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தமிழ் நாடு மற்றும் புதுச்சேரி மாநிலத்தலைவர் திரு. D.R. சேகர் அவர்களின் பதவி ஏற்பு விழா

HOUSE HUNT EXPO 2014

On 29, 30, 31 August, 2014

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2371 0663, 4231 8009
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Southern Centre
Casa Blanca, 11, Casa Major Road,
Egmore, Chennai - 600 008.
Tel: 2819 2006, Telefax: 2819 1874
Email: baisouthern@yahoo.com
Website : www.baisoutherncentre.com

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ஆசிரியர் மடல்

Mu. Moahan

இந்திய பாராளுமன்ற தேர்தல் (உலகின் அதிகமான மக்கள் வாக்களித்த ஜனநாயக நாடு) நடைபெற்று முடிந்துவிட்டது. நாட்டின் பெரும்பான்மையைப் பெற்று பாரதிய ஜனதாக கட்சி - பிரதமர் மோடி அவர்களது தலைமையில் ஆட்சி அமைத்துள்ளது.

நாட்டின் தேங்கி, தேய்ந்து போய் இருக்கும் பொருளாதார நிலைமை மீண்டும் வளர்ச்சி அடையும் என்கிற எதிர்பார்ப்பு, நம்பிக்கை நமக்கு ஏற்பட்டிருக்கிறது.

கட்டுநர் சமுதாயம் சந்தித்து வரும் மிக முக்கியமான பிரச்சனைகளை அகில இந்திய தலைமையகம் மூலமாக மத்திய அரசின் கவனத்திற்கு கொண்டு செல்ல தக்க முயற்சிகள் செய்யப்பட்டு வருகிறது. முக்கியமாக வரி விதிப்பில் உள்ள முரண்பாடுகள் களையப்பட்டு எளிமைப்படுத்தப்பட வேண்டும். சிமெண்ட் முதலாளிகளின் கூட்டுக் கொள்கையை தடுக்க நமது நீண்ட நாளைய கோரிக்கையான சிமெண்ட்டிற்கு ஒழுங்குமுறை ஆணையம் அமைக்கப்பட வேண்டும்.

டீசல் மற்றும் பெட்ரோலியப் பொருட்களின் மீதான மத்திய மாநில அரசுகளின் அதிகப்படியான வரிச்சுமை குறைக்கப்பட்டாலே, எரிபொருட்களின் விலை குறையும். இதன் மூலம் போக்குவரத்து செலவு குறையும். விலைவாசி குறையும்.

நாட்டின் உள்கட்டமைப்பை மேம்படுத்த தகுந்த நடவடிக்கைகள் எடுக்கப்பட வேண்டும். அனைவருக்கும் வீடு என்கிற தற்போதைய அரசின் தேர்தல் வாக்குறுதி நிறைவேற கட்டுமானத் துறையிலுள்ள இன்னல்களை நீக்க அரசு தீவிர நடவடிக்கை எடுக்க வேண்டும்.

இவையெல்லாம் நடக்க வேண்டும்.

மனதி லுறுதி வேண்டும்
வாக்கினிலே யினிமை வேண்டும்
நினைவு நல்லது வேண்டும்
நெருங்கின பொருள் கைப்பட வேண்டும்
கனவு மெய்ப்பட வேண்டும்
கைவசமாவது விரைவில் வேண்டும்
மண் பயனுற வேண்டும்.

- மகாகவி பாரதியார்

அன்புடன்

மு. மோகன்

மய்யத் தலைவர் மடல்

R. Siva Kumar

கட்டுமானப் பொருட்களின் தேவைகளும் தட்டுப்பாடும்

தற்போதைய கட்டுமானத்துறையின் முக்கிய கட்டுமானப் பொருட்களான மணலும் கருங்கல்லும் அரசின் கருணையினாலேயே நமக்கு கிடைக்க வேண்டிய சூழ்நிலையில் உள்ளோம். சிமெண்ட் மற்றும் இரும்புக்கம்பிகள் தனியார் நிறுவனங்கள் உற்பத்தி செய்து அதிக விலையில் விற்பனை செய்கின்றனர்.

மணல் சென்னை , காஞ்சிபுரம் மற்றும் திருவள்ளூர் மாவட்டங்களில் நடைபெறும் கட்டுமான மற்றும் உள்கட்டமைப்பு அபிவிருத்தி பணிகளுக்கான ஒரு நாளைக்கு சுமார் 10000 லோடு மணல் தேவைப்படுகிறது. அனால் ஆற்றுப்படுகைகளில் மணல் ஒரு நாளைக்கு 2000 லோடுதான் விநியோகம் செய்யப்படுகிறது. இதுவே மணல் விலை அரசு ஒரு கன அடி 10 ரூபாய்க்கு அடக்கவிலை வைத்தும் நமக்கு வேலை தளத்துக்கு வந்து சேர குறைந்தது 50 ரூபாய் ஆகிறது. மணலுக்கு மாற்றாக (M-Sand) மாற்று மணல் பயன்படுத்த அரசு ஊக்குவிக்கிறது.

கருங்கல் ஜல்லி கற்கள், வெவ்வேறு அளவுகளில் (40,20,12,6mm) கட்டுமானப் பணிகள் மற்றும் சாலை அபிவிருத்திப் பணிகளுக்கு பயன்படுத்தப்படுகிறது. ஒரு நாளைக்கு சுமார் 30000 லோடு ஜல்லி கற்கள் தேவைப்படுகிறது. ஆனால் தற்போது 10000 லோடு கூட உற்பத்தி ஆவதில்லை. சென்னை மாவட்டத்தில் கருங்கல் உற்பத்தி கிடையாது. காஞ்சிபுரம் மற்றும் திருவள்ளூர் மாவட்டங்களிலுள்ள கனிமத்துறையினரின் கட்டுப்பாட்டில் உள்ள குவாரிகளில் இருந்து கருங்கல் பெற வேண்டும். தற்போது காஞ்சிபுரம் மற்றும் திருவள்ளூர் மாவட்டங்களில் சுமார் 100 இடங்களில் அரசு வருவாய் குவாரிகள் உள்ளது. ஆனால் 10 % தான் குவாரிகள் இயங்குகின்றன.

தற்போது சென்னைக்கு தேவையான ஜல்லி கற்கள் சென்னையிலிருந்து 80 முதல் 100 கி.மீ தூரத்திலிருந்து வருகிறது. அப்படி கொண்டுவரப்படும் ஜல்லி கற்களை தற்போதைய நவீன கனரக வாகனங்களில் அதிக கொள்ளளவில் கொண்டு வந்து சேர்ப்பது அவசியமாகிறது. ஆனால் தற்போதைய அரசானை மூலம் வாகனங்களில் எடை கூடுதலாக ஏற்ற தடைசெய்யப்பட்டுள்ளது. இதனால் குறைந்த அளவே உற்பத்தியாகிக் கொண்டிருக்கும் ஜல்லி கற்கள் சென்னைக்கு குறைந்த அளவிலேயே கொண்டு வரப்படுகிறது. இதனால் இரட்டிப்பு போக்குவரத்து, அதிக டீசர் செலவு, ஓட்டுநர்கள் பற்றாக்குறை போன்றவை ஏற்பட்டுள்ளது.

ஏற்கனவே சென்னையில் போக்குவரத்து நெரிசல் அதிகமாக உள்ளது. மேலும் மெட்ரோ ரயில் பணிகளுக்காக நிறைய இடங்களில் போக்குவரத்து மாற்றப்பட்டு நெரிசல் மிக அதிகமாகி உள்ளது. சென்னை சுற்றுப்புரங்களுக்கு இதன் காரணமாக பகலில் லாரிகள் தடைசெய்ப்பட்டு இரவு நேரங்களில் குறிப்பிட்ட குறைவான காலத்திற்கே அனுமதிக்கப்படுகிறது. தற்போதைய எடை கட்டுப்பாடு காரணமாக லாரி போக்குவரத்து இரண்டு மூன்று மடங்கு அதிகப்படுத்த வேண்டிய சூழ்நிலை உள்ளது. இதனால் கட்டுமானப் பணிகள் மற்றும் அபிவிருத்திப் பணிகள் மிகக் கடுமையாக பாதிக்கப்படும் அபாயம் ஏற்பட்டுள்ளது.

மணல் விலை ஏற்கனவே உயர்ந்துள்ளது. ஜல்லி விலை தற்போது உயர்ந்துள்ளது. லாரி வாடகை எடை கட்டுப்பாடு காரணமாக உயர்ந்துள்ளது. ஆக மொத்தத்தில் கட்டுமான மூலப் பொருட்கள் மற்றும் லாரி வாடகை உயர்ந்து விட்டதால் கட்டுமான செலவினங்கள் இரண்டு மடங்காகி விட்டது. மேலும் பொருட்களின் தட்டுப்பாடு காரணமாக அபிவிருத்திப் பணிகள் செய்து முடிப்பதில் காலதாமதம் ஏற்படுகிறது. இதன் காரணமாக மக்களுக்கும் அரசுக்கும் அதிக செலவும் கால விரயமும் ஏற்படுகிறது.

தீர்வு

அரசு நிர்ணயம் செய்யும் விலைக்கே தனியார் சிமெண்ட் உற்பத்தியாளர்கள் விற்பனை செய்ய அரசு வலியுறுத்த வேண்டும்.

அரசு மணல் குவாரிகளை முறைப்படுத்தி மணல் தட்டுப்பாடின்றி கிடைக்க வழிவகை செய்ய வேண்டும். கருங்கல் குவாரிகளை ஏலம் விட்டோ, அரசே மணல் குவாரிகளை ஏற்று நடத்துவதைப்போல் ஏற்று நடத்தியோ, முழு அளவில் இயங்க ஏற்பாடு செய்ய வேண்டும். நவீன கனரக வாகனங்களின் பாரம் தாங்கும் சக்தியை மறு மதிப்பீடு செய்து அதிக பாரம் ஏற்ற (உதாரணமாக டாரஸ் டிப்பர் 45 டன் பாரம் தாங்கும் சக்தி உள்ளது. அரசு 14 டன்தான் எடை அங்கிகளும் தருகிறது. அதற்கு 30 டன் அனுமதி தந்தால் வரி வருவாயும் அதிகம் கிடைக்கும்) புதிய வழிமுறைகளை ஏற்படுத்தி போக்குவரத்து நெரிசலை குறைப்பதற்கு வழிவகை செய்ய வேண்டும்.

இவை அனைத்தும் அரசின் கருணையில் உள்ளது. மாண்புமிகு முதல்வர் அவர்கள் தமிழகததை முன்னணி மாநிலமாக்கப் பாடுபட்டு வரும் வேளையில் கட்டுமான அபிவிருத்திப் பணிகள் தடையின்றி நடக்க அரசு அதிகாரிகள் தங்கள் கவனத்தை செலுத்தி தற்போதைய சூழ்நிலையை சீராக்க வேண்டுகிறோம்.

State Office Bearers & Sub Committee 2014-15 Address

Shri. D.R. Sekar, State Chairman, Tamil Nadu, Builders & Promoters, M/s. Rajadurai Constructions Pvt Ltd, Kavya Court, 89. West Ponnurangam Road, R.S Puram, Coimbatore – 641 002. Ph: (O) 0422 2551633 / 2555634 (R) 2541326. (M) 094433 20750. Email: drsekar@yahoo.com	**Shri. N. Raghunathan,** State Secretary, Tamil Nadu No. 62, New No. 46, D – Block, Anna Nagar East, Chennai – 600 102. Mob: 094440 17551. Email: nraghu756@hotmail.com
Shri L. Djegaraj Moncher State Secretary - Puducherry Plot No.2 & 3, First Cross, Ganapathi Nagar, Thanthaiperiyar Nagar Extn., PUDUCHERRY – 605 005 (O) (0413) 2202532 (M) 09994377555 Email: raj.moncher@yahoo.com	**Shri. Kadampattai V. Rajagopal** Past State Chairman, Tamil Nadu Engineering Contractor, M/s. V.R.V Contractors, 244, Philomina Nagar, 3rd Street, Nanjikottai Road, Thanjavur – 613 006. Mob: 94431 56266. Email: sureshvarsu@gmail.com
Shri. M. Ayyappan, Chairman – State Highways Committee M/s. Sri Ayyappan Constructions, Mangai Valagam, No. 34, Uma Nagar, 4th Cross, Medical College Road, Thanjavur – 613 007. Mob: 94431 37050 / Ph: 04362 227008. Email: ayyappan1961@yahoo.com	**Shri. S.D. Kannan,** Chairman, Taxation Committee, M/s. S.D.K Constructions, Plot No: A 2/3, Sakthivel Apartment, Chennai – 600 042. Mob: 98840 77950. Email : sdksakthi@gmail.com
Shri. V.Venkatesan, Co –Chairman – State Highways Committee M/s. Shree Venkateswara Road Constructions Pvt Ltd, No: 5, Jeyaraman Street, Gokulapuram, Chengalpattu – 603 001. Kancheepuram District. Mob: 94432 26998. Email: v_k_rajendiran@yahoo.co.in	**Shri. N. Sriram,** Chairman – CPWD Committee, M/s. Sriram & Co, No. 22, Bharathi Road, Ram Nagar, Ranganatha Puram, Coimbatore – 641 009. Ph: 0422 6561017, Mob : 93631 13723 Email: sriram-1948@yahoo.co.in
Shri N. Shivakumar Chairman – Local Admn Dept Committee, Engineering Contractor, No. 27, Chandra Nagar, Sri Rangam, Tiruchirapalli – 620 006. 98424 40005 /98421 90747 Email: n.sivakumar40005@gmail.com	**Shri. V. Balasubramanian,** Chairman – BSNL Committee, M/s. Vee Vee Constructions, No: 22, Bharathiyar Street, RMS Colony North Extn, E Pudur, Thiruchirapalli – 620 012. Mob: 94431 53087. Email : veeveeconstructions.try93@yahoo.com veeveeconstructions.try93@gmail.com
Shri. K. Venkatesan, Chairman Railway Committee, No: 17, Nagammal Street, FS-AP Anbalaya apartments, Vetri Nagar Extn, Chennai – 600 082, Mob: 98844 12122 / 81241 12221 Email: venkatesancont@yahoo.co.in	**Shri. B. Natarajan,** Chairman – TWAD Committee TWAD Contractor, 4180, Sukkampatty (via), Salem – 636122, Mob: 98427 62309.

