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Discipline Committee of the Association of Professional Engineers of Ontario
In the Matter of a Hearing Under the *Professional Engineers Act*, RSO 1990, Chapter P.28
And in the Matter of a Complaint Regarding the Conduct of

V.F. Wilcox, P.Eng.

A Member of the Association of Professional Engineers of Ontario, and

Trade Engineering Company Limited

A Holder of a Certificate of Authorization

Decisions and Reasons

The Discipline Committee of the association met in the offices of the association on April 18, 1996, to hear allegations of professional misconduct against Victor F. Wilcox and Trade Engineering Company Limited (hereinafter referred to as Wilcox and Trade respectively)

Mr. William D. Black, of McCarthy Tétrault, appeared as legal counsel for the association. Wilcox and Trade were not represented by counsel.

The hearing arose as a result of Wilcox and Trade's involvement in an addition to a Barrie U-Store mini-storage facility at 100 Saunders Road and in the design for a proposed multi-unit commercial building at 79 Anne Street South in the City of Barrie, Ontario.

At the beginning of the hearing, Mr. Black informed the Committee that the following facts were agreed as reflected in the Agreed State-

ment of Facts, which was filed as an exhibit.

Agreed Statement of Facts

APPENDIX "A"

Barrie U-Store

1. Wilcox was at all material times a member of the Association of Professional Engineers of Ontario (PEO).

2. Trade was at all material times the holder of a Certificate of Authorization.

3. Cowden-Woods Design Builders Ltd. (hereinafter referred to as "Cowden") was engaged by the owner of Barrie U-Store as the general contractor to construct an addition to expand an existing three-building mini-storage facility located at 100 Saunders Road in Barrie, Ontario.

4. Wilcox and his company, Trade, were engaged by Cowden-Woods to provide engineering services for the addition.

5. The new building was a one

storey structure, 9.14 metres x 85.13 metres x 4.64 metres high, approximately 780 metres in area, and was to be used as a self-storage facility. Pitched wooden roof trusses were supported on masonry walls, with steel siding panels on the gable ends and roof. The foundation and floor slab for the addition had been previously constructed.

6. On June 6, 1994, Wilcox signed and stamped building drawings 9423001 to 004, prepared by Cowden-Woods, which drawings were submitted to the City of Barrie to obtain a building permit.

7. On June 23, 1994, a building permit was issued for the addition and construction began shortly thereafter.

8. In March 1995, an engineer examined drawings 9423001 to 004 and noted that the steel lintels over the main storage doors appeared to be undersized. His design check indicated an over-

stress of approximately 60% in strength and excessive deflection under gravity load.

In addition, the said engineer noted that the structural information on the drawings was very minimal and there was no design load information for the pre-engineered wood trusses.

9. A review of drawings 942001 to 004 by an independent structural engineer engaged by PEO indicated that:

(a) The 52 lintels specified for use over each overhead door are 2-90 x 90 x 6.5 angles welded back-to-back. While these angles are capable of carrying a simple dead load, including the masonry and roof structure, they are inadequate to properly carry the snow loads stipulated by the Ontario Building Code 1990, which is the applicable Code.

Calculations involving no exposure factor indicate a factored moment which is 2.5 to 3 times greater than the member resistance. Although not recommended, if an exposure factor of 0.85 is used, calculations indicate a factored moment that is 1.8 to 2.2 times greater than the member resistance;

(b) The specified live-load deflection is approximately span/157, whereas the conservative Code allowable deflection for elastic roof coverings is span/180. This deflection could cause cracking problems in the adjacent concrete block, and

(c) The potential uplift from wind loads is approximately twice the roof dead load, which includes the lintel and two courses of concrete block. It would appear that there could be a problem in regard to uplift, because the drawings do not indicate how much of the wall is tied to the roof to prevent uplift.

APPENDIX "B"

79 Anne Street South

1. Wilcox was at all material times a member of the Association of Professional Engineers

of Ontario (PEO).

