DEMOLITION OF EXISTING DWELLINGS, STRUCTURES & OUTBUILDINGS

at

118-120 STATION STREET

Penrith NSW

ARCHITECTURAL SPECIFICATION

PREPARED BY

MORSON GROUP PTY LTD

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DEMOLITION

1 GENERAL

1.1 CROSS REFERENCES

General

General: Conform to the *GENERAL REQUIREMENTS* worksection.
Note and comply with the requirements of the Conditions of Development Consent.

Associated worksections

Associated worksections: Conform to the following:
- *SITE MANAGEMENT*

1.2 STANDARD

General

Demolition: To AS 2601.

1.3 INTERPRETATION

Definitions

For the purposes of this worksection, the following definitions apply:
- Demolition: The complete or partial dismantling of a building or structure, by pre-planned and controlled methods or procedures.
- Dilapidation record: The photographic or video and written record made before commencement of demolition work of the condition of the portion of the existing building being retained, adjacent buildings, and other relevant structures or facilities.
- Dismantle: The reduction of an item to its components in a manner to allow re-assembly.
- Recover: The disconnection and removal of an item in a manner to allow re-installation.

1.4 INSPECTION

Notice

Inspection: Give sufficient notice so that inspection may be made of the following:
- Adjacent structures before commencement of demolition.
- Services before disconnection or diversion.
- Trees as documented to be retained, before commencement of demolition.
- Contents of building before commencement of demolition.
- Structure after stripping and removal of roof coverings and other external cladding.
- Underground structures after demolition above them.
- Excavations remaining after removal of underground work.
- Site after removal of demolished materials.
- Services after reconnection or diversion.

1.5 SUBMISSIONS

Stockpiles

Location: Submit the locations for on-site stockpiles to be used for demolished materials for recycling in the works. Coordinate with the locations of storage for other waste streams and prevent mixing or pollution.

Recycling

Delivery location: Submit the name and address of the proposed recycling facility.
Certification: Provide evidence of delivery to the nominated recycling facility.

2 PRODUCTS

2.1 DEMOLISHED MATERIALS

Demolished materials classes

Ownership and implementation: Comply with the **Demolished materials classes table.**

Demolished materials classes table

Class	Requirement	Ownership
Recovered items for delivery to the principal	Recover without damage items identified in the **Recovered items for delivery to the principal schedule**	Principal/proprietor
Demolished material for recycling off site	Demolish and deliver for recycling material identified in the **Demolished material for recycling off-site schedule**	Contractor
Dismantle for relocation as part of the works	Dismantle without damage and store items identified in the **Dismantle for relocation schedule**	Principal/proprietor
Demolished for removal	Remove from the site demolished materials identified in the **Demolish for removal schedule**. Do not burn or bury on site Transit: Prevent spillage of demolishing materials in transit	Contractor

Refer to the Waste Minimisation Management Plan as an Annexure to this specification.

3 EXECUTION

3.1 SUPPORT

Temporary support

General: If temporary support is required, certification for its design and installation is required from a professional engineer engaged by the contractor.
Ground support: Support excavations for demolition of underground structures.
Adjacent structures: Provide supports to adjacent structures where necessary, sufficient to prevent damage resulting from the works.
Lateral supports: Provide lateral support equal to that given by the structure to be demolished.
Vertical supports: Provide vertical support where necessary using piling or underpinning or both.

3.2 PROTECTION

Encroachment

General: Prevent the encroachment of demolished materials onto adjoining property, including public places.

Dust protection

General: Provide dust-proof screens, bulkheads and covers to protect existing finishes and the immediate environment from dust and debris.

Security

General: If a wall or roof is opened for alterations and additions, provide security against unauthorised entry to the building.

Temporary access

General: Provide a substantial temporary doorset fitted with a rim deadlock, and remove on completion of demolition.

Salvaged items

General: Salvage all components associated with the listed items that are essential for their reuse. Minimise damage during removal.

3.3 DEMOLITION

Encroachment

General: If encroachments from adjacent structures are encountered and are not documented, give notice and obtain instructions.

Concrete slabs

General: Using a diamond saw, neatly cut back or trim to new alignment with a clean true face existing concrete slabs to be partially demolished or penetrated.
Recycling: If concrete crushing is proposed on site, submit details of plant and environmental controls.

Refrigeration systems

General: Undertake demolition work on refrigeration systems in conformance with:
- AS/NZS 1677.2.

- The recommendations of SAA HB 40.1 and SAA HB 40.2.

Explosives
General: Do not use explosives.

Extent of Demolition
Carry out all demolition to existing buildings and footings, fences, trees and site features as required to complete the works.
The demolition documentation gives a broad description of the extent. However, the Contractor is deemed to have inspected the site during the Tender Period to allow for all ancillary demolition work not specifically listed but required for the construction of this project.
Where demolished items are adjacent to sections of building to be retained, take care to minimise damage to existing materials and surfaces by using demolition techniques appropriate to the found situation.
Damage to existing surfaces to be retained shall be made good to match existing unless otherwise noted.

3.4 HAZARDOUS MATERIALS

General
General: Hazardous materials that have already been identified are set out in the Hazardous Materials Report annexed to the Specification. Comply with the recommendations for removal of hazardous materials contained in the Hazardous Materials Report.

Hazardous materials
General: Give notice immediately if hazardous materials or conditions are found, including the following:
- Asbestos or material containing asbestos.
- Flammable or explosive liquids or gases.
- Toxic, infective or contaminated materials.
- Radiation or radioactive materials.
- Noxious or explosive chemicals.
- Tanks or other containers which have been used for storage of explosive, toxic, infective or contaminated substances.

Removal
General: Remove hazardous materials outside of club operating hours.

3.5 COMPLETION

Notice of completion
General: Give at least 7 working days' notice of completion of demolition so that adjacent structures may be inspected following completion of demolition.
Making good: Make good any damage arising out of demolition work. Obtain written acceptance from the owner of each adjoining property of completeness and standard of making good.

Temporary support
General: Clear away at completion of demolition.

4 SELECTIONS

4.1 DEMOLITION

Recovered items for delivery to the Principal schedule

Item		Deliver to
*	TBA by Client	Principal

Demolished material for recycling off-site schedule

Material
Bricks, concrete, timber

Dismantle for relocation schedule

Item	Location for storage	Location for re-assembly
Nil	Nil	nil

Demolish for removal schedule

Item
All other items not scheduled above.

End of Section

SITE MANAGEMENT

1 GENERAL

1.1 AIMS

Responsibilities

Designated areas for protection: Neighbouring Building and RSL Club access driveway
Outline of the works: DEMOLISH EXISTING RENDERED BRICK BUILDING

Incidental works

Generally: Undertake the following:
- Reinstatement: Reinstate undeveloped ground surfaces to the condition existing at the commencement of the contract.
- Minor trimming: As required to complete the works as documented.

1.2 CROSS REFERENCES

General

General: Conform to the *GENERAL REQUIREMENTS* worksection.

