

Architectural Specification

For New Dwelling

**Lot 101
DP 1126373**

**No 18 Seymour Pde, Belfield
NSW 2191**

For Michael Thai & Anne Ung

Based on
ArchiAssist Master Specification

Prepared by



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SPECIFICATION REVISION TABLE

Revision	Date	Revision Detail
A	10/10/2023	DA/CC Issue

1 PRELIMINARIES

1 GENERAL

1.1 GENERAL

The Work

Provide Work as documented, compliant with NCC / related Regulations / A/O Standards / Statute, under reasonable, foreseeable on/off-Site, weather & Industry conditions.

Confirm all reasonable, foreseeable on/off-Site, weather & Industry conditions before contract start.

Keep on-Site, copies of all *documents* & Regulatory Authority documents/correspondence.

Allow contingencies for risks for Work related impositions.

Documentation is presented diagrammatically or in written form in several *docs*, each one detailing only a specific part of the *Work*. Small items may not be specifically *doc*, consequentially *allow* to *provide* fully completed *Work* (including un-*doc* accessories, trim, framing, finishes, processes, methods) without Contract variation.

Provide fully, *Work* items that are not shown in all *docs*.

A reference in any *doc* to another *doc* does not imply any level of importance, but rather is to be taken as a *doc* reading aid only. The order that information is presented in does not imply any level of importance.

Different parts of single individual *Work* items may be *doc* in different separate *docs*. These differently located descriptions are all to be *provided* in the single individual *Work* item.

Any description of an item in any *doc* does not lessen the requirements another description of the same item *doc* elsewhere.

NOTIFY on discovery of incompletely *documented Work*, and *allow* to *provide* everything to fully complete *Work* (to the standards *documented*).

This Specification

Specification content is for, and directed at, the Contractor (*UDO*) & applies to all *Work including* that *documented* elsewhere.

This Specification does not reduce Contractor responsibility for *Work including* compliance with Referenced Documents (RD – refer below).

All SECTIONS must be read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, & 3 Metalwork.

Singular words may mean plural & vice versa, depending on context.

Documentation Discrepancy

A *documentation* discrepancy is conflicting detail about an item, from two or more different *documentation* sources. Different but non-conflicting detail about an item is not a discrepancy.

Immediately **NOTIFY** on finding a *doc* discrepancy *including* an omission.

For discrepancies within this Specification, firstly *allow* specific descriptions over general descriptions, then only after that is found impracticable, *allow* the most expensive option.

Allow the following for discrepancies of this Specification with:

Architectural drawings, Schedules & other docs:
Allow drawings, Schedules & other docs.

Manufacturer advice: Refer Sub-SECTION 3 'Proprietary Products'.

General Conditions of Contract (GCC): *Allow* GCC (definitions in Clause 1.3 below apply to this Specification).

Consultant doc: *Allow* *Consultant doc* except if this architect Specification *docs* higher quality.

Referenced Documents (RD): Refer Clause below.

Drawings noted immediately above *include drawings* comprised wholly of Specification notes.

All *doc* detail presented in all the different *docs* is to be *provided*, with the exception of the *allowance* for *doc* discrepancies listed immediately above.

Contract Non-Compliance

Pay Owner \$250.00 +GST/hour (extra to the Contract Price) as reimbursement for the cost of time spent by the *Superintendent* & *Consultants* on Contract non-compliance issues & Contractor not first checking the *documents* (refer also 'The Work' above).

1.2 REFERENCED DOCUMENTS (RD)

Referenced documents (RD) are those (current at time of *Work*) that; **1)** the *docs* refer to *including A/O Standards* (with associated Parts) and, **2)** are not *documented* but need to be complied with to complete the *Work* to Statutory & Industry standards. *Work* to be RD compliant.

RD & Doc Discrepancies: Immediately **NOTIFY** & *allow* the higher quality or more expensive option.

Where RD give un-doc options, immediately **NOTIFY** & *allow* the more expensive option.

Where extra detail is *doc* over-and-above the RD, *provide* as *doc*, in addition to that detail in the RD.

A/O Standards associated Parts are not necessarily specified herein. The Contractor is to assess & implement where required, the content of *A/O Standards* & associated Parts.

Subcontractors to possess *A/O Standards* & associated Parts applicable to their *Work* responsibilities. **SUBMIT** certification that this is the case.

1.3 INTERPRETATION

Italicized text used in this Specification only, are defined in this Clause. Other *document* definitions apply only to those specific *documents*.

Refer to AS HB50 'Glossary of Building Terms' for definitions of other industry terms.

Defined words not italicized in the Specification text are to be taken as defined words & **NOTIFY** *Superintendent* for definition confirmation.

Refer to Civil SECTION for Civil Works definitions.

APAS: Australian Paint Approval Scheme	HWD: Hardwood
AS: Australian Standard	LOSP: Light organic solvent preservative
BCA: Building Code of Australia (& NCC)	MDF: Medium density fibreboard (moisture resist grade UDO)
BMT: Base metal thickness	MK: Master Key
CFC: Compressed fibre cement to AS/NZS 2908.	NATA: National Assoc of Testing Authorities
CHS: Circular hollow section.	NCC: National Construction Code <i>including</i> the BCA
Deg: Degree	NZS: New Zealand Standard
Dia: Diameter	PVC: Polyvinyl chloride
DPC: Damp proof course (refer SECTION 2).	PWD: Person with disability (design to AS 1428).
EPDM: Ethylene propylene diene monomer	RHS: Rectangular hollow section.
FC: Fibre cement to AS/NZS 2908.	RTA: Registered Testing Authority as per the BCA.
FFL: Finished Floor Level	SHS: Square hollow section.
FW: Floor waste drainage outlet	UDO: Unless <i>documented</i> otherwise.
GMK: Grand master key	

Advise, advice: In writing, promptly and construction program timed.

Allow/allowance: Plan & price to *provide* as specified. **NOTIFY** to confirm after making the *allowance*. If the allowance is not used, deduct its cost from the Contract Sum.

Aluminium/zinc coat: Factory applied *metallic* coat to mild steel, to AS 1397 *similar* to Lysaght Zinalume®.

A/O Standards: Australian & Overseas Standards.

Balanced construction: For timber-based panel construction, facings both sides, of equal thickness, grain direction, properties (to avoid leaf warp induced by moisture content changes).

Clear finish: Term for clear, translucent, oiled, sealed or stained coatings.

Consultant: Design Professional usually associated with Contract *document* drafting. Authors of Reports/Assessments which are contract *docs* are deemed *Consultants*.

Cnrs: Centres (spacing).

Day: Calendar day, except National public holidays & the days between + including Christmas Eve & 7th day after New Years day.

Doc, documented: As per the Contract *documents* (*including* referenced *documents* & Manufacturer *advice*).

Drawn, drawing: As *drawn* in the Contract *documents*.

Engineer: Contractor *provided* Engineer with Statutory Registration & Professional Indemnity insurance & may be a material Manufacturers Engineer or a Consultant. Engineer Work to *include allowance* for anticipated loadings.

Exposed to view: Visible/exposed without disassembly at Practical Completion (*including substrates* coated with a liquid applied finish). *Exposed to view Work* is to be *provided* with a high degree of aesthetic quality.

External, exterior: Not weather protected by enclosing building skin or sarking *including* outside a DPC, exposed to the ground, under roof/awning/floor overhangs, under suspended floors, or in porous walls & their cavities.

Fire resisting: Having the fire-resistance level (FRL) required for that building member or part.

Flush-set: Lining/cladding sheet recessed edge joints & fixings filled with multi-layer fill taped/reinforced compound, edges & corners with embedded beading.

Galv: Hot dip galvanized as per Metalwork SECTION.

Glazing material: Glass, glazing plastics & other translucent material, used in a *glazing system*.

Glazing system: Assemblies which use *glazing material* as the primary material.

If required: Work required by Statutory, physical, performance, Contractual, administrative needs.

Include/s: Includes, but is not limited to, the written list of items following this defined word.

Instruction, instructed: Written instruction or direction by *Superintendent* as defined by the Conditions of Contract.

Max, min: maximum, minimum.

Metallic coated: Includes zinc-coated, zinc/iron alloy-coated, & aluminium/zinc coated steel, to AS 1397.

Moisture exposed: In an *external* place, *Wet Area*, around wet fixtures, below a DPC or directly exposed to water.

NOTIFY: Contractor to **SUBMIT** written notification to *Superintendent UDO*, timed to suit the construction program. Allow 7 days for *Superintendent advice*. Confirm that the notification has been received.

Owner: Building Owner or Owners Representative or Principal (as per Contract).

Paint: Term for new *Site* applied coatings, but not waterproofing, render or sealer. Refer Painting SECTION.

Pre-painted: Factory coat polyester on aluminium/zinc coated steel, to AS/NZS 2728, similar to Colorbond®.

Proprietary: Manufactured product, identified by product name/code, refer this SECTION, Sub-SECTION 3.

Provide: Contractor to perform the following in relation to the *Work* (from Contract start to completion): plan, instigate, construct, demolish *if required*, administer, supervise, co-ordinate, comply with all applicable Statutory & Regulatory controls, order, check, services survey, program, pay fees/costs/wages/taxes, purchase, design *if required*, supply, confirm materials/*Work* compliance, transport, store, secure, protect, manoeuvre materials & personnel, fabricate/install, commission, clean/maintain, *Work* to complete & fully operational condition, allow for overhead & profit costs.

SECTION: Specification SECTION of this Specification document.

Similar to: Thing *documented* to communicate *min* requirements. A *similar to* thing may be *provided* other than the thing *documented*.

Site: Existing improved & un-improved property within the property boundaries, and the *Work*.

Site information: *Site* specific, non-Contract docs, eg asbestos & geotechnical reports, *Site* survey. Check *Site information*. *Site information* does not reduce Contractor responsibility for checking *Site* conditions.

SUBMIT, submission: Contractor to **SUBMIT** to *Superintendent UDO*, as per this SECTION, Sub-SECTION 5. Confirm that the *submission* has been received.

Substrate: The surface to which a material or product is to be applied.

Superintendent: Owners representative, defined by Contractual Conditions. *Superintendent* actions do not reduce Contractor responsibility for *providing* the *Work*.

Supply: Contractor to instigate, administer, supervise, co-ordinate, order, program, pay fees/costs, purchase, transport, *Site* deliver/un-load, store/protect, clean/maintain, allow for overhead & profit costs.

Type test: Off-*Site* test by RTA, on a *proprietary* product, before *Site* delivery. *Provide* to *Type test* design.

Wet Area: An internal space where water supply & drainage is a predominant feature *including* that with a *FW*.

Work/s: *Provide* as *documented*. *Proprietary* items *provided* with the *Work* are subject to this Specification.

2 THE SITE

2.1 GENERAL

Site possession is for *Work* only.

Confirm all reasonable, foreseeable on/off-*Site*, weather & Industry conditions before contract start.

Do not *Work* on any property outside of the *Site*, without the relevant Owners written consent & without *providing* that Owner with indemnity from damages claims caused by the *Work*.

Immediately **NOTIFY** on discovery of:

- Discrepancy between *Site* conditions and *Site information* or docs (*allow* the *Site* conditions).

- Unknown building/*Site* encroachments.
- Any un-*doc* or unexpected condition or thing found on the *Site including* that related to archaeology, palaeontology, forensic science, or any man-made thing. Protect these discoveries.

NOTIFY to confirm *Site* construction area.

2.2 INFRASTRUCTURE & PROPERTY

General

Infrastructure & property *includes Owner*, Public & other privately owned fixed items *including* services & landscaping. *Work* affecting any infrastructure/property to be done only with the written consent of that infrastructure/property Owner.

SUBMIT detail of proposed *Work* to existing infrastructure with 14 days notice.

Provide a survey of existing above-ground & below-ground services at Contract start. **SUBMIT** services survey. Locate existing on/off-*Site* infrastructure at Contract start. Repair/divert/relocate *if required*. Immediately **NOTIFY** if un-*doc* services found.

Protect (regards *Work*) all infrastructure & property.

Cut, seal, make safe redundant services as *doc* & to Authority requirements. *Provide* temporary infrastructure during infrastructure shut-down. Minimise interruptions. Immediately **NOTIFY**, record & rectify obstruction/damage/contamination of Public/Private infrastructure or the environment.

Min 14 days before start of on-*Site Work*, **NOTIFY** adjoining property Owners & Occupants of *Work* start *including Works* description & duration. Advise adjoining property Occupants, within *min* 3 days, of noisy, dusty, smelly or polluting *Work*.

Dilapidation Record

At Contract start, Record existing infrastructure/property on and around the *Site including* using digital colour, high resolution photos with time & date display, in electronic file format as *instructed*, each photo location labelled. **SUBMIT** 2 copies of the Record before on-*Site Work* start. Immediately rectify defects that cannot be proven from the Record to not be *Work* caused.

3 MATERIALS

3.1 MATERIALS GENERAL

General

Refer also SECTIONS 2 Fixing & Sealing, & 3 Metalwork which are common SECTIONS.

Provide materials, new *UDO*, defect free (*including* discolouration), labelled, no deformation (straight with flat plane, *UDO*).

Provide materials made for the intended use, environmental conditions & expected loads.

Materials not to adversely affect other materials & to be compatible with contacting materials.

Materials Compliance: Confirm materials compliance with *doc* requirements. Rectify if non-compliant.

Consistency: Same type of material to be from one Source or Manufacturer for material quality & colour/finish consistency. *Provide* consistent colour/finish on all surfaces of the same element.

Material projecting (salient) corners/edges: Arris or rounded with rough edges removed to minimize human impact injury.

Provide exposed to view colour/finish consistent, unblemished, with a high degree of aesthetic quality.

Water: Potable, clean, free from deleterious matter.

Sand: Fine, sharp particles, clean, no salts or adverse chemicals, not from a marine environment, clay content 1-5%, to be dry when added to mixes.

Materials containing asbestos are not to be brought onto the *Site*.

Material Non-Conformability

At discovery of a *doc* selection non-conformability (eg subsequent inappropriateness or unavailability), **NOTIFY**. No Contract variations given for material non-conformability or late/long product order/lead times. The following *allowances* are to be made in the similar price range alternatives.

Size – *allow* next standard size up.

Material – *allow* to source a *similar to* alternative.

Type/Profile – allow similar type/profile.

Colour/Finish – allow colour/finish from the standard manufacturer range, closest to matching that colour/finish of the primary adjacent surface.

Inappropriateness – allow a similar to alternative.

3.2 PROPRIETARY PRODUCTS

Provide *proprietary* products to Manufacturer *advice*, UDO higher quality. If Manufacturer *advice* is unavailable provide as per Sub-SECTION 4 'Materials & Products (General)'. Keep on Site current Manufacturer *advice* & safety data.

Proprietary system components are not to be substituted with another Manufacturers components.

Supply: Label with Manufacturer/product name, ingredients/contents, safety/first-aid *advice*. *Supply* to point of use in new, unopened packaging/containers.

Discrepancy: **NOTIFY**. Discrepancy between Manufacturer *advice* & *doc*, allow *advice* (**NOTIFY** if that *advice* seems poor quality *advice*). If this *advice* leaves options to be yet made, allow higher quality option. If product options are un-*doc*, **NOTIFY** & allow higher quality or more extreme option.

Proprietary products provided need to comply with *document* (including this Specification) content.

3.3 PROVISIONAL ALLOWANCES

Provisional *allowances* are to be Contract Sum *included*. Allow extra to *include* GST, overhead/profit & to *provide*. **NOTIFY** for *instruction* to implement *allowances* & *Work* related to *allowances*.

The words "supply" relating to a provisional *allowance* means "purchase price" only. Allow additionally to order, deliver and fully incorporate these "supply" items.

Provisional *allowances* may be prime cost and provisional sum items and the exact full extent of what the *allowance* covers is to be *doc*. If the exact full extent is not *doc*, **NOTIFY** to confirm.

Provide *Work* related to provisional *allowances* which are *doc* elsewhere. Provide if required associated *Work* related to but not specifically *doc* for each *allowance*.

3.4 CONTINGENCY SUM

Allow the contingency sum which is *doc* elsewhere, to be used only for un-foreseeable *Work*, excluding GST (allow extra to *include* GST). **NOTIFY** for *instruction* to implement *allowance*.

4 BUILDING WORK

4.1 MATERIALS & PRODUCTS

General

Refer also **SECTIONS 2 Fixing & Sealing, & 3 Metalwork** which are common **SECTIONS**.

Technical College or to the applicable Trade Association *advice*.

Work to be undamaged without distortion, secured, maintained & protected.

Provide for permanence, *min* future maintenance, stability, *min* corrosion, optimum performance, material movement, uniformity, consistency. Allow for physical/climatic effects.

Provide materials square, centred, aligned, flush, plumb/level, straight, UDO. Curves to be smooth & even. Materials to be seasoned/cured & if not, allow for shrinkage/growth.

Conceal cut & drilled *exposed to view* edges. Cut straight & smooth with no end-cut over-run. Joints to be minimal, tight, scribed & neat. Patterned/textured surfaces of the same material to be installed in same direction.

Provide long shaped materials in the longest possible lengths & broad materials in the biggest possible size. Avoid where possible, joints in *exposed to view* single elements, UDO.

Provide flat shaped materials to be mounted with their broad area against a *substrate*, fully contacting that *substrate* across the flat shaped material broad contact area.

If *doc Work* is inappropriate for the situation, **NOTIFY** & allow a similar to appropriate alternative.

Un-documented changes in material/assembly alignment, level, appearance or other inconsistency: Allow to correct & **SUBMIT** method of correction.

Compatibility: Separate incompatible materials *including* for *moisture exposed* incompatibilities.

Ordering/Delivery/Storage: To suit *Site* conditions. *Site* measure before ordering associated materials. Keep *min* on-*Site* storage. Avoid concentrated storage loads. Store level & off ground, dry, out of direct sunlight, rain & other damaging weather.

Work Compliance: Confirm *Work* compliance with *doc* requirements. Rectify if non-compliant.

Security: Secure *Site* from unauthorized entry until Practical Completion. Any *Works* damage from unauthorized entry is to be made good at the Contractors expense.

Materials on *Substrates*: *Provide* applied materials/colours/finishes to all *substrate* faces *including* reveals, edges, recesses, projections, corners. Fix/bond fully to *substrate* (not loose or drummy). Junctions flush, *UDO*.

Support & Framing: Support & fix fixtures, fittings and other items on structural substrates or framing. Penetrations of materials fixed to framing to be full perimeter of penetration framed. *Provide* double framing to frame-fixed materials at butt joints.

Frames/Trim/Guides: Trim material edges at junctions. Frames to be full perimeter with mitre joints of factory-made joint quality.

Floor/Pavement Surfaces: *Provide* flush finish. If flush finish is impossible, ramp to meet an adjacent floor/pavement finish, *providing* a ramp of solid transitional material *max* 1:20 gradient (**SUBMIT** proposed ramp detail).

Eliminate material projections that may cause impact injury if projections occur within 2050mm above pavement/floor level.

Movement/Expansion Joints: Extend through all finishes & materials without bridging. *Allow* structural element deflection over non-load bearing structures to *Engineer advice*. *Provide* for materials to expand & contract without damage or deformation, under anticipated conditions.

Coating/Sealing: Clean/prepare materials to be coated/sealed to coating/sealer Manufacturer *advice*.

Exposed to view building services & other components connected to the building to be colour matched to adjacent finished materials, *UDO*.

NOTIFY to confirm set-out of patterns, unique layouts & layouts of panelised elements.

Acclimatize materials *if required* to *Site* conditions *min* 7 days.

If ambient temperature is outside 5-35 deg C, *provide* to *Engineer advice*.

If *Work* is *doc* to be finalised by *instruction*, **NOTIFY** for that *instruction*.

Moisture Exposed Materials

Moisture exposed materials to be quality *similar to external* grade, corrosion resistant with protective coating. Seal *moisture exposed* material edges, cut ends, openings, joints & fixings.

Penetrate *moisture exposed* materials only when a dry-situation penetration is not possible.

Higher materials/Lower materials relationship, order of preference: To be lapped over them, to be flashed over them, to be sealed against them, *UDO*. Material Manufacturer *advice* overrides this preferred order.

External Materials

External materials to be *external* grade, corrosion resistant with protective coatings applied.

Provide permanent construction to resist the entry of *external* moisture into building walls & fabric (skin) *including* at & below ground/pavement junctions.

Provide external systems to be weather/draft-proof & prevent wind-blown rain being forced back behind *external* materials. Flash/water-seal *external* material edges, openings, joints & fixings.

External components fixed with shake-proof type fixings, which resist vibration loosening under wind load. *Provide* fixings to *Engineer advice*.

External surfaces to fall away from buildings & structures. **NOTIFY** to confirm falls if they are not *doc*.

Vermin Entry: *Provide* permanent metallic materials (solid or of *max* aperture 3mm) to prevent bird & rodent entry into building fabric/services/elements.

Tolerances & Measurements

Site measure before ordering associated materials. Do not scale off *drawings*. Confirm sizes of equipment, hardware & appliances to be housed in *Work*, before *Work* start. Measure to the 'Australian Standard Method of Measurement of Building Works' (ASMM).

Tolerances: Applied over the limited specified distance (ie not cumulative). Check tolerances before fixing other materials. Set-out consistently. Building set-out tolerance + or - 15mm.

Ingredient Mixing: Measure ingredients using measuring devices. Ingredients not to contain excess moisture. Mix using mechanical devices.

Substrate Preparation

Substrate: To be solid, clean, with no deposits/sealers/curing compounds/oil/grease/bond-breaker, or other thing to impair finish/adhesion. *Allow* for material shrinkage/growth/movement.

Prepare *substrates* so as not to affect the performance or visual appearance of any applied finish.

Cure & dry *substrates* before applying other materials. Fill hollows/voids using high strength, colour matched *proprietary* filler product. Remove projections. Prime/seal *substrates* as *advised* by the Manufacturer of the overlaid material. Confirm *substrate* moisture content requirements with the overlay material Manufacturer.

Hardware & Operational Components

Provide proprietary hardware/mechanicals to operational condition.

Supply as assembled as possible, in dust/moisture proof, individual & labelled packaging. *Include* templates, fixings, Manufacturer fixing *advice*. *Provide* for correct right/left handing. If *exposed to view* hardware colour & finish is *un-doc*, **NOTIFY**.

Safety: *Provide* to not cause User injury, *including* by: **a)** sliding frames, no scissor action, **b)** hand operation not to result in injury against adjacent elements, **c)** *min* unrestrained clamping action.

Provide acoustic mountings to isolate structural vibrations where required.

Operable parts clean, smooth, balanced, effortless, quiet operation, no binding/excessive play/self-move, correct tension, lubricated *if required*. Operable parts not to impact adjacent surfaces.

Provide sliding components with *min* lateral (perpendicular to operational direction) movement.

SUBMIT operational component Operation & Maintenance Manuals.

Motorised Components

Proprietary, electric powered, with manual over-ride (for unintentional hand-operation), optional manual operation facility, hard-wired (concealed) unless *doc* as radio remote operated, power isolation switch, obstruction auto-stop/reverse safety function. Locate control as *doc* or if not *doc*, *allow* to locate as close to the motor as practical 1000mm above FFL & **NOTIFY** to confirm location.

Motor to be Manufacturer certified for the applicable use. Motor *includes* limiting switches, over-load cut-out, & metal encased/sealed in *moisture exposed* situations. Electrical *Work* Electrical Engineer certified. *Provide* services connection to enable full function.

Provide a 1 year Installer/Owner Service Contract (from Practical Completion), for Installer to maintain & service equipment. *Include* a maintenance/servicing program **SUBMIT** **a)** copy of Contract, **b)** operation & maintenance manual **c)** Defects Liability Period Servicing program.

Slip Resistance

Before Practical Completion & at the end of the Defects Liability Period, *Site* test each area/room *documented* with a slip resistance rating, to AS/NZS 4663 'Existing Surfaces'. **SUBMIT** slip resistance maintenance methods.

Sealers & coatings to pedestrian surfaces cannot lessen the slip-resistance of the *substrate* material.

NOTIFY to confirm slip resistance rating of floor & pavement surfaces.

4.2 GENERAL ACTIONABLE ITEMS

Superintendent Compliance Requests

At *Superintendent* request, **SUBMIT** detail demonstrating *doc* compliance on proposed or completed *Work*, regardless of *submission* status specified. This can *include*: compliance from Suppliers or Subcontractors, compliance with Referenced Documents (RD) as per Clause above.

At *Superintendent* request, **SUBMIT** detail of Contractors *Work* financial security and accountability.

Non-compliant *Work* is to be immediately rectified. No Contract variation given for certifications, demonstrations, *submissions* or rectifications.

Make Good

Make good to original condition, new & existing materials & finishes damaged or altered due to; *Work* conduct, demolition, or previous damage/corrosion. *If required*, dismantle & reassemble elements to make good to concealed or partly concealed items.

Make good to damaged *proprietary* products to that product Manufacturer *advice*.

Immediately **NOTIFY** of damage/corrosion to new & existing materials or finishes. Reinstate *Work* damaged *Site* & adjacent surrounds *including* planting, to pre-Contract condition.

Chasing

Chasing is not permitted, *UDO*. For chases, **SUBMIT** *Engineer* certified details *including* chase depth, path & repair (using a polymer modified, high-density, structural grade cement-based product).

Temporary Facilities

Provide temporary facilities required to safely construct the *Work including* phone, e-mail, office, amenities, storage, signage, lighting, water, electricity, fire-fighting equipment, barriers, support/bracing & as required by Statute, to be removed by Practical Completion.

Provide scaffolding to AS 1576 & to the 'Scaffolding Code of Practice'. *Provide* scaffolding & temporary structures fit for purpose *including* fully braced with stable bases. Scaffolding & temporary structures over 2 stories in height to be *Engineer* certified & **SUBMIT** certification 2 weeks prior to erecting the scaffolding or temporary structures.

Provide a *min* 1800mm height, steel framed/mesh (*max* 100mm gap) temporary fence around *Work*.

Provide all separate temporary metered services *including* for water & electricity, installed by Service Authorities in Contractor name. Do not use existing on-*Site* services. Arrange, apply for & pay Service Authority applications. Disconnect at Practical Completion.

Provide temporary stormwater drainage and disposal of *Site* generated sewerage and waste.

Site Sign

At Contract start *provide* a Project Sign (size 1800 x 1200mm) at each Public frontage. **NOTIFY** to confirm sign detail & location. *Provide* wording & coloured perspective drawing on an 18mm thick exterior grade plywood panel *painted*.

Signs to be framed, braced & secured against anticipated wind loadings to *Engineer* design.

Surveys

SUBMIT certified Licensed Surveyor drawn survey at Contract start, to *include* Site confirmation, *Site* boundaries, in-ground & above-ground services, infrastructure, trees, built elements.

SUBMIT certified Licensed Surveyor drawn survey (fully dimensioned with figured levels) at Practical Completion, to *include* (for both pre-existing & contract built elements): *Site* boundaries, structures to *Site* boundary clearances, earthworks, in-ground & above-ground services, building grids/footings/structure, each floor perimeter & levels, building height, *external Work* features, trees.

From Contract start, *provide* & maintain survey pegs to identify site boundaries. If survey marks are disturbed, **NOTIFY** & Surveyor to immediately rectify.

Cleaning

SUBMIT a Waste Management Plan.

Clean on-*Site* continuously & clean off-*Site* immediately when contaminated/dirtied by *Work*. Remove rubbish & surplus vegetation, earthworks, water, surplus materials, samples. Pay disposal charges. Do not burn or bury anything. Do not walk dirt onto *Work*. For Practical Completion, clean all *exposed* to view parts. Clean to Manufacturer *advice* for *proprietary* products.

No wet waste to be put on the ground or in drainage systems. Remove debris in services.

Cleaning chemicals to be low volatile organic compound type and low environmental impact type.

Clean away all dirt types *including*: dust, smudges, markings, wrappings, grease, oil. Immediately clean away substances that may cause staining *including* sawdust or metal finings in *moisture exposed* locations.

Final Practical Completion clean is to be done by a professional cleaning subcontractor.

4.3 CONTRACTOR DESIGN

General

Provide material selections, design & *Work* where *Work* is not fully *doc*, compliant with the *docs*.

Provide materials suitable to function, load, location, finish, fabrication. Do not infringe on patents, registered designs, trademarks/names/copyrights or other protected rights.

Work which is load bearing or has uncommon loadings is to be *Engineer* certified.

Shop drawn elements are part of Contractor design.

Provide warranty periods & conditions for Contractor selected materials & systems to match those of other well-known *similar to* product materials & systems warranties.

Provide building elements to withstand earthquake loads compliant with AS 1170, *including to* secondary structures, partitions, ceilings, services pipes/trays/ducts/equipment/machinery. Refer to the Structural *Consultant docs* for earthquake loading parameters.

Contractor Material Selections

Contractor material selections *include* materials: **1)** Required but not specifically *doc*, **2)** *Doc “similar to”*, **3)** *Doc* without naming a Manufacturer.

Materials to be from reputable well known good quality Manufacturers with material warranty time-periods *similar to* the industry norm for that particular material.

Poor quality *Work* relating to Contractor selections is to be rectified without Contract variation.

SUBMIT detail of proposed selections (to the same detail as specified in Clause ‘Contract Alternatives’ below) for all products except those incorporated in Fixing & Sealing *SECTION* & minor items made in powder, liquid (except *paint* & waterproofing), tape or thin strip form.

4.4 PERSONNEL

General

Engage & be responsible for on-Site & off-Site personnel; qualified, *Work* type experienced, licensed for the *Work* assigned. Engage a Site Supervisor to be readily contactable in business hours & contactable after-hours.

Provide personnel related awards/benefits *including* superannuation, redundancy schemes, wages/salaries/pay, applicable industry benefit schemes, site allowances, workers compensation, insurances.

Personnel to refer to & *Work* in compliance with the *docs* (*including* Referenced Documents as per Clause 1.2 above) applicable to their particular *Work* scope.

Engage 1 only Contractor Representative for *Superintendent* liaison.

SUBMIT when known, names & contact details of Site Supervisor/Manager, Subcontractors & Suppliers. *Include* Subcontractor License No_ & Class.

4.5 SAFETY & DISRUPTION

General

Provide *Work* related protection of persons & property. *Work to provide* as safe a Site as possible.

Contractor is the “Principal Contractor” re: Workplace Health & Safety Act. At *Work* start *provide a* Construction Safety Plan & Safety Reports, to be kept on-Site. Obtain Subcontractor Work Method Statements. *Provide Site* specific induction for persons on-Site.

Implement all *Work* safety precautions, assessments, education, programs, to minimise potential for injury & property damage. **NOTIFY** of Site accidents involving injury.

Minimise & keep away from on/off-Site persons, dust/spray/noise/exhaust, by either, stopping the activity, timing, or physical barriers. Site music/radios/dogs not to be heard outside of the *Work* area. Use electric cement mixers. Connect temporary electrical power at Contract start (for *min* generator noise). Address immediately any safety & disruption complaints.

Do not drop any items from any height without a chute.

Monitor, minimize & control noise & vibration to AS 2436 & as *doc*.

Provide temporary support, fencing, shoring, access ways & lighting. *Provide* traffic control to Regulatory Authority written approval. Erect Regulatory safety/warning signs (to AS 1319). Display an after-hours emergency phone number, clearly visible from outside Site.

Provide for construction: **a)** adequate fire extinguishers/blankets (*include* for electrical & liquid fires to AS 1841 & AS 2444), **b)** first-aid kits, **c)** electrical *Work* Electrical *Engineer* certified, **d)** safe entry and exit, with emergency lighting & evacuation signage.

Comply with AS/NZS IEC 62198 ‘Managing Risk in Projects – Application Guidelines’.

Hazardous Substances

Provide hazardous substances *including* fuel to Manufacturer *advice*, safety *advice*, spill drills, storage, first aid. Maintain an on-Site Hazardous Substances Register which *includes* Manufacturer data sheets & record of persons using these substances.

Store hazardous substances in maintained, locked, banded/dammed/sealed areas & containers.

Do not burn or bury hazardous substances & immediately remove them from *Site* after use.
Hazardous gas producing materials to be mixed outdoors, otherwise mechanically ventilate if indoors.

4.6 ADMINISTRATION

General

Provide Work associated labour & administration *including* (as applicable) Accident/Income/Worker Protection, Superannuation, Redundancy, *Works/Public Liability/ Professional Indemnity Insurance*.

Provide on-Site, a copy of Statutory Authority Approvals, Contract *documents, Instructions*, the *NCC*, Manufacturer *advice*, Supplier delivery records.

Provide & SUBMIT the full range of effective insurances relating to the *Work*.

Work related personnel to secure Contract *docs* & not to disclose *Work* related information to the Media. Refer Media enquiries to *Superintendent*.

Site Meetings

Conduct *Site* meetings from Contract start to Practical Completion, at weekly intervals. Arrange attendance of appropriate *Consultants/Subcontractors*.

