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| Civil Engineering Associate | New South Wales (NSW) |
| ASCO Code: 3122-11 | December 2006 |
| Labour market rating | Shortage |
| Comment: <i>Shortages are evident for qualified civil engineering drafters with two years or more experience in specialisations including building construction, mining, roads, railways, drainage, sewerage and other infrastructure.</i> | |

Occupational demand

Non-residential construction activity in NSW has been strong in recent years, growing by 8.3 per cent in 2005-06 following growth of 6.3 per cent the previous year. The consensus of employers and industry contacts was that demand for the occupation had been solid throughout 2006.

Occupational supply

Supply to the occupation from course completions and net immigration has been fairly stable in recent years. The number of persons commencing Certificate IV and diploma courses in civil and structural engineering rose steadily up to 2003 before easing over the last two years. The apparent completion rate of students in these courses is low, with completions in a range of 60 to 80 a year over the three years to 2005. Completions are projected to remain at a similar level in 2006 but are likely to fall somewhat in 2007. Supply to the occupation from net immigration ranged from 15 to 20 persons a year over the three years to 2005-06.

Employer and industry comments/current labour market

The Department of Employment and Workplace Relations (DEWR) survey of employers who had recently advertised for civil engineering associates showed that only 17 per cent of vacancies were filled within six weeks of advertising. The survey results were indicative of a significant shortage. Employers were unable to fill vacancies for qualified drafters with two years or more experience across a range of specialisations including non-residential building, mining, roads, railways, drainage, sewerage and other infrastructure. There was an average of three applicants per advertised vacancy but an average of less than one applicant per vacancy was considered suitable by employers. Employers and recruitment agencies stated that the majority of applicants did not have relevant qualifications or did not have sufficient experience in the relevant industry sectors or were based overseas and were seeking sponsorship in order to migrate to Australia.

The recruitment experience of employers in regional NSW was similar to that of their Sydney counterparts. Vacancies attracted few applicants and even fewer had relevant experience. A number of vacancies remained unfilled after extensive advertising in the Hunter, the Illawarra and Central Western NSW.

Labour market outlook

The Construction Forecasting Council expects solid growth for non-residential construction in 2006-07 and 2007-08 and, as a result, demand for civil engineering associates should remain strong over the next year. No significant increase in supply from course completions and net immigration is expected over the short term. Shortages across most sectors of the industry are likely to persist in Sydney and regional NSW in 2007.

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| Civil Engineering Associate Professionals | | Victoria |
| ASCO Code: 3122 | March 2007 | |
| Labour market rating | Shortage | |
| Comment: | | |

Occupational demand

Demand for civil engineering associates is primarily determined by the business levels within the overall economy and more specifically by the level of construction activity. Population growth and rising interest rates impact upon the level of investment being made into construction. Building activity in Victoria has decreased over the last two years. The value of new residential building fell by around seven per cent during this period and the number of housing commencements fell by approximately 13 per cent between 2004 and 2006. However, construction activity may improve in the short to medium term, indicated by a rise in dwelling units approved during the last seven months. DEWR Skilled Vacancies Index data suggest demand for civil engineering associates fell between 2000 and 2006 and although vacancies have increasing slightly during the latter part of 2006, they are lower than the level recorded in 2005.

Occupational supply

ABS educational attainment data suggest over 40 per cent of employed civil engineering associates nationally have advanced diplomas or diploma qualifications. According to the Department of Education, Science and Training the number of persons who were enrolled in an engineering and related technologies diploma (AQF) in Australia increased by almost 60 per cent from 2004 to 2005. The number of persons who were enrolled in an engineering and related technologies advanced diploma (AQF) in Australia increased by almost 30 per cent from 2004 to 2005. The supply of civil engineering associates from net immigration has decreased, down by around 30 per cent from last year. Net immigration to Victoria during 2005-06 was less than 10 civil engineering associates.

