COLEMAN MOORE COMPANY
We help solve
Stormwater &
Pavement Issues

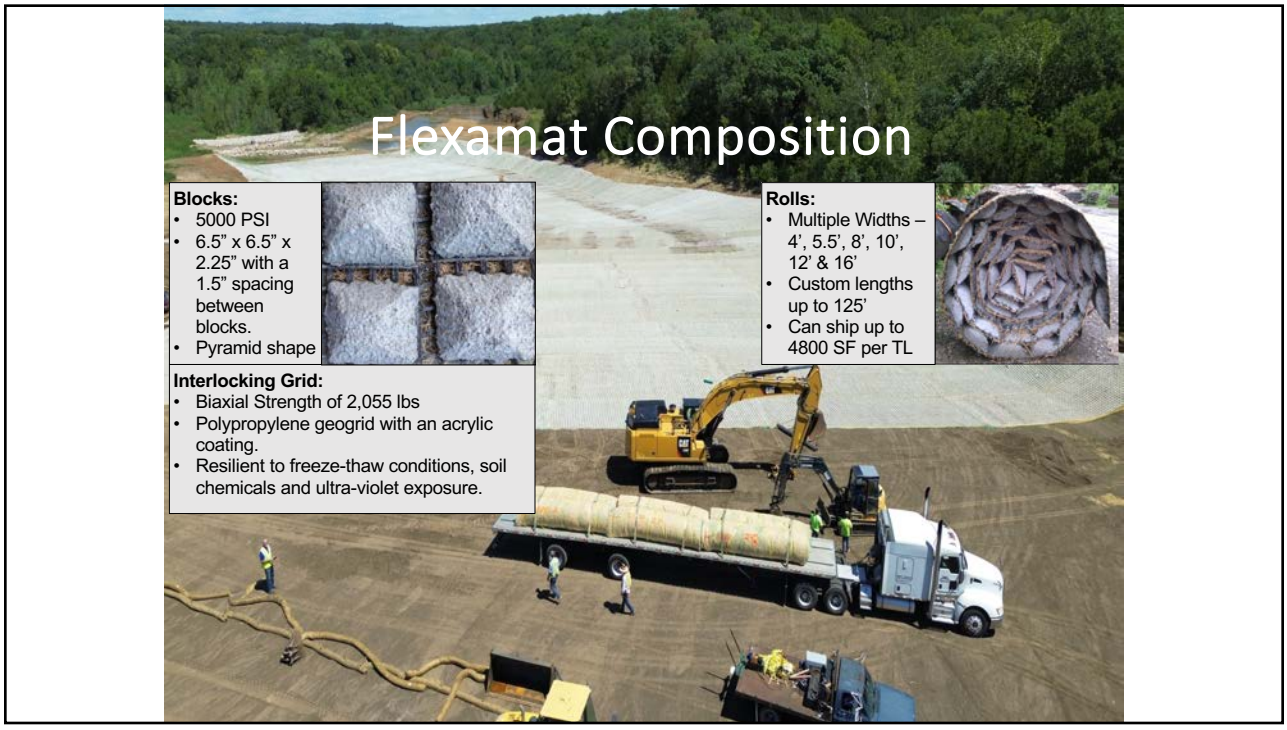
1

Flexmat
Washington County

2

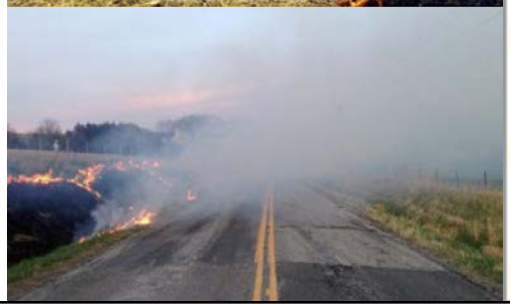
Flexmat
Washington County.

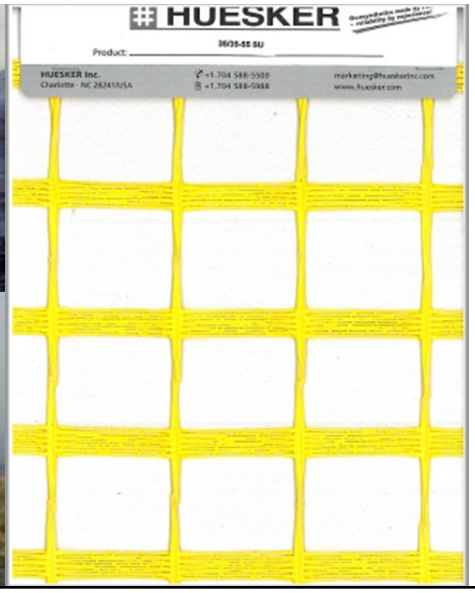
3


Flexamat Composition
Blocks:
• 5000 PSI
• 6.5” x 6.5” x 2.25” with a 1.5” spacing between blocks.
• Pyramid shape
Rolls:
• Multiple Widths – 4’, 5.5’, 8’, 10’, 12’ & 16’
• Custom lengths up to 125’
• Can ship up to 4800 SF per TL
Interlocking Grid:
• Biaxial Strength of 2,055 lbs
• Polypropylene geogrid with an acrylic coating.
• Resilient to freeze-thaw conditions, soil chemicals and ultra-violet exposure.

