4.2 ARCHITECTURAL & CONSTRUCTION BRIEF

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4.2.1 INTRODUCTION
The following sections outline the general requirements for the building design, construction methods and materials for primary school buildings. Variations to these requirements shall be approved by the Department of Education through the BMW project delivery manager. Specific technical performance and installation requirements should be included in the Trade Specification.

For the impact on design of cleaning requirements refer to 6.7 Cleaners
For further information on Bin enclosure Design refer to 6.7 Cleaners

4.2.1.1 Cooling
- All new Primary Schools are to be provided with cooling.
- Refer 5.9 Mechanical
- Split System reverse cycle air-conditioning in Type 3 UAT only. Location for split system air-conditioning to be provided if and when required. Provide power and drain initially.

4.2.1.2 Interactive White Boards
- All new Primary Schools are to be provided with interactive white boards.
- Allow a suitable monetary sum for the supply and installation of 20 x IWB’s
- IWB’s are to be selected once the new principal has been appointed.
- Builder is to make provision for all data, power and associated electrical services.
- All IWB’s for Pre-Primary classroom 1, 2, Kindergarten, Year 1 and Year 2 to be installed at 600AFL to bottom of IWB. All other IWB’s to be installed for top of board height at 2057AFL. IWB heights to be confirmed by school principal.

4.2.2 MATERIALS
Materials and workmanship shall generally comply with relevant Australian Standards and the Building Code of Australia.

Material Selection
Selection of materials should have the following qualities:
- minimum maintenance requirements
- durable for long life use
- aesthetically suitable for type and location of building
- historically have a good track record, ie proposed use of new products will have to be approved by the Department of Education and Training or their appointed representative
- hot dipped galvanised treatment to steel where exposed to corrosive climate, e.g. near salt water, etc.

Materials Endorsed
The following Brief Sections list materials and finishes endorsed for use in school buildings. Refer to relevant Sub-consultant Briefs and Room Data Sheets for location and selection criteria.

Alternative Materials
If alternative materials, systems or fixtures are proposed then a comparison of the proposed and the standard is to be provided. Criteria to consider the following:
- Durability/Warranty
- Weathering
- Moisture resistance
- Capital cost
- Recurrent cost
- Finish (application of)
- Stability
- Structural capacity
- Protection
- Sustainability values
- Environmental consideration
- Maintenance
4.2.3 FLOORS

Unless specific site conditions or project constraints require otherwise, all floors are to be reinforced concrete slabs on ground. Refer 5.8 Structural Brief.

4.2.3.1 Termite Protection
- Refer 10.8 Termite Protection

4.2.3.2 Floor Finishes
Refer to room Data Sheets for floor finishes.
- Carpet – Direct stuck carpet from an approved supplier and range. Provide PVC reducing strips at junctions with different materials.
- Entrance Mats – Direct stuck and inset into carpets and vinyls surfaces (no requirement for mat wells). Entrance mats to be located at all external doorways, to rooms with carpet or vinyl.
- Vinyl – Direct stuck sheet vinyl with welded joints. R10 Non-slip finish to wet areas.
- Monolithic concrete with sealed finish – generally to storerooms and covered assembly.
- Ceramic tiles – generally in toilets (refer Wall & Floor Tiling).
- Refer to 5.19 Interior Design for detailed product specifications
- Indoor/outdoor floor covering - Flotex, or a similar product equivalent in function, quality, appearance, etc to the approval of the superintendent. Selected product may require specialist machine for periodic cleaning. The machine shall be supplied with loose furniture. Refer 8.1 Loose Furniture

4.2.3.3 Skirtings
Refer to room Data Sheets for location of skirtings.
Skirting types shall be as follows:
- All Activity Areas, Arts and Crafts Room, Year 1 Classrooms, Pre Primary and Kindergarten Classrooms: Welded sheet vinyl integral with floor vinyl with 38 diam-covering fillet and to be 150mm overall height.
- Standard Learning Areas are carpeted and have no skirting.
- Universal access toilets: R10 welded sheet vinyl integral with floor vinyl with 38 diam coving fillet and to be 300mm overall height. UAT Type 0 and Type 0a to Administration Block and Library Block to have 150x150 ceramic tiled skirting.
- Administration Building, Library, Staffroom and Conference Room have 100 x 18 painted bullnosed MDF skirting, except where electrical skirting ducts are indicated.