Associated worksections

Associated worksections: Conform to the following:
- *DEMOLITION*
- *EARTHWORK*
- *PAVEMENT BASE AND SUBBASE*
- *ASPHALTIC CONCRETE*
- *PAVEMENT ANCILLARIES*

1.3 INTERPRETATIONS

Definitions

General: For the purposes of this worksection the following definitions apply:
- Clearance authority: Any authority covering statutory requirements relating to the project and requiring clearances for work in that particular area.
- Clearances: A formal certificate, approval or condition issued by a statutory authority to allow work to be carried out in a particular area.
- Contamination of land: The presence of a substance in, on or under the land at a concentration above that which is normally found in that locality, such that there presents a risk of harm to human health or to the environment.
- Green and organic waste: Includes all food wastes, vegetative wastes from land clearing and pruning operations, biosolids produced from the treatment of liquid wastes, garden wastes and forestry waste (bark and saw dust) and paper and cardboard products.
- Environment: The physical factors of the surroundings of human beings including the land, waters, atmosphere, climate, sound, odours, tastes, the biological factors of animals and plants and the social factor of aesthetics.
- Environmental audits: A review of environment management practices, in particular the evaluation of a site for environmental liability.
- Environmental impact assessment: A method for predicting environmental impacts of a proposed development including minimising identified impacts.
- Environmental management plan (EMP): A plan describing the management of the environmental issues and considerations for the activity being undertaken. This applies to the design, construction and operation of the buildings and infrastructure.
- Pollution incident: An incident or set of circumstances during or as a consequence of which there is, or is likely to be a leak, spill or other escape of a substance as a result of which pollution has occurred, is occurring or is likely to occur.
- Weed: An invasive plant that degrades our natural areas, reduces the sustainability or affects the health of people and animals.

1.4 SUBMISSIONS

Submissions program

Time for submissions: [complete/delete]

Environmental management plan (EMP)

Submit an Environmental management plan and include the following details:
- Assignment of responsibility for environmental controls.
- Conditions of approvals, licences and permits to meet statutory requirements.
- Details of potential environmental impacts and operational control measures that are to be implemented including:
  . Heritage.
  . Preservation of visual values.
- Details of environmental protection for each activity.
- Locations of environmental controls and environmentally sensitive areas.
- Communication procedures.
- Emergency response procedures including response time.
- Environmental training plan and procedures.
- Environmental auditing program.
- Other items necessary to protect the surrounding environment.

Address the phases of activity, as appropriate:
- Before construction and site establishment.
- During construction.
- After construction, including rehabilitation activities and maintenance of erosion and sedimentation controls.

Preliminary environmental management plan: Submit with the tender documentation.
Completed environmental management plan: Submit before work commences on site.

Soil erosion and sediment control plan

Submit a soil erosion and sediment control plan and include the following details:
- Staging of operations and sequence of works.
- Diversion of upstream water around the site.
- Provision of temporary drains and catch drains.
- Application of diversion, dispersal and/or retention measures to concentrate flows to control and dissipate stormwater through the site without damage.
- Spreader banks or other structures to disperse concentrated runoff.
- Temporary grassing or other treatments such as contour ploughing or bunding to disturbed areas and long-term stockpiles.
- Restoration of disturbed areas in progress with the works.
- Use of mulch materials to protect disturbed or exposed areas where suitable.

Areas: Include all site areas and access and haulage tracks, borrow pits, stockpile and storage areas and compound areas.

Waste management plan

As per the Approved Waste Management plan submitted to council for DA.

Ground contamination control plan

Submit a ground contamination plan and include the following details:
- If the land is identified as contaminated, or the presence of acid sulphate soils is found, prepare a Remediation Action Plan (RAP) in accordance with the Environmental Protection Authority (EPA) guidelines.
- Note the findings of the Preliminary Environmental Site Assessment appended to the Specification.

Weed management plan

Details required:
- Identify weeds and infestation zones within the work site/investigation date.
- Method of cleaning vehicles and machinery and cleaning date.
- Cleaning bay location and treatment date.
- Contaminated fill stockpile, treatment type and treatment date.

Site preparation

Mulching: Submit details of provisions for mulching cleared vegetation.

Internal monitoring

Documents: Provide documented procedures describing:
- How environmental monitoring is to be planned, implemented and recorded.
- Non-conformance control and corrective action procedures for all of the control measures that are to be implemented.

Records: Maintain records of the results of environmental monitoring, including the effectiveness of any remedial action taken.
Internal monitoring personnel: Provide staff member's names and contact details.
Machinery and equipment: Provide details of proposed plant.

Emergency response

Emergency response personnel: Provide staff member's names and contact details.

Weed management personnel

Submit details of:
- Subcontractors who will treat weed infestations.
- Chemical handlers, qualifications, date, and spray type.

1.5 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:
- Enclosures to trees to be retained.
- Trees to be removed.

2 EXECUTION

2.1 GENERAL

Community liaison

General: Notify residents about new or changed construction activities which will affect access to, or disrupt the use of, their properties.
Notice: 5 working days unless the work is of an urgent nature with safety implications.
Notification content:
- The nature of the work.
- The reason for it being undertaken.
- The expected duration.
- Changes to traffic arrangements and property access.
- The 24-hour contact number of the responsible representative.

Legislative requirements

Conditions of Development Approval relevant to environment controls: [complete/delete]
Environmental Impact Statement issues relevant to environment controls: [complete/delete]

Complaints

Report: Within 1 working day of receiving a complaint about any environmental issue, including pollution, submit a written report detailing the complaint and action taken.
Register: Keep a register of all environmental complaints and action taken.

Cultural heritage

Training: Ensure that all personnel working on site have received training relating to their responsibilities regarding cultural heritage and are made aware of any sites/areas, which must be avoided. Identify such sites/areas on a site map and make available to all relevant personnel during the works.
Notice: Give notice if any item is encountered which is suspected to be an artefact of heritage value or any relic or material suspected of being of Aboriginal or early settlement origin.
Action: Stop construction work that might affect the item and protect the item from damage or disturbance.

Clearances

If required obtain clearances from the following authorities: [complete/delete]

2.2 CONTROL AND PROTECTION

Air quality control

General: Protect adjoining owners, residents and the public against dust, dirt and water nuisance and injury. Use dust screens and watering to reduce the dust nuisance.

Lighting of fires

Prohibition: Do not light fires.

Noise control and vibration

Comply with the Conditions of Development Consent relating to noise control during construction.
Monitoring: Measure vibration levels of the peak particle velocity to AS 2187.2.
Limits: Do not exceed the vibration or airblast overpressure recommended in AS 2187.2 Appendix J.

Dust control

Dust control measures: Use water spray and screened fencing to control dust.

Vegetation and fauna

Wild life protected: All native.
Trees to be removed: Inspect to establish if nesting native fauna are present. If present give notice.
Pruning: To AS 4373.

Water quality

Wash out: Ensure that wash out does not enter waterways or stormwater drains.
Cross connection: Ensure that there are no cross connections between the stormwater and the public sewerage system.

