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நீல் ஆம்ஸ்ட்ராங்.... இவர் தான் நிலவில் முதன் முதலில் கால் வைத்தவர். ஆனால் முதன் முதலில் வைத்திருக்க வேண்டியவர் எட்வின் சி ஆல்ட்ரின். இவர் தான் நிலவுக்கு சென்ற அப்பல்லோ விண்கலத்தின் பைலட். அதாவது விமானி. ஆல்ட்ரின் அமெரிக்காவின் விமானப் படையில் பணிபுரிந்தவர். மேலும் விண் நடை அனுபவம் உள்ளவர். அதனால் அவர் பைலட்டாக நியமிக்ககப்பட்டார். நீல் ஆம்ஸ்ட்ராங்க் அமெரிக்காவின் கப்பல் படையில் வேலை பார்த்தவர். மிகுந்த தைரியசாலி என்பதால் இந்த பயணத்திற்கு தேர்ந்தெடுக்கப்பட்டார். அவர் கோ பைலட், அதாவது இணை விமானி.

இவர்கள் சென்ற அப்பல்லோ விண்கலம் நிலவை அடைந்ததும் நாசாவிலிருந்து "பைலட் பர்ஸ்ட" என்று கட்டளை பிறப்பிக்கப்பட்டது. ஆனால் ஆல்ட்ரினுக்கோ மனதில் சின்ன தயக்கம். இடது காலை வைப்பதா? வலது காலை எடுத்து வைப்பதா? என்றல்ல, நிலவில் முதன் முதலில் கால் எடுத்து வைக்கிறோம். புவியீர்ப்பு விசையற்ற இடத்தில் இருக்கிறோம். கால் வைக்கும் இடம் எப்படி இருக்கும் என்று தெரியாது. புதை மணலாக இருந்து உள்ளே இழுத்து விட்டால், எரி மணலாக இருந்து காலை சுட்டுவிட்டால், தயக்கததில் மணிக்கணக்காக தாமதிக்கவில்லை சில நொடிகள் தான் தாமதித்திருப்பார். அதற்குள் நாசாவில் இருந்து இரண்டாவது கட்டளை பிறப்பிக்கப்பட்டது. "கோ பைலட் நெக்ஸ்ட்" நீல் ஆம்ஸ்ட்ராங் கட்டளை வந்த அடுத்த நொடி காலடி எடுத்து வைத்தார். உலக வரலாறு ஆனார்.

உலக வரலாறு, ஒரு நொடி தயக்கத்தில் மாற்றி எழுதப்பட்டது. திறமையும் தகுதியும் இருந்தும் கூட தயக்கத்தின் காரணமாக தாமதித்தால் இன்று ஆட்ரினை யாருக்கும் தெரியவில்லை. முதலாவது வருபவரைத்தான் இந்த உலகம் நினைவில் வைத்திருக்கும் என்பது மட்டுமல்ல. தயக்கம், பயம் இவை எந்த அளவுக்கு நம் வெற்றியை பாதிக்கும் என்பதற்கு இதுவே உதாரணம். இனி நிலவை பார்க்கும்போதெல்லாம் இந்தச் சம்பவத்தை நினைவில் வைத்துக் கொள்ளுங்கள். ஒரு நிமிடத் தயக்கம் நம்முடைய மிகப் பெரிய வெற்றிகளைத் தடுத்துவிடுகிறது.

நாம் எல்லோருமே மிகப் பெரும் சாதனைகளை படைக்கிற வல்லமை உடையவர்கள்தான். நம்முடைய தயக்கம், பயம், கூச்சம் இவைதான் நம் முதல் எதிரி. பலருக்கு தன்னுடைய தவறுகளை களைவதில் தயக்கம். தவறுகளை தட்டிக் கேட்க தயக்கம்.. அடுத்தவர்களை பாராட்டுவதில் தயக்கம்.

சரியானதை செய்யத் தயங்கினால், தவறானதை தான் செய்து கொண்டிருப்போம்.
எனவே நல்ல விஷயங்களில் தயக்கத்தை தவிர்ப்போம்

எனைத்திட்பம் எய்தியக் கண்ணும் வினைத்திட்பம்
வேண்டாரை வேண்டாது உலகு

- திருக்குறள்

அன்புடன்
மு. மோகன்

மய்யத்தலைவர் மடல்

அன்புடையீர் வணக்கம் !

கடந்த 22.01.2019 அன்று ஓட்டல் அசோகாவில் நடைபெற்ற மகாசபைக் கூட்டத்தில் தென்னக மய்யத்தின் 2019-2020 ஆண்டிற்கான புதிய நிர்வாகிகள், செயற்குழு மற்றும் பொதுக்குழு உறுப்பினர்கள் போட்டியின்றி ஒரு மனதாக தேர்வு செய்யப்பட்டு அறிவிக்கப்பட்டார்கள்.

தென்னக மய்ய உறுப்பினர்கள் அனைவரும் ஒரு மனதாக நிர்வாகிகள், மற்றும் செயற்குழு பொதுக்குழு உறுப்பினர்களை தேர்வு செய்தமைக்கு மய்ய உறுப்பினர்களுக்கு என் மனமார்ந்த நன்றியைத் தெரிவித்துக் கொள்கிறேன்.

2019-2020ம் ஆண்டின் நிர்வாகிகள் மற்றும் செயற்குழு பொதுக்குழு உறுப்பினர்களுக்கு எனது இயதப்பூர்வமான நல் வாழ்த்துக்கள் உரித்தாகுக.

இத் தேர்தல் சிறப்பாக நடந்திட தேர்தல் பொறுப்பாளராக (Returning Officer) செயல்பட்ட திரு. O.K. செல்வராஜ் மற்றும் தேர்தல் பார்வையாளர் (Scrutinizing Officer) ஆக செயல்பட்ட திரு. S. சத்தியமூர்த்தி ஆகியோருக்கு எனது நன்றியையும், பாராட்டுதலையும் தெரிவித்துக் கொள்கிறேன்.

தென்னக மய்யத்தின் சார்பில் தமிழக அரசிடம் ஒருங்கிணைந்த கட்டுமான வளர்ச்சி விதிகள் மற்றும் கட்டுப்பாடுகள் சம்மந்தமாக வைக்கப்பட்ட கோரிக்கைகள் ஏற்கப்பட்டு தமிழக அரசு ஒருங்கிணைந்த கட்டிட வளர்ச்சி, கட்டுப்பாடு விதிகள் 2019 என்ற சட்டத்தை அமுலாக்கம் செய்துள்ளதற்கு தமிழக அரசுக்கும், மாண்புமிகு அமைச்சர் பெருமக்களுக்கும், ஊரக வளர்ச்சி சார்ந்த அதிகாரிகளுக்கும் BAI தென்னக மய்யத்தின் சார்பில் நன்றியைத் தெரிவித்துக் கொள்சிகறேன்.

அன்புடன்,
L. வெங்கடேசன்
மய்யத்தலைவர்

Use of Polymers in Concrete

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Polymers or epoxies are used for imparting certain special properties to concrete. They have been used for the following reasons:

(1) To improve strength and durability of hardened concrete
(2) To improve chemical resistance and impermeability of hardened concrete
(3) To modify the flow characteristics of fresh concrete
(4) To improve the bond characteristics between old and new concrete for repair work

The prices of various polymers vary considerably, but as a rough guide it can be assumed that polymers cost approximately 20 times that of ordinary cement. However, direct cost should not be the sole basis of an economic assessment of their use, because the treatment could reduce the fabrication cost and substantially improved performance and durability.

Some popularly used polymers are listed below.

Urethanes: These are polymers and copolymers produced by the reaction of isocyanates with polyols.

Acrylics: These are polymers and copolymers of the esters of acrylic and methacrylic acids.

Styrene butadiene resins (SBR): SBR resins are basically synthetic rubber in solution.

Vinyl: This is a general term for substituted ethylenes and their copolymers such as polyethylene, polystyrenes (basically copolymers than homopolymers).

Epoxies: Synthetic polymers which are condensates of epichloro-hydrin and a suitable polyhydroxyl material; most commonly used polyhydroxyl material is bisphenol–A.

Polymers are used in the following ways with concrete:

(1) Polymer impregnated concrete
(2) Polymer concrete
(3) Polymer-modified concrete/mortar
(4) Polymer as protective coating
(5) Polymer as bonding agent
(6) Other applications

A comparison of some major properties of some polymers is shown in Table 1.

Table Comparison of properties of different polymers

Property	Urethanes	Acrylics	SBR	Vinyl	Epoxies
Adhesion	Excellent	Excellent	Primer required	Excellent	Excellent
Resistance to acids	Very good	Fair	Poor	Fair	Excellent
Resistance to alkalis	Very good	Very good	Poor	Very good	Excellent
Resistance to oils/ petroleum products	Excellent	Very good	Poor	Very good	Excellent

Flexibility	Very good	Fair	Excellent	Very good	Fair
Abrasion resistance	Very good	Good	Good	Very good	Excellent
Resistance to UV rays	Good	Very good	Good	Very good	Good

Source: Seshadri & Ramana Kumar 1992.

Figure 1 illustrates compressive stress as a function of strain in concrete at different levels of polymer content [polymer used is methyl methacrylate (MMA)].

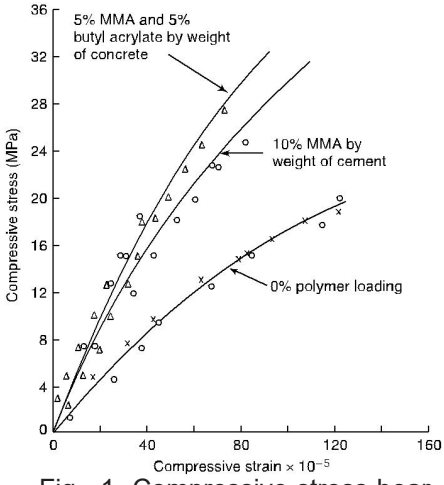


Fig. 1 Compressive-stress-bearing capacity of concretes at different levels of polymer content (Source: Seshadri & Ramana Kumar 1992)

1 Polymer-impregnated Concrete

The ways in which the polymer is introduced into the hardened concrete vary widely and depend upon the commercial objective. These include the following operations:

(1) The concrete is thoroughly dried, usually by heating.
(2) They dry concrete is evacuated.
(3) The concrete is immersed in the chosen monomer (or the monomer is applied to the surface of the concrete).
(4) Pressure is applied.
(5) The impregnated concrete is sealed to avoid loss of monomer.
(6) The monomer is converted to polymer either by gamma radiation or by thermal-catalytic method.
(7) The concrete is cooled.

The full sequence of operations can only be followed in a precast concrete factory. In the site work it is normally possible to dry the concrete only partially, apply the monomer to the surface, and use heat to control the polymer conversion.

A wide range of monomers are being used in concrete. These include acrylonitrite, ethyl acrylate, methyl methacrylate (MMA), polyester styrene, styrene, and vinyl chloride. A mixture of 70% MMA and 30% of trimethylopropane trimethacrylate has also been used for high-temperature applications in de-salination plants.

Improvements in compressive strength and tensile strength result from the introduction of the polymer. However, the quantity of polymer that can be introduced depends upon the porosity of concrete, and hence the potential improvement of a particular concrete is substantial if the original concrete is weak (i.e., has a high porosity) but is relatively small if the basic concrete is of high strength and low porosity. In fact, by careful mix design, it is not difficult to make workable plain concretes from ordinary Portland cement and strong natural aggregates with a 28 day cube crushing strength of 100 N/mm2, whereas most polymer-impregnated concretes, irrespective of the strength of the basic unmodified concrete, have cube strengths in the range of 120–150 N/mm2. These high strengths are stable and do not increase further with age. But the strengths of plain concretes continue to rise and at one year the advantage shown by the polymer-impregnated concretes would have largely disappeared. On the other hand, for very high early-age strengths (at 7 days, say), the polymer impregnation technique could be used. However, even if the polymer/cement ratio is only 1:20, the material costs are about doubled and, with the addition of extra handling, curing, and polymerization costs, the resulting product is necessarily expensive.

1.1 Properties

Polymer-impregnated concretes normally have cube crushing strengths in excess of 100 N/mm2 irrespective of the strength of the original untreated concrete. The weaker concretes absorb a higher proportion of the monomer and hence have higher material costs. The flexural strengths

are usually about 15 N/mm2, which is slightly higher than that for the highest strength plain concretes that can be made from normal constituents. The elastic moduli lie in the range from 30 to 60 kN/mm2, which are similar to those for high-strength plain concrete (about 45 kN/mm2).