4.2.4 WALLS

4.2.4.1 External Walls
- External walls are generally cavity face brick work, with rolled, raked or flush joints. The preferred brick format is 290mm x 162mm x 90mm.
- Where gables, high level spandrels and fascias are constructed in light steel stud framing, they must be clad with durable materials such as compressed fibre cement sheets (paint finish) or pre-finished (Colorbond or similar) profiled steel.

4.2.4.2 Internal Walls
- Internal walls are generally face brick work, with rolled joints. The brick format is 290mm x 162mm x 90mm. Light coloured bricks should be used.
- Store Rooms generally should also have face brick walls. Where one wall is face brick on the other side, the fair face brick finish in the Store Room is acceptable.
- Hardwall plaster is generally only used where a face brick finish cannot be achieved on both ends of a wall. Such as in offices and in single leaf walls where chasing is required. Provide galvanised stopping beads and flushing angles at edges and corners.
- Glass finish cement render is used in the canteen and toilets (refer 4.2.7 Plasterwork).
• Gables & high level spandrels – welded steel stud frames lined with flush jointed plaster board. Provide galvanised stopping beads and flushing angles at edges and corners. Provide insulation to the wall as required by the Acoustics and Building Envelope Engineer.
• Where fixtures and fittings such as hand rails and grab rails are fixed to walls specify solid bricks.
• Where sound transmission may be a problem, consult with Acoustics and Building Envelope Engineer.

4.2.5 STRUCTURAL STEEL
• Structural steel to be either Hot Dip Galvanised or primed with a zinc rich primer, prior to application of finish coatings, depending on exposure conditions (refer 5.8 Structural Engineering Brief)
• Generally all external steel or steel built into cavity walls shall be hot dip galvanised.

4.2.6 ROOFING
4.2.6.1 Materials
• Unless specific site conditions or project constraints require otherwise, all roofs are to be pre-finished (Colorbond) steel. Generally of custom-orb profile.
• Tile or Zincalume roofing should be avoided and only used if required for Heritage or other reasons.
• Provide proprietary impregnated foam filler strips under all ridge cappings and ridge vent bases.

4.2.6.2 Domed Skylights

4.2.6.2.1 Skylights to Classrooms, Activity Rooms & Library
Where indicated on the ceiling plans supply and install clear acrylic domed skylights of 500mm to 550mm diameter, complete with rigid silver reflective light shaft and all required supporting structure as detailed. Allow for all elements including transition to square ceiling diffuser, to transmit daylight into interior spaces. All skylights to Classrooms and Activity Areas must incorporate electronically operated variable dimming mechanism. The dimming mechanism is only required to the skylights in the Staffroom/Conference Room and Library on the two closest skylights to the interactive whiteboards to reduce possibility of glare.

4.2.6.2.2 Roof Domes

4.2.6.2.3 Flashing
Flashing to be non corrosive, leak proof and selected to match the colour and profile of the roof material. Combined dome and flashing assembly must be dust and leak proof.

4.2.6.2.4 Reflective Tube/Light Shaft
Skylight shaft from roof dome to diffuser transition must be rigid, specularly reflective silver tube, with visible light reflectance greater than or equal to 97%.

4.2.6.2.5 Diffuser Transition
Tubular shafts must transition to nominal 600mm x 600mm square ceiling diffuser, mounted flush with ceiling. Interior and exposed surfaces to be white.

4.2.6.2.6 Diffuser
Diffusers at ceiling level to be Fresnel lens type, to maximise light diffusion and light output. Visible light transmittance of diffuser to be no less than 90% to be classified CC2 light transmitting material. Diffuser arrangement to be double or triple layered, as required to achieve the Thermal Performance values stated below.

4.2.6.2.7 Thermal: Performance
Product should have current NFRC certified performance values equal to or better than:
• Solar Heat Gain Coefficient (SHGC); 0.25 (or less)
4.2.6.2.8 Daylight Dimmers

Provide electro-mechanically actuated dimming dampers between roof dome and diffuser, to provide variable dimming from 2% to 100%. Wire skylights in pairs from the front to the back of room to a bank of engraved labelled switches adjacent to the room’s light switches.

