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தென்னக மய்ய நிர்வாகிகள் பதவி ஏற்பு விழா

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ஆசிரியர் மடல்

அன்புடையீர் வணக்கம்,

அகில இந்திய கட்டுநர் வல்லுநர் சங்கம், தென்னக மய்யத்தின் 2022-23ம் ஆண்டின் தலைவராக தேர்ந்தெடுக்கப்படடிருக்கும் திரு. R.R. ஸ்ரீதர், துணைத் தலைவர் திரு. A.N. பாலாஜி, செயலாளர் திரு. N.G. லோகநாதன், பொருளாளர் திரு. P.K.P. நாராயணன், இணை செயலாளர் திரு. Y. சீனிவாசன் மற்றும் செயற்குழு பொதுக்குழு உறுப்பினர்கள் அனைவருக்கும் இதயம் நிறைந்த நல்வாழ்த்துக்கள். இரண்டாண்டு காலம் தென்னக மய்யத்தலைவராக சீர்மிகு செயலாற்றி உடனடி முன்னாள் தலைவராகும் திரு. L. சாந்தகுமார் அவர்களுக்கு உளம் கனிந்த பாராட்டுக்கள்.

அகில இந்திய அளவில் முன்னோடி மய்யமாகத் திகழும் பாரம்பரியமிக்க தென்னக மய்யத்தலைவராக பொறுப்பேற்றிருக்கும் திரு. R.R. ஸ்ரீதர் அவர்கள் தனது வேகத்துடன் விவேகமுடன் செயல்பட்டு உறுப்பினர்களின் தொழில் மேன்மை பெருகும் வகையில் செயலாற்றி மய்யத்தின் புகழை மேலும் உயர்த்தி பெருமை சேர்த்திடுவார் என்பது அனைவரின் எதிர்பார்ப்பாக உள்ளது.

ஒரு நாட்டின் அழகையும், முன்னேற்றத்தையும் கணிக்க அந்நாட்டின் கட்டிடக்கலையும், கட்டுமானத்திறனும் கணக்கில் எடுத்துக்கொள்ளப்படுகிறது. முந்தைய காலத்தில் ராஜாக்கள் ஆண்ட போது அவர்களது நாட்டை பாதுகாக்கும் வண்ணம் அரணாக கட்டப்பட்ட கட்டுமானங்கள் அந்நாட்டின் சிறப்பினை பறைசாற்றும். அப்படிப்பட்ட பெருமைக்குரியது கட்டுமானத்துறை என்றால் அது மிகையாகாது. பல நாடுகளில் கட்டுமானக் கலைத்துறையிலும் இந்தியர்களின் பங்களிப்பு மேன்மை வாய்ந்ததாக கருதப்படுகிறது. வளர்ந்து வரும் தொழில் நுட்பம், புதிய யுக்திகளின் மூலம் கட்டுமானத்துறையில் இளைஞர்கள் ஆர்வம் கொண்டு ஈடுபட பயிற்சி பட்டறைகள் செயலாக்கம் செய்யப்பட வேண்டும்.

கடலலை ஓய்ந்தபாடில்லை என்பதை போல் கட்டுநர்களின் துறை சார்ந்த இன்னல்கள், இடையூறுகள் குறைந்தபாடில்லை. தீர்ந்தபாடில்லை. அரசு வரிவிதிப்பு முறையினை எளிமையாக்குகிறோம் என்று ஒருங்கிணைந்த GST நடைமுறைப்படுத்தியது. அதில் உள்ள முரண்பாடுகளை முறைப்படுத்த இன்றுவரை முடிவில்லா முயற்சியில்தான் உள்ளது.

கொரோனா என்னும் கொடிய நோய்த்தொற்றின் கோரத்தாண்டவத்தினால் கட்டுமானத்துறை முடங்கிப்போனது. அதிலிருந்து மீண்டு தொழில் தொடங்க முற்படும் தருணத்தில் கட்டுமானப் பொருட்களின் கட்டுக்கடங்காத விலையேற்றம் தொழில் முனைவோரை கலக்கத்தில் ஆழ்த்தியுள்ளது. நாட்டின் உட்கட்டமைப்பை உருவாக்கி தொழிலாளர் வேலை வாய்ப்பை வழங்கி பொருளாதாரத்தை மேம்படுத்தவும் முக்கிய பங்காற்றிடும் கட்டுமானத்துறை நசிந்துவிடாமல் காத்திடும் வகையில் ஒன்றிய அரசும், மாநில அரசும் கட்டுக்கடங்காமல் விலையேற்றிடும் கட்டுமானப் பொருட்களின் விலையை கட்டுப்படுத்திட ஒழுங்குமுறை ஆணையம் (Regulatory Authority) அமைத்து கட்டுநர்களின் குறை தீர்த்து கட்டுமானத்துறையினை மேம்படுத்தினால் நம் நாட்டின் வளர்ச்சி பாதையும் செவ்வனே அமையும் என்பது உள்ளங்கை நெல்லிக்கனி ஆகும்.

என்றும் அன்புடன்
S. அய்யநாதன்

மய்யத்தலைவர் மடல்

தென்னக மய்யத்தலைவர் என்ற முறையில் மய்யத்தலைவர் மடல் வாயிலாக உங்களிடம் எனது கருத்துக்களை பகிர்ந்து கொள்வதில் பெருமகிழ்ச்சி கொள்கிறேன். முதலில் என்னையும், மய்ய நிர்வாகிகளையும் ஏகமனதாக தேர்வு செய்து உங்களுக்கு பணியாற்ற வாய்ப்பினை வழங்கியமைக்காக எனது மனப்பூர்வமான நன்றியைத் தெரிவித்துக் கொள்கிறேன். நமது தென்னக மய்யத்தினை மேலும் பெருமை கொள்ளத்தக்க வகையில் செயலாற்ற உங்கள் அனைவரின் ஒத்துழைப்பையும் அன்போடு வேண்டுகிறேன்.

கடந்த 1.04.2022 அன்று நமது மய்ய அலுவலகத்தில் நானும், ஏனைய நிர்வாகிகளும் சேவாரத்னா பீஷ்மா R. இராதாகிருஷ்ணன் அவர்கள் பதவியில் அமர்த்த பதவி ஏற்றுக் கொண்டு செயல்பட துவங்கியுள்ளோம். இந்நிகழ்ச்சியில் முன்னாள் அகில இந்தியத்தலைவர் திரு. Mu. மோகன் மற்றம் மய்ய முன்னோடிகள், செயற்குழு பொதுக்குழு உறுப்பினர்கள் கலந்து கொண்டு சிறப்பித்தனர்.

12.04.2022 அன்று நமது மய்ய அலுவலக கட்டிடத்தில் திறக்கப்பட்டுள்ள இலவச மருத்துவ சிகிச்சை மய்யத்தில் தொழிலாளர் மருத்துவ முகாம் நடைபெற்றது. பீஷ்மா திரு. R. இராதாகிருஷ்ணன் அவர்கள் துவக்கி வைத்த இம்முகாமில் முன்னாள் அகில இந்தியத்தலைவர் திரு. Mu. மோகன் அவர்கள் உள்ளிட்ட மய்ய முன்னோடிகள், மூத்த உறுப்பினர்கள் செயற்குழு மற்றும் பொதுக்குழு உறுப்பினர்கள் கலந்து கொண்டனர். அப்பல்லோ மருத்துவமனை, சவிதா பல் மருத்துவ கல்லுரி மருத்துவமனையிலிருந்து வந்திருந்த மருத்துவர்கள் இம்முகாமில் கலந்து கொண்ட 110க்கு அதிகமாக தொழிலாளர்களுக்கு மருத்துவ பரிசோதனை செய்து மருந்துகள் வழங்கப்பட்டன.

27.04.2022 அன்று மய்யத்தலைவர் மற்றும் நிர்வாகிகளுக்கான முறையான பதவி ஏற்பு நிகழ்ச்சி Hotel Feathers A Radha –ல் மிகச் சிறப்பாக நடைபெற்றது. நமது அகில இந்தியத்தலைவர் திரு நிமேஷ் டி பட்டேல் அவர்கள் தலைமை விருந்தினராக கலந்து கொண்டு சிறப்பித்தார். இந்நிகழ்ச்சியில் அகில இந்திய துணைத்தலைவர், தென் மண்டலம் திரு. G. வேதானந்த், அகில இந்திய காப்பாளர் திரு. Mu. மோகன், தமிழ்நாடு, புதுச்சேரி மற்றும் அந்தமான் மாநிலத்தலைவர் திரு. K. ஜெகநாதன் ஆகியோர் கவுரவிக்கப்பட்டனர். புதிய தலைவர் உள்ளிட்ட நிர்வாகிகள், செயற்குழு மற்றும் பொதுக்குழு உறுப்பினர்களை அகில இந்திய முன்னாள் தலைவர் பீஷ்மா திரு. R. இராதாகிருஷ்ணன் அவர்கள் பதவியில் அமர்த்தினார். பிரபல வழக்குரைஞர் திரு. சஞ்சய் ராமசாமி அவர்கள் கலந்து கொண்டு வாழ்த்துரை வழங்கினார்.

நமது தென்னக மய்யம் தனது சங்க நடவடிக்கைகளுக்காக ISO 9001-2015 தரச்சான்றிதழை பெற்றுள்ளது என்பதை மகிழ்ச்சியோடும் பெருமையோடும் அனைத்து உறுப்பினர்களுக்கும் தெரிவித்துக் கொள்கிறேன்.

தென்னக மய்த்தின் புகழினை மேலும் உயர்த்த உங்களின் அனைவரின் ஒத்துழைப்புடன் அயராது பாடுபடுவேன் என்று உறுதி கூறுகிறேன்.

நன்றி ! வணக்கம்
என்றும் அன்புடன்
R.R. ஸ்ரீதர்

NEED FOR MORE STEEL STRUCTURES

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1.1 Need for using steel for structures

Structures are built to satisfy functional requirements of people and industries.

They are mainly required for the following purposes:

a) To enclose and create a space for living or for an industry.
b) To support loads due to people, equipment, material and environment.
c) To aid transportation by spanning rivers or other obstructions.
d) To retain material as in the case of tanks, bins etc.

The important purpose of a structure is to support loads and transfer the same safely to the ground through the foundation. Structures are generally classified based on their functions. The following list gives typical classification:

a) Residential housing including apartments.
b) Institutional buildings for offices, shops and other establishments.
c) Commercial buildings and business centers.
d) Industrial facilities to aid functioning of factories, power houses, trade promotion centers etc.
e) Bridges which aid transportation.
f) Towers which carry electrical conductors or those intended for micro- wave transmission.
g) Storage structures such as water tank, silos and bins.

These structures can be designed and built for moving different materials and they have unique systems based on the structural form. Though the subject of this book is for “Design of Steel Structures”, it is not used in isolation. Most steel structures are supported by concrete foundation. It is proper at this juncture to state that steel is generally preferred material because of its strength, stiffness and ease of fabrication compared to other materials for the majority of the structures.

