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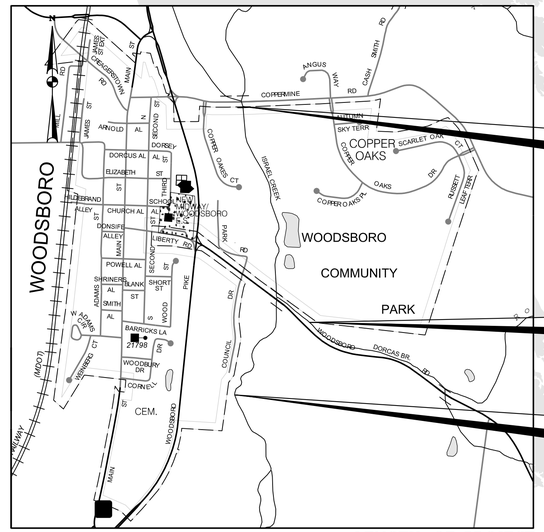
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION

Tentative
Not
for
Public
Information
11/29/2016

S.H.A. CONTRACT NO. FR671A21
FEDERAL AID PROJECT NO. N/A
TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD 550



FREDERICK COUNTY

LENGTH OF PROJECT: 5,550 LINEAR FEET

HORIZONTAL DATUM	NAD 83 /91
VERTICAL DATUM	NAVD 88

SCALE: 1" = 1000 '

1000 0 1000 2000 feet

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,
License No. _____
Expiration Date _____

R-O-W PLAT NUMBERS	*SURVEY BOOK NUMBERS*

REVISIONS
NOTE:
See Sheet No. 2 for List of Revised Sheet Numbers

AASHTO DESIGN CRITERIA

THIS PROJECT WAS DESIGNED IN ACCORDANCE WITH THE 2001 PUBLICATION OF AASHTO'S "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS."

STANDARD SPECIFICATIONS BOOK, BOOK OF STANDARDS AND MUTCD

ALL WORK ON THIS PROJECT SHALL CONFORM TO: THE MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATIONS SPECIFICATIONS ENTITLED STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS DATED JULY 2008 REVISIONS THEREOF OR ADDITIONS THERETO; THE SPECIAL PROVISIONS INCLUDED IN THE INVITATION FOR BIDS BOOK; THE ADMINISTRATIONS BOOK OF STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES AND THE LATEST ADOPTED MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

RIGHT OF WAY

RIGHT OF WAY AND EASEMENT LINES SHOWN ON THESE PLANS ARE FOR ASSISTANCE IN INTERPRETING THE PLANS. THEY ARE NOT OFFICIAL. FOR OFFICIAL FEE RIGHT OF WAY AND EASEMENT INFORMATION, SEE APPROPRIATE RIGHT OF WAY PLATS.

UTILITIES

THE LOCATION OF UTILITIES SHOWN ON THE PLANS ARE FOR INFORMATION AND GUIDANCE ONLY. NO GUARANTEE IS MADE OF THE ACCURACY OF SAID LOCATIONS.

COMPLETENESS OF DOCUMENTS

THE STATE HIGHWAY ADMINISTRATION SHALL ONLY BE RESPONSIBLE FOR THE COMPLETENESS OF DOCUMENTS OBTAINED DIRECTLY FROM THE STATE HIGHWAY ADMINISTRATION'S CASHIER'S OFFICE. FAILURE TO ATTACH ADDENDA MAY CAUSE THE BID TO BE IRREGULAR.

ADA COMPLIANCE

THE DESIGN OF THIS PROJECT HAS INCORPORATED FACILITIES FOR THE ELDERLY AND HANDICAPPED IN COMPLIANCE WITH THE STATE AND FEDERAL LEGISLATION

ENVIRONMENTAL INFORMATION
MDE# TBD

ALL STORMWATER MANAGEMENT FACILITIES CONSTRUCTED FOR CONTRACT NO. FR671A21 SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE STATE HIGHWAY ADMINISTRATIONS BEST MANAGEMENT PRACTICES (BMP) INSPECTION AND REMEDIATION PROGRAM.

SEDIMENT AND EROSION CONTROL REGULATIONS WILL BE STRICTLY ENFORCED DURING CONSTRUCTION.

STANDARD STABILIZATION NOTE :

FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, COMPLETE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN THREE (3) CALENDER DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN DAYS (7) AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

OWNERS / DEVELOPERS CERTIFICATION :

I / WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I HEREBY AUTHORIZE THE RIGHT OF ENTRY FOR PERIODIC ON-SITE EVALUATION BY STATE OF MARYLAND, DEPARTMENT OF THE ENVIRONMENT, COMPLIANCE INSPECTORS.

APPROVAL RECOMMENDED

DEPUTY DIRECTOR OFFICE OF ENVIRONMENTAL DESIGN — DATE

APPROVAL RECOMMENDED

DIRECTOR OFFICE OF ENVIRONMENTAL DESIGN — DATE

APPROVED

DEPUTY ADMINISTRATOR /CHIEF ENGINEER FOR PLANNING, ENGINEERING, REAL ESTATE AND ENVIRONMENT — DATE

CENTURY ENGINEERING
CONSULTING ENGINEERS – PLANNERS
10710 GILROY ROAD
HUNT VALLEY, MD 21031

BY: JTURNER

DRILL HOLES

SURVEY BOOK NO.

\\vmhv8ln\Projects2\2016\Transportation\121112.07 SHA Israel Creek\CADD\1_pGN-T0001_Israel Creek.dgn
Monday, November 21, 2016 AT 07:55 AM

INDEXED

ABBREVIATIONS

ABAND. ..... Abandoned
AASHTO ..... American Association of State Highway Transportation Officials
ADT..... Average Daily Traffic
AHD..... Ahead
APPROX. ..... Approximate
℄ or B/L ..... Baseline
BK ..... Back /Book
BIT. ..... Bituminous
B.C. ..... Bituminous Concrete
B.M. ..... Bench Mark
BOT. ..... Bottom
B.O.F. ..... Base of Foundation
C.C. ..... Center of Curve
CAP ..... Corrugated Aluminum Pipe
CAPA ..... Corrugated Aluminum Pipe Arch
CATV ..... Cable Television
C.B.R. ..... California Bearing Ratio
CHT ..... Curb Height Transition
℄ or C/L ..... Centerline
CL. ..... Class
CLF ..... Chainlink Fence
CMP ..... Corrugated Metal Pipe
C.O. ..... Cleanout
COMB. ..... Combination
CONC. ..... Concrete
CONSTR. ..... Construction
COR. ..... Corner
CORR. ..... Correction
CPP–S ..... Corrugated Polyethylene Pipe – Type 'S'
CSP ..... Corrugated Steel Pipe – Aluminized Type 2
CSPA ..... Corrugated Steel Pipe Arch – Aluminized Type 2
DC ..... Degree of Curve
D.H.V. ..... Design Hourly Volume
D.I. ..... Drop Inlet
DIA. ..... Diameter
D.O. ..... Double Opening
E ..... East
E ..... Electric
E ..... External Distance
EA ..... Each
EB ..... Eastbound
EBR ..... Eastbound Roadway
ELEV ..... Elevation
ES ..... End Section
EX or EXIST .. Existing
FCH ..... Full Curb Height
FDC ..... Fully Dpressed Curb
FT ..... Feet
F or FL ..... Flowline
F.B.D. ..... Flat Bottom Ditch
F.H. ..... Fire Hydrant
FWD. ..... Forward
G ..... Gas
G.V. ..... Gas Valve
H.B. ..... Handbox
HDPE ..... High Density Polyethylene
HDWL. ..... Headwall
HERCP..... Horizontal Ellipitical Reinforced Concrete Pipe
HP..... High Point
IFB ..... Information for Bid
IN ..... Inch
I.S.T..... Inlet Sediment Trap
INV..... Invert
J.B. ..... Junction Box
K ..... K Inlet
L ..... Length
LF ..... Linear Feet
L.L. ..... Liquid Limit
LP ..... Low Point
L.P. ..... Light Pole
LT..... Left
MAC..... Macadam
M.C. ..... Moisture Content
MAX. ..... Maximum
M.D.D..... Maximum Dry Content
MOD..... Modified
MIN..... Minimum
N ..... North
NB ..... Northbound
NE ..... Northeast
N.P. ..... Non–Plastic
NTS ..... Not To Scale
O.C. ..... On Center
OHE ..... Overhead Electric
O.M. ..... Optimum Moisture
PAV'T..... Pavement
PC ..... Point of Curvature
PCC ..... Point of Compound Curvature
P/C ..... Point of Crown
P/GE ..... Profile Grade Elevation
P.G.E. ..... Profile Ground Elevation
P.G.L. ..... Profile Grade Line
P/GL ..... Profile Ground Line
P/R ..... Point of Rotation
P.I. ..... Plasticity Index
PI ..... Point of Intersection
POC ..... Point On Curve
POT ..... Point On Tangent
PPWP ..... Polyvinyl Chloride Profile Wall Pipe
PROP ..... Proposed
PRC ..... Point of Reverse Curve
PT ..... Point
PT ..... Point of Tangency
PVC ..... Point of Vertical Curve
PVC ..... Polyvinyl Chloride
PVI ..... Point of Vertical Intersection
PVRC ..... Point of Vertical Reverse Curve
PVT ..... Point of Vertical Tangency
R ..... Radius
R.F. ..... Rock Fragments
RT ..... Right
RW or R/W ... Right of Way
RCP ..... Reinforced Concrete Pipe
RCPP ..... Reinforced Concrete Pressure Pipe
R.Q.D. ..... Rock Quality Designation
R.M. ..... Rootmat
S ..... South
SAN. ..... Sanitary Sewer
SB or S/B ..... Southbound
S.D. ..... Storm Drain
S.D.D. ..... Surface Drain Ditch
S/E ..... Super Elevation
SF ..... Silt Fence
SF ..... Square Feet
SHT. ..... Sheet
SPP ..... Structural Steel Plate Pipe
SPPA ..... Structural Steel Plate Pipe Arch
S.P.T. ..... Standard Penetration Testing
SRP ..... Steel Spiral Rib Pipe – Aluminized Type 2
SRPA ..... Steel Spiral Rib Pipe Arch – Aluminized Type 2
SSD ..... Stopping Sight Distance
SSF ..... Super Silt Fence
STD. ..... Standard
STA. ..... Station
SO. ..... Single Opening
SY ..... Square Yards
SWM ..... Stormwater Management
T ..... Tangent
T ..... Telephone
T.C. ..... Top of Cover
T.G. ..... Top of Grate
T or TL ..... Traverse Line
T.M. ..... Top of Manhole
TOC ..... Top of Curb
TRAV..... Traverse
TS ..... Temporary Swale
T.S. ..... Top of Slab
T.S. ..... Topsoil
TYP. ..... Typical
U.D. ..... Under Drain
U.G. ..... Underground
U.P. ..... Utility Pole
USDA ..... United States Department of Agriculture
VCL ..... Vertical Clearance
V.C.L. ..... Vertical Curve Length
W ..... Water
W ..... West
WB ..... Westbound
WB ..... Wetland Buffer
WBR ..... Westbound Roadway
W.M. ..... Water Meter
W.S. ..... Wrapped Steel
WUS ..... Waters of the United States
W.V. ..... Water Valve
CCB..... CLAY CHANNEL BLOCK
HRF ..... HABITAT ROUGHNESS FEATURE
VGCS..... VALLEY WIDE GRADE CONTROL STRUCTURE
WDA ..... WETLAND DEPRESSIONAL AREA

CONVENTIONAL SIGNS
(SAMPLES)

ELECTRICAL HAND BOX – SIGNALS ..... H.B.
STATE, COUNTY OR CITY LINES .....
EXISTING TRAFFIC BARRIER .....
EXISTING WOOD FENCE LINE .....
EXISTING METAL FENCE LINE .....
EXISTING EDGE OF PAVEMENT .....
EDGE OF SHOULDER .....
TRAVERSE POINT .....
TRAFFIC LIGHT .....
ELECTRIC MANHOLE ..... E
TRAFFIC SIGN .....
SANITARY SEWER LINE & MANHOLE ..... SS SAN
STORM DRAIN MANHOLE ..... SD
UTILITY POLE .....
EXISTING RIGHT OF WAY .....
EXISTING POINT & LINE OF DIVISION .....
EXISTING EASEMENT LINE .....
BASE LINE ..... 100+51
EXISTING PIPE / CULVERT .....
EXISTING DROP INLET .....
EXISTING 5' MAJOR CONTOUR 20
EXISTING 1' MINOR CONTOUR .....

WETLAND .....
WETLAND BUFFER ..... B
WATERS OF THE U.S. ..... WUS
HEDGE /TREE LINE .....
BUSH /TREE .....
CONIFEROUS TREE .....
SOIL BORING .....
LIMITS OF DISTURBANCE ..... LOD
PROPOSED 5' MAJOR CONTOUR 20
PROPOSED 1' MINOR CONTOUR .....
VALLEY WIDE GRADE CONTROL STRUCTURE (VGCS) .....
HABITAT /ROUGHNESS FEATURE (HRF) .....
WETLAND DEPRESSIONAL AREA (WDA) .....
SCOUR PROTECTION POOL .....

ROCK CASCADE .....
PROPOSED FOOTPATH .....

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DATUM: NAD 83/91 Horizontal
NAVD 88 Vertical

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CONSULTING ENGINEERS – PLANNERS
10710 GILROY ROAD
HUNT VALLEY, MD 21031

BY: jturner

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF ENVIRONMENTAL DESIGN

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

REVISIONS

NOTES AND ABBREVIATIONS SHEET

SCALE NTS ADVERTISED DATE ____ CONTRACT NO. FR671A21

DESIGNED BY WLO, AEB
DRAWN BY SEH
CHECKED BY CAL
F.A.P. NO. ____
COUNTY FREDERICK
LOGMILE —
HORIZONTAL SCALE ____
VERTICAL SCALE ____

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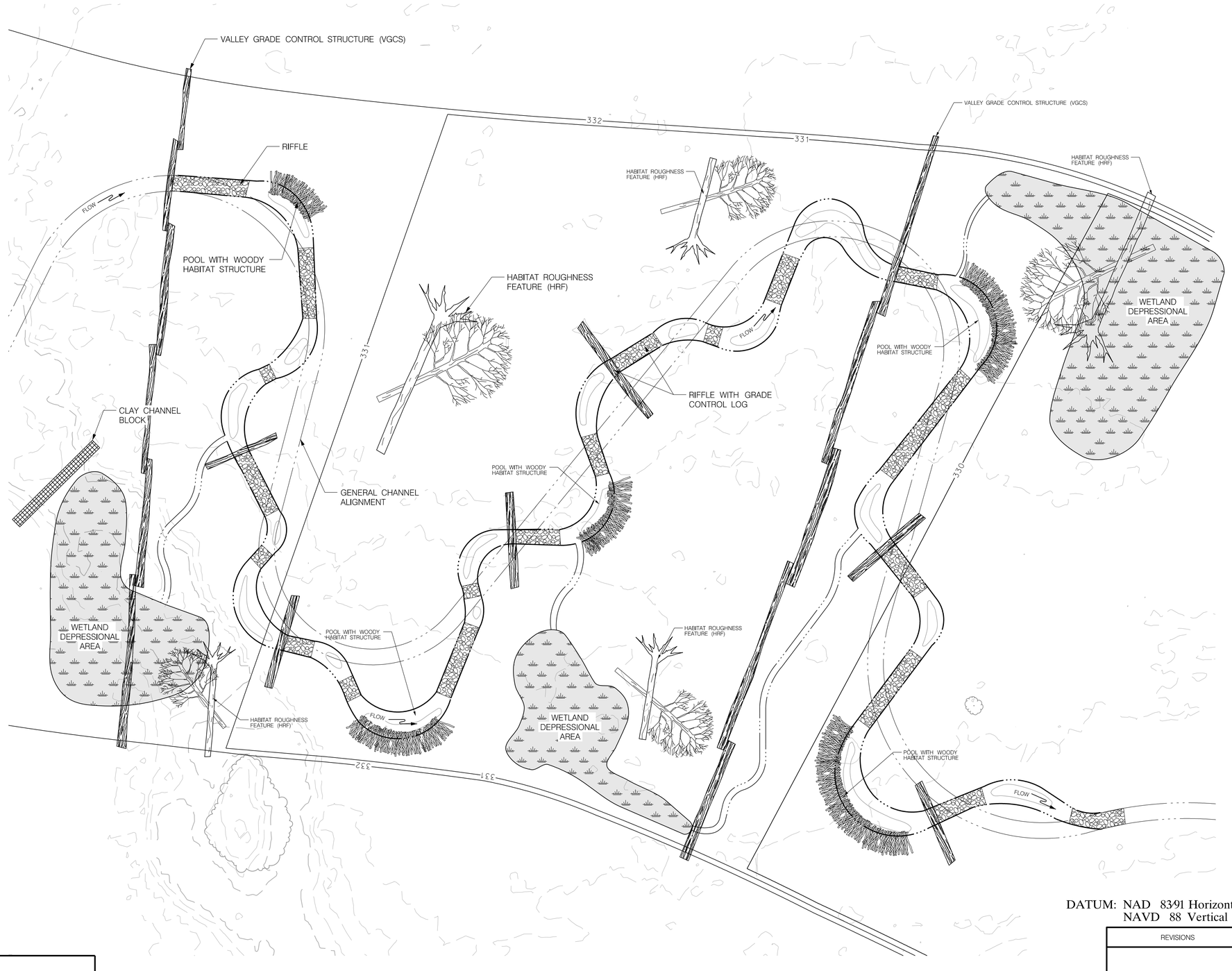

