



# MARYLAND DEPARTMENT OF TRANSPORTATION

# MARYLAND TRANSIT ADMINISTRATION

## TRANSIT DEVELOPMENT AND DELIVERY

# RED LINE LIGHT RAIL TRANSIT SYSTEM

# REFORESTATION AND LANDSCAPING



CONTRACT NO. T-0862-1940  
MDE NO. 14-SF-0329

**ADA DESIGN CERTIFICATION**

"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA).

6-24-14 DATE  
 DESIGNER'S SIGNATURE  
 GREGORY G. HOER PRINTED NAME  
 MD. REGISTRATION NO. 365  
 P.E. R.L.S. OR (R.L.A.) (CIRCLE)

**DESIGN CERTIFICATION**

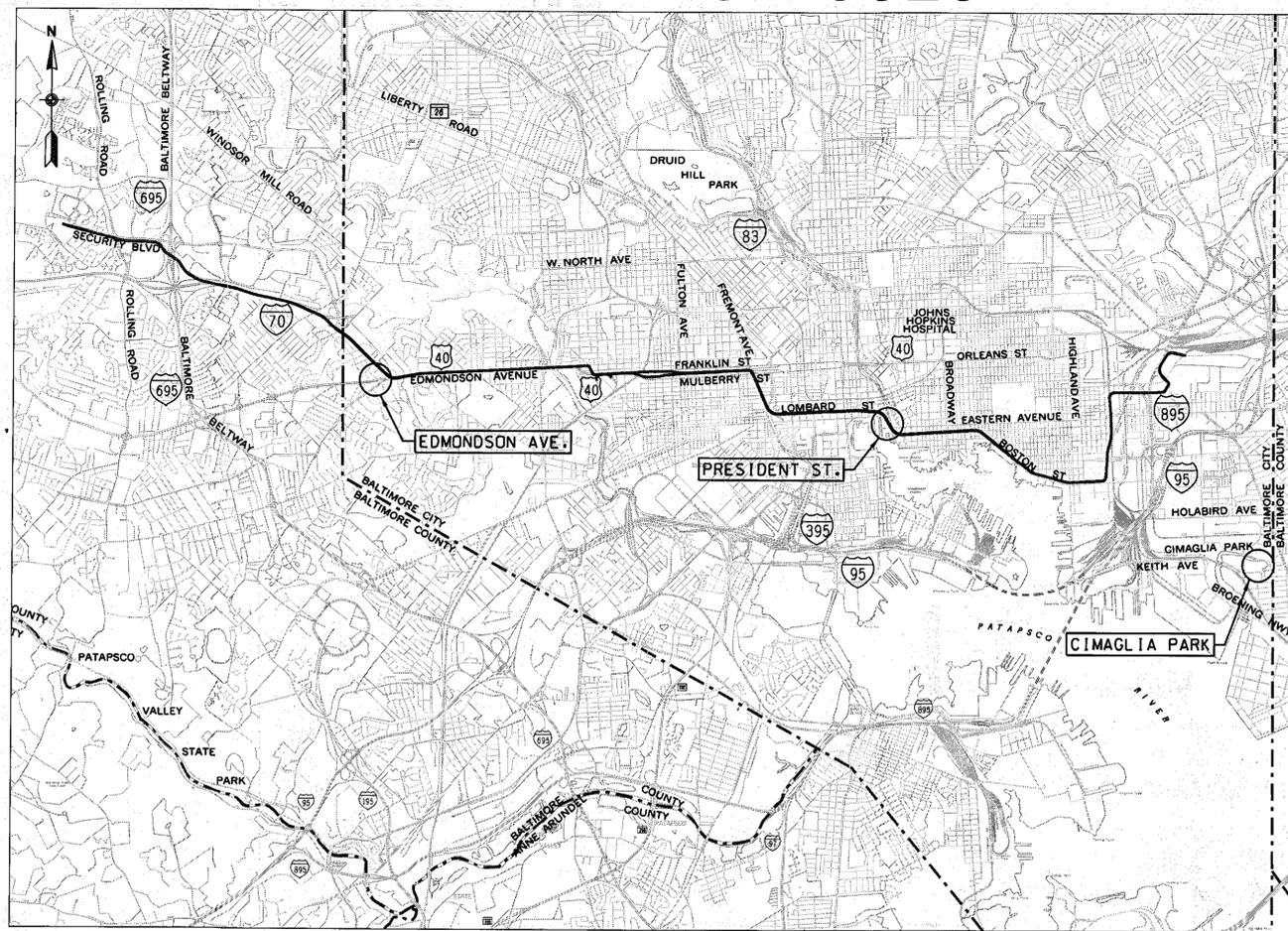
"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, THE 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I AND II INCLUDING SUPPLEMENTS, THE ENVIRONMENT ARTICLE SECTIONS 4-101 THROUGH 116 AND SECTIONS 4-201 AND 215, AND THE CODE OF MARYLAND REGULATIONS (COMAR) 26.17.01 AND 26.17.02 FOR EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT, RESPECTIVELY"

6-24-14 DATE  
 DESIGNER'S SIGNATURE  
 GREGORY G. HOER PRINTED NAME  
 MD. REGISTRATION NO. 365  
 P.E. R.L.S. OR (R.L.A.) (CIRCLE)

**OWNERS / DEVELOPER CERTIFICATION**

"I/WE HEREBY CERTIFY THAT ALL CLEARING, 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."

June 25, 2014 DATE  
 OWNER/DEVELOPER SIGNATURE  
 GOVIND R. SULIBHAVI, MANAGER, Track & Structural Engineering  
 055424 CERT. NO. PRINTED NAME AND TITLE



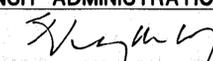
SCALE: AS NOTED LOCATION: BALTIMORE

**VICINITY MAP**

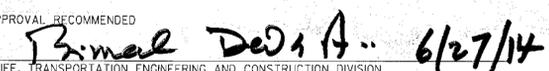
JH 6/26/14

BALTIMORE CITY REVIEW	R/W RELEASE	GRADE ESTABLISHED	HIGHWAY DESIGN	STRUCTURAL	DRAINAGE	LIGHTING	CONDUIT	SEDIMENTATION AND EROSION CONTROL	TRAFFIC ENGINEERING	SIGNAL ENGINEERING	WASTE WATER ENGINEERING	WATER ENGINEERING	TRANSPORTATION ENGINEERING
BY	D.F.	N/A.	AL.	N/A	AA/MSW	MS	RC	HR	MS	SSL	WAO/GM	ONS	NA
DATE	6-27-14		6-26-14		6/27/14	6-26-14	6-26-14	6/27/14	6-27-14	6/27/14	6-27-14	6/26/14	

**MARYLAND TRANSIT ADMINISTRATION**

APPROVED:   
 HENRY M. KAY EXECUTIVE DIRECTOR  
 TRANSIT DEVELOPMENT AND DELIVERY  
 DATE: 6/25/14

**CITY OF BALTIMORE DEPARTMENT OF TRANSPORTATION**

APPROVAL RECOMMENDED  
 6/27/14 DATE  
 CHIEF, TRANSPORTATION ENGINEERING AND CONSTRUCTION DIVISION  
 APPROVED  
 for William Johnson 6/27/14 DATE  
 DIRECTOR, DEPARTMENT OF TRANSPORTATION

**RED LINE**  
 General Engineering Consultant Team  
 Baltimore, MD

CONTRACT NO. T-0862-1940  
 DRAWING NO. TI-19001  
 1 OF 22

# INDEX OF DRAWINGS

SHEET NO.	DWG. NO.	DESCRIPTION	SHEET NO.	DWG. NO.	DESCRIPTION	SHEET NO.	DWG. NO.	DESCRIPTION
1	TI-19001	COVER SHEET						
2	GI-19001	INDEX OF DRAWINGS						
3	GN-19001	GENERAL NOTES AND LEGEND						
4	CS-19001	CIVIL ABBREVIATIONS AND SYMBOLS						
5	LS-19A01	CIMAGLIA PARK PLANTING AND EROSION & SEDIMENT CONTROL PLAN						
6	LS-19A02	CIMAGLIA PARK VEGETATION CONTROL PLAN						
7	LD-19A01	CIMAGLIA PARK DETAILS						
8	LD-19A02	CIMAGLIA PARK PLANTING LISTS-SHEET 1						
9	LD-19A03	CIMAGLIA PARK PLANTING LISTS-SHEET 2						
10	LS-19B01	EDMONDSON AVENUE PLANTING PLAN-SHEET 1						
11	LS-19B02	EDMONDSON AVENUE PLANTING PLAN-SHEET 2						
12	LS-19B03	EDMONDSON AVENUE PLANTING PLAN-SHEET 3						
13	LS-19C01	PRESIDENT STREET PLANTING PLAN-SHEET 1						
14	LS-19C02	PRESIDENT STREET PLANTING PLAN-SHEET 2						
15	LS-19C03	PRESIDENT STREET PLANTING PLAN-SHEET 3						
16	LS-19C04	PRESIDENT STREET PLANTING PLAN-SHEET 4						
17	LD-19001	EDMONDSON AVENUE AND PRESIDENT STREET-PLANTING SCHEDULE, NOTES AND DETAILS						
18	ES-19001	CIMAGLIA PARK EROSION & SEDIMENT CONTROL NOTES - SHEET 1						
19	ES-19002	CIMAGLIA PARK EROSION & SEDIMENT CONTROL NOTES - SHEET 2						
20	ES-19003	CIMAGLIA PARK EROSION & SEDIMENT CONTROL NOTES - SHEET 3						
21	ES-19004	CIMAGLIA PARK EROSION & SEDIMENT CONTROL NOTES - SHEET 4						
22	ES-19005	CIMAGLIA PARK EROSION & SEDIMENT CONTROL NOTES - SHEET 5						



**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.  
 RLA-365 License No.      04-26-2015 Expiration Date



NO.	DESCRIPTION	BY	DATE

REVISIONS

APPR	MB	DESIGN	BCT	RED LINE LIGHT RAIL TRANSIT SYSTEM REFORESTATION AND LANDSCAPING  INDEX OF DRAWINGS  DATE: JUNE 2014      SCALE: NONE
		DRAWN	BCT	
		CHECK	RPC	

