

The Freyssinet Prestressed Concrete Co. Ltd.



Company Profile



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ABOUT US

The Freyssinet Prestressed Concrete Company Limited was established in 1954 to promote 'State of the art' prestressing technology and related products in India.

It has successfully made pioneering efforts to apply this technique in all types of structures and undertake the works on turnkey basis. It has developed the range from a modest 20 T. prestressing anchorage to 700 M.T. anchorages.

Over the years, the Company diversified into areas of Rehabilitation of Structures, Re-building of Bridges and Civil construction, Handling of Heavy Loads etc... By virtue of expertise attained, it has been recognized as a Civil and Structural Engineering firm in the country particularly in the specialized field of Prestressing and Repairs & Rehabilitation of Structures.

Many of the Structures executed by the Company have won accolades in the National and International fields.

freyssinet-india

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PRESTRESSING

Prestressing is a specialized business. This system is complex and made up of multiple elements which require extensive experience, technical knowledge, research, innovation and considerable means for installation.

FPCC has developed multifarious types of anchorages for prestressing force ranging from 185 KN to 10000 KN. Some of the products manufactured are:

- Anchorages & sheathing
- Hydraulic Jacks
- High-pressure pumps
- Neoprene bearings
- Flat jacks
- Grouting equipments

The techniques developed by Freyssinet are characterized by their durability and increased compactness:

- K range
- External prestressing
- Unbonded tendons

The quality & efficiency of these techniques have led to the Freyssinet's predominant presence on all mega, prestigious projects in different categories.

- Bridges
- Irrigation structures
- Offshore platforms
- Nuclear containment vessels
- Liquefied natural gas tanks
- Silos
- Geotechnics
- Buildings

SEGMENTAL CONSTRUCTION

LIST OF SEGMENTAL PROJECTS EXECUTED BY FPCC

S.N.	PACKAGE	LENGTH OF CORIDOR	TOTAL NOS. OF SPANS	TIME OF COMPLETION	HTS QTY.	SYSTEM	STATUS	
1	Beas Bridge	0.2 km	1	6 months	Not applicable	12K13	completed	
2	Delhi Noida Bridge	0.806 Km		8 Month	425 MT	27K15	Completed	
3	DMRC Viaduct Line - 1 (1C-24) (Wazirpur)	6.75 Km.	162	24 Month	1395 MT.	19K15	Completed	
4	DMRC Project Line - 3 (3C-23)(Vikasपुरi)	7.42 Km.	261	24 Month	1600 MT.	12K15 /19K15	Completed	
5	DMRC Project Line - 3 (3C-21)	7.52 Km.	260	24 Month	1495 MT.	12K15 /19K15	Completed	
6	DMRC Project Line - 3 (3C-27)(Pragati Maidan)	2.62 Km.	40	12 Month	315 MT.	4K15/ 12K15 /19K15	Completed	
7	DMRC Viaduct (BC-12 & BC-13)	6.80 Km.	247	24 Month	1000 MT.	12K15 /19K15	Completed	
8	DMRC Viaduct (BC-7)	5.20 Km.	139	24 Month	1000 MT.	12K15 /19K15	Completed	
9	DMRC Viaduct (BC-25) (Sarita Vihar)	7.291 Km.	220	18 Month	1180 MT.	12K15 /19K15	Completed	
10	DMRC Viaduct (BC-26)	6.80 Km.	186	18 Month	1300 Mt.	12K15 /19K15	Completed	
11	DMRC Viaduct (BC-34)	2.02 Km.	75	12 Month	350 Mt.	12K15 /19K15	Completed	
12	Hebbal flyover	2.34 Km		18 Months	800 MT	19K13/7K13	Completed	
13	Bangalore Metro	1.5Km	37	8 Months	275MT	19K15	Completed	
14	J.J.Flyover	2.40 Km	64	12 Months	765 MT	19K13/7K13	Completed	
15	Allahabad Bypass bridge over Ganga river	1.12 Km	20	30 Month	717.71 MT	19K13	Completed	
15	Elevated Bridge Project, Amritsar	5.00 Km.	76	18 Month	1400 MT.	4K15/ 19K15	In Progress	
16	Punjgutta flyover	0.6Km,	52	13 month	350 MT	12K13	Completed	
17	Lajpatnagar flyover	1.6 Km	0	15 Months	320 MT	12K15/19K15	Completed	
18	Signature Bridge	2.02 Km.	101	24 Month	1410 MT	19K15	In Progress	
19	Sone Bridge	3.016 Km	43	30 Month	1100 MT	19K15/12K15	Completed	
20	Britania Flyover	0.155 Km	16	12 months	155 MT	19K15 /4S15	Completed	
21	Mumbai Metro (Reliance, HCC)	Extd. Pier cap-Crossover-Station bldg.					4S15,5S15, 19K15,12K15	In Progress

BEAS BRIDGE



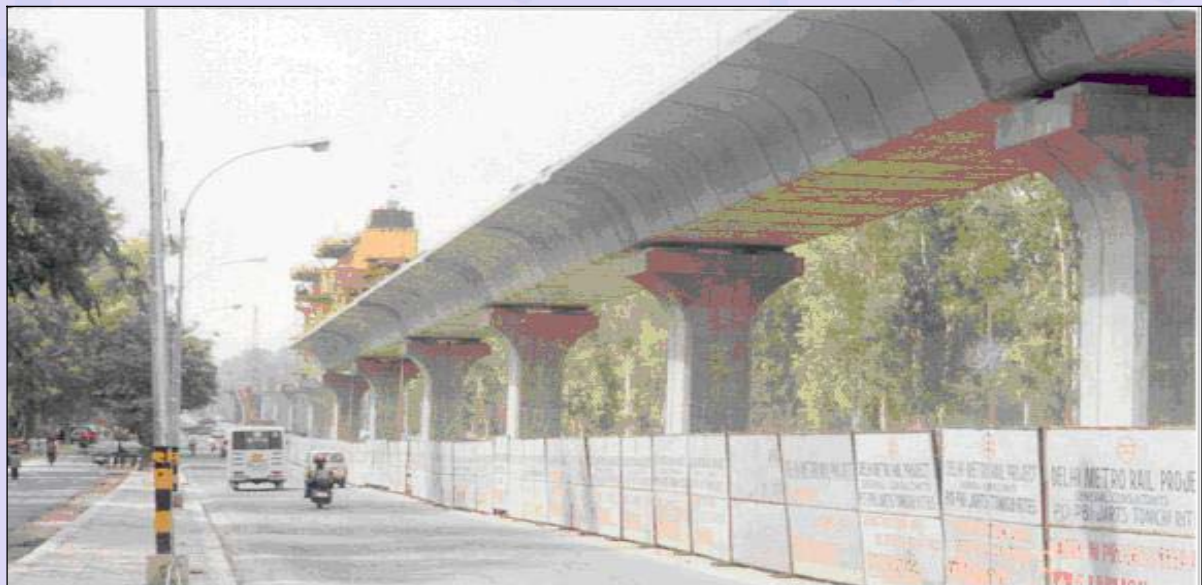
Project: Beas Bridge, Kullu , Himachal Pradesh

Details: Beas project was constructed across river Kullu in Himachal Pradesh. Due to heavy current of water and geological condition, typical arch of 100 mtr span was constructed to support the deck and columns of the bridge. The FPCCL was involved in carrying out the erection and its analysis of arch. The arch was constructed in the segment and alignment was maintained / adjusted using temporary stays which were anchored in temporary steel towers.



DELHI NOIDA BRIDGE

Project: Delhi Noida Bridge
Details: The decking of this bridge was constructed by precast segmental construction. It was post-tensioned by 27K15 Freyssinet external tendons which were used for the first time in the country at that time.



DELHI METRO RAIL CORPORATION (DMRC)

Project: Delhi Metro rail Corporation (DMRC)
Details: This is prestigious project in Indian Government was developed through Delhi Metro Rail Corporation (DMRC) which involves 190 km metro including elevated and underground. FPCCL has carried out 52 km stretch elevated sector with various contractors. The total quantum of post tensioning carried out by FPCCL was 9635 MT involving 16188 no. of segments. The work was carried out round O'clock and FPCCL holds record of carrying out post tensioning of 45 spans in a month in single package.



HEBBAL FLYOVER

Project: Hebbal Flyover

Details: This Bridge is located in Bangalore. The total length of flyover was 2.34 k.m. The numbers of segments was 785 nos and duration was 18 months. The 19K13/7K13 system was used. The contractor was Gammon India Ltd. and designer was Rites.