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NOTE: SEE DETAIL SHEETS DE-03 – DE-06 FOR TYPICAL DETAILS OF INDIVIDUAL STRUCTURES

DATUM: NAD 8391 Horizontal
NAVD 88 Vertical

TYPICAL CHANNEL PLANFORM

NOT TO SCALE

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HUNT VALLEY, MD 21031

BY: jturner

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF ENVIRONMENTAL DESIGN

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD-550

REVISIONS

STREAM RESTORATION DETAILS

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DRAWN BY SEH
CHECKED BY CAL
F.A.P. NO. ____

COUNTY FREDERICK
LOGMILE —
HORIZONTAL SCALE ____
VERTICAL SCALE ____

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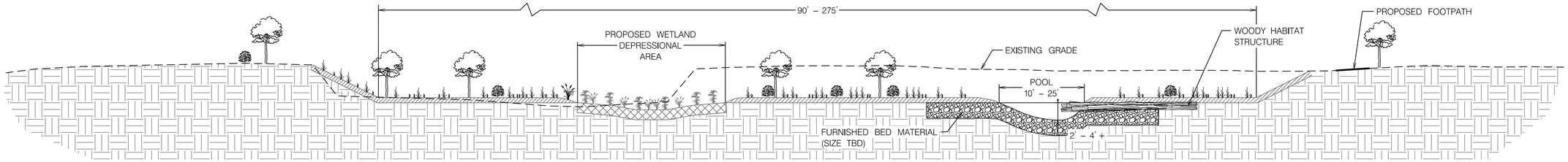
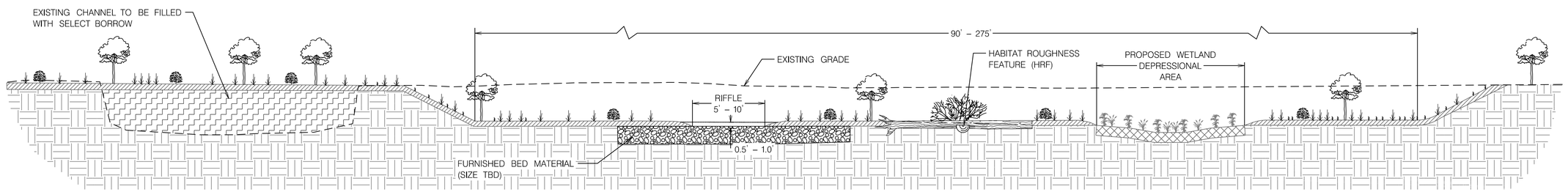


TYPICAL VALLEY CROSS–SECTION WITH CONSTRUCTED POOL

NOT TO SCALE



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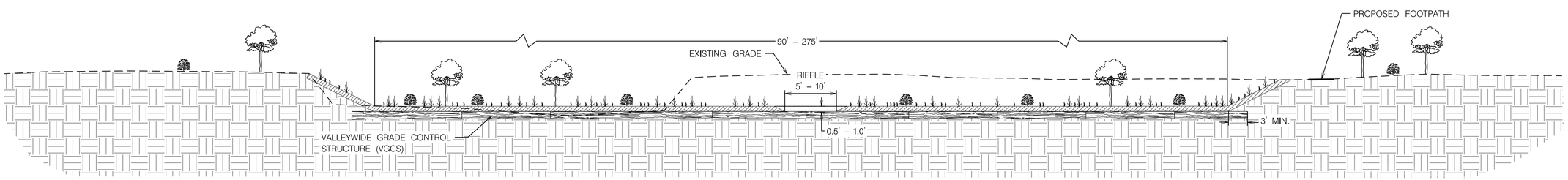

TYPICAL VALLEY CROSS–SECTION WITH VALLEY WIDE GRADE CONTROL STRUCTURE (VGCS)

NOT TO SCALE

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for
Public
Information
11/29/2016

NOTE: SEE DETAIL SHEETS DE–03 – DE–06 FOR TYPICAL DETAILS OF INDIVIDUAL STRUCTURES.

DATUM: NAD 8391 Horizontal
NAVD 88 Vertical

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
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TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

REVISIONS

STREAM RESTORATION DETAILS

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DRAWN BY SEH
CHECKED BY CAL
F.A.P. NO. ____

COUNTY FREDERICK
LOGMILE ——
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 5'

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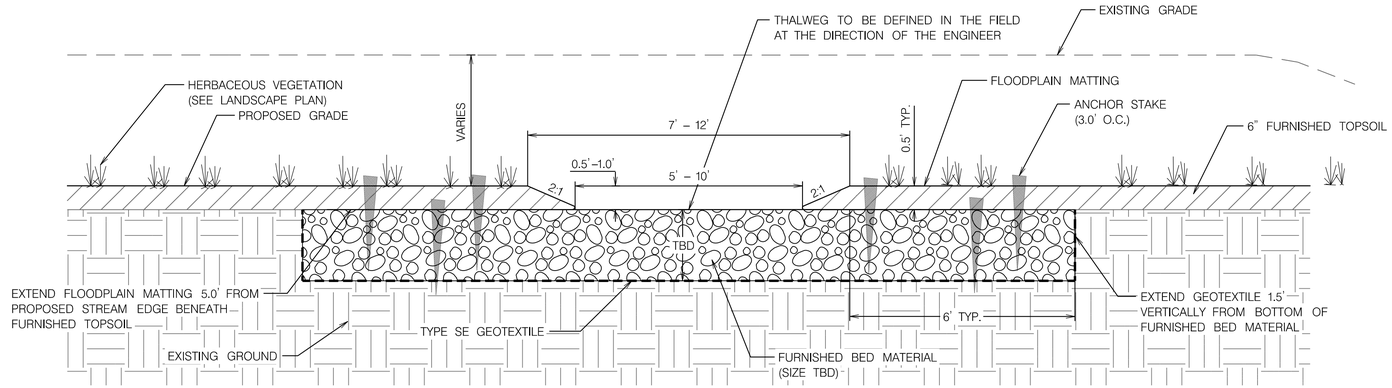
HUNT VALLEY, MD 21031

BY: jturner



TYPICAL CONSTRUCTED RIFFLE – SECTION VIEW

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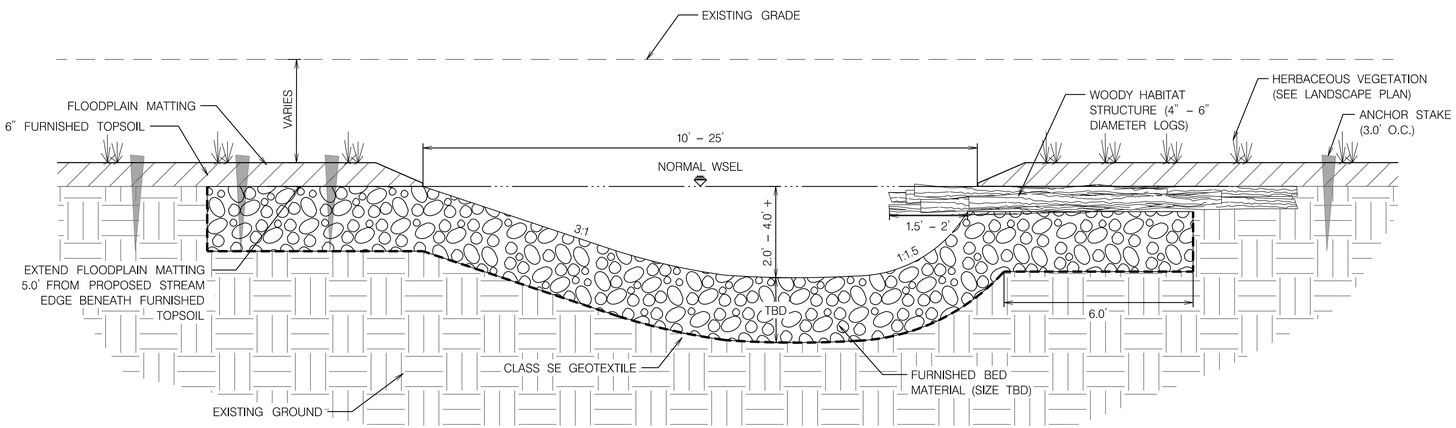

TYPICAL CONSTRUCTED POOL WITH WOODY HABITAT STRUCTURE – SECTION A–A'

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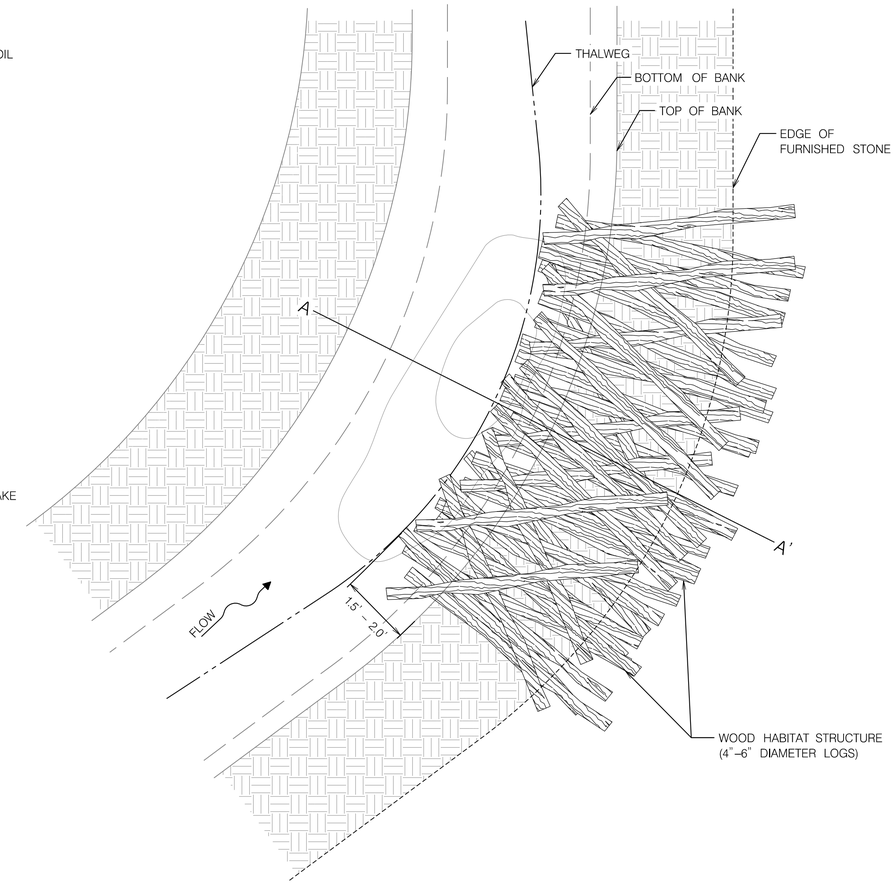

TYPICAL POOL WITH WOODY HABITAT STRUCTURE

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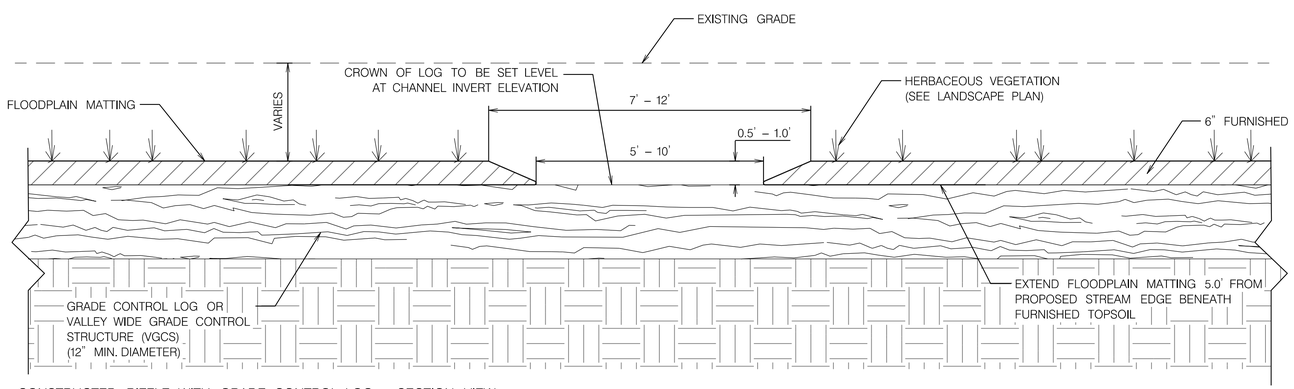

CONSTRUCTED RIFFLE WITH GRADE CONTROL LOG – SECTION VIEW

NOT TO SCALE

NOTE: ALL TYPICAL SECTIONS ARE AS VIEWED FACING DOWNSTREAM.