As the strengths and elastic moduli of high-strength plain and polymer-impregnated concretes are not very different, the failure and cracking strains are unlikely to differ significantly. High-strength concretes of both types tend to be brittle and cracks, once initiated, propagate rapidly and frequently run through the aggregate. This can mean that the total energy expended in fracturing high-strength material is less than that demanded by more conventional (medium-strength) concretes, in which the aggregate delays the propagation of cracks and failure is relatively ductile and not explosive or catastrophic.

During the manufacturing cycle, polymer-impregnated concretes have often been heated to 150°C. Because of the reduced porosity and permeability, these concretes have low shrinkage and creep characteristics. If the temperature is above the ambient temperature, it is possible that the creep will be larger.

The polymer-impregnated concretes tested have improved resistance to sulphate, chloride, and acid attacks compared with the plain concretes from which they are made. While significant improvements have also been observed in the resistance to cycles of freezing and thawing, it is important to note that similar improvements are shown by good (high-strength) air-entrained concretes devoid of any polymer.

1.2 Applications

It is likely that the greatest commercial potential for polymer-impregnated concrete will depend upon the enhanced resistance to damage from aggressive environments. It is impossible to make a general recommendation for the use of polymers in any particular application. Each must be judged separately and alternative solutions compared. With regard to the use of polymer impregnation to improve the durability of concrete in sub-zero temperatures, it is important to emphasize the adequate performance of correctly designed plain concrete and to dispel the view that polymer impregnation is essential in these conditions. The fact that dense concretes, such as prestressed kerbs, are also resistant to de-icing salts is important to note in this context.

Polymer impregnation can be used to repair damaged concrete, but it is impossible to make a general recommendation regarding the viability of the technique. Every potential application is different and must be considered separately. Sufficient information is already available for a rational decision to be reached for most applications.

There is some evidence that polymer impregnation can improve the resistance of the concrete surface to abrasive wear. So in factories where heavy equipment is likely to damage the floor, or in dense traffick areas in cities where frequent repair work would seriously impede the flow of traffic, these polymer-based special techniques can be advantageously employed.

2 Polymer-modified Cement Concretes

Concretes with polymers added during mixing to modify the properties of the hardened concrete are classified as polymer-modified cement (PMC) concrete. Polymers are added to concrete mixes either as an aqueous emulsion or in a dispersed form in an attempt to improve

- the tensile strength and extensibility of concrete,
- the impact resistance,
- the abrasion resistance,
- durability and resistance to aggressive fluids, and
- bond between old and new concrete.

2.1 Properties

One of the earliest polymers used is polyvinyl acetate (PVA), but the range of polymers that have been tried is now extremely wide and includes PVA copolymers, acrylics, vinyls, natural rubber,

and styrene butadiene rubber. The proportions of polymer incorporated also vary considerably and range from under 1% to over 30% of the solid volume of cement.

The addition of these polymers has certain common effects. Concrete mixes become more workable and so the water content can be reduced. Despite the higher workability, more air is entrained in polymer cement concretes. PMC concretes usually contain at least 3% more entrained air than plain concretes of similar workability. Reduction in the water content increases the crushing strength, but the extra voids have the reverse effect and, in consequence, the polymer admixtures generally have only a small effect upon the crushing strength. However, there is normally a significant increase in the flexural strength of the concrete, which may be attributed to an improved bond between the aggregate and the matrix.

As the elastic moduli of polymers are generally lower than those of cement pastes and concretes, the moduli of polymer cement concretes are lower than those of the equivalent plain cement concrete. The additional entrained air reduces the moduli further.

The durability of concretes with polymer admixtures depends primarily upon the properties of the polymer used and upon the mix proportion. Hydrated Portland cement is alkaline (having pH value greater than 12.5) and some of the polymers hyrolyse in moist cement environments. PVA is particularly sensitive to such an environment and its use is recommended only in dry conditions. PVA copolymers have been used to resist hydrolysis in alkaline solutions, but these are more expensive.

At least 5% polymer by weight of cement is required to obtain substantial changes in the properties of the hardened concrete. The addition of polymer usually increases the setting time of the cement significantly.

The polymer concretes have a greater resistance to abrasion than plain concretes, wear rates being reduced by as much as 75%. For this reason, and because of improved durability, polymer cement concretes have been used for factory floors, where the abrasion resistance of conventional concretes may be inadequate. Polymer concrete floors provide a neat and clean floor usually needed by electronics industries.

2.2 Applications

Polymer cement concretes are several times more expensive than plain concretes. Therefore they are used only for special applications. The principal advantages shown by these concretes are (a) greater failure strain, (b) good bond with old concrete, (c) improved resistance to abrasion, and (d) improved durability and resistance to chemical attack. Some typical applications in which these properties have been worthwhile are the following.

(1) For factory floors, particularly where chemicals or oils are liable to be spilt.
(2) For repair of old or damaged concrete.
(3) For surfacing steel bridge or ship decks.
(4) For flooring in frozen-food factories.
(5) For loading ramps, where the abrasive wear of concrete is high.
(6) For cementing ceramic tiles to concrete (the extra bond and flexibility are advanta geous here).
(7) For concretes subjected to large doses of de-icing salts.

3 Polymer Concrete

Just as cement is used as a binder in cement concrete, monomer or resin is added to bind preheated aggregates consisting of coarse, fine, ultrafine, and other particle sizes. The commonly used binders are styrene, methylmethacrylate, polyesters, and epoxies.

In the prepack method graded dry aggregates are packed in moulds and polymer is poured into the voids and, if necessary, impregnated by vacuum process. In the premix method polymer and aggregates are mixed in conventional mixers and the mix is transferred to moulds. The mix is vibrated for compaction.

3.1 Properties

They are highly resistant to chemical attack and freeze–thaw cycles. Permeability and absorption are almost zero. The typical properties of polymer concrete and plain concrete are shown in Table .2 for comparison. Table .3 compares some of the key properties achieved with cement concrete and polymer concrete.

Table 2 Comparison of properties of polymer concrete and plain concrete

Property	Polymer concrete	Plain concrete
Compressive strength, kg/cm^2	1200	300
Tensile strength, kg/cm^2	150	30
Flexural strength, kg/cm^2	350	80
Water absorption	0.5	5.5
Percentage of loss of weight on 90 days exposure to chemicals	Nil	9.5

Table 3 Comparison of key properties

Property	Test method	Polymer concrete* (epoxy screed)	Average concrete
Compressive strength (N/mm^2)	BS: 1881 Part 4	74	20
Flexural strength (N/mm^2)	BS: 4551 Part 10.3.1970	32	7
Tensile strength (N/mm^2)	BS: 12-1958 App. H	15	3.5
Abrasion resistance (mg/cycle)	Paint Research Assoc., UK, Taber abrasion test-wt loss	2.7	4.19
Bond strength of concrete (N/mm^2)	Electrometer pull-off test	3.0	Lower than typical cohesive strength of concrete

*Figures for polymer concrete are for a proprietary product.
Source: Seshadri & Ramana Kumar 1992

3.2 Application

Even though the initial cost of polymer cement concrete (PCC) is high, the material cost efficiency is estimated to be 400% compared to ordinary cement concrete. Hence PPC is used to manufacture pipes for carrying chemicals in industries.

4 Polymer Composites

These are produced using polymers with cement, sand, or aggregates. The addition of polymers to concrete has been shown to improve its

(a) compressive strength (b) resistance to wear and tear (c) fatigue resistance,
(d) impact resistance (e) impermeability (f) durability and (g) chemical resistance.

Because of these properties, they have found application in the following areas:

(1) Precast products such as kerb stone
(2) Bridge ducts
(3) Chequered plates for industrial structures
(4) Manhole covers
(5) Sewers
(6) Tunnel linings
(7) Pipes carrying chemicals

5 Proportioning of Polymer Concrete

While using polymers it should be noted that polymer dispersion is water based and the ratios of mixing vary from manufacturer to manufacturer, depending upon solid contents. Ultimately, it is the proportion of solid content of polymer and cement content that reflects on the quality and cost of PCC. Typical mixing ratios for various applications are shown in Table .4.

Economy is one of the most decisive guiding factors in determining the amount of polymer, in a particular PCC. More the content of polymer, the more is the enhancement in the properties of PCC and the durability of the repaired structure.

Table .4 Typical ratios for various applications

Type of application	Thickness/Mortar type	Mixing ratios (parts by volume)
Bonding slurry for bonding new layers to hardened bases	Very Thin, < 10 mm	Cement:Sand = 1:1 Polymer: Water = 1:1
Patching and repair mortars	Up to 10 mm thick	Cement:Sand = 1:2 Polymer:Water = 1:2
	Above 10 mm thick	Cement:Sand = 1:3 Polymer:Water = 1:3
Cement screeds with high abrasion resistance, high elasticity, and less dust formation	Above 10 mm thick Above 30 mm thick	Polymer:Water = 1:4 Polymer:Water = 1:6
Levelling and smoothing mortars with increased oil and petrol resistance		Cement:Sand = 1:2 Polymer:Water = 1:2
Plastic reinforced mortars for plasters, bonding and joint mortars, with better bonding and higher weather resistance	Cement mortars Lime and lime cement mortars Joint mortars Bonding mortars	Polymer:Water = 1:5 Polymer:Water = 1:10 Polymer:Water = 1:2 Polymer:Water = 1:2

Source: Surlekar 1992

Depending on the type of the polymer and its contents, the degree of elasticity also varies.

6 Tests on Polymer Concrete

The best way to ensure the advantages of polymers is to conduct a series of tests on the polymer-modified mortars and to compare the results with mortars without polymers. In most of the practical cases, it suffices only to conduct the tests on polymer-modified concrete if the base concrete values are known. It is normally sufficient that the repair mortar has 10% higher strength than the base concrete. The following tests can be conducted to determine the suitability of the formulation:

- Compressive strength test
- Flexural strength test
- Bond strength test
- Air entrainment test
- Alkali resistance test
- Chloride content test

In the case of specialized repairs, the following tests may also be conducted:

- Water permeability test
- Vapour permeability test
- Carbonation resistance test
- Wear resistance test
- Impact resistance test
- Chloride ion penetration test
- Shrinkage characteristics test
- Bond and shrinkage tests in typical repair case UV resistance test
- Modulus of elasticity test
- Dynamic modulus of elasticity test
- Coefficient of thermal expansion test

Only those tests which have a direct bearing on the given repair situation should be conducted. Tables .5 and.6 show some typical test results for polymer-added mortars. The polymer used in these cases is an acrylic dispersion with solid content of 33%. The mix used is as follows:

Gauging solution 1 part of polymer dispersions:2 PBW of water

Mixing ratio 100 PBW of mortar:12.5 PBW of gauging solution.

Table 5 Typical compressive and flexural strengths of PCC

Flexural strength and compressive strength of the polymer mortar system Hardened mortar characteristics: 4 × 4 × 16 cm prisms		
Age, days	**Flexural strength, N/mm^2**	**Compressive strength, N/mm^2**
2	5.9	26
7	7.0	36
28	11.0	55

Source: Surlekar 1992

Table 6 Typical bonding strengths in concrete

	Adhesive strengths in tension for storage at standard reference atmosphere 23°C/50% Rh		
After 7 days	**After 28 days**	**After 90 days**	**Fracture**
1.9 N/mm^2	2.4 N/mm^2	3.6 N/mm^2	In the concrete or in the concrete surface

Notes: Stored at constant conditions = 2.1 N/mm2,
Temperature cycling = 2.2 N/mm2
Temperature cycling + humidity cycling = 1.9 N/mm2
Fractures occurred mainly in concrete
Source: Surlekar 1992

Mortar ratio 1 PBW cement:3 PBW of well graded sand
(PBW = parts by weight)

6.1 Precautions While Testing

Since the setting behaviour and mixing proportions are peculiar to polymer mortars, it is advisable to observe a few precautions while testing polymer mortars. It is preferable to conduct an air-entrainment test, because some formulations tend to entrap air during the mixing process. The air entrapped is at times 20%. Therefore, if there is marked loss in the strength of polymer mortars as compared to cement sand mixture, it can be due to the air entrainment.

The air entrained by polymer addition should not be more than 1–1.5% more than that in the control mix.

Secondly, since the polymer-modified mortars are used as thin overlays, it is preferable to test the compressive and flexural strengths on thinner sections.

Normally, as per DIN specification, the tests are conducted on prisms of 40 × 40 × 160 mm. The prisms are tested for flexural strengths and the broken halves of the prisms are tested for compressive strengths, with special attachments in which the load is transferred to 40 × 40 mm area. If prisms are not available, 50 × 50 × 50 mm cubes can be utilized for compression strength tests.

