



RBC
RE-BUILD CONSTRUCTION PVT LTD

SPECIALIZED JOBS BY RBC
Restoring the past, building the future

Since 1992

HOUSE OF HABIB



RETROFITTING & RENOVATION

WORKS AT HOUSE OF HABIB

CONTRACTOR:

RE-BUILD CONSTRUCTION PVT. LTD

SUMMARY OF PROJECT:

- Resides at mountain tip of Muhammad Ali Society, Karachi.
- Since early 90s, renovation work is going on by our hands not just architecturally but structurally.
- Due to movement of mountain it is common to have marble damage landscaping repairing work.
- RBC is continuously maintaining the flooring, walls, underground and overhead tanks, boundary walls.
- Fiber lining technique is used by RBC for repair of existing Water Tanks.
- One of the renowned name in Pakistan in many endeavors, House of Habib is a satisfied client of RBC.



2014



UNILEVER HEAD OFFICE, AVARI TOWERS

RETROFITTING WORKS AT
UNILEVER HEAD OFFICE
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD
CONSULTANT: MUSHTAQ & BILAL

SUMMARY OF PROJECT:

- Specialized Seismic Retrofitting was required at Unilever Head Office so RBC presented the most efficient work plan.
- Initially around 30,000 holes were required in existing structure for jacketing work.
- For drilling holes Ferro scanning was done along with preparation of as-built drawings for installation of anchors.
- Based on our drawings MS Plates were prepared.
- About 40,000 chemical rebars and 16,000 anchors of M12, M16 and M20 were fixed.
- All the work was executed efficiently. Jacketing by MS Plates installed using chemical anchors with high precision and without damaging existing structure internal reinforcement



2016

DHA CITY PHASE 9



FIXING OF SOLAR PANELS IN HARD
STRATA

CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD.
CONSULTANT: EA CONSULTANCY

SUMMARY OF PROJECT:

- Solar panels were to be fixed by another contractor but during excavation rocky strata was found which made excavation very difficult job and the work could not be continued.
- Another approach was required for work execution so RBC provided the best work plan for execution of work which made the task easier and more efficient.
- Pull out tests were conducted and substrate was checked before drilling.
- Design was based on the worst scenario considering minimum strength of substrate.
- Rebars were installed using Rawlplug® RKEX-II Epoxy in holes till 18” of depth.
- Then solar panels were fixed supported by pedestals. Hence the work was completed successfully.



2017

METRO CASH & CARRY



RETROFITTING WORKS AT IN
GENERATOR ROOM.
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD.
CONSULTANT: MUSHTAQ & BILAL

SUMMARY OF PROJECT:

- Retrofitting was required at Metro generator view due to destruction caused by fire so RBC presented the most efficient work plan.
- Ferro scanning was done before drilling to avoid damage to internal reinforcement and to facilitate drilling of holes for anchors.
- As-built drawings were also prepared.
- Slabs and beams were provided with MS Plates that were installed through chemical anchors. Lateral bracings were also fixed.
- Anchors were placed in staggered pattern.
- Jacketing of structural members was done efficiently.



2017

AVARI TOWERS



RETROFITTING WORKS AT AVARI
TOWERS
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD
CONSULTANT: MUSHTAQ & BILAL

SUMMARY OF PROJECT:

- Specialized Seismic Retrofitting was required at Avari towers so RBC presented the most efficient work plan.
- Complete structure analysis was conducted.
- Before drilling holes Ferro scanning was done along with preparation of as-built drawings for installation of anchors.
- Based on our drawings MS Plates were prepared.
- MS Plates were installed using chemical anchors with high precision and without damaging existing structure internal reinforcement.
- About thousands of chemical rebars and anchors of M12, M16 and M20 were installed.
- Pull out tests were conducted.
- All the work was executed efficiently.