Employer and industry comments/current labour market

The Survey of Employers who Recently Advertised found around 65 per cent of vacancies were filled. There was 0.7 suitable applicants per vacancy compared with an average of 5.8 applicants deemed unsuitable by employers per vacancy. The most common reason employers considered applicants to be unsuitable was a lack of experience in certain fields. While some commented that graduates and other workers new to the industry were available, a majority sought medium to highly experienced workers. Further, the existence of Australian-specific codes and standards means employers seek staff with local experience. Satisfactory communication skills are also lacking in the potential recruits according to employers. With a majority of the work conducted by consultants and contractors, employers are now seeking strong client service communications to match the standard technical skill base. This has been found lacking in recent times. Regional employers surveyed found sourcing suitable applicants particularly difficult as they felt most were unwilling to make the required lifestyle changes, such as moving to regional areas or extensive travel. Many employers also commented a key factor making it difficult to recruit and retain staff is remuneration. Larger firms reported relatively low turnover rates. Regional employers report a lack of training and skilled workers while city businesses saw the rise in Victorian infrastructure projects as the cause of the skill shortage.

Labour market outlook

The lack of qualified civil engineer associates entering the labour market coupled with the increasingly high demand due to major civil projects in Victoria has led to a shortage, expected to continue over the next six months.

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| Civil Engineering Associate Professionals | | Queensland |
| ASCO Code: 3122 | December 2006 | |
| Labour market rating | Shortage | |
| Comment: <i>Workers with 12D and MX software knowledge are in high demand and are especially difficult to recruit.</i> | | |

Occupational demand

Demand for civil engineering associates comes from engineering and architectural consultancy firms, construction companies, government, the transport industry and the mineral resources sector. Queensland is currently experiencing very high levels of activity in engineering construction as infrastructure development advances at a pace to meet the State's population growth and business continues to invest in new capacity. In this year's survey, demand for associates mostly came from State and local government for civil works, urban development, port expansions and other public infrastructure projects. Demand was high for associates skilled in civil design and sub-division work, and for workers skilled in specific software packages, particularly for road modelling.

Occupational supply

Formal education for this occupation is via a diploma, advanced diploma or associate degree program. Diploma programs are available through both public and private sector registered training organisations and an associate degree is available at the University of Southern Queensland (USQ) and Central Queensland University (CQU). Data from CQU and the Department of Education, Science and Training show that the combined number of commencements for the associate degree in civil engineering averaged around 50 per year from 2001 to 2004. Completions over that time were much lower, with an average of only 15 students graduating each year. In 2005, the USQ enrolled 132 students in its new, generic Associate Degree in Engineering program but the number specialising in civil engineering is not yet available. The CQU program had 33 new enrolments in 2005 and 87 in 2006. Direct international migration to Queensland may be a significant source of supply to this occupation, with overseas arrivals and departures data showing a net permanent and long term gain to the State of 27 self-identified civil engineering associate professionals in 2005-06.

Employer and industry comments/current labour market

Less than 12 per cent of the vacancies for civil engineering associates in this year's survey were filled within six weeks of advertising. The greatest difficulties reported were in filling senior positions and regional vacancies. Employers were often seeking workers skilled in specific software packages, such as 12D or MX, or associates with good drawing skills. Respondents reported that a shortage of town planners has led to associates moving into assessment work, rather than design and drawing. About 87 per cent of advertisements attracted no enquiries from potential applicants at all, and respondents partly attribute this to the work preferences of the existing workforce, which do not include relocating, returning to drawing work, or learning new software. Most employer contacts reported a backlog of work, in some cases enough to double their output if they could secure appropriately skilled civil engineering associates. To cope with the shortage, some local government authorities are sharing associates and other professionals, and one employer is offering full fee-paying diploma scholarships in return for a short-term employment commitment.

Labour market outlook

High levels of activity in infrastructure development, commercial building and the mineral resources sector are creating very high demand for civil engineering associates in Queensland. The supply of new associates from education and from interstate and overseas migration presently falls well short of meeting demand. Improvements to supply from education are anticipated by 2010 but, for the next few years, the State-wide shortage is expected to persist and will probably intensify.

