

BORROLOOLA COMMUNITY

CONSTRUCTION OF NEW AIRPORT TOILET BLOCK

1. HYDRAULIC SERVICES

1.1 General

This section shall be read in conjunction with other clauses of the specification and associated drawings.

The entire sanitary plumbing and water supply services shall be carried out by or under the direct supervision of a suitably licensed plumbing contractor in strict compliance with the regulations and directions of the N.T. Building Practitioners Board and the N.T. Plumbers and Drainage Licensing Board, and to the satisfaction of the Construction Manager.

Supply and install the following sanitary fixtures and associated tapware. Refer to abbreviated symbols on drawings and as listed below to identify fixture location and type.

It is the contractors responsibility to check for any items shown on the drawings but not included in the specification or vice versa including any discrepancies or omissions in the schedule of selections, any such items shall be brought to the attention of the consultant prior to the close of tender. Following the close of tender any items will be deemed to form part of the contract and no variations will be allowed.

Sanitary fixtures colour: White, unless otherwise noted.

No substitutes will be allowed unless approved in writing by the Architect/Construction manager. Late ordering of specified items will not be accepted as a reason for substitution.

1.2 SCOPE OF WORKS

The work shall include but is not limited to all labour, design, material, transport, machinery, the supply and fixing of all necessary equipment and components for the complete installation, commissioning of all hydrant hydraulic services shown on the drawings and as specified.

Items not included in the Specification but shown on the drawings or vice versa shall be included as part of this Contract.

The work covered in this section comprises:

- Service and maintenance during the 52 weeks defect liability period.
- Lodgement of design drawings and obtain approval from relevant Local Authorities prior to commencing work.
- Lodge all relevant notices of intent to perform work.

- Pay all fees to the relevant Statutory Authorities.
 - Connection to existing fire hydrant service as shown on the drawings.
 - Construction in compliance with the Construction Program.
 - Preparation and issue of "as executed" drawings and Maintenance Manuals in accordance with project requirements.
 - Location of all existing services prior to commencing work.
 - Sealing, capping and removal from site of all redundant pipework and fittings.
 - Diamond cutting and removal of existing concrete surfaces to allow construction.
 - Pipe identification tape to all new plumbing service pipelines.

 - Identification markings to all new isolation valves to new fire hydrant system.
 - Excavation, backfill, compaction, shoring and dewatering of all service trenches as required.
 - Backfill of service trenches with imported material below all roadways, sealed paths and buildings.
 - Removal and disposal of excess excavation material from site in an approved manner.
 - Coordination with all other trades prior to and during installation of fire services.
- Additional References**
- National Construction Code (NCC)
 - The Plumbing Code of Australia
 - Building Code of Australia (BCA)
 - Hydraulic Services - DIPL Small Building Works

1.3 CONTRACT DRAWINGS

Drawing Nos: H00 – H05

These drawings are not to be used for Structural or Architectural work including location of structure, fixtures, fittings, plant, equipment and sundry equipment. Refer to the Pureblue manufacturers drawings for the relevant Structural or Architectural details for identification and exact locations. The Hydraulic services drawings are to be read in conjunction with Pureblue manufacturers drawings and other associated documents and relevant drawings.

Drawings showing pipework layouts are diagrammatic only. Before commencing work verify the exact positions of existing pipelines, plant, appliances and the like to which the pipework is to be connected.

All invert levels shown on design drawings are recommended only and must be checked on site before excavation or installation of pipework to ensure correct cover and clearances can be achieved.

The contractor shall verify themselves as to the most practical layout for the various services which form part of the contract. Should their opinion vary greatly from that indicated on the plumbing drawings, they shall seek the approval of the Project Manager.

The Contractor shall allow for all necessary co-ordination of the various services upon receipt of the existing services information.

Provide a complete set of current construction documents on site including civil layout drawings, hydraulic specification and all revisions issued by the Project manager.

