STERLING

ENGINEERING CONSULTANCY SERVICES PRIVATE LIMITED

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BKC Special Issue

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Editorial - Dr. Deepali Hadker

Welcome to a special issue of our Newsletter. This issue is dedicated to all the projects we have completed in the Bandra Kurla Complex area. Hence it is called "The BKC Special Issue". The Bandra-Kurla Complex is planned by MMRDA as a commercial complex in the suburbs of India's financial capital - Mumbai. This complex is the first of a series of "growth centers" created to arrest further concentration of offices and commercial activities in South Mumbai. The complex covers around 370 hectares of land. This was once a low-lying marshy land on the west side of the Mithi river bound by suburbs of Kurla in the east and Bandra in the west.

We had completed a number of landmark projects in this area like the UTI building, ICICI Headquarters, SEBI, Bank of Baroda etc. and continued to take on new projects. All the projects in BKC were prestigious and ionic structures because most of them were Headquarters of financial giants in the country! Hence there was a great demand on us to produce designs which were innovative and challenging. Many of the projects were fast track projects. A few years later, it was only natural that we moved to an office space here in the heart of the city's new commercial hub! Sterling moved to its current office in "Madhava" building on Dassera day in 2006 - almost six years ago. Our entire Borivali branch office moved here headed by Girish sir with a staff of 35 and today we have more than 100 staff members in our Madhava office alone!

I am particularly delighted to present this 9th issue of our newsletter as it has been put together by our "new engineers" at Sterling! They were each assigned a project in BKC which was either completed or under construction where Sterling was appointed as structural engineers. The young engineers had an introductory lecture by Mr. Hadker about the BKC area and prevailing soil conditions and the manner in which the local problems were overcome. This briefing was a great starting point and they then went on to visit the buildings, study drawings and designs prepared by Sterling. Many of the photographs in this issue are also taken by them. It was truly an enriching experience and the result of course is here for all of you to see.

So go ahead and enjoy this journey – WELCOME TO BANDRA KURLA COMPLEX !

Awards

This is an extract from the letter received from our Client – PBEL, congratulating the entire Sterling Team when the first phase of the PBEL City won the most outstanding concrete structure of Andhra Pradesh in 2012.

"It is indeed a great pleasure to work with all of you and we would like to share with you what we together achieved in the first phase of PBEL City. The towers of PBEL City have been recognized by the Indian Concrete Institute as the most outstanding concrete structure of Andhra Pradesh in 2012. With all your support and expert help, we are confident that many more such awards will follow in the coming years. PBEL takes this opportunity to thank all of you for this success and recognition."

– Architect Roossoe Vijayarangam, PBEL

Dhirubhai Ambani International Convention and Exhibition Center, BKC

Girish Dravid

Located in the heart of BKC, DAICEC, as it is called presently, will probably be the single largest multi-purpose building in one plot, admeasuring in excess of 8 million sq. ft. Going deep into the ground as much as 18 m for accommodating basements, it will technically be a High Rise Building, reaching almost 80 m above ground. A Convention and Exhibition space of 72 m x 214 m with a height of 12 m, multiple banquet halls, conference and meeting rooms, serviced apartments, state of the art and most modern auditorium for 2300 spectators, a cultural plaza, a retail shopping complex with multiple anchors, office block and residential premises – will turn this large building into a busy mini-city.

Being an exhibition center, the requirements of loading and un-loading the exhibition material are quite unique, which will be catered through a system of external and internal driveways and ramps. The exhibition hall itself will be designed for a live load of 50 KN/sq.m in addition to other superimposed loads. Due to the requirement of column free spaces in the exhibition hall, the residential blocks are supported on huge transfer trusses spanning 72 m. There will be a meticulously planned composite structural framework - characterized by long spans, abundant use of structural steel, post-tensioning, anchoring, new methods of countering underground water pressure, use of advanced construction methods, mega-columns and mega-trusses and many more interesting features. Sterling is proud to be chosen as structural consultants and to be among the panel of the best consultants of the world for this prestigious and unique project by Reliance Industries.

The construction of the project is likely to begin in a couple of months. The planning and architectural scheme designs are almost complete, and the tendering activity is likely to begin soon. Keep watching pages of the future Newsletters to get up to date information on this interesting project as its design takes shape.

Completed Landmarks by Sterling in BKC

ICICI Headquarters

Kamal Hadker

ICICI Bank decided to start work on its ambitious project of constructing their central corporate office building in Bandra Kurla Complex, Mumbai in 1995.