Provide a suitable interior meeting space with table & chairs to accommodate the Contractors team & the design team *including Consultants*.

Superintendent to write/distribute meeting minutes. Meeting minutes do not constitute an *instruction*.

Meeting No.1: **SUBMIT** name/phone number of 2 Representatives, for after-hours emergency.

Works Payment

Pay *Work* related costs *including*: Duty (*including* Import duty), tax *including* Goods & Services, (GST), labour, goods import/cartage, Patent royalties, *Site/Industry/Union* allowances/penalty rates, superannuation, overtime & *Site* specific Industrial disputes.

Within 7 days of Contract start, **SUBMIT** a Schedule of anticipated Progress Claims. With each Progress Claim, *provide* a revised Schedule, a statement of amounts claimed for each Trade & a Statutory Declaration that all Sub-contractors have been paid to date.

Contractor to be registered for GST & have an Australian Business Number (ABN).

The Contract relating to the *Work* is not subject to 'Rise & Fall' adjustments.

Statutory Authority Approvals & Instructions

Provide Statutory Authority approvals/submissions/inspections/tests except those that have been organized and paid for by the *Owner*.

Provide Work to comply with Statutory Authority approvals/submissions/inspections/tests to Authority requirements.

SUBMIT Independent Building Certification for each construction stage as required by Statute.

SUBMIT on receipt, Authority approvals, *submissions*, instruction, Inspection & Test Certificates, copies of Authority correspondence/meeting minutes.

Immediately **NOTIFY** of discrepancy between Authority requirements & *docs* (*allow* Authority requirements).

Authority Approvals Done by the Owner

The *Owner* to instigate, arrange, pay for, lodge, coordinate, gain approval; the following approvals:

- Building approval/permit, Plumbing & drainage pre-construction approval, Utilities pre-construction approvals, Fire Authority pre-construction approvals.

Development (Planning) Approval (DA) Conditions Affecting Work

DA Conditions to be *provided* as *Work* items are identified by the *Superintendent* in the DA Conditions. If *Work* related DA Conditions are un-doc or un-identified in the DA, *allow* to *provide* them & **NOTIFY**.

The DA application has been organised & the DA application fee has been paid for by the *Owner*.

Construction Program

SUBMIT a construction program at Contract start & at each update. Keep program updated & on-Site. Program to show (in days & weeks *including* holidays):

1. Sequence of *Work*.
2. Critical paths of *Work* activities.
4. Inspection & Testing Plan.
5. **SUBMIT** (submissions) & **NOTIFY** (notifications) program.

3. Approvals & Work by Others.

6. Start & completion dates of Trades/Supply.

Progress Photographs

Comprehensively & clearly photograph all on-Site daily-Work-in-progress with colour digital camera *min* 5.1 mega-pixel resolution with time & date on photos. **SUBMIT** in electronic file format as instructed, at each Site meeting, for period from previous Site meeting.

4.7 INSPECTION & TESTING

NOTIFY (*min* 5 days notice) of inspections & tests. Attend all inspections & tests. *Superintendent & Consultants* have the option to attend.

Provide access to on/off-Site Work areas for: *Superintendent, Consultants, Inspectors, Testers.*

Do not proceed with or conceal, un-tested/un-inspected Work, which is *doc* to be inspected/tested. Do not alter Work after inspection/test (if altered provide new inspection/test).

Test fully completed Work, by independent RTA & instruments calibrated by RTA. This testing may be done by a Manufacturer for their own *proprietary* product or system.

Correct failed inspections/tests until a pass is achieved. Where number of tests are *doc*, the number relates to first-time passed tests. No Contract variations given for late/failed inspections/tests.

Provide for including instigating & timing of *doc* or regulatory inspections by *Consultants, Building Certifiers & other Certifiers.*

SUBMIT results of tests & non-*Superintendent* inspections including Certificates & observations, within 5 days of testing, *UDO*.

Inspection & certification by Parties other than Contractor, does not relieve/reduce Contractor of any responsibility for Work.

4.8 CONTRACT ALTERNATIVES

Proposed Contract alternatives to be *min* equal quality, detail & appearance to that *doc*, implemented only by *instruction*.

SUBMIT comparison detail of both the *doc* & alternative options including, cost, performance data, install & maintenance detail, Test Reports, BCA fire hazard compliance, material compatibility, samples, *Engineer & NATA* Certificate, warranty, reason for alternative, effect on Work including the Construction Program.

Superintendent may reject alternatives. No Contract variations given for alternative submissions or rejections or delays. Pay alternative proposal costs, including administration, testing, *Engineer & NATA* certification, Shop drawing changes & *Superintendents/Consultants* time.

4.9 COMPLETION

Refer Clause 'Cleaning' above. At Practical Completion retighten *exposed to view* threaded fixings.

SUBMIT Regulatory Completion Certificate to Local Authority format (for Practical Completion).

SUBMIT Defects Liability Period Maintenance & Servicing Program for all equipment & services.

5 SUBMISSIONS

5.1 GENERAL

Time *submissions* to suit the Construction Program. *Submissions* are to be accompanied by a dated transmittal listing items *submitted*. Work to comply with final *submission* content.

Allow *min* 12 days for *Superintendent* response to any *submission*, after which Work relating to *submission* may start. Comply with *submission* related *Superintendent advice*.

Superintendent is not obliged to give *submissions advice*. If *advice* is given, it is for design intent only. *Submission* process does not reduce Contractor responsibility for *submission* content & related Work.

Superintendent may reasonably reject poor quality *submissions*. No Contract variations given for late or rejected *submissions*, for under-estimation of Work relating to *submissions*, or for Work relating to *Superintendent advice*.

Drafted *submissions* to be in English & metric units, labelled with: Project, Contractor, Subcontractor, Supplier, Manufacturer, date, product, model No_. Re-*submissions* re-dated with new Revision No_.

Drafted *submissions* to have Author signature, letterhead, ACN No_, Statutory State Licence No_ or *Engineer* Statutory Registration No_ (as applicable), to be legible & drawings to be legible at A3 size.

SUBMIT electronic & hard copies, both with same content. Electronic copies: Microsoft Word, PDF & drawing compatible CAD, latest versions in electronic file format as *instructed*. Hard copies: *Provide* 3 copies, *UDO*.

5.2 MANUFACTURER ADVICE

SUBMIT *Manufacturer advice*: to *include* (as applicable) technical & install detail (*including* for wind load, *substrate* preparation, maintenance), drawings, performance/rating data, safety *advice*, *Type test* reports, Certification Scheme compliance, NCC compliance, warranties & approved Installers.

Also, **SUBMIT** Binder of *Manufacturer advice* (irrespective of *submissions* previously made), 7 days before Practical Completion, for all *proprietary* products.

Binder content ordered as per this Specification, labelled, new, rigid cover, 3 ring A4 size. *Include* Table of Contents. Label tabbed dividers same as this Specification *SECTIONS*.

5.3 CERTIFICATES, TEST RESULTS & SITE ADVICE

SUBMIT all Certificates, Test Results & *Manufacturer Site advice*. Nominate providers name, Project name, *A/O Standards*, other as *doc*.

Also, **SUBMIT** Binders of all these documents (irrespective of *submissions* previously made), 7 days before Practical Completion.

Binders content ordered as per this Specification, labelled, new, rigid cover, 3 ring A4 size. *Include* Table of Contents. Label tabbed dividers same as this Specification *SECTIONS*.

5.4 SAMPLES

Provide labelled samples. **SUBMIT** 2 samples of each product type & colour & finish, either as the full product item sample, a *min* 450mm sample length or a *min* 450 x 450mm sample area.

If a sample is of a product or material of which a *doc* colour/finish comes in a range of colour/finish (typical but not exclusive to natural materials) provide samples showing both extremities of the range.

Successful samples are to be *Superintendent* endorsed. Keep one batch protected in *Site Office*, send the other to *Superintendent*. Samples form the basis of subsequent related materials.

5.5 PROTOTYPES

Prototypes to be completed items as *doc*, *including* related inspections, tests, *submissions* (*including* samples) & administration. Prototypes form the basis of subsequent related *Work*.

Prototypes of part elements are to *include* typical jointing, junctions, penetrations & other typical finished detailing.

Prototypes located off-*Site* are to be located within half-an-hour car drive from the *Site*.

5.6 SHOP DRAWINGS

Contract *docs* relating to items to be shop drawn, are intended only to show indicative design intent.

Shop drawings to be *doc* compliant, to scale, dimensioned & show the highest level of construction detail *including* plan & elevation detail, components, operational parts, fixing, sealants, finishes, connection to other elements & services.

Show how materials are to expand & contract without damage or deformation, under anticipated conditions.

Provide Engineer Design Certificate & *Engineer* Completion Certificate. *Provide* a list of *A/O Standards* complied with & related *Engineer* certification.

SUBMIT after all content is checked *including*, dimensions, calculations, quantities, manufacture, revisions marked. Update & **SUBMIT** shop drawings to *Work* as Executed status.

If shop drawings are specified for *proprietary* product installation, *proprietary* product manufacturer standard product, *Engineer* certified drawings are acceptable.

If *proprietary* products are incorporated, *provide* product Manufacturer Certificate with shop drawings.

Provide Work which is shop drawn, without Contract variation.

5.7 WORK AS EXECUTED DRAWINGS

Superintendent to issue drawings in electronic format for Contractor to produce the Work as Executed drawings. **SUBMIT** Work as Executed drawings promptly after related *Work* complete, no later than 14 days before Practical Completion. Update & **SUBMIT** shop drawings to Work as Executed status.

5.8 WARRANTIES

SUBMIT all Installer/Supplier & *proprietary* product Manufacturer warranties in the 'Manufacturer Advice' Binder. Installer warranty *min* same duration as product warranty. *Provide* Head Contractor & Subcontractor warranties for *Work*.

Within 7 days of Contract start, name *Owner* as warrantee registered with Manufacturer. Warranties to be valid even if *Ownership* changes. Commence warranty periods at Practical Completion.

Provide to Manufacturers warranty conditions. Do not *provide proprietary* products without warranties. Warranty to cover cost of: **a)** Product replacement, **b)** Rectification of other damage caused by product defect, **c)** Un-covering & rectification *Work* to access product, **d)** Building User disruption.

SUBMIT Warranty Schedule *including* manufacturer, subcontract & head building contact warranties *including* warranty periods.

5.9 OPERATION & MAINTENANCE MANUALS

SUBMIT no later than 14 days before Practical Completion, compiled by persons experienced in the *Work* type, hard copy manuals in new, rigid cover, 3 ring A4 size binders. Manual content order to be same order of this Specification.

Binders to *include*:

- Cover: Identify each binder with typed title. Identify Contractor, project & issue date.
- Dividers: Durable divider for each separate element. Type titles under laminated plastic tabs.
- Drawings: Fold drawings to A4 size, bound to be unfolded without removal from binder. *Provide* with reinforced punched binder tabs.
- Text: Table of Contents, page numbered, typed on bond paper.

Content to *include*:

- Test Authority Certificates, Manufacturer warranties, product Certificates.
- Names, addresses, phone/email address/website of Manufacturers, Suppliers, Contractor, Subcontractors.
- Work as Executed drawings (if *doc*) & technical data/drawings.
- Schedules of equipment, locations, performance figures, manufacture dates, spares to be held (include name, model No_ & local sources), warranties.
- Manufacturer Specifications, assembly, operation, fault-find, repair, cleaning, adjustment, service.

5.10 D&C SERVICES DOCUMENTATION

This Clause applies where Design & Construct (D&C) services *documentation* (eg electrical, hydraulic, mechanical services) is used (ie the Contractor is to *provide* full construction services *docs*).

SUBMIT the full construction *documents* for the nominated services.

Provide services *Work*, based on the final services *documents*, without Contract Variation.

Final services *docs* to be *doc* compliant, to scale, dimensioned & show the highest level of construction detail *including* plan & elevation detail, components, operational parts, fixing, sealants, finishes, connection to other elements & services.

Provide Engineer Design Certificate & *Engineer* Completion Certificate for each different *Engineer*.

Provide a list of A/O Standards complied with & related *Engineer* certification.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2 FIXING & SEALING

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere. All SECTIONS must be read with this SECTION.

1.2 REFERENCED DOCUMENTS

Cross References

Read with SECTIONS 1 Preliminaries, 3 Metalwork & all related SECTIONS.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text. Refer also to Consultant documents for other interpretations.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Detail & Samples: proposed fixings & sealants if *Superintendent* requested.

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with SECTIONS 1 Preliminaries & 3 Metalwork.

Adhesives, Sealants, Fixings to be *proprietary* products, non-staining to contacting materials.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 ADHESIVES

Mastic Adhesive to AS 2329. Timber Adhesive to AS 2754.

Do **not** provide: **a)** Cement-based adhesives on wood, metal, *paint*, glazed surfaces, gypsum-based plaster, **b)** Organic solvent-based adhesives on *paint*, **c)** Organic PVC-based, PVA (polyvinyl acetate) & organic natural rubber latex adhesives in *moisture exposed* situations.

Adhesives not to be visible at completion. Apply adhesives only to cured *substrates*.

2.4 SEALANTS

For the purposes of the Work, sealants described here *include* caulking compounds.

Single Component Silicone to TT-S-1543B. Elastomeric Joint Sealant to ASTM (American Society for Testing & Materials) C920.

Seal *moisture exposed* junctions/penetrations/fixing points. Provide non-absorbent, non-sealant adhering, closed cell polyethylene bond breaker/backing rod. Design for anticipated joint movement. Colour match *exposed to view* sealant to adjacent *substrate* colour, UDO.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Do not apply: **a)** bituminous materials to absorbent surfaces, **b)** exposed to adverse weather **c)** outside *advised* working time, **c)** to unfixed materials. Apply sealants only to cured *substrates*.

Make smooth, concave surface. Protect curing sealant from adverse weather & direct sunlight. Clean excess sealant from surfaces, at application. Apply sealant during median joint movement conditions.

Provide sanitary grade anti-fungal, mould resistant sealant in *moisture exposed* situations.

Sealants: Contacting *painted substrates* – paintable sealant; contacting naturally coloured metal – clear sealant.

Aesthetic Sealants: Sealants used purely for aesthetic purposes are to have the visible sealant bead as small as possible to the *advice* of the sealant manufacturer.

Sealers & coatings to pedestrian surfaces cannot lessen the slip-resistance of the *substrate* material.

2.5 FIXINGS

General

Steel Nails AS 2334.

Plain Washers AS 1237.1.

Metric Screw Thread AS 1275.

Self Drillers AS 3566.1 & 2.

Electroplating AS 1897.

Galvanize AS 1214 & AS/NZS 4680.

Powder Actuated
AS/NZS 1873.4.

Nuts/Bolts/Screws AS 1110 / 1111 /
1112 & AS/NZS 1252 / 1390 / 2465.

Anchor Test Methods ASTM E488 &
E1512.

All items to be fixed & fix to *Engineer advice* ceiling/wall hung/overhead/structural items, *UDO*.

Fixings to match quality of fixed material (eg stainless steel product, stainless steel fixings).

Provide fixings all metric sized, capable of taking expected loads, selected for the purpose to fixing
Manufacturer *advice*.

Fix to structural *substrates*, not to linings or claddings, except if necessary for the most minor fixings.
For fixing over non-structural materials, eg claddings/linings, *provide* fixing extra length, for required
depth into structure. Pack behind materials & *substrates* if *required*, to give solid fixing base.

Set-out fixings evenly, consistently, centred where applicable. Use regular set-out start points &
straight edge/chalk lined guide lines. Clamp or pre-drill materials to avoid separation. Drill fixing holes
min depth required for fixing length. Replace fixings with burred/damaged heads or nuts.

Seal behind or *paint* over, *moisture exposed* fixings, *UDO*. At concealment or *painting*, re-tighten
fixings. For Practical Completion, re-tighten un-concealed/un-*painted* fixings.

Locate screws, rivets, bolts *min* 3x screw/rivet/bolt head *dia* away from the edge of the material being
fixed & nails *min* 4x nail head *dia* away from the edge of the material being nailed, *UDO*, or material
(being fixed) manufacturer *advised* otherwise

Cord fixed or operated products to be *provided* with child strangulation safety warning labels.

Finish: *Exposed to view* fixing heads: **a)** at coloured *substrates*, same as *substrate* colour/finish, **b)** at
metal *substrates*, same as metal colour/finish, **c)** at *clear finished substrates*, fixings finish to be
stainless steel or brass (to match adjacent metal), *UDO*.

Nails

Nail fix only to timber. Punch *exposed to view* heads 2mm below timber surface & fill. Avoid timber
hammer bruising. Remove bent nails & temporary holding nails. Nails not to penetrate
structure/framing back face. Nails to be no less than 15mm from material edge.

Screws

Screws not part of a *proprietary* fixture to be *min* 3.5mm *dia*. *Provide* washers to un-countersunk
screws. Pre-drill *substrates* & structure/framing, if *required*, to avoid material damage/splitting.

Screws generally not to penetrate material back face. File to a blunt point, exposed screw points
penetrating thin base materials.

Embedment depth *min* 6x fixing *dia*, *UDO*, or fixing manufacturer *advised* otherwise.

A screw fixing into any hole which had previously held a screw (no matter how long that previous
screw had been in place) to be the next standard size up from the previous screw size.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Bolts & Anchors

Masonry anchors to be *proprietary* expansion, friction or chemical type. Masonry/concrete edge distance to anchor, to anchor *Engineer advice*, unless dimensioned otherwise.

Embedment depth *min* 6x bolt/anchor *dia*, *UDO*, or fixing manufacturer *advised* otherwise.

Do not fix into masonry mortar joints. Fix to solid or core filled masonry only. Holes for adhesive/epoxy fixed bolts cleaned out before fixing. Use *proprietary* plastic plug fixings only for lightweight, non-structural use.

Bolt protrusion past nut: Less than 2000mm above *FFL* - no protrusion, over 2000mm - *max* 4mm protrusion, *UDO*.

Provide washers to bolts & nuts, except to cuphead timber bolt heads.

Anti-Tamper Fixings

Tamper Resistant Fixings

Tamper resistant fixings are designed for security, removable only by either: **a)** grinding or drilling-out (installed with a washer to protect *substrate*), **b)** using a tool/bit only available by lease from a fixing Manufacturer who keeps a Register of persons leasing the tool/bit or, **c)** using a tool/bit only available from an Trade Fixing Supplier selling only to Trades-persons. *Provide* tamper resistant fixings as *doc* & also to:

- Elements which are directly accessible 24 hours a day to the Public, from *FFL*/ground to *min* 2400mm above *FFL*/ground.

Items needing maintenance removal to be fixed by option **b)** above.

Corrosion Resistance

Self-drilling Fixings (to AS 3566): Class 4 if *moisture exposed*, otherwise Class 2.

Threaded Fixings: *Galv* 50 microns thick if *moisture exposed*, otherwise electroplated zinc 12 microns thick.

Power Actuated Fixings: Stainless steel 316 grade if *moisture exposed*, otherwise electroplated zinc 12 microns thick.

Other: Fixings contacting concrete, masonry or chemically treated timber to be *min galv* mild steel. Fixings contacting corrosive timber (*including* western red cedar & rosewood) to be stainless steel 316 grade or bronze silicate.

Provide fixings & metal items to comply with AS 4312 'Atmospheric Corrosivity Zones in Australia'.

SUBMIT corrosion resistant fixing supply & install Plan.

Compatibility

Provide fixings to materials as follows:

Fixing	Material
Aluminium	Aluminium, <i>aluminium/zinc</i> coated & <i>pre-painted</i> steel, zinc coated steel.
Steel zinc plated	<i>Aluminium/zinc</i> coated & <i>pre-painted</i> steel, zinc coated steel.
Monel or copper	Stainless steel, copper, brass.
Stainless steel (non-magnetic)	Stainless steel, copper, brass, aluminium, <i>aluminium/zinc</i> coated & <i>pre-painted</i> steel, zinc coated steel.

Provide metal items in arrangements of compatible metal types. Separate incompatible metal types. Do not *provide* incompatible metal types where water can flow from one over the other. *Provide galv* steel items fixed with *galv* steel fixings.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2.6 FLASHINGS & DPC'S

Provide flashings & DPC (to AS/NZS 2904) to stop moisture entering the building interior, combined with other moisture/water resistant materials to provide a moisture-proof/water-proof system.

Flashings: Nominal 200mm wide concealed part & nominal 200mm wide *exposed to view* part. Stop (ie close-off) flashings at open ends with the same material as the flashing material.

DPC: Aluminium *min* 0.45mm BMT bitumen film coated both sides, or other flexible, corrosion resistant, durable flashing material.

Concealed Flashing: Mild steel *aluminium-zinc* coated *min* 0.55mm BMT. *Exposed to View* Flashing: Mild steel *pre-painted min* 0.55mm BMT, colour to match adjacent material, UDO.

Concealed flashings & DPC to have 135 deg folded back edges as a water barrier.

Seal joints & fixings, *min* number joints, laps *min* 150mm. Lap upper over lower. DPC/flashings to be overlapped *min* 150mm by an impervious material or sealed to an impervious *substrate*.

Seal flashing/DPC junctions. Sealant in contact with *painted substrates* to be paintable sealant. Fold junctions where possible. Form to required shapes to closely follow *substrate* profile. Provide expansion joints @ *max* 6 metres & at *substrate* joints.

Pipe Penetrations: Flash with *proprietary* flexible clamping shoe, sealant sealed & clamp & seal to pipe with screw-tightened stainless steel collar.

Curved flashings to incorporate a cut, folded & interlocked & sealed seam which faces down.

SUBMIT sample. Curved stainless steel flashings may be welded.

Flashings not built into un-clad masonry/concrete: Do not cut flashing into wall. Turn apron flashing up wall 150mm, top edge fixed (mechanically @ 600mm *cnrs*) & sealed. Over-flash this flashing, *min* 100mm with a 2nd flashing fixed to wall (mechanically @ 300mm *cnrs*), top edge turned out 45 deg & sealant filled. *Paint* wall & sealant.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with **SECTIONS 1 Preliminaries & 3 Metalwork**. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Substrate Preparation: Refer Preliminaries SECTION, Sub-SECTION 4 'Substrate Preparation'.

Mix hazardous gas producing materials outdoors otherwise mechanically ventilate if mixed indoors.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

3 METALWORK

1 GENERAL

1.1 GENERAL

Where there is a conflict between this Specification and the Structural Consultants *doc*, then the latter should take precedence.

Provide Work as per this SECTION & as *doc* elsewhere. All SECTIONS must be read with this SECTION.

1.2 REFERENCED DOCUMENTS

Cross References

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing & all related SECTIONS.

For detail in this specification of the following, refer:

- Access hatches/panels – Doors SECTION.
- Fencing, metal – External Works SECTION.
- Fixtures, *proprietary* – Fixtures SECTION.
- Gates – Doors SECTION.
- Gratings & lids (for Services) – Fixtures SECTION.
- Ladders – Fixtures SECTION.
- Louvre panels, metal – Fixtures SECTION.
- Screens/sunhoods, *external* – Fixtures SECTION.
- Stair nosing piece – Concrete / Timber Work SECTION.
- Stud framing, metal – Structural Steel SECTION.
- Wire rope components – Fixtures SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related.

Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.

Steel Structures AS 4100 & AS/NZS 4600.	Structural Steel AS/NZS 3678 / 3679.	Welding AS/NZS 1167 / 1553 / 1554 & AS/NZS ISO 3834.
Certified Welders AS 1796.	Electrodes AS/NZS ISO 18276.	Steel Sheet/Strip Metallic Coat AS 1397.
Galvanizing AS/NZS 4791 / 4792 / 4680 & AS 2309.	Metal Finish Prep AS 1627.	Electrogalvanized (zinc) Coatings AS 4750.
Steel Wire AS 2423 & AS/NZS 4534		Non-destructive Testing AS 3878.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text. Refer also to *Consultant documents* for other interpretations.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text.

SUBMIT results of tests & inspections. **NOTIFY** for inspection of:

- Completed shop fabricated items before *Site* delivery.
- Start of *Site* welding (only if welding *doc* or *instructed*).
- *Site* installed assemblies, before concealment.
- Prepared metal *substrate*, before on-*Site* or off-*Site* application of finishes.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Samples: Welding. Finishes (all types).

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with **SECTIONS 1 Preliminaries & 2 Fixing & Sealing**.

Provide metalwork to suit function, load, location, finish & fabrication.

Provide anti-tamper fixings as per Fixing & Sealing SECTION.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 METALS

Mild Steel

Hollow Sections: Includes CHS, RHS, SHS, min strength grade C350, to AS/NZS 1163. Moisture exposed members to be hot dip galv inside & out to min 300 g/m².

Cold Formed Members: Includes L, Z & C lipped & un-lipped sections, min strength grade G550, to AS/NZS 4600, metallic coated min Z350 (350 g/m²) to AS 1397.

Hot Rolled & Welded Members: Includes universal 'I' shape, channel, angle, rod & flat, min strength grade 1-300 to AS/NZS 3679. Moisture exposed members dip galv.

Sheet & Thin Plate: Sheet steel min 0.8mm BMT. Plate steel min 5mm thick.

If metal is doc 'corrosion resistant' & if mild steel is used, hot dip galv steel is the min level required.

Stainless Steel

Min grade 304, No 4 brushed finish, UDO.

Sheet & Thin Plate Stainless Steel: Sheet min 0.8mm BMT. Plate min 3mm thick.

Chromium/chromium-nickel stainless to ASTM A240/A240M. Bar, shapes, tube to ASTM A276/A554.

Finish grain/direction to run sheet length, 1-way, consistent between sheets. Use grit faced belts or fibre brushes for finishes. No carbon steel abrasives or materials containing chloride. Remove heat discolouration by pickling. Clean & rinse to be acid free & dry.

Joining: Weld to AS/NZS 1554.6 & ASTM A240/A240M. Sheet welded or folded. Rivet only for sheet less than 1mm thick. Drill only (not punch). Clean & passivate assembly.

Aluminium

Production, grades, types to AS/NZS 1865 / 1866 / 1867 / 1874. Weld to AS 1665 & min butt weld quality as advised in Appendix A. Aluminium structures to AS/NZS 1664.

Separate aluminium & mild steel with non-conductive EPDM washers or other compatible corrosion resistant material.

Aluminium not to be embedded in concrete. Aluminium contacting concrete to be separated. Provide so water running-off concrete does not pass over aluminium.

Copper & Copper Alloys

Comply with the following for copper & copper alloys: AS 2738 'Composition & Designations'. AS 1566 'Rolled Flat Products'. AS/NZS 1567 'Rods, Bars, Sections'.

Copper grade to be to the copper Manufacturer advice for the application.

Incompatible metals

Provide metal items in arrangements of compatible metal types. Separate incompatible metal types. Do not provide incompatible metal types where water can flow from one over the other. Provide galv steel items fixed with galv steel fixings.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2.4 METAL FINISHES

General

Test 10% of each finish type. Test powder coat & *paint* related finishes to AS/NZS 1580 & include adhesion, permeability, film thickness, gloss level, colour.

Handle only cured finishes. Store above ground under weather-proof covers. Protect from damage.

Clean & repair finish as finish Manufacturer *advised*. Avoid contact with corrosive materials.

Painting & Shop Priming

Paint or shop prime coat non-*proprietary* mild steel fabrications/members, *UDO*. Coatings compatible with final decorative *paint* coatings. **SUBMIT** proposed shop primer detail & *paint* Manufacturer compatibility certification.

Coat concealed surfaces with the full *doc* coating system. Moving parts to be coated individually.

Round metal *substrate* edges slightly to stop coatings thinning at edges.

Refer to the Painting SECTION which also applies to metalwork.

Hot Dip Galvanizing

Definition: Protective zinc coating to AS/NZS 4680 & AS/NZS 2312.2, alloyed to mild steel, applied by hot dip immersion in molten zinc minimum 98% purity. Coating mass *min* 600 g/m². Coating smooth, continuous, adherent, uniform, defect free (eg, no lumps, blisters, acids, black spots, dross, flux).

Extent: To mild steel *moisture exposed* or contacting concrete/masonry/treated timber surfaces, *UDO*.

Hot dip *galv* in concrete: Chromate passivate by submersion in 0.15-0.2% sodium dichromate solution.

Fabrications: Avoid heat distortion. Hollow sections to have holes on fabrication underside. Fabricate size to suit *galv* bath & provide lifting facility. Do not cut, drill, weld after *galv*. Protect *galv* finish.

Confirm suitability of items to be galvanized with the Galvanizer. If any items found to be unsuitable, do not *galv* those items & **NOTIFY**.

Repair: Protect *galv* finish. Significantly damaged *galv* is to be replaced. To repair minor *galv* damage, use zinc stick coat or hot zinc spray, thickness to match *galv*.

Powder Coating

Powder coat to aluminium/alum alloy materials to AS 3715.

Powder coat to metals other than aluminium/alum alloy materials to AS 4506. Powder coat to mill finish steel, remove rust to AS 1627.4 to grade Sa 2½ of AS 1627.9, pre-clean by immersing in trichloroethylene or alkaline solution, then iron phosphate coat.

Powder coat *galv* to BS 6497. Pre-clean by immersing in a suitable alkaline or acidic solution, apply a zinc phosphate chemical conversion coating, rinse & degas before coating.

Pre-treat, powder apply & oven cure to coating Manufacturer *advice*. Provide conversion coatings if Manufacturer *advised*. Applicator to be Manufacturer approved & Qualicoat© licenced.

If powder coat colour is not *doc*, allow powder coat colour from Manufacturer standard colour range, gloss level Satin. **NOTIFY** for final selection.

Powder coating not to be *provided* in chemically corrosive environments.

Warrant for full finish performance for *min* 10 years.

Anodising

Anodise only aluminium/alum alloys (to AS 1231) satin finish *UDO* (by polish, clean, etch, de-smut, anodise & seal). Same anodising finish in one area or connected areas to be the same batch finish (for consistency). Warrant for full finish performance for *min* 20 years.

Anodising thickness in *moisture exposed* situations 25 microns, otherwise 15 microns.

Electroplating

Nickel or nickel/chromium coatings on steel, iron, zinc alloy, copper, copper alloys, aluminium/alum alloys, to AS 1192. Zinc coatings on steel or iron by batch process, to AS 1789.

To repair internal minor damage, not *exposed to view*, prepare, clean & apply *min* 2 coats of 2-pack organic primer to AS/NZS 3750.9 or APAS-2916. Replace damaged *exposed to view* finishes.

Factory Applied Pre-Painting

General: Spray apply in controlled mechanically ventilated area, no dust or wind disruption. *Provide* full gloss finish. Refer 'Shop Priming' above for mild steel fabrication priming only.

Air Drying Enamel: For general use: Primer 2- pack epoxy to APAS-2971 & 2 top coats to APAS-0015/1. For oil resistant use: Primer 2-pack epoxy to APAS-2971 & 2 top coats to APAS-0024/1.

Equipment Painting: Undercoat: To APAS-0029. Primer: Zinc-coated steel to APAS-0134. Primer: Other metal to APAS-0032 or APAS-0162/1. Enamel Finish: 2 coats to APAS-0024/1. High Performance Organic Coats: On aluminium, *includes* polyvinylidene fluoride (PVF2).

Stoving Enamel: Internal use only. Primer: To APAS-0065. Topcoat: To APAS-0066/3.

2-pack Coating: Primer: 2-pack epoxy to APAS-2971. Topcoat: *Similar to proprietary* polyurethane.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with SECTIONS 1 Preliminaries & 2 Fixing & Sealing. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Support & fix fixtures, fittings and other items on framing. Penetrations of materials fixed to framing to be full perimeter of penetration framed. *Provide* double framing to frame-fixed materials at butt joints.

Mix hazardous gas producing materials outdoors otherwise mechanically ventilate if mixed indoors.

Substrate Preparation: Refer Preliminaries SECTION, Sub-SECTION 4 'Substrate Preparation'.

At Practical Completion, re-tighten *exposed to view* threaded fixings.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

3.2 FABRICATION

Factory fabricate if possible. *Provide* members in single lengths. *Site* measure before fabrication. No cutting, drilling, welding after hot dip *galv*. Fabrications to suit function, load, location & finish.

Edges to be clean, neat, smooth, filed. Joints to be accurate & neat. Surfaces to be smooth. Do not *provide* materials with visible distortion or 'oil-canning effect'.

Form tube bends without deforming tube cross-section. Folds in sheet metal to be machine made using a folding press.

Design joints & fixings to accommodate thermal movement. Non-welded joints to be spigot & socket joints (to allow movement) with no increase in outside size.

No colour variations after cutting & joining. Identify each fabrication item without damaging finish.

Fixing strength & corrosion resistance *min* equal to that of the highest grade metal in the assembly.

