

STEEL FUTURES

AN UPDATE ON THE CHRISTCHURCH REBUILD

The draft Central City Plan released by the Christchurch City Council in August sets out how the central city will be redeveloped, and is a significant milestone in the rebuilding of Christchurch. Members interested in reviewing the draft Plan can download a copy from:
www.centralcityplan.org.nz.

The public now have until 16th September 2011 to make submissions, and the final Central City Plan must be presented to the Canterbury Earthquake Recovery Minister, the Hon. Gerry Brownlee, for consideration and approval by December 2011. On this basis it is not likely to be ratified until early 2012 at the earliest.

The SCNZ Manager’s conversations with Christchurch architects and engineers indicate that new major projects are on hold pending finalisation of the Central City Plan, and pay-outs by insurance companies. The continued aftershocks and difficulties in securing insurance for new buildings are also causing delays. It is therefore unlikely that any significant commercial rebuild construction activity will take place in 2012.

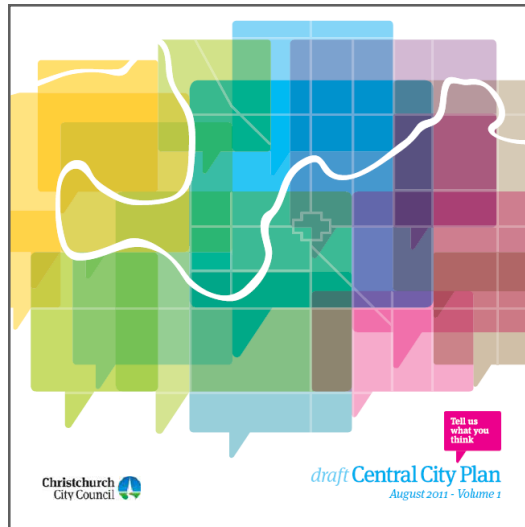
It is being reported that the reconstruction will take place over a 10-year period. This view reflects the realities of a limited local construction resource and a desire to avoid the usual boom-and-bust cycle with accompanying cost volatility. Phillip Ridge, Project Manager for the Canterbury Development Corporation (CDC – Christchurch City Council’s economic development arm), has written an interesting and supportive article entitled *Six Months On: Issues, challenges and opportunities facing the Christchurch reconstruction*. This report gives a comprehensive commentary on the

current situation in Christchurch and the opportunities going forward, and can be downloaded from:
www.manufacturingnz.org.nz/news-and-info/latest/six-months-on-issues,-challenges,-and-opportunities-facing-the-christchurch-reconstruction.

SCNZ submission on the draft Central City Plan

SCNZ will be making a submission on the draft Plan, with a focus on two key issues affecting our industry: building height restrictions and local content.

Building height restrictions



Nearly 600 buildings in the red zone will be demolished. In response to this devastation and the apparent public anxiety over tall buildings, the draft Plan proposes a height restriction on CBD construction equivalent to a seven-storey building. A recent article in The Press newspaper, featuring Hamish Doig of Colliers International, raised concerns over the negative impact of such a height restriction on investment in property in Christchurch. A flurry of subsequent letters to the editor clearly shows that this is a very emotive topic

– understandably, there is a reluctance by many to return to high-rise buildings.

However, the challenging soil conditions in the CBD mean that expensive foundations will be required to ensure the integrity of buildings during a severe earthquake. These foundation costs will be relatively more expensive when they are only spread over a limited number of floors, reinforcing the concerns raised by Mr Doig, and by building owners and developers.

A further observation on the height restriction is that none of the 181 fatalities occurred in buildings

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UPCOMING EVENTS

2011
11-27 October
3 November

Steel Structures Seminar Series: Spring
SCNZ AGM

Continued from page 1 over seven storeys high.

Modern steel-framed multi-level buildings with heights well above the proposed seven-storey limit proved their excellent seismic resilience in the earthquakes. The 12-storey HSBC Tower has already been reoccupied without structural repair, while the 22-storey Pacific Tower only requires minimal repair.

