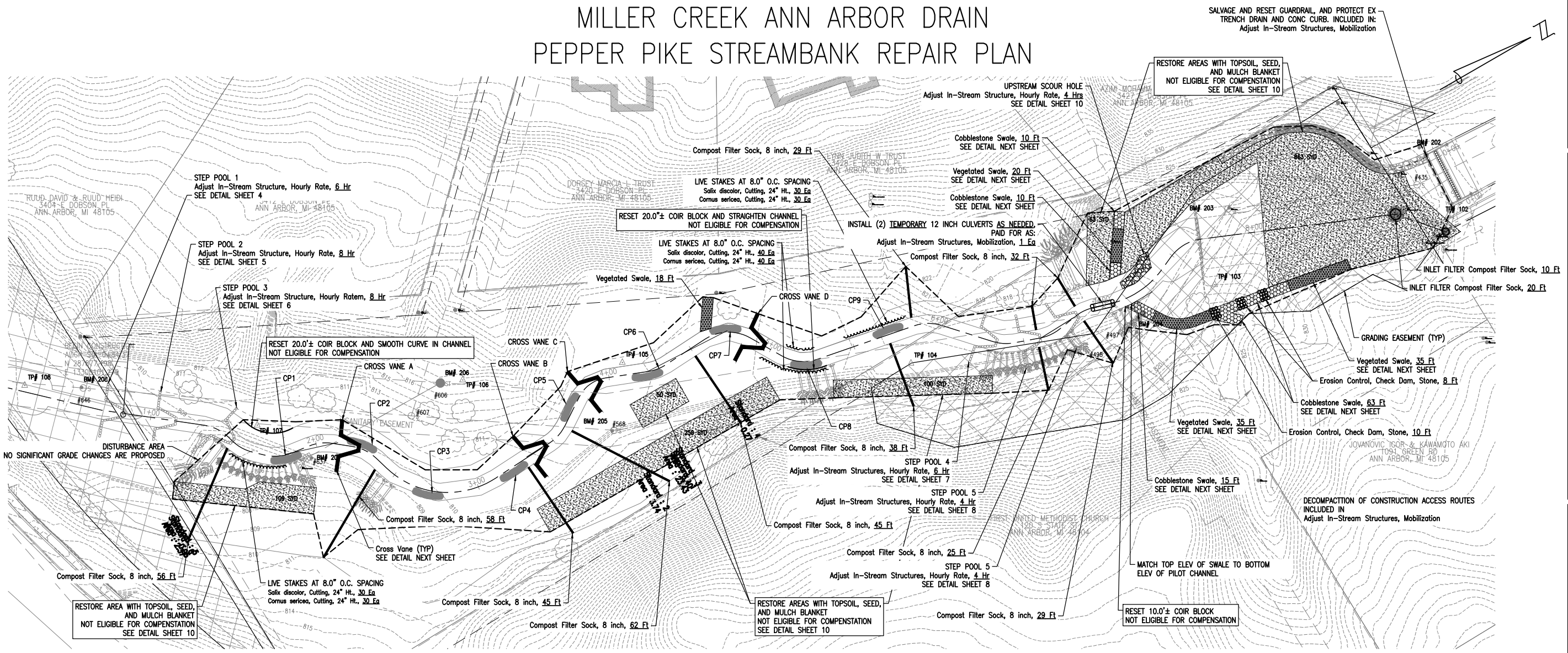


MILLER CREEK ANN ARBOR DRAIN PEPPER PIKE STREAMBANK REPAIR PLAN



REVISIONS
 REVISED 10/7/2021 PER WQRC COMMENTS
 REVISED 10/29/2021 PER EGLE COMMENTS
 ...

DATE: 01/15/2021
 SHEET: 0115-1500
 PROJ. NO.: 0115-1500
 PROJ. NAME: MILLER CREEK ANN ARBOR-PEPPER PIKE STREAM RELOCATION
 CITY/VILLAGE/TOWNSHIP: ANN ARBOR
 COUNTY: WASHTENAW
 CAD: MFS
 SCALE: 1"=40'
 H: 17'-0"
 V: 17'-0"
 MORE DATA: VERT DATUM: NAVD 83
 RAD: 58'

WASHTENAW COUNTY WATER RESOURCES COMMISSIONER
 MILLER CREEK ANN ARBOR-PEPPER PIKE STREAM RELOCATION
 PEPPER PIKE STREAMBANK REPAIR PLAN

SCALE WRD

| CATEGORY 1 - NOT ELIGIBLE FOR COMPENSATION | | | CATEGORY 2 - HOURLY ADJUSTMENTS IN CONTRACT | | | CATEGORY 3 - UNIT PRICE ADJUSTMENTS IN CONTRACT | | | CATEGORY 4 - ADDITIONS TO CONTRACT | | |
|--|------|--|---|------|---|---|------|----------------------------------|------------------------------------|------|-----------------------------------|
| TOTAL | UNIT | DESCRIPTION | TOTAL | UNIT | DESCRIPTION | TOTAL | UNIT | DESCRIPTION | TOTAL | UNIT | DESCRIPTION |
| 1 | LSUM | Native Connections Forested Wetland Establishment Mix (Customized) | 40 | Hr | Adjust In-Stream Structures, Hourly Rate | 370 | Ea | Salix discolor, Cutting, 24" Ht. | 26 | Ft | Erosion Control, Check Dam, Stone |
| 1435 | Syd | Topsoil Surface, Furn, 4 inch | 1 | LSUM | Adjust In-Stream Structures, Mobilization | 370 | Ea | Salix discolor, Cutting, 24" Ht. | 72 | Syd | Cobblestone Swale |
| 265 | Syd | BioNet C125BN Erosion Control Blanket | | | | | | | 60 | Syd | Vegetated Swale |
| | | | | | | | | | 18 | Cyd | Cobblestone, Natural, 2-4 inch |
| | | | | | | | | | 4 | Ea | Cross Vane |
| | | | | | | | | | 449 | Ft | Compost Filter Sock, 8 inch |

