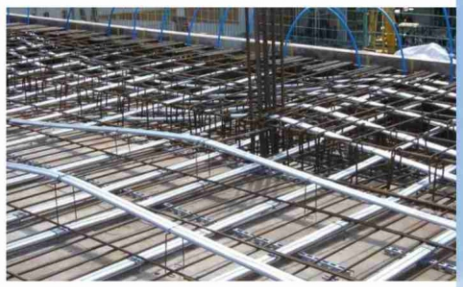
Sanfield [India] Limited.

AN ISO 9001-2008 and CE CERTIFIED COMPANY



SOLUTION FOR POST TENSIONING

BONDED PT SLAB • UNBONDED PT SLAB • PT ANCHOR

MAURER

COMPLETED PROJECTS

Omaxe Spa Village at Noida

Surya Treasure Island Mall at Bhilai

City Centre Mall at Raipur

I-GATE Knowledge Park at Airoli

THE COMPANY

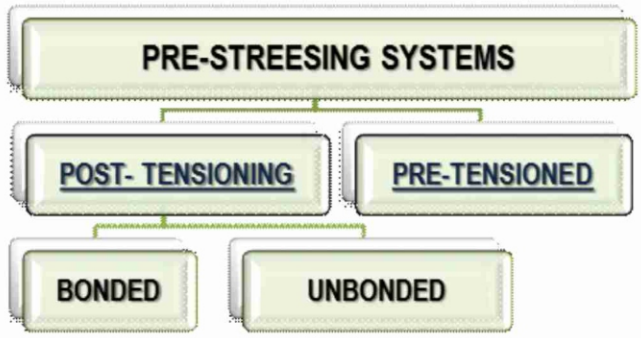
SANFIELD (INDIA) LIMITED, a company serving the requirements of the Construction & Infrastructure sector from 1994 is now a Group Company of MAURER SE, an ENGINEERING Group of Companies in existence from 1876.

Sanfield (India) Limited is the exclusive designers, manufacturers and installers of a wide range of HIGH PERFORMANCE, SPECIALIZED CONSTRUCTION RELATED PRODUCTS, manufactured in Technical collaboration with various world renowned Companies.

Sanfield (India) Limited with the assistance of its parent Companies and backed by the vast experience and expertise of various leading Companies of the world provides a single source responsibility from design, manufacturing, testing, material supply, installation and after sales services for all its product range. Accredited quality assurances and guarantees back up our products and services. The various products and services offered by Sanfield (India) Limited are:

1. **Pre-Stressing and Post Tensioning Systems for Buildings. (Bonded & Un-Bonded Post-Tensioned Slabs)**
2. **Post Tensioned Inclined and Vertical Anchors.**
3. Bridge and Highways Expansion Joint System
4. MAURER MSM Spherical Bearings (with Modified Low Friction Sliding Element), Anti Uplift Bearings & Elastomeric Bearings.
5. Maurer Seismic Protection Systems (Lock-up Devices/Anti-Seismic Devices & Dampers) for use in Buildings & Bridges.
6. Architectural Expansion Joint System for use in Buildings and other Applications.
7. Sanfield POT/POT-cum-PTFE Bearings, with initial Technology Transfer from M/s Granor Rubber & Engineering Pty. Limited, Australia.
8. ERICO Lenton Mechanical Rebar Splicing Systems (Bar Couplers) for use in Building and other infra projects.
9. Fabrication of Steel Girders (approved from Indian Railways / RDSO).
10. Bridge Deck Waterproofing System.
11. Gas Pressure Welding in association with DAIA Corporation, Japan.
12. Speciality Product Division (SPD)

SANFIELD (INDIA) LIMITED is the ISO-9001:2008 CE Certified company to have been approved by the Ministry of Road Transport & Highways for all the types of EXPANSION JOINTS SYSTEM without any restrictions on their movement capabilities and POT/POT–cum-PTFE STRUCTURAL BEARINGS and ELASTOMERIC (NEOPRENE) BEARINGS. We have also been approved by Research Designs & Standards Organization (R.D.S.O.), Government of India, Ministry of Railways for Bridge Bearings and Expansion Joins. We have supplied Expansion Joints & POT and POT cum PTFE Bearings to Bridge Contractors all over India, Nepal, Hong Kong, Thailand, Indonesia, Dubai and Afghanistan.