Shri. N. Ramalingam, Chairman - State PWD Committee, M/s. Ramalingam & Co, No: 252, Gandhiji Road, 2nd floor, Chandran Studio buildings, Erode – 638 001. Ph: 0424 2258107, Mob: 94449 31889 Email : ho@ramalingam.in	**Shri. B. Palanivelu,** Chairman – DTCP Committee, M/s. Bala Consultants, 19B Gananathanayaang Street, Playanmkottai – 627 002. Mob: 98430 57485, 0462 - 2579705 Email : balapalanivel67@gmail.com
Shri. R. Muthukumar, Co - Chairman - State PWD Committee E-1, Rani Ramadevi Nagar, Raja Gopalapuram, Pudukkottai – 622 003, Ph: 04322 229911 Mob: 94433 40164 / 98424 40011 Email: macg.raya@gmail.com	**Shri. K. Jeganathan,** Chairman – Mines & Minerals, Pappammal Puram, Aundipatti – 625 531. Theni, Mob: 94437 44178.
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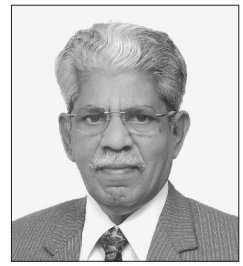
Shri M. Selvakumar Co-Chairman – Workers Training Programme Committee M/s. Construction India No.2, Lady Doak College Road, Chinna Chokkikulam, MADURAI – 625 002 (P) (0452) 4522485 (M) 09842195113 Email: selvakumarmohan2011@gmail.com	**Shri D. Damodaran** Chairman – Membership Development Committee M/s. Cauvery Decors AA/18/1, King Plaza, 1st Floor, Near Ugra Kaliamman Temple, Annanagar, Tennur, Tiruchirappalli – 620 017 (M) 09842470007 / 08681070007 Email: cauverydecor@gmail.com
Shri S. Saravanan Chairman – Membership Development Committee Puducherry No. 3, First Floor, Iyyanar koil Street, Sithankudi, Puducherry – 605 013.	**Shri Vedanand** Chairman – Private Contractors & Data Committee M/s. R.K. Constructions, No. 118, 1st Floor, P.W.D. Road, Chidambara Nagar, Nagercoil – 629 002.
Shri D. Prem Kumar Co-Chairman - Private Contractors & Data Committee 57, Vivekananda Nagar, Dindigul – 624 001. Ph.No: 98421 34533 Email: dopremkumar@gmail.com	**B.R. Ravichandran** Chairman - Archological Committee M/s. Sri Kumaran Construction No.32-H, Nellukkara Street, Kanchipuram – 631 501, Tamil Nadu (M) 09443266259
Shri K.R. Dhanasekar, Chairman – TNEB Grievances Committee No. 26 H, Tamil Nagar, Gobichettipalayam – 638 452. Ph.No: 98427 25234	

Strategy for Improving Life Span of Structure



M.Karthikeyan, B.E., M.B.A.,
Past President –BAI

Deterioration of buildings is inevitable and it is a time bound process. The growing rate of deterioration is very much alarming and it is more than the expected level. The life span of the building is very much reduced than expected. Various reasons which were not predicted for have crept in. Factors like interaction with soils, environment, the inbuilt flaws like faulty design and planning , poor construction materials and methods that are adopted, accidents like fire, blast, impact of falling objects and natural calamities of like cyclone, flash floods intensity of earthquake etc., are playing the major role in deterioration of buildings than those were predicted. We find many buildings constructed 30 years before are the large junk facing deterioration. Replacement of them is highly impossible for lack of space, money and will to do it. It is a crucial problem that we see today not only in India, but also worldwide.

We have to find methods to extend the life span of the existing structures. Approach to the problem is to address it properly. Now lot of development has come in handy to solve the problem. Many new materials, construction chemicals, modern methods of applications have shown the way to rectify and control these deficits in buildings.

The causes of deterioration has to be analyzed properly like a medical doctor who does to a patient starting with preliminary investigations and further with deepened study according to the conditions of the patient. If the cause of deterioration of the structure is identified or judged and a proper assessment of present state of structure is made, one can decide upon economically viable solution to repair the distressed structure and increase its life span. Appraisal of those members and parts of structure that have been subjected to potential damages is identified with proper instruments and gadgets that are available in plenty nowadays. After identifying those areas each structural members has to be evaluated for the extent of damage. Several factors have to be considered to make up the loss of load carrying capacity and the behavioral capabilities of current yield strength of reinforcing steel after damage in RCC members and others. Proper repair method needs to be evaluated and a scheme to rehabilitate of retrofitting works is to be formulated. Post repair evaluation may be carried out using non destructive testing methods applying systematically and scientifically to assess the extent of damage repaired in a structure.

Following steps may be necessary to assess the damages in a structure.

1 Physical inspection of damaged structure.
2 Identifying and documenting the damages
3 Collection of samples for carrying out tests both at site and in laboratory.
4 Studying the documents used for construction before, during and with present changes made after original construction including structural aspect.
5 Study of the load coming onto the structure.
6 Study of environmental, chemical attacks due to industrial atmosphere, Soil structure

interaction and diagnosing the root causes for deterioration

7 To take precaution and preventive steps to arrest further damages.

8 To adopt retrospective analysis to get the diagnosis confirmed.

9 Assessment of structural adequacy.

10 Estimate the future expected life and possible use

11 Remedial measures necessary to strengthen and repairing the structure with the cost, time factors.

12 Suggesting post repair evaluation including load tests if required.

Physical inspection of damaged structure will give information about the type of distress, extent of damage, classification and possible causes for preparing and documents the damages. Planning for in- situ testing, change in environmental exposures, design stage information could be collected.

A list of in-situ testing necessary may be prepared based on requirements. Sample analyzed and tested for the assessment of the structural capacity if need be at the laboratories. The existing building is compared with that of the planned one and deviations in loads may be identified assessment. Soil interaction, water table, could be noted for analysis.

Causes of Deterioration

Designs of concrete structure govern the performance of the structures. Well designed and detailed concrete structure will show less deterioration in comparison with poorly designed and detailed concrete. Beam Column joints prone to defective concrete due to inadequate cover leading to cracks and thereby carbonation and corrosion. Environmental effect is severe through micro cracks presents in concrete leading to corrosion.

Quality of materials used should be ensured by means of various tests as per I.S. codes. Alkali- aggregate reaction, sulphate attack, salinity of water clayey materials in fine aggregate used also leads to early weakening of structures.

Quality supervision is a major point. Checking for water cement ratios, control on strength, permeability and durability and also insufficient or over vibration resulting in porosity, honeycomb and segregation are the points to ponder.

Check for the Damages

1. Spalling of concrete cover due to water Ingress.
2. Cracks parallel to the reinforcements.
3. Spalling at edges and corners.
4. Swelling of concrete in P.T.slabs.
5. Dislocation.
6. Internal cracking
7. Reduction in area of steel reinforcement.

Damage Assessment and Testing Technique

Now number of instruments and gadgets are available for non-destructive technique, partially destructive or destructive techniques to predict the type of damages and extent of damages.

Some of techniques adopted are.

1. Rebound hammer test [Schemidt] for strength and uniformity.
2. Ultrasonic pulse velocity test [UPV]
3. Pull out and pull off tests
4. Core test
5. Windsor prob
6. Rebar locator

Corrosion test, absorption and permeability test for alkali aggregate reaction, abrasion resistance test rebar location test are also conducted. Besides these carbonation tests, sulphate determination test, chloride determination tests and many other tests are conducted based on the extent of damages and importance of the building. With these tests it would be possible to know in-situ strength/quality of concrete to precisely identify the damage and cause of deterioration of the structure to predict the residual life and determine the measures to enhance the life of the structure.

Repair of structures

The success of repair activity depends upon

the identification of the roof cause of deterioration of the concrete structure. If the causes are identified it is easy to repair with the use of modern construction chemicals. These materials usage depends on the nature and intensity of damage, and funds available and time.

Conclusion

Several methods are also adopted and responsibility of choosing the right one is in the hands of experts in the field. Adoption of proper methodology and proportion of materials, adopting techniques like pressure grouting, giving protective coats, doing patch works, bonding of old concrete to new concrete, proper treatment of expansion and contraction joints, water proofing technology, providing chemical protection and also taking care of aesthetics of the structure should be done.

Experience of the contractor and his team, proper preparation of surface, and application knowledge of the materials to be handled are equally important.

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சாலைகளில் விபத்துக்களை ஏற்படுத்தும் இரும்புத் தடுப்புகள்

O.K. Selvaraj
Vice Chairman

முன்பெல்லாம் தமிழகத்தில் அரசின் வணிகவரித்துறையினரால் வரி ஏய்ப்பினை கண்டுபிடிக்கவும், தடுப்பதற்கும் ஒவ்வொரு மாவட்ட எல்லையிலும் வணிகவரிச் சோதனை சாவடிகள் அமைக்கும் போது இரும்புத் தடுப்புகள் அமைத்து சோதனைக் சாவடிகளை உருவாக்குவர். அவ்வாறு இரும்புத் தடுப்புகள் அமைப்பதால், வியாபார சரக்குகளை ஏற்றிச் செல்லும் கனரக வாகனங்கள், இச்சாவடிகளை வேகமாக கடந்து செல்வது அல்லது தவிர்த்துவிட்டுச் செல்வது கடினமாக்கப்பட்டு வணிகவரித்துறையினரால் எளிதாக அனைத்து வாகனங்களையும் சோதனை செய்ய முடிந்தது.

அடுத்த கட்டமாக தமிழகத்தில் சில வருடங்களுக்கு முன்பு தீவிரவாதிகள் ஏற்படுத்திய அச்சுறுத்தல் காரணமாகவும், ஒன்றிரண்டு இடங்களில் தீவிரவாதிகள் தப்பிக்க நேரிட்டதை மனதில் கொண்டு தமிழக காவல்துறையினரால், தமிழகத்தில் பெரும்பாலான இடங்களில் இந்த இரும்புத் தடுப்புகள் (Barricades) அமைக்கப்பட்டன.

இவ்வாறு பெரும்பாலான இத்தடுப்புகள் ஊருக்கு/நகருக்கு வெளியே அமைக்கப்பட்டன. இது தவிர தமிழ் நாட்டின் பெரிய நகரங்களான சென்னை, கோவை, திருச்சி, மதுரை, சேலம் போன்ற ஊர்களில் அரிதாக ஒன்றிரெண்டு இடங்களில் முக்கிய பிரமுகர்கள் இல்லத்திற்கு அருகில் தடுப்புகள் வைக்கப்பட்டிருக்கும். அதிலும் குறிப்பாக தலைநகர் சென்னையில் முக்கிய VIP களின் வீட்டிற்கு அருகில் இத்தகைய தடுப்புகள் கூட்டத்தை கட்டுப்படுத்துவதற்காக அமைக்கப்பட்டிருக்கும்.

ஆனால் தற்போது சென்னையில் தினமும் எல்லா சாலைகளிலுமே அதுவும் போக்குவரத்து அதிகமாக உள்ள சாலைகளில் இந்த barricadeகள் வைக்கப்பட்டு வருகின்றது. எதற்காக இப்படி எல்லா சாலைகளிலும் புற்றீசல்கள் போல் இந்த இரும்புத் தடுப்புகள் வைக்கப்பட்டு வருகின்றன என்று விசாரித்துப் பார்த்ததில் நமக்கு கிடைத்த தகவலானது - சாலைகளில் அதிவேகமாக செல்லும் வாகனங்களை ஒழுங்குபடுத்துவதற்கும் கட்டுபடுத்துவதற்கும்தான் என்கின்றனர் காவல்துறையினர் (மாநகர போக்குவரத்து பிரிவு).

இதனால் ஏதேனும் நல்ல பலன் கிட்டியிருக்கிறதா அல்லது பலன் கிடைக்குமா என்றால் நிச்சயமாக இல்லை என்றுதான் கூற வேண்டும். விபத்துக்களை தடுப்பதற்கு மாறாக புதிதாக விபத்துக்களை ஏற்படுத்திவிடுமோ என்ற அச்சம் நமக்கு

ஏற்படுகிறது. ஒரு சில இடங்களில் விபத்துக்களும் ஏற்பட்டுள்ளன. பரபரப்பான Peak hours களில் தங்கள் இடங்களுக்கு குறிப்பிட்ட நேரத்திற்குள் சென்றடைய வேண்டுமென்ற எண்ணத்தில் வாகன ஓட்டிகள் இத்தடுப்புகளை சிறிதும் சட்டை செய்யாமல் ஒருவரை யொருவர் முந்திச் செல்ல எண்ணும்போது இவைகளுக்கு இடையில் (இத்தடுப்புகளுக்கு) சிக்கிக்கொண்டு ஒருவரும் செல்ல இயலாமல் போக்குவரத்து ஸ்தம்பித்துவிடுகிறது. (Traffic jam) பின்பு எங்கிருந்தாவது காவலர்கள் வந்து போக்குவரத்தை சீர் செய்ய சில மணி நேரங்களாவது தாமதமாகி அனைவருக்கும் பிரச்சனையை ஏற்படுத்திவிடுகிறது.

தேசிய நெடுஞ்சாலைகளில் அநேக இடங்களில் இந்த இரும்புத்தடுப்புகள் சாலைகளில் சாய்ந்து கிடக்கின்றன. இரவு நேரங்களில் இவ்வாறு சரிந்து கிடப்பதை கவனிக்காமல் பல வாகனங்கள் இதன் மீது மோதி விபத்துக்குள்ளாகின்றன. எனவே வாகனங்களின் வேகத்தைக் கட்டுப்படுத்துவதற்கு இந்த Barricades அமைப்பதை கைவிட்டு அதற்கு பதிலாக வேகத்தடைகள் அமைக்கலாம். வேகத்தடைகள் அமைக்கும் போது விஞ்ஞான ரீதியாக வேகத்தடைகள் அமைக்கப்பட வேண்டும். அதாவது based on scientific principles. வேகத்தடைகள் இத்தனை அடி அகலத்தில் இத்தனை அடி உயரத்தில் என்று அமைக்கப்பட வேண்டும். மேலும் வேகத்தடைகள் அமைக்கப்பட்டிருப்பதை தெரிவிக்கும் அறிவிப்பு பலகை அமைத்தல் என்பன போன்ற விஷயங்களை கவனத்தில் கொண்டு அமைக்கப்பட வேண்டும் என்பதே நமது விருப்பமும் யோசனையும் ஆகும்.

