

Civil / Structural Engineer



Profession

Civil/Structural Engineer

Current Position

Engineer

Joined Arup 1997

Qualifications

CEng MICE

MSc. DIC. Earthquake Engineering and Structural Dynamics
Imperial College, London 1999

1st Class B.Eng. Hons. Civil Engineering
University of Glasgow, 1997

Professional Associations

Member of the Institute of Civil Engineers (MICE)

Member of the Engineering Council (EC)

Member of SECED

Publications:

Willford MR, Hicyilmaz K and Pratt K
'Dynamic considerations in the design of high-speed railway bridges'.
Transportation Research Board Conference, Washington DC, January 2004

Nicholas J Sartain, Kubilay M O Hicyilmaz, 'Key issues in the seismic design of immersed tube tunnels', Society for Earthquake and Civil Engineering Dynamics (SECED) and the University of Bath Young Engineers Conference, March 05

Key Data

Kubilay Hicyilmaz is a chartered civil engineer, specializing in Earthquake Engineering and Structural Dynamics. He has spent 6 months on site as a Design Liaison Engineer on the CTRL project. He has been seconded to Arups Los Angeles (LA) Office to gain design experience for 1 year. Currently he is in Arups Advanced Technology Group working on a range of dynamic issues.

Kubilay spent 3 months working for GOAL in the relief efforts on the post 8th October 2005 South Asian earthquake. His main role was to develop a training program in earthquake resistant construction techniques to the local populations of Azad Jammu Kashmir in Pakistan in GOALs areas of responsibilities. The training was expanded to include NGOs, INGOs to improve their knowledge base in earthquake engineering principals.

During his time with Arup, Kubilay has gained experience in a range of dynamic problems. This has included seismic, impact and vibration analysis using mainly Finite Element Methods. As part of his work he has gained competency in running the following specialist software codes: NASTRAN, LS-DYNA, CEAP, T/HIS, PRIMER, D3PLOT, GSA and SAP.

As part of his work he has become familiar with a range of British, European and American structural design requirements

He is fluent in English, Swiss-German, and German. Kubilay also Speaks Turkish, French and a small amount of Spanish, Mandarin and Xhosa.

Relevant Projects

Unilever House

He has designed a tuned mass damper for a stair structure hung from floors that were hung of cables. Currently he is involved with giving advice to implement the accurate adjustment of the cable lengths to obtain the designed cable forces.

Muslim Aid

He has been involved in a technical review Muslim Aids housing program for Aceh Indonesia from an Earthquake Engineering view point and providing practical advice how to improve the project.

Ijburg Bridge

Kubilay has provided advice to improve the dynamic performance of the stairs for this bridge.

Heathrow T5

Currently he is correlating the predicted floor vibration levels with field measurements to demonstrate the validity of his predictions and analysis methodology

Twickenham Stadium Commercial development

He has assessed the likely vibration levels due to rhythmic type activities for this mixed use development and advised the client of likely vibration levels.

Gesellschaft fuer Nuklear Service Ignalina Project

Kubilay has assessed the effects of various impact scenarios on a range of transportation and storage containers advising on areas of high demand. Where appropriate he has been suggesting design improvements and liaises with the client as needed

Twickenham Stadium, UK

He investigated the dynamics of the new Twickenham stadium working closely with the design team. He provided advise on the stadium dynamics as the stadium design progressed.

NMTPS, Rolls Royce

Kubilay worked on a number of drop tests to assess the impact behaviour of a new transportation container. He coordinated with the client and investigated ways to improve the ultimate behaviour of the container.

FMC – ExxonMobil.

Structural Engineer

He performed time history analysis of a loading arm and identified critical components by calculating their utilisation ratio time histories. He confirmed the elastic performance evaluation by non-linear dynamic analysis and verified component behaviour by using appropriate loading protocols. He presented results as part of the project team to the client and agreed the new scope. He prepared quotes for new work and delivered results by the agreed date.

East Coast Main Line, Floating Track Slab, UK

He performed the category 2 check on the analysis of the floating track slab using specialist software knowledge and dynamics experience.

St Pancras Barlow Shed – London, UK

He was involved in the non-linear analysis of the cast iron columns to assess their capacity against new loads resulting from the refurbishment work. He correlated models against full scale test results from the BRE. He investigated the using different design scenarios to reduce the column moments.

Pont Dewi Sant Bridge – Whales, UK

He analysed the anchor box connection to determine stresses and highlighted areas of stress concentration

Trinity House, Oxford, UK

He derived alternative solutions to reduce footfall induced vibration levels and provided retrofitting cost estimates

CTRL, C310, UK

He worked on site as a Design Liaison Engineer for Rail Link Engineering. He was responsible for answering site queries and ensuring that Design Statements, Design and Check Certificates were properly signed off. He reviewed contractor drawings, calculations reports.

Marmaray Crossing

He performed the analysis to predict the longitudinal seismic load effects on the proposed Marmaray Crossing under the Bosphorus. This work involved looking at the effects of local soil conditions and the spatial variability of the earthquake motion.

Heathrow T5 Vibration work

Kubilay assessed footfall induced vibration levels for the T5 project. As part of this work he investigated

methods to reduce the predicted vibration levels, prepared a calculation package, liaise with the client and coordinate internal reviews and resources.

Tutt Hill Bridge - London, UK

Kubilay performed dynamic analysis on this heavily skewed bridge to justify the design of the bridge post construction for ultimate and serviceability loads. After initial simple beam models the final analysis runs were performed in LS-DYNA where a 3-D model of the bridge was loaded by a 3-D train model. This level of analysis sophistication was required in order to justify that no remedial action was required. Recently he has been involved in correlating measured bridge vibration levels during the commissioning phase of the CTRL Phase 1 works to analytical predictions.