BANGALORE METRO

Project: Bangalore Metro

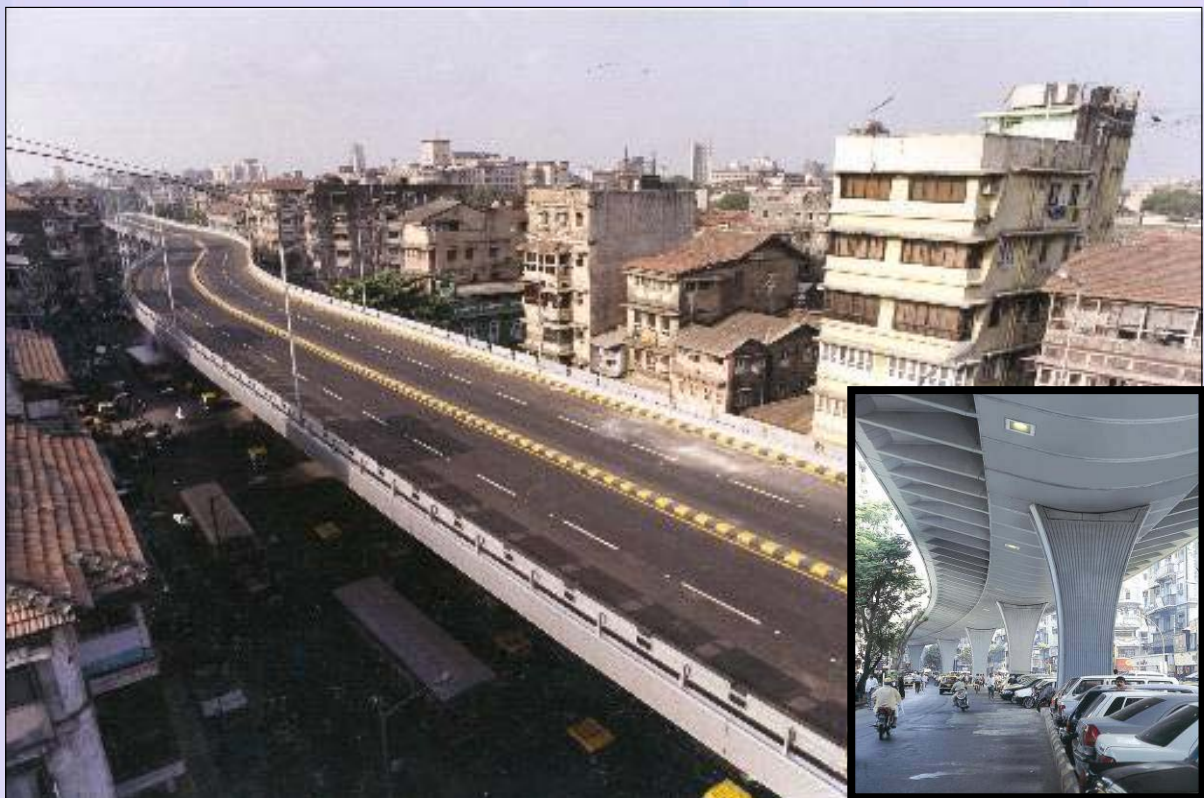
Details: This Bridge is located in Bangalore. The total length of flyover was 1.5k.m.. The total number of segments was 584 nos and duration was 8 months. The 19K15 system was used.



BASSEIN CREEK BRIDGE, MUMBAI

Project: Bassein creek Bridge, Mumbai

Details: This bridge is located on Mumbai-Delhi Highway on NH-8. The bridge was constructed by using segmental cantilever method. The decking was prestressed by Freyssinet 19K13 system.



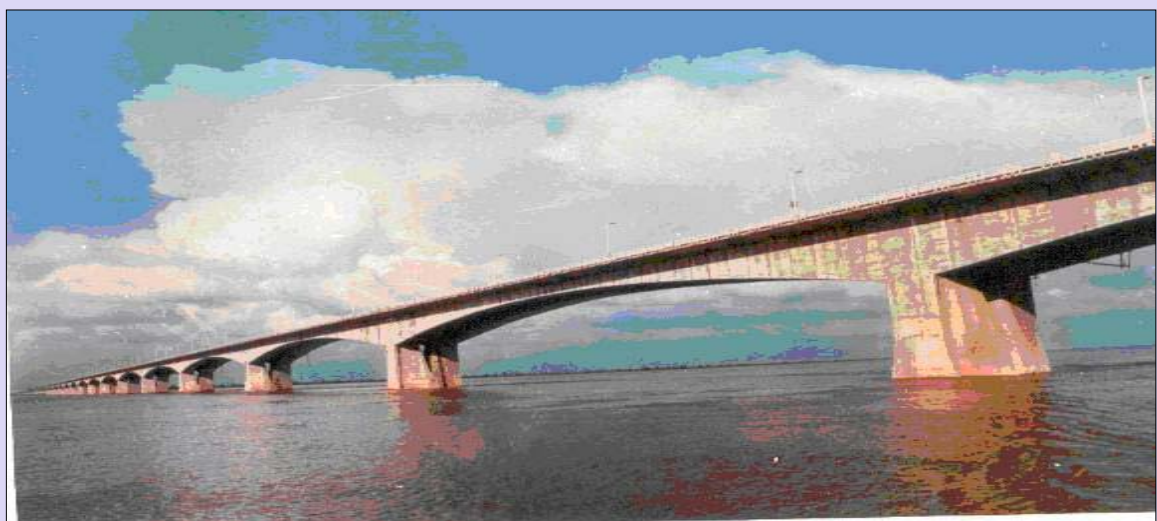
J.J.FLYOVER



ALLAHABAD BYPASS



JAIGAD CREEK BRIDGE



GANGA RIVER BRIDGE

CRYOGENIC TANKS

Ethylene storage tank –Dahej, Gujrat

PROJECT	: ETHYLENE STORAGE TANK AT DAHEJ
OWNER	: INDIAN PETRO - CHEMICALS LTD.
DESIGN CONSULTANTS	: W.A. FAIRHURST, U.K
PMC	: ENGINNERS INDIA LTD. (EIL)
CONTRACTOR	: INDIA TUBE MILLS CO. LTD. INDIA AND MOTHERWELL BRIDGE PROJECT
PRESTRESSING SUB CONCRCTOR	: THE FREYSSINET PRESTRESSED CONCRETE CO. LTD.
QUANTITY	: 2 TANKS OF SAME DESIGN.
CAPACITY	: 25,000 CUM
HEIGHT	: 30 MTRS.
PRESTERSSING SYSTEM	: FREYSSINET 19K13 FOR HORIZONTAL & "U" SHAPE VERTICAL TENDONS
SHEATHING	: 100 MM ID
STORAGE TEMPERTURE	: 104 DEGREE
YEAR	: 1997



LNG storage tank, Kochi

PROJECT	: LNG STORAGE TANKS AT KOCHI
NAME OF CLIENT	: PETRONET LNG LIMITED.
PMC	: WHESSOE OIL & GAS Ltd. U.K
EPC CONTRACTOR	: IHI CORPORATION. Tokyo Japan
CIVIL CONTRACTOR	: AFCONS Infrastructure Ltd.
PRESTRESSING	: THE FREYSSINET PRESTRESSED CONCRETE CO. LTD.
QUANTITY	: 2 TANKS OF SAME DESIGN
DIAMETER OF TANK	: 85 mtr
HEIGHT OF TANK	: 41 mtr
PRESTERSSING SYSTEM	: FREYSSINET 19 K 15 FOR HORIZONTAL & 12K15 FOR VERTICAL TENDONS
SHEATHING	: 100 & 85 mm ID
STORAGE TEMPERTURE	: - 165 °C
YEAR	: 2011, ONGOING



NUCLEAR REACTORS & CRYOGENIC TANKS

FPCCL has involved in the post tensioning of Nuclear reactor in India since it is first reactor and till date FPCCL has carried out post tensioning of ten reactors. The typical post tensioning work of nuclear reactor involved installation of semi circle cable, vertical cable and “J” shape cable.

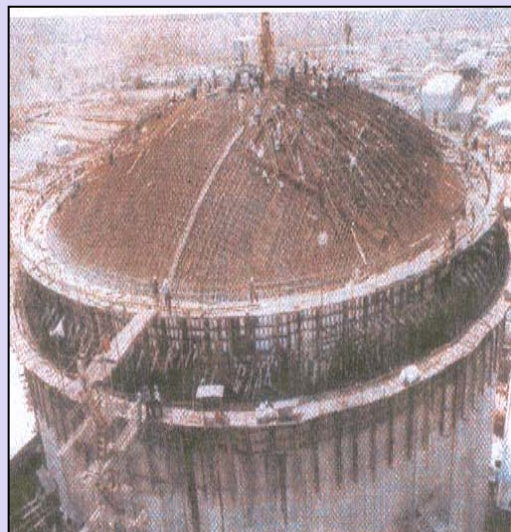
All the nuclear reactors in India have been prestressed by Freyssinet.