மேலும் சாலை பாதுகாப்புப் பற்றிய விழிப்புணர்வு ஏற்படுத்தும் வகையில் தொலைக்காட்சி, பத்திரிக்கை மக்கள் அதிகமாக கூடும் இடங்களில் அறிவிப்பு பலகைகள், விளக்கங்கள் என இத்தகைய பிரச்சாரங்களை தீவிரப்படுத்தினால் அதற்கு நல்ல பலன் ஏற்படும்.

எனவே இத்தகைய பலன் எதுவும் அளிக்காத இரும்புத் தடுப்புகள் அமைப்பதை கைவிட்டும் ஏற்கனவே அமைத்திருப்பதை அகற்றிவிடுவதே அனைவருக்கும் நன்மை அளிக்கக்கூடிய ஒன்றாகும் என்பதே எனது பணிவான கருத்தாகும்.

மேலும் இன்றைய காலக்கட்டத்தில நான்கு சக்கரவாகனங்களின் செயல்திறன் நவீனமயமாக்கப்பட்டதாலும், சாலைகளும் நான்கு வழிச்சாலை, ஆறு வழிச்சாலை அதி விரைவு சாலை (Express Highway) என்று மேம்படுத்தப்பட்டதாலும் இதைப்போன்ற சாலைகளில் சில இடங்களில் வாகனத்தின் வேகம் 40 கிமீ தான் செல்ல வேண்டும் என்பதை 60 கி.மீ ஆக மாற்றினால் நன்றாக இருக்கும்.

முன்பு அண்ணா சாலையில் வாகனங்களின் தன்மைக்கேற்ப சாலையில் தனித்தனிப் பிரிவுகள் (Lanes) ஏற்படுத்தப்பட்டு பேருந்துகள், லாரிகள் ஒரு பாதையிலும் கார்கள் ஒரு பாதையிலும் இருச்சக்கரங்கள், ஆட்டோக்கள் எனத் தனித்தனி பாதைகளில் (Laneகளில்) சென்றன. எனவே இதனையும் முக்கியமான அகன்ற சாலைகளில் இவ்வாறு அமைத்து செயல்படுத்த முயற்சிக்கலாம்.

Alternate Materials to Sand

Dr. L. Ramajeyam
Ph.D.,M.E.(struct).,F.I.E.,F.I.V.,MISTE,C.Engg.(Ind).
Dean Civil Engineering, Meenakshi Sundararajan Engineering College
Former Principal
P.T.Lee.Chengalvaraya Naicker Polytechnic College

The following questions are raised

1. Whether sand can be replaced by quarry dust for cement mortar?
2. Whether sand can be replaced by quarry dust for concrete works?
4. Whether quarry dust or M-sand or any other suitable material can be replaced for sand in building construction?

We will discuss in detail

With the increased shortage of natural river sand for construction due to over exploitation from sources and the ability of the nature to replace it and increasing pressures from local bodies, to protect the environment, either replacement or substitution for sand is warranted during this decade and for future.

The crusher dust, amounting to 25% of the coarse aggregates produced in stone crushers which were considered to be waste material facing the solid waste disposal problem, is being experimented as an alternate to river sand in construction industry for concrete and masonry works. Equal or excess quantity of sand is required for brick masonry and stone masonry in any construction project when compared to the concrete consumption in the same project.

Before going in to the usage of above materials. Let us see the structural components of different components in the buildings.

Structural Component; (It is mainly supporting the structures and giving stability to the buildings)

1. Foundation of Columns and Piles
2. Plinth Beams, Beams, Columns etc
3. Roof slab, Staircase, Lift wall, Head Room etc.

Non-Structural Component:

1. Base Concrete and Flooring concrete
2. Brick Work
3. Plastering Works
4. Floor finish

Therefore using any alternate material to sand for structural component, it is essential to know the real impact of the alternate material. The another risk factor is the effect of alternate materials may be knowing only after few years or two and leads to structural damages and may lead to non repairable.

But in the case of alternate material used for Non- structural elements the risk factors is almost nil.

What are the alternate materials available to replace sand?

In fact we have been sitting over a landfill of possible substitutes for sand. Industrial waste and by-products from almost all industry, which have been raising hazardous problems both for the environment, agricultural and human health can have major use in construction activity which may be useful for not only from the

economy point of view but also to preserve the environment as well. Some of the researchers did the work to find the alternatives for natural sand and they concluded about different industrial waste and their ability to replace the much sought after natural river bed sand.

1 Copper Slag

Copper slag is a by-product obtained during the matte smelting and refining of copper. Copper slag used in this work was brought from Sterlite Industries Ltd (SIL), Tuticorin, Tamil Nadu, India. SIL is producing Copper slag during the manufacture of copper metal. Currently, about 2600 tons of Copper slag is produced per day and a total accumulation of around 1.5 million tons. It is a by-product obtained during the matte smelting and refining of copper. To produce every ton of copper, approximately 2.2–3.0 tons copper slag is generated as a by-product material. Utilization of copper slag in applications such as Portland cement substitution and/or as aggregates has threefold advantages of eliminating the costs of dumping, reducing the cost of concrete, and minimizing air pollution problems.

Uses of copper slag

- Copper slag has also gained popularity in the building industry for use as a fill material.
- Contractors may also use copper slag in place of sand during concrete construction.
- Copper slag can also be used as a building material, formed into blocks.

At present about 33 million tonnes of copper slag is generating annually worldwide among that India contributing 6 to 6.5 million tonnes. 50 % copper slag can be used as replacement of natural sand in to obtain mortar and concrete with required performance, strength and durability. In India a study has been carried out by the Central Road Research Institute (CRRI) shown that copper slag may be used as a partial replacement for river sand as fine aggregate in concrete up to 50 % in pavement concrete without any loss of compressive and flexural strength and such concretes shown about 20 % higher strength than that of conventional cement concrete of the same grade.

- Addition of slag in concrete increases the density there by increase the self weight of the concrete.
- The results of compression & split-tensile test indicated that the strength of concrete increases with respect to the percentage of slag added by weight of fine aggregate upto 40% of additions.
- The recommended percentage replacement of sand by copper slag is 40%.
- The research studies revealed that the addition of slag does not paves way for leaching of harmful elements like Copper (Cu) and Iron (Fe) present in slag in concrete. Thus, It does not pose any environmental problem.

2 Granulated Blast Furnace Slag

According to the report of the Working Group on Cement Industry for the 12th five year plan, around 10 million tonnes blast furnace slag is currently being generated in the country from iron and steel industry. The compressive strength of cement mortar increases as the replacement level of granulated blast furnace slag(GBFS) increases. GBFS sand can be used as an alternative to natural sand from the point of view of strength. Use of GBFS up to 75 per cent can be recommended.

A mix of copper slag and ferrous slag can yield higher compressive strength of 46.18MPa (100 per cent replacement of sand) while corresponding strength for normal concrete was just 30.23MPa. With higher levels of replacements (100 per cent) there might be some bleeding issues and, therefore, up to 80 per cent copper slag and ferrous slag can be used as replacement of sand.

3. Washed Bottom Ash (WBA)

Currently India is producing in over 100 million tons of coal ash. From which total ash produced in any thermal power plant is approx 15 –20 per cent of bottom ash and the rest is fly ash. Fly

ash has found many users but bottom ash still continues to pollute the environment with unsafe disposal mechanism on offer. The mechanical properties of special concrete made with 30 per cent replacement of natural sand with washed bottom ash by weight has an optimum usage in concrete in order to get a required strength and good strength development pattern over the increment ages.

4. Quarry Dust:

Eventhough it is a crushed stone but it contains lot of minor particles ie. Dust. It is giving nuisance to the mortar or concrete mixture. Quarry dust is not properly graded and it is almost uniform graded small particles.

The fines below 150 microns (0.15mm) in crusher dust will have high affinity to water which creates high water demand and reduced strength while replacing sand and used in masonry or concrete and hence it should be removed before using for any work.

The micro fines below 150 microns will be about 15% of the total volume of crusher dust. These micro fines below 150 micron (0.15mm) size can be removed by vacuum de dusting system with bag filters in the crusher itself or removed by sieving. The micro fine free crusher dust is used as the alternative to sand.

Now lot of research work is going on to utilize the quarry dust for building works in the replacement of sand and still it is in research stage only.

Still everything in experimental stage, therefore it is not advisable to use the quarry dust for structural element as such but the quarry dust without micro fines can be used for all the non- structural elements works such as

1. Brick Mortar for Brick masonry or stone masonry

2. Base mortar for Tiles and Flooring work

3. Base concrete for Foundation Bed for 1:4:8 – 40mm Aggregate works

4. P.C.C. works for Flooring concrete 1:4:8 or 1:5:10

5. Base Filling below P.C.C for Foundation structure

It is not advisable to use quarry dust for structural Component (elements) as mentioned above. Since the effect and durability of concrete with quarry dust will know after years or so.

Now, in some places treated quarry dust are available in the name of M-sand. M- Sand is totally different, it is manufactured directly from the blue metal. Therefore treated quarry dust cannot be taken as M-sand.

5. Construction and Demolition waste

There is no documented quantification of amount of construction and demolition(C&D) waste being generated in India. Municipal Corporation of Delhi says it is collecting 4000 tonnes of C&D waste daily from the city which amounts to almost 1.5 million tones of waste annually in the city of Delhi alone. Even if we discount all the waste which is illegally dump around the city, 1.5 million of C&D waste if recycled can significantly substitute demand for natural sand by Delhi.

Recycled sand and aggregate from C&D waste is said to have 10-15 per cent lesser strength than normal concrete and can be safely used in non-structural applications like flooring and filling. Delhi already has a recycling unit place and plans to open more to handle its disposal problem. Construction and demolition waste generated by the construction industry and which posed an environmental challenge can only be minimized by the reuse and recycling of the waste it generates.

6. Foundry Sand

Metal foundries use large amounts of sand as part of the metal casting process. Foundries successfully recycle and reuse the sand many times in casting process. When the sand can no longer be reused in the foundry, it is removed from the foundry and is termed as “foundry

waste sand." (FWS). Like many waste products, foundry sand has beneficial applications to other industries.

Foundry sand consists primarily of silica sand, coated with a thin film of burnt carbon, residual binder (bentonite, sea coal, resins) and dust. Foundry sand can be used in concrete to improve its strength and other durability factors. Foundry Sand can be used as a partial replacement of cement or as a partial replacement of fine aggregates or total replacement of fine aggregate and as supplementary addition to achieve different properties of concrete.

Concrete containing 25% and 35% replacement of fine aggregate with clean/new foundry sand showed compressive strength similar to that of the control mix.

The compressive strength values for concrete with 25% and 35% regular sand replacements with used foundry sand are lower than the concrete with no replacement. But, Compressive strength may be increased by using admixtures, and/or additives such as fly ash.

7. M-sand

It is a Manufacturing Sand, and it is nothing but crushed stone with proper sizes with combination of all grades (fines to coarse). Therefore it can be replaced for all works instead of sand. Especially for concrete works and Mortar for Brick or stone Masonry. It gives difficult to work for plastering.

Therefore Building Industry, builders, Promoters and contractors should think of alternate materials to sand.Many Industries may also set up some units to dispose the waste material with proper treatment to use as alternate materials to sand. New industries can also be setup to collect all the waste materials mentioned above and with proper treatments, it can be sold out as alternate materials to sand.

New Patron Members

Sl.No.		Name & Address	Sl.No.		Name & Address
1		Mr. J. Dilli Babu M/s. Pawan Caastles Old No. 48, New No.30, 2nd Floor Rajaji Salai, Chennai – 600 001	2		Mr. K. Pratapa Reddy M/s. Pravaha Engg. Infra Pvt Ltd No.57/2, Srichakra Ramraj Aparts, 12th Avenue, Ashok Nagar, Chennai – 600 083.
3		Mr. M.S. Hariharan M/s. Ample Properties Pvt Ltd Flat – F2/1st Floor Nivedha Nithyam, Plot No.HIC – I 412 5TH Main Road Mugappair Eri Scheme, Chennai – 600 050	4		Mr. V. Sundaravadivelu M/s. Sri Purnima Builders No.8, Bharathi Street (1st Floor) Vasudevan Nagar, Jafferkhanpet Chennai – 600 083
5		Mr. R. Lokeshwaran M/s. MRL Homes & Estates 312-C, T.H. Road, Avadi, Chennai – 600 054	6		Mr. C. Deivasigamani 3/301, 1st Street Krishna Nagar Madhanandapuram, Chennai – 600 125

Income Tax Rates/Slab of Partnership Firms for A.Y.2014-15 (F.Y.2013-14)

S.D Kannan
Chairman, Taxation Committee

Income Tax Rate	Surcharge	Education Cess
30%	10% surcharge will be applicable where total taxalbe income is over Rs.1 Crore.	3%

A partnership firm for the purpose of income tax means a partnership firm includes a limited liability partnership firm.

Partnership Taxation

Partnership firm is treated as a separate entity. It is immaterial that partnership is registered or not registered. So partnership firm is taxes under the income tax slab for partnership firm and partners are taxes under the income tax slab for individuals.

Income Tax Slab/ Income Tax Rates

- Tax rates on partnership firm is 30%
- Any long term capital gains shall be taxable @ 20%
- Short term capital gains shall be taxable @ 15% u/s 111A
- Education cess @2% and secondary & higher education cess @1% will be applicable. However surcharges has eliminated from A.Y.2012-11.

FAQ related to Partnership Income Tax Rates/ Slab

Is partnership firm liable to deduct tax at source on partner salary and interest?

As the partner are individually taxed by the income tax slab on individuals. But the firm is not required to deducted TDS on the partner's salary and interest paid to the partners.

Is partner's share profit exempt from income tax while calculating partner's income tax?

Yes the share of profit is exempt from income tax as it is already taxed according to the income tax slab for partnership firms.

How to calculate income tax of partnership firms according to income tax slab on partnership firms?

In computing the total income of the firm, any salary, commission, remuneration and bonus to a partner shall be deductible subject to certain restriction.

What is Alternate Minimum Tax (AMT)?

The provision relating to Alternate Minimum Tax introduced in A.Y. 2013-13 for Limited Liability Partnership (LLPS). Now, it has extended to all partnership firms w.e.f. A.Y.2013-14. The deduction under section 80HH to 80RRB is claimed only by paying minimum tax @ 18.5% on adjusted total income of partnership firms or LLPs.

Mothers name on PAN card – New Form 49A & 49AA WEF 16.05.2014

CBDT has revised PAN Application form 49A and 49AA wef from 16.05.2014 vide its notification no. 26/2014 , Dated- 16-5-2014. Revised Form 49A and 49AA provides option to get printed Mothers Name on PAN card. So those applying for New PAN card or for revised PAN card have the option to get printed on their PAN card printed the name of his/her mother.But applicant can select only one option, he /she cannot have the name of both mother and father printed on PAN card. In case Applicant do not exercise his/her option than by default Father's name will get printed on PAN card.

