


DRAINAGE CONTROL MEASURES				STANDARD DRAWING REFERENCE
12.1.1	APPROPRIATE DRAINAGE CONTROLS MUST BE APPLIED TO THE SITE. THESE CONTROLS MAY CONSIST OF COMPONENTS OF THE PERMANENT DRAINAGE SYSTEM, PLUS TEMPORARY DRAINAGE MEASURES THAT ARE REQUIRED TO BE FUNCTIONAL ONLY DURING THE CONSTRUCTION PHASE.	A4-00331		
12.1.2	THE REQUIRED DRAINAGE CONTROL MEASURES MUST BE ASSESSED ON A PROJECT-SPECIFIC BASIS, AND BASED ON THE ANTICIPATED CATCHMENT AND WEATHER CONDITIONS.	A4-00331		
12.1.3	IF DEEMED A COMPLEX SITE, A CONSTRUCTION DRAINAGE PLAN (CDP) SHOULD BE PREPARED BY A DRAINAGE/STORMWATER ENGINEER.	A4-00331		
12.1.4	IT IS IMPORTANT TO ENSURE THAT STORMWATER IS NOT UNLAWFULLY DIVERTED OR RELEASED INTO NEIGHBOURING PROPERTIES, OR ALLOWED TO CAUSE EROSION AT DISCHARGE POINTS.	A4-00331		
12.1.5	THE FOLLOWING TASKS ARE TO BE CARRIED OUT: - FIRSTLY, ASSESS THE BENEFITS AND PRACTICALITY OF DIVERTING UP-SLOPE RUNOFF AROUND ANY GIVEN SOIL DISTURBANCE. THIS MAY REQUIRE LARGE SITES TO BE VIEWED AS A SERIES OF ADJOINING SUB-CATCHMENTS. DRAINAGE OPTIONS INCLUDE FLOW DIVERSION BANKS (POSSIBLY FORMED FROM THE STRIPPED TOPSOIL), AND EXCAVATED CATCH DRAINS. IF THE SUBSOILS ARE KNOWN TO BE DISPERSIVE OR HIGHLY ERODIBLE, THEN AVOID CUTTING DRAINS INTO THESE SOILS. INSTEAD, USE FLOW DIVERSION BANKS TO REDIRECT WATER ACROSS THE SLOPE. - SECONDLY, CHOOSE AN APPROPRIATE GRADIENT AND CHANNEL LINING FOR EACH DRAIN. LOW GRADIENT DRAINS CAN OFTEN BE LEFT WITH AN OPEN SOIL SURFACE. IF FLOW VELOCITIES ARE EXPECTED TO BE HIGH, THEN EITHER CONTROL THE WATER VELOCITY WITH THE USE OF CHECK DAMS, OR SELECT AN APPROPRIATE CHANNEL LINING. - THIRDLY, CONSIDER HOW BEST TO MOVE STORMWATER DOWN ANY STEEP SLOPES. DRAINAGE OPTIONS INCLUDE SLOPE DRAINS FOR MINOR FLOWS, AND SUITABLY LINED DRAINAGE CHUTES. ALTERNATIVELY, A LEVEL SPREADER CAN BE USED TO RELEASE THE WATER AS 'SHEET' FLOW DOWN THE SLOPE. - FOURTHLY, IF THE SITE CONTAINS A MAJOR SEDIMENT TRAP SUCH AS A SEDIMENT BASIN, THEN CONSIDER HOW BEST TO DIRECT THE MAXIMUM QUANTITY OF SEDIMENT-LADEN WATER TO THESE SEDIMENT TRAPS. DRAINAGE OPTIONS INCLUDE THE USE OF CATCH DRAINS, FLOW DIVERSION BANKS, OR FOR LARGE CATCHMENTS, FORMALLY DESIGNED DIVERSION CHANNELS. - FINALLY, ENSURE THAT STORMWATER IS NOT UNLAWFULLY DIVERTED OR RELEASED INTO NEIGHBOURING PROPERTIES, OR ALLOWED TO CAUSE EROSION AT DISCHARGE POINTS.	A4-00331		
DRAINAGE ACROSS A SLOPE - CATCH DRAINS (CD)				
