



## CAPABILITY STATEMENT

# ASSOCIATED STRUCTURAL CONSULTANTS

'Souparnika', 63/2413, Chemmath Road, Gandhinagar, Kochi 682 017, Kerala, India.

Phone: +91 484 220 3098, 220 3106. E-mail: [asckochi@gmail.com](mailto:asckochi@gmail.com)

## BRIEF PROFILE

**Associated Structural Consultants (ASC)** is a highly professional and rapidly expanding consultancy organization working in the field of Civil and Structural Engineering.

**ASC** brings out innovative and cost efficient structure with the help of latest structural concepts and computer analysis & design. We have in house computer facilities for static and dynamic analysis (linear and non-linear - geometric and material nonlinearity) of tall multi storey buildings, shells, folded plates, tall chimneys, bridges , foundation systems, retaining systems etc.

**ASC** offers consultancy services in:

- Complete structural and foundation design.
- Bridges - steel, concrete and pre stressed concrete bridges.
- Proof consultants/ Peer review for bridges, buildings & foundation systems.
- Structural auditing.
- Geotechnical Services—Design of piles, Earth support systems, Test arrangements, RE walls, Pile lateral load tests etc.
- Offshore structures, docks, harbours etc.
- Sports complexes & assembly structures.
- Power plants.
- Large span shell structures.
- Chimneys and transmission /communication towers.
- Design of Highways, new roads, CD works etc.
- Repair and rehabilitation of all type of structures.

## **SURESH S.**

**Position** : Partner Since 1994

### **EDUCATION**

Post Graduate from IIT, Madras, in Structural Engineering in 1987.  
Graduate in Civil Engineering from Kerala University 1985.

### **SPECIALISATION**

Industrial Buildings, Pre stressed Concrete Bridges,  
Transmission/Communication Towers.

### **MEMBERSHIP IN PROFESSIONAL BODIES**

Chartered Member, The Institution of Structural Engineers (IStructE), UK.  
Fellow, The Indian Association of Structural Engineers, Institution of Engineers, India, Indian Concrete Institute, Indian Roads Congress, Indian Institution of Bridge Engineers, Indian Geotechnical Society.

### **KEY EXPERIENCE**

Civil Engineer with over 32 years of experience in structural engineering. All round experience in designing high-rise buildings, commercial complexes, bridges and communication towers. Design to different country codes of practice including seismic detailing. Experienced in bridge design in pre stressed concrete, RCC and structural steel. Organisation and control of all aspects of consultant's operations relating to a wide range of civil engineering works & Geotechnical works. Teaching experience of more than 10 years as visiting faculty at CUSAT and visiting professor at Kerala Technical University.

### **WORK HISTORY**

<i>DATE</i>	<i>TITLE</i>	<i>COMPANY</i>
1994 - Date	Partner	Associated Structural Consultants, Kochi.
1989 - 1994	Structural Engineer	Consultant, Kochi.
1987 - 1989	Project Associate	IIT Madras, Chennai.

## U. KRISHNAKUMAR

**Position** : Partner Since 1994

### EDUCATION

Post Graduate in Structural Engineering from Kerala University in 1988.  
Graduate in Civil Engineering from Kerala University 1985.

### SPECIALISATION

Multi storey buildings, Pre stressed Concrete Bridges.

### MEMBERSHIP IN PROFESSIONAL BODIES

Chartered Member, The Institution of Structural Engineers (IStructE), UK.  
Fellow, The Indian Association of Structural Engineers.  
Fellow, Institution of Engineers, India.  
Indian Roads Congress, Indian Institution of Bridge Engineers.

### KEY EXPERIENCE

Over 31 years of experience in consulting civil and structural engineering. Broad design experience with an emphasis on high-rise buildings and commercial complexes. Innovative structural solutions for Amusement Parks. Design to different country codes of practice including seismic design and detailing.

