



## Fine Tuned Structures, LLC

Consulting Structural Engineers

197 Fox Squirrel Run

Summerville, SC 29483

P: 843-376-4800

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<http://finetunedstructures.com>

### COMPANY PROFILE

Fine Tuned Structures, LLC (FTS) is a structural engineering consulting company. We have experience designing structures in all major building materials as reinforced concrete, post-tensioned concrete, steel, masonry and wood. Our broad portfolio has projects in both private and public sectors which range from residential custom homes, to schools, to high rises. We can design in US custom units as well as in metric SI units applying all major US design codes, EUROCODE or British Standards. We are loyal to our clients. We strive to build and maintain impeccable reputation. We can deliver code compliant, economically deigned unique structures for competitive design fee.

#### We offer the following services:

- Structural design of new structures
- Evaluation and renovation of existing structures including seismic retrofit
- 3D modeling of complex structures including application of all relevant loads per governing codes. Linear and non-linear structural analyses
- Structural observations, assessments and recommendations for repair and strengthening techniques based on conditions and cost
- Specialty structural repair design such as: concrete restoration, FRP structural strengthening, bridge jacking design and heavy lifting
- Plan checking (where required by the governing authorities)
- Value engineering
- Forensic engineering
- Construction phase assistance including site visits and on-site support
- Steel connection design
- Specialty structural design of aluminum screen cladding grid.

To facilitate our design, we utilize several states of the art and well respected software such as ETABS, SAFE, ADAPT Floor Pro, ADAPT Edge, Enercalc, RetainPro, Revit (BIM) and AutoCAD.

#### The core of FTS is represented by the following key personnel:

Pavel Pavlov, PE, SE. Founder and principal of FTS in charge of overall business operations. Pavel has more than 21 years of diverse structural engineering experience both in construction and in design with expertise in structural design applications for high seismic and high wind zones. He is registered professional engineer in the states of Virginia, Kentucky, North Carolina, South Carolina, Georgia and Florida. He is also registered professional structural engineer in the states of Utah and Illinois.

Anton (Tony) Gueorguiev, PE. Principal in charge of Washington, DC studio. Tony has more than 20 years of structural engineering experience. He is an expert in specialty structural repair and strengthening techniques utilizing reinforced, post-tensioned concrete and fiber reinforced polymer (FRP). He was directly involved in several bridge repair projects where bridge jacking and heavy lifting was utilized. Tony is registered professional engineer in the states of Virginia, Maryland, District of Columbia and California.

Vladimir Vasilev, Assoc. Prof., Dipl. Structural Engineer. Vladimir is the Chief Structural Engineer in charge of the engineering team in Sofia, Bulgaria office. He is an engineer with over 21 years of progressive experience in structural design, bridge engineering, academics and research in the field of structural engineering, expert assessments and reports, and construction management.



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Dimitar Battchiev, Dipl. Architect. Dimitar is an architect, specialized in structural / architectural detailing and Revit consulting. With over 22 years of extensive experience in architectural design in USA and Europe, structural and architectural detailing, and BIM consulting Dimitar brings a valuable BIM expertise which plays an integral part of our construction document delivery. He is the BIM manager for Fine Tuned Structure detailing team in the office in Sofia, Bulgaria.

Kalin Pavlov. Managing director of the office in Sofia, Bulgaria, Kalin has been active businessman and entrepreneur since 1996. He has diverse experience as business manager and leader, which makes him invaluable partner and participant in Fine Tuned Structures growth since company inception. His expert knowledge of Revit provides an example of a manager with hands-on experience and understanding of the building design/detailing process.