Dewatering

General: Keep groundworks free of water. Provide and maintain slopes, crowns and drains on excavations and embankments to ensure free drainage. Place construction, including fill, masonry, concrete and services, on ground from which free water has been removed. Prevent water flow over freshly laid work.
Disposal: Dispose of water legally.

2.3 TRUCK CONTAMINATION

Truck contamination precautions

Covers: Use tarpaulins to prevent the dropping of materials on public roads.
Washing: Wash the underside of all vehicles leaving the site as follows:

- Mud: Do not carry mud on to adjacent paved streets or other areas.
- Noxious plants: If noxious plants, as designated by the Local Authority, are present on the site ensure seeds are not carried on to adjacent paved streets or other areas.

2.4 MANAGEMENT AND CONTROL PLAN IMPLEMENTATION

Approval

Approval authority: Penrith City Council

Implementation

General: Implement the following approved management and control plans:

- Environmental management control plan.
- Soil erosion and sediment control plan.
- Air quality control plan.
- Waste management plan.
- Ground contamination plan.
- Weed management plan.

Reporting

General: Compile the environment management plan (EMP) reports regularly to report the progress in relation to:

- Performance against statutory requirements.
- Performance against the EMP and the EMP policy, ecologically sustainable development outcomes and targets.

- Summary of monitoring, inspection and audits.
- Summary of reports required to meet the statutory requirements.
- Summary of environmental emergencies, incidents, non-compliance and complaints.

2.5 TREE PROTECTION

General

Warning sign: Display a sign in a prominent position at each entrance to the site, warning that trees and plantings are to be protected during the contract. Remove on completion.
Lettering: Road sign type sans serif letters, 100 mm high, in red on a white background, to AS 1744.
Protection measures program: Before commencement of earthworks.

Trees to be retained

Extent: All trees NOT marked for removal.

Tree protection

Tree enclosures: Provide temporary protective enclosures as follows:
- Enclosure size: 10 times the trunk diameter at 1500 mm measured as a radius from the trunk.

Trunk protection: If space is not available for tree enclosures provide trunk protection comprising 2000 mm long planks of 100 mm x 50 hardwood stacked vertically around the trunk and secured with 10 gauge wire over hessian protective padding.
Sheeting to excavations: Where excavations are to be made near trees, add continuous 900 mm high corrugated galvanized steel sheeting, bedded 150 mm into the ground, wired to the enclosure.
Trees to be protected with sheeting: [complete/delete]
Work on trees: If it is proposed to perform work on trees to be retained, give notice and obtain instructions.
Removal: If a tree to be retained is damaged and repair work is considered impractical, or is attempted and fails, give notice and obtain instructions.

Work near trees

Harmful materials: Keep the area within the dripline free of sheds and paths, construction material and debris. Do not place bulk materials and harmful materials under or near trees. Do not place spoil from excavations against tree trunks. Prevent wind-blown materials such as cement from harming trees and plants.
Damage: Prevent damage to tree bark. Do not attach stays, guys and the like to trees.
Work under trees: Do not remove topsoil from, or add topsoil to, the area within the dripline of the trees.
Excavation: If excavation is required near trees to be retained, give notice and obtain instructions. Open up excavations under tree canopies for as short a period as possible.
Hand methods: Use hand methods to locate, expose and cleanly remove the roots on the line of excavation. If it is necessary to excavate within the drip line, use hand methods such that root systems are preserved intact and undamaged.
Roots: Do not cut tree roots exceeding 50 mm diameter. Where it is necessary to cut tree roots, use means such that the cutting does not unduly disturb the remaining root system. Immediately after cutting, water the tree and apply a liquid rooting hormone to stimulate the growth of new roots.
Backfilling: Backfill to excavations around tree roots with a mixture consisting of three parts by volume of topsoil and one part of well rotted compost with a neutral pH value, free from weed growth and harmful materials. Place the backfill layers, each of 300 mm maximum depth, compacted to a dry density similar to that of the original or surrounding soil. Do not backfill around tree trunks to a height greater than 200 mm above the original ground surface. Immediately after backfilling, thoroughly water the root zone surrounding the tree.
Compacted ground: Do not compact the ground or use skid-steel vehicles under the tree dripline. If compaction occurs, give notice and obtain instructions.
Compaction protection: Protect areas adjacent the tree drip line. Submit proposals for an elevated platform to suit the proposed earthworks machinery.
Watering: Water trees as necessary, including where roots are exposed at ambient temperature > 35°C.
Mulching: Spread 100 mm thick organic mulch to the whole of the area covered by the drip line of all protected trees.

2.6 EXISTING SERVICES

Marking

General: Before commencing earthworks, locate and mark existing underground services in the areas which will be affected by the earthworks operations including clearing, excavating and trenching.

Excavation

General: Do not excavate by machine within 1 m of existing underground services.

2.7 TREES TO BE REMOVED

Designation

Extent: Refer to Demolition drawing.
Marking: Mark trees and shrubs to be removed with tags.
- Location: 1000 mm above ground level.

2.8 SITE CLEARING

Extent

General: Clear only the following site areas:
- Areas to be occupied by works such as structures, paving, excavation, regrading and landscaping.
- Other areas designated to be cleared.

Contractor's site areas: If not included within the areas documented above, clear generally only to the extent necessary for the performance of the works.

Clearing and grubbing

Clearing: Remove everything on or above the site surface, including rubbish, scrap, grass, vegetable matter and organic debris, scrub, trees, timber, stumps, boulders and rubble.
Grubbing: Grub out stumps and roots over 75 mm diameter to a minimum depth of 500 mm below subgrade under buildings, embankments or paving, or 300 mm below finished surface in unpaved areas. Holes remaining after grubbing shall be backfilled with sand material to prevent ponding of water. The material shall be compacted to the relative density of the existing adjacent ground material.
Old works: Remove old works, including slabs, foundations, pavings, drains and manholes found on the surface.

2.9 SEDIMENT FILTERS

General

Inspection: For displacement, undercutting, over-topping and soil buildup, after each rain event. Effect repairs immediately.
Removal: When the upslope areas have been permanently stabilised.

Straw bale filters

Description: Temporary structures made of straw bales (cereal straw) laid end to end across direction of stormwater flow in order to filter sediment.
Location: [complete/delete]
Slopes: If filter is at toe of a slope, place bales 1500 – 2000 mm away from slope, to provide access for maintenance and to allow coarse sediment to drop out of suspension before reaching sediment filter.
Binding: Wire-bound or with string-tied bindings wrapped around the bale sides.
Installation:
- Trench: 100 mm deep trench the width of a bale and the length of the proposed sediment filter.
- Placing: Lengthwise in the trench with ends tightly abutting and corners lapped.
- Fixing: Drive two 50 x 50 mm wooden stakes or metal star pickets through each bale. Ensure bales are packed closely and staked securely. Eliminate gaps with loose straw wedged between tight.