4.2.6.3 Domed Skylights to Toilets, Stores

Supply and install clear acrylic domed skylights of 250mm or 350mm diameter as indicated on drawings, complete with all supporting structure, rigid silver reflective light shaft and ceiling diffuser, to transit daylight into interior spaces. No requirement for electronically operated dimming mechanism.

4.2.6.3.1 Roof Domes

Refer to “4.2.6.2.4 Roof Domes”

4.2.6.3.2 Flashing

Refer to “4.2.6.2.3 Flashing”.

4.2.6.3.3 Reflective Shaft/Tube

Refer to "4.2.6.2.4 Reflective Shaft/Tube”.

4.2.6.3.4 Diffuser

Refer to “4.2.6.2.6 Diffuser”

4.2.6.3.5 Thermal Performance

Product should have current NFRC certified performance values equal to or better than:

- Solar Heat Gain Coefficient (SHGC); 0.35 (or less)
- U-Value; 3.5 (or less)

Provide evidence supporting the NFRC certification values for the supplied products.

4.2.6.4 Sheet Roof Lights

Where indicated by the Acoustic and Building Environment Engineer provide roof lights as follows:

- Roof lights to be Ampelite Wonderglass 2400 grams/m² with a 25 year warranty, FGW’s Topglass GC 2400gsm with a 25 year warranty or similar product equivalent in function, quality etc to the approval of the Superintendent in consultation with BMW.
- Profiled to match the roof sheeting
- Provide safety mesh under roof lights
- Lay a 50mm x 12mm thick section of bitumen impregnated polyurathene foam over the safety mesh where the safety mesh intersects the purlin.
- Lay 2 lines of 12mm x 9mm thick bitumen impregnated polyurathene foam at end laps of translucent sheet.

4.2.6.5 Insulation

- The whole of the roof is to be insulated, including covered assembly roof.
- Eaves, overhangs, verandahs, etc., do not have to be insulated.
- Where sound may be a problem, consult with Acoustics and Building Envelope Engineer.
- Insulation may be resin bonded fibreglass blankets and where placed above perforated ceiling should have a black polyester scrim bottom face.
• Roof areas having non-acoustic ceilings on rake or roof areas without ceiling fibreglass shall be 75mm thick fibreglass (R1.8) and faced on underside with plain reflective foil laminate.
• Perforated reflective foil laminate with a prefinished white finish should be used on the insulation of roof areas without ceilings such as the Covered Assembly and the Covered Areas in each Teaching Block. Support insulation on black plastic coated chain link mesh tightly stretched and fixed over the purlins.
• Ensure that insulation is detailed to prevent sagging.
• Consult with Acoustics and Building Envelope Engineer for insulation standards.

4.2.6.6 Gutters and Downpipes
• Liaise with Hydraulics Consultant on size and location of gutters and downpipes.
• Eaves gutters are generally to be half round pre-finished steel (Colorbond) to minimise maintenance.
• Box gutters shall be designed in accordance with CD13 of the standard construction details, or otherwise not employed.
• Downpipes are generally to be galvanised CHS as detailed in standard construction detail CD16.
• The verandah down pipe to sump connection shall be in accordance with CD16 of the standard construction details.
• Elsewhere they are to be sewer grade.
• Where UPVC and painted downpipes are specifically requested by DoE through BMW, they are to be securely fixed to walls and columns with galvanised straps or stand off brackets.

4.2.6.7 Roof Safety Systems
• Where safety requirements dictate, new schools and additions should have permanent anchors or static lines on the roof to DOCEP requirements for use with fall arresting equipment by maintenance people.

4.2.6.8 Guarantee
• The contractor is to provide a 5 year guarantee for the whole roof.

4.2.7 ROOF VENTILATORS
Refer to 5.14 Acoustics and Building Envelope

4.2.7.1 Operable Ridge Ventilators
Refer to 5.14 Acoustics and Building Envelope.

4.2.7.2 Fixed Opening Ridge Vent
Fixed ridge ventilators are to be water and dust resistant continuous fixed opening ridge vent. Vents are to have a self cleaning drainage system bird and vermin mesh and shall be constructed of zincalume sheet colorbond finish to match roof sheeting. Under normal operating conditions, rain shall not enter the throat.