### **FTS Selected US Projects:**

- **Patrick Square – Clemson, SC – Engineer of Record** – Nearly 100,000 sq. ft. new complex with a two story assisted living long term care building, administrative 2 story connector wing and a four story independent senior living apartment building. The structure is very diverse with conventional wood frame, partial podium slab over underground basement, joist and deck floor and roof and numerous retaining walls structures, walkways and canopies. Building is located in moderate to high wind zone and is classified as seismic design category C. All is supported on conventional strip and spread footings.
- **White Oak North Grove – Spartanburg, SC - Engineer of Record.** Brand new 80,000 sq. ft. short and long term nursing home. Project consist of 6 building wings connected to a central core. One story occupancy group I-2 facility utilizing light gage load bearing walls/shear walls and light gage roof trusses with isolated structural steel framing in the large open areas of dining hall and therapy suites. Building is supported on shallow foundations.
- **Poinsette – Charleston, SC** – Engineer of Record together with Curry Engineers. 5 story approximately 70,000 sq. ft. luxury apartment building in downtown Charleston, SC. FTS is responsible for the design of the one story concrete structure supporting two 4 story wood framed towers above. The design includes post-tension podium slab directly transferring all loads from the two towers down to concrete frame structure and foundations. The concrete structure is designed to withstand high wind and seismic loads as well as flooding. Building is pile supported.
- **6400 Bluewater Condominium – Hilton Head, SC** – Engineer of Record – 88,000 sq. ft. 6 story reinforced concrete structure with two-way post-tensioned flat slabs. Seismic design category D with 141 mph design wind speed and liquefiable soils. Building is supported on piles. FTS provided the full structural design including all post-tension slabs as well as full construction assistance until project completion.
- **Chicora School – Charleston, SC** – Engineer of Record – 74,000 sq. ft. two story public elementary school. Load bearing special reinforced masonry shear walls supported on spread footings. Structure is located in a hurricane zone with design wind speed of 130 mph and seismic design category D.
- **La Hacienda Mexican Restaurant, North Charleston, SC** - Engineer of Record – 6,000 sq. ft. one story commercial building. Combined wood and steel framed structure with exterior and interior dining areas. Supported on spread footings. Design is based on the IBC 2012 provisions.
- **Holiday Inn – Chattanooga, TN** – Sub-consultant to Woods Engineering for the entire concrete structure of the project. 8 story 190,000 sq. ft hotel in downtown Chattanooga. 3 levels of parking, transfer slab and four levels of hotel rooms. Reinforced cast in place concrete frame structure from ground to fourth floor. Load bearing metal stud walls with pre-cast hollow core planks from the 4<sup>th</sup> floor up. FTS was responsible to create a 3D structural analytical model for the entire building, design the fourth floor as two-way transfer post-tensioned slab, and design all columns, walls and foundations.



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- **6300 Bluewater Condominium – Hilton Head, SC** – Engineer of Record – 58,000 sq. ft. 5 story reinforced concrete structure with two-way post-tensioned flat slabs. Seismic design category D with 130 mph design wind speed and liquefiable soils. Building is supported on piles. FTS provided the full structural design including all post-tension slabs.
- **Addition and Renovation of White Oak assisting leaving facility – Shelby, NC** - Engineer of Record Project consist of new one and two story 16,000 sq. ft addition, new hip roof spanning without interior supports 72 ft over existing dining hall. Perimeter steel moment frames support AEGIS Ultra-span light gage roof trusses. Renovation included several areas in the existing facility. Steel framing is used for all renovated areas. Building is supported on shallow foundations.
- **Charleston Harbor Resort Expansion - Charleston, SC** – Sub-consultant to Curry Engineering. Scope of work includes 3D modeling and design of the main 5 story, 130,000 sq. ft. hotel building. The hotel is part of major resort expansion plan. Linear and Response spectrum analyses were performed per the governing US codes. Building is located in a hurricane region with design wind speed of 130 mph. Seismic design category D. Special reinforced concrete shear wall frame structure supported on pile foundations is utilized for lateral design.
- **Bluewater Condominium B – Hilton Head, SC** – Engineer of Record – 58,000 sq. ft. 5 story load bearing masonry with precast hollow core planks. Seismic design category D with 130 mph design wind speed and liquefiable soils.
- **White Oak Estates – Spartanburg, SC** - Engineer of Record – 14,000 sq. ft. one story assistance living facility. Load bearing masonry walls supported on spread footings. Seismic design category C and 90 mph design wind speed.
- **Cooper’s Ridge Apartments – Ladson, SC** – Engineer of Record – fifteen 4 story apartment buildings and club house – light frame wood structures supported on strip footings. All buildings are designed and detailed for seismic design category D and 120 mph design wind speed.
- **ATMC communication center – Shallotte, NC** – Engineer of Record - Essential facility for local TV station – one story Isolated concrete forms (ICF) wall system with light gage roof trusses. Structure is designed for 150 mph design wind speed and seismic design category C.
- **Pender County EMS – Burgaw, NC** – Sub-consultant to Woods Engineering as lead structural engineer - One story emergency operation center designed as essential facility with design wind speed of 120 mph and seismic design category D. Special reinforced concrete shear walls supported on spread footings.
- **NCREP – Shallotte, NC** – Engineer of Record - 30, 000 sq. ft. luxury single family home with 19,000 sq. ft. luxurious pool and landscape. Isolated concrete forms (ICF) concrete walls and slabs for the house, reinforced concrete for landscape structures. Structure is designed for 150 mph design wind speed and seismic design category C.
- **Southeastern NC Agricultural Center – Robeson County, NC** – Sub-consultant to Woods Engineering as lead structural engineer – One story multipurpose public pavilion utilizing pre-engineered 2D steel frames spanning 145 ft. Foundation design for the steel frame which is supported on large spread footings.
- **Bald Head Ferry Terminal – Southport, NC** – Sub-consultant to Woods Engineering as lead structural engineer - Private marine transportation facility. Mixed reinforced concrete, steel and exposed timber structure. Building is located in V flood zone. Designed for hydrostatic and hydrodynamic loads including wave action and debris loading. Seismic design category C and 130 mph design wind speed.
- **Tanyard Parish - Wilmington, NC** – Sub-consultant to Woods Engineering as lead structural engineer - One-way reinforced post-tensioned (PT) platform slab with 64 ft. span PT girders supporting 2 and 3 story wood frame structure above. Seismic design category C and 130 mph design wind speed.
- **Straw Market – Myrtle Beach, SC** – Engineer of Record - 27 story reinforced concrete condominium tower with waffle slabs. Seismic design category D and 130 mph design wind speed. Dual system of specially reinforced concrete shear wall cores and peripheral specially reinforced concrete moment frames.



