

**Chronology of Important Activities Relating to  
Shatin Area 14 B Phase 2 Piling Contract**

<b><u>Date</u></b>	<b><u>Event</u></b>
1996 and 1997	Ground investigation carried out by Term Ground Investigation Contractors, Gammon Construction Ltd and Geotechnics & Concrete Engineering (HK) Ltd
19 December 1996	Building Committee (BC) approved proposed client brief and control plan for Home Ownership Scheme Development at Shatin Area 14B and project estimates for Phases 2, 4 & 5
18 July 1997	Foundation advice report issued by Housing Department (HD) Geotechnical Engineer/10
17 October 1997	Tenders invited by Housing Authority (HA) for the construction of the foundations of Yuen Chau Kok (YCK)
20 October 1997	Approval of BC by presumption of revised client brief, control plan and revised project estimates for Phases 2, 4 & 5
28 November 1997	10 tenders received
23 December 1997	Submission of the tender report by Davis Langdon & Seah
15 January 1998	Approval by BC of the tender award to Zen Pacific Civil Contractors Ltd (Zen) as a straightforward item
7 February 1998	Letter of Acceptance issued to Zen
10 February 1998	Commencement of Piling Contract
13 February 1998	Submission by Zen to HD of the curriculum vitae of site staff
18 February 1998	Submission by Zen of proposed method statement for the construction of large diameter bored piles (LDBPs)

<b><u>Date</u></b>	<b><u>Event</u></b>
21 February 1998	Endorsement by HD of the appointment of Lysander Lam Ping Chuen and Associates (P C Lam) as the Registered Structural Engineer (RSE) for the project
27 February 1998	Project Structural Engineer (PSE) forwarded comments to Zen regarding the proposed method statement, including Project Geotechnical Engineer (PGE)'s recommendation to use a reverse circulation driller rather than a bell-out chisel for the formation of bell-out
12 March 1998	Submission by Zen of a revised method statement in response to PSE's comments. Zen retained the use of bell-out chisel without further objection from the Contract Team
2-23 March 1998	Predrilling for piles at Block D
13-24 March 1998	Predrilling for piles at Block E
31 March 1998	Submission by Zen of the predrilling results and the proposed founding levels for piles at Block D  PSE seeking PGE's comments on the proposed founding levels for Block D
31 March 1998 and 2 April 1998	Inspection by PSE and PGE of the predrilled rock samples of Block D
20 April 1998	Reply of PGE to PSE that he had no comment on the proposed founding levels regarding Block D
27 April 1998	Submission by Zen of the predrilling results and the proposed founding levels for piles at Block E
28 April 1998	PSE seeking the PGE's comments on the proposed founding levels for Block E
4 May 1998	Inspection by PSE and PGE of the predrilled rock samples of Block E
18 May 1998	Reply of PGE to PSE that he had no comment on the proposed founding levels regarding Block E

<b><u>Date</u></b>	<b><u>Event</u></b>
20 May 1998	Issue by a Chief Structural Engineer of a memorandum alerting staff to be vigilant in site supervision of foundation works using LDBPs, in particular during predrilling for determining founding levels
3 June 1998	Issue by Project Director/Works (PD/W) of a memorandum alerting staff to the need for vigilant monitoring of concreting works relating to LDBP pursuant to a number of problem cases involving the construction of LDBP in the private sector. Instruction also given to estimate additional overtime required
22 June 1998	Project Clerk of Works estimated additional overtime requirement
2 July 1998	Construction of bored piling work in Block D completed
10 July 1998	Issuance of supervision guidelines for LDBP by PD/W
15 July 1998	Application by Zen to HD for using H piles for the foundations for Blocks F, G and H
16 July 1998	PD/W approved additional overtime estimate for supervising LDBP foundation works
July and August 1998	Extensive failure of the sonic tests on the piles at Block D, followed by a series of coring tests done
5 August 1998	HD approved change of piling design for Blocks F, G and H
25 August 1998	Construction of bored piling work in Block E completed
23 September 1998	Zen took over the project from the subcontractor but retained the key site staff
18 October 1998	Acceptance by PSE of Zen's proposal to conduct vibration tests for all doubtful piles in Block E and to do a coring test on only one of the doubtful piles
21 and 24 October 1998	Sonic-testing by HD's contractor of nine piles in Block E. Results unsatisfactory: eight of the nine piles were found to have blocked tubes. The testing contractor recommended that all the piles be further investigated

<b><u>Date</u></b>	<b><u>Event</u></b>
2 November 1998	Submission of vibration test report on all the 18 piles in Block E done by a company employed by Zen. The conclusion was that the piles were of acceptable concrete integrity
9 November 1998	Zen submitted core test reports of BP4 and BP9 of Block E
30 November 1998	Issue by the Contract Manager (CM) of a warning letter to Zen for the inadequate attendance of the Quality Control Engineer throughout the contract period
5 December 1998	HD being informed by Zen of change of RSE
19 December 1998	Completion of the Piling Contract  Zen informing HD the substantial completion of piling works and requesting the issue of the Certificate of Completion
21 December 1998	Commencement of the Building Contract
12 January 1999	Certification by CM of completion of Section A of the works, i.e. a temporary transformer and switch room compound
5 March 1999	Letter from Zen to CM reminding him that the Certificate of Completion should be issued within 21 days upon Zen's notice on 19 December 1998
17 June 1999	Certification by CM of completion of Section B of the works, i.e. piling, pile caps and remaining works, despite the fact that Zen had yet to submit the RSE Report to certify satisfactory completion of the works
mid-1999	Instruction made by HD to monitor building settlement at all HA construction sites following problems with short piles on other sites
5 July 1999	Letter from PSE to Zen asking for the submission of the RSE Report to certify completion of works
17 September 1999	Commencement of monitoring of building settlement at Phase 2 site

<b><u>Date</u></b>	<b><u>Event</u></b>
4 October 1999	Agreement reached by Zen with the original RSE, P C Lam, for preparation of RSE Report
9 December 1999	CM Wong & Associates Ltd. (CMW) commissioned by HA to investigate piles at Blocks D and E
18 December 1999	Submission by RSE of the final RSE Report to Zen
January 2000	Findings by CMW: three piles in Block D and one pile in Block E, out of 18 piles in each block, complied with contract specification
21 June 2000	Zen submitted the RSE Report to HD without warranting its accuracy

*Source of information : written and oral evidence provided by witnesses*