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STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
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TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

REVISIONS

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F.A.P. NO. ____

COUNTY FREDERICK
LOGMILE ——
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 5'

DRAWING NO. DE – 03 OF 06 SHEET NO. 05 OF 24

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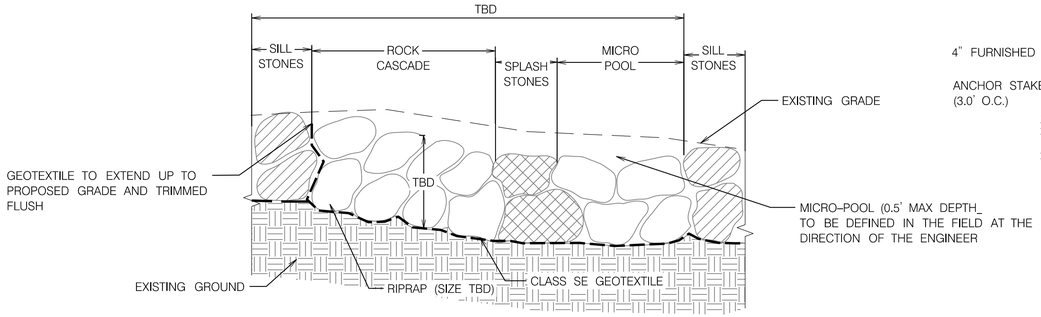

ROCK CASCADE TYPICAL – PROFILE

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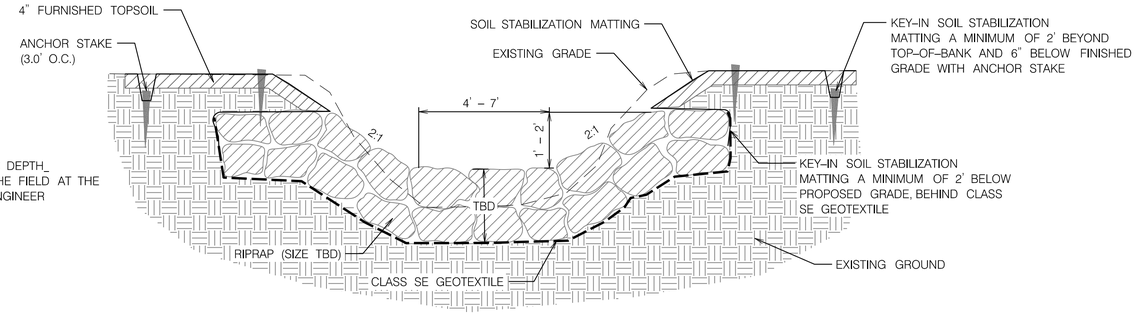

SILL – SECTION VIEW

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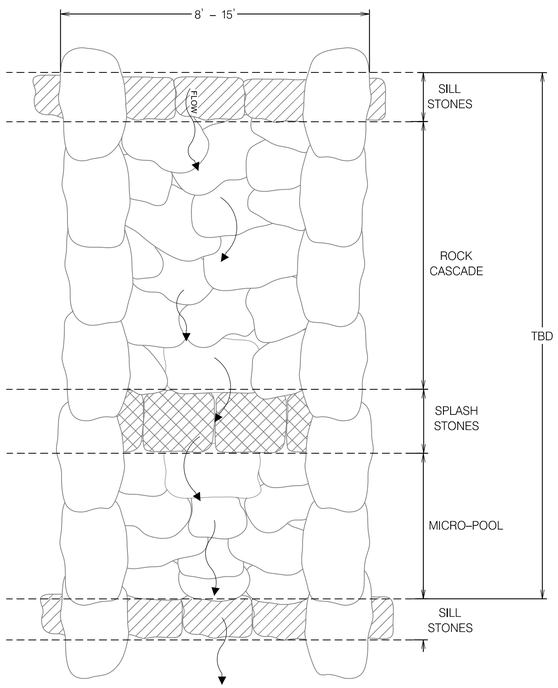

ROCK CASCADE TYPICAL – PLAN VIEW

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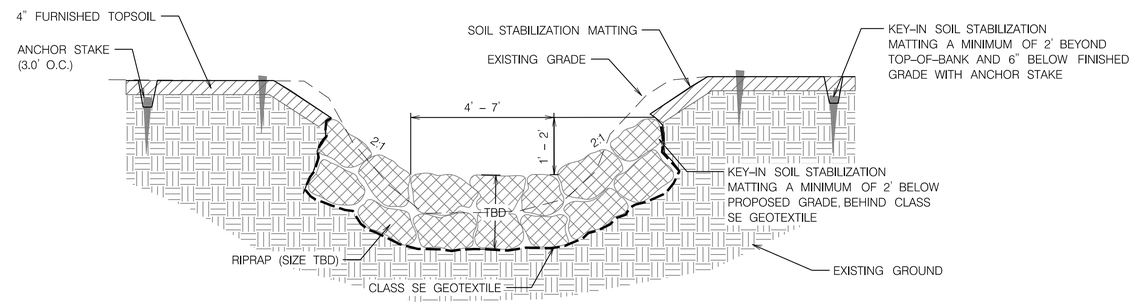

ROCKS CASCADE /SPLASH STONE – SECTION VIEW

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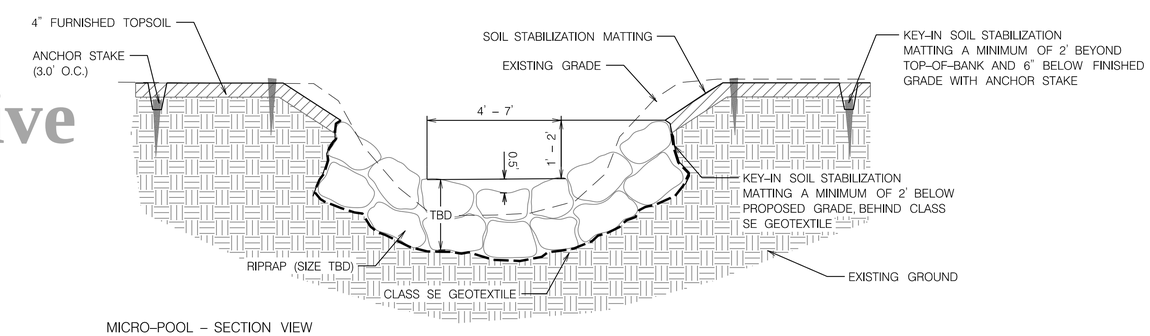

MICRO–POOL – SECTION VIEW

NOT TO SCALE

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11/29/2016

DATUM: NAD 8391 Horizontal
NAVD 88 Vertical

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF ENVIRONMENTAL DESIGN

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

REVISIONS

STREAM RESTORATION DETAILS

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DESIGNED BY WLO, AEB
DRAWN BY SEH
CHECKED BY CAL
F.A.P. NO. _____

COUNTY FREDERICK
LOGMILE —
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 5'

DRAWING NO. DE – 04 OF 06

SHEET NO. 06 OF 24

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CONSULTING ENGINEERS – PLANNERS
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HUNT VALLEY, MD 21031

BY: jturner

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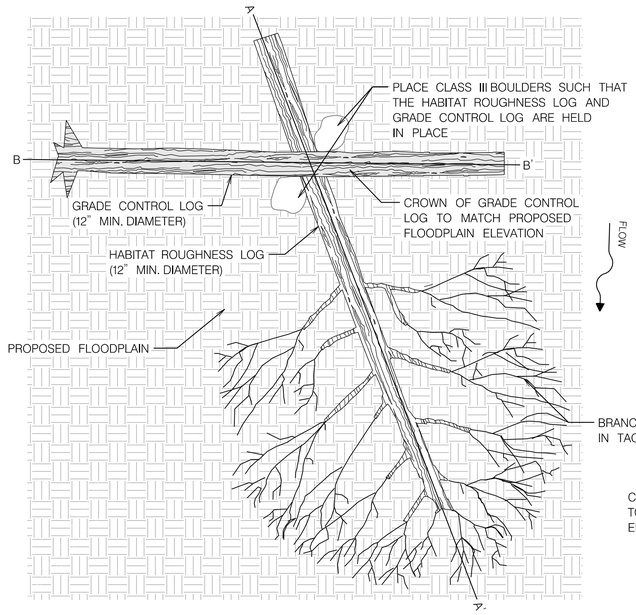

HABITAT ROUGHNESS FEATURE (HRF) – PLAN VIEW

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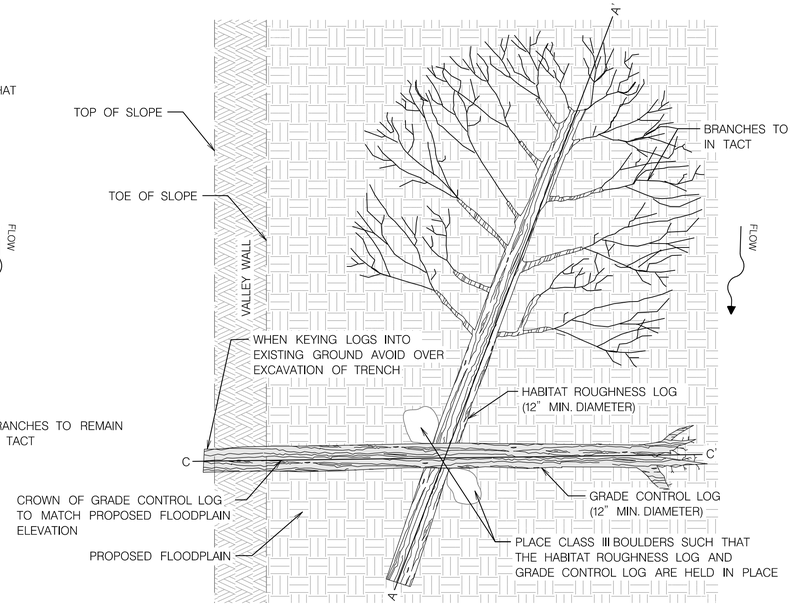
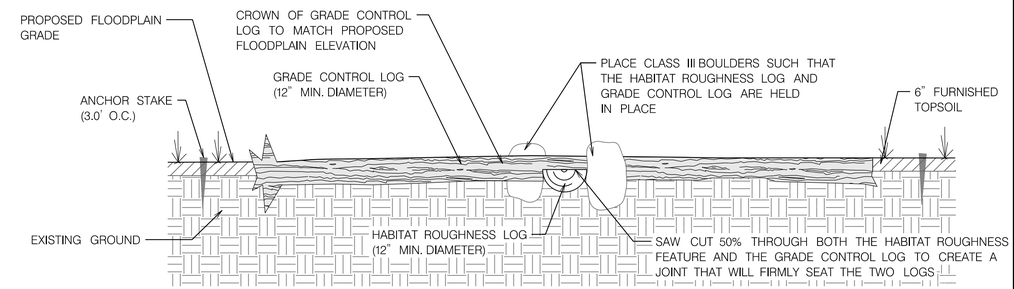


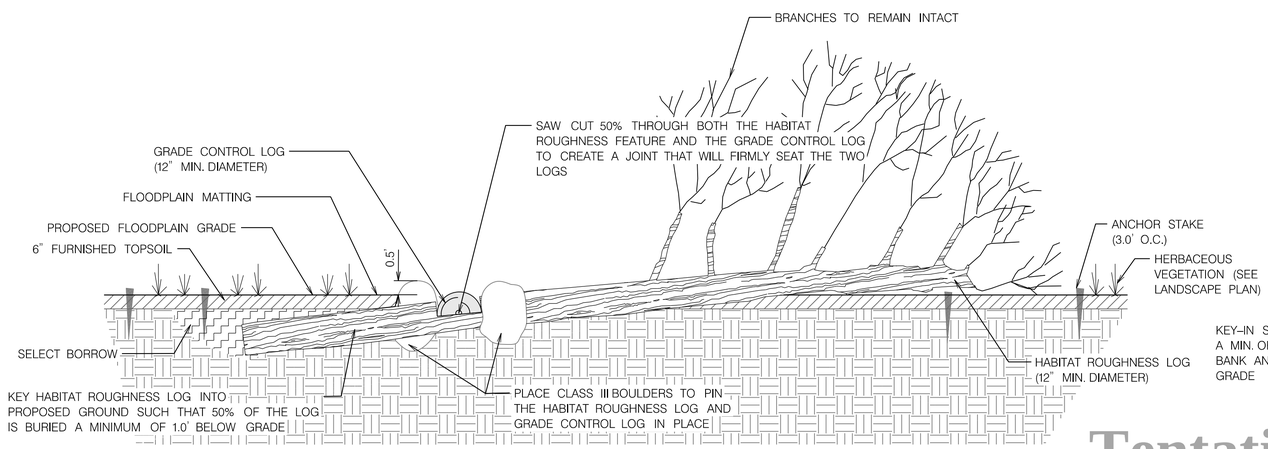
HABITAT ROUGHNESS FEATURE (HRF) VALLEY WALL KEY–IN – PLAN VIEW

NOT TO SCALE



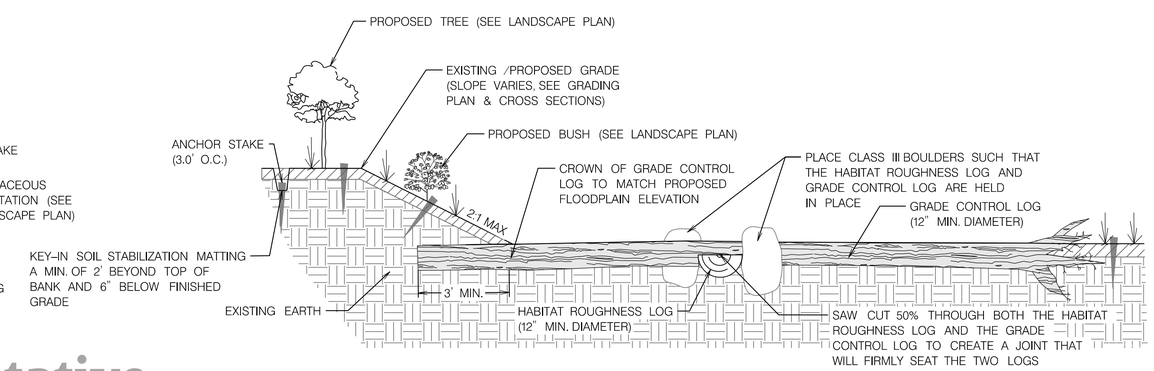
HABITAT ROUGHNESS FEATURE (HRF) – SECTION B–B'

NOT TO SCALE



HABITAT ROUGHNESS FEATURE (HRF) – SECTION A–A'

NOT TO SCALE



HABITAT ROUGHNESS FEATURE (HRF), VALLEY WALL KEY–IN – SECTION C–C'

NOT TO SCALE

Tentative
Not
for
Public
Information
11/29/2016

DATUM: NAD 83/91 Horizontal
NAVD 88 Vertical

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF ENVIRONMENTAL DESIGN

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

REVISIONS

STREAM RESTORATION DETAILS

SCALE N.T.S. ADVERTISED DATE ____ CONTRACT NO. FR671A21

DESIGNED BY WLO, AEB
DRAWN BY SEH
CHECKED BY CAL
F.A.P. NO. ____

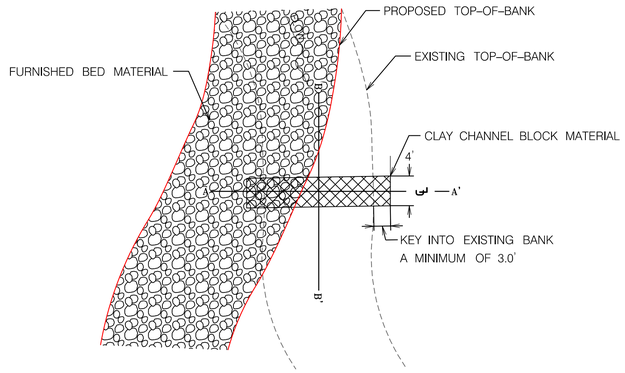
COUNTY FREDERICK
LOGMILE ——
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 5'

DRAWING NO. DE – 05 OF 06 SHEET NO. 07 OF 24

PLOTTED: Monday, November 21, 2016 AT 02:51 PM
FILE: \\mhvfile\Projects2\2016\Transportation\121112.07 SHA Israel Creek\CADD\3_pDE-P000_Israel_Creek.dgn

CENTURY ENGINEERING
CONSULTING ENGINEERS – PLANNERS
10710 GILROY ROAD
HUNT VALLEY, MD 21031

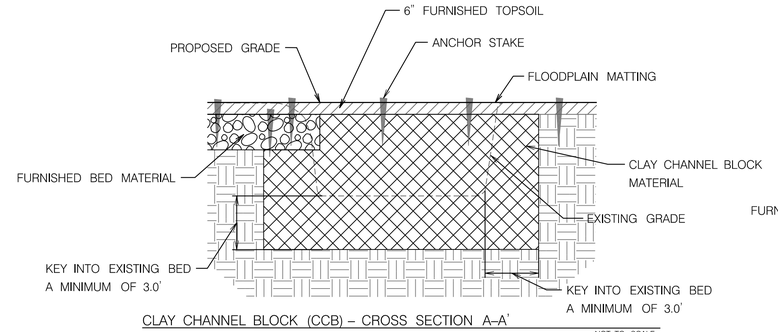
BY: jturner



CLAY CHANNEL BLOCK (CCB) – CROSS SECTION A–A'

