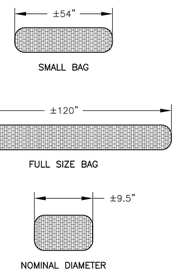
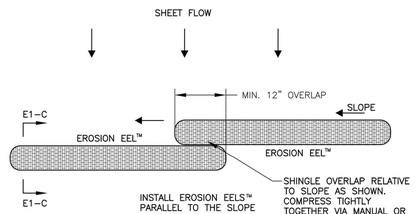
Project No. 520054201



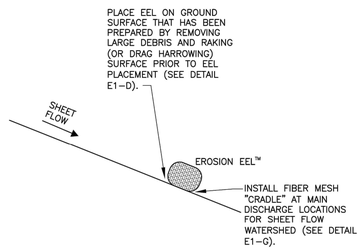
NOTE:
ALL EROSION EELS™ USED FOR PERIMETER CONTROL SHALL USE MIXTURE SPECIFICATIONS 1.1 AND 1.2.

DETAIL E1–A: EROSION EELs™
N.T.S.

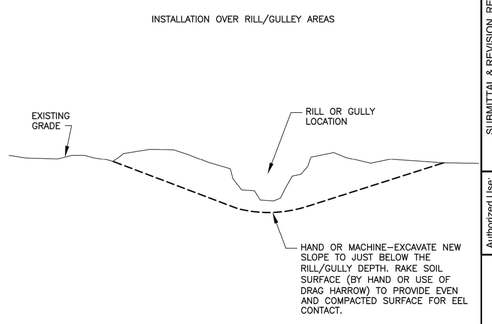


INSTALL EROSION EELS™ PARALLEL TO THE SLOPE CONTOURS. PLACE 100 ft. (11 FULL SIZE 10' EELS) OF EROSION EELS™ FOR EVERY 0.25 ACRE DISTURBED AREA.

DETAIL E1–B: INTERCEPTING SHEET FLOW PERPENDICULAR TO FLOW PATH – PLAN VIEW



DETAIL E1–C: INTERCEPTING SHEET FLOW PERPENDICULAR TO FLOW PATH – PLAN VIEW



DETAIL E1–D: CROSS–SECTION VIEW
N.T.S.

SUBMITTAL & REVISION RECORD

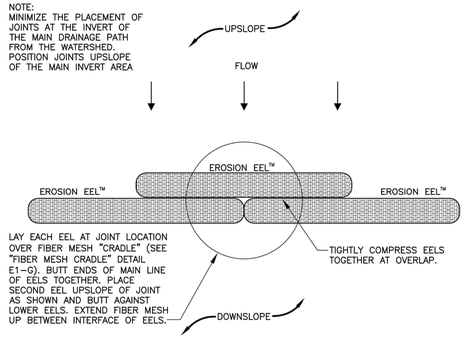
NO	DATE	DESCRIPTION

Authorized User:
- Survey
- Design Dev.
- Permitting
- Bidding
- Construction

Erosion EELS.com 866-HDS-EELS 866-425-3357

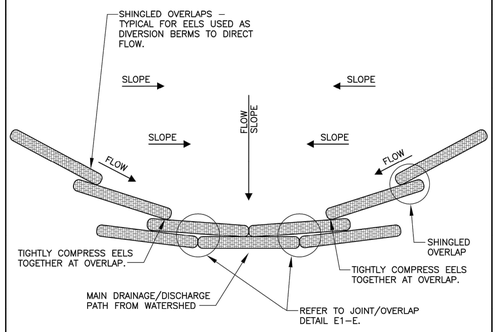
FRIENDLY ENVIRONMENT
100 PRINCE STREET
SHELBYVILLE, TENNESSEE 37160
1–931–607–5953

NOTE:
MINIMIZE THE PLACEMENT OF JOINTS AT THE INVERT OF THE MAIN DRAINAGE PATH FROM THE WATERSHED. POSITION JOINTS UPSLOPE OF THE MAIN INVERT AREA