4.2.7.3 Rotary Ventilators
Rotary ventilators are to be passive wind driven. Ventilators are to be water and dust resistant, have bird and vermin mesh and shall be constructed of zincalume sheet colorbond finish to match roof sheeting. Under normal operating conditions, rain shall not enter the throat.
Where circular roof ventilators are used, they must also incorporate motorised dampers (air-flow controllers) to ensure the vent can be closed and effectively sealed in winter and during inclement weather.
Also refer to Refer to 5.14 Acoustics and Building Envelope.

4.2.8 SUSPENDED CEILINGS

4.2.8.1 Acoustic Requirements
Ceiling construction and materials shall be selected so as to assist in achieving the acoustic & thermal requirements nominated in the Environmental Brief:
• refer to 5.14 Acoustics and Building Envelope Brief.
• metal strip ceilings shall have a noise co-efficient (NRC) of 0.65 or better.
4.2.8.2 General Requirements

Suspended ceilings shall:

- be level
- be strongly and rigidly constructed
- resist uplift caused by wind loading
- have insulation to acoustic ceiling be held in place with clips to avoid sag
- have suspension system capable of supporting three times the sum of loads imposed by completed ceiling, light fittings, ceiling fans and conduit trays. Banana clips must not be used.
- the suspension system is not required to support live loads or other structural loads.

4.2.8.3 Metal Strip Ceilings

- Metal strip ceilings are generally located in teaching and activity areas, Library, Staff Room, Conference Room and in the Administration Reception Area.
- Specify shadowline angle trims to perimeter walls.
- Metal strips are to be 100mm wide modules of 82 to 84mm roll formed channel profile strip with 16 to 18mm gaps between strips. Metal strips to be pre-finished (colorbond or powdercoat) steel or aluminium.
- Metal strips shall be perforated except for metal strip panelling to Music Room which shall be non-perforated.
- Insulation over metal strip ceilings shall have black dyed polyester fabric adhered to underside. Insulation to be 65mm thick (or as advised by Acoustic and Building Environment Engineer) to achieve the NRC minimum rating of 0.65. Insulation on raking ceiling to be held in place by 10mm diameter galvanised steel rods fixed through the support channels.

4.2.8.4 Flush Gypsum Board Ceiling

- This type of ceiling is generally located in the offices, toilets, stores, etc. Specify shadowline angle trims to perimeter walls. Gypsum board is to be 13mm thick.
- Specify water resistant Gypsum board in toilets & cleaner’s rooms.

4.2.8.5 Eggcrate Diffusers

At locations of ridge ventilators, provide square gridded 15 x 15mm deep interlocking white plastic diffusers, set in a powder coated frame in the ceiling.

4.2.8.6 Ceiling Insulation

- Specify resin bonded fiberglass blankets having a minimum, thermal resistance of R1.5 or as advised by Acoustic and Building Environment Engineer.
- Insulation over metal strip ceilings shall have black dyed polyester fabric adhered to underside. Insulation to be 65mm thick (or as advised by Acoustic and Building Environment Engineer) to achieve the NRC minimum rating of 0.65.

4.2.8.7 Wall Insulation

Any external cavity brick walls not shaded by a veranda must be insulated to achieve a minimum total R-value of R2.3 to comply with Part J1 of BCA 2010. All of the other external cavity masonry walls will need to achieve R1.8 performance. These requirements only apply to habitable spaces. Examples of suitable products include:

- **Air-cell** insulation or a similar product equivalent in function, quality, appearance, etc to the approval of the Superintendent, installed within the cavity. Ensure that the product is installed with appropriate overlaps and the joints are sealed.
- **Foil Faced Polystyrene Board** (eg 25mm ‘Kingspan Kooltherm K8 Board’, or a similar product equivalent in function, quality, appearance, etc to the approval of the Superintendent.) This product should be surface mounted to the inner leaf of masonry, with the foil face facing outwards.

4.2.9 DOORS & WINDOWS

4.2.9.1 Windows

- All windows to be anodised or powdercoated aluminium.
- All aluminium extrusions to be commercial sections not residential.
- Windows generally to be sliding windows.
4.2.9.2 Glazing
- All glass to be to Australian Standards.
- Provide laminated safety glass to glazed doors, and floor length window.