Being hardcore bankers, the Clients knew the importance of early completion of the project and were willing to incur additional expenses on the structure to achieve their target.

A suitable founding layer was available at approximately 7m below ground. This enabled the construction of two basements for car parking and MEP services. Without wasting any time construction of diaphragm walls along the periphery was commenced and simultaneously, open excavation was started in the central zone under the towers blocks. Immediately after reaching the founding layer, RCC raft foundation was laid under each service core. Thus construction of the core walls could commence immediately using "slip forming" technique. While this was in progress, diaphragm walling could be completed and installation of pre-stressed anchors followed. This permitted the balance excavation work to progress up to the boundaries of the plot.

While all these activities were in progress at site, Clients successfully imported special high-strength steel sections from Trade Arbed – well known steel producers from Belgium. These sections - weighing as high as 500 kg / m – were used as columns. The entire steel fabrication work was carried out in six different locations simultaneously!

As the construction of main raft – complete with inverted foundations for the columns – progressed in all directions, steel columns were systematically brought to the site in 40 feet long trailers and were directly erected in position by using a heavy duty crane. This crane was mounted on rails between the two towers to satisfactorily cover the floor plate of both tower blocks.

Erection of all the steel work progressed very rapidly and was quickly followed by construction of cast-in-situ floor slabs as well as encasing of steel columns. The entire design was carried out taking full advantages of composite construction. Clients acknowledged the advantages of steel construction and admitted that the extra cost of approximately Rs. 100/- per sqft was completely justified because of six months saving in construction time.

A unique feature of this project is the boardroom structure spanning between the two buildings at 10th floor level. This is designed like a bridge and rests on suitable neoprene pads at both ends.

Unit Trust of India

Rohan Jirage

This corporate Head Quarters building for Unit Trust of India was the first major project launched in BKC after commencement of Bharat Diamond Bourse project.

The entire plot was reclaimed by using heterogeneous fill over the old marine clay layer at 8 feet depth. Conventional open excavation was impractical due to strong movement of sub-soil water just above the marine clay layer. This problem was overcome by constructing a rubble masonry wall along the boundary line of the plot having its foundation on the "murrum" layer just below the marine clay. This resulted in significant saving of time and construction cost compared to the elaborate diaphragm wall adopted by Bharat Diamond Bourse.

The structural design for this building was challenging because of the extremely complicated architectural form. The floor plan resembles two outstretched arms – bent at the elbows – as office wings holding between them the central tall atrium space with two impressive skylights. Each floor projects out by 8 feet beyond the floor below. Thus the final floor projects out 32 feet beyond the building line at ground level.In the office area, girders span 10 m between external walls to create column free space. The external framework of RCC columns and beams is designed like cantilevered verindeel trusses to permit large window openings in the façade. To make the construction process safe and accurate, the contractors chose to provide rigid scaffolding / shuttering all the way from the basement floor level to the terrace level. It was finally removed after completing the entire structure.

Completed Landmarks by Sterling

Laxmi Towers

Samantha Lopez

The plot on which this building stands was allotted by MMRDA to the Association of Medium Size Financing Companies. Hence it is appropriately called – Laxmi Towers. Designed by Ar. Hafeez Contractor, this project comprises of three towers resting on a common basement which is 200 feet long. Two expansion joints are provided in between adjacent towers at the ground floor level, where, exposure to the Sun and consequently the effects of thermal stresses were maximum. Shrinkage strips were provided during construction to minimize temperature stresses. Double columns were provided along the expansion joint above the first basement. This expansion joint was subsequently sealed as per specifications to prevent entry of rainwater.

The column grids in the basements were chosen carefully to achieve maximum number of parking spaces. The same column positions were maintained in the super structure. A flat slab system was adopted to facilitate maximum flexibility of internal planning of individual offices. The flexibility rendered by the flat slab system in conjunction with the column grids was much appreciated by the clients. Despite the subsequent changes in ownership of office premises and the merger of adjoining office spaces, the clients did not require any structural modifications.

The Securities and Exchange Board of India

S. B. Malekar and Shrijay Kalghatgi

This is another landmark project in Bandra Kurla complex – with Pheroze Kudianavala as the architectural firm, CPWD as their project management consultants and IIT MUMBAI as proof consultants. CPWD, IIT and Sterling worked as a team from the very initial stages from concept stage, design development stage, tender activities and to final GFC drawings.

