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Queensland Transport

QT 04-61 Dohles Rocks Boat Ramp Reconstruction

SPECIFICATION

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1 GENERAL

1.1 EXTENT OF CONTRACT

The Contract shall include the supply of all plant, equipment, labour and material necessary for the execution of the whole of the Works required for the reconstruction of the Dohles Rocks boat ramp, all in accordance with this Specification, Particular and General Conditions of Contract and the Drawings.

The major items included in the Works are as follows:

1. earthworks including removal of southern end of existing boat ramp, excavation and preparation of the boat ramp subgrade;
2. supply and placement of crushed rock to form the working platform for the boat ramp;
3. supply and placement of a compacted sub base for the boat ramp;
4. construction of reinforced concrete slabs for boat ramp;
5. supply and placement of concrete toe planks;
6. formation of fully grouted stone shoulders either side of the concrete slabs;
7. formation of crushed rock shoulders either side of the concrete toe planks.

1.2 DRAWINGS

This Specification and the Conditions of Contract shall be read in conjunction with the following Drawings:

Drawing Number	Title
BN-42-4-1A	Dohles Rocks Boat Ramp Reconstruction 2001 Site and Locality Plan
BN-42-4-2A -	Dohles Rocks Boat Ramp Reconstruction 2001 General Arrangement
BN-42-4-3A	Dohles Rocks Boat Ramp Reconstruction 2001 Construction Details
MISC-36-3-5E	Precast Reinforced Concrete Toe Plank for Boat Ramps
MISC-42-3-11A	Project Sign (2 Line Project Name)

1.3 SITE OF WORKS

For the purpose of this Contract the site of the works shall be defined as the area contained within a line drawn 10 metres each side of the centreline of the existing boat ramp.

1.4 LEVEL DATUM

1.4.1 Level Datum

All Levels and Soundings are in metres and are reduced to LAT based on PM 57820, RL 2.937 m LAT.

1.4.2 Horizontal Datum

All coordinates are in metres and are to AMG, AGD84, Zone 56.

1.5 DISPOSAL OF MATERIALS

All waste materials from the works shall become the property of the Contractor for disposal ashore.

The Contractor shall exercise care not to dispose of materials in or allow any material to enter into the ocean. The works area and its environs shall be inspected after the works are completed and the Contractor shall be required to remove, at his own expense, any waste materials required to be removed under this Contract.

1.6 NOT USED

1.7 TRANSPORT

Special care shall be taken in the lifting, handling and transporting of all installed items to ensure protection from damage. In particular, all open joints, gussets and other projecting parts shall be protected to the satisfaction of the Superintendent.

All items shall be rigidly braced and packed to prevent distortion of the section during transportation. It shall be the responsibility of the Contractor to carry out remedial measures on any item which arrives on site in a distorted condition, notwithstanding satisfactory inspection and checking in the fabrication works.

1.8 NOT USED

1.9 WORKS SIGN

A project sign shall be installed by the Contractor in a prominent location selected by the Superintendent's Representative on the site within two weeks of work commencing. This sign shall be in accordance with the drawing attached to this Specification. The cost of the supply and erection of this sign shall be included in the Contract price. Upon issue of the certificate of Practical Completion, the sign shall become the property of the Contractor and be removed from the site.

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1.10 CONTRACTOR TO VISIT SITE OF WORKS

The Contractor shall be deemed to have fully informed himself as to the site of the work, facilities, transportation, storage and handling of materials, availability of labour and materials and other matters and conditions whatsoever affecting the carrying out of the works.

No claim for extra compensation in excess of the tendered price will be considered on any ground such that the Contractor was not conversant with local conditions prevailing at the site, unexpected difficulty of the work or otherwise whatsoever, except as may be expressly provided in the Specification.

2 EARTHWORKS

2.1 GENERAL

The Contractor shall carry out all earthworks required to enable the boat ramp to be located to the lines and levels as shown on the Drawings. The earthworks shall include both the excavation and removal from the site of unsuitable material and the supply and placement of new material.

The payment of all earthworks shall be in accordance with the Bill of Quantities. Volumes representing Fill in the Bill of Quantities are compacted insitu finished volumes. Tenderers shall have allowed for the bulking and settlement of the fill material in their Tenders.

2.2 DEMOLITION AND REMOVAL OF EXISTING STRUCTURE

The Contractor shall demolish the southern end of the existing boat ramp from Ch43.600. All material shall be removed by the Contractor from the site of works and disposed of in accordance with Cl 1.5.

2.3 EXCAVATION

2.3.1 Preparation of Sub-grade

The Contractor shall trim the existing sub-grade material to the required lines and levels as indicated on the Drawings. If the existing sub-grade should be below the required lines and levels it shall be filled with suitable insitu cut material won from the works or 75mm crushed rock base material conforming to the gradings of the 75mm Crushed Rock specification.

2.3.2 Removal of Excess Insitu Material to Spoil

Excess unsuitable excavated material shall be removed by the Contractor from the site of works and disposed of in accordance with Cl 1.5. Where needed and indicated, excavated unsuitable material will be treated for contaminants prior to disposal

2.3.3 Treatment of Acid Sulphate Soils

An Acid Sulphate Soils Investigation has been undertaken. Excess material removed to spoil is to be limed at the rate of 15kg / cubic metre of spoil before disposal. The timing and process of liming is to done to the satisfaction and prior approval of the Superintendent to ensure that the correct amount of lime is added and that it is spread uniformly through the spoil. Spoil that is allowed to dry before liming shall be bunded to prevent acidic drainage entering watercourses.

The spoil is to be disposed in an area approved by the Superintendent and the local authority.

2.3.4 Excavation to Side of Ramp

The sides of the ramp shall be excavated and graded to the levels and formation as shown on the Drawings for construction of the stone inclines, shoulders and revetments, and slopes at 1 in 3, where required.

2.4 PREPARATION OF SUBBASE

All loose or soft existing subgrade material shall be removed to achieve a sound firm layer on which to place the compacted base material. Existing unsuitable material shall be removed prior to the placement of imported material. Imported material shall be placed and compacted to achieve the required lines, levels and degree of compaction.

The base shall be trimmed to the correct lines and compacted to a density not less than 95% of the maximum dry density, measured at a depth of 150mm below subbase level.

The Contractor shall give the Superintendent's Representative twenty-four hours notice for inspection of the base. Placing of the concrete slabs and planks shall not commence until after the Superintendent's Representative has inspected and approved the base preparation.

2.5 MATERIALS

2.5.1 Geotextile Filter Material

The toe, base and shoulder formation shall be lined with geotextile filter material as detailed on the Drawings. The Geotextile filter shall be a needle punched, non-woven, spun bonded material of not less than 340 grams per square metre, lapped or otherwise joined in accordance with the Manufacturer's recommendations.

2.5.2 Crushed Rock

The 75mm crushed rock base material for the working platform and underlying the precast concrete planks shall conform to the following grading:

A.S. Sieve Size	Percentage by Weight passing sieve
75	100
63	80 - 100
53	65 - 90
37.5	35 - 65
26.5	20 - 40
19	15 - 30
9.5	8 - 20
4.75	3 - 12
2.36	1 - 4

Aggregate soil lumps shall not be included, and all material shall be free from clay, silt, adhering particles and organic matter.

2.6 TOLERANCES

The tolerances for the finished surface levels shall not deviate from the levels shown on the Drawings by more than plus 0mm or minus 20mm.

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3 CONCRETE

3.1 GENERAL

This section of the Specification shall apply to all concrete work as specified herein, and the supply, storage handling and placing of all material including reinforcement where applicable.

The following Australian Standard Specifications and their latest revisions shall form part of this Specification where applicable.

Number	Title
AS 1012 – Parts 1 to 18	Methods of testing concrete
AS 1141	Methods for sampling and testing aggregates
AS 1302 – 1991	Steel reinforcing bars for concrete
AS 1303 – 1991	Steel reinforcing wire for concrete
AS 1304 – 1991	Welded wire reinforcing fabric for concrete
AS 1379 – 1997	Specification and supply of concrete
AS 1478.1 – 2000	Chemical admixtures for concrete, mortar and grout - Admixtures for concrete
AS 1554.3 – 1983	Structural steel welding (known as the SAA Structural Steel Welding Code) - Welding of reinforcing steel
AS 2758.1 – 1998	Aggregates and rock for engineering purposes - Concrete aggregates
AS 3582.1 – 1998	Supplementary cementitious materials for use with portland and blended cement - Fly ash
AS 3583	Methods of test for supplementary cementitious materials for use with portland cement
AS 3600 – 2001	Concrete structures
AS3610 – 1995	Formwork for concrete
AS 3972 – 1997	Portland and blended cements
AS/NZS 4455 – 1997	Masonry units and segmental pavers
AS/NZS 4456 – 1997	Masonry units and segmental pavers - Methods of test
AS/NZS 4534 – 1998	Zinc and zinc/aluminium-alloy coatings on steel wire
AS/NZS 4680 – 1999	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles

3.2 MATERIALS

3.2.1 Cement

Unless specified otherwise, all cement shall conform to the provisions of AS 3972 and, unless specified otherwise, shall be Type GP general purpose portland cement manufactured by the QCL Group.

Should the Superintendent so require, the Contractor shall give for each consignment of cement brought onto the site, a test certificate by a National Association of Testing Authority laboratory, certifying that the cement is in accordance with the aforesaid Specification.

Cement shall be stored above ground level in dry, weatherproof sheds, well protected from dampness acquired from contact with floors or walls, in stacks no more than 7 bags high so that earlier deliveries are always accessible.

Cement may be stored in bulk provided that silos to a design approved by the Superintendent are provided.

Stocks on site shall be used in order of delivery.

The Contractor shall keep a record of the dates and quantities of the various lots of cement received and used and this record shall be accessible to the Superintendent at all times.

All cement at the time of use shall be free from contamination of any sort and free of lumps, caking and any evidence of partial hydration.

The Contractor shall permit sampling of cement in accordance with the provisions of AS 3972 if required by the Superintendent. Cement that has been in storage for more than three months may be re-tested if required by the Superintendent. The Superintendent may make such additional tests of the cement stored at the site as are deemed necessary.

Any cement that fails to meet the requirements of this Specification shall be at once removed from the works at the expense of the Contractor.

3.2.2 Aggregates

The aggregate supplier must have a quality assurance system in place whereby he can and shall provide documentary evidence to the Contractor that the particular aggregates being supplied for concrete conform in all respects to the requirements of AS 2758.1 and that the aggregates are free of materials which suffer from or have potential for alkali-silica reaction. Any required sampling and testing of aggregates shall be in conformity with AS 1141.

Fine aggregate shall consist of clean natural sand or crushed rock or combination thereof.

Coarse aggregate shall consist of crushed stone or river gravel or a combination thereof and shall be free from coatings of clay, dirt, organic or other deleterious matter.

The water absorption of aggregates when determined by the methods described in AS 1141.5, AS 1141.6.1, and AS 1141.6.2 shall not exceed 2.5 percent.

The Contractor shall supply to the Superintendent such copies of the test results obtained under the quality assurance system as he may require.

Any aggregates that fail to meet the requirements of this Specification shall be removed at once from the works at the expense of the Contractor.

The handling and storage of aggregates shall be such as to prevent segregation, inter-mixing, contamination and the draining of water into them. Aggregates should not be stored in direct contact with the ground and the bottom 0.3 metres of aggregate stockpiles should be allowed to remain to serve as a drainage layer for the aggregate above.

3.2.3 Water

The water used in concrete, mortar or grout shall be clean, fresh and free from injurious amounts of oils, acids, alkalis, salts, organic materials or other deleterious substances.

Where water is not free from colour or taste a sample shall be submitted to the Superintendent for analysis.

3.2.4 Admixtures

Admixtures (including Fly Ash) may be used only with the written approval of the Superintendent.

Chemical Admixtures shall conform to, and their use shall comply with AS 1478.

Fly Ash Admixtures shall conform to AS 3582.1.

Calcium Chloride shall not be used as an admixture in reinforced or prestressed concrete.

Before approval can be given to the use of a particular admixture, the Contractor shall either show by tests that the use of the admixture, in combination with the other materials to be used on the actual job, produces the desired effect without appreciably affecting the other qualities required for the concrete and without endangering the reinforcement or shall supply a written guarantee covering the performance of the admixture.

Where air entrainment is allowed, the air content shall be within the range of 3 to 5 percent except where otherwise specified. The Contractor shall have a suitable air content gauging device on the job so that the air content of the freshly mixed concrete may be accurately determined. Admixture metering shall be by means of an approved and well maintained dispenser.

3.2.5 Reinforcing Steel

All steel reinforcement is to be of sizes as shown on the drawings or as specified. All reinforcing bars shall conform to the requirements of AS 1302, and shall be of the grade shown on the drawings.

Alternative materials, where specified or shown on the drawings, shall conform to:

AS 1303 Steel reinforcing wire for concrete
AS 1304 Steel wire reinforcing fabric for concrete

All steel delivered to the works is to be stored in suitable racks, clear of the ground in a weatherproof building.

