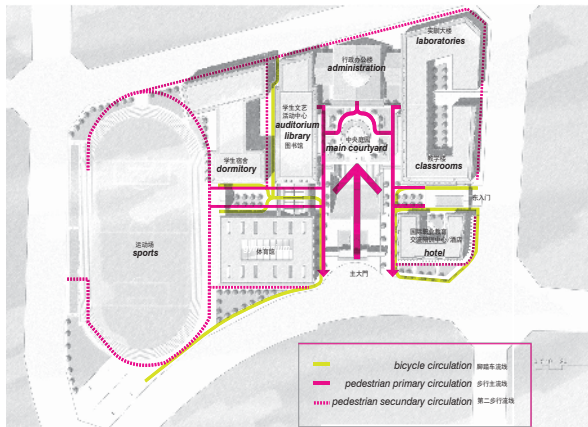
总用地面积：16,971平方米

本设计为新青苏职中校区塑造一融合现代设计与古典欧洲建筑组合的校园。本设计风格受到后欧洲文艺复兴建筑的影响,展现一种坚毅和持久性的古典之美。此建筑风格也为本校园设计带来重大的影响,以中央庭院作主轴,各建筑物围绕着此大型的中央庭院,而主要的行政大楼成为中轴线的中心。主循环动线已此中轴线化分为东西二侧,国际职业教育交流培训中心与旅馆位在校园的东面,而体育馆则座落在西侧。在主校区的中心轴由二侧的楼梯拥下至地下层的学生活动中心,是所有学生白天和夜晚的活动区也成为本校园的心藏地区。在中心二侧的阶梯,倾斜的大草坪及建筑物环绕在各种绿色庭院中,提供美丽的绿化环境。除了遍布郁郁葱葱的植栽,本校园采用可持续建筑原则应用到采光和自然通风。



Institutional





Accessory Units



"Wedge" Cabin

Design: 2014

Client: California State Parks

Location: Various

Awarded: The project has received a lot of press

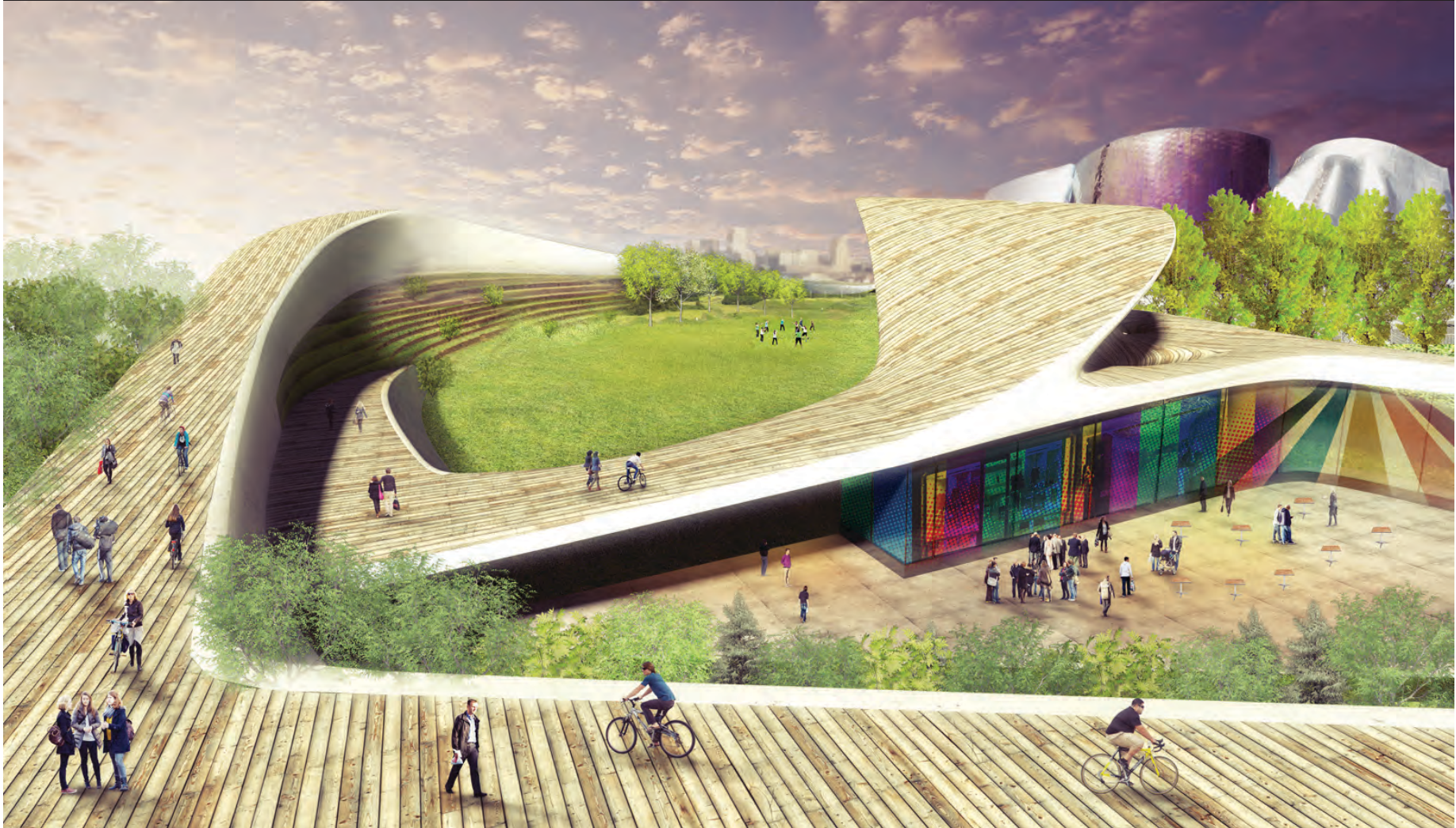
Note: Juintow Lin was the instructor in charge of this class and the project manager for the design, construction, and exhibit

The Wedge is among the new cabin designs that will eventually be integrated into California State Parks. Image courtesy of Paul Vu.

In an effort to modernize the experience of staying overnight at California State Park cabins, the Parks Forward Commission invited architecture students from California State Polytechnic University, Pomona, to design new cabins to be placed at campgrounds throughout the state. The commission, an independent initiative designed to address the cultural, financial, and operational challenges facing California State Parks, revealed the designs at the State Fair in Sacramento and the LA County Fair in Pomona. Students were asked to balance issues of culture, sustainability, mobility, and construction. They answered with structures that could be easily prefabricated and relocated, with simple construction techniques and materials. They are low maintenance, fire resistant, and ADA compliant. The Wedge Cabin, a slope-roofed wood building, is a modern take on the traditional cabin. It was built on a chassis in a factory in four days and shipped on a truck to the fair. The possibility for variations in materials and configurations are endless.



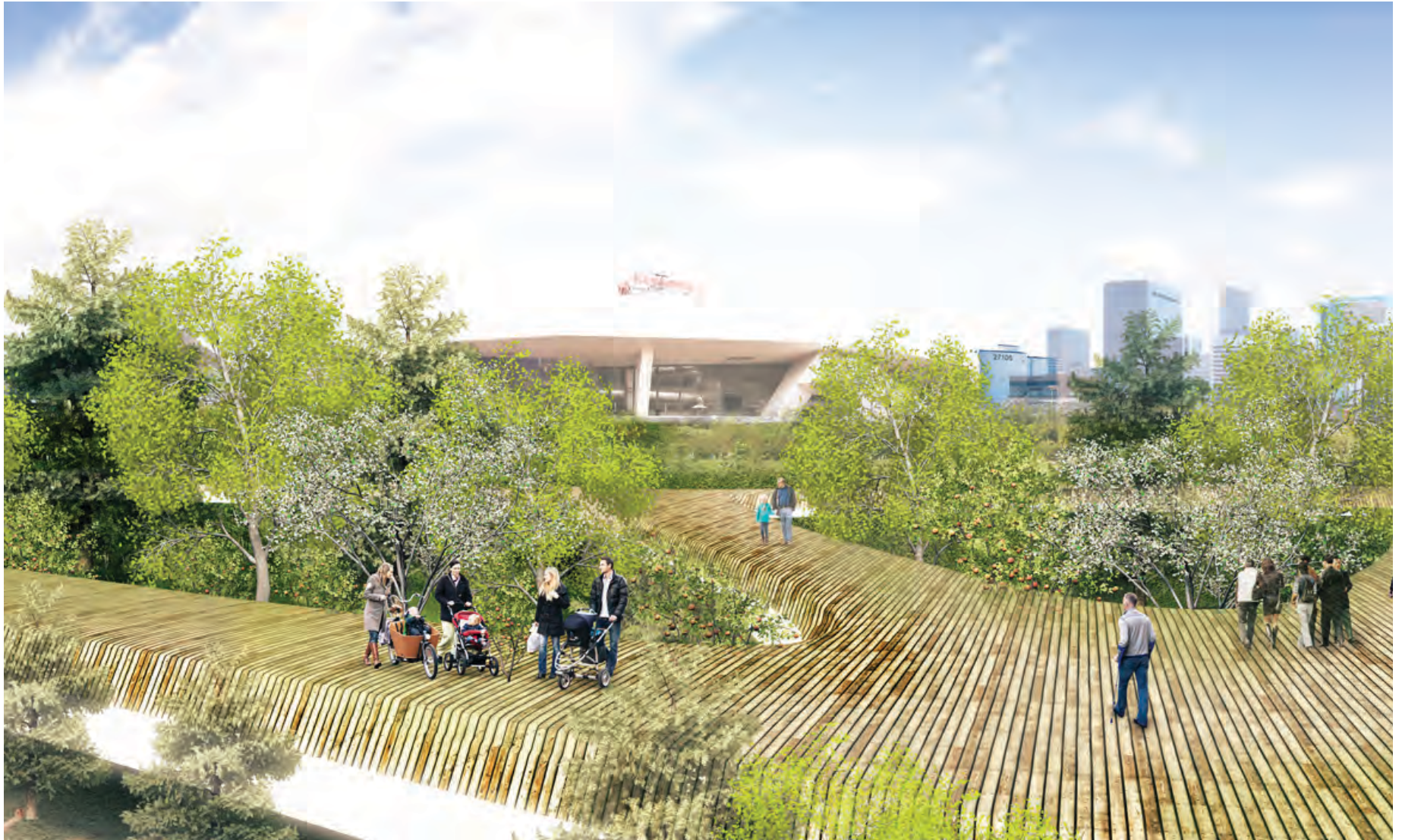
Competitions



Cycle Hill Seattle

Design: 2012
Location: Seattle, WA

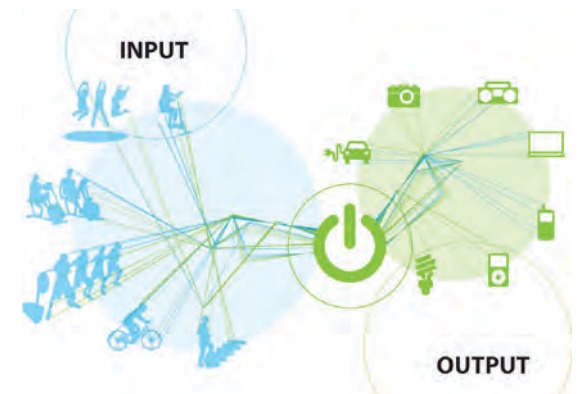
Cycle Hill Seattle serves to revitalize the cultural campus, engage participation from the larger urban community, encourage sustainable building practices and change attitudes towards healthy lifestyles. At the core of this proposal is a metropolitan hub focused on both a massive networked urban bike-share program as well as an interactive energy harvesting playground. The bike-share program reaches out far into the greater Seattle metropolis with sharing stations located at strategic points throughout the city. The singular project can make a powerful and lasting impact through encouraging a change in attitudes towards alternative public transportation. The proposal can realistically be scaled and replicated in other cities to impact bicycle-friendly attitudes in the 50% plus of the world's population who live in the global megalopolises. On the



local level, the site is programmed in a flexible and multi-purposed manner that provides a large open field on one side and a pedestrian forest on the other connected by a series of bike- and walkable ramps that weave together an amphitheater for concerts, a marketplace and shopping all organized to encourage open connections to the reinvigorated the broader cultural campus. The proposal includes an innovative approach towards interacting in public space via numerous fun kinetic play structures that appeal to people of all

ages. The structures are designed to be both interactive and collaborative in nature to encourage social connections and engage both first-time tourists and returning visitors to the site. The energy generated by people doing activities of all types, will be harvested to supplement the power needed on the site. Taking a cue from leisure sports, the proposal seeks to demonstrate that having fun in an urban context and healthy activity are not necessarily a contradiction in terms.







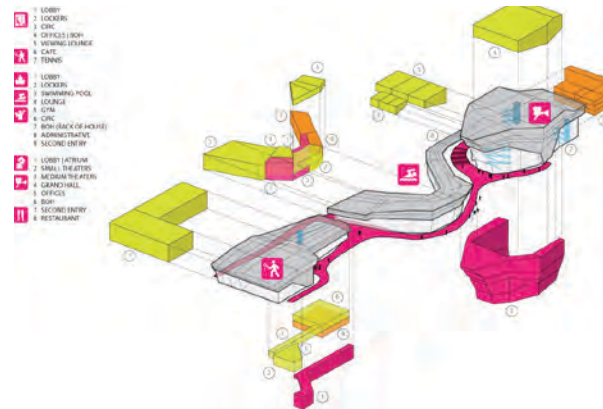
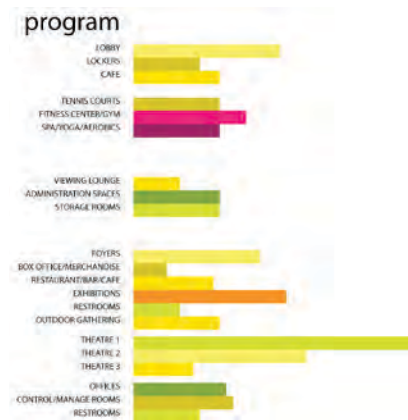
Recreation Plaza

Design: 2012

Location: Xifeng Town,
Tieling City, China

Status: Schematic Design
Complete

This project serves to establish a landmark international presence in Xifeng Town, Tieling City in Liaoning Province. The three buildings, including a Theater, Natatorium and International Tennis Hall are seamlessly woven together into the landscape along the river's edge. At the core of the proposal is an integrated network of paths that anchor the buildings both to the ground and to each other. The sculptural formal language serves to simultaneously reflect the mountains beyond and the gracefulness of the flowing river. The design has equal presence both on the river (north) and street (south) side. Programmatically, the theater contains a large auditorium for Opera and assembly meetings as well as smaller theaters for watching movies. All theaters are accessed from a large open lobby which is connected to an open public plaza on the streetscape. The theater building flows into the Natatorium which formally embraces a courtyard on the river side and allows for natural sunlight to penetrate the swimming pool on the top floor. The International Tennis Hall sits at the end of the site and is formally tied to the complex of buildings through the pedestrian walkways both on the north and south and rises up with a gesture of motion and athleticism.