For construction facility and protection of surrounding buildings and areas, a temporary diaphragm wall was constructed 1.2m away from the external retaining wall of the proposed basement.

The office building complex has two basements and main office tower consisting of ground plus eight floors. A typical office floor has North and South wings connected by a central lift core. At every floor a bridge in structural steel was provided to connect two wings at east side with aesthetically pleasing curved curtain wall facade. The building has very attractive tall atrium at south west corner with part circular curtain wall facade. Lateral support for the building is provided by shear cores which house the lifts and stairs. In addition, some shear cores are also provided at the corners. The building is supported on raft foundation with flat slab floors at ground and upper basement levels. The upper floors are slab and beam constructions. There is very large entrance canopy in structural steel at the entrance of the South atrium.

This project proved to be challenging and satisfying for Sterling at all stages of design and construction and we was delivered as per strict time schedules demanded by Clients.

Trent House

M. Shashank

This office complex designed by Access architects for Naman developers, was completed in 2007. The building has two basements, a ground floor, and ten upper floors with a helipad at terrace level. Basements are utilized for car parking and MEP services. The extent of excavation for the basement was maximized by using bored cast in-situ shore piles stabilized by temporary rock anchors. The building has a flat slab system with a column grid of 7.55m x 8.3m which was economical and ideally suited for flexible office spaces. The building floor plate is "T" shaped up to third floor and becomes rectangular above. A Central atrium at seventh floor creates an interesting space which is covered by a steel skylight at the terrace level. The tenth floor is specially designed to support landscaped areas outside the Director's office.

Bank of India

Amith Upadhye

This unique building has an attractive architectural appearance and state of the art structural design. This boat shaped building is oval in plan with two basements, eight upper floors and one refuge floor. The building is 98 m long and has a total height of 43m.

In plan, the typical floor bulges in the centre to 25 meters width. Services like the elevators, staircases, toilets, storerooms are in west side of the structure allowing large column free office spaces having clear spans ranging from 15 m at the center to 8m towards the end.

The total depth of the basement is 7.4 m. Diaphragm Wall was provided all around the periphery of the basement and was stabilized by temporary pre-stressed anchors to prevent ingress of subsoil water in the excavated pit.

The large span beams which range from 8 m to 15 m are post – tensioned prestressed beams. An elegant stainless steel canopy projects out of the building by 7m. The supporting framework of the glass canopy is made from stainless steel plates. Stainless Steel members run across the canopy, which provide lateral support to the cantilevered T-sections.

In order to achieve dimensional accuracy and superior quality of the RCC curved bands in the façade, it was decided to provide precast concrete elements in steel moulds. These elements were erected and assembled along the curved edge of the floor plate. The joints between precast units were grouted after ensuring the dimensional accuracy of the entire façade. This construction methodology was successfully adopted here for the first time.

Bank of Baroda

Sagar Sakore

Built in 1998, the Bank of Baroda Headquarters is an elegant building. In plan, it appears fan-shaped and has two basements, a ground floor and eight typical floors.

Floors of the building are designed as flat slabs with drop panels supported on circular columns to achieve maximum clear headroom under the false ceiling. The building consists of two cores located on the corners of the structure.

The most challenging part of the structure was the grand atrium. Two large RCC columns were provided at the extreme ends of the glazing. These columns supported the main steel truss spanning across the roof. Secondary trusses were provided perpendicular to the main truss and were cantilevered up to the edge of the curved facade. The top of all the trusses were at the same level and were designed to support a light weight roof at terrace level.

In order to support the curved glazing, of the tall atrium, horizontal trusses were designed to span between the RCC columns at every floor level. These horizontal trusses were then supported by vertical suspenders from the cantilevered secondary trusses above. The load transfer mechanism was such that, horizontal force due to wind was directly transferred to RCC columns, while vertical load of the entire glazing was transferred to the main atrium truss above.

ING Vyasya Bank

Navya Vishnu

The ING Vysya Bank is yet another bank to open its main headquarters building in the heart of the BKC - underscoring the commercial importance of the area. The architects are Pheroze Kudianavala.

The building with a curvature in plan has 11 floors with two basements below the plinth level. Shoring piles were used during excavation around the basement area to prevent damage to surrounding properties. Waterproofing treatment was laid at one level on bedding concrete. A solid raft with inverted foundations was laid to support columns of the super structure. The area between the inverted foundations was filled up with rubble, stone chips and dry sand to provide "counter-weight" to resist the uplift forces on the raft due to sub-soil water. The basement floor and ground floor levels were designed as flat slabs and the subsequent upper floor levels had a reinforced concrete framing system.