One of the most important properties of the polymers to be used in concrete should be the resistance to saponification. If, for example, the polymer suggested is PVA, the alkali reacts with the ester molecular group of PVA and makes PVA brittle and punky. This reaction, called alkali hydrolysis or saponification, leaves calcium soap on the surface, which attacks water and the strength of mortars. To avoid this problem, the polymer used should be of non-saponification type and the alkali resistance test should be conducted. This simple test, which exposes the specimen to calcium hydroxide reagents, is conducted after every 90 specimens for compressive and flexural strengths. The values are compared and if the compressive strength is 90% and flexural strength is 75% of the reference, respectively, the polymer is considered suitable for repair.

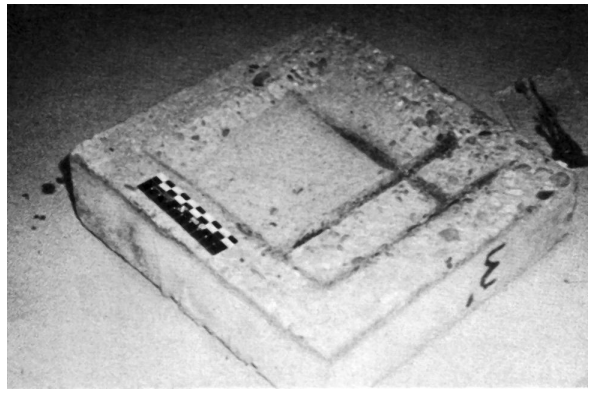


Fig. 2 Test specimen for bond and shrinkage in a typical repair case (*Source:* Surlekar 1992)

The test for bond and shrinkage for a typical repair situation is shown in Fig. .2. The coated mortar is subjected to cyclic temperature changes from –20°C to +60°C and the surface is observed for cracks, which mostly occur along and above reinforcements.

6.2 Tests to Ensure Quality of the Product

There are instances when different polymer types with different solid content are used. Since polymer dispersion is based on water, it can have different concen-trations. One should consider solid contents of the type of polymer employed. Under such circumstances, tests should be resorted to using an infrared spectrometer. Figure .3 shows an infrared spectrometer

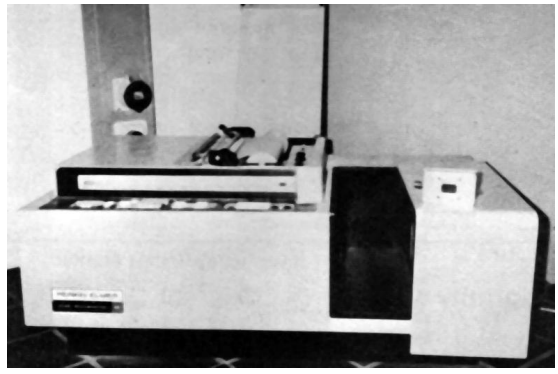


Fig.3 Infrared spectrometer *(Source:* Surlekar 1992)

The compositions of different samples can be qualitatively compared by infrared spectrometry. A typical spectrum for acrylic dispersion is shown in Fig. .4. The spectrum of the product intended for use should be compared with a chosen reference spectrum to ensure quality of the product used for repair.

Every batch of the product for repair should be tested to determine the solid content by the simple method of oven-drying.

These tests ensure the quality of the product and give a comparative evaluation procedure

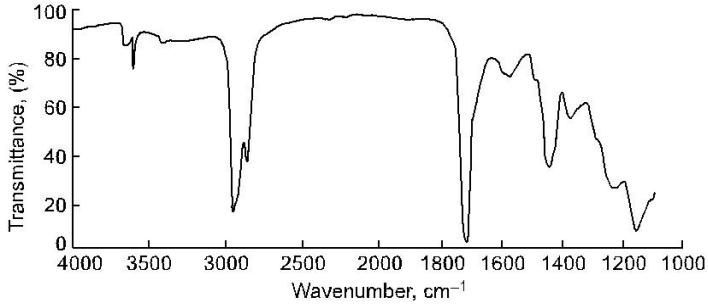


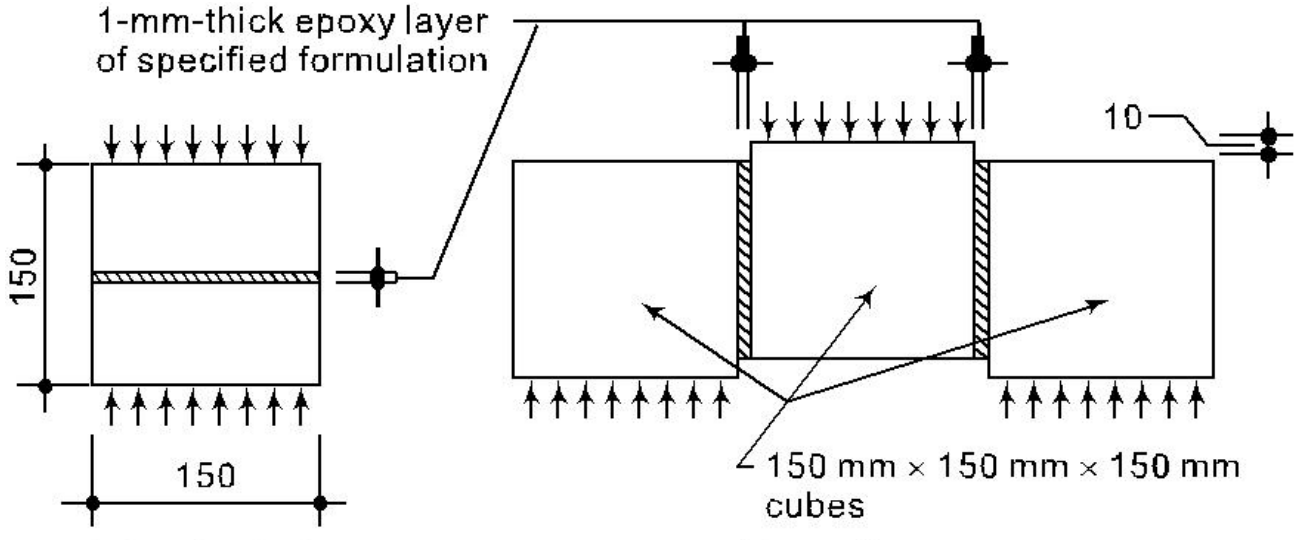
Fig. 4 A typical infrared spectrum for acrylic dispersion (*Source:* Surlekar 1992)

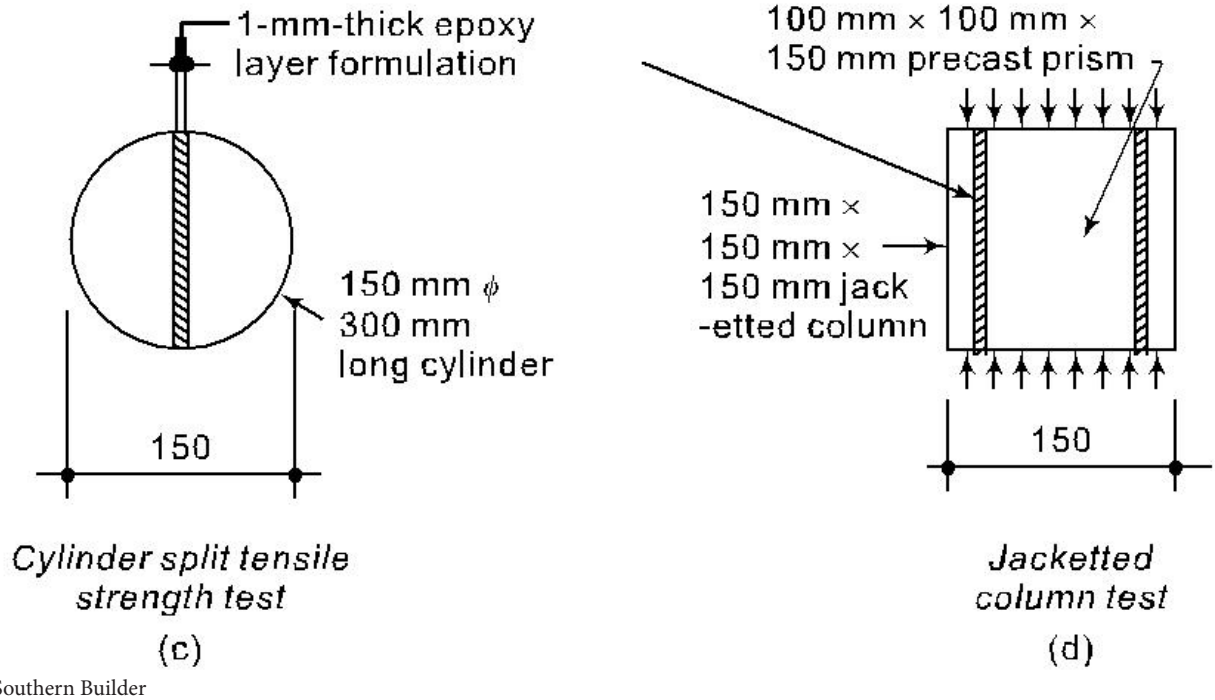
6.3 Tests on Epoxy Mortar Joints

To ensure adequate bond characteristics between old concrete and new concrete in repair work, epoxy joins are mostly used. These joints are subjected to a variety of loading conditions, such as compression, shear, tension, and bond.

To find the efficiency of the bonding agent, the precast concrete elements may be jointed by epoxy formulation and tested for failure. Figure.5 shows a series of six tests that can be conducted in a regular UTM to assess the following joint efficiencies:

- Compression [Fig. .5(a)]
- Direct shear [Fig. .5(b)]
- Split tension [Fig. .5(c)]
- Jacketing efficiency [Fig. .5(d)]
- Pull-out efficiency [Fig. .5(e)]
- Slant shear [Fig. .5(f)]





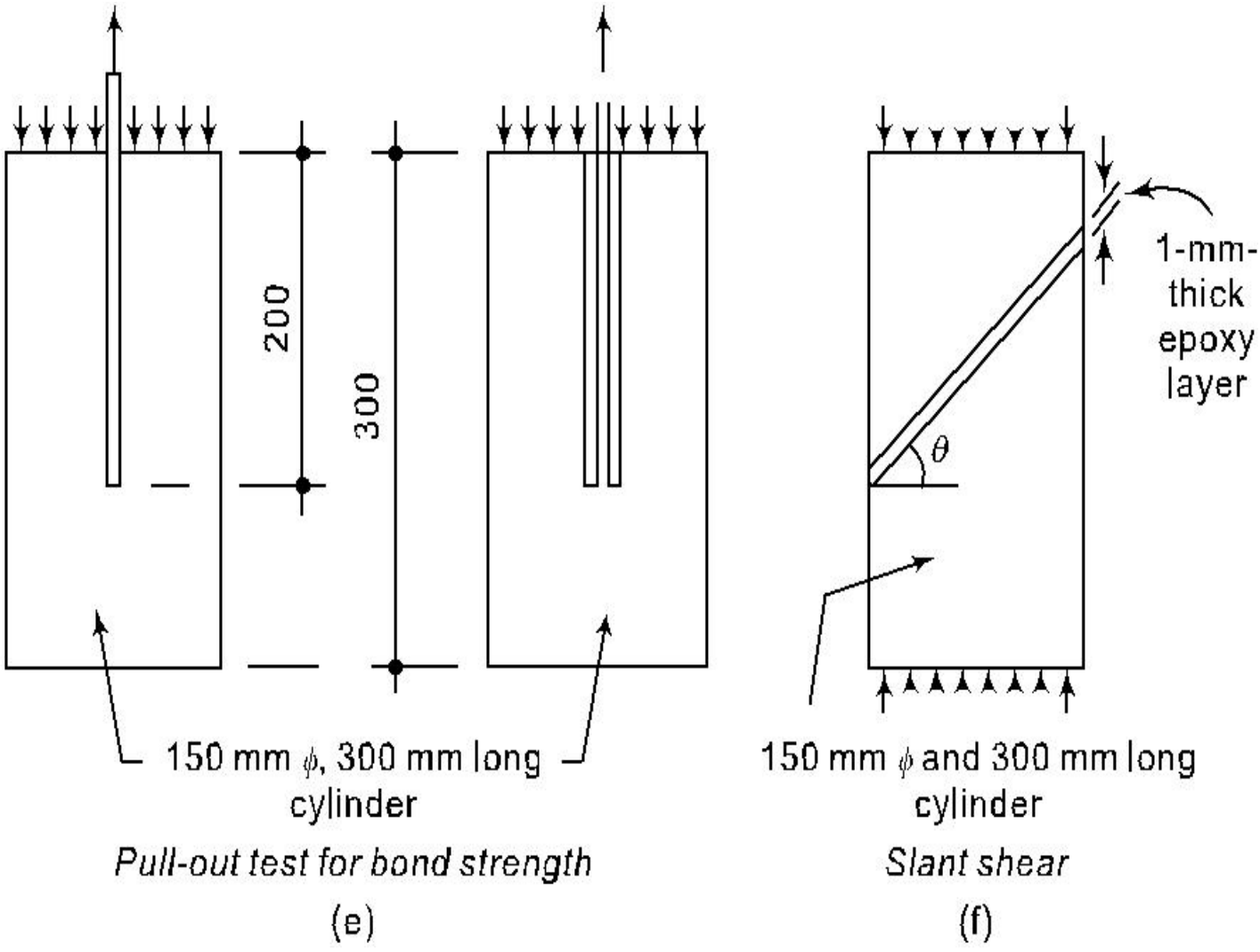


Fig. 5 Assessment of joint efficiencies (*Source:* Kar & Sharma 1992)

Polymers play a vital role in enhancing special properties of conventional concrete. Though they are costly, their application is increasing because of the economy that can be achieved by reduction in the construction time and fabrication difficulties. In this chapter, we discussed the various types of polymer concrete, their specific properties, and the fields in which they are applied. The use of polymers improves not only compressive strength in the hardened state but also workability when the concrete is fresh. Because there is no specific code of practice for the use of polymer concrete, it becomes necessary to test its performance and reconcile with the mix adopted based on requirements. A detailed description of the tests normally performed for assessing its basic behaviour characteristics such as shear and bond were described. It is felt that in the years to come, polymer use in concrete will increase especially in the area of repair and restoration technology.

