AUS-SPEC

Infrastructure Specifications

0341 Structural Steelwork

0341 STRUCTURAL STEELWORK

IMPORTANT: This document has been adapted from the NATSPEC suite of specification templates for use in the Cessnock City Council area by both Council and industry. NATSPEC regularly updates the base templates (currently in April and October each year), and Council may incorporate changes into its version of AUS-SPEC from time to time. To assist in highlighting any changes made by Council to the NATSPEC templates, the following conventions are used.

- See ANNEXURE M at the end of this document which contains (where practical) Cessnock City Council customisations (also known as 'office master' text). References to the Annexure are to also be inserted at relevant clauses in the main body of the document.
- Where content is added to the main body of the document, it is to be shown in brown text like this.
- Where content is deleted or excluded from the main body of the document, it is to be shown ~~struck through like this~~. Such clauses are to have no effect.

Where there is a conflict between main body text and Cessnock City Council specific clauses, Council's specific clauses shall prevail.

1 GENERAL

1.1 RESPONSIBILITIES

General

Requirement: Provide structural steelwork, as documented.

Performance

Construction category to AS/NZS 5131 (2016).

Adjoining elements: Provide for the fixing of adjoining building elements that are to be connected to or supported on the structural steel.

1.2 CROSS REFERENCES

General

Requirement: Conform to the following:

- *0136 General requirements (Construction)*
- *0161 Quality management (Construction)*
- ~~*0171 General requirements.*~~
- ~~*0344 Steel – hot-dip galvanized coatings.*~~
- ~~*0345 Steel – protective paint coatings.*~~
- ~~*0346 Structural fire protection systems.*~~

1.3 STANDARDS

General

Materials and design: To AS 4100 (2020).

Materials and design of cold-formed decking, purlins and girts: To AS/NZS 4600 (2018).

Composite steel-concrete construction including profiled steel sheeting and shear connectors: To AS/NZS 2327 (2017).

Fabrication and erection: To AS/NZS 5131 (2016).

1.4 INTERPRETATION

Abbreviations

General: For the purposes of this worksection, the following abbreviations apply:

- AESS: Architecturally Exposed Structural Steelwork.
- CC: Construction Category.
- NDE: Non-Destructive Examination.
- PCCP: Painting Contractor Certification Program (CSIRO).

Definitions
General: For the purposes of this worksection, the definitions given in AS/NZS 5131 (2016) apply.

1.5 TOLERANCES

General
Requirement: To AS/NZS 5131 (2016) Section 12 and Appendix F.

Tolerance class: 1.

AESS: As documented.

1.6 SUBMISSIONS

Design documentation
Adequacy of structure: Submit calculations to verify the adequacy of the structure to sustain loads and/or procedures, which may be imposed during construction, to the relevant standards above.

Coatings contractor
Painting contractor: Shall have a Quality Assurance system to AS/NZS ISO 9001, and shall be a PCCP accredited contractor. Prior to commencement, nominate a qualified National Association of Corrosion Engineers (NACE) Certified Coating Inspector or an Australasian Corrosion Association (ACA) Certified Coatings Technician under direction of a NACE inspector.
Records: Maintain records of works completed and testing, and have records available for inspection.
Verification: Nominate an independent NACE Certified Coating Inspector to carry out quality audits and specify the frequency of audits.
Defects: Provide written inspection reports.
Adequacy of structure: Submit calculations to verify the adequacy of the structure to sustain loads and/or procedures, which may be imposed during construction.

Execution details
Erection sequence methodology (ESM): For high risk or unusual work, submit ESM conforming to AS/NZS 5131 clause 11.5.1.

Anchor bolts: If anchor bolts do not meet documented location tolerances, submit proposals for rectification before proceeding.

Bolting connections: For connections not documented, submit proposals.

Bolt tensioning procedure: Submit details of procedure, equipment to be used and calibration of the process.

Erection sequence methodology (ESM): Submit ESM conforming to AS/NZS 5131 (2016) clause 11.5.1.