12.2.1	CATCH DRAINS ARE USED FOR THE COLLECTION OF SHEET RUNOFF AND THE DIVERSION OF SUCH RUNOFF ACROSS A SLOPE OR AROUND A SOIL DISTURBANCE. THEY CAN ALSO BE USED TO COLLECT 'DIRTY' WATER AND CARRY IT TO A SEDIMENT TRAP. CATCH DRAINS ARE BEST USED ON EROSION-RESISTANT, NON-DISPERSIVE SOILS.	A3-006733 to A3-006737 & A4-00332		
12.2.2	CATCH DRAINS CAN BE CONSTRUCTED WITH OR WITHOUT AN ADJOINING DOWN-SLOPE BANK.	A3-006733 to A3-006737 & A4-00332		
12.2.3	LARGE CATCH DRAINS ARE USUALLY FORMED BY PUSHING THE EXCAVATED SOIL DOWN THE SLOPE TO FORM AN ADJOINING FLOW DIVERSION BANK.	A3-006733 to A3-006737 & A4-00332		
12.2.4	CATCH DRAINS CAN BE EARTH-LINED (LOW GRADIENT DRAINS ONLY), OR LINED WITH EROSION CONTROL MATS, GRASS, OR ROCKS. APPLICATION OF A CHANNEL LINING, HOWEVER, MUST NOT BE ALLOWED TO REDUCE THE REQUIRED FLOW CAPACITY OR DIMENSIONS OF THE DRAIN.	A3-006733 to A3-006737 & A4-00332		
12.2.5	DRAINS CUT INTO DISPERSIVE SOILS CAN RESULT IN SEVERE EROSION PROBLEMS AND THE LOSS OF LARGE QUANTITIES OF SEDIMENT. IF A DRAIN IS REQUIRED TO BE CUT INTO DISPERSIVE SOILS, THEN THE DRAIN MUST BE LINED WITH A NON-DISPERSIVE SOIL (MINIMUM 100mm THICK), EVEN IF THE DRAIN IS TO BE LINED WITH ROCK, GRASS, OR EROSION CONTROL MATS.	A3-006733 to A3-006737 & A4-00332		
12.2.6	CONSTRUCTED DIMENSIONS OF CATCH DRAINS ARE TO BE AS PER STANDARD DRAWING.	A3-006733 to A3-006737 & A4-00332		
DRAINAGE ACROSS A SLOPE - FLOW DIVERSION BANKS AND BERMS (DB)				
12.3.1	FLOW CONTROL BERMS ARE USED FOR THE COLLECTION AND DIVERSION OF MINOR FLOWS FROM RELATIVELY SMALL CATCHMENT AREAS. THEY CAN ALSO BE USED TO DIRECT MINOR FLOWS TO DRAINAGE CHANNELS AND CHUTES. NOTE THAT BERMS CAN BE HIGHLY SUSCEPTIBLE TO TRAFFIC DAMAGE AND FLOW LEAKS.	A3-006752 to A3-006753 & A4-00332		
12.3.2	BERMS CAN BE FORMED FROM SANDBAGS, COMPOST, OR COMPACTED EARTH. IF EARTH IS USED, THEN A FORMALLY DESIGNED FLOW DIVERSION BANK SHOULD BE CONSTRUCTED.	A3-006752 to A3-006753 & A4-00332		
12.3.3	FLOW DIVERSION BANKS ARE TYPICALLY USED FOR THE DIVERSION OF FLOWS WHEN IN-SITU SUBSOILS ARE DISPERSIVE OR OTHERWISE HIGHLY ERODIBLE. THEY MAY BE FORMED FROM THE STRIPPED TOPSOIL AS AN ALTERNATIVE TO STOCKPILING. REFER STANDARD DRAWING FOR AN EXAMPLE CROSS SECTION.	A3-006752 to A3-006753 & A4-00332		
12.3.4	STRAW BALES CAN BE USED TO FORM TEMPORARY FLOW DIVERSION BANKS TO PROTECT EXPOSED SOILS AND EXCAVATIONS FROM IMMINENT STORMS. THEY SHOULD NOT BE USED FOR PERIODS LONGER THAN A WEEK, AND SHOULD NOT BE OPERATED AS SEDIMENT TRAPS.	A3-006752 to A3-006753 & A4-00332		
12.3.5	WHEN USING STRAW BALES, THEY MUST BE STAKED TO PREVENT MOVEMENT. THEY MAY ALSO BE WRAPPED IN FILTER CLOTH TO INCREASE THE OVERALL STABILITY OF THE BANK.	A3-006752 to A3-006753 & A4-00332		
