



**T-ROD INTERNATIONAL (PVT) LTD.**  
**GLASS FIBER REINFORCED BAR**

# **GLASS FIBER REINFORCED BAR**

---





## OUR HISTORY

The Group of Tabani's dates back to 1885 where it made its humble beginning under the name and style of M/s. H.A Ganny Brothers in Rangoon, Burma led by the present Chairman's grandfather whose trade with Japan and the European countries established a reputation which is diligently upheld even today. This fact could very well be evidenced from the book, "TWENTIETH CENTURY IMPRESSIONS OF BURMA" on page 331 published by Great Britain Publishing Company Limited 1910.

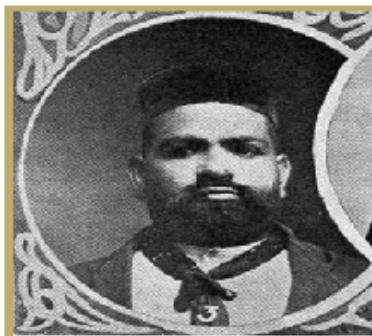
The Shifting to former East Pakistan and then to Pakistan left the family undeterred and hard work multiplied their achievements each time. The assets of an unblemished reputation for honesty and integrity are jealously guarded and upheld at every juncture. The roots of the present group are based on dedication, honesty and a will to achieve.

Since the four decades, 3<sup>rd</sup> and now 4<sup>th</sup> generation of the Tabani Family took charge of Group under the ambitious leadership of the late President M. Ebrahim Tabani, worked hard to set-up a strong manufacturing base in textile and leather garment products and Building Construction to promote development projects , Supplies to Pak Steel Mill; Pakistan Railways, Electric Energy Projects in Hydel, Thermal, Coal, Renewable Energy etc

After the demise of Mr. Ebrahim Tabani, the responsibility was taken over by Elder Son Mr Adnan Tabani, who is the current Chairman of the Manal International and Manal Global; and shouldered his brother and Cousin Mr. Umair Tabani (Vice Chairman) & Mr. Kashan Tabani (Chairman) to have a firsthand pulse of the market, setting forth the target and therefore to enhance export trade, there was a need to have international market network, particularly in view of the rapidly changing regional corporate environment and the development of socio-economic and political conditions the world over. These challenging circumstances have led to the gradual opening of The Group of Tabani's overseas offices / representations at more than half a dozen locations internationally. Presently, the Group has offices in Dubai, Sharjah, and representatives offices worldwide.

The Group of Tabani's is contemplating for opening a few more offices to deal directly with new potential markets in order to pay more attention towards areas that are presently looked after by nearby branches particularly in African States and China. The Group's growth is the result of efficient and quality services, for which it has received several national and international awards and commendations. Our goal is to introduce state-of-the art technologies and transfer of knowledge to meet the needs and challenges of the future.

### "TWENTIETH CENTURY IMPRESSIONS OF BURMA"



**Mr. YACOOB ABDOUL GANNY**





In the chapter “Rangoon” of the book “**TWENTIETH CENTURY IMPRESSIONS OF BURMA**” published by Great Britain Publishing Company – Limited in 1910.

On page 364 with serial no 3 writers mentioned “Mr. YACOOB ABDOOL GANNY” grand father of the Group’s present Group’s Chairman as “NATIVE MERCHANT OF RANGOON”



The main objective of the group is to maximize wealth keeping in mind the National Interest and interest of stakeholders. The following primary strategies have been determined on this basis:

- Increased focus on the structure and development of the business areas.
- Continued organic growth in all business areas.
- Regain profitability and ensure proper financial management.
- Develop the repair and service concept within the business areas of propulsion and Offshore.
- Strengthen the group’s strategic position through strategic cooperation and acquisitions.
- Reduce exposure outside the group’s priority areas.
- Develop property value.

1. MANSOOKHLAL DAWLATCHAND.      2. SURAJMAL LALLUBHAL      3. YACOOB ABDOOL GANNY.  
4. RAMRICKDASS BHAWSINGA.      5. LUXIMINARAIN BAGLA.

### **3rd one is Mr. Yacoob Abdool Ganny in picture**

**“TWENTIETH CENTURY IMPRESSIONS OF BURMA”**

**"Writers wrote on page 331"**

“MR. YACOOB ABDOOL GANNY is the honorary treasurer of Young Men’s Mahomedain Association in Yangoon. His business house is at 35, Merchant Street, where he has extensive dealings as an importer of piece-goods and hardware, and as an exporter of Burma products, such as cutch, beans, &c. During a visit which he recently paid to England he visited the principal manufacturing houses, and so was able to obtain knowledge of details useful to him in the conduct of his own business. The son of Abdool Ganny, he was born in Bombay Presidency thirty-five years ago. In 1885 he joined his two brothers in Yangoon and they traded under the style of H. A. Ganny Brothers. One of the brothers died in 1895, and the other in 1899, when Yacoob Abdool Ganny became sole proprietor of the business. He has four sons and three daughters”.



### The Group of Tabani's (Corporate Creed)

- Always believe and remember Allah Almighty, be kind to others and serve humanity.
- Always be faithful to your duties, thereby contributing to the Company and to the overall good.
- Always be studious and creative, striving to stay ahead of the times.
- Always be practical and avoid frivolousness.
- Always strive to build a homelike atmosphere at work that is warm and friendly.

## OUR MISSION

- To participate fully in the socio-economical advancement of Pakistan by utilizing its entrepreneurial expertise and professional skills.
- To engage outstanding professionals in all spheres of activity and tap the full potential of every employee based on the philosophy that human resources of the group are its most valuable assets.
- To enter into joint venture collaboration with world renowned companies to establish projects vital to the economic growth and development of the country.
- To pursue profitability, diversification and sustained growth, The Group of Tabani's keeping view the changing global business environment, lays emphasis on ventures with high market growth potential and enters into areas of advanced technology.