Hollow sections 30 x 30 mm and over, cap ends with fully welded *min* 3mm plate. Hollow sections smaller than 30 x 30 mm, cap ends with hard plastic tight-fitting socket-type flat caps.

Moisture Exposed Hollow Sections: Fixings & penetrations to be sealed except drain holes. Drain via *min* 2/5mm *dia* underside holes @ 600mm *cnrs*.

Welds: No cracks/slag/porosity, to be neat/smooth/ consistent. Welding to be continuous, *UDO*. Stitch welds consistent length, spacing. On-*Site* weld only if *doc* or *instructed*.

Brazed Joints: Lapped not butted. Brazing to be continuous. Filler metals to AS/NZS 1167 & as metal Manufacturer *advised*.

Fabrication Tolerances: + or - 1.5mm from *doc* dimensions & *Site* measurements.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including **SECTIONS 1-3**, and in this **SECTION** – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also **SECTION 1**, Clause 1.1 'Documentation Discrepancy'.***

4 DEMOLITION

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork & all related SECTIONS.

For detail in this specification of the following, refer:

- Earthwork removal – Civil SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related.
Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.
The Demolition of Structures AS 2601.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text.

SUBMIT results of tests & inspections. **NOTIFY** for inspection of:

- Services before disconnection or diversion.
- Structure after removal of non-structural linings & claddings.
- Underground structures after above ground demolition.
- Demolition completion, after demolished materials removal.
- Services after reconnection or diversion.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5.

SUBMIT also:

- Asbestos Materials Survey Report, prepared by a Registered/Licensed Asbestos Investigator.

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2.3 DEMOLISHED MATERIALS

Demolished Materials for Removal

Definition: Demolished building materials not salvaged for re-use or storage, to be the Contractors property once demolished, disposed of off-*Site*.

Do not burn or bury on *Site*. No spillage both on-*Site* & in transit. Dispose of legally & to Local Authority & Statutory requirements. Remove demolished materials from *Site*, including dust.

Demolish so that existing concealed materials may be salvaged undamaged if *instructed*.

SUBMIT proposals for the demolition of materials not *doc* to be demolished.

Salvaged Materials for Re-use

Definition: Demolished building materials, re-used by Contractor in the *Works*.

Salvage demolished material for re-use, without demolition damage. **NOTIFY** if such damage is likely to occur or has occurred. Repair & re-finish to near new original condition. *Provide* with new fixings & sealants at the junction of re-connection to the new *Work*.

Provide temporarily storage in a dry, weather-sealed on-*Site* location. Store elevated & level above floor/pavement, each item fully supported to avoid storage damage.

SUBMIT a Work Plan for demolished materials for re-use including temporary storage.

SUBMIT proposals for the re-use of demolished materials not *doc* but suitable for re-use.

Salvaged Materials for Storage

Definition: Demolished building materials, stored on-*Site* by Contractor, for future *Owner* use.

Salvage demolished material for storage, without demolition damage. **NOTIFY** if such damage is likely to occur or has occurred. Demolition damage to salvaged materials for storage, to be rectified.

Store in an *Owner provided* on-*Site* location. **NOTIFY** to confirm store location. Store elevated & level above the floor/pavement, each item fully supported to avoid storage damage.

2.4 HAZARDOUS MATERIALS

Standards & Regulations

Selection, Use & Maint of Respiratory Protective Devices AS 1715	Indust Vacuum Cleaners for Particulates Hazardous to Health AS 3544	High Efficiency Particulate Air (HEPA) Filters – Class, Construct & Performance AS 4260
Class Labels Dangerous Goods AS 1216	Lead Paint Removal AS 4361.	Australian Code for Dangerous Goods Transport by Road & Rail (ADG Code).

Workplace Health and Safety (WHS) Act & Regulation & (WHS) Safety Advisory Standards (for asbestos & hazardous substances).

Environmental Protection (EP) Act & Regulation, (EP) Regulations – Interim Waste & Waste Management, (EP) (Waste Management) Policy.

General

Work to Site hazardous materials Records/Registers/Reports/Information. **NOTIFY** immediately & stop *Work* (as appropriate) upon discovery of un-*doc* hazardous materials, including:

- Asbestos or material containing asbestos.
- Lead & lead based *paints* & products.
- Flammable or explosive liquids or gases.
- Toxic, infective or contaminated materials.
- Radiation or radioactive materials.
- Noxious or explosive chemicals.
- Hazardous material storage tanks/vessels.
- Military munitions.
- Mineral & glass wool insulation.

Lead Based Paint Removal

SUBMIT a Lead Based Paint Survey Report (by an accredited Lead Advisory Board professional) and then a related *Work Plan*. Contain & dispose of lead affected dust & demolished materials. *Work* to comply with AS 4361.2 'Guide to Lead Paint Management'.

Asbestos Materials (AM) Removal

GENERAL

If un-recorded AM is found on *Site* during conduct of the *Work*, stop *Work* around the area of AM & **NOTIFY** for *instruction*. Immediately **SUBMIT** estimation of area of AM which needs to be removed in the area of the AM discovery. Remove the AM on *instruction*.

Comply with the National Occupational Health and Safety Commission Publications *including*:

- Relevant State Authority Work, Health & Safety Regulations & Acts,
- Code of Practice for the Safe Removal of Asbestos,
- Code of Practice for the Management and Control of Asbestos in Workplaces,
- Guidance Note on Membrane Filter Method for Estimating Airborne Asbestos Fibres,
- Exposure Standards for Atmospheric Contaminants in the Occupational Environment .

This clause contains full level asbestos materials (AM) removal *Work*. *Provide* the level of AM *Work*, to Regulatory requirements, for the particular application. Refer 'Asbestos Materials Survey Report' for AM extent. Remove all AM found, whether or not recorded in the Survey Report. Immediately **NOTIFY** on discovery of AM not recorded & stop work in that area & inform all *Site* personnel.

PREPARATION

NOTIFY all adjoining property Owners & Occupants *including* Owners & Occupants within a 200 metre radius of the *Site* perimeter, of proposed AM *Work* *min* 10 days before AM *Work* start. *Include* *Work* start & finish timings. Re-**NOTIFY** if timing changes occur.

SUBMIT proposed *Work* Method Statement to the *Owner*. Conduct Regulatory administration & notifications. Warn & instruct non-AM Personnel of AM *Work*.

Before AM *Work* start, seal that *Work* area in a containment barrier. Then smoke (non-toxic) test & rectify barrier if breach occurs. In AM *Work* area, seal existing services/ventilation, install water supply back-flow prevention, wrap remaining elements. Erect prominent warning/advisory signage.

Provide decontamination & change facilities, contaminated clothing/equipment storage facilities & breathing protection. *Provide* temporary air-extraction systems with Grade 1 HEPA filters to AS 4260 to maintain the AM *Work* area at negative air pressure. Vacuum clean to AS 3544 with Grade 1 HEPA filters to AS 4260.

EXECUTION

Continually utilize, check, maintain AM equipment, containment barriers, protective clothing, breathing protection, signage, seals, wraps, back-flow prevention, *Site* Personnel education.

Prevent entry into containment area of non-AM Personnel. Do not eat, drink, smoke or conduct non-AM *Work* in containment area.

Demolish all materials for dust minimization as though all materials are connected to AM. Remove AM whole where possible. Do not use power tools, pressurised air/water tools, abrasive cutting/sanding tools. Cut/drill AM minimally, using vacuum extraction at tool contact point. Use non-pressurized, wet-method removal where possible & safe to do so.

Keep containment area at negative pressure. Regularly monitor air immediately outside containment area. Stop *Work* if air/asbestos content exceeds Regulation & correct *Work* accordingly before *Work* re-start. Monitor by an Organisation not the AM *Work* Organisation.

COMPLETION

At AM *Work* completion, **SUBMIT** a new & updated 'Asbestos Materials Survey Report' to the *Owner*.

Remaining, un-covered AM to be vacuum cleaned, sealed with adhesive spray, labelled as per AS 1216. Clad with new, solid material without fixing through AM.

Clean-up in 2-Stages: **1)** before containment barrier removal, **2)** after barrier removal. Each Stage, full vacuum to AS 3544, then damp cloth wipe. Do not use pressurised air/water tools.

Monitor air within the containment barrier for asbestos content. Immediately after barrier removal, monitor air again, clean-up, examine the AM *Work* area & surrounds. Monitoring & examination to be done & recorded by an Organisation not the AM *Work* Organisation & **SUBMIT** Record to the *Owner*.

Dispose AM as per Regulation. Obtain Regulatory approval for AM transportation/disposal, and then record, contain, wrap AM to Regulatory requirements before transportation/disposal.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

General

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

SUBMIT a Demolition Work Plan detailing stages, protection of adjacent elements, services *Work*, support, timing, equipment, methods, etc.

Demolition of a material *includes* associated items *including* fixings, sealants & membranes.

Demolish generally in the reverse order of how the structure was constructed. Do not use explosives & other highly destructive demolition methods. Demolish by controlled dismantling. Recycle as much as possible demolished materials, to Local Authority requirements.

Identify structural & fire/smoke resistant/resisting building elements to remain & **SUBMIT** this identification.

Do not reduce the performance of that which remains *including* finishes, corrosion protection, services, structure, weather-proofing, security. When demolishing against other materials to remain, do so accurately & neatly. Seal exposed concrete faces to protect reinforcement from corrosion.

Refer Preliminaries SECTION, Sub-SECTION 2 'Infrastructure & Property' for Dilapidation Record & rectification of *Work* caused defects.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

Support

Provide adequate temporary bracing & support for remaining materials & excavations. *Provide* permanent support for structures & if not *doc*, *allow* to support & **NOTIFY**.

Provide Engineer designed temporary support if un-*doc* support of structures is required. **SUBMIT** proposal and *Engineer* design Certificate.

Protection & Security

Protect remaining items & infrastructure. Prevent spillage onto areas outside demolition area.

Provide dust-proof screens & covers to protect existing finishes & the environment from dust.

Contain & remove toxins/dust/fibres & other hazardous airborne pollutants.

Provide temporary covers to stop weather, water, wind ingress. Covers to withstand anticipated weather conditions. Rectify building and/or contents if damaged by weather ingress.

Provide security to prevent unauthorised access. Security *min* same level before demolition.

Compensate for & replace contents lost as a result of security breach.

Make Good

Refer Preliminaries SECTION, Sub-SECTION 4 'Make Good'.

Structural Certification

SUBMIT independent *Engineer* Certification of structural demolition *Work*.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

5 EXTERNAL WORKS

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork & all related SECTIONS.

For detail in this specification of the following, refer:

- Civil Works – Civil SECTION.
- Fixtures, *proprietary* – Fixtures SECTION.
- Gates – Doors SECTION.
- Gratings & lids (for Services) – Fixtures SECTION.
- Stone tiling – Tiling SECTION.
- Tiling, external – Tiling SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.
 Stormwater Drainage AS 3500. Earthworks Guidelines AS 3798.
 Measuring Civil Work AS 1181. Earth Retaining Structures AS 4678.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5.

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork.

Pedestrian/vehicle surfaces & their edges (nosing) to be slip-resistant.

Provide anti-tamper fixings as per Fixing & Sealing SECTION.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 MISCELLANEOUS MATERIALS

Refer to the applicable Specification SECTIONS for description of *external* products & materials.

2.4 DRIVEWAY CROSSOVER

Provide driveway crossover to Local Authority detail & approval. Concrete *min* quality as per Concrete SECTION. **SUBMIT** Authority approval & inspection Certificate. Broom finish, UDO.

2.5 STEPPING-STONE PAVERS

Lay pavers on 75 mm thick concrete base which extends the full area of each paver. Pavers to adhere to concrete base. Lay pavers level.

2.6 SUB-SOIL DRAINS

Subsoil Slotted Pipe/Cell Drainage: *Provide if required* for drainage. *Min* area = to a 100mm *dia* pipe to AS 2439, geotextile fabric (to AS 3706) wrapped (no soil to enter the system), laid to fall, run in free draining granular fill (eg 5-10mm gravel) which is also geotextile fabric wrapped, connected to the stormwater system. *Provide* drains behind all retaining walls at wall base. *Min* depth 250mm below finished surface.

2.7 METAL FENCING

General

Junctions tight, robust, members not spliced, hollow or tubular members capped at ends. Fence true to plane. Fence height as *doc* elsewhere.

Metalwork as per the Metalwork SECTION.

Provide pool fencing to AS 1926.

Footings & other concrete: Concrete as per Concrete SECTION.

Gates: Refer Doors SECTION.

2.8 TIMBER FENCING

Provide timber fencing to the following detail, *UDO*:

- Timber copper chrome arsenate (CCA) treated (timber as per Timber Work SECTION).
- Concrete Footings: *Min* 600 deep x 300mm (as per Concrete SECTION).
- Posts: 65 x 65 x 3mm *galv* RHS @ *max* 1800mm *cnrs* (as per Metalwork SECTION).
- Rails: 75 x 38mm *HWD*, M10 bolt to each post, halved joint at post. Fences *max* 1300mm high to have 2 rails, fences 1300-1800mm high to have 3 rails, fences 1800-2100mm high to have 4 rails.
- Standard Palings: 100 x 16mm pine, square ends, close spaced to give 5-10mm gap after shrinkage. Fix with 2/40mm *galv* nails each rail crossing. Palings to extend past top & bottom rails *max* 100mm.
- Cap & Lap Fencing: Palings to be 100 x 16mm pine, square ends, lap each paling 25mm each edge. Fix palings with 2/40mm *galv* nails each rail crossing. Cap to fence top to be 90 x 45mm (15mm deep rout/groove to underside to house palings & top rail), double nail fixed @ 450mm *cnrs*.
- Gates: Refer Doors SECTION.

2.9 SLEEPER RETAINING WALL

Material: Concrete precast, 1800-2100mm long x 200mm wide x 75mm thick, steel reinforced.

NOTIFY to confirm *exposed to view* finish. Pencil round projecting (salient) corners/edges.

Material: Timber copper chrome arsenate (CCA) treated (timber as per Timber Work SECTION), *HWD*, 1800-2100mm long x 200mm wide x 50mm thick. Arris projecting (salient) corners/edges.

Upright members to be set in concrete footings. Concrete as per Concrete SECTION.

Provide geotextile fabric to the back face (earth-side face) of the wall.

Provide sub-soil drainage full length on the earth-side of the retaining wall at its base.

Refer to the *drawings* & Schedules for specific wall detail.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

General

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Furniture & fixtures to be installed horizontal/vertical, regardless of base *substrate* contour.

External surfaces to fall away from buildings & structures. **NOTIFY** to confirm falls if they are not *doc*.

NOTIFY upon un-*doc* or un-expected ground work discoveries *including* cavities, water, rock, contaminated or hazardous materials, land-fill, archaeological materials.

Work to *Site* hazardous materials Records/Registers/Reports/Information. **NOTIFY** immediately & stop Work (as appropriate) upon discovery of un-*doc* hazardous materials, *including*:

- Asbestos or material containing asbestos.
- Lead & lead based *paints* & products.
- Flammable or explosive liquids or gases.
- Toxic, infective or contaminated materials.
- Radiation or radioactive materials.
- Noxious or explosive chemicals.
- Hazardous material storage tanks/vessels.
- Military munitions.
- Mineral & glass wool insulation.

Refer Preliminaries **SECTION**, Sub-SECTION 4 'Building Work' for more execution detail.

Drainage & Erosion

Prevent erosion, contamination & sedimentation of *Site*/adjacent areas/stockpiles/drainage systems. **SUBMIT** a proposed Erosion & Sediment Control Plan.

Keep Works free of ponding water. Maintain surfaces/excavations/drains to allow drainage. Do not place materials, *including* fill, on water logged ground. Prevent water flow over new Work. Obtain relevant Statutory Authority approvals.

Site Clearing

Site clear as *doc*, as *min* for Work. Dispose of off-*Site*, excess excavations, rubbish, grass, vegetable/organic debris, stumps, rocks/rubble & disused built elements, *including* slabs, footings, paving, *UDO*.

In areas to be cleared & where *doc* to remove trees/plants, remove stumps & remove roots over 15mm *dia* within 200mm below ground surface. Backfill grubbing holes with sandy loam, compacted to the relative density of the adjacent ground.

Remove topsoil from areas to be excavated & built on, regardless of topsoil depth. Stockpile on-*Site* for reuse (150mm deep under grass, 400mm deep in garden areas), *UDO*. Provide extra imported soil to make up the balance, *if required*.

Control weeds by non-chemical means. Mow grassed areas to height *min* 75mm & *max* 200mm.

3.2 PLANT PROTECTION

Maintain plants in good condition, *including* watering. Keep large plant trunks & drip line area free of excavations, material & debris. Prevent plant damage & do not attach anything to large plants, *UDO*.

Obtain *instruction* for branch cutting, to be done as close as possible to the main branch junction, neatly without stripping of bark & have no chemical treatment applied to the cut.

Do not excavate within large plant drip line & if *doc* to do so, hand excavate in *min* time. Locate, protect, expose roots & cleanly cut *if required*. Do not cut roots over 50mm *dia*. Immediately after cutting, wash root end & apply suitable anti-infection/fungus treatment.

Backfill excavations around large plant roots with a mixture consisting of 3 parts topsoil & 1 part, neutral pH value, decomposed compost. Place backfill in 300mm *max* depth layers, dry density compacted to that of the surrounding earth. Immediately after backfilling, thoroughly water roots.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

6 CIVIL WORKS

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Refer also Civil/Structural Consultant docs.

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork** & all related SECTIONS.

For detail in this specification of the following, refer:

- Concrete – Concrete SECTION.
- Crossover – External Works SECTION.
- Erosion control – External Works SECTION.
- Gratings & lids (for Services) – Fixtures SECTION.
- Signage (general detail) – Fixtures SECTION.
- Site clearing & plant protection – External Works SECTION.
- Sleeper retaining walls – External Works SECTION.
- Sub-soil drainage – External Works SECTION.
- Topsoil removal – External Works SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related.

Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text.

SUBMIT results of tests & inspections.

1.5 SUBMISSIONS

Refer items written **SUBMIT** in text & as per Consultant docs. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Certification of completion of civil Work provided as doc in this SECTION & as doc elsewhere (certification may be done by the respective Subcontractor/s).

1.6 ADDITIONAL NOTES

General

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**.

Provide broom finish to all concrete pavements, UDO. Pedestrian/vehicle surfaces & their edges (nosing) to be slip-resistant.

Provide anti-tamper fixings as per Fixing & Sealing SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork.**

Provide broom finish to all concrete pavements, *UDO*. Pedestrian/vehicle surfaces & their edges (nosing) to be slip-resistant.

Provide anti-tamper fixings as per Fixing & Sealing *SECTION*.

Refer Preliminaries *SECTION*, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 BULK FILL

Bulk fill may be imported or obtained from *Site*.

Material Records: **SUBMIT** Supplier name, material detail & source. **SUBMIT** NATA Registered Laboratory Certificate, including test results, certifying material compliance with docs. Min 1 test per 50m³, min 2 tests.

Compact fill. If compaction value is un-doc, **NOTIFY**.

Remove materials that will prevent satisfactory filling. Do not provide fill with sulphur content exceeding 0.5%. Max rock & lump size: 2/3 compacted layer thickness.

Do not fill with: **a)** organic soils, top soil, silt or silt-like materials, **b)** soluble/leachable substances, or materials which change volume or weaken when worked or wet, **c)** fill containing contaminants, wood, metal, plastic or other deleterious, organic or perishable material.

Spray water to obtain moisture content, uniformly in controlled quantities over uniform lane widths.

Do not place material or equipment on surfaces weakened by moisture.

Commence compacting close to structures & compact away from structures.

Batter Faces: Compact separately or overfill & cut back. Form roughened surfaces.

Test completed fill: Min 1 test per layer per 250m².

Lay in 200mm finished layers. Mix fill uniformly. Place fill in near-horizontal layers of uniform thickness, systematically deposited. Do not feather edges at junctions of fill & existing surfaces.

Moisture Content: At compaction 85 – 115% of optimum moisture content as per AS 1289 to achieve required density.

2.4 PAVEMENT BASE & SUBBASE

Material Records: **SUBMIT** Supplier name, material detail & source. **SUBMIT** NATA Registered Laboratory Certificate, including test results, certifying material compliance with docs. Min 1 test per 50m³, min 2 tests.

Base: Crushed rock or natural gravel to AUS-SPEC1 Tables C242.1, C242.2, C242.3.

Subbase: Crushed rock or natural gravel to AUS-SPEC1 Tables C242.1, C242.2, C242.4.

Test roads min 1 test each lane, each layer every 25 lineal metres, and carparks 1 test per layer every 500m².

Relative Compaction (min dry density ratio modified to AS 1289): Base 98, Subbase 95.

Moisture Content: At compaction, -2% to +1% of optimum moisture content (modified compaction).

Lay in 75-150mm finished layers, with equal layers in multilayer courses.

2.5 SITE STORMWATER

Standards

Stormwater Drainage AS 3500.	PVC & ABS Solvent Cement & Priming AS/NZS 3879.	PVC Pipes & Fittings AS 1254, AS/NZS 1260.
Glass Reinforced Polyester (GRP) AS 3571	Grey & Ductile Cast Iron AS 1830 / 1831.	Fibre Reinf Concrete (FRC) Pipes & Fittings AS 4139.

*** Read **specific** Specification detail with **common** detail including **SECTIONS 1-3, and in this SECTION** – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer **also** SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Polyethylene (PE) Pipes/Fittings
AS/NZS 4129 / 4130, AS 2033.

Precast Concrete Pipes
AS 4058, AS/NZS 3725.

Seals for Water Works
AS 1646.

General

Joining: Up-stream pipes socket into down-stream pipes. Cap in-complete, open pipe ends.

Anchor Blocks: In-situ concrete, to pipe junctions & changes of grade or direction.

Before backfilling or concealing, conduct air or water pressure tests to AS 3500.3. Test each run or line. Clean & flush the stormwater system.

Refer Roofing **SECTION** for down pipe ground connection detail.

Pits

Pit or Chamber Internal: *Provide* a smooth, seamless finish, using steel trowelled render or concrete cast in steel forms, with coved or splayed corners.

2.6 KERB & CHANNEL

General

Shape & compact a firm base before laying kerb & channel, to AS 2876 if not laid on *subbase* or *Base*. Construct in fixed forms, by extrusion or by slip forming to AS 2876. Fall to drainage outlets. Stormwater discharge into kerb/channel to be via *proprietary* corrosion resistant metal discharge outlets.

Tolerances: **a)** gutter surface level: + or - 10mm, **b)** kerb top to gutter surface 5mm in 3000mm, **c)** alignment 20mm.

Provide control joints @ *min* 3000mm *cnrs* & also to align with abutting pavement joints.

Backfill: 3 days after kerb & channel placement with granular material (no organic material, clay or rock more than 50mm size). Compact in layers *max* 150mm thick, to a relative compaction of 95% when tested AS 1289.5.4.1 compliant for standard compaction.

Slip form placing

Place plastic concrete uniformly. Vibrate to fully compact concrete, with uniform dense surface, no honeycombing or areas deficient in fines over *min* 95% of the surface.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

NOTIFY upon un-doc or un-expected ground work discoveries *including* cavities, water, rock, contaminated or hazardous materials, land-fill, archaeological materials.

External surfaces to fall away from the building & structures. **NOTIFY** to confirm falls if they are not *doc*.

Work to Site hazardous materials Records/Registers/Reports/Information. **NOTIFY** immediately & stop *Work* (as appropriate) upon discovery of un-doc hazardous materials, *including*:

- Asbestos or material containing asbestos.
- Lead & lead based *paints* & products.
- Flammable or explosive liquids or gases.
- Toxic, infective or contaminated materials.
- Radiation or radioactive materials.
- Noxious or explosive chemicals.
- Hazardous material storage tanks/vessels.
- Military munitions.

Refer Preliminaries **SECTION**, Sub-SECTION 4 'Building Work' for more execution detail.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Geotechnical Testing

Test (as *doc*, *min* 2 tests) excavations, fill, *subbases* & *Bases* to AS 3798 by a NATA registered Geotechnical Test Authority.

SUBMIT Geotechnical *Engineer* certification of completed *formation* & ground bearing capacity (both natural & fill) is as *doc* or adequate to support building loads.

Proof roll all excavations (except trenching), fill, *subbases* & *Bases*, to determine extent of *bad ground* as *advised* by NATA registered Geotechnical Test Authority. Remove & reinstate *bad ground*.

3.2 EXCAVATION

Do not use explosives. Bearing surfaces for load bearing structures to be an even plane. Step to accommodate level changes.

Tolerance under structures, buildings, pavement & for other ground surfaces: +0 -20mm. Finish self-draining, no ponding, scraper blade finish.

Record excavation & fill quantities, *including rock* quantities using a Licensed Surveyor. Pre-excavation (in-ground) volume applies for excavation measurement.

Rock Excavation: No Contract variation given for *rock* excavation.

Compact excavations/*formations*. If compaction value is un-*doc*, **NOTIFY**.

Test finished excavations: *Min* 1 test per 250m².

If excavation exceeds required depth, deteriorates or has *bad ground* removed, reinstate to *doc* depth & bearing capacity. Prevent void formation. Fill & compact voids to match surrounding material.

Provide temporary excavation support & remove when not required. *Provide* permanent support as *doc*. If not *doc*, allow permanent support & **NOTIFY**.

Provide temporary then permanent excavation support below *line of influence* as *doc*. If not *doc*, allow this support as *advised* by the Geotechnical *Engineer* & **NOTIFY**.

3.3 TRENCHING

General

Excavate trenches: **a)** to uniform grades, **b)** in straight lines between pits/inspection points/junctions, **c)** sides stable & supported, **d)** widths *min* & consistent, **e)** clean, no projections, no obstructions, no water, **f)** with a firm base. Cut tree roots within 600mm of services. No access over open trenches.

Over-excavation: Reinstate to correct depth & bearing value using compacted bedding material or sand stabilised with 1 part of cement to 20 parts of sand by weight.

Trenches open for *min* time. Backfill as soon as possible after service laid & bedded, if possible, same day. Place backfill in layers *max* 150mm compacted thickness.

If boring under pavements is required, *provide* a tight fit of service pipes. Pressure grout fill voids.

Trench Backfill

Services Marking: *Min* 350mm above services, lay underground marking tape (to AS/NZS 2648.1).

Bedding Material: For bed & haunch zones to be granular material, grading as per AS 1141.

Fill (General): Well graded, inorganic, non-perishable material, *max* size 75mm, plasticity index to be under 55%. No stones more than 25mm size within 150mm of services.

Fill under roads & paved areas & within 4000mm of structures to be coarse sand, controlled low strength material or 'B' grade fine crushed *rock*. Compact to achieve 95% solidified compaction test as per AS 1289 at optimum moisture content.

Fill In Topsoil Areas: Compact to *min* equal to that of adjacent natural earth.

Fill In Reactive Clay: In sites classified M, M-D, H, H-D or E to AS 2870, re-use excavated *Site* material at a moisture content within + or - 1% of that of the adjoining in situ clay.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

7 CONCRETE

1 GENERAL

1.1 GENERAL

Where there is a conflict between this Specification and the Structural Consultants *doc*, then the latter should take precedence.

Provide Work as per this SECTION & as *doc* elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork** & all related SECTIONS.

For detail in this specification of the following, refer:

- Floor mats – Fixtures SECTION.
- Pavers – External Works SECTION.
- Render – Render SECTION.
- Sleeper (concrete) retaining walls – External Works SECTION.
- Tactile indicators – Tiling SECTION.
- Wheel stops – Fixtures SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD).

Concrete Structure AS 3600.	Concrete Supply AS 1379.	Aggregates AS 1141 / 2758.
Portland, Blended Cement AS 3972.	Admixtures AS 1478.	Res Slabs, Footings AS 2870.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections.

NOTIFY for inspection of:

- Completed base or sub-grade before covering.
- Completed formwork, cores, embedments & reinforcement before concrete placing.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Prototype (on-Site) of each unformed concrete finish type, *min* 4 m² area.
- Prototype (on-Site) of each formed concrete finish type, *min* 4 m² area.
- Detail of proposed, un-documented concrete products.
- Certification of completion of concrete *Work provided as doc* in this SECTION & as *doc* elsewhere (certification may be done by the respective Subcontractor/s).

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**.

Concrete, concrete related materials & materials *doc* in this SECTION are not to contain chlorides.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 CONCRETE

General

Concrete of the same type to be of consistent colour, texture & finish.

Concrete generally to be Plant pre-mixed, designed for *min* plastic settlement & shrinkage cracking. Ingredients to be chloride, fluoride, breccia, dolerite, nitrate free & not negatively affect concrete workability, performance or finish. Admixtures to be *proprietary*.

Delivery Records: **SUBMIT** with each Plant pre-mixed batch to AS 1379, *including, doc* performance, mix detail, additives, cement binder type, post-mix water additions, *Site* allowed water addition.

Site Records: Keep *Site* Records of each concrete placement. *Include* date & concrete grade, source, volume, slump, placement location.

Concrete Properties

Refer to *Consultant docs*.

Batch accuracy % by mass: Cement + or - 1. Aggregates + or - 2. Water + or - 1. Admixture + or - 3.

Concrete not detailed on *Consultants documents* to be *min* F'c N25 at 28 days, 80mm slump, 20mm aggregate, *UDO*.

Coloured Concrete

Plant pre-mix colour oxide into the concrete, *UDO*, to AS 3600 (with colour control). *Provide* extra sun protection to dark coloured curing concrete for *min* concrete heating. Apply hardener/sealer.

Joints

Refer Structural *Consultant docs*.

Sealant fill joints. Form joints straight. Select & locate joints as *doc*. Joint descriptions below may not all be applicable & may not all be a complete list of all joints to be incorporated.

Construction Joint: **NOTIFY** if required but un-*doc* & **SUBMIT** proposed detail.

Dowel Joint: *Min* 16mm *dia* *galv* mild steel rod *min* 600mm long (*UDO*), with one half of length bonded into concrete & the other half inserted into a cast-in *proprietary* plastic sleeve enabling rod to slide.

Sleeve to have capacity for the rod to slide further-in past its position at time of being cast-in.

Expansion Joint: Fill with jointing materials, finished neatly & flush. Before filling, dry & clean joint surfaces & prime. Apply jointing material to give water-tight joints.

Saw Cut Joint: Use physical depth & line guides to give constant & accurate cut depth & line. Cut straight with no end-cut over-run.

Separation Joint: *Provide* at slab junctions with other structures using an 10mm compressible material filled isolation joint.

Structural Movement Joint Covers: *Provide* the least conspicuous joint cover type (flush with floor finish) to allow expected movement to *Engineer advice*. Joint covers to be corrosion resistant metal (to match adjacent metal, *UDO*), mechanically fixed to *substrate*. **SUBMIT** proposed detail.

2.4 REINFORCEMENT & EMBEDMENTS

Material

Provide proprietary reinforcement to AS/NZS 4671, Grade 500 N (500 MPa, Ductility Class N (normal)), Type N deformed (ribbed), *UDO*. *Provide* factory marked showing grade. No mill scale, rust, oil, grease, mud or other which may reduce concrete bond.

Reinforcement to be Australian Certification Authority for Reinforcing Steels (ACARS) certified. **SUBMIT** Certification, plus Manufacturer Certificate of compliance with *docs*.

Galv & *galv* repair as per Metalwork SECTION. Mild steel embedments contacting the surface of concrete is to be hot dip *galv* & chromate passivated.

Chairs: *Proprietary*, corrosion resistant, broad-base, *max* 800mm *cnrs*. Chairs in suspended slab to have *min* chair visibility at soffit & plastic tips to legs colour matched to the concrete.

Tie Wire: Annealed steel *min* 1.6mm *dia*. *Provide galv* wire to *galv* reinforcement.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Reinforcement & Embedments Execution

Reinforcement/embedments not to move at concrete pour. Chair reinforcement (do not lift at pour).

At slab or pavement re-entrant corners, *provide* diagonal reinforcement. Lap, splice, weld reinforcement to AS/NZS 1554. Wire tie reinforcement at intersections & ligatures to bars in each ligature corner. Tie bars to ligatures *max* 1000mm *cnrs*. Tie ends not extend into concrete cover.

Tie bundled bars for *max* bar contact, with 2.5mm *dia* wire @ *cnrs max* 24 x *dia* of smallest bar.

Bend reinforcement as *doc* or to *Engineer advice*. Do not deform bar profile or reduce bar structural integrity. Do not bend *galv* steel. Do not heat steel to bend.

Reinforcement/embedments temporarily protruding to be safety caped & corrosion protected.

Services to be sleeved. Isolate embedments from reinforcement. Do not cut reinforcement to position embedments, displace as *instructed*.

Aluminium not to be embedded in concrete. Aluminium contacting concrete to be separated. Do not allow water run-off from concrete to pass over aluminium.