Furthermore, new low-damage steel seismic-resisting systems, such as those used on the award-winning Te Puni Village project in Wellington, are suitable for building structures higher than seven storeys. Over \$2.5 billion of new steel structures built in the last few years in New Zealand use this technology, and it will help make new multi-level buildings economically feasible for Christchurch developers and building owners – and safe for their potential tenants.

Local content

Mr Ridge makes it clear that it is important for New Zealand's long-term prosperity that local companies have a significant role to play in the rebuild. SCNZ will be working with business development organisations – such as the CDC and NZTE's Industry Capability Network New Zealand – to advocate that infrastructure and building procurers such as local government and developers need to consider whole-of-life and service cost, rather than just initial capital cost, when making purchasing decisions. According to Mr Ridge's report, New Zealand companies have shown themselves to

be competitive on this basis.

Furthermore, the recent events in Christchurch have highlighted the importance of Code Compliant buildings. The New Zealand Steel Structures Standard includes world-leading material and welding requirements to ensure steel structures are seismically resilient. The good seismic performance of steel structures in the earthquakes is also a demonstration of the quality of workmanship of local steel constructors.

Purchasing locally has significant downstream benefits to the economy. Ridge references a 2009 Berl report which concluded that every \$1 million spent in domestic manufacturing activity in New Zealand (instead of imports) results in an additional \$0.93 million in value added and 8.87 FTEs. This is consistent with similar research undertaken by HERA.

SCNZ's submission to the draft Central City Plan will argue strongly for Christchurch City Council to ensure local businesses and materials are preferred because of the benefits to the wider New Zealand economy. On the compliance side, the Council will be advised to be vigilant to ensure they have sufficient evidence from design professionals that any imported pre-fabricated structural steel product is Building Code Compliant before issuing Building Consents and Code Compliance Certificates.

We will provide you with further updates as we set about making a case for our local steel industry to play a

UPCOMING SCNZ STEEL STRUCTURES SEMINAR

Steel Construction New Zealand (SCNZ) will present a one day seminar for structural engineers who want to stay on top of their game by developing their structural steel design skills.

The full day seminar will feature:

- Design Guide Updates
 - ⇒ Learn about the latest updates to two important HERA and SCNZ technical resources
 - * HERA Report R4-76, Seismic Design Procedures for Steel Structures (Eccentrically braced frames only)
 - * Steel-in-housing Design Aid
- Steel-Concrete Composite Floor Construction
 - ⇒ Steel Framed Car Parking: Design Guide (New publication)
 - ⇒ Long Span Composite Floors
 - * Discover aspects of composite beam design unique to long span construction

- ⇒ Design of Floors for Vibration
 - * Gain an understanding of the most up to date design guidance for assessing floor vibration performance. Features case studies from actual projects utilizing commercially available software
- ⇒ Design of Structural Hollow Section Connections
 - * Understand the behavior and design models for a range of commonly used hollow section connections

The seminars will be presented by SCNZ engineers and Arun Syam, Tubular Development Manager for OneSteel Market Mills.

The seminars will be held from 11th to 27th October in Christchurch, Nelson, Wellington, Taupo, Takapuna and Auckland.

For more information and to register, please visit www.scnz.org/events.

SCNZ FREE DESIGN SUPPORT SERVICE – CHRISTCHURCH REBUILD

In the aftermath of the recent devastating 4th September 2010 and 22nd February 2011 Lyttleton earthquakes, there are many badly damaged buildings requiring replacement. The design of these buildings will place considerable demand on building designers.

To aid busy design professionals at the concept phase of a project, SCNZ offers a free design support service to help them explore the potential of steel solutions for their

projects. Working alongside design teams, we prepare costed preliminary structural designs that involve the efficient and cost effective use of structural steel.

For more information on this free service please refer to the attached brochure, or download a copy from the SCNZ website, www.scnz.org.