## OUR OBJECTIVES

The main objective of the group is to maximize wealth keeping in mind the National Interest and interest of stakeholders. The following primary strategies have been determined on this basis:

- Increased focus on the structure and development of the business areas.
- Continued organic growth in all business areas.
- Regain profitability and ensure proper financial management.
- Develop the repair and service concept within the business areas of propulsion and Offshore.
- Strengthen the group's strategic position through strategic cooperation and acquisitions.
- Reduce exposure outside the group's priority areas.
- Develop property value.





## PURPOSE VALUES

At The Group of Tabani's we are committed to improving the quality of life of the communities we serve. We do this by striving for leadership and global competitiveness in the business sectors in which we operate. Our practice of returning to society what we earn evokes trust among consumers, employees, stakeholders and the communities. We are committed to protecting this heritage of leadership with trust through the manner in which we conduct our business.

## CORE VALUES

"Our Core Values are at the heart of our business. They define who we are, how we work, what we believe in and what we stand for. These values guide how we act and how we expect to be treated, providing a sound basis of decisions."

– Mr. Kashan.E.Tabani, Chairman –

– Mr. Umair.E.Tabani, Vice.Chairman –

The Group of Tabani's has always been values-driven. These values continue to direct the growth and business of The Group of Tabani's.

The Core The Group of Tabani's Values and Motto underpinning the way we do business are:

## COMMERCIAL VALUES

- **Customer First:** Our jobs and Our Company's future comes from the customers/consumers that's why we forge partnership with our customers/consumers and strive to exceed their expectations.
- **Sales:** We educate and persuade to offer our products and services as far and wide as the market opportunity exists.
- **Growth:** We are committed to growing revenues and business activities.
- **Profitability:** Profits provide the resources to maintain operations, to invest in new opportunities, and to ensure a financially secure organization.
- **Engineering:** Constantly seek, test and implement improvements to methods, practices, procedures and systems to bring about greater efficiency and productivity.
- **Creativity:** Seeing solutions and opportunities where others do not.
- **Thrift:** The need for economy is an eternal truth.
- **People:** People make the difference when they work together as a knowledgeable, productive and motivated team. By encouraging effective teamwork – We recognize the human worth of each individual and collaborate to achieve.
- **Entrepreneurship:** Differentiate the group through creative thinking and action.



## ETHICAL VALUES

- **Customer First:** Our jobs and Our Company's future comes from the customers/consumers that's why we forge partnership with our customers/consumers and strive to exceed their expectations.
- **Sales:** We educate and persuade to offer our products and services as far and wide as the market opportunity exists.
- **Growth:** We are committed to growing revenues and business activities.
- **Profitability:** Profits provide the resources to maintain operations, to invest in new opportunities, and to ensure a financially secure organization.
- **Engineering:** Constantly seek, test and implement improvements to methods, practices, procedures and systems to bring about greater efficiency and productivity.
- **Creativity:** Seeing solutions and opportunities where others do not.
- **Thrift:** The need for economy is an eternal truth.
- **People:** People make the difference when they work together as a knowledgeable, productive and motivated team. By encouraging effective teamwork – We recognize the human worth of each individual and collaborate to achieve.
- **Entrepreneurship:** Differentiate the group through creative thinking and action.

## OUR LEADERSHIP

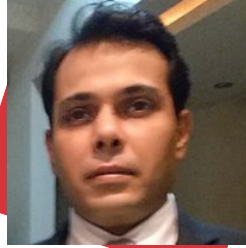


**Sitting :** Mr. Haji Muhammad Siddique Tabani, Late (Founder)

**Standing left :** Mr. Muhammad Azam Tabani, Mr. Muhammad Yaqoob Tabani

**To right :** Mr. Abdul Rauf Tabani, Mr. Muhammad Ebrahim Tabani, Late (Founder Chairman) and Mr. Muhammad Ismail Tabani, (Late)





MR KASHAN TABANI  
CHAIRMAN

## MESSAGE

*"As a Group, our driving goal is to grow, succeed and become a leader in every business that we engage in, whilst adhering to our values of integrity, respect and commitment to excellence. We bring our traditional family values of fairness, honesty and trust to bear on modern and innovative ways of working and developing our business and associated relationships. We have grown to become one of the leading business group in the Country through sound financial management, a talented human resource pool, and the ability to create and avail business opportunities that fit our values. This has resulted in the Group assuming a leadership position in several of the businesses. We will continue to build partnerships with our customers, through knowledge, ingenuity and commitment of our people as well as through the products and services we offer. We have always adopted the best management practices and acquired/used latest technologies to improve our business efficiencies and achieve economies of scale. Our goal is not just to build a great enterprise for our stakeholders but also to enrich and give back to the communities in which we operate. We ensure that as our businesses grow, the communities around us get the right opportunities to develop as well. As a successful entrepreneur and good corporate citizen, we continue to play our role in the economic development of Pakistan. We care for the environment, communities and business associates "*

## MEMBER

- MEMBER PRESIDENT OF PAKISTAN HUMAN RIGHTS (KHI)
- MEMBER VICE PRESIDENT OF PAKISTAN HUMAN RIGHTS (SINDH)
- Member Karachi Chamber of Commerce & Industries
- Member Federation of Pakistan Chamber of Commerce & Industries
- Member United Mem on Jam at of Pakistan
- Member World Memon Organization
- Member Mem on Federation of Pakistan
- Member Karachi Club
- Member of Karachi Gymkhana





Mr. KASHAN.E.TABANI and Mr. UMAIR.E.TABANI are blessed and born in a very noble and well known business family of the Memon Community originating from Gondal, Kathiawad/ Gujrat, India; They are the third son of late Mr. Haji Mohammed Ebharim Tabani & late Mr. Haji Mohammed Esmail.S. Tabani. They were born in Karachi where They spent there infancy. Due to take-over of all business activities And Nationalization by the then Military Government; the family business established by their late Grand Grand Father Yaqub Abdul Gani in 1885, a legendary businessman of Burma of their time having Established trade with Japan and European Business Houses evidenced from the book "Twentieth Century Impressions of Burma" on page 331, published by Great Britain Publishing Company Limited in 1910, The family was forced to leave Burma and settled in East Pakistan, The family further had to come back to Karachi due to disturbances in East Pakistan and finally The Fall of Dhaka.

