



POSITION	President and Founder
SPECIALIZATION	Marine Structures and Foundation Engineering
EXPERIENCE	23 yrs
EDUCATION	Ph.D., Civil (Geotech) Engr., Cornell University (2001) M.Sc., Structural Engr., Middle East Tech. U. (1995) B.Sc., Civil Engr., Middle East Tech. U. (1992)
REGISTRATION	Professional Engineer, States of NY, CT, TX, NJ (pending) Transportation Worker Identification Credential (TWIC)
TRAINING	OSHA 10-hr Construction Safety Training Confined Space Entry Permit Training
MEMBER	American Society of Civil Engineers (ASCE) Coasts, Oceans, Ports & Rivers Institute (COPRI) COPRI P3 for Waterways Infrastructure Committee

## KEY QUALIFICATIONS

Mr. Tutuncu is the President and Founder of Piers & Pillars Engineering PLLC. He has broad-based capabilities in the fields of marine and geotechnical/foundation engineering gained from over 20 years of experience in conceptual design, detail design, inspection and condition assessment of coastal and marine structures; marine facilities and terminals; bulk storage silos; oil import, storage and export facilities; buried pipeline systems; and industrial and hotel buildings. During his career, he has been involved in hundreds of marine and geotechnical engineering projects in the US and abroad, majority of which included challenging local geotechnical and foundation engineering issues. He has been a passionate advocate of advancing the engineering practice, and training and mentoring younger generation of engineers.

## MARINE FACILITIES

**Texas Ports 2014-2015 Capital Program, TX** – Project Manager responsible for engineering evaluation of various port projects proposed along the Texas Gulf Coast. The Port Authority Advisory Committee (PAAC) develops the Port Capital Program annual report that details the various port projects and funding needs submitted by Texas public ports. To identify high priority and strategic port projects, and to make recommendation to the TxDOT for funding, PAAC requested engineering (design, cost, and schedule) and socio-economic review of up to nine projects. Mr Tutuncu led the engineering review team for the following four projects:

- Port of Brownsville new Oil Dock No.6 project
- Port Mansfield navigation channel dredging project
- Port of Palacios bulkhead rehabilitation project
- Port of Galveston cruise terminal passenger terminal expansion project

**International-Matex Tank Terminals (IMTT) Pier 9T Project, NJ** – Design Lead responsible for overall direction of engineering for the terminal expansion project in Bayonne, NJ. The project involved construction of a new pile-supported steel loading platform with hose tower structure, pig launch platform, two new steel sheet pile cellular mooring dolphins, oversheeting of existing cellular breasting dolphins to accommodate berth deepening, and retrofitting existing pipe supports to accommodate new pipeline installation.

**Port of Guam Modernization Plan, Piti, Guam** - Marine Engineering Manager responsible for the detail design to upgrade or replace six cargo

berths, the Hotel Wharf and the Seaplane Ramp at the Jose D. Leon Guerrero Commercial Port – the biggest U.S. deep-water port in the Western Pacific region – which lies on the shores of Apra Harbor in west central Guam. The master plan calls for nearly \$200 million in capital improvement upgrades to the port. Key modernization initiatives include upgrading the terminal operating system to allow for automated invoicing, cargo and container tracking, financial management and maintenance management; expansion of wharf space to accommodate larger vessels as well as increase overall vessel handling capacity; acquisition of additional gantry cranes to allow for increased cargo movement through the port and to enhance overall productivity and efficiency and expansion of existing facilities to support the fishing and cruise line industries.

**SEAGIRT Marine Terminal Berth IV, MD** - Marine Structural Engineer for review and evaluation of contractor's as-built deck support piles capacity assessment reports and associated engineering repair solutions where needed. Also performed review of engineering plans for unloading container cranes from transport vessel to the berth. The project involved replacement of an existing cofferdam retaining wall facility with a pile-supported concrete deck.

**Rabigh Power Plant No.2 Fuel Supply Study, Kingdom of Saudi Arabia** - Project Manager responsible for fuel supply capacity assessment and de-bottlenecking study at the existing crude oil and heavy fuel oil unloading terminal for the power generation plant. The study involved a site visit to collect information about existing

facility and operation practice, evaluation of existing jetty for increased import volumes and larger vessel sizes, downtime assessments due to increased vessel traffic and longer unloading times, site selection for a secondary jetty and associated piping system for integration of new jetty to existing fuel supply system.