Northern Technical School

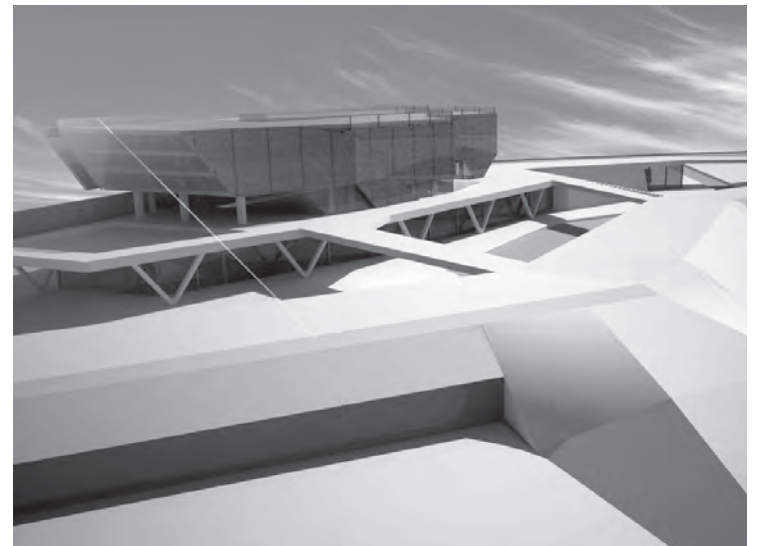
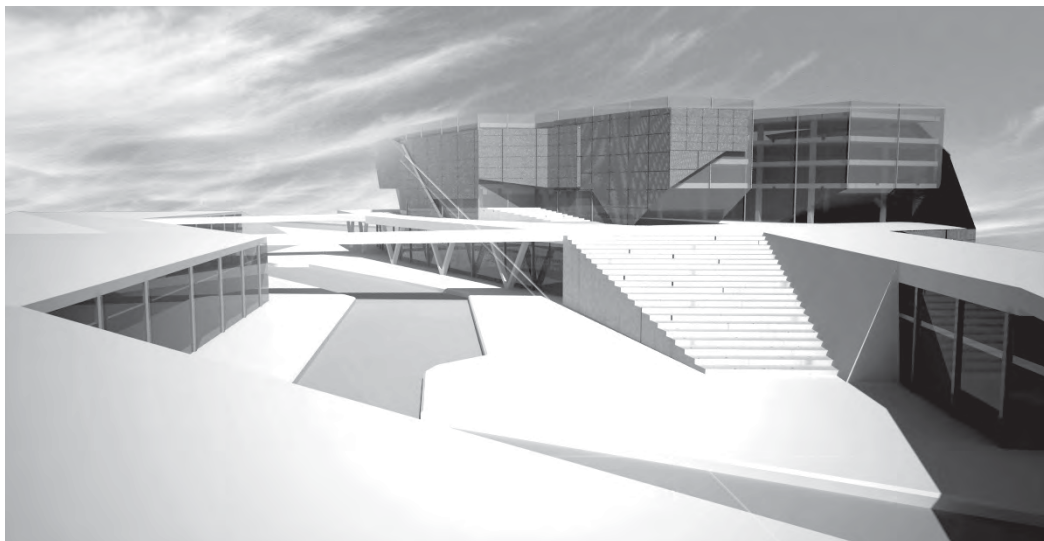
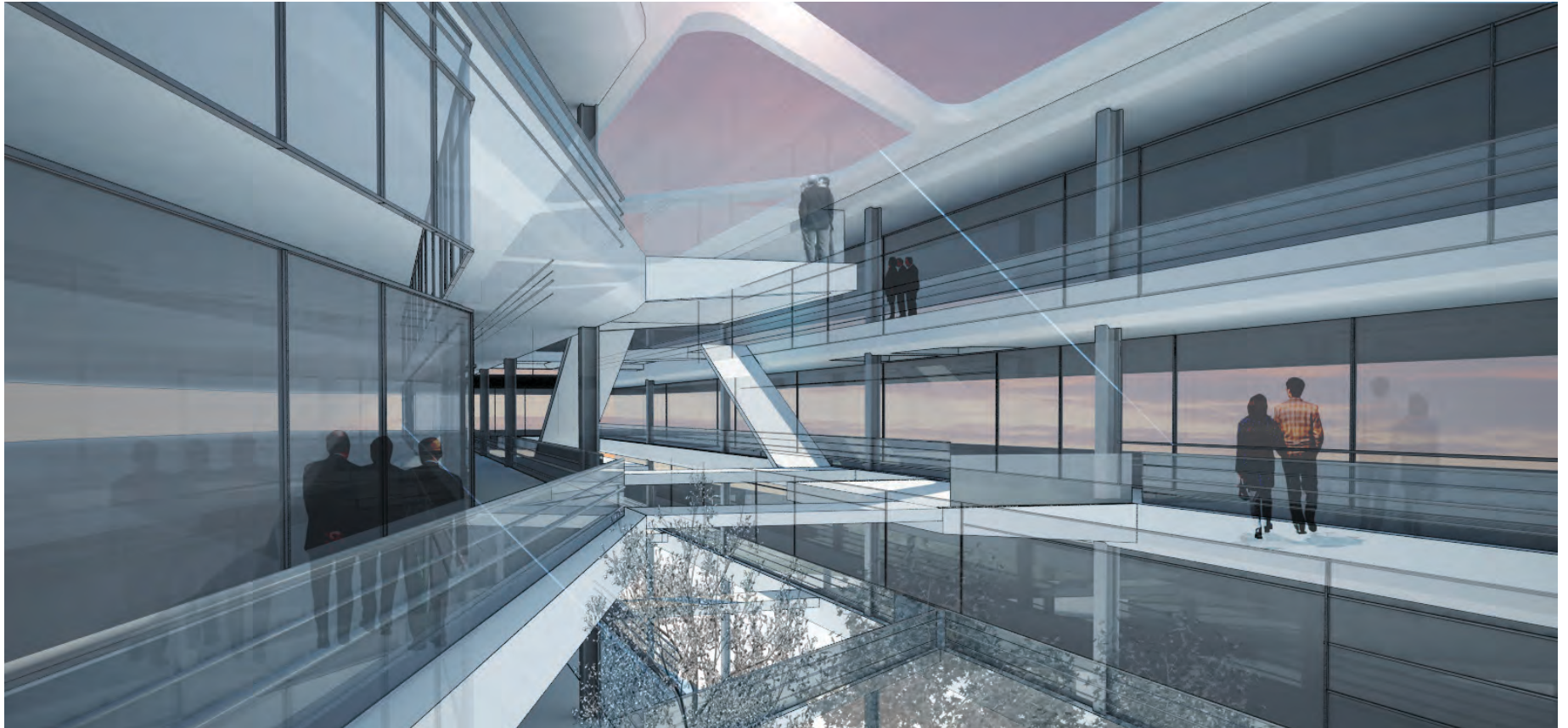
Design: 2011

Location: Liaoning, China

Area: 753,470 sf (70,000 sm)

Lot size: 2,511,540 sf (233,330 sm)

The Northern Technical School Master plan is a landmark campus that facilitates a sense of urban community. The plan facilitates high levels of productive hands-on learning as well as smaller quiet places in nature that serve as a reprieve to the urban context and academic environment. The labs and the workshops on the ground level embrace and wrap around a central courtyard which is developed both for pedestrians and vehicular activity. The courtyard is both enclosed by the labs at the bottom of the main building and the long workshops on the river side. Bridged openings between the workshops allow easy pedestrian access and visual connections to the riverfront. The main entry to the main building is by means of a grand open air public stair which rises to the level of the platform. From the platform level, pedestrian activity encircles, looks down upon and crosses over the central working courtyard of activity and connects to the river beyond. All areas from the main building have easy access to the central atrium and to the level of the platform and looks out upon the river's edge.





Yuanda Headquarters

Design: 2012

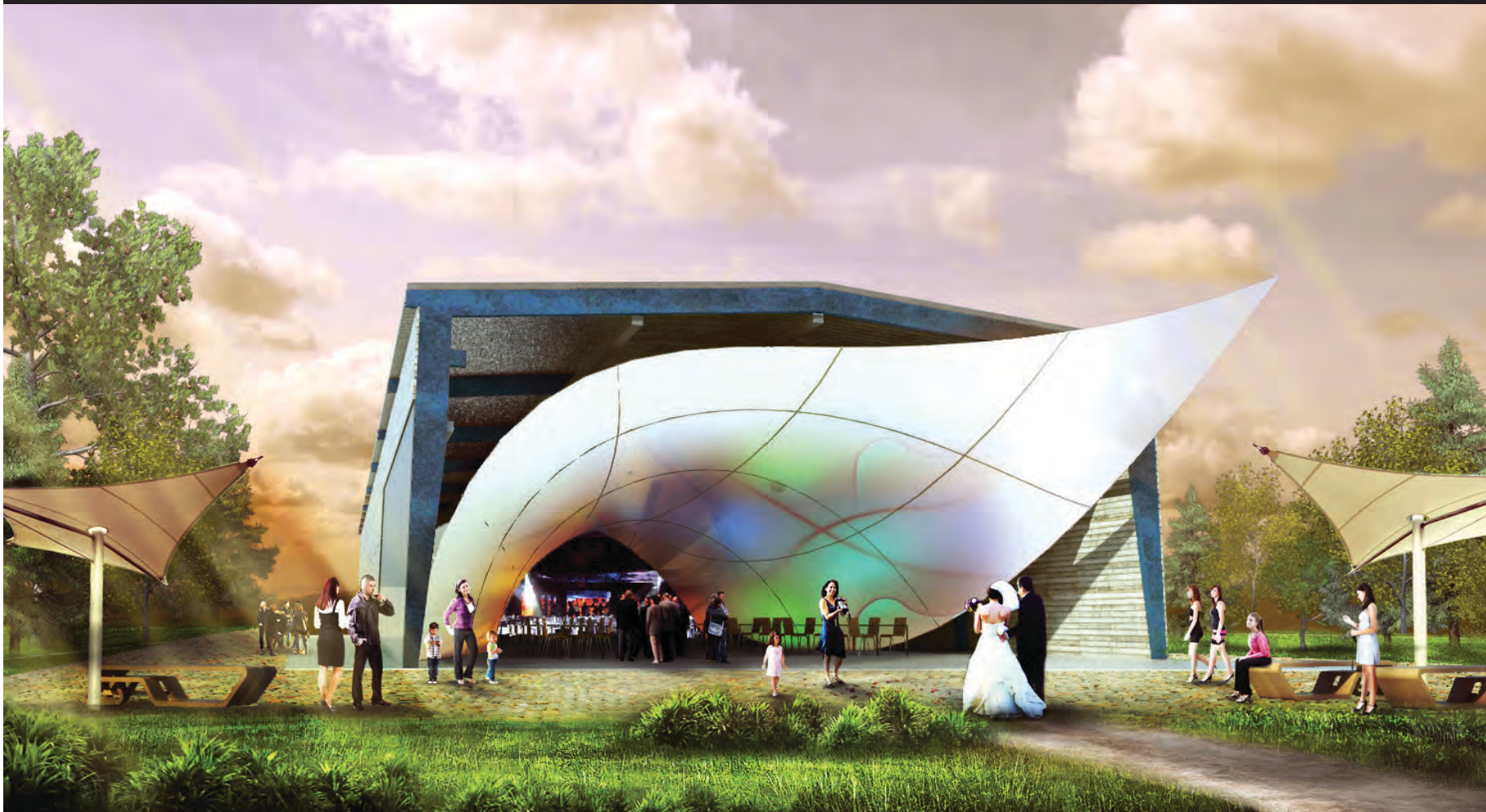
Location: Liaoning, China

Area: 594,920 sf (55,270 sm)

Lot size: 1,068,860 sf (99,300 sm)

The internalized master plan for China's largest curtain wall company at once presents a strong and dynamic urban street presence and a sense of community through a series of human-scale green space plazas. The general organization places the entry and offices on the street edge near the entry to the plaza with the research buildings surrounding the internalized courtyard. The exterior has a uniform perimeter, whereas the interior façade is more varied to create a showcase of varying curtain walls. The interior research labs face into a green courtyard which serves as a natural counterpoint to the urban environment. The central courtyard is broken up into smaller spaces for social gathering primarily through a series of simple height variations. The green space is articulated with pedestrian bridges which provide a variety of visual connections and alternate circulation routes. Those who work at the campus will feel a sense of community and of belonging through an environment that facilitates spaces of hard work alongside a connection to nature.





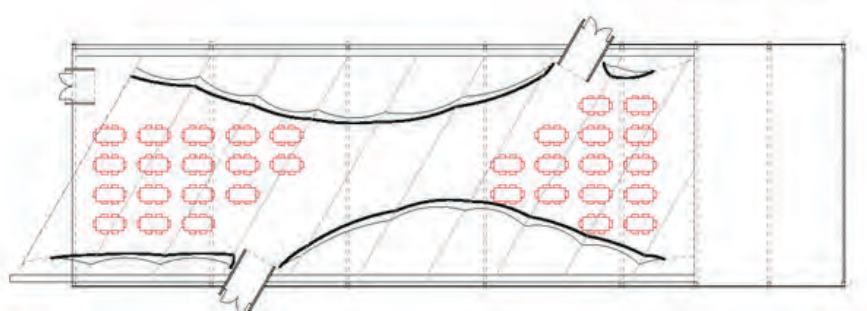
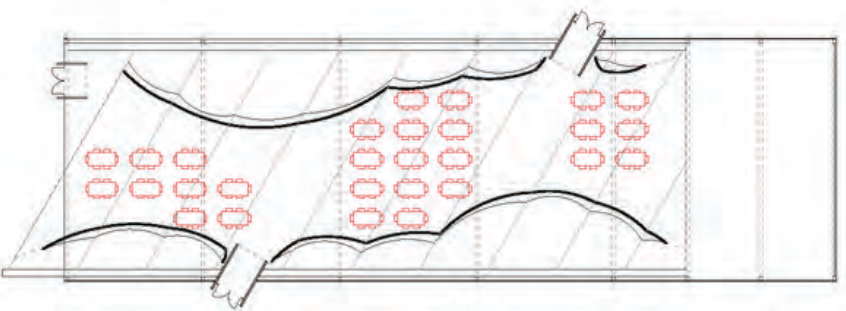
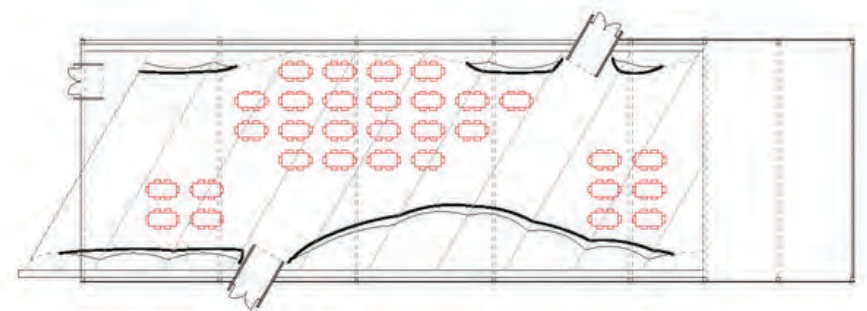
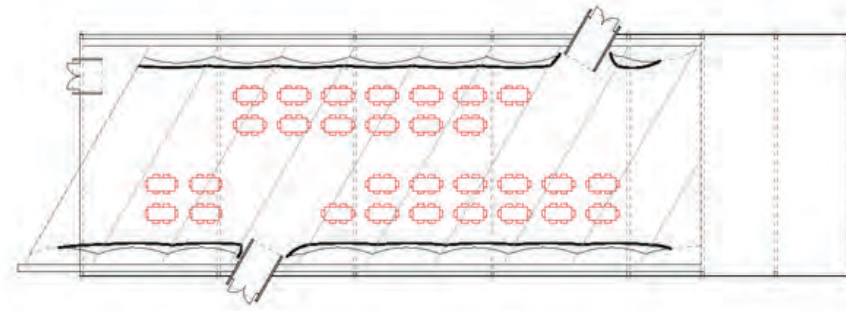
Eco-29

设计时间：2012
地址：特拉维夫
总建筑面积：860平方米
状态：已竣工

力环境。此项目意图利用动态的空间布局来满足婚礼过程中快速变化的空间上的需求，以及其它活动场所，例如市场，企业产品发布会等等。动态设计包括了风力冲浪，攀岩，航海以及传统工业自动化的种种方面。此建筑共使用55个发动机，其中每肋使用7个发动机（5个在肋上，2个在地面。）

