BER Case 95-5

Approved
December 7, 1995

II.3.a. - Code of Ethics
II.3.b. - Code of Ethics
II.3.c. - Code of Ethics
III.1.a. - Code of Ethics
III.1.b. - Code of Ethics
III.1.f. - Code of Ethics
III.3.a. - Code of Ethics

FAILURE TO INCLUDE INFORMATION IN ENGINEERING REPORT

FACTS:

Engineer A was retained by a municipality to design a dock on a supporting foundation of 90 piles. Following construction, there was a contractor's extra claim and Engineer A and the municipality were both sued by the contractor. The claim was settled by mediation. Engineer A and the municipality shared the cost of the settlement with the contractor for $300,000.

During the mediation, the municipality brought in expert witnesses to support their case. One expert testified that the pile driving records indicated that many of the piles did not, at the time of initial driving, meet driving resistance sufficient to satisfy the load carrying requirements of the design calculations. Engineer A testified that the geotechnical firm's report expected that the piles would gain sufficient additional strength within 30 days to meet driving resistance requirements.

To test this, the municipality retained Engineer B to supervise the driving of several test piles to see whether the piles would gain sufficient strength to meet the design calculation requirements. An independent geotechnical consultant was retained by Engineer A to observe the test. The geotechnical consultant testified and showed that dynamic test equipment had failed during the test and that the test piles were not driven to the same depth of penetration that apparently was required for the plug to form in the original piles. Driving conditions were not duplicated in driving the test piles in that a vibratory hammer was used for the test piles and not used in the original

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driving. Also, after the 30 day set up, the driving hammer was dropped several times to start

the hammer before the record of blow counts commenced. In the opinion of Engineer A's geotechnical consultant, this would have broken the pile bond and undervalued the skin friction value reported by Engineer B's tests. However, the test piles were driven and after a 30 day set, the increase in set up strength with time was confirmed.

Engineer B's concluding report stated that approximately 19 of the 90 piles did not meet the safety factor required by the design calculations. This opinion was based upon the fact that the nineteen piles did not reach sufficient depth to develop the full strength when applying skin friction resistance value to the square footage of pile penetration. Engineer B did not state anywhere in the report that these 19 piles, according to the pile driving records, had been driven to essential refusal and that, applying accepted wave equation calculations, the piles would have indicated a strength several multiples over the calculated load requirements. Additionally, Engineer B did not report that the dynamic test equipment had failed.

At no time during the development of Engineer B's report did Engineer B talk to any representative of Engineer A, even though Engineer A's on-site representatives were available to testify as to the accuracy of the pile driving records. No effort was made by Engineer B to inquire from contractors, workers, or others on the job to verify or refute his theories about why the 19 piles met driving refusal prior to predicted depth. When queried by Engineer A after the report was issued by Engineer B, Engineer B said: "We just did not believe the driving records and there was also the issue of whether the pile was vented to allow air to escape from below a closure plate that was included in the pile to separate the concrete fill in the pile from the clay. The driving records look suspicious." Previously, Engineer B had said, "We didn't look at the pile driving records because it was not in our scope of work."

QUESTION #1:

Was it ethical for Engineer B to not have included the failed operation of the test equipment in his report?

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QUESTION #2:
Was it ethical for Engineer B not to communicate with any representatives of Engineer A about the project?

QUESTION #3:
Was it ethical for Engineer B not to communicate with the contractor's supervisor and workers who were on the job during construction?

QUESTION #4:
Was it ethical for Engineer B to issue his report without mentioning that the 19 piles questioned had, according to the driving records, met refusal?

DISCUSSION:
A mix of legal or quasi-legal and engineering procedural philosophies are revealed in this case. Engineers must be exponents of all the available technical facts as the basis for problem solving. Facts are not adversarial, even if they may be conflicting. Adversarial interests, however, are polarizing to the effect that some facts may be preferred by one interest over the other.

In this case, an adversarial relationship is established between the municipality and Engineer A to resolve the sharing of a settlement cost between the two. To test the criteria and professional judgment upon which Engineer A's conclusion, and recommendations were based, the municipality arranged for a test pile driving program and retained Engineer B to supervise the program.

At the conclusion of the program Engineer B reports that 19 piles do not meet the required factor of safety for the reason that the piles were not driven to a sufficient depth that pile friction resistance would support the load. Material facts, however, were not addressed in Engineer B's report. Among them, that dynamic test equipment failed during the test, and that all 19 test piles reported as failing the test were driven to refusal.

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Whatever rational Engineer B may employ to draw his conclusion, valid or not, the select language of the report precludes any interpretation that any or all 90 piles met the factor of safety requirement. The opportunity for expert engineering review and interpretation of the pile driving test was effectively denied by Engineer B's report.

It is not evident from the facts of the case that Engineer B's selective use of technical fact was inspired by the adversarial circumstance, nor does it matter. As evidence, the report appears to serve no purpose except to impugn Engineer A, or to support the original testimony of the municipality's expert witness. As an engineering document the report is incomplete and does a disservice to Engineer B's client municipality by potentially misdirecting a conclusion. Neither interpretation is tolerated by the Code of Ethics which requires that engineers "shall include all relevant and pertinent information in such report, statements or testimony."

Further, by excluding the pile driving records, Engineer B has denied himself the opportunity to present a rational for discounting their value, and thereby to serve his client.

It is clear that Engineer B may be criticized for his failure to communicate with Engineer A's on-site representative. We are inclined to the view that each was independently responsible for the assembly and interpretation of the facts of the pile driving. However, Engineer B's failure to inquire from the contractor, workers or others on the job is a failure of fact gathering diligence.

Engineer B appears to have assumed a responsibility to defend the client municipality by the selective use of data. This is an egregious denial of the duties and responsibilities of a professional engineer in any setting, legal, quasi-legal or non-legal.

CONCLUSIONS:

1). It was unethical for Engineer B to issue his report without mentioning the failed operation of the testing equipment.

2). It was unethical for Engineer B to not communicate with any representative of Engineer A about the project.

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3). It was unethical for Engineer B to not communicate with the contractor's supervisor and workers who were on the job during construction.

4). It was unethical for Engineer B to issue his report without mentioning that the 19 piles questioned had, according to the driving records, met refusal.

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MINORITY REPORT TO BER CASE NO. 95-5

In reviewing this case, the Board isolated Engineer B's failure to communicate with Engineer A or Engineer A's representative. This was done in order that some consideration could be given to the legal or quasi-legal implications of the apparently adversarial circumstance of the matter. This minority report relates only to conclusion 2), that it "was unethical for Engineer B to not communicate with any representative of Engineer A about the project. The minority is fully in agreement with all other conclusions.

Disagreement centers on a fine point of distinction that Engineer B may interpret communication with Engineer A to constitute an interference with independent fact-gathering for the reason that the relationship was adversarial. All hard data relating to the pile driving project was otherwise equally available to Engineer A and Engineer B from the contractor's record. However, faulty or slanted Engineer B's eventual use of the available project record may have been, the minority feels that Engineer B was entitled to maintain a severance from Engineer A during the pile driving test and preparation of the report.

In contrast, the minority is in absolute concurrence that Engineer B's failure to inquire from the contractor constitutes an unethical failure of fact-gathering diligence.

The minority believes that Engineer A and Engineer B should have come, independently, to the same fundamental conclusion based on the facts of the case, and deplores Engineer B's selective use of information as profoundly unethical.

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