**Maid of the Mist Winter Storage Facility Relocation, Buffalo, NY** - Marine Structural Engineer responsible for assisting in development of concepts for removal of site-seeing boats from Niagara Falls to their winter storage location. As part of the study, marine rail/winch system, tower crane, and rubber-tired ship-lift options were evaluated in terms of their suitability to steep slopes at the shores of Niagara Falls.

**West 30<sup>th</sup> Street Heliport Relocation Study, New York City Economic Development Corporation (NYCEDC), New York City** - Marine Structural Engineer for evaluation of the feasibility of relocating existing heliport to one of two other waterfront sites. Responsibilities included evaluation of barge and fixed pier structures for two general layouts at two site locations.

**New Haven Oil Terminal Upgrades, CT** - Engineer of Record for oil terminal dock rehabilitation project involving partial replacement of wooden dock structure and design and construction of a new offshore mooring dolphin. Dr. Tutuncu also performed engineering inspection of the dock facilities prior to detail design and coordinated the underwater inspection at the same fuel terminal facility.

**Ras Laffan Port Expansion Project, Qatar** - Design Lead for the Engineering, Procurement,

Installation and Commissioning (EPIC) design of marine structures for the expansion of the world's largest liquefied natural gas exporting facility. The port expansion project involved four liquid product natural gas berths, two container berths, five tug boat and small craft berths and two finger piers for Qatari Navy and Coast Guard vessels. In addition to managing a design team of 20 engineers, Dr. Tutuncu participated in site progress meetings and site visits, developed various project design reports and berth equipment technical specifications, reviewed vendor technical submittals for berth equipment and furniture and coordinated the response to the majority of the site and vendor technical queries related to the design and berth equipment.

**Ras Laffan Fueling Planning Study, Qatar** - Project Manager and Lead Engineer for this study to determine near-future and future shipping volumes in the Ras Laffan Port as well as associated bunker fuel demands and facility needs for the import, storage and export of bunker fuels and lube products.

**Bayway Refinery Docks Vessel Approach Velocity Assessment Study and Associated Facilities Inspection, Linden, NJ** - Project Manager for this study to determine applicable vessel approach velocity for fendering at the existing docks based on various national and international navigational codes and guides. The study findings were subsequently used to determine the demand on the aging dock structures, which was then compared to the underwater and above-water inspection findings and structural analyses to determine upgrade needs.

**Marine Oil Terminal Audits, Various Locations -**

Lead Engineer for marine oil terminal audits for five terminals in the U.S. Dr. Tutuncu visited oil import terminals in Louisville, Kentucky, Seattle, Washington and Jacksonville, Florida to perform the audits and coordinated the work at terminals in Brooklyn, New York and Carteret, New Jersey. The audits, based on the International Safety Guide for Oil Tankers and Terminals (ISGOTT), included inspection of the electrical equipment, fendering system, lifting equipment, lighting, ship-shore electrical isolation prior to cargo transfer, terminal layout and design, mooring system, ship-shore personnel access, other cargo transfer protocols, communication protocol and emergency shut-down protocol. High-level structural condition assessments and review of the maintenance, inspection and testing program were also part of the project scope.

**Everett Liquefied Natural Gas (LNG) Import Terminal Upgrade, Everett, MA -**

Project Engineer for the development of alternative conceptual designs to replace the LNG unloading platform and breasting dolphins at the existing import terminal. The terminal was kept in operation during the construction of the replacement structures.

**Dubai LNG Import Terminal Front-End Engineering and Design (FEED) and Detail Design**

- Design Consultant responsible for coordinating berthing and mooring analyses and developing technical specifications for the purchase of various berth equipment. The project involved pile-supported fixed mooring and breasting dolphins and a loading platform to facilitate a

vessel converted to a floating storage and re-gasification unit (FSRU). The FSRU eliminates the need for onshore storage tanks by transferring and storing LNG from carriers until it is converted to gas and transferred to a domestic pipeline network via a subsea pipeline.