12.3.6	REFER STANDARD DRAWING FOR THE DIMENSIONAL REQUIREMENTS OF FLOW DIVERSION BANKS AND BERMS.	A3-006752 to A3-006753 & A4-00332		
DRAINAGE DOWN A SLOPE - CHUTES (CH)				
12.4.1	ALL CHUTES REQUIRE: - FLOW DIVERSION BANKS, OR SIMILAR, TO DIRECT FLOW INTO THE CHUTE; - A WELL-DEFINED INLET PROFILE; - A WELL-DEFINED CROSS-SECTIONAL PROFILE THAT CAN FULLY CONTAIN THE FLOW (INCLUDING SPLASH) DOWN THE FACE OF THE CHUTE; - A STABLE OUTLET AND ENERGY DISSIPATION SYSTEM AT THE BASE OF THE CHUTE.	A3-006738 to A3-006743		
12.4.2	DO NOT USE CHUTES ON DISPERSIVE SOILS.	A3-006738 to A3-006743		
12.4.3	FILTER CLOTH IS COMMONLY USED TO LINE SHORT-TERM (< 3 MONTHS) BATTER CHUTES.	A3-006738 to A3-006743		
12.4.4	CHUTES LINED WITH ROCK MATTRESSES ARE COMMONLY USED TO FORM SPILLWAYS ON SEDIMENT BASINS, AND AS PERMANENT BATTER CHUTES. IN MOST CASES, PERMANENT, ROCK MATTRESS-LINED CHUTES SHOULD BE VEGETATED (GRASSED), UNLESS LOCATED IN ARID AND SEMI-ARID AREAS. THE MATTRESS SHOULD BE LAID WITH THE DIAPHRAGM (INTERNAL DIVIDING WALL) AT RIGHT ANGLES TO THE DOMINANT DIRECTION OF WATER FLOW.	A3-006738 to A3-006743		

DRAINAGE CONTROL MEASURES				STANDARD DRAWING REFERENCE
12.4.5	ROCK LINING IS TYPICALLY USED ON: - PERMANENT DRAINAGE CHUTES; - SEDIMENT BASIN SPILLWAYS.	A3-006738 to A3-006743		
12.4.6	WHEN ROCK LINING, SPECIAL CARE MUST BE TAKEN TO ENSURE: - USE OF AN APPROPRIATE ROCK SIZE; - ROCKS ARE RECESSED INTO THE EARTH TO ALLOW THE FREE ENTRY OF INFLOWS; - THE USE OF GEOTEXTILE FABRIC UNDER THE ROCKS IF THE VOIDS ARE LEFT OPEN. - (NOTE: ROUND ROCK IS SIGNIFICANTLY LESS STABLE THAN ANGULAR, FRACTURED ROCK)	A3-006738 to A3-006743		
12.4.7	ROCK MUST BE RECESSED INTO THE SOIL TO PREVENT INFLOWS BEING DIVERTED ALONG THE EDGES OF THE ROCK LINING.	A3-006738 to A3-006743		
12.4.8	THE CHUTE LINING MUST NOT BE ALLOWED TO REDUCE THE REQUIRED FLOW CAPACITY OR DIMENSIONS OF THE CHUTE.	A3-006738 to A3-006743		
12.4.9	IF A CHUTE IS PLACED ON DISPERSIVE SOILS, THEN THE CHUTE MUST BE LINED WITH A NON-DISPERSIVE SOIL (MINIMUM 200mm THICK), EVEN IF THE CHUTE IS TO BE LINED WITH CONCRETE, ROCK, ROCK MATTRESSES, OR GRASS.	A3-006738 to A3-006743		
DRAINAGE DOWN A SLOPE - SLOPE DRAINS (SD)				
12.5.1	SLOPE DRAINS ARE MOST COMMONLY USED IN LOW RAINFALL REGIONS WHERE THE LIMITED CAPACITY OF THESE DRAINS WILL NOT BECOME AN ISSUE. SEDIMENT TRAPS CAN BE INCORPORATED INTO THE INLET AND/OR OUTLET OF THESE PIPES.	A3-006752 to A3-006753 & A3-006760		
12.5.2	A FLOW DIVERSION BANK IS REQUIRED AT THE INLET OF THE SLOPE DRAIN TO DIRECT WATER INTO THE PIPE.	A3-006752 to A3-006753 & A3-006760		
