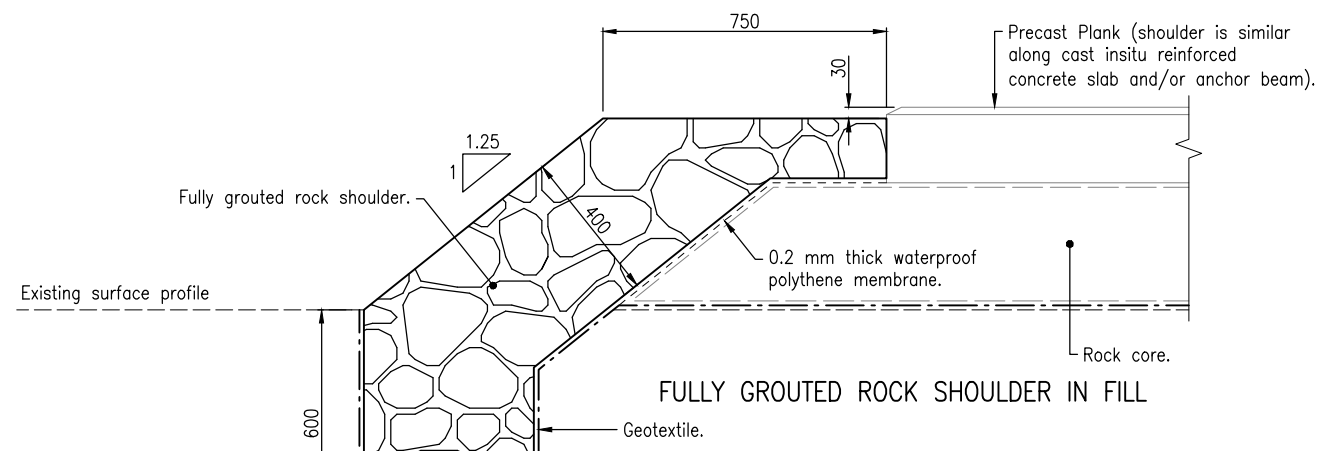


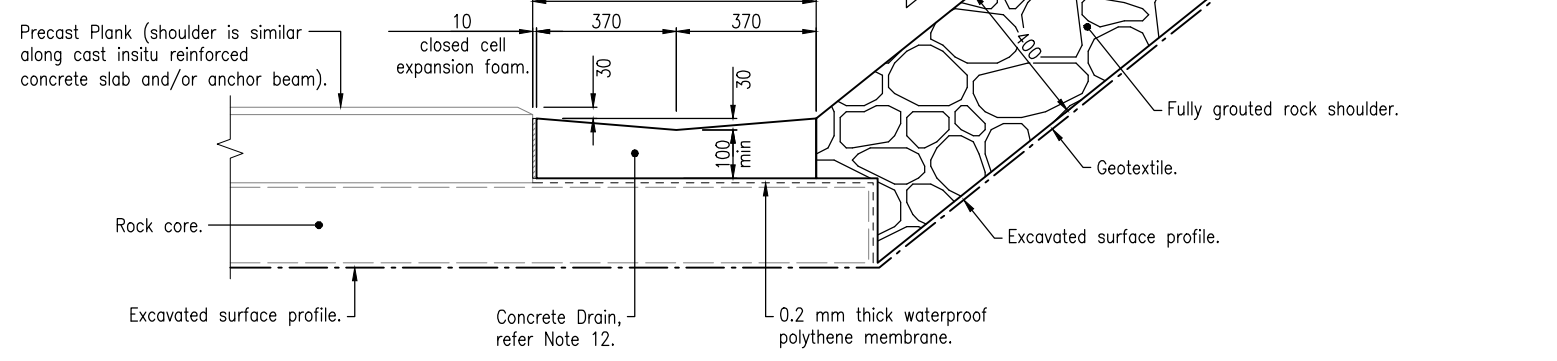
UNGRADED ROCK SHOULDER IN FILL

UNGRADED ROCK SHOULDER IN CUT

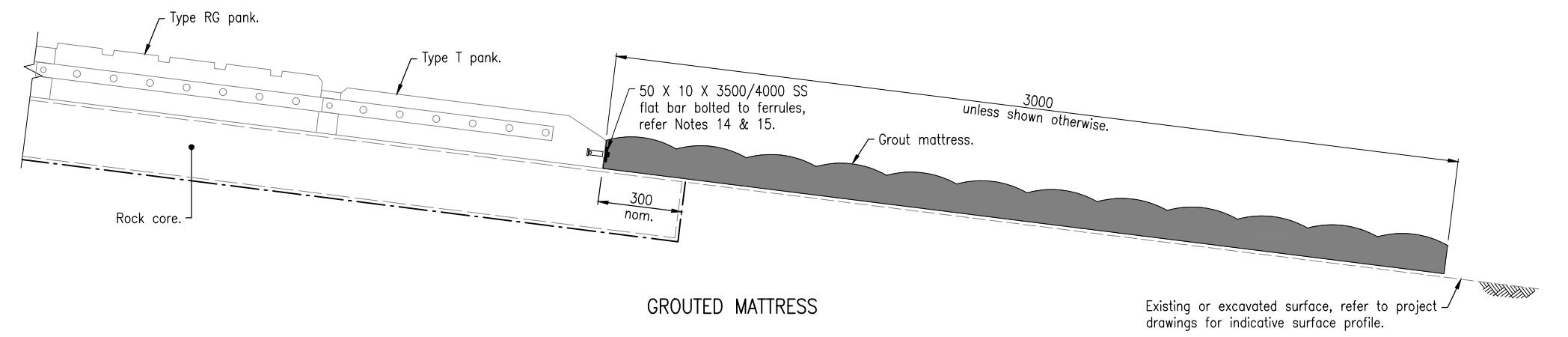
Rock core shown indicatively only. Refer project drawings for design depth.



FULLY GROUTED ROCK SHOULDER IN FILL



FULLY GROUTED ROCK SHOULDER IN CUT



GROUTED MATTRESS

**NOTES:**

- APPLICATION OF THIS STANDARD DRAWING: This Standard Drawing shall only be used:
  - In conjunction with MRTS300, and
  - when referenced by a certified project drawing for a boat ramp designed in accordance with the TMR design manual "Design Criteria for Boat Ramps".
- CONSTRUCTION OF BOAT RAMP shall be in accordance with MRTS300.
- Grouted Shoulders**
- ROCK: shall be unweathered, clean, hard and durable graded 150 to 200 with essentially flat faces.
- GROUT: shall be a stiff 1:3 GP cement/sand 20 MPa (minimum) mortar mix.
- FOOTINGS – EXCAVATION: Excavation shall be to the minimum design depth and thickness.
- FOOTINGS – EXTENT OF GEOTEXTILE: The geotextile shall fully line the footing to both sides and base. Sufficient extra geotextile shall be allowed so that full separation of footing and existing base material is retained during consolidation (when in soft conditions).
- FOOTINGS – CONSTRUCTION: shall be full depth and thickness either:
  - grouted rock, or
  - minimum N25/20 mass concrete.
- FOOTINGS – ALIGNMENT WITH SHOULDER BATTER: The shoulder batter shall be fully supported and not extend beyond the edge of the footing.

- SHOULDER AND BATTERS CONSTRUCTION: alternating layers of grout and rock shall be placed so that the grout extends through the full design thickness of the shoulders. Rocks shall be placed to form irregular joints and be interlocked with smaller sized rock so that there are not any large voids and individual rocks cannot be easily dislodged. NONCONFORMANCE: Shoulders which are constructed by placing rock and then grouting or shotcreting only the outer surface shall be rejected.