Steel shall be free from all loose rust, grease, tar, paint, oil, mud, loose mill scale or other coating which would tend to destroy its bond with the concrete.

The Contractor may be required to produce a test certificate showing results of such tests as may be required to establish the compliance of the reinforcing steel with the above standard specifications.

Unless shown on the Drawings to be otherwise, all bars shall be deformed.

3.2.6 Galvanized Reinforcement

Reinforcement or other steel items shown on the drawings as to be galvanized and to be cast into concrete shall be hot dip galvanized in accordance with AS/NZS 4534 and AS/NZS 4680.

In order to inhibit zinc/alkali reaction in fresh concrete, such galvanized items shall be passivated in 0.2% sodium dichromate solution applied by the galvanizer.

As an alternative to passivation as above, chromium trioxide shall be added to the concrete mix in a ratio of 300 ppm (0.3 grams per litre) of mixing water.

Damage caused to galvanized coatings of items for incorporation in concrete shall be repaired by application of an organic zinc rich paint.

3.3 FORMWORK AND FALSEWORK

3.3.1 General

All formwork and falsework shall be designed and constructed in accordance with AS 3610.

Unless otherwise provided, detailed drawings of formwork and falsework shall be submitted to the Superintendent for approval before their construction is undertaken. In no case, however, shall such approval relieve the Contractor of responsibility for the results obtained.

Falsework that cannot be founded on a satisfactory footing shall be supported on piling which shall be spaced, driven and removed in a manner approved by the Superintendent. Subject to approval by the Superintendent, falsework may be supported on constructed portions of the substructure provided the structure is not overstressed or rendered unstable. Allowance shall be made for any deflection during the placement.

Structural strengthening rendered necessary by falsework loads shall be effected at the Contractor's expense. Falsework shall be released only at the time and in the order and manner approved by the Superintendent.

All forms shall be of such material and be so prepared as to give the required surface finish. Unless specified otherwise, concrete surfaces to be exposed to the public view are to have Class 3 surface finish with Type C colour control, and surfaces which are to be permanently concealed from view shall be of Class 5 finish, as defined in AS 3610.

All forms shall be built mortar tight and of sufficient rigidity to prevent distortion by the pressure of the concrete and other loads incident to the construction operations. Forms shall be constructed and maintained so as to prevent warping and the opening of joints due to shrinkage of the timber.

The design of the forms shall take into account the effect of vibration of the concrete as it is placed.

When forms are re-used, their original shape, strength, rigidity, mortar tightness and surface smoothness shall be maintained at all times. Material previously used in formwork must be cleaned off and oiled before re-use. Warped timber shall not be used.

Forms which are unsatisfactory in any respect shall not be re-used.

Metal form ties, if cast-in, shall be constructed so as to permit their removal to a depth of at least 30 mm from the face without injury to the concrete. Ordinary wire ties shall not be used. Cavities left when the end fitting of ties are removed shall be as small as possible and shall be subsequently filled with cement mortar of similar characteristic strength to the surrounding concrete and the surface left sound, smooth and uniform of colour.

Form ties shall be located in a uniform and symmetrical pattern relative to the finished structure.

Provision is to be made in all forms of concreting so that all edges and corners will show an arris of 25 mm or of dimensions as shown on the drawings.

Angle fillets shall be used in the angles of the forms and exposed angles shall be chamfered unless otherwise specified.

The inside of forms shall be thoroughly coated with non-staining mineral oil applied before the reinforcement is placed. Where the forms are to be walked on during placing of the steel they shall be covered so that the oil shall not smear the steel reinforcement.

3.3.2 Tolerances

Unless provided elsewhere in this Specification, construction tolerances for formwork shall be in accordance with clause 3.4.3 *Tolerances* of AS 3610.

The Contractor shall be responsible for setting and maintaining the concrete forms within the tolerance limits and shall ensure the work is completed within the specified tolerances.

3.4 BENDING AND PLACING OF REINFORCEMENT

Bending of reinforcing bars shall comply with the relevant provisions of AS 3600. Bars shall be bent and placed accurately as shown on the Drawings, within the tolerances specified in AS 3600, and shall be well secured by wiring or welding so that no displacement can occur when placing and compacting the concrete.

Bar chairs of plastic, small concrete blocks or stainless steel may be used to space the reinforcing bars. For buildings floor slabs and the like, bar chairs shall be spaced no greater than 600 mm centres.

Bars shall be spliced at points of minimum moment or as directed by the Superintendent and in either case, splicing shall be in accordance with the provisions of Section 13 of AS 3600.

Welding of reinforcement shall be carried out only where shown on the Drawings or with the approval of the Superintendent and such welding shall be in accordance with AS 1554.3.

The Superintendent may require the Contractor to have carried out tests to establish the strength and reliability of any welding used in the work. Any welding failing to meet the standards laid down for the appropriate test will be rejected.

Minimum concrete cover to reinforcement, where not shown on the Drawings, shall be in accordance with the appropriate clauses of AS 3600.

3.5 CONCRETE CLASS

In this Specification, concrete shall conform to the following requirements:

Purpose	Aggregate (maximum)	Cement (minimum)	W/C Ratio (maximum)	Characteristic Strength (f'_c)
Prestressed Piles	20 mm	400 kg/m³	0.45	50 MPa
Wharves, Jetties, Boat Ramps	20 mm	360 kg/m³	0.45	50 MPa
Buildings	20 mm	360 kg/m³	0.50	32 MPa
Road Kerbs, Footpaths	20 mm	330 kg/m³	0.55	25 MPa

3.6 CONCRETE MIX DESIGN AND ACCEPTANCE OF MIX DESIGN

3.6.1 General

The Contractor shall be solely responsible for the design and production of concrete to comply with this specification and approval of mixes by the Superintendent will in no way relieve the Contractor of this responsibility.

3.6.2 Information to be Provided by Contractor

At least 2 weeks prior to concreting on the site, the Contractor shall submit to the Superintendent for approval, details of the concrete mix he proposes to use for each particular class of concrete. The information to be submitted for each class of concrete is as follows:

(i) Mix designation mark
(ii) Class of concrete (characteristic strength)
(iii) Proportion by weight of individual ingredients and total weight of batch
(iv) Admixtures and quantity of admixtures to be incorporated
(v) Slump
(vi) Mean Grade Strength
(vii) On site quality control measures

No concreting shall be carried out until the above information has been approved in writing by the Superintendent. Any variations to details of concrete mixes shall require the approval of the Superintendent before being adopted.

3.6.3 Mean Grade Strength

The mean grade strength shall be the 28 day compressive strength selected for the design of a particular class of concrete. The mean grade strength shall be not less than the sum of the specified characteristic compressive strength and 1.25 times the standard deviation associated with that particular characteristic strength. Assessment of the selected standard deviation for a particular class of mix shall be in accordance with the requirements of Section 20 of AS 3600 and shall be not less than 2 MPa and not greater than 7 MPa.

The mean grade strength and the selected standard deviation must be consistent with control measures employed at the batching plant. If during the course of the job, the characteristic compressive strength of supplied concrete as determined by project control testing, falls below the specified characteristic compressive strength and/or the control measures nominated by the Contractor are not fully implemented the Contractor shall be required to adjust his mix design so that the specified characteristic strength is achieved. This process of adjustment may involve a completely new mix design.

All costs associated with adjustment of concrete mixes shall be borne by the Contractor.

3.6.4 Preliminary Mixes

Except as provided in the clause *Preliminary Mixes - When not Required*, the Contractor shall make for each of the various classes of concrete to be used in the works at least one preliminary mix using the batch plant as established for the execution of the works.
The functions of preliminary mixes are as follows:

(i) To demonstrate that the batch plant is able to produce the various classes of concrete required in the execution of the works.

(ii) To demonstrate that the various mixes proposed by the Contractor will comply with the class requirements of the Specification.

The preliminary mixes shall be full batches and shall be made from the materials proposed for use in the works. The mixes shall be made in accordance with the requirements of this Specification under actual field conditions and in the presence of the Superintendent or his representative. For each preliminary mix, the slump shall be recorded and 9 standard cylinders for compression testing shall be made.

The results of compressive strength testing shall comply with the acceptance requirements for project assessment as set out in Section 20 of AS 3600.

Where preliminary mixes fail to meet the requirements of this Specification, additional preliminary mixes shall be required.

3.6.5 Preliminary Mixes - When not Required

Preliminary mixes will not be required under the following circumstances:

(i) Where concrete is supplied by an established supplier of ready-mixed concrete and the supplier is able to produce satisfactory test results from identical mixes produced previously by that supplier.

(ii) Where precast units are manufactured by an established precasting manufacturer who can produce evidence of an history of good quality control and the manufacturer is able to produce satisfactory test results from identical mixes produced previously by that manufacturer.

In all instances, satisfactory test results shall be as determined by the Superintendent and the Contractor will be required to submit full details of test results together with information relating to the mix designs to the Superintendent for consideration.

3.6.6 Approval of Mixes

No concrete shall be placed until mixes have been approved in writing by the Superintendent. Where preliminary mixes are required, mixes will not be approved until satisfactory test results have been obtained from preliminary mixes.

Once approved by the Superintendent, the mix for a particular class of concrete will not be altered without the written approval of the Superintendent.

3.7 ON SITE BATCHING AND MIXING

3.7.1 Batching

All aggregates for a batch shall be measured and proportioned when dry and loose, or with suitable allowance for moisture content, and shall be measured by weight unless specified otherwise.

The mechanism of delivery of materials to the weigh hopper shall be such that there is the least reasonable time lag between the closing of the material hopper and the entry of the material into the weigh hopper.

The weighing mechanism shall be arranged for convenient observation by the batcher and the Superintendent. It shall be equipped to indicate when the correct amount of material is in the weighing container. The Superintendent shall have the right to inspect the scales for signs of sluggishness, damage, balance or any other matter causing inaccuracy as often as he considers an inspection is necessary. Scales shall be provided with sufficient standard weights for calibrating and testing weighing equipment. Such calibration and test weighing shall be carried out as often as the Superintendent considers necessary. Scales shall be maintained accurate within a maximum tolerance of 0.4 percent of the nett loading being weighed.

Cement for classes of concrete with a specified characteristic compressive strength exceeding 30 MPa shall be batched by weight and shall be weighed separately from the aggregates.

Water for concrete shall be supplied directly from a water measuring and discharging device approved by the Superintendent with controls so arranged that only measured water shall flow into the mixer. It shall have a visible indicator showing the quantity of water measured and shall be provided with a locking arrangement on the controls to prevent unauthorised adjustment.

The actual quantity of water added to each batch will be governed by the moisture content of the aggregates and shall be adjusted by the Contractor to the satisfaction of the Superintendent.

The Contractor shall keep on the site and at the works an approved device for determining the water content of the fine aggregate and must stockpile the material in such a way and for a sufficient time to allow moisture content to become stable and uniform.

The Contractor shall keep at the mixing site records showing for each batch of concrete produced the weight of cement, weight of each grade of aggregate used and weight of added water, and results of tests made to determine the water contained in the aggregate.

These records shall be made available on demand to the Superintendent or his authorised officer for inspection.

3.7.2 Mixing and Transporting

Concrete shall be mixed in an approved type of mixer of a size which in the opinion of the Superintendent is sufficiently large for the size of the pours proposed. Mixer speed shall be in accordance with the manufacturer's recommendation or, in the absence of a recommendation by the manufacturer, at a speed of not less than 14 and not more than 20 revolutions per minute.

It shall be the Contractor's responsibility to ensure that sufficient concrete can be mixed to complete a pour. The Contractor shall be required to submit details of concrete supply back-up arrangements to the Superintendent for approval prior to commencement of mixing. If the Superintendent considers these arrangements to be unsatisfactory, he may require a standby mixer, equivalent to that in use for the particular work, to be provided and maintained ready for immediate use during the course of all pours for structural concrete.

The mixer shall be set up level and the volume of mixed concrete in a batch shall not exceed the rated capacity of the mixer. The batch shall be charged into the mixer so that some water will enter in advance of any aggregate. Materials shall be so placed in the hopper that at least two-thirds of the sand and gravel comprising each batch will enter the drum before the cement. Mixing shall continue until the concrete is thoroughly mixed. The minimum mixing time after all materials, including water, have entered the mixer shall be 2 minutes for drum type mixers. For pan or other type mixers the minimum time shall be as directed by the Superintendent after conducting tests.

The entire contents of the mixer shall be discharged before recharging and the mixer shall be cleaned at frequent intervals while in use. Upon resumption of mixing, the first batch of concrete materials charged into the mixer shall contain sufficient excess sand, cement and water to coat the inside surface of the drum without diminishing the required mortar content of the mix.

Mixing by hand shall not be permitted except for minor works and then only with the approval and to the satisfaction of the Superintendent. Hand mixed batches shall not exceed 0.2 cubic metres in volume and the mixing shall be done on a watertight platform.

All concrete transported by non-agitating equipment shall be placed within ten minutes of mixing. Where agitating equipment is used to transport the concrete this period may be increased to 1½ hours.

Concrete shall be mixed only in quantities required for immediate use. The use of partly hardened concrete or remixing of such concrete, with or without additional cement, aggregate or water, will not be permitted.