After completion of these studies, **BACHELOR OF SIENCE IN INFORMATION TECHNOLOGY** through Brooks University USA, and **Bachelor in business** through IQRA University; **Mr. Muhammad Kashan.E.Tabani & Mr.Muhammed Umair.E.Tabani** groomed themselves with all business ethics of Trade And Industry under the able guidance of their late Father's **Mr. Haji Mohammed Ebharim Tabani & Mr. Haji Mohammed Esmail.S. Tabani**, The Visionary promoter of "The Group of Tabani's" in Pakistan & Russia, After the sudden demise of **Mr. Haji Mohammed Ebharim Tabani & Mr. Mohammed Esmail.S. Tabani**, The Chairmanship of "The Group of Tabani's" was given to **Mr. Muhammad Kashan.E. Tabani** and vice Chairmanship to **Mr.Muhammed Umair.E.Tabani**.

During the initial years of their Business carrier, **Mr. Muhammad Kashan.E. Tabani & Mr.Muhammed Umair.E.Tabani** travelled worldwide for promoting Family Business in USA, Far East, China, Middle East, Gulf, Europe, America, and all Associated Socialist Countries. He was the roving Ambassador for Pakistan initiating challenging Roles for development of Bilateral Trade and Social Relations with all the above Countries. They pioneered to establish Pakistan's relations with all the Heads of these States. They ventured to establish bilateral business relations, they organized the meetings with all the Heads of Central Asian republics with Pakistani dignitaries and accompanied on Official tours with the Heads of Pakistan Government on various occasions to Central Asia and other Countries including USA. They also represented the Group on various Trade Bodies of FPCCI, KCCI, Hamdard Foundation, Rajputana Hospital, Hyderabad and Gondal Memon Association, Pakistan Memon Federation, and many Organizations. **Mr. Muhammad Kashan.E. Tabani and Mr.Muhammed Umair.E.Tabani**. Are all round Social Worker; always ready for submission in the Glory of Allah. They are blessed to have performed Hajj and Umrahs many times. They has been conferred by many awards From Government of Pakistan for the performance in business and Social activities.

Besides, above activities, **Mr. Muhammad Kashan.E. Tabani** and **Mr.Muhammed Umair.E.Tabani** has ventured in development of many Projects in the Pakistan Steel Mills Corp., Defense Organizations, Oil and Gas Development Co., Pakistan Railways, Alternate Energy Projects, Hydel, Thermal, Wind Power Technology, Coal Power Plants, Mining, Textile and readymade garments etc.

They have adopted from there late father, **Mr. Haji Mohammed Ebharim Tabani & Hajji Mohammed Esmail.S. Tabani**, the urge to serve the Memon Community and other welfare work, irrespective of caste and creed and played leading Role in all times of calamities.



MR UMAIR TABANI  
VICE CHAIRMAN

## MESSAGE

*“As a family-owned business, we understand the importance of heritage, tradition and commitment to our communities. As a forward-looking international corporation, we have the highest standards of corporate governance, professionalism and operational standards. The combination is compelling.*

*In a growth science fueled by a recovering economy and external factors like the regional evolution and face changing of the world. slowly and steady growth of European Economic Community Countries and Republic of China emerging as one of the super Power spreading its entire trade wings world over. Pakistan, having bilateral trade activities with all friendly countries has put The Group of Tabani's on road map to capitalize on Investments in Energy starring and logistic fields by moving age traditional Textile and commodities business to one of the leading and partnership of world renowned Companies in the field of Building & Construction ; Electricity Power Projects, Hydel, Thermal Power, Railways, Defense Industry requirements, steel Mill requirements, Mining and Minerals and the aim for revival of traditional old Textile and Commodities Trade worldwide. Led by a team of highly dedicated and experienced professionals, the group of Tabanis /Tabani & Companies continues to set new standards of excellence in the local economy by offering world class state-of-the-art products and service. The Group's prestigious position is testimony of the visionary foresight and relentless efforts of the Group's leadership, which have led it to achieve many milestones and landmarks over the years, thus making it a benchmark in the economy of Pakistan.*

## MEMBER

- Member Association of Builders and Development Board (ABAD)
- BBA from AMI Karachi
- Certification in Communication & Business Development
- Member Karachi Chamber of Commerce and Industries
- Member Pakistan Defense Housing Authority
- Member Karachi Club

**Mr. Umair . E . Tabani, Vice Chairman – The Group of Tabani,** is the spearhead of fourth generation entering the Group and has been guided by the third generation. After going through the rigorous academic career by completing his BBA with a reputable University and stepped into practical business environment and joined hands with his superiors to contribute in the betterment and success of the Group, as:



## **INTERNATIONAL EXPOSURE**

He has visited foreign countries to meet and share his experiences, knowledge, views and ideas with key players and personalities of trade and business and attended various seminars, conferences and exhibition related to Textile, Engineering, and Construction works, Aviation, Oil & Gas Industries, Railways and Defense Industry.

The ideas and development brought home were modified and implemented in Group to give an edge on competitors and to enhance the goodwill and reputation.

He is **Executive Member of Association of Builders and Development Board (ABAD)** .

## **MEMBER OF THE BOARD OF DIRECTORS**

He is a member of Board of Directors of The Group of Tabani's & Tabani & Companies. He is engaged in the policy formulation, further planning, decision making and implementation of the pre-decided objectives and pre-determined targets of the Group.





## WHAT IS GLASS FIBER REINFORCED BAR

---

As constructional material, steel has been a huge success story ever since the industrial revolution. However, steel also has its disadvantages, such as its low resistance to corrosion and the resulting limited lifetime, which has lead engineers to look for alternative solutions.