Site base plate holing: If hand cutting of bolt holes in column base plates are required, submit details.

AS/NZS 5131 clause 6.7.1 permits hand flame cutting of bolt holes only for site rectification of base plates.

Purlins and girts: If purlins and girts support components other than roofing or cladding, submit details.

All fixing to purlins for the suspension of ducts and services etc. is to be through the web of the section.

Site modifications: Submit details of proposed on-site modifications or rectifications to any steel member, connection component, mechanical fastener, weld or corrosion protection. Refer to AS/NZS 5131 Section 14.

Splices: If variations to documented splice locations or additional splices are proposed, submit details.

Temporary connections or attachments: If not documented, submit details.

Undocumented weld types: Submit proposals for weld type and electrodes.

Welding plan: Submit a welding plan to AS/NZS 5131 (2016) clause 7.2.

Work method statement: Before any erection work commences, submit a work method statement to AS/NZS 5131 (2016) clause 11.2.3. Proof of registration of all lifting equipment used on site is required to be available for inspection at all times. Refer to AS/NZS 5131 clause 11.2.5.

Fabrication details
Distortions: Submit proposals for the following:

- Preventing or minimising distortion of galvanized components, welded components or welded and galvanized components.
- Restoration to the designed shape.

Identification marks: If members and/or connections will be exposed to view, submit details of proposed marking.

Program: Submit a fabrication program showing the proposed sequence of operations and time required.

Products and materials

Steel members and sections: Submit test reports or test certificates conforming to AS 4100 (2020) clause 2.2.2.

Bolts, nuts and washers: Submit test reports or test certificates conforming to AS/NZS 1252.1 (2016) Section 6.

Verification testing of bolt assemblies: Submit test reports or certificates conforming to AS/NZS 1252.2 (2016) Section 2, together with the Supplier Declaration of Conformity (SDoC).

Anchor bolts: If anchors, other than those documented, are required or proposed for supporting or fixing structural steel, submit evidence of the anchor capacity to carry the load.

Substitution: If alternative sections or connections are proposed, submit details.

Records

Survey: Submit survey of erected structural steel to verify components have been installed as documented.

Drawings: Submit as-built structural drawings, upon completion.

Samples

AESS: Submit samples of AESS, as documented.

Special finishes: Submit samples of finished steel, as documented.

Minimum sample size: 0.1 m^2.

Shop detail documentation

General: Submit shop detail documentation to a scale that best describes the detail, conforming to AS/NZS 5131 (2016) clause 4.4.

Drawing format: PDF. Provide Building Information Model (BIM) or native CAD format (e.g. DXF) or hardcopy if requested.

Review of shop detail documentation: Obtain from both the Superintendent and the Principal Certifier, or the Superintendent and Council if the work is to be installed within a dedicated public road reserve.

Subcontractors

General: Submit names and contact details of proposed fabricator, detailer and installer.

Responsibilities: Submit names and contact details corresponding to the person/organisation assigned responsibility to the items listed in AS/NZS 5131 (2016) Table B3.

Tests

Requirement: Submit test results, as follows:

- Bars and sections: Non-destructive tests.
- Plates: Ultrasonic tests.
- Welds: Non-destructive examinations.

Warranties

Requirement: Submit the following:

- All necessary documentation to enable Council as the future asset owner to claim on warranties and guarantees for the performance and/or replacement of all components, with terms and durations in accordance with any DA consent conditions and approved plans, or if none are specified, in line with the standard warranties offered by industry or major competing suppliers. Alternatively submit analysis to demonstrate that the product with a lesser warranty duration represents a superior whole-of-life cost for Council.

1.7 INSPECTION

Notice – off-site

Inspection: Give notice so that inspection may be made of the following:

- Materials including welding consumables before fabrication.
- Testing of welding procedures and welder qualification tests.
- Commencement of shop fabrication.

- Commencement of welding.
- Complete penetration butt welds before the placement of root runs.
- High-strength bolt tensioning (when completed off-site).
- Completion of fabrication before surface preparation.
- Surface preparation before protective coating.
- Completion of protective coating before delivery to site.