1.2 Various material options

The primitive man when started building his home, started using stone and mortar, i.e., Stone Masonry (Stone Age). With the advancement of civilization, brick masonry and pozzolanic mortar were used to build houses and domes. Some times fiberes (natural) were used to reinforce brittle mortar. With the advancement of technology, the various materials used at present for majority of the structures are as follows:

a) Masonry (unreinforced and reinforced)
b) Concrete (plain, reinforced and pre-stressed)
c) Structural steel

Masonry has the limitation as it cannot sustain tensile stresses though it is very good in transmitting compression. Reinforced masonry has been used successfully to build structures including high rise buildings. Reinforced concrete structures are very durable and hence is preferred for tall buildings with Structural walls (shear walls) and flat slabs. The floor slabs with long spans and long span bridges are built using prestressing technique.

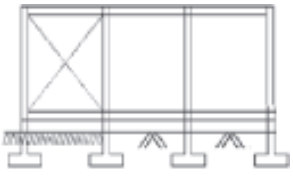
Structural steel is ideally suited for building industrial structures. These structures are carefully engineered to give desired performance and long life. Structural steel members are also used in combination with concrete as a composite steel frame concrete floor system in which reinforced concrete (RC) shear walls (structural walls) provide the required lateral load resistance. These systems have been used in a number of tall buildings such as Petronas Twin Towers in Kuala Lumpur, Malaysia and Burj Khalifa Tower in Dubai.

Structural steel members are made using alloy of iron having carefully controlled quantities of carbon and metals. The metals include manganese, chromium, aluminum, vanadium, molybdenum, niobium and copper. These metals affect the properties of steel produced. For example, carbon and manganese increase tensile strength but reduce ductility and weld-ability. Chromium and copper increase resistance to corrosion.

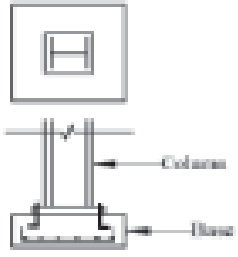
1.3 Various types of structures

Behavior of structure depends on the way in which external loads are resisted by the system. In general, the following types of behaviour can be identified:

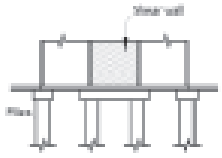
a) Gravity structures: Load bearing structures which depend on gravity load for stability such as a gravity dam and load bearing wall structure are typical examples under this category (Fig.1a)
b) Framed structures: Both steel and RC rigid jointed frame which collect the load from the floor or roof and transmit it to the foundation through the columns, are classified under this type (Fig. 1b).
c) Shells and folded plates: Curved spatial structures such as domes or folded plates carry the loads by developing in plane stresses (Fig.1c)
d) Tension Structures: Suspension cables and tensile membrane structures develop tensile stresses between anchor points. They may either be developing tension due to gravity forces such as in suspension cables or supported by pneumatic air pressure (Fig.1d).

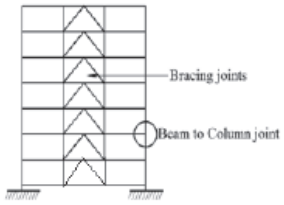


(a) Gravity load bearing wall



(b) Steel frame building





(c) Shell and Folded plate structure

(i) Tension cable

(ii) Pneumatic

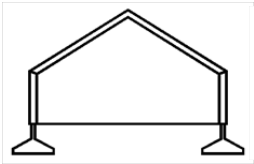
Fig. 1.1 Types of structures

1.4 Types of steel structures

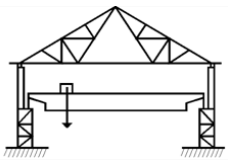
A few examples of different types of steel structures are shown in Fig 1.2. Steel structures are generally used for constructing industrial and commercial buildings to provide large column free areas. These can be broadly classified as given below:

1. Single storey – single or multi bay structures which may be truss supported by stanchions or rigid frames of solid or lattice systems (Fig.1.2a).
2. Multistory – multi bay braced or rigid jointed systems for tall buildings. To improve the efficiency, they may be with out-riggers or core supported suspended floor systems using belt truss arrangement (Fig. 1.2b).
3. Space structures having single or double layer grids or domes with Buckminster Fuller's geometry (Fig.1.2c).
4. Stressed skin structures where cladding becomes responsible for stability (Fig.1.2d).
5. Self supporting towers having cross arms for carrying conductors or other loads or Guyed towers or masts (Fig.1.2e).

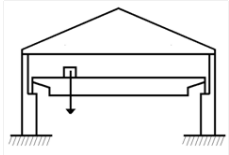
Only single bay and multistory structures described in items 1 and 2 are discussed in this book. Space structures, stressed skin structures and towers are not covered in this book.



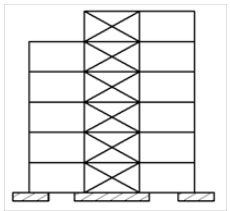
(i) Portal frame



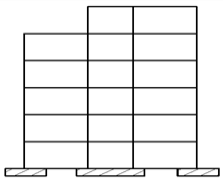
(ii) Truss and columns



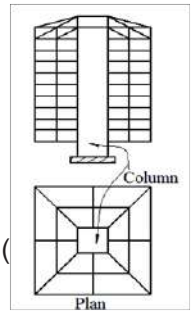
(iii) Rigid frame



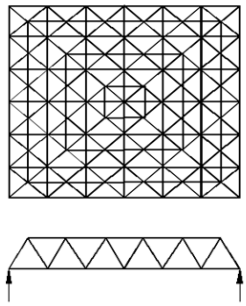
(i) Braced frame



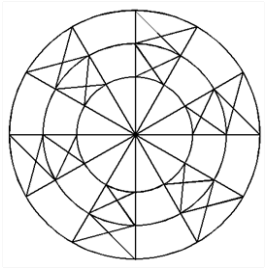
(ii) Rigid frame



(iii) Core supported tower

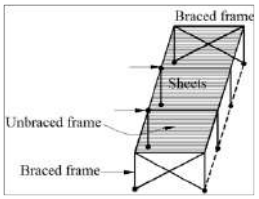


(i) Space deck roof



(ii) Schwedler dome

(c) Space structures



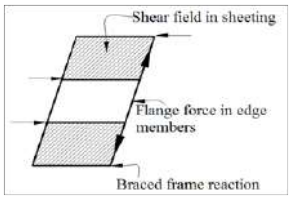
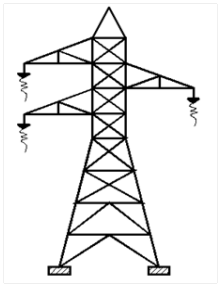
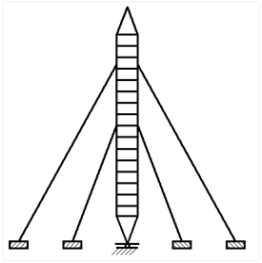


Plate girder action carries load to the stiffened portals

(d) Stressed skin structure concept





(e) Self supporting and guyed towers

Fig. 1.2 (c) Space structures

1.5 Types and properties of steel

Both mild steel and high tensile steel conforming to IS 2062 are generally used for steel construction and fabrication.

Important physical properties of steel are summarized in Table 1.1

Mechanical properties of steel vary depending on the type as well as product thickness for structural application. Properties of steel conforming to IS:2062 are given in Table 1.2.

Steel types generally used for different components are summarized in Table 1.3 along with the specification to be followed and the corresponding yield strength.

Table 1.1 Physical properties of steel

Sl.No.	Property	Magnitude
1	Modulus of Elasticity (E)	2×10^5MPa
2	Modulus of Rigidity (G)	0.769×10^5MPa
3	Possion ration (μ) (i) Elastic range (ii) Plastic range	 0.3 0.5
4	Unit mass of steel	7850 kg/m^3 (78.5 kN/m^3)
5	Co-efficient of thermal expansion (α)	12 x 10^{-6}/ oC

Structural steels are hot rolled into required shape such as I sections or universal beam. The heavy rolled sections are useful in tall buildings. Built up H, I or Box sections, made using plates and latice members are used for transfer girders and bridge girders. Light weight sheets and purlins are made of cold rolled sheets. High strength steels are used for bolts for fastening different members.

Table 1.2 Mechanical properties of mild and high tensile steels as per IS 2062

Sl.No	Grade classification	Yield Stress (N/mm2)			Ultimate tensile stress (N/mm2)	Percentage of elongation
		t<20mm	t = 20-40mm	t>40mm		
1	E250 (Fe410W) A	250	240	230	410	23
2	E250 (Fe410W) B	250	240	230	410	23
3	E250 (Fe410W) C	250	240	230	410	23
4	E300 (Fe440)	300	290	280	440	22
5	E350 (Fe490)	350	330	320	490	22
6	E410 (Fe540)	410	390	380	540	20
7	E450 (Fe570) D	450	430	420	570	20
8	E450 (Fe590) E	450	430	420	590	20

1.6 Merits and demerits of steel structures

Following are the advantages of using steel as a structural material.

1. Its strength /weight ratio is high. Hence, it is advantageous to use it for long span or tall structures as its dead weight is low.
2. Since steel members are factory made, quality of members is assured.

Table 1.3 Steel specification used for different structural components

Sl.No	Structural components	Specification	Yield strength (MPa)
1	Primary sections	IS 2062 Plates and Sections	345
2	Hot Rolled sections	Rods & Tubes IS 2062 E250, I section & Angles	250
3	Cold formed steel	ASTM A653-07	345
4	Anchor Bolts	IS 2062	250
5	Bolts	IS 3757	640
6	Secondary Bolts	IS 1364	240
7	Sag rods	IS 2062	250
8	Roofing Sheets	AS 1397	550
9	Cladding Sheets	AS 2728:2007	550
10	Welding wire/Rod	IS 814 ER 4222	-

3. It has almost equal strength in both compression and tension and hence its behaviour is easily predictable.
4. It is amenable for fast track construction unlike concrete.
5. It can be easily dismantled and re-erected and hence expansion of space at any point of time is possible with steel structures.
6. Steel is environment friendly as 95% of material is recoverable when the structure is demolished. Hence, the steel in structure is recyclable.
7. Steel structures can be strengthened by adding plates and members. Hence, it is possible to enhance the use for larger loads.
8. The properties of steel are definite and hence it is possible to predict the performance of steel structure based on analysis.
9. Behaviour of steel is ductile and hence its performance during seismic and other disastrous loading is favorable.
10. Steel structures can be designed to suit any aesthetic consideration.

The following are few disadvantages which have to be taken care of during adoption of steel structures.

1. Steel is susceptible for corrosion and hence the loss of material due to corrosion has to be considered during design.
2. Steel needs periodic maintenance by suitable painting and this has to be accounted for, while considering life cycle cost.
3. Steel needs protection against fire damage because its fire rating is low.
4. As steel is of higher cost, its use should be made economical by optimization during design.
5. Steel fabrication should be made precise and hence the tolerance during execution is low. Hence, precise quality execution is necessary.

1.7 Steps involved in design of a steel structure

The aim of 'Design of a Steel Structure' is to produce

economical and safe design of the structure to serve its intended purpose. The steps involved are summarized below:

1. The structure should be idealised for the purpose of easy structural analysis and subsequent design.
2. A detailed evaluation of loads acting on the structure is necessary
3. Analysis of effect of various loads and the load combinations will reveal the critical condition for the structure
4. The most severe load combination or combinations will be applied and design forces and moments will be arrived at with appropriate load factors for stability and safety.
5. For these stress resultants foundations, frames, elements and connections are designed.
6. Based on the above, detailed structural drawings are prepared.