Provide electrical earth to AS 3000 to conductive concrete reinforcing of building elements which are *moisture exposed* as *doc*, or if not *doc* to Electrical *Engineer* design.

Concrete Cover

As per Structural *Consultant docs* or *advice*. **NOTIFY** to confirm concrete cover depth.

Min cover for *moisture exposed*, non-structural concrete: 40mm.

Min cover for non-*moisture exposed*, non-structural concrete: 20mm.

Tolerances

Embedments: Cored & embedded items generally + or - 10mm, fixings + or - 3mm, anchor bolts to AS 4100. Dowels: Alignment 2mm in 300mm, 90 *deg* to joint face, location + or - half the dowel *dia*.

2.5 FORMED SURFACES

Formwork to AS 3610. Temporary formwork *min* 18mm thick form-ply to AS 6669 or steel plate.

Clean forms & spaces of water, dust, debris, stains so as not to affect concrete finish/performance.

Apply form release agent (*proprietary* water based, compatible with subsequent finishes) to formwork.

Provide 45 *deg* bevel fillet (25mm face) at corners & inverted "v" drip groove to suspended beam & slab underside, nominal 75mm from outside edge.

SUBMIT *Engineer* Certificate of formwork design before formwork installation start & *Engineer* Certificate of completed formwork at formwork completion, before concrete placement.

Permanent formwork not to contain timber, chlorides, or to impair concrete structural performance.

Design & construct formwork: **a)** not to move during concrete placement, **b)** not to lose concrete, **c)** to allow load deflections/cambers, concrete shrinkage/creep, temperature changes.

Provide AS 3610 formwork Classes to concrete as follows:

- *Exposed to view* special finish as *drawn* and/or scheduled (done as single pour only) – Class 1
- *Exposed to view* concrete (other than Class 1 concrete) – Class 2
- *Non-exposed to view* concrete & concrete to receive a waterproof membrane – Class 3

For surface finish Classes 3 and better, set out formwork to give regular arrangement of panels, joints, bolt holes, and similar visible elements in the formed surface. Formwork joint spacing *min* 1200mm.

Formed Element Tolerances: Class 1 & 2: -0, +5mm. Class 3: -0, +10mm. Class 4: -0, +15mm.

Remove supporting formwork only on *instruction*. Remove formwork to AS 3600 & AS 3610.

Provide a skim coat or repair medium to concrete formed surfaces where the surface needs to be up-graded to meet *doc* finish/colour. Coat/medium to be a *proprietary* high strength, structural repair grade polymer modified cement-based trowel-on coat with primer.

2.6 UNFORMED SURFACES

General

This Clause applies to concrete finishes resulting from *providing* concrete element finishes unaffected by formwork, *including* slab surfaces, toppings, sprayed or trowelled concrete. Screed & consolidate surfaces.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Tolerances

Concrete tolerance: + or - 3mm, *UDO*. Refer specific SECTIONS for floor finish tolerances.

External pavement: Non-ponding & free draining when wet, level tolerance + or - 5mm from *doc*.

Class (AS 3600)	Straight edge length, any direction.	Tolerance (max)
A (Interior flooring with resilient finish eg vinyl, rubber).	3000mm straight edge	3mm
B (Interior pedestrian surface except as specified for Class A).	3000mm straight edge	6mm
C (External pedestrian surface).	600mm straight edge	6mm

Machine Float

To all slabs, top surface. Float when concrete is cast, then re-float to a uniform, smooth, granular texture. Hand float in locations inaccessible to machine float.

Steel Trowel Finish

Provide to internal floors except where *doc* to receive wood float finish, *UDO*. After machine float, steel trowel smooth, *min* defects. When surface hardened sufficiently, re-trowel for final finish, trowel mark free, uniform texture/appearance.

Characteristic	Straight edge length, any direction.	Tolerance (max). (evaluate before applying finishes)
Smoothness	150mm	1mm

Wood Float Finish

Provide to internal concrete finished floors & floors to receive applied finishes, *UDO*. After machine float, use wood or plastic hand floats for final finish, free of float marks, uniform texture/appearance.

Broom Finish

Provide to external paving concrete, *UDO*. After machine float & steel trowel, broom across surface to produce coarse, even-textured broom lines (1mm deep) at 90 deg to anticipated traffic direction.

Exposed Aggregate Concrete

After steel trowelling, water hose the just hardened concrete surface to expose the aggregate. Apply hardener/sealer. No wet waste put on the ground or in drainage systems.

2.7 FLOOR TOPPING

General

Surface & Tolerance: As per Clause 'Unformed Surfaces' above.

Provide control joints for the full depth of the topping, located to coincide with *substrate* joints & subsequent overlaid finish joints.

Topping surfaces *if required* to fall. **NOTIFY** to confirm fall.

Self Levelling Topping

Extent: Under a subsequent applied/laid floor finish, on cementitious floor *substrates* to attain required tolerance.

Topping to be a *proprietary* high strength polymer modified concrete self-levelling liquid mortar, self-smoothing & able to be feather-edged.

Internal Wet Area Topping

Extent: Under a subsequent applied/laid floor finish on cementitious floor *substrates*, to attain required levels & falls to *FW*.

Topping to be applied as a moist sand:cement (3/4:1 ratio) mixed with a *proprietary* additive to increase strength & *substrate* bond. Wood float finish.

If topping over 40mm thick, lay in 2 equal layers, reinforcing between each. Reinforcing to be *galv* welded mesh (to AS 2423) wire spaced 40 x 1.5mm *día* wire. Lap reinforcing 40mm, no 4-way laps.

Applied flooring surface to be flush with top of *FW* grate. Make horizontal wall junctions. Lay topping to fall to drainage outlets.

Topping not finishing against a solid vertical element, to finish against a mechanically fixed corrosion resistant metal angle waterstop (finish to match adjacent metal, *UDO*), top flush with *FFL*.

Internal General (dry area) Topping

Extent: Under a subsequent applied/laid floor finish on cementitious floor *substrates*.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Topping to be applied as a moist sand:cement (3/4:1 ratio) mixed with a *proprietary* additive to increase strength & *substrate* bond. Wood float finish.

If topping over 40mm thick, lay in 2 equal layers, reinforcing between each. Reinforcing to be *galv* welded mesh (to AS 2423) wire spaced 40 x 1.5mm *dia* wire. Lap reinforcing 40mm, no 4-way laps.

Topping not finishing against a solid vertical element, to finish against a mechanically fixed corrosion resistant metal angle (finish to match adjacent metal, *UDO*), top flush with *FFL*.

External Deck/Pavement Topping

Extent: Under a subsequent applied/laid *external* flooring/pavement finish on cementitious floor *substrates*, to attain required levels/falls.

Topping to be applied as a moist sand:cement (3/4:1 ratio) mixed with a *proprietary* additive to increase strength & *substrate* bond. Wood float finish.

If topping over 40mm thick, lay in 2 equal layers, reinforcing between each. Reinforcing to be *galv* welded mesh (to AS 2423) wire spaced 40 x 1.5mm *dia* wire. Lap reinforcing 40mm, no 4-way laps.

Applied flooring surface to be flush with top of *FW* grate. Make horizontal wall junctions. Fall topping away from the building.

Concrete Floor Substrate Surface Ramping

Extent: Under a subsequent applied/laid floor finish, to ramp a cementitious floor *substrate* to be flush with a slightly differing height, adjacent floor finish.

Provide a proprietary high strength, structural repair grade polymer modified concrete mortar with primer. Apply thickened self-levelling compound to achieve surface tolerance, *if required*.

If mortar cannot be feather-edged, saw cut & scabble *substrate* *max* 3mm deep (to Manufacturer *advice*). Mitre splay return ends. Ramp *max* 1:20. Saw cut using physical depth & line guides to give constant & accurate cut depth & line, cut with no end-cut over-run.

2.8 ANCILLARY CONCRETE ITEMS

Curing Compound

Curing compound to AS 3799 & to be solvent free, self-dissipating, 1 coat, liquid acrylic emulsion compatible with subsequent applied finishes (do not use wax or chlorinated rubber based products).

After concrete has cured, remove compound or test (to Manufacturer *advice*) to confirm dissipation.

Covering Sheet

White opaque polyethylene film, or white burlap-polyethylene sheet, to ASTM (American Society for Testing & Materials) C171-07.

Moisture Barrier Film & Bedding

Extent: Under concrete slabs on ground & to extend to form a barrier around recesses, thickenings, beams, pits which are integral with or built into the slabs.

Under Internal Building Slabs: Treated termite barrier film as per the Termite Barrier SECTION.

Under all other Slabs: Polyethylene film to AS 2870, medium impact resistance, *min* 0.2mm thick, labelled continuously "AS 2870 Concrete Underlay 0.2mm Medium Impact Resistance". No punctures, tears or openings.

Installation under new concrete whole slabs: Lay film between sand bed & slab, down under footings & up the outside face to, and sealed against a sealed material. Lap joints 200mm facing away from concrete pour direction. Waterproof adhesive tape seal laps/penetrations. If film meets tanking, seal junction to tanking Manufacturer *advice*.

Installation under new part-slabs & infill-slabs: Lay film between sand bed & new slab infill & sealed against the existing adjacent slab film. Lap joints 200mm facing away from concrete pour direction. Waterproof adhesive tape seal laps/penetrations.

Film edges to be combined with & sealed against other moisture/water resistant materials to provide a complete moisture-proof/water-proof system.

Sand bed 50mm thick, smooth, graded surface, no hard projections, wet just before laying film.

Floor Hardener/Sealer

Extent: To floor/pavement concrete finished surfaces (ie surfaces not to receive an overlaid finish material *including* to concrete finished Stair treads/landings.

Material: Concrete penetrating type, calcium hydroxide reactive, liquid applied, non-yellowing, odourless, non-toxic & clear colour. Hardener/sealer to minimize concrete dusting, water ingress & staining, and is not to affect concrete surface colour, texture or slip resistance.

Exposed Concrete Sealer

Extent: To *external* building concrete surfaces not water-proof clad/coated *including external* concrete/pavement integral with an internal slab or enclosing part or all of an accessible space.

Sealer to be clear colour, chloride ion protection & provide deep impregnation to prevent water ingress into concrete & staining, and is not to affect concrete surface colour, texture or slip resistance.

SUBMIT proposed sealer detail.

Stairs Concrete Finished

Extent: To in-situ concrete stairs with a concrete finish.

Treads & landings broom finish as per Sub-Clause 'Broom Finish' above. Nosing 5-10mm radius. *Provide a max* 5mm tolerance under a 3000mm straight edge (any direction) to all tread & landing pedestrian surfaces.

Provide a luminance contrasting coloured pavement *paint* strip (AS 1428 compliant) with slip-resistant granules, to & across tread & landing nosings on both tread & riser faces.

Treads & landings to be slip-resistant. **NOTIFY** to confirm slip-resistance value & type.

Provide floor hardener/sealer to concrete stair tread & stair landing surfaces.

Miscellaneous Concrete

Miscellaneous concrete refers to minor concrete items either not specifically *doc* or *doc* without specific concrete detail.

Miscellaneous concrete to be *min* F'c N25 @ 28 days, 80mm slump, 20mm aggregate.

To minor items attached to or embedded in the ground, provide *min* 600 deep x 300mm *dia* footings with footing top steel towelled falling 25mm from centre out to ground level. Embed posts *min* 75% footing depth. Fix 2/M8 bolts into post in embedment depth to key between post & concrete. **NOTIFY** to confirm footing detail.

Concrete paths *min* 75mm thick, formed edges, broom finish surface, rounded edges, control joints (with rounded edges) @ 4000mm *cnrs*, *UDO*.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Keep traffic off concrete during curing. Keep construction plant off concrete for *min* 28 days. **NOTIFY** before allowing access or loading concrete structures.

Refer Preliminaries **SECTION**, Sub-SECTION 4 'Building Work' for more execution detail.

3.2 CONCRETE

General

Transport to prevent segregation, material loss, environmental contamination, adverse placement.

Placement: Do not place during hot, windy, rain times (program weather forecasts into Construction Program). Limit free-fall to 1000mm. Avoid segregation & concrete loss.

For thick elements, lay & compact *max* 300mm thick, then immediately lay & compact next layer.

Pumping: Pump concrete only if mix design is suitable for pumping.

Compaction: Mechanically vibrate concrete to remove trapped air & fully compact mix. Vibrators not to touch set concrete, formwork, reinforcement, embedments. Avoid segregation by over-vibration.

Provide a reserve vibrator.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Water: Do not add extra water to mix, & if required to do so, comply with AS 1379. **SUBMIT** detail including date, quantity & location of water addition. Do not place concrete in water.

Time Between Pours: Do not exceed the *doc max* time between pours to a single building element. **NOTIFY** if this time is un-*doc*.

Tolerances: Refer 'Formed Surfaces' & 'Unformed Surfaces' above. Other tolerances to be -0, +5mm.

Delivery Times

Time from Plant batch wetting to *Site* placement (concrete temp (C deg) at placement = *max* time):
10-24 deg = 2 hrs. 24-27 deg = 1.5 hrs. 27-30 deg = 1 hr. 30 deg = 0.75 hr.

Cold Weather Concrete Placement

If outdoors is over 5 deg C, concrete to be 10-30 deg C. If outdoors is under 5 deg C, concrete to be 18-30 deg C. Formwork & reinforcement at concrete placement to be 5-30 deg C. Prevent plastic concrete from freezing.

Severe Cold: Use high early strength cement. Do not use high alumina cement, or use calcium chloride, salts, chemicals, other admixtures to lower concrete freezing point.

Heating: Do not heat cement. Heat mix to *min* temperature necessary for placement. Mix added water to be *max* 60 deg C. Do not place ice or frozen materials in mix. Keep forms, materials & equipment free of frost/ice. Keep concrete from touching frost/ice.

SUBMIT proposed cold weather temperature control method detail.

Hot Weather Concrete Placement

Prevent premature stiffening of fresh mix. Minimize water absorption/evaporation loss.

Formwork & reinforcement at concrete placement to be 5-30 deg C. If ambient shade temperature over 30 deg C, do not mix or lay concrete. Concrete to be 10-30 deg C, and concrete elements bigger than 1000mm (all dimensions) to be *max* 27 deg C, except that stronger than 40 MPa.

SUBMIT proposed hot weather temperature control method detail.

Curing

Cure concrete continuously, 3 days for non-structural concrete, *min* 7 days for structural concrete.

SUBMIT proposed cure methods. Maintain curing concrete at approx 15 deg C during cold weather.

Keep concrete temperature constant, *min* moisture loss, no rapid drying, protect from wind. Covers (if used) to be lapped/taped, covering concrete edges. Water (if used) to be fine spray. Curing procedure to include exposed concrete faces. Refer also Clause 'Curing Compound' above.

SUBMIT proposed off-form concrete cure methods including that to prevent colour inconsistencies.

Testing

Refer to the Structural *Consultant docs*.

Test & record to AS 1012 'Methods of Testing Concrete' by RTA.

Do 1 slump test from first delivery of each batch, before placement. Do not use test failed concrete.

Conduct sample (in cylinder) Laboratory tests, 4 samples each concrete batch. Test for transfer strength & early strength @ 7 days & 28 days. Test for dry shrinkage, **NOTIFY** to confirm test detail.

Chasing & Cutting Concrete

Refer Preliminaries SECTION, Sub-SECTION 4 'Chasing'.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

8 MASONRY

1 GENERAL

1.1 GENERAL

Where there is a conflict between this Specification and *the Structural Consultants doc*, then the latter should take precedence.

Provide Work as per this SECTION & as *doc* elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork & all related SECTIONS.

For detail in this specification of the following, refer:

- Autoclaved aerated concrete (ACC) floor system – Concrete SECTION.
- Stone tiling – Tiling SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related.
Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.
Masonry Structure AS 3700 & 4773. Masonry Units AS 4455. Portland Cement AS 3972.

Masonry Cement AS 1316 Pigment BS EN 12878. Lime AS 1672.1.

Mortar Admixtures AS 1478. Built-in Components AS/NZS 2699.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text.
SUBMIT results of tests & inspections.

NOTIFY for inspection of:

- Cavities, after cleaning out.
- Core holes & reinforcement fixed ready for grouting.
- Control joints, ready for insertion of joint filler.
- Flashings & DPC in position.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Certification of completion of masonry *Work provided as doc* in this SECTION & as *doc* elsewhere (certification may be done by the respective Subcontractor/s).

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

Corrosion Resistance Table

External or moisture exposed masonry Exposure Category to AS/NZS 4456.10.

Location	Metal components (<i>min</i> protection).	Min mortar Class.
Internal	Galv steel (including wire) 470 g/m ² .	M3
Moisture exposed	Stainless steel 316.	M4

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 MASONRY MATERIALS

Masonry Units

Clay Bricks: Structural grade, *min* age 14 days. Vertical rods: 75mm high units – 7 courses to 600mm.

Concrete Blocks: *Min* strength Grade 15 (F'uc 15), *min* age 14 days. Smooth finish, colour grey, UDO. Use pre-made ½ & ¾ units as required. Vertical rods: 190mm high units – 3 courses to 600mm.

Autoclaved aerated concrete (AAC): **SUBMIT** shop drawings including connection to other structure, coatings & cladding attachment detail. Provide a proprietary render coating to exposed to view surfaces of AAC.

Face Masonry Work

Exposed to view masonry to be high quality uniform texture & colour masonry, accurate laying & plane face, uniform joints with variation in colour evenly mixed over the masonry element.

Single Skin Face Masonry: Uniform width, double-face quality units.

Masonry Mortar

Provide natural grey colour mortar, UDO.

Mortar joints to be fully filled & contacting the whole masonry unit throughout the joint.

Water: Clean, potable, no deleterious matter. Cement: Portland type: GP (AS 3972).

Pigment: Less than 10% cement content. Sand: Fine, low clay content, efflorescing salts free.

Mortar Class (refer Corrosion Resistance Table above): M3 – 1:1:6 (cement:lime:sand) without additives, M4 – 1:0.5:4.5 (cement:lime:sand) without additives.

Machine mix mortar for 5-7 minutes. Use mixers with electric motors for *min* noise.

Reinforced & Grouted Blockwork

Grout Core Fill: Material & testing, refer Structural Consultant docs.

Reinforcement: Refer Concrete SECTION & Structural Consultant docs.

Provide proprietary cleanout blocks at grouted core bases, located on wall side not exposed to view. Remove excess mortar from masonry & mortar droppings from reinforcement.

Do not grout until cores & core bases are clean & mortar joints attained strength to resist blow-outs.

Wet cores immediately before grouting. Limit masonry height to enable grout to fully compact, fill all voids & bond to masonry. Compact by vibration or rodding.

10-30 minutes after pour completion, top up grout & compact to mix with the previous pour.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Stone Cladding

SUBMIT samples (including the coping), then prototype (including the coping) *min* 5m².

Repair non-structural faults with matched colour resin filler.

Externally provide flashing/sealing to prevent water ingress & waterproof substrate. Sealant seal stone junctions/penetrations & at junctions with other materials.

Coping (if *doc*) to be *min* 40mm thick, full bullnose (180 deg) edge, smooth machined finish, overhang 20mm. To parapets, coping to have both edges bullnosed.

SUBMIT fixing method detail & Manufacturer Engineer fixing/adhesive certification.

Sealant/Sealers/Adhesives: Provide as advised by sealant/sealer/adhesive Manufacturer for the stone type. Test 3 stone samples by applying sealant/sealer/adhesive then after 7 days visually inspect for defects or discolouring.

2.4 STONE PITCHING

SUBMIT prototype *min* 5m² (include coping prototype).

Stone size nominally 150-250mm. Face of stone exposed to view to be the quality face. The shape of each stone laid is to roughly reflect the shape of the space (made by the shape of the adjacent stones already laid) to which the stone is to occupy.

Mortar joints to be nominally 25-35mm thick & mortar finished rounded smooth concave (ironed) moist cloth wiped. No mortar on rock faces.

Tolerance of the outside stone face alignment between each stone is 20mm.

2.5 COMPONENTS

Flashings & DPCs

DPC & concealed flashings flexible aluminium bitumen coated & exposed to view flashings mild steel as per Fixing & Sealing SECTION.

FLASHINGS

To external walls, provide full wall/pier width flashings including:

- At floors, from outside wall face, across & up cavity *min* 150mm & fixed to inner wall. Where floor slab supports outer skin & is not set down, bed flashing in suitable sealant.
- Under sills, 1 course below sill, across & up cavity *min* 150mm & fixed to inner wall.
- At lintels, from lintel outside edge (above lintel), across & up cavity *min* 150mm & fixed to inner wall. Extend full length of lintel & turn down 10mm at lintel ends & outside horizontal edge.
- At abutments with other structure, provide 150mm wide vertical cavity flashing, fixed & sealed to structure opposite cavity.

Sandwich flashings between mortar except on lintels or shelf angles. Bed flashings in one operation for *max* adhesion. Point up joints around flashings. Step flashings at junctions with inclined elements.

DPC's

Provide full wall/pier width DPC's including:

- At framed floors in the first course below the underside of floor framing.
- To cavity or veneer walls built off ground slabs, in the bottom course.
- To walls adjoining infill ground slabs in the course above the underside of the slab. Project out towards the slab, 40mm and dress down over the under-slab membrane.
- At a height of *min* 150mm above adjacent finished ground & 75mm above finished pavement.
- To building walls built up off in-ground footings, in course immediately above finished ground level.

Step to follow ground line *max* 200mm per step. Sandwich DPC between mortar.

Wall Ties

Provide masonry ties (to AS/NZS 2699.1) to connect masonry to the building structure. Ties stainless steel wire (*min* 3.5mm dia) or plate, water drip groove, built into mortar or mechanically fixed. Embed *min* 50mm into mortar & maintain outside mortar cover of *min* 25mm.

Strength Class: No light duty ties. Medium duty for cavities up to 60mm wide. Heavy duty for cavities 60-200mm wide. **SUBMIT** proposed tie detail & samples.

Provide *min* ties as follows:

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

- Within wall area: 400mm vertical spacing & 450-600mm horizontal spacing.
- At openings: 200-300mm vertical spacing & 200-400mm horizontal spacing.
- At joints (not mortar joints) & vertical supports: 200-300mm vertical spacing.

Weep Holes & Cavities

Provide fully open perpend weepholes in *external* masonry wall leafs *max* 1200mm *cnrs*, in the course above cavity flashings. Provide 1 weephole at head & sill of openings up to 900mm wide & 2 weepholes for openings 900-1200mm wide.

Provide constant cavity widths as *drawn*. Keep cavities clean. Do not close cavities at openings. Install ties (as per 'Wall Ties' above), embedments, accessories & connections to prevent water passing across cavity.

Steel Lintels

Provide steel lintels (to AS/NZS 2699/3679 & AS 4100) to the heads of openings to masonry comprised of solid units. Lintels to be hot rolled mild steel, hot dip *galv*. Provide no cold formed steel.

Opening width (mm): Lintel size (mm)	Note: Angle long leg installed vertical
Up to 1200: 75 x 75 x 10 angle	1200-1650: 100 x 75 x 10 angle
1650-2400: 125 x 75 x 10 angle	2400-3000: 150 x 90 x 12 angle

Keep lintels 10mm clear of door & window frame heads. Pack mortar between angle lintel vertical leg & masonry. *Min* end bearing 200mm. Temporarily prop lintels until masonry reaches required strength. *Min* propping period 7 days.

Bed Joint Reinforcement

Extent: To masonry comprised of manufactured solid modular masonry units.

Provide continuous 50-60mm wide, *proprietary* stainless steel welded wire mesh reinforcement.

Locate: **a)** 150-200mm below & above openings, **b)** 200-300mm above bottom of wall, **c)** 150-250mm below top of wall, **d)** *Max* 500mm vertical spacing (horizontally laid).

Lap 450mm at splices. Fold & bend at corners to *provide* continuity. Stop 50mm before control joints. Extend 450mm beyond each side of openings.

Sill Units

Provide sills to windows in *external* masonry walls. Colour/material/finish to match adjacent masonry, *UDO*. Top surface of sill to fall out & extend past outer wall face (to shed water away from wall face).

Sill to Clay Brick Walls: Brick-on-edge.

Sill to Concrete Block Walls: *Proprietary* concrete block sill.

Coping To Manufactured Modular Masonry Units

Extent: To *exposed to view* masonry walls where the wall top does not meet another structure.

Provide a top coping course (across wall thickness) of solid material (*min* 90mm thick) matching the wall material. Fully mortar bed the coping across the full wall width onto solid/filled walls for maximum bond. Coping mortar bed mixture to contain high bonding & high strength additives.

Connectors & Accessories

Provide connectors & accessories as *doc* or *if required*. Material to be non-moisture absorbing, corrosion resistant (do not use aluminium). At cavities *provide* drip facility.

Bagged Finish

Refer to the *drawings* & Schedules for extent. Bagged finish is as defined by AS HB50 'Glossary of Building Terms'. **NOTIFY** to confirm finish. **SUBMIT** sample or prototype *min* 1 sq. meter size.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Tolerances: Conform to AS 3700. Other tolerances to be -0, +5mm, *UDO*.

Build-in accessories, connections & embedments as construction proceeds. If embedment is required in hollow masonry, fill grout cores or use solid blocks. Mortar fill steel door frames as *Work* proceeds.

Regulate construction rate to eliminate joint deformation, slumping, instability. If masonry to be connected to other structural elements, temporarily support & brace masonry until connected.

Keep masonry *Work* top covered to prevent rainwater entry into cores & cavities.

Provide gap at top of non-load bearing masonry to allow structures over the masonry to deflect to *Engineer advice*.

Clean masonry progressively when mortar is wet & clean again for Practical Completion. Clean without acid, wire brush or water blast.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

Monolithic Structural Action

If 2 or more adjoining masonry elements (*including* intersecting walls) are constructed at different rates or times, rake back or tie intersections to achieve monolithic structural action.

Provide masonry header units (except in stretcher bond face masonry) to AS 3700 Clause 4.11.2.

Space at 600mm *max*. Locate as *instructed* & at, **a)** engaged piers, **b)** shear & supporting wall and buttress intersections, **c)** between walls of solid masonry.

Joints

Stretcher bond pattern, *UDO*. *Provide* full width 10mm thick (+ or - 2mm) mortar joint beds & perpend. Align perpend vertically. Set-out for uniform mortar joints. *Min* cutting & avoid cut units less than ½ standard masonry unit.

Exposed to view mortar joints (for solid (pre-laid) masonry units) to be rounded smooth concave (ironed) or raked (square) or flush struck according client preference.

Mortar joints to hollow (pre-laid) unit masonry construction to be rounded smooth (ironed) at *exposed to view* locations, or flush struck at concealed locations, **NOTIFY** to confirm joint type for the location.

Masonry which is to receive a traditional sand/cement render: Rake mortar joints as a key to receive the render.

Concealed mortar joints *including* those covered by a non-*paint* membrane, sheeting, or *proprietary* render, to be flush struck.

Mortar joints in different planes which intersect, are to align with each other.

Control Joints: *Provide* vertical control joints as *doc* & where joined to other structure. *Min* joint width 15mm, sealant filled. If extent not *doc*, allow every 6 metres & **NOTIFY** to confirm control joint location. *Provide* expansion wall ties.

Allow adjacent materials growth/shrinkage & movement with clearances at masonry junction.

Chasing

Refer Preliminaries SECTION, Sub-SECTION 4 'Chasing'.

End of SECTION.

9 STRUCTURAL STEEL

1 GENERAL

1.1 GENERAL

Where there is a conflict between this Specification and the Structural Consultants *doc*, then the latter should take precedence.

Provide Work as per this SECTION & as *doc* elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork** & all related SECTIONS.

For detail in this specification of the following, refer:

- Hot dip galvanizing – Metalwork SECTION.
- Metal, metal pre-finish & general metal fabrication – Metalwork SECTION.
- Shop priming – Metalwork SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related.
Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.
Refer also Metalwork SECTION for applicable A/O Standards.

Structural Steel AS/NZS 3678 / 3679 / Steel Hollow Sections AS/NZS 1163.
5131.

Welding AS/NZS 1167 / 1553 /
1554.

Welders & Supervisor
Certification AS 1796 / 2214.

Welding Quality
AS/NZS ISO 3834.

Erecting Steelwork AS 3828.

Steel Structures AS 4100 & AS/NZS 4600.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text.
SUBMIT results of tests & inspections. **NOTIFY** for inspection of:

- Completed shop fabricated items before *Site* delivery.
- Completed framing & fixings before concealing.
- Tensioning of bolts in categories 8.8/TB and 8.8/TF.
- Prepared metal *substrate*, before on-*Site* or off-*Site* application of finishes.
- Start of *Site* welding (if *Site* welding is *doc* or *instructed*).

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Shop drawings: Include: **a)** member identification, orientation, camber, steel grade, **b)** connections (plate size/thickness, hole/slot size/location, fixings), **c)** fixing load capacity, **d)** hot dip *galv* drain holes, **e)** temporary lifting & bracing attachments & methods, **f)** surface preparation & finish.
- Samples of proposed weld types.
- Steel Supplier Certification of steel quality as *doc*.
- Certification of completion of structural steel *Work provided* as *doc* in this SECTION & as *doc* elsewhere (certification may be done by the respective Subcontractor/s).
- Certification of completion of structural steel *Work* conforming to the National Structural Steelwork Compliance Scheme (NSSCS).

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

10 TIMBER WORK

1 GENERAL

1.1 GENERAL

Where there is a conflict between this Specification and the Structural Consultants *doc*, then the latter should take precedence.

Provide Work as per this SECTION & as *doc* elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork** & all related SECTIONS.

For detail in this specification of the following, refer:

- Cabinet Work – Joinery SECTION.
- Fascias – Roofing SECTION.
- Sleeper (timber) retaining walls – External Works SECTION.
- Stud framing, metal – Structural Steel SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.

HWD AS 2796.	Softwood AS 4785.	Cypress Pine AS 1810.
Structural timber AS 1720 / 3818.	Grading AS 2082 / 2858.	Moisture testing AS/NZS 1080
Residential Timber Framed Construction AS 1684.	Stress & Proof Grading AS/NZS 1748 & AS 3519.	Nail Plated Products Manufacture AS 4446.
Glue Laminated Timber AS/NZS 1328.		

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections.

NOTIFY for inspection of:

- Completed framing before concealment.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5.

SUBMIT also:

- Certification of completion of structural timber *Work provided as doc* in this SECTION & as *doc* elsewhere (certification may be done by the respective Subcontractor/s).

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**.

Provide plantation timber, Forest Stewardship Council (FSC) Certified. **SUBMIT** Certification.

Timber selections as per the 'Timber Utilisation and Marketing Act'. Timber to be naturally termite resistant or preservative treated against termite attack, to AS 3660.

Supplier Dockets: For all timber. Dockets to *include* timber quality, grade & treatments.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

Structural Timber

Definition: **a)** Timber *doc* by Structural Consultant, **b)** timber part of a floor, load-bearing wall or roof, **c)** timber subject to live load. Natural durability to AS 5604 Table A1 *min* Class 2.

Structural Arrangements: *Provide as doc or Engineer Certified. If not doc, allow to provide & NOTIFY. SUBMIT Engineer & Supplier structural Certificate.*

Identify structural timber by branding or RTA Certificate. **SUBMIT** Certificate or an independent NATA Approved Authority Inspection Report. Identification to include: **a)** stress grade, grading method, moisture content, **b)** Product Certification Program mark, **c)** applicable A/O Standards. Branding not to be visible at completion.

Non-structural Timber

Non-structural timber to be either *HWD min* F14 stress grade or softwood *min* MGP10 stress grade.

Durability

Provide no timber with Lyctus susceptible sapwood. *Provide* natural or treated timber with durability (to AS 5604) as follows:

Class 1: Timber in contact with ground.

Class 2: Timber above ground, un-clad, *min* moisture exposed, well ventilated.

Class 3: Timber above ground, *min* moisture exposed, well ventilated, protected with a finish, well maintained.

Class 4: Timber fully moisture protected, indoors, above ground, well ventilated.

Exposed to View Timber

Extent *includes* decorative solid feature timber & exposed feature framing in habitable areas, and *excluding* typical *exposed to view* framing.

Exposed to view timber to be appearance grade, no knots, seasoned, sanded, edges bevelled.

Factory joints not to be visible at completion. Fixings countersunk matching colour filled, *UDO*.

Decorative timber to be select grade & dressed. Timber to be *provided* with natural features visible to be dressed with consistent species & appearance.

All *exposed to view* timber to have finish coating applied.

Timber veneer is not to replace decorative solid feature timber.

Moisture Content

Timber (except landscape timber) to be seasoned or kiln dried to 3% of the equilibrium moisture content & 10-15% moisture content (appropriate to species & application).

Preservative Treatment

Treatment to AS/NZS 1604 & AS 3660. Timber to be branded & **SUBMIT** Treatment Certificates.

LOSP treat all softwood to AS 1684, Hazard Class H3 where *moisture exposed* & H2 otherwise.