2017

DHA HEAD OFFICE (TPBC BUILDING)



RETROFITTING WORKS AT DHA
HEAD OFFICE

CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD
CONSULTANT:
ZENITH INTERNATIONAL

SUMMARY OF PROJECT:

- Specialized Retrofitting was required at DHA Head Office so RBC presented the most coherent work plan.
- Schmidt hammer test was conducted to identify existing strength.
- Ferro scanning and As-built drawings were also prepared.
- Pull out tests were also conducted.
- Excavation till bottom of footing was executed.
- Concrete was poured in foundations to increase their strength.
- Columns were Strengthen by Jacketing through MS Plates.
- MS Plates were installed through chemical anchors using high quality Epoxy.
- The Head Office was retrofitted and the whole task was executed efficiently.



2017

FK BUNGALOW



**RETROFITTING & RENOVATION
WORKS**

**CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD.
CONSULTANT: MUSHTAQ & BILAL**

SUMMARY OF PROJECT:

- Retrofitting and renovation was required at Faraz Khan Bungalow.
- Girders were fixed through anchors. These girders were later painted.
- All the irregular walls, beams and columns were flattened.
- To control the cantilever action, steel sections were installed.
- Measures to control seepage and roof leakage were also taken.
- Layout of different rooms was reconfigured.
- All the necessary wiring, plumbing and ductwork was executed. After surface treatment the rooms were painted.





2018



LUCKY MOTOR CORPORATION LTD



**RETROFITTING WORKS AT PAINT SHOP
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD**

SUMMARY OF PROJECT:

- Specialized Retrofitting was required at KIA Lucky Motors for two paint shops pits of 100m and 65m long.
- These pit walls required internal distance of 5500mm but another contractor mistakenly constructed walls with lesser distance so we were approached for completing the task accurately.
- By using our retrofitting techniques we aligned walls and installed flushed SS Plates with countersunk mechanical anchors.
- Another requirement in the pit was regarding inclination slope of RCC Pit floor for proper flow of residual paint in Pit side by channel.
- We utilized our precise technique and experience, retrofit the walls and floor as per required slope in 100m and 65m length of floor.



2019

SAMI PHARMACEUTICAL



RETROFITTING WORKS FOR HVAC
DUCTING BY
REBUILD CONSTRUCTION PVT. LTD.

SUMMARY OF PROJECT:

- Specialized Retrofitting was required due to HVAC duct openings to avoid cantilever action.
- Openings of 1'x1' and 2'x2' were made, Channels of 6"x3"x3/8" were installed using anchor bolts of 10mm which were embedded up to 90mm.
- MS Plates of 8"x8"x3/8" were welded with channels and fixed using bolts of 10mm.
- Utilizing our expertise of retrofitting shear connectors of 10mm were installed at 12" c/c distance.
- New RCC beam of compressive strength of 3000psi was placed.
- Using our technical knowledge of retrofitting the Client needs were fulfilled and task was done accurately.
- Work was executed with taking every safety precaution because safety comes first for us.



2019

LUCKY MOTORS CORPORATION. Ltd



SLAB JACKETING

CONTRACTOR:

RE-BUILD CONSTRUCTION PVT. LTD.

CONSULTANT: MUSHTAQ & BILAL

SUMMARY OF PROJECT:

- Slab removal and jacketing work was required at KIA lucky motors.
- Drop panels were chiseled and fabrication of girders and plates was done.
- Girders and plates were installed using Rawlplug® chemical anchors with Rawlplug® pure epoxy.
- For slab demolition, whole slab was vertically propped in grid pattern.
- Through stitching cores pieces of slab were removed and later converted into debris.
- Every challenge encountered was resolved by our experienced and qualified team utilizing experience of Retrofitting.



2020

D7 GIZRI



RETROFITTING WORKS AT D7
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD.
CONSULTANT: IMPACT ENGINEERING

SUMMARY OF PROJECT:

- Retrofitting by means of steel jacking was required because the compressive strength for five columns at fifth floor were found less than required compressive strength.
- Ferro scanning was done along with preparation of as built drawings.
- MS Plates of 12mm thickness were fixed on column using Rawlplug® Stud anchors 16190-5.8 grade with high strength Rawlplug® RKEX-II Epoxy.
- Over 500 anchors were installed.
- Corners of columns were welded via MS Angles. On top and bottom plates were fixed horizontally up to 2' by chemical anchoring and welded with vertical plate.
- Using our retrofitting expertise, we were able to resolve every encountered challenge.