4

Flame Resistant Grid





5

One truckload of Flexamat hauling 4800 square feet is equivalent to 32 truckloads of rock rip rap (18" depth)

6

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CAT
CAT
Washington County, IA
COLEMAN MOORE COMPANY

15

CAT
COLEMAN MOORE COMPANY

16

17

18

Flexmat
Washington County
Four Months After Install

19

Flexmat
Iowa DOT
I-680 & I-29
29
Council Bluffs
Sioux City
3/4 MILE

20

21

22

DO NOT
ENTER
WHEN
FLOODED
Dallas County – Controlled Overtopping

23

Flexmat
Iowa DOT
Davenport, IA
US-6

24

Flexmat
Iowa DOT
Davenport, IA
US-6

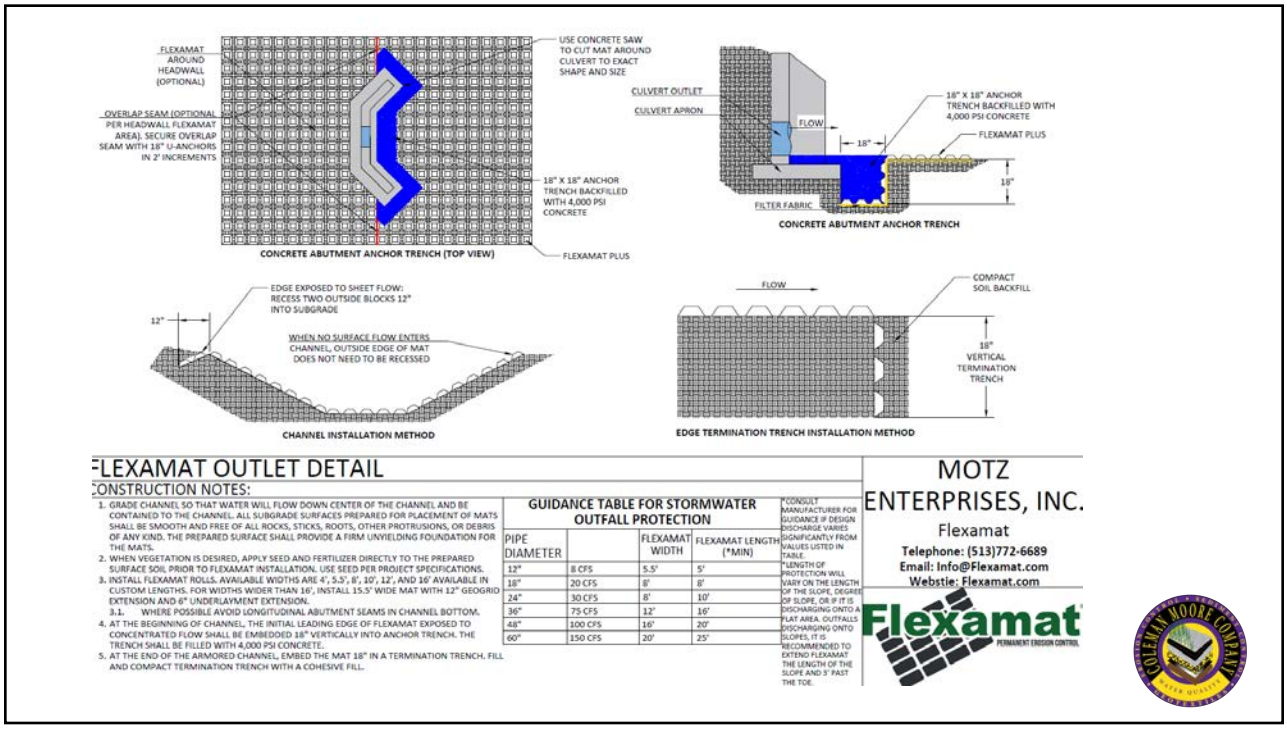
25

Squaw Creek
Cedar Rapids, IA

26

Norwalk Install

27


FLEXAMAT AROUND HEADWALL (OPTIONAL)
OVERLAP SEAM (OPTIONAL PER HEADWALL FLEXAMAT AREA). SECURE OVERLAP SEAM WITH 18" U-ANCHORS IN 2' INCREMENTS
USE CONCRETE SAW TO CUT MAT AROUND CULVERT TO EXACT SHAPE AND SIZE
18" X 18" ANCHOR TRENCH BACKFILLED WITH 4,000 PSI CONCRETE
FLEXAMAT PLUS
CONCRETE ABUTMENT ANCHOR TRENCH (TOP VIEW)
CULVERT OUTLET
CULVERT APRON
FLOW
18"
18" X 18" ANCHOR TRENCH BACKFILLED WITH 4,000 PSI CONCRETE
FLEXAMAT PLUS
18"
FILTER FABRIC
CONCRETE ABUTMENT ANCHOR TRENCH
12"
EDGE EXPOSED TO SHEET FLOW: RECESS TWO OUTSIDE BLOCKS 12" INTO SUBGRADE
WHEN NO SURFACE FLOW ENTERS CHANNEL, OUTSIDE EDGE OF MAT DOES NOT NEED TO BE RECESSED
CHANNEL INSTALLATION METHOD
FLOW
COMPACT SOIL BACKFILL
18" VERTICAL TERMINATION TRENCH
EDGE TERMINATION TRENCH INSTALLATION METHOD
FLEXAMAT OUTLET DETAIL
CONSTRUCTION NOTES:
1. GRADE CHANNEL SO THAT WATER WILL FLOW DOWN CENTER OF THE CHANNEL AND BE CONTAINED TO THE CHANNEL. ALL SUBGRADE SURFACES PREPARED FOR PLACEMENT OF MATS SHALL BE SMOOTH AND FREE OF ALL ROCKS, STICKS, ROOTS, OTHER PROTRUSIONS, OR DEBRIS OF ANY KIND. THE PREPARED SURFACE SHALL PROVIDE A FIRM UNYIELDING FOUNDATION FOR THE MATS.
2. WHEN VEGETATION IS DESIRED, APPLY SEED AND FERTILIZER DIRECTLY TO THE PREPARED SURFACE SOIL PRIOR TO FLEXAMAT INSTALLATION. USE SEED PER PROJECT SPECIFICATIONS.