Notice – on-site

Inspection: Give notice so that inspection may be made of the following:

- Steelwork on-site before erection.
- Anchor bolts in position before casting in.
- Steelwork and column bases erected on site, before grouting, encasing, site protective coating or cladding.
- Tensioning of bolts in categories 8.8/TB, 8.8/TF, 10.9/TB and 10.9/TF.
- Note: TF is friction-type and TB is bearing type as defined in AS 4100 (2020) clause 1.3.
- Reinforcement and formwork in place before any encasement.
- Completed grouting, encasement, fire protection or site applied protective coating.
- Mechanical or chemical anchor proof load testing. The loading and unloading of temporary works.

2 PRODUCTS

2.1 GENERAL

Materials

Requirement: To AS/NZS 5131 (2016) Section 5.

Storage and handling

Requirement: Pack, support, transport and handle members and components without overstressing, deforming or damaging them or their protective coating.

Damaged items: Rectify or replace. Do not assemble into the structure without approval.

Protection: Wrap or otherwise protect members or components to prevent damage to surface finishes during handling and erection.

Storage: Store off the ground.

Lifting points: Do not allow steel slings to come into direct contact with coated steelwork.

Purchasing and traceability

Purchasing documentation and procedure: To AS/NZS 5131 (2016) clause 4.6.

Level of traceability: To AS/NZS 5131 (2016) clause 5.2.3 and the types defined in AS/NZS 5131 (2016) clause 4.7.

2.2 STRUCTURAL STEEL

Steel members and sections steel grade table

Type of steel	Minimum grade
Hot-rolled sections to AS/NZS 3679.1 (2016) and SA TS 102 (2016)	300
Welded sections to AS/NZS 3679.2 (2016)	300
Hot-rolled plates, floor plates and slabs to AS/NZS 3678 (2016) and SA TS 102 (2016)	250
Hot-rolled flat products to AS/NZS 1594 (2002)	HA250
Hollow sections to AS/NZS 1163 (2016) and SA TS 102 (2016): Circular sections less than 166 mm nominal outside diameter	C250
Hollow sections to AS/NZS 1163 (2016) and SA TS 102 (2016): Sections other than circular sections less than 166 mm nominal outside diameter	C350
Cold-formed purlins and girts to AS 1397 (2021)	G450 or Z350

Certification

Steel: Minimum requirements for test and inspection certificates, to the following:

- Hot-rolled bars and sections: To AS/NZS 3679.1 (2016) clause 11.2.4.
- Welded I sections: To AS/NZS 3679.2 (2016) clause 11.2.4.
- Hot-rolled plates: To AS/NZS 3678 (2016) clause 11.2.4.
- Cold-formed hollow sections: To AS/NZS 1163 (2016) clause 11.2.4.

Environmentally sustainable steelwork

Requirement: Conform to requirements of the ASI Environmental Sustainability Charter, including:

- Steel: Sourced from steelmakers certified to ISO 14001.Steelwork: Supplied by fabricators who are members of the ASI Environmental Sustainability Charter or who are certified to ISO 14001.

Testing

Requirement: As documented.

Ultrasonic testing of plates

Quality level to AS 1710 (2007).

Guidance: The ASI recommends indicating joint details that are susceptible to lamellar tearing on the project drawings as 'LT susceptible' and requiring that such plate be ultrasonically tested to AS 1710 Level 1. The ASI also recommends supplementary ultrasonic testing to Level 1 for all plates 40 mm thick and over.

2.3 MECHANICAL FASTENERS

Standards

Bolts: To AS 1110.1 (2015), AS 1111.1 (2015) and AS/NZS 1252.1 (2016).

Nuts: To AS 1112.1 (2015), AS 1112.2 (2015), AS 1112.3 (2015), AS 1112.4 (2015) and AS/NZS 1252.1 (2016).

Bolting category

Requirement: To the **Bolting category schedule**.

