

NOTES

WATER-BARS, SPOON DRAINS AND WHOA BOYS

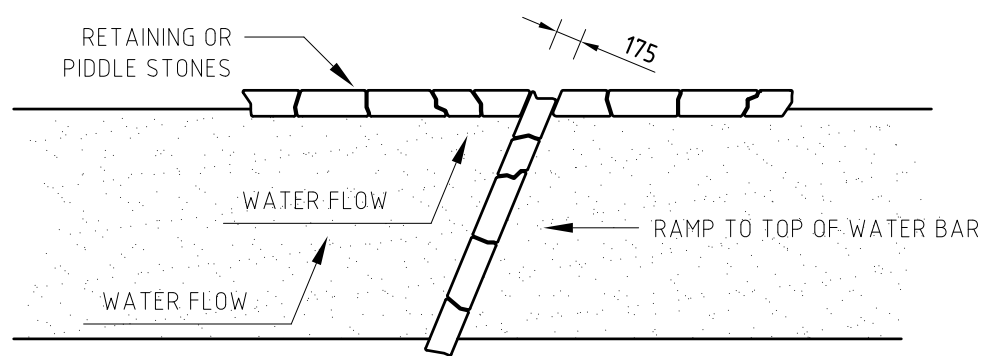
THE MOUTH OF ALL DRAINS MUST BE RETAINED WITH TOE STONES (TYPE 1 OR 2), OR SUITABLE ROCK TO AVOID EROSION OF THE TRACK EDGE. WATER MUST BE ABLE TO FLOW FREELY ACROSS THESE RETAINING STONES (REFERRED TO AS PIDDLE STONES). ON WALKING TRACKS THAT RISE LESS THAN 1 IN 20 (5%), A SPOON DRAIN MUST BE ENTERED INTO THE TRACK AT NO MORE THAN 10 METRE INTERVALS. SPOON DRAINS ARE TO BE USED AT EVERY CHANGE IN DIRECTION OR SUDDEN HEIGHT GAIN ALONG ANY GIVEN LENGTH OF WALKING TRACK (FIGURE 14). WHEN CONSTRUCTING SPOON DRAINS IT IS DESIRABLE THAT THE FALL OR GRADE WITHIN THE SPOON DRAIN HAS A CROSS FALL OF 1 IN 10, TO ENSURE SELF-CLEARING AND WATER SHED.

ON SECTIONS OF WALKING TRACK THAT RISE BETWEEN 1 IN 20 (5%) AND 1 IN 10 (10%), A CROSS DRAIN IN THE FORM OF A WATER-BAR OR WHOA BOY MUST BE ENTERED INTO THE TRACK. THIS IS TO BE AT NO MORE THAN 7.5 METRE INTERVALS. THESE DRAINS ARE TO BE ENTERED ACROSS THE TRACK AT 45 DEGREES. ON GRADES THAT EXCEED 1 IN 10 (10%) AND A MAXIMUM GRADE OF 1 IN 7.5 (14%), A SOLID CROSS DRAIN OR WATER-BAR MUST BE ENTERED INTO THE TRACK. THIS IS TO BE AT NO MORE THAN 5 METRE INTERVALS. THESE DRAINS ARE TO BE ENTERED ACROSS THE TRACK AT APPROXIMATELY 60 DEGREES. WHOA BOYS ARE NOT SUITABLE ON STEEPER GRADES AND WILL ONLY BE USED WHERE GRADES OF 1 IN 10 (10%) OR LESS ARE IMPLEMENTED.

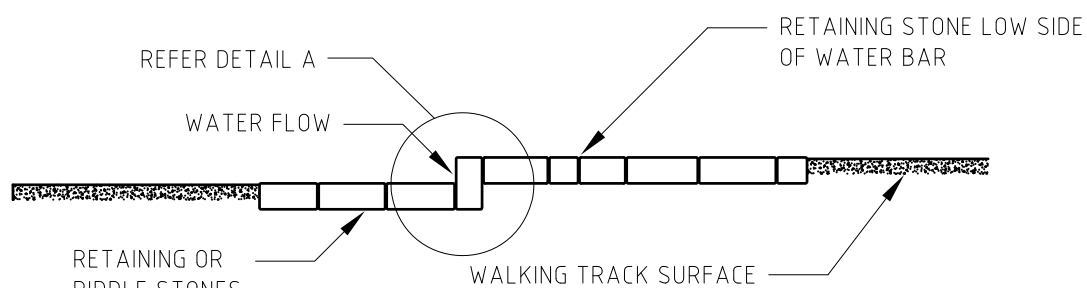
COMMON RULE OF THUMB - THE STEEPER THE TRACK THE MORE DRAINS AND THE SHALLOWER THE ANGLE OF WATER DIVERSION.

WHOA BOYS CAN ONLY BE USED IN GOOD FORMING CLAY SOILS. SANDY, LOOSE SOILS ARE DIFFICULT TO COMPACT AND MUST HAVE SOLID DRAINAGE IN THE FORM OF WATER-BARS CONSTRUCTED USING TYPE 2 PRE-CAST OR SUITABLE NATURAL STONE. IF NATURAL STONE IS USED, IT MUST BE CLEAN IMPORTED ROCK OR SITE STONE THAT IS CAPABLE OF BEING TIGHTLY RAMMED INTO A TRENCH TO A DEPTH OF 230 mm MINIMUM. APPROXIMATELY 100mm OF STONE IS LEFT EXPOSED TO DIVERT THE WATER. THE ROCK SHOULD HAVE GOOD FLAT TOPS TO AVOID TRIP HAZARDS AND MATCH THE LOCAL GEOLOGY. WATER-BARS AND WHOA BOYS MUST BE PLACED ACROSS THE TRACK AT AN ANGLE OF NO LESS THAN 45 DEGREES ON GRADES LESS THAN 1 IN 20.