### WORK HISTORY

<i>DATE</i>	<i>TITLE</i>	<i>COMPANY</i>
1994 - Date	Partner	Associated Structural Consultants, Kochi.
1989 - 1993	Design Engineer	STUP Consultants, Bengaluru.
1987 - 1989	Project Associate	IIT Madras, Chennai.

## **SUSEELA P.**

**Position** : Chief Design Engineer Since 1994.

### **EDUCATION**

Post Graduate in Structural Engineering from Kerala University in 1988.

### **SPECIALISATION**

Pre stressed Concrete Bridges, Industrial Buildings, Commercial Complexes.

### **MEMBERSHIP IN PROFESSIONAL BODIES**

Fellow, The Indian Association of Structural Engineers,

### **KEY EXPERIENCE**

29 years of experience in structural / design engineering. Specialised in high-rise buildings, commercial complexes and bridges. Design to different country codes of practice including seismic detailing. Experienced in bridge design in pre stressed concrete, RCC and structural steel.

### **WORK HISTORY**

<i>DATE</i>	<i>TITLE</i>	<i>COMPANY</i>
1994 - Date	Structural Engineer	Associated Structural Consultants, Kochi.
1990 - 1991	Design Assistant	Southern Railways, Chennai.
1988 - 1990	Design Engineer	United Consultants, Chennai.

## Technical staff

Name	Qualification	Experience
Fenil P. A.	Post Graduate in Structural Engg.	12 years
Riji G.	Post Graduate in Structural Engg.	3 years
Arjun S.	Post Graduate in Structural Engg.	2 years
Remya Rose Jacob	Post Graduate in Structural Engg.	2 years
Anu Sneha John	Post Graduate in Structural Engg.	2 years
Anurudh Ravindran	Post Graduate in Structural Engg.	1 year
Lakshmipriya A.	Post Graduate in Structural Engg.	1 year

## Other staff

Draughtsman	-	10
Office staff	-	5

## Software

1. Staad PRO V8i British Std	Analysis/Design
2. Staad PRO V8i Indian Std	” ”
3. Strap 11.5	” ”
4. Etabs NL 2017	” ”
5. Struds ADV 2007	” ”
6. NISA Design Studio	” ”
7. Cedrus-5	” ”
8. Safe Std 2016	” ”
9. SAP 2000	” ”
10. Adapt Floor Pro RC/PT 2017	” ”
11. Astra Pro	” ”
12. Aads Pro	” ”
13. RCDC Steel Design software	” ”
14. CYPE	” ”
15. CSI Bridge V21	Bridge Analysis & Design
16. Autocad, GstarCAD	Drafting
17. Lotus Smartsuite 9.8	Office Suite (compatible with MS Excel)
18. Microsoft Office 2013	Office Suite

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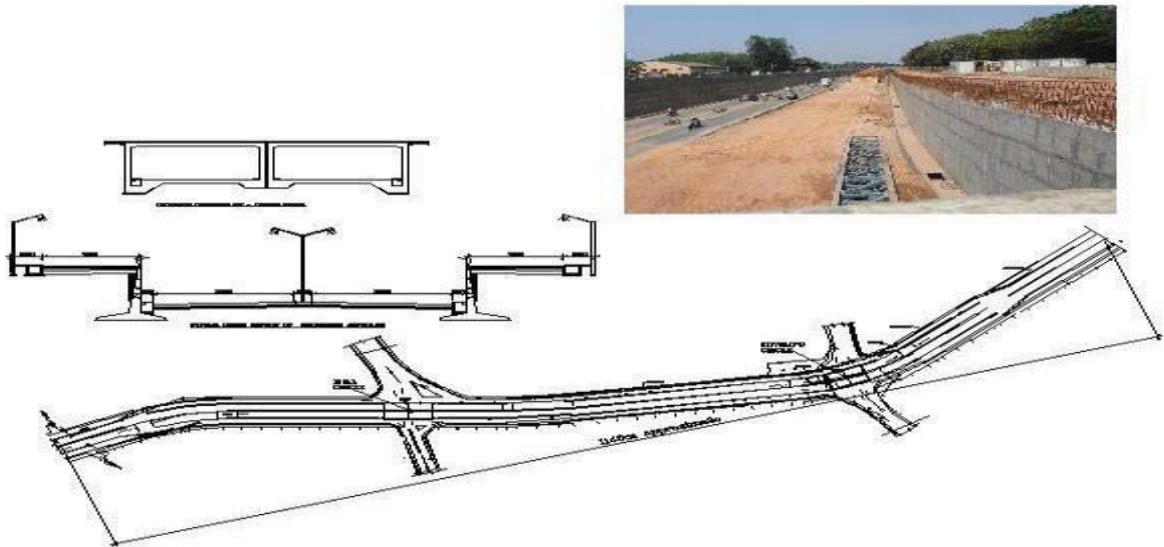