CONTRACT NO. T-0862-1940
DRAWING NO. GI-19001
SHEET NO. 2 OF 22

## GENERAL NOTES

1. THE EXISTING UTILITIES AND OBSTRUCTIONS SHOWN ON THESE PLANS ARE FROM THE BEST AVAILABLE RECORDS AND THE LOCATIONS AND/OR SIZES OF ALL UTILITIES SHALL BE CONSIDERED APPROXIMATE.
2. REPAIRS TO UTILITIES OR PROPERTY DAMAGE AS A RESULT OF CONTRACTOR'S NEGLIGENCE OR METHOD OF OPERATION SHALL BE COMPLETED TO THE SATISFACTION OF THE ENGINEER AND UTILITY OWNER AND BE MADE AT THE CONTRACTOR'S EXPENSE BEFORE PROCEEDING WITH CONSTRUCTION.
3. MATERIAL REMOVED INCLUDING LOGS, CUT BRANCHES AND CHIPS, ETC. SHALL BECOME THE CONTRACTOR'S PROPERTY TO BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF PROPERLY, UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIAL PROVISIONS.
4. THE CONTRACTOR SHALL PERFORM ALL WORK IN A MANNER THAT WILL INSURE THE SAFETY OF THE GENERAL PUBLIC, COMMUTERS, AND EMPLOYEES OF THE CONTRACTOR, MTA, ETC.
5. PRIOR TO PERFORMING EXCAVATION OR GRADING AT ANY LOCATION, CONTACT "MISS UTILITY", 1-800-257-7777 AT LEAST 48 HOURS IN ADVANCE OF THE PROPOSED WORK.
6. THE CONTRACTOR SHALL NOTE THE HISTORIC NATURE OF THE SURROUNDING COMMUNITY. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO MINIMIZE NOISE FROM CONSTRUCTION ACTIVITY ON-SITE.
7. A COPY OF THE CONTRACTOR'S SITE SPECIFIC PROJECT SAFETY PLAN SHALL BE SUBMITTED TO THE OFFICE OF SAFETY & RISK MANAGEMENT (OSRM) FOR REVIEW AND COMMENT. A COPY SHALL BE FORWARDED TO DENNIS RAFFERTY/DAVID AUCHU OR DESIGNATED REPRESENTATIVE IN THE OFFICE OF SAFETY & RISK MANAGEMENT. THE CONTRACTOR SHALL NOT BEGIN ANY WORK ACTIVITIES ON SITE UNTIL THE PROJECT SAFETY PLAN HAS BEEN REVIEWED AND FOUND TO BE ACCEPTABLE BY REPRESENTATIVES FROM THE OSRM.
8. THE CONTRACTOR SHALL CONFORM TO THE "MARYLAND HIGH VOLTAGE LINE ACT" AND CONTACT THE NECESSARY AUTHORITIES PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR SHALL MAINTAIN 10 FEET OF OVERHEAD CLEARANCE FROM EXISTING HIGH VOLTAGE WIRES.
9. NOTE TO CONTRACTOR: EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED.

## LEGEND - EXISTING

-  EXISTING RIGHT OF WAY
-  EXISTING WETLAND BOUNDARY
-  EXISTING TRAFFIC PATTERN

## LEGEND - PROPOSED

-  BY OTHERS
-  PROPOSED IMPROVEMENTS BY OTHERS
-  PROPOSED TRAFFIC PATTERN
-  PROPOSED PAVEMENT REMOVAL
-  PROPOSED SURFACE SWM AREA
-  SURVEYED TREES
-  TREES ALREADY REMOVED BY OTHERS
-  TREE TO BE REMOVED
-  PORTABLE SEDIMENT TANK
-  FILTER BAG
-  SILT FENCE
-  STABILIZED CONSTRUCTION ENTRANCE



**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.

RLA-365      04-26-2015  
 License No.      Expiration Date



NO.	DESCRIPTION	BY	DATE
REVISIONS			

APPR	BCT
CHECK	ES
DRAWN	RPC
DESIGN	MB

**RED LINE LIGHT RAIL TRANSIT SYSTEM  
 REFORESTATION AND LANDSCAPING**

**GENERAL NOTES AND LEGEND**

DATE: JUNE 2014      SCALE: NONE

CONTRACT NO.  
**T-0862-1940**

DRAWING NO.  
**GN-19001**

SHEET NO.  
**3 OF 22**

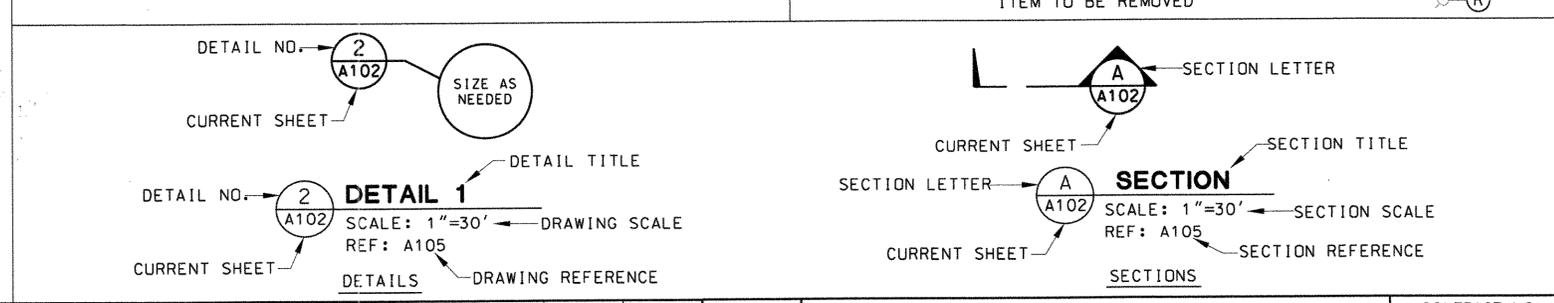
# ABBREVIATIONS

Δ	TOTAL CENTRAL ANGLE OF SPIRAL AND CIRCULAR CURVES	FF	FAR FACE
Δc	CENTRAL ANGLE OF CIRCULAR CURVE	FG	FINISH GRADE
AASHTO	AMERICAN SOCIETY OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS	FH	FIRE HYDRANT
AC	ASPHALT CONCRETE	FL	FLOOR, FLOWLINE
ABAN	ABANDONED	FR	FRAME
ABUT	ABUTMENT	FT.	FOOT, FEET
ADAAG	ADA ACCESSIBILITY GUIDELINES	F/T	FUTURE TRACK
AGIP	AT GRADE INLET PROTECTION	FUT	FUTURE
AGG	AGGREGATE	GALV	GALVANIZED
AH, AHD	AHEAD	GM	GAS METER
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	GND	GROUND
APPROX	APPROXIMATE	GR	GRADE
ASPH	ASPHALT	GV	GAS VALVE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	GW	GUY WIRE
@	AT	H	HEIGHT
BIT	BITUMINOUS	HBX	HAND BOX
BCCMP	BITUMINOUS COATED CORRUGATED METAL PIPE	HDPE	HIGH DENSITY POLYETHYLENE
BK	BACK	HMA	HOT MIX ASPHALT
BLDG	BUILDING	HORIZ	HORIZONTAL
B	BASELINE	HP	HIGH POINT
BLVD	BOULEVARD	H/W	HEAD WALL
BM	BENCHMARK	I	INLET
BOT	BOTTOM	ID	INSIDE DIAMETER
BRG	BEARING	IN.	INCH
BSMT	BASEMENT	INT	INTERIOR
CB	CATCH BASIN	INV	INVERT
CC	CONCRETE CURB	JB	JUNCTION BOX
C/C	CENTER TO CENTER	LB	POUND
CD	STONE CHECK DAM	Lc	TOTAL LENGTH OF CIRCULAR CURVE, IN FEET
CEM	CEMENT	LF	LINEAR FEET
CG	CONCRETE GUTTER	LOD	LIMIT OF DISTURBANCE
C&G	CURB AND GUTTER	LP	LOW POINT
CGSP	CORR. GALVANIZED STEEL PIPE	LPLG	LEAD PLUG (SURVEY MONUMENT)
CIP	CAST IRON PIPE	LR	LONG RADIUS
C	CENTERLINE	LRT	LIGHT RAIL TRANSIT
CL	CLASS	LRV	LIGHT RAIL VEHICLE
CMP	CORRUGATED METAL PIPE	LT	LEFT
CLR	CLEAR	MARC	MARYLAND RAIL COMMUTER
CO	CLEAN OUT	MAX	MAXIMUM
COL	COLUMN	MH	MANHOLE
COMB	COMBINED SEWER	MIN	MINIMUM
CONC	CONCRETE	MIN.	MINUTE
CONN	CONNECTION	MISC	MISCELLANEOUS
CONST	CONSTRUCTION	MON	MONUMENT
CRB	CURB LINE	MPH	MILES PER HOUR
CSXT	CSX TRANSPORTATION INCORPORATED	MSL	MEAN SEA LEVEL
C/T	CROSSOVER TRACK	MTA	MARYLAND TRANSIT ADMINISTRATION
CTB	CEMENT TREATED BASE	N	NORTH
Dc	DEGREE OF CIRCULAR CURVE	N/A	NOT APPLICABLE
DEFL	DEFLECTION	NB	NORTHBOUND
DEG.	DEGREES	N/E	NORTH LINE - EAST TRACK
D/I	DROP INLET	NF	NEAR FACE
DIA	DIAMETER	N/F	NOW OR FORMERLY
DIP	DUCTILE IRON PIPE	NIC	NOT IN CONTRACT
DN	DOWNSPOUT	NO.	NUMBER
DRWY	DRIVEWAY	NTS	NOT TO SCALE
DWG	DRAWING	N/W	NORTH LINE - WEST TRACK
DWLG	DWELLING	OD	OUTSIDE DIAMETER
E	EAST	OPP	OPPOSITE
EA	EACH	PAVT	PAVEMENT
EB	EASTBOUND	PC	POINT OF CHANGE FROM TANGENT TO CIRCULAR CURVE
EL	ELEVATION	PCC	POINT OF COMPOUND CIRCULAR CURVES
ELCP	ELLIPTICAL CONCRETE PIPE	PED	PEDESTRIAN
ELEC	ELECTRIC	PERF	PERFORATED
EM	ELECTRIC METER	PERM	PERMANENT
EMB	EMBANKMENT	PGE	PROFILE GRADE ELEVATION
E/P	EDGE OF PAVEMENT	PGL	PROFILE GRADE LINE
EQ	EQUAL	PI	POINT OF INTERSECTION OF TWO TANGENTS
EQL	EQUILATERAL	PK	PARKER-KALON NAIL (SURVEY MARKER)
EQN	EQUATION	PKG	PARKING
E/R	EDGE OF ROAD	R	PROPERTY LINE
E/S	EDGE OF STREAM	PLAT	PLATFORM
ESMT	EASEMENT	POB	POINT OF BEGINNING
EXIST	EXISTING	POC	POINT ON CURVE
EXP	EXPANSION	POE	POINT OF ENDING
EXT	EXTERIOR	POL	POINT ON LINE
FC	FIELD CONNECTION	POT	POINT ON TANGENT
		PRC	POINT OF REVERSE CURVES