Backfilling: Compacted excavated soil to ground level on downhill side of barrier, and 100 mm above ground level on the uphill side of the bales.

Silt fence

Description: A temporary barrier of geotextile filter fabric, supported on wire or mesh fencing in order to filter sediment from stormwater flow.
Location: [complete/delete]
Slopes: If filter is at toe of a slope, locate fence 1500 – 2000 mm away from slope, to provide access for maintenance and to allow coarse sediment to drop out of suspension before reaching sediment filter.

Contours: Locate fence line and posts along contours curving upstream at the sides to direct flow toward middle of the fence.
Installation:
- Trench: 100 mm wide x 200 mm deep along line of posts and upslope from barrier.
- Posts: 1200 mm long pre drilled steel star picket posts at 3000 mm centres, driven 600 mm and fitted with plastic safety caps.
- Wire mesh: ≥ 14 gauge x ≤ 150 mm mesh spacing. Fasten wire mesh to upslope side of posts with 25 mm long heavy-duty wire staples and tie wire. Extend wire mesh 150 mm into trench.
- Filter fabric: Geotextile filter fabric selected to suit local soil conditions cut from a continuous roll to minimise joints.
- Fixing fabric: Wire ties to the uphill side of fence posts, and extended 200 mm into the trench. Do not staple fabric onto trees.
- Fabric joints: 150 mm overlap at a support post, with both ends fastened to the post.

Performance: Retain soil found on site but with openings large enough to permit drainage and prevent clogging.
Fence height: 600 mm average.
Backfilling: Backfill trench over toe of fabric and compact soil.

Straw bale- geotextile filters

Description: Sediment filter comprising straw bales and geotextile filter fabric.
Location: [complete/delete]
Slopes: If filter is at toe of a slope, place bales 1500 – 2000 mm away from slope, to provide access for maintenance and to allow coarse sediment to drop out of suspension before reaching sediment filter.
Binding: Wire-bound or with string-tied bindings wrapped around the bale sides.
Bale installation:
- Trench: 100 mm deep trench the width of a bale and the length of the proposed sediment filter.
- Placing: Lengthwise in the trench with ends tightly abutting and corners lapped.
- Fixing: Drive two 50 x 50 mm wooden stakes or metal star pickets through each bale. Ensure bales are packed closely and staked securely. Eliminate gaps with loose straw wedged between tight.

Filter fabric installation:
- Geotextile filter fabric selected to suit local soil conditions cut from a continuous roll to minimise joints.
- Fixing fabric: Staple filter fabric to top of straw bale and extend down the uphill face of the bale into the trench. Stretch the fabric and peg securely into the subgrade.
- Fabric joints: 150 mm overlap at a support post, with both ends fastened to the post.

Performance: Retain soil found on site but with openings large enough to permit drainage and prevent clogging.
Backfilling: Compacted excavated soil to ground level on downhill side of barrier, and 100 mm above ground level on the uphill side of the bales against and over toe of the fabric.

2.10 DISPOSAL OF MATERIALS

Disposal

Spoil: Remove cleared and grubbed material from the site and dispose of legally.
Surplus material: Remove from site and dispose of legally.
Burial: Bury concrete and other inorganic fragments as follows:
- Location: Beyond built or paved areas.
- Depth: > 600 mm from finished ground level to the top of the object.
- Compaction: Eliminate voids.

Mulch

Seed free aerial vegetative matter: Put through a chipper. Reduce to pieces not larger than 75 x 50 x 15 mm and stockpile for re-use as mulch.
Material not permitted: Leaf matter and tree loppings from privet, camphor laurel, coral tree, poplar, willow and noxious weeds.

2.11 COMPLETION

Temporary works

Remove at completion: measures, safety fencing, temporary tree enclosures, sediment control.

Joining up
Abutments: Join new and existing work including cutting if required, in the manner appropriate to the materials and make good to existing work.

2.12 CLEANING UP
Siteworks generally
Progressive cleaning: Keep the work under the contract clean and tidy as it proceeds and regularly remove from the site rubbish and surplus material arising from the execution of the work including any work performed during the Defects Liability Period or the Plant Establishment Period.
Removal of plant: Within fourteen days of the date of Practical Completion, remove Temporary Works, Construction Plant, buildings, workshops and equipment not forming part of the Works, except such as are required for work during the Defects Liability Period or the Plant Establishment Period which shall be removed on completion of that work.

2.13 VERMIN
Vermin management
Requirement: Employ an approved firm of pest exterminators and provide a certificate from the firm stating that the completed building is free of vermin.

End of Section

EARTHWORK

1 GENERAL

1.1 CROSS REFERENCES

General

General: Conform to the *GENERAL REQUIREMENTS* worksection.

Associated worksections

Associated worksections: Conform to the following:
- *DEMOLITION*
- *SITE MANAGEMENT*

1.2 INTERPRETATION

Definitions

General: For the purposes of this worksection the definitions given below apply.
Standard: To AS 1348.
Description and classification of soils: To AS 1726.
- Bad ground: Ground unsuitable for the purposes of the works, including fill liable to subsidence, ground containing cavities, faults or fissures, ground contaminated by harmful substances and ground which is or becomes soft, wet or unstable.
- Base: One or more layers of material usually constituting the uppermost structural element of a pavement and on which the surfacing may be placed, which may be composed of fine crushed rock, natural gravel, broken stone, stabilised material, asphalt or Portland cement concrete.
- Rock: Monolithic material with volume greater than 0.5 cubic metres which cannot be removed until broken up by a "Caterpillar D9" bulldozer with a single ripper in bulk work or with a "Kato 1200" excavator or equivalent for trenches, or by percussion tools.
- Site topsoil: Soil excavated from the site which contains organic matter, supports plant life, conforms generally to the fine to medium texture classification of AS 4419 (loam, silt, clay loam) and is free from:
  . Stones > 25 mm diameter.
  . Clay lumps > 75 mm diameter.
  . Weeds and tree roots > 75 mm.
  . Sticks and rubbish.
  . Material toxic to plants.
- Subbase: The material laid on the subgrade below the base either for the purpose of making up additional pavement thickness required, to prevent intrusion of the subgrade into the base, or to provide a working platform.
- Subgrade: The trimmed or prepared portion of the formation on which the pavement or slab is constructed. Generally taken to relate to the upper line of the formation.

1.3 GEOTECHNICAL AND ENVIRONMENTAL SITE INVESTIGATION

Report

General: The geotechnical and environmental site investigation report provided is for information only. The geotechnical information and information on contaminants given is information on the nature of the ground at each tested part. It is not a complete description of conditions existing at or below ground level.

1.4 RECORDS OF MEASUREMENT

Excavation and backfilling

Agreed quantities: If there are variations to the contract levels or dimensions of excavations, do not commence backfilling or place permanent works in the excavation until the following have been agreed and recorded:
- Depths of excavations related to the datum.
- Final plan dimensions of excavations.
- Quantities of excavations in rock.

Method of measurement: To be by registered surveyor unless otherwise agreed.

Rock

Assume that excavation is to be in material other than rock.