To name few –

- Kaiga Atomic Power Project – Unit 3 & 4
- Rajasthan Atomic Power Project – Units 1,2,3 & 4
- Madras Atomic Power Project,
- Narora Atomic Power Project,
- Kakrapara Power Project, etc.



RAPP – 1 & 2



RAPP – 3 & 4

SILOS

LIST OF SOME SILOS PROJECT EXECUCUTED BY FREYSSINET

SR. NO.	NAME OF SILO	CLIENT	LOCATION	YEAR
1	A.)BLENDING SILO AT ACC, CHAIBASA	PENTRON CIVIL ENGG LTD.MUMBAI	CHAIBASA	JAN:2004
	B.) CLINKER SILO AT ACC, CHAIBASA	PENTRON CIVIL ENGG LTD.MUMBAI	CHAIBASA	JAN:2004
2	CLINKER SILO AT ROPAR	AMBUJA CEMENTS	PUNJAB	MAY 2003
3	ACC GAGAL CLINKER STORAGE SILO	GANNON DUNKERLEY & CO. LTD. NEW DELHI	GAGAL, HIMACHAL PRADESH	JAN:2003
4	RAW MEAL BLENDING SILO	ACC LTD.	BANGALORE	
5	CLINKER SILOS FOR CEMENT PROJECT	SATHIAPAL (I) LTD	PALAYAM, TAMILNADU	APRIL:2000
6	CLINKER SILO FOR SAURASHTRA CEMENT	SIMPLEX CONC. PILES LTD, NEW DELHI	GUJARATH	MAY:2000
7	CLINKER SILO FOR MADRAS CEMENT SITE	PETRON CIVIL ENGG. LTD.	MADARAS	JULY:2000
8	ACC TIKARIA CLINKER & CEMENT SILO	GANNON DUNKERLEY & CO. LTD. NEW DELHI	AMETHI, UTTER PRADESH	DEC:2001
9	CLINKER STORAGE SILO FOR M/S GAEL	GANNON DUNKERLEY & CO. LTD. NEW DELHI	ROPAR, PANJAB	JAN:2003
10	EXTERNAL PRESTRESSING	GANNON DUNKERLEY & CO. LTD. NEW DELHI	GULBARGA, KARNATAKA	DEC:2002
11	VIKRAM CEMENT SILO	VIKRAM CEMENT CO.	JAWAD,MADHYA PRADESH	DEC-2004
12	NALCO CEMENT SILO	NALCO CEMENT	VIZAG,ANDRA PRADESH	
13	ALATHIYUR SILO	MADRAS CEMENT CO.	TAMILNADU	
14	JAMNAGAR SILO-DIGVIJAY CEMENT	GANNON DUNKERLEY & CO.	GUJARAT	
15	ULTRA TECH CEMENT SILO	SINGH CONSTRUCTION	WES BENGAL	

SOME REFERENCES IN SILO PRE-STRESSING



ALATHIYUR SILO (BLENDING) NEAR PENNADAM IN TAMIL NADU

Project: Alathiyur Silo (Blending), Tamil Nadu

Details: This blending silo with a 22 meter diameter and a height of 53 meter was constructed using the slip-forming system and Freyssinet 12/7 mm wire system for prestressing.



ALATHIYUR SILO (CLINKER) NEAR PENNADAM IN TAMIL NADU

Project: Alathiyur Silo (Clinker), Tamil Nadu

Details: This clinker silo with a 35 meter diameter and a height of 41 meter was constructed using the slip-forming system and 12T13 system was adopted for prestressing.



CLINKER SILO AT ROPAR, PUNJAB

Project: Clinker Silo, Ambuja cement, Ropar, Punjab

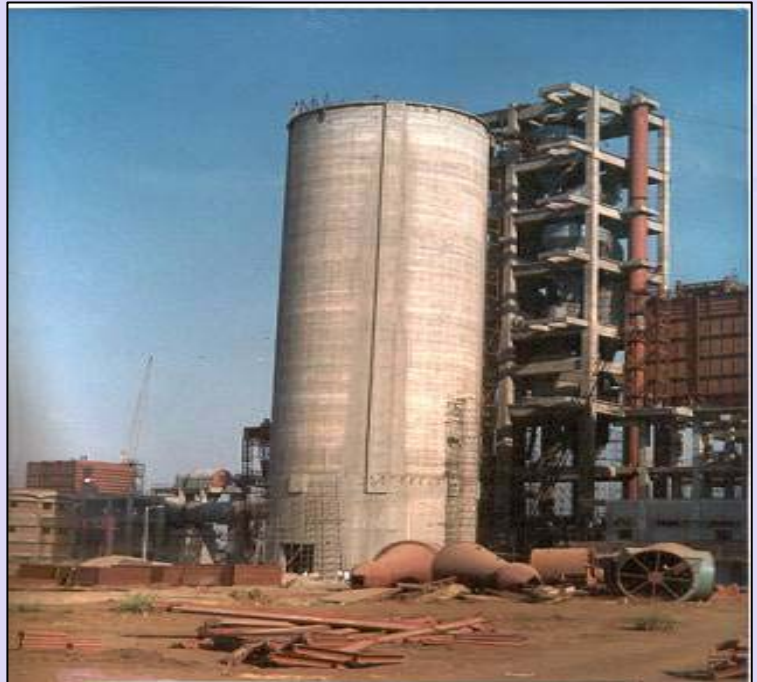
Details: This is one of the largest clinker silos constructed in India in 2003, with a 66 meter diameter and a height of 45 meter. It is provided with 4 ribs for anchoring Freyssinet 12K13 tendons.



GAGAL SILO, (H.P.)

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RAW MEAL SILO, BANGALORE



DAM - RADIAL GATES

S.N.	PROJECT	CONTRACTOR	CLIENT	NO.OF ANCHORS	COMPLETED ON
1	CHAMERA DAM (PHASE-I)	NHPC		760	March'1997
2	BASPA HEP PHASE-2 (350 MW)	Tex Maco/M/s Jai Prakash Associate Ltd.	NHPC	Nov.'1999	Nov.'1999
3	CHAMERA DAM (PHASE-II)	Tex Maco/M/s Jai Prakash Associate Ltd.	NHPC	October'2002	October-2002
4	INDIRASAGAR DAM	Gwalior Tanks & Vessels	NHDC	Feb'2004	FEB'2004
5	OMKARESHWAR DAM	M/s Jai Prakash Associate Ltd.	NHDC	March'2005	MARCH'2005
6	VISHNUPRAYAG HYDRO ELECTRIC PROJECT	M/s Jai Prakash Associate Ltd.	NHPC	July'2005	July'2005
7	MAHESHWAR DAM	MAHESHWAR		1892	March'06
8	BAGLIHAR HYDRO ELECTRIC PROJECT (450 MW)	M/s Jai Prakash Associate Ltd	NHPC	September'2009	September'2009
9	KARCHAM WANGTU HEP (1000 MW)	M/s Jai Prakash Associate Ltd	NHPC	August'2010	August'2010

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OMKARESHWAR DAM, MADHYA PRADESH

Project: Omkareshwar Dam, Madhya Pradesh

Details: Omkareshwar Dam constructed across River Narmada supplies power to the State of Madhya Pradesh and the annual generation from this hydroelectric project is 1167 million units. The dam is 949 meter in length and is 33 meter in height. It is a high concrete gravity dam. There are 23 radial gates of the size 20 meter x 17 meter in the spillway section anchored to the pier through RCC trunion girder of size 10 meter x 5 meter x 5 meter using Freyssinet 27K15 unbonded tendons.

The project was one of the fastest completed hydroelectric projects in the country during the period 2004 to 2006.



INDIRA SAGAR DAM, NARMADA NAGAR, DIST. KHANDWA(M.P.)

Project: Indira Sagar Dam, Khandwa

Details: Indira Sagar Dam is located on River Narmada at Narmada Nagar, Dist. Khandwa. Its installed generation is 1000 MW. The powerhouse has 8 turbines each having capacity to generate 125 MW electricity. The dam has 20 radial gates of the size 20 meter x 17 meter anchored to the pier through steel trunion girder using Freyssinet 27K15 system.



MAHESHWAR HYDROELECTRIC POWER PROJECT IN M.P.

Project: Maheshwar Hydroelectric Power Project, Madhya Pradesh

Details: Maheshwar Dam constructed across River Narmada in Madhya Pradesh. It is the longest dam in Madhya Pradesh. It is 3420 meter in length and is 36 meter in height. There are 27 radial gates of the size 20.5 meter x 17.5 meter anchored to the pier through the trunion girder using Freyssinet 19K15 and 12K15 tendons.