Eco-29 是一个通过动态变形以适应空间的婚礼礼堂/活动场所。此建筑项目为类似项目中所建造的最大型的电脑操控动

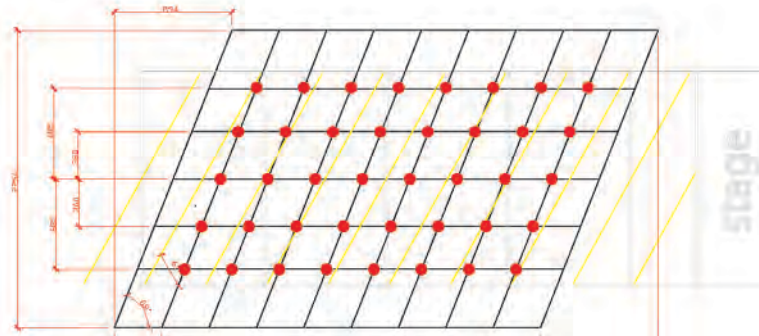






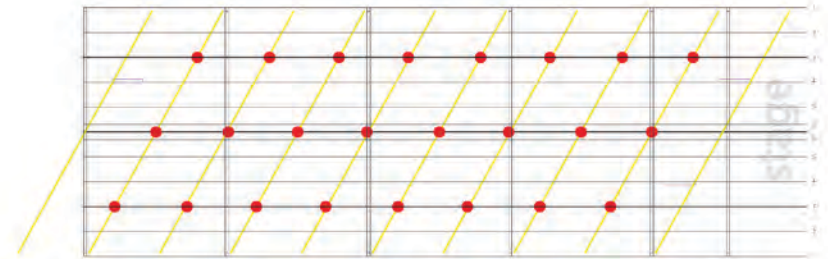
Knot Connections

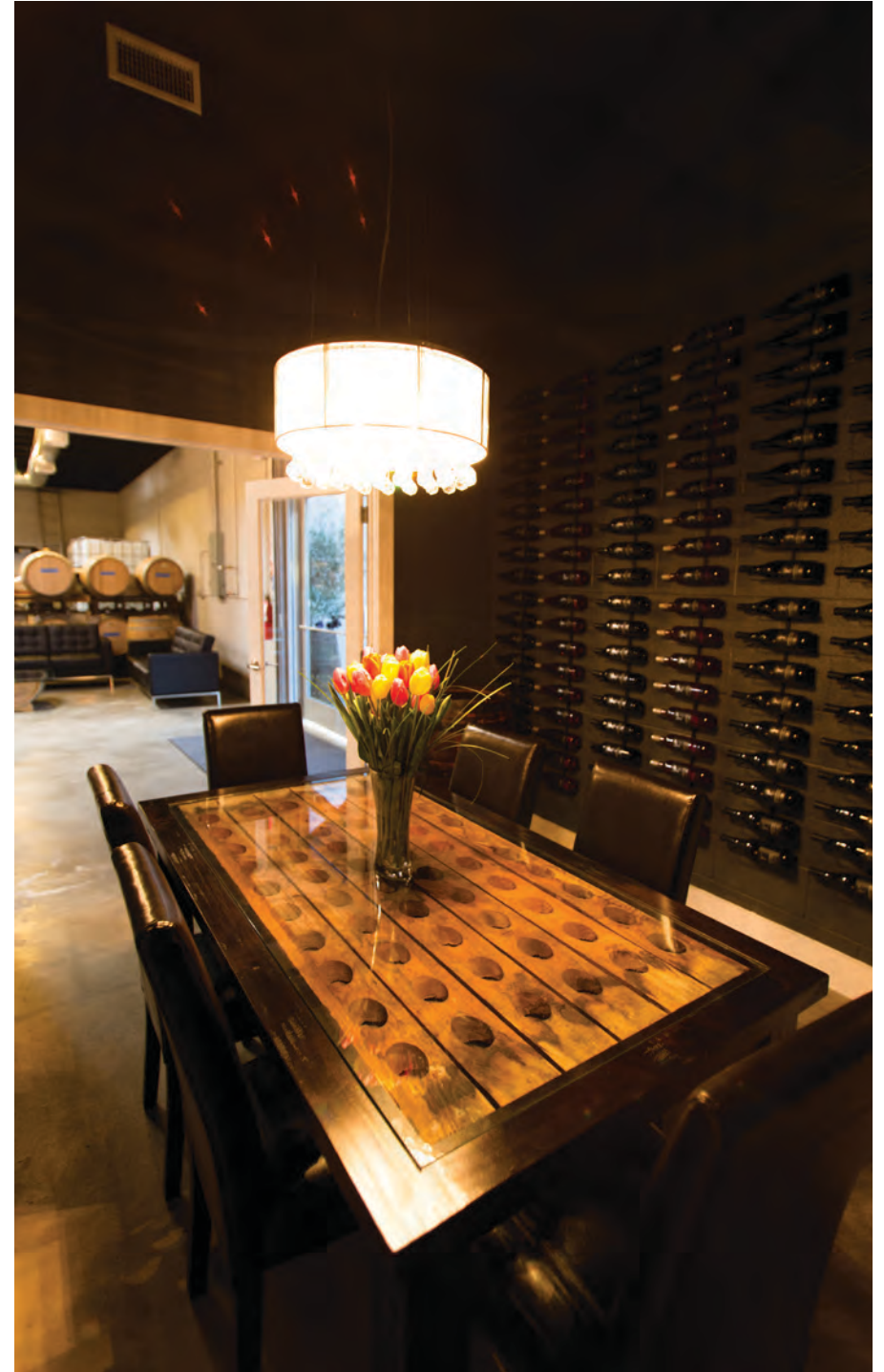
total connections: 40



Pulley Connections: Structure

total connections: 24







Eco-29

设计时间：2012
地址：特拉维夫
总建筑面积：860平方米
状态：已竣工

所建造的最大型的电脑操控动力环境。此项目意图利用动态的空间布局来满足婚礼过程中快速变化的空间上的需求，以及其它活动场所，例如市场，企业产品发布会等等。动态设计包括了风力冲浪，攀岩，航海以及传统工业自动化的种种方面。此建筑共使用55个发动机，其中每肋使用7个发动机（5个在肋上，2个在地面。）

Eco-29 是一个通过动态变形以适应空间的婚礼礼堂/活动场所。此建筑项目为类似项目中

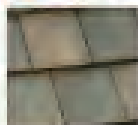


On the Boards





Oxford Resident Material Board



Concrete Roof Tile

Eagle Roofing Products
Bel-air
California Mission Blend



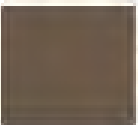
Cement Plaster

Expo Stucco
Smooth Finish
Tumbleweed



Window

Jeld-wen
Prairie grid
Bronze



Fascia Board

Dunn Edwards Paint
Painted 2x4
Wild Mustang DEA161



Wood Column

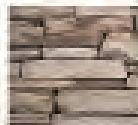
Expo Stucco
Stuccoed Foam
Tumbleweed +21b

Crown Moulding

Expo Stucco
Stuccoed Foam On 1x8 Board
Tumbleweed +21b

Pre-cast Trim

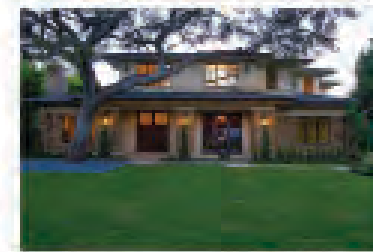
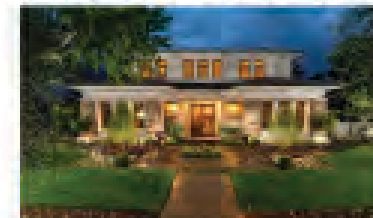
Expo Stucco
Pre-cast
Tumbleweed +21b



Stone Veneer

Eldorado Stone
Rustic Ledge
Pinetop

Examples of Prairie Style



Downspout/Gutter

Custom Iron Work
Sheet Metal
Rustic Bronze



Wood Trim

Dunn Edwards Paint
Wood
Outer Boundary DE6021



Garage Door

Amant
Oak Summit Collection
Walnut



Exterior Lighting

Modern Forms
Fog
Graphite





"Bubbles" Exhibit

Design: 2005

Client: Materials & Applications Gallery

Location: Silver Lake, Los Angeles CA

Awarded: The project won the AIA/LA Honor Award for Excellence in Architectural Design in 2007 (highest award for exhibits)

Collaboration: This project was done in collaboration with nondesigns, Brand Name Label, Axel Kilian and Darius Miller.

Note: This project was also built/constructed by FoxLin

Bubbles is an adaptable spatial pneumatic installation at an urban scale. The open-air interactive installation consists of 16 eight-foot diameter volumes or "bubbles" that inflate and deflate in reaction to the changing occupancy of their surrounding space. Visitors encounter and adaptive volumetric sense of architecture rather than a static surface. When a visitor bumps or pushes a bubble, it deflates, providing a pathway into the installation. More activity opens up the space, making it more navigable. When no visitors are present, the system returns to a state of equilibrium in which the bubbles fill the space entirely. The huge rip-stop nylon airbags hang in pairs connected by clear ducting. When touched, sensors initiate an exchange of air between the spheres. From the onset, the intent was to make a fully immersive architectural environment which could spatially respond to the changing social conditions. How the bubbles interact with humans over the course of time is impossible to predict.





"Neural Sky" Exhibit

Design: 2010

Locations: San Bernardino and Indio,
California

Venue 1: "Beyond Wonderland",
30,000 visitors, one day

Venue 2: Coachella, 200,000 visitors,
3 days

Note: This project was a student
design/build project at Cal Poly
Pomona, facilitated by FoxLin

The Neural Sky Exhibit is a large interactive exhibit that was designed and built to be exhibited at the Beyond Wonderland Concert and at the Coachella Valley Music and Arts Festival. The primary goals were to develop and understand strategies that can be applied to interactive architecture. Heavy emphasis was placed on creating a full-scale environment that a person could walk through, interact with, and experience spatially. The large scale environment was developed with over 10,000 computer-controlled LED lights that moved throughout the metal structure like a neural network. From an interactive standpoint, the idea is that the lights connect people within the space by literally connecting their locations with a path of light. From a control standpoint, the project focused on decentralization as a powerful control strategy for such systems of individually networked devices whereby there is no central control system. When such a structure is applied to a large system, there is a potential for emergent behavior when a number of simple systems operate in an environment that forms more complex behaviors as a collective.



Published Books

Interactive Architecture (co-authored by Fox) was published by Princeton Architectural Press in 2009.

Sustainable Urban Housing in China (co-edited and co-authored by Lin) was published by Springer in 2006.

Invited Lectures

2013

Keynote Lecture, Eighth National Architectural Digital Technology Teaching Seminar, Tianjin University, Tianjin, China – 08/2013
Keynote Lecture, The 9th International Conference on Intelligent Environments – IE'13, Greece – 08/2013
Hong Kong Polytechnic University, "Catching Up with the Past", Hong Kong – 03/2013
HICSS (International Conference on System Science), "Revisiting Interactive Architecture," Maui, Hawaii – 01/2013

2012

13th Venice Architecture Biennale – "Space Architecture", as part of the 2012 Ai [Architectural intelligence] – 06/2012
Maribor 2012 European Capital of Culture, Presenting Space Architecture at CPP – 2012
ACADIA Conference, "Conventions of Control: A Catalogue of Gestures for Remotely Interacting with Dynamic Architectural Space," CCA, San Francisco – 10/2012
Tongji University, "Interaction Design" at PARAsite headquarters, Shanghai, China – 07/2012
Tianjin University, "Interactive Architecture", Tianjin, China – 07/2012

ACM SIGCHI 2012 Conference on Human Factors in Computing Systems Workshop entitled "Ar-CHI-tecture" Talk entitled "Spatial Gestures for Architecture," Austin, TX – 05/2012
ASES National Conference, "Thermal Comfort Simulations for Disaster-Relief Housing for Haiti," Denver CO – 05/2012
PolyTeach, "Tools for Sustainability," Cal Poly Pomona, CA – 04/2012
Association of Collegiate Schools of Architecture (ACSA), "Haitian Rebuilding Initiative: Technological Solutions that Hinge on Empowerment," Boston MA – 03/2012

2011

NCKU National Cheng Kung University, Tainan Taiwan – 12/2011
2011 IAD Congress World Design Expo, Taipei Taiwan – 10/2011
NTUST National Taiwan University of Science and Technology, Taipei Taiwan – 10/2011
University of Southern California – 05/2011
American University of Sharjah (AUS) "Interactive Architecture", Sharjah – UAE – 04/2011
Tsinghua University, "Interaction and Sustainability", Beijing, China – 03/2011
Shenyang Jianzhu University, "Interaction and

Sustainability", Shenyang, China – 03/2011
Architectural Institute of Japan, "Interactive Architecture", Tokyo, Japan – 03/2011

2010

OBJECT Gallery, "Recent work of FoxLin", Claremont CA – 11/2010
Space2010, Anaheim CA – 08/2010
Building Enclosures Sustainability Symposium, Pomona – 04/2010
ETH, Eidgenössische Technische Hochschule, "Interactive Architecture," Zurich, Switzerland – 04/2010
Association of Collegiate Schools of Architecture (ACSA), New Orleans – 03/2010
HKPU, Hong Kong, "Recent Work", 03/2010
Dynamic Dimension Design, Tel Aviv, Israel, 03/2010

2009

Tsinghua University, Beijing, China – 09/2009
NCKU National Cheng Kung University, Tainan, Taiwan – 2009
Int. Conf. on Interaction Design in Beijing – 09/2009
NCKU in Tainan, Taiwan – 09/2009
Lecture at NCTU in Hsinchu, Taiwan – 09/2009
ACADIA in Chicago – 08/2009
ARCHIBOTS/Ubicomp in Florida – 08/2009
CAADRIA in Taiwan – 08/2009

HKPU, Hong Kong, "History of IA", 03/2009

2008

Clemson University, Clemson, SC, "History of IA and FoxLin", 11/2008

University of Buffalo, SUNI, Buffalo, NY, "History of IA", 10/2008

NCTU, Taiwan, "Experimenting with Experience", 01/2008
Hong Kong Polytechnic University (HKPU), Taiwan, "Scale in Design" - 01/2008

2007

Mobius LA, AIA Symposium, Los Angeles, CA - 10/2007
Plenary Speaker, ACADIA Conference, Halifax, Nova Scotia - 09/2007

2006

Situated Technologies Symposium in New York - 10/2006
Plenary Session, ACADIA Conference entitled "Smart Architecture at Otis College of art and Design entitled "Promises and Pitfalls of IA" - 08/2006

2005

MAK Center, LA Forum Lecture Series, "New Horizons" Los Angeles, CA - 11/2005
Woodbury University, "The End of Mechanics", Los Angeles, CA - 09/2005
International Conference on Sustainable Design, Bergamo Italy, Servitec - 09/2005
Talesin West "IA", Near Phoenix, AZ - 03/2005
University of Utah "Horizons", Salt Lake City, UT - 04/2005
MIT "Design and Computation Lecture Series", "A New Sense of Interactive Architecture", Cambridge MA - 04/2005
UST "Building the Impossible: Architecture in Motion Symposium", St. Louis, Mo - 04/2005
Harvard University, "A New Sense of Interactive Architecture", Cambridge MA - 05/2005
University of Bergamo, "Interactive Architecture", Part of a lecture Series sponsored by Servitec, Bergamo, Italy.
University of Tennessee, School of Art and Architecture: Recent work of Odesco: Beyond Kinetic", Knoxville, Tennessee - 03/2004

Guest: Discovery Channel: "Monster Nation" TV Program, Inventor/Builder - 09/2004

2004

Cal State University Pomona: "Living with Interactive Architecture", Pomona CA 10/2004

2003

Art Center College of Design, Work of Odesco and the KDG, Pasadena, CA, 09/2003.
Guest: Discovery Channel: "Monster House" TV Program, Architect/Builder, screen name "Gadget God" 03/2003

2002

Hong Kong Polytechnic University, "Recent Work" - 05/2002
Chinese University of Hong Kong, "Recent Work" - 04/2002

2001

Meta Media, Hyper Culture Symposium, "Teletecture", Baumer Symposium, Wexner Center, Ohio State University, Columbus Ohio - 01/2002
TU Delft, GameSetandMatch" Sumposium "Beyond Kinetic", "at the Faculty of Architecture, Delft, Netherlands.
Singapore National University, "Sustainable Applications of Intelligent Kinetic Systems", 2nd Int'l Conference on Transportable Environments".

2000

Moderator: ASCA Technology Conference, Session Moderator, Cambridge, MA - 06/2000
Workshop for Next Phase of Boeing Business Jet Interiors, Athens, Greece, - 10/2000

1999

Hong Kong Polytechnic University, "Intelligent Kinetic Systems, Live Video Lecture, Hong Kong-MIT

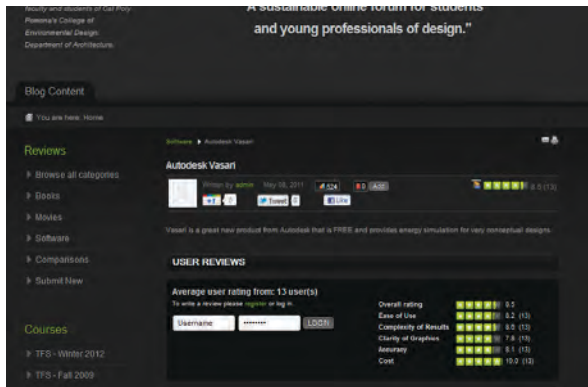
1998

Waseda University, Lecture on the Evolution of Interactive American Architecture, Tokyo, Japan



Websites

Our main website is Foxlin.com, which contains the most up to date information. Please also Like our Facebook page – www.facebook.com/foxlinarch.



ToolsForSustainability.com, maintained by Juintow Lin

Since 2000, when Lin worked as a Research Fellow at MIT's Building Technology Department with the Sustainable Urban Housing in China group, her research has focused on the use of computational tools to aid student and architects with incorporating sustainable principles into their designs. One of the challenges designers face is understanding what are the most appropriate tools to use and how and when to efficiently and effectively integrate them into the design process. Toolsforsustainability.com (TFS) aims to provide a practical overview of some of the available tools and methodologies for incorporating sustainable principles into the design process.



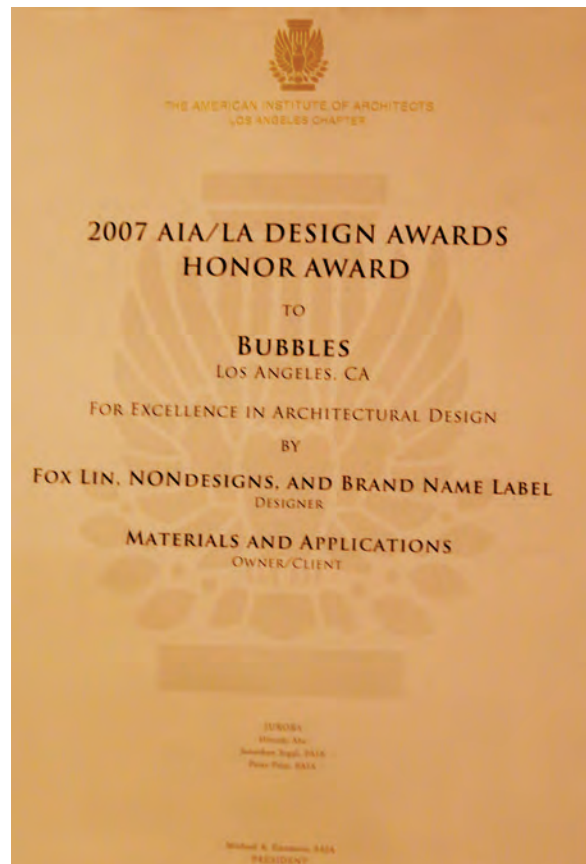
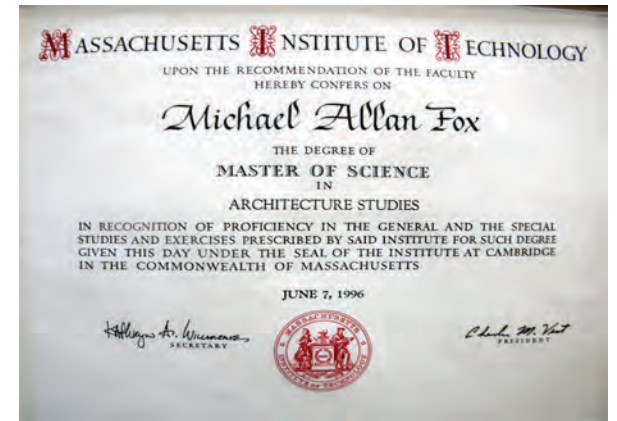
Robotecture.com, maintained by Michael Fox

Fox's research centers on interactive, kinetic, and robotic stuff. Site maintained by Michael Fox.