The special features of the building apart from the curvature include a slender steel canopy provided at the entrance and steel roofing at terrace. The canopy is connected from second floor slab level and anchoring rods and plates have been used for connecting the steel structure to the floor beams.

Completed Landmarks by Sterling

Maker Maxity

Kamal Hadker

This group of five modern, elegant office buildings, clad with glass and stainless steel are located at the very beginning of Bandra Kurla Complex. Each building has ten office floors. Two buildings are connected by steel bridges at two levels since both the buildings have been purchased by one owner. There is a basement under each building which accommodates all the MEP services and parking requirements. All the basements are structurally connected at raft level. However, there are expansion joints in the podium slab to permit thermal movements. The podium slab is designed for very heavy intensity of loads to permit fire engine movement around the office blocks as well as liberal landscaping loads. Flat slab with drop panels have been provided on all office floors to facilitate installation of MEP services including sprinklers. This slab is designed to support additional loads due to lightweight partition walls as well as conventional block walls to permit division of spaces. In view of the flat slab construction, most of the lateral loads (due to wind and earthquake) are resisted by the central service core. Since the core is placed on one side of the building, it experiences torsion which was accounted for in the design.

Raheja Corporation Corporate Office

Sunil Goregaonkar and Kirankumar Joshi

This office building designed by P. G. Patki Architects was built for K. Raheja Corporation exclusively to house their own offices. Started in 2005, it has 2 basements, a ground floor and 10 upper floors. Basements have been utilized for car parking and MEP Services. The total depth of excavation below ground level was 9.7m. Hence bored, cast-in-situ shore piles, stabilized by temporary rock anchors were provided. Presence of large cutouts at first floor and ninth floor have resulted in some free-standing columns about 8.4m in height.

Columns of the super-structure were supported on a raft with inverted pedestals and placed on a8.3m x 8.3 m grid. Generally, a flat slab system has been adopted in the office areas to achieve maximum flexibility of planning. Lift wells, staircases and toilet blocks were planned in the balance area where a conventional beam and slab system has been provided. The front elevation of the building has a slight curvature for aesthetic reasons.

There were several additions and alterations proposed by the Owners even while the construction was in progress. The structural feasibility of providing - 3 compactors (approx. 750kg/m2) at 7th and 8th floor, installation of a Godrej safe (1.5T) at 7th floor, a Transformer at upper basement level, Cooling tower over slab at terrace level along with expansion tank, large cutouts for the transformer etc. was studied and appropriate design changes were made in the working drawings.

After the building was almost completed, including finishing works, the Clients commenced work of the 9th and 10th floor. Hence these two floors have been constructed using structural steel columns (encased in concrete) and steel beams with a deck slab on top to minimize in-situ construction work. The Clients also asked Sterling to study the possibility of construction of 12th floor - as this was not feasible, it was proposed to extend the existing building at 6th, 11th and Terrace levels. Sterling designed this extension with light weight material for walls, as well as filling in sunken areas, to raise entire kitchen area to reduce overall load. Concrete on metal deck over composite steel beams has been used in these extended portions.

Sofitel Hotel

Girish Dravid

This five star luxurious hotel is built for the Accor Group by Naman Developers. There are two basements and the main hotel building, comprises of a four storey high podium, a lobby and 11 upper guest floors with a plan dimension of 78 M x 36 M. The total built up area of the project is 5.5 L sq.ft. The main building is constructed in RCC. There are flat slabs with drop panel in the lower ground and podium areas. The cores are designed with conventional beam slab framing. Transfer girders almost 4.5 meters deep were introduced above the podium to support the 11 guest floors above. Conventional beam slab framing was used in typical floor levels. 750mm-900mm wide floor deep RCC girders were used to support floating columns. Necessary openings were introduced to allow passage of services. Hanger column supporting three floor levels were introduced through the girder spanning 16 M. The elegant entrance lobby is 4 storey high with sloping glass façade using tension cable system. Structural steel has been used in a grand staircase at the ground floor and in the impressive entrance canopy.

MMRDA Head Office

Kamal Hadker

Nearly complete, the head office for MMRDA is an architecturally striking building and also offers the largest column free floor space for an office building - measuring 18m X 27m. This huge floor plate is supported on two major plate girders spanning 22.5m in length as well as two girders concealed in exterior glazing spanning 27m.