**Port of Izmir Container Terminal Privatization, Izmir, Turkey -**

the Port of Izmir's container terminal – Turkey's largest container terminal in terms of cargo volume – has seven berths with alongside depth of 42 feet (13 meters). The berths total 3,445 feet (1,050 meters) and the container terminal covers 1.6 million square feet (152,000 square meters). During the privatization process for the terminal, Dr. Tutuncu served as the structural consultant to the investment banks and visited the terminal with a specialized team of engineers to meet with stakeholders and evaluate the overall condition of the facilities to identify immediate upgrade and repair needs.

**Map Ta Phut LNG Import Terminal, Bangkok, Thailand -**

as the Lead Engineer, Dr. Tutuncu was seconded to Thailand for one month to lead the local design office in the evaluation and improvement of tender designs for the LNG import jetty and berth structures and the development of cost-saving alternatives for the bidder.

**Tropicana Jebel Ali Oil Terminal Marine Engineering Study, United Arab Emirates -**

Project Engineer responsible for the conceptual design of two oil tanker and barge berths inside the existing Jebel Ali Port.

**Baltic LNG Export Terminal Feasibility Assessment, St. Petersburg, Russian Federation -**

Project Engineer for the preparation of a feasibility assessment study and conceptual design alternatives for the marine facilities and material offloading dock of the proposed Baltic LNG export terminal. The study involved coordination with a local Russian engineering firm specializing in project permitting requirements.

**ExxonMobil Development Company, Various Locations** - Dr. Tutuncu was seconded to the ExxonMobil Development Company as a marine engineering consultant and relocated to Houston, Texas, for more than one year. In this role, he represented the marine engineering group in numerous high-profile projects around the world, including LNG import and export terminal projects, greenfield and brownfield oil terminal projects, due-diligence studies, workshops and several site visits:

- Papua New Guinea LNG Export Terminal Screening Study - Dr. Tutuncu was the Marine Engineering Team Leader. The project was proposed as an alternative to a gas pipeline from Papua, New Guinea, to Australia to commercialize gas resources.
- Sakhalin (Russian Federation) LNG Export Terminal Screening Study.
- Angola LNG Export Terminal Project - due-diligence studies for several U.S. import terminals in the Gulf of Mexico.
- Angola LNG Export Terminal Project - front-end engineering and design (FEED) review workshops.
- Sakhalin-China Gas Pipeline Project - pre-FEED review workshops.
- Qatar Gas II LNG - export berth design review.
- Dahej (India) LNG Import Terminal - due-diligence reviews.

- Banyu Urip (Indonesia) Oil Export Terminal - FEED review workshops.
- Gorgon (Australia) LNG Export Terminal Project - marine facilities review.
- Gorgon LNG Export Terminal Project - screening workshops for several U.S. import terminals.
- Northwest Australia LNG Export Terminal Projects - development planning workshops, studies and site visit.
- Bonny Island (Nigeria) LNG and Integrated Power Project - marine engineering support.
- Sakhalin Oil Export Terminal Service Harbor Project - design workshops.
- Qua Iboe Terminal (Nigeria) Flare Elimination Project - marine engineering support.
- Adriatic LNG Offshore Import Terminal - marine equipment technical specification review.
- Natuna (Archipelago of Indonesia) LNG Project Feasibility Study.
- Chayvo (Russian Federation) Gas Export Project - marine support.
- U.S. (Virginia) LNG Import Terminal Project - screening study and site visit.

**Ship-Shore Compatibility Studies, Various Locations** - Project Engineer responsible for ship-shore compatibility assessments for Q-Max and Q-Flex class next-generation large LNG carriers. The work entailed mooring analyses and assessments of navigation, berthing, loading arms and access gangway envelope, unloading rate and storage compatibility at numerous LNG import terminals around the world. Dr. Tutuncu published the study results in a technical paper included in the proceedings of the GasTech 2006 conference. He attended the conference in Abu Dhabi, UAE and delivered the presentation.

**Intrepid Museum Pier 86, New York City** - Marine Structural Engineer responsible for the evaluation and development of alternative piling options and the final design of the pier deck for the 780-foot-long (238-meter) Intrepid Museum pier.