3.8 READY-MIXED CONCRETE

Ready-mixed concrete complying with AS 1379, whether manufactured in a plant operated by the Contractor or by approved subcontractors may be used with the approval of the Superintendent.

Irrespective of whether the concrete is ordered by the *Performance Order* or the *Prescription Order* (as defined in AS 1379) the requirements of the clauses 1.6.3 *Normal class concrete* and 1.6.4 *Special-class concrete* under AS 1379 must be met.

Non-agitating equipment shall not be used for transporting ready-mixed concrete unless special circumstances arise which, in the opinion of the Superintendent, justify its use.

The location of the mixing plant must be such that in the opinion of the Superintendent no difficulty will be experienced in meeting the requirement that all concrete shall be placed in the structure within 1½ hours from the time of the introduction of cement and water being batched to the mix.

The records specified in the clause 4.1.6 *Records* of AS 1379 for concrete mixed on site shall be kept by the manufacturer of the ready-mixed concrete and shall be made available to the Superintendent on demand.

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3.9 TESTING OF CONCRETE

3.9.1 General

Testing for consistency, compressive strength, and, if air entraining agents are used, for air content shall be carried out throughout the progress of the works, as directed by the Superintendent.

Sampling for tests shall be in accordance with AS 1012.1 *Methods of testing concrete - Method 1: Sampling fresh concrete.*

3.9.2 Testing for Consistency

Consistency shall be measured by the slump test carried out in accordance with AS 1012.3.3 *Methods of testing concrete – Method 3.1: Determination of properties related to the consistency of concrete - Slump test*

The necessary standard slump testing apparatus shall be provided by the Contractor.

3.9.3 Testing for Air Content

Air content of air-entrained concrete mixes shall be determined in accordance with one of the methods laid down in AS 1012.4.1 *Methods of testing concrete – Method 4.1: Determination of air content of freshly mixed concrete - Measuring reduction in concrete volume with increased air pressure.*

3.9.4 Testing for Compressive Strength

Unless specifically agreed to by the Superintendent, all concrete produced under this Contract shall be subject to Project Assessment of Strength Grade, as specified in *Section 20* of AS 3600.

The Contractor shall provide all moulds, baseplates, rods and all other apparatus required for the manufacture of test cylinders for the compression testing of concrete produced under this Contract. Such moulds, baseplates, and rods or vibrators shall conform to the requirements of the latest revision of Australian Standard AS 1012.8.1 *Methods of testing concrete – Method 8.1: Method of making and curing concrete - Compression and indirect tensile test specimens* and AS 1012.8.1 *Methods of testing concrete – Method 8.2: Method of making and curing concrete - Flexure test specimens.*

In addition the Contractor shall be responsible for, and shall provide the labour for the sampling of concrete and the manufacture and curing of the test cylinders in accordance with the relevant requirements of the latest revision of AS 1012.8.1 and AS 1012.8.2.

The Contractor shall also arrange for, and be solely responsible for, the transporting of all completed test cylinders to the Superintendent's site office for testing. The test cylinders, however, shall not be moved from their place of manufacturer until marked by the Superintendent's representative.

The compression testing of test cylinders will be the responsibility of the Superintendent.

All costs associated with the supply of moulds, baseplates, rods, etc. and the manufacturer and transporting to the Superintendent's site office, of the test cylinders, shall be borne by the Contractor.

The Superintendent will keep on site a log book in which is recorded the following information:

(i) Test cylinder number or identifying mark
(ii) Date of sampling and name of operator
(iii) Slump of batch from which sample is taken
(iv) Date when tested
(v) Test result

The Contractor shall provide the Superintendent with such information as the Superintendent requires for the compilation of this log.

3.10 PLACING AND COMPACTION

3.10.1 General

The Superintendent's approval shall be obtained to the following before the placing of any concrete:

(i) Formwork and falsework as constructed
(ii) Reinforcement as placed in the forms
(iii) Back-up arrangements to ensure the completion of placing and compaction once commenced
(iv) Concrete mixes
(v) Proposed method of compaction

Where the mixing records required under the clause *Batching* above show any significant deviation from the approved preliminary mix proportions, or where the consistency test produces a slump in excess of the specified maximum for the concrete class required, the concrete batch concerned shall be rejected before placing in the forms and be removed from the site at the Contractor's expense.

Concrete shall be placed only in the presence of the Superintendent or his representative, and the Contractor shall be required to give adequate prior notice to the Superintendent in all cases of his intention to place concrete in any situation so that the necessary inspection can be arranged.

Wherever concrete is to be placed against a bare earth surface, the earth surface shall be wetted immediately prior to placing the concrete.

Concrete shall be placed in an essentially continuous manner between approved construction joints, and, unless otherwise authorised by the Superintendent, in horizontal layers not more than 450 mm thick.

Each layer shall be placed and properly compacted in accordance with the clause *Compaction* below, before the preceding layer has taken its initial set, unless an approved construction joint has been provided.

Any troughs and chutes used as aids in placing concrete shall be arranged and used in a manner that does not cause segregation. The use of water to facilitate the movement of concrete along troughs or chutes is expressly prohibited, but all troughs and chutes shall be kept clean and free of coating of hardened concrete by flushing thoroughly with water which shall be discharged well clear of concrete in place.

Troughs and chutes shall discharge into vertical downpipes at least 600 mm in length. Where steep slopes are required, the chutes shall be equipped with baffles or be in short lengths that reverse the direction of movement so that the concrete slides without segregation and on no accounts rolls.

Pneumatic placers and concrete pumps shall be used only if authorised by the Superintendent. Such equipment shall be arranged so that freshly placed concrete is not damaged by vibration. The delivery end of the pipe shall terminate in a fitting of approved design which shall prevent segregation of the concrete. After the completion of any concreting operations the equipment shall be thoroughly cleaned.

Concrete shall not be dropped from a height, or in such a manner as will cause segregation or loss of material. When placing operations involve dropping the concrete more than 1.5 metres, it shall be deposited through a sheet metal or other approved tremie, in such a way that the concrete does not segregate. The depositing of a large quantity of concrete at any point with the intention of moving it along the forms with vibration or tamping rods will not be permitted.

Immediately following the placing of concrete, all accumulations of mortar splashed upon reinforcement steel and the surfaces of the forms shall be removed. Exposed concrete surfaces shall be protected against damage by rain or other factors until the concrete has hardened.

After the initial set of the concrete, the forms shall not be jarred and no strain shall be placed on the ends of reinforcing bars which project.

3.10.2 Use of Cofferdams or Cylinders

If conditions are such that cofferdams or cylinders can be sealed only by placing concrete under water the work shall only be carried out under the immediate supervision of the Superintendent and as specified hereunder.

The cofferdams or cylinders shall be sufficiently tight to maintain still water at the location of placement. Any pumping must cease and the water level must be constant when placement commences.

Concrete seals on the bottom of cylinders or caissons shall be placed in one continuous operation. The concrete shall not be disturbed after being deposited and the placing shall be regulated so as to continually maintain an approximately horizontal surface. No tamping or vibration will be allowed.

Cofferdams or cylinders shall not be dewatered until at least 48 hours after the completion of placing the concrete seal. After dewatering, the top surface of the concrete shall be prepared as specified in the clause *Construction Joints* before subsequent placement of concrete.

3.10.3 Temperature Control

(i) Ambient Temperature

The maximum placing temperature of concrete shall not exceed 28.6°C. When the ambient temperature is expected to exceed 32°C during and after placing, formwork shall be cooled by water spray (excess water being removed before placing concrete), shade shall be provided to the freshly placed concrete, and the concrete surface kept moist as directed by the Superintendent.

(ii) Heat of Hydration

For thermal stress control in the hydration process of thick concrete elements, such as wharf slabs in excess of 500 mm thick, the concrete placement temperature shall be minimised by using chilled mixing water.

3.10.4 Compaction

All concrete shall be thoroughly compacted during and immediately after placing. Unless otherwise allowed by the Superintendent, the compaction shall be achieved by the use of mechanical vibrators in accordance with the conditions specified hereunder. Manual methods of compaction in lieu of mechanical vibration will be allowed on minor concreting operations or in emergency situations, only when approved by the Superintendent.

Where practicable, mechanical vibrators shall be of the high frequency, immersion type. The use of other types of vibrators in situations where immersion vibrating is not practicable, such as for thin, or heavily reinforced sections, shall be subject to the Superintendent's approval.

For precast members, the manufacturer's method of compaction may be used, if approved by the Superintendent.

The Contractor shall submit details of his proposed method of compaction and equipment and shall obtain the Superintendent's approval to the same prior to the commencement of placing of any concrete.

The selection and use of the various types of mechanical vibrators shall be in accordance with the following conditions:

(i) Immersion Vibrators - Type and Number

The type, size and number of immersion vibrators to be used on any part of the concrete work shall be subject to the Superintendent's approval. The selection of the vibrator size and operating characteristics best suited to a particular application can be based on the relevant information available from the latest edition of the Cement & Concrete Association of Australia, Technical Report No. TR38 – 'Concrete Placing'.

The total number of vibrators to be provided shall include a provision for at least 20% of the total to be maintained on standby, ready for immediate use in case of failure. The minimum number to be used in any part of the work shall be sufficient to ensure proper compaction of each concrete batch.

(ii) Use of Immersion Vibrators

Care shall be taken to ensure that the vibrators do not damage the form work.

Vibrators shall be inserted vertically to their full length, at uniform spacing over the entire area of placement. The distance between points of insertion shall be limited to approximately 1½ times the radius of action of the vibrator.

In slabs, vibrators may be sloped toward the horizontal as necessary to meet the requirement for full embedment of the vibrator.

Vibration shall continue at each position until the general cessation of the emergence of air bubbles. The vibrator shall then be withdrawn slowly and care shall be taken to close the hole left by the withdrawal of the vibrator.

Where more than one layer is being placed in a continuous operation the vibrators shall be inserted through the layer into the layer below. The concrete in the lower layer shall be fresh enough to permit this to be done without difficulty.

Vibrators shall not be inserted within 600 mm of any leading, unconfined edge.

Internal vibrators shall only be used to aid compaction. In no case shall they be used to spread the concrete laterally.

(iii) Form Vibrators and Vibrating Tables

If form or table vibrators are used (with the Superintendent's approval), the vibrator manufacturer's recommendations as to size, number and location of vibrator units for the particular application shall be obtained and followed. Notwithstanding such recommendations, vibrators shall be relocated as necessary to achieve adequate and uniform vibration over the surface of the form. To ensure that this is achieved, the frequency and amplitude of vibration shall be checked at several points on the form, using a vibrograph or other suitable device. For form vibration, the amplitude shall be considered adequate if it is greater than .05 mm for stiff mixes, or .025 mm for plastic mixes.

(iv) Surface Vibrators

Surface vibrators, if approved by the Superintendent for use in a particular application, shall be operated in accordance with the manufacturer's instructions.

(v) Use of Vibrators - General

Vibration shall not be applied directly, or through the reinforcement, to sections or layers of concrete which have hardened to the degree that the concrete ceases to be plastic under vibration.

3.11 CONSTRUCTION JOINTS

Construction joints shall be constructed only where shown on the Drawings or specified hereunder unless otherwise approved by the Superintendent. If not detailed in the Drawings or specified below, or in the case of an emergency, construction joints shall be placed as directed by the Superintendent.

Unless specified otherwise, or shown on the Drawings, construction joints in beams and slabs shall be located between the quarter and third span points.

The placing of concrete shall be carried continuously from joint to joint. The edges of all joints which are exposed to view shall be carefully finished true to line and elevation.

At horizontal construction joints, dressed timber strips approximately 25 mm square shall be placed inside the forms for all exposed faces and the surface of the lower layer of concrete shall be stopped slightly above the lower edge of the strips so as to give the joints a straight line. Timber strips shall be removed before placing the succeeding layer of concrete.

Before depositing new concrete against concrete which has hardened, the forms shall be re-tightened and the surface of the old concrete treated as described below:

(i) Bonding concrete to that which is not more than four hours old:

The laitance and thin layer of porous concrete immediately below shall be removed and the new concrete added immediately.

(ii) Bonding concrete to that which has been in position for more than four hours but not longer than three days:

The laitance and porous layer shall be removed as in (i). The surface of the concrete shall be brushed with a wire brush and thoroughly washed with clean water. After excess water has been removed a layer of cement mortar of similar composition to that embodied in the new concrete excluding the large aggregate and of plastic consistency, about 12 mm in thickness, shall be spread on the prepared surface and the new concrete placed immediately, while the mortar is still plastic.

(iii) Bonding concrete to concrete which is more than three days old:

The hardened surface shall be chipped away and brushed with a wire brush or sandblasted to the satisfaction of the Superintendent and then thoroughly washed with clean water. After excess water has been removed, a slurry of neat cement of the consistency of cream shall be applied with a brush and worked well into the interstices of the prepared surface. Cement mortar shall be applied as in (ii) and the new concrete placed immediately.

3.12 SURFACE FINISH

Surfaces cast against forms shall have a finish conforming to the class of formwork specified under *Section 3 Surface Finish* of AS 3610.