SEE BOXED CALLOUTS FOR WORK NOT ELIGIBLE FOR COMPENSATION



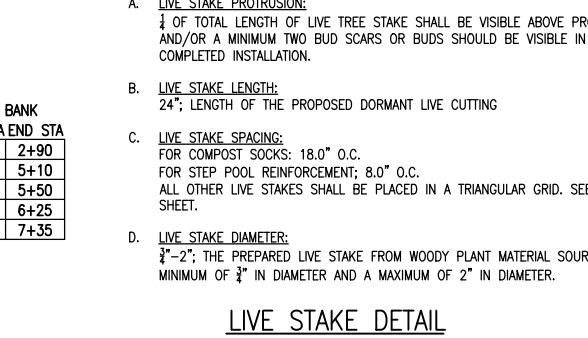
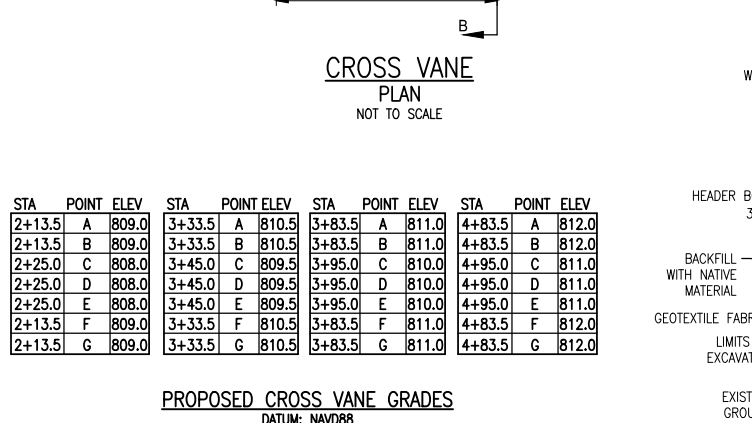
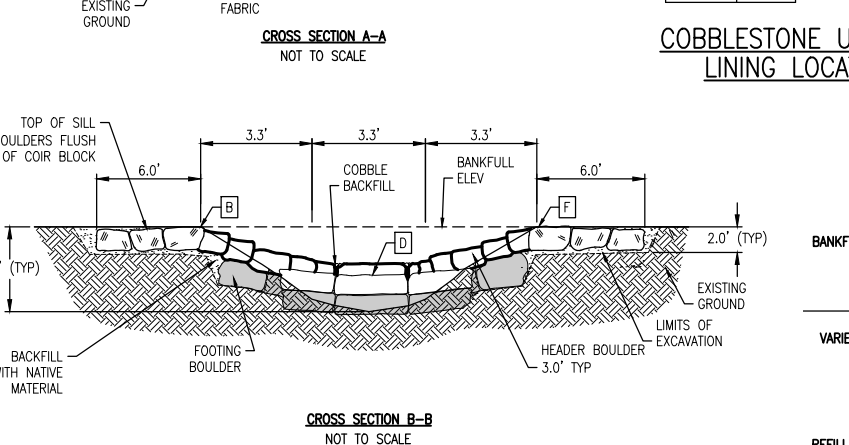
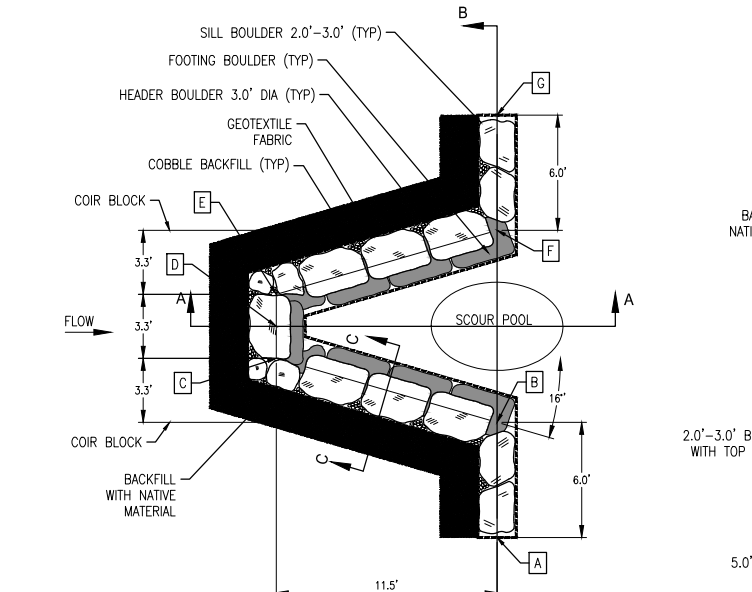
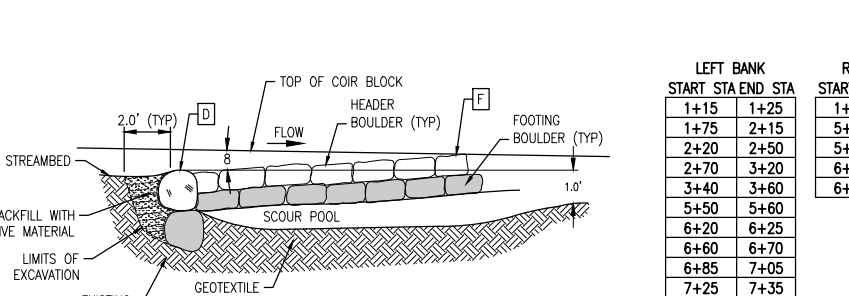
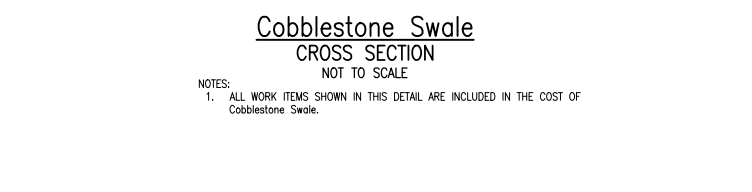
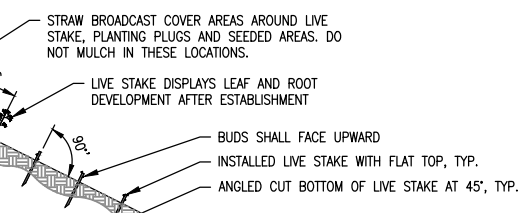
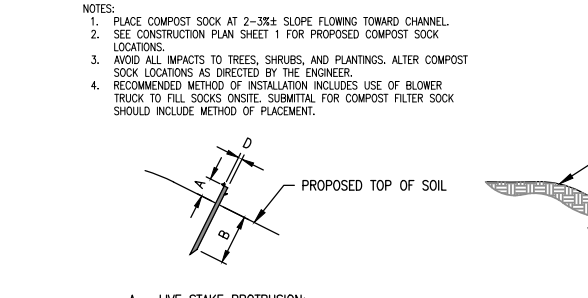
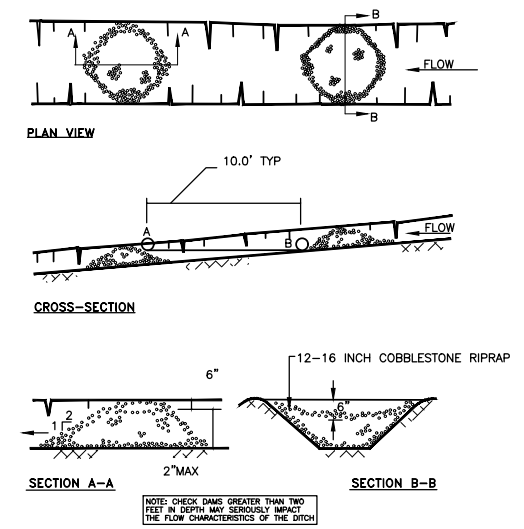
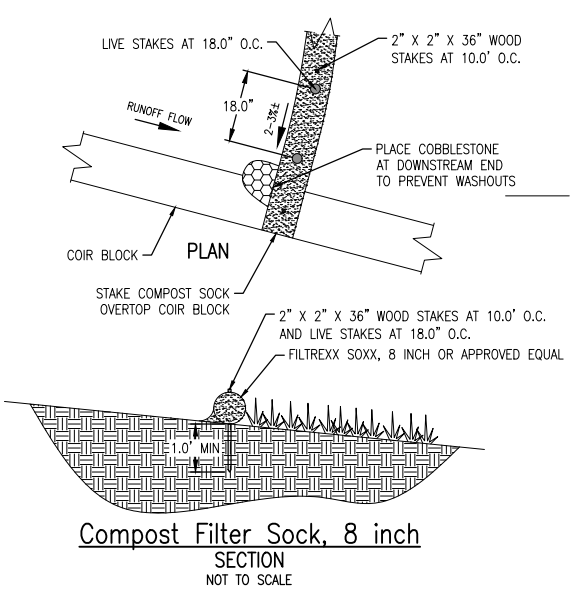
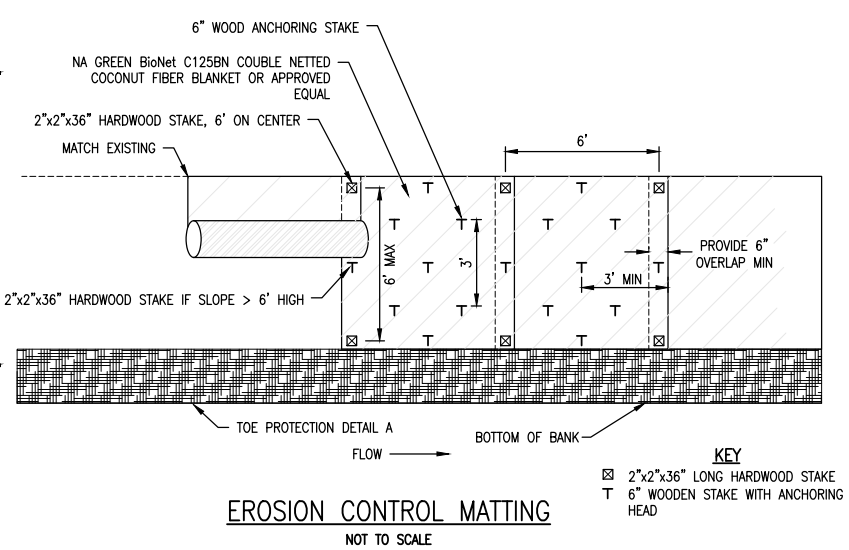
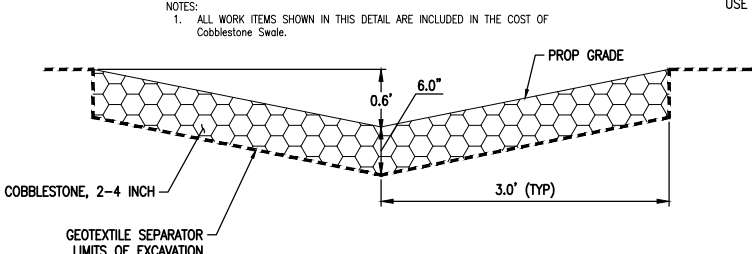
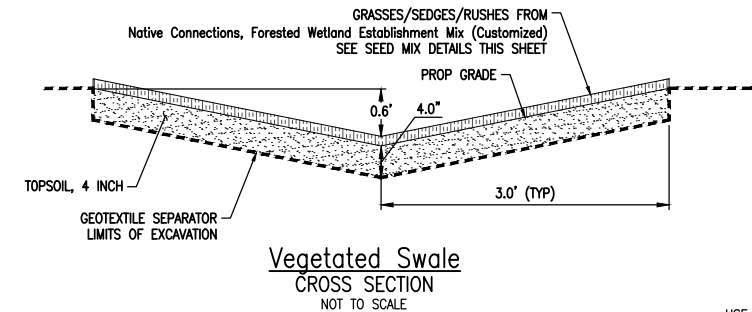
Know what's below.
Call before you dig.