Level and class: Any found rock will be measured for payment purposes, as extra over excavation of material other than rock. Do not remove the rock until the commencing levels and the classes of rock have been determined.

1.5 INSPECTION

Notice

Inspection: Give sufficient notice so that inspection may be made of the following:
- Items to be measured as listed in Records of measurement.
- Excavation completed to contract levels or founding material.

1.6 TESTS

Geotechnical testing authority

General: Use a NATA registered geotechnical testing authority.

Compaction control tests

Compaction control tests: To AS 1289.5.4.1 or AS 1289.5.7.1.

1.7 SUBMISSIONS

Tests

Imported fill: Submit certification or test results which establish the compliance of imported fill with the contract.
Compaction: Submit certification and/or test results in accordance with the specified level of responsibility to AS 3798.

Materials

General: Submit details of materials proposed, including the following:
- Sources of imported fill.

1.8 TOLERANCES

Tolerances

Finish: Finish the surface to the required level, grade and shape within the following tolerances:
- Under building slabs and loadbearing elements: + 0, -25 mm.
- Pavement subgrades; + 0, - 40 mm.
- Batters: No steeper than the slope shown on the drawings. Flatter slopes shall not impact on boundaries or required clearances to buildings, pavements or landscaping.
- Other ground surfaces: ± 50 mm, provided the area remains free draining and matches adjacent construction where required. Provide smoothness as normally produced by a scraper blade.

2 PRODUCTS

2.1 FILL MATERIALS

Fill material generally

General: Inorganic, non-perishable material.
Sulphur content: Do not provide filling with sulphur content exceeding 0.5 % within 500 mm of cement bound elements (for example concrete structures or masonry) unless such elements are protected by impermeable membranes or equivalent means.
Excluded materials:
- Organic soils.
- Materials contaminated through past site usage.
- Materials which contain substances which can be dissolved or leached out, or which undergo volume change or loss of strength when disturbed and exposed to moisture.
- Silts or silt-like materials.
- Fill containing wood, metal, plastic, boulders or other deleterious material.

Site based material

Re-use of excavated material: 'Not permitted'
Borrow material: 'Not permitted'.
Borrow pits:
- Provide erosion protection during winning operations of subsoil and ensure free drainage.

- On completion of winning operations grade abrupt changes of slope, re-spread topsoil and apply hydroseeded grassing.

Imported fill
Imported fill: Material complying with the following: [complete/delete]

3 EXECUTION

3.1 REMOVAL OF TOPSOIL

General
Extent: Areas to be cut and areas to be filled and areas to be occupied by structures, pavements, embankments and the like.
Maximum depth: 200 mm

Re-use of removed topsoil
General: Re-use of removed topsoil: [complete/delete]

3.2 EXCAVATION

Extent
Site surface: Excavate over the site to give correct levels and profiles as the basis for structures, pavements, filling and landscaping. Make allowance for compaction or settlement.
Footings: Excavate for footings, pits, wells and shafts, to the required sizes and depths. Confirm that bearing capacity is adequate.
Crawl space: Provide clear space under timber floor bearers.
- Minimum clearance: 400 mm.

Proof rolling
Extent: Proof roll excavations for pavements, filling and non-spanning slabs on ground to determine the extent of any bad ground.
Proof rolling method: As noted on Civil Engineer's drawings.

Excavation associated with Stormwater Site Works
Prepare site for stormwater overland flow control as indicated on the stormwater drainage documents.

Disposal of excess excavated material
General: Remove excess excavated material from the site and dispose of legally.

3.3 BEARING SURFACES

General
General: Provide even plane bearing surfaces for loadbearing elements including footings. Step to accommodate level changes. Make the steps to the appropriate courses if supporting masonry.

3.4 REINSTATEMENT OF EXCAVATION

General
General: If the excavation exceeds the required depth, or deteriorates, reinstate to the correct depth, level and bearing value.

3.5 SUPPORTING EXCAVATIONS

Removal of supports
General: Remove temporary supports progressively as backfilling proceeds.

Voids
General: Guard against the formation of voids outside sheeting or sheet piling if used. Fill and compact voids to a dry density similar to that of the surrounding material.

3.6 ADJACENT STRUCTURES

Temporary supports
General: Provide supports to adjacent structures where necessary, sufficient to prevent damage arising from the works.
Lateral supports: Provide lateral support using shoring.

Vertical supports: Provide vertical support where necessary using piling or underpinning or both.

Permanent supports
General: If permanent supports for adjacent structures are necessary and are not described, give notice and obtain instructions.

3.7 PREPARATION FOR FILLING
General
General: Prepare the ground surface before placing fill (including topsoil fill), ground slabs or load bearing elements. Shape to assist drainage. Remove materials which will inhibit or prevent satisfactory placement of fill layers, loose material, debris and organic matter. Compact the ground exposed after stripping or excavation.

3.8 PLACING FILL
General
Layers: Place fill in near-horizontal layers of uniform thickness, deposited systematically across the fill area.
Extent: Place and compact fill to the designated dimensions, levels, grades, and cross sections so that the surface is always self draining.
Edges: At junctions of fill and existing surfaces, do not feather the edges.
Mix: Place fill in a uniform mixture.
Previous fill: Before placing subsequent fill layers, ensure that previously accepted layers still conform to requirements, including moisture content.
Protection: Protect the works from damage due to compaction operations. Where necessary, limit the size of compaction equipment or compact by hand. Commence compacting each layer at the structure and proceed away from it.
Protective covering: Do not disturb or damage the protective covering of membranes during backfilling.

3.9 PLACING TOPSOIL
Stockpiled topsoil
Cultivation: Rip to a depth of 100 mm or to the depth of rippable subgrade if less. Cultivate around services and tree roots by hand. Trim to allow for the required topsoil depth.
Herbicide: Apply before placing topsoil.
Placing: Spread and grade evenly.

Disposal of excess topsoil
On site: Dispose of surplus topsoil remaining on site by spreading evenly over the areas already placed.
Off site: Remove excess topsoil from the site and dispose of legally.
Compaction: Lightly compact topsoil so that the finished surface is smooth, free from lumps of soil, at the required level, ready for cultivation and planting.
Edges: Finish topsoil flush with abutting kerbs, mowing strips and paved surfaces. Feather edges into adjoining undisturbed ground.

3.10 COMPACTION REQUIREMENTS FOR FILL AND SUBGRADE
Density
General: Other than rolled fill to AS 2870 clause 6.4.2(b). Compact the subgrade and each layer of fill to the required depth and density, as a systematic construction operation and to conform to any instructions noted on the Structural Engineering documentation. Shape surfaces to provide drainage and prevent ponding.
Excavated and stripped ground surface: After excavation and/or stripping, these surfaces should also be compacted.
Maximum rock and lump size in layer after compaction: 2/3 compacted layer thickness.
Fill batter faces: Either compact separately, or overfill and cut back. Form roughened surfaces to the faces.