Timber Trim

Provide timber trim as *doc* & as required to conceal joints. Trim to be *min* 19mm thick (as per 'Exposed to View Timber' above). Scribe-join vertically orientated trim at inward facing corners. Fix @ *max* 450mm *cnrs*. Remove sharp edges/corners from outward facing corners.

Timber Coatings

Refer to the Painting SECTION which also applies to this Timber Work SECTION.

Repair & sand timber smooth, & chamfer/round edges. Fixings countersunk & filled, *UDO*. Clean oil rich & aged timber with a compatible *proprietary* timber cleaner. Before fixing *moisture exposed* timber, apply 2 primer coats to concealed surfaces & cut ends.

Clear Finishes: Remove *substrate* colour blemishes & markings. **SUBMIT** samples of each *clear finish* & each *substrate*, with ½ sample un-coated & other ½ coated. Fixings: Countersunk fill tinted to match the average *substrate* colour around the fixing. Fill after 1st coat for accurate colour match & to avoid filler bleed into *substrate*.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2.3 SHEET PRODUCTS

Plywood General

Provide *min* 18mm thick structural grade plywood screw fixed, *UDO*.

Plywood to AS/NZS 2269 – 2271 & AS/NZS 2098, *balanced construction*, *min* stress grade F14 with Plywood Association of Australia (PAA) Quality Control & Product Certification compliance & branding.

Structural Plywood to be AS/NZS 2269 & JAS-ANZ Accreditation branded.

Exposed to view faces A-grade, otherwise C-grade. *Moisture exposed* applications Type A bond marine grade, otherwise Type C bond. Marine grade to AS 2272, A-grade faces (both faces).

If plywood fixed to framing is to be used to support fixtures/appliances, *provide* to *Engineer* design.

Decorative Timber Veneer

Select grade veneer Quality A to AS/NZS 2270 & AS/NZS 2098, veneer sheet *max* size, 0.55-0.65mm thick, *min* knots, tight butt joined, consistent colour/texture/appearance, book matched, crown cut, flitch batched (ie *provided* in the same order veneers were cut in), *UDO*. Trim exposed edges of veneered panels with solid matching timber *min* 12mm thick.

Timber veneer is not to replace solid timber where a specific species of solid timber is *doc*.

Adhesive to veneer Manufacturer *advice* (no PVA glue).

SUBMIT samples of each veneer type (half area coated as per Painting SECTION).

Particleboard & MDF

Thickness: 16-18mm, *UDO*. Material to be *min* emission type (*similar* to E0 grade)

Particleboard: To AS/NZS 1859.1. Where *moisture exposed* use high performance (HP) grade, otherwise use moisture resistant (MR) grade.

MDF: To AS/NZS 1859.2. Where *moisture exposed* use high performance (HP) grade, otherwise use moisture resistant (MR) grade. *Min* MDF cutting on-Site & cut to WH&S requirements, warn others, wear face masks, vacuum dust immediately after cutting, no cutting in windy conditions.

Plywood Substrate Flooring

Proprietary product *min* 18mm thick, tongue & groove, structural grade (as per 'Plywood General' above) screw fixed. Where weather exposed, seal (to ply Manufacturer *advice*) immediately after fixing, with sealer compatible with floor finish. Sand to smooth level before laying subsequent finish.

Particleboard Substrate Flooring

Proprietary product *min* 18mm thick, tongue & groove, to AS/NZS 1860 Class 1 flooring screw fixed. Where weather exposed, seal (to floor Manufacturer *advice*) immediately after fixing, with sealer compatible with floor finish. Sand to smooth level before laying subsequent finish.

CFC Substrate Flooring

Extent: As *Wet Area* flooring *substrate* on framed flooring.

Extent: As *external* flooring *substrate* on framed flooring.

Proprietary product *min* 18mm thick, tongue & groove, screw fixed.

2.4 TIMBER FRAMING

General

Non-Load Bearing Elements: *LOSP* treated *min* 70 x 35mm MGP10 pine, *UDO*.

Walls in *moisture exposed* situations, *provide* polyethylene film (*min* 0.2mm thick, joints lapped, no punctures, tears or openings) between frame & concrete/masonry.

Support & fix fixtures, fittings and other items on framing. Penetrations of materials fixed to framing to be full perimeter of penetration framed. *Provide* double framing to frame-fixed materials at butt joints.

Wall Framing

Studs spaced *max* 450mm *cnrs*. Nogging vertically spaced 900-1200mm & also for fixture & fitting support. *Min* 2 fixings each joint.

Provide double studs at control joints, openings, corners. Separate non-load bearing walls from higher structure (to allow structure deflection) via a laterally stable deflection head to *Engineer advice*. *Provide* additional framing for fixing linings, claddings, fixtures. Frame behind cladding/lining joints.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Tolerances (*max*): Plan deviation: 3mm. Alignment: 1mm. Wall thickness: 1mm.
Length: 1mm. Flatness: 1.5mm (1.5 metre straightedge any direction).

SUBMIT Engineer Certificate for framing supporting fixtures:

- Exceeding 20kg.
- Wall hung appliances & seats.
- PWD grab rails to AS 1428.
- PWD wall hung seats to AS 1428.

Floor Framing

Bearing *min* 50mm or for full support member thickness. Packing under (*if required*) to be solid & corrosion resistant. Lay members camber up. Separate non-load bearing walls under floors (to allow structure deflection) via a laterally stable deflection head to *Engineer advice*. Provide lateral restraint. Block/bridge between joists, same material as joists, in straight rows at 1800mm *cnrs max*. Chamfer all member underside edges.

Trusses

Provide truss system including design & system to suit the *doc* wall framing structure. Trusses plumb to within H/200 (H = truss height). Separate non-load bearing walls under trusses (to allow structure deflection) via a laterally stable deflection head to *Engineer advice*. Provide truss bracing & fix to load bearing & braced walls. **SUBMIT** shop drawings (*including* storage and hoisting *advice*, ceiling & roof battens) and truss Manufacturer *Engineer* installation certification.

2.5 TIMBER FLOORING

Nail Fixed Board Flooring

Boards tongue & groove type, consistent colour/texture/grain, lengths as long as possible (*min* 1800 – 2100mm long).

Lay flooring with full-width boards. Edge boards, *if required* to be cut-down in width, not to be cut down more than 25% of a full-width board.

Joints: At expansion joints, around perimeter & at *exposed to view* edges provide 12mm wide colour matched sealant joints. Provide expansion joints @ max 6000mm in both directions. Sealant to joints applied after floor finish applied. **NOTIFY** to confirm expansion joint locations.

Floor on Timber Joists: Refer to the Specification detail in the remainder of this Clause.

Floor on Concrete *Substrate*: Concrete to be *min* 28 days old before laying flooring, with moisture content up to 5.5% (by electrical resistance test to AS/NZS 2455.1 'Textile Floor Coverings Installation'). Fix boards to 70 x 35mm seasoned *HWD* battens spaced 450mm fixed to concrete with countersunk anchors @ 600mm *cnrs*. Provide continuous sheet polyethylene film 0.2mm thick (with lapped & taped joints) immediately above the concrete *substrate*. **NOTIFY** to confirm board laying direction.

Floor on Plywood *Substrate*: Plywood as per 'Plywood Flooring' above, with moisture content *max* 2% of expected average in-service equilibrium moisture content. Boards to be both fixed (as per 'Laying & Fixing' below) & adhered full length to plywood. **NOTIFY** to confirm board laying direction.

Laying & Fixing: Acclimatise on-Site *min* 1 week before fixing. Fix at construction completion. Fix to suit climatic conditions. Boards to be clamped & secret gun-stapled @ 200mm *cnrs*. Boards over 80mm to be additionally 2 nail surface fixed (centred/aligned, countersunk/filled) at each joist/batten.

Finish: Clean, sand & finish floor just before Practical Completion. Prevent boards bonding together. Provide finish as per Painting SECTION & to AS 4786.2 'Timber Floor Finishing'. **NOTIFY** to confirm slip resistance.

Surface tolerance between boards: 0.01mm. Plane tolerance (any direction) 2mm using a 3000mm straight edge.

Provide acoustic insulation between flooring & floor *substrate*, as per the *BCA* (regardless of the defined building class).

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Engineered Board Flooring

Provide a proprietary floating (non-adhered) tongue & groove type board floor system, laid on resilient floor Manufacturer advised underlay.

Lay flooring with full-width boards. Edge boards, *if required* to be cut-down in width, not to be cut down more than 25% of a full-width board.

Clamp all edges at walls using the skirting & at edges where no wall exists using *proprietary* tapered low-profile aluminium edging fixed to the floor *substrate* below the floating floor finish.

Boards to be consistent colour/texture/grain, lengths as long as possible (*min* 1800 – 2100mm long).

Surface tolerance between boards: 0.01mm. Plane tolerance (any direction) 2mm using a 3000mm straight edge.

NOTIFY to confirm board laying direction & slip-resistance rating.

Provide expansion joints to floor Manufacturer *advice*. **NOTIFY** to confirm expansion joint locations.

Laying: Acclimatise on-Site *min* 1 week before fixing. Fix at construction completion.

Provide acoustic insulation between flooring & floor *substrate*, as per the BCA (regardless of the defined building class).

2.6 TIMBER STAIRS

Closed Riser Stairs (Exposed Side Stringers)

Timber species to be *external* grade durable HWD, UDO.

Treads *min* 40mm thick, pencil round edges, housed 12-15mm into stringers. *Provide min* 19mm thick matching timber floor edge fascia & trim floor framing for stair-well opening.

Timber Side Stringers: *Min* 40mm thick, top edges pencil round finish. *Provide min* 1No/10mm dia steel, stair width bolts (*max* 1800mm spacing) to structurally pull stringers together.

Riser board *min* 19mm thick, set-back 19mm from tread leading edge & housed into tread & stringer. Wedge treads & riser boards into stringer.

Provide proprietary nosing pieces (each tread & landing), aluminium angle type incorporating slip resistant strip/s. Screw fix @ 450mm *cnrs*. Rebate nosing into the tread so that the tread surface is flush with the metal nosing body top surface. Set front edge of nosing piece *min* 15mm back from front edge of timber tread nosing.

Provide slip resistant granules into tread & landing coatings (**SUBMIT** sample).

Closed Riser Stairs (Concealed Profiled Side Stringers)

Timber species to be *external* grade durable HWD, UDO.

Treads *min* 40mm thick, pencil round *exposed to view* edges, secret screw fixed (from the underside using mild steel 30 x 30mm angle) to stringers. *Provide min* 19mm thick matching timber riser board & floor edge fascia/trim floor framing for stair-well opening.

Timber Side Stringers: *Min* 40mm thick.

Anchor/bolt fix with M10 bolts @ 750mm *cnrs* to side walls.

Provide proprietary nosing pieces (each tread & landing), aluminium angle type incorporating slip resistant strip/s. Screw fix @ 450mm *cnrs*. Rebate nosing into the tread so that the tread surface is flush with the metal nosing body top surface. Set front edge of nosing piece *min* 15mm back from front edge of timber tread nosing.

Provide slip resistant granules into tread & landing coatings (**SUBMIT** sample).

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Support & fix fixtures, fittings and other items on framing. Penetrations of materials fixed to framing to be full perimeter of penetration framed. *Provide* double framing to frame-fixed materials at butt joints.

Clean framing & other spaces/voids of rubbish, off-cuts, sawdust before concealment. Immediately clean away sawdust that may cause staining especially sawdust in *moisture exposed* locations.

Moisture Exposed Timber: Back plough boards *if required* to minimise warping. Before fixing timber, apply 2 primer coats to concealed surfaces & cut ends.

Bevel timber edges to be *painted*. Face camber up.

Tolerance: Plane, edges & straightness 2mm over a 2000mm straight edge any direction. Other tolerances to be -0, +5mm.

Acclimatize timber & timber based products to *Site* conditions *min* 7 days.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

11 TERMITE BARRIERS

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork & all related SECTIONS.

For detail in this specification of the following, refer:

- Treated timber – Timber Work SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD).

Termite Management (& barriers) AS 3660.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections. **NOTIFY** for inspection of:

- Substrates ready for termite barrier installation.
- Completed termite barriers before concealment.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Proposed termite barrier type, installation details & extent details.
- Installer certified, proposed extent & construction details.
- Certification of completion of Work provided as doc in this SECTION (certification may be done by the respective Subcontractor/s).

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork.

Termite barriers to be *proprietary* systems, same Manufacturer throughout the Work. Installer to be Manufacturer approved. Provide min 10 year warranty.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 CONCRETE PHYSICAL BARRIERS

Extent: To the new enclosed building. Refer Concrete SECTION for concrete detail. Concrete to be monolithic, well compacted when laid, with minimal hairline cracking when cured, to AS 3660.1.

2.4 TERMITE BARRIER SYSTEMS

Extent

Extent to new enclosed building *Work*. *Provide* termite barriers to form a continuous barrier at or near ground, to expose and/or prevent termite entry into the building.

Work part of an existing building: *Provide* a barrier system to protect the new *Work*. **SUBMIT** proposed existing/new building termite barrier junction detail.

Stainless Steel Mesh Barrier

Provide proprietary stainless steel mesh barriers to concrete slab perimeter, penetrations, openings, joints, edges, *external* wall cavities, *min* 316 grade. Epoxy parge laps, penetrations.

Under Slab Barrier

Provide a proprietary chemically treated termite & under-slab moisture barrier under new concrete building slabs, to the slab underside, perimeter, penetrations, openings, joints, edges, *external* wall cavities. Lay on sand bedding as per Concrete *SECTION*.

Physical barriers using chemicals to repel termites, to be registered with the Australian Pesticides & Veterinary Medicines Authority (APVMA).

Chemical Barrier

Provide a proprietary chemical termite barrier system of reticulated (piped) liquid chemicals in a refillable system under the concrete building slabs. *Include* a 1 year after Practical Completion top-up service. **SUBMIT** a Time Program of Refills over the 1 year post- Practical Completion period.

Chemical barriers & physical barriers using chemicals to repel termites, to be registered with the Australian Pesticides & Veterinary Medicines Authority (APVMA).

Graded Stone Termite Barrier

Provide a proprietary graded stone barrier with a capping system, to the concrete slab perimeter, penetrations, openings, joints, edges, *external* wall cavities.

Proprietary Barrier

Provide a proprietary termite barrier system suitable to the construction type. **SUBMIT** proposed barrier detail.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Attachments at near-ground level to be separated from the building to *min* regulatory requirements.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

3.2 COMPLETION

Provide 2 durable permanent notices, in different, prominent, encased, accessible locations, showing install date, chemical life expectancy as listed on the National Registration Authority label (for chemical barriers), Installer/Manufacturer *advice* for future inspection scope & frequency.

Do not build up the ground, garden beds, or other *Work* or attachment, which may compromise or form a termite bridge over a termite barrier.

Immediately before Practical Completion, engage an independent Installer (not the *Works* Installer) to do 3 monthly inspections during Defects Liability Period, with final inspection at Defects Liability Period end. **SUBMIT** inspection Reports at completion of each inspection.

SUBMIT Operation & Maintenance Manuals for termite barrier systems.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

12 WATERPROOFING

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork & all related SECTIONS.

For detail in this specification of the following, refer:

- Floor toppings – Concrete SECTION.
- Gratings & lids (for Services) – Fixtures SECTION.
- Moisture barrier, under-slab – Concrete SECTION.
- Sealers to concrete – Concrete SECTION.
- Sub-soil drainage – External Works SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.
 Wet Area Membranes AS/NZS 4858. Waterproofing Membranes Exterior Use AS 4654.

Waterproofing Wet Areas Res Buildings AS 3740 (applies to all building Classes & Types).

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text.

SUBMIT results of tests & inspections. **NOTIFY** for inspection of:

- Completed *substrate* preparation.
- Site Testing: 1 test each waterproofing type per 10m² or part thereof. **NOTIFY** to confirm test type.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Samples: All waterproofing systems. Include membrane, junctions, terminations, protection, movement joints, penetrations, corners, flashings.
- Prototypes: One of each waterproofing system.
- Manufacturer approval of each test type methods (refer Clause 1.4 above).
- Certification of completion of Work provided as doc in this SECTION (certification may be done by the respective Subcontractor/s).
- Manufacturer advice (after Manufacturer receipt of Contractor docs & after Manufacturer Site inspection) including: waterproofing suitability, *substrate* & overlay material compatibility, *substrate* optimum moisture content, joint & termination detail, curing, Type test Certificates.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork.**

Provide waterproofing systems (combined with other water resistant materials for a complete water-proof system) to stop the passage of water through or past waterproof membranes.

Waterproofing to be *proprietary* systems of single Manufacturer, with current appraisal Certificates from either **a) CSIRO, b) BRANZ, or c) an Australian Building Codes Board approved Organisation.** **SUBMIT** appraisal Certificate.

Waterproofing systems to have a *min* 15 year Manufacturers warranty.

Confirm waterproofing compatibility with *substrate* & subsequent finishes *including* finish adhesives.

Installer to be Manufacturer approved.

Refer Preliminaries **SECTION**, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 WATERPROOFING SYSTEMS

Internal Wet Area Waterproofing

Extent: To *Wet Areas* as per the *BCA* & as *doc*.

Material: Liquid applied acrylic flexible, chemical resistant membrane with reinforcing, *min* 2 coat application, dry film thickness *min* 1.2mm, *UDO*.

Provide continuous, mechanically fixed corrosion resistant metal angle waterstop (finish to match adjacent metal, *UDO*), top flush with *FFL*, at wall full height openings.

External Floor Waterproofing

Extent: To *substrates* of *external* cementitious *substrates* of floors attached to the building, with a subsequent pavement surface laid over & directly contacting the top of that *substrate* & as *doc*.

Apply to the *substrate* & where applicable as follows: turned up walls *min* 180mm, over hobs/plinths, up under & behind thresholds/sills.

Material: Liquid applied acrylic flexible membrane with reinforcing, *min* 2 coat application, dry film thickness *min* 1.2mm, UV resistant, *UDO*.

Membrane edges finished as per 'Accessories' below.

Building Slab/External Slab Junction Waterproofing

Provide waterproof membrane to the vertical edge face of the building slab on ground, at the junction of that slab & a separate adjoining *external* slab.

Material: Liquid applied acrylic flexible membrane with reinforcing, *min* 2 coat application, dry film thickness *min* 1.2mm, UV resistant, *UDO*.

Provide overlap at the top of the waterproofing membrane with a cladding material. Provide seal at the bottom of the membrane against the under-slab moisture barrier film.

SUBMIT proposed materials & details.

Concrete/Masonry Water Tank Waterproofing

Where there is a conflict between this Specification and the Water Tank manufacturer doc, then the latter should take precedence.

Internal Walls & Floor (*including* projections/columns): Flexible liner for potable-water, *min* 1.5mm thick, pre-made off-Site with welded seams, liner top edge to extend above tank overflow level.

Tank Ceiling (*including* beams): Liquid applied acrylic flexible membrane for potable-water, with reinforcing, *min* 2 coat application, dry film thickness *min* 1.2mm, *UDO*. Turn down walls to terminate below & behind liner top edge. Seal liner top edge to waterproofed wall behind.

Provide tanking to tank walls earth-side face. Lay Tank floor slab on 0.3mm thick polyethylene film on sand bed, turned up walls & sealed at tanking.

Refer Fixtures **SECTION** 'Service Gratings & Lids' for detail of in-ground tank lids.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

SUBMIT tank Manufacturer certification if waterproofing is achieved by concrete admixture only.

SUBMIT Operation & maintenance manual.

Window Sills & Door Thresholds Waterproofing

Extent: To wall *substrate* behind *external* window & door frames at jambs and sills/thresholds & as *doc*.

Material: Liquid applied acrylic flexible membrane with reinforcing, *min* 2 coat application, dry film thickness *min* 1.2mm, UV resistant, *UDO*.

At waterproofing vertical & horizontal external/outside edges, discharge water to outside of the building envelope skin via a flashing which is sealed at its edges against the waterproofing. **SUBMIT** proposed detail of waterproofing material & extent, and the flashing.

Waterproofing Under Stone Ballast

Waterproofing to be as per the tanking waterproofing described above *including* protection board. Lay ballast on top of the protection board.

Membrane edges finished as per 'Accessories' below.

Accessories

At inward membrane corners, *provide* 45 deg fillets & bond breakers to allow movement. At outward corners, *provide* round or chamfer edges. Reinforce joints, corners, junctions & seal penetrations in the element being waterproofed. *Provide* edge protection/termination strips.

Provide *proprietary* drainage outlets with puddle flange, clamp over membrane. Turn & reinforce membrane into outlet, lap over puddle flange, then clamp down.

Membrane & Protection Board Top Seal

Top edge to be over-lapped by cladding, flashing or other waterproofing material. Alternatively, seal edge with a *proprietary* waterproofing aluminium strip, mechanically fix & seal top edge with paintable sealant, *paint* finished to cover sealant and *substrate* directly above the sealant.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Protect membranes from abrasion & sunlight. Prevent moisture entry under membranes *including* at joints, terminations & penetrations. Seal fixings & other penetrations. Seal waterproofing membranes at edges.

Waterproof all *substrate* faces *including* pits, reveals, edges, recesses, projections, corners.

Provide membrane movement joints over *substrate* movement joints, *allowing* Structural Engineer *advised* movement quantity. *Provide* fillets & bond breakers to allow movement at other joints.

Provide waterstops to structural, movement & different material joints. **SUBMIT** detail of how the tops of waterstops are to be flush with an adjacent floor finish.

Cure membranes. Clean immediately at waterproofing Work completion & again immediately before installing overlay. *Site* test waterproofing as Manufacturer advised.

If overlay is bonded to a waterproof membrane, *provide* sufficient overlay movement joints for *min* membrane stress. If overlay is not bonded to a waterproof membrane, separate with double slip sheet of polyethylene film 0.3mm thick.

Refer Preliminaries **SECTION**, Sub-SECTION 4 'Building Work' for more execution detail.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

13 ROOFING

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork** & all related SECTIONS.

For detail in this specification of the following, refer:

- Roof hatch – Doors SECTION.
- Roof insulation/sarking – Insulation SECTION.
- Soffit linings – Cladding SECTION.
- Waterproofing – Waterproofing SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.
 Design & Installation Sheet Rainwater Goods, Accessory/ Plumbing/Drainage
 Roofing AS 1562. Fasteners AS/NZS 2179. AS/NZS 3500.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections. **NOTIFY** for inspection of:

- Roof frame ready for laying insulation/sarking.
- Start of roof covering install.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Manufacturer advice of each roof system, flashing/capping, component, includes: **a)** Engineer certified fixing type & spacing for wind load & frame, **b)** installation, **c)** condensate, corrosion, thermal movement control.
- Samples: Fixings. Roof penetration sealing method.
- Certification of completion of Work provided as doc in this SECTION (certification may be done by the respective Subcontractor/s).

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**.

Roofing systems to be *proprietary*, provided for anticipated wind load to Engineer or roofing Manufacturer Engineer design. Provide roofing to be water-tight.

Lay roofing side laps away from the direction of prevailing storms. **NOTIFY** to confirm this direction.

Provide expansion joints where roofing exceeds roofing Manufacturer advised lengths.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 ROOFING TYPES

Steel Roofing

Sheet steel, *min* grade G550, *pre-painted*, *min* 0.48mm BMT, UDO.

Turn sheet troughs up at high edges. Turn wide pan sheets only down into gutters. Project sheets 50mm into gutters. Sheets single length, no end lap.

Tile Roofing

Proprietary system comprised of individual tiles (to AS 2049 & AS 2050) *including* purpose made ridge and hip & barge capping pieces. *Provide* pointing, flashings, battens & sarking (as per Insulation SECTION). Cut tiles to be saw cut. Installer to be Manufacturer approved. **SUBMIT** samples of each type & colour.

2.4 ROOF PLUMBING

General

Mild steel: *Min* aluminium/zinc coated, finish to match roofing, *min* 0.55mm BMT, grade G550, UDO.

Stainless steel (other than *pre-painted* stainless steel): *Min* 0.56mm BMT, 304 grade, 2B moderate polish finish, UDO.

Accessories: Brackets, fixings, components to be compatible material & finish to adjacent elements.

Overflow Systems: Capacity = total capacity of down pipes serving the catchment area. Separate the overflow system from down pipe system.

Screw Fixings into Sheet Metal: Self-drilling, colour matched, non-conductive EPDM seal, threaded shank under head to grip sheet, sheet hole enlarger.

Rivets: Waterproof type, colour matched. For stainless steel, use stainless steel rivets. For aluminium/zinc coated & *pre-painted* mild steel, use aluminium rivets.

Sheet Metal Fabrication: Upper material to lap over lower. Fold junctions where possible. Non-welded joints lapped 150mm, sealed & mechanically fixed.

Eaves Gutters

Extent: To lower edges of roof sheeting except where another gutter type is to be *provided*.

Provide brackets (*max* 1200mm *cnrs*), down pipe spigots, stop ends, bends. Fall to down pipe *min* 1:300 from gutter high-points which are generally mid-point between down pipes. Water to fully drain from gutter. Water test & rectify if any ponding occurs. *Provide* expansion joints @ *max* 20 metres (joints steel capped over 2 x gutter end-walls).

Provide *proprietary*, corrosion resistant, readily removable leaf guards. Guards also to be readily removable just at the down pipe. Guards upper-most part to be across gutter top. Guards to extend along the full gutter length.

Box Gutters

Gutter Lining/Sumps: Mild steel as per Sub-clause 'General', "U" profile, size as *drawn*. Sides go up to roof sheet underside. Flash from under roofing/cladding, down *min* 100mm over gutter sides.

Gutter Base – Metal: Support lining fully on roof-sheet base 0.42mm BMT, aluminium/zinc coated, *min* joints which lap & occur over gutter support bracket.

OR

Gutter Base – Plywood: Support lining fully on 18mm thick exterior structural grade plywood, *min* joints which occur over double gutter support bracket.

Gutter Brackets: Support gutter base on *proprietary* galv steel, adjustable width brackets *max* 750mm *cnrs* & at both sides of sumps. Fix bracket ends to building structure to bracket Manufacturer Engineer advice, *min* 4No/5mm *dia* steel fixings each end, whichever greater.

Sumps: *Provide* at down pipe outlets to gutters, *min* 100mm deep x box gutter width (square). *Provide* sump fall to down pipe. *Provide* removable stainless steel hail, leaf & debris guard to each sump, extending up to gutter half-depth height.

Overflow: As per Sub-clause 'General' above, material = gutter lining, inlet 30mm below gutter top.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Gutter Falls: *Min* 1:150 from gutter high-points which are generally mid-point between down pipes. Water to fully drain from gutter. Water test & rectify if any ponding occurs.

Expansion Joints: Joints @ *max* 20 metres (joints steel capped over 2 x gutter end-walls).

Fabrication: Do not fix gutter lining to flashings or to base sheet. Fix base sheet to gutter brackets.

Rainwater Heads

Material: Mild steel as per Sub-clause 'General'.

Leaf/debris guard across top. Spitter capacity *min* equal to the connected down pipe.

Valley Gutters

Material: Mild steel as per Sub-clause 'General'.

Gutter legs (ie the gutter-halves each side of the folded centre-line) to extend *min* 250mm each side of gutter centre. Gutter level with roof batten underside extending under roofing, then turn up the batten height & back in towards the gutter *min* 30mm. Support gutter fully on 19mm thick *HWD* which is fixed to each roof frame member. Fix gutter to base only at high end under flashing. Turn up the gutter at the high end.

Soaker Gutters

Extent: Where roofing falls to meet a building element to be drained around.

Material: Mild steel as per Sub-clause 'General'.

Gutter leg (ie the gutter extending under adjacent roofing) to extend *min* 250mm under roofing.

Soaker gutter to be level with roof batten underside, then turn up the batten height to extend back under roofing. Turn soaker gutter leg vertically up the obstructing building element & flash over from above. Support gutter fully on 19mm thick *HWD* which is fixed to roof frame members. Gutter to continue to discharge back out to adjacent roofing below the level of the soaker gutter.

Down Pipes

External Down Pipes: Screw fixed grated access lid (for overflow discharge) at ground level & screw fixed solid access lids at each floor level. *Provide* ground level articulation/movement joint.

Internal Down Pipes: *PVC*, sound insulated with high-density mineral fibre, spiral wire bound to down pipe, acoustic rating *min* 40Rw (this acoustic requirement does not apply to down pipes cast into concrete).

Spreaders: *Min* 600mm long, same size, material & discharge capacity as attached down pipe. Install horizontal. If laid on roofing, lay on *pre-painted* steel wear layer, clear sealant adhered to roofing.

Fabrication: *Proprietary* bends & brackets to match down pipe type, colour & finish. Bracket off building structure *max* 1800mm *cnrs*. Upper pipe sections fitted & fixed into lower sections *min* 50mm. Separate down pipe from wall base to prevent concealed termite activity.

Down pipes to extend from gutter to ground, then connect to the stormwater system. Temporarily pipe roof stormwater to the stormwater system if permanent down pipes not in place.

If *PVC* down pipes are *doc*, *PVC* is to be sewer grade.

Flashings & Cappings

Provide steel flashings & cappings to roof sheet edges (not gutter edge), roof junctions, ridges, hips, barges, aprons, abutments, upstands, parapets, penetrations. Scribe to roofing profile. Refer Fixing & Sealing SECTION 'Flashings & DPC's'.

Each leg *min* 200mm across roof sheet & covering *min* 2 roof sheet ribs, down over barges and/or up walls (under cladding) as applicable.

Large Penetrations: 2 part (under & over) flashings with soaker gutter under roof sheet at top edge, flashed over roof sheet at sides/lower edge. *Allow* for movement between roof & penetration.

Cap parapets/upstands with inverted "U" shaped capping, which overlaps side cladding. Cap top to fall towards roof sheet. Upstands to be *min* 200mm height.

2.5 ACCESSORIES

Skylights

Proprietary skylight system to comply with AS 4285 'Skylights'. Glass, if used, to comply with AS 1288 'Glass in Buildings'. **SUBMIT** BCA energy efficiency & air sealing compliance Certificate.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Roof Ventilators

Proprietary roof ventilator system. **SUBMIT** Manufacturer certification for ventilation capacity to suit the application.

Fascias/Barges

Extent: To sheet roof/roofing edges, *UDO*.

Material: Dressed, seasoned treated *external* grade timber (as per the Timber Work SECTION) *min* 25mm thick x height to suit. Fixings: 2 counter-sunk/filled each framing crossing. Before fixing, apply 2 primer coats to concealed surfaces/cut ends.

OR

Material: Mild steel as per Sub-clause 'General'. *Proprietary* folded fascias to suit eaves gutter system, with *proprietary* brackets & corner/joining pieces (sealed & rivet fixed). Set height for gutter fall & to house soffit sheeting in the back-face groove.

Profiled Foam Strip

Extent to roofs over air conditioned spaces: To all roof edges.

Extent to roofs over non-air conditioned spaces: To the lower roof edge.

To be closed cell, waterproof, compressible, polyethylene foam, *min* 25mm thick, profiled to match & tightly fit roofing profile. Position behind sheet metal bird-proofing (to prevent bird access to foam).

Safety Mesh

Provide safety mesh as described in the Insulation SECTION.

Roof Battens

Extent: As required to support roofing (if no other framing *provided* or *doc*) & to support fixtures.

Battens mild steel, *min* qualities: 40mm deep, 0.75mm *BMT*, grade G550, *galv* 150 g/m² to AS 1397. Batten type, fixing & spacing to roof sheet Manufacturer *advice* & *Engineer* certified. Fix battens at each structural member crossing.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Provide to accommodate thermal movement *including* at fixings.

If roofing side laps misfit by an out-of-square roof, **NOTIFY** & rectify.

Framing Tolerance: In any plane: 5mm smooth deviation per 1000mm, or otherwise to AS 1562.

SUBMIT Operation & maintenance manuals for roofing systems, components & accessories.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

14 CLADDING

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork & all related SECTIONS.

For detail in this specification of the following, refer:

- Linings, internal – Linings SECTION.
- Louvre, metal, fixed – Fixtures SECTION.
- Sarking – Insulation SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'. Testing of Building Facades AS/NZS 4284.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections. **NOTIFY** for inspection of:

- Completed exposed wall frame, prior to & ready for fixing covering.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Manufacturer advice of each cladding type including: **a)** Engineer certified fixing type & spacing for wind load & frame, **b)** installation, **c)** condensate, corrosion, thermal movement control, **d)** joining to windows, doors & other penetrations.
- Certification of completion of Work provided as doc in this SECTION (certification may be done by the respective Subcontractor/s).

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork.

Cladding systems to be *proprietary*, provided for anticipated wind load to Engineer or cladding Manufacturer Engineer design.

Provide cladding (including flashings & sealants) to be water-tight & draft proof. Refer Fixing & Sealing SECTION.