Why Post-Tensioning:

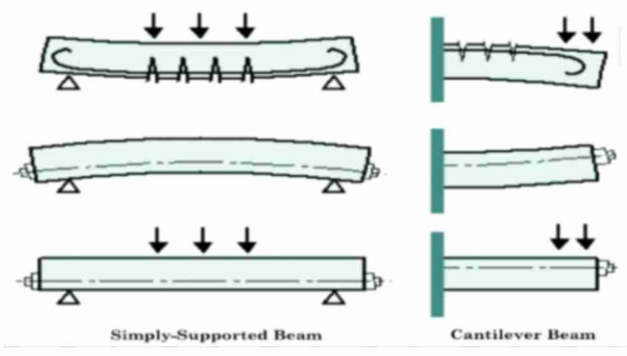
Architects, Structural Engineers, General Contractors, Real Estate Developers, and Owners incorporate post-tensioning systems on their projects in order to achieve economy, efficiency, quicker construction and lower lifetime cost of the structure. Because Post-Tensioning enhances concrete strength under both compressive and tensile stresses.

What is Post-Tensioning:

Post tensioning is a technique for reinforcing concrete. Post-tensioning tendons, which are pre-stressing steel cables inside plastic ducts or sleeves, are positioned in the forms before the concrete is placed. Afterwards, once the concrete has gained strength but before the service loads are applied, the cables are pulled tight, or tensioned, and anchored against the outer edges of the concrete.

Post-tensioning is a form of pre-stressing. Pre-stressing simply means that the steel is stressed (pulled or tensioned) before the concrete has to support the service loads. Most precast, pre-stressed concrete is actually pre-tensioned-the steel is pulled before the concrete is poured. Post-tensioned concrete means that the concrete is poured and then the tension is applied-but it is still stressed before the loads are applied so it is still pre-stressed.

1. **Reinforced concrete cracked under load**
2. **Post Tensioned concrete before loading.**
3. **Post Tensioned concrete after loading.**



Application:

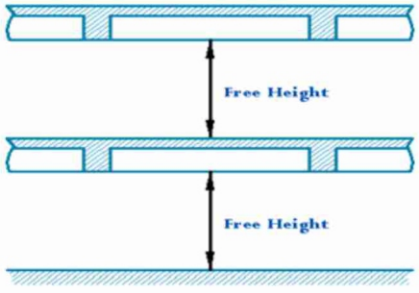
- Commercial Buildings, Parking's & IT Parks.
- Silos.
- Foundation Raft Slab.
- Concrete chambers in Nuclear Reactors.
- Bridges.
- Tanks.
- Ground Anchors.

Post-tensioning Advantages & Benefits

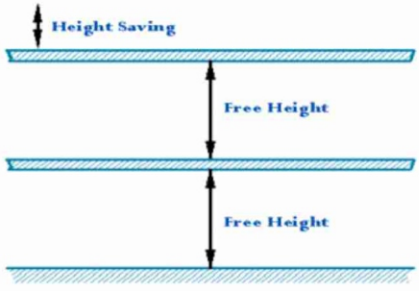
Post-tensioning frequently solves design and construction challenges that other construction methods simply cannot. Some key advantages include:

- Thinner concrete member sizes; reduction in concrete is approximately 20%.
- Rebar in floor elements is reduced by 60% to 75%.
- Decreased dead load reduces rebar and concrete in columns and foundations.
- Reduction in building height decreases the cost of building cladding, vertical mechanical/service elements, and rebar and concrete in shear walls.
- Potential pour cycle of 7 -8 days.
- Improved seismic behavior.
- Reduced deflection and vibration.
- Improved crack control and waterproofing properties—especially beneficial for parking garages and balconies.
- Longer spans and fewer columns give greater flexibility in floor layouts in office/residential buildings and better lighting in parking garages which enhances personal safety.
- Lower overall maintenance and lifecycle costs of the structure.
- Reduced building height also results in energy savings, especially for office buildings.