2020

KARACHI GRAMMAR SCHOOL (KGS)

RETROFITTING WORKS AT KGS
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD.
CONSULTANT: MUSHTAQ & BILAL

SUMMARY OF PROJECT:

- Retrofitting was required due to extreme deterioration of beams so RBC presented the most efficient working plan.
- Chiseling of beam plaster and dismantling of wall portion was performed carefully.
- MS Channels were installed through Rawlplug® chemical anchors using Rawlplug® R-KEX-II Epoxy in drilled holes of dia 18mm up to depth of 5" on 12" c/c.
- MS plates of 6"x4"x3/8" were fixed.
- Concrete was laid properly then MS wire mesh was fixed on chiseled sections, 1" thick plaster was provided on slab and beams below installed MS Channels.
- Every complication encountered was overcome by using our technical knowledge of retrofitting.



2020

AGHA STEEL



FRP RETROFITTING OF RCC CRANE
BEAM
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD.

SUMMARY OF PROJECT:

- To cater the additional load on crane beams strengthening was required so strengthening through CFRP was proposed as the best solution for this problem.
- The new required crane capacity was 140 tons and 180 tons.
- Designing was done by Aegion Fyfe Asia Pte Ltd for TYFO® Fibrwrap® System using codes ACI 318M-05 and ACI 440.2R-17.
- For CR-BM1 one vertical layer of TYFO® Fibrwrap® Carbon System on both sides of the beam was suggested along with 10mm thick steel plate at bottom by means of anchors at particular spacing.



- For CR-BM2 two different types of TYFO® Fibrwrap® Carbon System were recommended, first for the U-wrap of one layer whereas two layers of sagging wrap to be provided.
- Crane girders were designed and checked accurately under shear, flexure and torsion. Adequacy was section was checked.
- Columns were checked under loading and column analysis report was also provided.
- Software results and drawings were attached in technical report.
- Proper statement for the application of the Tyfo® Fibrwrap® Carbon systems was mentioned.



2020

SINDH TEXTILE MILL



CFRP RETROFITTING FOR SEISMIC
STABILITY
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD.

SUMMARY OF PROJECT:

- The owner of the building intended to know about the structural stability of the building for future Seismic Activity and Wind loads.
- After performing structural testing it was concluded that building needs retrofitting because there were no Plinth beams and SOG.
- The slab thickness used in the building is too thin i.e. inadequate for such span and therefore as expected cracks were visible in the slab.
- Structure was found vulnerable in case of future seismic activity.



- FRP Retrofitting was suggested for beams and columns as the most economical and efficient solution since it was demanded that operations won't be stopped even during retrofitting works.
- Designing was done by Aegion Fyfe Asia Pte Ltd for TYFO® Fibrwrap® System using codes ACI 318M-05 and ACI 440.2R-17.
- CFRP vertical wraps for columns and for inverted beams to control hogging were elaborated in drawings.
- Proper statement for the application of the Tyfo® Fibrwrap® Carbon systems was shared.



2020

DATARI CASTLE



CFRP RETROFITTING OF RCC
COLUMN
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD.

SUMMARY OF PROJECT:

- InDatari's castle few columns of Ground floor were deteriorated due to rainwater so RBC was approached for solution.
- Column strengthening through CFRP was proposed as the best solution.
- Designing was done by Aegion Fyfe Asia Pte Ltd for TYFO® Fibrwrap® System using codes ACI M318-05 and ACI 440.2R.
- PM interaction analysis were performed.
- First it was recommended to repair the deteriorated portion of column.
- It was suggested in design proposal to wrap CFRP horizontally and vertically extending 200mm above the deteriorated surface of



column with one layer of Tyfo® Fibrwrap® Carbon System.