CHAMERA DAM

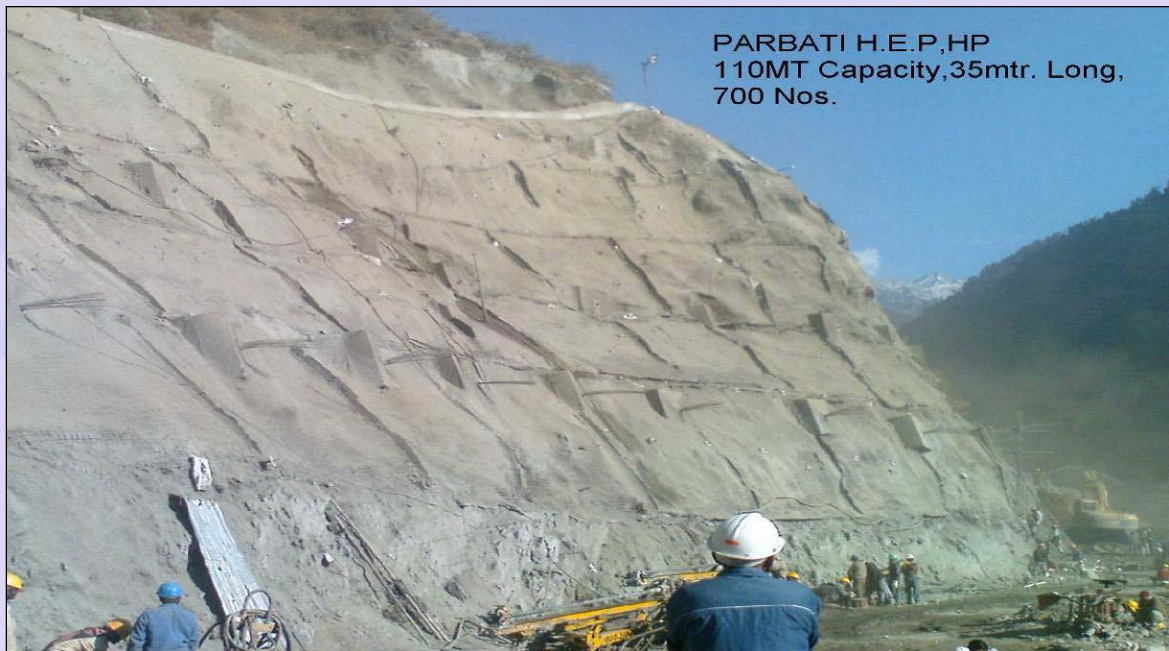


BAGLIHAR HYDRO ELECTRIC PROJECT

GROUND/ROCK ANCHORS

S.N.	PROJECT	CONTRACTOR	CLIENT	CAPACITY OF ANCHORS	NO. OF ANCHORS	TOTAL LENGTH IN (M)	COMPLETED ON
1	DHAULIGANGA ,HEP		NHPC	100	150	2250	1994
2	NATIONAL STOCK EXCHANGE OF INDIA BUILDING, BANDRA-MUMBAI	L. & T. LTD	NSEIL	120	290	7250	Feb.'1997
3	STERLING CENTRE BUILDING , WORLI, MUMBAI	FPCC LTD.	STERLING	120	8	160	April'1997
4	THAPAR HOUSE,MUMBAI	L. & T. LTD	CROMPTON GREVES	80	120	3000	Jan.'1998
5	GHATKOPAR PUMPING STATION, MUMBAI	TARWAYS	MCGM	150	24	384	1998
6	SNDDT COLLEGE BUILDING WADALA, MUMBAI.	SNDDT	SNDDT	100	40	600	Jan.'2000
7	BANK OF INDIA BUILDING, BANDRA-KURLA COMPLEX.,MUMBAI	SP	B.O.I.	60	48	720	Feb'2000
8	NAVRESHMA CO-OP BUILDING, MUMBAI	TARWAYS	NAVRESHMA	75	100	1200	May'01
9	UTSAV APARTMENT, JUHU, MUMBAI	FPCC LTD	UTSAV APP.	60	100	1500	2002
10	DENA BANK,MUMBAI	BG SHIRKE	DENA	60	100	1500	March'2002
11	KAIGA ATOMIC POWER REACTOR, KARNATAKA	G.I.L.	N.P.C.I.L.	350	280	7000	April'2002
12	SIDBI,MUMBAI	L. & T. LTD	SIDBI	60	120	1800	May'2002
13	PRAKASHGADH BUILDING, BANDRA MUMBAI	MSEB	MSEB	50	40	680	2003
14	JET HANGER, SANTACRUZ, MUMBAI.	L. & T. LTD	JET.	50	281	4215	May'2004
15	SEBI,BKC,MUMBAI	A.C.I.L.	C.P.W.D.	75	161	1932	Oct.'2004
16	GOLD COUNTY, MUMBAI	NILKANTH	NILKANTH	55	80	1200	May'2005
17	CANARA BANK, BKC, MUMBAI	N.B.C.C.LTD.	CANARA BANK	55	52	780	Aug.'2007
18	KOLDAM HEP,H.P.	G.I.L.	N.T.P.C.	60	180	1800	Aug.'2007
19	PARBATI HEP,HIMACHAL PRADESH	G.I.L.	N.H.P.C.	150	550	19250	Aug.'2007
20	ICICI BANK, HYDERABAD	L. & T. LTD	ICICI BANK	60	1100	12100	Sept.'2007
21	SUBHANSIRI H.E.P.	L. & T. LTD	N.H.P.C.	120	120	4200	Oct.'2007
22	LEH HEP	H.C.C	NHPC	60	30	750	Jan'2008
23	VSNL, BKC, Mumbai	V.S.N.L.	V.S.N.L.	60	40	480	March'2009
24	HOTEL LEELA PALACE, CHENNAI	G.I.L.	HOTEL LEELA	145	232	9280	April'2008
25	TCG ROCK ANCHOR AT BKC, MUMBAI	A.C.I.L.	TCG INFRASTRUCTURE	55	213	3408	APRIL'2009
26	ROCK ANCHOR AT WAZIRABAD, DELHI.	GAMMON	D.T.D.C.	125MT	192	15360	FEB'09
27	KOHINOOR ROCK ANCHOR AT VIDYAVIHAR, MUMBAI.	QUALITY CONSTRUCTION COMPANY	KOHINOOR CONST. PVT. LTD.	150 MT	415	4980	2010

28	INDIA TOWER ROCK ANCHOR AT CHARNI ROAD, MUMBAI.	DB HOSPITALITY	DB HOSPITALITY	175MT	360	11880	IN PROGRESS
29	CENTUTRY MILL	SPCL	CENTURY	90,120,150 MT	1061	--	IN PROGRESS
30	BAR ANCHORS NOVALTEL HOTEL,ANDHERI, MUMBAI	GAMMON	NOVALTEL	22 T	850	--	IN PROGRESS
31	CABLE ANCHORS NOVALTEL HOTEL,ANDHERI,MUMBAI	GAMMON	NOVALTEL	100 T	250	--	IN PROGRESS
32	ROCK ANCHORING FOR WELL SINKING,JHANSI, M.P.	DSC LIMITED	NHAI	260 & 220 MT	19 K 15	---	IN PROGRESS
33	CABLE ANCHORS AT VISHNUGAD, UTTARAKHAND	PATEL ENGG	NTPC	60 MT	7 K 13	3500	IN PROGRESS



PARBATI H.E.P,HP
110MT Capacity,35mtr. Long,
700 Nos.

PARBATI HYDROELECTRIC PROJECT IN HIMACHAL PRADESH

- Project:** Parbati Hydroelectric Project, Himachal Pradesh
- Details:** The project is located in the hilly terrain of Kullu.
- Challenge:** During construction of the power house a portion of the slope behind the power house collapsed. The slopes were to be stabilized to prevent further landslides and caving.
- Solution:** A system of prestressed anchors and rods was devised to stabilize the slopes. Freyssinet 12K13 tendons were used. Shortcreting was done on the slopes after anchoring of the tendons to prevent damage to the slopes due to water. A total area of 90 meter x 175 meter was stabilized in this manner.



HOTEL LEELA AT CHENNAI

Project: Hotel Leela, Chennai

Details: A 15 meter deep pit had to be excavated to locate a parking lot and a service basement on 2 levels.

Challenge: The side walls were to be protected from collapsing.

Solution: The side walls were stabilized by constructing secant piles in the sandy strata. The piles were anchored to the surrounding land by providing prestressed anchors with a capacity of 150 tonne. Freyssinet 10K15 tendons of varying length (35 to 45 meter) were used.

The job of anchoring about 350 tendons was completed in 4 months flat!



SOIL ANCHOR WORK AT WAZIRABAD

Project: Signature Bridge, Wazirabad

Challenge: Sinking of wells was required for the construction of the bridge.

Solution: Freyssinet soil anchors with a capacity of 150 tonne were employed for this purpose. Each anchor was taken 70 meter deep by pneumatic drilling rigs. The casing, too, was taken to that depth and was withdrawn completely during grouting. In all 24 wells with 8 anchors were executed in this manner.