Biomimetic-Architecture.com, maintained by Michael Fox, Ehsaan Mesghali, and Hunter Ruthrauff

The architectural profession is rapidly embracing digital design technologies developed and applied in the framework of biologically inspired processes. Put simply, nature is the largest laboratory that ever existed and ever will. While biomimicry does not exclude emulating form, we are interested in the processes and systems in which all design resides.





ENGINEERING, PLANNING & PROJECT MANAGEMENT

Garver is a multi-disciplined A-E, planning, and environmental services firm committed to quality practices, progressive methods, and honorable relationships. Our clients' trust is the cornerstone of our business, and we adopt their visions to deliver projects founded on sound designs, creative solutions, cost-effective services, and first-class customer care.

Garver has the experience and capabilities to provide horizontal and vertical design and project management services for aviation, transportation, water, energy, federal, commercial, industrial, development, private, survey, and construction administration projects. As a full-service design and planning firm, Garver provides high-quality architectural, site, civil, structural, mechanical, electrical, plumbing, and fire protection design; surveying; and construction management.

With engineering services dating back to 1919, Garver has nearly a century of service in providing clients with consulting expertise. Garver has 18 offices and our headquarters are based in North Little Rock, Arkansas. We provide services for transportation, aviation, water, energy, industrial, development, federal, survey, and construction management projects.

Just like the square is a fundamental building block, intelligent planning is foundational to solving your immediate needs and preparing you for tomorrow's demands.

The Garver name represents nearly a century of community betterment. Well-designed infrastructure advances our common interest to elevate the places we work, live, and play.

The offset "G" in our logo is also a circular arrow pointing up. This represents our dedication to a higher standard, one that goes outside the norm to blend custom solutions with quality designs.



Exceeding Expectations

Project Capabilities





Firm Profile

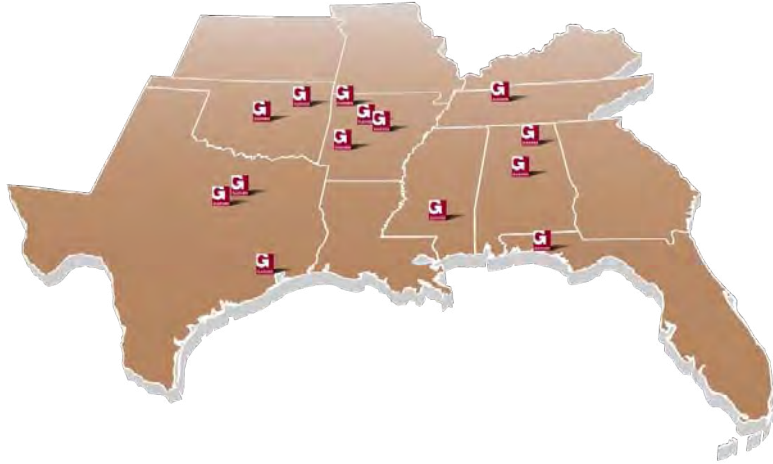
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Over the course of nine decades, Garver has expanded its geographical base from our headquarters in North Little Rock, Arkansas to 1 additional offices in Conway, Fayetteville, and Hot Springs, Arkansas; Birmingham and Huntsville, Alabama; Frisco and Houston, Texas; Norman and Tulsa, Oklahoma; Franklin, Tennessee; Brandon, Mississippi; and Destin, Florida.

Garver's staff continues to grow.

Garver has more than 350 personnel, with transportation, civil, aviation, water and wastewater, structural, electrical, fire protection, and mechanical engineers; architects; environmental scientists; technicians; surveyors; construction observers; and administrative employees.



Types of Services Offered

The following pages include descriptions for the various types of architectural and engineering design and related services we provide.

Architectural Services

Garver's architectural design services facilitate a holistic approach, allowing us to seamlessly meet our clients' needs. By providing in-house architecture, overall project design is improved, simplifying the interaction and communication between engineering and architecture teams. Garver's architectural designs blend functional requirements with aesthetic concepts. This results in well-conceived facilities that sit comfortably at the crossroads of art and science and enhance the built environment while fully meeting cost constraints and scheduling requirements. Garver's architectural services support our federal group and benefit all business lines that involve building structures.

Architectural Services

- Site assessment
- Zoning analysis
- Master planning
- Programming
- Sustainable design
- Thematic conceptualization
- Schematic design
- Construction documents
- Construction administration
- Design/build project delivery



Aviation Services

As a recognized leader in aviation, funding assistance, master planning, engineering design, construction oversight, and facility commissioning are all a part of the wide range of airside and landside services we offer. From general aviation to military airfields to international air carrier facilities, Garver's Aviation Group develops creative, cost-effective, and sustainable solutions for improving the safety and utilization of airports and airfields.

Bridge Design

From the moment we opened our doors as an engineering company in 1919, Garver has established trust with our clients through quality designs and innovative bridge solutions. Now approaching a century of service, our bridge team continues to exceed client expectations with dedicated project leadership and a high level of technical knowledge.

Garver has a wealth of experience in both the design of new bridges and the rehabilitation of existing ones. Our current staff has worked on a variety of bridge design and repair projects for municipalities and departments of transportation in Oklahoma, Arkansas, Mississippi, Tennessee, Kansas, and Alabama.

Garver bridge design services include conceptual planning through construction management. These bridges have ranged from short precast deck unit spans on pile bents to major river crossings founded on concrete piers. Unique bridge designs have included airport taxiway bridges, curved steel box girder spans with integral pier caps, through-girder railroad bridges, and curved cast-in-place concrete box spans. Our bridge capabilities include:

- **New Construction:** Garver's extensive experience in new bridge construction gives us the expertise to handle challenges associated with new structures, phased replacements, and bridge widenings.
- **Repair and Rehabilitation:** Garver provides bridge repair and rehabilitation services to extend the life of critical infrastructure.
- **Pedestrian Accommodations:** Garver designs pedestrian bridges that are safe, functional, artistic, and bring value to a community. Standard and non-standard spans with observation decks consisting of steel rolled beams, plate girders (straight and curved), cast in place concrete, prestressed beams, and pre-fabricated steel truss span superstructures.

Aviation Services

Planning and Environmental

- Feasibility and Site Selection Studies
- Airport Master and Development Plans
- Environmental Assessments
- Economic Studies and Business Planning
- Land Acquisition Assistance

Engineering Design

- Field Surveys
- Airfield Layout/Geometrics
- Pavement Analysis
- Airfield Lighting and Controls
- Terminal Roads/Parking
- Construction Sequencing

Military Airfields

- Runway, Taxiway and Apron Reconstruction/Rehabilitation
- BAK-12/14 Arresting Barrier Relocation/Installations
- Aircraft and Maintenance Hangars
- Air Traffic Control Towers
- Design-Build delivery for DOD, NAVFAC, AFCESA

Bridge Design

Garver has a wealth of experience in both the design of new bridges and the rehabilitation of existing ones.



- **Interchange Planning and Traffic Control:** Garver provides detailed planning studies to determine the most effective interchange configurations that take into account an area's geometric, traffic, and environmental considerations.
- **Historic Restoration:** Garver has the experience to inspect and restore historic structures, ensuring that future generations experience treasured landmarks.
- **Hydraulic and Scour Studies:** Garver's experience and knowledge in bridge hydraulics ensures a project that complies with all applicable floodplain ordinances and regulations.
- **Transportation Structures:** Garver routinely designs retaining walls, box culverts, and sign support structures as part of our bridge projects.
- **Steel Superstructure Design:** Steel rolled beams, steel plate girders (straight and curved), steel box girders (straight and curved), and tapered plate girders.
- **Concrete Superstructure Design:** Concrete slab and deck girders, concrete parabolic slabs, concrete box girders (straight and curved), concrete pre-stressed beams, and standard and modified AASHTO box beams (bulb tees and box beams).
- **Substructure Design:** Steel and concrete pile bents, concrete piers on pile-supported footings, concrete piers supported by spread footings, concrete piers supported by drilled shafts, dredged caissons, and cofferdam design.
- **Bridge Specialty Areas:** Seismic design, including Categories B, C and D, repair and rehabilitation, bridge inspection (structural/underwater), bridge load rating, scour analysis and scour countermeasures, retaining walls (conventional, MSE walls), bridge traffic and maintenance control, and bridge lighting and utility supports.

I am highly impressed with the ride on the new [SH-165] bridge that Garver just completed. You guys set the standard. I am going to tell my staff and other consultants that I expect this type of quality on every project.

~ Darren Saliba
Oklahoma Department of
Transportation
Division Engineer

Construction Management and Observation

Garver understands that construction observation and administration is a process of professional management applied to a construction project, from start to finish, achieving multiple goals. Those goals include controlling the time of construction, controlling the project cost, promoting job site safety, and monitoring the construction quality of the final product.

Garver provides construction services ranging from periodic observation to full-time resident inspection services. The Garver Construction Services staff has the experience and ability to serve as a representative in the field—working with contractors and monitoring the implementation of designs and to provide direct input during the construction process. Garver currently has over 35 full-time construction engineers and observers on staff with more than 600 years of combined experience. Our staff has provided construction phase services on numerous Garver-designed projects and on projects designed by other firms.

Drainage Studies and Design

Garver has prepared stormwater master plans, drainage basin studies, FEMA Letters of Map Revision (LOMRs), and regional detention studies, as well as the detailed design of stormwater collection, detention, and channelization projects for municipalities and industrial clients across the southern United States. We routinely incorporate the design of major drainage features into our street, highway, airport, and building improvement projects. Many of these are multi-purpose facilities that incorporate parks, athletic fields, trails, and wildlife habitat elements, which not only increase the effectiveness and aesthetics of the facility, but also allow for multiple funding sources to be tapped. Also, with Nationally Certified Floodplain Managers on staff, our team is sensitive to the direction of flood and stormwater policies and can provide solutions that not only meet the letter and intent of the regulations today, but also reduce exposure to future regulations.

Energy and Electrical Services

The Garver Energy Group primarily provides services related to electrical power. Electrical power requires engineering design for power generators, transmission lines, substations, distribution systems, and power collection systems for wind and solar farms. The Garver Energy Group has a wide range of diverse experience capable of supplying the required environmental assessments



Garver construction team members are masters of coordination. From sequencing projects and minimizing airport disruption to solving the inevitable construction problems, our field staff is committed to establishing good working relationships with contractors to promote the highest quality construction and to minimize problems that can cause budget and schedule overruns.

and permitting applications, surveying data, property acquisition documents, civil site design, bidding services, and construction management. Our engineers are well versed in NESC and RUS standards and use the best engineering tools and software available to design your project to meet your needs.

- **Medium and High-Voltage Transmission Lines:** Route Selection Studies, Pole Spotting and Sag Design, Switching Design, Structural and Guying Design.
- **Power Distribution Substations:** High-Voltage Switching, Transformers and Bus, Medium-Voltage Breakers, Protective Relaying Design, Arc Flash Hazard Analysis, and Breaker Cleaning and Testing
- **Distribution Systems:** System Modeling, Coordination Studies, GIS Mapping and Pole Inspections, Economic Analysis, System Upgrade Recommendations, Long-Range Planning, Cost of Service and Rate Analysis, and Large Power Contract Negotiation.
- **Associated Services:** Environmental and Permitting Services, Surveying and Property Acquisition Documents, Civil Site Work, Structural Design, Geotechnical Analysis, Construction Management, Bidding Services, Procurement Services, Project Scheduling and Management, Project Justification, Public Meetings, O&M Manuals and Operation Sequences, and Safety Inspections.

Building

Garver's Building Group provides A-E services for a wide field of vertical and heavy civil projects with either design-build or design-bid-build delivery methods. Garver provides design teams with building project experience backed by individuals who routinely work together and are knowledgeable in the criteria and requirements that shape the project process. Our familiarity and experience with these requirements continues to build efficiency in our interaction with the end user through familiar working relationships and knowledge of personal work preferences, and we use that experience to provide a successful design within very strict and limited deadlines.

Garver has considerable experience providing planning, site development, and new or repair/renovation design services for numerous building facilities designed to function efficiently. Whether the project is comprised of initiating a new project or an extensive renovation, Garver can provide the necessary project management and architectural, interior, civil, structural, mechanical, electrical, plumbing, and fire protection design experience.



Energy and Electrical Studies

The Garver Energy Group has a wide range of diverse experience capable of supplying the required environmental assessments and permitting applications, surveying data, property acquisition documents, civil site design, bidding services, and construction management.

Garver Headquarters Building, North Little Rock, Arkansas

Garver provided civil, structural, mechanical, and electrical engineering design for a new 38,582-square-foot, three-story, LEED Silver, corporate office building and a 7,929-square-foot, single-story, multi-purpose office building which includes a gym.



Over the years, Garver's clients have included port commissions, national railroad companies, food processors, medical facilities, scrap metal processing, the military, and Fortune 500 manufacturing and industrial clients to name a few. Project types included mechanical and electrical upgrades and replacements; structural assessments and improvements; blast evaluations; foundation design/improvements; infrastructure design and upgrades; facility demolition; process and material handling; industrial system and equipment replacement; site improvements and development; to usage studies, evaluations, and reports. These projects have included task orders for projects from Arizona to Florida.

Services We Provide - Site/Civil

- Drainage
- Hydraulics/
Hydrology
- Dams and Levees
- Utility Infrastructure
- Water and Wastewater
Systems
- Operations and
Maintenance
- Water Resources and
Supply
- Street and Pavement
Design

Services We Provide - Building/Structures

- Air Traffic Control
Towers
- Airfield Improvements
- Aircraft and Maintenance
Hangars
- Entrance Improvements
- Education/Child Care
Facilities
- Operations and Training
Facilities
- Office/Administration
Buildings
- Dormitories and Housing
- Medical Facilities
- Building Repair/Renovations

NAICS Codes

- 541310
- 541320
- 541330
- 541370

Federal/Military Clients

- USACE Districts Albuquerque, Fort Worth, Little Rock, Memphis, Nashville, Omaha, Tulsa, and Vicksburg
- Little Rock Air Force Base
- Fort Sill
- Redstone Arsenal
- U.S. Postal Service
- And many other military and civil clients

Mechanical Engineering

Garver's experience includes the design of new, renovated, and replacement projects with boilers, chillers, cooling towers, air handling units, and energy recovery.



Industrial and Manufacturing Services

Profitable industrial and manufacturing processes are designed to function efficiently. With that concept in mind, Garver operates with the knowledge and expertise to meet your needs and guide your projects to completion. Whether you are trying to get a new project off the ground or want to improve production, the Garver Industrial Team can provide the necessary experience and project management to support new, renovation, or replacement projects.

Mechanical Engineering

Garver's mechanical capabilities include design of comfort heating, ventilation, and air conditioning (HVAC) systems, plumbing systems, fire protection and suppression systems, petroleum storage and distribution systems, industrial pretreatment systems, stormwater and wastewater pumping stations, compressed air systems, industrial ventilation systems, industrial process equipment and piping systems, piping and instrument diagrams, hydraulic systems, and miscellaneous machine design. Our experience includes the design of new, renovated, and replacement projects with boilers, chillers, cooling towers, air handling units, and energy recovery.

Multi-Modal Facilities

Garver's multi-modal capabilities include ports, harbors, railroads, and intermodal facilities. We are experienced in planning, funding coordination, design/contract documents, bidding services and construction management for any type of facility required.

- **Ports and Harbors:** We have worked extensively for the Little Rock Port Authority, the Indiana Port Commission, and numerous other clients. Our capabilities include: deadmen and dolphins, cells, lift and unloading facilities, dock and mooring facilities, dock assessments and rehabilitation plans, infrastructure planning and design, cranes, marinas, warehouses, and slackwater harbors.