- Proper lap length for horizontal layer was mentioned.
- By CFRP strength was increased up to 15.25 N/mm^2 from 11.72 N/mm^2 with just one layer (horizontal & vertical) following confined concrete model.
- Method statement for the application of the Tyfo® Fibrwrap® Carbon Systems was attached.
- Project briefs of similar cases were attached in technical proposal.





2020

SSGC LPG PVT. LIMITED

GFRP RETROFITTING OF PILES &
UNLOADING JETTY
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD.

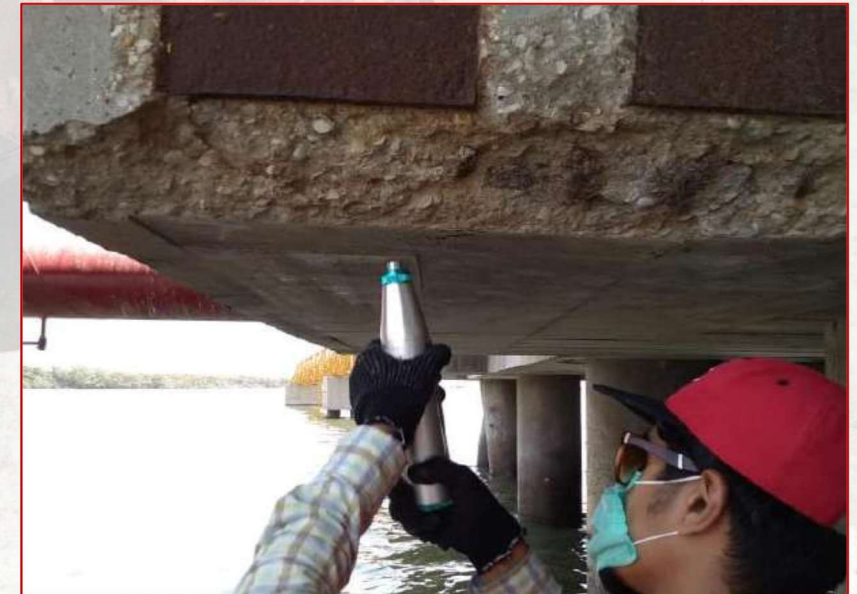
SUMMARY OF PROJECT:

- Rehabilitation of splash zone of Hollow core reinforced concrete Jetty piles was required due to spalling of concrete and corrosion of rebars.
- The Tyfo® Fibrwrap® System (GFRP) was suggested to use to prevent further corrosion while compensating for loss of tensile force due to corroded rebars.
- Designing was done by Aegion Fyfe Asia Pte Ltd for TYFO® Fibrwrap® System using code ACI 440.2R-17.
- Designing was based on two assumptions: 1. 60% main (vertical) rebar area is lost due to corrosion.



2. 100% of spiral rebar area is lost due to corrosion.

- It was recommended to install one layer of Tyfo® Fibrwrap® System in vertical direction.
- For horizontal direction two layers of Tyfo® Fibrwrap® System were to be installed.
- Earlier there was no cathodic protection on structure so Tyfo® Fibrwrap® System was provided as a corrosion protection layer.
- Method statement for the application of the Tyfo® Fibrwrap® systems for Piles was attached with pictorial description of application method for proper guidance.
- Similar completed international projects' reports were also attached.



