

CCURG GOVERNMENT AGENCIES
Productivity Commission (PC): Standards & Accreditation Submission
“The efficiency and effectiveness of standards setting...services in Australia”

ISSUE: Although supportive to Standards Australian (SA), CCURG has a duty-of-care to report that, with Australia now in a global marketplace and with several free trade agreements in place, the absence of *conformity* requirements in many Aust Stds for strategic products, is putting lives at risk and poses a serious threat to the integrity and longevity of buildings and civil infrastructure.

SCOPE: With some 6850 Aust Stds now available, the subject is very broad. Hence for simplicity, the approach taken in this Submission is to just look at some typical examples of strategic products, while limiting detailed technical comment as far as possible. The examples include bolts, and cementitious materials and reinforcing steel for concrete, all being both integral to most buildings and civil infrastructure projects, and fundamental to community safety and Australia’s continued development.

FOREWORD: The Submission represents a composite of views from a variety of agencies. However notwithstanding this, there is a consensus view that we as a nation, must exercise more control over our manufactured products. There is a genuine feeling that we are losing control.

CONFORMITY: For strategic product trade facilitation (see PC Issue Paper, page 5), *the balance between international traders wanting lower barriers and local producers insulating themselves from competition with higher barriers*, has largely not occurred, with Aust Stds remaining generally void of mandatory (normative) *conformity*. Thus there is no means of sorting “the wheat from the chaff” (both local and imported), resulting in manufacturer’s risk being unfairly carried by the purchasers. Many Aust Stds for products contain tests and test methods, but application of these tests is either informative or absent (see Appendix A for examples). Manufacturers can thus claim *compliance* to Aust Stds without actually testing for *conformity* (ie: each batch of product meets the specified requirements). This also disadvantages Australian Customs in the control of dumping, depriving them of a tool for assessing product quality.

WARNING: Manufacturers have presented CCURG members with test certificates for a single series of tests, and then legitimately in terms of the standard, tried to use these for all product over the life of that Aust Std. It is expected that Customs would have had similar experiences. Clearly this is a critical shortfall, exposing lives and property to unnecessary risk. The ACT WorkCover hazard alert for bolts (see below) could be the tip of the iceberg? Quality does come at a price, however is there a choice? Without quality, at risk is the OH&S, legal, social and other implications of direct and/or consequential failure, plus failure to meet duty-of-care and standard-of-care obligations. When compared to the cost of infrastructure, testing costs are trivial, and formalise what is, or what should already be done.

CONFORMITY ANOLOGY: For car drivers, a *requirement* is not to exceed the speed limit shown on road signs, to which *compliance* is mandatory. *Method of test* is by checking the car’s speedometer, and *conformity* is doing this frequently enough so as to travel safely and to avoid a fine from the police *auditors*. Who can honestly say they have never exceeded the speed limit? Can we reasonably expect manufacturers, under constant commercial pressures, to behave differently and not cut corners? With no *conformity* in many Aust Stds, effecting billions of dollars of infrastructure, manufacturers are not required to “read their speedometers” (ie: control processes)? Why bother, there are no police either?

LEGISLATION & BCA: When a standard is referenced in the Building Code of Australia (BCA), it becomes part of legislation, making *compliance* to it mandatory. Generally these primary referenced BCA standards, are with few exceptions, about design and installation. The Aust Stds for products that are common to all infrastructure (eg: bolts, steel reo and cement) are referenced from the BCA primary standards, and listed as BCA secondary referenced standards with *compliance* being only *mandatory for as much of the standard that is necessary to fulfil the regulatory purpose of the BCA primary referenced standard*. Other product examples include glass, structural steel hollow sections, hot rolled

plates, floor plates, bars and sections. There is an expectation that *compliance* to these standards will achieve acceptable product quality, but in the absence of mandatory *conformity* this is a nonsense, as well as being beyond the present scope or regulatory purpose of the BCA.

Exceptions to the primary standards mentioned above, are the fire resistance of “building materials, components and structures”. These product standards are primary, thus requiring full mandatory *compliance*, including *conformity* fire testing. Hence there appears to be an inconsistency or deficiency in the BCA system, with building materials for fire testing being regulated, but other products in the secondary references, not requiring *conformity* testing.

Consistency in product properties will be achieved with *conformity* testing and another analogy is used to make the point. It is common knowledge that “to make a good cake out of poor ingredients is very difficult”. Hence for projects, product standards are equally as important as design and installation standards, and having the former void of *conformity*, is proving to be a “*recipe for disaster*”.