Fiber composites are a good alternative which have been successfully used since the 1980's in various industries (e.g. automotive, aircraft ships and construction). One of the most prominent among composites is glass fiber reinforced plastics (GFRP). With its desirable physical properties and major advantages over steel, GFRP is destined to be used in many applications in modern construction industry and remedy a magnitude of previously unsolvable problems. One of its most interesting applications is its use as concrete reinforcement. After extensive development and certified testing

## PROPERTIES GLASS FIBER REINFORCED BAR

---

The product properties of GFRP Rebar are proven to offer clear advantages in economy quality and technology of construction. The product is easy to handle and has numerous applications in the most demanding applications. It is characterized by a high tensile strength and strong resistance to corrosion, chemicals and chlorides. It is highly suitable for applications that are sensitive to electric or magnetic fields or require thermal conductivity. GFRP Rebar allows for the possibility of reduced concrete cover and extending the life of the construction element considerably. Therefore a new standard of sustainability is achieved. GFRP Rebar of GFRP Technologies creates a reinforcement technology, which combines modern construction with a clear economic value. corrosion resistant high tensile strength resistant to Chemicals chloride resistant electrically insulated thermally insulated non-magnetic lightweight easily workable economical.





### **HIGH RELATIVE STRENGTH**

GFRP rebar offers a tensile strength up to 3 times that of steel.

### **RESISTANT TO CHEMICALS**

It will not be damaged and will remain in shape. It does not react to chemicals or the alkaline present in concrete.

### **ELECTRICALLY INSULATED**

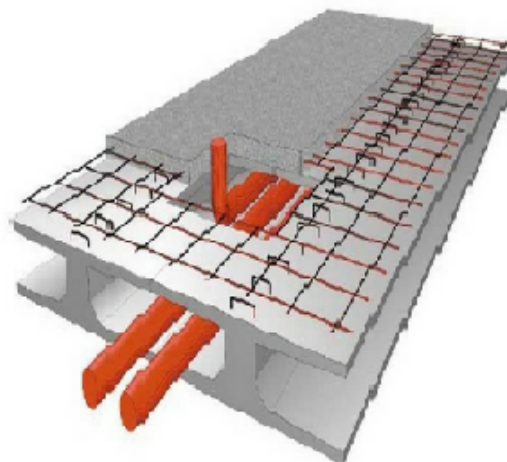
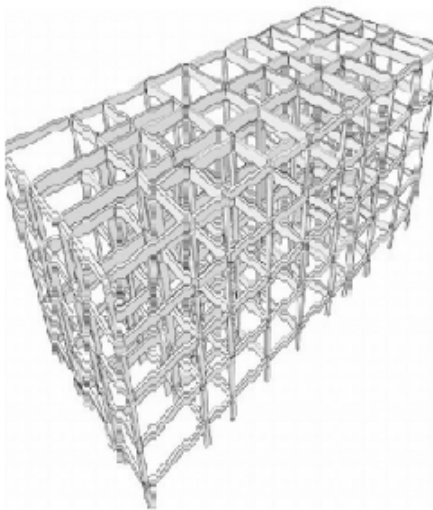
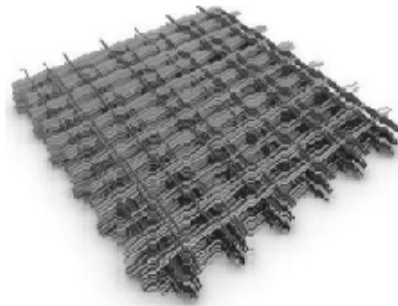
GFRP rebar does not contain any metal; it will not cause any interference in contact with strong magnetic fields or when operating sensitive electronic instruments.

### **NON MAGNETIC**

GFRP rebar does not contain any metal; it will not cause any interference in contact with strong magnetic fields or when operating sensitive electronic instruments.

### **EASILY WORKABLE**

It is much easier to handle, and in most cases, only one truck load will be sufficient to supply the rebar even for an entire project.



### **CORROSION RESISTANT**

It will not rust, even in the harshest environments. It does not react to salt ions, chemicals or the alkaline present in concrete.

### **CHLORIDE RESISTANT**

It will not be damaged and will remain in shape. It does not react to salt ions.

### **THERMALLY INSULATED**

GFRP is highly efficient at resisting heat transfer applications and does not create a thermal bridge within structures.

### **LIGHT WEIGHT**

GFRP rebar is 9 times lighter in weight than the equivalent strength of Steel rebar.

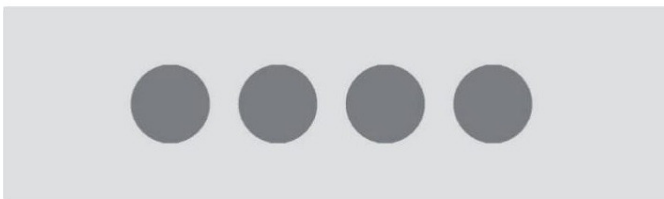
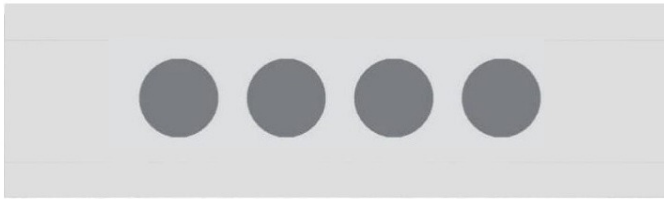
### **ECONOMICAL**

which in addition to less concrete reduces the overall construction costs. In many instances, using this material works out to be less expensive than steel.



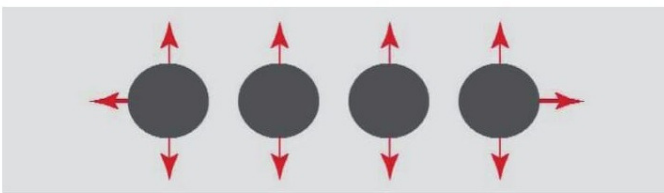
## STEEL VS GFRP

reinforcing steel

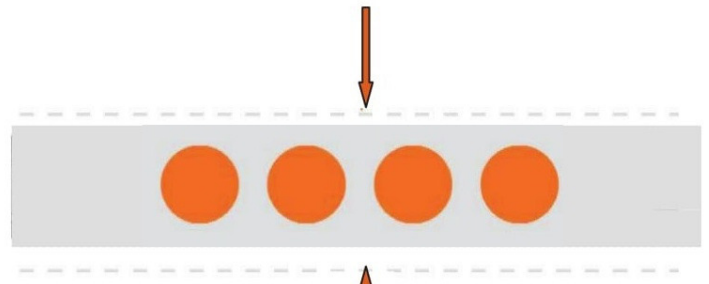


the cost of reinforcement with stainless steel is many times more than **GFRP Rebar**