WRP017358 v1.1
 Approved
 Issued On: 01/15/2020
 Expires On: 01/15/2025

DRAWING PATH: P:\0101_01250115170940_Pepper's_PipeDrawings\CivilMisc\Maps_Presentations\Repair_Plans.dwg Oct 29, 2021 1:13:20pm

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PEPPER PIKE STREAMBANK REPAIR PERMANENT EROSION CONTROL DETAILS



Native Connections Forested Wetland Establishment Mix (Customized)

| Grasses, Sedges, Rushes, etc. | Common Name | PLS Oz/A | Total PLS Oz. | Seeds per sq. ft. | % by weight | % by native seeds | C-Value | Wetland Code | Conserv. |
|-------------------------------|-----------------------------|--------------|---------------|-------------------|---------------|-------------------|---------|--------------|----------|
| Bromus ciliatus | Fringed Brome | 8.00 | 12.00 | 1.84 | 8.33% | 2.30% | 6 | FACW | - |
| Calamagrostis canadensis | Bluejoint Grass | 0.50 | 0.75 | 3.21 | 0.52% | 4.02% | 3 | OBL | - |
| Carex canosus | Brittle Sedge | 2.00 | 3.00 | 1.38 | 2.09% | 1.72% | 5 | OBL | - |
| Carex flaccid | Frank's Sedge | 2.00 | 3.00 | 0.78 | 2.09% | 0.88% | 4 | OBL | SC |
| Carex stipata | Awn-fruited Sedge | 2.00 | 3.00 | 1.66 | 2.09% | 1.95% | 1 | OBL | - |
| Carex vulpinoidea | Fox Sedge | 2.00 | 3.00 | 4.59 | 2.09% | 5.75% | 1 | OBL | - |
| Elymus riparius | Riverbank Wild Rye | 4.00 | 6.00 | 0.64 | 4.00% | 0.80% | 8 | FACW | - |
| Elymus virginicus | Virginia Wild Rye | 50.00 | 75.00 | 6.44 | 52.19% | 6.03% | 4 | FACW | - |
| Glyceria striata | Fowl Mann Grass | 1.00 | 1.50 | 3.67 | 1.04% | 4.60% | 4 | OBL | - |
| Juncus effusus | Soft Rush | 0.30 | 0.45 | 6.89 | 0.31% | 8.62% | 3 | OBL | - |
| Scirpus cyperinus | Wood Grass | 0.20 | 0.30 | 7.81 | 0.21% | 9.77% | 5 | OBL | - |
| | Grasses Oz per Acre | 72.00 | | 37.19 | 75.16% | 46.55% | | | |
| | Grasses Lbs per Acre | 4.50 | | 37.19 | 75.16% | 46.55% | | | |

| Forbs, Shrubs, Vines, etc. | Common Name | PLS Oz/A | Total PLS Oz. | Seeds per sq. ft. | % by weight | % by native seeds | C-Value | Wetland Code | Conserv. |
|---------------------------------------|----------------------------|--------------|---------------|-------------------|---------------|-------------------|---------|--------------|----------|
| Acidimometum altissimum (Verbena sp.) | Wingstem | 1.75 | 2.63 | 0.38 | 1.83% | 0.45% | 4 | FACW | - |
| Angelica atropurpurea | Angelica | 2.25 | 3.38 | 0.28 | 2.35% | 0.35% | 6 | OBL | - |
| Aster novae-angliae | New England Aster | 0.50 | 0.75 | 0.76 | 0.52% | 0.95% | 3 | FACW | - |
| Aster paniculatus | Swamp Aster | 0.25 | 0.38 | 0.46 | 0.26% | 0.57% | 5 | OBL | - |
| Bidens frondosa | Devil's Beggarticks | 0.25 | 0.38 | 0.28 | 0.26% | 0.04% | 1 | FACW | - |
| Cassia hebecarpa | Wild Senna | 3.75 | 5.63 | 0.12 | 3.91% | 0.15% | 5 | FACW | - |
| Cephalanthus occidentalis | Buttonbush | 1.50 | 2.25 | 0.37 | 1.36% | 0.47% | 7 | OBL | - |
| Bonessetia | Bonesset | 0.75 | 1.13 | 2.75 | 0.78% | 3.45% | 4 | FACW | - |
| Helianthus autumnalis | Sneezeweed | 3.00 | 4.50 | 6.68 | 3.13% | 11.21% | 5 | FACW | - |
| Iris virginica | Southern Blue Flag Iris | 0.75 | 1.13 | 0.02 | 0.78% | 0.02% | 5 | OBL | - |
| Lobelia siphilitica | Great Blue Lobelia | 0.25 | 0.38 | 0.27 | 0.26% | 3.59% | 4 | FACW | - |
| Monarda virginiana | Monkey Flower | 1.50 | 2.25 | 15.84 | 0.81% | 19.83% | 5 | OBL | - |
| Monarda fistulosa | Wild Bergamot | 1.50 | 2.25 | 2.41 | 1.57% | 3.02% | 2 | FACW | - |
| Panicum digitatum | Foxglove Beardtongue | 1.20 | 1.80 | 3.58 | 1.25% | 4.48% | 2 | FACW | - |
| Physostegia virginiana | Obedient Plant | 1.00 | 1.50 | 0.25 | 1.04% | 0.32% | 8 | FACW | - |
| Rudbeckia laciniata | Golden Glow | 1.50 | 2.25 | 0.48 | 1.57% | 0.60% | 6 | FACW | - |
| Salicaria obovata | Ohio Goldenrod | 1.00 | 1.50 | 2.53 | 1.04% | 3.16% | 8 | OBL | - |
| Scirpus atrovirens | Golden Alumnus | 2.50 | 3.75 | 0.63 | 2.81% | 0.79% | 6 | FACW | - |
| Zizia aurea | Forbes Oz per Acre | 23.80 | | 42.70 | 24.84% | Total | | | |
| | Forbes Lbs per Acre | 1.49 | | 42.70 | 24.84% | 53.45% | | | |

| Annuals, Temp Nurse Crop, etc. | Common Name | PLS Oz/A | Total PLS Oz. | Temp Seeds per sq. ft. |
|--------------------------------|--------------------------|---------------|---------------|------------------------|
| Annual Rye | Annual Rye | 80.00 | 120.00 | 24.79 |
| Lolium multiflorum | Seed Oats | 320.00 | 480.00 | 7.35 |
| Avetia sativa | Temp Oz per Acre | 400.00 | | 32.14 |
| | Temp Lbs per Acre | 25.00 | | |

| Total PLS Lbs/Acre 'Natives' | Total Lbs/Acre 'ALL' | Mix 'Natives' weight (lbs) | seed/seed/ft | Avg C |
|------------------------------|----------------------|----------------------------|--------------|-------|
| 5.99 | 30.99 | 24.84% | 53.45% | 24.14 |
| 1.50 | 8.48 | 75.16% | 46.55% | 24.14 |
| 46.48 | 46.48 | | | |

| Total per acre | % Forb | % Grasses | weight (lbs) | seed/seed/ft |
|----------------|--------|-----------|--------------|--------------|
| 30.99 | 4.80% | 38.11% | 112.03 | |
| 8.48 | 14.52% | 33.20% | 48.48 | |
| 46.48 | 80.68% | 28.69% | 160.51 | |

NOTES: Species subject to availability at time of order. All species to be adjusted to 100% PLS (Pure Live Seed).

OHM
ARCHITECTS ENGINEERS PLANNERS

34000 Plymouth Road
Livonia, MI 48150
P (734) 522-6711 | F (734) 522-6427

OHM-ADVISORS.COM

REVISIONS

NO. DATE

1. 10/27/2021 PER WCVRC COMMENTS

2. 10/29/2021 PER EGLE COMMENTS

3. 11/11/2021

4. 11/11/2021

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PEPPER PIKE STREAMBANK REPAIR EROSION CONTROL NOTES AND TEMPORARY EROSION CONTROL DETAILS

SOIL EROSION PERMIT NOTES

PROJECT NARRATIVE

THE NATURE OF THE REPAIRS INCLUDES EROSION AND SEDIMENTATION CONTROL. A COMBINATION OF EXCESSIVE RAINFALL AND THE UNVEGETATED CONDITION OF THE CONSTRUCTION SITE IN THE SPRING OF 2021 RESULTED IN SEVERE EROSION OF THE CONSTRUCTED STREAM CHANNEL AND ADJACENT BANKFULL SHELF. THE PROPOSED REPAIR PLANS INCLUDE A VARIETY OF PERMANENT EROSION CONTROL MEASURES TO MINIMIZE EROSION OF THE STREAM CHANNEL AND PREVENT THE DOWNSTREAM MIGRATION OF TOPSOIL. THESE MEASURES INCLUDE COBBLESTONE AND VEGETATED SWALES, COMPOST FILTER SOCKS, COBBLESTONE CHECK DAMS, EROSION CONTROL MATTING, SEEDING, CROSS VANES, LIVE STAKES, AND COIR BLOCK INSTALLATION. NO SIGNIFICANT PERMANENT GRADE CHANGES ARE PROPOSED. MINOR EXCAVATION AND GRADING ARE REQUIRED FOR CROSS VANE REPAIRS/INSTALLATION. TOPSOIL WILL BE ADDED TO THE AREAS INDICATED ON THE PLANS. ANY TOPSOIL OR MATERIAL STOCKPILES SHALL BE COMPLETELY ENCLOSED WITH SILT FENCE (SEE DETAIL THIS SHEET) AND OUTSIDE THE FLOODPLAIN, AS DIRECTED BY THE ENGINEER. RUTS FROM CONSTRUCTION EQUIPMENT SHALL BE SMOOTHED AND GRADED TO ENSURE POSITIVE DRAINAGE WITHOUT POOLING WATER. DEWATERING IS NOT ANTICIPATED FOR STREAMBANK REPAIR WORK.

PARCEL DETAILS

- OWNER: CITY OF ANN ARBOR C/O PARKS DEPARTMENT - P.O. BOX 8647 ANN ARBOR, MI 48102.
- PARCEL ID: 09-09-23-302-058
- LEGAL DESCRIPTION:

A PARCEL OF LAND BEING PART OF LAND SITUATED IN THE SW 1/4 OF SECTION 23, TOWN 2 SOUTH, RANGE 6 EAST, CITY OF ANN ARBOR, WASHTENAW COUNTY, MICHIGAN, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE S 1/4 CORNER OF SAID SECTION 23; THENCE S 89°05'30" W 500.0 FEET ALONG THE SOUTH LINE OF SAID SECTION 23 TO THE POINT OF BEGINNING; THENCE CONTINUING ALONG SAID SOUTH LINE S 89°05'30" W 257.0 FEET; HENCE N 26°41'10" E 190.87 FEET; THENCE N 43°26'15" W 279.95 FEET; THENCE 20.01 FEET ALONG A CURVE TO THE LEFT HAVING A RADIUS OF 276.0 FEET, CENTRAL ANGLE 04°09'12", CHORD BEARS N 45°05'58" E 20.0 FEET; THENCE S 43°26'15" E 273.23 FEET; THENCE N 26°41'10" E 148.32 FEET; THENCE N 18°35'50" E 213.0 FEET; THENCE N 02°52'40" E 156.36 FEET; THENCE N 88°58'00" E 10.0 FEET; THENCE S 00°47'20" E 676.27 FEET TO THE POINT OF BEGINNING.