Surfaces not cast against forms shall, where possible, be brought to the required grade by means of a vibrating screed and finished true to profile by wood floating. The surface shall be finally finished by means of a steel trowel, followed by light nylon brooming, unless specified otherwise.

3.13 REMOVAL OF FORMS AND FALSEWORK

3.13.1 Stripping

Forms shall remain firmly in place until the concrete has attained the necessary strength to support its weight and construction loads, or as otherwise specified. In addition, they shall remain in place when required to protect the concrete against effects of temperature extremes or excessive loss of moisture, for effective curing. No formwork shall be removed without the authority of the Superintendent.

Unless otherwise specified herein or by direction in writing by the Superintendent, forms shall not be removed from the concrete until the following times have elapsed from the placing of the concrete, or as otherwise provided in clause 5.4.3.2 *Stripping times* of AS 3610.

MINIMUM STRIPPING TIMES

MemberType		*Effective Span (m)	Minimum Stripping Time (days) for average air temperature during period prior to stripping			
			≥21°C	10-21°C	5-10°C	< 5°C
Vertical, unloaded	Wall, column, beam side	0	2	3	5	7
Vertical, load-bearing	Wall, column or load-bearing structure	0	5	6	7	9
Horizontal Slab		> 3	7	10	14	21
		3-6	10	14	21	28
		>6	14	21	28	28
Horizontal Beam		> 3	10	14	21	28
		3-6	14	21	28	28
		>6	21	28	28	28

* Effective span is the maximum distance between supports (either temporary or permanent).

Forms shall be removed with care without hammering and wedging and so as not to injure the concrete or disturb the remaining supports. Centering shall be gradually and uniformly lowered in such a manner as to avoid injurious stress in any part of the structure.

No load which may cause damage to the work shall be placed on or against any concrete. Loading placed on or against any concrete shall be subject to approval by the Superintendent and any requirements specified elsewhere in the Contract documents. Notwithstanding any

such approval, the Contractor shall repair as directed by the Superintendent and at his expense, any damage caused by his operations.

3.13.2 Repair and Finishing of Surfaces Cast Against Forms

As soon as the forms are removed, the exposed concrete will be examined by the Superintendent, who, at his own discretion, may direct the Contractor to repair any faulty concrete, and finish the surface in the following manner:

Immediately after removal of forms, all fins and other projections shall be ground off, all pockets and honeycombs which are accepted by the Superintendent shall be cleaned and filled flush with a stiff cement mortar having the same proportion of cement and sand as the original concrete. An approved bonding agent in the mix or on the interface (or both) shall be used at the discretion of the Superintendent.

On surfaces that will be in contact with earth and other surfaces not exposed to view, immediately after removal of forms, all pockets and honeycombs accepted by the Superintendent shall be cleaned and filled with an approved mortar and the surface of the patch finished flush with a wooden float. An approved bonding agent in the mix or on the interface (or both) shall be used at the discretion of the Superintendent.

3.14 CURING

Only fresh water shall be used for curing. Concrete surfaces other than slabs shall be kept continually moist for a period of not less than 7 days. Slabs shall be kept continually moist for a period of not less than 14 days.

Horizontal surfaces of thin sections unprotected by formwork and surfaces cast against forms, where the forms are removed less than 7 days after casting, shall be treated by application by roller or spray of an approved undiluted wax emulsion type curing compound to ASTM C309 at the rate recommended by the manufacturer, immediately upon removal of the forms and completion of such work as may be required to produce a satisfactory finish. The surface of the concrete shall be kept moist until the application of the curing compound.

Horizontal surfaces of sections greater than 800 mm thickness and unprotected by formwork shall be covered by a blanket of 50 mm thick fibreglass insulation batts in addition to the application of curing compound as above. The blanket shall be placed within one hour of concrete placement and shall remain in place for not less than 7 days.

Surfaces against which concrete is to be cast shall not be treated with a curing compound but shall be kept moist until the new concrete is cast, or for at least 7 days.

Curing methods other than those specified in this clause shall be used only with the written approval of the Superintendent.

Whatever method of curing is used, the method of its application shall be such that the concrete is not stained, marked, contaminated or otherwise damaged.

3.15 ACCEPTANCE OF CONCRETE IN PLACE

Any concrete work which does not conform to this Specification shall be liable to rejection. The Superintendent may, at his own discretion, require such work to be demolished and rebuilt to Specification at the Contractor's expense.

Alternatively, the Superintendent may give approval to the Contractor to carry out remedial works to bring the work up to an acceptable standard. All remedial works shall be at the Contractor's expense.

4 GROUTED STONE REVETMENTS

4.1 GENERAL

Where the concrete ramp below the natural surface, fully grouted stone revetments and shoulders shall be formed at a slope of 1 in 1.25 on either side of the ramp to the natural surface. A depression to act as a drain shall be formed between the stone shoulders and the stone inclines.

In areas where the concrete ramp and its shoulders are to be at or above the natural surface, fully grouted stone shoulders and revetments shall be constructed either side of the ramp as shown on the Drawings. The natural surface shall be graded at a slope no steeper than 1 in 3 away from the stone shoulders.

Grout used for the revetments shall be of 20 Mpa and the stone shall be graded 150 to 200mm.

4.2 STONE

Stone for the revetment shall be clean, hard, durable, free from seams or other imperfections and does not disintegrate in water. All weathered stones shall be rejected.

4.3 CONSTRUCTION

Grouted stone revetment shoulders shall be constructed as shown in the drawings. Stones shall be placed to form irregular joints. All stones shall be interlocked and wedged with small size stone as necessary, so that no single stone may be easily dislodged and no large voids remain between stones. All stone pitched faces must be stable prior to grouting with mortar.

The voids between stones at the exposed surface shall be filled with cement mortar made from a 1:3 Type GP cement/ sand mixture, with sufficient water added to give it a plastic like texture. The mortar shall be able to retain its shape and not flow like a liquid and is to be used within one hour of mixing and shall not be retempered.

Exposed surfaces shall have a relatively smooth, even and neat appearance and be cleaned free of any coating of cement mortar.

5 STEELWORK

5.1 GENERAL

This section of the Specification refers to the supply, fabrication and erection and/or installation of steel items for the works in accordance with AS 4100 – 1998 *Steel structures*.

5.2 STEEL MATERIALS

5.2.1 Ordinary Structural Steel

Unless otherwise noted, specified or approved, all steel shall be of Australian manufacture, all plates, flats, rolled sections and hollow structural sections shall be 350 grade steel complying with the following Australian Standards:

AS 1163 – 1991	Structural steel hollow sections
AS/NZS 1594 – 1997	Hot-rolled steel flat products
AS/NZS 3678 – 1996	Structural steel - Hot-rolled plates, floorplates and slabs
AS/NZS 3679.1 – 1996	Structural steel - Hot-rolled bars and sections

All materials shall be free from rust, surface defects, heat-affected zones or other defects. Material with surface defects which in the opinion of the Inspector would provide an unsatisfactory finish will be rejected.

5.2.2 Special Steels

Cast Steel shall comply with AS 2074 – 1982 *Steel castings*

Stainless Steel shall be grade 316. Bolts designated as CR STL on the Drawings shall be this grade and shall have rolled threads.

5.2.3 Bolts, Nuts and Washers

Unless otherwise specified or shown on the Drawings, all bolts, nuts and washers shall be supplied and installed in accordance with the following Standards as applicable:

AS 1110.1 – 2000	ISO metric hexagon bolts and screws - Product grades A and B - Bolts
AS 1110.2 – 2000	ISO metric hexagon bolts and screws - Product grades A and B - Screws
AS 1111.1 – 2000	ISO metric hexagon bolts and screws - Product grade C – Bolts
AS 1111.2 – 2000	ISO metric hexagon bolts and screws - Product grade C – Screws
AS 1214 – 1983	Hot-dip galvanized coatings on threaded fasteners (ISO metric coarse thread series)
AS/NZS 1252 – 1996	High strength steel bolts with associated nuts and washers for structural engineering
AS/NZS 1559 – 1997	Hot-dip galvanized steel bolts with associated nuts and washers for tower construction
AS 1237 – 1973	Flat Metal Washers for General Engineering Purposes

5.3 FABRICATION AND ERECTION

5.3.1 General

The fabrication and erection of all steelwork shall be carried out in accordance with the requirements of AS 4100 Steel Structures. In particular, the Contractor's attention is drawn to sections 14, 15 and 16 titled *Fabrication*, *Erection* and *Modification of Existing Structures* respectively.

Fabrication shall be carried out in workshop conditions in order that minimum work is required at the site of erection or installation of the steel items. Sufficient trial assembly shall be carried out in the workshop to prove the accuracy of the workmanship before dispatching the items to the sites.

Due allowance should be made for insulating collars in drill holes where dissimilar metals are in contact.

5.3.2 Preparation and Cutting

All plates, bars and section shall be flattened and straightened and made free from twist before any other work is done on them. The method adopted for this work shall be such as not to injure or mark the material.

Cold sawing shall be used when it is required to cut a section accurately to length, or where a rough edge might detract from the appearance of the structure.

Cold or hot sawing or machine gas cutting, or for small sections and plates, cropping and shearing may be used where the edges are to be butt welded, or where the exact length of a member is not vital to design and where a rough edge will not detract from the appearance of the structure, or where the edges are required to be machined after cutting.

Gas cutting by hand shall not be permitted.

All burrs left by sawing, cutting or shearing shall be removed before fabrication or assembly. The sharp arises of plate shall be removed by light grinding.

5.3.3 Welding

All welding shall be carried out in accordance with AS/NZS 1554.1 – 2000 *Structural steel welding - Welding of steel structures* with the exception of Section 7 *Inspection* which shall not apply.

For the purposes of this Specification the term 'Inspector' referred to in the above Code shall be taken to mean the Superintendent.

Welding procedure sheets as required under the above Code must be forwarded to the Superintendent for information only, before the associated welding is carried out.

Where welding procedures are not prequalified the Contractor shall meet all costs associated with the production of documentary evidence to the satisfaction of the Superintendent, and/or

test results as necessary to have the welding procedures qualified in accordance with the above code.

The Superintendent shall have access at all times to all phases of the work and the Contractor shall give reasonable notice in advance of the start of welding operations.

The Superintendent shall have the opportunity to witness all testing of welding procedures and welder qualification tests that are required. Furthermore, the Superintendent may require evidence to the effect that welders employed on the works have satisfactorily completed appropriate tests as laid down in AS 1796 – 2001 *Certification of welders and welding supervisors*.

Prior to and during welding operations, the Superintendent or his Inspector may inspect the setup of the work and check that the welding is being correctly carried out. However such checking shall not relieve the Contractor of his responsibility to carry out the welding in accordance with this Specification and the Drawings.

The Contractor shall be responsible for carrying out non-destructive tests on all SP welds and selected GP welds by ultrasonic or other means using a NATA registered laboratory. Copies of results shall be forwarded to the Superintendent immediately when available. Testing shall be in accordance with AS/NZS 1554.1.

Where flaws in the welds are found the Superintendent shall determine what imperfections are acceptable and what imperfections will involve cutting out and rewelding. Such determination shall, where possible, be based on the requirements of AS/NZS 1554.1 Section 6, *Quality of Welds*. Costs of any subsequent testing will be borne by the Contractor.

5.3.4 Bolted Connections

All bolts, nuts and washers, of any designation, shall be hot dip galvanized in accordance with the Specification for Protective Treatment of Steelwork, except where the Drawings nominate any bolt, nut and washer to be of stainless steel or other non-ferrous material.

All high-strength bolts, with their nuts and washers shall comply with AS/NZS 1252 and be supplied as hot dip galvanised from the manufacturer.

Where fabricated items are specified to receive protective treatment after assembly and tightening of nuts and bolts, the Superintendent shall inspect all such connections and his acceptance of these shall be obtained before proceeding with the protective treatment. Nevertheless any bolts and nuts found to contain slack following the application of protective treatment shall be tightened to the satisfaction of the Superintendent.

At any time throughout the Contract period and/or the Defects Liability Period, the Contractor shall, where directed by the Superintendent:

i) tighten all nuts and bolts found to contain slack irrespective of whether such slack was caused by shrinkage of materials or any other cause whatsoever,

ii) remove any connector showing signs of rust and replace it with a new connector of the same designation all at his own expense.

Where tightening of any nut or bolt or the replacement of any connector results in damage to or a discontinuity in the protective treatment of the structure such damage or discontinuity shall be made good to the entire satisfaction of the Superintendent all at the Contractor's expense.

5.3.5 Commercial, Precision and High-Strength Bolts to Snug Tight

This Section applies to commercial bolts conforming to AS 1111.1 and precision bolts conforming to AS 1110.1 of strength grades 4.6 and 8.8 respectively and to high-strength bolts of strength grade 8.8 conforming to AS/NZS 1252, tightened to snug tight in accordance with AS 4100. Bolted connections of these types are designated 4.6/S or 8.8/S on the drawings.

Washers shall be provided both at heads and nuts of all-through bolts and bolt lengths shall be such as to allow not less than 3 mm and not more than 12 mm of the bolt projecting beyond the nut.