For more details Please Visit below

Notification and Revised Form 49A and 49AA :-

Notification No. 26/2014 , Dated- 16-5-2014

S.O. 2045(E) - In exercise of the powers conferred by section 295 of the Income-tax Act, 1961 (43 of 1961), the Central Board of Direct Taxes hereby makes the following rules further to amend the Income-tax Rules, 1962, namely:—

1. (1) These rules may be called the Income–tax (5th Amendment) Rules, 2014.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Income-tax Rules, 1962, in Appendix II,

BJP's Announcement on Tax Front in Election Manifesto 2014

We are producing below the BJP's announcement on tax from as made by them in their Election Manifesto for 2014 Lok Sabha Elections :-

Taxation

UPA Government has unleashed 'Tax terrorism' and 'uncertainty', which not only creates anxiety amongst the business class and negatively impacts the investment climate, but also dents the image of the country. BJP realizes the importance of having a Tax Policy Roadmap, so that people are aware of the future and plan accordingly. We will:

- provide a non adversarial and conducive tax environment
- rationalize and simplify the tax regime
- overhaul the dispute resolution mechanisms
- bring on board all State governments in adopting GST, addressing all their concerns
- provide tax incentives for investments in research and development, geared towards indigenization of technology and innovation

RSource – BJP's 2014 Election Manifesto

We the BAI members and tax paying business community to be free from "Tax terrorism"

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Contact : 94433 83597, 98408 91747

கோவை மய்யத்தின் சார்பில் 03.05.14 அன்று நடைபெற்ற சேவை வரி பற்றிய கருத்தரங்கில் அகில இந்திய தலைவர் திரு. S.K. பாசு அவர்கள் உரையாற்றினார்.

முதலாவது மாநில அளவிலான மேலாண்மைக்கூட்டம் 04.05.2014 அன்று கோவையில் நடைபெற்றது.

அகில இந்திய கட்டுனர் சங்கத்தின் திருச்சி மய்ய பொதுக்குழுக்கூட்டம் 29.05.2014 அன்று சிறப்பாக நடைபெற்றது.

BAI's Southern Centre Member, K P Pradeep Appointed Hon. Secretary of SEWC

K P Pradeep, Editor-in-Chief, The Masterbuilder 'one of South East Asia's most prominent civil engineering and construction magazine' has been appointed as the secretary of Structural Engineers World Congress (SEWC) by its board recently. He is also the Secretary General of its India Section.

SEWC is an independent nonprofit organization with its own Board of Directors that was chartered and incorporated in 1994 by six International professional bodies namely ACI, SEI-ASCE, IAS, JSCA, NCSEA and SEAOC to facilitate the planning and organizing of a Structural Engineering World Congress at regular intervals in different parts of the world. The First Congress was held in San Francisco, USA (1998), the second in Yokohama, Japan (2002), the third in Bangalore, India (2007) and the fourth in Como, Italy (2011). The next and the 5th in the series is to be held in Singapore (2015).

The Structural Engineering World Congress (SEWC) is dedicated to the Art, Science and Practice of Structural Engineering. The World Congress is held every four years, aims to cover major aspects pertaining to technical and professional practice issues. The Congress focuses on the needs and the contemporary issues of the structural engineering profession worldwide and highlights the profession's interface with the society. It also re-iterates the impact of the structural engineering profession on the society reflected by excellent public image, standing and credibility of structural engineers. SEWC presents excellent opportunities for structural engineering professionals to interact with each other and to learn more about what is happening in the World of Structural Engineering now and about the trends for the future.

K P Pradeep is also the editor of the International Journal of SEWC. He is a Board of Director of ACI India Chapter, Secretary of ASCE India Section, Southern Region, Governing Council member of ICI and member of many other professional institutions. He is a member of BAI and a very active member of its Southern Centre.

BAI Southern Centre wishes him all the very best for his new assignment.

The Indian Construction Sector: Going Green

Bhavani Balakrishna

The construction sector is an important part of India's economy, steadily contributing about 8 per cent to the national GDP over the last five years. Fuelled by strong economic growth, rising population and rapid urbanization, it is one of the fastest growing sectors in India today. It also provides employment to 18 million people directly. The downside is the enormous resource and energy footprint of the sector. The sector emits about 22 per cent of India's total annual CO2 emissions. This impact is set to only increase with a housing shortage affecting more than 60 million households in the country. Given the massive growth in new construction and the inefficiencies of the existing building stock worldwide, if nothing is done, greenhouse gas emissions from buildings are expected to more than double in the next 20 years. Hence, it does not come as a surprise that concepts like sustainability and green are assuming importance. With the presence of two green certifying agencies, LEED and GRIHA, and the incentives proposed by the Government, stakeholders in the construction and building community are gradually being aware about the need to go green.

Growth of the Indian Green Building Market

India has the second largest green building market in the world, after the United States.In August 2013, over 2,155 green building projects amounting to over 1.52 Billion square feet of green building footprint were registered with IGBC while 425 buildings have been registered with GRIHA, making India one of the top three countries with largest green building footprint in the world. The Indian Green Building Council (IGBC) expects 2 billion square feet of green building space to be in development in India by 2015 and it estimates that over 1,000 projects will be registered per year. Going by the present growth rate of 30 % year on year, by the end of 2017, the organization expects to cross 4 to 5 Billion square feet of green building footprint. The green building footprint in residential sector alone is growing at a rate of 5 per cent every year.

Rating Agencies

Indian Green Building Council (IGBC) is a part of CII-Sohrabji Godrej Green Business Centre and is involved in promoting Green Building concept in India. Represented by all stakeholders of construction industry - corporate, government and nodal agencies, architects, product manufacturers, institutions - the vision of the Council is to support India in becoming one of the world's leaders in Green Buildings by 2015. The LEED (Leadership in Energy and Environmental Design) Rating System by the IGBC is a holistic rating system and has dedicated rating methods for residential buildings, commercial buildings, SEZs and so on.

The alternative system that soon followed is the Green Rating for Integrated Habitat Assessment (GRIHA) which has been conceived by The Energy and Resources Institute (TERI) and jointly developed by Ministry of New and Renewable Energy (MNRE) as the national rating system for buildings. GRIHA was adopted as the National Rating System (NRS) under the MNRE, as of 1 November 2007. It is a green building 'design evaluation system', and is suitable for all kinds of buildings in different climatic zones of the country. Both GRIHA and

LEED-INDIA are operating at the national level. Both these ratings have a checklist of criteria and points that are assigned to these criteria based on their relative importance.

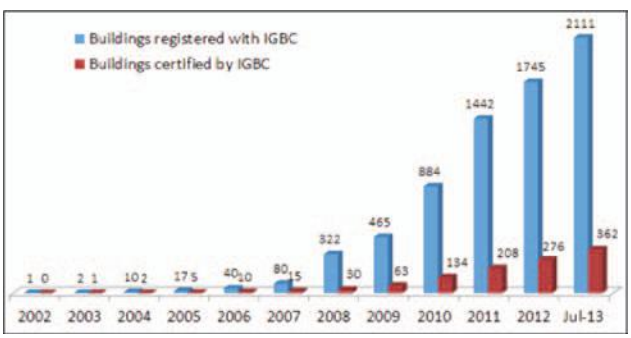
Technology

The green building materials & services market in India has also seen immense transition over the decade. In 2001, most green technologies and materials were scarcely available in the country and had to be imported. Today, a majority of them are locally manufactured and available within a site radius of 400 kilometers. In fact, India is one of the leading exporters of green building materials & technologies and is actively forging new international collaborations to develop more superior products. Technologies and materials like waterless urinals, CO2 sensors, VOC paints & coatings, high performance glass, wall & roof insulation, High CoP chillers, wind towers are today becoming widely accepted. Reuse of old materials which many architects earlier were shy of even discussing is gaining due importance in the design philosophy. A study conducted by IGBC indicates that the market potential for green building products and technologies would be about USD 100 Billion by 2015 for India.

Economics

One of the biggest hindrances of going green has been the cost related to the adoption of green practices. While it is certainly true that the initial investment cost for a green building may be more expensive, but over a few years this may become marginal with the increasing availability of green building materials, technology and expertise locally.

In 2003, building green was 18 percent more expensive than traditional building in India, and now it is only 3-5 percent more expensive. Construction cost of a green building may be 3-5 percent higher



than the conventional building. But the incremental cost gets paid back within three-four years with substantial reduction in operational costs. This makes good business sense.

However, to further encourage developers to go green, IGBC has already signed a memorandum with the National Housing Bank to finance green projects at a reduced rate of interest.

Role of the Government

The Ministry of New and Renewable Energy(MNRE) has already started emphasizing on energy efficient buildings and such buildings have been tried out in a few States as a result of the initiatives. Bureau of Energy Efficiency (BEE) have introduced Energy Conservation Building Code (ECBC) which includes energy efficient design features. National Building Codes have also been developed by the Bureau of Indian Standards (BIS) which incorporates some of the concepts of energy efficient solar buildings. The “Energy Efficient Solar / Green Buildings” scheme has been introduced to promote the widespread construction of energy efficient solar/ green buildings in the country through a combination of financial and promotional incentives, and other support measures so as to save a substantial amount of electricity and other fossil fuels apart from having peak load shavings in cities and towns.

The BIS has also prepared achapter on Sustainability as a part of National Building Code to promote Green Building construction in the Country. IGBC is also hoping addition of addendum number one in the National Building Code (NBC)before 2015 that will make it mandatory for all buildings in the country to be certified green before getting the completion certificate.

The Indian Green Building Council (IGBC) expects 2 billion square feet of green building space to be in development in India by 2015

India is one of the leading exporters of green building materials & technologies and is actively forging new international collaborations to develop more superior products.

A few state governments such as Noida have already come forward to announce incentives. NOIDA authority is ready to award 5 per cent extra FAR (floor area ratio extra built up area) to projects that commit for LEED gold rating. The Pimpri Chinchwad Municipal Corporation has also announced incentives for developers and owners who voluntarily comply with GRIHA. Delhi and Maharashtra governments have also shown interests in the scheme of FAR incentives. The Centre is also finalizing a draft policy on non-financial incentives to promote green buildings.

The Ministry of Environment and Forests (MoEF) in 2011has given special consideration to pre-certified LEED India and GRIHA projects by having a separate queue for clearance. However, these green incentives might prove counter productive

Material	Cost in INR	
	2003	2011
Waterless Urinals	15,000 per unit	6,000 per unit
CO2 sensors	50,000 per unit	20,000 per unit
Certified Wood	2,500 per cubic feet	1,600 per cubic feet
High Performance Glass	500 per square feet	350 per square feet
High Albedo Materials	90 per square feet	60 per square feet

Cost of Green Buildings (IGBC Experiences)					
Building	Year Awarded	Built in Area (sq.ft)	Rating Achieved	% increase in cost	Payback in years
CII Godrej GBC, Hyderabad	2003	20,000	Platinum	18%	7 years
ITC Green Center, Gurgaon	2004	1,70,000	Platinum	15%	6 years
Wipro Gurgaon	2005	1,75,000	Platinum	8%	5 years
Technopolis, Kolkata	2006	72,000	Gold	6%	3 years
Spectral Services Consultants Office, Kolkata	2007	15,000	Platinum	8%	4 years
Kalpataru Square	2008	3,00,000	Platinum	2%	2 years
Suzlon One Earth, Pune	2010	8,00,000	Platinum	<2%	2 years
Kohinoor Hospital, Mumbai	2010	2,30,000	Platinum	<2%	2 years

in the absence of follow-up and monitoring of the beneficiary projects.

Challenges

One of the main concerns with respect to adoption of green building practices is the lack of experienced workforce. Sustainable building technology requires interdisciplinary expertise and today there is a dearth of professionals in the space, with specialized knowledge and skills. There is need for more programs and associations with educational institutions to develop competent professionals with required techno-managerial skills in Building Science and Technology, with more emphasis on Green Technology. Jain University has recently collaborated with IGBC to launch a Master's program in Building Science and Technology (with specialization in Green Technology). More such programs across the country can address the sustainability challenges.

Since green buildings may demand higher initial investments, the government may have to provide more financial incentives for the real estate community to embrace green practices. This could be in the form of tax incentives, subsidies or attractive options in financing schemes.

With respect to residential buildings, while green buildings may come at premium, mainstream consumers may be unable to understand the significance of the building being green unless they are educated on the aspects. Hence, it becomes necessary that end consumers are made aware of the criticality of going green and how green practices can significantly reduce their utility costs over time.

Every market has its fly by night operators. Due to lack of knowledge and expertise about green building technologies in the construction community, this risk may increase double fold. Standardization of such technologies and certification of products will help builders during procurement.

Lastly, confidence of the construction community can only be improved by providing more live examples, case studies and demonstrable benefits of going green. There is still a lot of uncertainty and ambiguity over costs of developing green buildings, the economic benefits of going and the performance of green buildings over time.

பன்மாடிக் கட்டடங்கள் நிரப்புச் சுவர் (In filled Walls - MSB): மாறுபட்ட வாய்ப்பான கட்டுமானப் பொருள்கள் – ஓர் ஒப்பீடு

(பொறிஞர். அ.வீரப்பன் & பொறிஞர். பி.நல்லதம்பி)

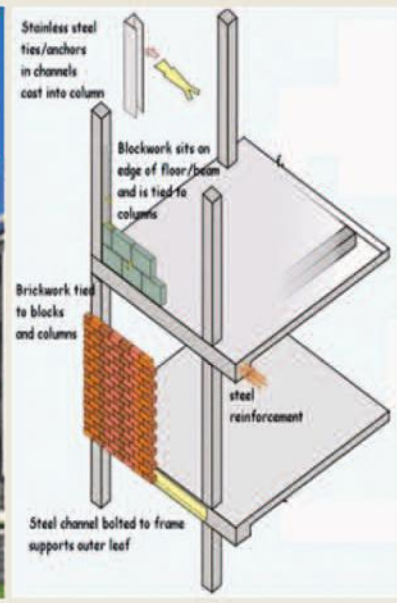
இப்பொழுது பன்மாடிக் கட்டடங்கள் – (அலுவலகங்கள், மருத்துவமனைகள், கல்வி நிலையங்கள் மற்றும் குடியிருப்பு வீடுகள்) கட்டும்பொழுது வெளிப்புற நிரப்புச் சுவர்களுக்கும், (Outer Walls), உட்புறப் பிரிப்புச் சுவர்களுக்கும் (Partition Walls), கீழ் குறிப்பிடப்படும் பல்வேறு கட்டுமானப் பொருட்களைப் பயன்படுத்துகிறார்கள்.

