PLATE TURF MINIMUM 1.5m WIDE
BEHIND HEADWALL AND WINGWALLS
IMMEDIATELY AFTER CONSTRUCTION
OF BATTER TO PREVENT SCOUR

PIPE OR BOX CULVERT

LENGTH MINIMUM 5 × PIPE DIAMETER
OR CULVERT DIAGONAL

PLAN
CULVERT INLET OR OUTLET

ROCKED FILLED MATRESS DETAIL
- GALVANISED WIRE OR PLASTIC COATED
  WIRE MESH MATRESS FILLED WITH
  ROCK AND SECURILY FIXED TOGETHER
  MATRESS TO BE SHAPED TO SUIT
  INLET AND OUTLET DRAINS
  PROVIDE GEOTEXTILE UNDER ROCK
  FILLED MATRESS
  CROSS SECTION OF MATRESS SHOULD
  BE "DISH" SHAPED - SEE SECTION 2

LOW FLOW CHANNEL FOR
FISH WHERE IDENTIFIED

SECTION
NOT TO SCALE

SECTION
NOT TO SCALE
(MATTRESS SHAPE TO SUIT INLET / OUTLET)

LOW FLOW CHANNEL FOR
FISH WHERE IDENTIFIED

GEOTEXTILE

NOTE
1. FOR ROCK SIZE REFER TO ROADS AND MARITIME SERVICES
   SPECIFICATION R55.
2. MATTRESS WORKS ARE TO ADDRESS THE NSW DEPARTMENT OF
   PRIMARY INDUSTRIES "POLICY AND GUIDELINES FOR FISH FRIENDLY
   WATER CROSSINGS".

INSTALLATION OF ROCK MATTRESS
TO BE COMPLETED AS SOON AS
PRACTICAL FOLLOWING COMPLETION
OF WING WALLS TO REDUCE THE RISK
OF AN EROSION EVENT.

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN

SEND FEEDBACK ON THIS STANDARD DRAWING TO
technologystandards@rns.wa.gov.au

MANAGER ROAD POLICY, SPECIFICATIONS
AND TECHNOLOGY

DATE 20.01.17

Transport
Roads & Maritime
Services

STANDARD DRAWING
ROAD DESIGN ENGINEERING
R0100 SOIL AND WATER MANAGEMENT SERIES
ROCK FILLED MATRESS PROTECTION FOR
CULVERTS AT INLETS AND OUTLETS

PROJECTWISEQRCODELAYER

© Roads and Maritime Services
NOTES

1. FOR ROCK SIZE REFER TO ROADS AND MARITIME SERVICES SPECIFICATION R55.
2. MATTRESS WORKS ARE TO ADDRESS THE NSW DEPARTMENT OF PRIMARY INDUSTRIES "POLICY AND GUIDELINES FOR FISH FRIENDLY WATER CROSSINGS".

INSTALLATION OF ROCK MATTRESS TO BE COMPLETED AS SOON AS PRACTICABLE FOLLOWING COMPLETION OF WING WALLS TO REDUCE THE RISK OF WING WALLS TO REDUCE THE RISK OF AN EROSION EVENT.
SAND BAG OR AGGREGATE BAG

2.0m MINIMUM

SECTION
NOT TO SCALE

OR

SECTION
NOT TO SCALE

NOTES
1. SPILLWAY TO BE OVER INVERT OF DRAIN, WITH DISCHARGE NOT PERMITTED TO FLOW AROUND ENDS.
A. SINGLE STRIP METHOD
1. BURY THE TOP END OF THE ORGANIC FIBRE REINFORCED MESH STRIP (JUTE MESH) IN A TRENCH 150 OR MORE IN DEPTH.
2. TAMPER THE TRENCH FULL OF SOIL, SECURE WITH A ROW OF PINS - MINIMUM NUMBER 8.
3. LAY MESH ALONG DRAIN WITHOUT STRETCHING THE MESH.
4. OVERLAP BURY UPPER END OF LOWER STRIP AS IN 1 AND 2. OVERLAP END OF TOP STRIP 150 AND STAPLE.
5. EROSION STOP FOLD OF MESH BURIED IN SLIT TRENCH AND TAMPERED;
   DOUBLE ROW OF STAPLES.
6. STAPLE THE MESH ALONG EACH EDGES AND CENTRE WITH TWO PINS ON EACH EDGE AND 1 IN CENTRE PER METRE OF MESH.
7. AFTER SEEDING AND LAYING JUTE MESH, APPLY A SLOW-BREAKING MEDIUM SETTING ANIONIC BITUMEN EMULSION AT A RATE IN ACCORDANCE WITH THE SPECIFICATION R11 SPRAYED BITUMINOUS SURFACING (WITH BITUMEN EMULSION), A HEAVIER APPLICATION IS TO BE MADE ON OUTER EDGES AND JOINTS.
8. ANIONIC BITUMEN TO BE APPLIED IN ALL INSTANCES EXCEPT UPON THE SUPERINTENDENTS DISCRETION FOR ENVIRONMENTAL REASONS.