2. Trade was at all material times the holder of a Certificate of Authorization.

3. Elstiwini Holdings Inc. (hereinafter referred to as "Elstiwini") engaged Trade to carry out the design and produce drawings for a proposed multi-unit commercial building on its property at 79 Anne Street South, in the City of Barrie.

4. The proposed building was a one-storey structure, approximately 14,400 square feet in area, to be used as a wholesale warehouse. The design called for a concrete slab on grade with no basement. The structural system consisted of a steel frame with steel deck on steel joists for the roof. The exterior walls were a combination of architectural block and metal siding.

5. On July 15, 1994, Wilcox, who is president of Trade, signed and stamped architectural drawings A1 to A6, structural drawings S1-S3, mechanical drawings M1 and electrical drawings E1 and E2, which drawings, together with eight pages of specifications, were submitted to the City of Barrie to obtain a building permit.

6. On September 6, 1994, a building permit was issued for the construction of the building.

7. Concerns were expressed by another engineer regarding the quality of the drawings during the tendering process.

8. A review of architectural drawings A1-A6 and structural drawings S1-S3 by an independent structural engineer engaged by PEO revealed Code violations, design deficiencies and omissions in drawings S1-S3, which are contrary to accepted structural engineering design practice. The Code violations included:

(a) no indication that the diaphragm action of the roof deck was utilized to transfer wind loads to the exterior walls;

(b) no indication of roof loadings;

(c) no indication of geotechnical information for footing designs (d) the beam load exceeded capacity by 7 to 9% for W8 x 48 on line 1 between C/D and for W8 x 20 on line 4 between B/C and DE;

(e) the beam load exceeded capacity by 30% for W8 x 17 on line 1 between B/C and DE;

(f) no detail was shown to indicate that the masonry wall on line H was tied at the top for stability (section 1/A6);

(g) the masonry joint reinforcing was indicated at every third block course, but is required at every second course;

(h) no masonry anchors to the steel columns were indicated;

(i) no structural component was indicated to resist the lateral load imposed by the sloped roof, shown on section 2/A6.

The design deficiencies included:

(a) anchor bolts located outside the column flanges developed moments which are not intended;

(b) two 15M bars are normally required in the top of foundation walls, but were omitted;

(c) bottom chord joist bridging should have been brought to the deck level, at the end of the bridging line;

(d) The soffit anchors should be welded to the steel lintel, not attached to the masonry at the soffit as shown on section 2/A6, and

(e) the grade at the asphalt drive entrance from Anne Street is lower than street level, allowing drainage from the surface of Anne Street to enter the driveway.

The omissions included: sizes of exterior footing and column base plates; joist bridging on the roof plan; cladding attachment detail at the eaves; cold formed channel thickness; structural wall elevation; parking lot drainage facilities.

The allegations of professional misconduct set out in the Notice of Hearing, and filed as an exhibit outlined that for

the Barrie U-Store, Wilcox signed and stamped drawings which contained Code violations.

For 79 Anne Street South, the Notice of Hearing indicated that an independent review of the specifications, mechanical drawing M1, and electrical drawings E1 and E2 by an independent mechanical/electrical engineer engaged by PEO revealed that mechanical drawing M1 was completely inadequate for building permit review or for construction. There was no indication of capacities, no indication of any construction detailing, and the drawing was completely lacking in engineering content.

This review further concluded that electrical drawings E1 and E2 indicated locations of light fixtures, wall receptacles, signs, emergency and exit lights and a summary of electrical loads, but no indication of fixture types or circuiting.

While there was more design content on the electrical drawings, they were still inadequate in detail and content for building permit review or for construction. The specifications for mechanical and electrical were general in nature and inadequate.

It was further alleged that for the Anne Street project, Wilcox: stamped drawings which contained Code violations, design deficiencies and omissions; stamped drawings which were inadequate for the purpose of building permit review or for construction; and prepared specifications that were general in nature and inadequate.