PROP	PROPOSED	SCH	SCHEDULE
PST	PORTABLE SEDIMENT TANK	SD	STORM DRAIN
PT	POINT OF CHANGE FROM CIRCULAR CURVE TO TANGENT	S/E	SOUTH LINE - EAST TRACK
PV	PETROLEUM VALVE	SEC.	SECOND
PVC	POLYVINYL CHLORIDE	SECT	SECTION
R	RADIUS	SF	SILT FENCE
RCEP	REINFORCED CONCRETE ELLIPTICAL PIPE	S.F.	SQUARE FOOT
RCP	REINFORCED CONCRETE PIPE	SG	SUBGRADE
REF	REFERENCE	SHA	STATE HIGHWAY ADMINISTRATION
REINF	REINFORCED	SHLD	SHOULDER
REOD	REQUIRED	SHT	SHEET
RET	RETAINING	SIG	SIGNAL
RP	RAMP	SLP	SLOPE
RR	RAILROAD	SP	SPACING
RT	RIGHT	STA	STATION
R/W	RIGHT OF WAY	STD	STANDARD
S	SOUTH	STL	STEEL
SAN	SANITARY	STR	STRUCTURE
SB	SOUTHBOUND	SURF	SURFACE
SCE	STABILIZED CONSTRUCTION ENTRANCE	SW	SIDE WALK
SCH	SCHEDULE	S/W	SOUTH LINE - WEST TRACK
SD	STORM DRAIN	SWM	STORMWATER MANAGEMENT
S/E	SOUTH LINE - EAST TRACK	TB	TEST BORING
SEC.	SECOND	Tc	TANGENT LENGTH OF CIRCULAR CURVE
SECT	SECTION	T/C	TOP OF CURB
SF	SILT FENCE	TEL	TELEPHONE
S.F.	SQUARE FOOT	TEMP	TEMPORARY
SG	SUBGRADE	T/G	TOP OF GROUND
SHA	STATE HIGHWAY ADMINISTRATION	T.G.	TOP OF GRATE
SHLD	SHOULDER	TOPO	TOPOGRAPHY
SHT	SHEET	TP	TEST PIT
SIG	SIGNAL	T/P	TOP OF PAVEMENT
SLP	SLOPE	T/R	TOP OF RAIL
SP	SPACING	TRK	TRACK
STA	STATION	TR SIG	TRAFFIC SIGNAL
STD	STANDARD	T.S.	TOP OF STRUCTURE
STL	STEEL	TYP	TYPICAL
STR	STRUCTURE	UD	UNDERDRAIN
SURF	SURFACE	UND	UNLESS NOTED OTHERWISE
SW	SIDE WALK	V	VELOCITY
S/W	SOUTH LINE - WEST TRACK	VAR	VARIES
SWM	STORMWATER MANAGEMENT	VCP	VITRIFIED CLAY PIPE
TB	TEST BORING	VERT	VERTICAL
Tc	TANGENT LENGTH OF CIRCULAR CURVE	W	WEST
T/C	TOP OF CURB	W/	WITH
TEL	TELEPHONE	W/O	WITHOUT
TEMP	TEMPORARY	WAT	WATER
T/G	TOP OF GROUND	WB	WESTBOUND
T.G.	TOP OF GRATE	WB MARC	WEST BALTIMORE MARYLAND COMMUTER RAIL
TOPO	TOPOGRAPHY	WHSE	WAREHOUSE
TP	TEST PIT	WM	WATER METER
T/P	TOP OF PAVEMENT	WMATA	WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
T/R	TOP OF RAIL	WP	WORK POINT
TRK	TRACK	WS	WATER SURFACE
TR SIG	TRAFFIC SIGNAL	WV	WATER VALVE
T.S.	TOP OF STRUCTURE	X-ING	CROSSING
TYP	TYPICAL	X-OVER	CROSSOVER
UD	UNDERDRAIN		
UND	UNLESS NOTED OTHERWISE		
V	VELOCITY		
VAR	VARIES		
VCP	VITRIFIED CLAY PIPE		
VERT	VERTICAL		
W	WEST		
W/	WITH		
W/O	WITHOUT		
WAT	WATER		
WB	WESTBOUND		
WB MARC	WEST BALTIMORE MARYLAND COMMUTER RAIL		
WHSE	WAREHOUSE		
WM	WATER METER		
WMATA	WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY		
WP	WORK POINT		
WS	WATER SURFACE		
WV	WATER VALVE		
X-ING	CROSSING		
X-OVER	CROSSOVER		

# SYMBOLS

EXISTING		PROPOSED		EXISTING		PROPOSED	
	RIGHT-OF-WAY				MAJOR CONTOUR LINE		
	PROPERTY LINE				MINOR CONTOUR LINE		
	PARCEL NUMBER		#500		SPOT ELEVATION		
	MATCHLINE AND SECTION LINE				HIGH WATER		
	TRACK CENTER LINE		WBR TRACK		DITCH		
	CENTER LINE		C		SWALE		
	BASE LINE		B		SURFACE FLOW DIRECTION		
	POINT OF INTERSECTION OF TANGENTS				STORM DRAIN LINE		
	STATION EQUATION		STA AH = STA BK		UNDERDRAIN LINE		
	PRIMARY HORIZONTAL CONTROL - TRAVERSE POINT				DROP INLET, CATCH BASIN OR DRAIN		
	BENCH MARK				CULVERT WITH HEADWALLS		
	TEST BORING 18				EXISTING PIPE TO BE REMOVED		
	TEST PIT				EXISTING PIPE TO BE ABANDONED		
	STRUCTURE OUTLINE				MANHOLE (TYPE AS NOTED)		
	METAL FENCE (CHAIN LINK)				CLEANOUT		
	ORNAMENTAL METAL FENCE				WATER LINE		
	WOOD FENCE				GAS LINE		
	RAILROAD TRACKS				SANITARY LINE		
	CONCRETE CURB				UNDERGROUND TELEPHONE LINE		
	CONCRETE CURB AND GUTTER				OVERHEAD TELEPHONE LINE		
	DETECTABLE WARNING SURFACE				UNDERGROUND ELECTRIC LINE		
	WALLS				OVERHEAD ELECTRIC LINE		
	TRAFFIC BARRIER				ELECTRICAL JUNCTION BOX		
	BILLBOARD OR LARGE SIGN				ELECTRIC METER		
	SIGNS - NON-TRAFFIC				UNDERGROUND FIBER OPTIC LINE		
	SIGNS - TRAFFIC				OVERHEAD FIBER OPTIC LINE		
	CUT SLOPE - TOP				UTILITY POLE		
	FILL SLOPE - TOE				LIGHT POLE		
	LIMIT OF WORK				FIRE HYDRANT		



**MARYLAND DEPARTMENT OF TRANSPORTATION**

**MARYLAND TRANSIT ADMINISTRATION**

**MTA Maryland**

**RED LINE**

**General Engineering Consultant Team**

Baltimore, MD

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

RLA-365 License No. 04-26-2015 Expiration Date



NO.	DESCRIPTION	BY	DATE
REVISIONS			

**RED LINE LIGHT RAIL TRANSIT SYSTEM REFORESTATION AND LANDSCAPING**

**CIVIL ABBREVIATIONS AND SYMBOLS**

DATE: JUNE 2014 SCALE: NONE

CONTRACT NO. T-0862-1940

DRAWING NO. CS-19001

SHEET NO. 4 OF 22

**NOTES:**

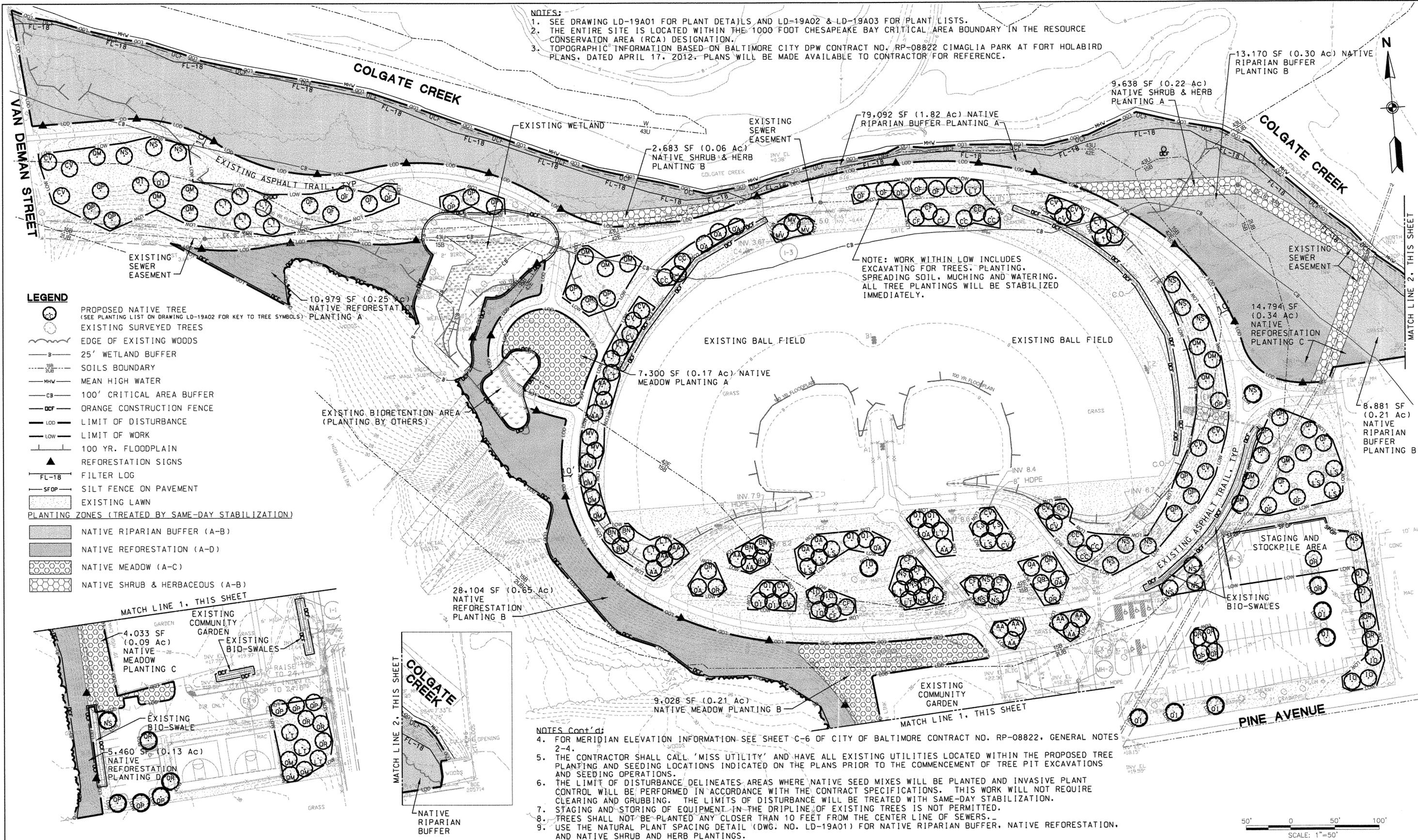
1. SEE DRAWING LD-19A01 FOR PLANT DETAILS AND LD-19A02 & LD-19A03 FOR PLANT LISTS.
2. THE ENTIRE SITE IS LOCATED WITHIN THE 1000 FOOT CHESAPEAKE BAY CRITICAL AREA BOUNDARY IN THE RESOURCE CONSERVATION AREA (RCA) DESIGNATION.
3. TOPOGRAPHIC INFORMATION BASED ON BALTIMORE CITY DPW CONTRACT NO. RP-08822 CIMAGLIA PARK AT FORT HOLABIRD PLANS, DATED APRIL 17, 2012. PLANS WILL BE MADE AVAILABLE TO CONTRACTOR FOR REFERENCE.

