Addendum to: iSWM Technical Manual – Construction Controls

The following are a selection of iSWM construction control BMP schematics chosen to be provided in standard details.

1. TEMPORARY EROSION CONTROL BLANKET
2. ANCHOR EXAMPLE FOR TEMPORARY EROSION CONTROL BLANKET
3. PERMANENT TURF REINFORCEMENT MATS 1 of 3
4. PERMANENT TURF REINFORCEMENTS MATS 2 of 3
5. PERMANENT TURF REINFORCEMENTS MATS 3 of 3
6. SCHEMATIC OF ROCK RIPRAP 1 of 2
7. SCHEMATIC OF ROCK RIPRAP 2 of 2
8. VELOCITY DISSIPATION DEVICE
9. FILTER FABRIC AREA INLET PROTECTION
10. EXCAVATED INLET PROTECTION
11. EXCAVATED STONE OUTLET SEDIMENT TRAP 1 of 2
12. EXCAVATED STONE OUTLET SEDIMENT TRAP 2 of 2
13. CONCRETE WASHOUT CONTAINMENT
14. TRASH RACK ISOMETRIC
15. TRASH RACK PLAN
16. TRASH SCREEN/CATCH DETAIL
17. OUTLET TRASH SCREEN BAG
Refer to sheet 2 of 3 of this detail for choice anchoring; or follow manufacturer recommendations.

4 inch minimum side overlap or per manufacturer's recommendations.

Erosion control blanket.

Staples at minimum 12" spacing or per manufacturer's recommendations.

3' Min.

For slope protection, not channels.

3 foot minimum overlap at ends of blankets. ECB at higher elevation shall overlap on top of lower ECB, or per manufacturer literature.

ECB isometric plan view.

For 3' end overlap or 4" side overlap.

ECB overlap example.

Figure 2.8 Standard construction detail - temporary erosion control blankets (1 of 3).
TOP OF SLOPE ANCHOR EXAMPLE 1

- Minimum 1 row of staples 12" O.C.
- 3' min. length
- SLOPE ≤ 2%
- Anchor trench may be omitted along perimeter for areas with less than 2% slope
- Contractor shall install staples at all critical points
- Erosion control blanket perpendicular to slope
- Finished slope free of rocks, clods, stumps or objectional material

TOP OF SLOPE ANCHOR TRENCH EXAMPLE 2

- Minimum overlap 6" min.
- SLOPE > 2%
- Anchor trench compacted backfill or gravel
- Staple spacing as recommended by manufacturer
- Erosion control blanket perpendicular to slope
- Finished slope free of rocks, clods, stumps or objectional material

FIGURE 2.8 STANDARD CONSTRUCTION DETAIL - ANCHOR EXAMPLES FOR TEMPORARY EROSION CONTROL BLANKETS (2 OF 3)
EROSION CONTROL BLANKETS GENERAL NOTES:


2. EROSION CONTROL BLANKET SHALL BE INSTALLED VERTICALLY DOWN SLOPE AS SHOWN.

3. PRIOR TO THE INSTALLATION: ALL ROCKS, DIRT CLODS, STUMPS, ROOTS, TRASH AND ANY OTHER OBSTRUCTIONS THAT WOULD PREVENT THE BLANKET FROM DIRECT CONTACT WITH THE FINISHED SLOPE, SHALL BE REMOVED.

4. ANCHORING METHODS PROVIDED ARE EXAMPLES OF THE TYPE OF ANCHORING THE ECB MANUFACTURER MAY RECOMMEND. ALWAYS FOLLOW THE MANUFACTURER’S RECOMMENDATIONS FOR ANCHORING BASED ON THE SITE-SPECIFIC APPLICATION.

5. INSTALLATION AND ANCHORING SHALL CONFORM TO THE RECOMMENDATIONS SHOWN WITHIN THE MANUFACTURER’S PUBLISHED LITERATURE FOR THE APPROVED EROSION CONTROL BLANKET. PARTICULAR ATTENTION MUST BE PAID TO JOINTS AND OVERLAPPING MATERIAL. AT A MINIMUM, THE END OF EACH ROLL OF ECB SHALL OVERLAP THE NEXT ROLL BY 3 FEET AND THE SIDES OF ROLLS SHALL OVERLAP 4 INCHES.