Industrial and Manufacturing Services

Electrical

- Power and Control System Upgrades and Documentation
- Automation and Controls Design
- SCADA Systems
- System Integration
- Radio Telemetry Controls
- Drive Design
- Power Substations and Motor Control Center Design

Structural

- Structural Analysis
- Concrete and Steel Design
- Equipment Supports and Foundations
- Seismic Design and Evaluation

Mechanical

- Process Flow and Instrumentation Diagrams
- Compressed Air and Process Cooling Water Analysis and Design
- Machine Design
- Manufacturing Process Improvements
- Industrial Pre-Treatment Design
- Industrial Heating, Ventilating, and Air Conditioning and Plumbing Design

Project Management

- Project Justification
- Construction Contract Documents
- Periodic Progress Reports
- Construction Observation
- O&M Manuals and Operation Sequences
- Safety Inspection

- **Railroads:** Garver has worked on various railroads throughout the state and the region. Our railroad team can assist in coordination with the Union Pacific Railroad, BNSF Railway, and others. Our capabilities include rail and bridge design, inspection, and rehabilitation plans; wash, fueling, and wastewater pre-treatment facilities and in-motion railcar weigh facilities.
- **Intermodal:** Our intermodal facility design includes environmental reviews, capital improvement plans, site grading, bulk handling facilities, and access road designs.
- **Industrial Development:** Garver also has decades of experience in developing land for industrial use and in designing related utility features, including water treatment, distribution, and storage; industrial wastewater treatment and pretreatment; electrical service; natural gas distribution; security systems; firefighting systems; SCADA; and other information transfer systems. Our experience includes the design of railroad facilities; warehouses; fuel facilities; manufacturing plants; aircraft hangars; paint, repair, and maintenance facilities; and industrial buildings of various types.

Roadway Design

With miles of designs under our belt, Garver's engineers are exceptional at considering all factors in developing an optimal and economical design. Garver's roadway design experience include rehabilitation and widening with overlay, reconstruction, alignments on new location, intersection improvements, storm sewer and/or open channel drainage design, improvements to horizontal and vertical alignments along existing or new locations, drainage improvements, traffic studies and signalization, maintenance of traffic plans, bridge and box culvert design, retaining walls, street lighting, utility relocation designs, and property acquisition document preparation.

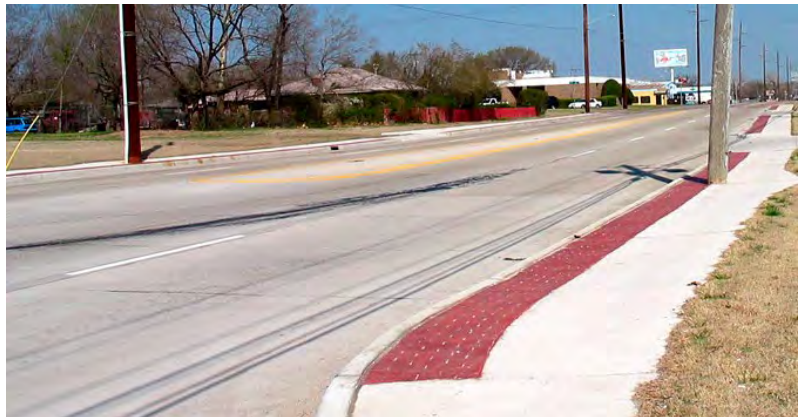
Garver typically develops roadway plans in three main stages. The first stage includes developing conceptual typical sections and line and grades, meeting the requirements of the design criteria for all alignments. These alignments are produced as continual alignments on roll type plots for ease of review. The second stage includes producing 50% to 60% complete plan sheets that include the design and incorporation of drainage structures, preliminary maintenance of traffic details, survey control details, cross sections, limits of construction, and right-of-way requirements. Following approval of plans at this stage, a public hearing can be held, and the project

“This [US 169 widening] project was designed under an expedited schedule, and there were several difficult design constraints that had to be addressed and overcome. It was imperative that an excellent design with well thought out construction phasing and sequencing be achieved for this high-capacity corridor.

~ Paul Green, PE
Oklahoma Department of
Transportation
Division Engineer

Pavement Rehabilitation

Routine pavement upkeep is an important process that includes evaluating the existing pavement condition and economically providing design and specification documents to produce a cost-effective solution to repair the surface.



certified so right-of-way may begin to be purchased. The third stage includes completing plans, including quantities and specifications for construction.

Pavement Rehabilitation

Garver's staff is up-to-date with the newest construction methods in overlay of asphalt pavement, asphalt pavement reclamation, asphalt pavement crack repair, asphalt pavement seal coats, and full-depth asphalt pavement repair. Asphalt overlay of concrete pavement such as fiber reinforced epoxy composite materials to repair concrete members and polymer-modified or latex-modified concrete to enhance concrete durability and bond strength are sometimes used. Routine pavement upkeep is an important process that includes evaluating the existing pavement condition and economically providing design and specification documents to produce a cost-effective solution to repair the surface.

Site Development

Bringing a community together improves its quality of life. From town facilities to commercial developments, Garver uses design expertise to provide quality site design. Garver offers a complete range of planning and engineering services including site analysis; site surveys and staking; permitting; design of parking, access roads, utilities, and drainage; erosion and sedimentation control; and environmental assessments.

Structural Engineering

Garver has designed all types of building structures, including manufacturing buildings, long-span aircraft hangars, parking decks, water and wastewater treatment plants, warehouses, airport control towers, and additions to existing buildings. In addition, Garver has performed seismic evaluations, foundation studies, site suitability analyses and complete site design. Rehabilitation of existing

Garver's Pavement Rehabilitation Capabilities:

- Full-depth PCC slab replacement
- Partial-depth PCC replacement
- PCC joint rehabilitation
- PCC crack repair
- Concrete overlay of asphalt pavement
- Asphalt overlay of concrete pavement
- Asphalt overlay of asphalt pavement
- Asphalt pavement reclamation
- Asphalt pavement crack repair
- Asphalt pavement seal coats
- Full-depth asphalt pavement repair

structures typically begins with a site condition evaluation, analysis of repair strategies and costs, and a written report of the findings.

Below is a list of quality structural designs that Garver has provided:

- Water and wastewater treatment plant buildings
- Hospital renovations
- Pump stations
- Air traffic control towers
- Industrial and manufacturing facilities
- Airport terminal improvements
- Parking decks – new and rehabilitation
- Aircraft rescue and fire-fighting facilities
- Warehouses and distribution facilities
- Additions to existing buildings
- Multi-story office buildings
- Pre-fabricated metal buildings
- Tilt-up concrete panels
- Seismic evaluation and design
- Blast assessment and security upgrades
- Replacement of roof structures
- Blast-resistant buildings
- Shipping docks
- Foundation design for poor soils condition

Traffic Engineering

Approximately 15 years ago, Garver added traffic engineering to our expertise. What started as one person dedicated to traffic studies and design has developed into a team of professionals with a passion to improve our transportation systems' safety, quality, and driving experience. The Garver Traffic Team provides traffic engineering services such as traffic studies, signal design, intersection design, pedestrian facilities, permanent signing, ITS, and maintenance of traffic. By having a team focused on traffic aspects, we can provide a high degree of technical competence and develop solutions to complicated projects.

Utility Design, Relocation, and Coordination

Garver's in-house services include utility design and coordination. Our extensive experience in transportation design gives us an appreciation for the importance of analyzing existing utilities and coordinating their relocations. Often water, sewer, gas, electric, communication, and other utilities must compete for limited space



Structural Engineering

Garver has provided structural engineering for a variety of building improvements, including an arena, parking decks, hospital renovations, and industrial facilities.

Garver's Traffic Engineering Services:

- Traffic studies
- Maintenance of traffic
- Traffic signalization
- Permanent signing plans
- Traffic signal timing
- Traffic calming devices
- Signal Phasing
- Traffic planning
- Intelligent Transportation Systems (ITS) design
- Intersection design

Utility Design, Relocation, and Coordination

Garver's staff routinely coordinates with utility companies during the survey, design, and construction phases to minimize construction time, conflicts, and change orders.



within a construction site. Garver understands that overlooking utilities can be costly during construction. As a result, Garver's staff routinely coordinates with utility companies during the survey, design, and construction phases to minimize construction time, conflicts, and change orders. We typically conduct a utility coordination meeting during an intermediate design phase and again during a final design phase. We invite all franchise utilities located in the project area to these meetings. We also send plan sets to each of the affected utility companies. When we provide construction observation on a project, we coordinate between utility companies and the contractor.

Water and Wastewater Services

From conception to operation, Garver takes pride in helping develop the best alternative for water and wastewater needs. Whether the best solution is a custom-engineered innovative technology or includes the integration of a conventional pre-engineered system, the Garver Water Group endeavors first to fully understand the needs and objectives. Our team provides comprehensive in-house services to successfully implement and optimize your facilities. Our engineers work in close coordination with local, state, and federal officials as required for public support, funding, permitting, and regulatory compliance.

Water and Wastewater Services

Drinking Water

- Planning and Modeling
- Resource Development
- Conveyance and Pumping
- Treatment
- Distribution
- Storage

Wastewater

- Planning and Modeling
- Collection and Pumping
- Treatment
- Re-Use
- WLA/TMDL/Assimilation

Additional Services

- Funding Assistance
- Operations Assistance
- HMI/SCADA Integration
- Software Application Engineering
- Stormwater Utilities
- Residuals Management.



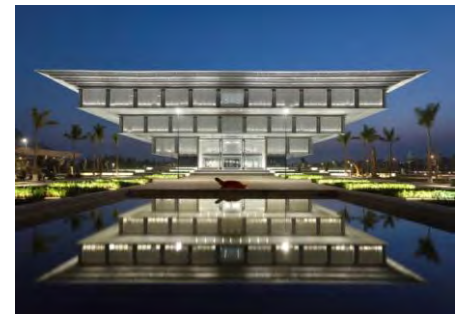
Profile 

INROS LACKNER was formed by the merger and integration of well-established engineering companies:

Prof. Dr. Lackner & Partner GmbH (1936)
and **Inros Planungsgesellschaft mbH (1950)** are the two main pillars of the company.

 **INROS LACKNER.**

was established in **2004** through their merger and the integration of other engineering companies that were part of the INROS Group.



References



**Client:**

bremenports GmbH & Co. KG

Design:

2006 – 2006

Execution:

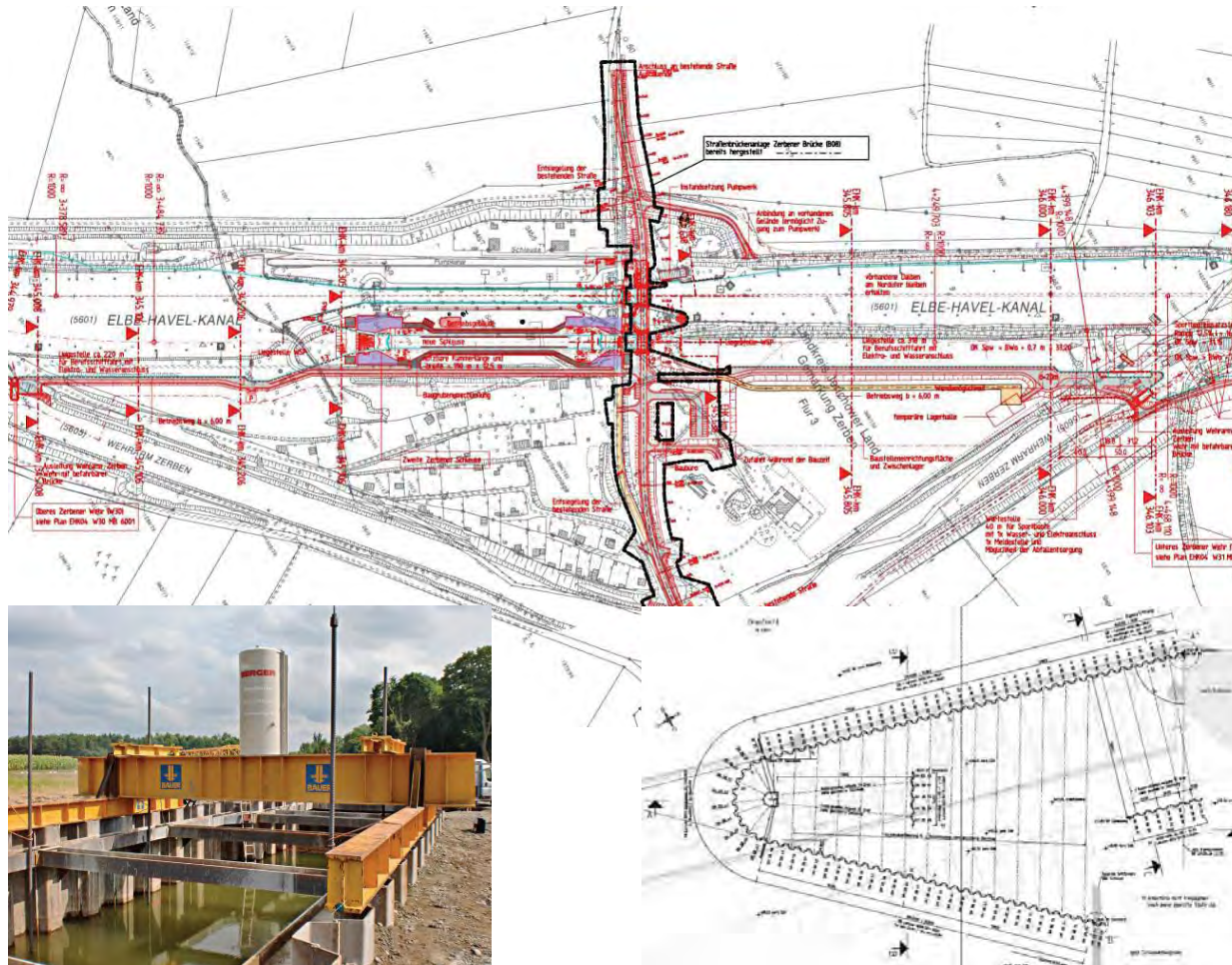
2007 - 2011

Services:

- Feasibility study
- Concept design
- Cost estimate
- Preliminary design
- Detailed design
- Technical assistance during the construction phase

Construction Costs:

220 million Euros



Client:

GP Papenburg
Baugesellschaft mbH
Hannover

Design:

2012 – 2017

Execution:

2015 - 2018

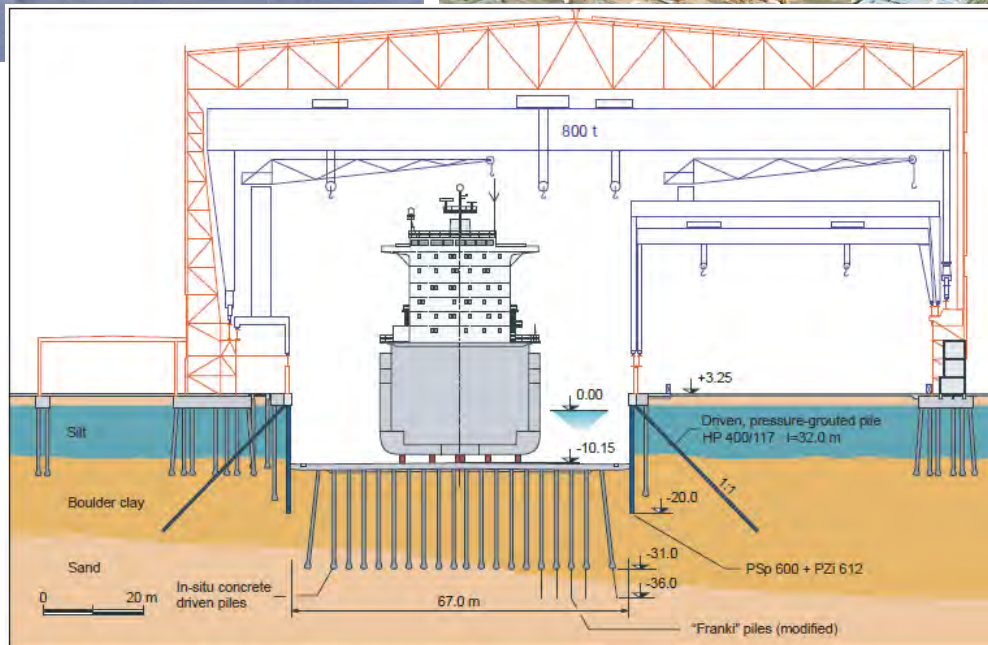
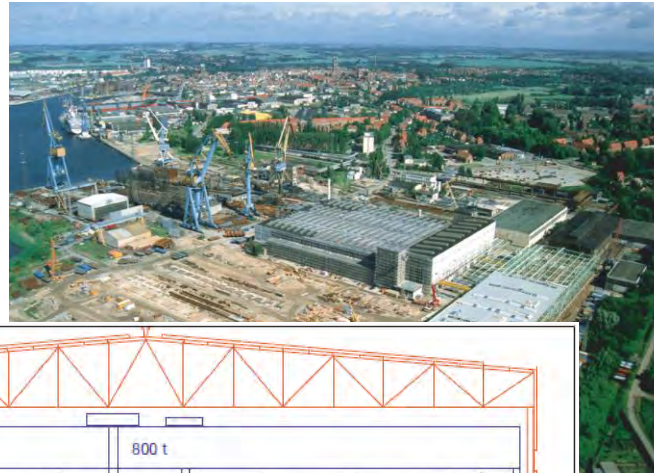
Services:

- Detailed design

Construction Costs:

60 million Euros

Construction of a second navigation lock at Zerben / Germany



cross section trough dock and manufacturing shop

Client:

MTW Schiffswerft GmbH,
Wismar / Germany

Design:

1992 – 1995

Execution:

1994 - 1998

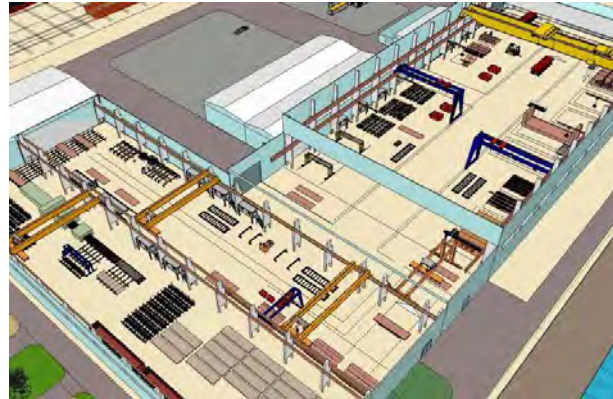
Services:

- Preliminary design
- Cost estimation
- Authority approvals
- Tendering procedure
- Site supervision
- Project management

Construction Costs:

305 million Euros

Modernisation of “MTW Shipyard”, Wismar / Germany



Client:

State Service of Maritime & River Transportation of Turkmenistan

Planning:

2012

Execution:

2013 - 2015

Services:

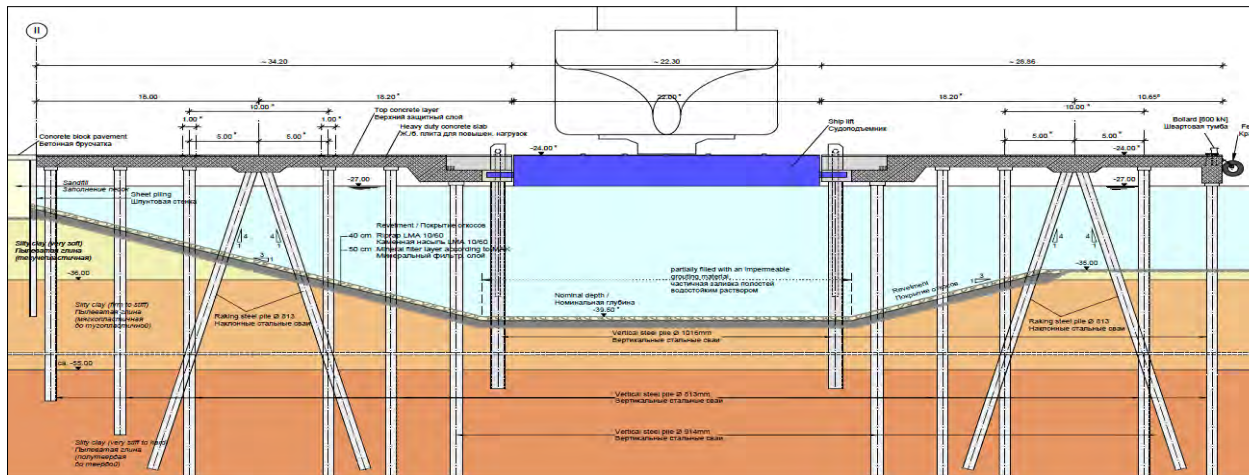
- Infrastructure and superstructures
- Shipyard technology incl. Personnel concept
- Machinery and equipment

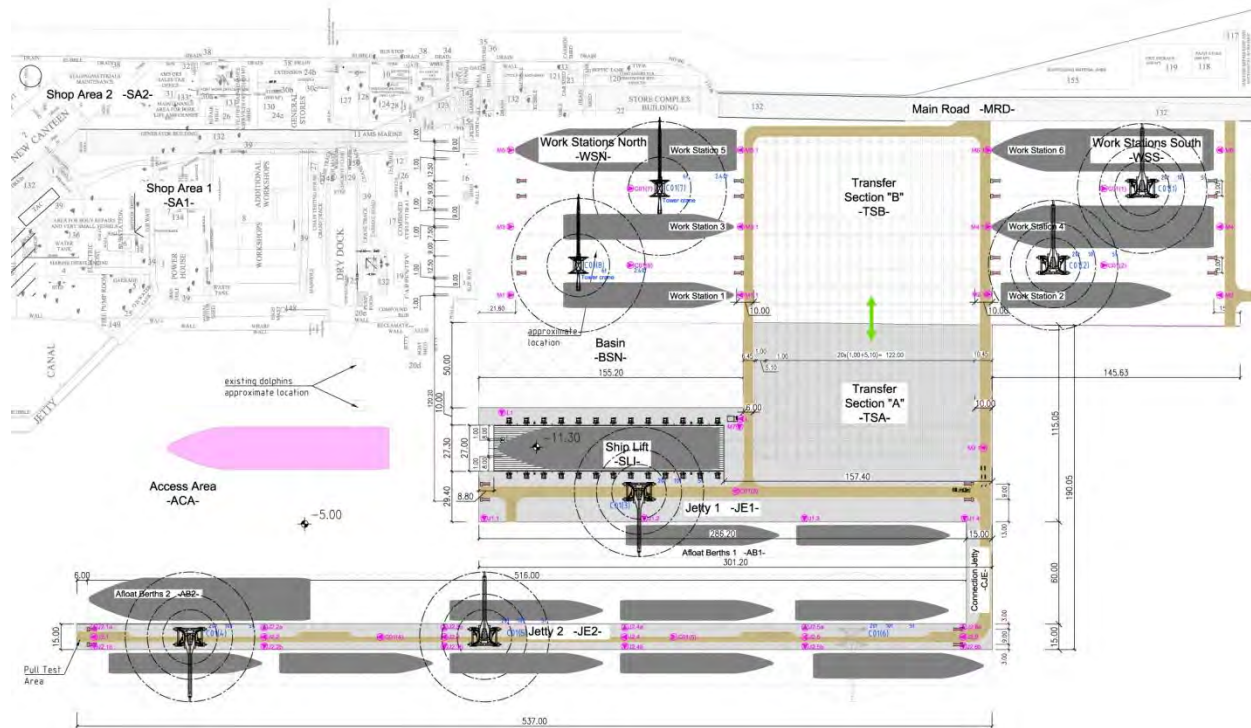
Scope of planning:

- Preliminary and detailed preliminary design
- Tendering / Contract Award
- Site supervision and management based on FIDIC Silver Book

Investment Cost:

160 million euros





Client:

Cochin Shipyard Ltd.

Design:

2014 - 2016

Execution (Expected):

2017 - 2020

Services:

- Data collection and evaluation
- Elaboration of:
Layout
- Basis of design document,
- Hydraulic modelling,
- Detailed project report
- Detailed design,
- Cost estimates,
- Tender documents
- Top Supervision



- **Client:**
Chantier Naval et Industriel
du Cameroun s.a. CNIC
- **Execution:**
2005 - 2014
- **Services:**
 - Project management
 - Evaluation of tenders,
design review
 - Technical inspections &
control of works
 - Site supervision of
breakwater, quay wall,
dredging and reclamation
works
 - Progress monitoring
 - Financial management
- **Investment costs:**
150 million Euro

**Client:**

JadeWeserPort
Realisierungsgesellschaft
mbH & Co.KG

Design:

2004 - 2007

Execution:

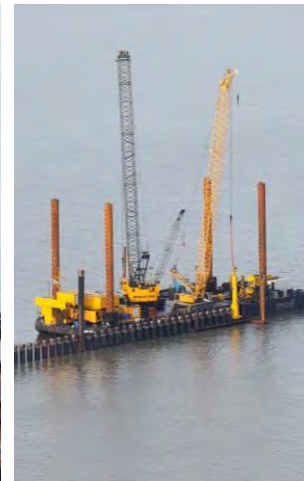
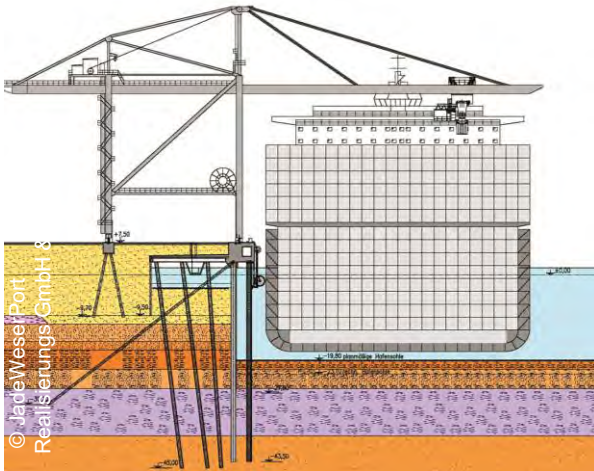
2008 - 2011

Services:

- Preliminary and detailed designs
- Construction methodologies
- Tendering and contract award
- Site supervision

Investment costs:

650 million Euro





Client:

CMIT

Design:

2007 - 2008

Execution:

2008 - 2012

Services:

- Terminal design for 1.15 million TEU p.a.
- Employer's requirements
- Design-Build Tender documents as per FIDIC
- Tendering and contract award
- Contract management
- Site supervision
- Health and safety coordination

Investment costs:

85 million Euro

International Container Terminal in Vung Tau (Vietnam)

**Client:**

DMT Consulting Limited

Design:

2015 - 2016

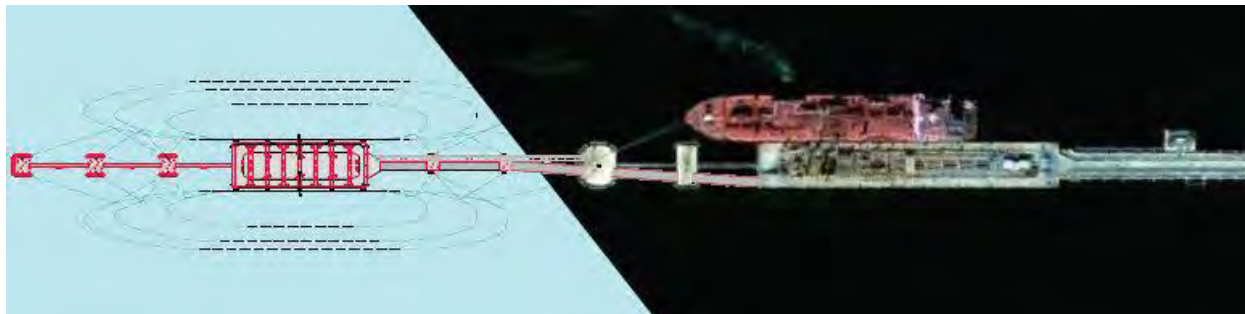
Services:

- Data Review and Gap
- Analysis
- Site Visit
- Cost and Design Basis
- Preliminary Layout Development
- Preliminary Design
- Bankable Feasibility Report

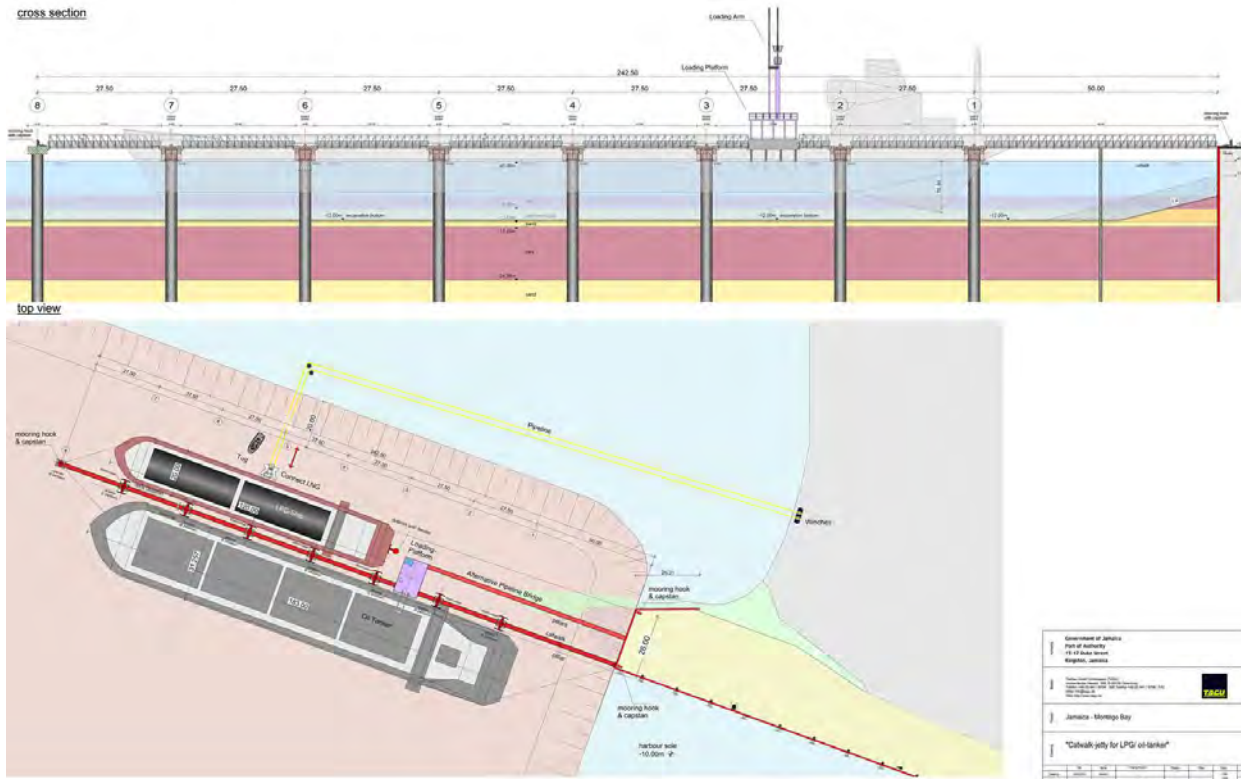
Construction Costs:

Confidential





75 million euros



Client:

Tiefbau AG Unterweser

Design:

2017

Services:

- Preliminary design
- Detailed design
- Preparation of material lists

Construction Costs:

Confidential

**Client:**

Kenya Ports Authority

Design:

2013 - 2017

Execution:

2015 - 2017

Services:

- Conceptual design
- Preliminary design
- Detailed design
- Tender documents
- Preparation of contract documents
- Participation in contract negotiations
- Award of contract
- Site supervision and project management



Client:

Ministry of Transport,
Government of Ghana

Design:

2013 – 2015

Execution:

2015 - 2018

Services:

- Site investigation
- Conceptual design
- Preliminary design
- Tender documents

Construction Costs:

Confidential



Client:

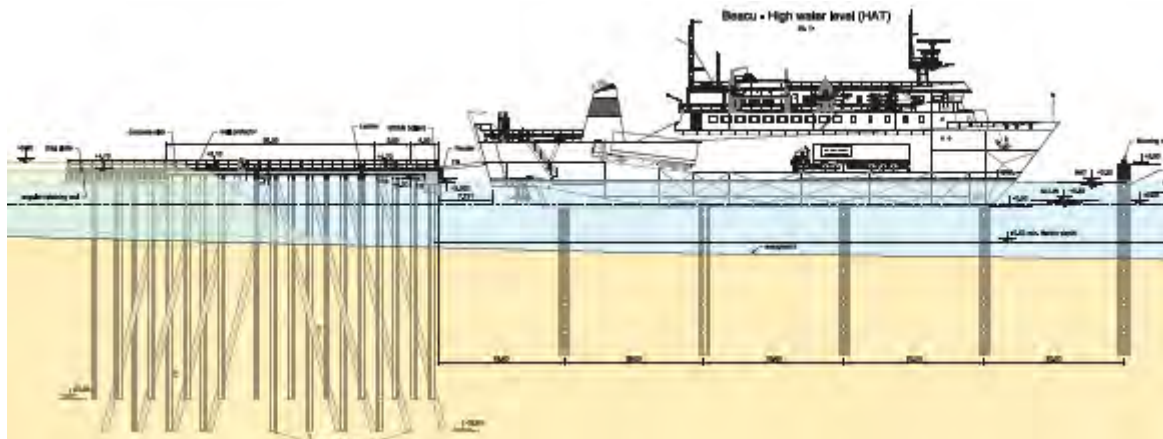
KfW – Kreditanstalt für
Wiederaufbau

Design:

2012

Services:

- Feasibility study
- Basic evaluation
- Preliminary design



Investment costs:

45 million EUR

Feasibility Study on the Timor-Leste Ferry Link (Timor-Leste)

**Client:**

Port Autonome de Pointe-Noire

Planning:

2008 - 2010

Execution:

2011 - 2012

Scope of planning:

- Detailed preliminary design
- Approval design
- Preparation of and participation in contract award
- Site supervision

Investment Cost:

30 million euros



Client :

Ministry for Living and Sustainable Development

Design:

02/2017 – 11/2017

Execution:

2017 – 2019

Consultancy Services:

- Management of construction authorizations
- Construction supervision
- Bathymetrical survey, numerical and physical modelling

Construction Costs:

51,4 Mio. Euro

**Client:**

KfW and Agency for the
Coastal Protection and
Planning

Design:

2013 - ongoing

Services:

- Basic evaluation
- Preliminary Design
- Detailed Design
- Approval Planning
- Working Drawings
- Tendering Procedures
- Site Supervision
- Project Management
- Technical Assistance

Investment costs:

100 million Euro

**Client:**

AIAS Maputo, Mozambique,

Design:

2013 – 2014

Execution:

2015 – 2017

Consultancy Services:

- Construction and structural design for river engineering, coastal protection, dredging works in the port area, tidal outlet, road construction
- Feasibility study
- Working drawings
- Tender and procurement plan
- Site supervision (FIDIC Red Book)

Construction cost:

9,5 Mio. Euro

Drainage Rehabilitation Works for the Chiveve River in Beira, Mozambique



Client :
AGETUR Togo

Date :
05/2009 – 11/2015

Prestations fournies :

- Etudes techniques
- DAO
- Evaluation des offres
- Supervision et contrôle des travaux

Coûts des travaux :
1,5 Mio. Euros



**Client:**

Kreditanstalt für Wiederaufbau
(KfW)

Planning:

2013

Scope of planning:

- Basic evaluation,
- Feasibility Study
- Preliminary designs

Investment Cost:

15 million euros

**Client:**

Water Resource Planning
Organization (WARPO),
Dhaka / Bangladesh

Design:

1992 - 1993

Execution:

1994 - 2001

2005 (monitoring)

Services:

- Studies / Model tests
- Preliminary design
- Morphological forecast
- Location determination
- Detailed design
- Tendering
- Monitoring
- Release of a manual on planning and construction measures
- Staff training

Erosion protection at Bahadurabad on the Jamuna river / Bangladesh



Client :

Ministry of Environmental and Forestry Resources

Date :

04/2014 – 09/2016

Consultancy Services:

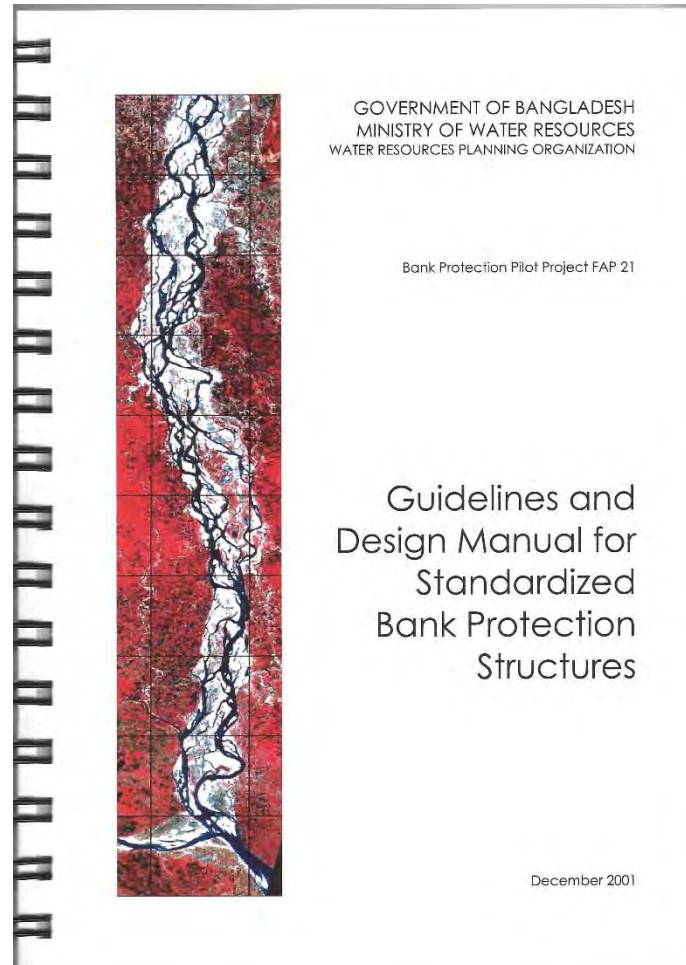
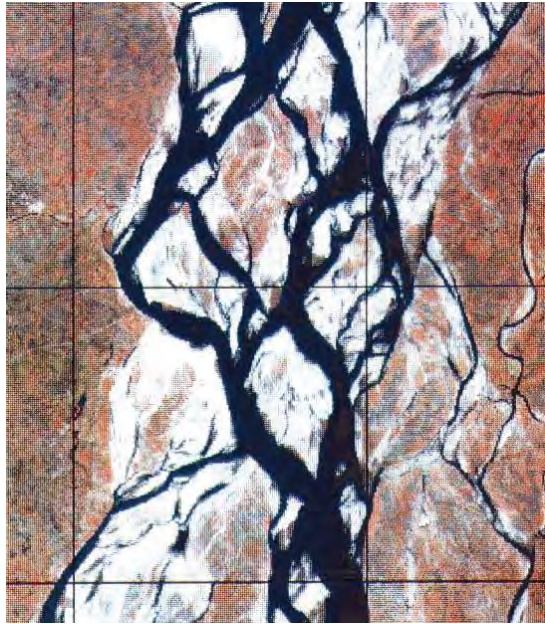
- Preliminary Design
- Detailed Design
- Environmental and Social Impact Assessment
- Tender Documents
- Technical Assistance to the Client

Construction Cost:

90.000,00 Euro



Coastal Protection in Togo from Point PK11 to PK45



Client:

Water Resource Planning
Organization (WARPO),
Dhaka / Bangladesh

Design:

1992 - 1993

Execution:

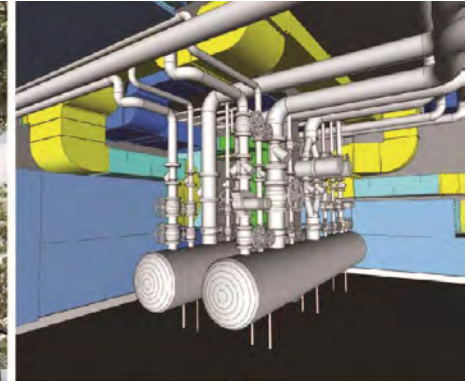
1994 - 2001

2005 (monitoring)

Services:

- Studies / Model tests
- Preliminary design
- Morphological forecast
- Location determination
- Detailed design
- Tendering
- Monitoring
- Release of a manual on planning and construction measures
- Staff training

Complex Building Design



Designing living spaces is a challenging task.

**Client:**

Daimler AG, Bremen

Planning:

2011 - 2012

Execution:

2011 - 2013

Services:

- Architecture
- Structural design
- Drainage design
- Document management

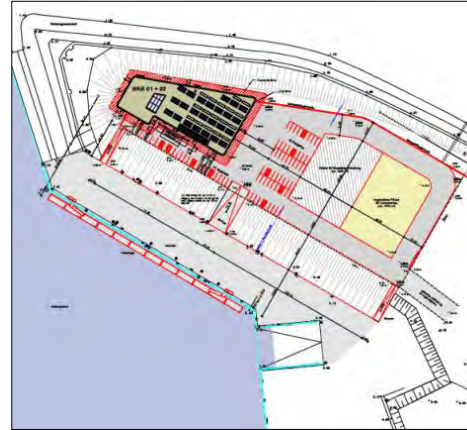
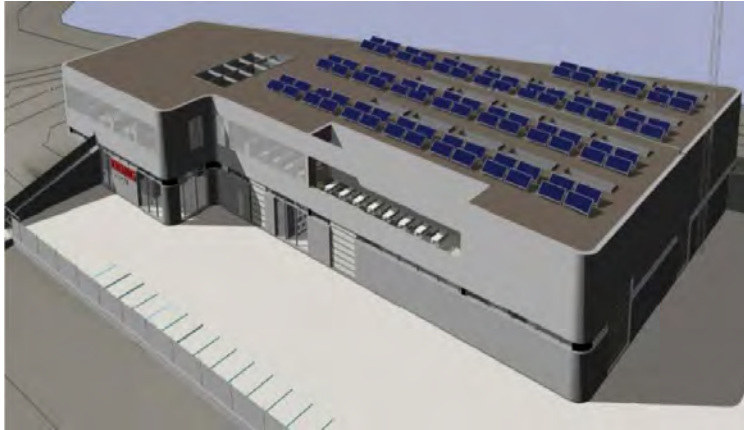
Scope of planning:

- Preliminary design, detailed design, approval design, working drawings
- Preparation of and participation in contract award
- Project management

Investment Cost:

approx. 110 million euros

Complex Building Design



Client:

DONG ENERGY
Renewables, Hamburg

Planning:

since 2012

Execution:

since 2012/13

Services:

- General planning
- Elaboration of exceptional authorisation by dyke law
- Detailed preliminary design, approval design
- Tendering / cost estimate
- Fire protection concept

Investment Cost:

approx. 5.7 million euros



**DONG O&M - Workshop, Storage and Office Building in Norddeich,
East Friesland / Germany**

Complex Building Design



Client:

Pilsetas Ganibas, Riga

Planning:

2011

Execution:

2013 - 2015

Services:

- General planning
- Sketch design

Investment Cost:

150 million euros



City Link Riga / Latvia

Complex Building Design



Client:

Culture and Information
Department, Hanoi (Vietnam)

Design:

2007 - 2008

Execution:

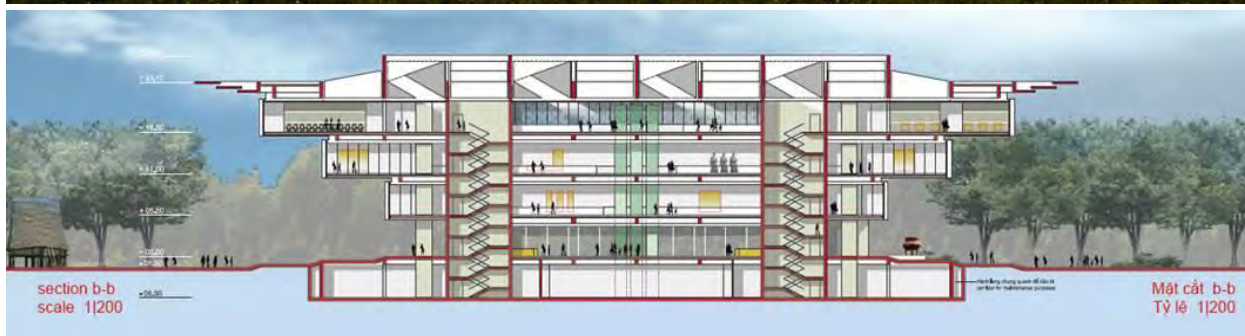
2007 - 2010

Services:

Technical building equipment
Structural design
Infrastructure

Investment costs:

96 million Euro



National Museum in Hanoi (Vietnam)

Complex Building Design



Sponsor:

Hanseatic City of Rostock

Planning:

2012

Execution:

since 2013

Services:

- General planning

Investment Cost:

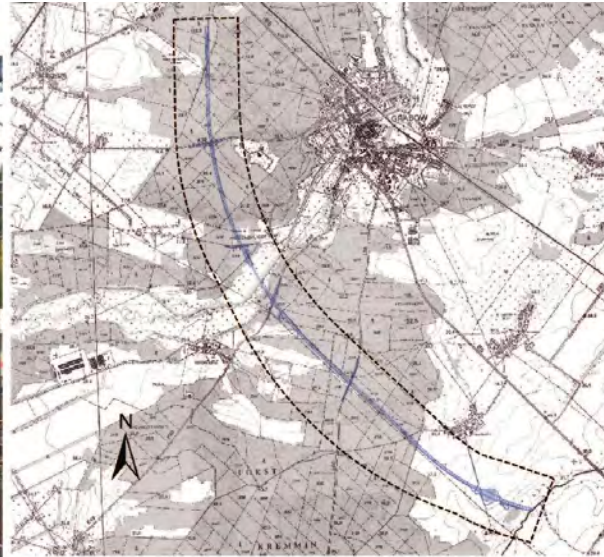
12 million euros

“Winner of Hearts”

(1st place in survey of local newspaper OZ)



Design Competition of the Hanseatic City of Rostock / Germany



Designing and building what connects people.



- **Client:**
 - Turkmen Ministry of Road Transport
- **Planning:**
 - since 2015
- **Execution:**
 - 2015 - 2018
- **Services:**
 - Architectural planning
 - Planning of bridges and tunnels
 - Road planning
 - Planning of technical equipment
 - Planning for underground engineering works
- **Contract price**
- **construction works:**
 - 1.78 billion euros

High-speed motorway between Turkmenbashi and Ashgabat / Turkmenistan

**Client:**

Autobahnamt Sachsen

Planning:

2010 - 2014

Services:

- Bridge design
- Motorway design
- Environmental planning
- Subsoil
- Surveying
- Demolition planning
- Planning of traffic routing during construction

Scope of planning:

- Basic evaluation
- Preliminary design
- Detailed preliminary design
- Approval design

Investment Cost:

30.0 million euros





Client:

National Authorising
Officer of the European
Development Fund
(EDF)

Execution:

2016 - 2019

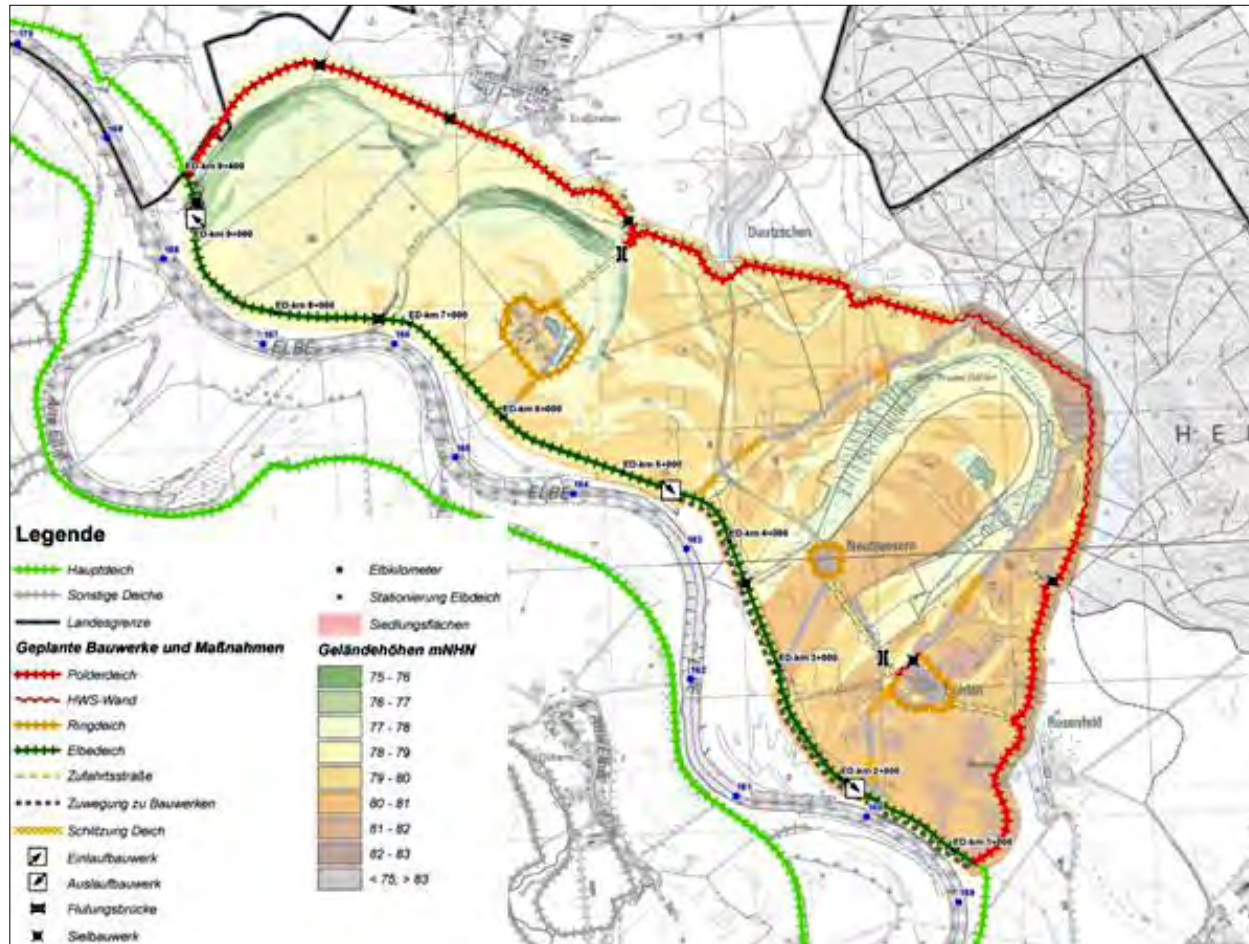
Services:

- Site supervision
- Bridge inspection
- Quantity and quality control
- Administrative management

Investment Cost:

70 million euros





Client:

Landestalsperrenverwaltung
des Freistaates Sachsen

Planning:

2011 - 2014

Services:

- Object planning
- Structural design
- Technical equipment
- Ground water modelling
- Route and evacuation concept
- Property management