## Roads & Bridges

### **Prestressed Concrete Bridge for Vallarpadom Rail Crossing.**

11 x 26 m prestressed concrete I girder + 1 x 10.15 m RCC slab type bridge at Ernakulam for Vallarpadam rail crossing extension for Goshree Bridge No. 2. PSC Bridge with 4 nos. of I girder and RCC slab designed for 70R/Class A loading has a carriage way of 7.5 m, footpath on both sides and designed with concrete mix M45 precast girder and cast in site deck slab. Design was proof checked by College of Engineering, Thiruvananthapuram.

**BEL-Kuvembu junction combined under pass** on outer ring road, Bengaluru, the four lane outer ring road of Bengaluru city is given a great separation by providing an underpass at BEL Jn and Kuvembu Jn combinedly. Total length of underpass is 1.5 km and the bridging is for



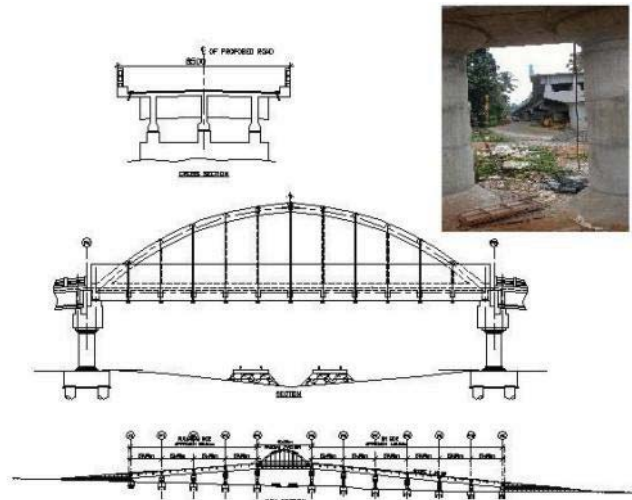
50mtrs at both the junctions. The design include functional and structural designs of the roads, bridges, drains and other related structures. The work was completed in October 2013.

**11 x 40 m Pre stressed Concrete I Girder Bridge** at Krishnankotta across Canoly Canal in Kodakara, Kodungalloor, for Kerala State PWD. The PSC Bridge with 4 numbers of I girders designed for 70R / Class A loading has a carriage way of 7.5 m and designed with concrete mix M45 pre cast girders and cast in site deck slab. The design was proof checked by IIT, Madras. Designed for Kerala State PWD, the bridge was completed in 2006.





**Road Over Bridge at Puliyanam** at KM 74/600-700 between Karukutti and Angamaly Railway stations, Kerala. Superstructure consists of 10 x 23.5m RCC spans (8.5m wide) and 40m obligatory span over the railway line, consisting of pre stressed bow string girders and RCC deck slab. The construction was completed in 2014.



**10 x 35 m Prestressed Concrete I Girder Bridge** at Kallummuttil kadavu Quilon, Kerala, for Kerala State PWD. The PSC Bridge with 3 numbers of I girders designed for 70R / Class A loading has a carriage way of 7.5 m and designed with concrete mix M40 pre cast girders and cast in site deck slab. The design was proof checked by IIT, Madras. Designed for Kerala State PWD, the bridge construction is completed.