6. IN ABSENCE OF MANUFACTURER’S LITERATURE, A MINIMUM 11-GUAGE WIRE STAPLES, 6-INCHES IN LENGTH AND 1-INCH WIDTH WILL BE USED.


8. INSPECTION SHALL BE AS SPECIFIED IN THE SWPPP.
Turf Reinforcement Mats Notes:

1. Turf reinforcement mats shall be installed vertically downslope as shown.

2. Prior to the installation: All rocks, dirt clods, stumps, roots, trash and any other obstructions that would prevent the mat from direct contact with the finished slope, shall be removed.

Figure 2.11 Schematics of Permanent Turf Reinforcement Mats (1 of 3)
REQUIREMENTS STATED ABOVE.
CHANNEL WIDTHS 0' TO 8'. CONTRACTOR SHALL VERIFY MAT MEETS OVERLAP AND SLOPE
NOTES:
LONITUDINAL INSTALLATION OF TURF REINFORCEMENT MAT PERMITTED ONLY FOR CONSTRUCTION CONTROLS

NOTE: LONGITUDINAL INSTALLATION OF TURF REINFORCEMENT MAT PERMITTED ONLY FOR CHANNEL WIDTHS 0' TO 8'. CONTRACTOR SHALL VERIFY MAT MEETS OVERLAP AND SLOPE REQUIREMENTS STATED ABOVE.

TRM ISOMETRIC PLAN VIEW FOR SMALL CHANNELS/DITCHES
N.T.S.

FIGURE 2.11 SCHEMATICS OF PERMANENT TURF REINFORCEMENT MATS (2 OF 3)
FIGURE 2.11 SCHEMATICS OF PERMANENT TURF REINFORCEMENT MATS (3 OF 3)
**TEMPORARY VELOCITY DISSIPATION DEVICE PLAN VIEW**

- **Temporary Pipe Slope Drain Per NCTC0G 202.13**
- **Minimum Apron Length (L) = 10-FT**
- **0.5 x D MIN.**
- **Minimum Apron Width (D + L)**
- **Well Graded Stone or Recycled Concrete Riprap**

**TEMPORARY VELOCITY DISSIPATION DEVICE PROFILE VIEW**

- **Temporary Pipe Slope Drain Per NCTC0G 202.13**
- **0.75L**
- **Well Graded Stone or Recycled Concrete Riprap**
- **2T**
- **Slope = 0% on Apron**
- **T**
- **Overfall Elevation**
- **Receiving Elevation**
- **Filter Fabric Per NCTC0G 202.12.2.3**

**NOTE:** Dimensions of the Riprap Apron shall be designed based on flow conditions. Temporary control design storm (2-Years, 24-Hour). Provide calculations that document the following parameters used to design the apron.

- Pipe diameter (or equivalent for flume, swale, etc.), D, feet
- Discharge velocity from drainage structure, \( V_{pipe} \), FT/S
- Determine gradation for \( d_{50} \) Well Graded Stone or Recycled Concrete Riprap
- Median stone diameter \( d_{50} \) and maximum stone diameter \( d_{100} \), feet

**FIGURE 2.13 SCHEMATICS OF VELOCITY DISSIPATION DEVICE**
FILTER FABRIC DROP INLET PROTECTION CROSS SECTION (A-A)

FILTER FABRIC GRATE INLET PROTECTION CROSS SECTION (A-A)

NOTE:
1. STAKES SHALL CONFORM TO SPECIFICATIONS SECTION 202.5.2.2
2. HEIGHT OF INLET PROTECTION SURROUNDING THE INLET SHALL BE SHOWN ON THE PLANS AND MUST BE CHECKED TO VERIFY PONDING WATER WILL NOT CAUSE FLOODING OF PROPERTY OR DAMAGE.
3. CONCENTRATED DITCH FLOW COMING FROM ONE OR MORE SIDES TOWARD THE INLET MAY REQUIRE A STONE OVERFLOW STRUCTURE TO BE CONSTRUCTED ON ONE SIDE OF THE INLET.
4. POST SHALL BE INSTALLED AT EACH CORNER AND BETWEEN CORNERS IF THE DISTANCE IS GREATER THAN 6' BETWEEN CORNER POSTS.

