

DETAILER TRAINING IN CANADA

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Abstract

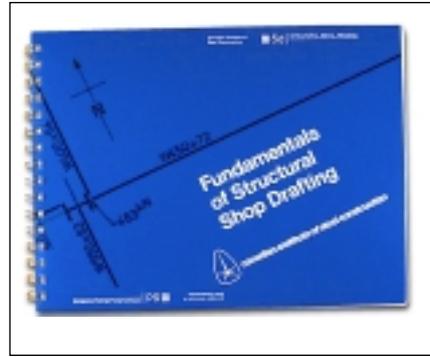
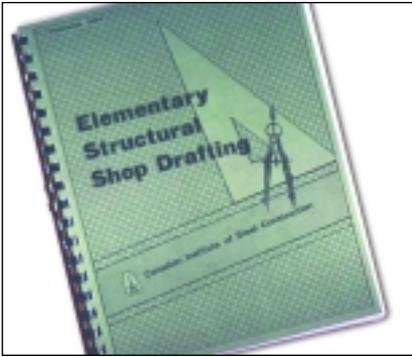
This paper outlines the different approaches taken to detailer training in the various regions across Canada by structural steel fabricators and by detailers as reported to the Canadian Institute of Steel Construction's National Committee on Detailing. The extent to which the involvement of those outside the steel industry, such as educational institutions and apprenticeship training programs, was achieved is discussed.

Background

The Canadian Institute of Steel Construction operates through six regional committees, starting in the East with the Atlantic Regional Committee and ending in the West with the B.C. Regional Committee. The Atlantic Regional Committee consists of CISC Fabricator and Associate Members located in the provinces of Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland. The Central Region encompasses the provinces of Manitoba, Saskatchewan, and the northwest corner of Ontario. The remaining Regions are provincially based.

Up until the 1970s, training of detailers was generally provided for "in-house", in the drafting/detailing offices of the major steel fabricators, such as Dominion Bridge, and Canron. Not only did detailers learn their trade at the hands of those with long structural steel fabrication experience, overseen by equally experienced checkers and squad bosses and engineers, all within the one fabricator's shop; but, so also did many engineers, fitters, layout persons, estimators, erectors, and other shop and field personnel. With the emergence of post-secondary technical colleges and, in the province of Quebec, CEGEPS, during the 1960s and 1970s, a number of basic training courses for steel detailers were initiated.

It was also not uncommon for high schools or technical secondary colleges to have courses on drafting, machining, and other technical skills training useful to the steel industry. To assist instructors of these courses, CISC published "Elementary Structural Shop Drafting", a 140-page textbook based on the 1965 Edition of CSA Standard S16, "Steel Structures for Buildings", to



provide the basics. Even then, the Preface of that textbook stated; “To become a competent structural draftsman, the study of this text must followed by the study of further structural theory coupled with practical drafting and detailing experience”.

In 1980, CISC published the first edition of “Fundamentals of Structural Shop Drafting” to replace the previous book, “Elementary Structural Shop Drafting”, as the design standard was now based on limit states design and SI metric units and SI was now the system of

units for courses in all Canadian schools—from elementary to university.

For a number of years the Ontario Regional Committee of the CISC organized a three-level structural steel detailing training program. Fabricators Members of CISC’s Ontario Region would provide the students and the instructor was usually a senior detailer from one of the member companies. The venue was either a technical college or high school classroom rented for continuing adult education.

During the

1980s, the structural steel fabricating industry started to undergo a major restructuring. No longer did the large steel fabricators maintain large drafting rooms, or even erection departments, having started to sublet these operations to independent detailing and erection companies. The personnel of these companies were often former employees of the major fabricators and understood well the needs of their clients. This meant that the fabricators had fewer staff and sent lesser and lesser numbers of students to the evening training courses. In addition, the instructors had started to, or had reached retirement age. Therefore, by the end of the 1980’s, Ontario Region had suspended the detailer training courses.