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- **Preserve # 4 and # 5 – Oak Island, NC** – Sub-consultant to Woods Engineering as lead structural engineer - Multi-story luxury condominiums - two-way post-tensioned slabs. Seismic design category C and 130 mph design winds speed.
- **Sky Venture – Fort Bragg, NC** – Sub-consultant to Woods Engineering as lead structural engineer - Complex 3D steel structure for free fall simulation used by both military and public.
- **West Gate Hotel – Wilmington, NC** – Lead Structural Engineer – Approximately 60,000 sq. ft. 5-story hotel. Concrete masonry load bearing walls with precast hollow core plank floors. Seismic Design Category C with a combination of specially reinforced masonry shear walls in the long direction and ordinary reinforced masonry shear walls in the short direction of the building. Design wind speed is 130 mph. The site was remediated with stone columns to improve the allowable soil bearing capacity to 4,500 psf. This avoided using deep pile foundations and the building was design and constructed on spread footings.
- **National Center for Agricultural Research, Central Wing Renovation, Peoria, IL** – design of new 6-story stair tower with structural steel moment frames and composite decks. Seismic design category D.
- **National Institute of Health, Renovation of Building 6 and 6C, Bethesda, Maryland** – design of new 3-story reinforced concrete frame structure and underground utility vault. Supervised structural design and coordinated with other disciplines. Seismic design category C.
- **MDTA I-895 Bridge jacking** – Engineer of Record – structural design for steel frames to enable bridge jacking, repair and bearing replacement while maintaining traffic flow. Repair was performed by OTB Contracting.
- **Strengthening PT beams in a metro station – Washington, DC** – Sub-consultant to Freyssinet for structural design. Specialty and comprehensive design for strengthening a post-tensioned girder with extremely deteriorated and corroded tendons. Strengthening included design of an additional structure – reinforced concrete frame (two oval shaped columns and tie beam) as mid support to the strengthened beam. Carbon fiber reinforced polymer design. Temporary supports design. Design of the jacking of the existing beam. Design check of the platform condition and capacity to bear additional loads. On-site engineering supervision and consultation to the Owner WMATA.
- **Temple LNG Tanks, Berks County, PA** – Sub-consultant to Freyssinet for structural design. Post-tensioned tendon layout designed to position tendons in compliance with stress diagram provided by the Owner's main Consultant. Comprehensive long-term stress loss calculations. FEM analysis for various sections of the LNG tank.
- **Bridge Jacking and Repair, Richmond, VA** – Sub-consultant to Freyssinet for structural design. Bridge jacking design for bearing replacement, pier and abutment retrofit.