1.8 Designer's role and responsibility

It is important for structural engineer/designer to utilize his knowledge of structural mechanics, material behavior, geotechnical aspects and utilize the codes of practice as well as his own practical experience to arrive at acceptable designs. To aid the Structural Design, hand books, design aids and computer software is utilized. However, it is ultimately the responsibility of the designer to ensure safety, serviceability and economy of the project.

1.9 Factors to be considered for a good design

The following factors are to be considered by the designer in order to arrive at a successful Structural Design:

1. The site location and environment in which structure has to perform.
2. Soil condition
3. Weathering condition
4. Materials of construction
5. Fabrication facilities
6. Transportation facilities
7. Technicians for erection
8. Construction machinery
9. Safety against corrosion
10. Safety against fire
11. Maintenance required
12. Possibility for expansion
13. Failure probabilities due to accidental damage, fatigue, brittle fracture, earthquake and similar other disastrous conditions

1.10 Design alternatives and optimization

There can be more than one design solution for a problem. Therefore, it is necessary to examine alternative design solutions during planning stage to finalize most suitable structural solution which is aesthetically pleasing, functionally adequate, structurally safe and economical. During this stage, fire and corrosion protection and maintenance cost should also be considered.

Optimization is achieved by considering alternatives, working out their cost and choosing the design which leads to least cost. Thus the aim of optimization is to obtain most economical design. With respect to steel work design optimal design is achieved by adopting minimum weight solution.

1.11 Types of structures and design method

(a) The methods used to idealise steel structures are:

1. Single storey, single bay buildings (Fig. 1.3a)
2. Single storey, multibay buildings (Fig. 1.3b)
3. Multi- storey buildings (Fig. 1.3c)
4. Special structures (Fig. 1.3d)

1. Single storey, single bay buildings:

This includes truss and stanchion frame; 3 or 2 pin portal frames and welded rigid jointed frame or rigid joints made using high strength bolts.

2. Single storey, multibay buildings:

These may be lattice girder roof and multi-bay portal. They can also be of cable suspended flat or curved roofs.

3. Multi- storey buildings

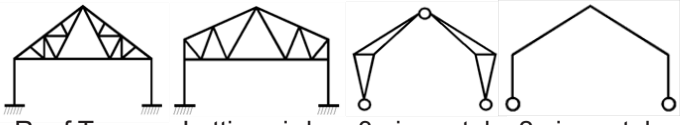
Depending on the functional need, many variations can be used such as rigid frame, braced frame, core supported, shear wall frame and out rigger frame.

4. Special structures

These consist of cantilever sports stadia, cable suspended roofs and domes required for large covered areas.

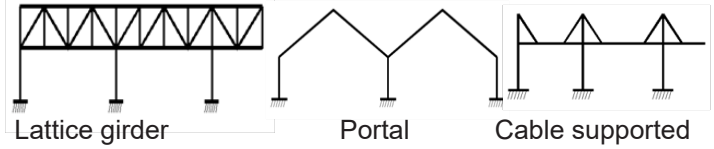
b) Design methods

For design of above structures various design methods can be used. The methods that are given in IS 800:2007 are simple, rigid or semirigid design. The rigid designs are adopted either using elastic or plastic analysis technique.



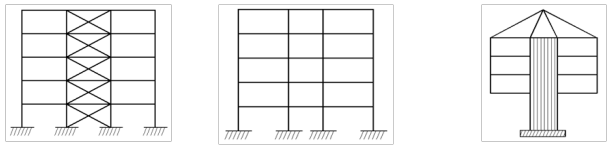
Roof Truss Lattice girder 3 pin portal 2 pin portal

(a) Single storey, Single bay buildings



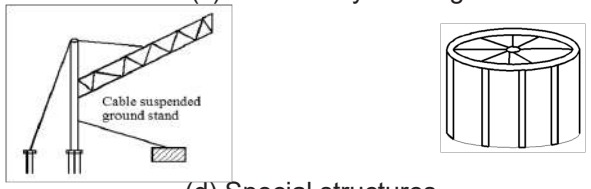
Lattice girder Portal Cable supported

(b) Single storey multi bay buildings



Braced Rigid frame Core supported

(c) Multi storey buildings



(d) Special structures

Fig. 1.3 Methods used to idealise steel structures

1.12 Structural idealization, load path and modeling

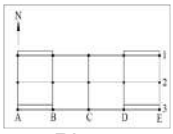
Structures resist external loads and create space for intended purpose. Idealization means breaking down or

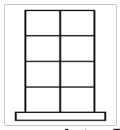
disuniting structure into simple elements such as beams, columns, braces, ties, floor slabs and foundation. The load resisted by the structure is transferred to these elements from the surface. From element such as a floor slab the load is transferred to beams, columns and then finally to the foundation and soil below. Thus one can identify the path through which the load gets transferred until it reaches the soil. The elements and the joints connecting them should have sufficient strength as well as stiffness to transmit the loads, so that the structural skeleton is safe. It should perform satisfactorily within the permissible limits of deformation.

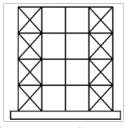
For example, a multistorey structure having three dimensions can be treated as a series of plane frames in two principal directions (Fig. 1.4a).

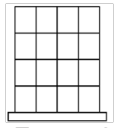
The tower structure in Fig. 1.4b can be analysed as a space frame as shown. Alternatively it can be treated as a series of plane frame.

The truss and column frame in Fig. 1.4c is separated into truss and column and foundation while a Gable portal frame is treated as one unit.

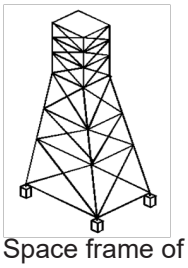

Plan

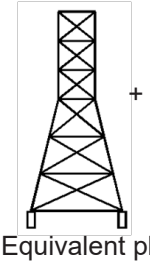

Frame A to E Elevation

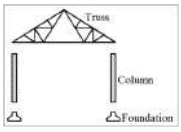

Frame 1 and 3 Elevation

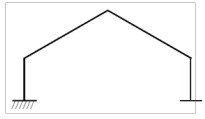

Frame 2 Elevation

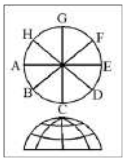
Note: Frame 1 to 3 are in East- West direction.
Frame A to E are in North- South direction
(a) Plane frames in two principal direction


Space frame of tower


+ 3 similar frame
Equivalent plane Frame
(b) Tower structure modeled using plane frames




(c) Truss – Column – Foundation and Gable portal frame



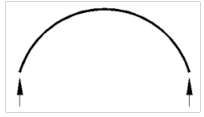
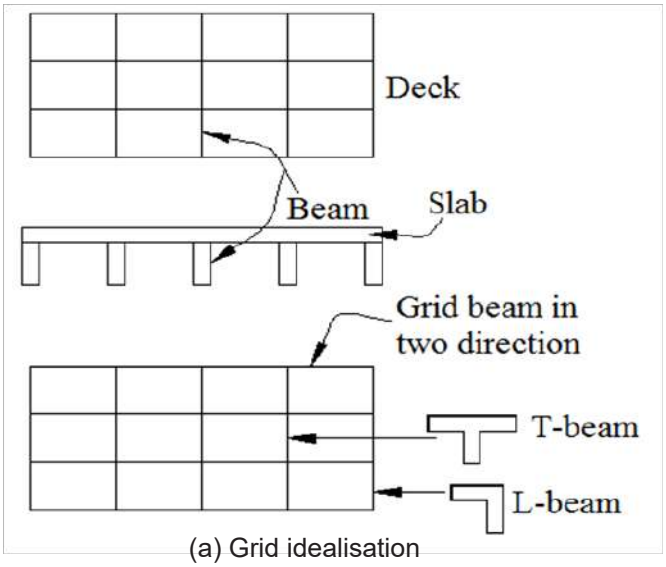

(d) Dome idealisation - 3D vs Linear

Fig. 1.4 Structural 2D idealisation

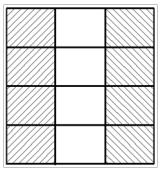
The dome can either be designed as a 3D frame or a series of 2D frame, arch rib as shown in Fig.1.4(d). Thus the structural idealisation is closely related to load path and is generally termed as modeling for analysis and design.

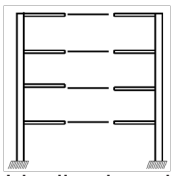
Fig.1.5 shows modeling for analysis of some of the following common steel structures

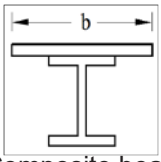
a) Ribbed Grid Deck floor
b) Coupled shear walls
c) Composite beam
d) Rigid frame – shear wall core building



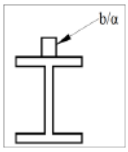
(a) Grid idealisation


Coupled shear wall

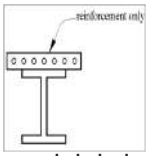

Idealised model
(b) Connected Shear wall Structure



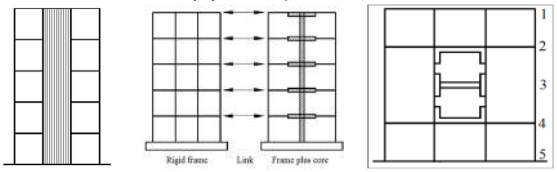
Composite beam



When slab is in compression



When slab is in tension
(c) Composite beam



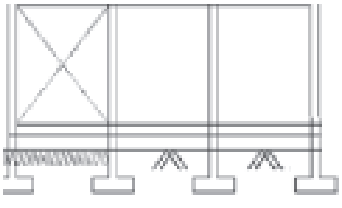
Link frame models
(d) Rigid frame – Shear wall – Core Building

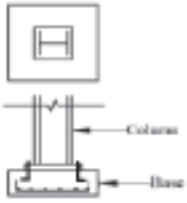
Fig.1.5 Modeling for analysis

1.13 Foundation for structures

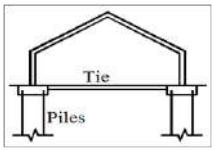
Foundations are essential to transfer loads from structure to the soil. The reactions at the base of the structure could be vertical gravity load, lateral shear or a base moment. Correct type of foundation should be chosen with respect to soil condition and the type of loads transferred by the structure at the base.

In general, foundations are classified as either deep or shallow. Some typical foundations adopted for steel structures are shown in Fig. 1.6. One should know that without a proper foundation, the structural design is considered incomplete. Normally, foundations are constructed in concrete though in some cases composite systems are also used.

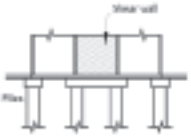




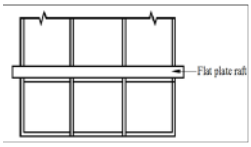
Individual bases



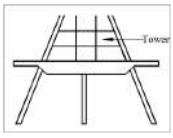
(b) Tied base for a portal frame



(c)Foundation for shear wall frame



(d) Basement Foundation for a Multistory Building



(e) Piled footing for tower

Fig. 1.6 General foundation types for steel structure

1.14 Steel fabrication

Fabrication is the process of making individual structural elements of a steel structure from steel members, plates and gussets etc. The process involves the following steps:

1. First the material list should be prepared
2. Rolled members are cut to size and prepared by drilling holes to receive the bolts.
3. Gussets, cleats, end plates, stiffeners are marked at cut out.
4. Main components are assembled and positioned for welding.
5. The finished members are cleaned with grid blasting, painted and it's identity marked on them.