அ.வீரப்பன்

- சாதாரண செங்கல் கட்டுவேலை 1:6
- எரிசாம்பல் செங்கல் கட்டுவேலை 1:6
- முன்வார்த்த கெட்டிக் காங்கிரீட் கட்டுகள் கட்டுவேலை 1:6 (Precast Solid Concrete Block Masonry)
- குறை எடை முன்வார்த்த காங்கிரீட் கட்டுவேலை 1:6 (Light weight concrete block (CLC/ AAC Block Masonry)
- Porotherm துளையிட்ட செங்கல் கட்டுவேலை 1:6 (Porotherm Burnt Clay Hollow Block Masonry)

பி.நல்லதம்பி

அண்மைக் காலங்களில் ஒவ்வொரு கட்டுமான பொருள்களின் உற்பத்தியாளரும் தங்கள் பொருள்களின் மேம்பட்ட தன்மைகளையும் கட்டுமானச் செலவு குறைகிறது என்றும் தெரிவிக்கிறார்கள். அறிக்கைகளும் வெளியிடுகின்றனர். பன்மாடிக் கட்டடங்களை கட்டும் கட்டுநர்களும், உரிமையாளர்களும் எந்தக் கட்டுமான பொருள் மிகச் சிறந்தது, கட்டுமானச் செலவு குறைவானது இவற்



றுடன் தரமும் உறுதிப்படுத்தப்படும் என்பதைப் பற்றிய தெளிவான எண்ணங்களும் கருத்துரைகளும் தெரியாமல் அல்லல்படுகின்றனர். பல சமயங்களில் தவறான கட்டுமானப் பொருட்களைந பயன்படுத்தி தரம் மற்றும் உறுதி முதலியவற்றுக்கு ஊறு விளைவிக்கின்றனர். இந்தக் குழப்பமான சூழ்நிலையில் பெருமளவு கட்டுமான வல்லுநர்களும் கட்டட கலைஞர்களும் சரியான, தெளிவான, உண்மையான புள்ளி விவரங்களன்றி இவர்களும் குழப்பத்திலே உள்ளனர். இவற்றுக்கெல்லாம் மிகச் சரியான புள்ளி விவரங்களையும் கருத்துரைகளையும் தருவதற்கென்றே இந்தக் கட்டுரை வெளியிடப்படுகிறது. இதில் தெரிவிக்கப்படும் தகவல்கள் நீண்ட, நெடிய ஆய்வுக்குப் பின்னே அளிக்கப்படுகின்றன.

அடிப்படைத் தகவல்கள்:

இந்த ஆய்வுக் கட்டுரையின் நிறைவு முடிவுகளும், கருத்துரைகளும் கீழ்க்கண்ட அடிப்படைத் தகவல்களின் அடிப்படையில் தரப்பபட்டுள்ளன.

- கட்டடங்களின் வெளிப்புறச் சுவர்கள் 230 மி.மீ/ 200 மி.மீ. கனமுடைய முழுக்கல் சுவர்களாலும், உட்புறப் பிரிப்புச் சுவர்கள் 110 மி.மீ. / 100 மி.மீ. கனமுடைய அரைக்கல் சுவர்களாலும் ஆனவை.
- **கட்டுமானப் பொருள்களின் எடை:**
    - i) செங்கல் கட்டுவேலை – 1700 கிலோ / கன மீட்டர்
    - ii) எரிசாம்பல் (Fly ash) செங்கல் கட்டுவேலை – 1800 கிலோ / கன மீட்டர்
    - iii) முன்வார்த்த கெட்டிக் காங்கிரீட் கட்டுவேலை – 2300 கிலோ / கன மீட்டர்
    - iv) குறைஎடை காங்கிரீட் (AAC Block) கட்டுவேலை – 800 கிலோ / கன மீட்டர்
    - v) துளையிட்ட (Porotherm) செங்கல் கட்டுவேலை – 694 கிலோ / கன மீட்டர்
    - vi) மேல் சுமத்தப்படும் பாரம் (Live load) – 250 கிலோ / சதுர மீட்டர்
- **கட்டுமானப் பொருள்களின் விலைப்பட்டியல்:**
    - i) செங்கல் (230 மி.மீ) – 1000 எண்ணிக்கை விலை ரூ.6000/–
    - ii) எரிசாம்பல் கற்கள் (230 மி.மீ) – 1000 எண்ணிக்கை விலை ரூ.5900/–
    - iii) முன்வார்த்த கெட்டிக் காங்கிரீட் கட்டுகள் (400x200x200)–100 எண்ணிக்கை விலை ரூ.5000/–
    - iv) போரோதெர்ம் – துளையிட்ட செங்கல் கட்டு (400x200x200) – 100 எண்ணிக்கை விலை ரூ.7000/–
    - v) குறை எடை காங்கிரீட் கட்டுகள் (400x200x200) – 100 எண்ணிக்கை விலை ரூ.12,000/–

வேலையாட்களின் கூலி விவரமும் பிற விவரங்களும், தயாரிக்கப்பட்ட விலை விவரப் பட்டியலில் (அட்டவணை–1) தரப்பட்டுள்ளன. அவற்றைப் பார்த்துக் கொள்ளுங்கள்.

முடிவுரைகள் / கருத்துரைகள் / பரிந்துரைகள்:

1. ஒவ்வொரு கட்டுமானப் பொருளையும் பயன்படுத்தினால் சுவர்களின் ஒரு கன மீட்டர் அளவுள்ளதின் கட்டுமானச் செலவுகளும் அவற்றின் ஒப்பிட்ட விலை வீதமும் அட்டவணை (1) மற்றும் (2)ல் தரப்பட்டுள்ளன.

Table no.2 showing the comparative cost of masonry wall with various materials

(as per prevailing market rates May 2014)

Sl. No	Description of Masonry	Cost Per cu.m	Cost Per cu.ft	With respect to Brick Masonry	
				Less (-)	Higher (+)
1.	BW in CM 1:6 using stock bricks / second class bricks	Rs.4355/-	Rs.123.35/-	-	-
2.	Flyash brick masonry in CM 1:5 (load bearing) CM 1:5	Rs.4372/-	Rs.123.80/-	0.39%	
	CM 1:6	Rs.4306/-	Rs.121.95/-	1.13%	
3.	Precast solid concrete Block Masonry in CM 1:6-230mm	Rs.4440/-	Rs.125.75/-		1.95%
	(for load bearing) in CM 1:5	Rs.4460/-		-	-
	Precast solid concrete Block Masonry in CM 1:6 - 150mm	Rs.3330/-	Rs.94.30	23.54%	
4.	Porotherm hollow blocks in CM 1:6 (Non-load bearing)	Rs.5620/-	Rs.159.15/-		29.05%
5.	AAC/CLC Blocks Masonry in CM 1:6 (Non load bearing)	Rs.8585/-	Rs.243.10/-		97.13%

இந்த விலை ஒப்பிட்டு ஆய்விலிருந்து பார்க்கும் போது முன்வார்த்த கெட்டிக் காங்கிரீட் கட்டுகளின் கட்டுமானச் செலவு மிகக் குறைவாகவும், குறை எடை காங்கிரீடட் (AAC / CLC Blocks) கட்டுமானச் செலவு மிக அதிகமாகவும் இருப்பது தெரியவருகிறது. இந்த இரு கட்டுமானப் பொருள்களின் மேம்பட்ட தன்மைகளும், குறைபாடுகளும் தனியே அட்டவணை (3)ல் பட்டியலிடப்பட்டுள்ளன.

Table 3 - Comparison of Properties of Construction Materials

Sl.No.	Property	Precast Solid concrete blocks	Light weight AAC Blocks
1.	Stiffness & Strength	Very Good	not good
2.	Dampness	No possibility	Every possibility
3.	Plastering	Good	Good
4.	Thermal comfort	Not Good	Very good
5.	Electrical consumption Air conditioned	High	Less
6.	Possible cracks when subjected to vibration	No Possibility	Very much possible
7.	Sound reduction	Not fair	Very good
8.	Reduction in load	Increase in Load	Very much Available
9.	Fire resistance	Very good	Fairly good
10	External Resistance & Durability	Very good	Not so good

2. குறை எடை காங்கிரீட் கட்டுகளைப் பயன்படுத்துவதால் ஒட்டுமொத்தமாக அடித்தளத்திற்கு வரும் பாரங்களின் அளவு குறிப்பிடத்தக்க வகையில் குறைகிறது. இதனால் வடிவமைக்கப்படும் / தேவைப்படும் அடித்தளத்தின் (நீளம் x அகலம் x கனம்) தேவைப்படும் எஃகு உறுதியூட்டிகளின் எடையும் சிறிது குறையவே செய்கிறது. இதன் அடிப்படையில் கட்டுச் சுவர்களை மட்டும் கணக்கில் எடுத்துக் கொண்டு ஆகும் கட்டுமானச் செலவு ஒப்பிடப்பட்ட பட்டியல் அட்டவணை (4)ல் தரப்பட்டுள்ளது. இந்த ஒப்பீடு பன்மாடிக் கட்டடங்கள் நிதி + 2, நிதி + 5, மற்றும் நிதி + 9, கட்டுமானங்களுக்கு தயாரிக்கப்பட்டு தரப்பட்டுள்ளது. இந்த ஆய்வின் அடிப்படையில் பார்க்கும் போது குறை எடை காங்கிரீட் கட்டுகள் (AAC Blocks) பயன்படுத்துவதால் அடித்தளத்தின் செலவு மிகக் குறைந்து இருப்பதாகத் தெரியவருகிறது.

இருப்பினும் அட்டவணை (5) இல் தரப்பட்டுள்ள புள்ளி விவரங்களையும் முடிவுகளையும் பாருங்கள்.

Table No.4 :- Cost of RCC Structural Members (Foundation, Grade Beams, Columns, and Beams excluding floor slabs)

SI NO	DESCRIPTION	G+9 Floors			G+5 Floors			G+2 Floors		
		BLOCK	FLYASH BRICK	AEROCON BRICK	BLOCK	FLYASH BRICK	AEROCON BRICK	BLOCK	FLYASH BRICK	AEROCON BRICK
		AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
1	FOOTINGS									
	F1	Rs. 1,67,910.00	Rs. 1,67,910.00	Rs. 1,26,180.00	Rs. 60,860.00	Rs. 63,940.00	Rs. 45,340.00	Rs. 29,155.00	Rs. 1,07,505.00	Rs. 58,740.00
	F2	Rs. 3,17,440.00	Rs. 3,17,440.00	Rs. 2,47,960.00	Rs. 1,33,005.00	Rs. 1,33,005.00	Rs. 96,090.00	Rs. 64,475.00	Rs. 1,21,865.00	Rs. 1,07,505.00
	F3	Rs. 13,26,325.00	Rs. 6,13,305.00	Rs. 3,18,170.00	Rs. 2,27,005.00	Rs. 1,18,440.00	Rs. 1,77,270.00	Rs. 1,21,865.00	Rs. 2,53,970.00	Rs. 1,82,725.00
	F4	Rs. 3,84,820.00	Rs. 12,55,175.00	Rs. 3,88,215.00	Rs. 4,35,235.00	Rs. 5,80,195.00	Rs. 3,55,605.00	Rs. 2,53,970.00		
	F5			Rs. 5,88,215.00						
	SUB TOTAL	**Rs. 21,96,495.00**	**Rs. 23,53,830.00**	**Rs. 16,68,740.00**	**Rs. 8,56,105.00**	**Rs. 8,95,580.00**	**Rs. 6,74,305.00**	**Rs. 4,69,465.00**	**Rs. 4,83,340.00**	**Rs. 3,48,970.00**
2	PLINTH BEAMS									
	PB1	Rs. 75,295.00	Rs. 75,295.00	Rs. 63,295.00	Rs. 75,295.00	Rs. 75,295.00	Rs. 63,295.00	Rs. 75,295.00	Rs. 75,295.00	Rs. 63,295.00
	PB2	Rs. 1,15,770.00	Rs. 1,16,850.00	Rs. 1,38,500.00	Rs. 1,15,770.00	Rs. 1,18,150.00	Rs. 1,28,500.00	Rs. 95,770.00	Rs. 95,770.00	Rs. 1,25,770.00
	PB3	Rs. 95,400.00	Rs. 95,400.00		Rs. 95,400.00	Rs. 95,400.00		Rs. 95,400.00	Rs. 98,400.00	
	SUB TOTAL	**Rs. 2,86,465.00**	**Rs. 2,87,545.00**	**Rs. 2,01,795.00**	**Rs. 2,86,465.00**	**Rs. 2,88,845.00**	**Rs. 1,91,795.00**	**Rs. 2,66,465.00**	**Rs. 2,69,465.00**	**Rs. 1,89,065.00**
3	COLUMNS									
	C1	Rs. 12,45,140.00	Rs. 12,45,140.00	Rs. 8,91,400.00	Rs. 3,80,370.00	Rs. 3,80,370.00	Rs. 3,79,040.00	Rs. 1,50,070.00	Rs. 1,60,070.00	Rs. 1,50,070.00
	C2	Rs. 31,37,810.00	Rs. 31,37,810.00	Rs. 13,01,190.00	Rs. 11,21,840.00	Rs. 11,21,840.00	Rs. 8,55,810.00	Rs. 3,55,000.00	Rs. 3,55,000.00	Rs. 2,70,230.00
	C3			Rs. 15,01,190.00						
	SUB TOTAL	**Rs. 43,82,950.00**	**Rs. 43,82,950.00**	**Rs. 36,93,780.00**	**Rs.15,02,210.00**	**Rs. 15,02,210.00**	**Rs. 12,34,850.00**	**Rs. 5,05,070.00**	**Rs. 5,15,070.00**	**Rs. 4,20,300.00**
4	FLOOR BEAMS									
	FB1	Rs. 8,46,225.00	Rs. 8,46,225.00	Rs. 6,66,225.00	Rs. 3,94,175.00	Rs. 4,31,975.00	Rs. 4,44,150.00	Rs. 1,72,790.00	Rs. 1,72,790.00	Rs. 1,52,930.00
	FB2	Rs. 25,91,100.00	Rs. 26,81,100.00	Rs. 6,93,225.00	Rs. 14,39,500.00	Rs. 14,39,500.00	Rs. 9,24,300.00	Rs. 5,75,800.00	Rs. 5,75,800.00	Rs. 4,96,520.00
	FB3			Rs. 9,36,225.00						
	SUB TOTAL	**Rs. 34,37,325.00**	**Rs. 35,27,325.00**	**Rs. 22,95,675.00**	**Rs.18,33,675.00**	**Rs. 18,71,475.00**	**Rs. 13,68,450.00**	**Rs. 7,48,590.00**	**Rs. 7,48,590.00**	**Rs. 6,49,450.00**
5	ROOF BEAMS									
	RB1	Rs. 78,835.00	Rs. 78,835.00	Rs. 78,835.00	Rs. 78,835.00	Rs. 78,835.00	Rs. 78,835.00	Rs. 78,835.00	Rs. 78,835.00	Rs. 78,835.00
	RB2	Rs. 2,40,520.00	Rs. 2,45,520.00	Rs. 1,92,740.00	Rs. 2,38,620.00	Rs. 2,38,620.00	Rs. 1,90,740.00	Rs. 2,30,520.00	Rs. 2,30,520.00	Rs. 1,78,740.00
	SUB TOTAL	**Rs. 3,19,355.00**	**Rs. 3,24,355.00**	**Rs. 2,71,575.00**	**Rs. 3,17,455.00**	**Rs. 3,17,455.00**	**Rs. 2,69,575.00**	**Rs. 3,09,355.00**	**Rs. 3,09,355.00**	**Rs. 2,57,575.00**
	TOTAL AMOUNT (Rs)	**106,22,590.00**	**108,76,005.00**	**Rs. 81,31,565.00**	**47,95,910.00**	**48,75,565.00**	**37,38,975.00**	**22,98,945.00**	**23,25,820.00**	**18,65,360.00**
			BRICK & F.A.BRICK	**BRICK & A.BLOCK**		**BRICK & F.A.BRICK**	**BRICK & A.BLOCK**		**BRICK & F.A.BRICK**	**BRICK & A.BLOCK**
	DIFFERENCE		**Rs. 2,53,415.00**	**Rs. 24,91,025.00**		**Rs. 79,655.00**	**Rs. 10,56,935.00**		**Rs. 26,875.00**	**Rs. 4,33,585.00**
	DIFFERENCE (%)		**2.33**	**-23.44**		**1.63**	**-22.04**		**1.16**	**-18.86**