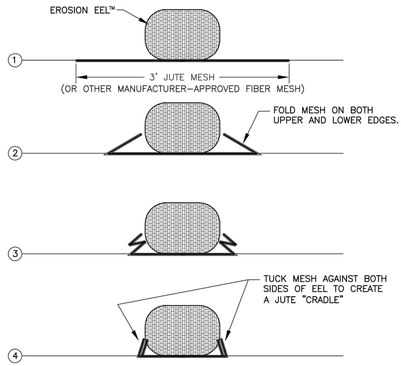


LAY EACH EEL AT JOINT LOCATION OVER FIBER MESH "CRADLE" (SEE "FIBER MESH CRADLE" DETAIL E1–G). BUTT ENDS OF MAIN LINE OF EELS TOGETHER. PLACE SECOND EEL UPSLOPE OF JOINT AS SHOWN AND BUTT AGAINST LOWER EELS. EXTEND FIBER MESH UP BETWEEN INTERFACE OF EELS.

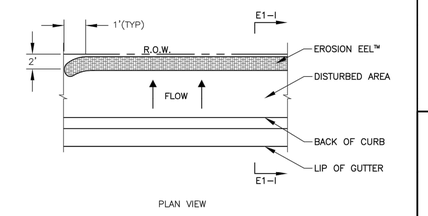
DETAIL E1–E: PLAN VIEW – OVERLAP/JOINT DETAIL NEAR DISCHARGE POINTS FROM WATERSHED
N.T.S.



DETAIL E1–F: PLAN VIEW – TYPICAL ARRANGEMENT OF EELS USED FOR PERIMETER CONTROL
N.T.S.



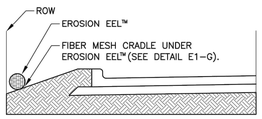
DETAIL E1–G: SECTION – FIBER MESH "CRADLE"
N.T.S.



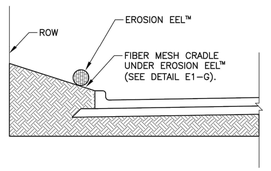
PLAN VIEW

DETAIL E1–H: EROSION EEL™ PLACED AT EDGE OF ROADWAY RIGHT–OF–WAY
N.T.S.

PERIMETER CONTROL AND SHEET (INTER-RILL) FLOW INTERCEPTION FOR THE EROSION EEL™

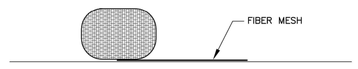


DETAIL E1–I: SECTION
N.T.S.



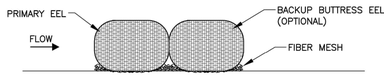
DETAIL E1–J: SECTION
N.T.S.

STEP 1



PLACE EROSION EEL™ NEAR THE INTENDED SETUP LOCATION. PLACE FIBER MESH CRADLE (DETAIL E1–G).

STEP 2



MOVE THE EEL OVER THE MESH AREA.

PLACE A SECOND EEL ADJACENT TO THE INITIAL EEL LOCATION (DOWNSLOPE) TO PROVIDE ADDITIONAL WEIGHT AS A BUTTRESS (OPTIONAL).

DETAIL E1–K: STABILIZING PROCEDURE FOR EROSION EEL PLACED OVER HARD SURFACE (PAVED, ROCK, ETC.)
N.T.S.

Spacing Recommendations for the Erosion Eel™ for Perimeter Controls and Intercepting Sheet Flow on Slopes

slope(%)	single eel spacing (ft)	*Stacked Dual eel spacing (ft)
0.5	300	N/A
1	200	N/A
2	160	N/A
3	80	N/A
4	50	N/A
5	40	N/A
6	35	N/A
8	30	N/A
10	25	N/A
15	17	N/A
20	12	25
25	7	15
33	N/A	10
50	N/A	6

* DUAL STACK REFERS TO TWO EELS STACKED ATOP ONE ANOTHER AND STABILIZED WITH T–POSTS. SEE DETAIL E2–E ON SHEET E–2.