To economize on fabrication cost the following techniques are used:

(i) Rationalize the design so that similar members are of approximately same size and weights are used for fabrication.

(ii) The welding detail must be simple and executable.

(iii) Avoid points of stress concentration.

(iv) Standard typified bolted connection should be used.

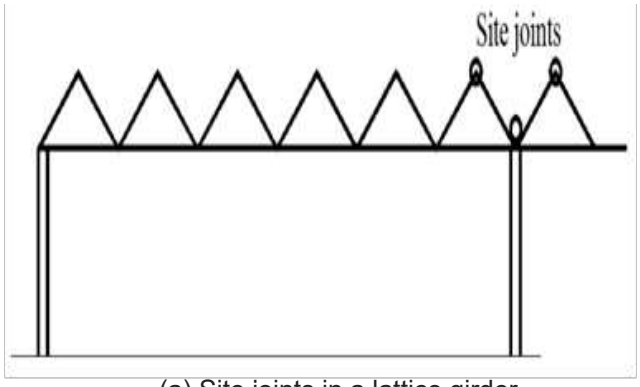
1.15 Steel Transportation and Erection

The site location will decide method of transport of various components. In addition, the cranes used and handling capacity will have to be considered to decide the number and location of site joints. In general it should be understood that it is preferable to weld in factory and bolt the joints at site. Economy in fabrication and erection could be achieved if components are made of similar size and weight.

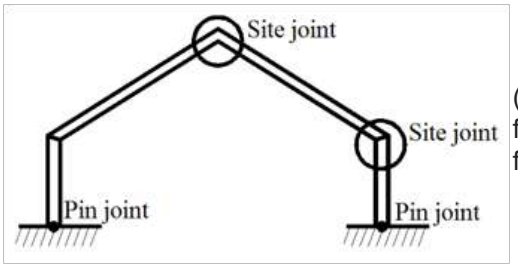
The site joints should be located near points of contra-flexure from design point of view. However, this may not always be possible. In such cases erection stresses have to be considered in design.

Fig.1.7 shows some typical cases of preferred location of site joints. The joints shown are for:

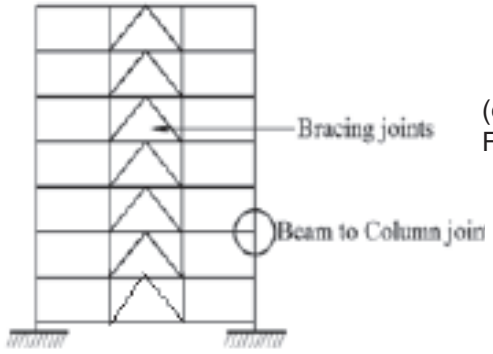
a) A typical long span roof
b) A portal frame
c) A multi story simple braced frame
d) A rigid jointed frame



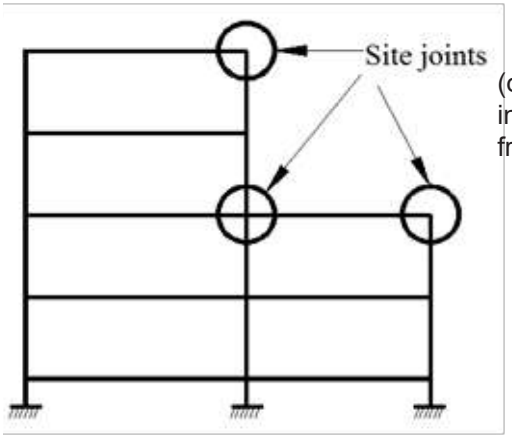
(a) Site joints in a lattice girder



(b) Site Joints for portal frame



(c) Simple Frame Joints



(d) Site joints in a rigid frame

Fig. 1.7 Typical cases of preferred location of site joints

திரு. S.D. கண்ணன்
Taxation Committee

RCM for purchase of input goods & services used in Construction of Project from Unregistered Person

There are lots of changes in the real estate projects in GST calculation W.E.F 01.04.2019. There is much doubt for the tax payable under RCM for shortfall of 80% in the input and input services. We give full analysis of the same for your knowledge and guidance.

Reverse Charge Mechanism (RCM) for purchase of input goods and services used in Construction of Project from the Unregistered Person

Notification No. 07/2019- Central Tax (Rate) dated 29th March 2019 effective from 1st April, 2019 and will be applicable on **"Promoters"** only for the **'specified supplies'**.

1. For Input and input Service for Construction of Project:

If **'Promoter'** (Recipient) purchased input goods and services used in the construction of project from the unregistered person, he is liable to pay GST under RCM on the supplies made under **Section 9(4)** of CGST Act, 2017. In respect of shortfall from the minimum value of goods or services or both required to be purchased for construction of project.

The condition in Notification No. 3/2019 dated 29th March 2019 specifies that 80% of inputs and input services should be procured from registered person.

"Shortfall from the minimum value of goods or services or both required to be purchased by a promoter" means, minimum *80% of input and input services or both required to be purchased from registered person and 20% can be purchased from unregistered person. Also, if this condition gets failed, promoted has to be pay RCM on the shortfall from 80% threshold.

Minimum value for the purpose is prescribed as 80% of the value of input & Input Services. However, value of input Services by way of grant of development rights, long term lease of land (against upfront payment in the form of premium, salami, development charges etc.) or FSI (including additional FSI) are excluded for calculating 80% procurement limit.

*** To understand:** Suppose a promoter purchased 60% of input and input services used in the construction of project from registered supplier. Despite he also purchased 15% Cement & 25% other input & input services from unregistered person, during financial year 2019-20.

Promoter purchased input and input services used in the construction of project from registered supplier	60%
Promoter purchased Cement used in the construction of project from unregistered person. *[He is liable to pay under RCM for total purchase of Cement from unregistered person, irrespective of % total purchase (see Notification No. 24/2019-Central Tax (Rate) dated 30.09.2019)]	15%
Other purchases from unregistered person	25%
Shortfall from the minimum value of goods or services or both required to be purchased by a promoter [Liable to pay under RCM on shortfall 80% – (60% + 15%)]	5%

- Please note that even if Promoter purchased input and input services used in the construction of project from registered supplier is 82% of total purchase, then promoter is still liable to pay on purchase of cement i.e. 15% under RCM (see Notification No. 24/2019-Central Tax (Rate) dated 30.09.2019).
- Please also note that inputs and input services on which tax is paid by promoter under reverse charge under Section 9(3) of CGST Act shall be deemed to have been procured from registered person.
- Please also note that input & input services from composition dealer shall be considered as purchase from registered person paying taxes under composition scheme.
- Please also note that the calculations of shortfalls are to be done financial year-wise. **The excess % of purchased from registered suppliers in a financial year cannot be adjusted in a next financial year.**

Caution:

- Inward supplies of exempted goods/services shall be included in the value of supplies from unregistered persons while calculating threshold of 80% – **FAQ (Part II- issued by CBI&C vide** Circular F No. 354/32/2019-Tax Research Unit dated 14-5-2019)
- Expenditure such as salaries, wages etc should not be considered in calculating the 80% threshold of input and input services because these are not supplies under GST Schedule III. **[FAQ(II)-Real-estate-sector-1405]**
- **GST Rate: The GST Rate is 18%** even if the actual rate of GST in case of some of inputs or input services is lower than 18% – **(Sr No. 452Q of Schedule III of Notification No. 08/2019-CT (R) dated 28-6-2017 as inserted w.e.f. 1-4-2019.)**

2. For Purchase of Cement: Notification No. 07/2019- Central Tax (Rate) dated 29th March 2019 prescribes that- **"Cement falling in chapter heading 2523 in the first schedule to the Customs Tariff Act, 1975 (51 of 1975)** which constitute the shortfall from the minimum value of goods or services or both required to be purchased by a promoter for construction of project, in a financial year (or part of the financial year till the date of issuance of completion certificate or first occupation, whichever is earlier) as prescribed in notification No. 11/ 2017- Central Tax (Rate), dated 28th June, 2017 at items (i), (ia), (ib), (ic) and (id) against serial number 3 in the Table, published in Gazette of India vide G.S.R. No. 690, dated 28th June, 2017, as amended"

In simple terms: As per Notification No. 24/2019-Central Tax (Rate) dated 30 September, 2019 RCM will be applicable on any amount of purchase of **'Cement'** by the **"promoter"** from an unregistered supplier for the construction of project during the financial year, irrespective of the condition of 20/80%, as in case of input goods and services i.e. on any purchase from unregistered person, RCM is applicable. At present GST Rate of Tax for cement is 28%. This tax will be paid under RCM in the same month of purchase.

3. For Purchase Capital goods:

As per Notification No. 07/2019- Central Tax (Rate), **"promoter"** is liable to pay GST under RCM for purchase of any capital goods from any unregistered supplier for construction of project during the financial year.

For the purpose of this notification i.e. Notification No. 07/2019- Central Tax (Rate) dated 29th March 2019, –

(i) the term "promoter" shall have the same meaning as assigned to it in clause (zk) of section 2 of the Real Estate (Regulation and Development) Act, 2016 (16 of 2016);

(ii) "project" shall mean a Real Estate Project (REP) or a Residential Real Estate Project (RREP);

(iii) the term "Real Estate Project (REP)" shall have the same meaning as assigned to it in in clause (zn) of section 2 of the Real Estate (Regulation and Development) Act, 2016 (16 of 2016);

(iv) "Residential Real Estate Project (RREP)" shall mean a REP in which the carpet area of the commercial apartments is not more than 15 per cent. of the total carpet area of all the apartments in the REP.

(v) the term "floor space index (FSI)" shall mean the ratio of a building's total floor area (gross floor area) to the size of the piece of land upon which it is built.