The first witness for the association was Joseph L. Merber, P.Eng., an expert in electrical and mechanical engineering. Mr. Merber prepared a report (exhibit 9) in which a review was made of the mechanical and electrical documents submitted by Wilcox to the City of Barrie for a building permit for the pro-

posed warehouse expansion at 79 Anne Street South. Merber testified that according to the OBC, since the 14,412 sq.ft. building exceeds 6460 sq.ft. the services of an architect and a professional engineer are required.

Mr. Merber found Wilcox's stamped drawings completely inadequate either for the purpose of review for the building permit or for the purpose of review for the building permit or for construction. He reported that there were no indication of capacities or any construction details. Similarly, the specifications were inadequate for either purpose of review for building permit or construction.

In cross examination, Wilcox agreed with Mr. Merber's review as outlined in his report.

The second witness for the association was Robert J.G. Muir, P.Eng., of Kleinfeldt Consultants Limited, an expert in structural engineering who, at the request of the association, prepared two reports in which the structural work of Mr. Wilcox for the 79 Anne Street South and the Barrie U-Store projects were reviewed.

With respect to the Barrie U-Store, Mr. Muir reported that the drawings were inadequate. His concerns about the inadequate design regarding such matters as the lintels, the snow loads, allowable deflection and potential uplift are outlined in items 9(a), (b), and (c) of Appendix "A".

In regard to the 79 Anne Street South building, Mr. Muir also found the drawings prepared by Wilcox to be inadequate and to contain discrepancies. Mr. Muir reported on the inadequacies, including Code violations, design deficiencies and omissions, which were outlined in his reports and listed previously under item 8 Appendix "B".

Under cross-examination by Mr. Wilcox, Mr. Muir reiterated his opinion that a snow load factor under drift conditions of 1.0 should be used

according to OBC and not 0.75 as suggested by Wilcox. Wilcox indicated that the Barrie building inspector used 0.75. Mr. Muir noted that 0.75 can be used in other conditions, but under drift conditions, as was the situation in this design, the OBC requirement is to use a factor of 1.0.

Mr. Wilcox gave evidence on his own behalf. He introduced as an exhibit a report by Reid Engineers and Planners dated March 22, 1996, in which the structural deficiencies at 79 Anne Street South were addressed. Wilcox testified that he believed that if the recommendations in that report were completed, the structure would now meet OBC requirements. In regard to the Barrie U-Store, he reported that since the building has been subject to severe storms with no problems experienced, the owners were reluctant to make any structural changes. Wilcox admitted that he was not a structural designer and he sealed the design to obtain the building permit at the request of the contractor, whose draftsman designed the building.

Under cross examination by Mr. Black, Wilcox admitted that the original design at 79 Anne Street South was inadequate and that if the remedial work recommended in the Reid Engineers and Planners report were undertaken, the building would be safe. In response to questions from Mr. Black, Wilcox testified that he had advised the owners of the Barrie U-Store to undertake certain improvements, but they were reluctant to do so since the building had not failed. He agreed with Mr. Black that it was inappropriate for him to have undertaken the structural design and in doing so he had let down the Barrie building officials, who had relied on his professional engineer's seal in issuing the building permit.

He advised Mr. Black that he did not have structural

design experience, but had been persuaded by the owner/contractor of 79 Anne Street South to design it. Under cross examination, he advised counsel that he had not undertaken the design of any similar projects since these projects. However, when Mr. Black submitted (exhibit #14) drawings with Wilcox's seal dated February 1995, for a building at 630 William Road in Barrie, Wilcox could not explain why his seal was on these drawings, claiming that he had not contributed to the design.

In response to a question from the panel, Wilcox testified that his area of expertise was testing and inspection in the construction industry, as well as geotechnical work, and the design of small sewage systems for institutional and private users. He reported that he was a 1952 engineering business graduate from the University of Toronto.