4.2.9.3 Doors & Frames
- Door frames adjacent to and forming part of a window assembly are to be anodised or powder coated aluminium frames to match the windows.
- All doors are to provide an 870mm clear opening. Double doors require at least one door leaf to provide an 870mm clear opening.
- Separate door frames in brick walls are to be either anodised or powdercoated aluminium to match the windows, or pressed zincaneal steel frames.
- External doors are to be either glazed (anodised or powder coated) aluminium or flush panel solid core.
- Internal doors are to be either glazed (anodised or powder coated) aluminium, flush panel solid core or flush panel hollow core, depending on location and use.
- Doors to teaching areas should be glazed aluminium.
- Glazed aluminium doors to have clear laminated safety glass
- Flush solid core doors to be water proof ply wood, with paint finish.
- Provide weather bars to all external thresholds
- Provide aluminium security door with insect screens to the canteen. Security screen doors are to be fitted with a three way locking system to prevent the door being bent at the underside.
- Provide an aluminium security grille to the Canteen Window.
- Provide metal clad doors to both external Canteen doors and all other external Covered Assembly doors that are unprotected by a veranda. These include the Uniform Store, Gardener’s Workshop, Machine Store, Cleaner’s Store and the Fertiliser Store.

Note: Contractor to provide shop drawings of aluminium windows & doors for approval prior to fabrication.

4.2.10 ACOUSTIC operable walls

4.2.10.1 Generally
Acoustic operable walls shall be folding type, consisting of top supported, manually operated panels that can be linked together to form a sound retardant closure.

4.2.10.2 Panels
Panels shall be constructed of a sandwich of board and / or steel separated by acoustic insulation to achieve the specified sound rating. Panel facings shall be contained within a perimeter frame with interlocking stiles. Panel faces shall be replaceable in the field.

4.2.10.3 Acoustics
The manufacturer shall guarantee that the operable walls are like construction to those tested to AS 1276 by a NATA approved independent Australian acoustic laboratory to achieve the following minimum performances (Refer 5.14 Acoustic and Building Envelope Brief):
- Operable walls between Classrooms Rw43
- Operable wall between Staff Room and Conference Room Rw45
- Operable wall between Music Room and Covered Assembly Rw52
4.2.10.4 Stacking
When the operable wall is opened, panels shall be parked in a centre tracking configuration.

4.2.10.5 Closure
The operable wall shall be opened and closed by an expanding jamb located at the stacking end of the track system, closing to a fixed adjustable jamb.

4.2.10.6 Seals
Provide sweep or other seals to seal the wall acoustically.

4.2.10.7 Surface Finish
Panel surfaces shall generally be finished in full height pin board material with a fabric facing. The exposed panel when in the stacked position, is to be finished in whiteboard material.

Visible frames and tracks shall be powder coated

4.2.10.8 Guarantee
The contractor is to provide a written guarantee signed by the Contractor stating that the operable wall and accessories are guaranteed for 5 years from the date of practical completion, against defects, flaws or faults due to workmanship and materials not in accordance with the contract.

4.2.10.9 Maintenance
The contractor is to provide a detailed hand over manual on completion, including details of operation, repair and maintenance.

4.2.11 ROLLER DOORS & ROLLER SHUTTERS

4.2.11.1 ROLLER DOORS
Roller doors shall be single piece pre-finished (colorbond) zinc coated profiled steel curtain roller door with woven nylon strip runners, spring assisted roller drum, mounting brackets and channel guides. Door shall be hand operated and have external twin sliding pad bolts.

Where doors are in pairs provide removable extruded aluminium centre mullion finished to match door curtain. Except for curtain, steel components shall be hot-dip galvanised. Provide 50mm x 75mm hot dipped galv. angle reinforcing bar to length of bottom inside edge of all external roller doors.

4.2.11.2 ROLLER SHUTTERS
Roller shutters to covered area of Covered Assembly building shall be 77mm x 1.4 thick powder-coated aluminium slat roller shutter with clear polycarbonate infilled slots. Roller shutters shall be motorised and connected to key operated individual switches located at each roller shutter.

Roller shutters to Canteen servery shall have two motorised roller shutters with 45mm face depth powder-coated aluminium extruded hollow sections. Roller shutters shall be motorised and connected to key operated switches mounted on the canteen internal wall adjacent to roller shutters.