Moisture content
General: Adjust the moisture content of fill during compaction within the range of 85 – 115% of the optimum moisture content determined by AS 1289.5.1.1 or AS 1289.5.2.1 as appropriate, in order to achieve the required density.

3.11 COMPLETION

Temporary works

Tree enclosures: Remove temporary tree enclosures at completion.
Tree marking: Remove temporary marks and tags at completion.
Temporary supports: Remove temporary supports to adjacent structures at completion.

End of Section

LANDSCAPE – FENCES AND BARRIERS

1 GENERAL

1.1 AIMS

Responsibilities

General: Provide fences and barrier systems:
- Complete for their function.
- Conforming to the detail and location drawings.
- Firmly fixed in position.

1.2 CROSS REFERENCES

General

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:
- *SITE MANAGEMENT*
- *EARTHWORK*
- *LANDSCAPE – WALLING AND EDGING*
- *CONCRETE - COMBINED*
- *BRICK AND BLOCK CONSTRUCTION*

Notice

Inspection: Give notice so inspection may be made of the following:
- Setout prior to construction.
- Footings prior to pouring concrete.

2 PRODUCTS

2.1 STEEL

Steel tubes

Posts, rails, stays and pickets: To AS 1163.
- Grade: C 350 L0.

Wire

Chainwire, cable wire, tie wire and barbed wire: To AS 2423.
Coating: [complete/delete]

2.2 CONCRETE

General

Standard: To AS 1379 Grade N20.

3 EXECUTION

3.1 CONSTRUCTION GENERALLY

Set out

General: Set out the fence line and mark the positions of posts, gates and bracing panels.

Clearing

Fence line: Except trees or shrubs to be retained, clear vegetation within 1 metre of the fence alignment. Grub out the stumps and roots of removed trees or shrubs and trim the grass to ground level, but do not remove the topsoil.

Excavation

Posts: Excavate post holes so that they have vertical sides and a firm base. Spread surplus material on the principal's side of the fence.

Erection

Line and level: Erect posts vertically. Set heights to follow the contours of natural ground.

Earth footings

Base: Place 100 mm of gravel in the footing base under posts.

Compaction: Backfill with earth around posts, compacting firmly by hand or machine in 150 mm deep layers.

Concrete footings
In ground: Place mass concrete around posts and finish with a weathered top falling 25 mm from the post to ground level.
On slabs: Provide welded and drilled post base flanges for fixing with masonry anchors to the concrete.

3.2 GATES

Hardware
Provide the following:
- Drop bolt and ferrule to each leaf of double gates.
- Latch to one leaf of double gates.
- Provision for locking by padlock.
- Hinges to ensure smooth operation.

Hand access
General: Where required, provide hand holes to give access from outside to reach locking provision.

3.3 SECURITY FENCING

Scope
Relocate and adjust existing fencing and gates and provide new fencing as shown on the drawings.

Finish
All fencing materials to be Galvabond steel with disturbed galvanising touched up prior to an electrostatically applied polyester powder coated finish to BS6497, Specification for Powder Coating. New fencing is to match the existing relocated fencing.

Steel Tubes
Components to be manufactured from Galvabond steel square, rectangular and circular hollow sections.

Fittings
Fixing brackets, hinges and fasteners to be manufactured from plain carbon steel, galvanised and powdercoated where applicable to match fencing.

Footings
General: To consist of concrete no leaner than one volume of cement complying with AS1315, Portland Cement, to seven volumes of combined fine and coarse aggregate of 25mm maximum size.
Concrete strength not to be less than 15 Mpa.

Location	Footing size
Standard panel	250mm diameter x 750 deep
Single gate post for opening to 1200mm wide	250mm diameter x 750 deep
Double gate post for openings 1200- 4200mm wide	250mm diameter x 900 deep
Double gate post for openings 4200- 6000mm wide	400mm diameter x 1200 deep

Posts:

Location	Post size
Panels	65 x 65 x 3mm SHS
Single gates – opening to 1000mm wide	65 x 65 x 3mm SHS
Double gates – opening 1000 to 4200mm wide	75 x 75 x 3mm SHS
Double gates – opening 4200 to 6000mm wide	100 x 100 x 3mm SHS

Tops to be provided with tightly fitting steel caps painted to match fence colour.

Panels:
Height: 2100mm
Length: 2400mm
Horizontal rails: 40 x 40 x 2.5mm SHS

Vertical bars: 25 x 25 x 1.6mm SHS with tops flattened to form spear points or 25 OD x 1.6mm CHS with tops flattened to form spear points.
Spacing of bars: 140mm maximum
Fixing: Fixing cleats to posts.
Construction: Vertical bars to pass through top and bottom rail. Spot welded.

Gates:
Single gates up to 1200 wide and double gates 1200 to 4200mm wide:
- Horizontal rails: 40 x 40 x 2.5m SHS
- Stiles: 40 x 40 x 2.5 SHS

Double gates - 4000 to 6000mm wide:
- Horizontal rails: 65 x 65 x 3mm SHS
- Stiles: 65 x 65 x 3mm SHS

Vertical bars: As per fence panels
Construction: Fully welded frame
Spacing of bars: 140mm maximum
Hinges: 2 No. two-piece hinges, heavy duty to suit gate size.
Retainer: Lugs welded to gate and post. Colour to match gate or manufacturer's approved device.
Hold Open Device: 600mm galvanised non-removable drop bolt. Where installed in bitumen or concrete, provide brass ferrule.

Fixing cleat
Type: Patent fixing cleat secured to post with tamperproof screws.

Base Plates
Materials: Galvanized mild steel
Size:
- 165 x 165 x 8 for 65 x 65 panel posts twice drilled for bolt fixing
- 200 x 200 x 10 for 75 x 75 gate posts drilled for 4-bolt fixings.
- 165 x 165 x 8 for 65 x 65 gate posts drilled for 4-bolt fixings.

Weld to base of posts.
Finish: Powder coat to match fence
Location: Where fixing is required to concrete slabs.

Locks
Broadhurst Locking System single gate
Broadhurst Locking System double gate
Pool gate safety lock

End of Section

PAVEMENT BASE AND SUBBASE

1 GENERAL

1.1 AIMS

Responsibilities

General: Provide base and subbase courses that are as follows:
- In conformance with the level tolerances specified.
- In conformance with the compaction requirements supplied.

1.2 CROSS REFERENCES

General

General: Conform to the *GENERAL REQUIREMENTS* worksection.

Associated worksections

Associated worksections: Conform to the following:
- *SITE MANAGEMENT*
- *EARTHWORK*
- *STORMWATER – SITE*
- *PAVEMENT ANCILLARIES*

1.3 INTERPRETATION

Definitions

General: For the purposes of this worksection the definitions given below apply.
- Standard: To AS 1348.
- Absolute level tolerance: Maximum deviation from design levels.
- Relative level tolerance: Maximum deviation from a 3 m straight edge laid on the surface.

1.4 INSPECTION

Notice

Inspection: Give sufficient notice so that inspection may be made of the following:
- Prepared subgrade.
- Proof rolling of subbase prior to spreading of base.
- Proof rolling of base prior to sealing.