B. TWO OR MORE STRIPS METHOD
1. PROCEED AS FOR SINGLE STRIP FOR EACH ROW. PROVIDE 150 OVERLAP BETWEEN ADJOINING STRIPS AND STAPLE ALONG TOP EDGE BETWEEN STRIPS.
2. AFTER SEEDING AND LAYING JUTE MESH, APPLY A SLOW-BREAKING MEDIUM SETTING ANIONIC BITUMEN EMULSION AT A RATE IN ACCORDANCE WITH THE SPECIFICATION. A HEAVIER APPLICATION IS TO BE MADE ON OUTER EDGES AND JOINTS.
3. ANIONIC BITUMEN TO BE APPLIED IN ALL INSTANCES EXCEPT UPON THE SUPERINTENDENTS DISCRETION FOR ENVIRONMENTAL REASONS.

NOTES
1. PRIOR TO PLACING THE ORGANIC FIBRE REINFORCED MESH (JUTE MESH), THE DRAIN SHALL BE PREPARED IN ACCORDANCE WITH ROADS AND MARITIME SERVICES SPECIFICATION R11 SPRAYED BITUMINOUS SURFACING (WITH BITUMEN EMULSION). A HEAVIER APPLICATION IS TO BE MADE ON OUTER EDGES AND JOINTS.
2. PROVIDE 150 OVERLAP-BURY UPPER END OF LOWER STRIP AS IN 1 AND 2. OVERLAP END OF TOP STRIP 150 AND STAPLE.
3. EROSION STOP FOLD OF MESH BURIED IN SLIT TRENCH AND TAMPERED;
   DOUBLE ROW OF STAPLES.
4. STAPLE THE MESH ALONG EACH EDGES AND CENTRE WITH TWO PINS ON EACH EDGE AND 1 IN CENTRE PER METRE OF MESH.
5. AFTER SEEDING AND LAYING JUTE MESH, APPLY A SLOW-BREAKING MEDIUM SETTING ANIONIC BITUMEN EMULSION AT A RATE IN ACCORDANCE WITH THE SPECIFICATION. A HEAVIER APPLICATION IS TO BE MADE ON OUTER EDGES AND JOINTS.
6. ANIONIC BITUMEN TO BE APPLIED IN ALL INSTANCES EXCEPT UPON THE SUPERINTENDENTS DISCRETION FOR ENVIRONMENTAL REASONS.
7. PROCEED AS FOR SINGLE STRIP FOR EACH ROW.
8. PROVIDE 150 OVERLAP BETWEEN ADJOINING STRIPS AND STAPLE ALONG TOP EDGE BETWEEN STRIPS.
9. AFTER SEEDING AND LAYING JUTE MESH, APPLY A SLOW-BREAKING MEDIUM SETTING ANIONIC BITUMEN EMULSION AT A RATE IN ACCORDANCE WITH THE SPECIFICATION. A HEAVIER APPLICATION IS TO BE MADE ON OUTER EDGES AND JOINTS.
10. ANIONIC BITUMEN TO BE APPLIED IN ALL INSTANCES EXCEPT UPON THE SUPERINTENDENTS DISCRETION FOR ENVIRONMENTAL REASONS.