Compiled by Sakthi Services / KSDK and Company LLP

TAMBARAM CENTRE - INSTALLATION

STATUTORY AND TAX COMPLIANCE CALENDAR FOR MAY 2022

S.NO	PARTICULAR	RELEVANT FORM	DUE DATE (MAY, 2022)
	[A] THE INCOME TAX ACT 1961		
1	Due date for deposit of Tax deducted for the month of April, 2022	281	7th
2	Due date for issue of TDS Certificate for tax deducted 1) under section 194-IA in the month of Mar, 2022 2)under section 194-IB in the month of Mar, 2022 3) under section 194-M in the month of Mar, 2022	16B, 16C, 16D	15th
3	Due date for Deposit of TDS Payment for tax deducted 1) under section 194-IA in the month of April, 2022 2)under section 194-IB in the month of April, 2022 3) under section 194-M in the month of April, 2022	26QB, 26QC, 26QD	15th
4	Due date for furnishing of Form 24G by an office of the government where TDS/TCS for the month of April, 2022 has been paid without the production of a challan	24G	15th
5	Quarterly statement of TCS deposited for the quarter ending March 31, 2022.	27EQ	15th
6	**LLP** – Form 11 Annual Return for Previous Year for Previous Financial Year.	Form 11	30th
7	Quarterly statement of TDS deposited for the quarter ending March 31, 2022.	26Q	31st
	[B] GOODS & SERVICE TAX (GST) LAWS		
1	E-commerce operator registered under GST liable to TCS	GSTR – 8	10th
2	Form GSTR -7 (TDS Deductor)	GSTR – 7	10th
3	GST filing of returns by the registered person with an aggregate turnover of more than 1.50 crore For April 2022	GSTR – 1	11th
4	Due date for filing return by Input Service Distributors.	GSTR – 6	13th
5	Who opted for QRMP Scheme, IFF (Optional) for April 2022	IFF/GSTR – 1	13th
6	Tax payers having aggregate turnover more than Rs.5 Crore month of April 2022	GSTR – 3B	20th
7	Monthly Payment for April 2022 through Challan PMT06 for QRMP Filers.	PMT06	25th
	[C] COMPLIANCE FOR ESI AND PF PAYMENTS		
1	PF Payment for April, 2022	ECR	15th
2	ESIC Payment for April, 2022	ESI Challan	15th

❖ **ABOVE DUE DATES ARE APPLICABLE FOR TAMIL NADU STATE**

FOR DETAILS AND CLARIFICATION PLEASE MAIL US @ Sakthiservices2011@gmail.com
K S D K and Company LLP – Ph No. 9884071956

VARIOUS ASPECTS IN LINKING OF RIVERS AND LINKING PROJECTS UNDER PROPOSAL IN INDIA

DR. Colonel.
P Nallathambi
Ph.D (Structural Engg),
ME, MBA, FIE, FIV)

Introduction.

River linking is a project of linking two or more rivers by creating a network of manually created canals and providing water to the land areas that do not have river water access and reducing the flow of water to sea using this means. It is based on the assumptions that surplus water in some rivers can be diverted to deficit rivers by creating a network of canals to interconnect the rivers. India accounts for 2.4% of the world's surface area but supports 16.7% of the world's population. India possesses meagre 4% of the world's water resources, that too highly uncertain in time and space due to its monsoonal climate. Still, India possesses dismal per capita storage capacity compared to those countries where rainfall is more or less evenly distributed in time and space. The National River Linking Project (NRLP) is designed to ease water shortages in western and southern India while mitigating the impacts of recurrent floods in the eastern parts of the Ganga basin. The NRLP, if and when implemented, will be one of the biggest interbasin water transfer projects in the world. Many citizens of India feels since independence that rivers to be linked for better prosperity. Considering economical, environmental, social, political and technical aspects, implementing a river-linking project may be a highly tough and challenging task.

Reasons and Motivation of Interlinking.

Water despite lavish precipitation of 4,000 cubic km annually over India, 3,000 cubic km of the total is confined to the four months of monsoon, with the remaining 1,000 cubic km falling in the remaining eight months of the year and the precipitation is uneven. Parts of the country have abundant precipitation and others face extreme water deficits. The bulk of water during the monsoon washes into the oceans unused. Annual water resources of the country are measured in terms of run-off in the river systems, estimated by the National Commission as 1,953 cubic km. Interlinking river project is supposed to diminish water scarcity in western and peninsular India; help in irrigation and storage as a large part of Indian agriculture is rainfall dependent; mitigate droughts and floods; reduce diversity between the water surplus and water-scarce parts of India; will help the socio-economic development of people. The reasons for interlinking:

(a) Regional Rainfall Variation. The rainfall over the country is primarily orographic (relating to a mountain), associated with tropical depressions originating in the Arabian Sea and the Bay of Bengal. The summer monsoon accounts for more than 85% of the precipitation. Large parts of Haryana, Maharashtra, Andhra Pradesh, Rajasthan, Gujarat, Madhya Pradesh, Karnataka and Tamil Nadu are not only in deficit in rainfall but also subject to large variations, resulting in frequent droughts and causing immense hardship to the nation. Water availability even for drinking purposes becomes critical, particularly in the summer months as the rivers dry up and the groundwater recedes. Regional variations in the rainfall lead to a situation when some parts of the country do not have enough water even for raising a single crop. On the other hand, excess rainfall occurring in some parts of the country create havoc due to floods.

(b) Futuristic Demand of Irrigation. Irrigation using river water and groundwater has been the prime factor for raising the food grain production in our country from a mere 50 million tons in the 1950s to more than 200 million tons at present, leading us to attain self-sufficiency in food. Irrigated area has increased from 22 million hectares to 95 million hectares during this period. At a present estimate, the ultimate irrigation potential of the country is stated as 113 million Ha.

(c) Increasing Population and Food Demand. The population of India, which is around 1300 million at present, is expected to increase to 1800 million in the year 2050 and that would require about 450 million tons of food grains. For meeting this requirement, it would be necessary to increase irrigation potential to 160 million hectares for all crops by the year 2050.

(d) To Control Floods and Droughts. Floods are a recurring feature, particularly in the Brahmaputra and Ganga rivers, in which almost 60 % of the river flows of our country occur. Flood damages, which were Rs. 52 crores in 1953, have gone up to Rs. 5,846 crores in 1998 with an annual average being Rs. 1,343 crores affecting the States of Assam, Bihar, West Bengal and Uttar Pradesh along with untold human sufferings. On the other hand, large areas in the States of Rajasthan, Gujarat, Andhra Pradesh, Karnataka and Tamil Nadu face recurring droughts. As much as 85% of drought-prone area falls in these States.

Highlights of Probable Benefits due to Inter Linking of Rivers in India.

(a) Irrigation. By linking rivers vast amounts of land areas that do not have otherwise irrigated and unusable for agriculture become fertile.

(b) Flood Prevention. By creating a network of rivers flood and drought problems can be greatly avoided by channelling excess water to areas that are not experiencing a flood or are dry. This works similar to the canal system in the Netherlands to channel excess water from the sea.

(c) Generation of Electricity. With new canals built, the

feasibility of new dams to generate hydroelectric power becomes a possibility.

(d) Navigation. A newly created network of canals opens up new routes and ways and routes of water navigation, which is generally more efficient and cheaper compared to road transport.

(e) Higher GDP Growth. By interlinking rivers, there will be a boost and increased employment in the agricultural sector, power, transportation; construction etc. Interlinking can increase the GDP by 5 to 6 %.

(f) Business Opportunities. It is expected to generate large scale business opportunities in the manufacture of mechanical equipment, earthmovers, stone crushers, power shovels, other transportation vehicles, etc. In addition, this project would also require large scale manufacturing of construction materials such as an estimated 56 million tons of cement and 2 million tons of steel etc.

(g) Drinking Water. The majority of our population will get drinking water; Special emphasis is that all the cities connected by the Golden quadrilateral project will get drinking water.

(h) Revenue. The government is expecting revenues from benefits of navigating through waters, increased tourism, joint ventures, private initiatives and cess on waters.

History of Rivers Interlinking. During the British raj, an Engineer Sir Arthur Cotton had sought to link the Ganga and the Cauvery to improve connectivity for navigation purposes. But due to the increased railway connectivity among the areas, the idea was shelved. (a) 1972- Dr K.L. Rao, a dams designer and former irrigation minister had proposed "National Water Grid" and Ganga- Cauvery link. (b) 1974- "Garland canal" proposal by captain Dastur. (c) 1980- Ministry of water resources frames the National Perspective Plan(NPP). (d) 1982- The National Water Development Agency (NWDA) was formed as an autonomous body entrusted with the task to carry out the water balance and feasibility studies of the river linking program. (e) 1999- A National Commission formed for Integrated Water Resources. Development plan (NCIWRDP) set up to review. (f) Aug 2002- President Abdul Kalam mentions the need for river linking in his Independence Day speech. (g) Oct 2002- Supreme court recommends that the government formulate a plan to link the major Indian rivers by 2012. (h) Dec 2002- Prime Minister Atal Bihari Vajpayee had formed a task force under the chairmanship of Suresh Prabhu and it was estimated that this project would cost about 56 billion crore rupees. (i) Feb 2012- Supreme Court, gave its go-ahead to the interlinking of rivers and asked the government to ensure that the project is implemented expeditiously. (j) 2016- The deadline was revised. (k) Dec 2021- The decision to clear the Rs 44,605 crore project for interlinking Ken-Betwa projects to complete in 8 years comes barely two months ahead of assembly elections in Uttar Pradesh. Announcing the cabinet decision, Union Information and Broadcasting Minister Anurag Thakur said the river linking project has been deemed a “National Project”.

Issues Caused by Interlinking and its Concerns. Interlinking is opposed due to: (a) Huge capital requirement; (b) Project may take 50 years to complete; (c) Can cause seismic hazards in Himalaya; (d) Execution is difficult as 21/30 links are dependent on other links; (e) Displacement of tribal and poor; (f) Interstate water disputes (political); (g) Loss of forest and biodiversity. For the completion of the Interlinking River project, many big dams, canals, and reservoirs will have to be constructed due to which the surrounding land will become marshy and will not be suitable for agriculture. This can also reduce the production of food grains. The various issues are: (a) Ecological issues. The major concern is the argument that rivers change their course in 70-100 years and once they are linked, future change, of course, can create huge practical problems for the project. (b) Aqua life. Several leading environmentalists believe that the project could be an ecological disaster. There would be a decrease in downstream flows resulting in a reduction of freshwater inflows into the seas seriously jeopardizing aquatic life. (c) Deforestation. The creation of canals would need large areas of land resulting in large scale deforestation in a certain area. (d) Areas getting submerged. The possibility of new dams comes with the threat that habitable or reserved land getting submerged underwater. (e) Displacement of people. As large strips of land might have to be converted to canals, a considerable population living in these areas must need to be rehabilitated to new areas. (f) Technical feasibility. The slope, altitude and other topographical aspects have to be considered. (e.g. for Ganga, Patna is a divisible surplus but raising water to the Vindhya chain of 2860 ft requires a high enormous amount of power.

Problems may Cause by River Liking. Unfortunately, the centre has made little use of the powers vested in it vide Entry 56 of List I. States have exclusive jurisdiction over waters that are located within their territories, including inter-state rivers and river valleys. It is arguably this status of water in the constitution that constrains the highest in the executive and the judiciary, despite their pronouncements on and commitment to resolving the problem. It has also stopped the Centre from establishing allocation rules and clearly defined water rights among states that have unending disputes over the sharing of inter-state water resources. The latest example is the second Krishna Water Disputes Tribunal, which has turned into a warzone, with a battery of lawyers, technical staff and irrigation department officials from

Maharashtra, Karnataka and Andhra Pradesh fighting to win the maximum allocation of the Krishna river for their respective state. Solutions. We need to see if a change in its constitutional status is required. We also need to enhance our water-storage capacity, as we suffer the most from the vagaries of the monsoon. A river-linking project, alongside a chain of water-conservation projects, would offer a solution.

Alternatives to Indian River Linking. The cost of this project in 2001 was Rs 5,60,000 Crore but in reality, there is a possibility that it will be more. Taking the water of Ganga above the Vindhya towards Cauvery, will cost a lot more and for this, large diesel pumps will be used, more than 4.5 lakhs people will be almost displaced, 79,292 forests will also be submerged in water. It can also be understood that without joining rivers, the problem of flood and drought can be solved. The other alternatives are:

(a) Rainwater harvesting and conservation of water resources: Changes in topography, soil system and runoff flow pattern in a changing climatic environment is considered. Not only stored rainwater but soil erosion is also prevented.