The 90s

In 1990 and 1991, the severe slump of the total construction industry meant that there was very little work, not only for structural steel fabricators, but also for steel detailers. Cash strapped governments reduced support for education and with funding and the contraction of the job market for their graduates, the colleges, which had taught courses on detailing, began to drop these courses. Independent detailing com-



Addition to Toronto General Hospital Western Division.

panies, often small business of a few highly skilled detailers, lacked the backing to invest in training new staff as they themselves were either cutting back in a struggle to survive or disappearing altogether. Fabricators also lacked resources for training of, and the need for, new staff.

As the 1990s progressed, and as the economy started to improve, the demand for detailers started to increase. Initially, fabricators, still generally reliant on sublet detailers for their detailing needs, looked to the detailers to supply more of their own, assuming that detailers were now a distinct, but separate, part of the structural steel fabrication industry. Detailers did not always hold that same view and lacked both a coherent voice as well as resources to solve the problem.

However, because no new detailers had been trained in the previous years, the detailers still remaining were quickly ageing, and immigration was no longer a practical means of addressing the shortage, it became important, in the light of the new structure of the structural steel fabrication industry, that both fabricators and detailers address the issue of detailer training.

In typically Canadian fashion, the approach to the training of detailers differs across the country.

British Columbia

In the B.C. Region, the first initiative was the development, in 1993, of a connection design course which could be taken by correspondence by senior steel detailers and addressed the selection and design of connections. The connection design course was developed and is administered by a consultant structural engineer in B.C. whose firm also is retained by many local fabricators for the design of steel connections. This course is divided into 10 modules, four of which are



Motorola Building in Markham, Ontario.

sent by mail to the student once the student had registered and paid the fee. Students are required upon completion of each module, to take the corresponding test. The tests for two modules are then returned for marking before the next set of two of modules is sent to the student. It is anticipated that each module will require from 3-4 hours of study by the student who has 12 months overall to complete all ten modules.

While initially developed for senior detailers, the course's first few modules can benefit a good detailer with one or two year's experience, as these first modules form the background to many industry tables and standards. In 1996, this course, developed originally for members of the B.C. Region, was made available to CISC members across country. On average 40 students take the course per year and last year 63 students enrolled—a growing testament to its popularity and success.

Concurrent with this course, Hugh Dobbie, a local and prominent B.C. detailer, was determined to increase the profile of steel detailers as highly skilled people. His vision was that, to attract young people, steel detailing needed to be identified more as a "profession" and to look and feel "high-tech." To help, he began developing a certification program for steel detailers and help found the Steel Detailers

Institute of B.C. (SDIBC). The SDIBC is a professional association of individual steel detailers as opposed to detailing companies.

This certification program consists of three levels reflecting the relative experience of the detailers—Associate Steel Detailer (ASD), Certified Steel Detailer (CSD) and Registered Steel Detailer (RSD). Detailers are required to maintain a log of their work experience, which is to be verified by their employer. In addition to the work experience, the detailer is required to undergo a prescribed amount of training. The purpose of this program of certification is to provide some level of assurance that the detailers involved in structural steel have both knowledge and experience. The SDIBC expects to have over 100 detailers in the program by year's end.

On the educational side, two post-secondary colleges in the B.C. Region, Vancouver Community College and the British Columbia Institute of Technology, have established extensive steel detailing training programs of at least 6-month duration and produce about 50 steel detailers per year. About one-third of these students are absorbed into the local structural steel fabrication industry. Vancouver Community College has begun an advanced detailing program as a night course consisting of three hours per week over a 12-week pe-

riod. Graduates of the BCIT and VCC programs are eligible to become Associate Steel Detailers under the SDIBC program. When students enroll as student members, they are given a career log to record their courses of instruction and work experiences.

Having established this certification framework, it was presented to the B.C. provincial authorities in order to try for provincial recognition of the certification program.