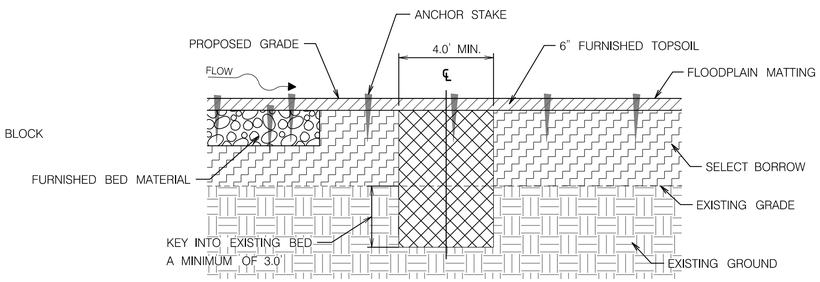
NOTE: SEE CLAY CHANNEL BLOCK CROSS-SECTION DETAILS ON THIS SHEET FOR ADDITIONAL INFORMATION REGARDING SUBGRADE CONSTRUCTION

NOT TO SCALE



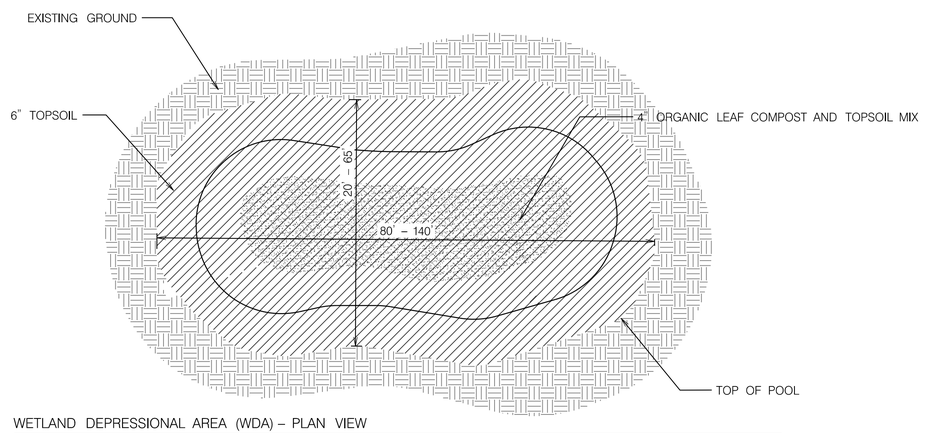
CLAY CHANNEL BLOCK (CCB) – CROSS SECTION A–A'

NOT TO SCALE



CLAY CHANNEL BLOCK (CCB) – CROSS SECTION B–B'

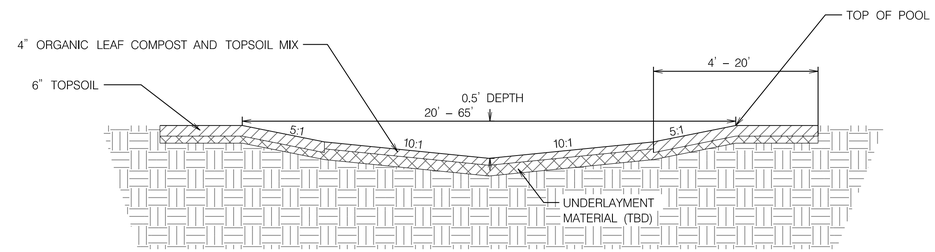
NOT TO SCALE



WETLAND DEPRESSIONAL AREA (WDA) – PLAN VIEW

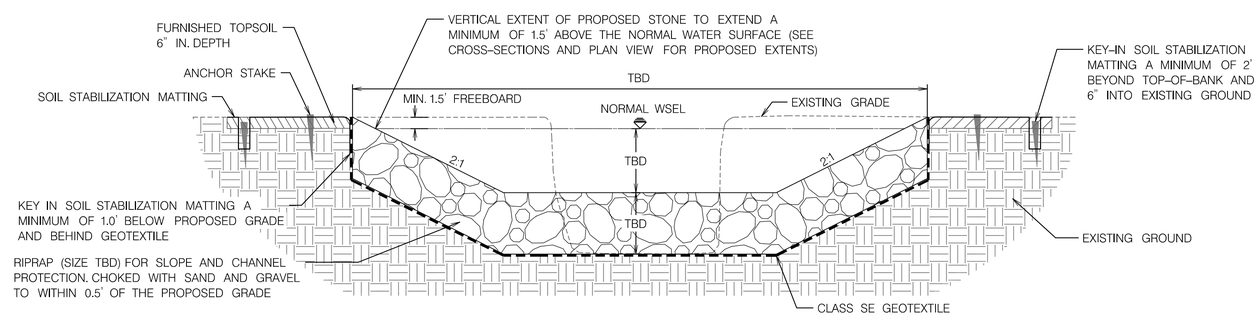
NOT TO SCALE

NOTES:
1. SEE PLAN VIEW FOR PROPOSED WETLAND DEPRESSIONAL AREA LOCATIONS. EXACT EXTENTS TO BE DEFINED IN THE FIELD AT THE DIRECTION OF THE ENGINEER.
2. ORGANIC LEAF COMPOST AND TOPSOIL MIX TO CONSIST OF EQUAL PARTS TOPSOIL AND ORGANIC LEAF COMPOST MIXED ON-SITE.



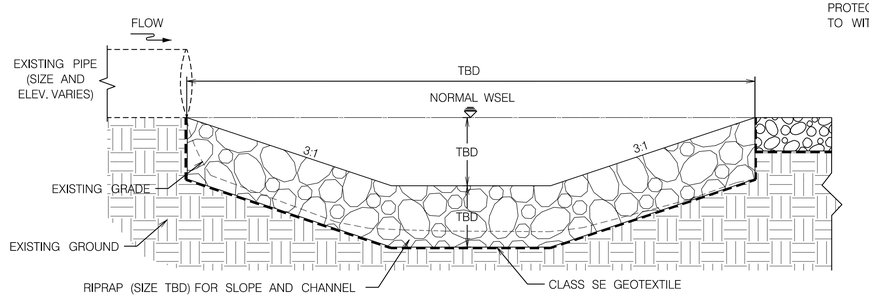
WETLAND DEPRESSIONAL AREA – SECTION VIEW

NOT TO SCALE



SCOUR PROTECTION POOL – CROSS-SECTION

NOT TO SCALE



SCOUR PROTECTION POOL – PROFILE

NOT TO SCALE

Tentative
Not
for
Public
Information
11/29/2016

DATUM: NAD 83/91 Horizontal
NAVD 88 Vertical

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF ENVIRONMENTAL DESIGN

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD-550

REVISIONS

STREAM RESTORATION DETAILS

SCALE N.T.S. ADVERTISED DATE ____ CONTRACT NO. FR671A21

DESIGNED BY WLO, AEB
DRAWN BY SEH
CHECKED BY CAL
F.A.P. NO. ____

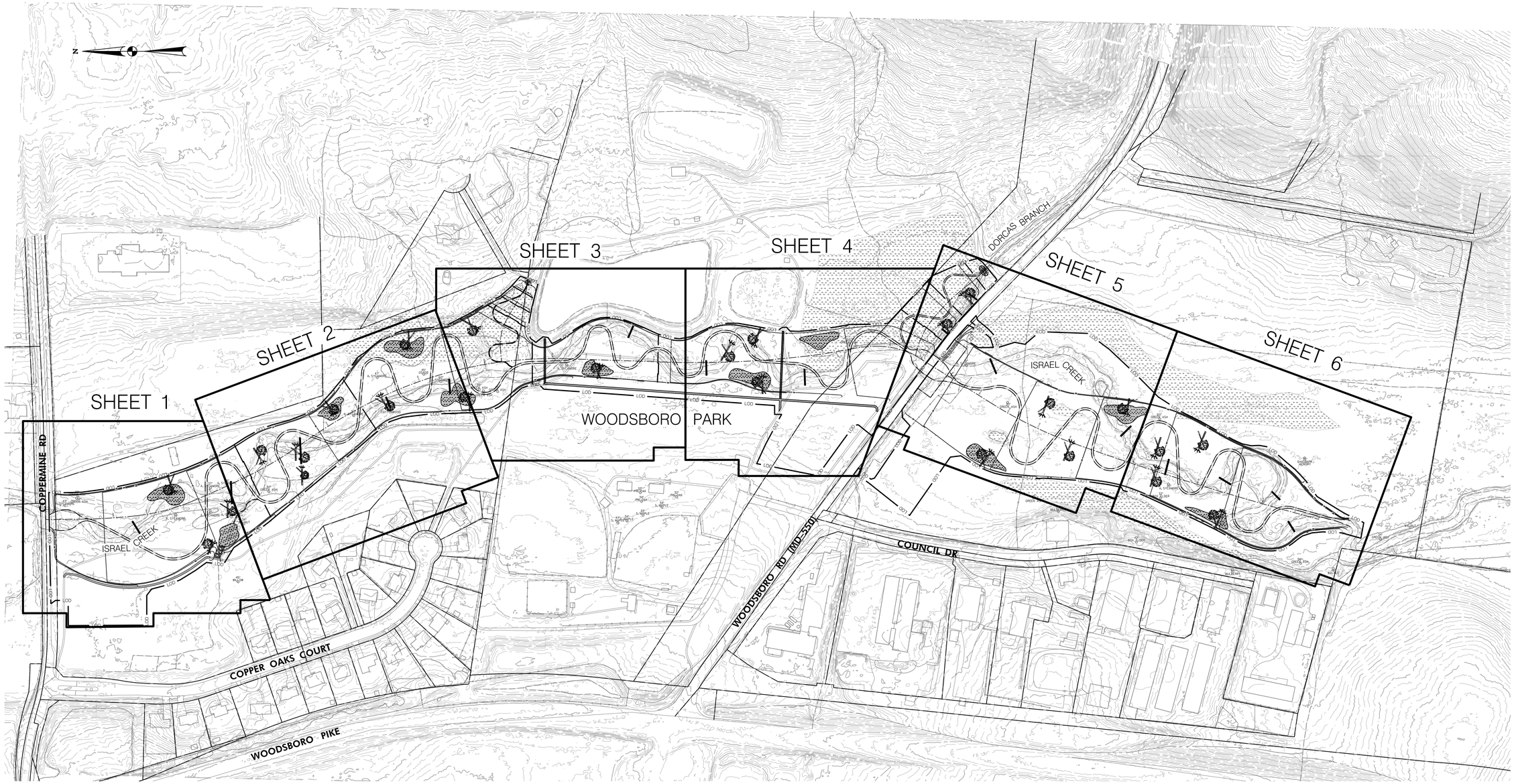
COUNTY FREDERICK
LOGMILE ——
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 5'

DRAWING NO. DE – 06 OF 06
SHEET NO. 08 OF 24

PLOTTED: Monday, November 21, 2016 AT 10:33 AM
FILE: \\mthvfile\Projects2\2016\Transportation\121112.07 SHA Israel Creek\CADD\3_pDE-P000_Israel_Creek.dgn

CENTURY ENGINEERING
CONSULTING ENGINEERS – PLANNERS
10710 GILROY ROAD
HUNT VALLEY, MD 21031

BY: jturner



Tentative
Not
for
Public
Information
11/29/2016

DATUM: NAD 8391 Horizontal
NAVD 88 Vertical

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF ENVIRONMENTAL DESIGN

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD-550

REVISIONS

SHEET LAYOUT PLAN

SCALE 1" = 150" ADVERTISED DATE ____ CONTRACT NO. FR671A21

DESIGNED BY WLO, AEB
DRAWN BY SEH
CHECKED BY CAL
F.A.P. NO. ____

COUNTY FREDERICK
LOGMILE —
HORIZONTAL SCALE ____
VERTICAL SCALE ____

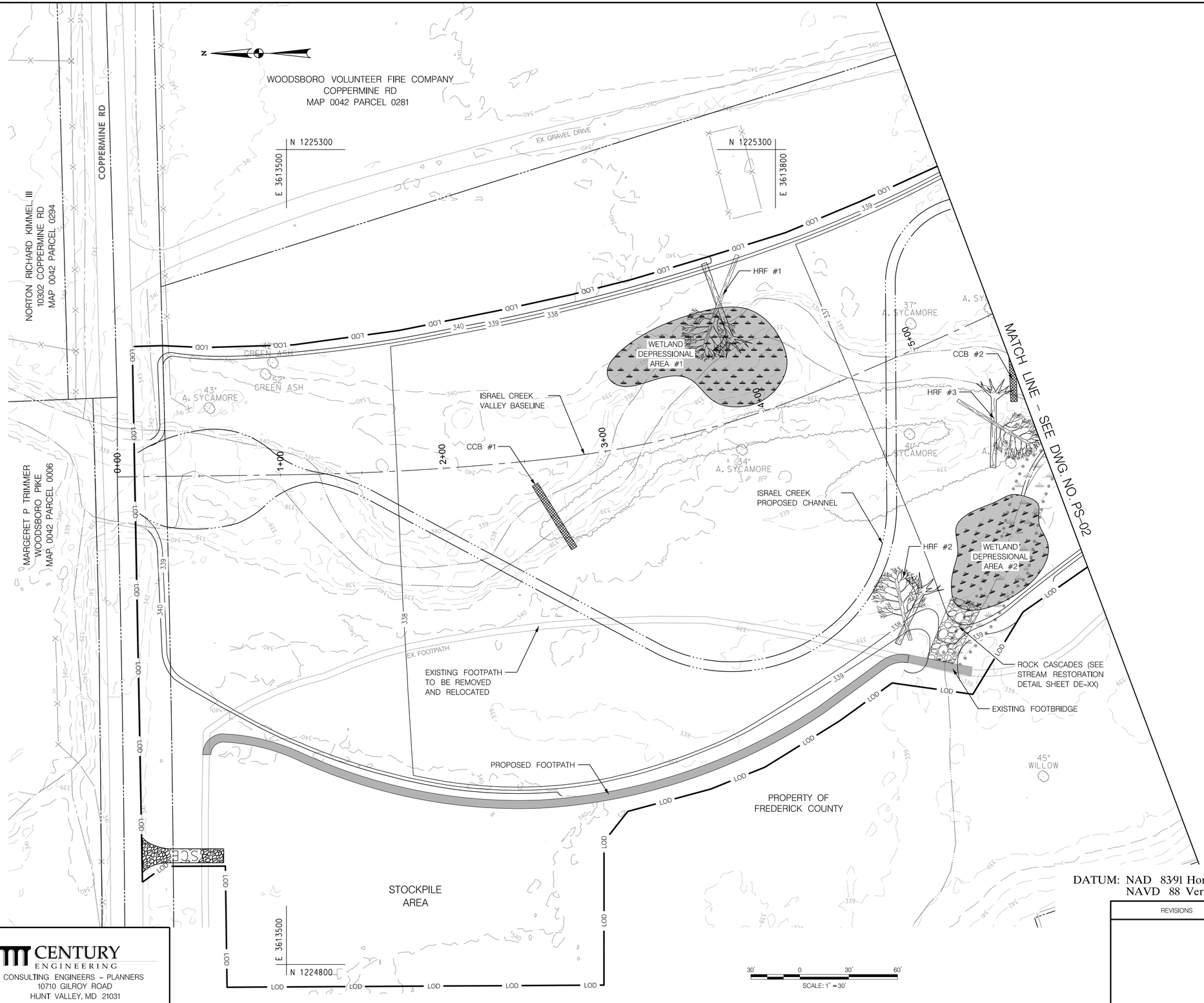
DRAWING NO. OV- 01 OF 01 SHEET NO. 09 OF 24