(b) Recharging groundwater reservoir: Skills have to be developed for arresting rainwater where it falls and allowing it to recharge these groundwater reservoirs.

(c) Large scale utilization of groundwater in deltas: practically feasible and initiatives for bore well development and irrigation needed with responsibility lying.

(d) Community participation: Approaches of reducing water consumption by the affluent in the cities and reducing the wastage of water by the farmers in there can be attempted.

(e) Maintaining existing irrigation infrastructure. The irrigation efficiencies are notoriously low at around 35% at best. As a midterm review of the 9th Plan made it clear, even a 10% increase in irrigation efficiency could lead to additional irrigation potential of 14 Mega Ha.

(f) Virtual water trade. The virtual water trade concept suggests that water-rich countries should produce and export water-intensive commodities to water-scarce countries, thereby enabling the latter to divert their precious water resources to alternative, higher-productivity uses. Analysis by Verma shows that the amount of virtual water traded between states is more or less equivalent to the water transfers of 178 Bm3 proposed in the NRLP.

National River Linking Project (NRLP) in India.

NRLP is designed to ease water shortages in western and southern India while mitigating the impacts of recurrent floods in the eastern parts of the Ganga basin. The NRLP, if and when implemented, will be one of the biggest inter-basin water transfer projects in the world. The goal is to support South Asia's quest for food livelihoods and water security and capitalize on the uncommon opportunity created by the NRLP. The Project that the Supreme Court and the President have enjoined the government of India to implement may well be the largest infrastructure project ever undertaken in the world, to transfer water from the surplus river basins to ease the water shortages in western and southern India while mitigating the impacts of recurrent floods in Eastern India. It will build 30 links and some 3000 storage to connect 37 Himalayan and Peninsular rivers to form a gigantic South Asian water grid. The canals planned to be 50 to 100 meters wide and more than 6 meters deep, would facilitate navigation.

Objectives. Equitable distribution of the available water resources within a nation or a region; Increased Economic Efficiency; Self-sufficiency in basic water-related outputs such as food and hydro energy; Providing livelihood and employment opportunities in situ, in various parts of the nation so that migration of population, seasonal or permanent, short distance or long distance, in water distress situations, a distress large scale migration of population is avoided through a balanced regional economic development. The purpose is to promote a balanced, analytical and informed national discourse on India's Water Future 2050 and approaches to shaping it, including through the River Linking project.

Road Map of NRLP: Building 30 links, 3000 small and large reservoirs, 12500 km of canals to link 36 Himalayan and Peninsular rivers to effect 178 km³ of inter-basin water transport 35 million ha of the net irrigated area; 35 GW of hydro-capacity; Navigation and flood control benefits. Proposed- 2016; Most Likely=2050. Cost = Rs 560,000 cr. at 2001 prices; 1- 1.5% of India's GDP for the next three decades.

Press Information Bureau Release. The Government has said that the National Water Development Agency (NWDA) under the Ministry of Water Resources (MoWR) has identified 30 inter-state River links (16 under Peninsular Component and 14 under Himalayan

Himalayan and Peninsular Component of the ILR Project

Component) for preparation of Feasibility Reports (FRs). Out of these, FRs of 14 links under the Peninsular Component and two links (Indian portion) under the Himalayan Component have been completed. The interlinking of rivers in India consists of two parts, a Northern Himalayan River Development Component and a Southern Peninsular River Development Component.

Himalayan Development. National Commission about ILR-1: The northern component would consist of a series of dams built along the Ganga and Brahmaputra rivers in India, Nepal and Bhutan for storage. Canals would be built to transfer surplus water from the eastern tributaries of the Ganga to the west. The Brahmaputra and its tributaries would be linked with the Ganga and the Ganga with the Mahanadi river. This part of the project would provide additional irrigation for about 220,000 square kilometres and generate about 30 gigawatts of electricity. It could also provide excess water for the controversial Farakka Barrage which could be used to flush out the silt at the port of Kolkata.

Himalayan Component: It is proposing the construction of 14 Canals. The project intends to link the Brahmaputra and its tributaries with the Ganga and the Ganga with the Mahanadi River to transfer surplus water from east to west. The scheme envisages flood control in the Ganga and Brahmaputra basins and a reduction in water deficits for many states Kosi- Mechi; Kosi- Ghagra; Gandak- Ganga; Ghagra- Yamuna; Sarda- Yamuna; the Yamuna- Rajasthan; Rajasthan- Sabarmati; Chunar- Sone Barrage; Sone Dam- Southern Tributaries of Ganga; Brahmputra- Ganga; Brahmputra- Ganga; Farakka- Sunderbans; Ganga- Damodar- Subernrekha; Subernrekha- Mahanadi, all are highlighted in the above figure.

Peninsular Development. National Commission about ILR-2: First, the Mahanadi, Godavari. Krishna and Kaveri rivers would all be linked by canals. Extra water storage dams would be built along the course of these rivers. The purpose of this would be to transfer surplus water from the Mahanadi and Godavari rivers to the south of India. Second, those rivers that flow west to the north of Mumbai and the south of Tapi would be linked. The water would be used by the urban areas of Bombay and also to provide irrigation in the coastal areas of Maharashtra. Third, the Ken and Chambal rivers would be linked to provide better water facilities for Madhya Pradesh and Uttar Pradesh. Finally, several west-flowing rivers along the Western Ghats simply discharge into the Arabian Sea. The Peninsular part of the project would provide additional irrigation to 130,000 square kilometres and generate an additional 4 gigwatts of power.

Peninsular Component: Proposed Construction of 16 Canals: River interlinks are envisaged to benefit the states of Orissa, Karnataka, Tamil Nadu, Gujarat, Pondicherry, and Maharashtra. The linkage of the Mahanadi and Godavari rivers is proposed to feed the Krishna, Pennar, Cauvery, and Vaigai rivers. Transfer of water from Godavari and Krishna entails pumping 1,200 cusecs of water over a crest of about 116 meters. Interlinking the Ken with the Betwa, Parbati, Kalisindh, and Chambal rivers is proposed to benefit Madhya Pradesh and Rajasthan. Mahanadi (Manibhadra)- Godavari (d/s); Godavari (Inchampalli) -Krishna (Nagarjunsagar); Godavari (Inchampalli Low Dam)- Krishna (Nagarjunsagar Tail Pond); Godavari (Polavaram)- Krishna (Vijaywada); Krishna (Almatti)- Pennar; Krishna (Srisilam)- Pennar; Krishna (Nagarjunsagar) - Pennar (Somasila); Pennar (Somasila)- Cauvery (Grand Anicut); Cauvery (Kattalai) - Vaigai - Gundar; Ken- Betwa; Parbati - Kalisindh - Chambal; Par- Tapi- Narmada; Damanganga - Pinjal; Bedti- Varda; Netravati- Hemavati; Pamba- Achankovil- Vaippar.

Intra-State Inter-Linking of Rivers. India approved and commissioned NDWA in June 2005 to identify and complete feasibility studies of intra-State projects that would inter-link rivers within that state). The States Government of Bihar proposed 6 inter-linking projects, Maharashtra 20 projects, Gujarat 1 project, Orissa 3 projects, Rajasthan 2 projects, Jharkhand 3 projects and Tamil Nadu proposed 1 inter-linking proposal between rivers inside their respective territories. Since 2005, NDWA completed feasibility studies on the projects, found 1 project infeasible, 20 projects as feasible, 1 project was withdrawn by the Government of Maharashtra, and others are still under study.

Current Status: A Group on Intra-State River links has been constituted by MoWR, RD & GR on 12 Mar 2015. The Group has reviewed all relevant issues on Intra - State River Links including the definition of such links, consider and suggest the funding of intrastate river link projects. The Group has held various meetings and submitted its report on 28 May 2015 to the Ministry of Water Resource, RD & GR.

(a) Ken - Betwa Link Project. The various clearances for Ken - Betwa link project got clearance of the Rs 44,605 crore project to complete in 8 years. The Government will start implementing this National Project as a model link project of the ILR programme.

(b) Damanganga - Pinjal Link Project. The DPR of Damanganga - Pinjal link was completed in March 2014 and submitted to the Governments of Maharashtra and Gujarat. Govt. of Maharashtra has submitted the Detailed Project Report of Damanganga Pinjal link project to the Central Water Commission during January 2015 for appraisal.

(c) Mahanadi Godavari Link Project. Mahanadi Godavari link is the first and critical link of nine link systems of Maadi Godavari- Krishna - Pennar Cauvery-

Vaigai - Gundar under Peninsular Component of NPP. The Government of Odisha was not agreeable for the Mahanadi (Manibhadra) Godavari (Dowlaiswaram) link due to the large submergence involved in the Manibhadra dam proposed under the link project. Based on the suggestions of WRD, Govt. of Odisha, NWDA has proposed a revised preliminary proposal of the Mahanadi -Godavari link project with reduced submergence. A presentation on the revised proposal of the Mahanadi-Godavari link project has been made to the Hon'ble Chief Minister, Govt. of Odisha on 29 May 2015 by the senior officers of MoWR, RD & GR.

(d) Krishna-Godavari link project. The interlinking of the Godavari and the Krishna has been on the anvil for almost five decades and with the commissioning of the Pattiseema scheme, four major rivers in Andhra Pradesh are now connected: Godavari-Krishna, Krishna-Pennar and Pennar-Tungabhadra. Thousands of farmers in Krishna, Guntur, Prakasam, Kurnool, Kadapa, Anantapur and Chittoor districts will benefit from the Godavari-Krishna linkage. About 17 lakh acres including 13 lakhs in the Krishna delta will get assured irrigation water for two crops round the year. Thousands of villages en route will get drinking water supplies.

Eminent Personalities on ILR. Bharat Singh. "There seems to be no convincing argument or vital national interest which can justify undertaking this mammoth undertaking". Jairam Ramesh, Member of Parliament said in a short duration debate in parliament on July 26, 2005, “To imagine that we are going to be able to solve our annual problems of flood and drought by a massive programme of inter-linking of rivers, in my view, there would be no greater calamity than massive inter-linking of rivers.”