**Port Master Planning, Djibouti** - Marine Structural Engineer responsible for reviewing existing Djibouti Port and oil import berth layouts and developing conceptual design alternatives for the new container terminal included in the Djibouti Port Master Plan. Construction of the new container terminal began in 2006 and the terminal commenced operations in 2008. It can handle 1.5 million TEUs a year.

**Port Everglades Petroleum Sector Strategy Study, FL** - Project Engineer for the review and high-level condition assessment of existing oil import berths, various berth equipment, fender and mooring systems, and tanker navigation into the berths.

**Costa Azul LNG Terminal, Mexico** - Marine Structural Engineer for review and revision of the berthing and mooring design criteria for this LNG import terminal—the first LNG receipt terminal on the west coast of North America. Located between Rosarito and Ensenada, the terminal is capable of processing 1.0 billion cubic feet (28,316,846 cubic meters) per day of natural gas from two 5,650,346-cubic-foot (160,000-cubic-meter) onshore storage tanks, with room for expansion.

**Newport News Berth Mooring and Breasting Structures, Newport News, VA** - Marine Structural Engineer responsible for assessing the

remaining structural and geotechnical capacity of prestressed concrete pile-supported mooring and breasting structures based on information provided by engineer-divers who inspected the concrete pre-stressed piles supporting the structures.

**Everett LNG Terminal, Everett, MA** - Project Engineer for the provision of construction support to the terminal upgrade works. The project involved fender upgrades on two breasting dolphins, onshore mooring dolphin construction, purchasing and installation of a laser docking aid system and the ship-shore personnel access gangway system. In addition to reviewing and approving contractor submittals, Dr. Tutuncu provided field engineering support during pile driving operations for the onshore mooring dolphin. Previously, as the project engineer, he was responsible for the final design and preparation of bid documents, including technical specifications.

**Riverhead Sea Island Terminal Upgrades, Riverhead, NY** - Marine Structural Engineer for construction support and review and approval of contractor submittals and shop drawings for the installation of two monopole breasting dolphins and fenders to provide barge access. Dr. Tutuncu was also the lead engineer for a subsequent study that evaluated the feasibility of new personnel access gangway systems for the terminal and he also performed a condition assessment of existing steel catwalks.

**Newtown Creek, NY** - Marine Structural Engineer for the final design of a steel sheet pile bulkhead wall and a pile-supported precast concrete platform. Newtown Creek is a 3.5-mile (6-

kilometer) estuary that forms part of the border between the boroughs of Brooklyn and Queens.

**Port Elizabeth Container Terminal, NJ** - as part of a berth-deepening project, Dr. Tutuncu, as Marine Structural Engineer, reviewed critical connection details for ship-shore cranes at the container terminal and designed king pile anchorage details to the existing wharf.

**Astoria Generating Station Fuel Oil Import Dock Replacement Project, Astoria, NY** - Resident Field Engineer responsible for overseeing all construction activities, including site clearing and demolition, sheet pile and pile driving, concrete pours and construction record maintenance. Dr. Tutuncu also functioned as a coordinator between the constructor and the design office and participated in key project meetings and the selection of the successful bidder. Previously, as the project engineer, he was responsible for underwater and above-water inspection of existing facilities, condition assessment, post-collapse investigation and documentation and preparation of emergency permit applications for the timber pile-supported low-level relieving platform. In this role, he worked closely with a team of engineer-divers to collect inspection data for the existing platform. Following the platform's partial collapse, he continued in his role as the project engineer and led a design team responsible for the preparation of conceptual design alternatives. Following the selection of the preferred alternative, he led a team of 10 engineers engaged in the detail design of the selected replacement structure.

**Brooklyn Bridge Park Master Plan, NY** - Marine Structural Engineer for the conceptual design of a 230-foot-long (70-meter-long) steel pile-supported, precast concrete pier as part of the Brooklyn Bridge Park Master Plan. Brooklyn Bridge Park is an 85-acre (34.4-hectare) park currently under construction on the Brooklyn waterfront in the vicinity of the Manhattan and Brooklyn bridges. Two sections of the park – Pier 1 and Pier 6 – opened in 2010 and the remainder of Phase 1 is expected to be complete in 2013.