PLOTTED: Tuesday, November 22, 2016 AT 04:32 PM
FILE: \\vmhville\Projects2\2016\Transportation\121112.07 SHA Israel Creek\CADD\4_pOV-P001_Israel Creek.dgn

CENTURY ENGINEERING
CONSULTING ENGINEERS – PLANNERS
10710 GILROY ROAD
HUNT VALLEY, MD 21031

150' 0 150' 300'
SCALE: 1" = 150'

BY: jturner



Tentative Not for Public Information 11/29/2016

NOTE: PROPOSED CHANNEL PLANFORM SHOWN IS TO ILLUSTRATE GENERAL CHANNEL LOCATION. RIFFLES, POOLS, AND ADDITIONAL CHANNEL GEOMETRY TO BE ADDED AT SEMI–FINAL DESIGN. SEE STREAM RESTORATION DETAIL SHEET DE–01 FOR AN ILLUSTRATION OF THE TYPICAL CHANNEL PLATFORM

DATUM: NAD 83/91 Horizontal
NAVD 88 Vertical

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF ENVIRONMENTAL DESIGN

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

REVISIONS

STREAM RESTORATION PLAN

SCALE 1" = 30' ADVERTISED DATE _____ CONTRACT NO. FR671A21

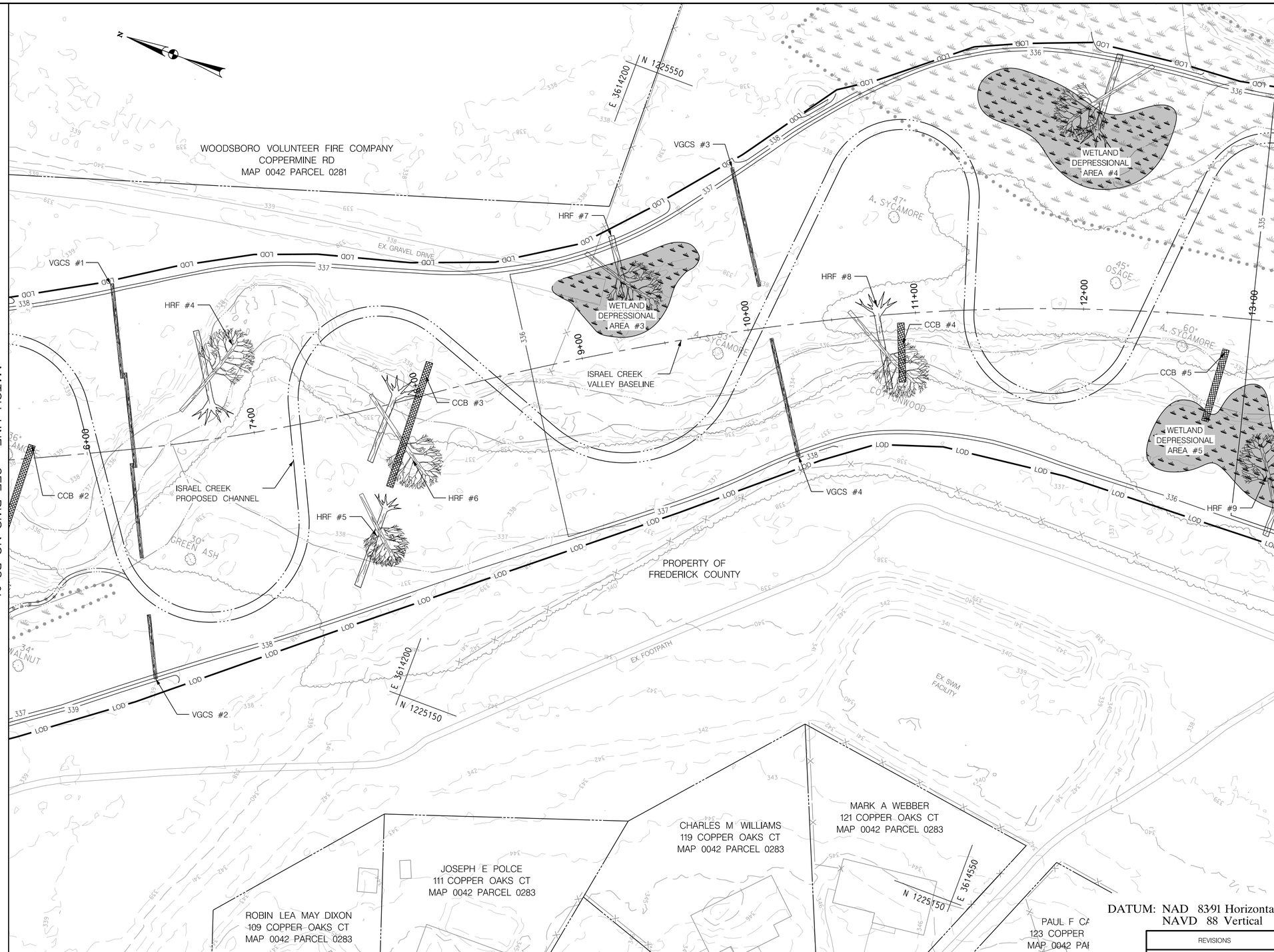
DESIGNED BY	WLO, AEB	COUNTY	FREDERICK
DRAWN BY	SEH	LOGMILE	—
CHECKED BY	CAL	HORIZONTAL SCALE	1" = 30'
F.A.P. NO.		VERTICAL SCALE	1" = 5'

DRAWING NO. PS – 01 OF 06 SHEET NO. 10 OF 24

CENTURY ENGINEERING
CONSULTING ENGINEERS – PLANNERS
10710 GILROY ROAD
HUNT VALLEY, MD 21031

BY: jturner

PLOTTED: Monday, November 21, 2016 AT 10:40 AM
FILE: \\vmhville\Projects2\2016\Transportation\121112.07 SHA Israel Creek\CADD\5_pSR-P001_Israel Creek.dgn



Tentative Not for Public Information 11/29/2016

NOTE: PROPOSED CHANNEL PLANFORM SHOWN IS TO ILLUSTRATE GENERAL CHANNEL LOCATION. RIFFLES, POOLS, AND ADDITIONAL CHANNEL GEOMETRY TO BE ADDED AT SEMI-FINAL DESIGN. SEE STREAM RESTORATION DETAIL SHEET DE-01 FOR AN ILLUSTRATION OF THE TYPICAL CHANNEL PLANFORM.

DATUM: NAD 83/91 Horizontal
NAVD 88 Vertical

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF ENVIRONMENTAL DESIGN

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

CENTURY ENGINEERING
CONSULTING ENGINEERS – PLANNERS
10710 GILROY ROAD
HUNT VALLEY, MD 21031

BY: jturner

REVISIONS

STREAM RESTORATION PLAN

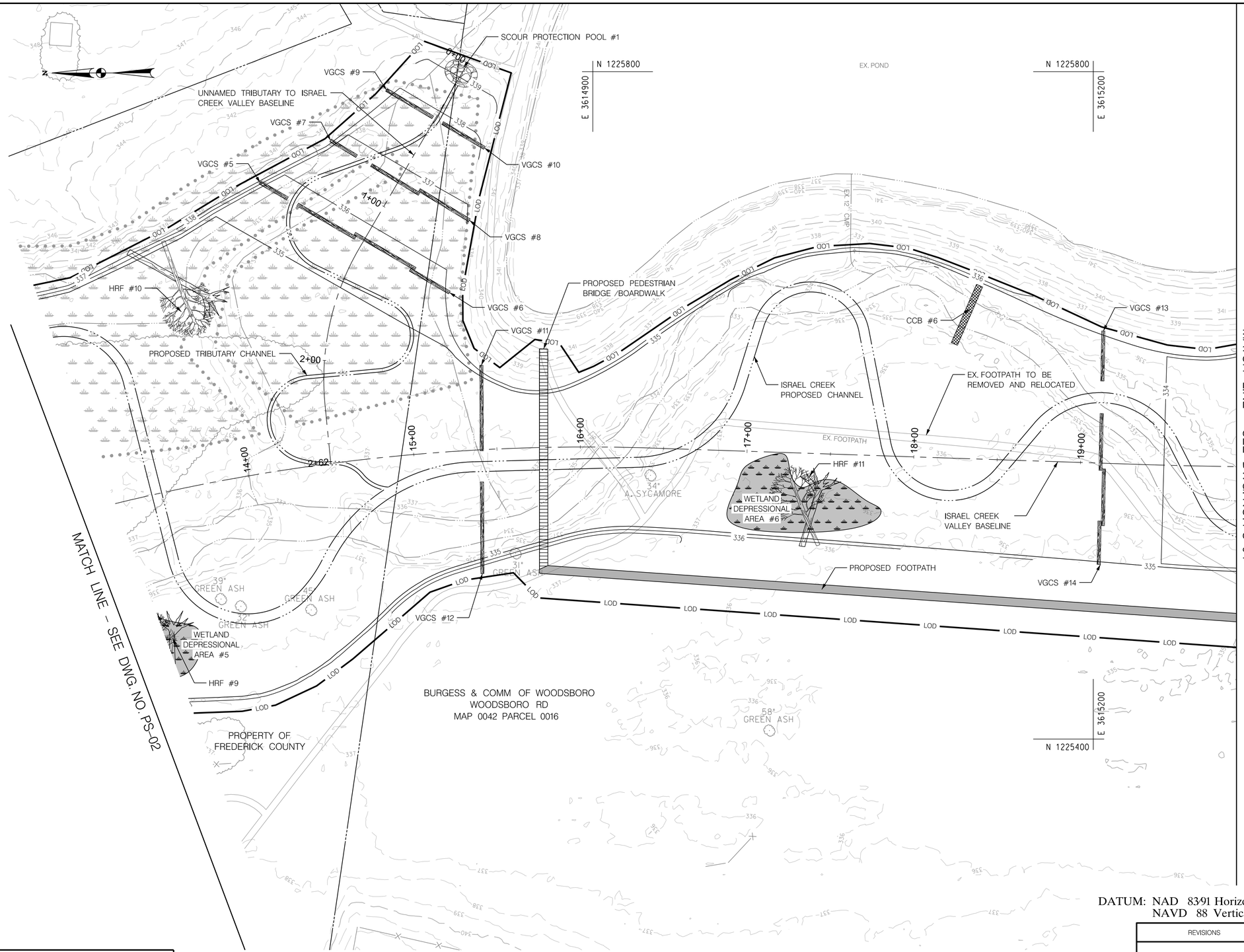
SCALE 1" = 30' ADVERTISED DATE _____ CONTRACT NO. FR671A21

DESIGNED BY WLO, AEB
DRAWN BY SEH
CHECKED BY CAL
F.A.P. NO. _____

COUNTY FREDERICK
LOGMILE —
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 5'

DRAWING NO. PS-02 OF 06 SHEET NO. 11 OF 24

PLOTTED: Monday, November 21, 2016 AT 10:43 AM
FILE: \\vmhville\Projects2\2016\Transportation\121112.07 SHA Israel Creek\CADD\5_pSB-P002_Israel Creek.dgn
1" = 30'



NOTE: PROPOSED CHANNEL PLANFORM SHOWN IS TO ILLUSTRATE GENERAL CHANNEL LOCATION. RIFFLES, POOLS, AND ADDITIONAL CHANNEL GEOMETRY TO BE ADDED AT SEMI-FINAL DESIGN. SEE STREAM RESTORATION DETAIL SHEET DE-01 FOR AN ILLUSTRATION OF THE TYPICAL CHANNEL PLANFORM.

DATUM: NAD 83/91 Horizontal
NAVD 88 Vertical

30' 0 30' 60'
SCALE: 1" = 30'

CENTURY ENGINEERING
CONSULTING ENGINEERS – PLANNERS
10710 GILROY ROAD
HUNT VALLEY, MD 21031

BY: jturner

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF ENVIRONMENTAL DESIGN

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD-550

REVISIONS

STREAM RESTORATION PLAN

SCALE 1" = 30' ADVERTISED DATE _____ CONTRACT NO. FR671A21

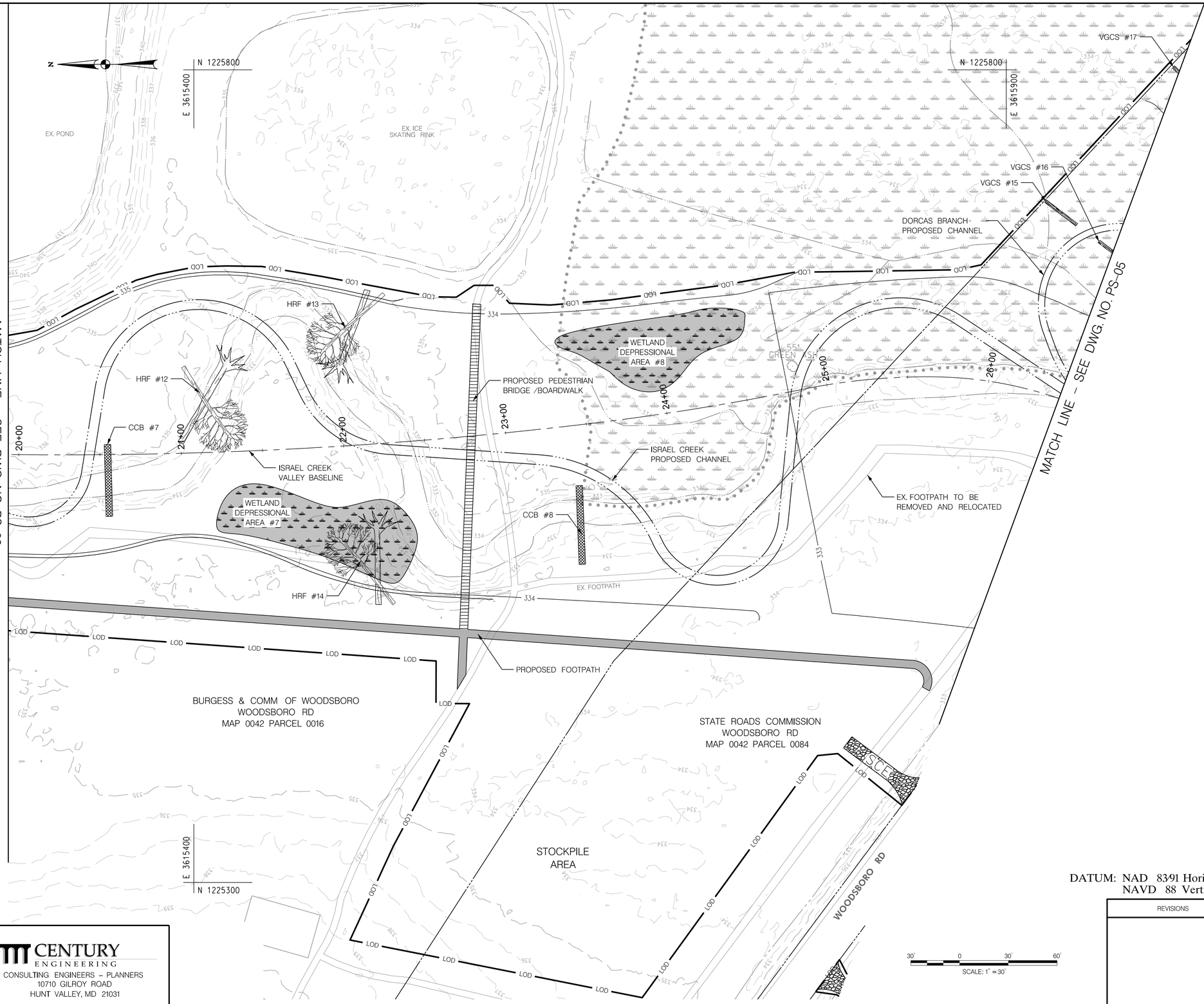
DESIGNED BY WLO, AEB
DRAWN BY SEH
CHECKED BY CAL
F.A.P. NO. _____