**Bridge across Muvattupuzha River,**  
Velloor Panchayath, Kottayam, Kerala.



140m RCC Bridge (7 x 20 M) with 7.5m Carriageway width at Thattavelikadavu. The bridge is founded on 40m deep RCC piles. Construction completed in 2002.



### **Proof Consultancy Services for Flyover at Edappally, Ernakulam.**

This is a four lane flyover parallel to the metro viaduct spanning over the very busy Edappally junction in Kochi. The owner client of this flyover was DMRC Kochi. Total length of bridge is 427m with 69m approach at Edappally Church side and 75m approach at Aluva side. The concrete bridge length is 283 meter with a middle span of 35m and 5.5m clearance at Edappally signal junction. The spans were managed using Post-tensioned Concrete Girder continuous Bridge for a length of 283 meter with 11 spans which includes 3 nos 25m, 30m, 20m, 35m, 12.589m, 2 nos 27m, 15.3m & 41.15m spans. A constant deck width of 8.4m is considered. A one lane 70R wheeled/tracked vehicle load and 2 lane class A wheeled load was considered for the design. The sub structure was bored cast in situ piles of 1 meter diameter. Proof checking by us for M/s DMRC & KMRL.



### **Proof Consultancy Services for Bridge at Champakara, Ernakulam.**

This is a four lane bridge across the Champakara canal in Kochi. This is being built to replace the existing two lane bridge due to heavy traffic congestion. The owner client of this flyover was DMRC . Total length of bridge is 305m with 30m approach at Champakara Church side and 31m approach at Vyttila side. The concrete bridge length is 246 meter with a middle span of 44.5 and 5 m clearance at center of the canal which is also a national water way. The large middle span of 44.5 m was managed using Post-tensioned Concrete and the rest are done using RCC I beams. The bridge is built as two separate parts for the Metro pillars to pass between them. A one lane 70R wheeled/tracked vehicle load and 2 lane class A wheeled load was considered for the design. The sub structure was bored cast in situ piles. Proof checking by us for M/s DMRC & KMRL.

## **DMRC – Execution of Kochi Metro Rail Project.**

R2B section- Maharaja's College to Petta - Preparation of structural designs and drawings for:

### **1. Ernakulam South Metro station.**

- (a) RHS entry structure - Complete redesign of entry structure.
- (b) LHS entry structure - Redesign of foundation and validation of superstructure drawings of M/s Egis Rail.



**2. Modification in design and drawings of PP909 due to utility infringement.**

**3. Elamkulam LHS entry structure - Complete design and drawings.**

**4. Structural redesign of Pile & Pile cap of viaduct locations - P703, P737 to P745 , P747, P 704 & Pier 705, 908, 909 & 911.**