BACKGROUND: CCURG, a network of government agencies, has raised the conformity issue with SA a number of times over a number of years, but without achieving a satisfactory result. Consequently, conformity is an issue for each strategic product standard. With severely reduced government representation to Aust Std’s committees, that forum is now dominated by manufacturers who, to minimise their costs, push for minimum testing. This is both time inefficient and ineffective, as to counter, agencies must divert scarce resources to balance the meetings. Even then SA policy may negate customer needs. Another approach being used, is to prepare standard government tech specs containing conformity for Aust Stds. *With limited government resources, it is not possible to address all the strategic products used in infrastructure, and is also inefficient as it duplicates the SA process.*

Materials typically constitute some 30% to 60% of total project cost, and presently in Australia, approximately 17% of cement, 20% of steel reo and almost all bolts are imported. The former two are the most commonly used products in infrastructure, being basic to cast insitu and precast concrete. With the widespread occurrence of salinity in both urban and rural areas, plus acid sulfate soils and alkali silica reactivity, these present significant risk to government infrastructure. However there is very little conformity in place to cover product risk for quality, safety and longevity.

PRECEDENCES & DRIVERS: The water industry, as noted in SG-018 at: committees.standards.org.au/POLICY/SG-018/STANDARDIZATIONGUIDE-SG-018.HTM has been able to standardise conformity across water industry products, apparently against SA policy and not as part of the 2400 Aust Stds mandated by government legislation. The water industry precedent would suggest that civil infrastructure, being largely a matter for the States, has lacked a driver, or sufficient customer leverage, to effect national solutions. As discussed below, CCURG has been able to use agency class action to develop a procurement document for cementitious materials, but this has been difficult and has taken some 3 years or more to prepare.

STDS MoU: In recent CCURG correspondence with SA, three questions were asked about the MoU posted at pc.gov.au/study/standards/mou/sai1.rtf

- Re key definition in Article 1, Clause 1.2, “Aust Stds are consensus based, voluntary documents with which *compliance* is not mandatory unless incorporated into law or called up in contractual arrangements”. What is the value of a manufacturing standard containing tests that do not have to be performed? (Should the MoU be revisited to include normative *conformity* in these standards as per the water industry precedent?)
- Re Article 3, General Principles, Clause 3.1.1, has the “risk assessment process which takes into account public and occupational health and safety and environmental protection” been undertaken for cementitious materials? (All government infrastructure strategic products could be equally included, particularly bolts.)
- Re Clause 3.5, with free trade and no compliances, purchasers are now put at unfair risk, hence has “a fair and acceptable balance of all relevant interests” been obtained?

Unfortunately the responses from SA did not adequately address customer risk, thus initiating this CCURG submission. The correspondence is considered open and can be provided on request.

SA POLICY: This can be found using the following link to SG-007, Clause 2.
committees.standards.org.au/POLICY/SG-007/STANDARDIZATIONGUIDE-SG-007.HTM

A note to Clause 2 states: "The ISO/IEC Guide 59, Code of Good Standardization Practice, is also acknowledged as a useful reference document", and it is understood that policy has recently been determined from Clause 5.7 of this document, that is: "Administrative requirements relating to conformity assessment and marks of conformity or other, non-technical issues should be presented separately from technical and/or performance requirements."

Recent European Std's have generally inserted the conformity requirements (ie: the sampling and testing frequency plans) in Part 1 (eg: EN 197), with audit requirements in Part 2 (ie: tasks for the certification body and conformity marks). However it is understood that Aust Std's have made a different interpretation, now inserting both requirements in a new Part 2. Part 1 of Aust Std's would remain as is, devoid of mandatory "means of demonstrating compliance with this standard", thus allowing conformity to the standard without doing any product testing. With the loss of standardisation in standards, for reciprocity, an impediment to trade is created.

HB 162-2002 "Rules for the structure and drafting of Aust Std's", includes Annex F (Informative) "Means of demonstrating compliance with this standard", and thus verifies the need for conformity. However being informative, it is not logical for a manufacturer to claim *compliance* with a standard, yet not be required to demonstrate *conformity*.

LESSONS IN HISTORY: Conformity testing is far from being a new concept as testified in the recent BBC TV program "Seven Wonders of the Industrial World", where the lack of cement testing jeopardized the London sewer project and fraudulent steel cable handling after testing, put the Brooklyn Bridge project in crisis. The problem with bolts is also not new, the paper "Structural Bolt Paper ASI SCJ Vol 39 No 2 Dec 2005" available from enquiries@steel.org.au notes that in 1999, the US government enacted the "Fastener Quality Act", following defective and counterfeit fasteners over a 15 year period had reportedly caused the death of nearly 400 US citizens. Also in 2002, because of similar issues on global markets, ISO introduced a fastener quality assurance system.