Table 5: Comparison of total loads of walls at foundation level w.r.t brick work (230mm) for 3 floors.

Description	Brick work	Fly ash brick	Solid concrete block	AAC light weight block
Wall loads for 3 floors (kg)	527850 kg	558900 kg	728433 kg	253368 kg
Walls in volume	310.50 m^3	310.50 m^3	316.71 m^3	316.71 m^3
Unit cost/m^3	Rs. 4355	Rs. 4306	Rs. 4440	Rs. 8585
Total cost of walls	Rs. 1352228	Rs. 1337013	Rs. 1406192	Rs. 2718955
Difference in cost of walls	--	(-) Rs. 15215	(+) Rs. 53964	(+) Rs. 1366727
Difference in cost (%)	--	(-) 1.125%	(+) 3.991%	(+) 101.07%

Inference : 1) Fly ash brick masonry is the most economical.

2) AAC light weight block masonry is the costliest.

3) For G+5 & G+9 floors, the percentage difference in cost is the same as noted above.

இவற்றின்படி கீழ்க்கண்ட கருத்துரைகள் பெறப்படுகின்றன.

i. குறை எடைக் காங்கிரீட் கட்டுவேலையைப் பயன்படுத்தினால் மிகக் குறைவான எடையே அடித்தளத்திற்குச் செலுத்தப்படுகிறது. இச்சுவர்களின் ஒட்டு மொத்த எடை (பாரம்) பெரிதும் குறைகிறது.

ii. எனினும் இவற்றின் ஒரு கன மீட்டரின் எடை குறைவாக இருப்பதால் இச்சுவர்களின் கொள்ளளவு சிறிது கூடுதலாக உள்ளது.

iii. மேலும் இச்சுவர்களின் ஒரு கன மீட்டர் கட்டுவேலையின் கட்டுமானச் செலவு மிக மிக அதிகமாக இருப்பதால் (ஏறக்குறைய+97%), இச்சுவர்களின் கட்டுமானச் செலவு (மொத்த எடை குறைவாக இருந்தாலும் - 52%) மிகவும் அதிகமாக உள்ளது (101%).

நிறைவாக - சுருங்கக் கூறின் குறை எடைக் காங்கிரீட் கட்டுகளைப் பன்மாடிக் கட்டுமானங்களில் பயன்படுத்துவதால் கட்டுமானச் செலவு கூடவே செய்கிறது என்பது எளிதில் புலனாகிறது.

3. முன்வார்த்த கெட்டிக் காங்கிரீட் கட்டுமான வேலை பல்வேறு மேம்பட்ட தன்மைகளால் (செலவு சிறிது கூடுதலாக இருந்தாலும்) தரமான வேலை, உறுதியானப் பிடிப்புத் தன்மை, ஈரத்தை உறிஞ் சாமை, விரிசல்கள் விழாமை, மிகக் குறைந்த பராமரிப்புச் செலவு, பாரத்தை ஏற்கும் வலிமை முதலான காரணங்களினால் நாங்கள் பரிந்துரைக்கிறோம். மேலும் 200 மி.மீ. கனமுடைய சுவர்களுக்குப் பதிலாக, 150 மி.மீ. கனமுடைய சுவர்களே போதுமானவை. இதனால் சுவர்களின் மொத்தக் கட்டுமானச் செலவும் குறிப்பிடத்தக்க வகையில் (25%) குறைவதற்கு வாய்ப்புள்ளது. இதனின் மீட்சியாக குடியிருப்புகளில் / கட்டுமானங்களில் உள்ளே கிடைக்கும் பரப்பளவு (Carpet Area) 5% முதல் 10% வரை கூடுதலாக கிடைக்கவும் வாய்ப்புள்ளது. எனவே குறைபாடுகளுடைய குறை எடைக் காங்கிரீட் கட்டுகள் (AAC Blocks) (அட்டவணை (3)யை பார்க்க) கட்டுமானப் பொருளை விட முன்வார்த்த கெட்டிக் காங்கிரீட் கட்டுமான சுவர்கள் சிறந்தவை என்பது எங்களின் கருத்துரை – பரிந்துரை.

Appendix: Table No.1

MASONRY WALLS WITH VARIOUS MATERIALS – MAY 2014 (WITH MARKET RATES)

SNo.	Quanty	Unit	DESCRIPTION	Rate	Per	Amount
1			**Brick work in CM 1:6 9"X4 3/8"X2 3/4"**			
			Brick work in CM 1:6 (one cement & six sand) using			

			Ist / IInd class stock bricks of size 9"X4 3/8"X2 3/4"			
			including finishing, curing,etc., complete complying with standard specification -10 cum			
	4600	Nos	first class stock bricks of size 9"X4 3/8"X2 3/4"	6000.00	1000 nos	27600.00
	2.50	m^3	Cement mortar 1:6	1487.60	m^3	3719.00
	4	Nos	Mason I class	550.00	Each	1925.00
	7	Nos	Mason II class	500.00	Each	3550.00
	7	Nos	Mazdoor I class	350.00	Each	2485.00
	14	Nos	Mazdoor II class	300.00	Each	4230.00
		l.s	Sundries			43509.00
			Total for 10 cum			43510.00
			Rate for 1 M^3			4355.00
2			**Fly Ash Brick work**			
			in CM 1:5 (one cement & five sand) using			
			fly ash bricks of size 200x110x70mm			
			including finishing, curing,etc., complete complying with standard specification-10 cum			
	4600	Nos	Fly ash bricks of 200x110x70mm	5900.00	1000 nos	27140.00
	2.50	m^3	Cement mortar 1:6	1487.60	m^3	3719.00
	3.5	Nos	Mason I class	550.00	Each	1925.00
	7.1	Nos	Mason II class	500.00	Each	3550.00
	7.1	Nos	Mazdoor I class	350.00	Each	2485.00
	14.1	Nos	Mazdoor II class	300.00	Each	4230.00
		l.s	Sundries			11.00
						43060.00
			Rate for 1 M^3			**4306.00**
3			**Precast Solid Blocks 400 x 200 x 200mm**			
			Supplying and fixing Solid Blocks of following size confirming to S.S. 2145-1965 (including jam blocks closers etc.) made in CC 1:3:6 in CM 1:5 (one of cement and five of sand),for masonry wall partition wall including curing neat finishing etc. complete			
			Using 400 x 200 x 200mm			
			100cft x 8/12 = 66.66667/35.31 =	1.89 M^3		
	112.00	Nos.	SOLID BLOCK 200mm width	50.00	No	5600.00
	0.18	M^3	CM1:5	1487.60	M^3	267.77
	2.50	Nos.	Mason I class	550.00	Each	1375.00
	1.75	Nos.	Mazdoor I class	350.00	Each	612.50
	1.75	Nos.	Mazdoor -II	300.00	Each	525.00

			sub total			8380.27
			Sundries			2.21
			Total for 1.89 M^3			8382.48
			Rate for 1 M^3			**4434.85**
5			**Porotherm Burnt Clay Hollow Blocks 400 x 200 x 200mm** Supplying and fixing Porothem Blocks of following size confirming to S.S. 2145-1965 (including jam blocks closers etc.) made in CC 1:3:6 in CM 1:6 (one of cement and five of sand),for masonry wall partition wall including curing neat finishing etc. complete			
			Using 400 x 200 x 200mm			
			100cft x 8/12 = 66.66667/35.31 =	1.89 M^3		
	112.00	Nos.	Porothem BLOCK 200mm width	70.00	No	7840.00
	0.18	M^3	CM1:6	1487.60	M^3	267.77
	2.50	Nos.	Mason I class	550.00	Each	1375.00
	1.75	Nos.	Mazdoor I class	350.00	Each	612.50
	1.75	Nos.	Mazdoor -II	300.00	Each	525.00
			sub total			10620.27
			Sundries			1.55
			Total for 1.89 M^3			10621.82
			Rate for 1 M^3			5620.01
6			**AAC Blocks 400 x 200 x 200mm**			
			Supplying and fixing AAC Blocks of following size confirming to S.S. 2145-1965 (including jam blocks closers etc.) made in CC 1:3:6 in CM 1:6 (one of cement and five of sand),for masonry wall partition wall including curing neat finishing etc. complete			
			Using 400 x 200 x 200mm			
			100cft x 8/12 = 66.66667/35.31 =	1.89 M^3		
	112.00	Nos.	AAC BLOCK 200mm width	120.00	No	13440.00
	0.18	M^3	CM1:6	1487.60	M^3	267.77
	2.50	Nos.	Mason I class	550.00	Each	1375.00
	1.75	Nos.	Mazdoor I class	350.00	Each	612.50
	1.75	Nos.	Mazdoor -II	300.00	Each	525.00
			sub total			16220.27
			Sundries			5.38
			Total for 1.89 M^3			16225.65
			Rate for 1 M^3			**8585.00**

M/s. CR. Tiles Versus The State of Tamil Nadu Rep. by the Deputy Commissioner (CT) - 2014 (5) TMI 457 - MADRAS HIGH COURT - VAT and Sales Tax

- **S.D Kannan,** Chairman, Taxation Committee

Nature of agreement - Works contract or contract of sales - "supply, laying and polishing of the mosaic tiles" - involvement of manufacturing activity - definition of "works contract" u/s 2(u) of the TN GST Act, 1959, which includes any agreement for carrying out for cash, deferred payment or other valuable consideration, the building, construction, "manufacture", of any moveable or immoveable property and the conclusion of the AO and first appellate authority - Held that:- When the dealer purchases a commodity, which had already suffered tax and out of such commodity, manufactures another commercial commodity and uses the commercial commodity in the execution of works contract, if such commercial commodity purchased by the dealer is not used in the execution of the works contract in the same form in which it was purchased, in such case, what is used in the execution of works contract is a distinct and different commodity.

Assessee has admittedly purchased sand, cement, colour and so on, which goods had suffered tax - But when these goods were used in the manufacturing activity, those goods are transformed into another commercial commodity, namely, mosaic - The transaction would be considered as one of sale - Relying upon Apparels and Handloom Exporters Association and Others v. State of Tamil Nadu and Others [2001 (9) TMI 1114 - MADRAS HIGH COURT] this Court considered the meaning of "whether as goods or in some other form" employed in Article 366 (29-A) of the Constitution of India and Observed that whether the goods purchased by the dealer are used in the works contract in the same form and even after such use, the commodities used lose their character are the test to determine as to whether it is a works contract or sale.

In a case of manufacture of mosaic tiles, in our opinion, the same yardstick cannot be applied inasmuch as the goods used by the dealer transformed into a different good, viz., mosaic and the cement, colour, sand and chips lose their individual identity by that transformation. In that sense, the transaction of a mosaic to the contractor would amount to sale and not works contract. - All the questions raised are answered against the assessee - Revisions are dismissed - Decided against assessee.

D. Murugesan And P. P. S. Janarthana Raja,JJ.
For the Petitioners : Mr. V. Sundareswaran
For the Respondent : Mr. R. Sivaraman, Spl. G. P.

ORDER

(Order of the Court was made by D. Murugesan, J.)

These batch of Tax Case Revisions are at the instance of the assessee raising the following questions of law:-

1. Whether the Appellate Tribunal was correct in holding that the contract of "supply, laying and polishing of the mosaic tiles" is not works contract since there is "manufacture" involved, ignoring the definition of "works contract" u/s 2(u) of the Tamil Nadu General Sales Tax Act, 1959, which includes any agreement for carrying out for cash, deferred payment or other valuable consideration, the building, construction, "manufacture", of any moveable or immoveable property and the conclusion of the assessing officer and first appellate authority?

2. Whether the petitioner is entitled for the deduction u/s 3B(2)(b) of the Tamilnadu General Sales Tax Act, 1959, in view of the admitted fact that the petitioner had purchased all the goods locally from the registered dealers inside the State of Tamilnadu and also "used" in the

execution of works contract in the same "form" in which such goods were purchased ?

3. Whether the Appellate Tribunal was correct in appreciating that the statutory mandatory deduction u/s 3B(2)(b) of "all amounts for which any goods specified in the first or second schedule are purchased from the registered dealer and used in the execution of works contract in the same form in which such goods were purchased and does not use the words "transferred in the same form in which such goods were purchased" as contended by the authorities below to disallow the deduction ?"