SCNZ AGM AND MEMBERS EVENT 3RD NOVEMBER

You are invited to join other SCNZ members at the recently opened Auckland International Airport Novotel Hotel on the 3rd of November for the SCNZ AGM and member's event that will feature:

- * The opportunity to network with other influential steel construction industry people.
- * A presentation on the construction of the Auckland International Airport Novotel Hotel from the project Steel Fabricator and Builder
- * Presentations with a green theme:
 - ⇒ The Australian Steel Institute (ASI) Sustainability Charter was set up in response to changes to the Australian Green Star material credit criteria for structural steel. These changes are being considered by the New Zealand Building Council, with possible adoption in early 2012.

David Ryan the ASI National Marketing Manager



and Rick Green Manuele Engineers will give an overview of the Sustainability Charter and its implementation including a fabricator's perspective.

⇒ Dr Stephen Hicks the HERA Structural Systems Manager and chairman of the recently formed Sustainable Steel Council will discuss the activities of this new pan-metals industry organization.

⇒ Alex Culter Chief Executive of the New Zealand Building Council Green Building will also speak.

* An opportunity to catch up on important issues affecting the steel construction industry, in particular the Christchurch rebuild

* An entertaining after dinner speaker: Phil Kingsley Jones

* Good food in a well appointed venue

More details of this not to be missed event will follow in due course.

SCNZ ELECTIONS

Nominations for the election of SCNZ members to the Executive Council closed on August 12. This year the current SCNZ Chairman, Chris Kay (NZ Steel, Auckland) was not up for re-election. Chris has, however, chosen to stand down after the SCNZ AGM. In accordance with the SCNZ constitution the Council will appoint a replacement to serve the remainder of Chris's two year term. Scott Miller (Professional) having served two-two year terms is not eligible for re-election. Mike Sullivan (Steel Constructor), Peter Donohue (Steel Distributor) and Grant Bradford (Steel Distributor) were required to stand down after serving one two year term but were eligible for re-election. Grant has chosen not to re-stand.

The excellent contribution of out-going Councillors Chris Kay and Scott Miller to the governance of Steel Construction New Zealand is acknowledged. Chris played a significant role in helping steer the organisation through the twelve month period before a full time manager was appointed for SCNZ following the departure of founding Manager Clark Hyland.

The continuing Councillors are Craig Taylor (Steel Producer), Bob Delacey (Steel Constructor), Steve Stickland (Associate) and Wolfgang Scholz (HERA representative). The

STEEL ADVISOR LATEST ISSUE

The latest Steel Advisor issue contains two articles prepared by SCNZ Engineers Alistair Fussell and Kevin Cowie. The first article is entitled Fire Resistance of Composite Beams with Profiled Steel Decking. The second article is entitled Design of Angle Trusses. The first article was first published in HERA Design and Construction Bulletin and provides recommendations for the treatment of voids above the top flange caused by the ribs of the profiled steel

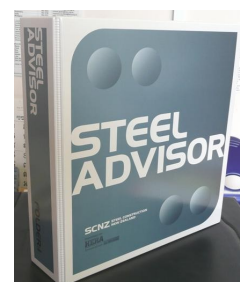
decking. Revisions have been made to the article to be consistent with current standards. The second article covers the behaviour and design of angle struts, general principles of truss design and cost effective truss fabrication.

Two nominations were received for the vacant Professional member position. They were:

- Geoff Chilcott (MSC Consulting Group, Auckland)
- Richard Gardiner (BECA, Auckland)

An election will now be held for the Professional member position. Voting forms were emailed out on 26th of August 2011 with voting closing 5pm Friday 9th September. The Council will then nominate a Vice Chairman and Chairman for election by the members at AGM on the 3rd of November.

The Steel Advisors articles are available for subscribers at www.scnz.org/steel-advisor.



Would you like to become a SCNZ member?

For an annual subscription of only \$100 + GST you can enjoy the benefits of belonging to an association dedicated to the advancement of steel construction. Please fill in the details below and fax back to 09 263 5638.

Yes, I would like to become a SCNZ member.

For a copy of the SCNZ Membership brochure, please visit the SCNZ website, www.scnz.org.

Company name: **Contact Name:**

Phone: **Email:**.....