COUNTY FREDERICK
LOGMILE ——
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 5'

DRAWING NO. PS – 03 OF 06 SHEET NO. 12 OF 24

PLOTTED: Monday, November 21, 2016 AT 11:21 AM
FILE: \\mhvfile\Projects2\2016\Transportation\121112.07 SHA Israel-Creek\CADD\5_pSR-P003_Israel-Creek.dgn

Tentative
Not
for
Public
Information
11/29/2016



Tentative Not for Public Information 11/29/2016

NOTE: PROPOSED CHANNEL PLANFORM SHOWN IS TO ILLUSTRATE GENERAL CHANNEL LOCATION. RIFFLES, POOLS, AND ADDITIONAL CHANNEL GEOMETRY TO BE ADDED AT SEMI–FINAL DESIGN. SEE STREAM RESTORATION DETAIL SHEET DE–01 FOR AN ILLUSTRATION OF THE TYPICAL CHANNEL PLANFORM

DATUM: NAD 83/91 Horizontal
NAVD 88 Vertical

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF ENVIRONMENTAL DESIGN

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

REVISIONS

STREAM RESTORATION PLAN

SCALE 1" = 30' ADVERTISED DATE _____ CONTRACT NO. FR671A21

DESIGNED BY WLO, AEB
DRAWN BY SEH
CHECKED BY CAL
F.A.P. NO. _____

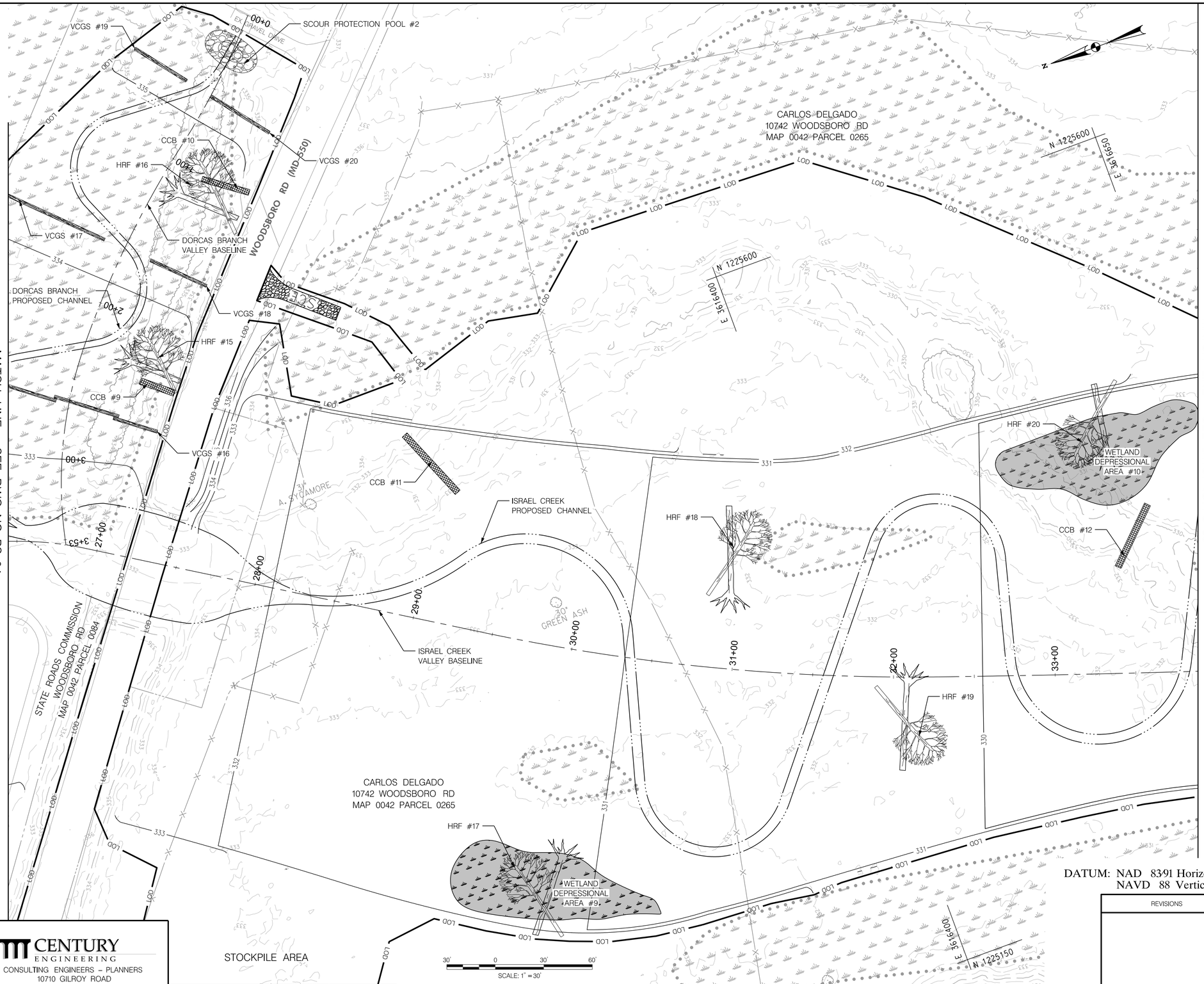
COUNTY FREDERICK
LOGMILE ——
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 5'

DRAWING NO. PS – 04 OF 06 SHEET NO. 13 OF 24

CENTURY ENGINEERING
CONSULTING ENGINEERS – PLANNERS
10710 GILROY ROAD
HUNT VALLEY, MD 21031

BY: jturner

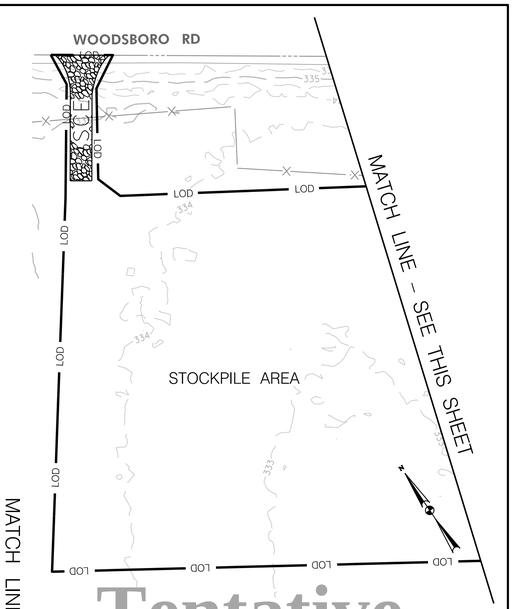
PLOTTED: Monday, November 21, 2016 AT 11:26 AM
FILE: \\mhvfile\Projects2\2016\Transportation\121112.07 SHA Israel Creek\CADD\5_pSR-P004_IsraelCreek.dgn



MATCH LINE – SEE DWG. NO. PS–04

MATCH LINE – SEE DWG. NO. PS–06

MATCH LINE – SEE THIS SHEET



MATCH LINE – SEE THIS SHEET

Tentative Not for Public Information 11/29/2016

NOTE: PROPOSED CHANNEL PLANFORM SHOWN IS TO ILLUSTRATE GENERAL CHANNEL LOCATION, RIFFLES, POOLS, AND ADDITIONAL CHANNEL GEOMETRY TO BE ADDED AT SEMI-FINAL DESIGN. SEE STREAM RESTORATION DETAIL SHEE DE-01 FOR AN ILLUSTRATION OF THE TYPICAL CHANNEL PLANFORM.

DATUM: NAD 8391 Horizontal
NAVD 88 Vertical

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF ENVIRONMENTAL DESIGN

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

REVISIONS

STREAM RESTORATION PLAN

SCALE 1" = 30' ADVERTISED DATE _____ CONTRACT NO. FR671A21

DESIGNED BY WLO, AEB
DRAWN BY SEH
CHECKED BY CAL
F.A.P. NO. _____

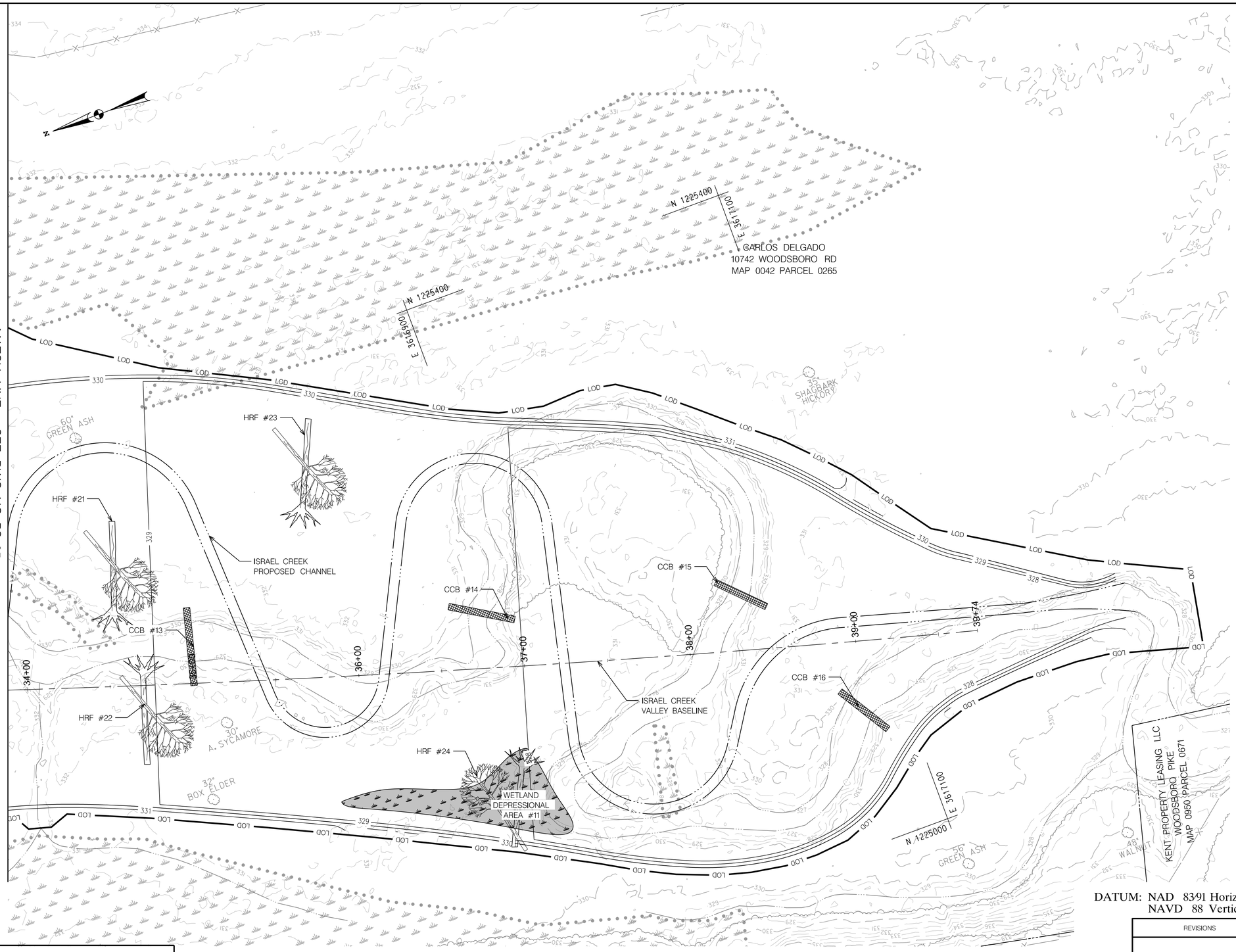
COUNTY FREDERICK
LOGMILE ——
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 5'

DRAWING NO. PS – 05 OF 06 SHEET NO. 14 OF 24

CENTURY ENGINEERING
CONSULTING ENGINEERS – PLANNERS
10710 GILROY ROAD
HUNT VALLEY, MD 21031

BY: jturner

PLOTTED: Monday, November 21, 2016 AT 11:27 AM
FILE: \\vmhvlile\Projects2\2016\Transportation\121112.07 SHA Israel Creek\CADD\5_pSR-P005_Israel Creek.dgn



Tentative Not for Public Information 11/29/2016

MATCH LINE – SEE DWG. NO. PS-05

NOTE: PROPOSED CHANNEL PLANFORM SHOWN IS TO ILLUSTRATE GENERAL CHANNEL LOCATION. RIFFLES, POOLS, AND ADDITIONAL CHANNEL GEOMETRY TO BE ADDED AT SEMI-FINAL DESIGN. SEE STREAM RESTORATION DETAIL SHEET DE-01 FOR AN ILLUSTRATION OF THE TYPICAL CHANNEL PLANFORM.

DATUM: NAD 8391 Horizontal
NAVD 88 Vertical

SHA
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF ENVIRONMENTAL DESIGN

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD-550

REVISIONS

STREAM RESTORATION PLAN

SCALE 1" = 30' ADVERTISED DATE ____ CONTRACT NO. FR671A21

DESIGNED BY WLO, AEB
DRAWN BY SEH
CHECKED BY CAL
F.A.P. NO. ____

COUNTY FREDERICK
LOGMILE —
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 5'

DRAWING NO. PS-06 OF 06 SHEET NO. 15 OF 24

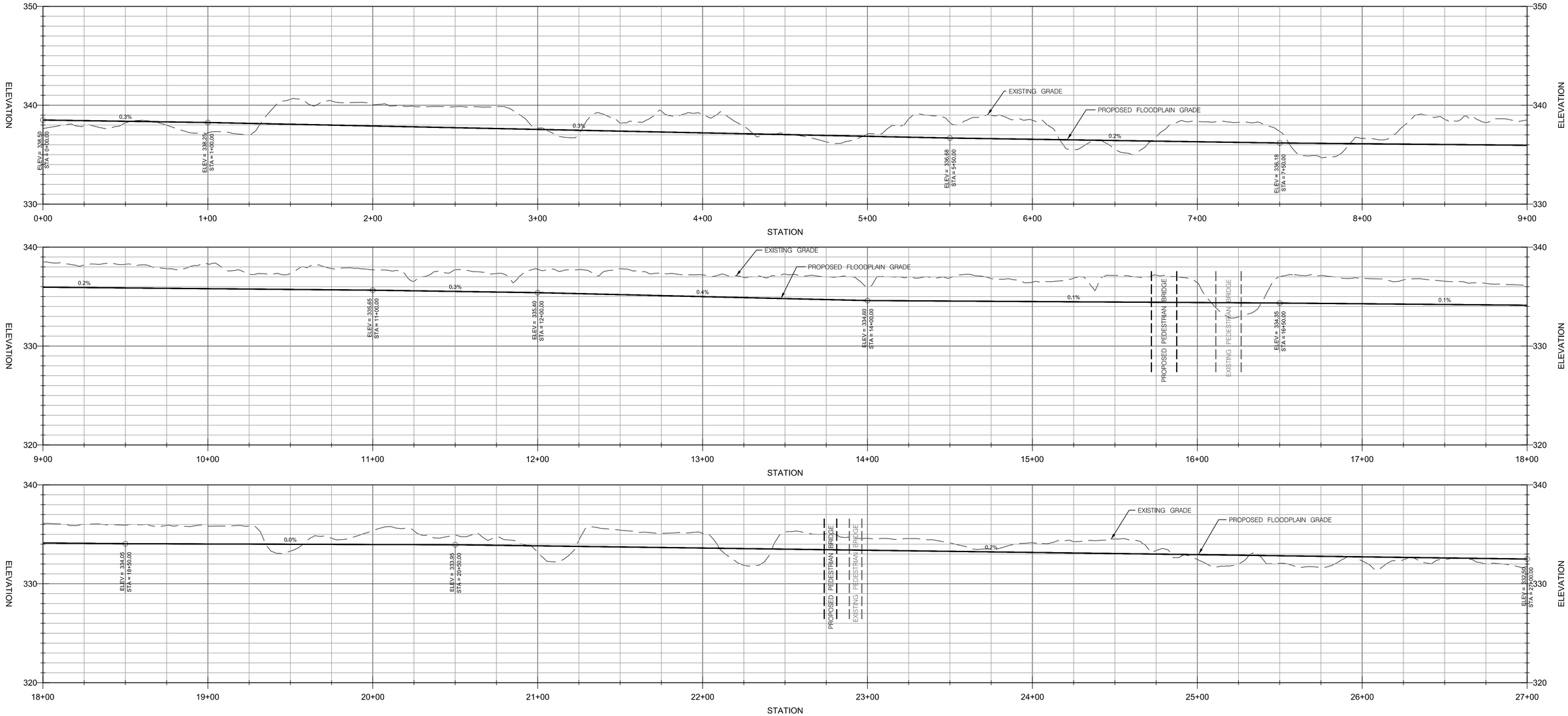
CENTURY ENGINEERING
CONSULTING ENGINEERS – PLANNERS
10710 GILROY ROAD
HUNT VALLEY, MD 21031