1.4 QUALITY ASSURANCE

Establish and maintain a quality assurance system for the project in accordance with the principals of AS3902 to assist in the management of the project and monitoring of the quality of the works "as constructed" and "as commissioned".

Prepare inspection and test plans (ITPs) for each section of the work and provide for review prior to commencing the activity. Undertake inspection and test activities confirm and verify conformance of the specified requirements.

1.5 EXECUTION OF WORK

Workmanship shall be of high standard for remote area works and each section of work shall be properly and neatly executed to the best trade practice.

1.6 INSPECTIONS – Witness Points

Witness Point

Give sufficient notice, forty eight (48) hours. So that inspections may be made of work ready for testing.

TESTS – HOLD POINTS

Hydrostatic pipeline tests to AS3500.

Water Services Hold Point - Fill the piping with water and test at the required pressure and duration, 1500 kpa for 4 hours. Obtain the superintendent's approval of the test results. Provide an Inspection Test plan for the testing process.

Drainage Services Hold Point - Fill the piping with water and test at the required pressure and duration, 1.5m static head for 30 minutes. Obtain the superintendent's approval of the test results. Provide an Inspection Test plan for the testing process.

1.7 CONTRACTORS SUBMISSIONS

Work-as-executed drawings

Submit drawings showing the "as installed" locations of pipes, fittings, tanks, control valves and accessories. Show the depth of underground piping.

1.8 SERVICES CONNECTIONS

Design Criteria

Supply and install all equipment necessary to meet the design criteria of the specification. All equipment supplied for the works shall be covered by written manufacturer's warranties in respect of workmanship and materials, in addition to the guarantees required in respect to the installation as a whole.

Modifications to existing services are to comply with relevant codes at the time of the building construction. Make new services connections as shown on the hydraulic drawings and extend to new building as shown.

Pipeline Connections

Connect the sewer and potable water system to the existing services as shown on the drawings. Carry out the excavation necessary to locate and expose the connection points being mindful of existing services, not all may be shown on the drawings. It is the contractor's responsibility to locate and identify all existing services prior to construction. On completion reinstate surfaces and elements which have been disturbed such as roads, pavements, kerbs, footpaths and nature strips.

Reference Documents - Standards

AS/NZS 3500: Plumbing and Drainage

AS/NZS 3500.1: Water services

AS3500.2: Sanitary Plumbing and Drainage

AS 1428 – Design for Access and Mobility

AS 1192: Electroplated coatings – Nickel and chromium.

AS 3996: Access covers and grates

1.9 Contractor's Submissions

Work-as-executed drawings

Submit drawings showing the "as installed" locations of pipes, fittings, pits, inspection openings, fixtures and equipment. Show the depths of underground piping.

1.10 GUARANTEES

Obtain and include within the Maintenance Manuals the warranties offered by the manufacturers of all fixtures, fittings, tapware and accessories. Provide a written warranty/guarantee in a form accepted by the Superintendent and signed by the Manufacturer and the Contractor.

1.11 TRAINING

Allow to train the owners staff in the management of the plumbing installation, including a detailed introduction and familiarisation tour. Allow for responding to the staff's technical queries during the Defects Liability Period and provide assistance regarding the operation and maintenance.

1.12 EXISTING SITE CONDITIONS

The Contractor shall be deemed to have visited the site to determine the extent of work. No variations will be considered arising from neglect of this provision.

Check with all relevant authorities as to the possible locations of any underground services on site and locate same before commencing excavation.

Determine the location of all existing services on site, before commencing any work.

1.13 PROTECTION OF EXISTING SERVICES AND BUILDINGS

Allow for satisfactory supervision on site to prevent any damage to new or existing (still in use) plumbing services, buildings and trees by other trades. Make good any damage to these services and repair at the Contractor's expense. No extras will be permitted for this work.

Ensure the continuity of all existing services to all surrounding areas during the progress of this work. Arrangements shall be made with the Superintendent for this work.

Approval for the shutting down of existing services must be obtained in writing from the Superintendent prior to the work commencing.