**5. UG Tank cum Property Development Building ( B + a + 3 floors) for Kadavanthra Station.**

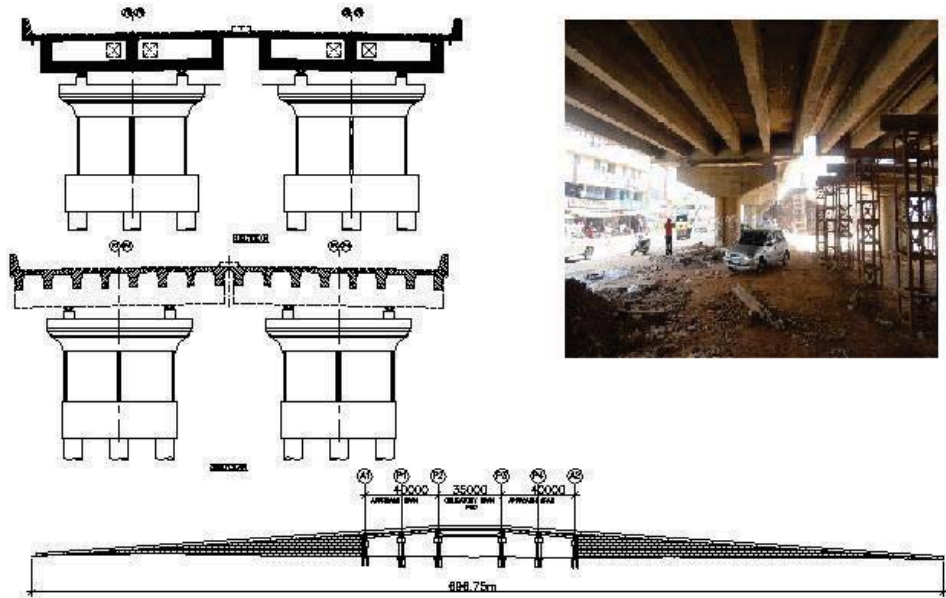


*CHAMPAKARA BRIDGE - UNDER CONSTRUCTION*

### **Bhadrappa Lay out Junction Fly Over on Outer Ring Road, Bengaluru.**

Pre stressed concrete box girder having a span of 35 m. The four lane outer ring road of Bengaluru city is given a great separation by providing flyover at Bhadrappa Lay out Junction . Total length of this flyover is 600m and it

consists of 35m box girder obligatory span with 4 x 20m approach spans using pre stressed I girders. The total width of bridge is 25m and is resting on pot bearings over a piled foundation. The design include functional and structural



designs of the roads, bridges, drains and other related structures. The work was completed in 2014.

### **Hennur Banasawady Underpass on Outer Ring Road, Bengaluru.**



Complete detailed design of 560.28m underpass structure with pre stressed concrete covered span to give grade separation for the four lane outer ring road of Bengaluru City. The bridge width is 40m. Completed in 2010.



**PSC Box Girder Bridge.** Bridge No. 433 for Southern Railway at CH 3610.0 between Bengaluru and Nayandahalli Stations. This is a box girder bridge on an 8° curve track completed in 2004 as part of doubling of tracks between Bengaluru and Mysore (Bridge No.433). Using M40 concrete and 12.7 mm dia Stress relieved Low relaxation strands, the depth of construction of this 20m span Bridge is 1.80m. Designed for MBG 1987 loading for Southern



Railways. The image shows full scale load testing of the bridge.

**Prestressed Concrete Slab Bridge.** Bridge No. 448 for Indian Railways at km 8/300-500 Bengaluru city - Mysore section in Karnataka State, India.



**Thanneermukkom Saltwater Barrier.** Third stage work of Saltwater Barrier This is a two lane bridge cum salt water barrier at Thanneermukkom in Alappuzha. The owner client of this bridge is Irrigation Department, Govt. of



Kerala. This bridge has total 31 spans with 28 nos. of 12m clear span, 2 nos of 8.5m clear span and 1 no.of 14m clear span. The bridge super structure consists of 4 nos. of precast RCC beams and cast-in-situ RCC slabs. One lane 70R wheeled/tracked and 2 lane class A wheeled load was considered for the bridge superstructure design. Construction completed in 2018.

**Saltwater Exclusion Regulator cum Bridge** at Palayivalavu, Neeleswaram, Kasaragod.

This is a two lane bridge cum salt water exclusion regulator. The owner client of this bridge is Irrigation Department, Govt. of Kerala. This bridge has total 17 spans with 15 nos. of 12m clear span & 2 nos. of 7.5m bridge clear span. The bridge super structure consists of 3nos. of precast RCC beam and cast-in-situ RCC slabs. One lane 70R wheeled / tracked and 2 lane class A wheeled load was considered for the bridge superstructure design.



This bridge is under construction.



## Buildings & Other Works

**Sahara grace, Kochi. Apartment Buildings for SAHARA PRIME CITY LIMITED, LUCKNOW.** An apartment complex consists of 15 towers of 10 to 25 storey height at Kakkanad, Kochi. This on going project consists of a total of about 800 residential units and a commercial building.