30' 0 30' 60'
SCALE: 1" = 30'

BY: jturner

PLOTTED: Monday, November 21, 2016 AT 11:28 AM
FILE: \\vmhville\Projects2\2016\Transportation\121112.07 SHA IsraelCreek\CADD\5_pSR-P006_IsraelCreek.dgn

Israel Creek Valley Profile



NOTE: ELEVATIONS OF EXISTING AND PROPOSED BRIDGES ARE UNKNOWN. EXACT ELEVATIONS TO BE ADDED FOR THE NEXT DESIGN PHASE

DATUM: NAD 83\91 Horizontal
NAVD 88 Vertical

Tentative
Not
for
Public
Information
11/29/2016

CENTURY ENGINEERING
CONSULTING ENGINEERS – PLANNERS
10710 GILROY ROAD
HUNT VALLEY, MD 21031

30' 0 30' 60'
SCALE: 1" = 30'

BY: jturner

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF ENVIRONMENTAL DESIGN

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

REVISIONS

VALLEY PROFILE SHEET

SCALE 1" = 30' ADVERTISED DATE ____ CONTRACT NO. FR671A21

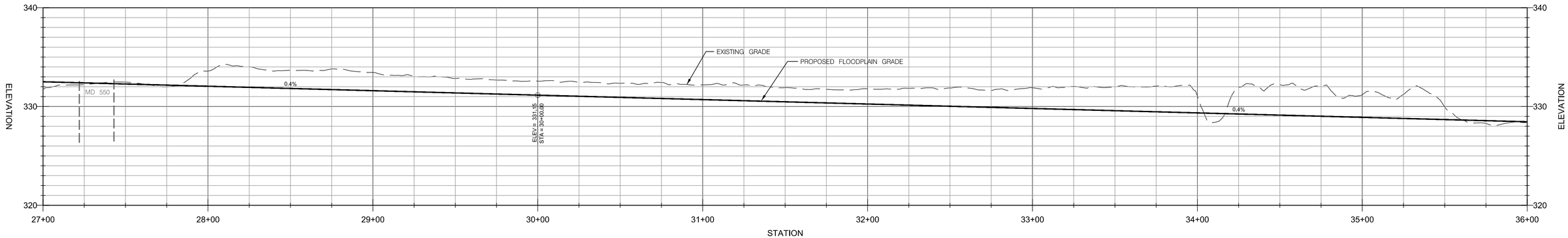
DESIGNED BY WLO, AEB
DRAWN BY SEH
CHECKED BY CAL
F.A.P. NO. ____

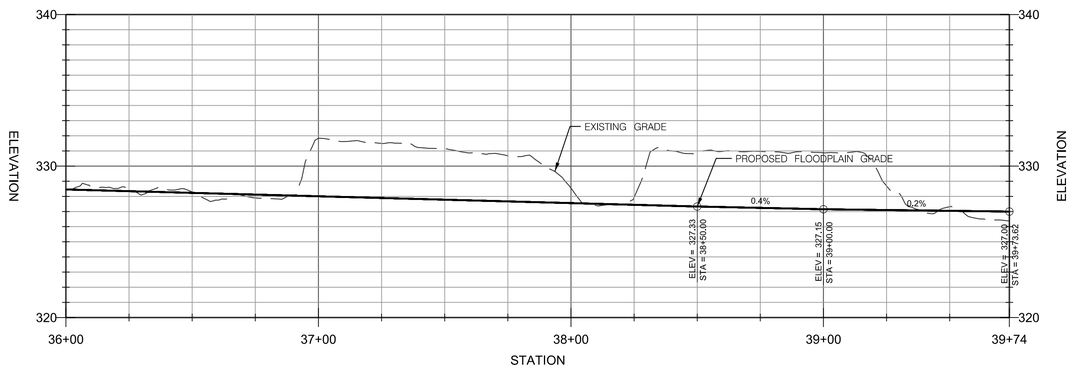
COUNTY FREDERICK
LOGMILE —
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 5'

DRAWING NO. PR–01 OF 02 SHEET NO. 16 OF 24

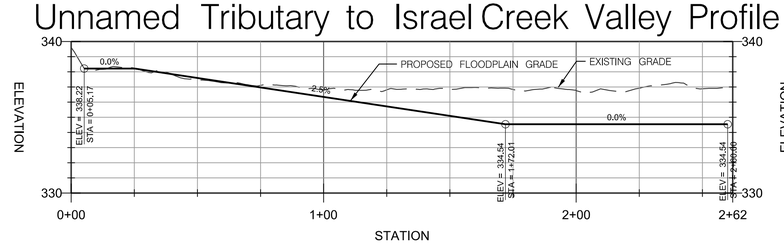
PLOTTED: Monday, November 21, 2016 AT 02:10 PM
FILE: \\vmhville\Projects2\2016\Transportation\121112.07 SHA Israel Creek\CADD\6_plHP_P000_Israel_Creek.dgn

Israel Creek Valley Profile

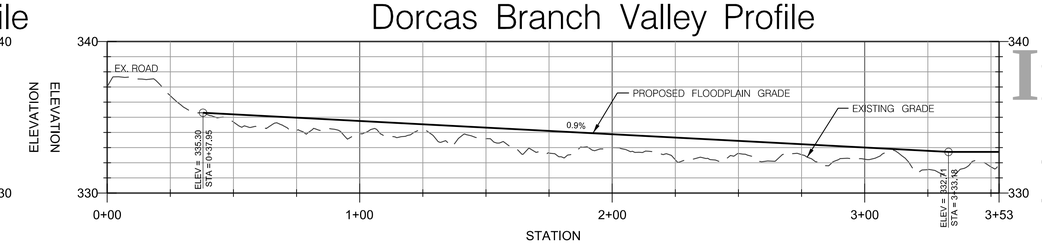




Unnamed Tributary to Israel Creek Valley Profile



Dorcas Branch Valley Profile



Tentative Not for Public Information 11/29/2016

NOTE: ELEVATIONS OF EXISTING AND PROPOSED BRIDGES ARE UNKNOWN. EXACT ELEVATIONS TO BE ADDED FOR THE NEXT DESIGN PHASE

DATUM: NAD 83/91 Horizontal
NAVD 88 Vertical

CENTURY ENGINEERING
CONSULTING ENGINEERS – PLANNERS
10710 GILROY ROAD
HUNT VALLEY, MD 21031

30' 0 30' 60'
SCALE: 1" = 30'

BY: jturner

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF ENVIRONMENTAL DESIGN

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

REVISIONS

VALLEY PROFILE SHEET

SCALE 1" = 30' ADVERTISED DATE ____ CONTRACT NO. FR671A21

DESIGNED BY WLO, AEB
DRAWN BY SEH
CHECKED BY CAL
F.A.P. NO. ____

COUNTY FREDERICK
LOGMILE ——
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 5'

DRAWING NO. PR–02 OF 02
SHEET NO. 17 OF 24

PLOTTED: Monday, November 21, 2016 AT 02:11 PM
FILE: \\mhvfile\Projects2\2016\Transportation\121112.07 SHA Israel Creek\CADD\6_pHP_P000_Israel_Creek.dgn

Tentative Not for Public Information 11/29/2016

WOODSBORO VOLUNTEER FIRE COMPANY
COPPERMINE RD
MAP 0042 PARCEL 0281

EX. GRAVEL DRIVE

COPPERMINE RD

N

N 1225250

E 3613500

N 1225250

E 3613750

NORTON RICHARD KIMMEL III
10302 COPPERMINE RD
MAP 0042 PARCEL 0294

MATCH LINE – SEE DWG. NO. LD-02

PROPERTY OF
FREDERICK COUNTY

E 3613750

N 1225000

MARGERET P TRIMMER
WOODSBORO PIKE
MAP 0042 PARCEL 0006

45" WILLOW

PROPOSED CHANNEL

PROPOSED FOOTPATH

LEGEND

- ZONE 1 – FLOODPLAIN WETLAND
- ZONE 2 – RIPARIAN FOREST
- ZONE 3 – WETLAND DEPRESSION
- ZONE 4 – TURFGRASS

30' 0 30' 60'
SCALE: 1" = 30'

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
LANDSCAPE ARCHITECTURE DIVISION

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD-550

REVISIONS

STREAM RESTORATION LANDSCAPE PLAN

SCALE AS SHOWN ADVERTISED DATE _____ CONTRACT NO. _____

DESIGNED BY ACG
DRAWN BY SJZ
CHECKED BY ACG
F.A.P. NO. _____

COUNTY FREDERICK
LOGMILE _____

DRAWING NO. LD – 01 OF 07 SHEET NO. 18 OF 24

CENTURY ENGINEERING
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10710 GILROY ROAD
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NMP ENGINEERING CONSULTANTS, INC.
EXECUTIVE PLAZA I, 6th FLOOR
11350 MCCORMICK ROAD
HUNT VALLEY, MD 21031
TEL (410) 771-9808
FAX (443) 318-4091

BY: JZhai–

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WOODSBORO VOLUNTEER FIRE COMPANY
COPPERMINE RD
MAP 0042 PARCEL 0281

PROPERTY OF
FREDERICK COUNTY

EX GRAVEL DRIVE

EX FOOTPATH

PROPOSED CHANNEL

N 1225250
E 3614250

N 1225250
E 3614500

E 3614250
N 1225000

MATCH LINE – SEE DWG. NO. LD–01

MATCH LINE – SEE DWG. NO. LD–03

ROBIN LEA MAY DIXON
109 COPPER OAKS CT
MAP 0042 PARCEL 0283

JOSEPH E POLCE
111 COPPER OAKS CT
MAP 0042 PARCEL 0283

CHARLES M WILLIAMS
119 COPPER OAKS CT
MAP 0042 PARCEL 0283

MARK A WEBBER
121 COPPER OAKS CT
MAP 0042 PARCEL 0283

SAMUEL L FORD, JR
117 COPPER OAKS CT
MAP 0042 PARCEL 0283

PAUL F CATALDO
123 COPPER OAKS CT
MAP 0042 PARCEL 0283

LEGEND

- ZONE 1 – FLOODPLAIN WETLAND
- ZONE 2 – RIPARIAN FOREST
- ZONE 3 – WETLAND DEPRESSION
- ZONE 4 – TURFGRASS

30' 0 30' 60'
SCALE: 1" = 30'

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
LANDSCAPE ARCHITECTURE DIVISION

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

REVISIONS

STREAM RESTORATION LANDSCAPE PLAN

SCALE AS SHOWN ADVERTISED DATE _____ CONTRACT NO. _____

DESIGNED BY ACG
DRAWN BY SJZ
CHECKED BY ACG
F.A.P. NO. _____

COUNTY FREDERICK
LOGMILE _____

DRAWING NO. LD–02 OF 07 SHEET NO. 19 OF 24

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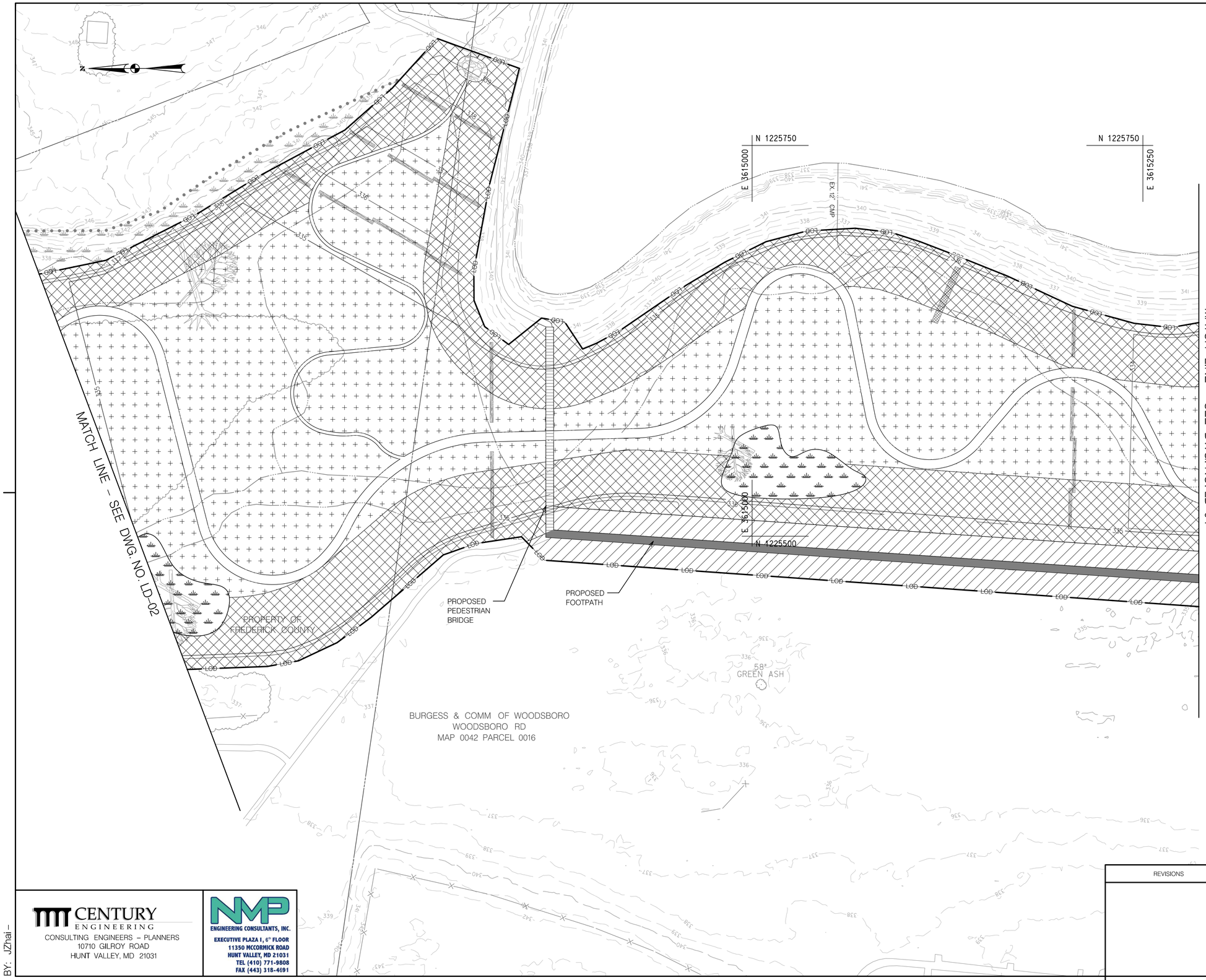

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LEGEND

- ZONE 1 – FLOODPLAIN WETLAND
- ZONE 2 – RIPARIAN FOREST
- ZONE 3 – WETLAND DEPRESSION
- ZONE 4 – TURFGRASS

30' 0 30' 60'
SCALE: 1" = 30'

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
LANDSCAPE ARCHITECTURE DIVISION