- DRAIN NAME: MILLERS CREEK ANN ARBOR DRAIN
- TEMPORARY EASEMENTS ARE INCLUDED AS SUPPORTING DOCUMENTATION. ALL WORK TO BE COMPLETED AS A CONTINUATION OF THE ORIGINAL STREAMBANK CONSTRUCTION.

SOIL TYPES

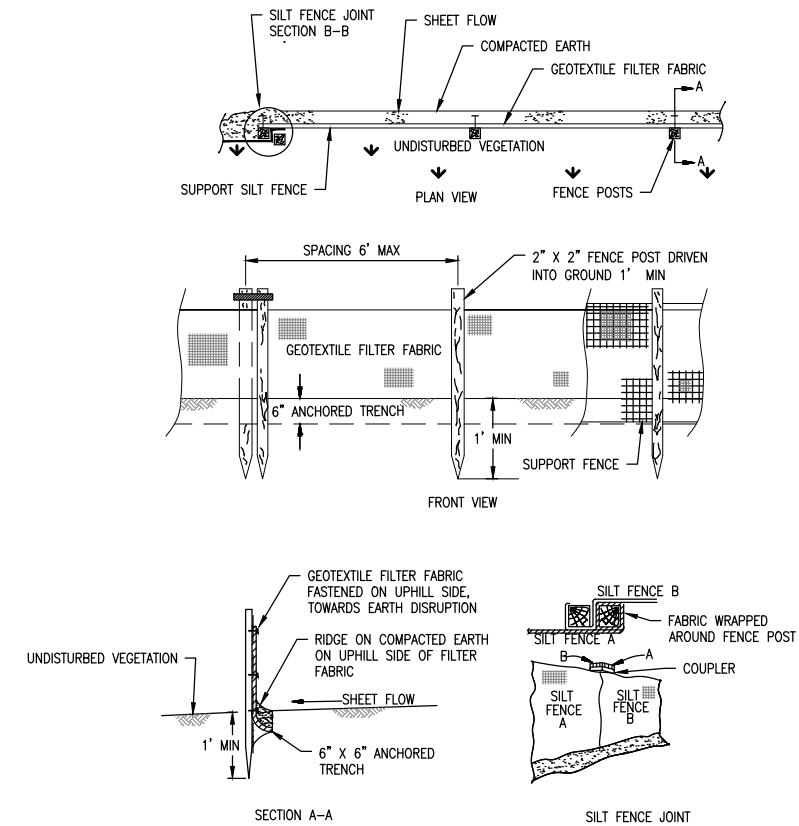
MnF - MIAMI LOAM, 25-35% SLOPES
Hn - HOUGHTON MUCK, DISINTEGRATION MORAIN, 0-2% SLOPES (0.16 Ac of Disturbed Area)
WawabC - WAWASEE LOAM, 2-6% SLOPES (0.16 Ac of Disturbed Area)
WawabE - WAWASEE LOAM, 18-25% SLOPES (0.16 Ac of Disturbed Area)

SUGGESTED SEQUENCE OF CONSTRUCTION

- REMOVE GUARDRAIL AS NEEDED AND PLATE TRENCH DRAIN TO PREVENT DAMAGE BY CONSTRUCTION EQUIPMENT.
- ESTABLISH CONSTRUCTION ACCESS OFF PEPPER PIKE STREET. ADD AGGREGATE AS NEEDED.
- CONSTRUCT TEMPORARY CULVERT CROSSING.
- INSTALL COMPOST FILTER SOCKS AROUND INLETS.
- PROCEED WITH CROSS VANE REPAIRS, CHANNEL RECONSTRUCTION, TOPSOILING, SEEDING, AND COMPOST FILTER SOCK INSTALLATION. START AT THE DOWNSTREAM END AND WORK UPSTREAM. ENSURE FINAL GRADING IS SMOOTH, FREE OF TIRE RUTS, AND FREELY DRAINING WITHOUT PONDING WATER.
- CLEAN UP SITE AND REMOVE TEMPORARY CULVERT CROSSING. REINSTALL GUARDRAIL AND DEMOBILIZE.

MAINTENANCE

THE OWNER IS RESPONSIBLE FOR THE MAINTENANCE OF THE PROPOSED IMPROVEMENTS. VISUAL INSPECTION OF THE SCOUR POOLS, STREAM CHANNEL, CROSS VANES, STEP POOLS, ETC SHOULD BE PERFORMED ANNUALLY OR AS NEEDED. THE OWNER IS RESPONSIBLE FOR ANY NEEDED REPAIRS AND MAINTENANCE INCLUDING SEDIMENT REMOVAL, RESETTING OF BOULDERS, SELECTIVE COBBLESTONE BACKFILL OF VOIDS, ETC.



SILT FENCE DETAIL

FOR TEMPORARY TOPSOIL STOCKPILES
INCLUDED IN THE COST OF Topsoil Surface, Furn, 4 inch
ALL OTHER EROSION CONTROL DETAILS ARE PERMANENT AND SHOWN ON SHEET 2

REVISIONS
REVISED 10/7/2021 PER WOVRC COMMENTS

VERT DATUM
WAD 98

WAD 98

SCALE
V: 1"=4'

H: 1"=4'

CITY/VILLAGE/TOWNSHIP
ANN ARBOR

COUNTY
WASHTENAW

CAD
MPS

PROJ LDR
WMI

ENG
—

PROJ NUMBER
0715-1500

DATE
01/20/2021

SHEET
3

OF 10

WASHTENAW COUNTY WATER RESOURCES COMMISSIONER
MILLERS CREEK ANN ARBOR-PEPPER PIKE STREAM RELOCATION
EROSION CONTROL PLAN AND DETAILS

WRCLE WRD

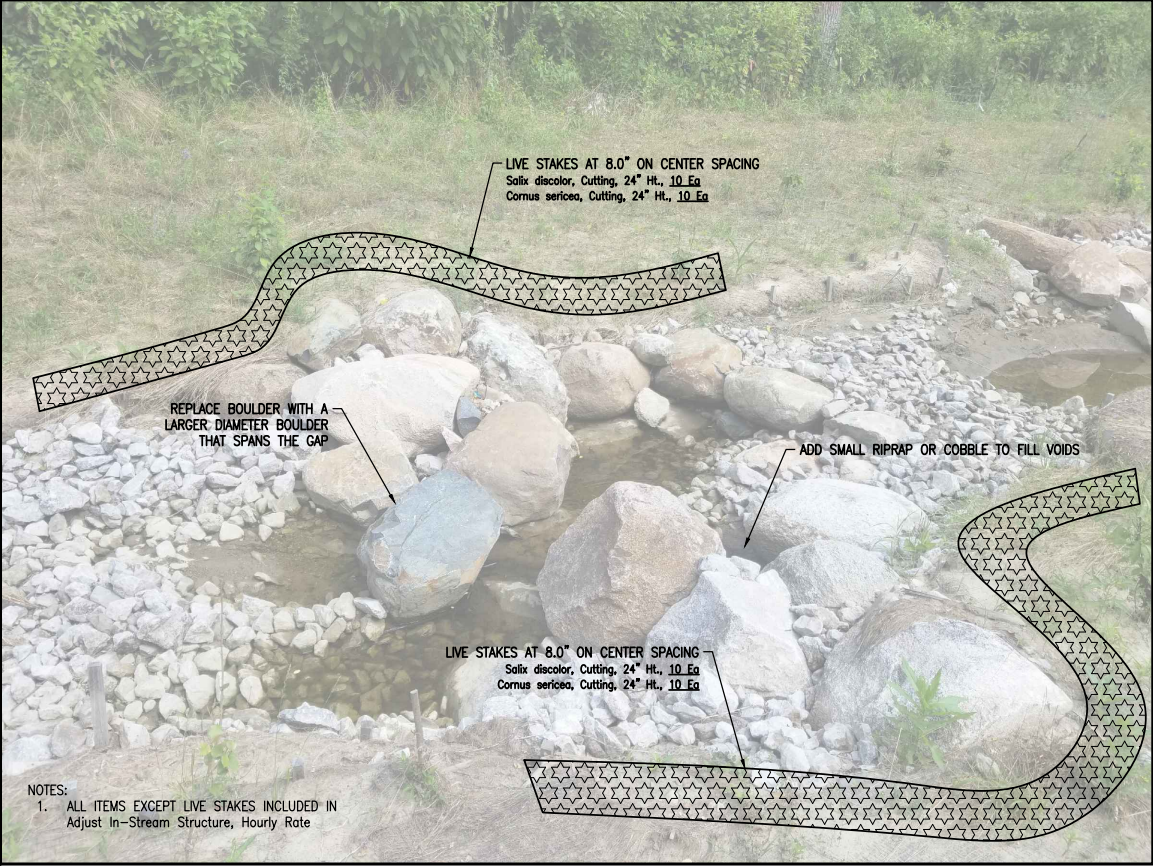
WRP017358 v1.1

Approved

Issued On: 01/15/2020

Expires On: 01/15/2025

STEP POOL 1



STEP POOL 1
VIEW LOOKING WEST

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| DATE | PROJ NUMBER | ENG | PROJ LEAD | CADD | COUNTY | CITY/VILLAGE/TOWNSHIP | SCALE | VERT DATUM | VERT DATUM |
| 01/15/2021 | 0115-15000 | — | — | — | WASHTENAW | ANN ARBOR | H 1"=40' | V 1"=4' | NAVD 88 |