3. INSTALL FLEXAMAT ROLLS. AVAILABLE WIDTHS ARE 4', 5.5', 8', 10', 12', AND 16' AVAILABLE IN CUSTOM LENGTHS. FOR WIDTHS WIDER THAN 16', INSTALL 15.5' WIDE MAT WITH 12" GEOGRID EXTENSION AND 6" UNDERLAYMENT EXTENSION.
3.1. WHERE POSSIBLE AVOID LONGITUDINAL ABUTMENT SEAMS IN CHANNEL BOTTOM.
4. AT THE BEGINNING OF CHANNEL, THE INITIAL LEADING EDGE OF FLEXAMAT EXPOSED TO CONCENTRATED FLOW SHALL BE EMBEDDED 18" VERTICALLY INTO ANCHOR TRENCH. THE TRENCH SHALL BE FILLED WITH 4,000 PSI CONCRETE.
5. AT THE END OF THE ARMORED CHANNEL, EMBED THE MAT 18" IN A TERMINATION TRENCH. FILL AND COMPACT TERMINATION TRENCH WITH A COHESIVE FILL.
GUIDANCE TABLE FOR STORMWATER OUTFALL PROTECTION
PIPE DIAMETER | | FLEXAMAT WIDTH | FLEXAMAT LENGTH (*MIN)
12" | 8 CFS | 5.5' | 5'
18" | 20 CFS | 8' | 8'
24" | 30 CFS | 8' | 10'
36" | 75 CFS | 12' | 16'
48" | 100 CFS | 16' | 20'
60" | 150 CFS | 20' | 25'
*CONSULT MANUFACTURER FOR GUIDANCE IF DESIGN DISCHARGE VARIES SIGNIFICANTLY FROM VALUES LISTED IN TABLE.
*LENGTH OF PROTECTION WILL VARY ON THE LENGTH OF THE SLOPE, DEGREE OF SLOPE, OR IF IT IS DISCHARGING ONTO A FLAT AREA. OUTFALLS DISCHARGING ONTO SLOPES, IT IS RECOMMENDED TO EXTEND FLEXAMAT THE LENGTH OF THE SLOPE AND 5' PAST THE TOE.
MOTZ ENTERPRISES, INC.
Flexamat
Telephone: (513)772-6689
Email: Info@Flexamat.com
Webstie: Flexamat.com
Flexamat
PERMANENT EROSION CONTROL

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30

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ASTM: D6460 Large Scale Flume

Limiting Shear	Limiting Velocity
24+ psf	19+ ft./sec

Flexamat

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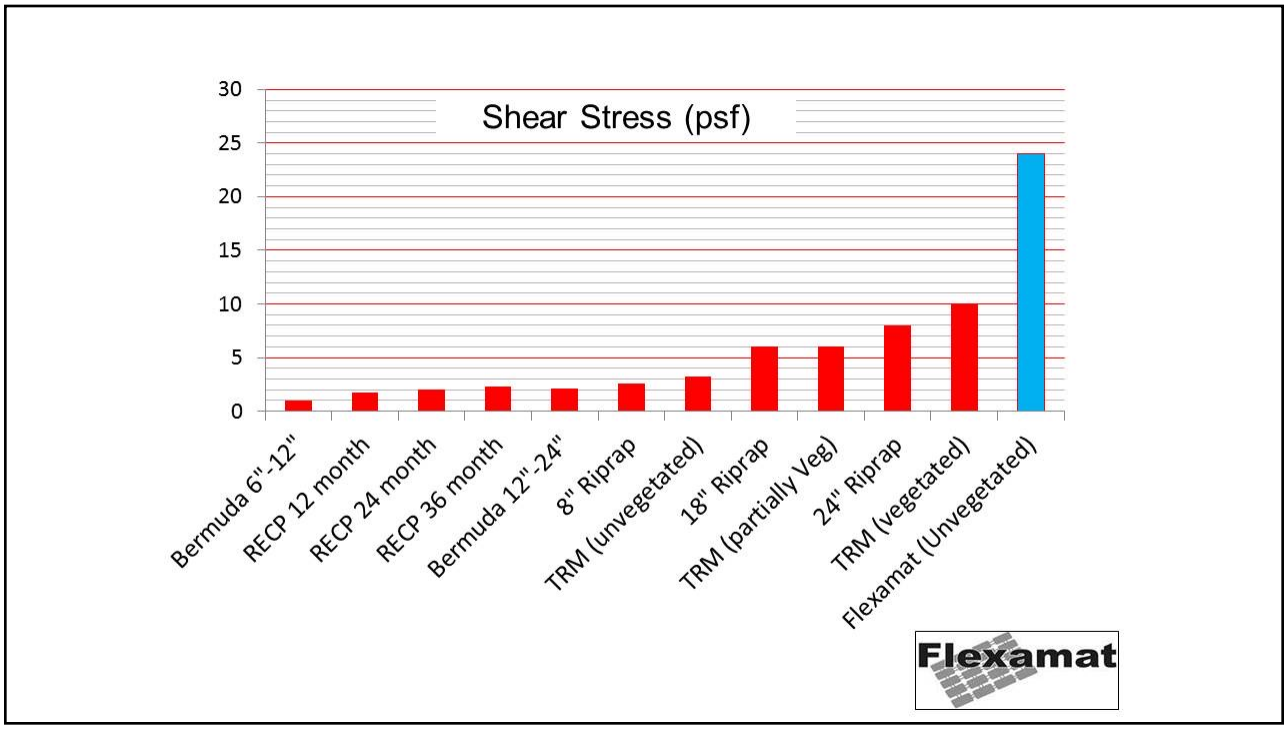
Shear Stress (psf)
30
25
20
15
10
5
0
Bermuda 6" -12"
RECP 12 month
RECP 24 month
RECP 36 month
Bermuda 12" -24"
8" Riprap
TRM (unvegetated)
18" Riprap
TRM (partially Veg)
24" Riprap
TRM (vegetated)
Flexamat (Unvegetated)
Flexamat