**Banyan Tree Resorts,** Perumbalam, Kochi. Development of a full Island in Vembanad Lake for a 7 star equivalent Resort. Completed in 2014.

### Nikunjam I Park



Basement + G+35 storey building with combined raft foundation and piles resting on dense sand at 50m depth. Construction completed.

**Koroth Gulf Links,** a Commercial cum Residential Building at Marine drive, Kochi. 15 storey RCC framed building completed in 2008.

**Kent Glass House.** 22 storey Apartment Structure in Vyttila, Kochi, completed and occupied in 2009.

**Taj Residency Jetty,** Kochi. Offshore structure constructed on precast piles in Kochi backwaters for Taj group of Hotels. It is an RCC framed construction. Completed in 1997.

### Building Complex for Federal Institute of Science and Technology.

An Engineering College in Angamaly, Kochi, with an area of 5,00,000 Sq. Ft.



**VEEGALAND AMUSEMENT PARK**, Pallikkara, Kochi. An Amusement park built on a hill at Pallikkara, Kochi, Kerala. Design of all structures like Wave Pool, Sky Wheel, Slides, Theatre, etc. as well as land development structures like retaining walls. The 6 storey high Sky wheel is perched atop the 7 storey structure of fairy castle.

**P. V. S. Commercial cum Hospital Building**, Kochi. 16 storey building with a helipad at roof level. Upper 11 floors for hospital and bottom 4 floors for commercial complex. The RCC framed cum shear wall building is having 30,000 sq. ft. Basement Parking and is founded on 45m deep RCC piles.

**WONDERLA Amusement Park**, Bengaluru, India, The second Amusement Park built by the promoters of Veega Land.

**Federal Park Vennala**, Kochi (For Federal Bank Officers' Association.) Two blocks of G +17 floor apartment blocks, using RCC frame plus sheerwall structure completed & occupied in 2010.



**CHOICE PARADISE**, Thripunithura, Kochi.

One of the tallest buildings in South India with Basement + Ground Floor + 37 Floors. Building is founded on DMC Piles, resting on hard rock. Lateral loads of seismic Zone III as well as wind load for 170 kmph are taken fully by shear walls. The structure is located at Thripunithura, Kochi. Project completed .



**AJ Hall**, Kaloor, Kochi, a full fledged auditorium converted from a cinema theatre. The hall has over 25000 sq. feet state-of-the-art facilities in different halls, and can accommodate nearly 2000 people.



**Sridhar Cinemas**, Broadway, Kochi. Conversion to Multiplex Theatre Complex. Completed.

**Padma Cinemas**, M G Road, Kochi. Conversion to Multiplex Theatre Complex. Completed.

**Shenoys Vistarama**, M G Road, Kochi. Conversion to Multiplex Theatre Complex. Work in progress.

**SILICON DRIVE**, Kakkanad, Kochi. Apartment blocks comprising three blocks having up to 18 Floors. Building is founded on raft foundation resting on laterite. Located opposite to CEPZ, Kakkanad, Kochi.

**MALABAR GOLD**, M.G. Road, Kochi. Basement + Ground + 8 Floors. Building is founded on DMC Piles of 48m depth, resting on hard rock. Lateral loads of seismic Zone III as well as wind load for 170 kmph are taken fully by shear walls. The structure is located on M G Road, a major artery of the city of Kochi, Kerala.

**Federal Towers**, Aluva. (For Federal Bank Officers' Association.) An Apartment Complex consisting of 15 Storey Twin Towers with 1,50,000 Sq ft floor area founded on hard rock at 17m depth on the bank of river Periyar.

**Unicorn Valves Pvt. Ltd.**, Coimbatore. The building consists of 3 floors, including office space, factory floor area and testing facilities. Located at Coimbatore, Tamil Nadu.