WASHTENAW COUNTY WATER RESOURCES COMMISSIONER
MILLERS CREEK ANN ARBOR-PEPPER PIKE STREAM RELOCATION
STEP POOL 1 REPAIRS

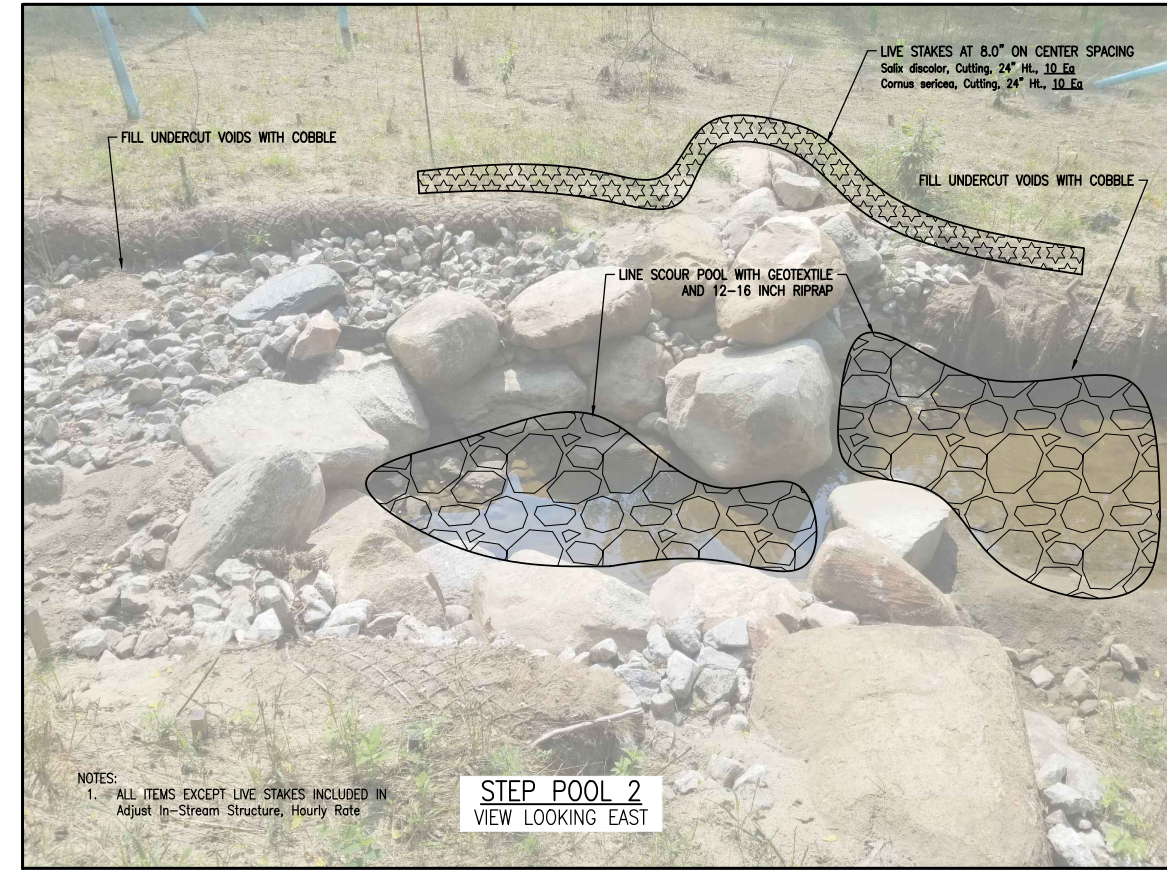
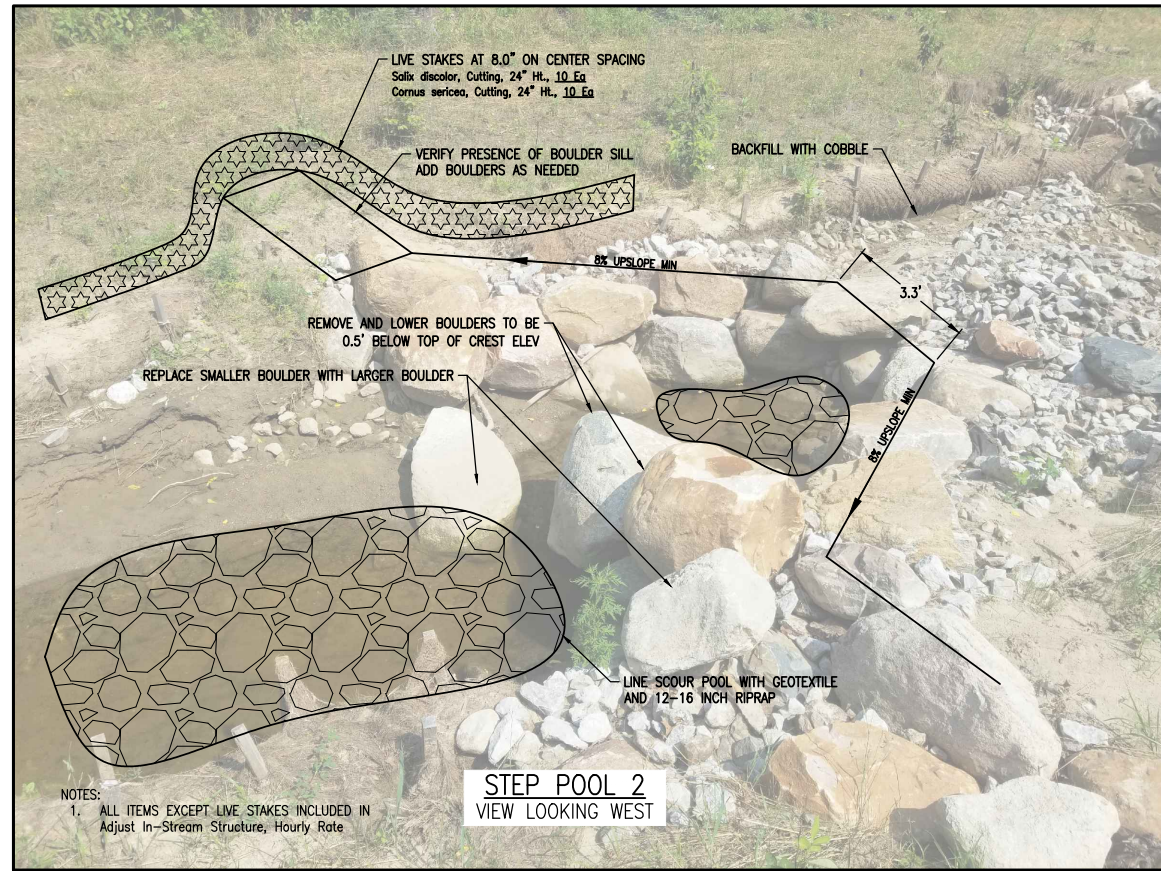


Know what's below.
Call before you dig.

WRP017358 v1.1
Applied
OF 10

Issued On: 01/15/2020
Expires On: 01/15/2025

STEP POOL 2



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| DATE | PROJ NUMBER | ENG | PROJ LEAD | CADD | COUNTY | CITY/VILLAGE/TOWNSHIP | SCALE | VERT DATUM | VERT DATE |
| 01/15/2021 | 0115-15000 | — | — | — | WASHTENAW | ANN ARBOR | H: 1"=40' V: 1"=4' | NAVD 83 | |