**NOTES Cont'd:**

4. FOR MERIDIAN ELEVATION INFORMATION SEE SHEET C-6 OF CITY OF BALTIMORE CONTRACT NO. RP-08822, GENERAL NOTES 2-4.
5. THE CONTRACTOR SHALL CALL 'MISS UTILITY' AND HAVE ALL EXISTING UTILITIES LOCATED WITHIN THE PROPOSED TREE PLANTING AND SEEDING LOCATIONS INDICATED ON THE PLANS PRIOR TO THE COMMENCEMENT OF TREE PIT EXCAVATIONS AND SEEDING OPERATIONS.
6. THE LIMIT OF DISTURBANCE DELINEATES AREAS WHERE NATIVE SEED MIXES WILL BE PLANTED AND INVASIVE PLANT CONTROL WILL BE PERFORMED IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. THIS WORK WILL NOT REQUIRE CLEARING AND GRUBBING. THE LIMITS OF DISTURBANCE WILL BE TREATED WITH SAME-DAY STABILIZATION.
7. STAGING AND STORING OF EQUIPMENT IN THE DRIFTLINE OF EXISTING TREES IS NOT PERMITTED.
8. TREES SHALL NOT BE PLANTED ANY CLOSER THAN 10 FEET FROM THE CENTER LINE OF SEWERS.
9. USE THE NATURAL PLANT SPACING DETAIL (DWG. NO. LD-19A01) FOR NATIVE RIPARIAN BUFFER, NATIVE REFORESTATION, AND NATIVE SHRUB AND HERB PLANTINGS.

**LEGEND**

- PROPOSED NATIVE TREE (SEE PLANTING LIST ON DRAWING LD-19A02 FOR KEY TO TREE SYMBOLS)
- EXISTING SURVEYED TREES
- EDGE OF EXISTING WOODS
- 25' WETLAND BUFFER
- SOILS BOUNDARY
- MEAN HIGH WATER
- 100' CRITICAL AREA BUFFER
- ORANGE CONSTRUCTION FENCE
- LIMIT OF DISTURBANCE
- LIMIT OF WORK
- 100 YR. FLOODPLAIN
- REFORESTATION SIGNS
- FILTER LOG
- SILT FENCE ON PAVEMENT
- EXISTING LAWN
- PLANTING ZONES (TREATED BY SAME-DAY STABILIZATION)**
- NATIVE RIPARIAN BUFFER (A-B)
- NATIVE REFORESTATION (A-D)
- NATIVE MEADOW (A-C)
- NATIVE SHRUB & HERBACEOUS (A-B)



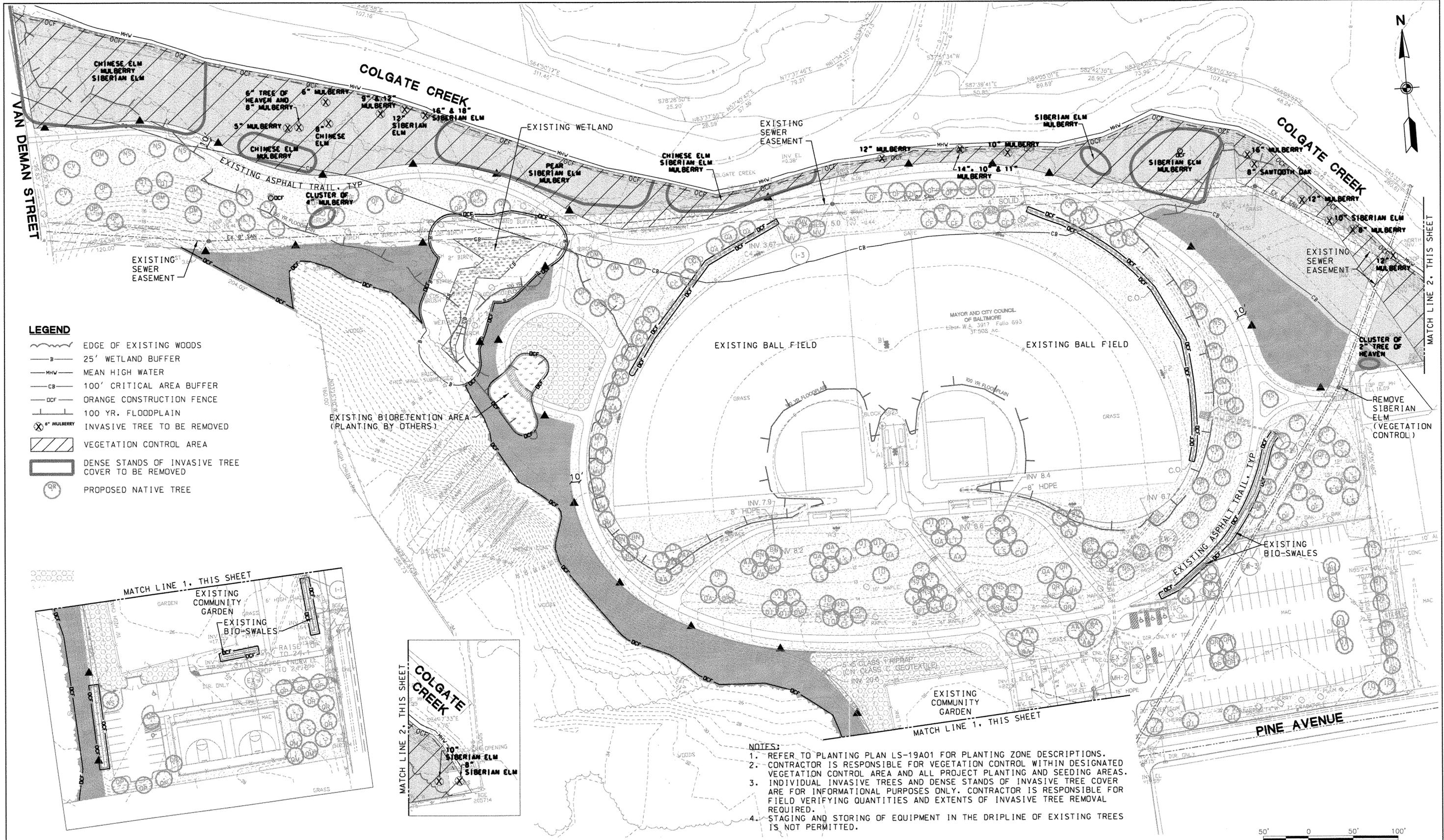
**PROFESSIONAL CERTIFICATION**  
 I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
 RLA-365 04-26-2015  
 License No. Expiration Date



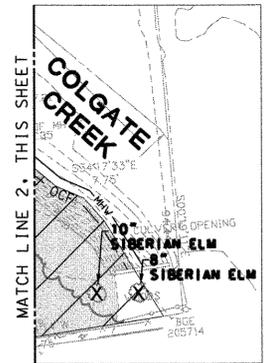
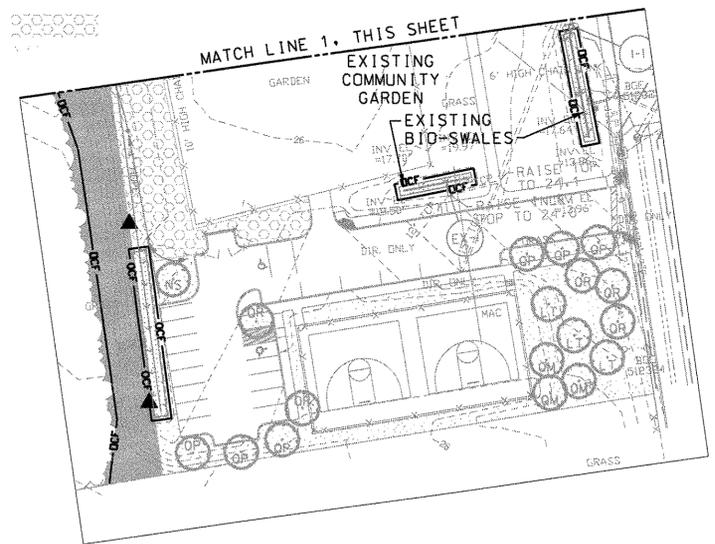
NO.	DESCRIPTION	BY	DATE
REVISIONS			

RED LINE LIGHT RAIL TRANSIT SYSTEM  
 REFORESTATION AND LANDSCAPING  
 CIMAGLIA PARK PLANTING  
 AND EROSION & SEDIMENT CONTROL PLAN  
 DATE: JUNE 2014  
 SCALE: 1" = 50'

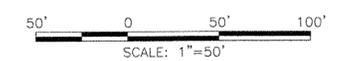
CONTRACT NO.  
 T-0862-1940  
 DRAWING NO.  
 LS-19A01  
 SHEET NO.  
 5 OF 22



- LEGEND**
- EDGE OF EXISTING WOODS
  - 25' WETLAND BUFFER
  - MEAN HIGH WATER
  - 100' CRITICAL AREA BUFFER
  - ORANGE CONSTRUCTION FENCE
  - 100 YR. FLOODPLAIN
  - 6" MULBERRY
  - INVASIVE TREE TO BE REMOVED
  - VEGETATION CONTROL AREA
  - DENSE STANDS OF INVASIVE TREE COVER TO BE REMOVED
  - PROPOSED NATIVE TREE



- NOTES:**
1. REFER TO PLANTING PLAN LS-19A01 FOR PLANTING ZONE DESCRIPTIONS.
  2. CONTRACTOR IS RESPONSIBLE FOR VEGETATION CONTROL WITHIN DESIGNATED VEGETATION CONTROL AREA AND ALL PROJECT PLANTING AND SEEDING AREAS.
  3. INDIVIDUAL INVASIVE TREES AND DENSE STANDS OF INVASIVE TREE COVER ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING QUANTITIES AND EXTENTS OF INVASIVE TREE REMOVAL REQUIRED.
  4. STAGING AND STORING OF EQUIPMENT IN THE DRIPLINE OF EXISTING TREES IS NOT PERMITTED.