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Wisconsin DOT – Bridge Scour Repair

34

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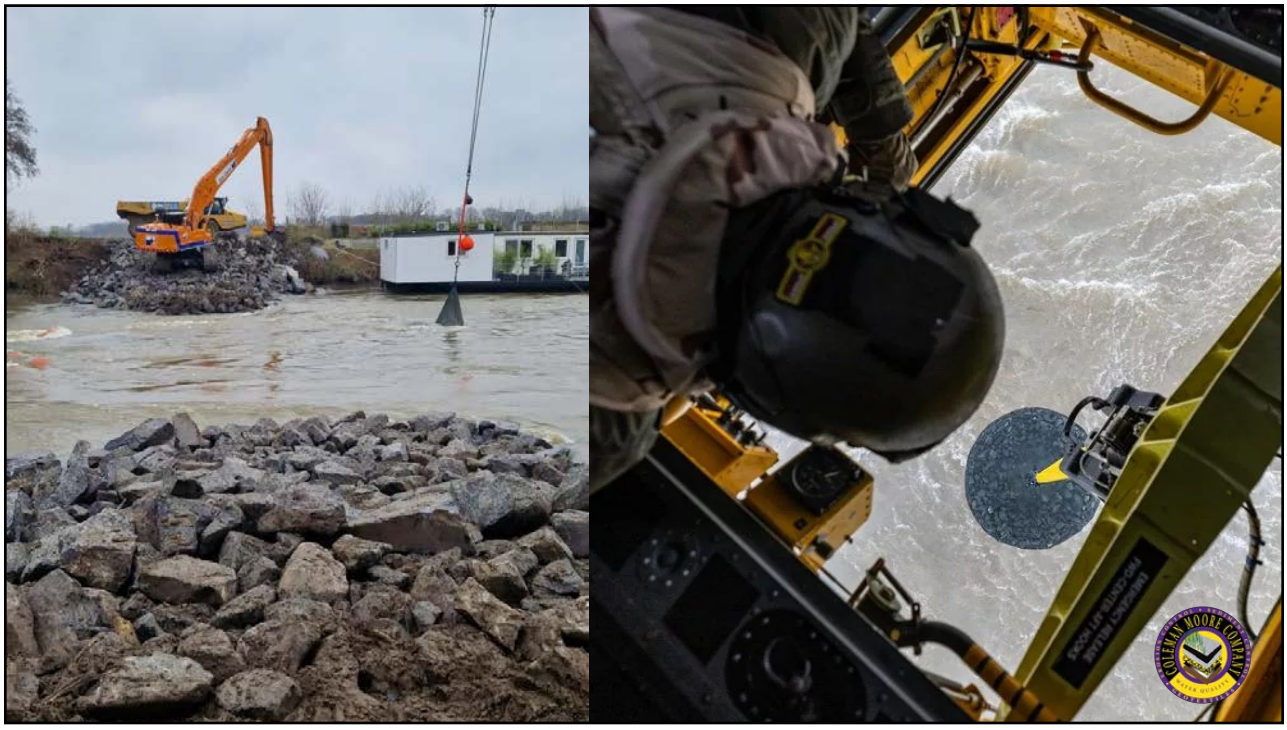