5.3.6 High Strength bolts in Structural Connections

This Section applies to high-strength bolts of strength grade 8.8 conforming to AS/NZS 1252 and fully tightened in friction type and bearing type joints in accordance with AS 4100. Bolted connections of these types are designated 8.8/TF on the drawings.

The assembly of joints shall be strictly in accordance with the procedures set down in AS 4100. Galvanized load bearing indicating washers shall be used for indicating the tension in the galvanized bolt and nut assembly.

To limit the ingress of moisture into the joint the assembly shall be tightened until the gap between the washer and nut is just closed.

5.4 PROTECTIVE TREATMENT OF STEELWORK

5.4.1 General

All steelwork shall be given the protective treatment nominated on the Drawings and described below.

5.4.2 Galvanizing

Prior to delivery to the Galvanizer, the Contractor shall ensure that any surface coatings including painted markings, weld slag and weld glazing are entirely removed by blasting, chipping or scraping. Failure to remove such surface coatings could result in rejection of the galvanized item through areas remaining ungalvanized.

The Contractor shall consult with the Galvanizer and subject to agreement by the Superintendent's Representative provide such drain and vent holes and handling attachments as may be necessary or as may be shown on the Drawings.

The galvanized coating on all items to be galvanized shall conform to:

AS 1397 – 2001	Steel sheet and strip - Hot-dipped zinc-coated or aluminium/zinc-coated
AS/NZS 4534 – 1998	Zinc and zinc/aluminium-alloy coatings on steel wire
AS/NZS 4680 – 1999	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
AS/NZS 4791 – 1999	Hot-dip galvanized (zinc) coatings on ferrous open sections, applied by an in-line process
AS/NZS 4792 – 1999	Hot-dip galvanized (zinc) coatings on ferrous hollow sections, applied by a continuous or a specialized process

However the dimensions of hot-dip galvanized fasteners shall comply with the requirements of Section 5 of AS 1214 – 1983 *Hot-dip galvanized coatings on threaded fasteners (ISO metric coarse thread series)*. The uniformity of the coating of hot-dip galvanized fasteners shall comply with clause 6 of the same code.

Except where shown on the drawings or directed otherwise by the Superintendent, all items shall be galvanized after fabrication and care shall be exercised to ensure that the entire surface of such items is coated. Areas of the galvanized coating damaged by welding, drilling, cutting, etc. or by excessively rough treatment during handling and transit shall be made good, as directed by the Superintendent, in accordance with the provisions of AS/NZS 4680, AS/NZS 4791 and AS/NZS 4792. The method of repair and the materials used therein shall be subject to the approval of the Superintendent's Representative.

Special attention shall be paid to the conditions of transport, shipment and storage to avoid the possibility of wet-storage stain (white rust). The Superintendent may require any wet-storage stain on any galvanized article to be removed.

All edges of galvanized steelwork shall be wiped clean of droppings, tears and all sharp protuberances whilst still fluid. No such defects will be acceptable in the finished element.

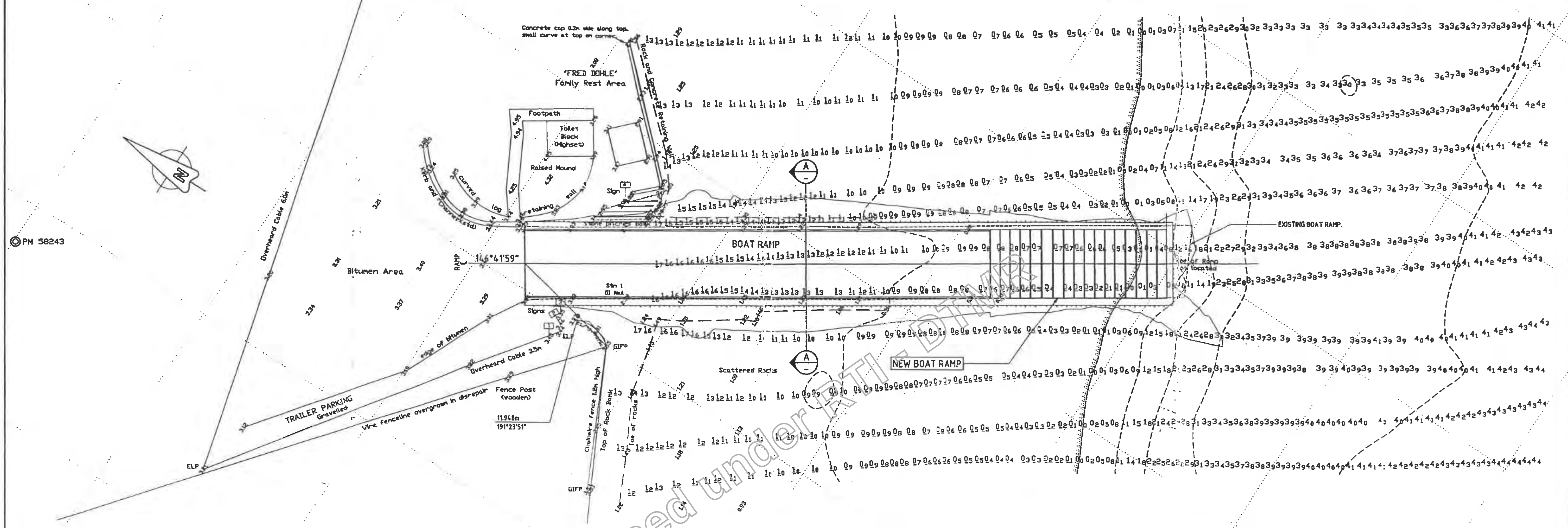
It is realised that multiple dipping may be required for very large items and that this will detract from the appearance of the galvanizing at the overlaps of the dippings.

5.4.3 Passivation of Stainless Steel

All welds in stainless steel shall be passivated by the application of a ten percent nitric acid solution followed by washing clean with fresh water.

6 Drawings

"F"



SITE PLAN

SCALE 1:200

CO-ORDINATES AMG AGD84 ZONE 56

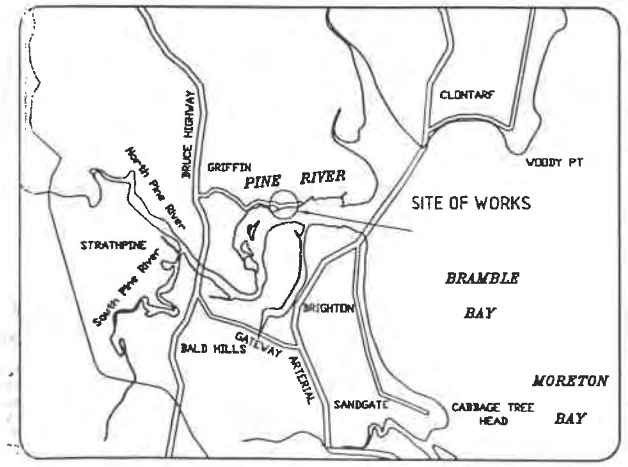
STATION	EASTING	NORTHING	R.L.
PM 93850	504 368.79	6 982 708.85	2.787
PM 58243	503 955.87	6 982 679.80	3.053
PM 136941	504 292	6 982 700	
1 (GI Nail)	503 984.95	6 982 625.05	2.39
Starboard Bn No9	504 227.0	6 982 506.6	
Port Beacon No12	504 019.0	6 982 487.9	

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL CHAINAGES ARE IN METRES.
3. ALL LEVELS AND SOUNDINGS ARE IN METRES AND HAVE BEEN REDUCED TO LOWEST ASTRONOMICAL TIDE (L.A.T).
4. VERTICAL DATUM FOR LEVELS ESTABLISHED FROM PM 57820 R.L 2.937m L.A.T.
5. SOUNDINGS SHOWN THUS e.g 0_7 INDICATE METRES BELOW L.A.T
6. SOUNDINGS SHOWN THUS e.g $\underline{0}_2$ INDICATE METRES ABOVE L.A.T
7. LEVELS SHOWN THUS e.g. 3.20 INDICATE METRES ABOVE L.A.T.
8. ALL CO-ORDINATES ARE IN METRES AND ARE TO THE AUSTRALIAN MAPPING GRID. HORIZONTAL DATUM IS AGD84 ZONE 56, BASE STATION: PM93850, EASTING: 504 368.791, NORTHING: 6 982 708.853.
9. SURVEY INFORMATION ON THESE DRAWINGS WERE DERIVED FROM QUEENSLAND TRANSPORT Drg. No. B675-006. DATE OF SURVEY FEBRUARY 2001.

SIGNS:

1) Moreton Bay Marine Park
- Map and Regulations
2) "NO PARKING"
3) WARNING SIGN
- Ramp Slipery
- Steep drop off at end of ramp
- Boatmen lower masts
4) Boating Patrol Sign
- Boat safety check list



LOCALITY PLAN

SCALE 1:100 000

6 982 640 N

6 982 520 N

6 503 980 E

Drawing No.	Associated Drawings	Amend.	Description	Date	Approved
MISC-36-3-SF	PRECAST REINFORCED CONCRETE TOE PLANK				
BN-42-4-3	CONSTRUCTION DETAILS				
BN-42-4-2	GENERAL ARRANGEMENT	A	STEPS TO EACH SIDE OF RAMP REMOVED	29/1/2003	

File No: 850/00047

Contract No: QT04-61

Drafting	Drafting Chd	Examined
K.H./T.T.	D.S.H.	D.H. HEAZLEWOOD

Design	Design Chd	Approved
R.A.C.	A.S.U.	

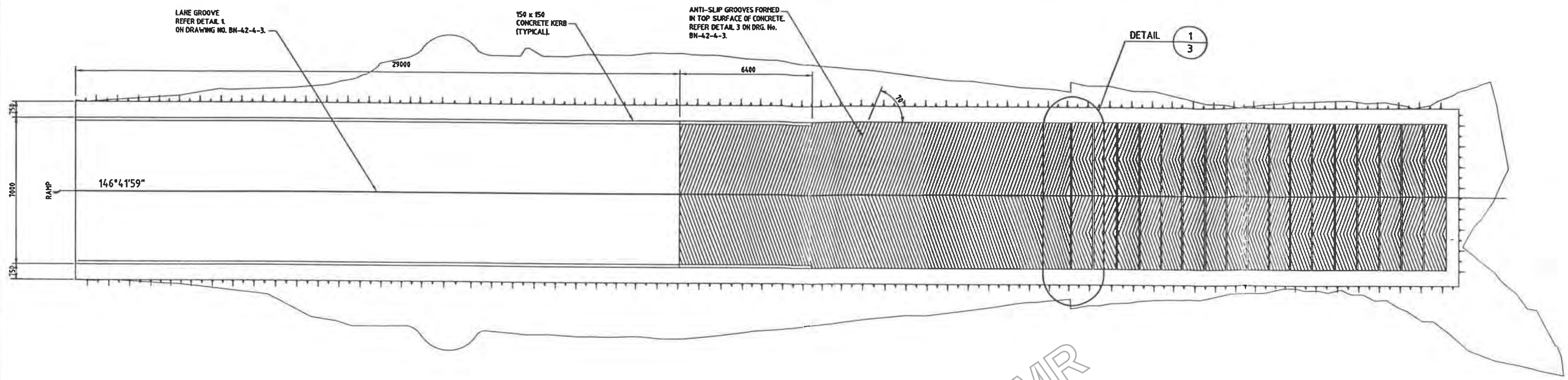
Date	R.P.E.Q. No.	Certified
24/02/03	4874	A.S UHLMANN

Queensland Government
Queensland Transport

DOHLES ROCK
BOAT RAMP RECONSTRUCTION - 2001
SITE AND LOCALITY PLAN

Drawing Number: BN-42-4-1A

"F"



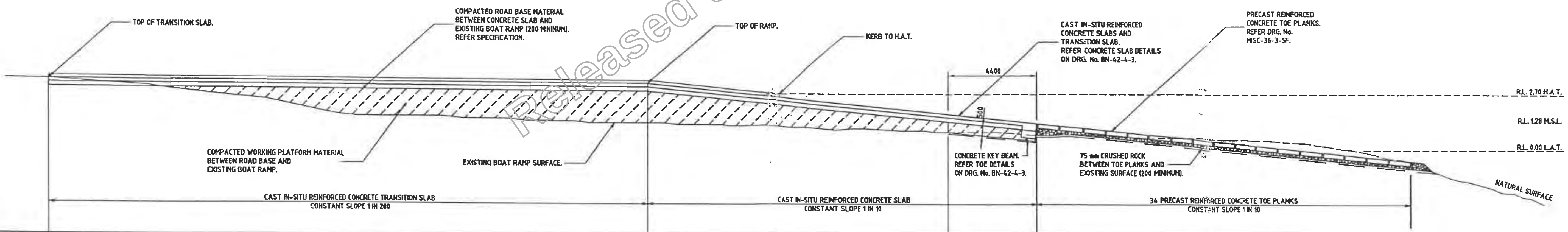
TOP VIEW

SCALE 1:100

NOTES:

GENERAL:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL CHAINAGES ARE IN METRES.
3. ALL R.L.s ARE IN METRES AND REDUCED TO LOWEST ASTRONOMICAL TIDE (L.A.T.).
4. FOR REMAINING NOTES REFER DRAWING No. BN-42-4-1.