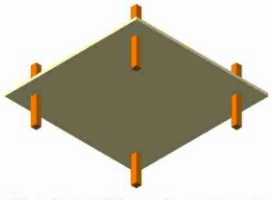
RCC Structure

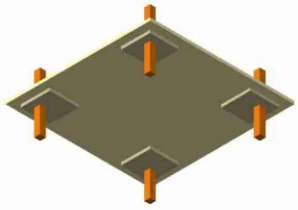


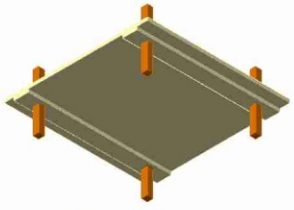
PT Structure

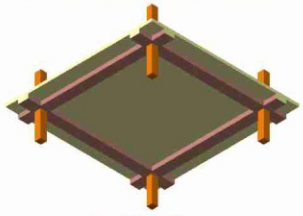


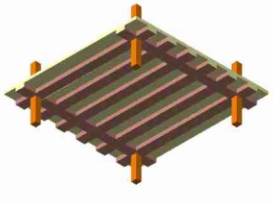
PT Slab Type

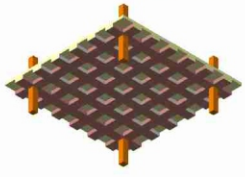

Flat Slab Without Drop Panel


Flat Slab With Drop Panel


Flat Slab With Band

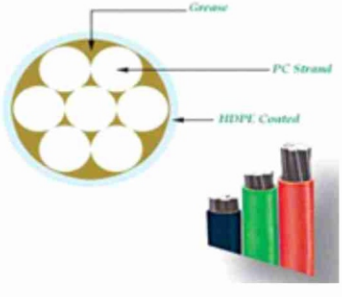

Flat Slab Beam


Beam and Slab


Waffle Slab

Sanfield Un-Bonded Strand System

Most common diameter utilized is 0.5" although 0.6" has been used to decrease congestion in designs that have high design forces resulting in increased materials. The seven-wire strand goes through an extrusion process that covers them with corrosion-inhibiting grease along with a seamless plastic sheathing. Common applications for this type of PT are in parking garages, condominiums, hotels, offices, mixed-use buildings and slab-on-grade construction. These systems are further categorized into "Standard" or "Encapsulated"



Methodology of Un-Bonded PT Systems

- **Shuttering.**
- **Bottom Reinforcement.**
- **Tendons laying as per profiling.**
- **Top reinforcement.**
- **Concreting.**
- **Stressing of Tendons after achieving of desire strength.**
- **Deshuttering.**

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Sanfield Post-Tensioned Anchor System

Post-Tensioned Anchor :

Ground Anchors are basically devices used to transmit the forces to the soil by means of Pre-Stressed tendon to anchor the Structure to the ground or to retain the slopes from collapsing.

Types of Ground Anchors

A) Based on the Anchorage Zone

Rock Anchors - Fixed length is anchored in the hard rock.

Soil Anchors - Fixed length is anchored in the Soil.

B) Based on Nature of Structure

Permanent Anchors – Permanent ground anchors have to guarantee their function during the lifetime of the structures to be anchored.

Temporary Anchors – Pre-Stressed anchors, which have to fulfill their function only for a limited time.

C) Based on how it is installed

Vertical Anchors – These anchors are provided vertically into the ground

Inclined Anchors – These anchors are provided at an angle into the ground

D) Based on Application

Test Anchors –Test anchors are specially design anchors subject to extensive tests in order to obtain, either comprehensive information on anchor capacity and geo-technical conditions, or to prove the quality and adequacy of design, material and construction.

Control Anchors – Control anchors are anchors in or beside the structure used for long-term observation.

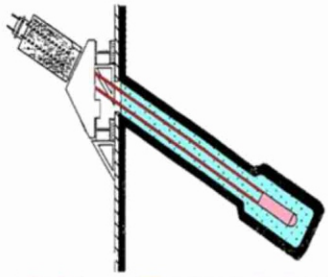
Application of Ground Anchors

Rock anchors mainly found applications in the following structures.

- Inclined anchors in the retaining walls to retain the earth
- Vertical anchors in the raft foundation, to resist the uplift pressure due to high water table.
- In the diaphragm walls.
- To retain embankment slopes of the roads, canals etc.
- Rock anchors are used in pile load testing.

Methodology of Ground Anchors

- Drilling
- Water Test (Permeability test)
- Virgin Grouting
- Re-drilling
- Homing
- Primary Grouting (Fixed length grouting)
- Stressing Secondary Grouting



INCLINED ANCHOR FOR BASEMENT EXCAVATION

VERTICAL ANCHOR FOR FOUNDATION

Sanfield [India] Limited.

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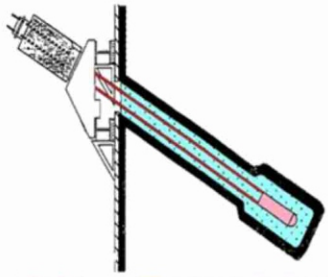

INCLINED ANCHOR FOR BASEMENT EXCAVATION

VERTICAL ANCHOR FOR FOUNDATION

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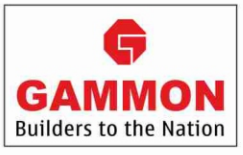

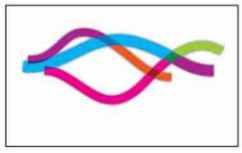

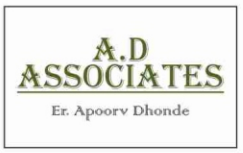

PT ANCHOR SYSTEM & CLIENTELE

Sanfield [India] Limited.