2020

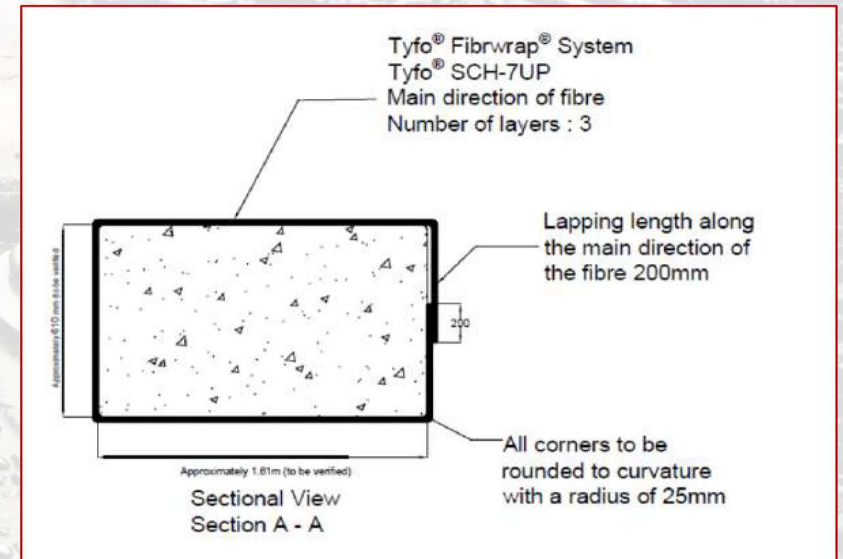
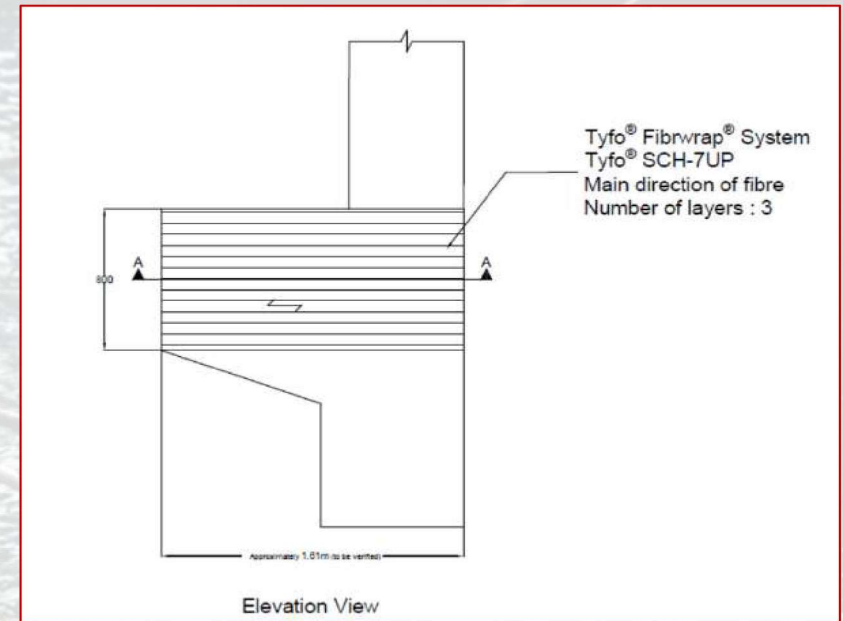
HONDA



CFRP RETROFITTING AT HONDA
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD.

SUMMARY OF PROJECT:

- Corbel strengthening was required due to missing steel links so RBC was approached for solution.
- Corbel strengthening through CFRP was proposed as the best solution for this problem.
- Designing was done by Aegion Fyfe Asia Pte Ltd for TYFO® Fibrwrap® System.
- It was suggested in design proposal to wrap the entire surface of cross-sectional area of missing links with three layers of Tyfo® Fibrwrap® Carbon System.
- Proper method statement for the application of the Tyfo® Fibrwrap® Carbon Systems was attached.



2021

SHARMEEN OBAID CHINYOY BUNGALOW



RETROFITTINGS FOR CC

RETAINING WALL

CONTRACTOR:

RE-BUILD CONSTRUCTION PVT. LTD.

CONSULTANT: MUSHTAQ & BILAL

SUMMARY OF PROJECT:

- Specialized Retrofitting was required because boundary wall which was resisting soil at the back face, due to excessive load large cracks appeared which made wall incapable of bearing more load.
- MS Plates of 3" width with thickness of 1/4" at 12" c/c distance to be installed by means of anchors.
- Installation of ten Columns of W-Section 6"x6" and 8"X8" along with beams of WSection 6"x6" and 4"x4", bolting of anchors and welding of frame was done appropriately.
- Utilizing our expertise of retrofitting, activity was done accurately and client was satisfied.
- Work was executed with following all safety precautions because safety is our priority.