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| Civil Engineering Associates | | South Australia (SA) |
| ASCO Code: 3122 | October 2006 | |
| Labour market rating | Shortage | |
| Comment | | |

Occupational demand

The workforce of civil engineering associates consists of around 350 persons in South Australia. Approximately a third are employed in the property and business services industry, with a further 20 per cent employed in the government administration and defence industry and 17 per cent in the construction industry. Demand for civil engineering associates is largely determined by the level of engineering construction activity. The value of engineering construction work commenced increased in 2005-06 by 11 per cent compared to 2004-05 and employment increased in the year to August 2006. Employers contacted for this survey also reported a significant increase in their workforce size over the past 12 months. However, Skilled Vacancy Survey data show that the number of vacancies for civil engineering associates has fallen over the past two years. It appears that some employers have abandoned newspaper advertising and are exploring alternative recruitment methods. TAFE has reported a substantial increase in direct approaches from employers interested in hiring potential staff.

Occupational supply

Around 70 per cent of civil engineering associates have Certificate III or higher qualifications and a third of the occupation has a diploma or advanced diploma qualification. South Australia TAFE offers the qualifications of Diploma of Civil Engineering and Advanced Diploma of Civil Engineering. The Advanced Diploma satisfies the academic requirement for Associate Membership of the Institute of Engineers Australia and membership of the Institute of Drafting and Design Australia. On average, there have been around 150 commencements per annum in the Diploma course over the past four years. Over the same period, there have been approximately 36 commencements per annum in the Advanced Diploma course. Overall, approximately 70 per cent of all commencements result in completions. Although the number of potential completions is high relative to the size of the workforce, not all graduates are employed as civil engineering associates. Other occupations held by graduates include: civil engineer, general manager, building and engineering associate, project and program administrator and mobile construction plant operator.

Employer and industry comments/current labour market

A survey of employers who had recently advertised for civil engineering associates indicated that 40 per cent of vacancies were filled within six weeks, this suggests that employers are experiencing significant recruitment difficulties. On average, employers received around 11 applications per vacancy, but most of these were deemed unsuitable. The main reasons given by employers for rejecting unsuitable applicants were lack of experience and relevant qualifications. High demand and a shortage of experienced drafters to meet this demand were the major factors cited by employers for current recruitment difficulties. Despite the tight labour market conditions and the opportunity for bidding up of wages, staff turnover among surveyed firms remained moderate.

Labour market outlook

Although TAFE course enrolments are expected to increase in 2007, this may be insufficient to meet growing demand. The level of engineering construction activity is likely to increase over the next few years due to a number of large projects including the possible expansion of the Olympic Dam mine and the Air Warfare Destroyers project. The Housing Industry Association has forecast a 15 per cent increase in the value of engineering construction 'work done' in South Australia for 2006-07. As a consequence, demand for civil and structural engineers is expected to grow and current shortages are likely to continue.

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| Civil Engineering Associate | Western Australia (WA) |
| ASCO Code: 3122-11 | November 2006 |
| Labour market rating: | Shortage |
| Comment <i>Local government positions are the most difficult to fill.</i> | |

Occupational demand

Demand for civil engineering associates has continued to increase due to the buoyant WA economy, particularly the resources sector. Australian Bureau of Statistics data shows that there was an increase of 70 per cent in the value of all engineering construction work done in WA to June 2006, compared with the same period to June 2005. The total value of work remaining to be done at June 2006 is 73.1 per cent higher than a year ago. Mineral exploration in WA decreased by 2.2 per cent in the same period, however petroleum exploration rose by 12.7 per cent.

This occupation is too small for quarterly Australian Bureau of Statistics' Labour Force Survey figures to be reliable, however the number of civil engineering associates recorded in WA increased by 12.9 per cent to 544 over the five years to the 2001 Census.