**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.  
 RLA-365 04-26-2015  
 License No. Expiration Date



NO.	DESCRIPTION	BY	DATE
REVISIONS			

WMM  
 DEA  
 GRO  
 RM

RED LINE LIGHT RAIL TRANSIT SYSTEM  
 REFORESTATION AND LANDSCAPING

CIMAGLIA PARK VEGETATION CONTROL PLAN

DATE: JUNE 2014 SCALE: 1"=50'

CONTRACT NO.  
T-0862-1940

DRAWING NO.  
LS-19A02

SHEET NO.  
6 OF 22



NATIVE RIPARIAN BUFFER A					Size (acres): 1.82				
Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/Species Name	Common Name	Wetland Indicator Status	Size	Type	Placement	
200			<b>TREES</b>						
	20	73	<i>Betula nigra</i> *	River birch	FACW	8' ht.	Multistem, 3 stems min., Cont. grown	Naturalized @ 20' OC	
	15	55	<i>Carpinus caroliniana</i> *	American hophornbeam	FAC	1" caliper	Container grown	Naturalized @ 20' OC	
	15	54	<i>Nyssa sylvatica</i> *	Black gum	FAC	2" caliper	Balled and Burlapped	Naturalized @ 20' OC	
	20	73	<i>Platanus occidentalis</i> *	American sycamore	FACW	1" caliper	Container grown	Naturalized @ 20' OC	
	20	73	<i>Quercus bicolor</i> *	Swamp white oak	FACW	1" caliper	Container grown	Naturalized @ 20' OC	
	10	36	<i>Ulmus americana 'Princeton'</i> *	American elm	FAC	1" caliper	Container grown	Naturalized @ 20' OC	
	<b>100</b>	<b>364</b>	<b>=total</b>						
			<b>SHRUBS</b>						
	33	33	<i>Asimina triloba</i>	Paw paw	FAC	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	33	33	<i>Lindera benzoin</i>	Spicebush	FACW	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	34	33	<i>Viburnum dentatum</i>	Southern arrowwood	FAC	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	<b>100</b>	<b>99</b>	<b>=total</b>						
40 LBS			<b>NATIVE RIPARIAN SEED MIX</b>						
	30	21.8	<i>Dichanthelium clandestinum</i>	Deertongue	FAC	N/A	SEED	LB. of P.L.S. 76%	
	15	10.9	<i>Elymus canadensis</i>	Canada Wild Rye	FAC	N/A	SEED	LB. of P.L.S. 76%	
	20	14.6	<i>Elymus riparius</i>	Riverbank Wild Rye	FACW	N/A	SEED	LB. of P.L.S. 76%	
	25	18.2	<i>Elymus virginicus</i>	Virginia Wild Rye	FACW	N/A	SEED	LB. of P.L.S. 76%	
	10	7.3	<i>Tridens flavus</i>	Purple Top	FACU	N/A	SEED	LB. of P.L.S. 76%	
	<b>100</b>	<b>72.8</b>	<b>=total</b>						

P.L.S. = Pure Live Seed  
\* = Fall Digging Hazard

NATIVE RIPARIAN BUFFER B					Size (acres): 0.51				
Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/Species Name	Common Name	Wetland Indicator Status	Size	Type	Placement	
200			<b>TREES</b>						
	20	20	<i>Betula nigra</i> *	River birch	FACW	8' ht.	Multistem, 3 stems min., Cont. grown	Naturalized @ 20' OC	
	15	16	<i>Carpinus caroliniana</i> *	American hophornbeam	FAC	1" caliper	Container grown	Naturalized @ 20' OC	
	15	16	<i>Nyssa sylvatica</i> *	Black gum	FAC	2" caliper	Balled and Burlapped	Naturalized @ 20' OC	
	20	20	<i>Platanus occidentalis</i> *	American sycamore	FACW	1" caliper	Container grown	Naturalized @ 20' OC	
	20	20	<i>Quercus bicolor</i> *	Swamp white oak	FACW	1" caliper	Container grown	Naturalized @ 20' OC	
	10	10	<i>Ulmus americana 'Princeton'</i> *	American elm	FAC	1" caliper	Container grown	Naturalized @ 20' OC	
	<b>100</b>	<b>102</b>	<b>=total</b>						
			<b>SHRUBS</b>						
	33	10	<i>Asimina triloba</i>	Paw paw	FAC	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	33	9	<i>Lindera benzoin</i>	Spicebush	FACW	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	34	9	<i>Viburnum dentatum</i>	Southern arrowwood	FAC	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	<b>100</b>	<b>28</b>	<b>=total</b>						
40 LBS			<b>NATIVE RIPARIAN SEED MIX</b>						
	30	6.1	<i>Dichanthelium clandestinum</i>	Deertongue	FAC	N/A	SEED	LB. of P.L.S. 76%	
	15	3.1	<i>Elymus canadensis</i>	Canada Wild Rye	FAC	N/A	SEED	LB. of P.L.S. 76%	
	20	4.1	<i>Elymus riparius</i>	Riverbank Wild Rye	FACW	N/A	SEED	LB. of P.L.S. 76%	
	25	5.1	<i>Elymus virginicus</i>	Virginia Wild Rye	FACW	N/A	SEED	LB. of P.L.S. 76%	
	10	2.0	<i>Tridens flavus</i>	Purple Top	FACU	N/A	SEED	LB. of P.L.S. 76%	
	<b>100</b>	<b>20.4</b>	<b>=total</b>						

P.L.S. = Pure Live Seed  
\* = Fall Digging Hazard

NATIVE INDIVIDUAL TREES			Number (individual trees): 225				
Symbol	Species Quantity	Vegetation Strata/Species Name	Common Name	Wetland Indicator Status	Size	Type	Placement
		<b>TREES</b>					
AA	15	<i>Amelanchier arborea</i>	Downy serviceberry	UPL	8' ht.	Multistem, 3 stems min., Cont. Grown	As shown on plan
BN	6	<i>Betula nigra</i> *	River birch	FACW	8' ht.	Cont. Grown	As shown on plan
CC	9	<i>Cercis canadensis</i> *	Redbud	UPL	2" caliper	Balled and Burlapped	As shown on plan
CV	19	<i>Chionanthus virginicus</i>	Fringe tree	FACU	2" caliper	Balled and Burlapped	As shown on plan
CF	11	<i>Cornus florida 'Appalachian Spring'</i>	Appalachian Spring dogwood	FACU	2" caliper	Balled and Burlapped	As shown on plan
IO	7	<i>Ilex opaca</i> *	American holly	FAC	6' ht.	Balled and Burlapped	As shown on plan
LS	9	<i>Liquidambar styraciflua</i> *	Sweet gum	FAC	2" caliper	Balled and Burlapped	As shown on plan
LT	21	<i>Liriodendron tulipifera</i> *	Tulip poplar	FACU	2" caliper	Balled and Burlapped	As shown on plan
MV	6	<i>Magnolia virginiana</i>	Sweetbay magnolia	FACW	8' ht.	Balled and Burlapped	As shown on plan
NS	21	<i>Nyssa sylvatica</i> *	Black gum	FAC	2" caliper	Balled and Burlapped	As shown on plan
QA	10	<i>Quercus alba</i> *	White oak	FACU	2" caliper	Balled and Burlapped	As shown on plan
QF	16	<i>Quercus falcata</i> *	Southern oak	FACU	2" caliper	Balled and Burlapped	As shown on plan
QI	16	<i>Quercus imbricaria</i> *	Shingle oak	FAC	2" caliper	Balled and Burlapped	As shown on plan
QM	19	<i>Quercus macrocarpa</i> *	Burr oak	FACU	2" caliper	Balled and Burlapped	As shown on plan
QP	24	<i>Quercus michauxii</i> *	Swamp chestnut oak	FACW	2" caliper	Balled and Burlapped	As shown on plan
QR	16	<i>Quercus rubra</i> *	Red oak	FACU	2" caliper	Balled and Burlapped	As shown on plan
	<b>225</b>	<b>=total</b>					

\* = Fall Digging Hazard

NATIVE REFORESTATION A					Size (acres): 0.25				
Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/Species Name	Common Name	Wetland Indicator Status	Size	Type	Placement	
200			<b>TREES</b>						
	10	5	<i>Acer rubrum</i>	Red maple	FAC	2" caliper	Balled and Burlapped	Naturalized @ 20' OC	
	10	5	<i>Celtis occidentalis</i>	Hackberry	FACU	2" caliper	Balled and Burlapped	Naturalized @ 20' OC	
	10	5	<i>Nyssa sylvatica</i>	Black gum	FAC	2" caliper	Balled and Burlapped	Naturalized @ 20' OC	
	20	10	<i>Platanus occidentalis</i> *	American sycamore	FACW	1" caliper	Container grown	Naturalized @ 20' OC	
	5	3	<i>Quercus alba</i> *	White Oak	FACU	1" caliper	Container grown	Naturalized @ 20' OC	
	20	10	<i>Quercus bicolor</i> *	Swamp white oak	FACW	1" caliper	Container grown	Naturalized @ 20' OC	
	20	10	<i>Quercus imbricaria</i> *	Shingle oak	FAC	1" caliper	Container grown	Naturalized @ 20' OC	
	5	2	<i>Ulmus americana 'Princeton'</i> *	American elm	FAC	1" caliper	Container grown	Naturalized @ 20' OC	
	<b>100</b>	<b>50</b>	<b>=total</b>						
54			<b>SHRUBS</b>						
	20	3	<i>Asimina triloba</i>	Paw paw	FAC	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	20	3	<i>Hamamelis virginiana</i>	Witch hazel	FACU	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	20	3	<i>Lindera benzoin</i>	Spicebush	FACW	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	20	3	<i>Viburnum acerifolium</i>	Mapleleaf viburnum	FACU	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	20	2	<i>Viburnum dentatum</i>	Southern arrowwood	FAC	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	<b>100</b>	<b>14</b>	<b>=total</b>						
40 LBS			<b>NATIVE GRASS SEED MIX</b>						
	20	2.0	<i>Chamaecrista fasciculata</i>	Partridge pea	FACU	N/A	SEED	LB. of P.L.S. 76%	
	15	1.5	<i>Elymus hystrix</i>	Bottlebrush grass	NI	N/A	SEED	LB. of P.L.S. 76%	
	20	2.0	<i>Elymus riparius</i>	Riverbank wild rye	FACW	N/A	SEED	LB. of P.L.S. 76%	
	3	0.3	<i>Monarda fistulosa</i>	Wild bergamot	UPL	N/A	SEED	LB. of P.L.S. 76%	
	4	0.4	<i>Rudbeckia hirta</i>	Black eyed susan	FACU	N/A	SEED	LB. of P.L.S. 76%	
	15	1.5	<i>Sorghastrum nutans</i>	Indiangrass	UPL	N/A	SEED	LB. of P.L.S. 76%	
	10	1.0	<i>Schizachyrium scoparium</i>	Little bluestem	FACU	N/A	SEED	LB. of P.L.S. 76%	
	3	0.3	<i>Tridens flavus</i>	Purple top	FACU	N/A	SEED	LB. of P.L.S. 76%	
	10	1.0	<i>Tridens flavus</i>	Purple top	FACU	N/A	SEED	LB. of P.L.S. 76%	
	<b>100</b>	<b>10.0</b>	<b>=total</b>						