- GROUTED ROCK SURFACE FINISH: Exposed surfaces shall have a minimum of 80% of exposed rock with a close faced maximum mortar setback of 10. Excess cement mortar coating shall be removed.
- TRAFFICABLE SURFACES: shall be a generally flat, even, and neat appearance free of sharp or angular points which will be hazardous to ramp users.
- MASS CONCRETE DRAIN and SHOULDER CAP:
  - Concrete shall be minimum S32/20.
  - Contraction joints 40 deep and < 6 wide at 90° to the boat ramp control line shall be tooled at 2 m nominal spacings adjacent to precast plank gaps and/or construction joints.
  - Trafficable surfaces shall have a medium broom finish at 90° to the boat ramp control line.
- Ungrouted Shoulders**
- ROCK: shall be unweathered, clean, hard, and durable graded 150 to 200 mm with essentially flat faces.

- Grouted Mattress**
- CONNECTION BAR: shall be Grade 316 stainless steel flats to ASTM A276. All sharp edges shall be removed and neatly finished.
  - BOLTS: shall be A4/316 M12 x 60 long with 316SS M12 washers, Quantity = 3 per lane.
  - GROUT MATTRESS: shall
    - be a double layered fabric block mattress reinforced with polymer rope inserted through each block that allows flexibility to conform to the surface.
    - Be maximum thickness 200 when inflated.
    - Have a sewn pocket at the top end for the Connection bar.

- General**
- DIMENSIONS are in millimetres unless shown otherwise.
- Referenced Documents**
- Departmental Specifications  
MRTS300 Construction of Boat Ramps  
Design Criteria for Boat Ramps
- Australian and International Standards  
ASTM A276 Standard Specification for Stainless Steel Bars and Shapes

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BOAT RAMP CONSTRUCTION				A3	Standard Drawing No <b>4031</b> Date 3/2024
SHOULDERS AND GROUTED MATTRESS		Not to Scale			
A					