**DeKastri Oil Export Terminal, Russian Federation** - as Marine Structural Engineer for the FEED design team, Dr. Tutuncu was responsible for the development of the onshore facilities layout. Other responsibilities included site feasibility studies, development of design basis documents and coordination between engineering disciplines. Subsequently, Dr. Tutuncu developed design basis documents for the terminal, reviewed Russian specifications and regulations and participated in project meetings with Russian design institutes. The DeKastri terminal provides storage and a single point mooring (SPM) tanker loading facility that can accommodate year-round crude oil export to world markets. The terminal includes two 650,000-barrel storage tanks to hold the Sakhalin-1 crude oil prior to tanker transfer and shipment with provision for four additional storage tanks.



## DISASTER RESPONSE/PREPAREDNESS

**Strategic Initiative for Rebuilding and Resiliency (SIRR), New York, NY** - Marine Structural Engineer responsible for coordination of marine engineering components of the study, development of coastal protection typologies applicable to different site conditions to minimize storm surge damage, and assisting cost estimating of these typologies.

**Townsend Inlet Bridge Emergency Repairs / Restoration, Cape May, NJ** - Marine Structural Engineer responsible for review of repair details at the approach causeway of the bridge.

Townsend Bridge on Ocean Avenue connects Avalon to Sea Isle City. The bridge was closed because of damage to adjacent roads leading up to the bridge due to Superstorm Sandy.

**Gulf Coast II, Mobile, AL** - Marine Structural Engineer on this Federal Highway Administration (FHWA) study that aims to define climate adaptation strategies in coastal Alabama. The study has two basic components: identify infrastructure that may be at risk given changes expected due to global climate change and to develop guidance for use by planning organizations and state departments of transportation in conducting a risk assessment and adaptation plan.

## ROADWAYS/BRIDGES

**Route 17 (Dominion Boulevard) Improvements - Bridge Over Elizabeth River, VA** - Marine Structural Engineer responsible for review of bridge pier protection system shop drawings that involved composite wale and H-pile fender

arrangement and steel walkways installed integral with the fender system.

**Veterans Drive, St. Thomas, USVI** - Marine Structural Engineer responsible for studying potential shoreline treatment options to allow re-routing of the roadway around the historic Legislature Building. Alternatives examined included rip-rap revetment, sheetpile bulkhead, precast concrete bulkhead, pile-supported platforms and precast concrete block quay wall. Also functioned as structural engineer for the detail design of reinforced concrete revetment wall along the roadway.

**Verrazano-Narrows Bridge, Staten Island and Brooklyn, NY** - as Marine Structural Engineer, Dr. Tutuncu designed an innovative removable security barrier using commercial stainless steel rock nets to close the openings in the riprap island surrounding the bridge abutments. He also designed two pile-supported steel platforms to be used by New York City Fire Department (FDNY) boats to connect to the bridge fire-fighting system during emergencies and routine fire testing.

## RENEWABLE ENERGY

**UK Round 3 Offshore Wind Farm Study, Southern North Sea, UK** - Marine Structural Engineer responsible for review and modification of design basis document and concept-level turbine support foundation details. The study was looking at three foundation types (monopile, jacket and gravity base) for three turbine sizes two of which are larger than any currently existing prototypes.





**Wind Turbine Prototype Study, East Coast, United States** - Marine Structural Engineer responsible for review of design basis, development and structural analysis of concept model for tower and support foundation. The prototype project is currently under development and consists of the design and installation of a 5 megawatt wind turbine founded in an offshore environment on the East Coast of United States.

**Cape Wind Project, Cape Cod, MA** - Cape Wind, to be built on Horseshoe Shoal in Nantucket Sound off the coast of Cape Cod, is the nation's first offshore wind farm. The turbines, more than 400 feet (121 meters) high, will dot an area of about 24 square miles (62 square kilometers) and provide enough electricity to power 400,000 homes. As the Project Engineer, Dr. Tutuncu was responsible for the detail design and construction support for a pile-supported steel platform for the installation of a meteorological observation tower. He also provided construction supervision during pile driving for the tower, which collected essential wind data to verify the feasibility of the proposed wind farm. The tower continues to report local meteorological conditions and is designated by the U.S. Coast Guard as an aid to mariners. Previously, as structural engineer, Dr. Tutuncu developed the tower's conceptual design as well as the conceptual design of an electric service platform involving a jacket structure.