2.The assessee are the manufacturer of mosaic tiles by making use of raw materials like cement, sand, oxide and powder. On the ground that the assessee had entered into an agreement with a contractor for laying of mosaic tiles in the form and design intended by the user, they are entitled to the exemption in terms of Section 3B(2)(b) of the Tamil Nadu General Sales Tax Act. The Assessing Officer found that the assessee had purchased sand, red-oxide, cement and chips locally and engaged in the manufacturing activity and those goods had been transformed into a different commodity and in that sense, the transaction would be considered to be a sale. Accordingly, the claim of exemption was refused. That order was taken on appeal before the first appellate authority, who found that the chips, which were used for the manufacturing activity would fall under works contract, as the chips do not transform into a different commodity and accordingly, granted the exemption. Insofar as the other goods, he refused to extend the exemption benefit. As to the refusal of the benefit other than chips, the assessee preferred appeals to the Appellate Tribunal. Challenging the grant of exemption to the chips as well, the Revenue also preferred appeals. By the common impugned order, the Tribunal found that the transactions are in the nature of sale and is not works contract and allowed all the appeals in favour of the Revenue. This order has given rise to the cause for the present Tax Case Revisions.

3. Mr.Sundareswaran, learned counsel had extensively argued before us by drawing the relevant provisions of the Act, particularly, Section 3B, Section 2(g)(vi), 2(n)(ii) of the Tamil Nadu General Sales Tax Act. In our opinion, a detailed discussion on the above provisions is not required in the wake of the settled position of law.

4. The purport of the various provisions relating to works contract came up for consideration before a Division Bench of this Court in the judgment in Tamil Nadu Mosaic Manufacturers Association v. State of Tamil Nadu and Another (1995) 97 STC 503 and the Division Bench, after analysing the provisions, held as follows:-

".. The settled position of law is that whenever a commercial commodity which has suffered sales tax is transformed into another distinct commercial commodity, it becomes a separate and distinct commercial commodity for the purpose of levy of sales tax and it can be taxed again and in such a case, section 15(a) of the Central Sales Tax Act will have no application. When the dealer purchases a commercial commodity which has suffered sales tax and out of such commercial commodity purchased by the dealer, he manufactures another distinct commercial commodity and uses the same in the execution of works contract, the commercial commodity purchased the dealer is not used in the execution of the works contract in the same form in which it is purchased and in such a case what is used in the execution of the works contract is a distinct and different commodity though manufactured out of the commodity purchased by him and which has suffered sales tax. When the commodity purchased by the dealer and which has suffered tax, is transformed into another distinct commercial commodity after purchase by the dealer and when it is used in the execution of the works contract, since the two goods, viz., the commodity purchased by the dealer and the commodity used in the execution of works contract are distinct and different commercial commodities falling under two different sub-items of an entry under section 14 of the Central Sales Tax Act, the question

of levying sales tax at more than one stage on the same commodity does not arise. In other words, when the goods used by the dealer in the execution of the works contract is commercially different from the goods purchased by the dealer, falling under different sub-items of an entry under section 14 of the Central Sales Tax Act, the question of contravention of section 15(a) of the Central Sales Tax Act which prohibits levy of sales tax on declared goods at more than one stage does not arise and on that ground, it cannot be contended that section 3-B is invalid."

5. When the dealer purchases a commodity, which had already suffered tax and out of such commodity, manufactures another commercial commodity and uses the commercial commodity in the execution of works contract, if such commercial commodity purchased by the dealer is not used in the execution of the works contract in the same form in which it was purchased, in such case, what is used in the execution of works contract is a distinct and different commodity. The assessee has admittedly purchased sand, cement, colour and so on, which goods had suffered tax. But when these goods were used in the manufacturing activity, those goods are transformed into another commercial commodity, namely, mosaic. In that event, the transaction would be considered as one of sale. Subsequently, in the judgment rendered in Apparels and Handloom Exporters Association and Others v. State of Tamil Nadu and Others, (2003) 129 STC 167, this Court had an occasion to consider the meaning of the word "whether as goods or in some other form" employed in Article 366 (29-A) of the Constitution of India and ultimately, found in paragraph 10 and 11 as follows:-

"10. We are in complete agreement with what has been stated by the court in that case. The court therein specifically rejected the arguments that notwithstanding the change in the form of the goods, the changed form in itself being a taxable commercial commodity under a different head, such change should be ignored and the deduction allowed to be claimed by regarding the goods which had been bought by the dealer executing the works contract as the goods used in carrying out the works contract.

11. Article 366(29-A) was not enacted to confer largerbenefits on the persons engaged in carrying out works contract who transferred the properties and the goods used in such contract to the other party to the contract. If a person who is engaged for example in the manufacture of rolling shutters, buys iron and steel for the purpose of manufacture, after paying tax on such purchase, he cannot contend while selling the shutters that no tax should be levied on the shutters as they have been manufactured from iron and steel on which he has already paid tax. The iron and sutters are commercially distinct commodities and are charged to tax accordingly. That position will not change merely because the person who buys the iron or steel, after making the rolling shutter, chooses to transfer the property in the form of shutter to a person who may want to use it in the home or as an attachment to the building. The goods and the property in which it is transferred in such a case remains the property in shutter and not in the iron which had been bought for the purpose of manufacture of shutter. The tax that may have been paid on the purchase of iron or steel to manufacture shutter cannot be regarded as tax that would be payable on the shutter as well."

6. The judgments above would show that whether the goods purchased by the dealer are used in the works contract in the same form and even after such use, the commodities used lose their character are the test to determine as to whether it is a works contract or sale. For example, in a case of an agreement for supply of wheat flour, if the dealer purchased the wheat as such and after grinding, supplied the same to the buyer in powder form, such flour does not lose its character as wheat. In that sense, the word employed in Section 3B, viz., "in the same form or in some other form" could be applied. However, in a case of manufacture of mosaic tiles, in our opinion, the same yardstick cannot be applied inasmuch as the goods

used by the dealer transformed into a different good, viz., mosaic and the cement, colour, sand and chips lose their individual identity by that transformation. In that sense, the transaction of a mosaic to the contractor would amount to sale and not works contract. Hence, the Tribunal was justified in holding so.

7. Accordingly, we find no infirmity in the order of the Tribunal and all the questions of law raised in these revisions are answered against the assessee. The Tax Case Revisions are dismissed. No costs.

Supply & Installation of Lifts is a Works Contract – SC

Supply & Installation of Lifts is a Works Contract ; SC explains distinction between contract for sale of goods and works contract

The Constitution bench of the Supreme Court in the case of M/S. Kone Elevator India Pvt. Ltd. vs. State of Tamil Nadu and Ors. (Writ Petition (C) No. 232 OF 2005) vide its order dated 6.5.2014 has overruled the decision of the three-Judge bench in the case of State of A.P. v. Kone Elevators (India) Ltd, reported at (2005) 3 SCC 389.

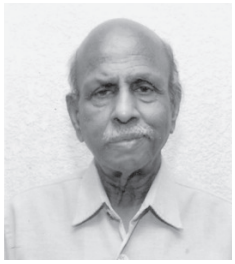
Honourable SC held that that four concepts have emerged from various SC judgments. They are (i) the works contract is an indivisible contract but, by legal fiction, is divided into two parts, one for sale of goods, and the other for supply of labour and services; (ii) the concept of "dominant nature test" or, for that matter, the "degree of intention test" or "overwhelming component test" for treating a contract as a works contract is not applicable; (iii) the term "works contract" as used in Clause (29A) of Article 366 of the Constitution takes in its sweep all genre of works contract and is not to be narrowly construed to cover one species of contract to provide for labour and service alone; and (iv) once the characteristics of works contract are met with in a contract entered into between the parties, any additional obligation incorporated in the contract would not change the nature of the contract.

Dominant nature test" or "overwhelming component test" or "the degree of labour and service test" are really not applicable. If the contract is a composite one which falls under the definition of works contracts as engrafted under clause (29A)(b) of Article 366 of the Constitution, the incidental part as regards labour and service pales into total insignificance for the purpose of determining the nature of the contract.

SC held that The conclusion, as has been reached in Kone Elevators (supra), is based on the bedrock of incidental service for delivery. It would not be legally correct to make such a distinction in respect of lift, for the contract itself profoundly speaks of obligation to supply goods and materials as well as installation of the lift which obviously conveys performance of labour and service. Hence, the fundamental characteristics of works contract are satisfied. Thus analysed, we conclude and hold that the decision rendered in Kone Elevators (supra) does not correctly lay down the law and it is, accordingly, overruled.

Source- M/s. Kone Elevator India Pvt. Ltd. Vs. State of Tamil Nadu and Ors. (Supreme Court), Writ Petition (C) No. 232 Of 2005, Date of Judgement: 06/05/2014.

Agreement Between Owner and Promoter in Joint Development



Shri. C.H. Gopinatha Rao

THIS AGREEMENT made this day of between (hereinafter called OWNER which expression include their respective heirs, legal representatives, executors, administrators and assigns of the ONE PART;

M/s. .....

having their office at .....

and represented by .....

(hereinafter called 'PROMOTER' which expression shall include his successors and assings) of the OTHER PART;

WHEREAS the OWNERS represent that they are now the absolute owners of the property as described in Schedule 'A'.

WHEREAS the PROMOTERS has approached the OWNERS for the purchase of undivided share approximately 50% (fifty percent) of the total extent of the land of the property described under the Schedule 'A' free from all encumbrances with the purpose of development of the property as residential flats.

WHEREAS the OWNERS have agreed to convey the PROMOTER or his nominee/s the above undivided share approximately 50% of the total extent of the land under the following terms and conditions:

NOW THIS AGREEMENT WITHNESSETH AS FOLLOWS:

1. The owners shall convey the PROMOTER and/or his nominee/s about 50% of undivided share of the land of scheduled mentioned property.

2. The promoter shall hereby undertake to construct for the owners …separate self contained residential flats as per their choice (the owners shall decide the choice of the flats after the receipt of the approval of the plan by the concerned authorities and before commencing the construction) totally to about ……. Sq.ft.in …….floors viz …. floor and …… floor in addition to ….. covered car park in stills as per specifications described in Schedule 'B' hereunder to be constructed in the premises free of cost and further pay a sum of Rs. (Rupees.....) only in lieu of the cost of about 50 (fifty) percentage of undivided share of land to be conveyed to the PROMOTER or his nominee/s either under one or more sale deeds. However the conveyance will be made only where sufficient progress in construction has been made. Alternatively, the amount towards the value of the undivided share of land can be deposited to the owner when the owner will convey the sale deed any time after approval of the plans and the sum deposited will be released when sufficient progress is made. This deposit will not carry any interest. The promoter shall not receive and advance from any party before the plans are approved or without the consent of the owner.

3. The present design is made based on the prevailing permissible F.A.R. of 1.5. In case the limit is increased before the completion of the project, a revised plan should be submitted utilising the additional F.A.R. permitted and the promoter should give a sum calculated at the rate of Rs. Per Sq.ft. of 50% of the excess built up area that will be achieved.

4. The plinth area will be measured as per I.S. 3861 of Bureau of Indian Standards. The sunshades will be of 2' width and these as well as the architectural treatments or OHT sump or compound wall or any other part of the complex other than the main building will not be included in the plinth area. The said (flats) shall be among the total of flats to be constructed and the promoter can sell the other. Flats to the prospective BUYERS who will maintain the common areas and amenities along with owners.

5. The promoter will not claim any charges from the Owners either for preparation of plans or getting them approved from the concerned authorities. Any incidental expenses involved towards the same or any taxes like Sales Tax on Works Contract of any other taxes which are in force or which may be levied by any authority in future. The owners will only

pay the money to be deposited for the Electricity Board for their …… flats for which official receipts shall be obtained in the name of the Owners by the Promoter.

6. The promoter shall promptly notify the Owner of any change in the constitution of his firm. It shall be open to the Owner to terminate this agreement on the death, retirement, insanity of insolvency of any person being incharge in the partnership. Such opinion shall not be exercised or such approval with held unreasonably.

7. The owners hereby declare that they are the absolute owners of the land described in the Schedule 'A' and that the land is free from all encumbrances and that no amount is due to any party or to any authorities by way of tax or otherwise and that the owners will indemnify the promoter in case of dispute that may arise.

8. On completion of the project, the unbuilt land will become the common property of the owners and the prospective buyers of the other …… flats.

9. The promoter declares that the entire building will be constructed as per the sanctioned plan and shall indemnify owners and prospective buyers of flats incase of any action taken by any statutory authority and pay suitable compensation to the owners and the prospective buyers of flats, if any minor additions or alterations is contemplated with reference to the sanctioned plan, the promoter will get the consent in writing from the owners. The total number of flats shall not exceed ……(…….) under any circumstances.

10. The promoter undertakes to complete construction within ……(……) months from the date of handling over of site after demolition of the building. The demolition of the building will be commenced only after getting the approval for demolition and also the approval by the concerned authorities for the construction of the proposed new building. In case of any delay in delivering the possession of the flats to the owner, the Promoter undertakes to pay penalty at the rate of Rs. (Rupees .....) per month for the delayed period of handling over. Under any circumstances, the period for construction of new flats should not exceed…… months. In case if delay beyond …….. months. In case if delay beyond ……. Months the owner will be entitled to special damages in addition to Rs.p.m. The progress of work should be uniform. The promoter shall give a programme for the execution of the work during the total contract period and get in approved by the architect/owner shall issue the contractor a memo in writing pointing out the delay in progress and asking the promoter to explain the causes for the delay within 3 days of the receipt of the above. The owner receives the right to terminate the contract and forfeit the security deposit, if satisfactory explanation is not offered by the contractor for delay in execution of work or when the quality of the works is not as per the specifications.

11. The promoter assures that he will engage a qualified and experienced Engineer to excute the work till the building is handed over and that the Engineer will certify the stability of the building and quality of the works.

12. The owners are convinced that the Promoter is constructing a ……. Storeyed building inclusion of stilts with …….(…….) flats in total. The owners will have no right to hinder the progress of building is constructed as per the sanctioned plan, and as per the specification and comply with I.S. code.

13. The promoter will indemnify the owners on all respects regarding the construction of the building or any part thereof on account of any lapse on the part of the promoter.