7. Conclusion

In conclusion the use of polymers aids in various projects in concrete construction. A few of them are described in this presentation.

Tax Corner

INTERIM BUDGET-2019:

BENEFITS FOR REAL ESTATE SECTOR

திரு. S.D. கண்ணன்
Taxation Committee

(I) In interim budget-2019 presented by Finance Minister Piyush goyal special incentive has been given to the real estate sector specially the housing sector by amending the and extending the benefits under income tax provisions.Main changes has been given as under

1. Tax on notional rent on unsold real estate inventory to be levied after 2 years vs. 1 year previously.
2. Exempted notional rent applicable on second self-occupied house.
3. Threshold limit for TDS on rental income increased to Rs 2.4 lakh per annum from Rs 1.8 lakh per annum previously.
4. Capital gains limit u/s 54, raised to Rs 2cr and will now be available for two residential houses instead of one earlier.
5. Deduction of profits from affordable housing project currently available for projects approved before 31 March 2019, extended to be available for projects approved till 31 March 2020 (i.e. one more year)
6. A Group of Ministers has been formed to discuss the measures to reduce the GST burden on home buyers.

(II) The Above Points Are Analysed Below:-

1. No Tax on Notional Rent for Builders

Proposal: Benefit of nil tax currently available for one year in case of unsold inventory of real estate developers, extended to two years

Present: Notional income from unsold inventory for up to one year (from end of financial year in which certificate of completion of property is received) is exempt from tax

Change: Period of exemption of one year increased to two years

Impact: Incentive to real estate developers to reduce their tax cost and pass on the benefit to ultimate homebuyers

2.Exempted notional rent applicable on second self-occupied house.

Proposal: Exemption of notional income from self occupied house property increased for up to two properties

Present: Notional income from any one self-occupied house property is exempt from tax Tax deduction upto Rs 200,000 is available in respect of interest paid on loan borrowed for such property

Change: Limit of one self-occupied property increased to two properties Aggregate limit of tax deduction for interest paid, however, remains unchanged

Impact: Likely to benefit middle class families who have to maintain families at two locations on account of job, children, care of parents, etc.

3.Change in TDS limit for Rent

Present: No liability to deduct tax at source on rent paid upto Rs.180,000 annually

Change: Limit of Rs.180,000 increased to Rs.240,000

Impact: Likely to reduce compliance and benefit small taxpayers

4.Capital gains limit u/s 54, raised to Rs 2cr and will now be available for two residential houses instead of one earlier.

5.Deduction of profits from affordable housing project

Present : Deduction is available in respect of profits derived from developing an affordable housing project which has received approval from Government between 1 June 2016 till 31 March 2019

Change: Sunset time-limit for approval extended by one year to 31 March 2020

Impact: Incentive to affordable housing sector to enable developers to reduce their tax cost and pass on the benefit to ultimate homebuyers

6.A Group of Ministers has been formed to discuss the measures to reduce the GST burden on home buyers.

CMDA - CIRCULAR

Office of the Commissioner of
Town and Country Planning,
807, Anna Salai, Chennai – 600 002.

Roc.No.13193/2017-LA2 Dated: 3.01.2019

CIRCULAR

Sub: Unapproved layout regularization scheme – Additional points of Operational guidelines – Sent –Regarding.

Ref: 1) G.O.Ms.No.78, Housing and Urban Development [UD4(3)] Department, dated: 4.5.2017.
2) G.O.Ms.No.172, Housing and Urban Development [UD4(3)] Department, dated: 13.10.2017.
3) This office Circular of even no. dated: 30.10.2017.

In the reference 3rd cited above circular instructions have been issued containing operational guidelines for implementation of the unapproved layout regularization scheme. In para 7 of the said operational guidelines it has been informed that the framework of the layout shall be vetted online by the Office of the Commissioner of Town and Country Planning. This procedure is being followed since inception of the scheme in which the following partial modification of the procedure is issued for strict adherence:

The field officer can clear layouts having total extent of unsold plots less than 50,000 sq.ft. at his level itself without referring to head office subject to the conditions that:

(a) As provided in rule no.7(e)(iv) given in the G.O. first cited above, the layout framework should be finalized in such a way that any part of an unsold plot required for providing access to the surrounding areas shall be earmarked as road extension.

(b) OSR shall be mostly earmarked square in shape to the extent possible avoiding very linear shapes. Multiple OSR should also be avoided.

Further, while considering layouts having total extent of unsold plots of 50,000 sq.ft. and above at head office, the concerned sectional technical officer concerned - Deputy Director / Assistant Director of the head office can give online vetting upto 2,00,000 sq.ft. directly and whereas, in case of more than 2,00,000 sq.ft., it shall be vetted online by the Commissioner of Town and Country Planning.

The above instructions take effect immediately.

(sd./-).....
Commissioner of Town and Country Planning(FAC)

To
All the field officers of this department.
Copy to:
All the Deputy Directors, Assistant Directors, Research Officer.

/forwarded/by order/

மிகவும் அவசரம்/ உடனடி கவனத்திற்கு

பதிவுத்துறை

அனுப்புநர்
பதிவுத்துறைத்தலைவர்
100 சாந்தோம் நெடுஞ்சாலை,
சென்னை 600 028.

பெறுநர்
சார்பதிவாளர்கள்
அனைவருக்கும்

எண்.10751/சிஎஸ்1/2016 நாள்: 21.1.2019

ஐயா/அம்மையீர்,

பொருள்: துறைக்கட்டணங்கள் பணம் செலுத்துகை –
பதிவுப்பொது மக்களால் துறைக்கட்டணங்கள்
செலுத்துப்படுதல் – அறிவுரைகள் – தொடர்பாக

பார்வை: 1. இவ்வலுவலக சுற்றறிக்கை எண்.37/சி1/09
நாள்: 8.9.2009

2. இவ்வலுவலகக் கடிதஎண்.5642/சிஎஸ்1/2012
நாள்: 7/1/2015 மற்றும் 12.2.2015, .1..2016
(துணைபதிவுத்துறைத்தலைவர்களுக்கு
முகவரிக்கப்பட்டது)

3. அரசு வணிகவரி மற்றும் பதிவுத்துறைக் கடிதஎண்.153 நாள்:5/12/2018

••• •••

துறைக்கட்டணங்கள் ரூ.1000/–க்கு மேற்படின் கேட்புக் காசோலை மட்டிலுமே செலுத்தப்படல் வேண்டும் என பார்வை 1ல் கண்ட சுற்றறிக்கையின்வழி அறிவுரைகள் வழங்கப்பட்டுள்ளது.

12.1.2015/19.1.2015/9.3.2016 முதல் வங்கிகள் மூலம் நேரடியாக/இணையவழி (offline/online) பணம் செலுத்திடும் முறையானது (e–payment) கூடுதல் விருப்பத் தெரிவு முறையாக செயல்படுத்தப்பட்டுள்ளது. இது தொடர்பான அறிவுரைகள் பார்வை 2ல் கண்ட கடிதங்களின்வழி அளிக்கப்பட்டுள்ளன.

போலி முத்திரைத்தாட்களை அறவே ஒழித்திடும் நோக்கில் மின்னணு முத்திரை பதிப்பு முறை (e–stamping) சென்னையில் உள்ள தெரிவு செய்யப்பட்ட 9 அலுவலகங்களில் முன்னோடி திட்டமாக 27.5.2010ல் செயல்படுத்தப்பட்டு 6.2.2011ல் சென்னையில் உள்ள அனைத்து அலுவலகங்களிலும் விரிவுபடுத்தப்பட்டு, தற்போது மாநகராட்சி பகுதிகளில் உள்ள 56

சார்பதிவாளர் அலுவலகங்களுக்கும் நீட்டிக்கப்பட்டுள்ளது. ஆக 119 சார்பதிவாளர் அலுவலகங்களில் மின்னணு பதிப்பு முறை செயல்படுத்தப்படுகிறது.

சீரிய, தரமான, விரைவான, எளிமையான, பாதுகாப்பான மின் செலுத்துகை முறையினை ஊக்குவித்திடவும் மேன்மேலும் அதிகரித்திடும் விதமாக அரசுக்கு கருத்துரு அனுப்பப்பட்டு அதன் அடிப்படையில் கீழ்க்கண்டவாறு துறைக்கட்டணங்களை (முத்தரைத் தீர்வை, பதிவுக்கட்டணம் மற்றும் ஏனைய கட்டணங்கள்) வசூலித்திட பார்வை 3ல் கண்ட கடிதவழி அரசால் ஒப்புதல் அளிக்கப்பட்டுள்ளது.

1. ரூ.1000/–க்கு குறைவாக வசூலாகும் துறைக்கட்டணங்கள்	ரொக்கம் (by way of cash)
2. ரூ.1000/–க்கு மேற்பட்டு ரூ.5000/–க்குக் கீழ்	கேட்புக்காசோலை (DD)
3. இணையவழி/நேரடியாக வங்கி மூலம் பணம் செலுத்தும் முறை (online/offline payment)	எந்த உச்ச வரம்புமின்றி (without any limit)

எனவே மேற்கண்ட அரசு நெறிமுறையின்படி துறைக்கட்டணங்களை வசூலிக்க உரிய நடவடிக்கைகளை தவறாது மேற்கொள்ள அறிவுறுத்தப்படுகிறது.

இச்சுற்றறிக்கையினை பெற்றுக் கொண்டமைக்கு ஒப்புதலினை மாவட்டப்பதிவாளர்களுக்கும் மாவட்டப்பதிவாளர்கள் துணைபதிவுத்துறைத்தலைவர்களுக்கும் துணைபதிவுத்துறைத்தலைவர்களால் ஒருங்கிணைந்த ஒரே அறிக்கையாக இவ்வலுவலகத்திற்கும் அனுப்பப்படல் வேண்டும்.

கூடுதல்பதிவுத்துறைத்தலைவர் (மு & பி)

21/1/14

A saint was asked-
"What is anger?"
He gave a beautiful answer
"It is a punishment we give to ourself,
for somebody else's mistake"

கவியரசர் கண்ணதாசன் நினைவலைகள்

கவியரசு கண்ணதாசனின் திரைப்பட பாடல்களை நீங்கள் கேட்டு இரசித்து இருப்பீர்கள். அந்த வரிகளை படிக்கும்போது அந்த வார்த்தைகளின் அர்த்தங்கள் பன்மடங்கு பெருகுவதை நீங்கள் உணரவே இந்த வரிகள்.
உங்களது உள்ளம் கவிதை உள்ளம். தமிழ் நெஞ்சங்களின் கவிதை உள்ளங்களில் கவியரசர் இருக்கிறார்.