NOTE
1. PRIOR TO PLACING THE ORGANIC FIBRE REINFORCED MESH (JUTE MESH), THE DRAIN SHALL BE PREPARED IN ACCORDANCE WITH ROADS AND MARITIME SERVICES SPECIFICATION R11 SPRAYED BITUMINOUS SURFACING (WITH BITUMEN EMULSION). A HEAVIER APPLICATION IS TO BE MADE ON OUTER EDGES AND JOINTS.
2. PROVIDE 150 OVERLAP-BURY UPPER END OF LOWER STRIP AS IN 1 AND 2. OVERLAP END OF TOP STRIP 150 AND STAPLE.
3. EROSION STOP FOLD OF MESH BURIED IN SLIT TRENCH AND TAMPERED;
   DOUBLE ROW OF STAPLES.
4. STAPLE THE MESH ALONG EACH EDGES AND CENTRE WITH TWO PINS ON EACH EDGE AND 1 IN CENTRE PER METRE OF MESH.
5. AFTER SEEDING AND LAYING JUTE MESH, APPLY A SLOW-BREAKING MEDIUM SETTING ANIONIC BITUMEN EMULSION AT A RATE IN ACCORDANCE WITH THE SPECIFICATION. A HEAVIER APPLICATION IS TO BE MADE ON OUTER EDGES AND JOINTS.
6. ANIONIC BITUMEN TO BE APPLIED IN ALL INSTANCES EXCEPT UPON THE SUPERINTENDENTS DISCRETION FOR ENVIRONMENTAL REASONS.
7. PROCEED AS FOR SINGLE STRIP FOR EACH ROW.
8. PROVIDE 150 OVERLAP BETWEEN ADJOINING STRIPS AND STAPLE ALONG TOP EDGE BETWEEN STRIPS.
9. AFTER SEEDING AND LAYING JUTE MESH, APPLY A SLOW-BREAKING MEDIUM SETTING ANIONIC BITUMEN EMULSION AT A RATE IN ACCORDANCE WITH THE SPECIFICATION. A HEAVIER APPLICATION IS TO BE MADE ON OUTER EDGES AND JOINTS.
10. ANIONIC BITUMEN TO BE APPLIED IN ALL INSTANCES EXCEPT UPON THE SUPERINTENDENTS DISCRETION FOR ENVIRONMENTAL REASONS.
NOTES

PERMANENT DIVERSION BANKS
1. Location to be shown on design drawings.
2. Channels to be parabolic or trapezoidal, cross- and not-U-shaped.
3. Channel grades to be 1% to 5%.
4. The removal of trees and shrubs to be avoided where possible.
5. Earth banks to be keyed into existing surface and machine compacted to prevent failure.
6. Channels to be free of irregularities that will impede normal flow.
7. Any stabilisation works to be completed within 10 days of construction (e.g. channel lining with organic reinforced jute mesh).
8. Outlets from banks below disturbed construction areas to discharge onto a stable area (e.g. rocks, natural undisturbed ground), and then into a sediment control if possible (e.g. sediment basin, sediment fence or similar).
9. Outlets from banks draining disturbed areas to be discharged onto a stable area (e.g. rocks, natural, undisturbed ground), within the same catchment from which the run-off originated.

TEMPORARY DIVERSION BANKS
1. Locations selected continually during construction to protect works (e.g. may regularly change).
2. V-shaped channels are acceptable as the banks are usually constructed by a grader to function over a short period (e.g. overnight, weekend).
3. Channel grades to be 1% to 5%.
4. Banks to be adequately machine compacted to prevent failure.
5. Spacing between banks to be dependent upon slope and soil type.
6. Outlets from banks to discharge onto a stable area (e.g. rocks, natural, undisturbed ground), timer, windrow, sediment trap, geotextile (or battery drain). Bank outlets to extend past disturbed areas and not be too short.
7. Banks to be inspected after storm events and repaired as required.

SPILLWAY DETAIL
1. Outlet to be level and minimum 2 metres in length.
2. Outlet sill to finish flush with natural surface on undisturbed or stabilised ground.
3. Area below, and at end of, outlet not to be disturbed.
1. Check dams may be constructed of a variety of materials (e.g. straw bales, sediment fence, rock & geotextile, sheet piling, etc.).

2. Check dams to be trenched 200 mm into ground surface on basin and sides and securely backfilled.

3. Spillway to be over invert of drain with discharge not permitted to flow around ends.

4. Spillway to be less than 1 metre above invert of drain to be considered dissipator below spillway (e.g. rock, sand bales).