12.5.3	SLOPE DRAINS ARE COMMONLY USED IN ROAD CONSTRUCTION TO PREVENT ROAD RUNOFF DISCHARGING DOWN NEWLY SEEDED BATTERS. THEY CAN ALSO BE USED TO DIRECT CONCENTRATED FLOWS THROUGH BUSHLAND.	A3-006752 to A3-006753 & A3-006760		
12.5.4	ALL SLOPE DRAINS REQUIRE: - SUITABLE FLOW DIVERSION BANKS AT THE PIPE INLET TO CONTROL FLOW ENTRY; - A STABLE OUTLET (OUTLET STRUCTURE) AT THE END OF THE SLOPE DRAIN TO CONTROL EROSION	A3-006752 to A3-006753 & A3-006760		
12.5.5	LAY-FLAT PIPES CAN BE USED AS AN ALTERNATIVE TO THE MORE COMMONLY USED FLEXIBLE, SOLID-WALL, PVC PIPES.	A3-006752 to A3-006753 & A3-006760		
END OF DRAIN STRUCTURES - OUTLET STRUCTURES (OS)				
12.6.1	LEVEL SPREADERS ARE USED AT THE END OF FLOW DIVERSION BANKS AND CATCH DRAINS TO DISCHARGE MINOR FLOWS DOWN STABLE, GRASSED SLOPES, OR INTO BUSHLAND. THEY CAN ALSO BE USED TO DISCHARGE ROAD RUNOFF INTO GRASSLAND OR BUSHLAND.	A3-006756 to A3-006758		
12.6.2	OUTLET STRUCTURES ARE USED AT THE END OF TEMPORARY CHUTES AND SLOPE DRAINS TO DISSIPATE FLOW ENERGY AND CONTROL SCOUR. THEY CAN ALSO BE USED AS A PERMANENT ENERGY DISSIPATER ON PIPE AND CULVERT OUTLETS.	A3-006756 to A3-006758		
12.6.3	THE FINAL SIZE AND SHAPE OF THE OUTLET STRUCTURE (REFER STANDARD DRAWING) MAY NEED TO BE MODIFIED TO MATCH THE SIZE AND SURFACE CONDITIONS OF THE RECEIVING CHANNEL.	A3-006756 to A3-006758		
VELOCITY CONTROL STRUCTURES - CHECK DAMS				
12.7.1	FIBRE ROLL (FCR) - FIBRE ROLLS CONSIST OF SMALL DIAMETER BIODEGRADABLE STRAW-FILLED LOGS. - THEY CAN BE USED AS CHECK DAMS IN WIDE, SHALLOW DRAINS SO LONG AS THE LOGS CAN BE ANCHORED TO PREVENT MOVEMENT. - FIBRE ROLLS ARE BEST USED IN LOCATIONS WHERE IT IS DESIRABLE TO ALLOW THE LOG TO INTEGRATE INTO THE VEGETATION, SUCH AS VEGETATED CHANNELS; HOWEVER, SOME PRODUCTS CONTAIN A PLASTIC MESH THAT MAY REPRESENT A WILDLIFE ENVIRONMENTAL RISK. - THESE CHECK DAMS CAN ALSO BE USED AS A TEMPORARY (SUPPLEMENTARY) SEDIMENT TRAP.	A3-006759 & A3-006799		
12.7.2	SANDBAG CHECK DAM (SBC) - SANDBAG CHECK DAMS ARE TYPICALLY USED IN DRAINS LESS THAN 500mm DEEP, WITH A GRADIENT LESS THAN 10%. - THESE CHECK DAMS ARE TYPICALLY SMALL (IN HEIGHT) AND THEREFORE LESS LIKELY TO DIVERT WATER OUT OF THE DRAIN COMPARED TO ROCK CHECK DAMS. - SANDBAG CHECK DAMS CAN ALSO BE USED AS A TEMPORARY (SUPPLEMENTARY) SEDIMENT TRAP.	A3-006759 & A3-006799		