The Canteen and the Covered Assembly roller shutters shall be keyed alike and also provided with a manual winding rod.

4.2.12 TOILET PARTITIONS
Toilet partitions are to be 13mm solid compact laminate partition system such as RYNAT Endura Series, Laminex or Aqualoo systems, or a similar product equivalent in function, quality, appearance etc to the approval of the superintendent.

- Terrazzo may only be used where requested by the client for specific projects.

Partitions are to be:
• A minimum of 170mm above floor level. Partitions to Unisex Students Toilets 1 & Unisex Students Toilet 2 in Teaching Block 1 shall be installed at floor level.
• Heights vary depending on location, refer to Room Data Sheets.
• Partition doors are to be 13mm solid compact laminate partition system, with self closing hinges and indicator latches. (refer 8.3 Hardware Schedule)
• Terrazzo partitions are to be anti graffiti coated.
• Front partition panels are to be full height and braced back to purlins as nominated on drawings.

4.2.13 CABINETWORK
All fixed furniture to be in accordance with the 5.19 Interior Design Brief, and Standard Furniture Details. Refer Room Data Sheets for locations.

4.2.14 DOOR HARDWARE
Refer to 8.3 Hardware Specification, 8.4 Hardware Schedule
Door stops - Supply to all doors where doors open against walls or furniture.
Door Restainers - Supply to all external doors
Door closers – Supply to all external doors and to internal entry doors to all teaching areas.

4.2.15 SANITARY HARDWARE
• Toilet Paper Dispensers - Heavy-duty cast aluminium bracket with satin finish. Bobrick single-roll toilet tissue dispenser B-273 or a similar product equivalent in function, quality, appearance, etc to the approval of the superintendent.
• Paper Towel Dispenser - “Bobrick” surface mounted paper-towel dispenser B-262 or a similar product equivalent in function, quality, appearance, etc to the approval of the superintendent.
• Towel Rails - “GAMCO” model 76737 satin finished stainless steel surface mounted towel bar or a similar product equivalent in function, quality, appearance, etc to the approval of the superintendent.
• Shower Curtain and Rail - Satin Chrome plated brass tube rail and plastic shower curtain

4.2.16 SIGNAGE
• General Plastic signs shall be extruded aluminium sign holders screw fixed with laminated engraving stock adhesive fixed to holder
• Room Name Signs 32mm high black anodized aluminium sign holders. Lettering shall be 12 mm high uppercase Helvetica Medium. Signs shall have co-ordinated style, length and height above floor level. Provide a sign at each room entry door internally and externally.
• Administration & Dental Therapy Unit 200mm high black anodised aluminium sign with 100mm high lettering
• Building Name 100mm black anodised sign with 50mm high Lettering in upper case Helvetica Medium.
Note: Fix to Library, Covered Assembly and all Learning Blocks.
• School Name Sign 200mm high x10 mm thick aluminium uppercase Helvetica Medium with black anodised finish.
• UAT/AAT Signage Braille inclusive as per AS1428.1 (2009).
All UAT signage to specify users as “Adults”
All AAT signage to specify users as “Students with Assistants”
4.2.17 MISCELLANEOUS HARDWARE

- Fire Extinguisher and Fire Blankets and Signage  Refer 5.16 Fire Brief

4.2.18 WALL AND FLOOR TILING

Materials and workmanship shall comply with Australian Standards. Refer to 5.19 Interior Design.

- Tiled walls and floors are generally confined to toilets. Universal Access Toilets (UATs) are finished with a non-slip or patent dimple vinyl floor and coved vinyl skirting, except for UAT Type 0 and Type 0a in the Administration Block and Library Block.
- Wall tiles are to be specified in showers and excessive wet areas.
- Floor tiles are to be non-slip, laid to fall.

4.2.19 Painting

Unless specifically noted otherwise the following materials and sub-strates are to be painted:

- Plastered walls – low sheen acrylic paint
- Cement rendered walls – semi gloss acrylic paint
- Rolled joint brick work – semi gloss acrylic
- Plasterboard – ceilings & walls – flat acrylic, semi gloss acrylic in wet areas.
- Doors, skirtings joinery -gloss enamel.
- Steel door frames – gloss enamel.
- Plasterboard Walls – Low sheen acrylic. Semi gloss acrylic in wet areas.
- Internal Structural Steel ( visible ) – gloss enamel
- Roof & sanitary plumbing (unless pre-finished ) including gutters, rain water pipes (excluding verandah down pipes), vents, stacks etc – gloss enamel.