P.L.S. = Pure Live Seed  
\* = Fall Digging Hazard

NATIVE REFORESTATION B					Size (acres): 0.65				
Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/Species Name	Common Name	Wetland Indicator Status	Size	Type	Placement	
200			<b>TREES</b>						
	10	13	<i>Acer rubrum</i>	Red maple	FAC	2" caliper	Balled and Burlapped	Naturalized @ 20' OC	
	10	13	<i>Celtis occidentalis</i>	Hackberry	FACU	2" caliper	Balled and Burlapped	Naturalized @ 20' OC	
	10	13	<i>Nyssa sylvatica</i>	Black gum	FAC	2" caliper	Balled and Burlapped	Naturalized @ 20' OC	
	20	26	<i>Platanus occidentalis</i> *	American sycamore	FACW	1" caliper	Container grown	Naturalized @ 20' OC	
	5	7	<i>Quercus alba</i> *	White Oak	FACU	1" caliper	Container grown	Naturalized @ 20' OC	
	20	26	<i>Quercus bicolor</i> *	Swamp white oak	FACW	1" caliper	Container grown	Naturalized @ 20' OC	
	20	26	<i>Quercus imbricaria</i> *	Shingle oak	FAC	1" caliper	Container grown	Naturalized @ 20' OC	
	5	6	<i>Ulmus americana 'Princeton'</i> *	American elm	FAC	1" caliper	Container grown	Naturalized @ 20' OC	
	<b>100</b>	<b>130</b>	<b>=total</b>						
54			<b>SHRUBS</b>						
	20	7	<i>Asimina triloba</i>	Paw paw	FAC	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	20	7	<i>Hamamelis virginiana</i>	Witch hazel	FACU	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	20	7	<i>Lindera benzoin</i>	Spicebush	FACW	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	20	7	<i>Viburnum acerifolium</i>	Mapleleaf viburnum	FACU	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	20	7	<i>Viburnum dentatum</i>	Southern arrowwood	FAC	18" ht.	Container grown	Groups of 3 or 5 @ 6' OC	
	<b>100</b>	<b>35</b>	<b>=total</b>						
40 LBS			<b>NATIVE GRASS SEED MIX</b>						
	20	5.2	<i>Chamaecrista fasciculata</i>	Partridge pea	FACU	N/A	SEED	LB. of P.L.S. 76%	
	15	3.9	<i>Elymus hystrix</i>	Bottlebrush grass	NI	N/A	SEED	LB. of P.L.S. 76%	
	20	5.2	<i>Elymus riparius</i>	Riverbank wild rye	FACW	N/A	SEED	LB. of P.L.S. 76%	
	3	1.0	<i>Monarda fistulosa</i>	Wild bergamot	UPL	N/A	SEED	LB. of P.L.S. 76%	
	4	1.1	<i>Rudbeckia hirta</i>	Black eyed susan	FACU	N/A	SEED	LB. of P.L.S. 76%	
	15	3.9	<i>Sorghastrum nutans</i>	Indiangrass	UPL	N/A	SEED	LB. of P.L.S. 76%	
	10	2.6	<i>Schizachyrium scoparium</i>	Little bluestem	FACU	N/A	SEED	LB. of P.L.S. 76%	
	3	1.0	<i>Tridens flavus</i>	Purple top	FACU	N/A	SEED	LB. of P.L.S. 76%	
	10	2.1	<i>Tridens flavus</i>	Purple top	FACU	N/A	SEED	LB. of P.L.S. 76%	
	<b>100</b>	<b>26.0</b>	<b>=total</b>						

P.L.S. = Pure Live Seed  
\* = Fall Digging Hazard

NATIVE REFORESTATION C					Size (acres): 0.34				
Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/Species Name	Common Name	Wetland Indicator Status	Size	Type	Placement	
200			<b>TREES</b>						
	10	7	<i>Acer rubrum</i>	Red maple	FAC	2" caliper	Balled and Burlapped	Naturalized @ 20' OC	
	10	7	<i>Celtis occidentalis</i>	Hackberry	FACU	2" caliper	Balled and Burlapped	Naturalized @ 20' OC	
	10	7	<i>Nyssa sylvatica</i>	Black gum	FAC	2" caliper	Balled and Burlapped	Naturalized @ 20' OC	
	20	14	<i>Platanus occidentalis</i> *	American sycamore	FACW	1" caliper	Container grown	Naturalized @ 20' OC	
	5	3	<i>Quercus alba</i> *	White Oak	FACU	1" caliper	Container grown	Naturalized @ 20' OC	
	20	13	<i>Quercus bicolor</i> *	Swamp white oak	FACW	1" caliper	Container grown	Naturalized @ 20' OC	
	20	14	<i>Quercus imbricaria</i> *	Shingle oak	FAC	1" caliper	Container grown	Naturalized @ 20' OC	

NATIVE SHRUB & HERBACEOUS A				Size (acres): 0.22				
Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Wetland Indicator Status	Size	Type	Placement
<b>SHRUBS</b>								
108	20	5	<i>Asimina triloba</i>	Paw paw	FAC	18"	Container grown	Groups of 3-5 plants @ 6' OC
	20	5	<i>Hamamelis virginiana</i>	Witch hazel	FACU	18"	Container grown	Groups of 3-5 plants @ 6' OC
	20	5	<i>Lindera benzoin</i>	Spicebush	FACW	18"	Container grown	Groups of 3-5 plants @ 6' OC
	20	5	<i>Viburnum acerifolium</i>	Mapleleaf viburnum	FACU	18"	Container grown	Groups of 3-5 plants @ 6' OC
	20	4	<i>Viburnum dentatum</i>	Southern arrowwood	FAC	18"	Container grown	Groups of 3-5 plants @ 6' OC
	<b>100</b>	<b>24</b>	<b>=total</b>					
<b>NATIVE GRASS SEED MIX</b>								
40 LBS	20	1.7	<i>Chamaecrista fasciculata</i>	Partridge pea	FACU	N/A	SEED	LB. of P.L.S. 76%
	15	1.3	<i>Elymus hystrix</i>	Bottlebrush grass	NI	N/A	SEED	LB. of P.L.S. 76%
	20	1.7	<i>Elymus riparius</i>	Riverbank wild rye	FACW	N/A	SEED	LB. of P.L.S. 76%
	3	0.3	<i>Monarda fistulosa</i>	Wild bergamot	UPL	N/A	SEED	LB. of P.L.S. 76%
	4	0.4	<i>Rudbeckia hirta</i>	Black eyed susan	FACU	N/A	SEED	LB. of P.L.S. 76%
	15	1.3	<i>Sorghastrum nutans</i>	Indiangrass	UPL	N/A	SEED	LB. of P.L.S. 76%
	10	0.9	<i>Schizachyrium scoparium</i>	Little bluestem	FACU	N/A	SEED	LB. of P.L.S. 76%
	3	0.3	<i>Tridens flavus</i>	Purple top	FACU	N/A	SEED	LB. of P.L.S. 76%
	10	0.9	<i>Tradescantia virginiana</i>	Virginia spiderwort	FACU	N/A	SEED	LB. of P.L.S. 76%
	<b>100</b>	<b>8.8</b>	<b>=total</b>					

P.L.S. = Pure Live Seed

NATIVE SHRUB & HERBACEOUS B				Size (acres): 0.06				
Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Wetland Indicator Status	Size	Type	Placement
<b>SHRUBS</b>								
108	20	2	<i>Asimina triloba</i>	Paw paw	FAC	18"	Container grown	Groups of 3-5 plants @ 6' OC
	20	2	<i>Hamamelis virginiana</i>	Witch hazel	FACU	18"	Container grown	Groups of 3-5 plants @ 6' OC
	20	1	<i>Lindera benzoin</i>	Spicebush	FACW	18"	Container grown	Groups of 3-5 plants @ 6' OC
	20	1	<i>Viburnum acerifolium</i>	Mapleleaf viburnum	FACU	18"	Container grown	Groups of 3-5 plants @ 6' OC
	20	1	<i>Viburnum dentatum</i>	Southern arrowwood	FAC	18"	Container grown	Groups of 3-5 plants @ 6' OC
	<b>100</b>	<b>7</b>	<b>=total</b>					
<b>NATIVE GRASS SEED MIX</b>								
40 LBS	20	0.5	<i>Chamaecrista fasciculata</i>	Partridge pea	FACU	N/A	SEED	LB. of P.L.S. 76%
	15	0.3	<i>Elymus hystrix</i>	Bottlebrush grass	NI	N/A	SEED	LB. of P.L.S. 76%
	20	0.5	<i>Elymus riparius</i>	Riverbank wild rye	FACW	N/A	SEED	LB. of P.L.S. 76%
	3	0.1	<i>Monarda fistulosa</i>	Wild bergamot	UPL	N/A	SEED	LB. of P.L.S. 76%
	4	0.1	<i>Rudbeckia hirta</i>	Black eyed susan	FACU	N/A	SEED	LB. of P.L.S. 76%
	15	0.3	<i>Sorghastrum nutans</i>	Indiangrass	UPL	N/A	SEED	LB. of P.L.S. 76%
	10	0.3	<i>Schizachyrium scoparium</i>	Little bluestem	FACU	N/A	SEED	LB. of P.L.S. 76%
	3	0.1	<i>Tridens flavus</i>	Purple top	FACU	N/A	SEED	LB. of P.L.S. 76%
	10	0.2	<i>Tradescantia virginiana</i>	Virginia spiderwort	FACU	N/A	SEED	LB. of P.L.S. 76%
	<b>100</b>	<b>2.4</b>	<b>=total</b>					