C°

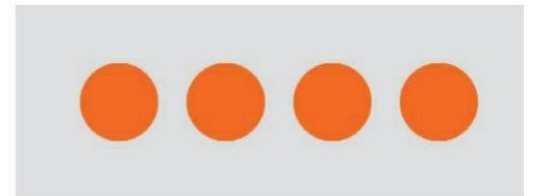


**GFRP Rebar**

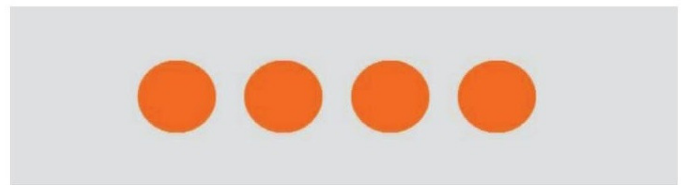


- thinner concrete sections
- less concrete usage
- ideal for exposed concrete
- easier to handle

\$ ↓



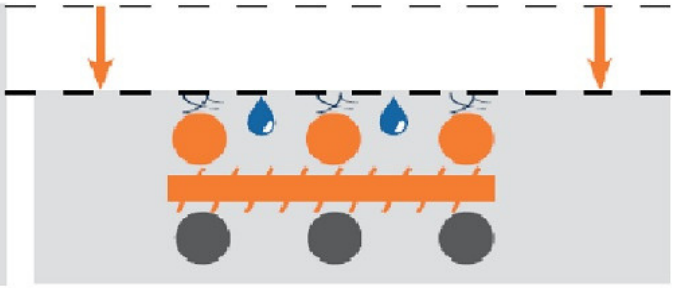
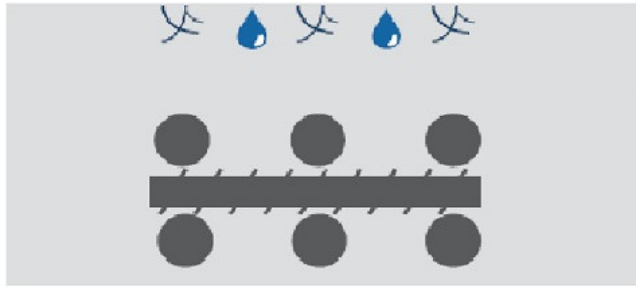
**GFRP Rebar** is a much more favourable alternative to reinforcement than using stainless steel, epoxy coated or galvanised steel. It is even less costly than black steel in many applications.



**GFRP Rebar** is thermally non-conductive and does not interfere with electric nor magnetic fields.

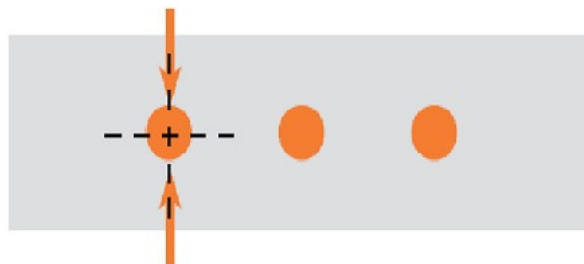
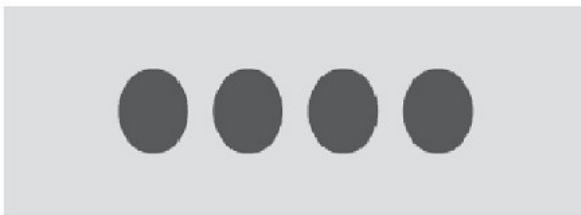
- Thermal anchor
- Transistor rooms
- Lab and MRI
- Signaling (Rail)



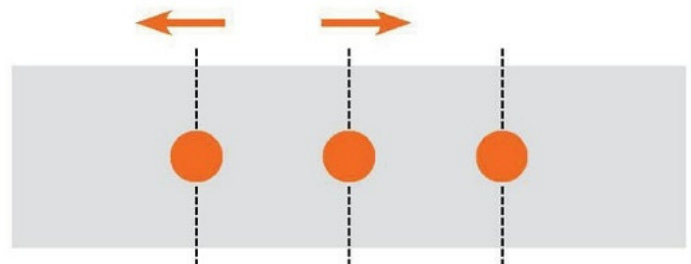
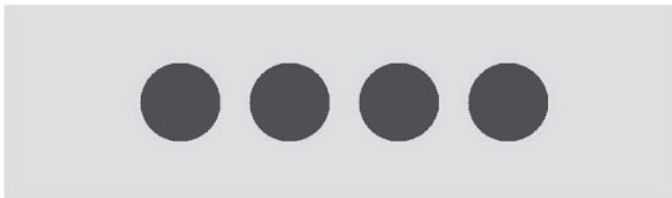


**GFRP Rebar** can be used for surface reinforcement and for crack limitation.

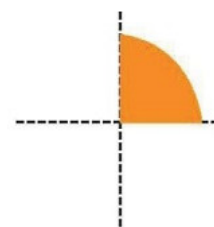
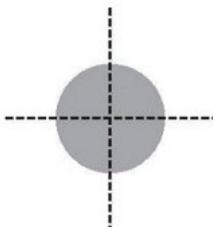
- Industrial floors
- Dry shrinkage prevention
- Parking garages
- Tunneling



Due to the significantly higher tensile strength of **GFRP Rebar**, when compared to conventional steel rebars much smaller diameters can be used.



Due to the significantly higher tensile strength of **GFRP Rebar**, when compared to conventional rebars, wider spacing between rebars can be selected.