NOTIFY to confirm cladding compliance with AS 5113 'Fire Propagation Testing & Classification of External Walls of Buildings'.

Provide anti-tamper fixings to ground floor cladding, as per Fixing & Sealing SECTION.

Provide expansion joints where cladding exceeds cladding Manufacturer *advised* lengths. Provide *min* horizontal joints to sheet cladding.

If cladding selection un-doc, allow 6mm FC cladding & **NOTIFY**.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 CLADDING TYPES

Horizontal Wall Board Cladding

Boards, to be single lengths as long as possible (generally *min* 1800 – 2100mm long). Stagger end joints (in a straight line). Fix boards horizontally.

Boards to be full width, with *if required* a cut-down the top board, not to be cut down more than 25% of a full-width board. Start board laying at wall bottom, overlapping upper boards over lower boards.

Align boards with boards on adjacent planes.

Butt joints to be fixed in compression. Butt joints to be sealed.

Provide secret fixing to each board at each framing member.

At corners, butt & seal boarding against corner bead then *provide* cover pieces to the junction to *provide min* 50mm wide board coverage over each wall plane for the full height of the corner.

Before fixing, apply 2 primer coats to concealed surfaces & cut ends.

Sealants to be paintable at or adjacent to *painted substrates*.

Soffit Board Cladding

Boards, tongue & groove type, to be single lengths as long as possible (generally *min* 1800 – 2100mm long). Stagger end joints (in a straight line).

Provide full-width boards. End boards, *if required* to be cut-down in width, not to be cut down more than 25% of a full-width board.

Align boards with boards on adjacent planes. Butt joints to be fixed in compression.

Provide secret fixing to each board at each framing member.

At corners, butt boarding against corner bead.

Before fixing, apply 2 primer coats to concealed surfaces & cut ends.

Sealants to be paintable at or adjacent to *painted substrates*.

NOTIFY to confirm board laying direction.

Fibre Cement (FC) Cladding

FC cladding to be *proprietary* system. Treat joints and edges using *proprietary* PVC strips, *flush-setting*, or timber battens, as *doc*, and if not *doc* immediately **NOTIFY** & allow *flush-setting*. Cut FC on-Site by scissor action (not with a powered abrasive cutter).

2.4 ASSOCIATED COMPONENTS

Flashings

Provide steel flashings to cladding edges, corners, junctions, abutments & penetrations.

Scribe flashing to cladding profile & coloured to match cladding. Each flashing leg *min* 200mm wide.

Stop (ie close-off) flashings at open ends with the same material as the flashing material.

Refer Fixing & Sealing SECTION 'Flashings & DPC's'.

Battens

Extent: As required to support cladding (if no other framing is *provided* or *doc*), where cladding covers solid masonry/concrete *substrates* & to support fixtures.

Refer *proprietary* cladding systems specifications for associated *proprietary* batten systems.

Mild steel *min* qualities: 40mm deep, 0.75mm BMT, grade G550, *galv* 150 g/m² to AS 1397. Batten type, fixing & spacing to cladding Manufacturer *advice* & Engineer certified. Fix battens at each structural member crossing.

*** Read **specific** Specification detail with **common** detail including **SECTIONS 1-3**, and in this **SECTION** – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer **also** **SECTION 1**, Clause 1.1 'Documentation Discrepancy'.***

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Support & fix fixtures, fittings and other items on framing. Penetrations of materials fixed to framing to be full perimeter of penetration framed. *Provide* double framing to frame-fixed materials at butt joints.

If cladding joints misfit by an out-of-square wall, **NOTIFY** & rectify.

Provide to accommodate thermal movement *including* at fixings.

Tolerances: Plane, edges & straightness 3mm over a 2000mm straight edge (any direction).

SUBMIT Operation & maintenance manuals for cladding systems, components & accessories.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

15 GLAZING

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork** & all related SECTIONS.

For detail in this specification of the following, refer:

- Glass splashbacks – Joinery SECTION.
- Louvres, metal, fixed – Fixtures SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD).

Windows in Buildings AS 2047.	Glass in Buildings AS 1288.
Cut Processed Glass Quality AS/NZS 4667.	Testing AS/NZS 4284 & AS 1530 / 4420.
Glossary of Terms AS/NZS 4668.	Safety Glazing AS/NZS 2208.
Aluminium Structures AS/NZS 1664 & AS 1866.	Insulating Units AS/NZS 4666.
Bullet Resistant Panels AS/NZS 2343.	

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections. **NOTIFY** for inspection of:

- Openings or structure ready to take *glazing system/s* installation.
- Fabricated *glazing systems* Site delivered, ready for installation.
- Completion before concealing fixings to building structure.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Samples: *Glazing material* types (150mm² size), frame sections & joints, finishes, hardware, seals.
- Shop drawings: For *glazing systems* described in this SECTION. To include: **a)** *glazing material* type (including safety glass use to AS 2047 & AS 1288), thickness, fixing, **b)** frame type, profile, jointing, sealing, fixings, hardware, **c)** fixing to the building, **d)** lateral head restraint while allowing lintel deflection, **e)** corrosion, structural & thermal movement control, **f)** flashings, **g)** Thermal Stress Report regards proposed window arrangements.
- Certification of completion of *Work provided* as doc in this SECTION (certification may be done by the respective Subcontractor/s).
- Type-test reports verifying *glazing system* compliance with AS 2047.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork.**

Provide glazing systems with the same Manufacturer throughout the Work. Manufacturer to be an Australian Window Assoc (AWA) member & provide products labelled AWA. **SUBMIT** AWA Certification, including 7 year warranty.

Provide glazing systems with Window Energy Rating Scheme (WERS) rating. **SUBMIT** WERS Certification.

Installer to be Manufacturer approved for all glazing systems.

Glazing systems to be *proprietary*, provided for anticipated loadings to Engineer or glazing system Manufacturer Engineer design. Provide glazing systems to be sealed when closed.

Fixings: Conceal non-rivet fixings. Provide anti-tamper fixings to glazing systems to locked spaces. Refer Fixing & Sealing SECTION.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 GLAZING SYSTEM COMPONENTS

Glazing Material

Glass *min* 6mm thick.

Provide glazing material without abrasions, discolouration, bubbles. Edges *min* ground chamfered. Exposed to view edges bevelled.

Vision Strip: Provide to full height, translucent glazing material (without a mid-rail), an etched or ceramic coated vision strip (not adhesive fixed) across the internal face of the glazing material.

NOTIFY for instruction on strip detail, size & height if strip un-doc elsewhere.

Glazing film *if required*, provided internally, to glass Manufacturer advice.

Permanent labels to be maintained. Remove temporary labels at Practical Completion. Label each panel to AS 1288 with product name & A/O Standards mark. Identify internal & external faces.

Toughened Glass: Do not cut, drill, scratch, or put in direct contact with metals or other non-resilient materials. Heat soak test toughened glass for *min* glass breakage due to nickel sulphide inclusions.

Ceramic Coated/Opacified Glass: Toughened safety glass, coloured ceramic coating or a opacifier film fused to interior-facing glass side.

Glazing Material Components

Components to be part of a *proprietary system*, includes sealants, tapes, spacers, blocks. Seal the glazing material perimeter. Seals to be to be ultra-violet stabilised & flexible.

Extruded Seals: 100% solids with high consistency, ultra-violet stabilised, neoprene/EPDM/silicone rubber to BS (British Standard) 4255, or PVC to BS 2571.

Brush Seals: Polypropylene or similar pile & backing, low friction silicone treated, ultra-violet stabilised. Fix in purpose-made aluminium holders.

Movement Joints: Sealant sealed, aluminium plate cover fixed on 1 side (*include* in shop drawings).

Hardware

General

Refer Preliminaries SECTION, Sub-SECTION 4 'Hardware & Operational Components'. Provide operational hardware.

Provide *min* 1 window hand operation latch/handle to each operable sash & 2 window hand operation latches/handles to each operable sash over 900mm in length.

Provide sliding components with *min* lateral (perpendicular to operational direction) movement.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Keying

Extent: To operable sashes.

Locksets: Keyed alike.

Locksets to AS 4145. *Provide* 3 keys to each lock, with *proprietary* label & metal ring, immediately before Practical Completion. Key material to be brass, stainless steel or mild steel zinc plated.

During construction, use temporary construction cylinders to *provide* building security. At Practical Completion, replace construction cylinders with new cylinders, complying with final key plan.

Lock Manufacturer to **SUBMIT** details of key system produced for locks within a group key system & a record of the key coding system, showing lock types, key type & number supplied & Supplier name.

Window Winders

Proprietary product, metal construction, to open windows *max* 45 deg. *Includes* mechanism & drive (on ball bearings) metal encased. System as window Manufacturer *advised* to operate the *max* window bank number.

Manual operation.

Motorized Operation: Refer Preliminaries SECTION, Sub-SECTION 4 'Motorized Components'.

Cover Plates

Provide cover plates to all *glazing systems* to cover frame junctions & frame/building junctions. Cover plates to be the same material as *glazing system* frame.

Flashings

Provide flashings to all *external glazing systems* to weather-proof the frame & the building junctions. Refer Fixing & Sealing SECTION.

Head Flashings: To *external* windows without a roof overhang within 0-45 deg up from window head, *provide* steel head flashing projecting out 75mm, pitched down, rolled outer edge 5mm clear above window sash top, extend 100mm past jambs.

2.4 FRAMED GLAZING SYSTEMS

Provide framing to whole *glazing systems* & each glazed panel, *UDO*. *Glazing material* sealed & housed into *glazing system* frame.

Aluminium Frames: Extruded aluminium frames *min* 1.6mm *BMT*.

Steel Frames: Mild steel frames *min* 3mm *BMT*, *galv* finish.

Timber Frames (with putty): Mortise & tenon joins, mitre corners. Timber as per Timber Work SECTION. *Glazing material* held in frame rebates, secured on the *external* face with small nails @ *max* 250mm, sealed at *glazing material* edges with *external* grade putty, *paint* finished. Nails not to be visible after installation of putty.

Timber Frames (with timber bead): Mortise & tenon joins, mitre corners. Timber as per Timber Work SECTION. *Glazing material* held in frame rebates, secured on the internal face with quad bead nailed @ *max* 250mm, sealed *externally* at *glazing material* edges with *external* grade paintable sealant, *paint* finished.

Provide sub-sill (*external* leg down over cladding, internal leg up behind window frame) & sill drainage. Factory assemble where reasonably possible. Frame joints accurate tight fitting & reinforced.

Reveals/heads/sills: Clad, line, trim & finish *glazing system* reveals/heads/sills *including* architraves to non-*flush-set* reveals/heads/sills.

2.5 GLAZING TO DOORS

Refer Doors SECTION for door element detail. Refer this Glazing SECTION for *glazing system* detail.

2.6 INSECT SCREENS

Screens: *Proprietary* system, framed, reinforced & screw fixed mitre joints.

Provide vertical & horizontal mid-frames *max* 1000mm spacing & boxed-out frame *if required* for full window operation. Screens removable without tools & fixed @ 600mm *cnrs*. Locate inside of out-swing windows & locate outside of sliding, in-swing & louvre windows.

Mesh (installed taut) black coloured, fibreglass reinforced *PVC*, beaded into internal facing frame channels with continuous resilient black bead.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Provide if required a top hinged & framed insect screen hand access panel, at window handle.

Sliding Screens: Frame to house & run screens, nylon slide guides, pull handle, pile seal to edges.

Provide retractable roll-up insect screen, mesh sewn into flexible frame. Operate via retraction system with tension spring, nylon bearings, self-locking device, plastic sealing strip at sill, zip-up closing, chord operation & tie points (with child strangulation safety warning labels).

2.7 SECURITY SCREENS

Fully framed metal security grille to AS 5039 & AS 5040. Fix with anti-tamper fixings as per Fixing & Sealing SECTION.

Grille stainless steel, insect-screen size mesh, *similar to* Crimsafe®, black powder coat colour. Frame to match colour of *glazing system* frame, UDO.

Grille expanded aluminium mesh, black powder coat colour. Frame to match colour of *glazing system* frame, UDO. **SUBMIT** proposed grille type. *Provide* insect screen mesh (installed taut) black coloured, fibreglass reinforced PVC, beaded into internal facing frame channels with continuous resilient black bead.

Provide if required a top hinged & framed security screen hand access panel, at window handle.

Adhere clear *proprietary* security film *min* 0.1mm thick over the inside of all fixed *external* glass on the same floor level as security screened windows. Extend film past *glazing material* encapsulation.

Screens to be openable from the inside & GMK keyed.

Installer to be Manufacturer approved.

2.8 MIRRORS

Clear toughened glass, silver layer on back face, then 1 coat of electrolytic copper (*min* 0.005mm thick) then 2 coats of mirror sealing *paint* (*including* to edges) then vinyl backing. Sealants not to contact mirror back. Screw fix with *min* 4 No countersunk capped fixings *max* 600mm *cnrs*.

If framed, back glass with *min* 4mm thick exterior grade plywood, adhered to glazing Manufacturer *advice*, frame corners mitred & reinforced. If frameless, *provide* dome-headed chromium-plated caps with polyethylene sleeves & washers to prevent fixing/glass contact.

Provide mirrors to be mounted with their broad area against a *substrate*, fully contacting that *substrate* across the mirror broad contact area.

2.9 SHOWER SCREENS

Clear toughened safety glazing, operable & fixed panels, polished stainless steel fittings & hardware. Drain water back into shower compartment.

Refer Fixtures SECTION for shower curtain & rail detail.

2.10 GLASS BALUSTRADES

Proprietary system to AS 1288, toughened safety glass, clear colour UDO. Hardware stainless steel, finish to match frame, UDO.

Gates *if required*, as per Doors SECTION, to match balustrade, *include* latch & GMK lock.

Provide balustrades/fences to pools to AS 1926.

2.11 WINDOW SAFETY ACCESS SYSTEM

Extent: Inside windows, where it is possible to fall out of that window more than 2000mm.

Provide a *proprietary* permanent system of stainless steel eyelets (powder coated to match wall colour), flush wall fixed at window. *Provide* 3 harnesses. **SUBMIT** shop drawings & Manufacturer Certificate of compliance to AS/NZS 1891 'Fall Arrest Systems', AS 2626 'Safety Belts & Harnesses', AS/NZS 5532 'Manufacturing Requirements for Single Point Anchor Device', the BCA, relevant Codes, Workplace Health & Safety Act & Regulations.

*** Read **specific** Specification detail with **common** detail including **SECTIONS 1-3**, and in this **SECTION** – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer **also** SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Install systems within acceptable building tolerances. Install to not carry building loads, *including* loads caused by structural deflection, growth or shortening. *Allow* for thermal movement. At building movement joints, *provide glazing system* movement joints of equal location & movement.

Aluminium not to be embedded in concrete. Aluminium contacting concrete to be separated. Do not allow water run-off from concrete to pass over aluminium.

SUBMIT Operation & maintenance manuals for *glazing material & systems*.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

16 DOORS

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork** & all related SECTIONS.

For detail in this specification of the following, refer:

- Cabinet doors – Joinery SECTION.
- Concrete ramp thresholds – Concrete SECTION.
- Services lids – Fixtures SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.

Timber Doors/Doorsets	Ply & Blockboard	Wet Processed Fibreboard (hardboard)
AS 2688 / 2689.	AS/NZS 2270 / 2271.	AS/NZS 1859.4.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections. **NOTIFY** for inspection of:

- Openings or structure ready to take door system/s installation.
- Pre-fabricated door systems *Site* delivered, before installation.
- Completion before concealing fixings to building structure.
- Hardware operation.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Manufacturer technical & construction detail of doors (other than typical flush leaf type).
- Shop drawings: As specified. To include: **a)** leaf type, **b)** frame type, profile, jointing, sealing, hardware, **c)** fixing to the building, **d)** lateral head restraint while allowing lintel deflection, **e)** corrosion, structural & thermal movement control, **f)** flashings.

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**.

Doors & doorsets to be *proprietary* products.

Provide external doorsets for anticipated wind load to *Engineer* design.

Timber as per Timber Work SECTION.

Timber veneer is not to replace decorative solid feature timber.

Provide anti-tamper fixings to lockable doors as per Fixing & Sealing SECTION.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 DOOR LEAFS

General

This Clause relates to flush leaf & timber type doors (refer Clause 'Doorsets' for other door detail).

Leafs over 1020mm wide or over 2340mm high, leaf/frame/hinges/fixings to *Engineer advice*.

Coat door edges *including* top & bottom edges, and behind hardware.

Tolerances - Width & Height: 2mm, Thickness: 1.5mm, Diagonal: 1mm, Twist: Straight edge 1.5mm.

Flush Leafs

Leafs to be *balanced construction*, perimeter *min* 12mm thick timber edging, nominally 38-45mm thick, 2 faces hardboard *min* 4mm thick, *moisture exposed* leafs 2 faces exterior grade hardboard/plywood.

Solid Core Leaf: Solid, full thickness, either: adhered edge to edge vertical blockboard, or single piece moisture resistant *MDF*.

Hollow Core Leaf: Cellular core, framed perimeter/mid-height/at openings with *min* 25mm thick timber. Leaf frame to accommodate hardware, fixings, rebates. Fix (screw) components only to leaf framing.

Semi-solid Leaf: **SUBMIT** proposed selection detail.

Timber Veneer Face Leaf: *Min* 4mm thick, as per Timber Work SECTION (including **SUBMIT** sample).

Crafted Timber Leafs

Timber stiles, rails/transom & infill panels. Mortise & tenon joins, mitre corners. Leaf nominally 40mm thick, *UDO*.

Crafted Timber Door Leaf with *Glazing Material*: As per this Doors SECTION & 'Framed Glazing Systems' in the Glazing SECTION.

2.4 FRAMES

General: Frame all sides fixed to building structure. Hinged door leaf face to be flush with door frame face. Frames to *include* door stop moulds (with resilient buffers) to 3 sides. Screw fix hardware & accessories.

Provide external frame fixing to Engineer advice.

Timber Frames: *Provide* frame, size = width (wall + linings thickness) x *min* 19mm thick, architraves & 32 x 12mm door stop moulds, *UDO*. Mitre join corners.

Steel Frames: Mild steel 1.6mm *BMT* (*galv* where *moisture exposed*) folded profile *including* door stop moulds & architraves. Throat width = wall + linings thickness, *UDO*. Mitre join & weld corners. Fix using *galv* steel brackets *min* 25 wide x 1.6mm *BMT*. Mortar fill frames fixed to masonry/concrete, *provide* mortar guards. Screw fix hardware *including* hinges to 4mm back-plates with tapped holes.

Aluminium Frames: Refer Glazing SECTION for frame detail & this Doors SECTION for other door detail.

2.5 DOORSETS

General

Doorsets are an operational assembly, of leafs, frame, hardware & accessories.

Hinged Doors: Opening stile (opposite hanging stile) to accommodate *min* 60mm latch/lock backset.

Double (hinged) Leafs: Single swing leafs, rebated meeting stiles & rebated hardware. Prevent binding of meeting stiles. Bolt secondary leaf on secure side & **NOTIFY** to confirm primary leaf/secure side.

Jambs/heads: Clad, line, trim & finish doorset jambs/heads *including* architraves to non-flush-set jambs/heads.

Glazing to Doorsets

Refer this Doors SECTION for door element detail. Refer Glazing SECTION for *glazing system* detail. Leaf perimeter framed, *UDO*.

Automatic Doors

To AS 5007 "Powered Pedestrian Doors", AS 3000 "Wiring Rules" & the BCA Part D. Refer also 'Glazing to Doorsets' above. Motorized Operation: Refer Clause 'Door Hardware', 'Motorized Doors'.

Provide roller bearing operation, over-head beam support, 240 volt motor, solid state micro-processor (for adjusting, monitoring, fault diagnosis), self-lubricating gearbox, noise-suppression, self-reset facility, battery failsafe, electric lock, integrated uninterruptible power supply, aluminium cladding & removable head/track cover. **NOTIFY** to confirm door/access features & and final access settings.

Provide necessary recesses & cores, grout in components *if required*. Provide flush access plates.

Installer to be Manufacturer approved.

SUBMIT shop drawings, including confirmation that door design is specifically for the *Work*. Warranty to be 2 year parts, 1 year labour & 5 year unconditional on gearbox & motor.

Building Entry Doors: Operation fully-adjustable, normal use by microwave sensors, emergency-exit by large-head button. Mode/entry switch (lock/exit/auto/open) by security GMK. Options board for building services interface, auto-open width adjustable for traffic volume, security open/non-reverse, fire/smoke alarm interface to fire escape plan.

Provide after-hours secure access. **NOTIFY** for instruction on after-hours times & access control type.

Insect Screen Doorsets

Screens: *Proprietary* system, framed, reinforced & screw fixed mitre joints.

Provide an internal hand-operated locking snib of contrasting colour to the surrounding frame it is mounted on. Provide locks, keyed alike.

Locate outside primary doorset, box framed leafs, vertical/horizontal mid-frames *max* 1000mm spacing, lock, closer, perimeter pile seal.

Mesh (installed taut) black coloured, fibreglass reinforced PVC, beaded into internal facing frame channels with continuous resilient black bead.

Hinged Screens: To hinged primary doors. Provide lever handles both sides.

Sliding Screens: To sliding primary doors. Provide channel frame, nylon slide runners, pull handles.

Security Screen Doorsets

To be *proprietary* system to AS 5039 / 5040 including aluminium frame located outside primary doorset, anti-tamper fixings, GMK, closer, perimeter pile seal. Installer to be Manufacturer approved.

Screen Leaf: Stainless steel, insect-screen size mesh *similar to* Crimsafe®, black powder coat colour.

Screen Leaf: Expanded expanded aluminium mesh, black powder coat colour. Frame to match colour of *glazing system* frame, clear plastic guard (*min* 150mm radius semi-circular) internally mounted around lock. **SUBMIT** proposed grille type. Provide insect screen mesh (installed taut) black coloured, fibreglass reinforced PVC, beaded into internal facing frame channels with continuous resilient black bead.

Provide an internal hand-operated locking snib of contrasting colour to its surrounding frame.

Provide clear *proprietary* security adhesive film *min* 0.1mm thick over the inside of fixed glass which is part of a security screened door. Film to extend past *glazing material* encapsulation.

Hinged Screens: To hinged primary doors. Provide leaf with lever handles both sides. Leading (opening) edge of leaf to have 3-point locking (a locking bolt at top, mid and low leaf points).

Sliding Screens: To sliding primary doors. Provide leaf with nylon slide runners, pull handles.

Folding & Sliding Doorsets

Systems *include* hardware, running tracks, reveals/frames, impact cushioning buffers each end, pelmet/s to conceal head track. Confirm leaf weight for the system, to system Manufacturer *advice*.

Glazed Doorsets: Refer 'Glazing to Doorsets' above.

Folding/Sliding Doors: Run door leaf on 4 wheel carriers in steel overhead track & surface threshold track/guide.

Accordion Doors: Vinyl clad, head track & latch/lock. **SUBMIT** proposed detail. Installer to be Manufacturer approved.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Overhead Doors

To be *proprietary Engineer* certified system to AS/NZS 4505 'Garage Doors'.

For doors with roller drum, fix drum to steel wall brackets, steel shaft in heavy duty steel tube, roller bearings, deflection *max* 1/360th of span, helical coil springs counterbalanced to curtain weight.

Curtain: Vertical operation, wind locks, metal jamb guides lined inside with nylon bushes/strips.

Bottom Curtain Rail: Stiffening rail, full width, profiled to door opening bottom edge, continuous buffer seal of EPDM or PVC material (as per Clause 'Door Seals') in aluminium strip.

Max force required for manual operation not to exceed 220 N, *GMK*, chain operated *if required*, lifting handle 900-1000mm above *FFL* when door closed.

Motorized Operation: Refer Clause 'Door Hardware', 'Motorized Doors' below. *Provide* remote control.

Hinged Gates

Provide gates metal framed, bent or fully welded mitred corner joints, mid-rail, *UDO*.

Frame: Gate leaf size up to 2m² to be equivalent to 30 x 30 x 2mm mild steel *SHS* fully welded perimeter frame with mid-transom; Gate leaf size 2-4m² to be equivalent to 50 x 50 x 3mm mild steel *SHS* fully welded perimeter frame with mid-transom & 2 No. bracing members.

Gates lockable *GMK*, *min* 3 heavy duty hinges each gate leaf.

Provide slotted/enlarged holes to accommodate 10mm gate movement in an up or down direction (from the effects of gate sag & other environmental forces). Bottom edge 50mm clear of & to follow ground line without affecting gate opening.

Gates self-closing with child proof lift-up bolts located at gate top.

Access Hatches/Panels

Provide wall & ceiling services access to comply with the *BCA*. **NOTIFY** to confirm hatch/panel locations & sizes.

Hatches/panels to be *proprietary min* 600 x 600mm *UDO*, screw fixed to *substrate* structure (*min* 3No/4mm *dia min* screws each side), budget lock, 2 concealed hinges, solid panel leaf. Perimeter to be **a)** *flush-set* fixed into *flush-set* linings or **b)** flanged fixed to non-*flush-set substrate*.

To suspended ceilings, hatches/panels to ceiling *Manufacturer advice*.

Hatches/panels in acoustic elements to be acoustically rated to match the acoustic rating of the element housing the hatch/panel.

Hatches/panels in thermally insulated elements to be thermally rated to match the thermal rating of the element housing the hatch/panel.

Hatches/panels in *fire resisting* elements to be *proprietary* tested & are to be *fire resisting* rated to match the *fire resisting* rating of the element housing the hatch/panel. **SUBMIT** proposed detail, Regulatory compliance Certificate & AS 1530 *Type test* Reports. Installer to be *Manufacturer* approved.

Roof/External Access Hatches

To be *proprietary* system including lid & hob-surround body, frame, flashings, non-corrosive metal construction, two air assisted telescopic stays with hold open & controlled close facility, *GMK*, ladder (to AS 1657) with 1000mm height extendable handles & top 1000mm height barrier around opening. Water & draft sealed. **SUBMIT** proposed detail.

Opening *min* 1600 x 900mm *UDO*, with *min* 900mm clear head height at opening.

2.6 HARDWARE

General

Refer also Preliminaries SECTION, Sub-SECTION 4 'Hardware & Operational Components'.

All doorsets to have operational, metal hardware. Secondary hardware (eg hinges, bolts) to have finish to match primary hardware finish, *UDO*. Install correct left/right handing.

Mount lock/latch with *min* 60mm backset & centred 1000mm above *FFL*. Locksets to AS 4145.

If variations occur to door hardware, **SUBMIT** a *Manufacturer* revised Schedule showing variations.

Refer to the Door Hardware Schedule. *Provide* a Door Hardware Schedule if it has not been *doc*.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Keys

Keying Manufacturer registered secure profile, *UDO*. Provide locking to perimeter doorsets.

Keying *min* GMK level, *UDO*. Refer to the Door Hardware Schedule for keying detail.

Provide services access keying & requirements to the applicable Services Authority approval.

NOTIFY to confirm final key plan. Provide 3 keys each lock (with *proprietary* label & metal ring) at Practical Completion. Keys brass, stainless steel or mild steel zinc plated.

SUBMIT Lock Manufacturer key system/coding record including lock & key types, key numbers, Supplier name, proposed Supplier key security control method.

Construct with temporary construction cylinders, replaced at Practical Completion with new cylinders.

Hinges

Hinges to allow 180 deg door swing. Doors with closers: low friction bearing hinges. Lockable doors to have fixed pin or security hinges. Doors at obstacles/nibs/deep reveals: wide throw hinges.

Flush Door Hinges: *Min* size 100 x 75 x 1.6mm *BMT* butt (rebated) or flush (interlocked, surface mount), metal to match fixing corrosion resistance, finish to match door hardware. Fixings to be flush screws *min* 4.2 dia x 35mm long, finish to match hinge, *min* 8 screws each hinge. Quantity as follows:

Leaf width (mm)	Leaf height (mm)	Hinge Numbers
Up to 870	Up to 2340	3
870-1020	Up to 2040	3
870-1020	2040-2340	4
More than 1020	More than 2340	To door <i>Engineer</i> advice, <i>UDO</i>

Aluminium Framed Door Hinges: High tensile aluminium, nylon bushed stainless steel pins, nylon washer to knuckle joints, to door Manufacturer *advice*.

Sanitary Compartment Doors Hinges: Lift off type where up to 1200mm between pan & door-way.

Other Doorset Hinges: Provide to hinge Manufacturer *Engineer* advice.

Hardware Ancillaries

Provide barrel & flush bolts/keepers, lock plates, ferrules/floor sockets, strike plates (not universal strike plates), locks, latches, rebated hardware to rebated doors Provide lever handles, *UDO*.

Padlocks to AS 4145.4, corrosion resistant, shackle *min* 7mm dia, *min* length for application, *GMK*, with *galv* steel padbolt *min* 9.5mm dia.

Provide door closers with back-check (to cushion closing action) to lockable doors. Mount closers on the secondary/minor room side of doors.

Door closers to *PWD* accessible doors to have closer delay action & opening force to AS 1428.

Door Stops

Provide door stops to all doors to prevent door/hardware impact against other materials. Door stops to comprise a resilient buffer in metal body.

Door Buffers

Provide *min* 2 No resilient door frame mounted door buffers, located between frame stop mould & closed leaf, to cushion closing leaf & to stop leaf movement when closed.

Motorized Doors

Motorized Operation: Refer Preliminaries SECTION, Sub-SECTION 4 'Motorized Components'.

Provide: **a)** manually operated locking/latch, **b)** internal light activating at opening (remains on for 2 minutes, auto switch off), **c)** internal push button activation *max* 1800mm above *FFL*, permanent power supply connected. Installer to be Manufacturer approved.

Remote Control: Where *doc*, provide remote control facility & hand-held, battery powered radio remote control transmitters (12metre range). **SUBMIT** controller Supplier security guarantee that controller programming is limited to the User. Provide controllers for each doorset operated by remote control. Provide differently programmed controllers for each doorset.

Provide number of remote controllers equal to the number of openings controlled, plus 2 extra controllers for each opening.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Door seals

Provide proprietary seals continuous, no gaps. Provide full seals to doors to air-conditioned spaces.

Extruded Seals: 100% solids with high consistency, ultra-violet stabilised, neoprene/EPDM/silicone rubber to BS (British Standard) 4255, or PVC to BS 2571.

Brush Seals: Polypropylene or similar pile & backing, low friction silicone treated, ultra-violet stabilised. Fix in purpose-made aluminium holders.

Weather Seals: *Provide* full perimeter weather seals to *external* doors. To hinged doors also *provide* projecting threshold seal. Clear paintable seal the weather seals to door leafs/frames. Position threshold & seals so that water draining down jambs discharges onto threshold & out.

2.7 ASSOCIATED COMPONENTS

Door Leaf Modifications

Door leaf modifications *including* cut-outs & trimming-down more than 3mm, to be done by the door Manufacturer in their factory. *Provide* concealed frames to openings in the leaf. Distance from a cut-out to the leaf edge *min* 120mm.

Flashings

Provide flashing to *external* doorsets perimeter. Concealed flashings to be flexible, corrosion resistant, *min* 150mm wide. *Exposed to view* flashings mild steel. Refer Fixing & Sealing SECTION.

Head Flashings: To doors not protected by a roof overhang within 0-45 deg up from door head, *provide* steel head flashing projecting out 75mm, pitched down, rolled outer edge 5mm clear above door leaf top, extend 100mm past jambs.

Thresholds

Provide thresholds to *external* doors, to restrict rain-water ingress into the building, expel water to the outside & provide a level transition from external pavement to the internal floor. **NOTIFY** to confirm proposed threshold detail.

Refer to the Waterproofing SECTION for detail of waterproofing behind door perimeter.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Install systems within acceptable building tolerances. Install to not carry building loads, *including* loads caused by structural deflection, growth or shortening.

Install trim to make neat, clean, closed junctions between frames & *substrates*. Conceal fixings.

Provide sliding components with *min* lateral (perpendicular to operational direction) movement.

Spare Door Hardware: *Provide* spare door hardware (2 units of each hardware type) in new, unopened, labelled packaging. Store on-Site & **NOTIFY** to confirm storage location. Spare materials not to be used during the defects liability period.

SUBMIT Operation & maintenance manual for: 1) doors other than typical flush leaf type, and 2) for hardware.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

17 INSULATION

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork & all related SECTIONS.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.
 Material for Thermal Building Insulation AS/NZS 4859. Pliable Building Membranes & Underlays AS/NZS 4200. Thermal Insulation of Dwellings AS 3999.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections. **NOTIFY** for inspection of:

- Installed material before concealment.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- RTA test results demonstrating insulation compliance with AS/NZS 4859.1.
- Certification of completion of Work provided as doc in this SECTION (certification may be done by the respective Subcontractor/s).

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork.

Provide *proprietary* insulation/sarking. Label packaging with the appropriate A/O Standards mark.