## **BUILDINGS**

**Battery Maritime Building, New York City** - working with engineer-divers, Dr. Tutuncu, as

Marine Structural Engineer, was responsible for coordinating and collecting all inspection records for substructure elements of the historical Battery Maritime Building in lower Manhattan. He determined the residual load-carrying capacity of various foundation elements based on observed conditions as well as documented inspection findings and prepared final designs of the proposed foundation **repair details**.

**Hotel Buildings for Military Personnel, Ankara, Turkey** - Field Engineer during construction of two hotel buildings for military personnel. Responsibilities included coordinating and supervising construction activities, including foundations, basement waterproofing, concrete formwork, reinforcing steel placement and concrete pours in addition to managing subcontractor works and preparing various bid documents.

## **CONSTRUCTION**

**Oyak Construction Company, Ankara, Turkey** - As a Senior Civil Engineer based in the Ankara headquarters, Dr. Tutuncu was responsible for providing site support to various construction projects around the country. In addition to reviewing detail design documents for constructability, he prepared bids, cost estimates and payment support documents.

## **ADVANCED RESEARCH**

**Cornell University, Ithaca, NY** - Dr. Tutuncu was a Research Associate with responsibility for evaluating and modeling transient earthquake

wave effects on buried pipeline systems. This work was sponsored by the Multidisciplinary Center for Earthquake Engineering Research (MCEER), the National Science Foundation (NSF) and the Los Angeles Department of Water and Power (LADWP).

**Cornell University, Ithaca, NY** - As a Research Assistant, Dr. Tutuncu was responsible for determining the compression load capacity of water trunk lines with and without bell-and-spigot joints and improving the load capacity of these joints through the application of external fiber reinforced composite (FRC) wraps. Additional responsibilities included geographic information system (GIS) implementation and assessment of earthquake damage on the existing water trunk line system in Los Angeles during the Northridge Earthquake, numerical modeling and laboratory testing of full-scale pipe and bell-and-spigot joint test specimens, and assessment of retrofit techniques involving externally applied FRC wraps. Project sponsors included MCEER, NSF, and LADWP.

## PUBLICATIONS

*"Compression Performance of Steel Pipelines with Welded Slip Joints,"* Journal of Pipeline Systems Engineering and Practice, ASCE, 2010.

*"Compression Behavior of Non slender Cylindrical Steel Members with Small and Large Scale Geometric Imperfections,"* Journal of Structural Engineering, ASCE, 2006.

*"Ship-Shore Compatibility Study for Next Generation Large Liquefied Natural Gas Carriers,"* Proceedings, GasTech 2006

Conference, Abu Dhabi, United Arab Emirates, 2006.

*"Joint Effort Rapid Response Minimizes Downtime During Fuel Oil Dock Replacement,"* Proceedings, The Ports 2004 Conference, Houston, TX, 2004.

*"Seismic Rehabilitation of Water Trunk Lines with Fiber Reinforced Composite Wraps,"* Proceedings, 7th National Conference on Earthquake Engineering, Boston, MA, 2002.

*"Compressive Load and Buckling Response of Steel Pipelines During Earthquakes,"* MCEER-01-SP02, MCEER, Buffalo, NY, 2001.

*"Compressive Load and Buckling Response of Steel Pipelines During Earthquakes,"* Ph.D. Thesis, Cornell University, Ithaca, NY, 2001.

*"Fiber Reinforced Composites for Advanced Seismic Performance of Water Supplies,"* Research Progress and Accomplishments 1999-2000, MCEER-00-SP01, MCEER, Buffalo, NY, 2000.

*"Optimal Design of Planar and Space Structures with Genetic Algorithms,"* Computers & Structures, Elsevier Science Ltd., 2000.

*"GIS Characterization of Spatially Distributed Lifeline Damage,"* TCLEE Monograph No.16, ASCE, 1999.

*"Optimization of Steel Frames by Genetic Algorithms,"* Master's Thesis, Middle East Technical University, Ankara, Turkey, 1995.