SUBHANSARI HEP (H.P.)

Project: Lower Subansiri Project, Andhra Pradesh

Challenge: The slopes of the hills adjoining the diversion tunnels had to be stabilized.

Solution: Freyssinet rock anchors with a capacity of 60 tonne were used. The anchors were inclined 15° to the horizontal and embedded 12 meter deep in the sandstone strata. Freyssinet 7K13 tendons were used for anchoring.



DHAULIGANGA, M P

BUILDINGS

PT SLAB PROJECT EXECUTED BY FPCC

S.N	PROJECT	LOCATION	AREA (M2)	TYPE	MAIN CONSULTANTS	OWNER	YEAR
1	Utsav Apartments, Juhu	Mumbai	6,500	Residential			2003
2	Lakshma Fashion House,	Bangladesh	9,800	Commercial			2004
3	Handloom House, Fort	Mumbai	7,350	Commercial			2004
4	SKS Garments, Dhaka	Bangladesh	10,500	Commercial			2005
5	Pride Portal, S.B.Road	Pune	7,600	IT park	Y.S.Sane	Pride Housing	2005
6	COD, Dhaka,	Bangladesh	9,000	Commercial			2005
7	Ha-meem Textiles	Bangladesh	5,000	Industrial			2005
8	HSBC, Hyderabad.	Hyderabad.	36,700	Commercial	Mahimtura	L & T	2005
9	Santacruz Shopping Centre, Santacruz	Mumbai	1,250	Commercial	Mahimtura	L & T	2005
10	Cyrus Poonawalla Bungalow, Haji Ali, Mumbai.	Mumbai	1,500	Residential	Mahimtura	Poonawalla	2005
11	Arena Developers, Andheri, Mumbai.	Mumbai	3,300	Commercial	Structcon	Viswakarma	2005
12	Rosy Blue Factory, Kandivali, Mumbai.	Mumbai	200	Industrial	Sura & Asso.	Rosy Blue	2005
13	Pillai Plaza, Dadar	Mumbai	1,200	Commercial	Sura & Asso.	----	2005
14	Silver Masterpiece, Jogeshwari, Mumbai.	Mumbai	25,000	Commercial	Vijay Bhise	Silver Group	2006
15	Dheeraj Multiplex, Kandivali, Mumbai.	Mumbai	600	Commercial	Sura & Asso.	Dheeraj Group	2006
16	Crystal Point, Andheri	Mumbai	3,000	Commercial	Sura & Asso.	Crystsl Group	2006
17	Building at Sanpada	Navi-Mumbai	1,728	Commercial	Rajesh Ladhad	Akshar developer	2006

18	Ware House for Writer Corporation	Chennai	2,000	Commercial	D. Jain	Writer Corporation	2006
19	Tech Park One(Tower A, B, C, D), Yerwada, Pune.	Pune	75,000	IT park	SPA	Panchasheel	2007
20	Multiplex & Comm. Complex, Vashi, Navi Mumbai	Navi Mumbai	30,000	Commercial	Structcon	Haware	2007
21	Eco-Space (c/o Sigma Paints @ Andheri	Mumbai	5,500	Industrial	Desai & Asso.	Sigma Paints	2007
22	Proposed Hero honda showroom@ Pashan	Pune	1,500	Commercial	Spectrum	Kundan Auto.	2007
23	Proposed comm. bldg. at Karve Rd.	Pune	1,000	Commercial	Suhas Joshi	J. Natu	2007
24	Supreme Square @ Aund	Pune	1,000	Commercial	Suhas Joshi	Supreme Square	2007
25	Forbes Marshal @ Pune.	Pune	900	Commercial	Suhas Joshi	Forbes Marshal	2007
26	Proposed industrial bldg at Bhosari	Pune	PT beams	Industrial	Kishor Jain	Ratnesh Engg.	2007
27	IT Building for Bharati Vidyapeeth	Pune	7,200	IT park	Suhas Joshi	Bhartividyapeeth	2007
28	Reliance NOCIL Head Quarters	Navi Mumbai	20,000	IT Park	S. Mehendale	Relience	2007
29	Show-room at Dhantoli	Nagpur	380	Commercial	Skyline	Om Enterprises	2007
30	Proposed Micropark at Nagpur	Nagpur	10000	Commercial	Kulkarni	Micropark Logistic	2007
31	Velocity arcade	Nagpur	2500	Commercial	P.S.Patankar	Gupta infrastructure pvt.ltd	2007
32	Ashar IT Park, Mumbai	Thane	52,800	IT park	R.C.Tipnis	Ashar Realty	2008
33	Persistent Systems Ltd. Pune	Pune	40,000	IT park	Y.S.Sane	Persistent	2008
34	Gaikwad patil college, Nagpur	Nagpur	10,000	Educational	Skyline	Gaikwad-Patil	2008

35	Lunkad Developers, pune A.Sky Station	Pune	6,000	Commercial	Y.S.Sane	Lunkad Reality	2008
36	Lunkad Developers, pune B.Sky loune	Pune	15,000	IT park	Y.S.Sane	Lunkad Reality	2008
37	Lunkad Developers, pune C.Sky max	Pune	10,000	Commercial	Y.S.Sane	Lunkad Reality	2008
38	Lunkad Developers, pune D.Sky vista	Pune	5,000	IT park	Y.S.Sane	Lunkad Reality	2008
39	Centurian Mall, Nerul	Navi Mumbai	20,000	Commercial	Structcon	Haware	2008
40	Tiara Mall, Thane	Thane	5,600	Commercial	Structcon	Structcon	2008
41	Jabalpur Entertainment complexs pvt.Ltd,Jabalpur	Jabalpur	15,000	Commercial	Sky line	Jabalpur Entertainment	2008
42	Market city, Mumbai	Mumbai	65,000	Commercial	Y.S.Sane	Offbwat Developer	2009
43	IT Park Chikalhana	Aurangabad	4,500	IT park	Y.S.Sane	Vinay Surana	2009
44	SFC Mall,Sangli	Sangli	10,000	Commercial	ISM Consultants	Kupwad Municipal	2009
45	Empire Mall, Aurangabad	Aurangabad	135,000	Commercial	Clancy global	Provuge	2010
46	M/s Anuttam Developers Pvt.Ltd.	Pune	73,000	Commercial	Y.S.Sane	Anutam Developer	2010
47	IT Park Thane	Thane	24,000	IT park	R.C.Tipnis	Ram Krishna Metal	2010
48	Nahars Amrit shakti podium at Chandivli	Mumbai	70,000	Podium	Y.S.Sane	Nahar Amrit shakti	2010
49	PT slab & beams for Hotel Leela Palace at Chennai	Cennai	360	Hotel	Mahimtura consultants	Gammon india	2010
50	Rajiv Gandhi Infotech Park @ Hingewadi	Pune	20,000	IT Park	Y.S.Sane	Persistant	Ongoing



UTSAV APARTMENTS, MUMBAI-1994

The first completed post tensioned building in India in 1994 Apartment is located in Juhu, Mumbai having 6500m² area and panel size is 8.0 X8.0 m. The system used is 4S13.



BANK OF INDIA AT BANDRA KURLA COMPLEX, MUMBAI

This building is located at Bandra Kurla Complex in Mumbai and is a commercial building with 2 basements and 8 floors in the superstructure. It is provided with post-tensioned slabs and beams, using Freyssinet 4S13 system for slabs and 19K13 for beams. Grid size used for this project is 9.00 x 14.50 M.



EMPIRE MALL AT AURANGABAD

Owner: Provouge Pvt. Ltd.

Principal consultants: Clancy Glodal, Mumbai.

Main contractor: SPCL

This is a shopping mall located at Aurangabad, Maharashtra. It is the largest and first post-tensioned commercial building constructed in Aurangabad.

It is a 4-storey building with largest floor space area of 1, 10,000 Sq.M. and the grid size used is 10.80 M x 11.60 M. and 8.40 M. x 10.00 M.

Freyssinet 4S13 and 5S13 systems were used to prestress the slabs.



TECH PARK, PUNE, MAHARASTRA

Owner : Panchasheel

Consultant : Shirish Patel and Associates

This was prestigious I.T.Park constructed in Pune. The total area I.T.Park is 80,000 sq.mtr. with grid of 8.5 X 8.5 mtr.

**LAKSHMA FASHION HOUSE
BANGLADESH**



**SKS GARMENTS
DHAKA, BANGLADESH**

**FORT HOUSE
MUMBAI**



**BANK OF INDIA
MUMBAI**

**SILVER MASTERPIECE
MUMBAI**



ASHAR IT PARK AT THANE

**COMMERCIAL BUILDING AT
MAROL**



PRIDE PORTAL AT PUNE

GLIMPSES OF OUR REPAIRS AND REHABILITATION JOBS

BRIDGES



Vansadhara Bridge in Orissa State

Project: Vansadhara bridge, Orissa

Details: This bridge is situated on Behrampur-Raigada State Highway No.4 in Orissa. There are 9 spans of 104 ft. each and 2 end spans of 35 ft. with floating spans of 5 ft. The superstructure consists of RCC box girder with twin cells and balanced cantilever supported on solid piers. Rocker and roller steel bearings were provided on the piers supported by dumbbell shaped well foundations.