5. Check dams to be spaced so the toe of the upstream check is level with the spillway of the next downstream check (refer to diagram above).

6. Check dams to be spaced so the toe of the upstream check is level with the spillway of the next downstream check (refer to diagram above).

7. Check dams to be inspected after storm events and repaired as required.

Notes:

- Cross section of aggregate check dam
- Cross section of straw bale check dam
- Natural surface
- Spillway
- End of structure
- Larger than spillway
- Rock trenched 200 into ground
- Natural surface
- Spillway 150 mm
- Natural surface
- Cross section of ground
- Diagram of check dams

All dimensions are in millimetres unless otherwise shown.
**NOTES**

1. A temporary bank may be required to divert formation run-off into a batter drain.
DETAIL OF SILT FENCE

NOTES
1. DRIVE 1.5m LONG STAR PICKETS (OR WOODEN POSTS) INTO GROUND, 3.0m APART.
2. DIG A 150 DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE GEOTEXTILE TO BE ENTRENCHED AND SUITABLY COMPACTED TO PREVENT SCOURING.
3. BACKFILL TRENCH ON TOPSIDE OF GEOTEXTILE.
4. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
5. USE ONLY APPROVED GEOTEXTILE MATERIAL SUITABLE FOR SEDIMENT CONTROL.

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN
GENERAL FEATURES OF ROADWAY EROSION AND SEDIMENTATION CONTROL

- Turnups should be installed as shown in detail.
- Turnups should be inspected after storm events and repaired as required.
- Fences must have the following design limits for optimum function:
  - The area draining to the fence is 0.6 hectares or less:
  - The maximum slope length above the fence is 50 metres.
  - If it is necessary to construct a fence across the slope, turnups should be installed as shown in detail.
- Fences may have the following design limit for optimum function:
  - The area draining to the fence is 0.6 hectares or less:
  - The maximum slope length above the fence is 50 metres.

NOTES

1. Sediment fences to be erected along a terrain contour to filter runoff uniformly along the fence.
2. The ends of fences to be tapered uphill to contain the buildup of sediment.
3. Concentrated flows to a small area of the fence to be avoided so that capacity along the entire length is maintained.
4. Fences to have a stable overflow point in the event flow rates exceed the capacity to filter water.
5. Fences have the following design limit for optimum function:
   - The area draining to the fence is 0.6 hectares or less:
   - The maximum slope length above the fence is 50 metres.
6. If it is necessary to construct a fence across the slope, turnups should be installed as shown in detail.
7. Fences to be inspected after storm events and repaired as required.
SEDIMENT TRAP AT DROP INLET UTILISING AN EXCAVATED TRENCH

SEDIMENT TRAP AT DROP INLET USING STRAW BALES WITH A CATCHMENT FROM ALL DIRECTIONS

SEDIMENT TRAP AT DROP INLET UTILISING STRAW BALES IN NARROW CHANNEL.

SANDBAGS PLACED SECURELY AROUND DROP INLET OPENING TO Bypass FLOWS

SANDBAGS PLACED AND COMPACTED TO PREVENT FLOWS PASSING BENEATH OR BETWEEN BAGS

SANDBAG BARRIER TO PREVENT WATER FLOWS BY-PASSING INLET

SANDBAG BARRIER MUST BE HIGHER THAN DESILTING BAG LAYER.

ENDS OF SANDBAG BARRIER MUST BE HIGHER THAN DESILTING BAG LAYER.

DESILTING BAG LAYER MUST BE HIGHER THAN SANDBAG BARRIER

SANDBAG BARRIER TO PREVENT WATER FLOWS BY-PASSING INLET.

SANDBAG BARRIER MUST BE HIGHER THAN DESILTING BAG LAYER.

DESILTING BAG LAYER MUST BE HIGHER THAN SANDBAG BARRIER

SANDBAGS BENEATH OR BETWEEN BAGS TO PREVENT FLOWS PASSING

SANDBAGS PLACED SECURELY AROUND DROP INLET OPENING TO Bypass FLOWS

SANDBAGS PLACED AND COMPACTED TO PREVENT FLOWS PASSING BENEATH OR BETWEEN BAGS

SANDBAG BARRIER TO PREVENT WATER FLOWS BY-PASSING INLET

SANDBAG BARRIER MUST BE HIGHER THAN DESILTING BAG LAYER.