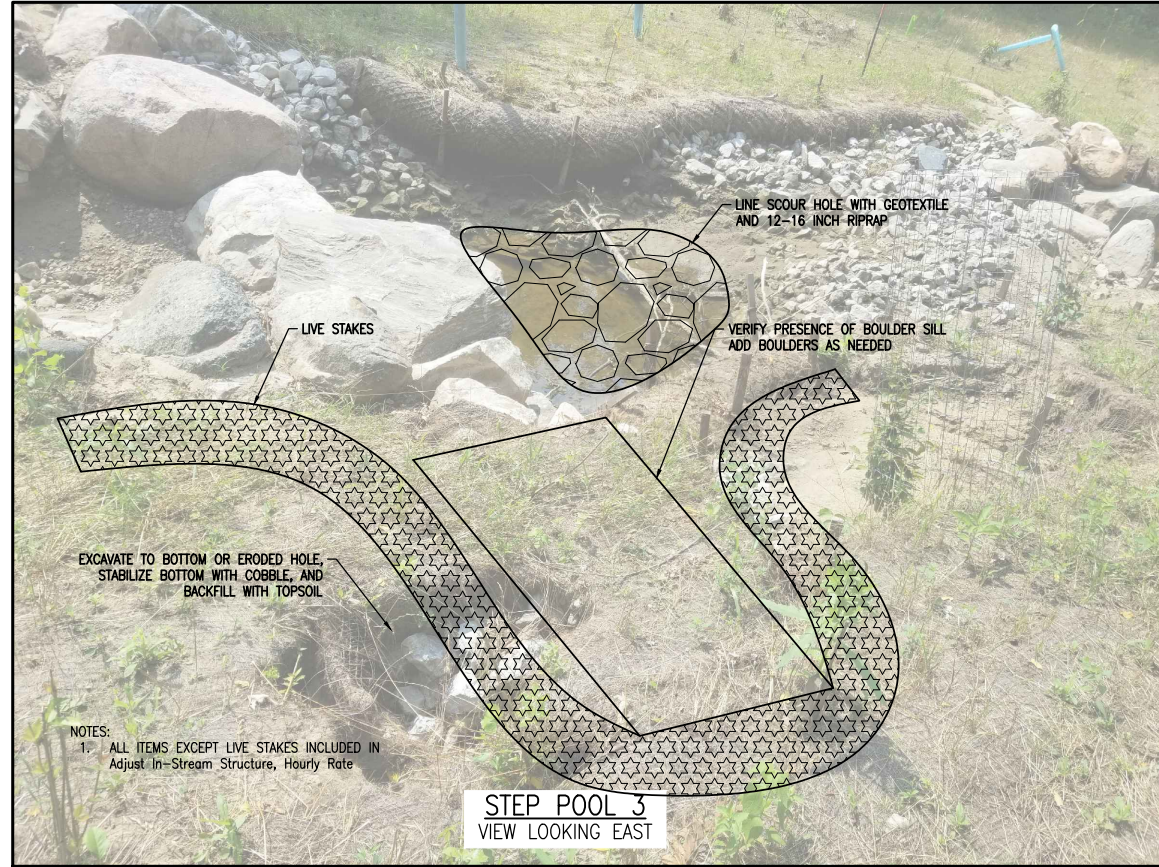
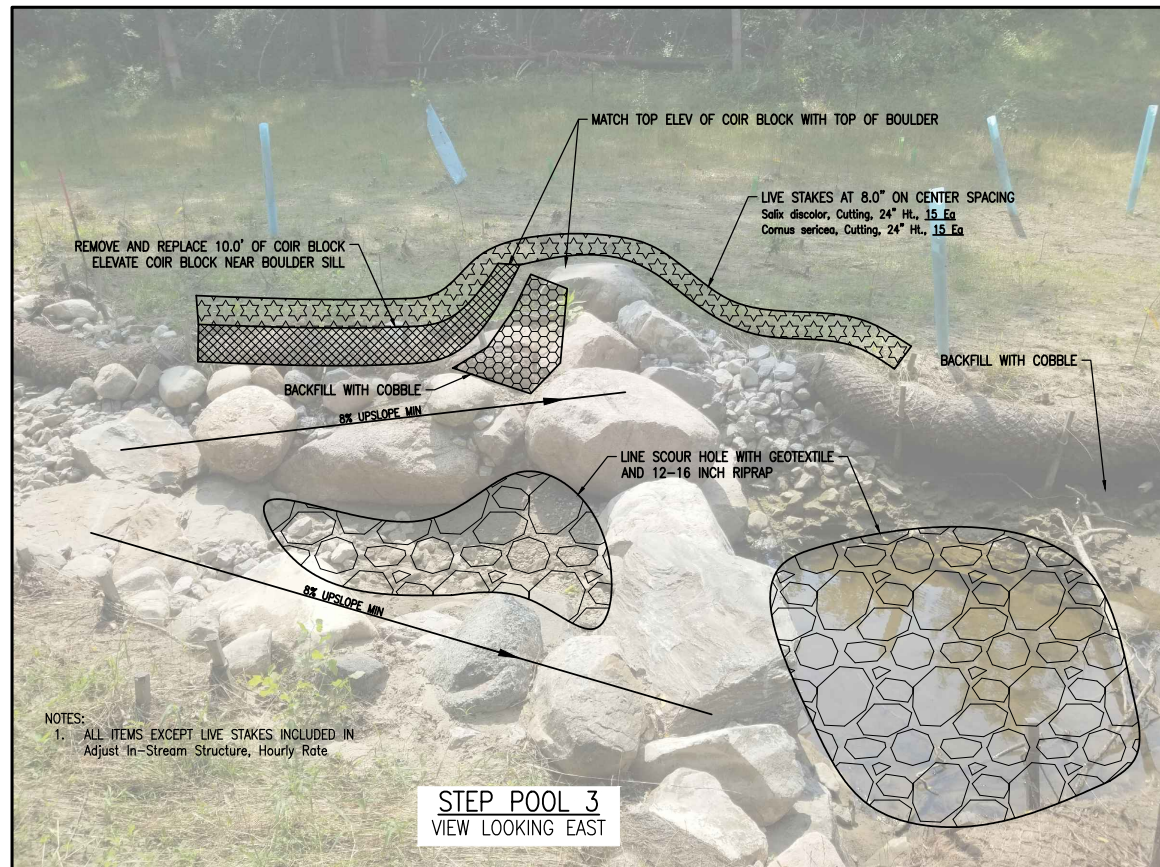
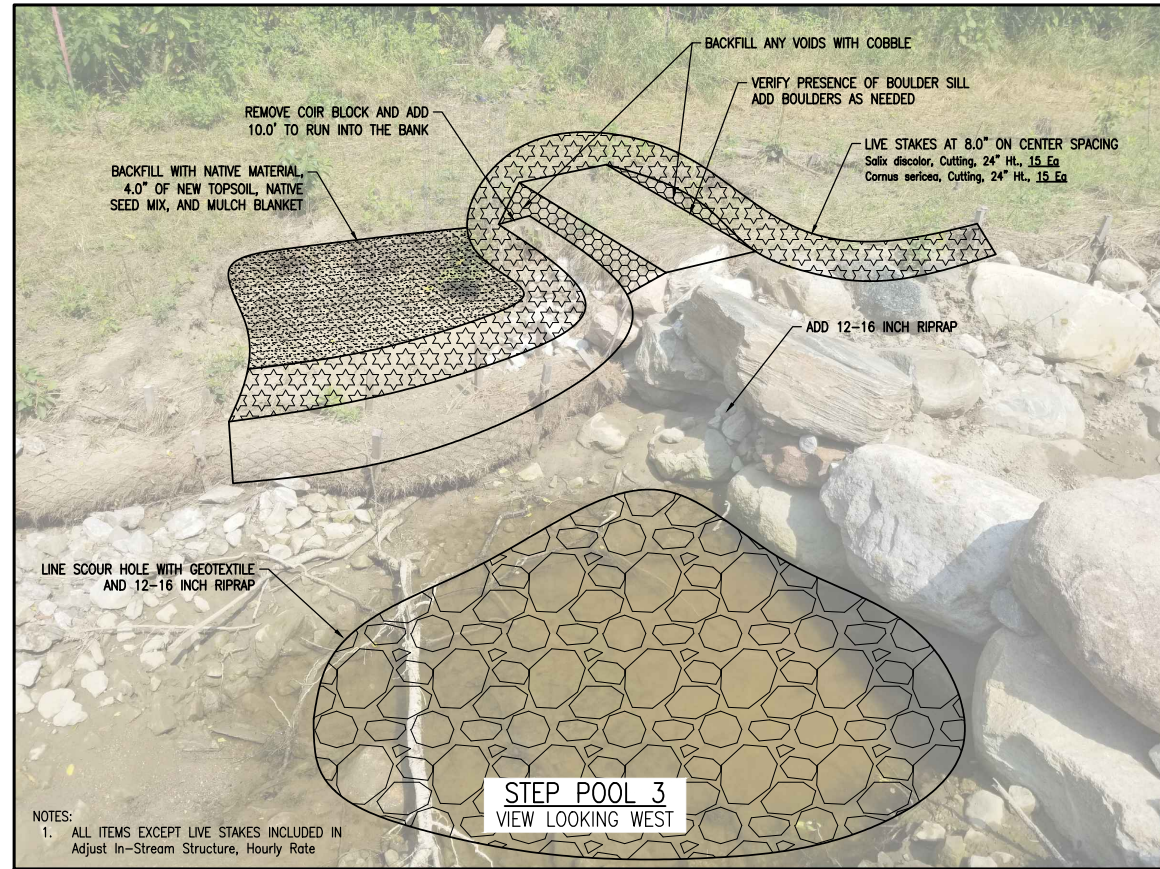
WASHTENAW COUNTY WATER RESOURCES COMMISSIONER
MILLERS CREEK ANN ARBOR-PEPPER PIKE STREAM RELOCATION
STEP POOL 2 REPAIRS



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STEP POOL 3



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| 01/15/2021 | 0115-15000 | | MM | MP | WASHTENAW | ANN ARBOR | 1"=40' | NAD 83 | NAVD 83 |