38

Black Hawk County

39

Linn County Conservation
Cedar Valley Nature Trail
Phase 1
SCOOPER
299D
CAT

40

Linn County Conservation
Cedar Valley Nature Trail Phase 2

41

Filled Unit Dimensions
6.3 ft x 1.3 ft

42

43

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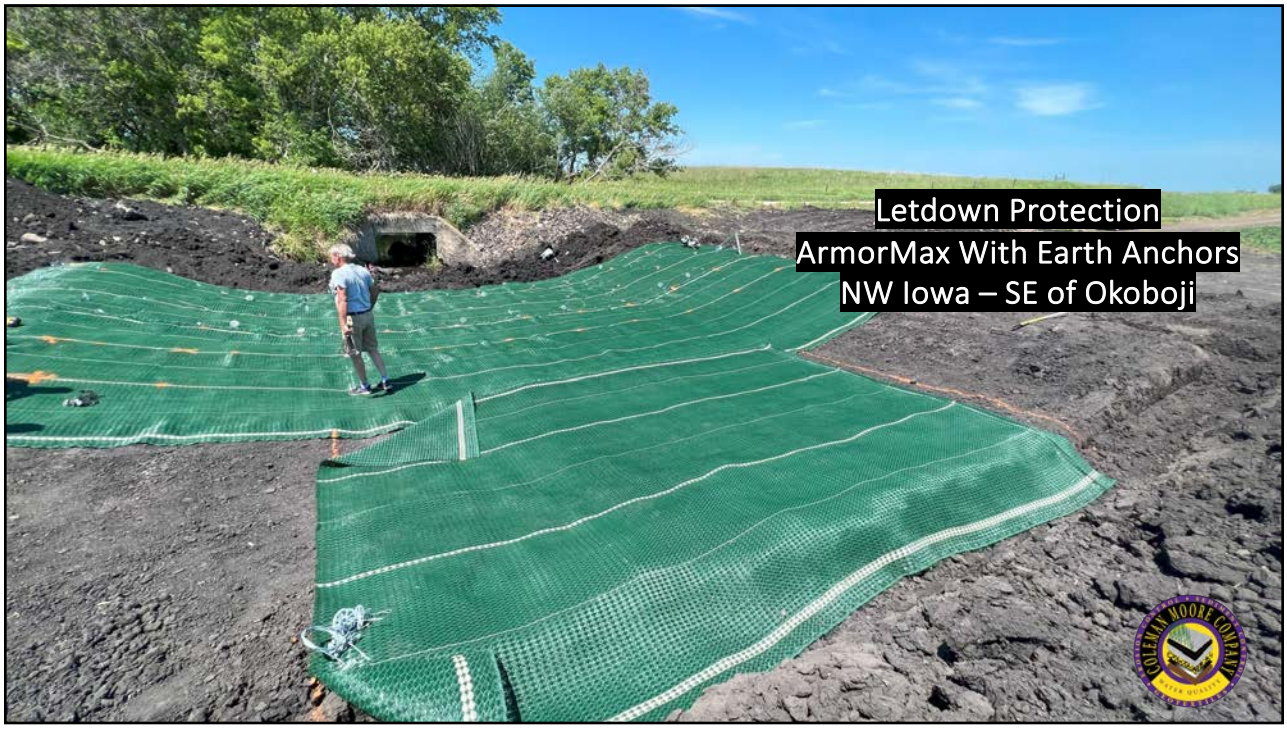
Two Years Later