The Department of Employment and Workplace Relations' Skilled Vacancy Count shows that newspaper vacancies for civil engineering associates from January to November 2006 increased by 59 per cent, over the number for the same period last year.

Occupational supply

Civil engineering associates generally complete a Certificate III/IV or Diploma in civil or structural engineering. Suitable courses appear to have become available only in recent years. Limited data on course completions is available, however, there were 77 completions in 2005, compared with an average of 55 completions annually over the previous three years. Graduates may work as an engineering technical officer or civil/structural engineering design drafter. Some employers are prepared to recruit people who have no formal qualifications but have gained a number of years of relevant experience, or others who have part-completed engineering degree courses. Net overseas migration contributed 40 civil engineering associates to WA in 2005-06, significantly higher than the annual average of four over the previous four years.

Employer and industry comments/current labour market

Just over one-third (40 per cent) of the surveyed vacancies were filled, with less than one (0.6) suitable applicant per vacancy. Only 19 per cent of the applicants were considered suitable with the main reasons for unsuitability being that applicants were unqualified or lacked relevant and/or sufficient experience. Employers reported that recruitment was at least as, if not more, difficult than 12 months ago. The shortage of suitable applicants covered positions for both technical officers and design drafters. Sixty per cent of the vacancies surveyed were for new positions, reflecting new business growth. Many civil engineering associates are attracted away from Perth to remote mine sites with higher salary packages. Employers such as local government councils find that they are unable to compete. Due to high demand, good remuneration and a formal training period of only two years, some contacts suggested the occupation should be more strongly promoted to school leavers as an alternative to professional and trade-level occupations. The WA Labour Economics Office has not previously assessed this occupation.

Labour market outlook

High demand for civil engineering associates from the both the construction and resource sectors is likely to be maintained for at least the next six months. As supply from course completions is not expected to be sufficient to meet the demand, shortages are likely to persist over the short-term.

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| Civil Engineering Associate Professionals | | Tasmania |
| ASCO Code: 3122 | November 2006 | |
| Labour market rating | Shortage | |
| Comment <i>Civil engineering associates can be known by a variety of job titles, such as technical officers, drafting assistants, or civil engineering assistants for example.</i> | | |

Occupational demand

At the 2001 Census there were 136 civil engineering associates and technicians, and another 193 people classified as building and engineering associate professionals “not further defined”. The increase in construction activity that started around 2001 in Tasmania has created demand for civil engineering associates that has not been met with a corresponding increase in supply. The local government sector is also a significant employer of civil engineering associate professionals, where demand is driven by construction, repair and maintenance of local councils’ infrastructure.

Occupational supply

Most civil engineering associate professionals are diploma qualified, with around 80 per cent with a diploma or certificate level qualification. TAFE Tasmania offers two streams within the civil engineering diploma course, of design and drafting, available at Hobart, Launceston and Burnie. TAFE sources indicate around 23 people complete the diploma of civil engineering course each year. However, it is common practice for employers to approach the various TAFE campuses to recruit people undertaking the course. Sometimes students subsequently return to the course part-time, but sometimes leave altogether, as, particularly in the private sector, employers are more interested in the skills people have acquired to date than the qualification.

Employer and industry comments/current labour market

The employers contacted in the lead up to this report who had advertised positions for civil engineering associates advised that only 33 per cent of advertised positions were filled. In addition, there was less than 1 suitable applicant per vacancy, with lack of skills and experience given as the main reason why applicants were considered unsuitable. A number of employers indicated that civil engineering associates are also sought when vacancies for civil engineers cannot be filled, as an alternative option for employers. This was only occasionally successful however. The most common reason for skill shortages in this occupation provided by the employer contacts were that there were simply insufficient numbers being trained. Local councils also pointed to the difficulty they have in matching the wages on offer in the private sector.

Labour market outlook

It is expected that shortages will continue for at least the next 12 months as demand is expected to continue to outstrip supply.