FINISHED SURFACE LEVEL (m)	3.335	3.190	1.288	-0.522
EXISTING SURFACE LEVEL (m)	3.335	1.300	0.731	-0.589
CHAINAGE (m)	0.000	29.000	48.000	66.100

VERTICAL DATUM: L.A.T.

BENCH MARK IS: PM 57820
WHICH IS 2.937m ABOVE DATUM.

LONGITUDINAL SECTION ALONG BOAT RAMP

SCALE 1:100

Drawing No.	Associated Drawings	Amend.	Description	Date	Approved
MISC-36-3-5F	PRECAST REINFORCED CONCRETE TOE PLANKS				
BN-42-4-3	CONSTRUCTION DETAILS				
BN-42-4-1	SITE AND LOCALITY PLAN	A	STEPS TO EACH SIDE OF RAMP REMOVED	11/01/2003	

File No: 850/00042
Contract No: QT01-61

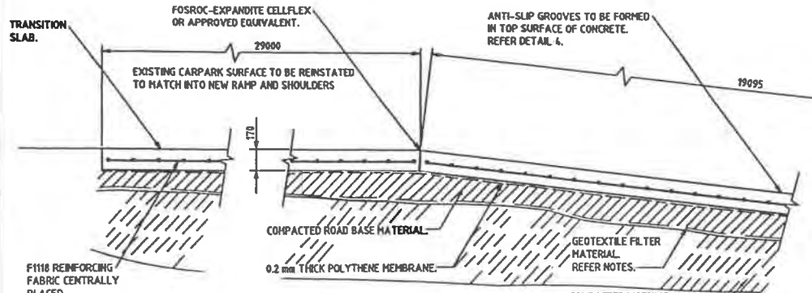
Ratio Scales: 1:1, 1:2, 1:2.5, 1:5

Drafting: E.G./K.H./TT — Drafting Chd: D.S.H. — Examined: D.S.HEAZLEWOOD
Design: R.A.C. — Design Chd: A.S.U. — Approved:
Date: 24/02/03 — R.P.E.Q. No.: 4874 — Certified: A.S.UHLMANN

Queensland Government
Queensland Transport

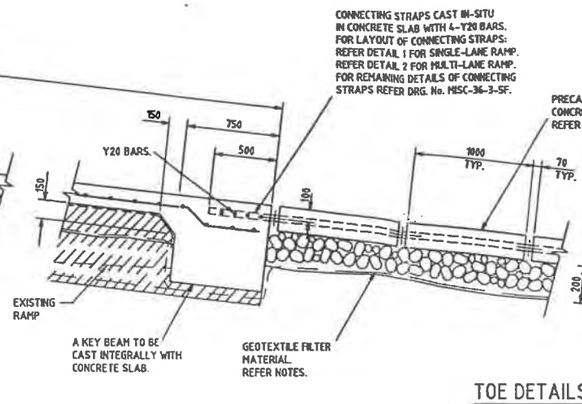
DOHLES ROCK
BOAT RAMP RECONSTRUCTION - 2001
GENERAL ARRANGEMENT

Drawing Number: BN-42-4-2A



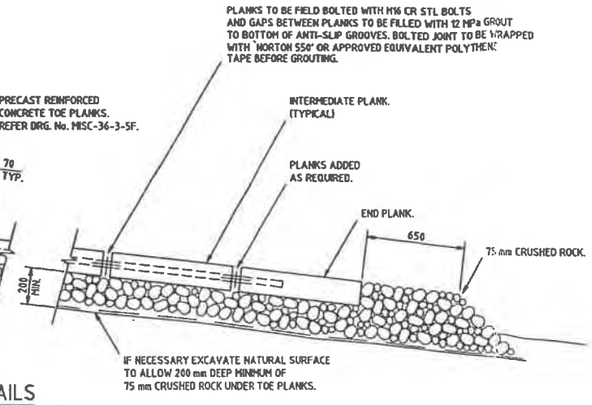
CONCRETE SLAB DETAILS

SCALE 1:25



TOE DETAILS

SCALE 1:25



NOTES:

GENERAL:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL CODES SHALL BE CURRENT SAA CODES.
3. THE BOAT RAMP SHOWN IS DESIGNED FOR SUBGRADE UNDER RAMP OF CBR GREATER THAN 3.0 IF CBR OF SUBGRADE UNDER RAMP IS LESS THAN 3.0, REFER TO FIGURE 1.

CONCRETE AND REINFORCEMENT:

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH AS 3600.
2. CONCRETE SHALL HAVE THE FOLLOWING PROPERTIES:
   MAXIMUM AGGREGATE SIZE 20 mm.
   MINIMUM PORTLAND CEMENT CONTENT 400 kg/m^3
   (MAXIMUM 40% – MINIMUM 20% OF CEMENT CONTENT MAY BE REPLACED WITH FLYASH.)
   MAXIMUM WATER/CEMENT RATIO BY WEIGHT 0.45.
   CHARACTERISTIC COMPRESSIVE STRENGTH AT 28 DAYS 50 MPa.
3. CLEAR COVER TO REINFORCEMENT SHALL BE 50 mm UNLESS NOTED OTHERWISE.
4. REINFORCEMENT BARS DESIGNATED 'Y' SHALL BE GRADE 410 Y BARS TO AS 1302.
5. REINFORCING FABRIC DESIGNATED 'F' SHALL BE WELDED WIRE REINFORCING FABRIC FOR CONCRETE TO AS 1304.
6. LAPS IN REINFORCING FABRIC SHALL BE FULL YIELD STRENGTH LAP SPLICES EG:

7. ALL REINFORCING BARS AND FABRIC, INCLUDING TIE WIRES, TO BE GALVANISED.
8. KERB TO BE POURED INTEGRALLY WITH SLAB.

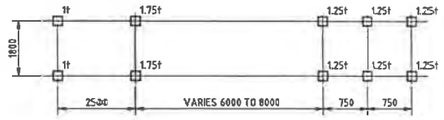
CORROSION RESISTANT STEEL – CR STL (STAINLESS STEEL):

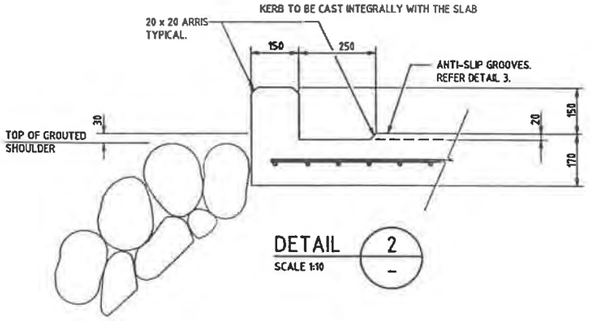
1. ALL CR STL INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GRADE 316 UNLESS NOTED OTHERWISE.
2. CR STL BOLTS SHALL HAVE ROLLED THREADS.
3. THREADS OF CR STL BOLTS SHALL BE COATED WITH A NICKEL BASED GREASE ANTI-SEIZE LUBRICANT.

GEOTEXTILE FILTER MATERIAL:

1. GEOTEXTILE FILTER MATERIAL SHALL BE A NEEDLE PUNCHED, NON-WOVEN, SPUN-BONDED MATERIAL OF NOT LESS THAN 340 GRAMS PER SQUARE METRE, LAPPED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

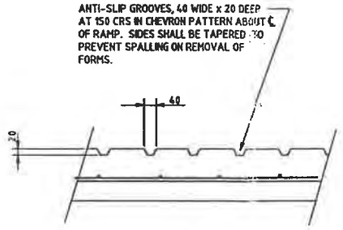
DESIGN WHEEL LOADING





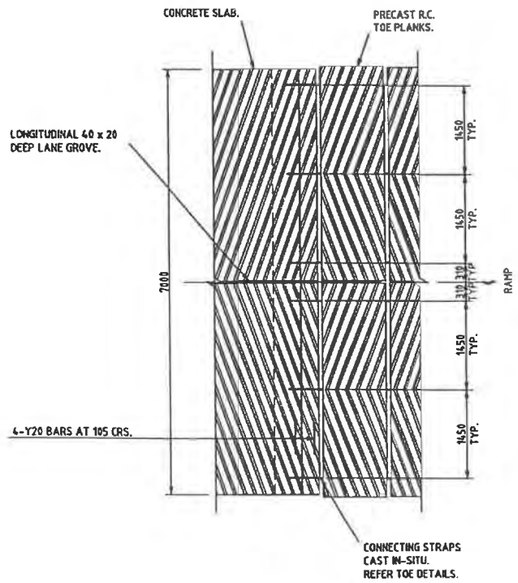
DETAIL 2

SCALE 1:10



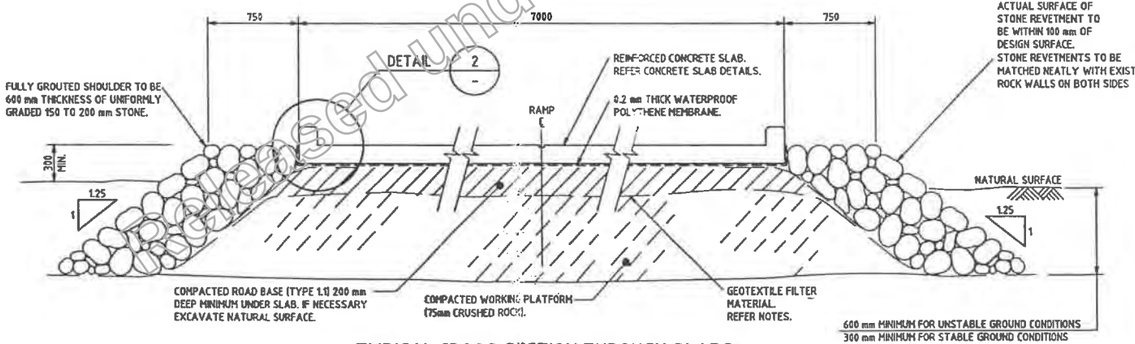
DETAIL 3

SCALE 1:10



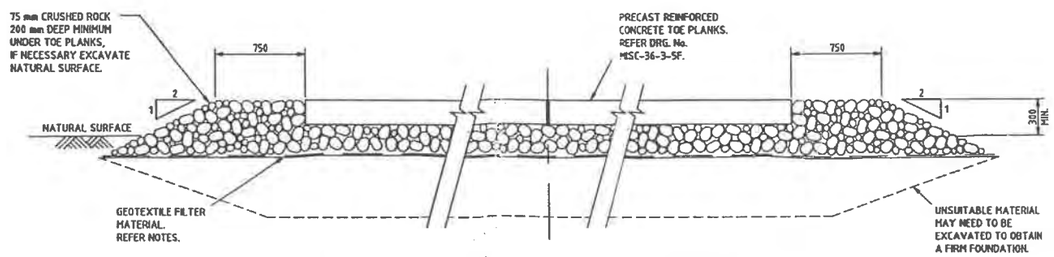
DETAIL 1

SCALE 1:50



TYPICAL CROSS SECTION THROUGH SLABS

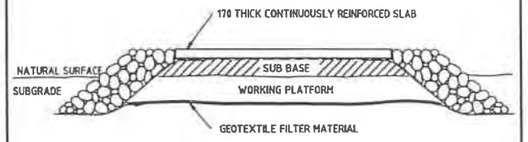
SCALE 1:25



TYPICAL CROSS SECTION THROUGH TOE PLANKS

SCALE 1:25

FIGURE 1.