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Post - Tensioned Slab Projects Reference List

S. No.	Project Name and Location	Client	Contractor/ Architect/ Consultant	Project Value
1.	NHAI Head Quarter Building - Delhi	NHAI	Unity Infrastructure, Mumbai	1.0 Crore
2.	Lawyers Chamber - Bhopal	BDA	VLCC, Indore	40.0 Lakh
3.	Sky Vista Mumbai	Bharat Infra	St. Eng. Globus Engineering, Arch. Haffiz Contractor, Mumbai	2.0 Crore
4.	IT Park Delhi, I-Gate Airoli	Infosys's	L&T	1.25 Crore
5.	Empire Glass House-Vikhroli (Mumbai)	Empire Industries	JW Consultant, Pune	1.6 Crore
6.	Treasure Island a. Indore b. Ujjain c. Jabalpur	Treasure Island	Arch. Sanjay Puri St. Eng. JW Consultant Arch. P.G. Patki Mahimtura Consultant, Mumbai	6.0 Crore 1.5 Crore 1.0 Crore
7.	Surya Mall - Bhilai	BSBK	St. Eng. JW Consultant, Pune Arch. P.G. Patki, Mumbai	2.0 Crore
8.	City Center Mall Raipur	Raipur	Tata Consultancy	1.0 Crore
9.	Omaxe Grand Wood & Sector -78, Noida	Omaxe	St. Eng. Mr. Sanjeev Jain	2.0 Crore
10.	Witty International School at Malad (Mumbai)	VJTF Infrastructures (P) Ltd	St. Eng. Mr. Jayesh Shah	65.5 Lakh
11.	Adhaar Symphony - Bhopal	Adhar Realities	St. Eng. A.D. Associates Arch. Sahastraksh Consultant	50 Lakh
12.	Sterling Globe - Bhopal	Sterling Realities	St. Eng. A.D. Associates	90 Lakh
13.	Abacus Building - Delhi	Abacus Buildcon	Reliable Consulting Engg. Krishna Gaur & Associates	1.6 Crore
14.	Vijay Shree Paper - Indore	Vijay Shree Group	Skeleton Consultant Pvt Ltd	25 Lakh
15.	Ware House/Parking Building at Pune	Mercedes Benz India Pvt. Ltd.	Shapoorji Pallonji	2 Crore

PT- Rock Anchor (Inclined/Vertical) Projects Reference List

S. No.	Client	Project Name and Location	Project Value
1	L&T Chennai	DLF Commanders Court ,Chennai	2 Crore
2	M/S Varun Industries Limited	Vasai Factory	1.5 Crore
3	Bhumiraj Builders	Sanpada Navimumbai	2 Crore
4	Hotel Horizon Pvt Ltd, Mumbai	Hotel Horizon site Mumbai	3 Crore
5	Marathon Next Gen Realty And Textile Ltd Mumbai	Marathon Mafatlal, Lower Parel, Mumbai	1.8 Crore
6	Valecha Engineering Limited , Mumbai	Jupiter Mill Parel	2.25 Crore
7	S.Saval Constructions, Mumbai	Wadala Site	1.25 Crore
8	L &T	Emami Gajraj, Chennai.	1.0 Crore
9	Valecha Engineering Limited , Mumbai	Parinee Developers BKC Bandra.	1.1 Crore
10	Valecha Engineering Limited , Mumbai JMC Projects (India) Ltd ,Mumbai	H.N. Hospital Site Goregaon	2.75 Crore

Under Construction PT Slab &PT Beam Views

PT SLAB IN MALL

PT SLAB IN PARKING

PT SLAB & BEAM FOR LARGE CANTILEVER

PT BAND FOR HEAVY STRUCTURES

PT SLAB FOR IT PARK

BRINGING TECHNOLOGIES TOGETHER

MAURER

ERICO®

viacor.

DWI
DWI-CERMABIT WATERPROOFING

Sanfield [India] Limited.

Expansion Joints, Bridge Bearings, Rehabilitation of structures,
Structural Protection Systems, Pre Stressing Systems, Bar Splicing

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