Do not paint the following:
- External Structural Steel
- Roof sheeting.
- Flashings not exposed to view.
- Dressed timber not exposed to view.
- Exposed galvanised purlins.
- Face brickwork.
- Veranda galvanised steel downpipes.

4.2.20 EXTERNAL WORKS

The following are to be incorporated in the school

- Fencing
- Paving
- Three flag poles
- Letter box
- Car-parks and Markings
- Courtyards
- Gas enclosure
- Bike racks
- Foot paths
- Bench Seats and Bag Racks
- Playing Courts
- Service access road and Bin Store.
4.2.20.1 Fencing

Refer to 4.1 Master Planning.
Refer to 4.2.0 Fencing Specification.

The following fencing types are to be used:

- Pre-primary Play Area - Either 1200mm high two rail PVC coated chain mesh or 2100mm high Garrison Fence (where it forms part of the security lock-down fence). Provide two pedestrian gates adjacent to the veranda. Provide self closing hinges or springs, and magnetic "pool type" latches to pedestrian gates. Provide 3.0m wide double gate for lawn mowing & vehicle access. Each leaf to have hand hole & drop bolt. One leaf to have galvanised chain welded to it for locking of gate.

- Hard Courts – PVC coated chain mesh in accordance with BMW’s standard specification included in Appendix 1 and in accordance with the draft AS1725 pt 2 and 4 - 2010. All pipe to be Class 1 – medium grade. Provide top and bottom pipe rails. Provide two pedestrian gates. Provide shot bolts & hand hole to gates.

- Perimeter Fencing – 2100 high Garrison Fencing in accordance with BMW’s standard specification included in Appendix 1.

4.2.20.2 Paving

The following paving types are to be used:

- Clay or Concrete segmental paving bricks.
  - Use trafficable paving where vehicle traffic is likely.
  - All segmental paving should be minimally bevelled to enable easy movement of TVs, computer trolleys and wheelchairs.

- Insitu Concrete.
  - Minimum thickness 75mm.
  - Provide tooled V joints at regular intervals. Provide control joints as determined by structural engineer. Control joints to backing strip and sealant.
  - Provide non slip finish – generally a swirl type finish. Broom finish is not to be used.
  - All external paving adjacent to canteens and in covered assembly areas should be sealed as protection against food spillages.

4.2.20.3 Flag Poles

Three flag poles are to be located in the Covered Assembly courtyard. Usually they are located directly opposite the Covered Assembly in a safe place eg. near verandah post. All as specified in the BMW standard 4.2.2 Flagpole Specification.

4.2.20.4 Letter box

Provide 470mm wide x 356mm high x 450mm long (or nearest brick coursing) aluminium letter box. Letter box shall be complete with door, 400 long slot and lock. Letter box to be located with easy access from Administration. Consider the design and access to the hard stand area that is to be provided on both sides of letter box for a) administration staff access to the rear of the letter box and for postal services access to the front of the letter box. Refer to CD 01.

4.2.20.5 Car-Parks and Markings

(Refer Civil Engineering Brief)

4.2.20.6 Drinking Units

Proprietary drinking unit to be located on verandah outside activity areas. Provide one per block including Covered Assembly and one on Pre Primary verandah which should be mounted at a lower height. Each unit to be chilled and have a minimum of three drinking spigots and one universal access spiggot Refer to 5.10 Hydraulics.

4.2.20.7 Bike Racks
All new bicycle parking facilities must comply with AS 2890.3. Construction and layout to be as detailed on standard construction detail CD.14.

4.2.20.8 Seats and Bag Racks
School bags and coats etc are stored on seats and bag racks outside teaching blocks under verandahs and outside internal activity areas. Seats are to be minimum 300mm clear of gas heater exhaust flues. Specify proprietary aluminium seating on secure steel brackets to teaching area verandahs, external areas to activity space, covered assembly and library wall to courtyard. Refer to standard drawing FD.58 for bag rack details.