Provide to AS/NZS 1530 Indexes: Spread of flame: 0. Smoke developed: Max 3. Flammability: Max 5.

Provide Manufacturer *advised* accessories to achieve doc performance, including spacers & separators which act to maintain the required insulation thickness.

Check moisture-retention characteristics of insulation. **NOTIFY** before ordering materials, if lining damage may result from excessive moisture-retention.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 MATERIALS

Mineral Wool Insulation

Insulation to be mineral wool, *UDO*. Definition: Fine mineral fibre insulation (*including* glass & rock wool) made by blowing air or steam through molten rock, slag or glass. Label packaging 'FBS-1 BIO-SOLUBLE INSULATION'. Comply with the Insulation Council of Australia & NZ (ICANZ) Industry Code of Practice for Safe Use of Mineral Wool Insulation.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Roof Sarking

Provide under new roofing, above roof framing to AS/NZS 4200, reflective vapour-permeable, heavy duty, high vapour barrier Class. Lap (higher over lower) *min* 150mm & waterproof tape joints against condensation & moisture entry. Continue sarking under roof gutters that exist above enclosed spaces.

Wall Sarking

Provide to clad *external* walls, between cladding & framing (*including* battens fixed to solid walls).

Provide to AS/NZS 4200, reflective vapour-permeable, *min* medium duty, high vapour barrier Class, *UDO* or unless advised otherwise by the Cladding Manufacturer.

Provide min R-Value R0.2 thermal break between cladding & metal framing.

Fix sarking to each frame member. Vertical joints to be *min*, overlapped 300mm, fully waterproof tape joints both sides. Lap (higher over lower) horizontal joints 150mm without taping.

Safety Mesh

Provide under new roofing, above roof framing, *metallic coated*, mild steel welded wire mesh (100mm aperture x 1.5mm *dia* wire) to AS/NZS 4389. Fix to framing with tension to provide *min* air gap at insulation/sarking (to insulation/sarking Manufacturer *advice*).

If safety mesh is inappropriate for the application, *provide* a similar WH&S compliant construction fall safety system

Thermal Framed Wall Insulation

Provide to framed *external* walls, *including* walls above ceilings, gable walls & walls forming part of a roof, *UDO*. Roof insulation/sarking to overlap wall insulation *min* 50mm.

Provide min R-Value R0.2 thermal break between cladding & metal framing.

To stud framed walls *provide* insulation batts.

Ceiling Insulation

Provide insulation batts above ceilings, over-lap wall insulation 50mm.

Suspended Framed Floor Insulation

Provide rigid insulation board to the underside of the framed floor, between floor joists.

Provide so that installed insulation will not come in contact with rainwater.

SUBMIT proposed insulation detail *including* fixing method.

Services Insulation

Refer to the Services SECTION.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Provide full insulation over whole insulated element. Maintain insulation design thickness. Insulation butt joints & edges slightly compressed with no air gap.

Provide fire separation at light/heating/electrical fixtures as advised by the fixture Manufacturer & the insulation Manufacturer. Electrically conductive materials to be separated from electrical wiring/fixtures & fixed with non-conductive fixings.

Do not allow insulation to become wet or moist.

If insulation/sarking cannot self-support, *provide* permanent support without affecting performance, or the fixing & appearance of other materials. *Provide* boxing to retain loose insulation.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

18 LININGS

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork** & all related SECTIONS.

For detail in this specification of the following, refer:

- Access hatches/panels – Doors SECTION.
- CFC substrate flooring – Timber Work SECTION.
- Cladding, *external* – Cladding SECTION.
- Gypsum plaster – Render SECTION.
- Soffit lining – Cladding SECTION.
- Splashbacks – Joinery SECTION.
- Stud framing, timber – Timber Work SECTION.
- Wall paper – Painting SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.

Gypsum Plasterboard AS/NZS 2588.	Cellulose – Cement Products AS/NZS 2908.2.	Gypsum Linings Application & Finishing AS/NZS 2589.
Wet Processed Fibreboard AS/NZS 1859.4.	Adhesive Mastic for Plasterboard AS 2753.	Methods of Fire / Smoke Tests AS 1530 & AS/NZS 3837.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections. **NOTIFY** for inspection of:

- *Substrate* or framing ready for linings installation.
- Linings installed before fittings installed & finishes applied.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Fixings: Type, spacing & *Engineer* certificate for lining systems without Manufacturer fixing *advice*.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork.

Linings to be *proprietary* systems, screw + adhesive fixed to framing or battens, *UDO*.

If lining sheet joint system is not *doc*, allow recessed edge, *flush-set* jointing & **NOTIFY** to confirm joint system.

Check moisture-retention characteristics of insulation. **NOTIFY** before ordering materials, if lining damage may result from excessive moisture-retention.

Provide partitions/walling & ceilings to withstand earthquake loads compliant with AS 1170. Refer to the Structural Consultant docs for earthquake loading parameters.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 TYPICAL LININGS

Typical Linings

Plasterboard to AS/NZS 2588.

Moisture resistant plasterboard for high humidity/moisture risk areas as per AS 3740 'Waterproofing of Wet Areas'. Provide to walls to be standard plasterboard lined which accommodate wet fixtures.

FC to AS/NZS 2908.

Ceiling Linings Generally

Do not fix ceiling systems to the primary building structure before that structure has been loaded for: 14 days for a framed structure, 28 days for a concrete structure. Support fixtures & services off framing, not off ceiling lining.

Where no ceiling framing is specifically *doc*, **NOTIFY** & allow to provide a *proprietary* suspended metal framed ceiling system.

2.4 BOARD (LONG STRIP TYPE) LINING

General

Boards to be tongue & groove type. Align boards with boards on adjacent planes. Butt joints to be fixed in compression.

Provide full-width boards. End boards, *if required* to be cut-down in width, not to be cut down more than 25% of a full-width board.

Provide secret fixing to each board at each framing member.

Junctions/corners/edges: To each element plane to which the boarding covers, at the board-ends location, provide at each end, a bead 25mm wide x the thickness of the boards, bead to match board material. **NOTIFY** to confirm junction/corner/edge detail & board laying direction.

Exposed to view edges bevelled or slightly rounded.

Horizontal Wall Board Lining

Boards to be single lengths as long as possible (generally *min* 1500 – 1800mm long). Stagger end joints (in a straight line). Start boarding layout at the wall base with a full width board.

Vertical Wall Board Lining

Boards to be of full lengths up to a *max* of floor to ceiling/floor height.

Top & bottom limits of boards to finish in a horizontal line.

Align boards with boards at different levels.

Ceiling Board Lining

Boards to be single lengths as long as possible (generally *min* 1500 – 1800mm long). Stagger end joints (in a straight line).

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2.5 TIMBER VENEERED LINING SYSTEMS

Plywood/MDF *substrate* board & veneer as per Timber Work SECTION (including **SUBMIT** veneer sample). If *substrate* board is to be butt joined, it is to be tongue & groove type. **SUBMIT** Engineer certification of fixings & framing. **NOTIFY** to confirm panel layout.

2.6 SUSPENDED CEILINGS

General

Proprietary Type tested system, constructed of corrosion resistant metal, *Engineer* certified to support the ceiling type. *Provide* mechanically fixed primary members hung from building structure via adjustable rod hangers & secondary members (supported off primary members).

Comply with AS/NZS 1170 'Structural Design Actions', AS/NZS 2785 'Suspended Ceilings Design/Install' & AS 2946 'Suspended Ceiling Luminaire/Air Diffuser Interface'.

System to be stable, braced & vibration suppressed. Failure of one hanging point not to cause progressive soffit failure. No looseness or rattling. Construct & brace bulkheads/profiles integrally. *Provide proprietary* splicing to join members. Mechanically fix hanging rod tops.

Provide framing for, services & fittings, including ducts & lights. Do not fix suspension members to services. Where services cause obstruction, *provide* bridging & suspension each side of service.

If partitions attached to ceiling, *include* partition mass in ceiling seismic mass. Minimise transmission of structure-borne sound & vibrations. *Allow* for differential movement at abutting surfaces. Install with control joints corresponding to structural joints & lining area limitations. *Provide* suspended frame electrical earth connection to Electrical *Engineer* advice.

Provide a ceiling system which has been *Type tested*. Installer to be Manufacturer approved.

Spare Framing: *Provide* matching spare framing, wrapped & labelled. *Provide* 3% of each member, colour & type installed. Store on-Site & **NOTIFY** to confirm storage location. Spare materials not to be used during the defects liability period.

Concealed Frame Ceilings

Proprietary concealed frame system. Linings as per 'Ceiling Linings' above.

2.7 ACCESSORIES

Trim

Provide trim to lining edges. *Provide* skirtings to walls at wall/floor finish junctions & cornices to ceiling/wall junctions (fix to non-load bearing walls to allow vertical movement).

Flush-set Joints

Provide flush-set sheet with metal beading to corners, exposed edges, control joints & butt joints.

Provide moisture resistant joint compound where *moisture exposed*.

Setting compound strength to match that required of the lining board being set.

Outward corners to have expanded metal mesh beading. Inward corners to have metal angle between framing & lining to allow differential movement.

Install *flush-set* linings to AS/NZS 2589.1, Finish Level 4 generally but the next better Level grade in locations exposed to glancing natural or artificial light.

Provide flush-set linings with staggered end joints in a brick pattern, away from opening corners.

Shadow-line Joints: *Provide* with perforated metal beading at junctions. Joint 10mm (no sealant).

Control Joints

Extent: Following structural joints & changes in *substrate*, and at lining Manufacturer *advised* spacing. **NOTIFY** to confirm control joint locations.

Provide with solid edges, parts interlocked for 3 directional movement, nominal 10mm wide joint. Joint to have proprietary joint cover or sealant filled (to match other adjacent joints).

Install framing both sides of joint, flush plane. Continue control joints through non-sheet materials, (eg framing, trim). Neatly cut *exposed to view* joints & fill flush with paintable flexible sealant.

Wall Openings Extending To Ceiling: *Provide* ceiling control joints to match location of opening sides.

*** Read **specific** Specification detail with **common** detail including **SECTIONS 1-3**, and in this **SECTION** – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer **also** SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Framing

Provide framing to all linings other than those *documented* to be adhered to solid *substrate*. *Provide* framing for the fixing of fixtures.

Stud Framing: Refer to the descriptions *doc* elsewhere in this Specification.

Battens: *Proprietary* folded mild steel *min* qualities: 0.75mm *BMT*, grade G2Z275, *galv* 275 g/m² (to AS 1397), *min* depth practicable x 38mm wide. *Provide* batten type, size & fixing to batten Manufacturer *advice* & *Engineer* certified for the load *including* lining type. Align to tolerance by packing or *substrate* adjustment. *Provide* wall nogging battens vertically spaced 900-1200mm.

Adhesives & Fixings

Wallboard adhesive synthetic rubber/resin based mastic contact adhesive suitable for the *substrate*.
Fixings *metallic coated*.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Support & fix fixtures, fittings and other items on framing. Penetrations of materials fixed to framing to be full perimeter of penetration framed. *Provide* double framing to frame-fixed materials at butt joints.

Do not install linings until *Work* area is weather-proof, and *substrates* & the building interior is dry.

Cut *FC* on-Site by scissor action (not with a powered abrasive cutter).

Surface Tolerance: Flatness *max* 1.5mm deviation with a 1.5m straightedge in any position. Confirm *substrate* tolerance before fixing linings.

No air gaps in linings or at lining edges, junctions & penetrations.

Run sheets across framing. Locate joints on framing. *Provide* support at edges & joints.

Back-block joints where fixing to framing is not reasonably practicable.

SUBMIT Operation & maintenance manuals for *Type tested* lining, partition or ceiling systems.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

19 JOINERY

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork & all related SECTIONS.

For detail in this specification of the following, refer:

- Doors, flush type – Doors SECTION.
- Fixtures, *proprietary* – Fixtures SECTION.
- Wet area partitions – Fixtures SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD).

Domestic Kitchen Assemb'y
AS/NZS 4386.1.

High Pressure Decorative
laminates AS/NZS 2924.

Reconstituted Wood Based
Panels AS/NZS 1859 & 4266.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections. **NOTIFY** for inspection of:

- *Substrate* or framing ready for installation of joinery.
- Shop fabricated joinery ready for *Site* delivery.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Shop drawings: All joinery.

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork.

Joinery products to be *proprietary* products, *UDO*.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 JOINERY MATERIALS

Board Material

Board material to be *balanced construction*. Particleboard or *MDF*, *min* 16-18mm thick, *UDO*.

Particleboard: To AS/NZS 1859.1. Where *moisture exposed* use high performance (HP) grade, otherwise use moisture resistant (MR) grade. Material to be *min* emission type (*similar to* E0 grade).

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

MDF: To AS/NZS 1859.2. Where *moisture exposed* use high performance (HP) grade, otherwise use moisture resistant (MR) grade. *Min MDF* cutting on-Site & cut to WH&S requirements, warn others, wear face masks, vacuum dust immediately after cutting, no cutting in windy conditions. Material to be *min* emission type (*similar* to E0 grade).

Compact Laminate: Solid resin based board 13mm thick, *exposed to view* edges slight convex, other edges square, *UDO*. Cut to avoid underside break-out by first using a scoring saw to scribe underside. Eliminate drill exit surface break-out. Factory cut & drill using computerised control tools. Assemble on-Site.

Paint finishes are to be 2 pack gloss finish, factory applied as a *proprietary* system.

Other Sheet, Frame & Trim Materials

Timber & plywood as per Timber Work SECTION.

Metal: Steel framing *min* 35 x 35 x 1.6mm SHS tube fully welded joints, black powder coat finish where *exposed to view*.

Plastic Laminate

Melamine: Low pressure decorative laminated board material. *Provide* generally to joinery inner surfaces. Interior Colour: White, *UDO*. Finish: Standard matt.

High pressure decorative laminated board material to AS/NZS 2924. *Provide* generally to joinery outer surfaces. Finish: Standard matt. Thickness: 0.8-1.0mm generally.

Class (AS/NZS 2924.1)	Typical applications
CG (compact general purpose)	High performance, self supporting vertical/horizontal surface
HD (horizontal heavy duty)	High performance horizontal surface
HG (horizontal general purpose)	General horizontal & high performance vertical surface
VG (vertical general purpose)	General vertical surface

Stone

This Clause applies to natural stone & reconstituted or engineered stone slab products. For tiles on joinery, refer to the Tiling SECTION for detail.

SUBMIT 3No 200 x 200mm samples. **NOTIFY** to confirm of finish gloss level.

Apply clear sealer to *exposed to view* surfaces.

Sealant/Sealers/Adhesives: *Provide* as *advised* by sealant/sealer/adhesive Manufacturer for the stone type. Test 3 stone samples by applying sealant/sealer/adhesive then after 7 days visually inspect for defects or discolouring.

Repair natural stone non-structural faults with matching colour resin filler.

Board (Long Strip Type) Lining

Boards to be tongue & groove type. Align boards with boards on adjacent planes. Butt joints to be fixed in compression. Secret fix each board at *max* 450mm spacing.

Provide full-width boards. End boards, *if required* to be cut-down in width, not to be cut down more than 25% of a full-width board.

Junctions/corners/edges: To each element plane to which the boarding covers, at the board-ends location, *provide* at each end, a bead 25mm wide x the thickness of the boards, bead to match board material. **NOTIFY** to confirm junction/corner/edge detail & board laying direction.

Exposed to view edges bevelled or slightly rounded.

Horizontal Joinery Boards: Boards to be single lengths as long as possible (generally *min* 1500 – 1800mm long). Stagger end joints (in a straight line). Start boarding layout at the joinery base with a full width board.

Vertical Joinery Boards: Boards to be of full height of joinery element. Top & bottom limits of boards to finish in a horizontal line. Align boards with boards at different levels.

Decorative Solid Feature Timber

Refer to Timber Work SECTION for timber quality detail & timber finishing detail. **SUBMIT** sample of each timber profile to be *provided*. Timber veneer is not to replace decorative solid feature timber.

Timber Veneer

As per Timber Work SECTION (*including SUBMIT* sample).

Glass

Refer Glazing SECTION. Joinery glass *min* 5mm thick, toughened.

Decorative Laminate Sheet Edging

2mm thick colour/pattern matched, hot resin adhered PVC edging to *exposed to view* sheet edges *including* to shelves, doors & drawer edges.

Fixings

Joints screwed & adhered. Screws *metallic coated*, *min* 3.5mm *dia*. Conceal fixings (or if impractical, colour matched caps). *Min* 35mm fixing embedment (not *including* wall lining/joinery board thickness) into structural *substrates*.

2.4 JOINERY UNITS

General

Provide joinery units as specified below with board material as per 'Board Material' above, *UDO*.

Confirm sizes of equipment & appliances to be housed in joinery, before joinery *Work* start. *Provide* *proprietary* vents in joinery holding fully enclosed appliances (vent size & location to appliance Manufacturer *advice*) & **NOTIFY** to confirm location.

Fix horizontal elements to the sides (not the bottom edge) of vertical elements.

For ceiling height Units, *provide* a joinery shadow-line ceiling junction, *UDO*.

Operable parts to have metal handles, resilient buffers, and are to close under natural force, fully without slamming.

Moisture Exposed Joinery: Seal junctions & penetrations (clear, anti-fungal, sanitary grade sealant). Vermin proof joints & penetrations. Metal flange & seal service penetrations.

Isolated joinery legs & gables to be concealed fixed.

Plinths (as floor mounted joinery unit bases)

Min 100mm high x 50mm deep toe recess & kick panel of board material, *UDO*. Frame across inside plinth @ 600mm *cnrs*. *Provide* plinth as a level base. Scribe to floor & secure to wall. **NOTIFY** to confirm plinth height.

Carcass

Provide as a 6 sided board material box structure (to house shelves, doors, drawers) with rigid divisions across carcass cross-section @ *max* 900mm *cnrs*.

Wall Mounted Units: Fix to building structure through a carcass back-wall panel with *min* 6 No 4.5mm *dia* screws, increasing by 2 fixings each direction for each 450mm (or part) increase in Unit size, with *min* Unit width & height of 450mm, *UDO*.

Shelves

Fixed Shelves: Board material fixed 3 sides, *min* 2 fixings/side, *max* 300mm *cnrs*. *Min* thickness:

Span up to 1000mm – 18mm thick.

Span 1000-1250mm – 25mm thick.

Span 1250-1700mm – 32/35mm thick.

Span over 1700mm, to *drawn* detail.

Adjustable Shelves (in carcass): Board material, each end on 2 No *proprietary* metal pins, snug slide fit into carcass wall holes, 30-40mm vertical *cnrs* to give full height adjustment. *Min* thickness:

Span up to 900mm – 18mm thick.

Span 900-1200mm – 25mm thick.

Span 1200-1500mm – 32/35mm thick.

Span over 1500mm, to *drawn* detail.

Adjustable Shelves (fixed to building walls): Board material, span *max* 900mm. Shelf brackets pre-finished metal, screw fixed to underside of shelf. Bracket into slotted vertical pre-finished metal wall strips which are fixed with *min* 2 screws for each shelf.

Joinery Doors

Board material, *max* 600mm wide. Thickness over 1500mm high: 25mm.

Hinged doors to be held lightly in the closed position by the hinge or other mechanism.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Wardrobes

Wardrobe doors: As *doc* elsewhere.

Provide sliding robe doors with full coverage mirror panels (as per Glazing SECTION).

Provide sliding robe doors of 10mm plasterboard vinyl faced.

Provide hinged robe doors of hollow core flush panel door leafs (as per Doors SECTION).

To each Robe. *Min* 40mm ht. x 15mm thick vertically elongated cross-sectional steel tube pre-coated hanging rail. Support rail ends in end holders, each holder fixed with *min* 2 No 3.5mm *dia* screws to vertical *substrate*. Span over 1200mm, *provide* intermediate, 4-screw fixed hanging holder.

Drawers

Front panel – board material routed to house drawer bottom panel, back & sides – *min* 12mm thick board material routed to house drawer bottom panel, bottom panel – PVC film bonded to 3mm thick hardboard. Each drawer on 2 steel slides (sized to drawer size) with plastic wheels on ball bearings, anti-fall out device, gentle hold-closed device, drawer lift-out facility.

Filing Cabinet Drawers: As *drawn*, sized for standard size *proprietary* filing rail inserts. Inserts to be twin metal rails screw fixed, factory finished colour to match internal drawer colour.

Cash Drawer: *Provide* a moulded plastic insert to a top lockable drawer at each Reception Counter. Insert to have compartments for each Australian currency type & spring clip note holders.

Cutlery Drawer: *Provide* a moulded plastic insert (with *min* 5 compartments for standard cutlery) at each Food Handling area.

Bench Tops

Provide solid bench tops *min* 32mm thick, *UDO*. Exposed edges: Pencil round (top & bottom edges small radius rounded), *UDO*.

Scribe & seal bench top to walls & other junctions. *Min* joints at corners, no joints in *moisture exposed* locations. Seal joints & clamp with *proprietary* connectors. Cut openings to have rounded corners.

Provide non-combustible sheet protection from heat produced by appliances.

Finish to extend under bench top. Fix to carcass (without penetrating bench top) with *min* 6 fixings, in rows of 3 fixings across carcass depth, @ *max* 600mm *cnrs*.

Provide filler/repair kit. Label underside with Manufacturer & Installer name & contact. Installer to be Manufacturer approved. **NOTIFY** to confirm finish gloss level.

SUBMIT bench top Operation & maintenance manual.

Splashbacks

Extent: To all sinks & basins, *UDO*.

Provide with concealed fixings, and sealant (sanitary grade anti-fungal) seal edges & joints.

Splashback materials & splashback *substrate* to be non-combustible within 450mm of hot appliances.

Glass Splashbacks: Toughened safety glass *min* 5mm thick, colour ceramic coated glass (back face) as per Glazing SECTION. Glass type & fixing to glass Manufacturer *advice*.

Isolated Supports

Isolated Feature Joinery Legs: *Proprietary* metal CHS leg (*min* 50mm *dia*) with adjustable foot, leg finish to match predominant joinery hardware. Fix to underside of joinery at top & to floor (concealed floor fixed). **SUBMIT** proposed product detail.

Isolated Joinery Gables: Board material *min* 25mm thick, dowel fixed at top & bottom. Dowels 6mm *dia* steel, 50mm long (embed 25mm into both elements) with construction grade water-resistant adhesive, *max* 250mm *cnrs* & *min* 2 dowels each board edge. Do not use exposed angle fixings.

2.5 HARDWARE**General**

Provide joinery hardware for full function of joinery operable parts. Refer Preliminaries SECTION, Sub-SECTION 4, Sub-clause 'Hardware & Operational Components'.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Door hinges

Steel *metallic coated*, concealed when door closed, fixed to carcass (surface mount) & door (rebated) *min* 2 screws each hinge leaf, *min* 120 deg opening, hold open facility, 3-way adjustable, gentle self-closing function. Doors to align flush with adjacent plane. *Min* numbers (for door self-weight only):

Up to 900mm high door: 2 hinges. 900-1500mm high door: 3 hinges.

1500-2100mm high door: 4 hinges. Over 2100mm high door: Type & number to Manufacturer *advice*.

To bi-fold doors: *Provide* metal piano type hinge, extending full door height.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Support & fix fixtures, fittings and other items on framing. Penetrations of materials fixed to framing to be full perimeter of penetration framed. *Provide* double framing to frame-fixed materials at butt joints.

Do not store where wet trades working or recently finished. Acclimatise joinery for min 3 days by storing in 'in-service' conditions, with ventilation to all surfaces.

Scribe *exposed to view* edges to *substrate* profile. *Provide* materials in single, long as possible lengths with *min* joints. Make joints over supports. *Allow* for thermal movement in length, by appropriate sealed separation at ends. Frame & trim for openings. Conceal voids & wall faces, behind joinery Units, using finished joinery or lining sheet.

Provide sliding components with *min* lateral (perpendicular to operational direction) movement.

Prime the surfaces of concealed unfinished timber & metal.

Tolerance (max)	
Plumb & level – 1mm in 1500mm	Scribe thickness variation: opposite scribes – 2mm
Adjoining surfaces same plane – 0.5mm	Doors centred in openings – 0.5mm

Refer Preliminaries **SECTION**, Sub-SECTION 4 'Building Work' for more execution detail.

End of SECTION.

20 FIRE STOPPING

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

This SECTION is written generically, so provide materials applicable to the Work.

1.2 REFERENCED DOCUMENTS

Cross References

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork & all related SECTIONS.

For detail in this specification of the following, refer:

- Linings, *fire resisting* – Linings SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related.

Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD).

NCC & BCA.

Fire Test Method AS 1530.

Fire Stop Systems AS 4072.1.

Construction of Buildings in bushfire-prone areas

NSW Planning for Bushfire Protection 2019

The storage and handling of LP gas AS 1596

AS 3959

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text.

SUBMIT results of tests & inspections. **NOTIFY** for inspection of:

- Conditions ready for fire stopping installation.
- Completion of fire stopping before concealment.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Detail of each proposed fire stopping system.
- Certification of completion of Work provided as doc in this SECTION (certification may be done by the respective Subcontractor/s).

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork.

Provide fire stopping to penetrations, joints & perimeter of fire rated elements, to equal element fire rating. Stopping to seal service penetrations, even after service has been fire destroyed.

Stopping where *moisture exposed* or near water services, to be water resistant. Provide permanent access to stopping which requires future maintenance.

Fire stopping sealants, foams, putty to be UV light self-illuminating (to facilitate Site inspection).

Installer to be Manufacturer approved.

Fire Resisting Elements: Refer drawings & Schedules for other detail including extent & rating.

If rating is doc elsewhere in hours or minutes only, provide fire stopping matching that time value in FRL (fire resistance level – in minute units) of structural adequacy/integrity/insulation.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

*** Read **specific** Specification detail with **common** detail including **SECTIONS 1-3**, and in this **SECTION** – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also **SECTION 1**, Clause 1.1 'Documentation Discrepancy'.***

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 SYSTEMS

Common Fire Stopping Systems

Fire Stop Mortar: Re-enterable, cementitious, non-shrink, moisture resistant, water insoluble when set.

Formulated Compound of Incombustible Fibres: Compound mixed with mineral fibres, non-shrinking, moisture resistant, water insoluble when set.

Fibre Stuffing: Mineral fibre, non-combustible, compressed stuffing insulation, dry.

Sealants: Elastomeric, non-sag, non-shrink, moisture resistant, water insoluble & flexible when set.

Fire Stop Foams: 1 part fire reactive ingredient compound, non-shrink, moisture resistant, water insoluble when set. Place in layers to give homogenous density, fill cavities.

Fire Stop Putty: 1 part, mouldable, non-shrink, moisture resistant, water insoluble & flexible when set.

Fire Rated Joints: Select the least conspicuous joint type, to allow expected joint movement to *Engineer* & joint Manufacturer *advice*. Joints to be mechanically fixed.

Accessories: *Provide* clips, collars, accessories, temporary boxing & other as required to install & support stopping. Materials to be non-combustible.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Fire stopping Manufacturer to inspect *documents* & *Site* then **SUBMIT** fire stopping *advice*. At completion, this Manufacturer or Independent Authority to inspect & **SUBMIT** Inspection Certificate.

Maintain cable separation. *Provide* for services thermal movement. Temporary form-up to stop leakage & remove after stopping cured.

Large Openings: *Provide Engineer* designed fire stopping capable of supporting the same loads as the surrounding element, or *provide* similar structural support around opening.

Labelling: Label each installation with a wired metal tag with, Manufacturer & Installer name & address, product name/code, installation date.

SUBMIT Operation & Maintenance Manuals.

Service Contract: *Provide* a 1 year Contract (from Practical Completion) between a fire protection Inspector & *Owner*, for inspector to check, report on and maintain fire stopping (to AS 1851), *including* fire doors & *Consultant doc* fire protection systems. **SUBMIT** copy of Contract.

Refer Preliminaries **SECTION**, Sub-SECTION 4 'Building Work' for more execution detail.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

21 FIXTURES

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

This SECTION applies also to fixtures & fittings doc elsewhere

1.2 REFERENCED DOCUMENTS

Cross References

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork** & all related SECTIONS.

For detail in this specification of the following, refer:

- Access hatches/panels – Doors SECTION.
- Door & window hardware – Doors / Glazing SECTIONS.
- Gates – Doors SECTION.
- Mirrors – Glazing SECTION.
- Roof fixtures – Roofing SECTION.
- Stair nosing piece – Concrete / Timber Work SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5.

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**.

Fixtures to be *proprietary* products/systems, UDO. Support & fix fixtures to framing or solid structure.

Accessories colour matched, metal to be corrosion resistant (finish to match adjacent metal). **NOTIFY** to confirm finishes & colours.

Provide anti-tamper fixings as per Fixing & Sealing SECTION.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2.3 RECESSED FLOOR MATS

Lift-out type, clear anodised aluminium perforated slats, slip resistant strip in-fill, resilient connectors, UDO. **SUBMIT** proposed detail.

Matting rows to be continuous across mat width, running perpendicular to pedestrian travel direction.

Recess mat into floor, mat top flush with FFL. Frame recess perimeter with *min* 2mm thick corrosion resistant metal angle (finish to match adjacent metal) fixed to floor, UDO. *If required* to raise mat level, apply a *proprietary* high strength, high build polymer modified concrete reinstatement mortar.

Provide drainage to external recessed mats.

2.4 SERVICE GRATINGS & LIDS

Covers/Grates: *Proprietary* product to AS 3996, corrosion resistant metal (to match adjacent metal, UDO), removable, impact noise dampened, flush finish, Load Class A-G as applicable (eg Class A foot traffic, Class C car traffic). Lids under the building roof foot-print to be in-fill type, in-filled to match adjacent surface finish. Refer also *Consultant docs*.

Access hatch to liquid in-ground storage tanks to be waterproof type.

Provide gratings & lids in waterproofed floors/pavements with clamp to waterproofing or waterproof floor finish. If floor/pavement surface is separated by topping from the waterproofing, *provide* *proprietary* slotted extension pipe to raise FW grate to FFL & to drain water in the topping.

2.5 STEEL WIRE ROPE

Proprietary stainless steel, tensioned wire rope system, *min* 4.0mm *dia* multi-strand wire rope (to AS 3569), UDO. Rope & hardware to be stainless steel, 316 grade.

Hardware *includes* swages, toggles & turnbuckles as per Manufacturer *Engineer advice*. Adjusters concealed type. In locations within reach of the Public, *provide* anti-tamper fixings & attachments.

Tension wire to Manufacturer *advised* calibrated tension. Replace damaged or frayed wire rope.

Wire rope balustrades to comply with the BCA requirements.

SUBMIT shop drawings.

2.6 MECHANICAL VENTILATION LOUVRE PANELS

Proprietary louvre panel system of corrosion resistant metal construction, perimeter frame, factory coated finish. Mitre join blade corners.

External Louvres: 2 stage louvre blades to face down to *external*. Perimeter seal & flash to building.

To panels with an interior side: *Provide* metal, corrosion resistant, bird proof mesh (2.5mm *dia* wire, 15mm aperture, welded or woven, black powder coated) to the interior side of blades, mechanically fixed.

SUBMIT shop drawings. **NOTIFY** to confirm arrangement.

For louvre panels which are part of a mechanically ventilated system, **SUBMIT**: a) *Engineer* Certificate for air-flow capacity, b) shop drawings.

2.7 EXTERNAL SCREENS

Refer also to the *drawings* & Schedules. Refer to the Metalwork SECTION for detail on metals & fabrication. **SUBMIT** shop drawings.

2.8 INTERNAL FIXTURES & APPLIANCES

Appliances & Equipment

Connect to services to enable proper function of items. *Provide* accessible electrical power isolation switches to items hard-wired. **SUBMIT** Operation & Maintenance Manuals.

Finishes & *substrates* within 450mm of hot appliances to be non-combustible.

*** Read **specific** Specification detail with **common** detail including **SECTIONS 1-3**, and in this **SECTION** – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer **also** **SECTION 1**, Clause 1.1 'Documentation Discrepancy'.***

Sanitary Ware

Provide, UDO: Chrome plate brass fittings/outlets. Plugs to water holding/receiving fixtures. Exposed pipes chrome plated. Brackets & fixings. Refer also 'Service Gratings & Lids' above.

Water supply fixtures to have WaterMark certification & a WELS label. **NOTIFY** if doc fixtures do not comply with these requirements.

Lap over & seal edges of water holding/receiving fixtures. Temporarily cap water supply & drainage pipes to prevent entry of debris & dirt. Flush pipes before installing fixtures.

Connect to services to enable proper function of items. **SUBMIT** Operation & Maintenance Manuals.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Connect to services to enable proper function of items.

Provide sliding components with *min* lateral (perpendicular to operational direction) movement.