At the conclusion of the evidence, counsel for the association and Mr. Wilcox made submissions to the Panel with respect to guilt.

After considering the evidence and exhibits filed, the Committee found Mr. Wilcox and Trade Engineering Company Limited guilty of incompetence as defined in Section 28(3)(a) of the Professional Engineers Act R.S.O. 1990, Chapter P.28, and which reads: "the member or holder has been found guilty in the opinion of the Discipline Committee of professional misconduct as defined in the Regulation".

The evidence indicated that Wilcox lacked knowledge, skill and judgment, and that he admitted his actions on these projects were unacceptable. Mr. Wilcox and Trade were found guilty of Professional Misconduct as outlined in Sections 72 (2)(a), (b), (c), (d), (e), (h) and (j) of Regulation 941, made under the Act.

u 72(2)(a): "negligence". In

this section, "negligence" means an act or an omission in the carrying out of the work of a practitioner that constitutes a failure to maintain the standards that a reasonable and prudent practitioner would maintain in the circumstances;

u 72(2)(b) "failure to make reasonable provision for the safeguarding of life, health or property of a person who may be affected by the work for which the practitioner is responsible";

u 72(2)(c): "failure to act to correct or report a situation that the practitioner believes may endanger the safety or the welfare of the public";

u 72(2)(d): "failure to make reasonable provision for complying with applicable statutes, regulations, standards, codes, bylaws and rules in connection with work being undertaken by or under the responsibility of the practitioner";

u 72(2)(e): "signing or sealing a final drawing, specification, plan, report or other document not actually prepared or checked by the practitioner";

u 72(2)(h): "undertaking work the practitioner is not competent to perform by virtue of the practitioner's training and experience";

u 72(2)(j): "conductor an act relevant to the practice of professional engineering that, having regard to all the circumstances, would reasonably be regarded by the engineering profession as disgraceful, dishonourable or unprofessional."

The panel finds that the evidence demonstrated that Wilcox was guilty of incompetence because of his lack of knowledge, skill and judgment, and his disregard for the welfare of the public.

The Committee heard submissions with respect to penalty from Mr. Black and Mr. Wilcox. Mr. Black argued that Wilcox's licence be suspended and the Certificate of Authorization be suspended for Trade,

pending the results of a practice review at Wilcox's expense. He requested that Wilcox's seal be turned in within 10 days and that the Decision and Reasons be published with names.

Wilcox did not agree with the need for publication with names. He realized the need for a practice review, but believed that only he should be affected, and thus the two other professional engineers on his staff should be able to carry on with the operation of his company.

By virtue of the power vest-

ed in it by Section 28 of the Professional Engineers Act, the Committee ordered that:

1. A practice review of Trade Engineering Company Limited be made by the association dating back to the year 1988, and continue for a minimum of one year; and until two consecutive reports acceptable to the Registrar are received.

2. Mr. Wilcox reimburse the association for the cost of the practice review

3. The Certificate of Authorization of Trade Engineering Company Limited be sus-

pending. This suspension is suspended, provided the Registrar is satisfied that the practice review is proceeding adequately.

4. The licence of Victor Wilcox be suspended for two years and reinstatement be subject to him passing the association's Professional Practice Examination (PPE). Reinstatement should include restrictions to his area of expertise.

5. Mr. Wilcox return his seal to The Association of Professional Engineers within 10 days.

6. The Decision and Reasons

of the Discipline Committee be published in the official journal of the association, in full with names, and emphasis on the mechanical, electrical and structural services.

Dated at Toronto this 11th day of December, 1996.

Walter W.K Miller, P.Eng.
(Chair)

For and behalf of the Committee:

Frank Anrep, P.Eng

Ted E. Aziz, P.Eng

Keitha J.F. Buckingham, P.Eng.

Dr. Kam E. Elguindi, P.Eng.