1.14 Dimensions

All invert levels shown on the Hydraulic drawings are recommended only and must be checked on site prior to excavation or installation of pipework to ensure correct grades, clearances and regulation cover can be achieved.

The Contractor shall be responsible for checking all dimensions and levels indicated against site restrictions and ensure that the proposed layout is practical before commencing the work.

Use all dimensions for fixtures, fittings and purpose made items specified as a guide only. All ordering of fixtures, fittings and purpose made items shall be subject to verification of a site measurement at the location of the unit to confirm its suitability prior to ordering.

1.15 Pipework Materials

Stainless Steel Tube

All stainless steel pipes for plumbing services are to be solid drawn tubes manufactured in accordance with AS 1432 Table 2.

Type '316' marine grade tube shall be the minimum tube used.

uPVC Pipelines

All un-plasticised polyvinyl chloride pipes and fittings shall conform to AS/NZS 1260.

Joining Method: Solvent cement joints to AS 2032.

Cross Linked Polyethylene Pipelines

All cross linked polyethylene pipes and fittings are to be Rehau PE-Xa (or an Australian watermarked approved equivalent) and shall conform to AS 2492. Installation and testing shall conform to AS 3500 and the manufactures recommendations.

Joining Method: Compression sleeved joints.

1.16 INSPECTION OPENINGS

Internal Areas

Shall be tamper proof with approved brass and or stainless steel suitable for the application required.

External Areas

Shall be approved tamper proof cast iron cover and concrete support block suitable for the application required. Covers shall be labelled with raised 10mm letters cast into the removable lid.

1.17 FLOOR WASTES

Traps and Risers: All floor waste grates are to be fitted with tamper proof fixings.

1.18 workmanship

Execution of Work

Workmanship shall be of high standard and each section of work shall be properly and neatly executed to the best trade practice. All plumbing installation works must be performed by a, or under supervision of a licensed tradesperson.

Protection

All pipework shall be protected against the entry of foreign matter at all times by the provision of suitable temporary end plugs or covers. Sanitary fixtures are to be adequately protected against damage and any item not considered by the Superintendent to comply with the approved sample shall be removed and replaced at the expense of the Contractor upon receipt of notice from the Superintendent.

Flushing of Services

Thoroughly flush all plumbing services to remove all contaminates, scale, metal particles, etc.

Sanitary Drainage: Following completion of pressure test to pipeline as installed, thoroughly flush and drain water from the pipeline. Pipeline is to be drained of water following the trench reinstatement and testing.

Below Ground Installation

Prepare trenches or openings and lay pipes at an approved depth on an approved base material. Upon completion cover and backfill with approved material and consolidate as required by the Statutory Authority, Engineer and the Architect. Maintain required separation between services and structural items.

Barriers and Accessibility

Provide all necessary barricades, signage and lighting to excavations to protect all persons during the course of the excavation. All necessary arrangements for access over trenches and safety lighting shall be made so that paths and doorways are trafficable at all times.

Shoring when used, shall remain in place until backfilling is commenced. During backfilling, remove timbering in such a manner as not to cause instability in trench wall or endanger the pipeline or adjacent structures. All works are to be supported by a submitted safety works plan. JSA or WMS or similar.

Excavation and Backfill

The contractor shall provide all trench excavation for drainage services shown on drawings.

Extent: Excavation shall include the removal of all materials of whatever nature encountered, including all obstructions of any nature that would interfere with the proper execution and completion of the works.

All excavations shall be kept free of water by dewatering as required.

Excavations for trenches shall not be deeper than the underside of the pipes or bedding materials when required, at uniform grade free of rock and/or other projections.

Pipe Bedding

Unless otherwise specified, bed the pipework on a continuous underlay of pipe bedding material, compacted if granular, of minimum thickness after compaction as required by the relevant standard, but in any case not less than 100mm. Grade the bedding evenly to the required gradient of the pipework.

Pipe surround material shall be free flowing compacted sand to a depth of 150mm above the crown of the pipe. Identification tape is to be laid on top of compacted sand.