Challenge: During one of the high floods, the transmission tower and cables on it toppled and thousands of mango trees got uprooted and blocked the waterway. Due to this the abutment on the right bank together with P1 and P2 and decking got washed away. The superstructure on P3 and P4 shifted towards the downstream side and rested on 2 pedestals only. The piers P3 and P4 were tilted towards the upstream side. The main span P3-P4 and suspended span P4-P5 were saved from getting washed away. However, they got misaligned badly in 3 directions.

Solution: P3-P4 span was rehabilitated by us successfully by adopting following measures:

- 1) Damaged concrete removed.
- 2) Both piers were provided with RCC cladding and anchoring of reinforcement was done with well cap and existing pier.
- 3) Span was lifted to the original level.
- 4) Lifted span was rotated for achieving proper alignment.
- 5) Span lowered on the Neoprene bearings.



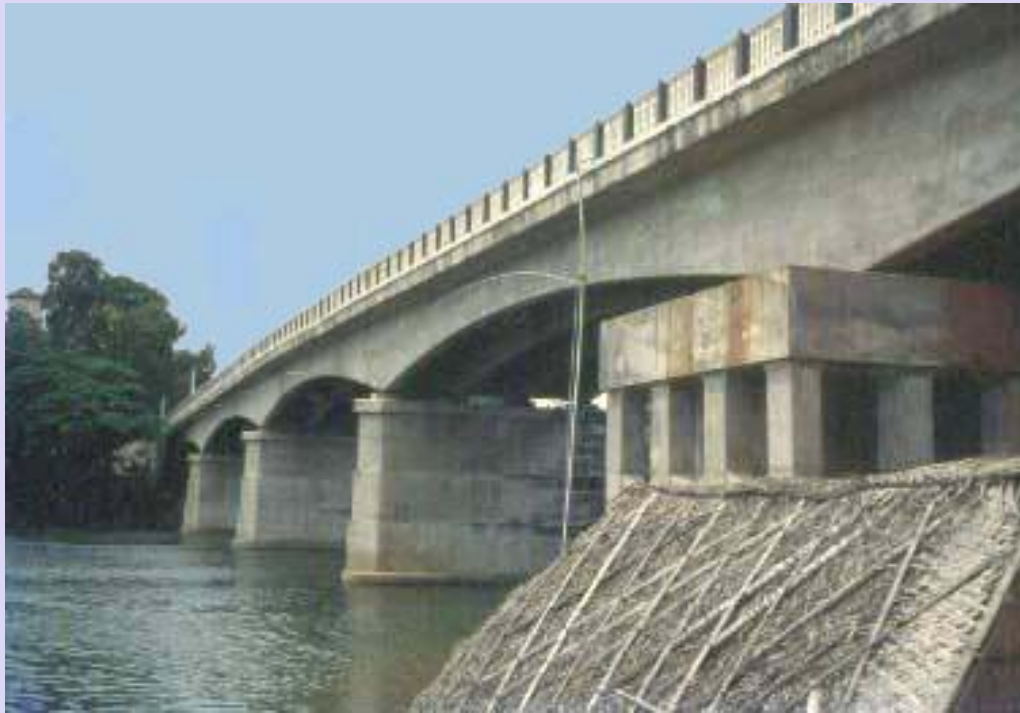
Sotlej Canal Bridge in Punjab

Project: Sotlej Canal Bridge in Punjab

Details: The sotlej bridge is located over canal in Punjab. Canal was used for irrigation purpose. Some submersible bridges are raised by jacking up the decks and by increasing the height of piers. Rapid growth of urban areas at times, calls for improvement in bridge structures near the city to take care of the network of roads and highways skirting the city.

Challenge: During the service life of bridge, time was come when the bridge was required to be elevated.

Solution: The decking of Sotlej Bridge over the canal was raised by 1.2 Metres to accommodate higher FSL.



Thevally bridge in Kerala State

Project: Thevally bridge, Kerala

Details: The bridge is located on a State Highway near Thevally town in Quilon district. It has balanced cantilever decking with 2 main units of 30.48 M. and central suspended span of 15.24 M. The end approach spans are supported by cantilever tips.

Challenge: In this bridge, one pier and an abutment suffered considerable settlement and tilting thereby adversely affecting the stability and alignment of the bridge. The abutment on Kadavur side and adjoining pier had settled and tilted. The settlement was 1.26 M. and 0.7 M. respectively. Due to settlement, the RCC rocker and roller bearings had cracks and because of rotation of span in plan, expansion gaps too varied substantially. Hence it was decided to construct new trestles around these foundations and transfer the load of the spans over them.

Solution: For pier and abutment 20 and 12 bored piles of 550mm ϕ were constructed respectively. On the top, new pier cap was provided. The rehabilitation work was executed in the following sequence:

- i) Construction of piling and raising pier on them for some height below the soffit of superstructure.
- ii) By lifting the span, the superstructure was brought to the original level position.
- iii) Articulations were repaired.
- iv) Balance height of the trestles was constructed.
- v) Side shifting of the span was done to bring it to original alignment.
- vi) Neoprene Bearings were installed on new trestles and the superstructure lowered on to them.



Khuni Nallah Bridge in Jammu & Kashmir State

Project: Khuni Nallah Bridge, Jammu & Kashmir

Details: The bridge, spanning a deep valley, is located in tough Himalayan terrain prone to landslides. The superstructure consists of 2 unequal cantilevers of 19.8 meter and 39 meter towards centre of the crossing and balanced by suspended spans of 30.4 meter. Shore spans are 8.2 meter and 18.6 meter in length.

Challenge: The prestressed concrete single cell box had suffered heavy damage due to a massive landslide resulting in rupturing of 32 out of 46 cables.

Solution: The cable positions were re-established and they were coupled and anchored over a concrete block specially constructed over the pier. The damaged portion of the deck was also repaired and the cables stressed. A load test was conducted in accordance of the IRC standards.



Nizamuddin Bridge across River Yamuna at Delhi

Project: Nizamuddin Bridge, Delhi

Details: Nizamuddin Bridge on NH-24 bypass connects the Ring Road at Delhi to trans-Yamuna areas. The bridge, with an overall length of 550 meter, has 2 independent carriageways. Two 900 mm diameter MCD are supported in the bridge between the 2 carriageways. A 3 meter wide footpath supported on cantilevered brackets has also been provided on either side.

Challenge: The bridge had suffered damage to concrete on account of spalling of rebars and prestressing steel, ceasing of bearings and heavy corrosion of RCC elements supporting the water mains.

Solution: The rehabilitation of the bridge was carried out by providing independent supports to the water mains and external cables for strengthening of the PSC girders. The structure was also lifted and bearings were cleaned and reinstated.



Zuari Bridge in Goa

Project: Zuari Bridge, Goa

Details: This bridge situated on NH-17 near Panjim in Goa across River Zuari. The bridge, with an overall length of 810 meter, comprises 5 “T” arms of varying length, 2 suspended spans and 5 viaduct spans of 36 meter each. The carriageway width on the bridge is 7.5 meter with a 1.5 meter wide cantilever footpath on either side.

Challenge: On account of proximity to the saline environment the existing prestressed cables were corroded resulting in loss of stresses. Excessive deflection of the cantilevers combined with vertical cracks in the web near the pier was also observed.

Solution: A scheme of external cables was devised to compensate for the loss of prestress, thereby improving the serviceability of the structure. The cables were located on the underside of the deck and over the soffit by deviating them from the web. A load test was performed in association with IIT, Mumbai, which proved the efficacy of the measures taken.



Mahatma Gandhi Setu, Patna

Project: Mahatma Gandhi Setu, Patna

Details: The longest bridge in Asia at 5525 meter, it comprises 45 spans of 121 meter each and 2 end spans of 63.5 meter each. It is a prestressed concrete bridge with pre-cast double cantilever construction on RCC piers and wells. The superstructure consists of cantilever "T" arms of 60 meter each on each side of the pier.

Challenge: On account of proximity to the saline environment the existing prestressed cables were corroded resulting in loss of prestressing forces and deflection of the cantilever arms. Due to distresses some of the segments were forming a gap of 15 to 20 mm. Cracks were observed in the bottom slab of the segment cast box girders in a few spans, and excessive sagging of cantilevers was also observed.

Solution: The rehabilitation of the bridge was carried out by external prestressing to the deflected cantilever tips and spans, and stitching was done with imported Macalloy bars. The damaged central hinge bearings and expansion joints were replaced with new ones.