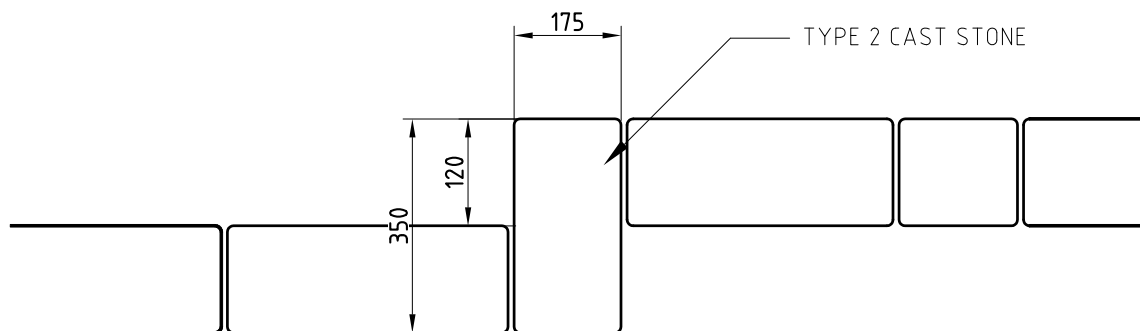
WHERE WATER-BARS ARE CONSTRUCTED, THE LOWER SIDE OF THE WALKING TRACK OR DOWN HILL SIDE WILL NEED TO BE RETAINED. THE TYPE 2 STONES OR SUITABLE NATURAL STONE SHOULD BE USED TO RETAIN THE RAMP ON THE LOWER SIDE OF THE WATER-BAR. ON GRADES THAT EXCEED 1 IN 10 (10%) IT MAYBE NECESSARY TO INCREASE THE WATER-BAR ANGLE TO 60 DEGREES TO MINIMISE THE SPEED OF WATER FLOW ALONG THE WALKING TRACK. THIS ANGLE WILL DEPEND ON SOIL TYPES, ASPECT AND TOPOGRAPHY AND MUST BE AGREED TO BY THE PROJECT MANAGER/COUNCIL SUPERVISOR.



PLAN



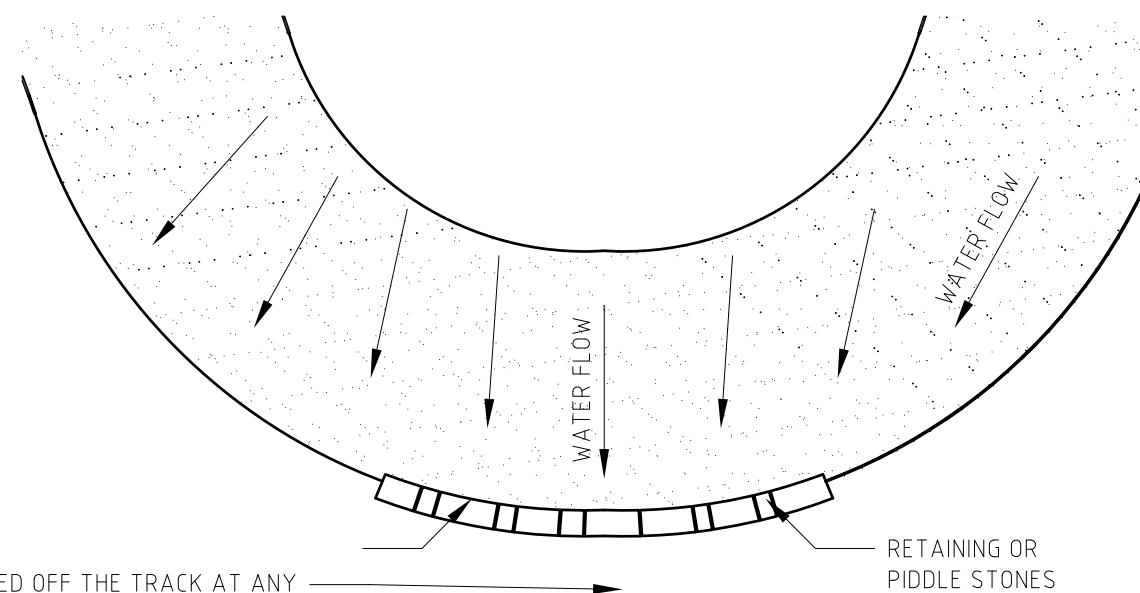
SECTION



DETAIL A

TYPE 2 CAST STONES

TYPE 2 CAST STONES (350mm x 175mm) WERE DEVELOPED AS A DEEPER ROCK TO BE EMBEDDED INTO THE WALKING TRACK FOR THE CONSTRUCTION OF WATER BARS. THESE PRODUCTS ARE DESIGNED TO HAVE 120mm EXPOSED ABOVE THE TRACK SURFACE, TO DIVERT WATER FROM THE WALKING TRACK.



DRAINAGE ON CURVED PATH SECTIONS



Gold Coast City Council

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					DRAFTING BY TECHNICAL SERVICES BRANCH	TYPE 2 CAST STONES WATER BAR CONSTRUCTION & EDGE RETENTION		STANDARD DRAWING No. 13-05-820
					PASSED - COORDINATOR OPEN SPACE ASSETS SIGNED: NAME: CAMERON TAYLOR DATE: 6/12/12			ISSUE 2013 EDITION
					APPROVED - MANAGER PARKS & RECREATIONAL SERVICES SIGNED: NAME: RON JACOBS DATE: 6/12/12			
No.	AMENDMENT	APPROVED	DATE	ISSUED				