P.L.S. = Pure Live Seed

NATIVE MEADOW A				Size (acres): 0.17				
Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Wetland Indicator Status	Type	Placement	
<b>NATIVE GRASS SEED MIX</b>								
40 LBS	20	1.4	<i>Chamaecrista fasciculata</i>	Partridge pea	FACU	SEED	LB. of P.L.S. 76%	
	15	1.0	<i>Elymus hystrix</i>	Bottlebrush grass	NI	SEED	LB. of P.L.S. 76%	
	20	1.4	<i>Elymus riparius</i>	Riverbank wild rye	FACW	SEED	LB. of P.L.S. 76%	
	3	0.2	<i>Monarda fistulosa</i>	Wild bergamot	UPL	SEED	LB. of P.L.S. 76%	
	4	0.3	<i>Rudbeckia hirta</i>	Black eyed susan	FACU	SEED	LB. of P.L.S. 76%	
	15	0.9	<i>Sorghastrum nutans</i>	Indiangrass	UPL	SEED	LB. of P.L.S. 76%	
	10	0.7	<i>Schizachyrium scoparium</i>	Little bluestem	FACU	SEED	LB. of P.L.S. 76%	
	3	0.2	<i>Tridens flavus</i>	Purple top	FACU	SEED	LB. of P.L.S. 76%	
	10	0.7	<i>Tradescantia virginiana</i>	Virginia spiderwort	FACU	SEED	LB. of P.L.S. 76%	
	<b>100</b>	<b>6.8</b>	<b>=total</b>					

P.L.S. = Pure Live Seed

NATIVE MEADOW B				Size (acres): 0.21				
Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Wetland Indicator Status	Type	Placement	
<b>NATIVE GRASS SEED MIX</b>								
40 LBS	20	1.7	<i>Chamaecrista fasciculata</i>	Partridge pea	FACU	SEED	LB. of P.L.S. 76%	
	15	1.2	<i>Elymus hystrix</i>	Bottlebrush grass	NI	SEED	LB. of P.L.S. 76%	
	20	1.7	<i>Elymus riparius</i>	Riverbank wild rye	FACW	SEED	LB. of P.L.S. 76%	
	3	0.3	<i>Monarda fistulosa</i>	Wild bergamot	UPL	SEED	LB. of P.L.S. 76%	
	4	0.4	<i>Rudbeckia hirta</i>	Black eyed susan	FACU	SEED	LB. of P.L.S. 76%	
	15	1.2	<i>Sorghastrum nutans</i>	Indiangrass	UPL	SEED	LB. of P.L.S. 76%	
	10	0.8	<i>Schizachyrium scoparium</i>	Little bluestem	FACU	SEED	LB. of P.L.S. 76%	
	3	0.3	<i>Tridens flavus</i>	Purple top	FACU	SEED	LB. of P.L.S. 76%	
	10	0.8	<i>Tradescantia virginiana</i>	Virginia spiderwort	FACU	SEED	LB. of P.L.S. 76%	
	<b>100</b>	<b>8.4</b>	<b>=total</b>					

P.L.S. = Pure Live Seed

NATIVE MEADOW C				Size (acres): 0.09				
Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Wetland Indicator Status	Type	Placement	
<b>NATIVE GRASS SEED MIX</b>								
40 LBS	20	0.7	<i>Chamaecrista fasciculata</i>	Partridge pea	FACU	SEED	LB. of P.L.S. 76%	
	15	0.6	<i>Elymus hystrix</i>	Bottlebrush grass	NI	SEED	LB. of P.L.S. 76%	
	20	0.7	<i>Elymus riparius</i>	Riverbank wild rye	FACW	SEED	LB. of P.L.S. 76%	
	3	0.1	<i>Monarda fistulosa</i>	Wild bergamot	UPL	SEED	LB. of P.L.S. 76%	
	4	0.1	<i>Rudbeckia hirta</i>	Black eyed susan	FACU	SEED	LB. of P.L.S. 76%	
	15	0.6	<i>Sorghastrum nutans</i>	Indiangrass	UPL	SEED	LB. of P.L.S. 76%	
	10	0.3	<i>Schizachyrium scoparium</i>	Little bluestem	FACU	SEED	LB. of P.L.S. 76%	
	3	0.1	<i>Tridens flavus</i>	Purple top	FACU	SEED	LB. of P.L.S. 76%	
	10	0.4	<i>Tradescantia virginiana</i>	Virginia spiderwort	FACU	SEED	LB. of P.L.S. 76%	
	<b>100</b>	<b>3.6</b>	<b>=total</b>					

P.L.S. = Pure Live Seed



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.  
RLA-365 License No. 04-26-2015 Expiration Date

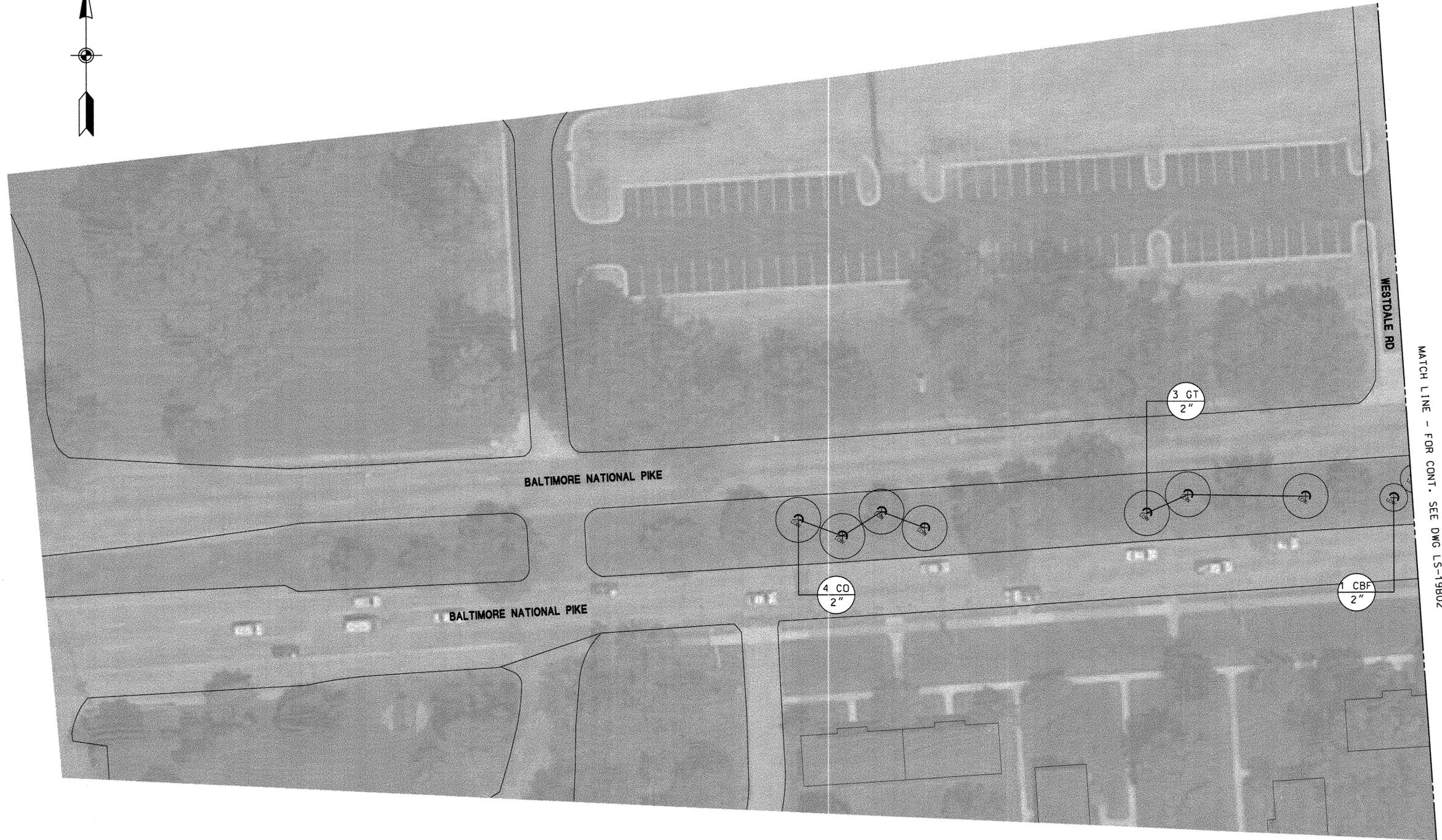


NO.	DESCRIPTION	BY	DATE
REVISIONS			

WMM  
DEA  
GRO  
RM

RED LINE LIGHT RAIL TRANSIT SYSTEM  
REFORESTATION AND LANDSCAPING  
CIMAGLIA PARK PLANTING LISTS  
SHEET 2  
DATE: JUNE 2014 SCALE: NONE

CONTRACT NO. T-0862-1940  
DRAWING NO. LD-19A03  
SHEET NO. 9 OF 22



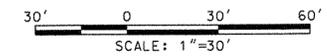
MATCH LINE - FOR CONT. SEE DWG LS-19B02

**PLANT LIST FOR THIS DRAWING**

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
CO	4	CELTIS OCCIDENTALIS	HACKBERRY	2 IN. CAL.	
GT	3	GLEDITSIA TRIACANTHOS 'INERMIS'	THORNLESS HONEYLOCUST	2 IN. CAL.	
CBF	1	CARPINUS BETULUS 'FASTIGIATA'	COLUMNAR EUROPEAN HORNBEAM	2 IN. CAL.	

**NOTES:**

1. PROPOSED TREE PLANTING LOCATIONS THAT COINCIDE WITH EXISTING TREE LOCATIONS WILL BE AVAILABLE AFTER BALTIMORE CITY FORCES REMOVE THE EXISTING TREES.