1.5 TESTS

Compaction control tests

Standard: To AS 1289.5.4.1 and AS 1289.5.4.2.

1.6 SUBMISSIONS

Frequency of compaction control tests

General: Not less than the following (whichever requires the most tests):
- 1 test per layer per 25 lineal metres for 2-lane roads.
- 1 test per layer per 1000 m2 for carparks.
- 3 tests per layer.
- 3 tests per visit.

Source of material: State the supplier name, nature of material (crushed rock, natural gravel, recycled, recycled concrete aggregate) and source quarry or recycling site.
Compliance of material: Provide certification and test results from a NATA registered laboratory confirming that the material complies with the requirements of the specification.

2 PRODUCTS

2.1 BASE AND SUBBASE MATERIAL

General

Compliance: Base and subbase materials shall comply with the **Base and subbase compliance table**.

Base and subbase compliance table

Course	Source	Compliance requirement
Base	Crushed rock or natural	To the AUS-SPEC 1141 *Flexible pavements* worksection

Course	Source	Compliance requirement
	gravel	
	Recycled concrete aggregate	To the SAA HB 155 Table 19
Subbase	Crushed rock or natural gravel	To the AUS-SPEC 1141 *Flexible pavements* worksection
	Recycled concrete aggregate	To the SAA HB 155 Table 19

3 EXECUTION

3.1 SUBGRADE PREPARATION

General

General: Subgrade preparation to be undertaken in accordance with the *EARTHWORK* worksection.

3.2 SUBBASE AND BASE COMPACTION

General

General: Compact each layer of fill to the required depth and density, as a systematic construction operation and to conform to the minimum relative compaction table.

Minimum relative compaction table

Item description	Minimum dry density ratio (modified compaction) to AS 1289.5.2.1
Subbase	95
Base	98

Unstable areas: Any unstable areas which develop during rolling or are identified by proof rolling shall be removed for the full depth of the layer and disposed of and replaced with fresh material. Materials used as replacement materials shall comply with the requirements of the specification. The placing and compaction of the replacement materials shall also comply with the requirements of the specification.

Compaction requirements

General: Apply uniform and sufficient compactive effort over the whole area to be compacted. Use rollers appropriate to the materials and compaction requirements.

Moisture content

General: During spreading and compaction, maintain materials at the optimum moisture content (modified compaction) within the range of -2% to +1% from the optimum moisture content.
Spraying: Maintain moisture content. Use water spraying equipment capable of distributing water uniformly in controlled quantities over uniform lane widths.

3.3 PLACING BASE AND SUBBASE

General

Weak surfaces: Do not place material on a surface which has been so weakened by moisture that it will not support, without damage, the constructional plant required to perform the work.
Spreading: Spread material in uniform layers without segregation.
Moisture content: Maintain wet mixed materials at the required moisture content before and during spreading. Add water to dry mixed materials through fine sprays to the entire surface of the layer after spreading, to bring the material to the required moisture content.
Layer thickness: 150 mm maximum and 75 mm minimum (after compaction). Provide equal layers in multilayer courses.

End of Section

CONCRETE PAVEMENT

1 GENERAL

1.1 AIMS

Responsibilities

General: Provide a finished surface as follows:
- Free draining and evenly graded between level points.
- Even and smooth riding.

1.2 CROSS REFERENCES

General

General: Conform to the *GENERAL REQUIREMENTS* worksection.

Associated worksections

Associated worksections: Conform to the following:
- *SITE MANAGEMENT*
- *EARTHWORK*
- *PAVEMENT BASE AND SUBBASE*
- *PAVEMENT ANCILLARIES*
- *CONCRETE - COMBINED*
- *STORMWATER - SITE*
- *ALL SPECIFICATION NOTES ON THE STRUCTURAL ENGINEERING DRAWINGS.*

The information on the structural drawings is to take precedence where it might differ from that in this specification.
Refer also to the Stormwater drainage documentation with respect to pavement levels.

1.3 STANDARDS

Specification and supply of concrete: To AS 1379.
Materials and construction: To AS 3600.

1.4 INTERPRETATION

Definitions

General: For the purposes of this worksection the definitions given in AS 1348 and the following apply.
- Absolute level tolerance: Maximum deviation from design levels.
- Relative level tolerance: Maximum deviation from a 3 m straightedge laid on the surface.
- Joint:
  - Construction: A joint provided to suit construction sequence with reinforcement continuous across the joint.
  - Contraction: An unreinforced joint with a bond-breaking coating separating the concrete joint surfaces.
  - Expansion: An unreinforced joint with the joint surfaces separated by a compressible filler.
  - Weakened plane: A contraction joint created by forming a groove, extending at least one quarter the depth of the section, either by using a grooving tool, by sawing, or by inserting a premoulded strip.

1.5 INSPECTION

Notice

Inspection: Give sufficient notice so that inspection may be made of the following:
- Base or subgrade before covering.
- Membrane or film underlay installed on the base or subgrade.
- Concrete formwork, reinforcement and dowels in position.
- Commencement of concrete placing.
- Completion of concrete placing.

1.6 SUBMISSIONS

Products – documentation

General: As an alternative to testing a product, submit the manufacturer's certificate together with the results of recent tests undertaken by the manufacturer, showing compliance with test criteria.

Products – proposals

Curing compounds: If it is proposed to use a liquid membrane-forming curing compound submit certified test results for water retention to AS 3799 Appendix B.
Reinforcement: Submit the manufacturer's certificate of compliance with AS/NZS 4671, or submit test certificates from an independent testing authority.
Curing by the covering sheet method: Submit details of the proposed covering material.
Repair materials: Submit proposals for epoxy resin/grout and elastomeric sealant.

Pre-mixed supply
Delivery docket: For each batch, submit a docket listing the information required by AS 1379, and the following information:
- For special class performance concrete, specified performance and type of cement binder.
- For special class prescription concrete, details of mix, additives, and type of cement binder.
- Method of placement and climate conditions during pour.
- Name of concrete delivery supervisor.
- Project assessment carried out each day.
- The amount of water, if any, added at the site.
- The concrete element or part of the works for which the concrete was ordered, and where it was placed.
- The total amount of water added at the plant and the maximum amount permitted to be added at the site.

Subcontractors: Submit names and contact details of proposed pre-mixed concrete suppliers, and alternative source of supply in the event of breakdown of pre-mixed or site mixed supply.

1.7 TOLERANCES
General
Edges abutting gutters: Within ± 5 mm of the level of the actual gutter edge.
Rigid pavement surface:
- Absolute tolerance: ± 10 mm.
- Relative tolerance: 5 mm.

Concrete surface course: + unspecified, - 5 mm.
Joint locations (rigid pavement): 15 mm.

2 PRODUCTS
2.1 PRODUCTS
Polymeric film underlay
Vapour barriers and damp-proofing membranes: To AS 2870 clause 5.3.3.

Reinforcement
Standard: To AS/NZS 4671.
Grade: As noted on structural engineering drawings.
Identification: Supply reinforcement which is readily identifiable as to grade and origin.