Certification

High-strength bolt assemblies: Minimum requirements for test reports, to AS/NZS 1252.1 (2016) clause 6.4.2.

Finish

Bolts, nuts and washers: Hot-dip galvanized to AS/NZS 1214 (2016), corrosion-free, and in serviceable condition.

Anchor bolts

Hexagonal bolts: To AS 1111.1 (2015).

Hexagonal nuts: To AS 1112.3 (2015).

Plain washers: To AS 1237.1 (2002).

Requirement: Provide each anchor bolt with 2 nuts and 2 oversize washers with sufficient thread for the levelling nut and washer to sit below the base plate.

Mechanical and chemical anchors: To AS 5216 (2021), installed to manufacturer's recommendations.

Anchor product: As documented on approved detailed design drawings.

- Proof testing of anchors: As documented on approved detailed design drawings.

2.4 OTHER MATERIALS

Welding consumables

Requirement: To the relevant part of the AS/NZS 1554 series.

Studs and shear connectors

Requirement: To AS/NZS 5131 (2016) clause 5.6.

Grade: As documented on approved detailed design drawings.

Type: As documented on approved detailed design drawings.

Length: As documented on approved detailed design drawings.

Grout

Requirement: To AS/NZS 5131 (2016) clause 5.8.

Method: As documented on approved detailed design drawings. Type: As documented on approved detailed design drawings.

Minimum compressive strength (MPa): As documented on approved detailed design drawings.
Minimum thickness (mm): As documented on approved detailed design drawings.

Maximum thickness (mm): As documented on approved detailed design drawings.

3 EXECUTION

3.1 PREPARATION, ASSEMBLY AND FABRICATION

Identification

Traceability: To AS/NZS 5131 (2016) clause 5.2.3.

Marking: Provide marks or other means of identifying each member compatible with the finish, for setting out, locating, erecting and connecting the steelwork to the marking plans. Show on the drawings any areas where identification marks are not permitted.

Hard stamping to AS/NZS 5131: As documented on approved detailed design drawings.

High-strength bolting: If the work includes more than one bolting category, mark high-strength structural bolted connections with a 75 mm wide flash of colour, clear of holes.

Exception: Certain marking may be restricted for AESS. Refer to **ARCHITECTURALLY EXPOSED STRUCTURAL STEELWORK.**

Cold-formed members: Clearly mark material thickness.

Monorail beams: Identify and mark rated capacity in conformance with AS 1418.18 (2001) clause 5.12.6.

Natural beam camber

General: If steel beams have a natural camber, within the straightness tolerance, fabricate the steelwork element with the camber up.

Cutting

Shearing: Do not shear edges of a connection or parts of a member that have been designated as areas of plastic deformation.

Punching: Do not punch fastener holes in locations designated as areas of plastic deformation.

Prohibited cutting methods: Refer to AS/NZS 5131 clause 6.5.1.

Shaping

Requirement: Where forming, shaping or correcting distorted members, avoid damage and conform to AS/NZS 5131 (2016) clause 6.6.

Holing

Slotted holes: Do not use slotted holes for connections, other than those documented.

Finish for pinned connections: Refer to AS/NZS 5131 clause 6.7.6. Pins and holes shall be finished so that the forces are distributed evenly to the joint plies.

Tolerances

Measurement: Check tolerances by measurement after fabrication and application of corrosion protection.

Assembly check

Trial assembly and temporary erection: If required by DA consent or permit conditions.

3.2 WELDING

General

Requirements: To AS/NZS 5131 (2016) Section 7.

Standard: To AS/NZS 1554.1 (2014).

Weld category

Weld categories not documented: Category GP.

Weld type

Weld type not documented: Submit proposals for weld type and electrodes.

Butt weld run-on/run-off tabs: As documented on approved detailed design drawings.

Stress relief treatment

Type: As documented on approved detailed design drawings.

Non-destructive weld examination (NDE)

Requirement: To AS/NZS 5131 (2016) clause 13.6.2.