**Express Estates**, Kaloor, Kochi. 18 Storey Residential Apartment Building. Area : 1,20,000 Sq.ft. The building is an RCC framed construction sharing lateral loads with the shear walls provided as the lift cores. The structure is founded on 45m deep DMC piles and designed for Zone III seismic loading and to withstand 140 kmph wind loading. Completed & occupied in 1998.

**Puthuran Plaza**, M.G. Road, Kochi. 10 storey Commercial Complex with voided flat slab floors with one basement Building is founded on DMC deep piles resting on dense sand at 43m depth. Lateral loads of seismic Zone III as well as wind load for 140 kmph are taken fully by shear walls. The structure is located on M G Road, a major artery of the city of Kochi, Kerala.

**CyberView**, Kakkanad, Kochi. Basement + Ground + 15 Floors. Commercial cum Residential Apartment by Heera Builders, located adjacent to Info Park, Kakkanad, Kochi.

## **IT Buildings**

**IT Park for Transasia group, Kakkanad, Kochi.** The project is an office building consists of two towers each having ground + 19 floors, with ground + 6 floors for car parking and office space above. The structure is founded on DMC piles resting on hard rock.

**IT Building for Maratt Ltd. at Smart City, Kakkanad, Kochi.** The project is an office building with 1 basement plus 9 floors; with basement, ground and first floors for car parking and office space above. The building is founded on DMC piles resting on hard rock. Located at Smart city, Kakkanad, Kochi.

## Geotechnical Projects

- 1. Geotechnical design of foundation** to various building and bridge projects.
- 2. Geotechnical Consultant** to the Central Mall building in M.G. Road, Kochi - A building with Three Basement + Ground + 4 floors having diaphragm walls as the retaining structure. Work completed in 2012.
- 3. Geotechnical Consultant** to Qatar Airways building on NH66, Kochi - A building with Two Basements. Used tangent piles as Earth Retaining System.
- 4. Full design and supervision** for the Three Basement + Ground + 4 floors building on M.G. Road, Kochi for Josco Jewelers near Shenoy's Junction. Used tangent piles as the Earth retaining system of Three basements.
- 5. Geotechnical consultant** to Three Basement + Ground + 8 floors building for M/s Pothys at Kaloor, Ernakulam under construction. Earth Support System for basement construction uses tangent piles with strutting.
- 6. Earth Support System using tangent piles for Kochi Metro** Ernakulam South Railway Station LHS Entry Exit building where basement raft is at 7m depth.

## Overseas Projects

### **Pot Room Building for M/s DUBAL, Dubai, UAE.**

Contractor: M/s Albanna Engineering, Dubai, UAE.

Reconstruction of Eagle Pot Room for Dubai Aluminium, Dubai. Complete engineering design and preparation of all necessary construction drawings as per British Standards for dismantling and reconstruction of the pot room operating



floor, basement, and busbar trenches required to accommodate the five new reduction cells & associated equipment, new busbars and switches.

### **DUBAI MUNICIPALITY, Al Aweer, UAE.**

Preparation of structural drawings and related design calculations of Deodorization Plant, Filtration Building, Chlorine Contact Tank, Wet Chamber, Flow Meter Chamber and Outlet Chamber. Contractor: M/s Mass Aritma, Al Aweer.

**Millennium Park, Colombo, Srilanka.** An Amusement park in Colombo, Srilanka, designed on top of a shopping cum parking building.

**Taj Hotel, The Maldives.** Various Structural designs and Engineering Drawings for renovation works.

**Pre stressed Pole Factory at Jos, Nigeria.** Preparation of factory layout, design of anchor blocks, curing tanks, etc. for an electric pole factory.

**Control Tower for Salalah Airport, Oman.** The VCR part of Salalah Airport is in structural steel construction. Completed in 2012.

**Al RODA Tower, Abu Dhabi, UAE.** Structural analysis and design of 3B+G+M+18FLOORS+ROOF.

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ascfld 023090

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