Dowels
General: Provide each dowel in one piece, straight, cut accurately to length with ends square and free from burrs.
Standard: To AS/NZS 4671.
Grade: 250R.
End tolerances: Ensure that deformation of an end from its true circular shape does not exceed 1 mm nor extend more than 1 mm from the end.

Concrete mix
Design: Design the mix to suit the methods of concrete manufacture, placing, compaction and finishing.

Aggregate
Standard: To AS 2758.1.
Aggregate size:
- For fixed form placement: < 40 mm.
- For slip form placement: To be a size compatible with the paving machine.

Washing: Wash aggregate as necessary or as directed to achieve requirements for soluble salt content or concrete drying shrinkage.

Concrete exposure classification (for durability assessment): Severe.

Cement
Standard: To AS 3972.
Type: GP or GB.

Curing products
Curing compounds: To AS 3799, Type 2, white pigmented or containing aluminium reflective pigments.
Covering sheet materials: To be white opaque polyethylene film, or white burlap-polyethylene sheet, or equivalent material.
Standard: To ASTM C171.

Concrete
Accuracy of batching (% by mass):
Cement: ±1.
Aggregates: ±2.
Water: ±1.
Admixture: ±3.
Admixtures: Introduce in solution in a portion of the mixing water. Ensure a uniform distribution of the admixture in the batch within the mixing period.
Mixing time: Measure the mixing time after solid materials are in the mixer, provided that mixing water is introduced before a quarter of the mixing time has elapsed. Increase mixing time if necessary to obtain the required uniformity and consistence of concrete. Do not over mix such that additions of water are needed.
Uniformity: Differences specified in AS 1379 apply to samples taken from 3 locations in a batch. Do not exceed 2% difference in moisture content of the 3 samples.
Transport: Transport and discharge the concrete without segregation.

3 EXECUTION

3.1 POLYMERIC FILM UNDERLAY
Location
General: Under slabs including integral ground beams and footings, provide a vapour barrier or, in areas prone to rising damp or salt attack, a damp-proofing membrane.

Installation
General: Lay over the base, lap joints at least 200 mm and seal the laps and penetrations with waterproof adhesive tape. Face the laps away from the direction of concrete pour. Take the underlay up vertical faces past the damp proof course where applicable, and tape fix at the top. Patch or seal punctures or tears before pouring concrete. Cut back as required after concrete has gained strength and forms have been removed.

Base preparation
General: According to base type, as follows:
- Graded prepared subgrade: Blind with sufficient sand to create a smooth surface free from hard projections. Wet the sand just before laying the underlay.

3.2 CONCRETE PLACING
Rate
General: Place at a rate of at least 25 linear metres of pavement per hour.

Cold weather
Subbase: Ensure that the subbase surface is free of frost.
Aggregate: Ensure that aggregate is free of ice, snow, and frozen lumps.
Temperature: Maintain the concrete at a temperature of at least 10°C for at least 24 hours after placing. Prevent the concrete from freezing during the curing period.

Admixtures
General: Do not add calcium chloride, salts, chemicals or other material to the mix to lower the freezing point of the concrete.

Hot weather
General: Avoid premature stiffening of the mix and reduce water absorption and evaporation losses. If the temperature of the surrounding air is higher than 32°C:
Mix, transport, place and compact the concrete as rapidly as possible, and cover with an impervious membrane or hessian kept wet until moist curing begins.
Hold the concrete to a temperature < 32°C when placed.

Placing in fixed forms
General: Place concrete uniformly over the width of the slab or lane and so that the face is generally vertical and normal to the direction of placing. Hand spread concrete using shovels, not rakes.
Vibration: Compact concrete using internal mechanical vibration of sufficient amplitude to produce noticeable vibrations at 300 mm radius. Insert vibrators into the concrete to the depth which will provide the best compaction, but not deeper than 50 mm above the surface of the subbase, and for a duration sufficient to produce satisfactory compaction, but not longer than 30 seconds in any one location.

Finishing
General: Immediately after placement and spreading and compaction of the plastic concrete, start finishing operations to achieve the documented finish.

Curing
General: Protect fresh concrete from premature drying and from excessively hot or cold temperatures. Maintain the concrete at a reasonably constant temperature with minimum moisture loss for the curing period.
- Temperature: Maintain the concrete at a temperature > 5°C for at least 7 days.

Curing compound method: Spray the entire surface including edges using a mechanical sprayer, at a uniform application rate of at least 0.35 L/m^2. Respray defective areas within 30 minutes. Respray within 3 hours after heavy rain. Apply as a continuous coating without visible breaks or pinholes.
Covering sheet method: Immediately after finishing operations cover concrete using damp hessian or cotton mats overlapped at least 150 mm and anchored against displacement by wind or other interference. Keep the mats continuously damp until covered by the covering sheet material. Repair tears and the like immediately.
- Joint sawing: Sheet materials may be removed for the minimum distance and period to permit joint sawing, provided the concrete is kept moist by other means.

Moist curing method: Immediately after finishing operations keep the concrete surface continuously damp by spraying constantly with water, fog, or mist, using suitable spraying equipment.
Minimum curing time: 7 days.

3.3 UNFORMED SURFACES
General
General: Strike off, screed and level slab surfaces to finished levels, to the tolerance class noted in the documents.

Surface finishes
General: Provide surface finishes in conformance with the Unformed surface finishes schedule.

Surface repairs
Surface repair method: If surface repairs are required, submit proposals.

Finishing methods – primary finish
Machine float finish:
- After levelling, consolidate the surface using a machine float.
- Cut and fill and refloat immediately to a uniform, smooth, granular texture.
- Hand float in locations inaccessible to the machine float.

Wood float finish: After machine floating use wood or plastic hand floats to produce the final consolidated finish free of float marks and uniform in texture and appearance.

3.4 JOINTS

Joints

General: Construct expansion, contraction and construction joints straight and plumb. Make transverse joints normal to longitudinal joints. Extend transverse expansion and contraction joints continuously from edge to edge of the pavement through interconnected slabs.

Transverse construction joints: To be as follows:

- Planned location: Terminate each day's placing operation at a transverse construction joint located to coincide with a planned contraction or expansion joint.
- Unplanned joints: If placement is interrupted for 30 minutes or longer, form a tied transverse construction joint within the middle third of the distance between planned joints but no closer than 1.5 mm to the nearest planned joint. If necessary remove placed concrete back to the required location.

Expansion joints: Provide formed full depth joints around structures and features which project through, into or against the pavement, and elsewhere as required.

3.5 COMPLETION

Protection

General: Keep traffic, including construction plant, off the pavement entirely during curing, and thereafter permit access only to necessary constructional plant vehicles until the pavement is at least 14 days old.

Traffic on pavement

General: Give notice before opening the pavement to traffic before the work is completed. Provide adequate means of protection.

End of Section