SUBGRADE CBR	170 THICK CONTINUOUSLY REINFORCED CONCRETE SLAB				
	SUB BASE THICKNESS (MINIMUM)		WORKING PLATFORM THICKNESS	MATERIAL TYPE	
	BOUND	UNBOUND		SUB BASE	WORKING PLATFORM
1	150	200	250	TYPE 1.1, 1.2	TYPE 1.2
2	150	200	150	TYPE 1.1, 1.2	TYPE 1.2
3 OR MORE	150	200	-	TYPE 1.1, 1.2	TYPE 1.2

NOTES:

1. SUBGRADE CBR VALUES TO BE DETERMINED AT PROPOSED BASE LEVEL OF FOUNDATION.
2. FOR SUBGRADE VALUES LESS THAN 1, EXISTING SUBGRADE WILL HAVE TO BE REMOVED AND AN ADDITIONAL WORKING PLATFORM INSTALLED OR PILE FOUNDATIONS MAY BE REQUIRED. CONTACT TRANSPORT INFRASTRUCTURE BRANCH FOR FURTHER ADVICE.
3. IF SELECTED, BOUND LAYERS FOR SUB-BASE ARE TO BE CEMENT STABILISED IN ACCORDANCE WITH QUEENSLAND TRANSPORT SPECIFICATION MRS 11.04 (CLAUSE 10) WITH A MINIMUM UNCONFINED COMPRESSIVE STRENGTH OF 3 MPA AT 7 DAYS.
4. TYPE 1.1 AND 1.2 MATERIALS AND CONSTRUCTION STANDARDS IN ACCORDANCE WITH QUEENSLAND TRANSPORT SPECIFICATION MRS 11.05

SUBGRADE CBR	200 THICK REINFORCED CONCRETE TOE PLANKS
	75 mm CRUSHED ROCK THICKNESS
1	450 MINIMUM
2	350 MINIMUM
3 OR MORE	200 MINIMUM

Drawing No.	Associated Drawings	Amend.	Description	Date	Approved
MISC-36-3-5F	PRECAST REINFORCED CONCRETE TOE PLANK				
BN-42-4-2	GENERAL ARRANGEMENT				
BN-42-4-1	SITE AND LOCALITY PLAN	A	STEPS TO EACH SIDE OF RAMP REMOVED	29/1/2003	

850/00047 — File No
QT04 - 61 — Contract No

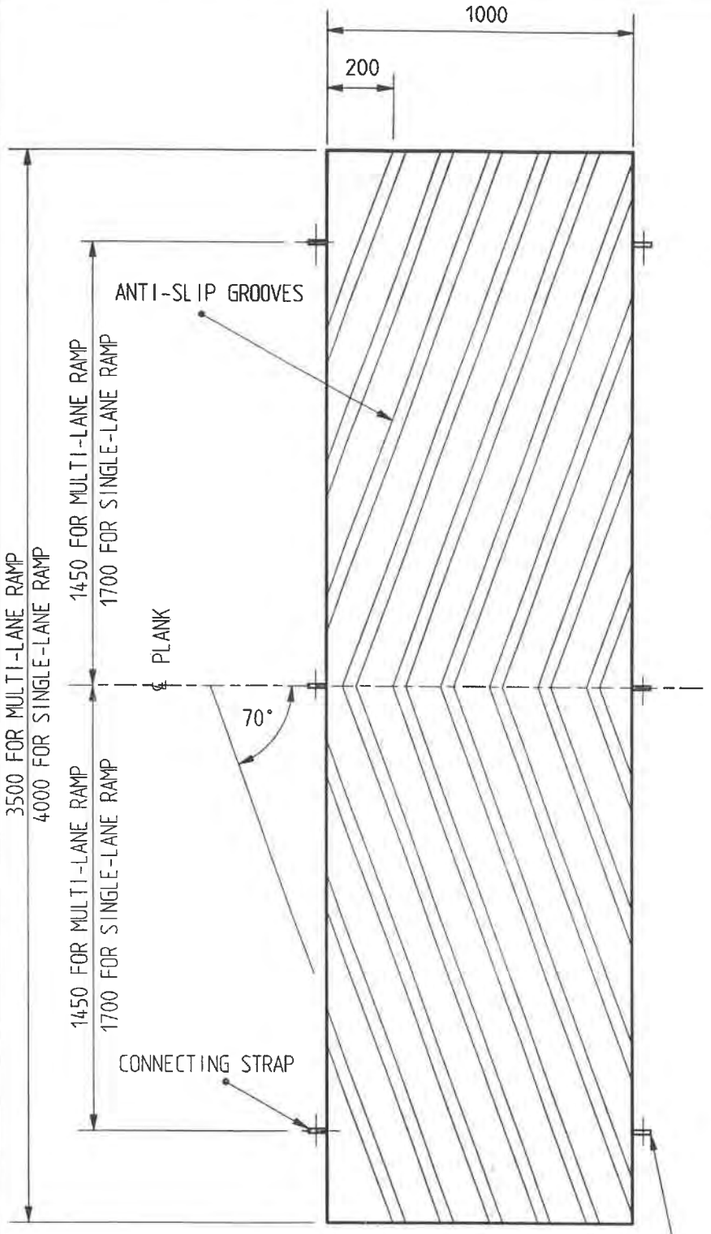
Ratio Scales: 1:1, 1:2, 1:25, 1:5

E.G./K.H./T.T. — Drafting	D.S.H. — Drafting Civil	D.S.HEAZLEWOOD — Examined
R.A.C. — Design	A.S.U. — Design Civil	Approved
24/02/03 — Date	4874 — R.P.E.Q. No.	A.S.UHLMANN — Certified

Queensland Government — Queensland Transport

DOHLES ROCK
BOAT RAMP RECONSTRUCTION - 2001
DETAILS PLAN

BN-42-4-3A — Drawing Number

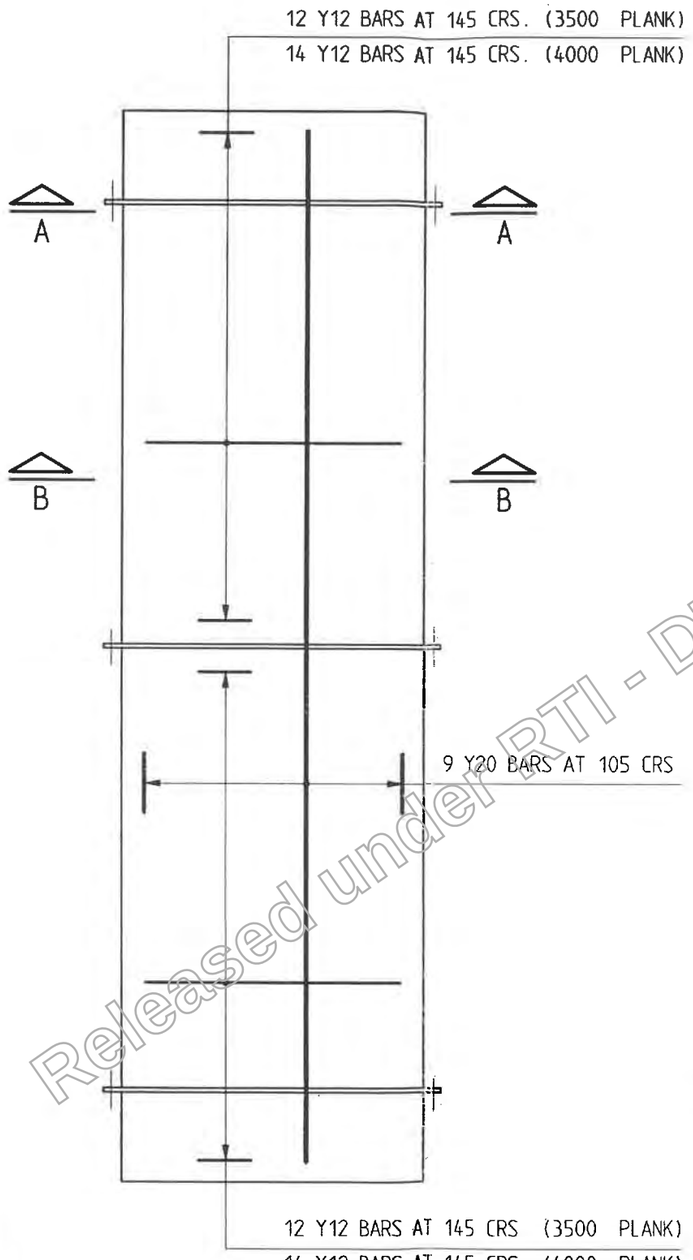


NOTE

CONNECTING STRAPS MODIFIED FOR END PLANK - REFER SECTION A-A

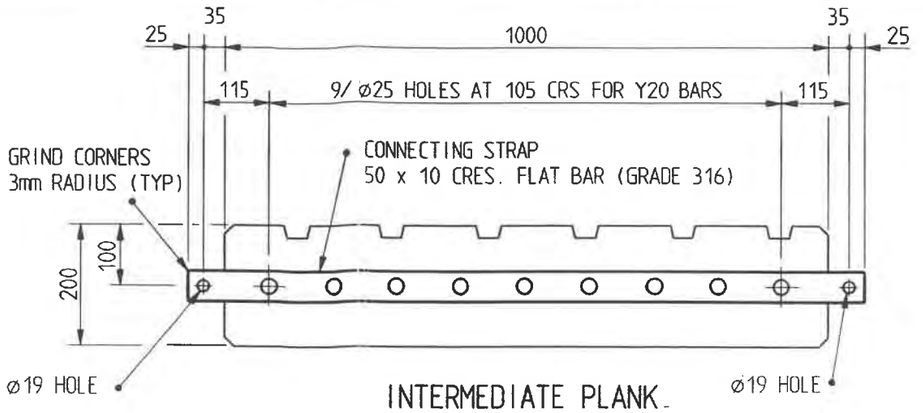
PLAN

SCALE 1:20

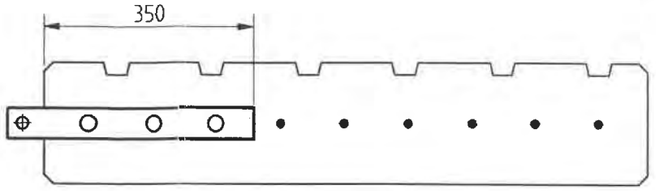


REINFORCEMENT LAYOUT

SCALE 1:20



INTERMEDIATE PLANK



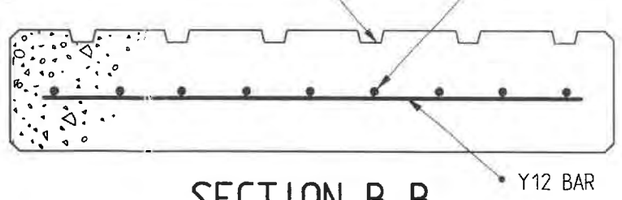
END PLANK

NOTE : REMAINING DETAILS OF END PLANK SHALL BE SIMILAR TO INTERMEDIATE PLANK.

SECTION A-A

SCALE 1:10

ANTI-SLIP GROOVES 40 WIDE x 20 DEEP AT 150 CRS IN CHEVRON PATTERN ABOUT CENTRELINE OF PLANK SIDES TO BE TAPERED TO PREVENT SPALLING ON REMOVAL OF FORMS



SECTION B-B

SCALE 1:10

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL CONCRETE AND REINFORCING MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH AS 3600.
3. CHARACTERISTIC COMPRESSIVE STRENGTH OF CONCRETE (F'c) AT 28 DAYS SHALL BE 50 MPa.
4. REINFORCING BARS DESIGNATED 'Y' SHALL BE GRADE 400 Y BARS TO AS 1302.
5. CLEAR COVER TO REINFORCEMENT SHALL BE 50 mm UNLESS NOTED OTHERWISE.
6. EDGES OF PLANK TO HAVE 15 x 15 CHAMFERS.
7. MASS OF 4000 LONG CONCRETE PLANK = 2300 kg.
8. FOR No. OFF AND LENGTH OF INTERMEDIATE AND END PLANKS REFER 'BOAT RAMP DRAWING'.
9. ALL REINFORCING BARS INCLUDING TIE WIRES TO BE GALVANISED.
10. TRAFFICABLE SURFACE OF PLANKS TO HAVE AN ABRASIVE BLAST EXPOSED AGGREGATE FINISH OR APPROVED EQUIVALENT

JAS-ANZ
QUALITY SYSTEM CERTIFIED TO AS/NZS ISO 9001 REGN. NO. 088

D.K.C Drafting	M. BURKE Drafting Ckd	Examined S. FERGUSON Snr Co-ord. (Tech & Admin)
Design	R.S. ATKINSON Design Ckd	Approved
Certified R.P.E.Q. No. 2323 Engineering Manager		28/1/98 Date

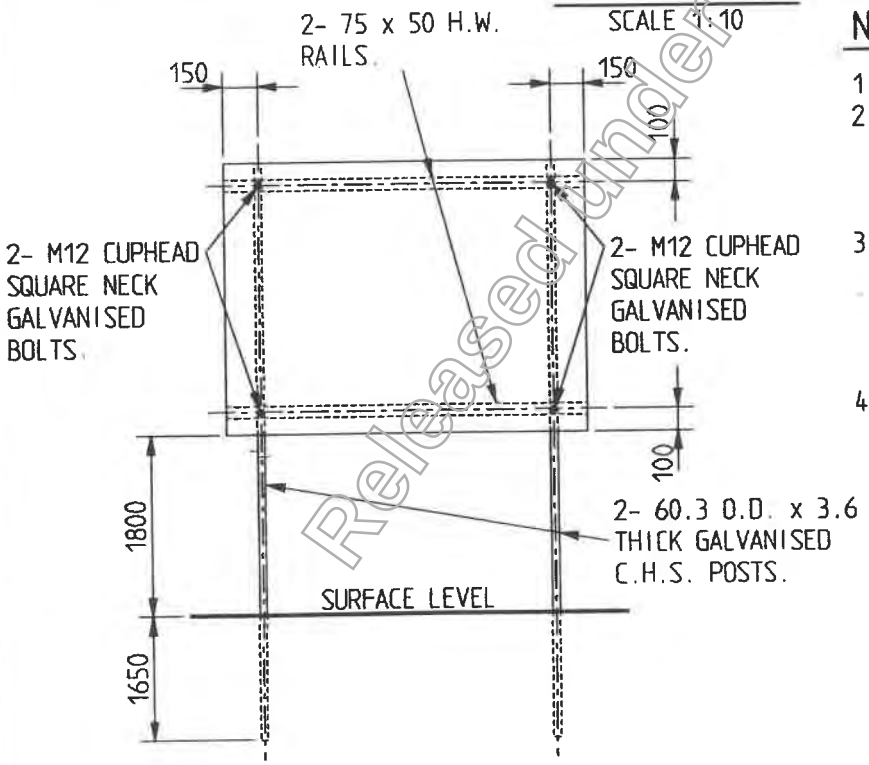
QUEENSLAND TRANSPORT
Queensland Department of Transport
Integrated Transport Planning Division
Transport Infrastructure Branch

PRECAST REINFORCED CONCRETE TOE PLANK FOR BOAT RAMPS

MISC-36-3-5F
Drawing Number

"F"

PROJECT SIGN
SCALE 1:10



PROJECT SIGN ERECTION DETAILS
NOT TO SCALE

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. BOARD- 18mm WATERPROOF COMPRESSED TIMBER FIBRE BOARD. BOARD TO BE FIXED TO RAILS WITH No. 6 GALV. WOOD SCREWS x 50 LONG AT 400 CRS.
3. COLOURS:
   BACKGROUND- WHITE.
   LETTERING- BLACK.
   QUEENSLAND GOVERNMENT LOGO- FULL COLOUR.
4. QUEENSLAND GOVERNMENT LOGO TO BE SUPPLIED BY QUEENSLAND TRANSPORT.