இறைவன் வருவான்,
அவன் என்றும் நல்வழி தருவான்
அறிவோம் அவனை
அவன் அன்பே நாம் பெறும் கருணை

உலகம் பிறந்தது எனக்காக
ஓடும் நதிகளும் எனக்காக
மலர்கள் மலர்வது எனக்காக
அன்னை மடியை விரித்தாள் எனக்காக

தெய்வம் என்றால் அது தெய்வம்
அது சிலை என்றால் வெறும் சிலைதான்
உண்டென்றால் அது உண்டு
இல்லை என்றால் அது இல்லை

ஆரம்பத்தில் பிறப்பும் உன் கையில் இல்லை
என்றும் அடுத்தடுத்த நடப்பும் உன் கையில் இல்லை
பாதை வகுத்த பின்பு பயந்தென்ன லாபம்
அதில் பயணம் நடத்திவிடு மறைந்திடும் பாவம்
நாளைப் பொழுது என்றும் நமக்கென வாழ்க
அதை நடத்த ஒனருவனுண்டு கோயில் காண்க
வேளை பிறக்கும் என்று நம்பிக்கை கொள்க
எந்த வேதனையும் மாறும் மேகத்தைப் போல

கண்ணிலே அன்பிருந்தால்
கல்லிலே தெய்வம் வரும்
நெஞ்சிலே ஆசை வந்தால்
நீரிலும் தேனூறும்

மனம் இருந்தால் பறவை கூட்டில் மான்கள் வாழலாம்
வழியிருந்தால் கடுகுக்குள்ளே மலையைக் காணலாம்
துணிந்து விட்டால் தலையில் எந்த சுமையும் தாங்கலாம்

பார்க்க தெரிந்தால் பாதை தெரியும்
பார்த்து நடந்தால் பயணம் தொடரும்
பயணம் தொடர்ந்தால் கதவு திறக்கும்
கதவு திறந்தால் காட்சி கிடைக்கும்
காட்சி கிடைத்தால் கவலை தீரும்
கவலை தீர்ந்தால் வாழலாம்
கடலளவு கிடைத்தாலும் மயங்க மாட்டேன்
அது கையளவே ஆனாலும் கலங்க மாட்டேன்
உள்ளத்திலே உள்ளதுதான் உலகம் கண்ணா
இதை உணர்ந்து கொண்டேன்
துன்பமெல்லாம் விலகும் கண்ணா
கடல் மீது விழுந்தது நீங்கள் நீந்துங்கள்
கனி மீது விழுந்தது உண்ணுங்கள்
வழிச்சாலை கண்டோர்கள் செல்லுங்கள்
போக வழியின்றி நிற்பவர்கள் நில்லுங்கள்
கல் தரையில் நீந்துகின்ற மனிதா காலம்
இட்ட கட்டளைகளை மாற்றுவது எளிதா ?

மூன்று தலைமுறைக்கும் நிதி வேண்டுமா
காலம் முற்றும் புகழ் வளர்க்கும் மதி வேண்டுமா
தோன்றும் பகை நடுங்கும் பலம் வேண்டுமா
இவை மூன்றும் துணை இருக்கும் நலம் வேண்டுமா

கடலுக்கு பயந்தவன் கரையில் நின்றான்
அதை படகினில் கடந்தவன் உலகைக் கண்டான்
பயந்தவன் தனக்கே பகையாவான்
என்றும் துணிந்தவன் உலகிற்க ஒளியாவான்

உயிரினங்கள் ஒன்றை ஒன்று வாழ்த்திடும் போது
அதன் உள்ளிருந்து வாழ்த்துவது உன் அருள் அன்றோ
கந்தா உன் அருளன்றோ

நம்பிக்கை உடையவன் தான் வேதாந்தியான விஞ்ஞானியானால் நம்பிக்கை இல்லாதவனுக்கு சுகமும் அற்ப நம்பிக்கை மிகவும் தேவையானது மனம் அது உன்னிடமே இருக்கிறது அதற்கான நீ ஒரு பைசாவும் செலவழிக்கத் தேவையில்லை.

லெ. வெங்கடேசன்
மய்ய தலைவர்

04.01.2019 அன்று நான்காவது மாநில அளவிலான கூட்டம் தேனி மய்யத்தின் சார்பில் தேனியில் நடைபெற்றது.

நான்காவது மாநில அளவிலான கூட்டத்தில் புதிய விழுப்புரம் மய்யம் திரு. S. கணபதி அவர்களை தலைவராகக் கொண்டு அறிவிக்கப்பட்டது.

ஓட்டல் அசோகாவில் நடைபெற்ற மகாசபைக் கூட்டத்தில் தென்னக மய்யத்தின் 2019-2020 ஆண்டிற்கான புதிய நிர்வாகிகள், செயற்குழு மற்றும் பொதுக்குழு உறுப்பினர்கள் ஒரு மனதாக தேர்ந்தெடுக்கப்பட்டு அறிவிக்கப்பட்டனர்.

வீட்டு வசதி மற்றும் நகர்ப்புற வளர்ச்சித் துறை செயலாளர் திரு. S. கிருஷ்ணன் அவர்களை தென்னக மய்யத்தின் மய்ய நிர்வாகிகள் சந்தித்து Tamil nadu Common Building Rules குறித்து விவாதித்தனர்.

திருச்சியில் நடைபெற்ற தென்பிராந்திய மாநாட்டில் மாநிலத்தலைவர் திரு. S. அய்யநாதன் அவர்கள் கவுரவிக்கப்பட்டார்.

தென் பிராந்திய மாநாட்டில் சிறப்பு கையேடு வெளியிடப்பட்டது.

THE SOUTHERN BUILDERS' CHARITABLE TRUST

APPEAL FOR SOUVENIR ADVERTISMENT

- Builders Association of India (BAI) is an apex body of Engineering Construction Contractors and Builders, Southern Centre is the biggest centre in our country. BAI-Southern Centre created Charitable Trust having as its objects, which are in public in nature.

- The trust is building a permanent structure on an own land very close to Anna Nagar extn, to house training centre for the construction workers in various lines, testing lab for construction materials, devices, apart from world class well equipped Auditorium for conducting seminar & workshop. Various product presentations pertaining to construction can also be held at the Auditorium.

- Apart from these activities the trust building will also have a full fledged medical centre to take care of the construction workers. The total cost of the project including the land cost is around Rs.12.00 crores. The progress of civil work is in full swing and we need generous contribution from our builder members and other allied agencies.

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பயோ-டை-ஜிஸ்டர் செப்டிக் டேங்க்

Er. A.G. Marimuthuraj

நீண்ட நாட்களாக சகித்துக் கொள்ள முடியாத, மனித நேயமற்ற தொழில் ஒன்று இம் மண்ணில் இருந்துவந்தது அது, மனிதக் கழிவை மனிதரே, அகற்றும் கொடுமைதான் இந்த கொடுமையை தீர்க்க வந்து இருக்கும் புதிய தொழில் நுட்பமுறைதான் "பயோ-டைஜஸ்டர்" செப்டிக் டேங்க்.

மனிதக் கழிவை மனிதரே அகற்றும் தொழிலில் நாடுமுழுவதும் சுமார் 16 ஆயிரம் தொழிலாளர்கள் உபயோகிக்கப்படுவதாக அன்மையில் எடுத்த ஆய்வு ஒன்று சொல்கிறது. அதிலும், உத்திரப் பிரதேசத்தில் தான் அதிக எண்ணிக்கையிலான தொழிலாளர்கள் இந்தத் தொழிலில் ஈடுபடுவதாக தெரியவருகிறது. இந்த தொழிலில் ஈடுபட்டுள்ள பலர் விஷ வாயு தாக்கி இறந்ததாக, அடிக்கடி, செய்தித் தாள்களில் செய்தியாக வருவது வருத்தத்திற்குறியதாகும்.

மேற்கண்ட நிலையை மாற்றவே பயோ-டை-ஜிஸ்டர் முறையிலான செப்டிக் டேங்க்குகள் சந்தைக்கு புதிதாக வந்துள்ளது. கோவையில், இந்த டேங்கை தயாரிக்கும் பணியில் ஈடுபட்டுள்ள "மேக் இந்தியா" நிறுவன நிர்வாகி ஏ. மாணிக்கம் அவர்கள் கூறுவது என்னவென்றால், பாரம்பரிய பழைய செப்டிக் டேங், சுத்தம் செய்யும் முறையில் 30% சதவீத கழிவுகளே வெளியேற்றப்படும் மீதமுள்ள 70 சதவீதக் கழிவுகள் டேங்க்குள்ளேயே தங்கிவிடும். தற்போது வந்துள்ள இந்தப் புதிய முறை பயோடேங்கில், நிரப்பப்பட்டுள்ள பாக்டீரியா நுண்ணுயிரிகள் 99.9 சதவீத கழிவுகளை மக்கச் செய்து அவற்றை மறு உபயோகத்திற்காக தூய்மையான நீராகவும், மீத்தேன் வாயுவாகவும், மாற்றி வெளியேற்றும் என்பது இங்கே குறிப்பிடத்தக்கதாகும்.

பழைய முறை கழிவு அகற்றும் முறையானது, சுற்றுச் சூழலை பாதிப்பதுடன் நிலத்தடி நீரும் மாசுபட அதிக வாய்ப்புள்ளது. அதனால் தொற்றுநோய் பரவ அதிக வாய்ப்பு ஏற்படுகிறது என்றால் அது மிகையாகாது. புதிதாக வந்துள்ள பயோ-டை-ஜிஸ்டர் முறையானது, சுற்றுச்சூழலைப் பாதுகாப்பதுடன், தண்ணீர் சிக்கனத்துக்கும், உதவுகிறது. இந்த டேங்கை இயக்க மின்சக்தியோ, எரிபொருளோ, தேவைப்படாது. கழிவுகளை சுத்திகரிக்கும் பாக்டீரியாக்களை ஒரு முறை உள்ளே செலுத்தினால் போதும் அவை தானியங்கியாக செயல்படத் தொடங்கும். அந்த பாக்டீரியா 6 முதல் 8 மணி நேரத்திற்குள் இரடிப்பாக தன்னைப் பெருக்கிக் கொள்ளும்.

மேலும் டேங்கில் கழிவுகள் தங்காத நிலையில், அடைப்பு ஏற்படுவது, தொற்றுநோய் பரவுவது, தவிர்க்கப்படுகிறது. இந்த டேங்கை பராமரிப்பது எளிதாகும். இதிலிருந்து வெளியேறும் சுத்திகரிக்கப்பட்ட நீரில் நாற்றம் இருக்காது. இதை அமைக்க சிறிய இடம் இருந்தால் போதும். இந்திய பாதுகாப்பு ஆராய்ச்சி மற்றும், மேம்பாட்டு அமைப்பு (டி.ஆர்.டி.ஓ) மூலம் தொழில்நுட்ப அங்கீகாரம் பெற்று உருவாக்கப்படும், இந்த டேங்கின் விலை சாதாரண செப்டிங் டேங்க் விலையைக் காட்டிலும் குறைவானதுதான்.

100 நபர் முதல் 120 நபர் வரை உபயோகிக்கும் டேங்குக்கு ரூபாய் 1.67 லட்சம் செலவிட்டால் போதுமானதாகும், அது போல் 10 நபர் முதல் 15 நபர் மட்டும் உபயோகிக்கும் டேங்க் அமைக்க சுமார் 28,500 ரூபாய் போதும். என்பது இங்கே குறிப்பிடத்தக்கதாகும். ஏராளமான ரயில்களில் இந்த வகை டேங்க்குகள் பொறுத்தப்பட்டு உள்ளது. தமிழ்நாடு, கர்நாடகா, கேரளா, ஆந்திரா, புதுச்சேரி உட்பட பல மாநிலங்களில் இந்த வகை டேங்க்குகளுக்கு நல்ல வரவேற்பு பெற்றுள்ளது. இவ்வகை டேங்க்கை அனைத்து இடத்திலும் உபயோகிக்கலாம்.

குறிப்பாக, பனி நிறைந்த ஜம்முகாஷ்மீர் மலைப் பகுதிகளில் பணிபுரியும் ராணுவ வீரர்கள் பயன்படுத்தும் இந்த வகை டேங்க், அங்கு நிலவும், தட்பவெப்பத்தால் கழிவுகள் விரைவில் மக்காத நிலையில் பயோ-டைஜஸ்டர்டேங்குகள் பொருத்துவது மிகவும் உபயோகமுள்ளதாக உள்ளது. என தெளிவாக சுருக்கமாக பயோ-டைஜஸ்டர் செப்டிக் டேங்க் குறித்து உபயோகமான தகவலை அதை தயாரிக்கும் கோவை நிறுவன தலைவர் கூறிப்பிட்டார். அனைவரும் இவ்வகை செப்டிக் டேங்கை வாங்கி உபயோகித்து புதிய தொழில் நுட்ப முறைகளை பயன்படுத்தி நன்மை பெறலாம்.

▲ கோவை அரசு மருத்துவக் கல்லூரி அருகே பயோ-செப்டிக் டேங்க் கழிப்பறையுடன் அமைக்கப்பட்டுள்ள போக்குவரத்து காவலர் நிழற்குடை. படங்கள்: ஜெ.மனோகரன்

The Gazette of India

असाधारण

EXTRAORDINARY

भाग II — खण्ड 1

PART II — Section 1

प्राधिकार से प्रकाशित

PUBLISHED BY AUTHORITY

MINISTRY OF LAW AND JUSTICE

(Legislative Department)

New Delhi, the 30th August, 2018/*Bhadrapada* 8, 1940 (*Saka*)

The following Act of Parliament received the assent of the President on the 29th August, 2018, and is hereby published for general information:—

THE CENTRAL GOODS AND SERVICES TAX (AMENDMENT) ACT, 2018

(No. 31 of 2018)

[29*th August,* 2018]

An Act further to amend the Central Goods and Services Tax Act, 2017.