**GFRP Rebar** is approximately 10% the weight of steel for the equivalent size diameter and length.



# TECHNICAL SHEET

## GFRP Rebar Technical Data (General)

Diameter (mm)	3	4	6	8	10	12	14	16	18	20	22	25	28	30	32	34	36	40
Cross section (mm <sup>2</sup> )	7	12	28	50	73	103	134	180	248	278	355	478	590	671	740	857	961	1190
Density (g/cm <sup>3</sup> )	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Weight (g/m)	18	32	51	98	150	210	275	388	485	570	700	970	1195	1350	1520	1800	2044	2380
Ultimate tensile (KN)	13.5	18	36	54	72	99	117	149	189	225	270	342	432	450	504	540	585	640
Ultimate tensile strength (Mpa)	1900	1500	1280	1080	980	870	764	752	744	716	695	675	702	637	626	595	575	509
Ultimate shear strength (Mpa)	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150	>150
E-modulus (GPa)	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40	>40



## ADVANTAGES GFRP

- 80+ years of lifespan and corrosion resistance
- 9 x lighter in weight than the equivalent strength of Steel rebar
- 3 x tensile strength of steel
- Non-conductive to heat and electricity
- Non-magnetic (transparent to electrical fields)
- High Fatigue endurance and Impact Resistance
- Non-existent corrosion, rust free
- Transparent to radio frequencies
- Cost effective vs. epoxy coated, galvanized and stainless steel rebar
- Impervious to chloride ion, low pH chemical attack and bacteriological growth
- Reduced whole of life project costs
- Low carbon footprint
- Maintenance free
- Standard/custom lengths, shapes and bends
- Non Toxic
- Easily cut and machined
- Easy and Rapid Installation



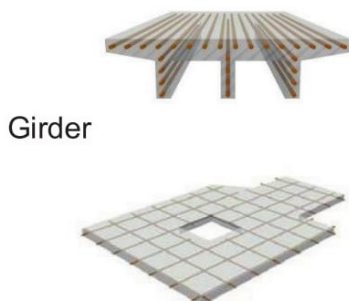




## PROPERTIES GLASS FIBER REINFORCED BAR

Lower cost and shorter construction periods is of paramount importance in modern construction projects. For this reason, use of precast concrete sections has become common-place in today's construction sites. The requirement for lower costs and shorter times however, do not mean that quality and workmanship can be compromised. This adds ever more increasing demands for prefabricated precast concrete elements. Due to its advantages, GFRP Technologies is an ideal reinforcement for these elements. Another great advantage of GFRP Technologies is the significantly reduced amount of reinforcement and concrete cover. This results in much lighter elements, creating design freedom and more importantly, cost savings.

- Pipe segments
- Profiles (T/L/U)
- Facade elements
- Railway sleepers
- Road barriers
- Prefabricated elements

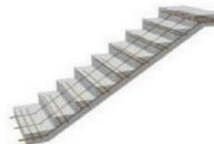


Girder

Walls and Ceilings



Road barriers



Stairs



Pipe

- Pipe segments
- Profiles (T/L/U)
- Facade elements
- Railway sleepers
- Road barriers
- Prefabricated elements



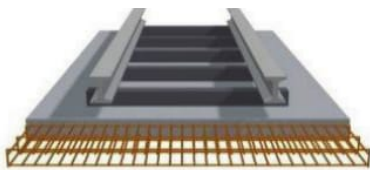
## ROAD AND RAIL INFRASTRUCTURE

Growing infrastructure and increasing demand for more roads, rail networks and bridges, and inevitable contact with harsh natural forces of nature, leads to the need for costly regular repair, restoration and maintenance.

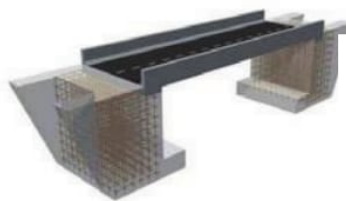
GFRP Technologies can reduce costs of any initial investment, maintenance and renovation. The protection of structures against chlorides usually require expensive alternatives and require increased concrete cover. These issues can be eliminated with the use of GFRP Technologies rebars

In situ concrete

- Noise reduction
- Ramps
- Highway reinforcement
- Railway sleepers
- Railway(Signal)



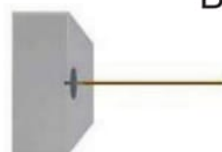
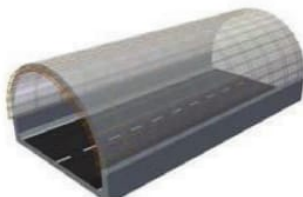
Rail tracks