GENERAL NOTES:

1. EROSION EELS™ USED IN PERIMETER CONTROL APPLICATIONS SHALL HAVE A SPECIFICATION MIXTURE 1.1 OR 1.2.
   a. MIXTURE SPECIFICATION 1.1. A FILTER MIXTURE COMPRISED OF 50% SHREDDED RUBBER AND 50% WOOD CHIP PARTICLES BY VOLUME. THE SHREDDED RUBBER SHALL BE WASHED AND PROCESSED TO REMOVE MOST, IF NOT ALL, METAL COMPONENTS. THE RUBBER SHALL BE DERIVED FROM RECYCLED TIRES AND SHALL BE SHREDDED TO PRODUCE A MAXIMUM PARTICLE SIZE OF +/– 3/4 INCH. THE WOOD CHIPS SHALL BE PRODUCED FROM HARDWOOD TREES AND SHALL CONFIRM TO AASHTO CERTIFICATION SPECIFICATION MP 9–03.
   b. MIXTURE SPECIFICATION 1.2. A FILTER MIXTURE COMPRISED OF 1/3 SHREDDED RUBBER, 1/3 WOOD CHIPS, AND 1/3 RECYCLED SYNTHETIC FIBERS. THE SHREDDED RUBBER SHALL BE WASHED AND PROCESSED TO REMOVE MOST, IF NOT ALL, METAL COMPONENTS. THE RUBBER SHALL BE DERIVED FROM RECYCLED TIRES AND SHALL BE SHREDDED TO PRODUCE A MAXIMUM PARTICLE SIZE OF +/– 3/4 INCH. THE WOOD CHIPS SHALL BE PRODUCED FROM HARDWOOD TREES AND SHALL CONFIRM TO AASHTO CERTIFICATION SPECIFICATION MP 9–03. THE SYNTHETIC FIBERS SHALL BE PRODUCED FROM RECYCLED, MANUFACTURED MATERIALS, SUCH AS, BUT NOT LIMITED TO, PRE–CONSUMER SCRAP CARPET, TIRE CHORD, AND TIRE FIBER MATERIALS.
2. EROSION EELS™ SHALL BE MANUFACTURED FROM A WOVEN GEOTEXTILE COVERING WITH INTERIOR FILTER MATERIALS SUCH AS 100% SHREDDED RUBBER (MIXTURE SPECIFICATION 1.0), 50% SHREDDED RUBBER/50% AASHTO–CERTIFIED WOOD CHIPS (MIXTURE SPECIFICATION 1.1), OR 1/3 SHREDDED RUBBER/1/3 AASHTO–CERTIFIED WOOD CHIPS/1/3 RECYCLED SYNTHETIC FIBERS (MIXTURE SPECIFICATION 1.2).
3. LENGTHS OF EROSION EELS™ SHALL BE EITHER A NOMINAL +/–10 FT. OR +/– 4.5 FT. NOMINAL DIAMETER SHALL BE +/–9.5 INCHES.
4. EROSION EELS™ CAN BE PLACED AT THE TOP, ON THE FACE, OR AT THE TOE OF SLOPES TO INTERCEPT RUNOFF, REDUCE FLOW VELOCITY, RELEASE THE RUNOFF AS SHEET FLOW AND PROVIDE REMOVAL OF SEDIMENT FROM THE RUNOFF.
5. EROSION EELS™ SHALL BE INSTALLED ALONG THE GROUND CONTOUR, AT THE TOE OF SLOPES, AT AN ANGLE TO THE CONTOUR TO DIRECT FLOW AS A DIVERSION BERM, AROUND INLET STRUCTURES, IN A DITCH AS A CHECK DAM TO HELP REDUCE SUSPENDED SOLIDS LOADING AND RETAIN SEDIMENT, OR AS A GENERAL FILTER FOR ANY DISTURBED SOIL AREA.
6. NO TRENCHING IS REQUIRED FOR INSTALLATION OF EROSION EELS™
7. PREPARE BED FOR EEL INSTALLATION BY REMOVING ANY LARGE DEBRIS INCLUDING ROCKS, SOIL CLODS, AND WOODY VEGETATION. EROSION EELS™ CAN ALSO BE PLACED OVER PAVED SURFACES INCLUDING CONCRETE AND ASPHALT WITH NO SURFACE PREPARATION REQUIRED.
8. RAKE BED AREA WITH A HAND RAKE OR BY DRAG HARROW.