STEEL CONSTRUCTION QUALIFICATION STRAND IS FOR INDUSTRY, BY INDUSTRY

With the anticipated lift in construction in the next couple of years, particularly with the Christchurch re-build, industry training is beginning to come back on the radar of the steel fabrication industry. It is therefore timely to remind SCNZ fabricator members of the recent changes to the National Certificate in Engineering qualification to make it more relevant to the steel construction sector. Competenz were invited to provide a brief article back grounding and explaining the changes to the qualification.

Competenz completed a review of the National Certificate in Engineering - Fabrication (Level 4) qualification with strands in Heavy Fabrication and Light Fabrication. As a result of this review, a new Steel Construction strand was introduced specifically for those in this field.

Representatives from within industry sought changes to recognise the specific skill sets that apply to trades people in the steel construction sector, playing a crucial part in developing what is now essentially a qualification 'for industry, by industry'.

This nationally recognised qualification covers a broad foundation of engineering and fabrication skills that all engineering fabricators need, with more specific skills and knowledge developed specifically for fabricators who manufacture and install structural steel components for building and civil engineering projects.

Steel Construction apprenticeships typically take three to

four years to complete, and the apprenticeship model allows the learning performed on-the-job as well as at a polytechnic to count toward the achievement of NZQA unit standards to complete the apprenticeship programme.

"The steel construction industry had been seeking a qualification to recognise the distinct skill and knowledge of their industry workers. This new strand delivers on that and is available to industry right now," says Competenz's industry leadership manager, Paul Town.

To enquire about the Steel Construction strand of the Level 4 Fabrication qualification, contact Competenz's customer support on 0800 526 1800 or visit www.competenz.org.nz

For more information contact: Rata Campbell, Communications Officer P: 09 539 9813 M: 027 666 6822 E:r.campbell@competenz.org.nz

HELP SPREAD THE WORD ABOUT STEEL

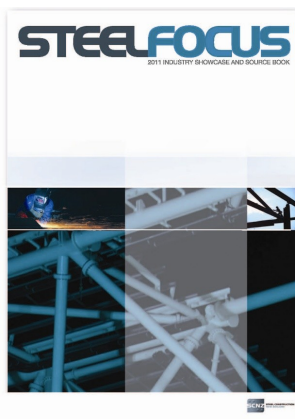
Recently we've produced some excellent new promotional material which showcases the qualities of steel and of our industry. This material can be downloaded from the SCNZ website or you can request hard copies from us.

The new *SCNZ membership brochure* provides an introduction to the organisation, its aims and activities, and the benefits of membership. This would be of interest to all companies engaged in the structural steel supply chain.

The new *benefits of steel brochure* provides a compelling case for the use of structural steel in bridge and infrastructure projects which all developers, builders and design professionals should read. Steel-concrete composite building construction in New Zealand shares a similar market to concrete in multi-

level building construction. The case for steel building solutions has been strengthened by the excellent seismic performance of buildings during the recent Christchurch earthquakes.

The most recent issue of *SteelFocus*, which showcases the best of our industry, has been extremely well received – thanks to those who provided feedback. The publication is a credit to editor Roy Kane and designer Darrin Godward. SCNZ would also like to thank member companies who supported the project through the placement of advertisements. Please help promote your industry by providing copies of this material to your customers, suppliers and other industry stakeholders who would benefit from the promotional, technical support and advocacy activities of SCNZ.



MATERIAL REQUIREMENTS FOR SEISMIC APPLICATIONS

Introduction

With focus in the recently released draft Christchurch Central City Plan on safe buildings, it is an appropriate time to remind SCNZ members involved in the structural steel supply chain of the material requirements for structural steel used in seismic applications and of their particular responsibilities in ensuring appropriate steels are specified and supplied for such applications.