Alberta

In Alberta, a committee composed primarily of members from CISC's Alberta Regional Subcommittee on Detailing and local steel detailers, known as The Alberta Steel Detailer Committee, has spent a considerable amount of time in developing the Alberta Steel Detailer Certificate Program. The overall goal of this program is to establish an excellent, highly flexible, non-mandatory employer driven and funded steel detailer specific program that focuses on classroom and practical components. The program can be an either two or four year in duration. The first three years of the program have a classroom component and practical component while the fourth year consists solely of a practical component.

Each year of the program consists of about 1800 hours with the amount of practical experience increasing within each successive year of the program. The students would be required to sit a set of standardized exams at the end of each year of the program. This would ensure that an acceptable level of parity among steel detailers certified to this program is achieved. The outline of this program is given in Table 1.

With such a highly detailed educational program being required for the steel detailer certificate, it is the intent of The Alberta Steel Detailer Committee to propose to the



New Toronto Airport (GTAA) roof in early October 2000.

Director of Apprenticeship of Alberta Learning; Apprenticeship and Industrial Training that the steel detailer be a Designated Occupation under the Alberta Apprenticeships and Industry Training Act.

The development of this certificate program has been funded by the Alberta Regional Committee of CISC and has had the co-operation of the technical educators in the province. Once this program is in place, it is anticipated that an employer would hire an apprentice who would study the set of topics in a classroom environment in conjunction with practical training according to the course outlines.

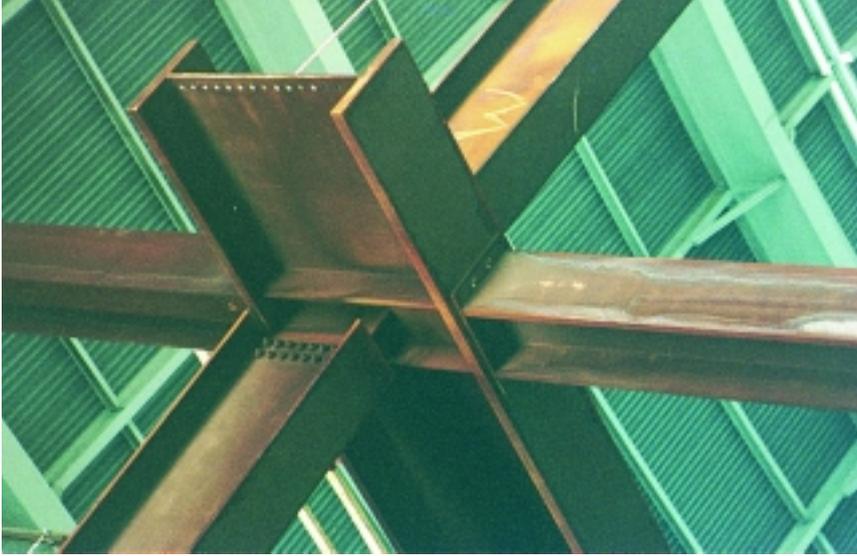
In addition, some of the larger fabricators in Alberta have instituted in-house training programs for steel detailers to meet their immediate needs.

Ontario

It was Ontario that for many years had had its own instructional program for structural steel detailers. This program had consisted of Basic, Level I and Level II Structural Steel Detailing. The industry had provided the instructor and fabricators had been the source of students. Local educational institutions had usually been the venue. These courses had been run until late 80's when both students and instructors were in short supply and the courses were subsequently suspended.

During that period, a few Ontario colleges, such as Mohawk and Seneca, had drafting programs with some portion of the course devoted to structural steel detailing. However, when it became apparent that there were no jobs for their students and the Ontario Government began rationalizing courses given at the college level, these courses were dropped for the curriculum.

The Ontario Regional Committee has been working over all last couple of years to develop a two to three-year self-directed apprenticeship program that would incorporate both shop and field experience. It is proposed to revise the original Ontario Region's Level I and Level II structural detailing courses and to develop a series of tests to evaluate the apprentice. Various members in the Ontario Region have been talking to local post-secondary colleges to try to interest them in reinstating formal courses for steel detailing. It has yet to bear fruit as only a few students applied for the initial offering of the course. As this may have been due to a perception that structural steel detailing is not "high tech" enough, some members of the Ontario Regional Committee have suggested producing a poster aimed at high school students to interest them in the structural steel industry before they enter post-secondary colleges.