Sharavathi Bridge near Honnavar, Karnataka

Project: Sharavathi Bridge, Karnataka

Details: Sharavathi Bridge constructed in sixties, is situated on NH-14 near Honnavar in Karnataka State. The Bridge, with an overall length of 1047.65 meter, comprises 34 spans of 30 meter each. The 2 end spans are balanced cantilever arms. Each main span consists of 5 prestressed "I" girders placed on hammerheads.

Assessment and design of the scheme for strengthening of the bridge was carried out by M/s. STUP Consultants P. Ltd., jointly with M/s. Hyder Consulting Ltd., U.K.

Challenge: On account of proximity to the saline environment the existing prestressed cables were corroded resulting in loss of stresses. Distresses were also observed in hammerheads.

Solution: The rehabilitation of the bridge was carried out by strengthening the piers and hammerheads with additional steel brackets and external prestressing of main girders. One of the outstanding features of this project was the load test carried out to assess residual prestress in the girders.



Jui Creek Bridge in Navi Mumbai

Project: Jui creek bridge, navi mumbai

Details: Jui Creek Bridge is a link between Old Bombay and New Bombay. The bridge consists of two simply supported spans of 44 M. length supporting two carriageways each of 7.3 M. width, two footpaths and central verge of 1.2 M. Detailed inspection and study of design showed that the structure is in good condition and the stability of the bridge is not going to be affected by raising the deck level by 2.65 M.

Challenge: An important road passes under this bridge. The only remedy was to raise the decking of the bridge by 2.65 M.

Solution: Temporary diversion of the traffic was arranged. Seven girders of each span weighing 1400 T. were lifted simultaneously by using hydraulic jacks. After completing desired lifting, the load was transferred on to the support system and abutments and pier were raised to the new level. The decking load was then transferred to new elastomeric bearings installed on the raised substructure.



Rehabilitation of Old Mahanadi Bridge on NH-5A near Paradip, Orissa

Project: Mahanadi Bridge, Orissa

Details: Mahanadi Bridge is situated on NH-5A between Chandikhol and Paradip in Orissa State. The bridge was constructed in mid sixties as an access to Paradip Port which was being developed at that time. It is a major High Level Bridge constructed over the creek with depth of water varying from 5 M. to 15 M. All 19 spans of bridge were simply supported and comprising of 4 'I' girders with 48 M. The rehabilitation work was supervised by M/s. Lea Associates South Asia Pvt. Ltd. – Project Consultant and NHAI, in addition to HCC Limited.

Challenge: This stretch of road was taken up for 4 laning by NHAI. The work of rehabilitation and strengthening of superstructure of this bridge was a highly specialized job and was therefore entrusted to FPCC by HCC Limited at the recommendation of NHAI.

Solution: All spans were strengthened by providing two external cables of 6T15 size for each girder. The cross prestressing was done by using 2 mono-strand Freyssinet cables of 1T15 system. The work has been completed and the bridge has been re-opened for traffic in November 2010.

RAILWAY BRIDGES



Thane Creek Bridge – Central Railway

Project: Thane Creek Bridge, Maharashtra

Details: The 135 year old bridge has a superstructure and sub-structure built in masonry, resting on open footings. In all there are 23 arches of 9.14 meter span and barrel length of 21 meter.

Challenge: Due to ageing, two arch sections had suffered distress and the mortar had leached loosening the stones.

Solution: In order to restore the integrity of the structure holes were drilled along the entire surface of the arch and the pier. Neat cement grouts were injected, dowels were fixed over the entire surface, the area around the foundation was excavated and RCC jacketing was done. Internment of the arch by RCC was also done. Tidal problems and long length of the barrel added to the challenge during this project. Cofferdams were constructed to isolate the foundation so that the required repair work could be accomplished.

REBUILDING OF 7 BRIDGES ON SURAT – BARODA SECTION



Bridge No.478 – Complete view after launching of all PSC girders

- Project:** 7 Bridges between Surat - Vadodara, Gujarat
- Details:** The bridges were more than 100 years old, and were located along a stretch of 109 km. The existin bridges were steel girder bridges having 3 600 mm (phi) cast iron piles covered with stone masonry piers.
- Challenge:** The cast iron piles were corroded significantly and needed to be replaced.
- Solution:** New pile foundations were laid between the 2 old foundations and RCC piers. The plate girder decking was replaced by prestressed concrete girders. A notable achievement was that the entire project was executed without disrupting traffic.



1st Stage - 35 M.T. existing steel girder was de-launched by 400 M.T. capacity hydraulic crane.



2nd stage – PSC box girder weighing about 220 M.T. being lifted using 2 Nos. 400 M.T. capacity cranes from the ground level.



3rd stage – Launching of PSC box girder in progress and is in final stage.



4th & final stage – View showing PSC box girder placed on Temporary c.c. cribs before finally placing in position on new pier caps.

- Project:** Cauvery River Railway Bridges
- Details:** There are 2 prestressed bridges spanning the Cauvery River with 47 spans in all. The existing superstructure consisted of two prestressed concrete girders spaced 1.2 meter apart with RCC decking on top.
- Challenge:** These bridges were to be converted from Meter Gauge to Broad Gauge track.
- Solution:** A full scale model test was performed on 2 released girders with RDSO, Lucknow. The tests were performed upto the ultimate capacity requirement of RBG loading according to the Indian Railway – Concrete Bridge Code. The prestressed concrete girders were strengthened by providing external post-tensioning and by increasing the thickness of the slab. Freyssinet 12 (phi) 5 tendons were used externally and were anchored at the end of the span.

freyssinet-india

SILOS



Diamond Cement Silo

- Project:** Diamond Cement Silo, Madhya Pradesh
- Details:** 2 raw meal silos constructed in 1983 for a capacity of 5500 MT. The 15 meter diameter silo is 33 meter in height.
- Challenge:** The 2 silos had suffered heavy damage due to vertical cracks and spalling. It was also observed that the circumferential reinforcement was not adequate.
- Solution:** 216 full-size circular mono-strand cables were provided and anchored using Freyssinet special connectors. The strands were housed in suitable HDPE ducts with a layer of grease. The assembly of strand and pipe was housed in bigger HDPE ducts and the inter space was grouted with neat cement grout, thus providing comprehensive protection to the prestressing steel.



Raymond Cement Silo at Bilaspur

- Project:** Raymond Cement Silo, Bilaspur
- Details:** The 14 meter diameter silo is 37 meter in height and has a capacity of 1.2 million tonne.
- Challenge:** The silo tilted by as much as 2 meter when cement was being loaded into it and cracked. It was resting on an adjoining silo, which made the job of repairing and realigning it extremely challenging.
- Solution:** The portion of the silo above the crack was supported by hydraulic jacks and by fitting steel brackets. Concrete jackets were provided to support the jacks and the upper portion. Concrete in the distress zone was cut in a controlled manner on the opposite side of the tilt. This was followed by lowering, i.e. tilting in the opposite direction, in small steps of 100 mm. The damaged portion was then concreted after bringing the silo back to its vertical alignment. The outer jacket was integrated with the existing silo and a PSC ring beam was provided for increased effectiveness.

DAMS



Indira Sagar Dam – Roller Bucket – NHDC, Khandwa

- Project:** Indira Sagar Dam – Roller Bucket – NHDC, Khandwa
- Details:** The dam has a height of 91 mter and a capacity of 12 billion cum. It has 20 gates, with 12 radial gates and 8 auxiliary gates.
- Challenge:** The roller buckets of the radial gates were damaged due to excessive force of the discharged water through spillways.
- Solution:** Stagnant water in the buckets was dewatered by heavy duty water pumps and loose concrete was removed by chipping. Additional reinforcement was laid by anchoring bars into the existing concrete.



Hirakud Dam, Sambalpur, Orissa State

Project: Hirakud Dam, Orissa

Details: Hirakud dam is one of the major dams in India situated across River Mahanadi in Orissa near Sambalpur. The 4800 meter long dam is a combination of concrete, masonry and earth section.

Challenge: Considerable leakage through the right spillway was observed, and was traced to several horizontal cracks formed along the spillway length.

Solution: In a feat that defied all odds, the cracks were treated underwater using imported low viscosity epoxy grout. The distresses were tackled effectively by deploying experienced deep sea divers and expertise especially suited for underwater treatment.



Chamera Dam in Himachal Pradesh

Project: Chamera Dam, Himachal Pradesh

Details: Chamera Dam is across River Ravi and its generation capacity is 540 MW. The radial gates of the dam are of the submersible type, with each gate being 10.2 meter x 12.8 meter in size. The gates rest on the crest of the spillway and are fixed to a trunion girder. Each gate is anchored with 96 high tensile bars of 36 mm diameter. The estimated force used for anchoring each gate was 9160 tonne with 48 prestressed bars provided on either side of the pier.