4.2.20.9 Bin Enclosure
Refer to 7.2 Construction Details CD.19 Bin Enclosure. Refer to 6.7 Cleaners.

4.2.21 SPORT AND RECREATIONAL FACILITIES
Sport and Recreational Facilities consist of following:
• Double Cricket Practice Net and Oval. (Cricket Pitch on oval is optional)
• Fenced Double Hard Court Play Area
• Pre Primary Sandpits - refer to standard drawing CD-11
• Playground equipment is installed and supplied by the school. However, consideration should be made to nominate locations for Pre-primary, Junior and Senior playgrounds and to account for the consequential design of irrigation, fencing and landscaping.

4.2.21.1 Oval (Playing Field)
The size of the Oval is 110m x 76m with a minimum 3m surround. It must have a North/South orientation with maximum 15 degree deviation. The oval should be easily supervised from a distance.

Agreement may be reached with Local Authorities for a joint use oval which may be fully or partly located on the POS. Early discussions between the Department of Education and the Local Authority will determine timing and development arrangements.

4.2.21.2 Preparation and Grassing
Refer to the 5.17 Landscape.

4.2.21.3 Bore and Reticulation
Refer to the 5.18 Bore and Irrigation.

4.2.21.4 Football Goal Posts
Refer to standard detail drawing CD 05

4.2.21.5 Double Cricket Practice Net and Cricket pitch
Cricket nets and cricket pitch all as detailed on standard detail drawings CD08, CD09 and CD10 and in accordance with AS1725.pt 4-1010. These may be constructed by the Local Authority if a shared arrangement has been entered into.

4.2.21.6 Fenced Double Hard Court Play Area
Refer to standard detail drawings CD 03, CD 04, CD 05, CD 06 and CD 07 and draft AS 1725.pt 2-1010

The double hard court area consists of line markings for two combined basketball/netball courts and two tennis courts. All court furniture must be provided. This is to be galvanised and any welds cold galvanised treated. Winders should be zinc plated to reduce likelihood of rusting including tennis posts, sleeves and sleeve caps, as well as combined basketball/netball towers (Refer to standard details CD 04, CD 05, CD 06, and CD 07)

Design requirements
• Orientation - The facility is to be orientated North/South with a maximum deviation of 15degs. The tennis Court line markings are to be North/South. The basketball/netball markings are to be East/ West.

• Facility fall and drainage - Courts should have a 1:100 fall in a single plain side to side, end to end or diagonally.
A finished asphalt tolerance of 3mm over a 3000 straight edge is needed to minimize surface ponding. Ponding on a court surface can lead to delamination of an acrylic surface, other maintenance issues as well as possible safety concerns. Consideration is to be given for the surface water run off. Run offs can be directed towards the adjoining oval or grass play areas. If this is done, consideration should be given to any possible erosion around the perimeter of the facility while grassed areas are being established. Run off could also be directed into suitable above or below ground collection points for storage for later use or into soak wells.

Sub-soil drainage (agricultural drains) may be required on the high side of the facility if there are surrounding high areas or impermeable subsoils that are likely to impact on the courts.

- **Kerb surround** - A suitable concrete kerb (mowing strip) should be laid flush with the court and sufficiently wide and deep so as to reduce the likelihood of grass growing into or under the facility asphalt surface.

- **Floodlights** – Lighting to courts is generally not a requirement. Where a joint development with the Local Authority occurs, floodlights and/or provision of conduits for future lighting may, along with the provision of adequate space for future courts and play areas. The Local Authority may also wish to construct the courts if they are part of the funding arrangements.

- **Acrylic surface finish** – Acrylic surface finish is required. The asphalt surface should be left for a minimum of four weeks to cure prior to the acrylic surface being applied. The 100% acrylic surface should be a minimum three coat system consisting of a filler, or base coat and two wear coats. This is to be applied in accordance with the manufacturers’ specification and all materials delivered to site should be clearly marked with the manufacturer’s specification.

- **Line markings** - All line markings should be 50mm wide and applied in 100% acrylic line marking paint compatible with the surface coating. Line markings are to be free of ‘feathered edging’ and be consistent in texture and application. Lines are applied in the following order and colours:
  
  - **Basketball** – red
  - **Netball** – yellow
  - **Tennis** – white