### FTS Selected International Projects:

- **Building One – Christophe Harbour, St. Kitts, West Indies** – Engineer of Record. 4 story 14,000 sq. ft. commercial building first in Christophe Harbour development in the southern peninsula of this Caribbean island. The building is to be the center of the Marina Village sub-division. Concrete frame structure utilizing ICF walls and conventionally formed two-way reinforced concrete flat slabs. The building design was very challenging with a sustained earth lateral load, very high wind and seismic loads in Class F soils. Foundations consist of pile caps, steel driven piles and tie/grade beams connecting all members together to form a stiff grid.
- **Marina Village Shops – Christophe Harbour, St. Kitts, West Indies** – Engineer of record – Two one story commercial buildings with approximate total area of 5,000 sq. ft. The structure is of ICF walls and Versa deck composite roof slab used for exterior dining area of open bar restaurant. The two shops are designed for a permanent soil pressure from public street on one side in combination with high wind and seismic loads. Both buildings are supported on spread and strip footings.

◆ Charleston, SC

◆ Washington, DC

◆ Sofia, Bulgaria ◆



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- **Sandy Bank Bay – St. Kitts, West Indies** – Engineer of Record - Club house, restaurant, sales office, club pool and 14 bungalows part of large resort development. Client is Christophe Harbour Development formerly part of Kiawah Development Partners. Masonry, concrete and wood framed structures. Seismic design category D and 130 mph design wind speed in a major hurricane prone region of the Caribbean.
- **Lusail Katara Hotel – Doha, Qatar** – Sub-consultant to Kling Consult GmbH for the structural design of a signature 5 and 6-star hotel complex. The unique building resembles two crossed swords which represents Qatar's national symbol. The project estimated cost is \$1.75 billion and consist of two 200-meter-tall towers and 7 low rise buildings forming a 1400x400 ft promenade with lavish landscape, recreational facilities and two story underground parking garage. The entire complex is founded on pile supported mat.
- **Jewel of the Creek – Dubai, UAE** – Sub-consultant to Kling Consult GmbH - Large development comprised of 21 towers, yacht marina and commercial promenade designed around a creek running through the entire complex. The creek is integrated and supported by the parking garage structure. Towers vary in height from 14-24 stories. Entire complex is connected with common 5 story underground parking. Common reinforced concrete pile supported mat. All complex structures are reinforced concrete with some isolated areas utilizing structural steel.
- **Creek Towers – Sorouh Reem Island - Abu Dhabi, U.A.E.** – Sub-consultant to Kling Consult GmbH – Two – 23-story twin condo buildings. Reinforced concrete frame structure with shear walls cores, columns and post-tensioned slabs. 5-story below grade parking as part of the structure. The towers are each flanked by 7 stories of office space which are connected to the main towers with 7-story atriums. The complex main towers incorporate office and commercial space on the first 7 floors with residential units on the upper 15 floors. Each tower also has a swimming pool and health club at the top level.
- **Dubai Islamic Bank – Dubai, U.A.E.** – Sub-consultant to Kling Consult GmbH - 39-story business center with 1000-people conference auditorium, 5 levels of underground parking and ground level entry featuring 7-story tall atrium. The main structure is of reinforced concrete with combination of central shear wall core and peripheral frames supporting reinforced concrete floors. The star-shaped plan has 8 segments, each at a different height, stepped every 5 stories. Seven of the eight steps are topped by an atrium ranging from 3 to 5 stories in height.
- **Octavian Business Bay – Dubai, U.A.E.** – Sub-consultant to Kling Consult GmbH – 19-story commercial tower with 4 underground parking levels, grade level, 3-story above ground parking and 16 levels of premium office spaces. Reinforced concrete structure with shear wall cores and columns supporting post-tensioned floors.
- **Screwworm Rearing Facility, Pacora, Panama** – design of industrial structure with reinforced concrete bearing walls and structural steel roof framing. Designed for the US equivalent of seismic design category D.
- **Belvedere Towers – Sofia, Bulgaria** – Engineer of Record – Two 11-story luxury condominium towers with 3-story shopping center and parking garage. Reinforced concrete frame utilizing shear walls, columns and two-way flat slabs. Both towers are supported by common reinforced concrete foundation mat and designed for the US equivalency of seismic design category C.

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