Be it enacted by Parliament in the Sixty-ninth Year of the Republic of India as follows:—

Short title and commencement.

1. (*1*) This Act may be called the Central Goods and Services Tax (Amendment) Act, 2018.

(*2*) Save as otherwise provided, the provisions of this Act shall come into force on such date as the Central Government may, by notification in the Official Gazette, appoint:

Provided that different dates may be appointed for different provisions of this Act and any reference in any such provision to the commencement of this Act shall be construed as a reference to the coming into force of that provision.

Amendment of section 2.

12 of 2017.

2. In section 2 of the Central Goods and Services Tax Act, 2017 (hereinafter referred to as the principal Act),—

(*a*) in clause (*4*),—

(*i*) for the words "Central Board of Excise and Customs", the words "Central Board of Indirect Taxes and Customs" shall be substituted;

(*ii*) for the words "the Appellate Authority and the Appellate Tribunal", the words, brackets and figures "the Appellate Authority, the Appellate Tribunal and the Authority referred to in sub-section (*2*) of section 171" shall be substituted;

(*b*) in clause (*17*), for sub-clause (*h*), the following sub-clause shall be substituted, namely:—

"(*h*) activities of a race club including by way of totalisator or a license to book maker or activities of a licensed book maker in such club; and";

(c) clause (*18*) shall be omitted;

(*d*) in clause (*35*), for the word, brackets and letter "clause (*c*)", the word, brackets and letter "clause (*b*)" shall be substituted;

(*e*) in clause (*69*), in sub-clause (*f),* after the word and figures "article 371", the words, figures and letter "and article 371J" shall be inserted;

(*f*) in clause (*102*), the following *Explanation* shall be inserted, namely:—

'*Explanation*.—For the removal of doubts, it is hereby clarified that the expression "services" includes facilitating or arranging transactions in securities;'.

Amendment of section 7.

3. In section 7 of the principal Act, with effect from the 1st day of July, 2017,—

(*a*) in sub-section (*1*), —

(*i*) in clause (*b*), after the words "or furtherance of business;", the word "and" shall be inserted and shall always be deemed to have been inserted;

(*ii*) in clause (*c*), after the words "a consideration", the word "and" shall be omitted and shall always be deemed to have been omitted;

(*iii*) clause (*d*) shall be omitted and shall always be deemed to have been omitted;

(*b*) after sub-section (*1*), the following sub-section shall be inserted and shall always be deemed to have been inserted, namely:—

"(*1A*) where certain activities or transactions constitute a supply in accordance with the provisions of sub-section (*1*), they shall be treated either as supply of goods or supply of services as referred to in Schedule II.";

(*c*) in sub-section (*3*), for the words, brackets and figures "sub-sections (*1*) and (*2*)", the words, brackets, figures and letter "sub-sections (*1*), (*1A*) and (*2*)" shall be substituted.

Amendment of section 9.

4. In section 9 of the principal Act, for sub-section (*4*), the following sub-section shall be substituted, namely:—

"(*4*) The Government may, on the recommendations of the Council, by notification, specify a class of registered persons who shall, in respect of supply of specified categories of goods or services or both received from an unregistered supplier, pay the tax on reverse charge basis as the recipient of such supply of goods or services or both, and all the provisions of this Act shall apply to such recipient as if he is the person liable for paying the tax in relation to such supply of goods or services or both.".

Amendment of section 10.

5. In section 10 of the principal Act,—

(*a*) in sub-section (*1*) —

(*i*) for the words "in lieu of the tax payable by him, an amount calculated at such rate", the words, brackets and figures "in lieu of the tax payable by him

under sub-section (*1*) of section 9, an amount of tax calculated at such rate" shall be substituted;

(*ii*) in the proviso, for the words "one crore rupees", the words "one crore and fifty lakh rupees" shall be substituted;

(*iii*) after the proviso, the following proviso shall be inserted, namely:—

"Provided further that a person who opts to pay tax under clause (*a*) or clause (*b*) or clause (*c*) may supply services (other than those referred to in clause (*b*) of paragraph 6 of Schedule II), of value not exceeding ten per cent. of turnover in a State or Union territory in the preceding financial year or five lakh rupees, whichever is higher.";

(*b*) in sub-section (*2*), for clause (*a*), the following clause shall be substituted, namely:—

"(*a*) save as provided in sub-section (*1*), he is not engaged in the supply of services;".

Amendment of section 12.

6. In section 12 of the principal Act, in sub-section (*2*), in clause (*a*), the words, brackets and figure "sub-section (*1*) of" shall be omitted.

Amendment of section 13.

7. In section 13 of the principal Act, in sub-section (*2*), the words, brackets and figure "sub-section (*2*) of" occurring at both the places, shall be omitted.

Amendment of section 16.

8. In section 16 of the principal Act, in sub-section (*2*),—

(*a*) in clause (*b*), for the *Explanation*, the following *Explanation* shall be substituted, namely:—

"Explanation.—For the purposes of this clause, it shall be deemed that the registered person has received the goods or, as the case may be, services—

(*i*) where the goods are delivered by the supplier to a recipient or any other person on the direction of such registered person, whether acting as an agent or otherwise, before or during movement of goods, either by way of transfer of documents of title to goods or otherwise;

(*ii*) where the services are provided by the supplier to any person on the direction of and on account of such registered person.";

(*b*) in clause (*c*), for the word and figures "section 41", the words, figures and letter "section 41 or section 43A" shall be substituted.

Amendment of section 17.

9. In section 17 of the principal Act,—

(*a*) in sub-section (*3*), the following *Explanation* shall be inserted, namely:—

'*Explanation.*—For the purposes of this sub-section, the expression ''value of exempt supply'' shall not include the value of activities or transactions specified in Schedule III, except those specified in paragraph 5 of the said Schedule.';

(*b*) in sub-section (*5*), for clauses (*a*) and (*b*), the following clauses shall be substituted, namely:—

"(*a*) motor vehicles for transportation of persons having approved seating capacity of not more than thirteen persons (including the driver), except when they are used for making the following taxable supplies, namely:—

(*A*) further supply of such motor vehicles; or

(*B*) transportation of passengers; or

(*C*) imparting training on driving such motor vehicles;

(*aa*) vessels and aircraft except when they are used—

(*i*) for making the following taxable supplies, namely:—

(*A*) further supply of such vessels or aircraft; or

(*B*) transportation of passengers; or

(*C*) imparting training on navigating such vessels; or

(*D*) imparting training on flying such aircraft;

(*ii*) for transportation of goods;

(*ab*) services of general insurance, servicing, repair and maintenance in so far as they relate to motor vehicles, vessels or aircraft referred to in clause (*a*) or clause (*aa*):

Provided that the input tax credit in respect of such services shall be available—

(*i*) where the motor vehicles, vessels or aircraft referred to in clause (*a*) or clause (*aa*) are used for the purposes specified therein;

(*ii*) where received by a taxable person engaged—

(*I*) in the manufacture of such motor vehicles, vessels or aircraft; or

(*II*) in the supply of general insurance services in respect of such motor vehicles, vessels or aircraft insured by him;

(*b*) the following supply of goods or services or both—

(*i*) food and beverages, outdoor catering, beauty treatment, health services, cosmetic and plastic surgery, leasing, renting or hiring of motor vehicles, vessels or aircraft referred to in clause (*a*) or clause (*aa*) except when used for the purposes specified therein, life insurance and health insurance:

Provided that the input tax credit in respect of such goods or services or both shall be available where an inward supply of such goods or services or both is used by a registered person for making an outward taxable supply of the same category of goods or services or both or as an element of a taxable composite or mixed supply;

(*ii*) membership of a club, health and fitness centre; and

(*iii*) travel benefits extended to employees on vacation such as leave or home travel concession:

Provided that the input tax credit in respect of such goods or services or both shall be available, where it is obligatory for an employer to provide the same to its employees under any law for the time being in force.".

Amendment of section 20.

10. In section 20 of the principal Act, in the *Explanation*, in clause (*c*), for the words and figures "under entry 84,", the words, figures and letter "under entries 84 and 92A" shall be substituted.

Amendment of section 22.

11. In section 22 of the principal Act,—

(*a*) in sub-section (*1*), after the proviso, the following proviso shall be inserted, namely:—

"Provided further that the Government may, at the request of a special category State and on the recommendations of the Council, enhance the aggregate turnover referred to in the first proviso from ten lakh rupees to such amount, not exceeding twenty lakh rupees and subject to such conditions and limitations, as may be so notified.";

(*b*) in the *Explanation*, in clause (*iii*), after the words "State of Jammu and Kashmir", the words "and States of Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya, Sikkim and Uttarakhand" shall be inserted.".

Amendment of section 24.

12. In section 24 of the principal Act, in clause (*x*), after the words "commerce operator", the words and figures "who is required to collect tax at source under section 52" shall be inserted.

Amendment of section 25.

13. In section 25 of the principal Act,—

(*a*) in sub-section (*1*), after the proviso and before the *Explanation*, the following proviso shall be inserted, namely:—

"Provided further that a person having a unit, as defined in the Special Economic Zones Act, 2005, in a Special Economic Zone or being a Special Economic Zone developer shall have to apply for a separate registration, as distinct from his place of business located outside the Special Economic Zone in the same State or Union territory.";

28 of 2005.

(*b*) in sub-section (*2*), for the proviso, the following proviso shall be substituted, namely:—

"Provided that a person having multiple places of business in a State or Union territory may be granted a separate registration for each such place of business, subject to such conditions as may be prescribed.".

Amendment of section 29.

14. In section 29 of the principal Act,—

(*a*) in the marginal heading after the word "Cancellation", the words "or suspension" shall be inserted;

(*b*) in sub-section (*1*), after clause (*c*), the following proviso shall be inserted, namely:—

"Provided that during pendency of the proceedings relating to cancellation of registration filed by the registered person, the registration may be suspended for such period and in such manner as may be prescribed.";

(*c*) in sub-section (*2*), after the proviso, the following proviso shall be inserted, namely:—

"Provided further that during pendency of the proceedings relating to cancellation of registration, the proper officer may suspend the registration for such period and in such manner as may be prescribed.".

Amendment of section 34.

15. In section 34 of the principal Act,—

(*a*) in sub-section (*1*),—

(*i*) for the words "Where a tax invoice has", the words "Where one or more tax invoices have" shall be substituted;

(*ii*) for the words "a credit note", the words "one or more credit notes for supplies made in a financial year" shall be substituted;

(*b*) in sub-section (*3*),—

(*i*) for the words "Where a tax invoice has", the words "Where one or more tax invoices have" shall be substituted;

(*ii*) for the words "a debit note", the words "one or more debit notes for supplies made in a financial year" shall be substituted.

Amendment of section 35.

16. In section 35 of the principal Act, in sub-section (*5*), the following proviso shall be inserted, namely:—

"Provided that nothing contained in this sub-section shall apply to any department of the Central Government or a State Government or a local authority, whose books of account are subject to audit by the Comptroller and Auditor-General of India or an auditor appointed for auditing the accounts of local authorities under any law for the time being in force.".

Amendment of section 39.

17. In section 39 of the principal Act,—

(*a*) in sub-section (*1*),—

(*i*) for the words "in such form and manner as may be prescribed", the words "in such form, manner and within such time as may be prescribed" shall be substituted;

(*ii*) the words "on or before the twentieth day of the month succeeding such calendar month or part thereof " shall be omitted;

(*iii*) the following proviso shall be inserted, namely:—

"Provided that the Government may, on the recommendations of the Council, notify certain classes of registered persons who shall furnish return for every quarter or part thereof, subject to such conditions and safeguards as may be specified therein.";

(*b*) in sub-section (*7*), the following proviso shall be inserted, namely:—

"Provided that the Government may, on the recommendations of the Council, notify certain classes of registered persons who shall pay to the Government the tax due or part thereof as per the return on or before the last date on which he is required to furnish such return, subject to such conditions and safeguards as may be specified therein.";

(*c*) in sub-section (*9*),—

(*i*) for the words "in the return to be furnished for the month or quarter during which such omission or incorrect particulars are noticed", the words "in such form and manner as may be perscribed" shall be substituted;

(*ii*) in the proviso, for the words "the end of the financial year", the words "the end of the financial year to which such details pertain" shall be substituted.

Insertion of new section 43A.

18. After section 43 of the principal Act, the following section shall be inserted, namely:—

Procedure for furnishing return and availing input tax credit.