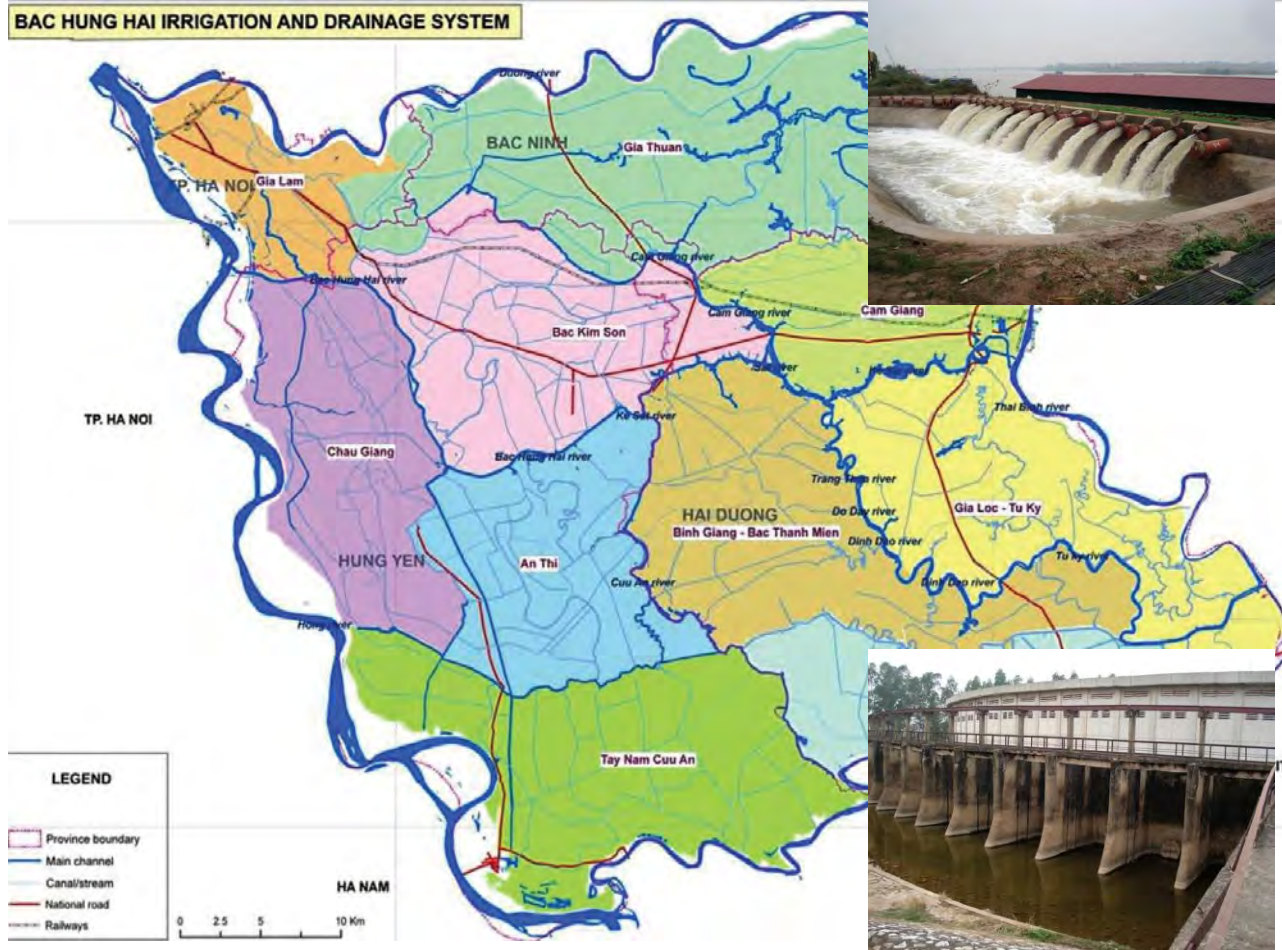
Scope of planning:

- Basic evaluation
- Preliminary design

Investment Cost:

89 million euros

BAC HUNG HAI IRRIGATION AND DRAINAGE SYSTEM



Client:

The Socialist Republic of Vietnam; Ministry of Agriculture and Rural Development

Planning:

2012 - 2016

Services:

- Project management and project implementation support
- Overall coordination of international and national experts, incl. procurement, capacity development, resettlement, irrigation, GIS and environment

Investment Cost:

180 million USD

**Client:**

DB ProjektBau GmbH

Planning:

2011 - 2013

Execution:

2011 - 2013

Services:

- Engineering structures
- Traffic facilities
- Site management
- Site supervision (rail)
- Ecological site supervision

Investment Cost:

15 million euros

**Improvement Measures along Railway Link Rostock - Berlin,
Section Gransee - Dannenwalde / Germany**

**Client:**

LVS Schleswig-Holstein

Planning:

2012 - 2013

Execution:

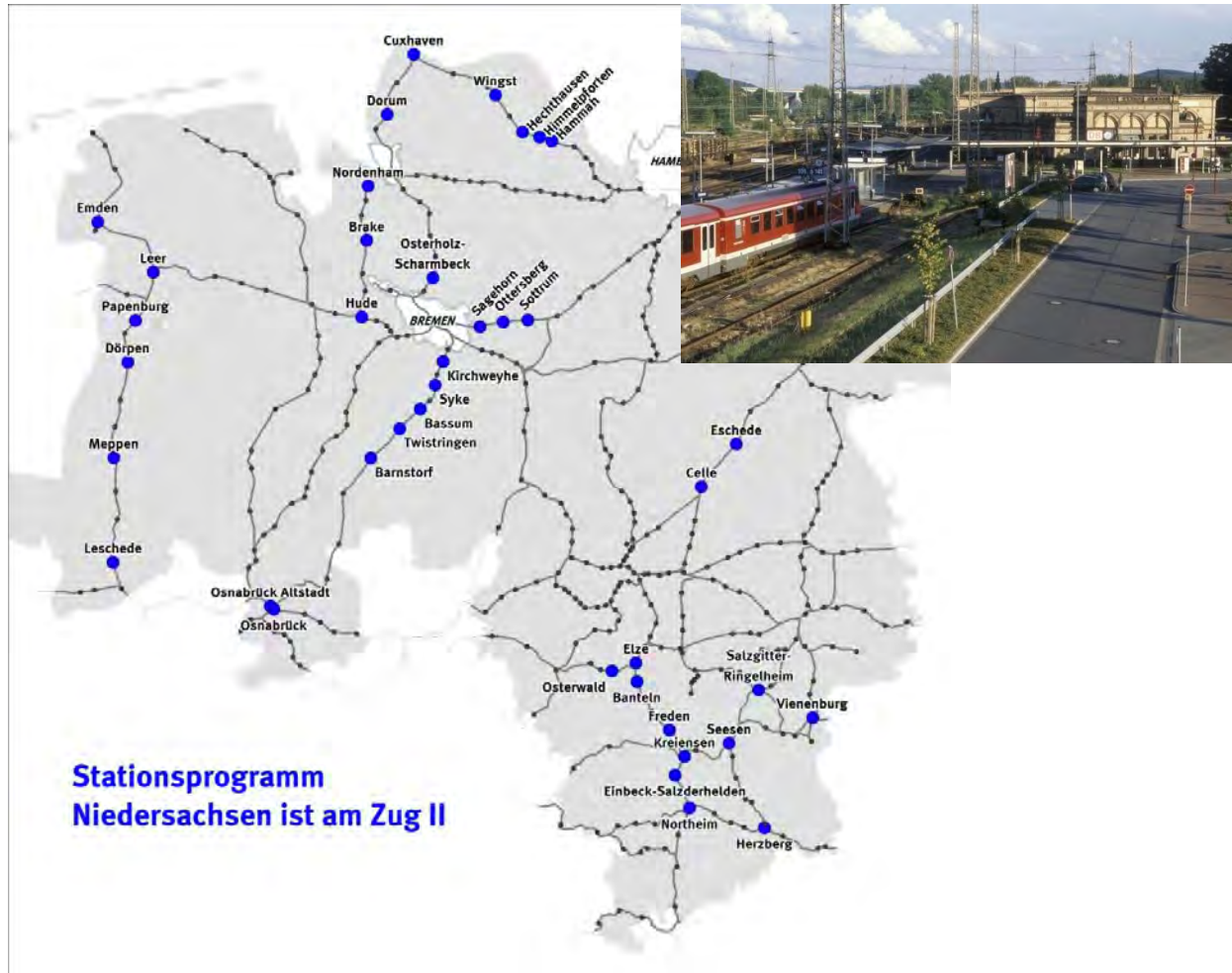
from 2018 onwards

Services:

- Object planning traffic facilities
- Object planning engineering structures
- Structural design

Investment Cost:

160 million euros



Client:

DB SuS / DB PB

Planung:

2009 - 2015

Execution:

since 2011

Services:

- Project levels 1 - 5
- Services A - E, AHO (Committee of Engineer Associations and Boards of Engineers for Fee Structures for Architects and Engineers)
- Cost and deadline monitoring / contract management within the system GRANID of German railway operator DB AG
- Partial project management (construction)

Investmen Cost:

119 million euros

Lower Saxony is on the train II
Modernisation of 40 railway stations / Germany

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INROS LACKNER.



Thanks for your attention!



KARL GROSS

Karl Gross Internationale Spedition

International Freight Forwarder



Our Company

This is Karl Gross

- international freight forwarding and logistics company
- founded in 1876
- head office: Bremen, Germany
- motto: Better logistics for you

We take on our clients' logistics challenges and create tailor-made solutions.

Some challenges are bigger than others. Our way of meeting these is out-of-the-box-thinking leading to favorable solutions for our customers.





Philosophy

How we are and how we act – the spirit of Karl Gross

We take care. Our customers are the center of our attention, and our thoughts and actions focus on them.

We are competent, motivated and loyal. Core of our services are our motivated employees. We emphasize their professional training and their continuous advancement of skills. We respect our people and cultivate a friendly and cooperative working environment. This lays the foundation for competent, specialized teams, staffed with loyal and long term team members.

We think and act as entrepreneur, are independent and flexible. We are a market-oriented, privately owned company. We have a clear and uncomplicated chain of command. This enables us to respond quickly and flexibly to varying customer demands and market changes.





Philosophy

How we are and how we act – the spirit of Karl Gross

We are international and cosmopolitan. As a specialist for international freight forwarding and logistics, we feel at home in many countries of the world. We are culturally open-minded and multilingual and our personal international contacts promote business relations and friendships around the world.

We believe in quality. When it comes to service quality, we are uncompromising. We apply top standards to ourselves. As we are convinced that the weakest link in the chain determines the overall logistics performance, we also apply these standards to our national and international business partners. In countries, where we do not have offices of our own, we have carefully selected strong local partners.



Office Locations

Competence Centers in Europe, Asia and the Americas





Our Products

Ocean Freight – Project Logistics – Air Freight

Our strength is to create logistics solutions tailored to the individual needs and demands of our customers.

In order to provide these, we offer a wide range of services in different transport sectors – ocean freight, project logistics and air freight.

Our service range also includes

- handling of customs clearance formalities
- **warehousing and interim storage**
- **cargo escort and on-site support** at international construction sites



Ocean Freight

Grown from our tradition

Karl Gross is specialist in organizing and handling of import and export ocean freight shipments.

- **FCL** – for full container loads
- **LCL** – for piece goods, mixed cargo and smaller shipments
- **RoRo** – Roll-on/Roll-off transportation
- **Break Bulk** – for goods to be shipped conventionally

Our ocean freight teams are well-experienced. They know the wide range of possibilities for shipping via ocean freight and make use of these to implement tailor-made transport solutions for imports, exports and cross-trades.



Impossible

Project Logistics

High, long, wide and heavy

Karl Goss is specialist in project cargo logistics – and partner for complex transports worldwide.

Successful solutions for shipping project cargo do not arise overnight. They result from extensive logistics experience, up-to-date know-how on country-specific conditions such as transport regulations and local infrastructure, and from precise pre-planning.

Our teams of project logistics specialists develop tailor-made logistics solutions by **air**, **sea** and **land** transport for **machinery, industrial equipment, entire plants and construction parts**.



Impossible

Project Logistics

High, long, wide and heavy

Our specialists ensure competent full-service logistics for oversized and overweight cargo.

Our services in project logistics include:

- **developing individual logistics concepts**, incl. kick-off meetings, project studies and preliminary route examinations, monitoring dates of delivery and planning of order processing
- **pre carriages** and **on-carriages** to and from selected seaports
- **seaworthy packing/heavy lift packing**
- **worldwide shipments via liner and charter vessels**, incl. heavy lift carriers
- **worldwide transports by air freight** on freighters **in liner or charter service**, including special aircrafts like Antonov or Ilyushin
- **crane logistics**
- **construction site logistics** at place of dispatch or place of destination



Air Freight

Fast and flexible

Accredited as IATA Agent since 1988 and as Regulated Air Cargo Agent, we develop and organize a broad range of worldwide air transport solutions via liner and charter air freight services.

Our service range includes:

- “**Belly Freight**” – cargo transportation via passenger aircrafts
- “**Freighter**” – cargo transportation in designated “cargo only” aircrafts
- shipments of **general cargo**
- shipments of cargo stowed in **air freight containers**
- shipments of goods stowed on **unit load devices**
- **consolidation** – combined transport for smaller shipments

A close-up photograph of an aircraft engine fan, showing the central hub and the curved blades. The image is in grayscale with a blue vertical bar on the left side.

Air Freight

Fast and flexible – Air Cargo Projects

For air transportation of oversized and overweight cargo, we develop and realize solutions

- via **part-charter** service or
- **full-charter** service

including solutions with wide-body aircrafts, like Antonov or Ilyushin.

A photograph of Scrabble tiles arranged to spell out the word 'SPECIALIZATIONS'. The tiles are light-colored wood with black lettering and point values. The word is arranged in two rows: 'SPECIAL' on the top row and 'IZATIONS' on the bottom row. The word 'Specializations' is overlaid in a large, white, serif font with a black outline.

Specializations

Specialists for your logistics challenges

The possibilities in intercontinental logistics are manifold – and they are becoming increasingly complex.

Shippers and consignees are looking for logistics partners supporting them to benefit from the possibilities available in the market.

That has been our aspiration – since 1876.

A photograph of Scrabble tiles arranged to spell out the word 'SPECIALIZATIONS'. The tiles are light-colored wood with black lettering and point values. The word is arranged in two rows: 'SPECIAL' on the top row and 'IZATIONS' on the bottom row. The tiles are slightly offset and have a natural wood grain texture.

Specializations

Specialists for your logistics challenges

Professional expertise, profound knowledge about commodity flows, a great deal of experience and up-to-date information are crucial to implement logistics solutions beneficial to our customers.

That is why we specialized in providing logistics solutions

- for transportation of certain types of **commodities** and
- in transport solutions for selected **trade lanes**



FCL/LCL

Full Container Load (FCL) or Less than Container Load (LCL)

The container is the number 1 way when it comes to stowing goods for ocean freight shipping. Hence, there is a vast variety of different types of ocean containers.

As specialists in container shipping, our ocean freight teams handle the entire spectrum of container types – from 20' Standard Container, to 40' High-Cube Container and 40' Open-Top-Container to special containers such as Reefers and Flat Racks.

If the proper container type for shipping of goods has yet to be found, we provide competent advice for our customers, and we are happy to take care of proper **stuffing and securing** of the cargo inside the container.



Steel

Competence in steel shipping

Shipping different types of steel and steel products involves very special challenges when it comes to modes of transportation. Heavy coils, fragile, thin tubes, coated materials – each type of product is different and has specific demands of its own for adequate handling.

Shipping of steel and steel products has been a Karl Gross core business activity for more than two decades. Numerous renowned steel mills and steel trading companies are cared for by our

- specialized **Steel Shipping Department**

who create international transport solutions via break bulk and container traffic.



Break Bulk

If cargo cannot be containerized

Our specialists plan and organize break bulk cargo shipments via **charter or liner service**.

They have particular knowledge for handling and shipping of:

- **steel and steel products**
- **machinery and factory equipment for the oil and gas industry**
- **equipment for the mining industry**



Break Bulk

If cargo cannot be containerized

Each commodity is different: aspects like weight, measurements and the nature of the goods are to be taken into account for planning and implementing break bulk transports.

So is the protection of goods, e.g. through seaworthy packing and the appropriate handling equipment.

Profound know-how and experience are indispensable.



Break Bulk

If cargo cannot be containerized

Unusual but not impossible: As specialists in break bulk cargo shipments we also look and go beyond the “usual transport patterns”.

Besides implementing shipping solutions on break bulk vessels or heavy lift vessels, we also create solutions for **transporting break bulk cargo on container vessels**.



Ro/Ro

„Roll on/Roll-off“

With this mode of transportation, cargo is rolled onboard or off an ocean going vessel via a ramp.

Using **special equipment** makes it possible to also use Ro/Ro services **for cargo which is not self-propelled**.

Our specialists make use of the possibilities and advantages of Ro/Ro shipping – especially when cargo pieces are oversized or for heavy lift cargo.



Heavy Lift

Extraordinary weights require extraordinary competence

Which modes of transport are suitable for pre and on-carriage? Which routes to or from international shipping ports are available? Which permissions do we need? Which solution is proper for international ocean transport? Which equipment is needed for handling?

The Karl Gross heavy lift specialists give answers to all questions concerning international door-to-door transportation of heavy lift cargo.

Proven experts only: We only work with handling partners who are proven experts in their fields of business and we decide case by case, which partners are best to work with for the transport in question.



KARL GROSS

Better logistics for you

www.karlgross.de