12.7.3	ROCK CHECK DAM (RCD) - ROCK CHECK DAMS SHOULD ONLY BE USED IN DRAINS AT LEAST 500mm DEEP, WITH A GRADIENT LESS THAN 10%. - THEY SHOULD ONLY BE USED IN LOCATIONS WHERE IT IS KNOWN THAT THEY WILL BE REMOVED ONCE A SUITABLE GRASS COVER HAS BEEN ESTABLISHED WITHIN THE DRAIN. - THEY CAN ALSO ACT AS MINOR SEDIMENT TRAPS. - ROCK CHECK DAMS CAN BE USED AS A PERMANENT VELOCITY-CONTROL DEVICE AND/OR SEDIMENT TRAP IN NON-VEGETATED, EARTH-LINED DRAINS	A3-006759 & A3-006799		
12.7.4	TRIANGULAR DITCH CHECK (TDC) - TRIANGULAR DITCH CHECKS ARE COMMONLY AVAILABLE AND RE-USEABLE PRODUCTS. - COMMONLY USED TO STABILISE WIDE, SHALLOW TABLE DRAINS WITH LESS THAN 10% GRADIENT. - THESE CHECK DAMS CAN ALSO BE USED AS A TEMPORARY (SUPPLEMENTARY) SEDIMENT TRAP.	A3-006759 & A3-006799		
CHANNEL AND CHUTE LININGS				
12.8.1	GEOTEXTILE LININGS (GEO) - USED TO PROVIDE TEMPORARY SCOUR PROTECTION IN LOW TO MEDIUM VELOCITY DRAINS. - HEAVY-DUTY FILTER CLOTH CAN BE USED TO FORM TEMPORARY DRAINAGE CHUTES DOWN STEEP BATTERS. - SHEETS OF PLASTIC CAN ALSO BE USED TO FORM SHORT, TEMPORARY DRAINAGE CHUTES DOWN EARTH BATTERS, BUT MUST BE USED WITH CAUTION.	A3-006744 to A3-006751		
12.8.2	JUTE OR COIR MESH (ECM) - JUTE OR COIR MESH IS USED TO PROVIDE TEMPORARY SCOUR PROTECTION IN LOW TO MEDIUM VELOCITY DRAINS. - THESE PRODUCTS ARE GENERALLY PREFERRED IN NATURAL ENVIRONMENTS AND BUSHLAND AREAS BECAUSE THEY CONTAIN NO PLASTIC REINFORCING THAT COULD ENTANGLE WILDLIFE. - OVERALL EROSION CONTROL AND CHANNEL REVEGETATION CAN BE IMPROVED BY PLACING THE MESH OVER A MULCH LAYER OR SPRAYING THE MATS WITH AN ANIONIC BITUMEN EMULSION (OR OTHER SUITABLE TACKIFIER) (EG. IN TABLE DRAINS)	A3-006744 to A3-006751		

DRAINAGE CONTROL MEASURES				STANDARD DRAWING REFERENCE
12.8.3	TEMPORARY EROSION CONTROL MAT (ECM) - TEMPORARY EROSION CONTROL MATS CONTAIN AN ORGANIC MULCH LAYER REINFORCED WITH A SYNTHETIC MESH THAT WILL EVENTUALLY BREAKDOWN UNDER DIRECT SUNLIGHT. - THEY ARE TYPICALLY USED TO PROVIDE TEMPORARY SCOUR PROTECTION IN LOW TO MEDIUM VELOCITY DRAINS. - CAUTION SHOULD BE TAKEN WHEN USING ANY SYNTHETIC REINFORCED MATS IN BUSHLAND AREAS AS GROUND DWELLING ANIMALS, SUCH AS LIZARDS, SNAKES, AND GRANIVOROUS (SEED-EATING) BIRDS, CAN BECOME TANGLED IN FINE NETTING.	A3-006744 to A3-006751		
12.8.4	TURF REINFORCEMENT MAT (TRM) - TURF REINFORCEMENT MATS ARE USED FOR THE LINING OF HIGH-VELOCITY, PERMANENT DRAINS AND CHUTES. - THEY ARE ALSO USED TO LINE GRASSED BYWASH SPILLWAYS FOR DAMS AND SEDIMENT BASINS. - THESE PERMANENT REINFORCED MATS ARE USUALLY DISTINGUISHED FROM TEMPORARY MATS BY THEIR DARK COLOUR, OR THE INCLUSION OF A BLACK SYNTHETIC REINFORCING MESH (THE BLACK COLOUR IDENTIFYING THE INCLUSION OF UV-STABILISING CARBON).	A3-006744 to A3-006751		