ENDS OF SANDBAG BARRIER MUST BE HIGHER THAN DESILTING BAG LAYER.

DESILTING BAG LAYER MUST BE HIGHER THAN SANDBAG BARRIER

SANDBAG BARRIER TO PREVENT WATER FLOWS BY-PASSING INLET.

SANDBAG BARRIER MUST BE HIGHER THAN DESILTING BAG LAYER.

DESILTING BAG LAYER MUST BE HIGHER THAN SANDBAG BARRIER

SANDBAGS BENEATH OR BETWEEN BAGS TO PREVENT FLOWS PASSING

SANDBAGS PLACED SECURELY AROUND DROP INLET OPENING TO Bypass FLOWS

SANDBAGS PLACED AND COMPACTED TO PREVENT FLOWS PASSING BENEATH OR BETWEEN BAGS

SANDBAG BARRIER TO PREVENT WATER FLOWS BY-PASSING INLET

SANDBAG BARRIER MUST BE HIGHER THAN DESILTING BAG LAYER.

ENDS OF SANDBAG BARRIER MUST BE HIGHER THAN DESILTING BAG LAYER.

DESILTING BAG LAYER MUST BE HIGHER THAN SANDBAG BARRIER

SANDBAG BARRIER TO PREVENT WATER FLOWS BY-PASSING INLET.

SANDBAG BARRIER MUST BE HIGHER THAN DESILTING BAG LAYER.

DESILTING BAG LAYER MUST BE HIGHER THAN SANDBAG BARRIER

SANDBAGS BENEATH OR BETWEEN BAGS TO PREVENT FLOWS PASSING

SANDBAGS PLACED SECURELY AROUND DROP INLET OPENING TO Bypass FLOWS

SANDBAGS PLACED AND COMPACTED TO PREVENT FLOWS PASSING BENEATH OR BETWEEN BAGS

SANDBAG BARRIER TO PREVENT WATER FLOWS BY-PASSING INLET

SANDBAG BARRIER MUST BE HIGHER THAN DESILTING BAG LAYER.

ENDS OF SANDBAG BARRIER MUST BE HIGHER THAN DESILTING BAG LAYER.

DESILTING BAG LAYER MUST BE HIGHER THAN SANDBAG BARRIER

SANDBAG BARRIER TO PREVENT WATER FLOWS BY-PASSING INLET.

SANDBAG BARRIER MUST BE HIGHER THAN DESILTING BAG LAYER.

DESILTING BAG LAYER MUST BE HIGHER THAN SANDBAG BARRIER

SANDBAGS BENEATH OR BETWEEN BAGS TO PREVENT FLOWS PASSING
NOTES

1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.

2. FORM A CUT-OFF TRENCH UNDER THE CENTRELINE OF THE EMBANKMENT 600 DEEP AND 1200 WIDE EXTENDING TO A POINT ON THE GULLY WALL ABOVE THE TOP OF THE RISER PIPE.

3. MANTAIN THE TRENCH-FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT TO 95 PER CENT COMPACTION.

4. SELECT FILL THAT IS FREE FROM ROOTS, WOODED ROCK, LARGE STONES OR FOREIGN MATERIAL.

5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING AT LEAST 100 DEEP TO HELP BOND COMPACTED FILL TO EXISTING SUBSTRATE.

6. SPREAD FILL IN 15 TO 150 LAYERS AND COMPACT AT OPTIMUM MOISTURE CONTENT.

7. INSTALL PIPE OUTLET WITH SEEPAGE COLLARS.

8. FORM-BATTER GRADES AT 2(H) : 1(V) UPSTREAM AND 3(H) : 1(V) DOWNSTREAM.

9. INSTALL PIPE OUTLET WITH SEEPAGE COLLARS.

10. PLACE A "FULL OF SEDIMENT" MARKER TO SHOW WHEN LESS THAN 300MM DEEP DOES NOT DRAIN FREELY WITHIN FOUR DAYS.

11. PLACE A "FULL OF SEDIMENT" MARKER TO SHOW WHEN LESS THAN DESIGN CAPACITY OCCURS AND SEDIMENT REMOVAL IS REQUIRED.

12. REFER TO NSW DEPARTMENT OF ENVIRONMENT CLIMATE CHANGE MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION FOR OTHER REQUIREMENTS.