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

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DRAWING NO. LD – 03 OF 07 SHEET NO. 20 OF 24

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LEGEND

- ZONE 1 – FLOODPLAIN WETLAND
- ZONE 2 – RIPARIAN FOREST
- ZONE 3 – WETLAND DEPRESSION
- ZONE 4 – TURFGRASS

30' 0 30' 60'
SCALE: 1" = 30'

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
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TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

REVISIONS

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DRAWING NO. LD–04 OF 07 SHEET NO. 21 OF 24

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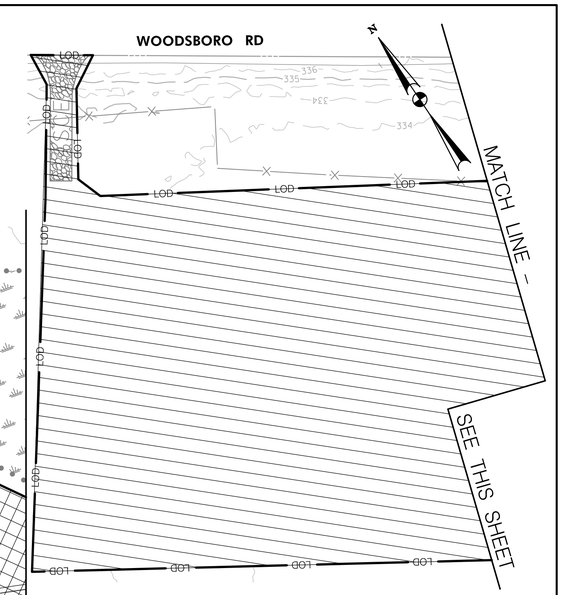

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LEGEND

- ZONE 1 – FLOODPLAIN WETLAND
- ZONE 2 – RIPARIAN FOREST
- ZONE 3 – WETLAND DEPRESSION
- ZONE 4 – TURFGRASS

30' 0 30' 60'
SCALE: 1" = 30'

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
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TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD-550

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REVISIONS

STREAM RESTORATION LANDSCAPE PLAN

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LEGEND

- ZONE 1 – FLOODPLAIN WETLAND
- ZONE 2 – RIPARIAN FOREST
- ZONE 3 – WETLAND DEPRESSION
- ZONE 4 – TURFGRASS

30' 0 30' 60'
SCALE: 1" = 30'

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
LANDSCAPE ARCHITECTURE DIVISION

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

REVISIONS

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DRAWING NO. LD – 06 OF 07 SHEET NO. 23 OF 24

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PLANT COMPOSITION SCHEDULE

ZONE 1 - FLOODPLAIN WETLAND

Size (acres): 13.01

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Root	Spacing Type	Size	Individual Minimum Spacing (ft.)
60	12			**TREES**					
		20	31	*Betula nigra*	river birch	CONT	Random	5-6 ft.	60
		10	16	*Carpinus caroliniana*	ironwood	CONT	Random	5-6 ft.	60
		10	16	*Crataegus viridis*	green hawthorn	CONT	Random	5-6 ft.	60
		20	31	*Platanus occidentalis*	American sycamore	CONT	Random	5-6 ft.	60
		20	31	*Quercus bicolor*	swamp white oak	CONT	Random	5-6 ft.	60
		20	31	*Ulmus rubra*	slippery elm	CONT	Random	5-6 ft.	60
		100	**47**	**= total**					
25	70			**SHRUBS**					
		15	137	*Alnus serrulata*	hazel alder	CONT	Random	2 - 3 ft.	25
		10	91	*Aronia arbutifolia*	red chokeberry	CONT	Random	2 - 3 ft.	25
		15	137	*Cephalanthus occidentalis*	common buttonbush	CONT	Random	2 - 3 ft.	25
		15	137	*Itea virginica*	Virginia sweetspire	CONT	Random	2 - 3 ft.	25
		20	182	*Onoclea sensibilis*	sensitive fern	CONT	Random	2 - 3 ft.	25
		10	91	*Rhododendron viscosum*	swamp azalea	CONT	Random	2 - 3 ft.	25
		3	27	*Rosa palustris*	swamp rose	CONT	Random	2 - 3 ft.	25
		15	137	*Sambucus nigra*	American black elderberry	CONT	Random	2 - 3 ft.	25
		15	137	*Vaccinium corymbosum*	highbush blueberry	CONT	Random	2 - 3 ft.	25
		103	**939**	**= total**					
2	10890			**HERBACEOUS**					
		3	4251	*Asclepias incarnata*	swamp milkweed	PLUG	Clusters of 3-5	2"	2
		5	7085	*Calamagrostis canadensis*	blue joint grass	PLUG	Clusters of 3-5	2"	2
		5	7085	*Carex crinita*	fringed sedge	PLUG	Clusters of 3-5	2"	2
		5	7085	*Carex vulpinoidea*	fox sedge	PLUG	Clusters of 3-5	2"	2
		5	7085	*Deschampsia cespitosa*	tufted hair grass	PLUG	Clusters of 3-5	2"	2
		5	7085	*Dichanthelium clandestinum*	deertongue	PLUG	Clusters of 3-5	2"	2
		5	7085	*Eutrochium maculatum*	spotted joe pye weed	PLUG	Clusters of 3-5	2"	2
		3	4251	*Iris versicolor*	blueflag	PLUG	Clusters of 3-5	2"	2
		5	7085	*Juncus canadensis*	Canadian rush	PLUG	Clusters of 3-5	2"	2
		3	4251	*Lobelia siphilitica*	great blue lobelia	PLUG	Clusters of 3-5	2"	2
		3	4251	*Mimulus ringens*	Allegheny monkeyflower	PLUG	Clusters of 3-5	2"	2
		3	4251	*Onoclea sensibilis*	sensitive fern	PLUG	Clusters of 3-5	2"	2
		3	4251	*Osmunda regalis*	royal fern	PLUG	Clusters of 3-5	2"	2
		5	7085	*Panicum rigidulum*	redtop panicgrass	PLUG	Clusters of 3-5	2"	2
		5	7085	*Saururus cernuus*	lizard's tail	PLUG	Clusters of 3-5	2"	2
		5	7085	*Saxifraga pensylvanica*	eastern swamp saxifrage	PLUG	Clusters of 3-5	2"	2
		5	7085	*Schoenoplectus pungens* var. *pungens*	common threesquare	PLUG	Clusters of 3-5	2"	2
		5	7085	*Schoenoplectus tabernaemontani*	softstem bulrush	PLUG	Clusters of 3-5	2"	2
		5	7085	*Scirpus cyperinus*	wool grass	PLUG	Clusters of 3-5	2"	2
		5	7085	*Scirpus atrovirens*	green bulrush	PLUG	Clusters of 3-5	2"	2
		3	4251	*Scutellaria integrifolia*	helmet flower	PLUG	Clusters of 3-5	2"	2
		3	4251	*Thelypteris palustris*	eastern marsh fern	PLUG	Clusters of 3-5	2"	2
		3	4251	*Woodwardia virginica*	Virginia chainfern	PLUG	Clusters of 3-5	2"	2
		97	**137449**	**= total**					
N/A	15			**NATIVE SEED**					
		3	5.9	*Arisaema triphyllum*	Jack in the pulpit	LB of P.L.S.	Seed	N/A	N/A
		3	5.9	*Asclepias incarnata*	swamp milkweed	LB of P.L.S.	Seed	N/A	N/A
		3	5.9	*Bidens cernua*	nodding bur marigold	LB of P.L.S.	Seed	N/A	N/A
		12	23.4	*Carex lurida*	lurid sedge	LB of P.L.S.	Seed	N/A	N/A
		10	19.5	*Carex scoparia*	broom sedge	LB of P.L.S.	Seed	N/A	N/A
		6	11.7	*Eupatorium perfoliatum*	boneset	LB of P.L.S.	Seed	N/A	N/A
		5	9.8	*Impatiens capensis*	jewelweed	LB of P.L.S.	Seed	N/A	N/A
		5	9.8	*Iris versicolor*	blueflag	LB of P.L.S.	Seed	N/A	N/A
		15	29.3	*Juncus effusus*	soft rush	LB of P.L.S.	Seed	N/A	N/A
		6	11.7	*Lobelia cardinalis*	cardinal flower	LB of P.L.S.	Seed	N/A	N/A
		10	19.5	*Panicum rigidulum*	redtop panicgrass	LB of P.L.S.	Seed	N/A	N/A
		15	29.3	*Scirpus atrovirens*	green bulrush	LB of P.L.S.	Seed	N/A	N/A
		10	19.5	*Verbena hastata*	blue vervain	LB of P.L.S.	Seed	N/A	N/A
		100	**195.3**	**= total**					

CONT= container
P.L.S.= Pure Live Seed
Plug size shall be 5" depth x 2" diameter

PLANT COMPOSITION SCHEDULE

ZONE 2 - RIPARIAN FOREST

Size (acres): 7.72

Overall Minimum Spacing (feet off center)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Root	Spacing Type	Size	Individual Minimum Spacing (ft.)
30	48			**TREES**					
		5	19	*Acer rubrum*	red maple	CONT	Random	5-6 ft	30
		10	37	*Acer saccharum*	sugar maple	CONT	Random	5-6 ft	30
		5	19	*Betula nigra*	river birch	CONT	Random	5-6 ft	30
		10	37	*Carya cordiformis*	pignut hickory	CONT	Random	5-6 ft	30
		10	37	*Juglans nigra*	black walnut	CONT	Random	5-6 ft	30
		10	37	*Juniperus virginiana*	eastern red cedar	CONT	Random	5-6 ft	30
		10	37	*Liquidambar styraciflua*	sweetgum	CONT	Random	5-6 ft	30
		10	37	*Nyssa sylvatica*	black gum	CONT	Random	5-6 ft	30
		10	37	*Platanus occidentalis*	sycamore	CONT	Random	5-6 ft	30
		10	37	*Quercus bicolor*	swamp white oak	CONT	Random	5-6 ft	30
		10	37	*Quercus palustris*	pin oak	CONT	Random	5-6 ft	30
		100	**371**	**= total**					
40	27			**UNDERSTORY TREES**					
		10	21	*Amelanchier canadensis*	shadbush serviceberry	CONT	Random	4-5 ft.	40
		10	21	*Asimina triloba*	pawpaw	CONT	Random	4-5 ft.	40
		15	31	*Carpinus caroliniana*	ironwood	CONT	Random	4-5 ft.	40
		10	21	*Chionanthus virginicus*	fringetree	CONT	Random	4-5 ft.	40
		10	21	*Diospyros virginiana*	persimmon	CONT	Random	4-5 ft.	40
		15	31	*Hamamelis virginiana*	American witchhazel	CONT	Random	4-5 ft.	40
		15	31	*Ilex opaca*	American holly	CONT	Random	4-5 ft.	40
		15	31	*Sassafras albidum*	sassafras	CONT	Random	4-5 ft.	40
		100	**146**	**= total**					
25	70			**SHRUBS**					
		15	81	*Cornus amomum*	silky dogwood	CONT	Clusters of 3-5	2 - 3 ft.	25
		10	54	*Clethra alnifolia*	sweet pepperbush	CONT	Clusters of 3-5	2 - 3 ft.	25
		15	81	*Hydrangea quercifolia*	oakleaf hydrangea	CONT	Clusters of 3-5	2 - 3 ft.	25
		10	54	*Kalmia latifolia*	mountain laurel	CONT	Clusters of 3-5	2 - 3 ft.	25
		10	54	*Lindera benzoin*	spicebush	CONT	Clusters of 3-5	2 - 3 ft.	25
		10	54	*Philadelphus inodorus*	mock-orange	CONT	Clusters of 3-5	2 - 3 ft.	25
		10	54	*Sambucus canadensis*	common elderberry	CONT	Clusters of 3-5	2 - 3 ft.	25
		20	108	*Vaccinium corymbosum*	highbush blueberry	CONT	Clusters of 3-5	2 - 3 ft.	25
		100	**540**	**= total**					
17	151			**HERBACEOUS**					
		20	108	*Andropogon gerardii*	big bluestem	CONT	Clusters of 3-5	GAL	56
		20	108	*Dryopteris intermedia*	evergreen woodfern	CONT	Clusters of 3-5	GAL	56
		10	54	*Osmunda claytoniana*	interrupted fern	CONT	Clusters of 3-5	GAL	79
		20	108	*Panicum virgatum*	switchgrass	CONT	Clusters of 3-5	GAL	56
		20	108	*Penstemon digitalis*	beardtongue	CONT	Clusters of 3-5	GAL	56
		20	108	*Phlox divaricata*	woodland phlox	CONT	Clusters of 3-5	GAL	56
		20	108	*Polystichum acrostichoides*	Christmas fern	CONT	Clusters of 3-5	GAL	56
		10	54	*Schizachyrium scoparium*	little bluestem	CONT	Clusters of 3-5	GAL	79
		10	54	*Senecio aureus*	golden groundsel	CONT	Clusters of 3-5	GAL	79
		20	108	*Smilax rotundifolia*	roundleaf greenbrier	CONT	Clusters of 3-5	GAL	56
		170	**918**	**= total**					
N/A	40		LBS.	**NATIVE SEED**					
		10	30.9	*Carex pensylvanica*	Pennsylvania sedge	LB of P.L.S.	Seed	N/A	N/A
		20	61.7	*Elymus virginicus*	Virginia wild rye	LB of P.L.S.	Seed	N/A	N/A
		10	30.9	*Eragrostis spectabilis*	purple lovegrass	LB of P.L.S.	Seed	N/A	N/A
		5	15.4	*Eupatorium fistulosum*	Joe-pye weed	LB of P.L.S.	Seed	N/A	N/A
		20	61.7	*Panicum clandestinum*	Deer tongue	LB of P.L.S.	Seed	N/A	N/A
		20	61.7	*Panicum virgatum*	Virginia switchgrass	LB of P.L.S.	Seed	N/A	N/A
		10	30.9	*Rudbeckia hirta*	Black-eyed Susan	LB of P.L.S.	Seed	N/A	N/A
		10	0	*Solidago caesia*	bluestem goldenrod	LB of P.L.S.	Seed	N/A	N/A
		5	15.4	*Vernonia noveboracensis*	New York Ironweed	LB of P.L.S.	Seed	N/A	N/A
		100	**277.7**	**= total**					

CONT= container
P.L.S.= Pure Live Seed

PLANT COMPOSITION SCHEDULE

ZONE 3 - WETLAND DEPRESSION

Size (acres): 0.95

Overall Minimum Spacing (ft)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Root	Spacing Type	Size
2.5	6970	**HERBACEOUS**						
		15	991	*Acorus calamus*	calamus	CONT	Cluster	QT
		10	660	*Iris versicolor*	blue flag iris	CONT	Cluster	QT
		15	991	*Peltandra virginica*	green arrow arum	CONT	Cluster	QT
		15	991	*Pontederia cordata*	pickerelweed	CONT	Cluster	QT
		15	991	*Nymphaea odorata*	American white waterlily	CONT	Cluster	QT
		15	991	*Saggitaria latifolia*	broadleaf arrowhead	CONT	Cluster	QT
		15	991	*Saururus cernuus*	lizards Tail	CONT	Cluster	QT
		100	**5615**	**= total**				

CONT= container

PLANT COMPOSITION SCHEDULE

ZONE 4 - TURFGRASS

Size (acres): 4.57

PLANT KEY	NAME	QUANTITY
TURF	Turfgrass Establishment SY	22,119

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BY: JZhai –

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STATE HIGHWAY ADMINISTRATION
LANDSCAPE ARCHITECTURE DIVISION

TMDL STREAM RESTORATION OF ISRAEL CREEK AT MD–550

REVISIONS

PLANTING SCHEDULES

SCALE AS SHOWN ADVERTISED DATE _____ CONTRACT NO. _____

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DRAWING NO. LD – 07 OF 07 SHEET NO. 24 OF 24

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