"43A. (*1*) Notwithstanding anything contained in sub-section (*2*) of section 16, section 37 or section 38, every registered person shall in the returns furnished under sub-section (*1*) of section 39 verify, validate, modify or delete the details of supplies furnished by the suppliers.

(*2*) Notwithstanding anything contained in section 41, section 42 or section 43, the procedure for availing of input tax credit by the recipient and verification thereof shall be such as may be prescribed.

(*3*) The procedure for furnishing the details of outward supplies by the supplier on the common portal, for the purposes of availing input tax credit by the recipient shall be such as may be prescribed.

(*4*) The procedure for availing input tax credit in respect of outward supplies not furnished under sub-section (*3*) shall be such as may be prescribed and such procedure may include the maximum amount of the input tax credit which can be so availed, not exceeding twenty per cent. of the input tax credit available, on the basis of details furnished by the suppliers under the said sub-section.

(*5*) The amount of tax specified in the outward supplies for which the details have been furnished by the supplier under sub-section (*3*) shall be deemed to be the tax payable by him under the provisions of the Act.

(*6*) The supplier and the recipient of a supply shall be jointly and severally liable to pay tax or to pay the input tax credit availed, as the case may be, in relation to outward supplies for which the details have been furnished under sub-section (*3*) or sub-section (*4*) but return thereof has not been furnished.

(*7*) For the purposes of sub-section (*6*), the recovery shall be made in such manner as may be prescribed and such procedure may provide for non-recovery of an amount of tax or input tax credit wrongly availed not exceeding one thousand rupees.

(*8*) The procedure, safeguards and threshold of the tax amount in relation to outward supplies, the details of which can be furnished under sub-section (*3*) by a registered person,—

(*i*) within six months of taking registration;

(*ii*) who has defaulted in payment of tax and where such default has continued for more than two months from the due date of payment of such defaulted amount,

shall be such as may be prescribed.".

Amendment of section 48.

19. In section 48 of the principal Act, in sub-section (*2*), after the word and figures "section 45", the words "and to perform such other functions" shall be inserted.

Amendment of section 49.

20. In section 49 of the principal Act,—

(*a*) in sub-section (*2*), for the word and figures "section 41", the words, figures and letter "section 41 or section 43A" shall be substituted;

(*b*) in sub-section (*5*),—

(*i*) in clause (*c*), the following proviso shall be inserted, namely:—

"Provided that the input tax credit on account of State tax shall be utilised towards payment of integrated tax only where the balance of the input tax credit on account of central tax is not available for payment of integrated tax;";

(*ii*) in clause (*d*), the following proviso shall be inserted, namely:—

"Provided that the input tax credit on account of Union territory tax shall be utilised towards payment of integrated tax only where the balance of the input tax credit on account of central tax is not available for payment of integrated tax;".

Insertion of new sections 49A and 49B.

21. After section 49 of the principal Act, the following sections shall be inserted, namely:—

Utilisation of input tax credit subject to certain conditions.

"49A. Notwithstanding anything contained in section 49, the input tax credit on account of central tax, State tax or Union territory tax shall be utilised towards payment of integrated tax, central tax, State tax or Union territory tax, as the case may be, only after the input tax credit available on account of integrated tax has first been utilised fully towards such payment.

Order of utilisation of input tax credit.

49B. Notwithstanding anything contained in this Chapter and subject to the provisions of clause (*e*) and clause (*f*) of sub-section (*5*) of section 49, the Government may, on the recommendations of the Council, prescribe the order and manner of utilisation of the input tax credit on account of integrated tax, central tax, State tax or Union territory tax, as the case may be, towards payment of any such tax.".

Amendment of section 52.

22. In section 52 of the principal Act, in sub-section (*9*), for the word and figures "section 37", the words and figures "section 37 or section 39" shall be substituted.

Amendment of section 54.

23. In section 54 of the principal Act,—

(*a*) in sub-section (*8*), in clause (*a*), for the words "zero-rated supplies", the words "export" and "exports" shall respectively be substituted;

(*b*) in the *Explanation*, in clause (*2*),—

(*i*) in sub-clause (*c*), in item (*i*), after the words "foreign exchange", the words "or in Indian rupees wherever permitted by the Reserve Bank of India" shall be inserted;

(*ii*) for sub-clause (*e*), the following sub-clause shall be substituted, namely:—

"(*e*) in the case of refund of unutilised input tax credit under clause (*ii*) of the first proviso to sub-section (*3*), the due date for furnishing of return under section 39 for the period in which such claim for refund arises;".

Amendment of section 79.

24. In section 79 of the principal Act, after sub-section (*4*), the following *Explanation* shall be inserted, namely:—

'*Explanation*.—For the purposes of this section, the word person shall include "distinct persons" as referred to in sub-section (*4*) or, as the case may be, sub-section (*5*) of section 25.'.

Amendment of section 107.

25. In section 107 of the principal Act, in sub-section (*6*), in clause (*b*), after the words "arising from the said order,", the words "subject to a maximum of twenty-five crore rupees," shall be inserted.

Amendment of section 112.

26. In section 112 of the principal Act, in sub-section (*8*), in clause (*b*), after the words "arising from the said order," the words "subject to a maximum of fifty crore rupees," shall be inserted.

Amendment of section 129.

27. In section 129 of the principal Act, in sub-section (*6*), for the words "seven days", the words "fourteen days" shall be substituted.

Amendment of section 140.

28. In section 140 of the principal Act, with effect from the 1st day of July, 2017,—

(*a*) in sub-section (*1*), after the letters and word "CENVAT credit", the words "of eligible duties" shall be inserted and shall always be deemed to have been inserted;

(*b*) in the *Explanation* 1—

(*i*) for the word, brackets and figures "sub-sections (*3*), (*4*)", the word, brackets and figures "sub-sections (*1*), (*3*), (*4*)" shall be substituted and shall always be deemed to have been substituted;

(*ii*) clause (*iv*) shall be omitted and shall always be deemed to have been omitted;

(*c*) in the *Explanation* 2—

(*i*) for the word, brackets and figure "sub-section (*5*)", the words, brackets and figures "sub-sections (*1*) and (*5*)" shall be substituted and shall always be deemed to have been substituted;

(*ii*) clause (*iv*) shall be omitted and shall always be deemed to have been omitted;

(*d*) after *Explanation* 2 as so amended, the following *Explanation* shall be inserted and shall always be deemed to have been inserted, namely:—

'Explanation 3.—For removal of doubts, it is hereby clarified that the expression "eligible duties and taxes" excludes any cess which has not been specified in *Explanation* 1 or *Explanation* 2 and any cess which is collected as additional duty of customs under sub-section (*1*) of section 3 of the Customs Tariff Act, 1975.'. 51 of 1975.

29. In section 143 of the principal Act, in sub-section (*1*), in clause (*b*), after the proviso, the following proviso shall be inserted, namely:— Amendment of section 143.

"Provided further that the period of one year and three years may, on sufficient cause being shown, be extended by the Commissioner for a further period not exceeding one year and two years respectively.".

30. In Schedule I of the principal Act, in paragraph 4, for the words "taxable person", the word "person" shall be substituted. Amendment of Schedule I.

31. In Schedule II of the principal Act, in the heading, after the word "ACTIVITIES", the words "OR TRANSACTIONS" shall be inserted and shall always be deemed to have been inserted with effect from the 1st day of July, 2017. Amendment of Schedule II.

32. In Schedule III of the principal Act, — Amendment of Schedule III.

(*i*) after paragraph 6, the following paragraphs shall be inserted, namely:—

"7. Supply of goods from a place in the non-taxable territory to another place in the non-taxable territory without such goods entering into India.

8. (*a*) Supply of warehoused goods to any person before clearance for home consumption;

(*b*) Supply of goods by the consignee to any other person, by endorsement of documents of title to the goods, after the goods have been dispatched from the port of origin located outside India but before clearance for home consumption.";

(*ii*) the *Explanation* shall be numbered as *Explanation* 1 and after *Explanation 1* as so numbered, the following *Explanation* shall be inserted, namely:—

'Explanation 2.—For the purposes of paragraph 8, the expression "warehoused goods" shall have the same meaning as assigned to it in the Customs Act, 1962.'. 52 of 1962.

TAMIL NADU COMBINED DEVELOPMENT & BUILDING RULES - 2019 HIGHLIGHTS

Planning Parameters for Non High Rise Buildings

All Buildings not exceeding 18.30m. in height

Sl.No	Description	Continuous Building Areas	Economically weaker Section Areas	Other areas	
1	2	3	4	4	
A	Minimum road width	3.0 m	3.0 m	3.0m up to 6.0 m	6.0 m and above
B	Maximum Height	GF + 2F or Stilt + 3F subject to a maximum of 12m height		GF + 1F or Stilt + 2F subject to a maximum of 9m height	GF + 2F or Stilt + 3F subject to a maximum of 12m height
C	Maximum number of dwelling units / commercial use	up to 16 dwellings or up to 300 square meters of commercial use	up to 16 dwellings	up to 8 dwellings	up to 16 dwellings or up to 300 square meters of commercial use
D	Maximum FSI	2.0			
E	Minimum Set backs	Where Street Alignment/new road is prescribed, it shall be from that street alignment/ new road line. In the case of others, it shall be from the property boundary.			
i)	Front set back	1.5m	1.0m	Abutting road width	Front set back
				Upto 9.0m	1.5m
				More than 9.0m upto 18m	3.0m
				More than 18m upto 30.5m	4.5m
				More than 30.5m	6.0m
ii)	Side Set back	Nil		Height of the building / Plot Width / SSB	
				Upto 7m / Up to 9m	1m on one side
				Upto 7m / Above 9m	1m on either side
				More than 7m. upto 12m / Up to 6m	1m on one side
				More than 7m. upto 12m / Above 6m, upto 9m	1.5m on one side
				More than 7m. upto 12m / Above 9m	1.5m on either side
ii)	Rear Set back	Nil		Height of the building	RSB
				Upto 7m	Nil
				More than 7m. upto 12m	1.5m

(b) The minimum road width, FSI, set back etc. for Non High Rise buildings upto 18.30m height and exceeding 16 dwelling units and exceeding 300 square meters of commercial building shall be regulated according to the table below:

Sl.No	Description	Continuous Building Areas	Other areas	
1	2	3	4	
A	Minimum road width	9.0 m		
B	Maximum Height	18.30 m		
C	Maximum FSI	2.0		
D	Minimum Set backs	Where Street Alignment/new road is prescribed, it shall be from that street alignment/ new road line. In the case of others, it shall be from the property boundary.		
i)	Front set back	Abutting road width	FSB	
		from 9.0m upto 18m	3.0m	
		More than 18m upto 30.5m	4.5m	
		More than 30.5m	6.0m	
ii)	Side Set back / Rear Set back	Nil	Height of the building	SSB / RSB
			Upto 7m	1.0m
			More than 7m upto 12m	1.5m
			More than 12m upto 16.0m	2.5m
			More than 16m upto 18.30m	3.0m

(C) Passage

Description		Passage width
A. Non High Rise buildings upto 12m height		
If the site does not directly abut a public road but gains access through a private passage or through a part of the plot which can be treated as a passage from a public road of minimum width as prescribed above, the minimum width of such passage shall be as follows:		
When it is intended to 8 dwellings		a)CBA / EWS areas – 1 m b)Other areas – 3 m
B. Non High Rise buildings exceeding 12.0m in height upto 18.30m height or exceeding 16 dwelling units		
If the site does not directly abut a public road but gains access through a private exclusive passage or through a part of the plot which can be treated as a passage from a public road of minimum width as prescribed above, the minimum width of such passage shall be as follows:		
(I)	When it is intended to 8 dwellings or up to 600 square metres of commercial building and the length of the passage does not exceed 80 metres.	3.6 meters
(ii)	When it is intended to serve upto 12 dwellings or upto 2,400 square metres of commercial building and the length of the passage does not exceed 100 metres.	4.8 meters
(iii)	When it is intended to serve not more than 16 dwellings or up to 3000 square metres of commercial building and the length of passage does not exceed 120 metres.	6 meters
(iv)	When it is intended to serve not more than 20 dwellings or up to 6000 square metres of commercial building and the length of passage does not exceed 120 metres.	7.2 meters
(v)	When it is intended to serve more than 20 dwellings or more than 6000 square metres of commercial building.	9 meters

Special rules for High Rise Buildings:
(i) Road width means the road space as defined in clause (103) of rule 2. The qualifying road width for permitting High Rise buildings with more than 18.30m shall be available atleast for a prescribed length of 500m in the case of Chennai Metropolitan Area and other Municipal Corporations and 250m for the other areas along the length of the road abutting the site and the stretch from a junction can be straight or a curve or zigzag or combination of the above.