Extent and type of NDE: To AS/NZS 5131 (2016) Table 13.6.2.2(A).

Non-visual NDE: By a third party testing authority.

Repairs: Repair welds revealed as faulty by NDE and repeat the examination.

Site welds

Completion: Weld only when correct alignment and preset or camber have been achieved.

3.3 MECHANICAL FASTENING

Connection contact surfaces

General: To AS/NZS 5131 (2016) clause 8.4.1.

Bolting categories 8.8/TF and 10.9/TF: Clean, as rolled and free from applied finishes.

Document friction-type (TF) connections on the drawings. Refer to AS/NZS 5131 (2016) clause 8.4.2.

Washers

Requirement: Place one washer under the part rotated during tightening process (nut or bolt head).

Lock nuts

General: Provide lock nuts to AS/NZS 5131 (2016) clause 8.2.3 as documented on approved detailed design drawings e.g. for bolts in moving parts or parts subject to vibration and for vertical bolts in tension.

Method of tensioning TB and TF bolting categories

8.8/TB and 8.8/TF: Use part-turn method or a direct tension indicator device.

10.9/TB and 10.9/TF: Use a direct tension indicator device.

Permanent bolting

Completion: Bolt only when correct alignment and preset or camber has been achieved.

3.4 SURFACE PREPARATION AND TREATMENT

General

Requirement: ~~Conform to *0344 Steel – hot-dip galvanized coatings* and/or *0345 Steel – protective paint coatings*, as appropriate.~~ As documented on approved detailed design drawings.

Surface preparation: To AS/NZS 5131 clause 9.3.2.

Abrasive blasting to AS 1627.4: Blast as follows:

- AESS: Class 2 blast and to the requirements of AS/NZS 5131 Section 10.
- Other steelwork: Class 1 blast.

Coating: Coat prepared steelwork to AS/NZS 5131 clause 9.9 and as follows:

- Primer: As documented.
- Thickness: As documented. Verify and record thickness.
- Time delay: Prime the steel surface as soon as possible after surface preparation (maximum 4 hours if outdoors) and before the surface deteriorates. If the surface is contaminated or rust bloomed, repeat surface preparation before priming.
- Concrete encasing: Where members are to be part concrete encased, extend the priming 50 mm into the surface to be encased.
- Clearances: Keep priming clear of members and components to be site welded, and surfaces against which concrete is to be poured (including concrete encasing except as noted above). On completion of site welding, of concrete pouring and of 8.8/TF bolting, prime to completely cover exposed surfaces.
- Inaccessible surfaces: Where surfaces will be in contact or near contact after fabrication or erection, apply the finish and allow it to dry before assembly.
- Marking: On the contact surfaces of friction type joints, minimise the use of marking ink for marking hole positions.
- Shop work: Where possible, apply the primer to the structural steel before delivery to the site.
- Transport and handling: Do not damage the paintwork.

- Site work: After erection, repair damage to the shop coating and apply any coating omitted at site connections.

3.5 SPECIAL FINISHES

General

Requirement: Apply special finishes, as documented.

3.6 METAL SPRAYING

General

Standard: To ISO 2063-2 (2017).

Requirement: Apply sprayed metal, as documented.

Process: Electric arc.

Application: Apply the coating as soon as possible after blasting.

3.7 FIRE PROTECTION COATINGS

General

Requirement: Apply fire protection to structural steelwork ~~to *0346 Structural fire protection systems*~~ as documented.

3.8 ARCHITECTURALLY EXPOSED STRUCTURAL STEELWORK

General

Requirement: Provide AESS as documented to AS/NZS 5131 (2016) Section 10 and as documented.

AESS category

AESS category to AS/NZS 5131 (2016) clause 10.2.

Fabrication

Additional requirements: To AS/NZS 5131 (2016) clause 10.4.

Corners and edges: Grind smooth sharp, marred, or roughened corners and edges.

Rough surfaces: Deburr and grind smooth.