2021

AERO ICONIC TOWER



RETROFITTING WORKS AT AERO
ICONIC TOWERS
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD
CONSULTANT: MUSHTAQ & BILAL

SUMMARY OF PROJECT:

- At Aero Iconic Tower Shear Strengthening of Raft foundation was required so RBC presented the most efficient work plan
- Before drilling holes Ferro scanning was done along with preparation of as-built drawings for installation of anchors.
- After drilling on raft, MS Plates were fabricated and installed using Rawlplug® Mechanical anchors.
- Rawlplug® Mechanical anchors were torqued properly.
- For concrete jacketing of columns rebar doweling was also done using the Rawlplug® Pure Epoxy.
- All the work was executed efficiently, adhering to safety precautions.



2021

AL ZOHRA TOWER



RETROFITTING AL ZOHRA TOWER
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD.
CONSULTANT: MUSHTAQ & BILAL

SUMMARY OF PROJECT:

- Slab removal and jacketing work was required at Al-Zohra Tower to make opening for staircase and to transfer its load.
- MS Channels and MS plates were fabricated.
- After chiseling beam for plates, holes were drilled for anchors in order to fix plates.
- Plates were fixed using Rawlplug® chemical anchors.
- Finally all Channels were fixed and welded.
- Slab was demolished in pieces using anti-vibration tool.
- Removed slab piece was shifted downward using chain pulley arrangement.
- Each piece was divided into small pieces to make debris.
- The whole task was completed timely and efficiently.



2021

EDHI VILLAGE INTERCHANGE (M9)



CFRP RETROFITTING
MAIN CONTRACTOR: FWO
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD.

SUMMARY OF PROJECT:

- Due to the vehicular impact PC Girders were damaged and strengthening was required.
- Girder strengthening through CFRP was proposed as the best solution for this problem.
- Designing was done by Aegion Fyfe Asia Pte Ltd for TYFO® Fibrwrap® System using codes ACI 318M-05 and ACI 440.2R-17.
- Five members of PC Girders were affected by the vehicular impact.
- One Girder (PCG1) was severely damaged whereas remaining four Girders (PCG2) were minimally damaged.



- In PCG1 10% of yield stress of tendons was lost and two bottom rebars and three stirrups were damaged.
- In PCG2 two rebars and one stirrup was damaged but tendons remained unaffected and intact.
- It was suggested in design proposal for Moment strengthening to use five layers of CFRP for PCG1 and two layers for PCG2.
- In case of Shear strengthening two layers of CFRP in PCG1 and one layer in PCG2 was suggested.
- Proper statement for the application of the Tyfo® Fibrwrap® Carbon systems on dry surfaces was mentioned.





2021

IDEAS BY GUL AHMED - CLIFTON



RETROFITTING WORKS AT IDEAS
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD.
CONSULTANT:
MUSHTAQ & BILAL

SUMMARY OF PROJECT:

- At Ideas the concrete started to spall off due to seepage and reinforcement was corroded so RBC was approached for specialized retrofitting.
- Anti-corrosive epoxy was coated on exposed reinforcement after replacement of damaged plaster with strengthening plaster made of different admixtures and hardener.
- MS Plates were installed at particular center to center spacing using Rawlplug® chemical anchors with Rawlplug® R-KEX-II Epoxy on drop panels.
- MS Channels were installed through Rawlplug® chemical anchors using Rawlplug® R-KEX-II Epoxy.
- Every hindrance was overcome by using our technical knowledge of retrofitting.



2021

INDUS HOSPITAL



CFRP RETROFITTING RCC SLAB
CONTRACTOR
RE-BUILD CONSTRUCTION PVT. LTD.