Abutment



Bridge piers

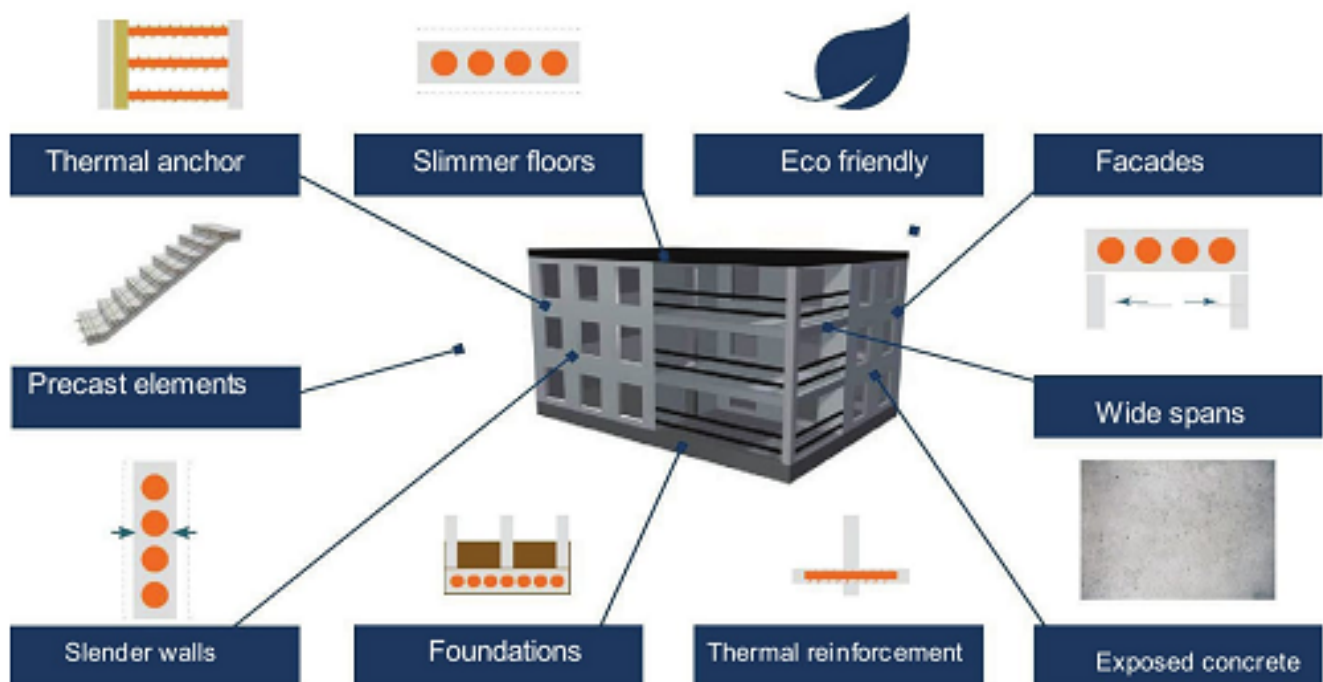
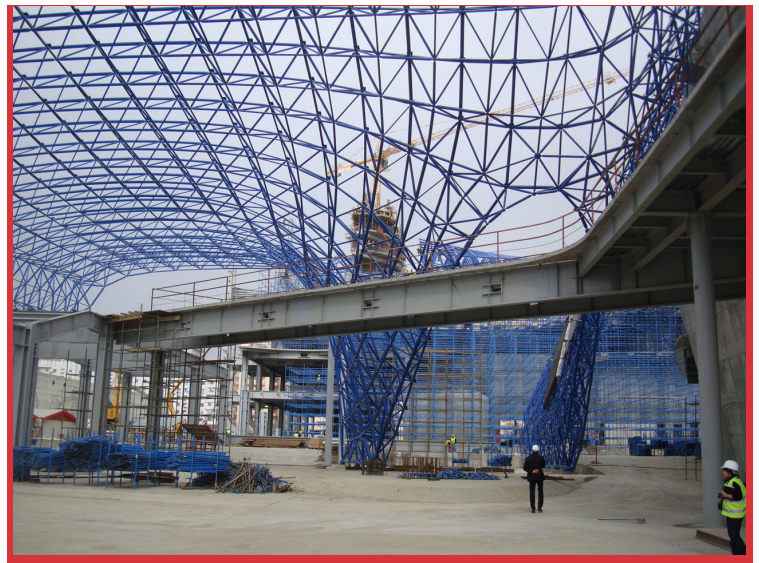






## HIGH RISE BUILDINGS

The increasing sophistication of residential and working structures poses higher requirements and challenges. Aspects such as healthy living, more efficient building methods, aesthetics and the wish for exceptional design, all play a major role in the building of structures. The relationship between people and the structures they live in, is becoming ever more important. This point is also a major concern for modern architects, investors and owners. less concrete C° smaller diameters C° GFRP Rebar offers excellent attributes for such structures from both a design and sustainability perspective, as well as being extremely cost efficient and durable.







## FORCE BUILDINGS

Industrial buildings are an essential part of everyday life. In industrial enterprises, different products are produced that make modern life easier. Such structures can usually be heavily loaded due to different production methods corrosive environments and strong magnetic fields.

GFRP Technologies offers cost effective ways to address such problems. An example of this can be outlined in the use of expensive Stainless-Steel reinforcement in Substations which can be replaced by GFRP Technologies This was previously necessary to prevent magnetic fields. Other such examples are Car Parks and Petrol Stations, that can avoid the cost of using protective materials and layers to prevent salt induced corrosion.



Industrial flooring



Chemical plants, oil and gas refineries



Parking garages



## DESIGN CONSULTING

The use of water, whether for travel, energy or treatment, is an essential part of industry and construction. These structures are highly exposed to aggressive media, such as pollution, salts and chemicals, resulting chloride resistance resistant to in high and recurring rehabilitation costs. Chemicals GFRP Rebar of GFRP Technologies counteracts this by protecting against chemicals & chlorides which consequently destroy the rebar and concrete. Therefore, it is not necessary to use costly Stainless Steel or thicker concrete cover that protects the steel. Likewise, it makes economic sense that these concrete structures can be built at significantly lower cost and have a much higher service life.



Treatment plant



Quay walls and wharfs



Hydropower plant

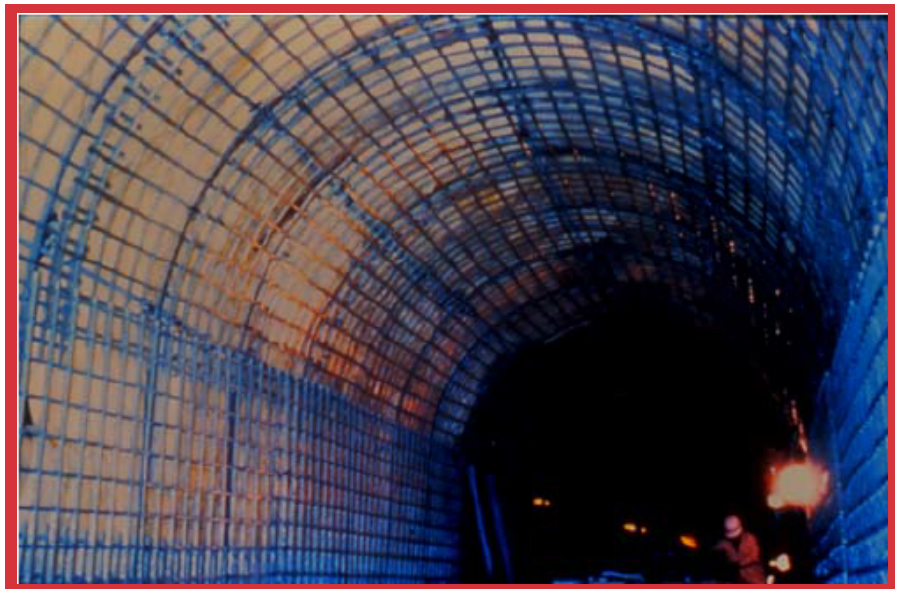




## TUNNEL CIVIL ENGINEERING

In Tunneling, Civil Engineering and Mining, there are various applications for reinforcement. Installations that use GFRP in diaphragm walls or piles, enable easy and time-efficient boring of tunnels. In parallel, the cost of any manual removal of steel reinforcement in the bored area may be avoided, with the additional benefit of less damage to any of the tunnelling equipment being used.