All trenches beneath all buildings, paths paved areas and roadways shall be backfilled with imported product and compacted as a minimum of 98% compaction.

Minimum Cover over Pipe

Unless overridden by regulatory authority requirements, the following table shall apply:

Pipes not subject to vehicular loading 450mm

Pipes subject to vehicular loading:

- not in roadways 600mm
- under sealed roadways 600mm
- under unsealed roadways 750mm

Consolidation and Compaction

Backfill to excavations shall be compacted to Australian Standards with clean fill soil.

Vibrating rollers shall not be used for consolidation of backfill over uPVC. Consolidation to this depth shall be done with a mechanical hand tamper of approved type.

Shoring of Excavations

Supply, place and maintain sheeting, strutting and bracing as may be required to support the walls of excavations adjacent pavements, services or structures. Shoring when used, shall remain in place until backfilling is commenced. During backfilling, remove timbering in such a manner as not to cause instability in trench wall or endanger the pipeline or adjacent structures.

Pureablue Toilet Block - Technical Specification

General

- The building is to be a pre-fabricated solution constructed in controlled factory conditions utilising advanced manufacturing equipment, tools and technologies to deliver a high quality product.
- Structure to be engineered to suit the location.

Building Configuration

- 1 x accessible unisex booth AS1428.1 compliant
- 3 x ambulant booths AS1428.1 compliant
- a rear service duct room; and
- a front roof covered veranda area.

Base slab

- Reinforced concrete slab pre-cast off steel mould.
- Pre-cast slab to be cast inverted in with 1 in 100 fall grade towards front of building. The surface finish must be high quality with minimal deviations in levelness of surface to avoid depression zones for water to puddle.
- The off-steel mould finish of the concrete floor complies with Australian Standards AS 4663:2013 for slip resistance.

Wall Structure: Sides & Rear

- Side and rear walls to be pre-cast concrete.
- Walls terminate at 2400mm above FFL.
- External finish to be power trowelled finish, painted with acrylic.
- Internal finish to be dimpled stainless steel embedded into the concrete panels. No visible fixings.
- Scuppers cast into base of side walls to allow drainage and low level ventilation
- Panel-to-panel connection systems to be incorporated into panel design to minimise visual impact and be tamper-proof.
- Mounting points for furniture to be cast into walls.

Wall Structure: Front Door Wall

- Fabricated from hollow tube steel
- Walls terminate at 2400mm above FFL.
- Clad externally with 15mm CFC sheeting
- Clad internally with dimpled stainless steel
- Polystyrene cavity infill

Wall Structure: Partition Walls

- Fabricated from hollow tube steel
- Clad with dimpled stainless steel
- Polystyrene cavity infill
- Structural members corresponding to furniture mounting points
- 70mm gap at base of walls to allow ventilation

Roof Structure

- Steel hollow section roof structure framing. Fabricated and powdercoated to selected colour scheme.
- Single-plane profile.
- Clad with Colorbond Corodek.
- All flashings Colorbond.
- Gap between top of walls and underside of roof decking to be infilled with powdercoated 1.9mm steel sheet. Sheet to have decorative pattern cut to permit natural light and airflow. Pattern to be approved by principal.

Rear Service Duct

- Service duct room at rear of building, accessed via a 700x1800 door, with high security perimeter frame.
- Carbine deadlock fitted to door. Barrel interchangeable to suit council lock system.
- Service room to house cisterns, drainage plumbing, cold water plumbing and sharps collectors.
- Has an inbuilt garden type tap with attached hose for use by cleaner.
- All plumbing mounted neatly on wall with for easy access and maintenance.
- Waste plumbing with inspection outlets at each junction for ease of clearing blockages.
- Room sealed to contain overflow contamination in severe blockage events.
- Electrical sub-board mounted on inside wall with extra double 10A GPO installed.