Erection

Additional requirements: To AS/NZS 5131 (2016) clause 10.5.

3.9 ERECTION

General

Execution: Make sure every part of the structure has sufficient design capacity and is stable under construction loads produced by the construction procedure.

Calculations: Verify the adequacy of the structure to sustain any loads and/or procedures, including crane lift studies which may be imposed.

Temporary work

General: Provide all necessary temporary bracing or propping.

Temporary connections: Detail required cleats, if not shown on shop detail documentation.

Temporary members: If temporary members are required, fix so as not to weaken or deface permanent steelwork.

Anchor bolts

General: For each group of anchor bolts, provide a template with set-out lines clearly marked for positioning the bolts when casting in.

Beam camber

Requirement: If beam elements have a camber (natural or induced), erect them with the camber up.

Site work

General: Other than work shown on the shop detail documentation as site work, do not fabricate, modify or weld structural steel on-site. If site modifications are necessary, refer to AS/NZS 5131 Section 14.

Purlins

Trimming members: Provide to support edges of roof sheeting along hips, valleys and roof penetrations.

Movements
General: Allow for thermal movements during erection.

Grouting at supports
Preparation: Before grouting steelwork supported by concrete or masonry, set steelwork on packing or wedges.

- Permanent packing or wedges: Form with solid steel or grout of similar strength to the permanent grout.
- Temporary packing or wedges: Remove before completion of grouting.

Timing: Grout at supports before constructing supported floors, walls and roofing.

Temperature: Do not grout if the temperature of the base plate or the footing surface exceeds 35°C.

Drifting
Limitation: Use drifting only to bring members into position, without enlarging holes or distorting components. See AS/NZS 5131 clause 11.5.7.

3.10 REPAIRS

General
Requirement: Repair finishes to restore the full integrity of any coating.

3.11 COMPLETION

Tolerances
Conformance: After completing erection, verify conformance with AS/NZS 5131 (2016) Section 12 and Appendix F.

Temporary connections
General: Remove temporary cleats on completion and restore the surface.

4 ANNEXURE A

4.1 ANNEXURE - SCHEDULES

These Schedules should be completed for Council or private development projects to specify parameters required in conjunction with the contract Drawings. Where there is an inconsistency between the approved Drawings and this Annexure, the approved Drawings shall prevail unless specifically noted otherwise.

Non-destructive testing of bars and sections schedule

Item to be tested	Test method	Other requirements

Note: See AS/NZS 3679.1 Appendix A for requirements at time of ordering steel.

Bolting category schedule

Joint location	Bolt type/size	Bolting category

Note: Bolting categories are defined in AS 4100 clause 9.3.1.

AESS schedule

Location	AESS category	Tolerance	Samples	Connections

Notes to schedule:
Location: Element location code or project specific identifier.

AESS category:

- AESS 1: Basic elements requiring enhanced workmanship.
- AESS 2: Feature elements viewed at a distance greater than 6 m.
- AESS 3: Feature elements viewed at a distance equal to or less than 6 m.
- AESS 4: Showcase elements where form is the only visible feature.
- AESS C: Custom elements which may select any of the requirements from the AESS categories.

Tolerance: To a specific standard or more stringent requirements, i.e. half the tolerances stated in AS/NZS 5131.

Samples: e.g. 3D rendering, physical sample, first off inspection. Connections: e.g. All welded, as documented.

Special finishes schedule

Steelwork location	Shop or site application	Defined special finish

Note: Define here any special finishes required, and their applicable steelwork locations. If the special finishes require the steelwork to be classified as AESS, then document the requirements in **ARCHITECTURALLY EXPOSED STRUCTURAL STEELWORK**.

Metal spray schedule

Steel member or surface	Abrasive blast cleaning to AS 1627.4 (2005)	Metal spray type	Minimum thickness (µm)	Seal coat

Notes to schedule:

Abrasive blast cleaning to AS 1627.4: e.g. grit blasting to Sa 2½ or Sa 3 to ISO 8501-1 as cited in AS 1627.9 with a profile height of 50 µm or 75 µm.