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| Civil Engineering Associates | Northern Territory |
| ASCO Code: 3122 | November 2006 |
| Labour market rating | Shortage |
| Comment: <i>Present for both draftpersons and engineering assistants</i> | |

Occupational demand

ABS Census data show that there were 90 civil engineering associates employed in the Northern Territory (NT) in 2001. Employment in the occupation is too small in the NT for ABS Labour Force Survey data to provide a meaningful indicator of employment growth for the period following the 2001 census. The value of both residential and non-residential building work done has grown considerably since 2001. The annual average growth rate over the past five years to June 2006 has been 19 per cent and growth has been particularly strong for the past two years. In chain volume measure terms, the value of building work done is at the highest level since the previous construction boom peak in 1998, which suggests increased demand for civil engineering associates from the 2001 level.

Occupational supply

Charles Darwin University offer courses in building, building design and drafting at the Certificate IV and Diploma level. The courses each tend to have an architectural rather than an engineering focus, however students from these courses are a key supply source for civil engineering associates. Some employers will look to secure students, in part time or vocational work, before they have progressed very far in their courses. They can then add the engineering perspective to their training in-house.

Employer and industry comments/current labour market

Employers typically faced difficulties when recruiting for civil engineering associates, with about half of advertised vacancies being filled within six weeks of advertising.

Wage pressures were commonly considered by employers to be an issue, with competition from better packages available interstate being the concern. Public sector employers also considered that they were now losing out to packages available in the private sector. However, turnover rates for the occupation typically were not considered to be high. Indeed some employers were currently worried about how they would replace some associate professionals who are approaching retirement age.

Although employers consistently claimed that demand for work was very high, causing regular overtime and a backlog of work, most were recruiting just to retain their existing work force numbers. Employers often reported they needed to be more flexible in their conditions and requirements in order to fill roles, for example, being willing to take on less experienced people and part-time workers.

Labour market outlook

Demand for civil engineering associates is expected to remain strong over the next year with new supply being limited. Therefore the occupation is expected to remain in shortage.

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| Civil Engineering Associate Professional | Australian Capital Territory (ACT) |
| ASCO Code: 3122 | October 2006 |
| Labour market rating | Recruitment Difficulty |
| Comment | |

Occupational demand

Australian Bureau of Statistics (ABS) Labour Force Survey data shows about half of civil engineering associates nationally work in the property and business services industry, with about 10 to 15 per cent also working in each of the government administration and defence and construction industries.

Demand for civil engineering associates in the ACT typically depends on the level of engineering construction. Housing Industry Association (HIA) estimates predict a 20 per cent increase in the value of engineering construction work done in the ACT during the 2006-07 financial year, with this level of engineering construction work being sustained through 2007-08.

Occupational supply

Forty one per cent of civil engineering associates nationally hold a Diploma or Advanced Diploma and another 35 per cent hold a Bachelor degree. Training in this occupation in the ACT is available through the Canberra Institute of Technology (CIT), which offers courses at diploma and advanced diploma level in Civil Engineering.

Employer and industry comments/current labour market

A survey of employers who had recently advertised for civil engineering associates in the ACT was undertaken for this report. Positions surveyed included general civil engineering associates, as well as the specialisations civil engineering design draftsman, road design draftsman and structural engineering drafting officer. Approximately half the positions surveyed were for senior level civil engineering associate professionals.

The majority of employers contacted experienced difficulty filling vacancies for civil engineering associates. Vacancy fill rates were around 30 per cent, and although employers received around six applications per vacancy, few applicants were considered by employers to be suitable. Senior positions in particular attracted few applications from suitable civil engineering associates.

Applicants were typically considered by employers to be unsuitable because they lacked relevant experience and qualifications. Although some applicants had qualifications and experience in the construction industry, and even specific areas of civil engineering, employers did not feel their level of experience was sufficient or relevant to their requirements. Numerous employers noted they required applicants to have skills using specific software packages.

Labour market outlook

With the Housing Industry Association expecting high levels of construction work to continue in the short term there is not expected to be any significant change in the labour market for civil engineering associates over the next six months.