49


Letdown Protection
ArmorMax With Earth Anchors
NW Iowa – SE of Okoboji

50

51

52

53

Missouri River
Homer, NE – Omida Drainage District
Army Corp of Engineers

54

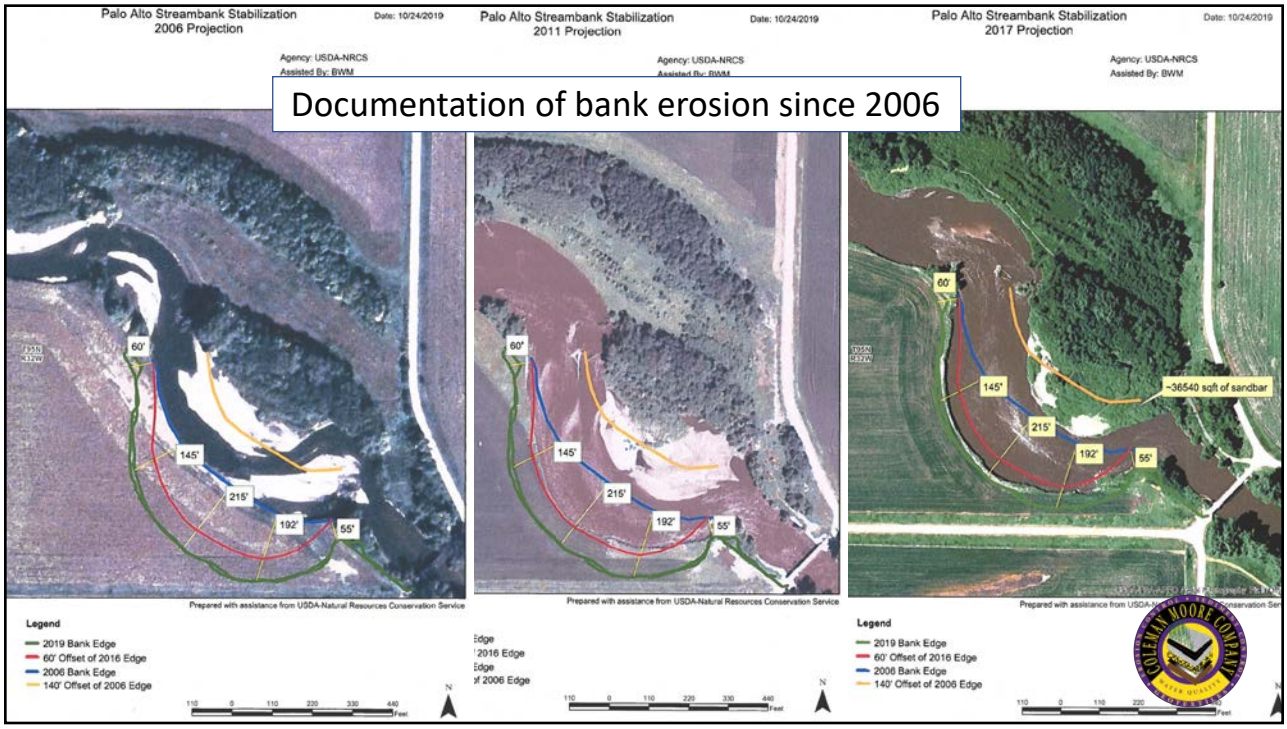
55

Bank Stabilization
West Branch Des Moines River
Palo Alto County
SCOURLOK® & ARMORMAX®

56

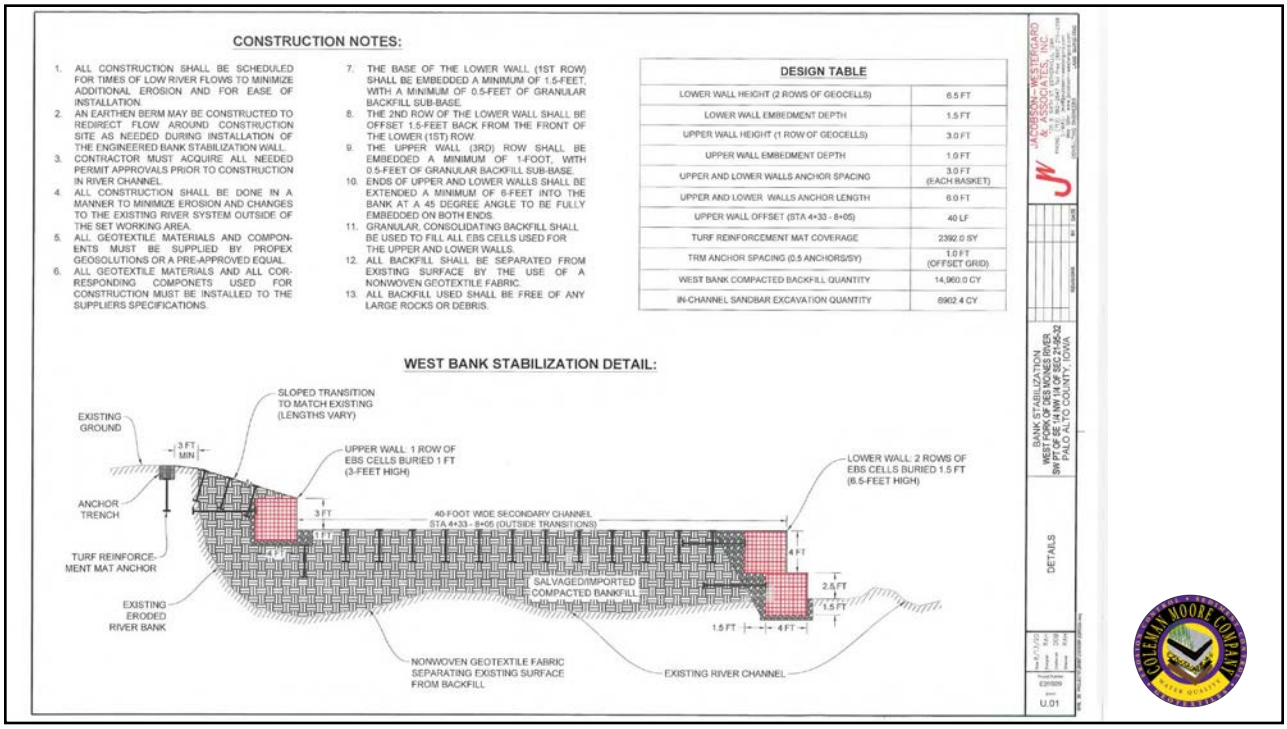
SE of Emmetsburg, IA – West Fork of Des Moines River threatening to wash out road

57


Palo Alto Streambank Stabilization
2006 Projection
Date: 10/24/2019
Agency: USDA-NRCS
Assisted By: BWM
Palo Alto Streambank Stabilization
2011 Projection
Date: 10/24/2019
Agency: USDA-NRCS
Palo Alto Streambank Stabilization
2017 Projection
Date: 10/24/2019
Agency: USDA-NRCS
Assisted By: BWM
Documentation of bank erosion since 2006
60'
145'
215'
192'
55'
~36540 sqft of sandbar
Prepared with assistance from USDA-Natural Resources Conservation Service
Legend
2019 Bank Edge
60' Offset of 2016 Edge
2006 Bank Edge
140' Offset of 2006 Edge
N

58

59



CONSTRUCTION NOTES:

1. ALL CONSTRUCTION SHALL BE SCHEDULED FOR TIMES OF LOW RIVER FLOWS TO MINIMIZE ADDITIONAL EROSION AND FOR EASE OF INSTALLATION.
2. AN EARTHEN BERM MAY BE CONSTRUCTED TO REDIRECT FLOW AROUND CONSTRUCTION SITE AS NEEDED DURING INSTALLATION OF THE ENGINEERED BANK STABILIZATION WALL.
3. CONTRACTOR MUST ACQUIRE ALL NEEDED PERMIT APPROVALS PRIOR TO CONSTRUCTION IN RIVER CHANNEL.
4. ALL CONSTRUCTION SHALL BE DONE IN A MANNER TO MINIMIZE EROSION AND CHANGES TO THE EXISTING RIVER SYSTEM OUTSIDE OF THE SET WORKING AREA.
5. ALL GEOTEXTILE MATERIALS AND COMPONENTS MUST BE SUPPLIED BY PROPEX GEOSOLUTIONS OR A PRE-APPROVED EQUAL.
6. ALL GEOTEXTILE MATERIALS AND ALL CORRESPONDING COMPONETS USED FOR CONSTRUCTION MUST BE INSTALLED TO THE SUPPLIERS SPECIFICATIONS.
7. THE BASE OF THE LOWER WALL (1ST ROW) SHALL BE EMBEDDED A MINIMUM OF 1.5-FEET, WITH A MINIMUM OF 0.5-FEET OF GRANULAR BACKFILL SUB-BASE.
8. THE 2ND ROW OF THE LOWER WALL SHALL BE OFFSET 1.5-FEET BACK FROM THE FRONT OF THE LOWER (1ST) ROW.
9. THE UPPER WALL (3RD) ROW SHALL BE EMBEDDED A MINIMUM OF 1-FOOT, WITH 0.5-FEET OF GRANULAR BACKFILL SUB-BASE.
10. ENDS OF UPPER AND LOWER WALLS SHALL BE EXTENDED A MINIMUM OF 5-FEET INTO THE BANK AT A 45 DEGREE ANGLE TO BE FULLY EMBEDDED ON BOTH ENDS.
11. GRANULAR, CONSOLIDATING BACKFILL SHALL BE USED TO FILL ALL EBS CELLS USED FOR THE UPPER AND LOWER WALLS.
12. ALL BACKFILL SHALL BE SEPARATED FROM EXISTING SURFACE BY THE USE OF A NONWOVEN GEOTEXTILE FABRIC.
13. ALL BACKFILL USED SHALL BE FREE OF ANY LARGE ROCKS OR DEBRIS.

DESIGN TABLE

LOWER WALL HEIGHT (2 ROWS OF GEOCELLS)	6.5 FT
LOWER WALL EMBEDMENT DEPTH	1.5 FT
UPPER WALL HEIGHT (1 ROW OF GEOCELLS)	3.0 FT
UPPER WALL EMBEDMENT DEPTH	1.0 FT
UPPER AND LOWER WALLS ANCHOR SPACING	3.0 FT (EACH BASKET)
UPPER AND LOWER WALLS ANCHOR LENGTH	6.0 FT
UPPER WALL OFFSET (STA 4+33 - 8+05)	40 LF
TURF REINFORCEMENT MAT COVERAGE	2392.0 SY
TRM ANCHOR SPACING (0.5 ANCHORS/SY)	1.0 FT (OFFSET GRID)
WEST BANK COMPACTED BACKFILL QUANTITY	14,960.0 CY
IN-CHANNEL SANDBAR EXCAVATION QUANTITY	6902.4 CY

WEST BANK STABILIZATION DETAIL:

BANK STABILIZATION
WEST BANK OF WOLF RIVER
SW PT OF SE 1/4 NW 1/4 OF SEC 21-85-20
PALO ALTO COUNTY, IOWA

DETAILS

U.01

60

15’ sections being installed
2’- 4’ below water level and second layer of slightly offset installed on top

61

Each section is anchored using 9ft engineered earth anchors into bank/backfill with gas powered driver and driving rod