Doors

- Door framing to have at minimum 100mm wide solid perimeter framing.
- Clad both sides with Colorbond sheet. Bonded with concealed mechanical fasteners.
- Door edge details to be free from any sharp edges.
- Doors to be inward opening with limiting by heavy duty rubber door stop on adjacent internal wall.
- Hinged doors swing on Qty 4, 100mm stainless steel fixed pin door hinges.
- Rubber pinch weld seal fitted to soften door slamming.
- Hydraulic door closers compliant with AS 1428.1 fitted.
- Stainless steel privacy latches designed to prevent tongue from remaining extended when not locked.
- Stainless steel push plates

Pans

- Stoddart Stainless steel P-trap pans AS1428.1 compliant.

Cisterns

- Caroma Invisi II cisterns with AS1428.1. Compliant push buttons.

Grabrails

- Grabrails in accessible and ambulant booths fabricated from 38dia x 1.6mm WT grade 316 stainless steel tube, AS1428.1 (2009) compliant,
- Grabrails fabricated with heavy duty mounting brackets, fixed to the internal wall structure by multiple tamperproof fasteners secured into the wall structure for extra robustness.
- Accessible backrest AS1428.1 compliant fabricated integral with grabrails. Must satisfy the standard requirement of withstanding 1100N of force applied in any direction. Fixed by tamperproof stainless steel fixings.

Accessible handbasin

- Stainless steel basin vanity to be fit-for-purpose robust and structurally integrated solution whilst maintaining AS1428.1 compliance.
- Unit to be secured to wall with Qty 6, M12 stainless steel bolts into ferrules cast into wall.
- Vandal resistant AS1428.1 compliant tap
- All plumbing concealed in wall cavity with cover fixed with multiple tamper proof fixings

General Furniture & Fixings

- Accessible Mirror: BA finish Stainless steel mirror mounted above sink as per AS1428.1.
- Coat Hooks: Robust stainless steel coat hooks mounted to AS1428.1 requirements into wall structure with tamper proof fixings.
- Toilet Paper Dispensers: Stainless Jumbo Toilet Roll Holder mounted to AS 1428.1 requirements.
- Door Stops: Heavy duty round rubber donut door stops fitted on wall adjacent D pull handle. Fixed with tamper proof fixing into wall structure.

Sharps Disposal

- Sharps collection duct through wall tube into 19L collection container mounted in service duct room with Pureblue Sharps-Safe™ anti-blockage collection system. This system eliminates potential for blockages to occur when rubbish is inevitably stuffed into chute. This eliminates the risk of needle stick injuries to users and staff when clearing blockages.
- 19L containers stored in plant room – no access by public.
- System fitted to all booths.

Veranda Columns & Basin

- Veranda columns 80x80 stainless steel SHS fabricated columns.
- Stainless steel basin unit integrated with the column.
- Basin AS1428.1 and compliant with vandal resistant design mount on front of door wall.
- Galvin CP Ezy-Push Pillar Tap fitted. Vandal resistant.
- All plumbing concealed in cavity with cover fixed with multiple tamper proof fixings.

Signage

- To comply with AS428.1 and AS1428.4. Tactile signs defining accessible and ambulant unisex booths located at specified position on or adjacent to the doors.

Lighting and electrical

- Internal Booth Lighting: Qty 1, LED 1000Lm 3000k downlight mounted on purlin in each booth.
- External Lighting: Qty 2, LED 1000Lm 3000k downlights, mounted on purlins in veranda area.
- All cabling routed through roof structure – fully concealed, no ugly conduits for vandals to interfere with.
- Lighting controlled by Daylight sensor mounted concealed within service duct. Additional Design Option: Motion sensor control in each booth.
- LED drivers mounted on in steel cabinet on wall in service duct.
- Full internal fitout and connection works including a 240V mains sub-board mounted on wall in service duct.
- Spare 10A GPO mounted adjacent to sub-board with breakers.

Caravan Dump Point

- Pre-cast concrete slab 1200x1000mm
- Stainless steel dump point with hinged lid and 100DWV P-trap.
- Signage.
- Stainless steel cold water tap riser with integrated hose.