The Need for Seismic Grade Steel

The conventional approach to designing structural steel seismic load resisting systems (moment resisting frames, eccentrically and concentrically braced frames) is known as ductile design. With this approach the structural engineer identifies locations in the structure which can dependably undergo controlled damage (yielding) to dissipate seismic energy while ensuring the overall stability of the structure. The Steel Structures Standard therefore requires a better quality of steel with enhanced mechanical properties for these yielding elements within seismic resisting systems. The 2007 amendment to the Steel Structures standard introduce new mechanical property requirements. In particular the minimum charpy impact and percentage elongation requirements were increased.

Grades of Steel for Seismic Applications

The new material requirements specified in the Steel Structures Standard (NZS 3404) have now been reflected in the material supply standards with the introduction of new seismic grades of steel (SO). These grades of steel are as follows:

- AS/NZS 3679.1-300SO (Hot rolled bars and sections)
- AS/NZS 3679.1-350SO

Plate manufactured to AS/NZS 3678:2011 is also available in SO grades. This plate will be required for welded beam sections intended for yielding elements of some seismic resisting frames (Fully and limited ductile).

NZS 3404 also recognises charpy impacted tested grades of steel for low temperature applications such as AS/NZS 3679.1-300L15 (charpy impact testing undertaken at -15 Degree Celsius), as equivalent to SO grade steel for seismic applications.

The Cold-formed Structural Steel Hollow Sections (circular, rectangular and square) Standard, AS/NZS 1163:2009 does not include any SO or L15 grades of steel.

LO grades of steel pipe manufactured to AS/NZS 1163:2009 may be used for non-yielding elements of structure, or elements expected to only undergo limited yielding. This grade of steel would be appropriate for the columns of seismic resisting systems subject to the following exclusions:

- The lower storey columns of fully ductile and limited ductile frames (category 1 and 2 systems)
- Some nominally ductile frames (category 3) designed to the more stringent requirements of NZS3404 to allow them to be designed for lower seismic loads.

The Steel Structures Standard recognises a range of steels manufactured to various Australia/New Zealand, Japanese and European Standards suitable for seismic

applications. If steels outside this range are to be used for a seismic application, the following must be undertaken by a suitably qualified person:

- An assessment to show the grade of steel is equivalent to ones recognised in NZS3404
- A fitness for purpose assessment if the material does not meet the requirements of NZS 3404 ie the anticipated level of yielding in the particular element for the particular project is low enough to warrant the use of structural steel with inferior mechanical properties to those required by NZS3404.

Responsibilities for the Structural Steel Supply Chain

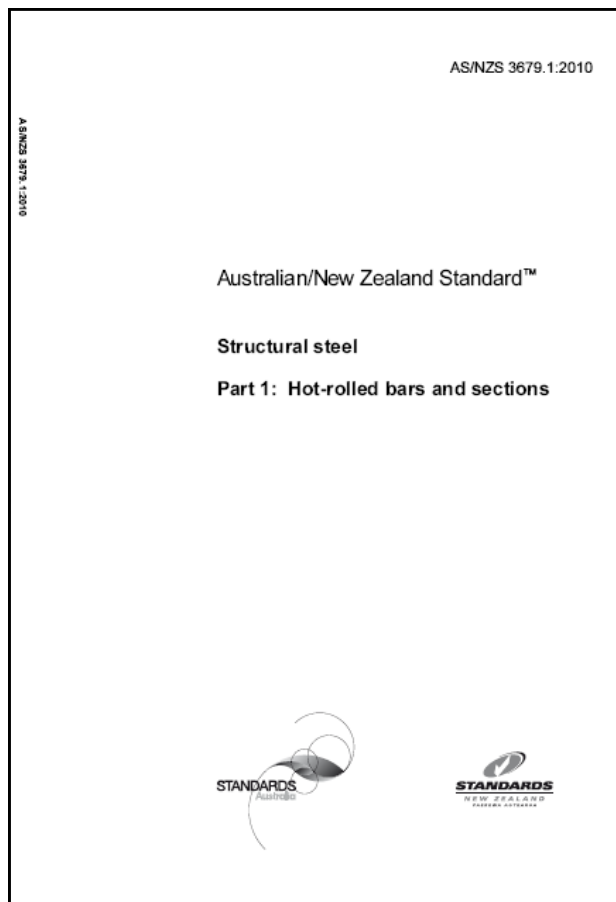
Structural Engineer

The design documentation must clearly identify the elements of the seismic resisting systems requiring seismic grade steel. Ideally the

engineer should highlight these requirements to the contractor at the earliest opportunity to ensure the steel supply chain is sourcing the appropriate materials to avoid procurement delays. The Structural Engineer should also request from the steel fabricator details of their quality systems to ensure the appropriate grades of steel are being used on a project which may have mixed grades of steel for similar types of sections. The Structural Engineer must also request copies of mill certificates to verify grade complying structural steel products have been supplied.