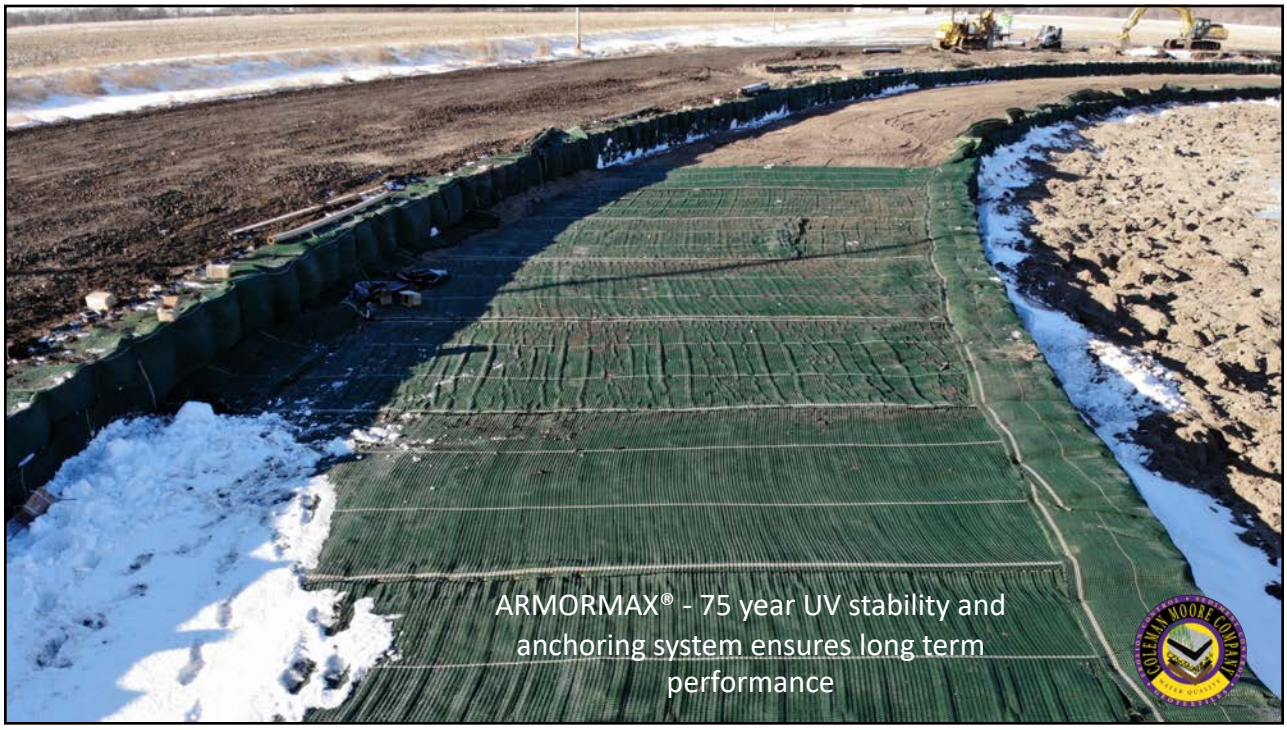
62

Units can be modified onsite in minutes to conform to project specifications
HESCO® strength with each section
HESCO
STOP EVERYTHING.
COLEMAN MOORE COMPANY

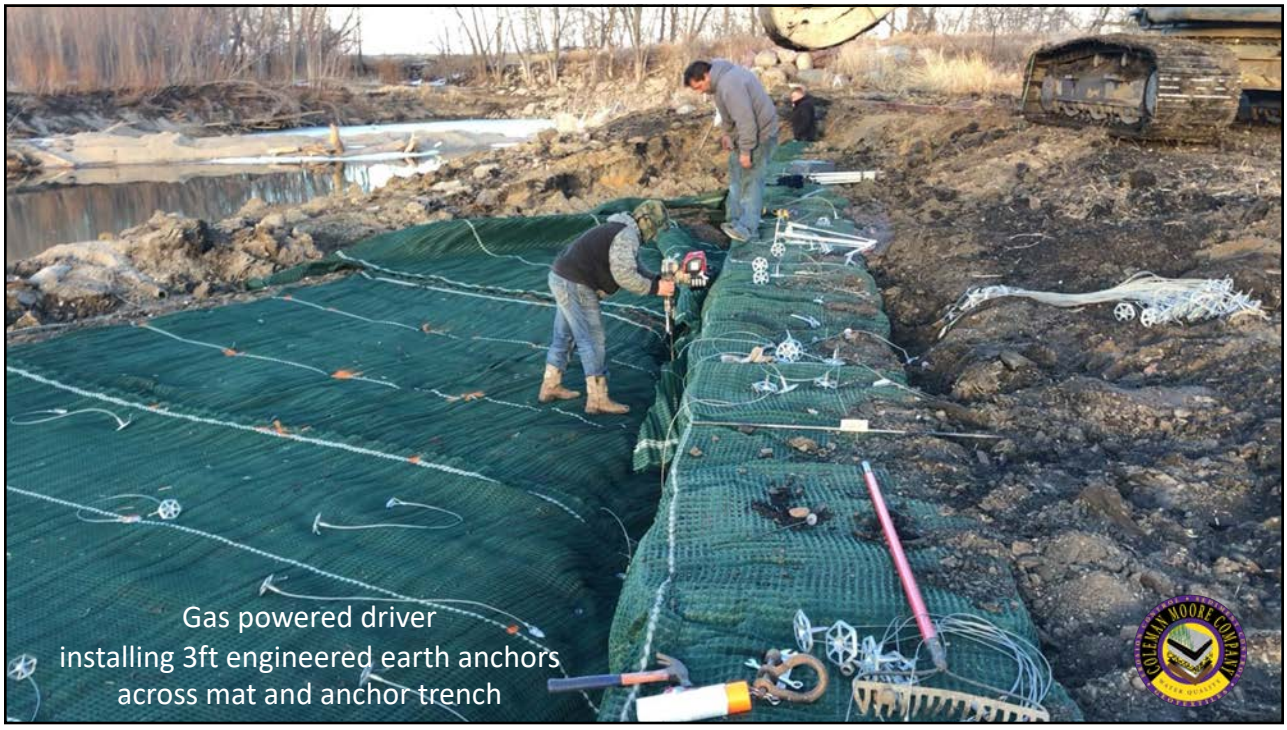
63

6” topdressing of soil / seed mix hauled in to promote vegetation
COLEMAN MOORE COMPANY

64


ARMORMAX® - 75 year UV stability and anchoring system ensures long term performance

65


Gas powered driver installing 3ft engineered earth anchors across mat and anchor trench

66

67

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December 2021
No issue with ice

69

Summer 2024
11ft Upstream – Emmetsburg USGS Guage

70

Thank You!
Mark Moore
Coleman Moore Company
mrmoore@colemanmoorecompany.com
515-681-8164

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