Denver Art Museum, Denver USA

Kubilay was involved in the detailed design of Daniel Liebeskind's scheme for Denver. Due to the unique 3-D form of this structure design methods and assumptions were constantly challenged and modified to cope with the specific demands of the scheme. He was specifically involved in developing a design for the floor diaphragms, drag beams and seismic analysis to UBC 97 of this structure. He was responsible for preparing results to be used in design for other team members, coordination of structure with the services requirements and the preparation of calculation packages to obtain plan check approval by the city of Denver, which was granted in May 2003.

Fashion Show

Kubilay was involved in checking tenants proposed alterations to the clients existing structure and advising of any possible adverse effects of the proposed work to the original structure.

LACMA – Rem Koolhaas

Kubilay was involved in investigating a range of diaphragm and roof concept to realise the architects vision of tying a collection of buildings together to form one unified structure in the seismic Zone IV location of Los Angeles.

University of Notre Dame, Indiana USA

Kubilay was involved in back analyses of the roof structure for the concert hall to determine how it would behave during construction. As a result of this work he was able to give specific propping

recommendations to the contractors for construction purposes. He obtained specialist advice on timber to satisfy the independent checkers concerns. This allowed the project to proceed without costly delays.

Ling Ao - Shenzhen, China

Fatigue life assessment of safety critical energy facility using measured data and finite element modelling. He also developed methods to model fluid structure interaction using LS-DYNA in the pipes and vessels being considered.

St Lukes Spiral Staircase - London, UK

Kubilay performed a dynamic assessment of the proposed stairs, advised clients on acceptance criteria to choose from and provided guidance on options to reduce the predicted footfall induced vibrations by a number of changes to the structure.

Canary Wharf Bridge - London, UK

Kubilay developed a scheme design for the installation of tuned mass dampers to a link bridge between two buildings to reduce crowd induced vibrations to acceptable levels.

MIT Neuroscience Building Cambridge, Massachusetts

Kubilay supervised the building of LS-DYNA models to analytically predict ground vibrations due to trains. Analytical results were compared with on site measurements. This work will help with the scheme design to house sensitive measuring equipment.

Medway Viaduct - London, UK

He has analysed the Medway viaduct to establish its response to ship impacts and assessed if the response of the bridge would derail a high-speed train. He advised client to perform a probabilistic risk analysis to satisfy the Health and Safety Executive.

Piled Slab Design - London, UK

Kubilay performed dynamic analysis on the proposed piled slab designs that is located over the marshes of East London. This work involved modelling of the structures and the appropriate high speed trains.

St Botolph's House - London, UK

Kubilay managed and performed forced response analysis to predict the relative benefits that different floor constructions methods would deliver compared with a conventional floor scheme. This meant

that the client could be advise about the pertinent construction method to adopt to achieve his desired performance targets on structural borne noise levels.

StratSat, UK

Kubilay was involved in evaluating the feasibility of building a 200m high inflatable launching tower for airships that are to be used for the mobile phone industry.

Proctor & Gamble Initial Seismic Evaluations

Parma, Pomezia, Gattatico, Italy
Athens, Greece
Takasaki, Japan
Casablanca, Morocco

Kubilay has performed a number of visual surveys to assess P&G's plants in Greece, Italy and Morocco using FEMA 178, 310 and P&G standards. As part of this work retrofitting costs for each building were estimated using FEMA 156 & 157 to achieve the Life Safety performance objective.

He evaluated the feasibility of non-conventional seismic rehabilitation schemes for a riveted 1950's building in Takasaki Japan using FEMA 273/274.

As part of the initial seismic evaluation of the Hellas plant he performed a basic rack evaluation the existing Hellas storage racks. This resulted in more detailed assessment of the existing racks.

He performed a detailed seismic assessment of a building for P&G's Casablanca plant to FEMA 273 guidelines. As part of this work he supervised the necessary structural investigations of the building on site in French.

Structural Integrity Surveys

Kubilay has taken part in three of these surveys to sites in Germany, Sweden and Poland. He compiled the reports and was involved in presenting the findings to P&G's review team

Cargo Lifter AirCrane - Berlin, Germany

Kubilay performed Non-linear analysis on this lighter than air balloon, that is designed to carry a payload of 75 tons, to assess the anchoring loads due to wind loading on the balloon. This analysis involved modelling the balloon as an inflated airbag that is being restrained by a cable net. He advised the client about likely deficiencies about

the current design both in operating procedures and connection designs.

Ford Otosan Plant - Izmit, Turkey

Kubilay was an engineer for the post earthquake seismic assessment of the plant and equipment for Ford's Otosan project in Turkey to FEMA 273. He visited Ford's plant engineers in Germany to establish their seismic design philosophy at a high level and provided support to the plant engineers Eisenmann as required.

Metsovitikos Bridge - Metsovitikos, Greece

Kubilay performed the seismic verification analysis of the Metsovitikos suspension bridge. This involved assessing the effects of arrival time, loss of coherency of the strong ground motion and design changes on the bridge response. He prepared the report on the seismic analysis, which will be reviewed by the Category III checker and the client's engineers from the University of Thessalonica.

Otokent Retail Complex - Istanbul

Kubilay organised a peer review of the seismic design of the Otokent project and subsequently provided support to the design team to improve their understanding, analysis and design of the planned buildings to UBC 97.

Pfizer - London, UK

Kubilay modelled a pile joint to assess its performance for a number of joint configurations in order to assess if observed failures on site were due to a design fault or a construction fault. This work allowed remedial action to be taken for piling work to continue on site.

Scheme Designs for Manufacturing Facilities

Kubilay was involved in the scheme design of manufacturing facilities for British American Tobacco (Philip Morris Project in Ukraine) and Danone (Project Novi - in Russia)