Challenges For River Linking Project. River Interlinking is undoubtedly the key solution to get rid of flood and drought problems. Though this project challenges in certain aspects are: (**a) Economic Aspect.** The project is said to be economically feasible if the cost-benefit ratio is higher. Currently, the total cost of the project is around 5.6 lakh crore which will surely increase till the completion of the project. In the 10th Five year plan, no funds have been kept for the river interlinking project so the project needs to be implemented on a BOT basis or with the participation of the private sector. **(b) Political Aspect.** Under the Indian constitution as per Article No. 246 clause 7, water sharing and storage is the state subject, the central government cannot make any law in this context. No state wants to give its water to other states and it has become a matter of dispute due to lack of cooperation between state governments on one side and disobeying the directives of the Supreme Court by political power. For an instance, Cauvery leads to riots in 1991 when Karnataka was unwilling to share water with Tamil Nadu by disobeying Supreme Court. **(c) Social Aspect.** This project is expected to displace 5,80,000 people across the country. Displacement leads to very severe socio-economic, cultural and environmental impacts. Rehabilitation hampers the productive assets and productive skills due to which psychological stress takes place and the potential for mutual help is diminished. For rehabilitation of affected people government has to allocate funds e.g. In Ken-Betwa link 334Cr are allocated for rehabilitation of around 7500 people. **(d) Environmental Aspect.** Many Environmentalist claims that the Interlinking of the river is one of the disastrous projects to the ecology. Scheme comprises 36 major dams and almost 15000km long canal network due to forest area can submerge which may harm to the wildlife and natural flora fauna and livelihood of the tribal population at risk. For an instance in the Ken-Betwa link total of 5258Ha of forest land will be submerged out of which 4141Ha is part of the Panna Tiger Reserve which may restrict the movement of tigers which leads to harm to the Tiger conservation policy. **(e) Land Acquisition.** For inter-basin, water transfer land is required for a 200 m wide canal with a total length of 15000km so excavated earth needs to be dumped on both sides or single sides of the canal and the land to be acquired will be a minimum of 300 m. For this Land Acquisition bill has to get passed in both the houses of parliament. Currently, it would take decades to acquire that much huge land for river-linking network only besides this land require for rehabilitation should also be taken into consideration. **(f) Other Challenges.** As many opponents believe that instead of river linking, priority should be given to control the pollution of the river as the study says 47% of Indian are only sewage carriers; Lack of Technical verification to check the feasibility of the project; Non-involvement of civil society; Social Acceptance and cooperation; Advanced Technology; Gaining the confidence of neighbouring countries.

Conclusion.

Considering the pragmatic view of all the issues raised it can be concluded that implementation of this ambitious scheme is not possible in foreseeable future. Hence it can be a better option to concentrate on the local resources and think upon the alternatives available. The river link network envisages knitting together ten major rivers across the nation, unheard of in human history. The project is likely to alter the geography of the country, impose ecological risks, and also inadvertently distribute pollutant loads across the rivers, spreading local contamination problems and raising questions of accountability for sources of pollution.

"River interlinking must be evaluated based on scientific, environmental merit and long-term sustainability, should not be based on emotions and immediate needs".

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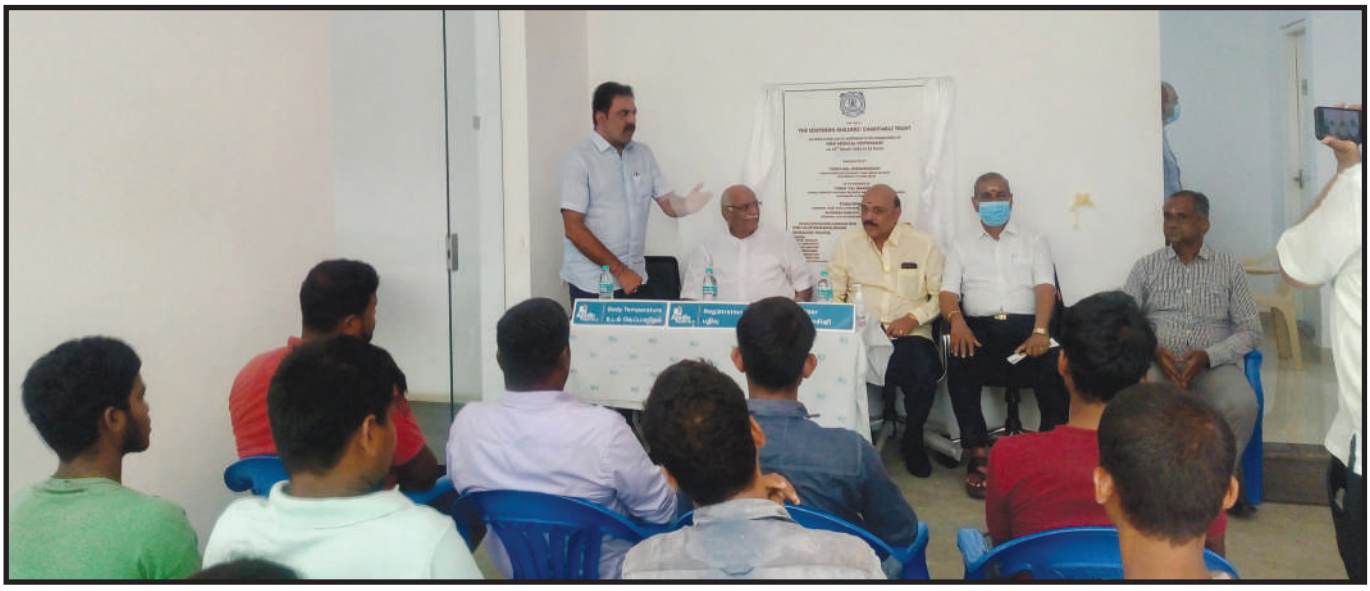

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கட்டுமான ஆராய்ச்சி மற்றும் மேம்பாட்டு சேவை சங்கம் (SOCIETY) மூலம் வழங்கப்பட்ட இலவச திறன் மேம்பாட்டு பயிற்சி முகாம்

வேகமாக மாறிவரும் உலக பொருளாதாரம் தொழில்நுட்பக் கல்வியையே அனைவரும் தேர்ந்தெடுக்க வேண்டும் என்ற நிலைக்கு தள்ளி உள்ளது. 20ம் நூற்றாண்டில் திறன் அடிப்படையில் இருந்த தொழில் நுட்பமானது 21ம் நூற்றாண்டில் அறிவு சார்ந்த தொழில் நுட்ப நிலைக்கு பரிணாமம் அடைந்துள்ளது. ஒவ்வொருவருமே தனது வாழ்க்கையில் வளர்ச்சி பெற வாய்ப்புகளை தேடி அலைகின்றனர். அதன் மூலம் சமுதாயத்திற்கு அர்த்தமுள்ள பங்களிப்பை வழங்க வேண்டும் என்பதனால் தொழிலை தேர்ந்தெடுப்பது என்பது ஒரு முக்கிய அங்கமாகிறது. இதில் ITI–யில் பயிலும் மாணவர்களுக்கு சிறந்த வாய்ப்புக்களை உருவாக்குவதன் முலம் அவர்களை மேம்பாடு அடையச்செய்ய வேண்டும் என்ற நோக்கத்தில் கட்டுமான ஆராய்ச்சி மற்றும் மேம்பாட்டு சேவை சங்கம் ITI மாணவர்களுக்கு திறன் பயிற்சி மற்றும் நிகழ்நேரப் பயிற்சி வழங்க முடிவு செய்தது. இப்பயிற்சியினை மூன்று தொகுதிகளாக வழங்க முடிவு செய்யப்பட்டு முதல் தொகுதி வெற்றிகரமாக முடிக்கப்பட்டுள்ளது.

இதன் நலனை விரும்பிய மரியாதைக்குரிய தென்னக மய்ய உறுப்பினர்களின் பொருள் உதவியோடு இலவசமாக அம்பத்தூர் மகளிர் ITI மாணவிகளுக்கு CADD LABS நிறுவனத்தார் முலமாக பயிற்சி வழங்கப்பட்டுள்ளது. முதலில் ஒவ்வொரு நாளும் இரண்டு மணி நேரமே பயிற்சி அளிக்க திட்டமிடப்பட்டது. மாணாக்கர்களின் வேண்டுதலுக்கிணங்க ITI வேலைவாய்ப்பு அதிகாரிகளோடு பயிற்சி அளிக்கும் CADD LABS நிறுவனத்தார் ஆகியோரோடு கலந்துரையாடியதன் அடிப் படையிலும் மாணாக்கர்களின் ஆர்வத்தின் அடிப்படையிலும் பயிற்சி நேரம் 8 மணி நேரமாக உயர்த்தப்பட்டது.

பயிற்சி இரண்டு பிரிவுகளாக அதாவது தொழில்நுட்ப பயிற்சி மற்றும் மென் பொருள் பயிற்சி என இரு பிரிவுகளாக வகைப்படுத்தி ஒவ்வொரு மாணாக்கர் மீதும் தனிப்பட்ட கவனம் செலுத்தி பயிற்சி அளிக்கப்பட்டு

முதல் தொகுதி 23.04.2022 அன்று நிறைவு பெற்றது. பயிற்சி பெற்ற மாணவர்கள் தங்களுக்கு அளிக்கப்பட்ட பயிற்சியில் மனப்பூர்வமான திருப்தி அடைந்தனர் என்பதை அறிய முடிந்தது. இப்பயிற்சியின் போது தென்னக மய்ய முன்னாள் தலைவர் திரு. S. இராமப்பிரபு அவர்கள், மாநிலப் பொருளாளர் திரு. T.V. சந்திரசேகர் அவர்கள், தென்னக மய்யப் பொருளாளர் திரு. P.K.P. நாராயணமூர்த்தி மற்றும் Ultra Tech நிறுவன தொழில்நுட்ப வல்லுநர் திரு.V.S.ரியாஸ் அலியார் ஆகியோர் கலந்து கொண்டு தங்களது தொழில் நுட்ப ஆலோசனைகளை வழங்கி பயிற்சியை மேம்படுத்தினர். பயிற்சி பெற்ற மாணாக்கர்களுக்கு பயிற்சி முடித்ததற்கான சான்றிதழ் வழங்கப்படவுள்ளது.

இப்பயிற்சியில் தொழில்நுட்ப வரைவாளர் பயிற்சியில் கலந்து கொண்ட ஒவ்வொருவரும் தங்களது திறமையின் அடிப்படையில் இந்தியா மட்டுமல்லாது மற்ற வெளி நாடுகளிலும் வேலை வாய்ப்பினை பெற தகுதியானவர்களாக தேர்ச்சிபெற்றுள்ளனர். இவ்வாறு சேவை சங்கத்தின் முலமாக தொழில்நுட்ப ப்பயிற்சி அளிப்பதானது அகில இந்திய அளவில் தென்னக மய்யத்திற்கு ஒரு மைல் கல்லாக அமைகிறது.

இத்தொழில் நுட்ப பயிற்சிக்கு அறிவுரை களையும், ஆலோசனைகளையும் வழங்கி வழி நடத்திய அகில இந்திய முன்னாள் தலைவர் பீஷ்மா திரு. R. இராதாகிருஷ்ணன் அவர்களுக்கும், காப்பாளர், அகில இந்திய முன்னாள் தலைவருமான திரு. Mu. மோகன் அவர்களுக்கும் நன்றியைத் தெரிவித்துக்கொள்கிறேன்.

தென்னக மய்யத்தலைவர், முன்னாள் காப்பாளர் திரு. K. இராமானுஜம் மற்றும் சொசைட்டியின் நிர்வாக உறுப்பினர்கள், செயற்குப உறுப்பினர்கள், மற்றும் ஆலோசனை களையும், ஆதரவுகளையும் நல்கிய அனைத்து நல் உள்ளங்களுக்கும் நன்றியைத் தெரிவித்துக் கொள்கிறேன்.

பயிற்சி அளித்த CADD LABS நிறுவனத்தினருக்கும் பயிற்சி கொடுக்க வாய்ப்பினை நல்கிய மிஜிமி தொழில் கல்வி மகளிர் அம்பத்தூர் முதல்வர் அவர்களுக்கும் மனமார்ந்த நன்றியைத் தெரிவித்துக் கொள்கிறேன். முதல் தொகுதியில் 13 மாணவிகளுக்கு பயிற்சி அளிக்கப்பட்டு பயனடைந்தனர்.