9. DO NOT PLACE EEL DIRECTLY OVER RILL AND GULLIES UNTIL AREA HAS BEEN HAND–EXCAVATED AND RAKED TO PROVIDE A LEVEL BEDDING SURFACE. ALL SURFACES SHALL BE UNIFORMLY COMPACTED FOR MAXIMUM SEATING OF EELS IN PLACE.
10. FOR LOCATIONS WHERE EELS WILL BE PLACED IN CONCENTRATED FLOWS (SUCH AS CHECK DAMS, INLET PROTECTION) AND FOR PERIMETER CONTROLS AT PRIMARY DISCHARGE LOCATIONS, BED THE EELS IN A JUTE MESH CRADLE PER THE DETAILED DRAWINGS.
11. FOR DITCH APPLICATIONS, THE MAXIMUM DRAINAGE AREA SHALL BE 10 ACRES.
12. IF MORE THAN ONE EROSION EEL™ IS PLACED IN A ROW, THE EELS SHALL BE OVERLAPPED A MINIMUM OF 12 INCHES TO PREVENT FLOW AND SEDIMENT FROM PASSING THROUGH THE FIELD JOINT. COMPRESS THE TWO EELS OF THE OVERLAP TIGHTLY TOGETHER EITHER BY HAND OR MANUFACTURER–APPROVED MECHANIZED MEANS.
13. WHEN USED IN DITCHES AS A CHECK DAM, EROSION EELS™ SHALL BE INSTALLED PER MANUFACTURER'S DETAILS.
14. FOR CHECK DAM APPLICATIONS, EROSION EELS™ SHALL BE PLACED PERPENDICULAR TO THE FLOW OF THE WATER. EROSION EELS™ SHALL CONTINUE UP THE SIDES SLOPES A MINIMUM OF 3 FEET ABOVE THE DESIGN FLOW DEPTH.
15. EROSION EELS™ SHALL REMAIN IN PLACE UNTIL FULLY ESTABLISHED VEGETATION HAS COMPLETELY DEVELOPED OR UNTIL THE STORAGE CAPACITY/FUNCTIONAL LIFE OF THE EEL HAS BEEN EXHAUSTED (REQUIRING REPLACEMENT WITH NEW EELS).
16. ANCHORING POSTS FOR CHECK DAM APPLICATIONS SHALL HAVE A MINIMUM WEIGHT OF 1.25 LBS/FT STEEL T–POSTS (5 TO 7 FT. LENGTHS) ROLLED FROM HIGH CARBON STEEL. POSTS SHOULD BE HOT–DIP GALVANIZED OR COATED WITH A WEATHER–RESISTANT PAINT FOR STEEL APPLICATION. POSTS SHOULD BE EQUIPPED WITH A METAL ANCHOR PLATE. INSTALL PER DETAILS ON THIS SHEET.
17. PLACE T–POSTS THROUGH HANDLE OF BAGS. DO NOT DRIVE POSTS THROUGH EROSION EELS™. T–POSTS ARE TO BE EMBEDDED A MINIMUM OF 2 FT INTO GROUND.

LAST EDIT DATE:	JUNE 7, 2007	LM
DWG SCALE:	N.T.S.	KW
PROJECT MGR:		KW
QUALITY MANAGER APPROVAL:		

SHEET OF
DWG NO: E-1

Date	Description	No.
Revisions		

McDonald's USA, LLC

01/26/2023
STATE OF MISSOURI
MATTHEW DAVID KORTE
NUMBER PE–2022042426
PROFESSIONAL ENGINEER

LANGAN
Langan Engineering and Environmental Services, Inc.
8951 Cypress Waters Blvd, Suite 150
Dallas, TX 75019
T: 817.328.3200 www.langan.com
MO Certificate of Authorization No. F001330220

Project
McDONALD'S
NEW PROJECT
L/C 024-1290
3720 WEST SUNSHINE STREET
SPRINGFIELD
GREENE COUNTY MISSOURI

Drawing Title
EROSION CONTROL DETAILS

Project No.	520054201
Date	DECEMBER 2022
Drawn By	OROD
Checked By	DWL

Drawing No. C3.2

Sheet 7 of 29

Date: 1/26/2023 Time: 11:51 User: mgrissom Style Table: Langan.stb Layout: Layout1 Document Code: 520054201-0601-CE501-0102