Steel Manufacturer

Grade complying steelwork must not only meet the chemical and mechanical requirements of the appropriate material supply standard but it must be also supplied with the appropriate grade marking (hot rolled,



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die stamped or painted), test certificate and bundle marking to ensure traceability. These requirements are discussed in more details in the February 2011 edition of Steel Futures.

Steel Distributor

The steel distributor needs to supply appropriate mill certificates as evidence of grade compliance.

Steel Fabricator

The steel fabricator shall supply the structural engineer with the appropriate test certificates and have in place

quality procedures in the workshop to ensure material traceability through the fabrication process.

The recent introduction of new mechanical property requirements for some critical elements in seismic resisting systems will result in the superior seismic performance of such systems. There is however greater responsibility placed upon the structural steel supply chain to ensure the appropriate grades of steel are specified, manufactured and supplied for seismic load resisting systems.

NZIOB AWARDS 2011

Close to 500 building industry people, including builders, engineers, architects and building product suppliers, packed the Pullman Hotel in Auckland on August 26th for the annual NZIOB Awards. The Awards recognise and celebrate the excellence of individuals and teams across all disciplines of the building industry.

SCNZ was there for its first year as sponsor of the Sustainability category of the Awards. The honour was taken out by John Overton, of Hawkins Construction, and John Sofo, of ASC Architects, for their contribution to the Papamoa College project, which earned a 5 Green Star rating from the New Zealand Green Building Council. The duo went on to become the Supreme Award winners for the evening.

The pair led this project successfully from inception to completion. The College is an innovative concept for a school with a series of large, open learning spaces replacing the traditional 30-student classrooms. During the construction, at least 75% of waste was recycled. Sustainable features include high levels of natural light, innovative stormwater management, rainwater harvesting and automated lighting.

SCNZ Steel Constructor member Jensen Steel Fabricators Ltd were the steel fabricators for this project.

Gemma Collins, of Fletcher Construction, was Highly Commended for her efforts on Ormiston College. Gemma brought the Windcatcher ventilation system to the project, a first for New Zealand. The school boasts abundant natural light, energy efficient lighting and



Papamoa College

heating, low-flow water fittings and solar water heating. SCNZ would like to congratulate John Overton, John Sofo and Gemma Collins on their tremendous achievements, and also the other finalists of the NZIOB Steel Construction New Zealand Sustainability Award: Richard Jack of Hawkins Construction for the Christchurch Civic Building; and Terry Buchan and Craig Treloar of Hawkins

Construction for the Britomart East 1 & 2 Office Redevelopment.



John Sofo and John Overton: Winners of the SCNZ Sustainability category and Supreme Award

SCNZ was delighted to be involved in the Sustainability category, clearly a very fitting alignment – steel construction has impressive sustainability credentials, and is one of the world’s most recycled and reused products.

Notably, a recent Ministry of Agriculture and Forestry-commissioned report demonstrated that, on a whole-of-life basis (including operational energy and end of life), steel’s environmental performance compares favourably with other materials such as timber and concrete.

Steel’s sustainability benefits include low waste, flexibility, off-site manufacture, speed of construction, resource

efficiency, long-lasting appeal, safety, reusability and recyclability.

The steel industry is committed to developing steel as a sustainable form of construction in terms of the triple bottom line objectives of economic viability, social progress and environmental responsibility. SCNZ is looking forward to being a sponsor of the NZIOB Sustainability Award again in 2012.



Ormiston College