WASHTENAW COUNTY WATER RESOURCES COMMISSIONER
MILLERS CREEK ANN ARBOR-PEPPER PIKE STREAM RELOCATION
STEP POOL 3 REPAIRS



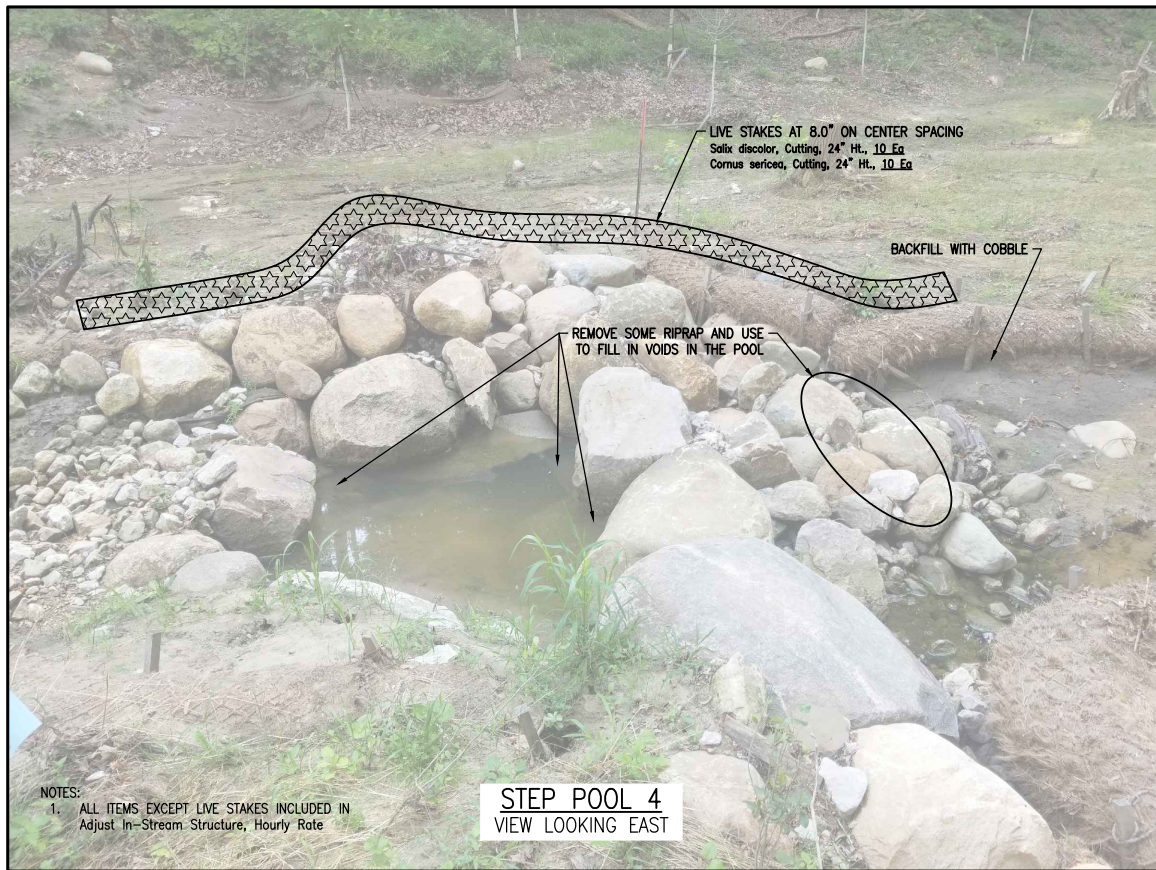
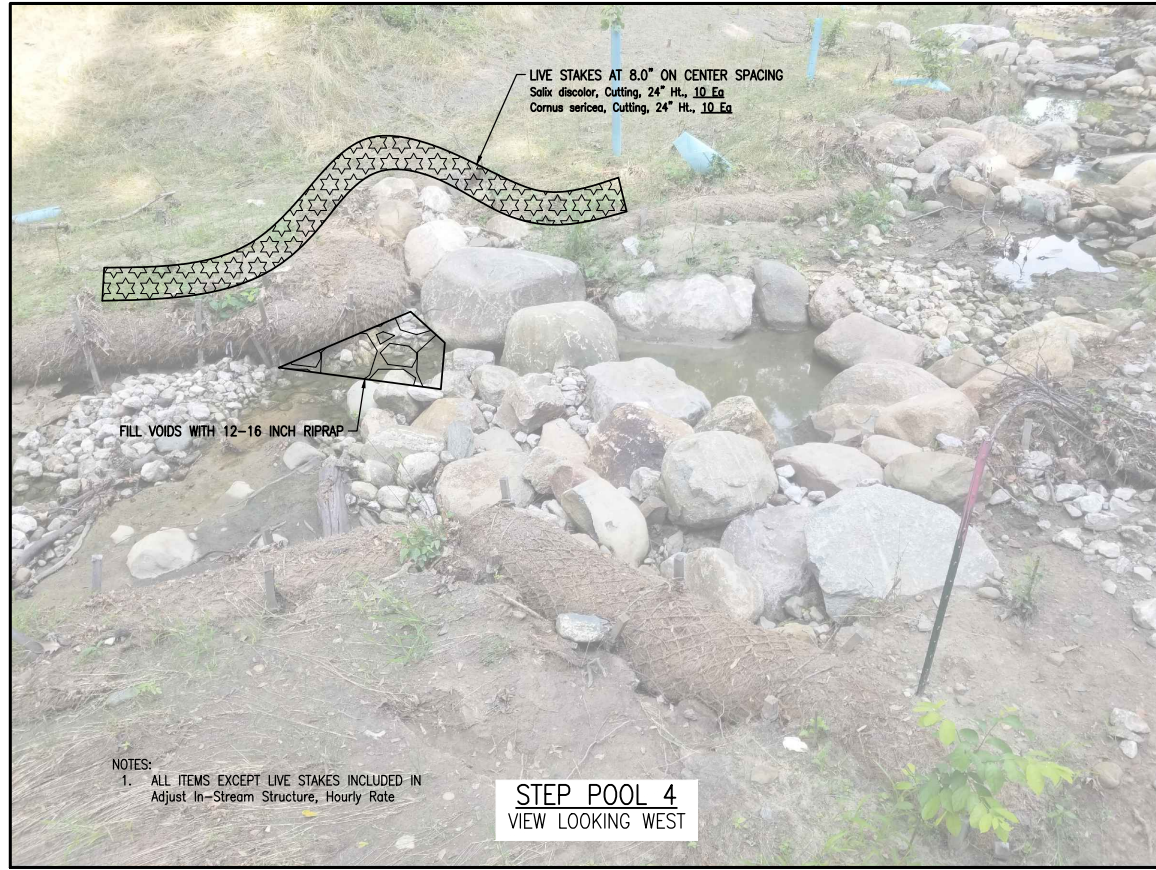
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STEP POOL 4



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| 02/20/21 | 0115-15000 | — | MM | MP3 | WASHTENAW | ANN ARBOR | H 1"=4' V 1"=4' | NAD 83 |
| WASHTENAW COUNTY WATER RESOURCES COMMISSIONER MILLERS CREEK ANN ARBOR-PEPPER PIKE STREAM RELOCATION STEP POOL 4 REPAIRS | | | | | | | | |



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STEP POOL 5



NOTES:
1. ALL ITEMS EXCEPT LIVE STAKES INCLUDED IN
Adjust In-Stream Structure, Hourly Rate

STEP POOL 5
VIEW LOOKING WEST



NOTES:
1. ALL ITEMS EXCEPT LIVE STAKES INCLUDED IN
Adjust In-Stream Structure, Hourly Rate

STEP POOL 5
VIEW LOOKING EAST



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| 01/15/2021 | 0115-15000 | — | — | — | WASHTENAW | ANN ARBOR | H 1"=40' | NAVD 83 |
| WASHTEANAW COUNTY WATER RESOURCES COMMISSIONER MILLERS CREEK ANN ARBOR-PEPPER PIKE STREAM RELOCATION STEP POOL 5 REPAIRS | | | | | | | | |



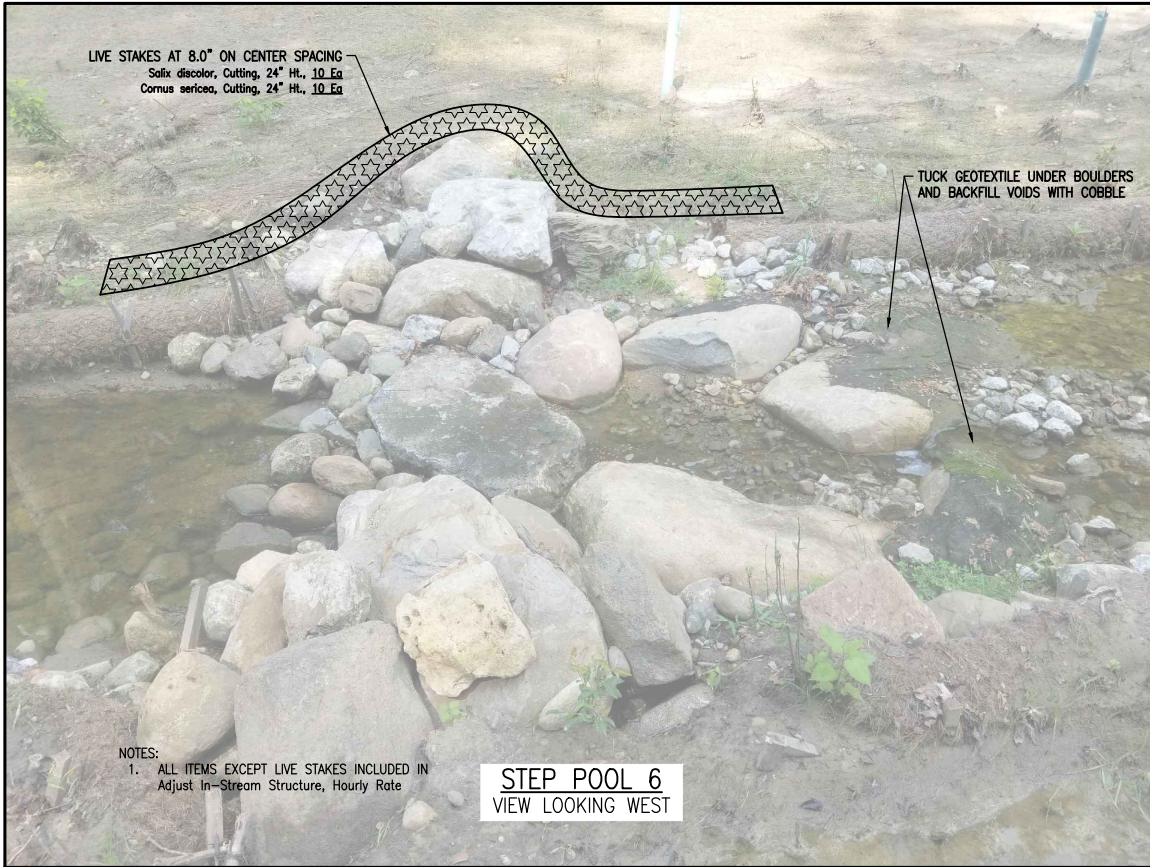
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STEP POOL 6