AREA INLET PROTECTION FILTER BARRIER PLAN VIEW

FIGURE 3.10 SCHEMATIC OF FILTER FABRIC AREA INLET PROTECTION
EXCAVATED INLET PROTECTION "Y" INLET SECTION A-A

FINISHED GROUND

12" MIN.

12" MIN.

Sediment storage volume as determined by engineer. See note 1.

WEEP HOLES (3/4" + MIN.) AS REQUIRED. WEEP HOLES TO BE FILLED WITH GROUT PRIOR TO BACKFILLING STORAGE AREA.

FILTER FABRIC PER NCTCOG 202.12.2.3

EXCAVATED INLET PROTECTION GRATE INLET SECTION A-A

FINISHED GROUND

12" MIN.

12" MIN.

Sediment storage volume as determined by engineer. See note 1.

WEEP HOLES (3/4" + MIN.) AS REQUIRED. WEEP HOLES TO BE FILLED WITH GROUT PRIOR TO BACKFILLING STORAGE AREA.

FILTER FABRIC PER NCTCOG 202.12.2.3

NOTE:
1. Storage volume shall be design storm volume or 3,600 cubic feet per acre disturbed.
2. Concentrated ditch flow coming from one or more sides toward the inlet may require a stone overflow structure to be constructed on one side of the inlet.

EXCAVATED INLET PROTECTION PLAN VIEW

INLET (GRATE OR DROP)

2 MAX.

1 1/2 FILTER STONE PER NCTCOG 504.2.2.1

FILTER FABRIC PER NCTCOG 202.12.2.3

EXCAVATED INLET PROTECTION PLAN VIEW

FIGURE 3.11 SCHEMATICS OF EXCAVATED INLET PROTECTION
CONSTRUCTION CONTROLS

· EXTENT OF GRADING TO PROVIDE THE CONTROLLED OUTLET
· STORAGE VOLUME
· HEIGHT, SLOPE, AND LENGTH OF STONE OUTLET
· DESIGN STORM VOLUME AND FLOW RATE AT THE TRAP
· SIZE OF CONTRIBUTING DRAINAGE AREA

DESIGN THE TRAP.

SITE TOPOGRAPHY. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETER USED TO

NOTE: ACTUAL DIMENSIONS OF THE SEDIMENT TRAP SHALL BE DESIGNED BASED ON FLOW CONDITIONS AND
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· STORAGE VOLUME
· EXTENT OF GRADING TO PROVIDE THE CONTROLLED OUTLET

EXCAVATED STONE OUTLET SEDIMENT TRAP ISOMETRIC VIEW

NOTE: ACTUAL DIMENSIONS OF THE SEDIMENT TRAP SHALL BE DESIGNED BASED ON FLOW CONDITIONS AND
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DESIGN THE TRAP:
· SIZE OF CONTRIBUTING DRAINAGE AREA
· DESIGN STORM VOLUME AND FLOW RATE AT THE TRAP
· HEIGHT, SLOPE, AND LENGTH OF STONE OUTLET
· STORAGE VOLUME
· EXTENT OF GRADING TO PROVIDE THE CONTROLLED OUTLET

FIGURE 3.30 SCHEMATICS OF EXCAVATED STONE OUTLET SEDIMENT TRAP (1 OF 2)
CONSTRUCTION CONTROLS

Stone outlet shall be confined with gabion or chainlink per NCTCOG 202.12.2.4 if height is greater than 1.5-feet.

Overfill 6" for settlement if fill is used.

Flow storage necessary for excavation if 2' min. 6' max. flatter 1 or 1.5.

NATURAL GROUND

To construct swale stone or earth fill 21" min. 6' max. fill 12" min. 3' min. 4' min. width.

EXCAVATED STONE OUTLET SEDIMENT TRAP VIEW LOOKING UPSTREAM (A-A)

Excavated stone outlet sediment trap section view (B-B)

Figure 3.30 Schematics of excavated stone outlet sediment trap (2 of 2)
CONCRETE WASHOUT NOTES:

1. WASHOUT AREA MUST BE CLEARLY MARKED WITH SIGNAGE NOTING THE WASHOUT AREA.

2. WASHOUT STRUCTURES SHALL BE CLEANED OUT WHEN THE STRUCTURE IS 75% FULL. TEMPORARY CONCRETE WASHOUT FACILITY SHOULD BE MAINTAINED TO PROVIDE ADEQUATE HOLDING CAPACITY.