Each box shaped wing comprises of 3 office floors and one terrace floor. Such boxes are stacked over each other in a staggered fashion giving this building its unique character. The stability of the building is ensured by the service core which is eccentrically placed. Torsional movement is prevented by the shear walls placed at the end of each wing. The stability of these shear walls is ensured by the rigid structure of the fire escape staircase.

ICAI - Institute for Charted Accountants of India

Shivabaswaraj Hosamani

The ICAI Bhawan was built for the national professional accounting body of India, on about 3000 square meter area of land with modern infrastructure facilities and a green building concept. It was designed by the architectural firm of Pheroze Kudianavala. The Ground plus six storied building has two basements. The building has a beautiful glass canopy at entrance which leads to a spacious atrium. There is an impressive auditorium of about 300 square meter area. The first floor houses a cafeteria and the remaining floors have offices. The whole building is dressed with glass curtain facade and partly with ACP cladding. Shore piling was carried out in certain parts to enable excavation close to the adjacent property. Along the balance periphery, conventional excavation was successfully carried out.

The major structural challenge was to provide column free space for the auditorium at ground floor level. RCC girders of 900mm x 1400mm size were designed at first floor level, on which columns were floated for the super structure.

PARINEE TOWER 1

Ishwar Nathe and Mrunali Nawker

Parinee Cresenzo, sprawled across 10 Lacs sq. Ft. area, this is an ambitious 20 storied commercial project with a perfect blend of modern aesthetics and eco-friendly features. The structural system is an RCC framed structure with strong Shear walls located at either end of the building and Columns are placed centrally. The structure is symmetrical about both major and minor axis. The floor plate of grid panel 14m x 11m consists of post tensioned flat slab of 300mm thickness and drop panel of 600mm thickness with peripheral beams only.

As the building has two basements, the foundation level is at approximately 12m below the existing ground level, so stitched raft with inverted footing is adopted as foundation system in which uplift pressure is reduced by providing one inch diameter PVC pressure release pipes and this pressure is resisted by active rock anchors.

Projects Under Construction in BKC

STARLITE – SIGNIATURE ISLAND, SIGNIA ISLES, SIGNIA PEARL - Rohan Hadgal and Amol Gaulkar

This new residential project comprises of three residential buildings called Signature Island, Signia Isles and Signia Pearl by Starlight Systems Pvt. Ltd. The architects are Talati and Panthaky Associates Pvt. Ltd.

Signature Island

This building comprises of a 16 storeyed building with two basements, a ground floor, podium and service floor. The 16 typical floors have 8 Duplex Levels. The total built up area is about 9.5L sq. ft.

The structure has also been designed with a provision of 4 additional levels. The basements are designed for conventional car parking system and the podium level will be used for Gymnasium, Health Club and other facilities. The two cores of this structure are used as the lateral supporting system consisting of shear walls at suitable positions in coordination with other architectural and services requirements.

Signia Pearl

This structure comprises of three basements, stilt level, podium and a 6 feet thick transfer slab. There are 18 typical floors with a Terrace above and a provision of 4 additional floors. Similar transfer slab system is going to be adopted in this structure below the 18 typical floor levels.

For the residential building, conventional beam-slab system is adopted as it consists of long shear walls; the overall system provides better stability under the action of lateral forces. Also transfer girder level is introduced to provide larger column spacing in basement area and efficient traffic flow. Raft slab connecting the individual inverted footings is designed for upward pressure due to subsoil water – properly taking into account the counterweight provided by the fill for all three structures.

Signia Isles

This structure has three basements, a ground floor, two podiums and a service floor. There are 12 typical floors with a terrace above. The built up area of this structure is about 5L sq. ft.

For the first time in India, a building with Transfer Slab (floating raft) system is used instead of the transfer girder system. This special system is adopted to provide flexibility to the architect/client to change their building interior configuration as per their need. Special supporting system has been designed to support the 2.1 m transfer slab (floating raft) to avoid back propping at lower floor levels.

Structural Engineer's Role in Green Buildings

Sanjot Mondal

Buildings are an integral part of our lives both as structural engineers as well as human beings. But buildings are also responsible for one third of global energy use and are the largest sources of greenhouse gas emissions contributing to global warming, acid rain, antibiotic resistant bacteria etc. A ton of cement manufacturing gives away an equal amount of greenhouse gas. Traditional construction methods require maximum use of resources like ground cover, water and energy. If anyone thinks that cities are built to the brim, be warned, as more than 70% of the buildings that would stand by 2030 are yet to be built!