GFRP has another advantage. Due to the high resistance to aggressive media, permanent reinforcement is possible, whereby alternative expensive corrosion protection is not necessary. Repair and maintenance costs are also significantly reduced. Enormous savings can be achieved by using GFRP bolts and shotcrete in tunnel.



TBM - Softeye – Cut-off wall reinforcement  
(easy machinability)



Bored pile



Viaducts and Tunnels

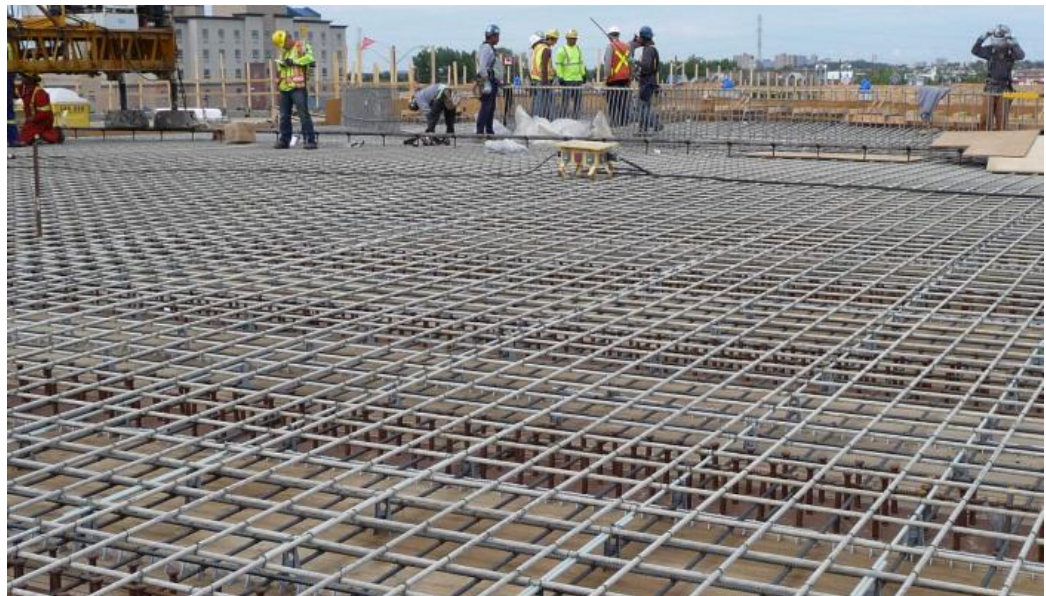
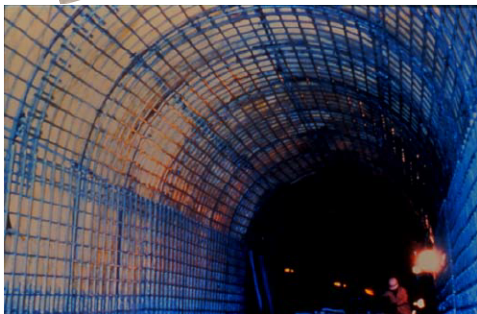


Sewer





# GFRP PROJECTS



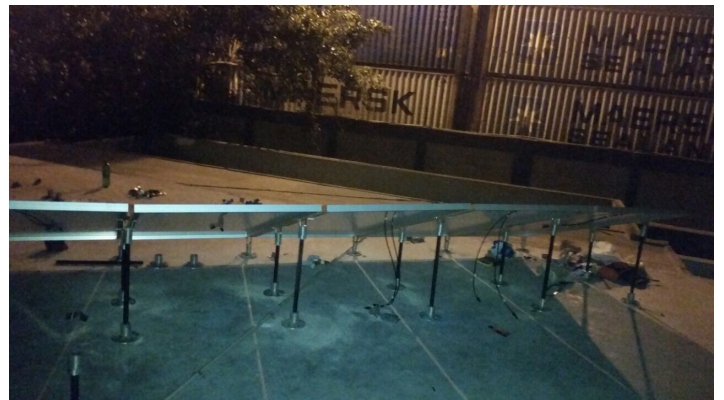
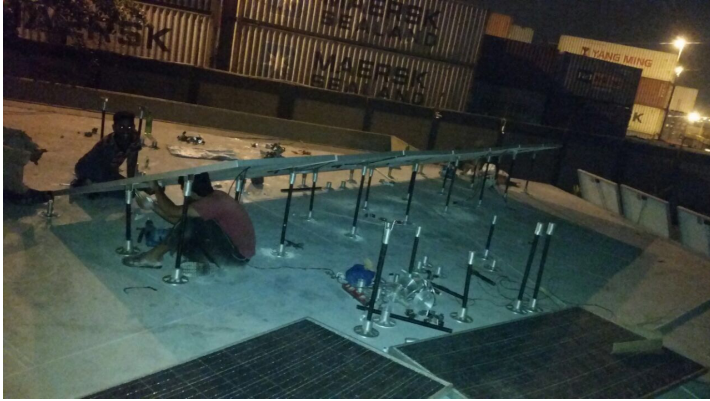








## NLC 2017 SOLAR GFRP FRAMING PROJECT







# LOCATE US

**ADDRESS:** SF Unit No 103, SITE Karachi, Pakistan

**CONTACT:** (92) 213 529 0952 , 213 529 0953

**EMAIL:** [info@t-rodinternational.com](mailto:info@t-rodinternational.com)

**WEBSITE :** [www.t-rodinternational.com](http://www.t-rodinternational.com)

**ALTERNATE SOLUTION THAN STEEL**

---