FIGURE 4.1 SCHEMATICS OF CONCRETE WASHOUT CONTAINMENT
**TYPICAL ROCK RIPRAP SLOPE PROTECTION SECTION**

- **FILTER FABRIC PER NCTCOG 803.4**
- **PROPOSED GRADE**
- **6" MIN. BEDDING**
- **VERTICAL FILTER FABRIC LAPSO BOTTOM FABRIC**
- **COMPACTED BACKFILL**
- **EXCAVATION LINE**
- **ROCK RIPRAP**
- **FILTER FABRIC**

**ROCK RIPRAP TOP OF BANK DETAIL**

- ROCK RIPRAP DRY OR GROUTED AS SHOWN ON EROSION CONTROL PLANS
  \[ T = 1.5 \times d_{50} \]
- FILTER FABRIC SPLICES SHALL HAVE A MINIMUM 18 INCHES OVERLAP
  \[ d_{\text{min}} = \_\_\_\_\_ \]
- DETERMINE GRADATION FOR \( d_{50} \) WELL GRADED STONE
  \[ d_{50} = \_\_\_\_\_ \]
- MEDIAN STONE DIAMETER \( d_{50} \) AND MAXIMUM STONE DIAMETER \( d_{100} \), FEET
  \[ d_{100} = \_\_\_\_\_ \]

**FIGURE X.XX RIPRAP SCHEMATICS OF ROCK RIPRAP (SHEET 1 OF 2)**
ROCK RIPRAP TOE OF SLOPE DETAIL

UPSTREAM ROCK RIPRAP TOE WALL DETAIL

FIGURE X.XX RIPRAP SCHEMATICS OF ROCK RIPRAP (SHEET 2 OF 2)
TEMPORARY TRASH SCREEN DETAIL

3/8" TENSION CABLE

PAINTED STEEL "T" POST 8-FOOT

CHAINLINK PER NCTCOG 801.4.2.1 CONNECT TO POST USING TIE WIRE OR METAL BANDS

NOTES:
1. CONCENTRATED DITCH FLOW COMING TOWARD THE INSTALLATION WILL REQUIRE A STONE OVERFLOW STRUCTURE TO BE CONSTRUCTED.
2. HEIGHT OF INSTALLATION SHALL BE SHOWN ON PLANS AND MUST BE CHECKED TO VERIFY PONDING WATER WILL NOT CAUSE FLOODING OF PROPERTY OR DAMAGE.
3. ENGINEER TO VERIFY APPLICABILITY OF TEMPORARY TRASH SCREEN.

PROFILE OF TEMPORARY TRASH SCREEN DETAIL

FIGURE X.XX TRASH SCREEN/CATCH DETAIL (SHEET 1 OF 2)
EXISTING/PROPOSED STORM DRAIN OUTLET

INSTALL COLLAR ON HEADWALL OR OPTIONAL WEIR CONFIGURATION DOWNSTREAM OF OUTFALL

PRE-MANUFACTURED MESH BAG VARIES BY MANUFACTURER MINIMUM 20mm/0.75-INCH MESH OPENING

OUTLET TRASH SCREEN BAG

FIGURE X.XX TRASH SCREEN/CATCH DETAIL (SHEET 2 OF 2)
FIGURE X.XX TRASH RACK ISOMETRIC

- Trash Basket
- Mounting Plate
- Mounting Bracket
- Block Off Plate
- Wing Wall
- Head Wall
- Flow

Proposed or existing concrete channel riprap

Engineer to verify min. concrete thickness for structure anchorage

Post installed concrete anchorage

Lateral bracing as engineer or manufacture specified

Side View with Headwall

Half Isometric View
NOTES:
1. OVERALL SIZE AND LOCATION TO BE DETERMINED BY THE ENGINEER.
2. SIZE AND SPACING OF MESH VARIES AS NEEDED.