Furniture & fixtures to be installed horizontal/vertical, regardless of base *substrate* contour.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

22 RENDER

1 GENERAL

1.1 GENERAL

Refer Concrete SECTION for concrete floor toppings.

Refer to the *drawings/other docs* & the Painting SECTION for detail on high-build coatings.

Provide Work as per this SECTION & as *doc* elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork & all related SECTIONS.

For detail in this specification of the following, refer:

- Bagging to masonry – Masonry SECTION.
- Floor toppings – Concrete SECTION.
- High-build coatings – Painting SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related.

Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text.

SUBMIT results of tests & inspections. **NOTIFY** for inspection of:

- *Substrate* ready for render start.
- Render completion before applied finish application.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5.

2 MATERIALS

2.1 MATERIALS COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 COMPONENTS

Render Extent

Refer to the *drawings* & Schedules for render extent.

Proprietary Render

Render is a *proprietary* product. Refer to the *drawings* & Schedules for *proprietary* render type & any additional detail.

OR

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Traditional Sand/Cement Render

Render thickness to be nominally 12mm or 16mm over whole plane where lath is incorporated.

Ingredients: Cement to be general purpose type (to AS 3972). Lime to be to AS 1672.1. Sand & water to Preliminaries SECTION 1, Sub-SECTION 3. Admixtures not to include plasticizers or workability agents in cement plasters. Curing agents to be *proprietary*.

Render to soffits (if applicable): *Proprietary* high bond strength, polymer modified product.

Bonding Agent: *Provide a proprietary* bonding agent to render. Agent to be water mixed with render to increase render strength & render to *substrate* bond. Prime *substrate*.

Layers	Substrate (concrete or masonry) – Render Mix (cement : lime : sand ratio)
Base	Dense/smooth – 1 : 0.5 : 4. Regular – 1 : 1 : 5. Lightweight/weak – 1 : 1.5 : 7.
Final	Moisture exposed – 1 : 1.5 : 5, otherwise 1 : 1.5 : 6.

Gypsum Plaster

Provide interior gypsum plaster 3mm thick on to a render *substrate*. Mix gypsum:lime putty ratio of 1:2, with calcium sulphate hemihydrate with setting modification additives.

Finish to be smooth. **SUBMIT** a Prototype *min* 2m² panel, including final edge/joint treatment.

Metal Beading

Extent: To render corners (vertical & horizontal) & terminating edges (stopping) to form/protect edges.

Provide metallic coated steel beading (to AS 1397) for non-moisture exposed render & as per 'Metal Corrosion Resistance' (below) for *moisture exposed* render. Corner beading to be expanded mesh, stopping to be perforated strip. Embed beading. Mechanically fix to *substrate* @ 300mm cnrs (4mm clear of *substrate*) & at beading ends/joins. Join with *proprietary* splices.

Lath

Extent: Across chases (if chases *instructed*) & over porous *substrates*.

Provide metallic coated steel lath (to AS 1397) for non-moisture exposed render & as per 'Metal Corrosion Resistance' (below) for *moisture exposed* render. Lath strip *min* 200mm wide, mechanical fix @ 150mm cnrs (4mm clear of *substrate*). Lap joints 100mm & tie with *galv* wire @ the 4 corners.

Joints

Provide full depth render joints at *substrate* joints, against other materials, against dry render & to divide render area into *max* 8m² panels. Joints to be sealant filled.

Metal Corrosion Resistance

Moisture exposed render: Stainless steel grade 304, *galv* 400 g/m² or *metallic coated* Z400/AZ150.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

Application

For smooth or pre-finished *substrates*, lightly scabble *max* 2mm deep. If *substrate* is too rough to allow render thickness/tolerance, lightly scabble high spots (*max* 2mm), apply additional render layers to low spots & *provide* lath to full area. **NOTIFY** of uneven *substrate* water absorption.

Scratch-comb newly stiffened base coat, 2 directions. Press render into lath & beading apertures. Sheath penetrations to permit movement. Seal penetrations. Do not render across other elements including drainage holes, control joints, flashings, damp-proof courses & embedments.

If ambient temperature is below 10 deg C or above 30 deg C, temperature of render mix/components & *substrate* to be 5-35 deg C. Do not render when ambient temperatures are outside of 5-35 deg C.

Cured render finish (before *painting*) to be crack & craze free.

Tolerances: Plane & line: *max* 3mm deviation in 2000mm any direction. Reveals: *max* 2mm deviation.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Render Finish

Wood or plastic float render on application to an even surface of fine sand texture, *paint* finished.

Bagged (sand free) by rubbing the finish surface with hessian when newly set firm, *paint* finished.

Steel trowel to a smooth dense surface which is not glass-like, *paint* finished.

SUBMIT a Prototype *min* 4m² panel, including final edge/joint treatment.

Curing & Completion

Prevent premature or uneven drying out, protect from sun & wind. Keep base coats moist for 2 days & dry for 5 days before further rendering. Keep finish coats moist for 2 days.

Do not apply final applied finish (eg *paint*) until the render has cured for the *min* time as applied finish Manufacturer *advised*.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

23 TILING

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork** & all related SECTIONS.

For detail in this specification of the following, refer:

- Floor mats – Fixtures SECTION.
- Floor toppings – Concrete SECTION.
- Gratings & lids (for Services) – Fixtures SECTION.
- Joint covers (structural) – Concrete SECTION.
- Pavers (external) – External Works SECTION.
- Splashbacks – Joinery SECTION.
- Stone cladding – Masonry SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.
 Ceramic Tiles: Adhesives & Grouts AS ISO 13007. Ceramic Tiles Def., Class, Charact. & Marking AS 4662. Ceramic Tiles AS 3958. (applicable to terrazzo tile also)

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections. **NOTIFY** for inspection of:

- *Substrate* & trial set-outs ready for tile laying start.
- Tile control & movement joints before sealing or concealing.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Samples: Each tile type, *including* slip resistance. Each grout & sealant joint/junction type.

2 MATERIALS

2.1 MATERIALS COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**.

Tiles & accessories to be *proprietary* products.

Provide tiling to Manufacturer *advice* when applying to heated concrete floors.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2.3 TILES

General

Refer *drawings* & Schedules for additional detail *including* selections.

Stone or Reconstituted Stone Units

Provide for higher thermal expansion than ceramic tiles. **SUBMIT** 3No 200 x 200mm samples.

NOTIFY to confirm of finish gloss level.

Natural rough-hewn tiles: **NOTIFY** to confirm size-range, shape & texture. **SUBMIT** 4No samples (2No samples representing tile *max* size, 2No samples representing tile *min* size). Grout joints to be average 10mm wide (*max* 13mm wide, *min* 6mm wide). Distribute variations in stone tile hue/colour/pattern uniformly. Grind-flat trip-hazard imperfections.

Repair non-structural faults with matching colour resin filler. Apply clear penetrating sealer to *exposed to view* stone surfaces (sealer to not affect original slip-resistance of unit).

Apply clear sealer to *exposed to view* tile and grout surfaces.

Sealant/Sealers/Adhesives: Provide as *advised* by sealant/sealer/adhesive Manufacturer for the stone type. Test 3 stone samples by applying sealant/sealer/adhesive then after 7 days visually inspect for defects or discolouring.

Terrazzo Tiles

Terrazzo tiles to BS (British Standard) EN 13748-1 / 13748-2, *min* 40mm thick.

Lay on 5-10mm adhesive bed.

Grout joints to match colour of adjacent terrazzo & to be 1.5-2mm wide.

Maintain grout slurry to act as a temporary protective coating until the terrazzo is ready to hone.

Mechanically hone after grout has cured, to required slip resistance rating.

Apply sealer to Terrazzo, *min* 1 coat after honing, *min* 1 coat at Practical Completion. Sealer not to reduce *doc* slip resistance rating.

NOTIFY to confirm final slip resistance rating (after sealing).

2.4 TILE ADHESIVES

Adhere all tiles. Adhesive to be premium grade, fibre reinforced, flexible (suitable for suspended framed floors) & chemical resistant.

Adhesive for translucent tiles to be white colour.

Apply by notched trowel, with even coverage after laying, adhesive pattern as per AS 3958.1 with 90% tile coverage. Verify by examining 1 in 10 laid tiles. Allow adhesive to cure before grouting or loading.

Adhere-only wall tiles to adhesive Manufacturer *advice*, otherwise mechanical & adhesive fix.

2.5 TILE GROUT

General

Provide *proprietary* grout to tile joints, except at sealant junctions/movement joints.

Commence grouting to fill tile joints, immediately after tile adhesive has cured. Clean tile joints & remove tile spacers before grouting. Grout tile joints before filling sealant joints. Finish joints flush & smooth. Clean off excess grout.

Joints to be consistent, straight & *allow*: Dry pressed & Vitrified tiles - 3mm wide. Extruded tiles - 6mm wide. Quarry, large or irregular tiles – 6 to 12mm wide. **NOTIFY** to confirm joint width.

Floor tile grout natural grey colour & wall tile grout white colour, *UDO*.

Standard Grout

Provide standard grout, except where epoxy grout to be *provided*.

Internal grout to be polymer modified, mould resistant, pre-coloured & cement based.

External grout to be polymer modified, mould resistant, pre-coloured, cement based, mixed with a water based polymer additive to increase durability.

Epoxy Grout

Provide chemical resistant epoxy grout to *Wet Area* floor/skirting tiles and to shower walls & floors. Do not apply in UV exposed situations.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2.6 TILE SEALANT JUNCTIONS

Provide sealant at tile junctions with other materials, elements & planes, tile movement joints, and at substrate control joints (except where a *proprietary* joint is *provided*). Sealant to be UV, chemical resistant & anti-fungal. Colour to match tile grout, *UDO*.

Finish joints flush & smooth. Clean off excess sealant. Joint size to sealant Manufacturer *advice*, consistent width. Sealant joints to contain no adhesive or grout.

2.7 ACCESSORIES

General

Accessories colour matched, metal to be corrosion resistant (finish to match adjacent metal). **NOTIFY** to confirm finish.

Seal the surface of unglazed, stone, porous, un-polished tiles to Manufacturer *advice*. Sealer to be penetrating type, odourless, non-toxic, clear colour, to minimize water ingress & staining, and is not to affect tile surface colour, texture or slip resistance.

Junctions & Edges: Trim junctions & edges with *proprietary* metal trim. Corners mitre joined or to be purpose-made moulded corner pieces. Floor trim to be tapered low-profile, slip-resistant.

Doorway junctions: Under a closed door, or where there is no door, to align with the wall centre line.

Tile Movement Joints

General Joint Extent: **a)** in *max* 2:1 tiled area proportions, **b)** where tiled areas change direction or narrows, **c)** where tiles meet other materials. **NOTIFY** to confirm location.

Internal Joint Extent: @ *max* 25m².

External or Sun-exposed Joint Extent: @ *max* 15m².

Tile movement joints to be sealant filled as per 'Tile Sealant Junctions' above.

Underlay

Provide board underlay on framed flooring. FC board, *min* 6mm thick, to AS/NZS 2908.2, Type B, category 2 *min*, laid on fire retardant, flexible levelling compound. Fixings to have flush finish.

Provide under-tile acoustic underlay to be BCA compliant (regardless of the defined building class).

Provide on suspended floor *substrate* located over occupiable areas below. Underlay & other under-tile materials (*including* adhesive & waterproofing) to be compatible with each other, and selected & *provided* as per Manufacturer *advice*.

Self-levelling & ramped topping to cementitious floor *substrates*: *Provide* as per Concrete SECTION 'Floor Toppings'.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

If *substrate* is too rough to lay to tolerance, or has uneven water absorption, *allow* to rectify & **NOTIFY**. If *substrate* is smooth, *provide* key by lightly scabbling (*max* 2mm removal). If *substrate* has been pre-finished, remove pre-finish & lightly scabble.

Match edges, align patterns. *Provide* whole tiles at high visible locations. Set out equal tile margins. Cut tiles *min* half size & locate cut tiles at low visible locations. Distribute variations in hue/colour/pattern uniformly. If set-out *un-doc*, **NOTIFY** to confirm.

Extend tiling behind/under fixtures not built into tiling. Lap over & seal edges of tiles at water-holding fixtures. Tiling on different elements/planes which meet, are to have tile joints aligned.

Drill holes without damaging tile faces. Cut ceramic tiles on-*Site* manually (without powered abrasive cutting tools) where possible. Rub cut edges smooth without chipping.

Transverse cut tiles at *FW* if *required* to achieve falls to *FW* & cut only those tiles contacting the *FW*.

Do not lay tiles if ambient temperatures are below 5 deg C or above 35 deg C.

Tolerance: Tile/grout joints along a 3000mm straight edge: 3mm. Flatness any plane under a 3000mm straight edge (any direction): 3mm. Tile to tile surface across grout joint: 0.5mm.

SECTION 23 TILING (ARCH)

*** Read **specific** Specification detail with **common** detail including **SECTIONS 1-3**, and in this **SECTION** – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer **also** **SECTION 1**, Clause 1.1 'Documentation Discrepancy'. ***

Spare Tiling Material: *Provide* spare matching tiles & accessories of each colour & type, sealed in durable labelled cardboard boxes. *Provide* 1.5% of the quantity installed. Store on-Site & **NOTIFY** to confirm storage location. Spare materials not to be used during the defects liability period.

SUBMIT Operation & maintenance manual.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

End of SECTION.

24 RESILIENT FINISHES

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork** & all related SECTIONS.

For detail in this specification of the following, refer:

- Floor toppings – Concrete SECTION.
- Joint covers (structural) – Concrete SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD).

Floor Coverings Resilient Sheet & Tile Installation AS 1884.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections. **NOTIFY** for inspection of:

- *Substrate* & trial set-outs ready for resilient finish laying start.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Samples: Each resilient finish, and accessories & trim.
- Certification of completion of Work provided as doc in this SECTION (certification may be done by the respective Subcontractor/s).

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**.

Resilient finishes to be *proprietary* products. Installer to be Manufacturer approved.

Provide resilient finishes to Manufacturer *advice* when applying to heated concrete floors.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 FLOOR SHEET

Edges to be firm, unchipped, machine-cut accurately to size & square to the face. Set out sheets for *min* joints. Run sheet joints parallel with the long sides of rooms.

Weld & joint method to sheet Manufacturer *advice* to achieve least conspicuous & strongest joint, best suited to *Site* & anticipated end-use conditions. Welds & joints to be flush, sealed & colour matched.

2.4 FLOOR TILES/PLANKS

Edges to be firm, unchipped, machine-cut accurately to size & square to the face & to the tile/plank. Distribute variations in hue/colour/pattern uniformly.

If set-out un-*doc*, **NOTIFY** to confirm. Match edges, align patterns. *Provide* whole tiles/planks at high visible locations. Set out equal tile/plank margins. Cut tiles/planks *min* half size & locate cut tiles/planks at low visible locations.

2.5 ACCESSORIES

General

Accessories colour matched, metal to be corrosion resistant (finish to match adjacent metal). **NOTIFY** to confirm finish.

Adhesives to Manufacturer *advice* for on-*Site* & anticipated end-use conditions, & to enable resilient finish to be lifted after adhesive cured, without *substrate* damage.

Junctions & Edges: Trim junctions & edges with *proprietary* metal trim. Corners mitre joined or to be purpose-made moulded corner pieces. Floor trim to be tapered low-profile, slip-resistant.

Doorway junctions: Under a closed door, or where there is no door, to align with the wall centre line.

Clamp finish into *FW* outlets.

Underlay

Provide board underlay on framed flooring. *FC* board, *min* 6mm thick, to AS/NZS 2908.2, Type B, category 2 *min*, laid on fire retardant, flexible levelling compound. Fixings to have flush finish.

Self-levelling & ramped topping to cementitious floor *substrates*: *Provide* as per Concrete SECTION 'Floor Toppings'.

Resilient Finish Movement Joints

Provide to resilient finish area limitations, to finish Manufacturer *advice*. **NOTIFY** to confirm location.

Coved Skirtings

Carry floor sheet continuously over *proprietary* cove former/fillet, up wall *min* 150mm high, *UDO*.

NOTIFY to confirm height.

Weld joints, seal edges. Joins at wall corners made by 45 *deg* splay out from the cove bottom, to avoid the joint occurring at corner, or use *proprietary* pre-formed, weld joined corner pieces. Sealant seal top edge of skirting, *UDO*. **NOTIFY** to confirm top edge treatment.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Substrate moisture content test to AS/NZS 1884 (& AS/NZS 1080.1 for timber *substrates*).

Do not start *Work* before building is sealed, wet *Work* complete/dry & good lighting available. Remove fixtures & refix at completion. Partitions to be installed before resilient finish laying. Lay with consistent grain & texture direction.

Butt edges to form tight joints showing no visible open seam. Scribe to adjoining materials. Finishes with regular patterns or surface profiles, to be match joined.

Keep dry & traffic off floors until adhesives & sealers/polishes cured. Immediately before Practical Completion, clean, buff & polish.

Spare Finish Material: *Provide* spare matching resilient finishes & accessories of each colour & type, sealed in durable labelled plastic wrap. *Provide* 1.5% of the quantity installed. Store on-*Site* & **NOTIFY** to confirm storage location. Spare materials not to be used during the defects liability period.

SUBMIT Operation & maintenance manuals for resilient finishes.

Substrate Tolerance: Flatness & smoothness under a 3000mm straight edge (any direction): 3mm.

SECTION 24 RESILIENT FINISHES (ARCH)

*** Read **specific** Specification detail with **common** detail *including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'. ****

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

25 CARPET

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork** & all related SECTIONS.

For detail in this specification of the following, refer:

- Floor mats – Fixtures SECTION.
- Floor toppings – Concrete SECTION.
- Joint covers (structural) – Concrete SECTION.
- Tactile indicators – Tiling SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.
Textile Floor Covering AS 1385 (Measures) & AS/NZS 2455 (Install).

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections. **NOTIFY** for inspection of:

- Substrate ready for carpet laying start.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Samples: Each carpet, and accessories & trim. Carpet penetration treatment. Fixing method.

2 MATERIALS

2.1 MATERIALS COMMON DETAIL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**.

Reference in this Carpet SECTION to carpet, also applies to underlay (if underlay is applicable).

Carpet to be *proprietary* products. Installer to be Manufacturer approved.

Provide carpet which is insect (*including* moth & carpet beetle) attack resistant.

Provide carpet to Manufacturer *advice* when applying to heated concrete floors.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

2.3 ROLL CARPET

Lay carpet in continuous lengths *min* joints. Joints neat/tight, not located below windows, in Corridors or at other high traffic locations.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Adhesives & tapes to AS/NZS 2455, compatible with contact materials (removable without *substrate* damage). Hot-melt adhesive tapes (*if required*) to be *similar to* commercial grade glass fibre & cotton thermo-plastic adhesive coated tape *min* 60mm wide on metal foil base, silicon-coated release paper.

Proprietary gripper strips (at carpet edges except at junction strips) *min* 33 wide x 7mm thick plywood, 3 rows of *metallic coated* steel angled pins of length to suit carpet. Fixings @ 150mm *cnrs*.

Fix carpet to stairs using *proprietary* metal rod (finish to match adjacent metal) which clamps the carpet into the junction of each stair riser & tread. **SUBMIT** detail of proposed system.

2.4 CARPET TILES

Non-curling tiles, capable of lifting & relocating. Back face to be marked with laying direction.

Tile tolerances: Dimensions, + or - 1mm. Squareness, + or - 1mm across diagonals.

Joints straight, neat/tight. Pile not to catch in joint. Do not fix tiles together. Adhesives to AS/NZS 2455 & compatible with contact materials. Adhere for 100% coverage & to hold tiles without permanent sticking (removable without *substrate* damage).

If set-out un-*doc*, **NOTIFY** to confirm. Match edges, align patterns. *Provide* whole tiles at high visible locations. Set out equal tile margins. Cut tiles *min* half size & locate cut tiles at low visible locations.

2.5 ACCESSORIES

Accessories colour matched, metal to be corrosion resistant (finish to match adjacent metal). **NOTIFY** to confirm finish.

Junctions & Edges: Trim junctions & edges with *proprietary* aluminium tapered low-profile, slip-resistant trim. Corners mitre joined or to be purpose-made moulded corner pieces.

Doorway junctions: Under a closed door, or where there is no door, to align with the wall centre line.

Provide soft underlay (to AS 4288) under roll carpet. Underlay joints to run parallel with carpet joints & not to be within 450mm of a carpet joint. Fix underlay to floor.

Provide board underlay on framed flooring. FC board, *min* 6mm thick, to AS/NZS 2908.2, Type B, category 2 *min*, laid on fire retardant, flexible levelling compound. Fixings to have flush finish.

Self-levelling & ramped topping to cementitious floor *substrates*: *Provide* as per Concrete SECTION 'Floor Toppings'.

3 EXECUTION

3.1 EXECUTION COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

Substrate moisture content test to AS/NZS 2455 (& AS/NZS 1080.1 for timber *substrates*).

Do not start *Work* before building is sealed, wet *Work* complete/dry & good lighting available. Remove door stops & other fixtures & refix at completion. Lay with consistent grain & texture direction.

Partitions to be installed before carpet laying.

Butt edges to form tight joints showing no visible open seam. Scribe to adjoining materials. Finishes with regular patterns or surface profiles, to be match joined.

Cutting Laid Carpet: Penetrate carpet only as required for services. Cut carpet either, cross cutting or cutting rectangular openings. Carpet not to fray. Re-fix edges with adhesive.

Substrate Tolerance: - Flatness under a 3000mm straight edge (any direction): 5mm.

- Smoothness under a 150mm straight edge (any direction): 1mm.

Spare Carpet Material: *Provide* spare matching carpet & accessories of each colour & type, sealed in durable labelled plastic wrap. *Provide* 1.5% of the quantity installed. Store on-Site & **NOTIFY** to confirm storage location. Spare materials not to be used during the defects liability period.

SUBMIT Operation & maintenance manuals for all carpet types.

Refer Preliminaries SECTION, Sub-SECTION 4 'Building Work' for more execution detail.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

26 PAINTING

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

1.2 REFERENCED DOCUMENTS

Cross References

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork & all related SECTIONS.

For detail in this specification of the following, refer:

- Lead based paint removal – Demolition SECTION.
- Powder coating – Metalwork SECTION.
- Sealers to concrete – Concrete SECTION.
- Steel shop priming – Metalwork SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related. Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.

Guide to the Painting of Buildings AS/NZS 2311.	Steel Coatings AS/NZS 2312 / 3750 & AS 4089.	Paint Properties AS 3730.
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1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections. **NOTIFY** for inspection of:

- Substrate ready before painting start.

1.5 SUBMISSIONS

Refer items written **SUBMIT**, in text. Refer Preliminaries SECTION, Sub-SECTION 5.

2 MATERIALS

2.1 MATERIAL COMMON DETAIL

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork.

Paint to be *proprietary* product.

Sealers & coatings to pedestrian surfaces cannot lessen the slip-resistance of the *substrate* material.

Refer Preliminaries SECTION, Sub-SECTION 3 'Materials' for more materials detail.

2.2 RELATED SPECIFICATION DETAIL

*** Refer to this page header note***

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

2.3 PAINT

Extent (New Work)

*Paint exposed to view materials including all edges, except pre-finished materials, UDO. If exposed to view materials are not doc to be painted, allow to paint & **NOTIFY** to confirm painting extent.*

*Hot Dip Galv: Paint exposed to view hot dip galv members, UDO. **NOTIFY** to confirm extent. Refer to Metalwork SECTION for galv repair.*

Services including pipes & ducts on painted building elements, UDO, to be painted same colour as the element, except for a) fire services b) services documented to be painted a specific colour.

Colour & Gloss Level

Colours: Refer drawings & Schedules.

Gloss Levels, UDO: Internal dry-area wall: low gloss. Internal dry-area ceiling: flat. External & moisture exposed elements: semi-gloss. Doors/metalwork/trim: semi-gloss. Wet areas: Gloss.

Colours will be selected by the Owner after Contract start. Colours will be selected from a common Manufacturers standard colour range. Allow the following colour schemes:

- *Externally: 2 evenly distributed different standard colours to major or primary components, 3 evenly distributed different standard colours to minor or secondary components (trim, frames, doors etc).*
- *Internally: 3 evenly distributed different standard colours to walls, 2 evenly distributed different standard colours to ceilings, 3 evenly distributed different standard colours to minor or secondary components (trim, frames, doors etc).*
- *Internal Feature or Dark Wall Colours: 2 different feature or dark colours, each being 2.5% area of the total to-be-painted internal wall area (total 5% of the total to-be-painted internal wall area).*

Paint Product

SUBMIT Paint Manufacturer Paint Schedule (ie specific paint applied to specific substrates) & Data Sheets of specific paints for all substrates, 14 days before painting start.

Paint: Premium quality, min 3 coats. Paint pre-coated substrates to paint Manufacturer advice.

*High Build/Textured Coatings: Installer Manufacturer approved. **SUBMIT** samples 600mm sq. size.*

Pavement Paint: To be high-build vehicular traffic grade, UV resistant, oil resistant, slip-resistant.

Wall Paper

SUBMIT samples min 450 x 450mm each type.

Provide required proprietary accessories, including Size, fungicidal wash, filler. Provide latex Size for fabric-backed / heavy vinyl, embossed paper, foil, if paper to be laid over gloss / semi-gloss surfaces.

NOTIFY for inspection of pre-hang set-out. Hang lining paper, where used, in transverse direction to final paper. Provide wallpaper colour/pattern consistent, sag/blister/discontinuity free, fully adhered.

Do not hang paper in conditions un-suitable to good finish, eg in extremely hot or humid weather.

Tightly butt sheet edges at joints & features. Accurately align the pattern in adjoining sheets. No horizontal joints in vertical drops. Do not turn more than 30mm of paper around corners.

*Spare Wallpaper: Provide spare matching wallpaper & accessories of each colour & type, rolled & sealed in durable labelled plastic wrap. Provide 1.5% of the quantity installed. Store on-Site & **NOTIFY** for instruction regards storage location. Spare materials not to be used during the defects liability period.*

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

3 EXECUTION

3.1 GENERAL

Read with **SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork**. Refer Sub-SECTION 2 'Materials' (above), for specific material execution detail.

At *paint* start **SUBMIT** Paint Manufacturer *advise* confirming delivery of *doc paint* & its *Work* suitability. Capture *paint* waste & wash, and dispose of off-Site at a Local Authority approved disposal facility.

Refer Preliminaries **SECTION**, Sub-SECTION 4 'Building Work' for more execution detail.

3.2 APPLICATION

General

Prepare *substrate*: Refer Preliminaries **SECTION** 'Substrate Preparation'. Provide "Wet Paint" signs in conspicuous locations. Light level at surface *min* 400 lux during *painting* & inspections.

To *substrates* to be *painting*, fill cracks, holes & countersunk fixings with colour matched, paintable fillers. At changes in *substrate*, fill joint with a flexible paintable sealant. Remove hardware & fixtures before *paint* start & re-fix at *paint* completion.

Prepare *substrates* so as not to affect the performance or visual appearance of any applied *paint*.

Apply 1st coat just after preparation to avoid *substrate* contamination, then check for and rectify defects. Allow *paint* to dry before doing subsequent *Work*. Slightly tint each coat of opaque *paint* differently from the previous coat (for visual recognition) with the final coat the *documented* colour.

Paint accurately with cut-in edges. *Paint* with a brush, trim & board type items *including* the thin edge same colour as main face. *Paint* smooth, flat, expansive materials (except doors) with roller or spray.

Spray Painting: Use conventional or airless tools which atomise sprayed *paint*. Provide masking, ventilating & screening facilities to the standards set out for spray *painting* booths to AS/NZS 4114.

NOTIFY to confirm set-out of *paint* patterns & unique layouts.

Refer to the Timber Work **SECTION** for more detail on timber *painting*.

Completion

Test all *paint* types, 2 tests per type *including* testing for adhesion, permeability, film thickness, gloss level & colour. **NOTIFY** to confirm test location. Test to AS/NZS 1580 done by *paint* Manufacturer.

Spare *Paint*: Provide spare *paint* (4 litres each paint colour/type) in new, unopened, labelled metal containers. Store on-Site & **NOTIFY** to confirm storage location. Spare materials not to be used during the defects liability period.

End of SECTION.

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

27 SERVICES

1 GENERAL

1.1 GENERAL

Provide Work as per this SECTION & as doc elsewhere.

Services include hydraulic, electrical, mechanical, transportation, fire protection, security, communication & other services as doc.

1.2 REFERENCED DOCUMENTS

Cross References

Refer also Consultant docs.

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork & all related SECTIONS.

For detail in this specification of the following, refer:

- Access hatches – Doors SECTION.
- D&C Service Documentation – Preliminaries SECTION.
- Drainage (basic) – External Works SECTION.
- Drainage (civil) – Civil Works SECTION.
- Gratings & lids – Fixtures SECTION.

Standards

Provide to documented A/O Standards including associated Parts, if those Parts are Work related.

Refer also Preliminaries SECTION, Sub-SECTION 1, Clause 'Referenced Documents (RD)'.

1.3 INTERPRETATION

Refer Preliminaries SECTION, Sub-SECTION 1, for definition of *italicized* text. Refer also to Consultant documents for other interpretations.

1.4 INSPECTION & TESTING

Refer Preliminaries SECTION, Sub-SECTION 4 'Inspection & Testing'. Refer also Specification text. **SUBMIT** results of tests & inspections.

1.5 SUBMISSIONS

Refer items written **SUBMIT** in text & as per Consultant docs. Refer Preliminaries SECTION, Sub-SECTION 5. **SUBMIT** also:

- Test/inspection results/certifications & Defects Liability Period Servicing program.
- Certification of completion of Work provided as doc in this SECTION & as doc by Consultants (certification may be done by the respective Subcontractor/s).

1.6 ADDITIONAL NOTES

Read with SECTIONS 1 Preliminaries, 2 Fixing & Sealing, 3 Metalwork.

Co-ordinate Services with Work. Provide all Services Authority approvals, labour, materials for services connections including permanent phone service.

Support & fix fixtures, fittings and other items on framing. Penetrations of materials fixed to framing to be full perimeter of penetration framed. Provide double framing to frame-fixed materials at butt joints.

Refer Preliminaries SECTION 'Hardware & Operational Components' & 'Motorized Components'.

NOTIFY to confirm services outlet, control & fitting locations and layouts. Allow to provide an extra 2000mm difference from doc location of each electrical outlet & control, UDO, without Contract variation (Contract price will not alter if outlet, control & fitting location remains as doc).

Provide articulation joint to services conduits, pipes & ducts at ground level to accommodate ground movement & settlement.

Provide sliding components with *min* lateral (perpendicular to operational direction) movement.

SECTION 27 SERVICES (ARCH)

*** Read **specific** Specification detail with **common** detail including SECTIONS 1-3, and in this SECTION – Sub-SECTION 1 'General' / Clause 2.1 'Material Common Detail' / Sub-SECTION 3 'Execution'. Refer also SECTION 1, Clause 1.1 'Documentation Discrepancy'.***

Services runs to be concealed, *UDO*. *Exposed to view* building services & other associated components to be colour matched to adjacent *substrate* materials.

Provide services access as *doc*, as per the NCC & the Doors SECTION.

Provide anti-tamper fixings as per Fixing & Sealing SECTION. Re-tighten all fixings.

Temporarily cap/disconnect services (as applicable) & prevent entry of debris/dirt into pipes/conduits.

Provide electrical earth to conductive piping & safety switches to each electrical circuit, to AS 3000.

Provide air-conditioned spaces to be air-tight to air-conditioning system requirements. Air conditioning & refrigeration physical *Work* done by a licensed Refrigeration Mechanic & design *Work* done by a Refrigeration *Engineer* listed on the 'National Professional Engineer Register'. **SUBMIT** confirmation of *Engineer* Registration. *Provide* non-combustible thermal & acoustic insulation to air-conditioning ducting.

Smoke detectors/alarms to AS 3786 & BCA. *Provide* detectors/alarms in accessible roof spaces (above the ceiling) to Regulatory requirements. **SUBMIT** plan of proposed detector/alarm layout.

Plumbing & drainage to AS/NZS 3500.

Above-Ground Hydraulic Pipe Insulation: *Provide* non-combustible thermal/acoustic insulation to hot water supply pipes. *Provide* non-combustible acoustic insulation to cold water supply pipes & to drainage pipes.

Provide services & associated elements to withstand earthquake loads compliant with AS 1170, including to secondary structures, partitions, ceilings, services pipes/trays/ducts/equipment/machinery. Refer to the Structural *Consultant docs* for earthquake loading parameters.

Provide mechanical ventilation to comply with the NCC & BCA & AS 1668 'The Use of Mechanical Ventilation & AC in Buildings'.

Vermin Entry: *Provide* permanent metallic materials (solid or of *max* aperture 3mm) to prevent bird & rodent entry into services & services equipment.

End of SECTION.