LIVE STAKES AT 8.0" ON CENTER SPACING
Salix discolor, Cutting, 24" Ht., 10 Ea
Cornus sericea, Cutting, 24" Ht., 10 Ea

TUCK GEOTEXTILE UNDER BOULDERS
AND BACKFILL VOIDS WITH COBBLE

NOTES:
1. ALL ITEMS EXCEPT LIVE STAKES INCLUDED IN
Adjust In-Stream Structure, Hourly Rate

STEP POOL 6
VIEW LOOKING WEST

LIVE STAKES AT 8.0" ON CENTER SPACING
Salix discolor, Cutting, 24" Ht., 10 Ea
Cornus sericea, Cutting, 24" Ht., 10 Ea

BACKFILL VOIDS WITH COBBLE

NOTES:
1. ALL ITEMS EXCEPT LIVE STAKES INCLUDED IN
Adjust In-Stream Structure, Hourly Rate

STEP POOL 6
VIEW LOOKING EAST



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| DATE | PROJ NUMBER | ENG | PROJ LEAD | CADD | COUNTY | CITY/TOWNSHIP | SCALE | VERT DATUM |
| 01/15/2021 | 0115-15000 | — | — | — | WASHTENAW | ANN ARBOR | H: 1"=40' V: 1"=4' | NAVD 83 |

WASHTENAW COUNTY WATER RESOURCES COMMISSIONER
MILLERS CREEK ANN ARBOR-PEPPER PIKE STREAM RELOCATION
STEP POOL 6 REPAIRS

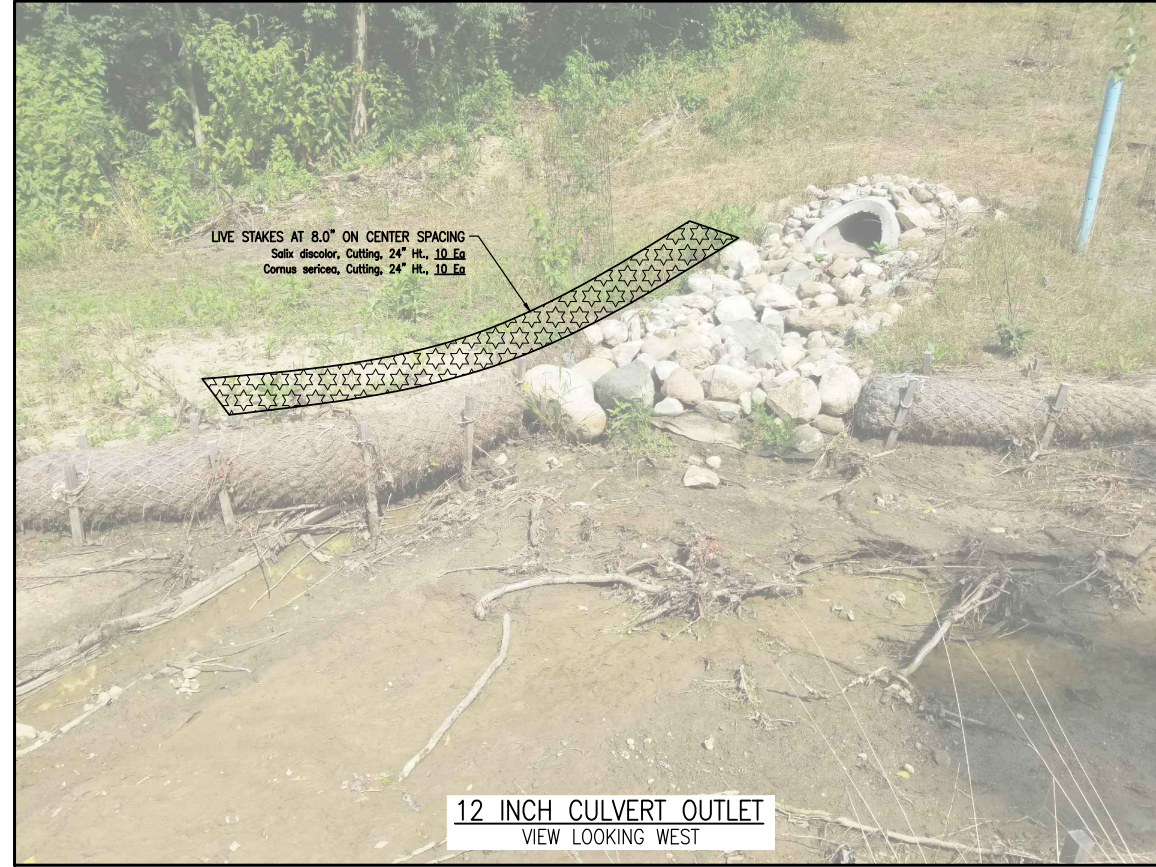
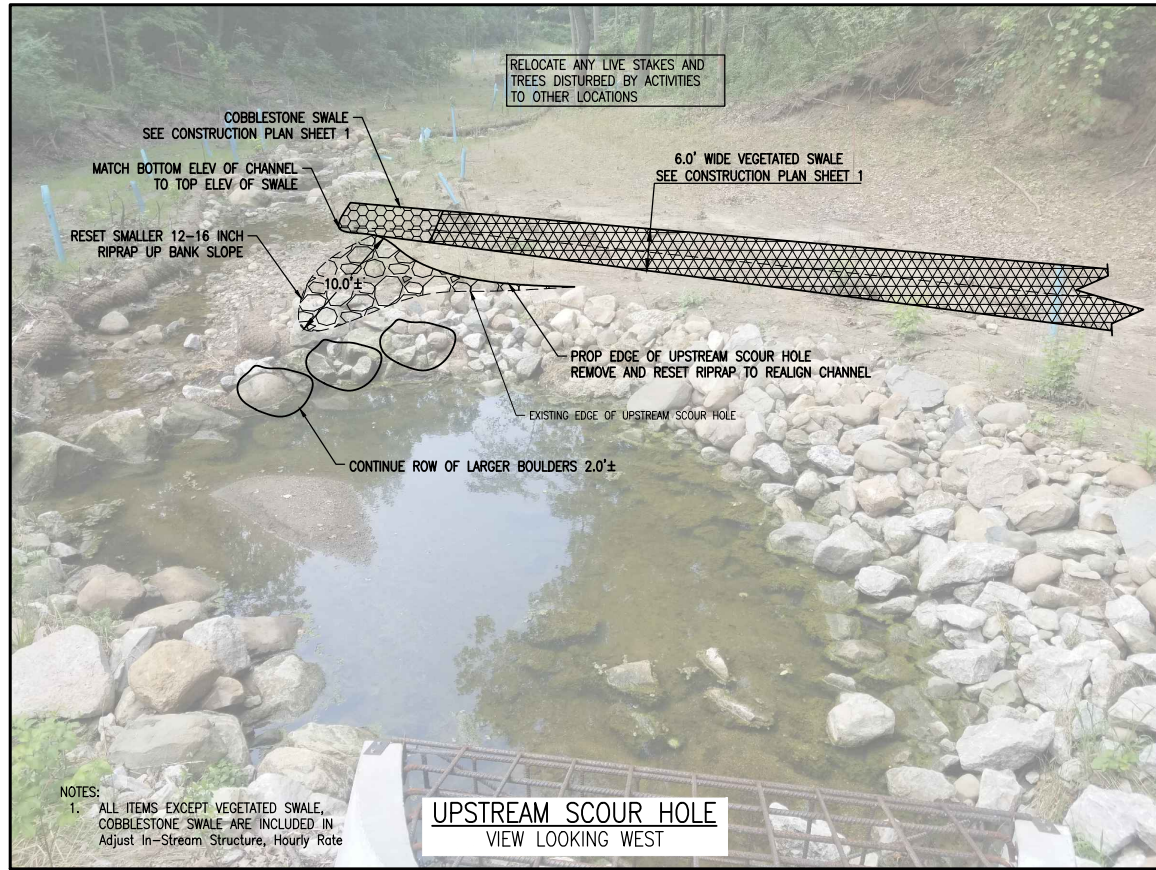


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| DATE | PROJ NUMBER | ENG | PROJ LEAD | CADD | COUNTY | CITY/TOWNSHIP | SCALE | HORIZ DATUM | VERT DATUM |
| 12/20/2021 | 0115-15-000 | --- | --- | SPS | WASHTENAW | ANN ARBOR | H 1"=40' V 1"=4' | NAD 83 | NAVD 88 |

WASHTENAW COUNTY WATER RESOURCES COMMISSIONER
MILLERS CREEK ANN ARBOR-PEPPER PIKE STREAM RELOCATION
MISC REPAIRS



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