13. ALTERNATE TREATMENTS TO MATTRESS AT INLET AND OUTLET SUCH AS CONCRETE, GRADING, RIP-RAP AND PLACED ROCK, TO BE DETERMINED ON SITE.

5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING AT LEAST 100 DEEP TO HELP BOND COMPACTED FILL TO EXISTING SUBSTRATE.

6. SPREAD FILL IN 15 TO 150 LAYERS AND COMPACT AT OPTIMUM MOISTURE CONTENT.

7. INSTALL PIPE OUTLET WITH SEEPAGE COLLARS.

8. FORM-BATTER GRADES AT 2(H) : 1(V) UPSTREAM AND 3(H) : 1(V) DOWNSTREAM.

9. INSTALL PIPE OUTLET WITH SEEPAGE COLLARS.

10. PLACE A "FULL OF SEDIMENT" MARKER TO SHOW WHEN LESS THAN DESIGN CAPACITY OCCURS AND SEDIMENT REMOVAL IS REQUIRED.

11. PLACE A "FULL OF SEDIMENT" MARKER TO SHOW WHEN LESS THAN DESIGN CAPACITY OCCURS AND SEDIMENT REMOVAL IS REQUIRED.

12. REFER TO NSW DEPARTMENT OF ENVIRONMENT CLIMATE CHANGE MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION FOR OTHER REQUIREMENTS.

13. ALTERNATE TREATMENTS TO MATTRESS AT INLET AND OUTLET SUCH AS CONCRETE, GRADING, RIP-RAP AND PLACED ROCK, TO BE DETERMINED ON SITE.
NOTES

1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.

2. FORM A CUT-OFF TRENCH UNDER THE CENTRELINE OF THE EMBANKMENT 600 MM DEEP AND 1200 MM WIDE EXTENDING TO A POINT ON THE GULLY WALL ABOVE THE RISER ELEVATION.

3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT TO 95 PER CENT COMPACTION.

4. SELECT FILL THAT IS FREE FROM ROOTS, WOOD, ROCK, LARGE STONES OR FOREIGN MATERIAL.

5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING AT LEAST 100 MM DEEP TO HELP BOND COMPACTED FILL TO EXISTING SUBSTRATE.

6. SPREAD FILL IN 100 TO 150 LAYERS AND COMPACT AT OPTIMUM MOISTURE CONTENT.

7. CONSTRUCT EMERGENCY SPILLWAY AT THE SAME TIME AS BASIN CONSTRUCTION.

8. REHABILITATE STRUCTURE IN ACCORDANCE WITH SOIL AND WATER MANAGEMENT PLAN (SWMP).

9. PLACE A "FULL OF SEDIMENT" MARKER TO SHOW WHEN LESS THAN DESIGN CAPACITY OCCURS AND SEDIMENT REMOVAL IS REQUIRED.

10. REFER TO NSW DEPARTMENT OF ENVIRONMENT CLIMATE CHANGE MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION FOR OTHER REQUIREMENTS.

11. ALTERNATE TREATMENTS TO MATTRESS AT INLET AND OUTLET, SUCH AS CONCRETE, GRADING, RIP-RAP AND PLACED ROCK, TO BE DETERMINED ON SITE.
LOW FLOW PIPE OUTLET DETAIL

LOW FLOW PIPE MAY NOT BE REQUIRED IF CONVERTING FROM TYPE D AND F SEDIMENTATION BASIN.

1. REMOVE ALL VEGETATION AND TURF, FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.
2. FORM A CUT-OFF TRENCH UNDER THE END OF THE EMBANKMENT 600mm DEEP AND 1200mm WIDE EXTENDING TO A POINT ON THE DULLY WALL ABOVE THE TOP OF THE RISER PIPE LEVEL.
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT TO 1 IN PER CENT COMPACTION.
4. SELECT FILL THAT IS FREE FROM ROOTS, WOOD, ROCK, LARGE STONES OR FOREIGN MATERIAL.
5. PREPARE THE SITE UNDER THE EMBANKMENT BY SMOOTHING 
6. SPREAD FILL IN Layers TO 1500mm LAYERS AND COMPACT AT OPTIMUM MOISTURE CONTENT.
7. INSTALL PIPE OUTLET WITH SEEPAGE COLARS.
8. FORM BATTER GRADING AT 1:2.5, 1:5 UPSTREAM AND 1:2:5 DOWNSTREAM.
9. INSTALL PIPE OUTLET WITH SEEPAGE COLLARS.
10. CONSTRUCT EMERGENCY SPILLWAY 300mm ABOVE TOP OF RISER PIPE.