Challenge: Some anchor bars showed signs of distress such as breaking and yielding. The existing bars were to be replaced with cable anchors, without affecting the existing arrangement of trunion girders, radial gates, piers and connected parts.

Solution: 6 strands of 15.2 mm diameter were used in each hole. FPCC's new compact anchorage system was used to overcome space constraints. Strand cable was un-bonded.

JETTIES



Kandla Port Trust - Jetty

Project: Kandla Port Trust Jetty

Details: Berthing facilities for cargo ships were constructed in 1964. Kandla is a natural all-weather port and is newly established. It is 15 Kms. from Gandhidham and is a Gateway for North and Western India. The jetty comprises 10 cargo berths in straight quay line in a sheltered creek. Each berth is 200 meter long. There are a number of bays, each 23 meter in length.

Challenge: The salinity of the marine environment had resulted in corrosion of rebars, spalling and cracking of concrete. There was heavy damage to quay walls due to constant collisions with berthing ships.

Solution: Various components of the jetty were restored by removing damaged concrete and building up sections by polymer mortar and guniting, as required. The project was completed within the stipulated deadline in spite of the challenges posed by the tidal variations, heavy marine traffic and space restrictions.



Jaffrabad Jetty

Project: Jaffrabad Jetty

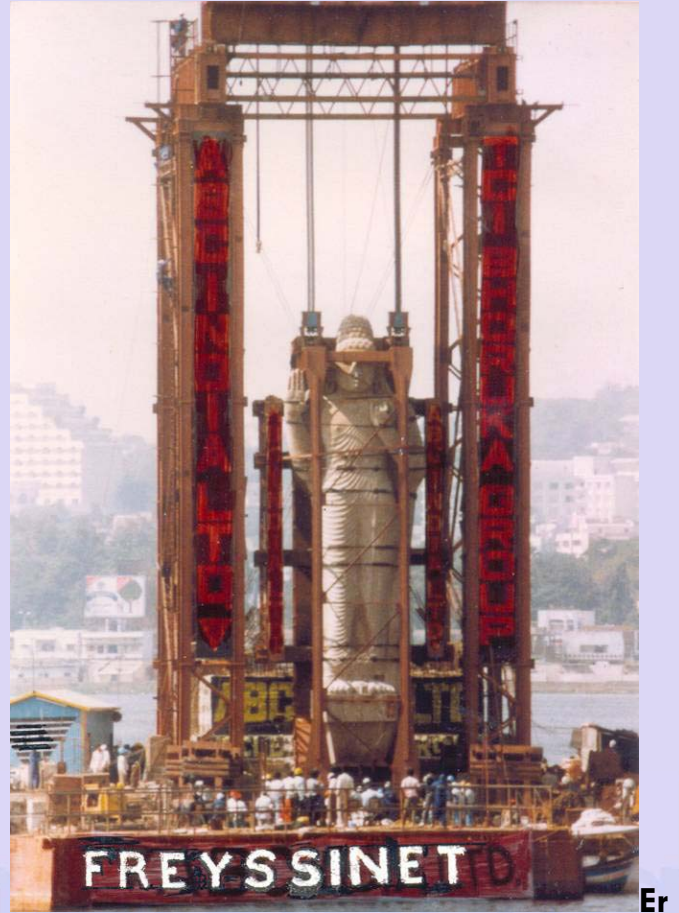
Details: The main jetty is 211 meter long and is used for berthing of ships. It is connected to the 265 meter long approach jetty. The width of the jetties is 11 meter and 10 meter respectively. The superstructure of the jetty consists of a 200 mm thick RCC deck slab resting on “T” beams and end “L” beams supported on main beams.

Challenge: The main/secondary “L” beams showed excessive distress with as much as 40% corrosion of steel and loss of density of concrete due to the saline atmosphere.

Solution: The main beams, “L” beams, along with the slab were dismantled and removed. New beams were cast off site, transported by a moving gantry and erected on site. The new deck was cast in parts after erection of the beams. Fenders were repaired as well as new fenders fixed.

The approach jetty was also repaired. Some main beams were replaced and the conveyor belt system was repaired. A noteworthy fact was that the entire project was completed without interrupting the operation of the conveyor belt.

MONUMENTS



Erection and Installation of Lord Buddha Statue

- Project:** Lord Buddha Statue
- Details:** The Lord Buddha statue is carved out of monolithic granite, and weighs a mammoth 300 tonne.
- Challenge:** The statue had sunk in the Hussainsagar Lake in Hyderabad. It had to be salvaged and resurrected.
- Solution:** The statue was salvaged and erected on its pedestal on Gibraltar Rock. Two lifting cables of 44 strands of 12.7 mm diameter were used in conjunction with a special cables and anchorage system. The hydraulic jacking system was mounted on top of towers and operated with a common power pack. The entire operation was completed in 32 hours flat!

HANDLING OF HEAVY LOADS



Andheri Sports Complex, Mumbai

Project: Water Tanks at Andheri Sports Complex

Details: The two water tanks of 23,500 litre and 1,95,000 litre weigh 70 MT and 240 MT respectively. The Lord Buddha statue is carved out of monolithic granite, and weighs a mammoth 300 tonne.

Challenge: The tanks were cast on ground and had to be lifted to a height of 47 meter and 38 meter respectively.

Solution: A state-of-the-art prestressing technique was used in conjunction with hydraulic jacks in order to achieve the challenging task.



Vijayawada Thermal Power Station

- Project:** Vijayawada Thermal Power Station
- Details:** 7 elements of the boiler supporting structure with a total weight of 450 tonne, which included 4 corner pieces of 64 tonne each and 2 crown girder weighing 110 tonne each.
- Challenge:** The elements had to be lifted on site to a height of 67 meter on RCC pylons.
- Solution:** The elements were erected with the help of special lifting jacks – SL-80 and 7 strands of 15 m diameter.

BUILDINGS



Bombay Gymkhana Club House

Project: Bombay Gymkhana Club House

Details: The Bombay Gymkhana Club House is a landmark structure that dates back to the English era.

Challenge: The steel columns supporting the first floor of the gymkhana building had corroded below the ground level on account of water seepage.

Solution: The affected portion was gas cut and the columns were supported by new pedestals and footings.



'Alok Bharati' - Corporate Office of Orissa Electricity Board in Bhubaneswar

Project: Alok Bharati, Orissa

Details: The Alok Bharati building is a commercial complex that houses a number of reputed companies.

Challenge: A fire broke out on the 5th floor of the building causing severe damage to all structural members, including columns and slabs, with spalling of concrete at various spots.

Solution: Ultrasonic Pulse Velocity (UPV) and Rebound Hammer Test were conducted to assess the strength of the concrete. Spalled portions and defects were rectified by epoxy injections and gunning, and additional reinforcement was provided to strengthen the structure. Leakage of the 5th floor slab was also rectified by providing acrylic based composite coating. Post-repair tests and load tests were conducted post-restoration to confirm efficacy of the rehabilitation measures.

NEW CONSTRUCTION

CONSTRUCTION OF BUILDINGS

HOUSING COMPLEX FOR THE ARMY (MINISTRY OF DEFENCE)

**MARRIED ACCOMMODATION PROJECT – JODHPUR
(BANAR, RALAWAS, SHIKARGARH)
(Total area executed 79,300 Sq.Mtrs.)
(Total Value – Rs.7, 371.96 Lacs)**



General view of buildings constructed in Banar



Typical view of building in Banar



General view of buildings constructed in Shikargarh



General view of buildings constructed in Shikargarh



Close view of building constructed in Shikargarh



Buildings with access road in Shikargarh



Entrance to the Enclave constructed in Shikargarh



Typical view of building constructed in Shikargarh



General view of buildings constructed in Ralawas



Close view of buildings constructed in Ralawas

MARRIED ACCOMMODATION PROJECT –JAIPUR
(Total area executed 63,092 Sq. Mtrs.)
(Total Value – Rs.5, 095.09 Lacs)



General view of buildings construction in Jaipur



Close view of the buildings constructed in Jaipur

MARRIED ACCOMMODATION PROJECT –JAISALMER
(Total area executed 38,804 Sq. Mtrs.)
(Total Value – Rs.3, 853.70 Lacs)



General view of the buildings constructed in Jaisalmer



General view of the buildings constructed in Jaisalmer

MARRIED ACCOMMODATION PROJECT – ALWAR
(Total area executed 49,734 Sq. Mtrs.)
(Total Value – Rs.5,128.08 Lacs)



Typical view of the buildings constructed in Alwar



Typical view of the buildings constructed in Alwar

MARRIED ACCOMMODATION PROJECT – JODHPUR
(For Ministry of Defence, Government of India)
(Total Gross Value – Rs.21,448.83 Lacs)





Construction of L.I.G. houses in Delhi for Delhi Development Authority.

No. of houses: 900

Total area developed: 37800 M²