SUMMARY OF PROJECT:

- At Indus Hospital Consultant wanted some openings in RCC Flat Slab therefore strengthening was required around opening.
- Total four openings required strengthening.
- RBC suggested CFRP wrap around openings was proposed as the best strengthening solution.
- Two openings were of size 2500mmx1000mm.
- Third opening had size of 2250x1000.
- Fourth opening had size of 1800x1000.
- Designing was done by Aegion Fyfe Asia Pte Ltd for TYFO® Fibrwrap® System using codes ACI M318-05 and ACI 440.2R.



- Around all four openings it was recommended to wrap two layers of 300mm Strip width & two layers of 400mm strip along both directions.
- Two layers of diagonal strips of 200mm was suggested.
- Method statement for the application of the Tyfo® Fibrwrap® Carbon Systems was attached.
- Project briefs of similar cases were attached in technical proposal.



2021

NOVATEX LIMITED



FRP RETROFITTING OF RCC CRANE
BEAM
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD.

SUMMARY OF PROJECT:

- To cater for the shortfall in design capacity causing cracks in some of the crane beams strengthening was required so CFRP was proposed as the best solution for this problem.
- Designing was done by Aegion Fyfe Asia Pte Ltd for TYFO[®] Fibrwrap[®] System using codes ACI 318M-05 and ACI 440.2R-17. Different load scenarios were considered in Analysis.
- One layer of TYFO[®] Fibrwrap[®] Carbon System as U-wrap in whole span to be provided.
- Proper statement for the application of the Tyfo[®] Fibrwrap[®] Carbon systems was mentioned.



2021

PHILIP MORRIS LTD



FRP RETROFITTING OF ROOF SLAB
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD.

SUMMARY OF PROJECT:

- The beams were to be strengthened due to the reduction area of the steel reinforcement caused by corrosion so Tyfo® Fibrwrap® Systems was proposed to strengthen beams and slabs to achieve their original capacity before corrosion.
- Designing was done by Aegion Fyfe Asia Pte Ltd for TYFO® Fibrwrap® System using codes ACI 318M-05 and ACI 440.2R-17.
- The loss in area of the reinforcement is taken as 10% reduction in the diameter of the steel reinforcement.
- One layer of particular width of TYFO® Fibrwrap® Carbon System to be applied in



x-axis and y-axis on Slab at specified center to center spacing.

- One layer of TYFO® Fibrwrap® Carbon System to be installed on beams for controlling hogging, sagging & shear at particular length & spacing.
- Technical datasheet of products was provided.
- Software results and drawings were attached in technical report.
- Proper statement for the application of the Tyfo® Fibrwrap® Carbon systems on structural members was mentioned.



2022

KINGS COTTAGES



**WATER PROOFING AT KINGS
COTTAGES
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD**

SUMMARY OF PROJECT:

- At Kings Cottage it was required to do waterproofing of very large and irregular expansion joint so RBC was approached to perform this task.
- After removing screed, backer rod was inserted in expansion joint which is soft and pliable filler designed to partially fill concrete expansion joints.
- Polysulphide sealant was used to caulk backer rod and chemically resist water penetration.
- Then Plastogrip which is water proofing membrane was applied through torching.
- The waterproofing work was done following standard procedures by utilizing our expertise.
- Rebuild Construction is making all efforts to protect existing structures and to meet client's requirements.



2022

SADABAHAR BANQUET



SPECIALIZED JOB AT SADABAHAR
BANQUET
CONTRACTOR:
RE-BUILD CONSTRUCTION PVT. LTD

SUMMARY OF PROJECT:

- At Sadabahar Banquet it was required to demolish RCC Pardi Beam to extend office so RBC was approached to execute work.
- Removal of RCC Pardi was done in pieces via anti vibration tool through stitch coring.
- Foundations for two MS Columns were laid.
- Fabrication of MS Columns and MS Girders of W4x8 was done.
- MS Columns were inserted and erection of MS Girder was done beneath the cutting edge of RCC Pardi Beam.
- Columns and Girder was painted with Red oxide paint.
- All the work was executed with efficiency & proficiency within specified short deadline, adhering to safety precautions.





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