Tie Girder detail of GTAA Terminal (Toronto) Oct. 2000.

Quebec

For the past three years (beginning in 1997), through the Unemployment Insurance retraining program and administered by Emploi Quebec, a basic training program for detailers has contributed about 100 new detailers in the region. All of the graduates of this program have found employment. The basic criteria of this program was that the person had to be unemployed; but, as the students that applied varied greatly in their educational and practical skills backgrounds, a minimum educational level was established to ensure that the students could succeed.

This program is now being replaced by a 1050-hour course prepared by Cegep Ahuntsic in collaboration with the CISC Quebec Regional Drawing Committee. This course will be open to all high-school graduates as well as post-secondary college level students. As this course is a formal educational program, entrance requirements have been set to screen the applicants for their abilities. With this 1050-hour course, a Certificate of Accreditation will attest to the graduate steel detailers abilities.

For Junior and Intermediate Level detailers there have been training courses dealing with the statics, resistance of materials, and connection design given during the fall of 1998. These courses have now been given to over 100 steel detailers.

In the fall of 2000, with the participation of the CWB Group, a 54-hour course on welding fundamentals was initiated and offered to detailers.

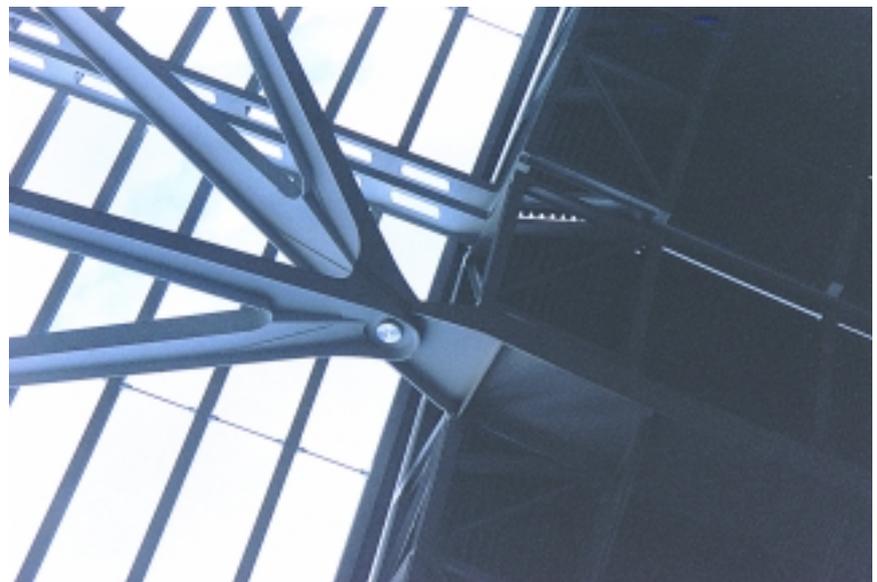
Atlantic Canada

Atlantic Canada covers four provincial jurisdictions and a population spread out through a diverse geography. Although the need for young people to be trained as detailers to replace the ever-ageing work force is just as great in Eastern Canada, no overall program for training has been instituted. Two post-secondary colleges in the Region give 2-year courses in which some amount of structural steel detailing is formally taught. However, fabricators still need to provide more in-depth training

and experience. Some have initiated in-house training supplemented with the AISC/NISD CD-ROM program. So great is the demand that students of the New Brunswick Community College program are often co-opted by potential employers a year or two before even they have graduated.

Conclusion

Detailer training, while off to perhaps a slow start, is gaining strength across Canada in a manner appropriate to the differing needs of the various regions.



Brace detail at floor level of GTAA Terminal.