D.J.J. Drafting	M.B. Drafting Ckd	Queensland Government Queensland Transport	PROJECT SIGN (2 LINE PROJECT NAME)
Design	Design Ckd		
2324 R.P.E.Q. No.	Certified		
	10-10-00 Date	© The State of Queensland Queensland Transport	MISC-42-3-11A Drawing Number

7 FISH HABITAT AREA PERMIT

"G"

Queensland Government
Department of Primary Industries

QUEENSLAND
FISHERIES ACT 1994
Section 51
FISHERIES REGULATIONS 1995

PERMIT NUMBER
02SODB2200

FISH HABITAT AREA PERMIT

This is to certify that DIRECTOR, BOATING INFRASTRUCTURE, QUEENSLAND TRANSPORT, FOR AND ON BEHALF OF THE STATE OF QUEENSLAND

of GPO BOX 2595 BRISBANE QLD 4001

is authorised to: Undertake works for construction of a 66 metre long by 7 metre wide (15 metres at toe of batter) boat ramp

at the approved area described as:

A 20 METRE WIDE DISTURBANCE PATH OVER THE DOHLES ROCKS PUBLIC BOAT RAMP, situated at DOHLES ROCKS ROAD DOHLES ROCKS QLD , as described in DPI Plan No 02SODB9543FH2200

for the purpose of: Reconstructing the existing boat ramp to meet Queensland Transport standards.

for the period 25 February 2003 **until** 24 February 2004.

Issued at DECEPTION BAY **this** 25 **day of** February 2003.

Delegate of the Chief Executive

CONDITIONS

1 A survey fee of $500.00 (for monitoring and report preparation) must be paid to the Department of Primary Industries, PO Box 76, Deception Bay Qld 4508, prior to the commencement of works, but in no case later than thirty (30) days after the effective date of this Permit.

2 Works are only authorised if the holder has notified the Queensland Boating and Fisheries Patrol of the commencement of works PRIOR to the commencement of those works. Any works commenced without prior notification are deemed not to be authorised.

3 The District Officer of the Queensland Boating and Fisheries Patrol, PO Box 10, Pinkenba Qld 4008 (Fax. No. 38603550), and the Habitat Manager (South), Department of Primary Industries, PO Box 76, Deception Bay Qld 4508 (Fax. No. 38179555), must be notified in writing, of the date of commencement or works, fifteen (15) days prior to the commencement of works.

4 A written report which details the completed works must be provided within fifteen (15) days of completion of works to the District Officer, Queensland Boating and Fisheries Patrol, and the Habitat Manager (South), Department of Primary Industries.

5 This Permit authorises persons identified by the holder to assist in the authorised activities on the approved area.

6 The holder must comply with:
a) the requirements of all relevant legislation and obtain approvals from the relevant administering organisations, including approvals to access and use the land for the authorised activity, and
b) any Codes of Practice or management arrangements relevant to the authorised activity.

7 At least two (2) signs must be displayed around the works site, in positions where they are clearly visible to the public, for fifteen (15) days prior to the commencement of the authorised activities and during all authorised works. Each sign must advise and describe the authorised activity, and state "Works authorised under QDPI Permit No. 02SODB2200".

8 This Permit is issued for necessary disturbances within the approved area only, and the works involved must be performed in such a manner as to not cause direct or indirect disturbance or damage to adjacent tidal land or plants or unnecessary disturbance within the approved area.

9 The holder must adequately mark the boundaries of the approved area to allow for ease of identification.

10 The holder is to ensure that all spoil from the approved area is not disposed of on tidal lands or within waterways and is managed to prevent acid soil development, if relevant.

Delegate of the Chief Executive

29 July 2003

The Director

not relevant

QT04-61 Dohles Rocks Boat Ramp Construction

Further to your fax of 28th July 2003, I advise that approval is given to substitute the Type 2.1c roadbase for the specified Type 1.1 provided that there is no difference in cost, and it is compacted in accordance with Cl. 2.4 of the Specification prior to getting wet.

Yours sincerely

Allan Uhlmann
Principal Engineer
Superintendent

Integrated Transport Planning Division
Transport Infrastructure Branch
Level 2, 126 Margaret St
BRISBANE QUEENSLAND 4000 GPO Box 2595 BRISBANE
ABN 13 200 330 520

Our ref 710/00074
Your ref
Enquiries Robert Collings
Telephone +61 7 3834 3924
Facsimile +61 7 3834 3923
Website www.transport.qld.gov.au

Queensland Government
Queensland Transport

Facsimile Transmission

Our ref 710/00074
Your ref MCM2455
Date 21 August 2003

Attention not relevant

From Robert Collings

Facsimile No 3395 7770

Subject **QT04-61 Dohles Rocks Boat Ramp - Deletion of Kerbs**

No of pages (incl cover sheet) 1

John,

I refer to discussions with Robert Collings on the construction of the kerbs for the ramp slabs. I have reviewed the necessity for the kerbs and advise that they are to be deleted from the works and replaced with amber double sided reflectors raised pavement markers at two metre spacing from Ch 0.0 to (approx) Ch 34.0. A row of pavement markers is also to be placed down the centreline from Ch 0.0 to Ch34.

Can you please advise if this substitution will result in extra costs.

Allan Uhlmann
Principal Engineer
SUPERINTENDENT

Integrated Transport Planning Division
Transport Infrastructure Branch
Level 2, 126 Margaret St
BRISBANE QUEENSLAND 4000, GPO Box 2595 BRISBANE
ABN 13 200 330 520

Enquiries Robert Collings
Telephone +61 7 3834 3924
Facsimile +61 7 3834 3923
Website www.transport.qld.gov.au
Email

10 September 2003

The Director

not relevant

Dear not relevant

QT04-61 Dohles Rocks Boat Ramp Construction
CV2 Demolition of Upper Ramp Slab

I advise that your price of NR or demolition of the upper ramp concrete slab is accepted.

Yours sincerely

Allan Uhlmann
Principal Engineer
Superintendent

Integrated Transport Planning Division
Transport Infrastructure Branch
Level 2, 126 Margaret St
BRISBANE QUEENSLAND 4000 GPO Box 2595 BRISBANE
ABN 13 200 330 520

Our ref 710/00074
Your ref
Enquiries Robert Collings
Telephone +61 7 3834 3924
Facsimile +61 7 3834 3923
Website www.transport.qld.gov.au

Queensland Government
Queensland Transport

Facsimile Transmission

Our ref 710/00074
Your ref MCM2455
Date 17 September 2003

Attention not relevant

From Robert Collings

Facsimile no 3395 7770

Subject **Request for Pricing CV1 - Signage**

No of pages 2 (including cover sheet)

Further to my previous faxes regarding signage, the new signs to be supplied and installed are:
Type 1
Type 4 and
Type 5 (Ramp May be Slippery). In accordance with Dwg Misc -37-3-12G.

Boatmen Lower Masts
Overhead Wires

The scope of work includes:

- Remove Marine Parks signs from existing posts, and remove posts
- Remove Fish Habitat Area sign from existing post, and remove post
- Remove "Boatmen Lower Masts" and "Overhead Wires" signs from existing post, and remove post.
- Supply and install QT standard posts
- Attach Type 1, Type 4, Type 5, Marine Parks and Fish Habitat Area sign to QT standard posts.
- Supply and install suitable post for existing "Boatmen Lower Masts" and "Overhead Wires" signs on western side (near the other signs), reattach signs.
- Remove old Boating Patrol sign on eastern side; attach new "Boatmen Lower Masts" and "Overhead Wires" to existing post.

Robert Collings
Engineer

Integrated Transport Planning Division
Transport Infrastructure Branch
Level 2, 126 Margaret St
Brisbane QUEENSLAND 4000 GPO Box 2595 BRISBANE QLD 4000
ABN 13 200 330 520

Enquiries Robert Collings
Telephone +61 7 3834 3924
Facsimile +61 7 3834 3923
Website www.transport.qld.gov.au
Email

Queensland Government
Queensland Transport

Facsimile Transmission

Our ref 710/00074
Your ref MCM2455
Date 17 September 2003

Attention not relevant

From Allan Uhlmann

Facsimile no 3395 7770

Subject **Dohles Rocks Boat Ramp - Centre Line**

No of pages 1 (including cover sheet)

Further to the discussion with Robert Collings today I confirm that the lane groove for the transition slab can be deleted and replaced by a single row of amber double sided raised pavement markers at two metre intervals.

Allan Uhlmann
Principal Engineer

Integrated Transport Planning Division
Transport Infrastructure Branch
Level 2, 126 Margaret St
BRISBANE QUEENSLAND 4000 GPO Box 2595 BRISBANE
ABN 13 200 330 520

Enquiries Robert Collings
Telephone +61 7 3834 3924
Facsimile +61 7 3834 3923
Website www.transport.qld.gov.au
Email

17 November 2003

The Director

not relevant

Dear not relevant

QT04-61 Dohles Rocks Boat Ramp Construction
Contract Variations 3 and 4

With reference to your invoice dated 31st October 2003, I advise that the following Contract Variations have been approved:

CV3	Clear Queuing Beach
CV4	Fill to eastern side

not relevant

Yours sincerely

Allan Uhlmann
Principal Engineer
Superintendent

Integrated Transport Planning Division
Transport Infrastructure Branch
Level 2, 126 Margaret St
BRISBANE QUEENSLAND 4000 GPO Box 2595 BRISBANE
ABN 13 200 330 520

Our ref 710/00074
Your ref
Enquiries Robert Collings
Telephone +61 7 3834 3924
Facsimile +61 7 3834 3923
Website www.transport.qld.gov.au

Item

ITEM DETAILS

Item ID:	11998	**Item Type:**	Email
Date Created:	01/04/2004	**Project ID:**	Contract No. QT04-61
Date Captured:	01/04/2004	**Sub Project ID:**	
Item Format:	Electronic	**Other Reference:**	850/00042[2]
Circulation:	Outgoing	**Copies Sent To:**	
Subject:	Mail Memo - Dohles Rocks Boat Ramp - Mooring Hooks		
Function Term:	Small Craft Facilities Design	**Activity Term:**	Boating Facilities Dohles Rocks Boat Ramp
Container Title:	Project Proposal Pine Rivers Shire Council, 2001	**Container ID:**	850/00042[2]

ADDRESSEE

Name:		**Address:**	

ACTIONS & OWNERSHIP

Author:	Alan R Johnsson	**Corporate Author:**	
Author Title / Position:	Design Drafter	**Complaint Classification:**	
Business Unit:	INTEGRATED TRANSPORT PLANNING INFRASTRUCTURE DELIVERY		
Action Officer:	Alan R Johnsson	**Action Required:**	
Action Instructions:	No Action Required	**Action Due Date:**	
Actioned Date:	01/04/2004		
Home Location:	Alan R Johnsson	**Last Movement Date:**	01/04/2004

SECURITY & ACCESS

Security Classification:	No Container Selected		
Security Access:	Unrestricted		

ADDITIONAL INFORMATION

Description / Additional Info:			

DOCUMENT CONTENTS

From: Alan R Johnsson on 01/04/2004 11:56 AM

To: Stuart R Deaves/cp1/qdot/au@qdot
cc: Allan S Uhlmann/ITP/qdot/au@qdot, Robert A Collings/cp1/qdot/au@qdot
Subject: Dohles Rocks Boat Ramp - Mooring Hooks

Stuart

This morning 1 April 2004 the 10 mooring hooks to Dohles Rocks boat ramp were installed by not relevant

The set out for the positions of these hooks was carried out by myself.

You can view photographs of the installation in I:\Transport Infrastructure\TR_INFRA\Projects\Qt0004 - Boat Ramps\0061 - Dohles Rocks\Photographs\Mooring Hooks

Regards
Alan