BOLTS, RISK: The recent Canberra hanger collapse (attached photo by courtesy of the Canberra Times), well demonstrates the OH&S/cost risk implications of structural bolts and the importance of conformity. The ACT WorkCover Hazard Alert HA.32 at: workcover.act.gov.au/docs/hazalerts.htm was issued without specific mention of the project nor attributing bolts as the primary cause of failure. However it did reference AS/NZS 1252-1996, and as it's Appendix A, "Suggested Sampling Plan for Mechanical Properties" is "Informative", additionally batch testing was recommended. This again confirms that compliance with standards must also include conformity or product quality verification.

Bolts are critical low cost items that are fundamental to the construction industry, and to carry out testing for each project is not cost effective. Having mandatory sampling plans in bolt standards, with traceability, enables manufacturers and stockists to cost effectively batch test and certify product. Duty-of-care is thus addressed, and risk fairly distributed. Presently, low quality uncertified bolts are unfairly making local manufacturers uncompetitive, and driving them out of business, or off-shore.

CONCRETE DURABILITY: EN 197-4:2004, Clause 7.4, notes that:

"In many applications, particularly in severe environmental conditions, the choice of cement has an influence on the durability of concrete, mortar and grouts, eg: frost resistance, chemical resistance and protection of reinforcement."

But as noted in Appendix A, conformity for cement in AS 3972 is an "informative" dialogue and for supplementary cementitious materials (SCM) in AS 3852 Parts 1, 2 & 3, are all "informative". The Australian cement industry has conceded that infrastructure is at risk from low quality cement and it follows that all items along the concrete food chain are similarly at risk. Concrete failure is insidious (eg: concrete cancer), and it's manifestation yields short life infrastructure, with the resultant premature, large capital replacement cost, being unfairly passed to future generations.

In June 2001, the Dept of Public Works and Services (DPWS, now Commerce), ceased cement testing. At that time, a commitment was made to the then Minister of DPWS, to put something else in place to ensure conformity. Now after more than 3 years, with considerable effort, and after extensive consultation with industry, an interim solution is close to implementation. This process demonstrates

the difficult task being faced by customers, who individually do not have the purchasing leverage to effect change involving large national and international manufacturers.

STEEL REO FOR CONCRETE: The Preface of AS/NZS 4671, states: “both ISO 6935 and ENV 10080 require mandatory third party assessment of compliance, contrary to the principles of Stds Aust...in this regard (see Appendix A).” This may predate existing Stds Aust policy, but then what is actual ISO practice? Appendix A, demonstration of compliance for steel reinforcing materials to AS/NZS 4671, is unfortunately “Informative”, but other appendices, being normative, give real customer value to this standard.

A closely related standard for steel prestressing materials, AS/NZS 4672 (draft), is being prepared, apparently to the new SA Policy, with Part 1 containing the generic HB 162-2002 and Part 2 containing “conformance requirements”. The result is that certification to Part 1 can still be achieved without conformity testing, requiring users that understand the issue, to reference Part 2 and negate the “Informative” clauses of Part 1. This creates unnecessary risk for customers.

For Australia with a relatively small population and manufacturing sector, the importance of reciprocity is already being seen. For example stainless steel reinforcement and reinforcement couplers are not being manufactured here, hence we are now reliant on both overseas standards and certification.

CONCLUSION: Recent failures in major steel structures, allegedly from low quality imported bolts, are a very serious wake up call about the dangers of the global market place and the need for us all to work co-operatively together to effectively manage the transition. There are many aspects to be addressed but the contents of this Submission highlights the serious issues associated with the lack of *mandatory conformity* in many Aust Stds for buildings and civil infrastructure. Government agencies do not have the resources to address the problem across all the strategic products used in infrastructure and even if they could, it is not cost effective. The expectations of the the Productivity Commission’s brief are not being realised, nor is the intended balance of the MoU being achieved. As a consequence, government and other customers are now carrying unnecessary serious risk.

For further details or explanation regarding this Submission, please call me on M: 0419-255-983 or call Ken Pearson on work telephone (02) 9372-7856.