14. The owners are convinced that the Promoter is constructing a …… storeyed building inclusion of stilts with ……(……..) flats in total of which ……. are meant for the prospective buyers. Everyone is entitled to own and enjoy the undivided interest in the scheduled property. Each party is lawfully entitled to use his flat and to maintain and repair if necessary the vertical horizontal and the lateral support and the walls supporting the superstructure of the other flat owners and off the adjoining structure, all sewer lines, water courses, pumping machinery lift external painting and all other amenities of the said property with the other flat owners. Each party shall not acquire any special right by virtue of this deed to cause interference to the enjoyment of free flow of air and admission of natural light in the apartments. Tamil Nadu Apartment Ownership Act 1994 has been passed and will come into effect from the date of notification by the Government. All flat owners are to follow the provision of the Act, and the rules made thereunder. The promoter shall embody these conditions while entering into building contract with the prospective purchasers.

15. No boarding is to be displayed on the terrace of the building. The terrace cannot be sold or rights could not be given to any purchaser.

16. The owners or the buyers of flats shall not have any right to make any structural alterations in the premises and shall not use the premises for any purpose which will be offensive in nature or cause damage or danger to the buildings.

17. The sketch plans enclosed are subject to the final approval to be obtained from the concerned authorities if any changes are to be made in the extent of flats to be handed over to the owners, a compensation at the rate of Rs. (Rupees.....)per square feet is to be a paid by the Promoter. For example if the total extent of built up area is 6,000 square feet and the owner's share is 2,950 square feet, then the promoter has to pay a sum of 50sq.ft. x Rs. …….. =Rs. ……..(Rupees) in addition to the sums specified in clause (2) of this agreement.

18. In case the owners decide to drop the proposal after getting the approval of the plans for any reason the owners will pay a compensation of Rs. (Rupees.....) to the promoter towards the preparation of plans and incidental expenses incurred in getting the approval in addition to any fees paid to the promoter to any statutory authority (for which necessary receipts shall be produced)

19. The promoter hereby agrees to deposit a sum of Rs. in favour of the owners until the project is completed and flats handed over to the owners. A sum of Rs. will be refunded when the entire structure is completed and a sum of Rs. when the flats are handed over retaining a sum of Rs. cash for a period of 12 months towards defects liability period, during which period, any defects noticed and brought to the notice of the promoters. It has to be rectified by him immediately, otherwise the owners will get the rectification done by a third party and deduct the expenses incurred from the Security Deposit of Rs. paid without prejudice to their right to take suitable action against the promoter. The above deposit of Rs. will not carry any interest.

20. The owners shall undertake to obtain the clearance certificate under Sec.230-A of Income Tax to convey the undivided share of the land in favour of the promoter or his nominee if necessary.

21. The owners state that they have not encumbered the scheduled mentioned property in any manner whatsoever and the same is free from all encumbrances attachments, liens, charges etc and declares that they suffer no infirmity in obtaining clearance under Section 230-A of the Income Tax Act 1961. The owners further undertake not to create any mortgage, lease or any liability of any kind in respect of the scheduled mentioned property from the date of this agreement and that they have not entered into agreement with any other party.

22. The owners declare that their cumulative/ individual land holdings are not in excess of the prescribed limit as set out by the Tamil Nadu Urban Land (ceiling and Regulation) Act of 1976 and amended in 1978.

23. The owners hereby undertake to permit the Promoter or the person authorized by him to enter upon the scheduled mentioned property to carry out the soil test or any other test and land survey immediately after this agreement.

24. The owners shall duly authorize and co-operate e with the promoter to obtain sanctions for erection of new superstructure, service connections etc from authorities such as MMDA, Corporation of madras, MMWSS Board, Tamil Nadu Electricity Board immediately on signing this agreement.

25. The promoters has paid on this day, a sum of RS. Towards the total sum of Rs. To be paid of which Rs. Is as per the Clause (2) of the agreement and the other sum of Rs. towards the rest for alternative accommodation for the period of months. The balance amount of Rs. and another sum of towards Security Deposit will be paid by the promoter before taking over the site. The promoter agrees that he will not receive any advance from any third party for booking of flats until the site is handed over to him. For the sum of Rs. Paid towards security deposit, the owner will not pay any interest. If the promoters doe not pay the sum of RS. Within 15 days from the date of receipt of the intimation by the owners that the site is ready for handing over, then the owners can terminate the contract and the promoter will forfeit the deposit of Rs. Paid along with the agreement.

26. That the promoter shall undertake get the necessary approval from the Corporation of Madras for demolition of the existing building and also pay the licence fee for the same.

27. That the owners shall bear all taxes till the delivery of the vacant possession of the property to the promoter.

28. That the owners shall indemnify the promoter against all claims in respect of the title of the schedule mentioned land at all times.

29. That the expenses for the preparation of the agreement, sale deeds and registration including all stamp duties shall be borne by the promoter.

30. The promoter assures the owners that the construction work will be strictly in accordance with and in compliance of the statues. Rules and regulations byelaws , stipulations, instructions etc. as may be imposed/issued by the concerned authorities.

31. The promoters assures that the quality and specifications of construction will confirm to Bureau of Indian Standards as .amended upto date and/or as followed by the Central Public Works Department. The various Acts and I.S. Codes mentioned above should be the at least versions and changes upto date.

32. That the Promoter agrees to do and perform all works incidental to the prior execution and completion of the building of flats including all works considered necessary therefore or in consequence thereof and supply all machinery materials and labour necessary for the same without demanding additional payment therefore

33. That the Promoter will be responsible for the safety of the workers. In case of any accident or any damages caused to any person or property including the property and person of third parties, the promoters will indemnify the owners form any claims that may be made by any parties claiming to be affected.

34. That the Promoter shall as soon as he enters into any agreement with the proposed buyers of undivided share of land for construction of flats thereon should furnish copies of the same to the owners and it any provision is determental to their interest, the provisions are to be modified. The agreements should specifically stipulate that the promoter shall not in any way involve or render the owners liable as a party or parties in any dispute that may arise between the promoter and the prospective buyer/s of undivided share of land and / or flats at the premises.

35. That the promoter agrees to indemnify the owners from any loss, costs, damages, fines, penalties or any action that may be taken by any authorities on account of any deviations or violations or lapses made by the Promoter.

36. The Promoter should hand over a copy of the plan as approved by the MMDA and Corporation of Madras with a copy of the Planning permit and Building Permit to the owner.

37. On completion of the building, the Promoter should arrange to get the completion certificate from the concerned authorities and furnish a co0py of the same to the owners. A copy jof structural drawing, drawing showing the plumbing and sanitary lines and also a copy of electrical labour should be furnished.

38. Incase of any disputes during the construction, the work should not be stopped and the disputes should be resolved through arbitration as per the Arbitration and conciliation Act as per the latest amendment Both parties agree that…. Will be the arbitrator and the fees for the arbitrator will be shared equally by the parties.

39. As the owners are retaining ½(half) undivided share of the land with them, the title deeds of the property will be retained by them subject to the condition that they will permit inspection by prospective purchasers at any reasonable time with prior notice.

40. It is further agreed that every construction agreement to be executed by the Promoter with the intending Purchasers should include a clause to the effect that the Purchaser will become a member of the society or Association to be formed by the Apartment Owners and an undertaking should be obtained from the Purchaser to the effect that the Purchaser is bound to the rules and regulations of the Society / Association of Apartment owners with reference to the enjoyment of the common areas, common amenities etc. and its maintenance and the sharing of maintenance repair charges, security etc;

41. The agreement shall be in full force until all the transactions are fully and finally completed and accounts between the Parties herein are fully and finally settled.

SOUTHERN CENTRE ACTIVITIES

02.05.2014 Southern Builders Charitable Trust - கூட்டம்

தென்னக மய்ய அலுவலகத்தில் நடைபெற்ற Southern Builder Charitable Trust சார்பான கூட்டத்தில் அதன் தலைவர் திரு. இரா. இராதாகிருட்டிணன் Managing Trustee திரு. J.R. சேதுராமலிங்கம், Executive Trustee திரு. N ரகுநாதன் மற்றும் Trustees - திரு. M. கார்த்திகேயன்,திரு. R. சிவக்குமார், திரு. Mu. மோகன், திரு. S. அய்யநாதன், திரு. A.N. பாலாஜி, சிறப்பு அழைப்பாளர் திரு. S.D. கண்ணன் ஆகியோர் கலந்து கொண்டனர்.

09.05.2014 Standard Schedule of Rates - 2014-15 பற்றிய முதனிலைக் கூட்டம்

நெடுஞ்சாலைத்துறை சார்பாக Standard Schedule of Rates -2014-15 g;wpwa முதனிலைக் கூட்டம் Director General ஏ Highways அலுவலக வளாகம், சேப்பாக்கம் சென்னையில் நடைபெற்றது. இக்கூட்டத்தில் அகில இந்தியத் துணைத்தலைவர் திரு. இல. மூர்த்தி, உடனடி முன்னாள் மய்யத்தலைவர் திரு. எஸ். அய்யநாதன், கவுரவ செயலாளர் திரு. A.N. பாலாஜி தஞ்சாவூர் மய்யத்தைச் சேர்ந்த திரு. அய்யப்பன், Paver Finish Road Builders Association தலைவர் திரு. S. பாண்டியன், மய்ய உறுப்பினர் திரு. S.P.K. நாகராஜன் ஆகியோர் கலந்து கொண்டு தங்கள் கருத்துக்களை பதிவு செய்தனர்.

15.05.2014

அகில இந்திய கட்டுநர் வல்லுநர் சங்கம் தமிழ்நாடு சார்பாக விலைப்பட்டியல் விவரம் அடங்கிய மனு முதன்மை இயக்குநர், நெடுஞ்சாலைத்துறை, சேப்பாக்கம், சென்னை அலுவலகத்தில் ஒப்படைக்கப்பட்டது.

23.05.2014 விளைபொருள் மதிப்பீடுக்குழுக் கூட்டம்

பொதுப்பணித்துறை அலுவலக வளாகத்தில் 51வது விளை பொருள் மதிப்பீடுக்குழுக் கூட்டம் மாலை 3.30 மணி அளவில் நடைபெற்றது. அக்கூட்டத்தில் தென்னக மய்யம் சார்பாக மய்யத்துணைத்தலைவர் திரு. O.K. செல்வராஜ் மற்றும் பொதுக்குழு உறுப்பினர் திரு. M.A. ஜேசுராஜரான் ஆகியோர் கலந்து கொண்டு தங்கள் கருத்துக்களை பதிவு செய்தனர்.

மாலை 4 மணி அளவில் நமது மய்ய அலுவலகத்தில் அறநிலையக்கூட்டம் அதன் தலைவர் திரு. இரா. இராதாகிருட்டிணன் அவர்கள் தலைமையில் நடைபெற்றது. அதில் மேலாண்மை பொறுப்பாட்சியர் திரு. J.R. சேதுராமலிங்கம் மற்றும் பொறுப்பாட்சியர்கள் திரு. M. கார்த்திகேயன், திரு. L. முர்த்தி, திரு. Mu. மோகன், திரு. S. அய்யநாதன், திரு. R. சிவக்குமார் மற்றம் சிறப்பு அழைப்பாளர்களாக திரு. K வெங்கடேசன், திரு. S. இராமப்பிரபு, திரு. K. கோட்டீஸ்வர சவுத்திரி, திரு. G. திலகர் ஆகியோர் கலந்து கொண்டனர்.

H. Rashidha Begam, BBA, I Year D/o H. Mohammed Habibullah M/s. Emarold Construction Awarded First Prize for proficiency in the subject " Principles of Management" for the year 2013-14 by Bhaktavatsalam memorial College for Women - Chennai – 600 060

Estd : 1941

BUILDERS' ASSOCIATION OF INDIA

(All India Association of Engineering Construction Contractors)

Southern Centre Estd : 1950

MEMBERSHIP APPLICATION FORM

To
The Secretary,
BAI - Head Office
G-1/G-20, 7th Floor, Commerce Centre
J. Dadajee Road, Tardeo
MUMBAI – 400 034
Ph : 2352 0507 / 2351 4802
Website : www.baionline.in

Through
The Honorary Secretary,
BAI - Southern Centre
"Casa Blanca", 2nd Floor,11, Casa Major Road,
Egmore, Chennai - 600 008.
Phone : 28192006 Telefax : 28191874
Web : www.baisoutherncentre.com
E-mail : baisouthern@yahoo.com

Dear Sir,

Please enroll my/our name as ANNUAL/RENEWAL Member of Builders' Association of India. I/We am/are connected with the Building Profession / Trade / Construction industry as (please tick relevant box/s)

☐ Civil Construction Contractors	☐ Real Estate Developer / Promoter	**Registered With**
☐ Electrical	☐ Architect/Engineer	☐ Central PWD
☐ Plumbing	☐ Transporter	☐ State PWD
☐ Fabrication	☐ Demolition	☐ MES
☐ Roads	☐ Manufacturers/Suppliers	☐ Railways
☐ Water Proofing	☐ Dealers/Hirers	☐ Other State/Central Govt.Dept.(specify)
☐ Interior decorator	☐ Engineering College/Polytechnics	_____
☐ Repairs/Maintenance	☐ any other (specify)	_____
		☐ any other (specify)
_____	_____	_____
_____	_____	_____

I/we specialise in _____

I/We have read the Rules and Regulations of your Association and agree to abide by the same Please find herewith sum of Rs._____/- (Rupees _____ _____) by Cash/Cheque/Demand Draft No _____ Dated _____ drawn on _____ in favour of "BUILDERS ASSOCAITION OF INDIA" towards the membership subscription.

Yours faithfully,
(For & On Behalf of)

Date : .....

(To be signed by Proprietor / Partner / Director of Attorney / Authorised Signatory)

(PTO)

Fill below in Block letters:

I. Full Name and Address.....

.....

.....

.....

Tel : Office : ..... Res ..... Mobile: .....

Fax : ..... E.mai : .....

2.Give names in case of partnership firm/ Ltd Company /Institution and indicate against each whether Partner / Director / Executive attorney	Name of the Person who will attend and vote at the meeting with residence address and contact numbers
a)_____	a)_____
b)_____	b)_____
c)_____	c)_____
d)_____	d)_____

Res / Address. & Tele. No. .....

.....

.....

PROPOSED BY .....

SECONDED BY .....

APPLICATION IN ORDER : FEES RECEIVED Rs. _____ Receipt No. _____

_____Date _____ Accepted by the Managing Committee at its meeting held on _____

at _____

SECRETARY'S NOTING SECRETARY

The Membership fees

Patron Membership fees	**Rs. 28,090 (Inclusive of Service Tax)**
New Membership fees	Rs.2909(Inclusive of Service Tax)
Renewal Membership fees	Rs.2797(Inclusive of Service Tax)

Cheque May drawn in favour of BUILDERS ASSOCIATION OF INDIA.

BUILDERS' ASSOCIATION OF INDIA

ESTD 1941

Southern Centre

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