Palais Royale

Our demand on natural and finite resources, water and building materials can be reduced and contribution to environment quality can also be enhanced by incorporating the Green Building Principle into design, construction and renovation. Green buildings are designed to maximize whole life cycle performance, conserve resources and enhance the comfort of users. There is a huge opportunity for all of us to bring innovation to the developing industry.

The role of a structural engineer is difficult to define as many of the aspects are determined by the Architects and MEP consultants. However, it is important for us to choose proper load resisting system with optimal use of appropriate materials. The first green principle would be to realize that the life cycle cost of the structure is important as demolition debris makes up for over 35% of non-industrial waste worldwide. This means that we must ensure a greater life span for our structures. Flexibility in planning, keeping in view the requirements of a variety of tenants are essential while designing of floor plates.

Flat slabs and flat plates considering flexible architectural layouts will be ideal in view of the repeat usage of the floor over time. Use of Post tensioning in concrete flat slabs will ensure lesser consumption of steel and concrete and will allow large column free spaces for better planning. The future designer will advise on how to increase the life span of new and existing structures and also quantify the extent of building reuse. The designer must provide options for adaptability of the structure for other uses. Performance based design is the next consideration while assessing life cycle cost with the degree of functionality in the event of an earthquake. For steel structures, designing bolted connections and fewer welds allows for reuse upon demolition.

Practices that would soon become norms would be roof top gardens and rain water harvesting. Though additional loads will increase the initial cost, the advantages of terrace gardens are cool interiors minimizing energy use, lesser storm water runoff, veggies for the users and habitat for birds and insects that man has taken away. For, plants and other species can live without us and the reverse is not true.

Designing of buildings systems to maximize energy performance is now possible with modeling software that simulates most cost effective energy efficiency. Other than fly-ash as a cementitious material, bamboo, cork, paper flake panels, calcium sand stone, wheat board, strawboard, wood fiber plates, vermiculite instead of intumescent paint, and flax linen are some of the materials used in innovative green buildings.One of the green buildings that Sterling has designed is Palais Royale at Worli, Mumbai, which is the first residential high rise that is platinum rated by Indian green building council. There is 100% recycling of waste and up to 45% of operation cost is expected to be saved.

So here is an opportunity to become an instrument of change and participate in the best practices of structural engineering and sustainable design.

Celebrating Good Times At Sterling ....

As we continue to celebrate good times at Sterling we are happy to announce that...

1) Nilesh Karmalkar had a baby boy Ronit on 20th September 2012, both mother and son are keeping Nilesh very busy !
2) Nishant Mhatre and wife Anita were blessed with a baby girl on 4th Dec 2012
3) Our draftsperson Kavita Patil gave birth to a baby boy Rigved on 7th Dec 2012
4) Our Site engineer Sameer Ughade became the proud father of a baby boy on 10th Feb 2013
5) Draftsman Kiran Sontakke tied the knot to Suvidha 23rd Dec 2012
6) Aniket Kadam from our BKC office became a proud father of Rudra – a lovely baby boy on 2nd May 2013.

Continuing Education

- In Dec 2012 our site engineer Mubin Lambe completed his Degree in Civil Engineering from AMIE and became an associate member of The Institute of Engineers, India, specializing in Structures.
- In our Bangalore branch, Sanjay Rao – has got a Gold Medal for securing First position in M-Tech (structures) batch of 2010-2012 from Manipal Institute of Technology, Manipal University.

Welcomes and Goodbyes

We are always happy to welcome new members to our Sterling family. They are:

Bandra West : Shrijay Kalghatgi and Dhanashree Dighe

Fort : Kirankumar Joshi, Rohan Jirage, Amit Upadhye, Santosh Kadam and Ishwar Nathe

BKC : Navya Vishnu, M Shashank, Amol Gaulkar, Rohan Hadgal, Deepak Rakhonde, Santosh Panigrahi, Anil Shinde, Abhinandan Batkadli, Arjun Rao, Kundan Ghogre, Dinesh Karpe and Vinayak Desai

Pune : Mrs. Sunila Shende

Bangalore : Harini and Nagendra Prasad N

We wish those members who have bid us goodbye the very best for their future. They are:

Sachin Save, Ashok Sawant, Mayur Patil, Samantha Lopez , Bhalchandra Tanawade and Anita Nair .