12.8.5	TURFING (T) - TURF CAN BE USED FOR THE LINING OF LOW VELOCITY CHUTES, CATCH DRAINS AND DIVERSION CHANNELS. - IF HIGH VELOCITY FLOWS ARE LIKELY WITHIN THE FIRST TWO WEEKS, THEN THE TURF IS TO BE ANCHORED WITH WOODEN PEGS. METAL STAPLES (COMMONLY USED TO ANCHOR EROSION CONTROL BLANKETS) ARE NOT TO BE USED (FOR REASONS OF PEDESTRIAN SAFETY). - IT IS IMPORTANT TO ENSURE THAT WATER ENTERING THE TURFED AREA IS NOT DIVERTED ALONG THE OUTER EDGE OF THE TURF.	A3-006744 to A3-006751		
12.8.6	PRE-GROWN REINFORCED GRASS (TRM) - PRE-GROWN REINFORCED GRASS CAN BE USED FOR THE LINING OF HIGH-VELOCITY, PERMANENT DRAINS AND CHUTES. THEY CAN ALSO BE USED TO LINE GRASSED 'BYWASH' SPILLWAYS FOR DAMS AND SEDIMENT BASINS. - PARTICULAR ATTENTION (IE. PLACEMENT AND ANCHORAGE) SHOULD BE GIVEN TO THE CREST, TOE AND SIDES OF THE MAT DURING INSTALLATION TO AVOID THE POTENTIAL FOR FUTURE EROSION AND/OR UPLIFTING.	A3-006744 to A3-006751		
12.8.7	CELLULAR CONFINEMENT SYSTEM (CCS) - CELLULAR CONFINEMENT SYSTEMS CAN BE USED TO STABILISE LOW TO MEDIUM VELOCITY CHUTES. - THE POCKETS MAY BE FILLED WITH SMALL ROCKS OR VEGETATED (GRASSED) SOIL TO FORM A TEMPORARY OR PERMANENT CHUTE. - THESE PRODUCTS CAN ALSO BE USED TO FORM TEMPORARY CONSTRUCTION ACCESS ACROSS DRY, SANDY BED STREAMS.	A3-006744 to A3-006751		
12.8.8	ROCK LINING (RR) - ROCK CAN BE USED FOR THE LINING OF HIGH-VELOCITY, PERMANENT DRAINS AND CHUTES. ALSO USED TO LINE SPILLWAYS FOR DAMS AND SEDIMENT BASINS. - AN UNDERLYING GEOTEXTILE OR ROCK FILTER LAYER IS GENERALLY REQUIRED UNLESS ALL VOIDS ARE FILLED WITH SOIL AND POCKET PLANTED. - NOTE THAT ROUND ROCK IS SIGNIFICANTLY LESS STABLE THAN ANGULAR, FRACTURED ROCK.	A3-006744 to A3-006751		
TEMPORARY WATERCOURSE CROSSINGS				
12.9.1	BARGE - A BARGE CAN BE USED AS A MOBILE TRANSPORTATION SYSTEM TO CROSS ESTUARIES AND PROTECTED WATERWAYS. - BARGES CAN BE USED AS A FIXED BRIDGE STRUCTURE TO CROSS WATERWAYS THAT ARE TOO WIDE FOR A TEMPORARY BRIDGE.	A3-006761 to A3-006764		
12.9.2	BRIDGE (TBC) - A TEMPORARY BRIDGE CROSSING IS USED WHEN IT IS IMPORTANT TO MAINTAIN FISH PASSAGE DURING THE CONSTRUCTION PERIOD. - CULVERT BRIDGING SLABS MAY BE USED TO FORM A BRIDGE DECK ACROSS NARROW STREAMS. - IT IS IMPORTANT TO CONTROL STORMWATER DRAINAGE ON ACCESS TRACKS/ROADS LEADING TO WATERCOURSE CROSSINGS IN A WAY THAT WILL MINIMISE THE RISK OF SEDIMENT-LADEN WATER FROM THESE TRACKS BEING DISCHARGED, UNTREATED, INTO THE WATERCOURSE.	A3-006761 to A3-006764		
12.9.3	CULVERT (TCC) - TEMPORARY CULVERT CROSSINGS ARE TYPICALLY USED ON WIDE STREAM CROSSINGS. - THEY ARE BEST USED WHEN FISH PASSAGE IS NOT CRITICAL; HOWEVER, SUITABLE FISH PASSAGE CAN BE ACHIEVED THROUGH APPROPRIATE USAGE/DESIGN. - RECYCLED STEEL PIPES ARE MOST COMMONLY USED.	A3-006761 to A3-006764		