SEE DETAIL DIAGRAM.

NOTE 1: MATERIAL WITH SPECIFIED MATERIAL IF BASIN DOES NOT DRAIN FREELY WITHIN FOUR DAYS.

NOTE 2: PLACE A "FULL OF SEDIMENT" MARKER TO SHOW WHEN LESS THAN 25 PER CENT OF THE BASIN IS FULL.

NOTE 3: ALTERNATE TREATMENTS TO MATTRESS AT INLET AND OUTLETS, SUCH AS CONCRETE, GRADING, RIP-RAP AND PLACED ROCK TO BE SET IN LOW POINT OF BASIN.

NOTE 4: REFER TO NSW DEPARTMENT OF ENVIRONMENT CLIMATE CHANGE 'MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION' FOR OTHER REQUIREMENTS.

NOTE 5: LOCATION AND LEVEL OF SEDIMENTATION BASIN SHOWN ON THE CONSTRUCTION DRAWINGS REFER TO THIS POINT.

NOTE 6: CONSTRUCT EMERGENCY SPILLWAY 300mm ABOVE TOP OF RISER PIPE.

NOTE 7: MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT TO 95 PER CENT COMPACTION.

NOTE 8: SPREAD FILL IN Layers TO 100mm DEEP TO HELP BOND COMPACTED FILL TO EXISTING SUBSTRATE.

NOTE 9: PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING AT LEAST 300mm DEEP TO HELP BOND COMPACTED FILL TO EXISTING SUBSTRATE.

NOTE 10: REMOVE ALL VEGETATION AND TURF, FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.

NOTE 11: SELECT FILL THAT IS FREE FROM ROOTS, WOOD, ROCK, LARGE STONES OR FOREIGN MATERIAL.

NOTE 12: CONSTRUCT EMERGENCY SPILLWAY 300mm ABOVE TOP OF RISER PIPE.

NOTE 13: INSTALL PIPE OUTLET WITH SEEPAGE COLLARS.

NOTE 14: FORM BATTER GRADING AT 1:2.5, 1:5 UPSTREAM AND 1:2:5 DOWNSTREAM.

NOTE 15: INSTALL PIPE OUTLET WITH SEEPAGE COLLARS.

NOTE 16: CONSTRUCT EMERGENCY SPILLWAY 300mm ABOVE TOP OF RISER PIPE.

NOTE 17: MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT TO 95 PER CENT COMPACTION.

NOTE 18: SPREAD FILL IN Layers TO 100mm DEEP TO HELP BOND COMPACTED FILL TO EXISTING SUBSTRATE.

NOTE 19: PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING AT LEAST 300mm DEEP TO HELP BOND COMPACTED FILL TO EXISTING SUBSTRATE.

NOTE 20: REMOVE ALL VEGETATION AND TURF, FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.
SECTION 1
NOT TO SCALE

MECHANICALLY BONDED
NON WOVEN GEOTEXTILE

ROCK FILLED MATTRESS 230 DEEP

SECTION 2
NOT TO SCALE

INFLOW PIPE MINIMUM
COVER OVER PIPE TO BE 3.0M

LEVEL

SECTION 3
NOT TO SCALE

REFER NOTE 5
(SEE SHEET 1)

ROCK FILLED MATTRESS 230 DEEP (TYP.)

SECTION 4
NOT TO SCALE

REFER NOTE 5
(SEE SHEET 1)

ROCK FILLED MATTRESS 230 DEEP

COVER OVER PIPE TO BE 500 INFLOW PIPE MINIMUM

ROCK FILLED MATTRESS 230 DEEP (TYP.)

VARIABLE

VARIABLE

COVER OVER PIPE TO BE 500 INFLOW PIPE MINIMUM

ROCK FILLED MATTRESS 230 DEEP (TYP.)

VARIABLE

VARIABLE