Special rules for High Rise Buildings:

(1) Areas set apart for High Rise building developments in Chennai Metropolitan Area are given in Annexure - XIX. In rest of the State, High Rise buildings are permissible except in areas specifically declared as prohibited area for construction of High Rise Buildings in the Master Plan or Detailed Development Plan or as may be declared by the local body in other areas with the approval of the Directorate of Town and Country Planning or Government from time to time.

(2) Road width:- The site shall either abut on a road not less than 18 meters in width or gain access from public road not less than18 meters in width through a part of the site which can be treated as an exclusive passage of not less than 18 metres in width. Provided further that High Rise building may be permitted with limitations on maximum FSI of the building on a site abutting or gaining access from a public road of min. 12 m or 15 m in width, or gain access from public road not less than 12 m or 15 m in width through an exclusive passage of not less than 12 m or 15 m in width, subject to compliance of the planning parameters according to the table below

(3) The extent of the site, FSI, Set back etc. for High Rise Buildings shall be regulated according to the table below:

Sl. No	Description	All Areas		
A	Min. Road width	12m	15m	18m
B	Maximum FSI	2.0	2.5	3.25
C	Maximum Coverage	50%		
D	Minimum set back all around	Height of the building above ground level	Minimum required setback space from the property boundary	
		Upto 30m	7m	
		Above 30m	For every increase in height of 6m or part there of above 30m minimum extent of setback space to be left additionally shall be one meter subject to the maximum setback of 20m	
E	Spacing between blocks in case of more than one block of High Rise building	Height of the building above ground level	Minimum required spacing between blocks	
		Upto 30m	7m	
		Above 30m	For every increase in height of 6m. Or part there of above 30m. space to be left additionally shall be one meter subject to the maximum setback of 20m	

Regulation for developments in the Aquifer Recharge Area

Non High Rise Buildings upto 9m height Residential / Commercial Buildings and Other Small developments:

- Non High Rise building upto 9m height residential / predominantly residential, clinics, Dispensaries, Nursing homes stated above
- Working women hostels stated above
- Service apartments stated above
- Cottage industries (with number of workers not exceeding 8 and electric machineries not exceeding 5 H.P.) stated above
- Nursery schools, primary schools not exceeding 300 sq.m.
- Reading rooms, libraries, post office, EB office, telegraphic office, Local body maintenance offices not exceeding 300 sq.m.
- Govt., semi Govt. office stated above
- Religious building stated above

	Natham / declared EWS areas / EWS plots	Other Areas
Minimum plot extent	80 sq.m.	220 sq.m.
Minimum frontage	4.5m	12 m
Max. FSI	1.00	0.80
Max. Plot coverage	50%	40%
Max. height	9.0m (G+1 or stilt +2 floors)	9.0m (G+1 or stilt +2 floors)
Min. set back: In accordance with the Rule 8 Where street alignment and building lines have not been specified, it shall be as given below.		
Min. Front SetBack	1.5m	Abutting road Width: Min. FSB
		Upto 9m: 1.5 m
		Above 9m but less than 18m: 3.0 m
		Above 18m but less than 30.5m: 4.5 m
		Above 30.5 m: 6.0 m
SSB	Nil	2m on either side
RSB	Nil	2m

Premium FSI:

The Premium FSI over and above the normally allowable FSI relating the same to road width parameter may be allowed as follows:

Sl.No.	Road Width	Premium FSI (% of normally allowable FSI)
1.	18.0 m and above	50%
2.	12.0 m - below 18.0 m	40%
3.	9.0 m - below 12.0 m	30%

Rates applicable for computation of Premium FSI charges:
The Premium FSI charges shall be collected at the rate of 50% of Guideline value for the excess FSI area over and above normally permissible FSI area for Non High Rise Building and at the rate of 40% of Guideline value for the excess FSI area over and above normally permissible FSI area for High Rise Building. In case of multiple survey numbers for a site the maximum Guideline value shall be considered.

2. Planning Parameters of Institutional Buildings:

Including nursery schools, Primary schools and religious buildings with floor area exceeding 300 sq.m. Secondary schools, Colleges, Higher Educational, Technical & Research Institutions, Students hostels & Dormitories, Research Institutions, Broadcasting, Telecasting & Telecommunication centers, Government & Quasi Government Offices, and Institutions, Government Archives, Museums, Art galleries and Public libraries, Foreign Missions, Consulates and Embassies.

Sl.No.	Description	Continuous Building Areas	Other areas
1	2	3	4
A.	Minimum road width	7.20m	Minimum 7.2m for schools upto higher secondary level and industrial training institutes. For others, min. 9 m
B.	Maximum Height	18.30m.	
C.	Maximum FSI	2.0	
D.	Minimum Setbacks	Where Street Alignment/new road is prescribed, it shall be from that street alignment/narrow line. In the case of others, it shall be from the property boundary.	
(i)	Front Setback	6m	6m
(ii)	Side Setback	Nil	6m
		For schools - 2m	
(iii)	Rear Setback	Nil	6m
		For schools - 2m	
E.	a) Structures permissible in the minimum prescribed Front set back, Side setback and Rear set back are given in the rule 28 b) In addition, Gate pillars, gopurams, and incidental structures (with height not exceeding 4m) such as servant room, cloak room, and watch man booth, cycle stand, Kitchen and toilets are permissible in these minimum prescribed setback spaces.		
F.	Parking spaces shall be provided within the site conforming to standards prescribed in the Annexure - IV.		
G.	Rainwater harvesting provisions as prescribed in the Annexure - XXII.		
H.	The minimum width of corridor shall be as given in rule 42		
I.	Special regulations for physically disabled stated in the rule 43 shall be adhered to.		
J.	The applicant not being a government department or agency shall deposit a sum at the rate of 50% of the infrastructure and amenity charges as a refundable non-interest earning security and earnest deposit. The deposit shall be refunded on completion of development as per the approved plan as certified by Executive Authority of the Local Body; if not, it would be forfeited.		

3. Planning Parameters of Industries:

The road width, FSI, Setbacks etc. for cottage industries, Green industries, Orange industries and Red industries shall be regulated according to the table below. The Detailed lists of these industries are given in Annexures V, VI, VII and VIII respectively.

Sl.No.	Description	Category of industries			
1		Cottage Industries		Green & Orange industries	Red industries (Special & Hazardous)
A.	Minimum road width	7m		7m	7m
B.	Maximum Height	18.30m		18.30m	18.30m
C.	Maximum FSI	1.50		1.50	1.50
D.	Minimum Setback	Where Street Alignment/new road is prescribed, it shall be from that street alignment/new road line. In the case of others, it shall be from the property boundary.			
(i)	Front Setback	Abutting road width	Front Setback	6.0m	6.0m
		less than 9m	1.5m		
		9m to 18m	3.0m		
		18m to 30.50m	4.5m		
		More than 30.5m	6.0m		
(ii)	Side Setback	1.50m		3.0m	6.0m
(iii)	Rear Setback	Nil		2.0m	6.0m
E.	Structures permissible in the minimum prescribed Front set back, Side setback and Rear set back are given in the rule 28 In addition, incidental structures such as Gate pillars, servant room, watch man booth, cycle stand and toilets with height not exceeding 4m are permissible in these minimum prescribed setback spaces.				
F.	Parking spaces shall be provided within the site conforming to standards prescribed in the Annexure - IV.				
G.	Rainwater harvesting provisions as prescribed in the Annexure - XXII.				

Parking Requirements

(1) Residential

(A) Corporation or Municipal Areas		(B) Panchayat Areas	
Dwelling Unit with	Number of Parking Spaces	Dwelling Unit with	Number of Parking Spaces
Floor area upto 25 sq.m	Nil	Floor area upto 50 sq.m	Nil
Floor area above 25 sq.m and upto 50 sq.m	1 Two Wheeler space	Floor area above 50 sq.m and upto 75 sq.m	1 Two Wheeler space
Floor area above 50 sq.m and upto 75 sq.m	1 car space for every 2 dwelling units and 1 Two Wheeler space for every dwelling unit	Floor area above 75 sq.m and upto 100 sq.m	1 car space for every 2 dwelling units and 1 Two Wheeler space for every dwelling unit
Floor area above 75 sq.m	1 car space for every 75 sq.m	Floor area above 100 sq.m	1 car space for every 100 sq.m

Visitors Parking:
In addition to the parking spaces specified above, parking spaces for visitors shall be provided to the extent of 10% of the number stipulated above rounded to the nearest whole number where number of dwelling units exceeds six.

Note:
1.In cases where the number of car parking spaces required in an ordinary residential building does not exceed 3 in number, separate driveway or aisle is not necessary.
2. In cases of flatted residential development where the number of car spaces required for a dwelling unit does not exceed 2 in number separate aisle is not necessary for the second car space required for that dwelling unit.

(2) Shops/Shopping Centres/Departmental Stores/Super Markets

(A) Corporation or Municipal Areas		(B) Panchayat Areas	
Floor Area	Number of Parking Spaces	Floor Area	Number of Parking Spaces
Upto 50 sq.m	Nil	Upto 75 sq.m	Nil
Above 50 sq.m	1 car space and 1 Two wheeler space for every 50 sq.m or part thereof excluding the first 50 sq.m	Above 75 sq.m	1 car space and 1 Two wheeler space for every 75 sq.m or part thereof excluding the first 75 sq.m

Layout and sub-division Rules:

Residential Developments:

Description (1)	Minimum width (2)	Remarks (3)
A. Passage		
(I) In Economically Weaker Section areas and continuous building areas:		
a) For single plot	1.0 metre	The passage will remain private
b) For two to four plots	1.5 metre	
(ii) When it is intended to serve upto two plots and length of the passage does not exceed 40 metres.	3.0 metres	The passage will remain private
(iii) When it is intended to serve up to four plots and length of the passage does not exceed 80 metres.	3.6 metres	-Do-
(iv) When it is intended to serve up to ten plots and length of the passage does not exceed 100 metres.	4.8 metres	-Do-
B. Streets and Roads		
(I) Streets of length does not exceeds 120 metres	7.2 metres	All streets shall become public
(ii) Streets of length more than 120 meters but below 240 metres	10.0 metres	All streets shall become public
(iii) Roads of length more than 240 metres but below 400 metres	12.0 metres	All streets shall become public
(iv) Roads of length between 400 metres to 1,000 metres	18.0 metres	All streets shall become public
(v) Roads of length more than 1000 metres	24.0 metres	All streets shall become public

Note
(1) In case of layout the minimum extent of plot shall be 32 sq.mts. for EWS and 72 sq.mts. for other category of plots.
(2) Minimum width of the road within a layout that is extendable to the adjacent land parcels shall not be less than 9 m in width.

SOUTHERN CENTRE ACTIVITIES

04.01.2019

நான்காவது மாநில அளவிலான கூட்டம் தேனி மய்யத்தின் சார்பில் தேனியில் நடைபெற்றது. இக்கூட்டத்தில் தென்னக மய்யத்தின் சார்பில் மய்ய நிர்வாகிகள், பொதுக்குழு மற்றும் துணைக்குழுத் தலைவர்கள் கலந்து கொண்டு சிறப்பித்தனர்.

0501.2019

மய்யத் தேர்தல் பற்றிய அறிக்கை அனைத்து உறுப்பினர்களுக்கும் அனுப்பப்பட்டது.

18.01.2019

10வது செயற்குழு மற்றும் பொதுக்குழு கூட்டம் காஸ்மோபாலிடன் கிளப்பில் திரு.O.K.செல்வராஜ், திரு.S.D.கண்ணன், திரு.S.சரவண பெருமாள், திரு.V.S.B. சுந்தர் ஆகியோரின் உபசரிப்பில் நடைபெற்றது.

22.01.2019

ஓட்டல் அசோகாவில் நடைபெற்ற மகாசபைக் கூட்டத்தில் தென்னக மய்யத்தின் 2019-2020 ஆண்டிற்கான புதிய நிர்வாகிகள், செயற்குழு மற்றும் பொதுக்குழு உறுப்பினர்கள் ஒரு மனதாக தேர்ந்தெடுக்கப்பட்டு அறிவிக்கப்பட்டனர்.

24.01.2019 - 25.01.2019

திருச்சியில் தென் பிராந்திய மாநாடு நடைபெற்றது. இம்மாநாட்டிற்கு தென்னக மய்யத்திலிருந்து மய்யத்தலைவர் மற்றும் நிர்வாகிகள், பொதுக்குழு உறுப்பினர்கள் கலந்து கொண்டு சிறப்பித்தனர்.

31.01.2019

வீட்டு வசதி மற்றும் நகர்ப்புற வளர்ச்சித் துறை செயலாளர் திரு.S.கிருஷ்ணன் அவர்களை தென்னக மய்யத்தின் நிர்வாகிகள் சந்தித்து Tamil nadu Common Building Rules குறித்து விவாதித்தனர்.

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