இதுபோலவே திட்டமிடப்பட்டுள்ள அடுத்த இரு தொகுதி தொழில்நுட்ப பயிற்சிக்கும் ஆதரவையும், நிதியுதவியும் வழங்க வேண்டுமென இத்தருணத்தில் அனைவரையும் வேண்டி கேட்டுக் கொள்கிறேன்.

அன்புடன்

K. அண்ணாமலை

தலைவர்

SOUTHERN CENTRE ACTIVITIES

01.04.2022

தென்னக மய்யத்தின் 2022-23 ஆண்டிற்கான புதிய தலைவர் மற்றும் மய்ய நிர்வாகிகளை மய்ய அலுவலகத்தில் பீஷ்மா திரு. R. இராதாகிருட்டிணன் அவர்கள் மற்றும் அகில இந்திய முன்னாள் தலைவர் திரு. Mu. மோகன் அவர்கள் பதவியில் அமர்த்தினர். இந்த நிகழ்வில் நம் மய்ய முன்னாள் தலைவர்கள், மற்றும் செயற்குழு பொதுக்குழு உறுப்பினர்கள் 40க்கு மேற்பட்டோர் கலந்து கொண்டு விழாவினை சிறப்பித்தனர்.

அன்று நண்பகல் 12.00 மணி அளவில் மாநில அலுவலகத்தில் மாநில தலைவர் மற்றும் நிர்வாகிகள் பதவியில் அமர்த்தும் விழாவிலும் நமது பீஷ்மா R. இராதாகிருட்டிணன், மூத்த உறுப்பினர்கள் மற்றும் ஏனைய உறுப்பினர்களும் கலந்து கொண்டு சிறப்பித்தனர்.

04.04.2022

மய்யத்தலைவர் திரு. R.R. ஸ்ரீதர் அவர்களும், துணைத்தலைவர் திரு. A.N. பாலாஜி அவர்களும் தமிழக இந்து சமயம் மற்றும் அறநிலையத்துறை அமைச்சர் திரு P.K. சேகர் பாபு அவர்களை நேரில் சந்தித்து பதவியேற்பு விழாவிற்கு தலைமை விருந்தினராக கலந்து கொள்ளுமாறு அழைப்பு விடுத்தனர். அமைச்சர் அவர்களும் கலந்து கொள்வதாக தெரிவித்துள்ளார்.

08.04.2022

தமிழக பொதுப்பணித்துறை மற்றும் நெடுஞ்சாலைத்துறை சம்மந்தமாக 2022-23ம் ஆண்டிற்கான Schedule of Rates சம்மந்தமான கூட்டம் நடைபெற்றது. அதில் முன்னாள் மாநிலத்தலைவர் திரு. R. சிவக்குமார் அவர்களும், தென் மண்டல செயலாளர் திரு. L. வெங்கடேசன் அவர்களும் கலந்து கொண்டனர்.

11.04.2022

பெருநகர சென்னை மாநகராட்சி ஆணையர் அவர்களை உடனடி முன்னாள் மாநிலத்தலைவர் திரு. R. சிவக்குமார், மய்யத்துணைத்தலைவர் திரு. A.N. பாலாஜி மற்றும் பொதுக்குழு உறுப்பினர் திரு. R. நிம்ரோட் ஆகியோர் சந்தித்து நமது கோரிக்கைகள் குறித்த மனுவினை அளித்தனர்.

12.04.2022

நமது அலுவலக கட்டிடத்தில் அமைக்கப்பட்டுள்ள இலவச மருத்துவ சிகிச்சை முகாமினை அறக்கட்டளை தலைவர் பீஷ்மா திரு. R. இராதாகிருட்டிணன் அவர்கள் துவக்கி வைக்க முகாம் சிறப்பாக நடைபெற்றது. இதில் அகில இந்திய காப்பாளர் திரு. Mu. மோகன் அவர்கள் முன்னாள் அகில இந்தியத் துணைத் தலைவர் திரு. S. அய்யநாதன் அவர்கள், மய்யத்தலைவர் திரு. R.R. ஸ்ரீதர் அவர்கள், மய்ய நிர்வாகிகள், உடனடி முன்னாள் மய்யத்தலைவர் திரு. L. சாந்தகுமார் மற்றும் செயற்குழு பொதுக்குழு உறுப்பினர்கள் கலந்து கொண்டனர். திரு. A. சத்தியநாராயணா மற்றும் திரு. K. கோபிநாதன் ஆகியோர் முன்னின்று ஏற்பாடு செய்த இம்முகாமில் சுமார் 110 தொழிலாளர்கள் மருத்துவ பரிசோதனை செய்து கொண்டனர். இம்முகாமில் அப்பல்லோ மருத்துவமனை, மற்றும் சவிதா பல்மருத்துவ கல்லூரி மருத்துவமனையிலிருந்து வந்திருந்த மருத்துவர்கள் மருத்துவ பரிசோதனை செய்து மருந்துகள் பரிந்துரைத்தபடி இலவச மருத்துகள் விநியோகிக்கப்பட்டன.

20.04.2022

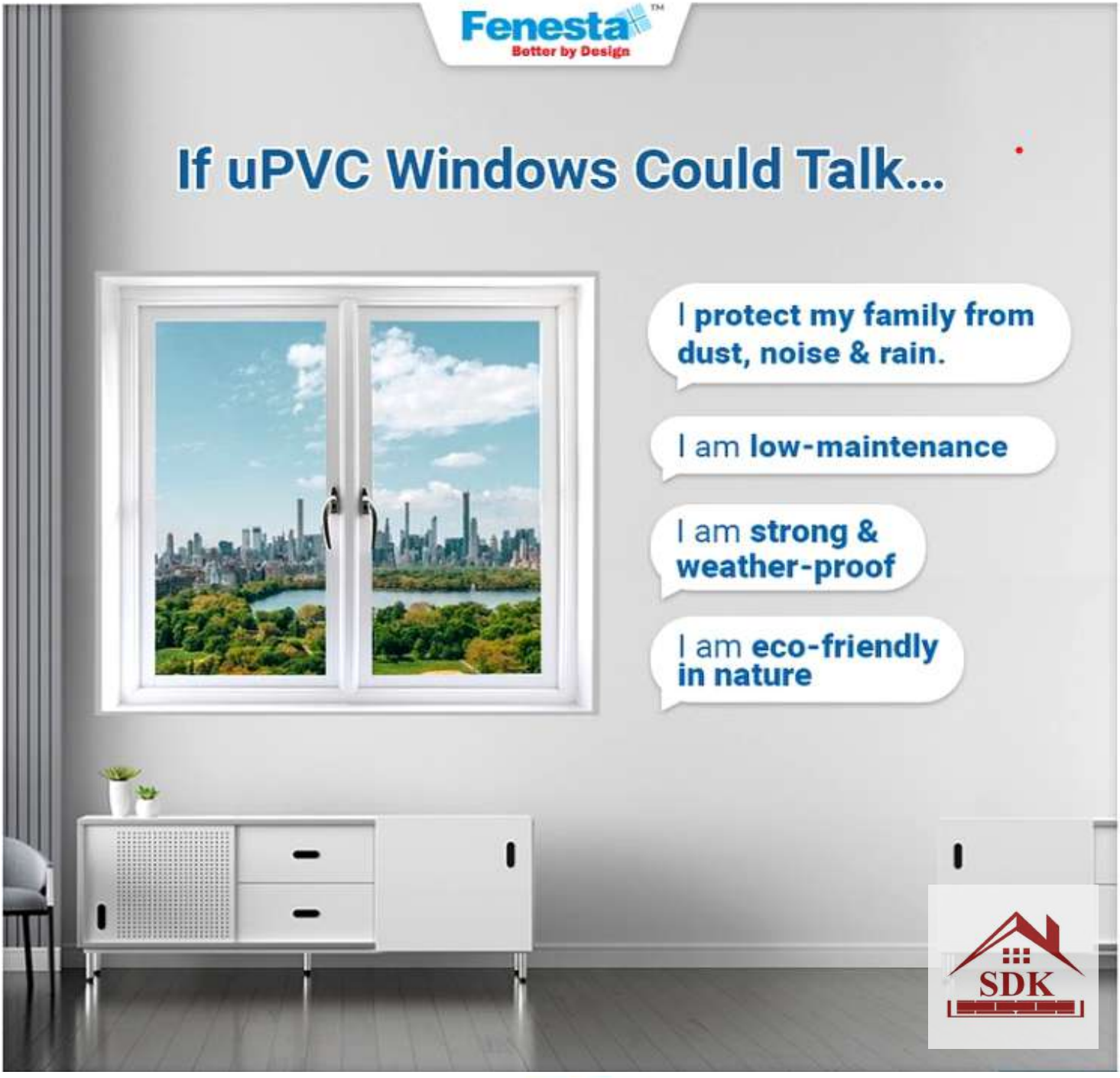
2022-23ம் ஆண்டிற்கான முதலாவது செயற்குழு மற்றும் பொதுக்குழு கூட்டம் Hotel Rain Tree-ல் திரு. M. ஜெய்சங்கர், திரு. T.M.S. சிவக்குமார், திரு. J. நிர்மல்சந்த், திரு. B. தனசேகரன், திரு. M. கண்ணன் ஆகியோரின் உபசரிப்பில் நடைபெற்றது.

27.04.2022

மய்யத்தலைவர் மற்றும் நிர்வாகிகளுக்கான பதவி ஏற்பு நிகழ்ச்சி 27.04.2022 அன்று Hotel Feathers A Radha–ல் மிகச் சிறப்பாக நடைபெற்றது. நமது அகில இந்தியத்தலைவர் திரு. நிமேஷ் டி பட்டேல் அவர்கள் தலைமை விருந்தினராக கலந்து கொண்டு சிறப்பித்தார். இந்நிகழ்ச்சியில் அகில இந்திய துணைத்தலைவர், தென் மண்டலம் திரு. G. வேதானந்த், அகில இந்திய காப்பாளர் திரு. Mu. மோகன், தமிழ்நாடு, புதுச்சேரி மற்றும் அந்தமான் மாநிலத்தலைவர் திரு. K. ஜெகநாதன் ஆகியோர் கவுரவிக்கப்பட்டனர். புதிய தலைவர் உள்ளிட்ட நிர்வாகிகள், செயற்குழு மற்றும் பொதுக்குழு உறுப்பினர்களை அகில இந்திய முன்னாள் தலைவர் பீஷ்மா திரு. R. இராதாகிருஷ்ணன் அவர்கள் பதவியில் அமர்த்தினார். பிரபல வழக்குரைஞர் திரு. சஞ்சய் ராமசாமி அவர்கள் கலந்து கொண்டு வாழ்த்துரை வழங்கினார்.

28.04.2022

தமிழக பொதுப்பணித்துறை மற்றும் நெடுஞ்சாலைத்துறை சம்மந்தமாக 2022-23ம் ஆண்டிற்கான Schedule of Rates சம்மந்தமான இரண்டாவது கூட்டம் நடைபெற்றது. அக்கூட்டத்தில் முன்னாள் மய்யத்தலைவர் திரு. L. வெங்கடேசன் அவர்கள் கலந்து கொண்டார்.



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