12.9.4	FORD (TFC) - FORD CROSSINGS ARE USED ON 'DRY' CREEK AND RIVER CROSSINGS WHEN STREAM FLOWS ARE NOT EXPECTED. THE REGULAR CROSSING OF 'WET' CREEK BEDS BY CONSTRUCTION VEHICLES IS TO BE AVOIDED. - THESE CROSSINGS ARE TYPICALLY USED IN SHALLOW, INTERMITTENT STREAMS THAT ARE EXPECTED TO HAVE NEGLIGIBLE BASE FLOW DURING THE CONSTRUCTION PERIOD. - CELLULAR CONFINEMENT SYSTEMS CAN BE USED TO STABILISE DRY, SANDY BED CROSSINGS	A3-006761 to A3-006764		
WORKS IN AND AROUND WATERCOURSES				
12.10.1	ENSURE ALL NECESSARY GOVERNMENT APPROVALS ARE OBTAINED PRIOR TO ANY DISTURBANCE OF A WATERCOURSE.	A3-006845 to A3-006862		
12.10.2	TO THE MAXIMUM DEGREE PRACTICAL, MINIMISE DISTURBANCE TO THE RIPARIAN VEGETATION EACH SIDE OF THE WATERCOURSE.	A3-006845 to A3-006862		
12.10.3	MINIMISE THE NUMBER OF TEMPORARY WATERCOURSE CROSSINGS.	A3-006845 to A3-006862		
12.10.4	TAKE ALL REASONABLE AND PRACTICAL MEASURES TO AVOID THE OPERATION OF CONSTRUCTION EQUIPMENT WITHIN THE MAIN CHANNEL OF THE STREAM.	A3-006845 to A3-006862		
12.10.5	ISOLATION BARRIER - WHEREVER PRACTICAL, PRIORITY SHOULD BE GIVEN TO THE USE OF INSTREAM FLOW DIVERSION SYSTEMS THAT SUCCESSFULLY ISOLATE ALL SOIL DISTURBANCES FROM STREAM FLOW. - ISOLATION BARRIERS CAN BE FORMED FROM SEDIMENT FENCE FABRIC (FLOW DEPTH < 0.8m), FLOATING SILT CURTAINS (DEPTH > 0.8m), LARGE WATER-FILLED RUBBER DAMS, AND SHEET PILING.	A3-006845 to A3-006862		
12.10.6	INSTREAM SEDIMENT CONTROL SYSTEM - THE USE OF INSTREAM SEDIMENT CONTROL MEASURES SHOULD ONLY BE USED AS A LAST RESORT, AND ONLY WHEN IT IS NOT PRACTICAL TO DIVERT DRY WEATHER FLOWS AROUND ALL DISTURBANCES. - INSTREAM SEDIMENT CONTROL MEASURES USUALLY REQUIRE THE INCORPORATION OF 'FILTRATION' SYSTEMS SUCH AS FILTER TUBES. - INSTREAM SEDIMENT CONTROL MEASURES MUST NOT BE USED DURING PERIODS OF ESSENTIAL FISH MIGRATION.	A3-006845 to A3-006862		

		SURVEY		SCALES (A1)		DRAWN		SIGNED		DATE		DIRECTOR ENGINEERING AND COMMERCIAL INFRASTRUCTURE				STANDARD EROSION & SEDIMENT CONTROL NOTES SHEET 3 OF 6		SHEET 3 OF 6 WORKS JOB No.					
		SURVEY FILE No				DESIGNED		SIGNED		DATE		ORIGINAL SIGNED BY JASON DEVITT								DRAWING No.		AMEND.	
		LEVEL DATUM		A.H.D.		CHECKED		SIGNED		DATE		MANAGER TECHNICAL SERVICES ORIGINAL SIGNED BY G. HAWES RPEQ 5693								13/1/14		DATE	
NO.		DATE		DESCRIPTION		DRAWN		APPROVED		MERIDIAN		FILE NAME		ISTANDARD DRAWINGS/A1-27001		A1-27003		A					
AMENDMENTS AND REVISIONS																							