Metal spray type: e.g. Zinc, Aluminium, Duplex, or Composite metal spray/paint systems.

Minimum thickness: Nominate required thickness. e.g. Indoor applications: 125 µm. Outdoor applications: 175 µm.

Seal coat: Required for enhanced performance in aggressive environments, or as a decorative finish. If a seal coat is required to metal spray finishes, state requirements. e.g. Two coats of vinyl seal to a total dry film thickness of 80 µm. Usually not required where composite systems are used.

4.2 – REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS 1110		ISO metric hexagon bolts and screws - Product grades A and B
AS 1110.1	2015	Bolts
AS 1111		ISO metric hexagon bolts and screws - Product grade C
AS 1111.1	2015	Bolts
AS 1112		ISO metric hexagon nuts
AS 1112.1	2015	Style 1 - Product grades A and B

AS 1112.2	2015	Style 2 - Product grades A and B
AS 1112.3	2015	Product grade C
AS 1112.4	2015	Chamfered thin nuts - Product grades A and B
AS/NZS 1163	2016	Cold-formed structural steel hollow sections
AS/NZS 1214	2016	Hot-dip galvanized coatings on threaded fasteners (ISO metric coarse thread series) (ISO 10684:2004, MOD)
AS 1237		Plain washers for metric bolts, screws and nuts for general purposes
AS 1237.1	2002	General plan
AS/NZS 1252		High-strength steel fastener assemblies for structural engineering - Bolts, nuts and washers
AS/NZS 1252.1	2016	Technical requirements
AS/NZS 1252.2	2016	Verification testing for bolt assemblies
AS 1397	2021	Continuous hot-dip metallic coated steel sheet and strip - Coatings of zinc and zinc alloyed with aluminium and magnesium
AS 1418		Cranes, hoists and winches
AS 1418.18	2001	Crane runways and monorails
AS/NZS 1554		Structural steel welding
AS/NZS 1554.1	2014	Welding of steel structures
AS/NZS 1594	2002	Hot-rolled steel flat products
AS 1627		Metal finishing - Preparation and pretreatment of surfaces
AS 1627.4	2005	Abrasive blast cleaning of steel
AS 1710	2007	Non-destructive testing - Ultrasonic testing of carbon and low alloy steel plate and universal sections- Test methods and quality classification
AS/NZS 2327	2017	Composite structures - Composite steel-concrete construction in buildings
AS/NZS 3678	2016	Structural steel - Hot-rolled plates, floorplates and slabs
AS/NZS 3679		Structural steel
AS/NZS 3679.1	2016	Hot-rolled bars and sections
AS/NZS 3679.2	2016	Welded I sections
AS 4100	2020	Steel structures
AS/NZS 4600	2018	Cold-formed steel structures
AS/NZS 5131	2016	Structural steelwork - Fabrication and erection
AS 5216	2021	Design of post-installed and cast-in fastenings in concrete
SA TS 102	2016	Structural steel – Limits on elements added
EN 15804	2012	Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
ISO 2063		Thermal spraying - Zinc, aluminium and their alloys
ISO 2063-2	2017	Execution of corrosion protection systems
ISO 14025	2006	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
ISO 21930	2017	Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services

5 ANNEXURE M – CESSNOCK CITY COUNCIL SPECIFIC CLAUSES

M1.	Variations to or non-conformances with Council's AUS-SPEC are to be evaluated with reference to the procedure in Council's *Development Engineering Handbook*. Acceptance is to be obtained in writing from: an authorised representative of Council's Director of Infrastructure and	**Variation procedure**

	Engineering Services.	
M2.	This specification applies in addition to any development consent (DA) conditions. If there is any inconsistency, the conditions of consent shall prevail.	**DA Conditions**
M3.	Refer to the Cessnock City Council *Development Engineering Handbook* for final inspection, works-as-executed and handover requirements.	**Completion**

6 AMENDMENT HISTORY

0	15/01/2024	First Published