Jin Mao Building, Shanghai

CTBUH World Conference

Girish Dravid presented a paper along with **Mr. Joseph Colaco** on **Palais Royale** at the CTBUH World Conference in September 2012 - the theme of the conference was **"Emerging High Rise Destinations In Asia".** Innovative ideas that were implemented in the structural design and construction of the currently tallest building in India were appreciated by a large audience who applauded heartily when it was conveyed to them that the entire consultants' panel for the building comprised of Indian agencies. Although many presentations on Palais Royale had already been given till date, this was a special one, as it was being featured in the CTBUH World Conference held at The Grand Hyatt Shanghai Hotel, situated in the **Jin Mao Building**, one of the tallest buildings in the world.

News and Events

Pramod Sahasrabuddhe and Girish Dravid were chief guests for the Aurangabad Engineers' Association function sponsored by Tata Steel on 25th January 2013. Pramod sir captured the imagination of the audience by speaking on "Art in Structural Engineering", while Girish sir generated interest by presenting the "Current Trends in Structural Engineering and Construction in Mumbai – Projects by Sterling".

Girish Dravid was invited to be the Guest Speaker on the occasion of the 14th Foundation Day of The Association of Consulting Civil Engineers (India), Nashik Centre on 4th February 2013. He spoke on current advances in the design and construction techniques with special reference to tall buildings with the case studies of Palais Royale, ICICI Hyderabad and New Cuffe Parade.

At a one day seminar in Bangalore, Nagendra sir delivered a lecture on Safety and Health Challenges in Construction Industries on 15th March 2013. The seminar was organized by the Karnataka State Safety Institute and was well attended by architects, engineers and developers.

On 15th December 2012, Mr. Nagendra Kumar organized a workshop for the staff in the Bangalore office on Empowering Personal Excellence. The workshop was conducted by Mr. H. V. Sridhar and the topics discussed were:
Self-Concept : Qualities and Abilities.
Social-Concept : People Skills and Communication.
Professional-Concept : Group Dynamics and Competencies.

Launch Of Employee Portal

Sterling launched its very own employee portal on 3rd Dec 2012, called - Banyan Tree.
It is a great way for employees to stay connected with news and events within the organization. It provides employees with access to log-in information on the time spent on various activities on the jobs assigned to them. They can also apply for leaves and check their personal information using this portal. It has made employees feel more connected as Sterling is operating from a number of locations. Some important policies and manuals are also available to view on the portal. The portal is designed by S-cube Technologies.

We are pleased to welcome on board – **Dr. Manmohan Maniyar** who joined Sterling Engineering on April 1st 2013. Dr. Maniyar is now our Senior Technical Advisor and is presently guiding all our engineers from the BKC branch office.

A 1987 B. E. Civil Engineering graduate from Government College of Engineering, Pune, Dr. Maniyar also completed his M. E. Structures from the same institute. Soon he went on to complete his Doctorate in Earthquake Engineering. He now has a rich technical experience of more than 26 years including teaching at premier institutes as well as working at renowned consulting engineers practices. His key strengths are - preparing structural schemes, computer analysis, preparing computational models, detailed designs and value engineering for a variety of structures including super tall and high rise structures. He is now actively associated with the prestigious Dhirubhai Ambani International Convention Centre at BKC and we look forward to his dynamic contribution in guiding, reviewing and coordinating our team of engineers.

LOCATION PLAN OF BANDRA KURLA COMPLEX.

PROJECTS BY STERLING

1) ICICI HEADQUARTERS
2) UNIT TRUST OF INDIA
3) LAXMI TOWER
4) THE SECURITIES AND EXCHANGE BOARD OF INDIA
5) TRENT HOUSE
6) BANK OF INDIA
7) BANK OF BARODA
8) ING VYSYA BANK
9) MAKER MAXITY
10) RAHEJA CORPORATION OFFICE
11) SOFITEL HOTEL
12) MMRDA HEAD OFFICE
13) INSTITUTE FOR CHARTERED ACCOUNTANTS OF INDIA
14) PARINEE TOWER - I
15) SIGNIA ISLAND, ISLE & PEARL
16) DAICEC CONVENTION CENTER BKC

RECREATIONAL GROUND

MAP CREDIT :- SHIVABASAVARAJ AND KETAN CHOUDHARI

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