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CCURG Chairman
23 May 2006

CCURG Participating Government Agencies:

CSIRO, Dept of Commerce, Dept of Housing, Dept of Natural Resources, Dept of Planning, Hunter Water Corp, Institute of Public Works Engineering Aust, Landcom, Rail Corp, Road Traffic Authority, State Water Corp, Sydney Catchment Authority, Sydney Ports Corp, Sydney Water Corp, Western Sydney Regional Organisation of Councils Ltd, Q’ld Dept of Main Roads, VicRoads, Building Commission of Vic, Dept of Innovation, Industry & Regional Development, Main Roads Dept WA

APPENDIX A
“MEANS OF DEMONSTRATING COMPLIANCE WITH THIS STANDARD”

STD NO	PRODUCT	CONFORMITY REQUIREMENT
CEMENTITIOUS MATERIALS FOR CONCRETE		
AS 3972 - 1997	Portland and blended cements	Appd A: “Informative” “Performance Based Specification of Cement”
AS 3582.1 - 1998	Supplementary Cementitious Materials for use with portland and blended cement Part 1: Fly ash	Appd A: “Informative” generic (see HB 162-2002, Annex F) & Appd B: “Informative” Sampling and Preparation of Samples
AS 3582.2 - 2001	Supplementary Cementitious Materials for use with portland and blended cement Part 2: Slag- Ground granulated iron blast furnace	Appd A: “Informative” generic (see HB 162-2002, Annex F) & Appd B: “Informative” Suggested Frequency of Testing
AS 3582.3 - 2002	Supplementary Cementitious Materials for use with portland and blended cement Part 3: Amorphous silica	Appd A: “Informative” generic (see HB 162-2002, Annex F) & Appd B: “Informative” Method of Sampling Amorphous Silica
STEEL REINFORCEMENT FOR CONCRETE		
AS/NZS 4671 - 2001	Steel reinforcing materials	Appd A: “Informative” generic (see HB 162-2002, Annex F) & Appd B “Normative”, Manufacturing control
AS/NZS 4672 (draft)	Steel prestressing materials Part 1: General requirements Part 2: Conformance requirements	Part 1 stands alone with Appd A “Informative” generic (see HB 162-2002, Annex F). Part 2, if called up, offers just one “Informative” solution.
BOLTS		
AS/NZS 1252 - 1996	High-strength bolts with associated nuts and washers for structural engineering	Appd A: “Informative”, Suggested Sampling Plan for Mechanical Properties
AS 4291.1 - 2000	Mechanical properties of fasteners made of carbon steel and alloy steel Part 1: Bolts, screws and studs	Body of standard contains tables of minimum mechanical and physical properties but no sampling scheme for acceptance of products
AS 4291.2 - 1995	Mechanical properties of fasteners made of carbon steel and alloy steel Part 2 Nuts with specified proof load values – coarse thread	Body of standard contains tables of minimum mechanical and physical properties but no sampling scheme for acceptance of products
AS/NZS 2465 - 1999	Unified hexagon bolts, screws and nuts (UNC and UNF threads)	Conformity to SAE J429
WATER INDUSTRY (typical examples of a variety of materials, products and components)		
AS/NZS 1260 - 1999	PVC pipes and fittings for drain, waste and vent applications	Appd A: “Normative” options of: Min sampling & testing frequency plan or Product Certification
AS 1579 - 2001	Arc welded steel pipes and fittings for water and wastewater	Appd A: “Normative” options of: Min sampling & testing frequency plan or Product Certification
AS 1646.1 - 2000	Elastomeric seals for waterworks purposes Part 1: Gen req'mts (Parts 2, 3 & 4 similar)	Appd A: “Normative” options of: Min sampling & testing frequency plan or Product Certification
AS/NZS 2280 - 2004	Ductile iron pipes and fittings	Appd A: “Normative” options of: Min sampling & testing frequency plan or Product Certification
AS 2638.1 - 2002	Gate valves for waterworks purposes Part 1: Metal seated (Parts 2, 3 & 4 similar)	Appd A: “Normative” options of: Min sampling & testing frequency plan or Product Certification
AS 4058 - 1992	Precast concrete pipes (pressure and non-pressure)	Appd A: “Normative”, Sampling scheme for routine testing
AS/NZS 4130 - 2003	Polyethylene (PE) pipes for pressure applications	Appd A: “Normative” options of: Min sampling & testing frequency plan or Product Certification
AS/NZS 4131 - 2003	Polyethylene (PE) compounds for pressure pipes and fittings	Appd A: “Normative” options of: Min sampling & testing frequency plan or Product Certification