**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.  
 RLA-365 04-26-2015  
 License No. Expiration Date

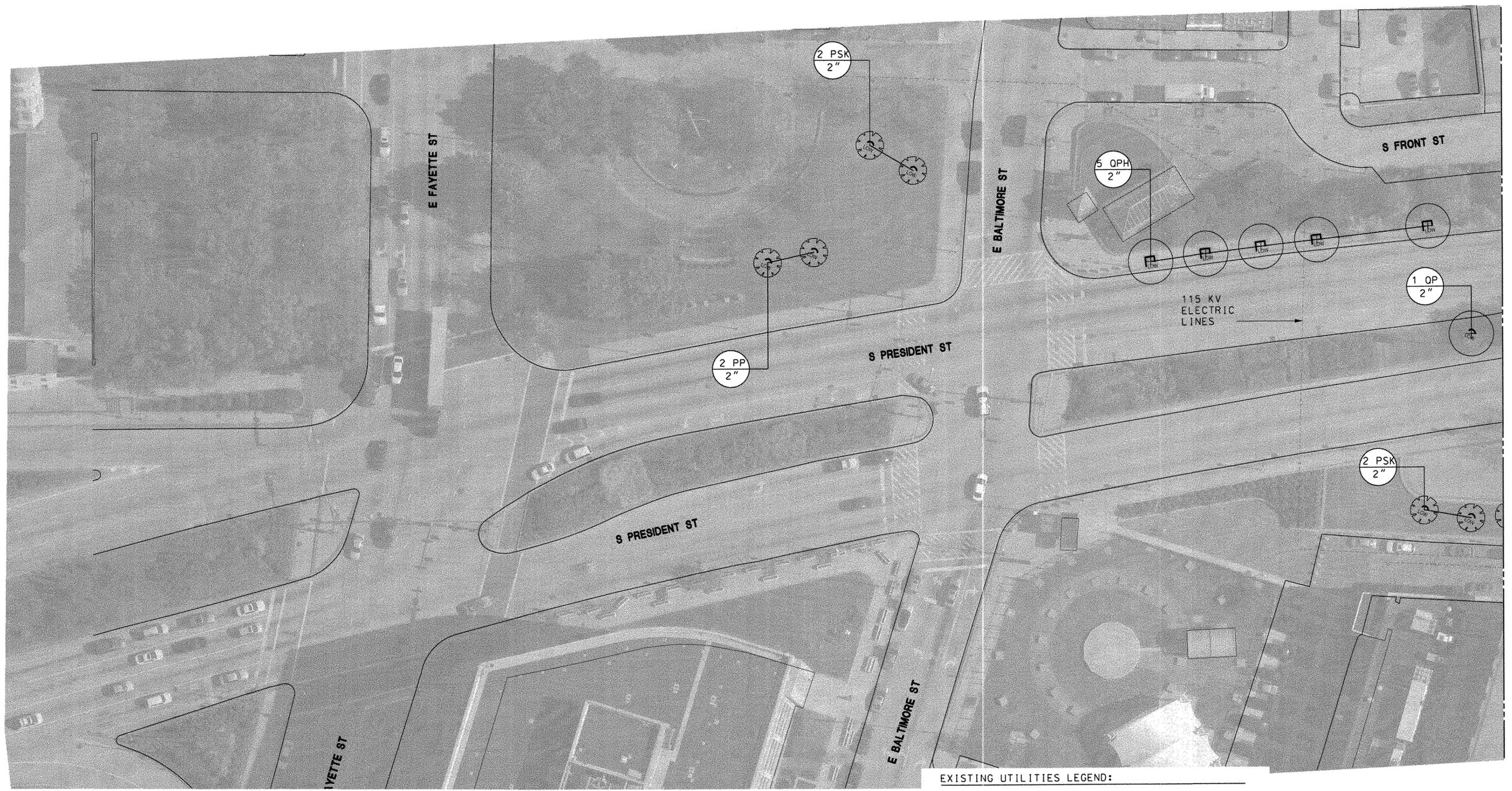
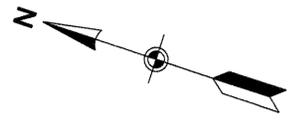


NO.	DESCRIPTION	BY	DATE

APPR. CHECK DRAWN DESIGN  
 JRH  
 JRH  
 GGH  
 GGH

**RED LINE LIGHT RAIL TRANSIT SYSTEM  
 REFORESTATION AND LANDSCAPING**  
 EDMONDSON AVENUE PLANTING PLAN  
 SHEET 1  
 DATE: JUNE 2014      SCALE: 1" = 30'

CONTRACT NO.  
 T-0862-1940  
 DRAWING NO.  
 LS-19B01  
 SHEET NO.  
 10 OF 22



**PLANT LIST FOR THIS DRAWING**

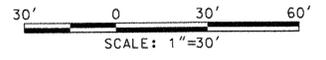
SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
PP	2	PARROTIA PERSICA	PERSIAN PARROTTIA	2 IN. CAL.	
PSK	4	PRUNUS SERRULATA 'KWANZAN'	KWANZAN CHERRY	2 IN. CAL.	
OP	1	QUERCUS PALUSTRIS	PIN OAK	2 IN. CAL.	
QPH	5	QUERCUS PHELLOS	WILLOW OAK	2 IN. CAL.	

**NOTES:**

- PROPOSED TREE PLANTING LOCATIONS THAT COINCIDE WITH EXISTING TREE LOCATIONS WILL BE AVAILABLE AFTER BALTIMORE CITY FORCES REMOVE THE EXISTING TREES.
- THE EXISTING TREE GRATES ALONG THE EAST SIDE OF PRESIDENT STREET, BETWEEN EAST BALTIMORE STREET AND EAST LOMBARD STREET, SHALL BE REINSTALLED BY THE CONTRACTOR IMMEDIATELY FOLLOWING THE PLANTING OF EACH TREE.

**EXISTING UTILITIES LEGEND:**

ELECTRICAL DUCTBANK		STORM DRAIN	
CABLE TV		TELEPHONE	
ELECTRICAL GAS		WATER	
SANITARY SEWER		MANHOLE COVER	
STEAM		DRAIN INLET	



**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.  
 RLA-365 License No. 04-26-2015 Expiration Date



NO.	DESCRIPTION	BY	DATE

DESIGN: JRH  
 DRAWN: JRH  
 CHECK: GGH  
 APPR: GGH

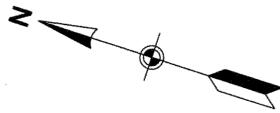
**RED LINE LIGHT RAIL TRANSIT SYSTEM  
 REFORESTATION AND LANDSCAPING**

**PRESIDENT STREET PLANTING PLAN  
 SHEET 1**

DATE: JUNE 2014      SCALE: 1" = 30'

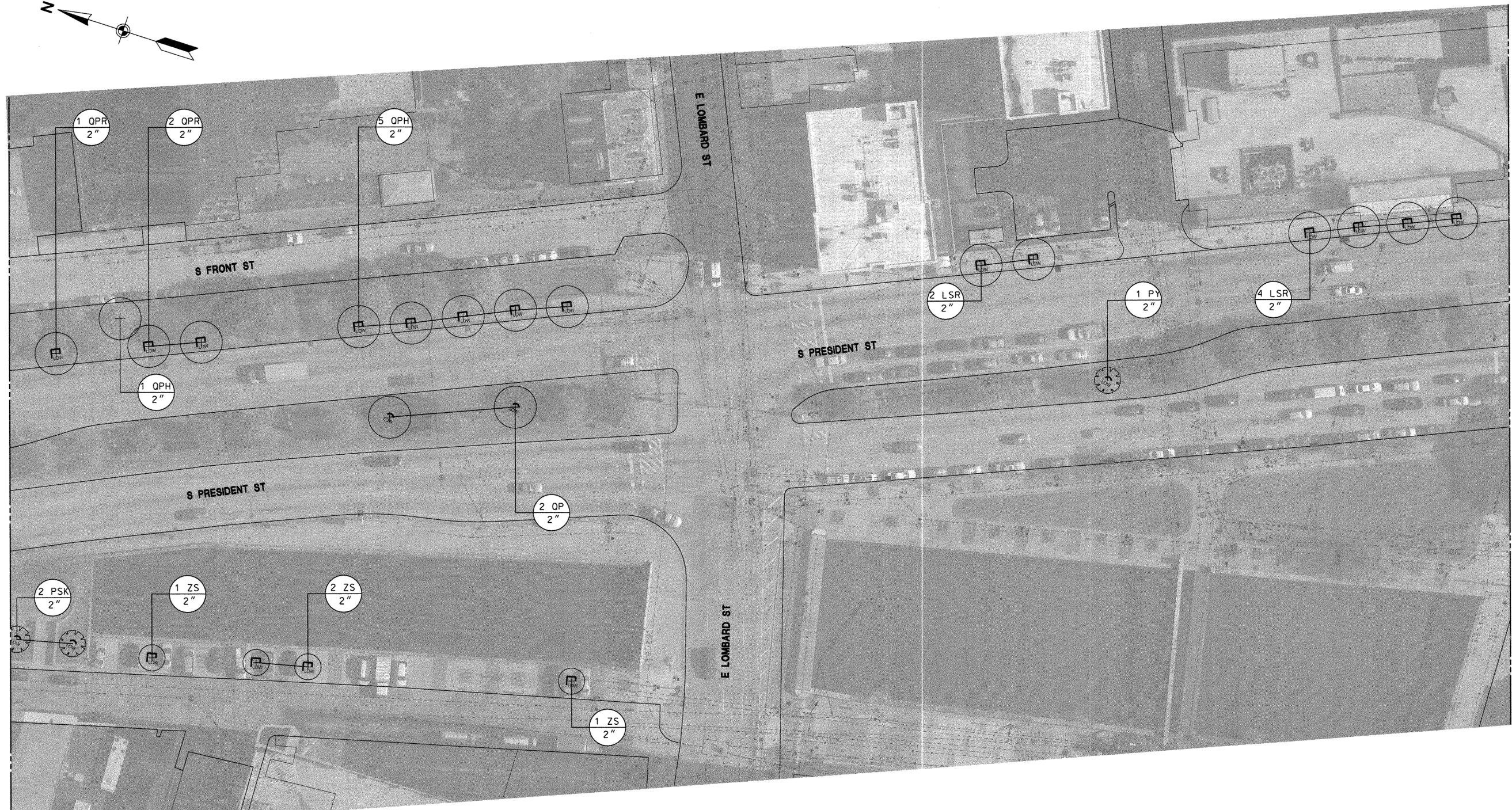
CONTRACT NO. T-0862-1940  
 DRAWING NO. LS-19C01  
 SHEET NO. 13 OF 22

MATCH LINE-FOR CONT. SEE DWG NO. LS-19C02



MATCH LINE-FOR CONT. SEE DWG NO. LS-19C01

MATCH LINE-FOR CONT. SEE DWG NO. LS-19C03



PLANT LIST FOR THIS DRAWING					
SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
LSR	6	LIQUIDAMBAR STYRACIFLUA 'ROTUNDILOBA'	ROTUNDILOBA SWEETGUM	2 IN. CAL.	
PSK	2	PRUNUS SERRULATA 'KWANZAN'	KWANZAN CHERRY	2 IN. CAL.	
PY	1	PRUNUS X. YEODDENSIS	YOSHINO CHERRY	2 IN. CAL.	
OP	2	QUERCUS PALUSTRIS	PIN OAK	2 IN. CAL.	
OPH	6	QUERCUS PHELLOS	WILLOW OAK	2 IN. CAL.	
OPR	3	QUERCUS PRINUS	CHESTNUT OAK	2 IN. CAL.	
ZS	4	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	2 IN. CAL.	

- NOTES:**
- PROPOSED TREE PLANTING LOCATIONS THAT COINCIDE WITH EXISTING TREE LOCATIONS WILL BE AVAILABLE AFTER BALTIMORE CITY FORCES REMOVE THE EXISTING TREES.
  - THE EXISTING TREE GRATES ALONG THE EAST SIDE OF PRESIDENT STREET, BETWEEN EAST BALTIMORE STREET AND EAST LOMBARD STREET, SHALL BE REINSTALLED BY THE CONTRACTOR IMMEDIATELY FOLLOWING THE PLANTING OF EACH TREE.

**EXISTING UTILITIES LEGEND:**

ELECTRICAL DUCTBANK		STORM DRAIN	
CABLE TV		TELEPHONE	
ELECTRICAL		WATER	
GAS		MANHOLE COVER	
SANITARY SEWER		DRAIN INLET	
STEAM			



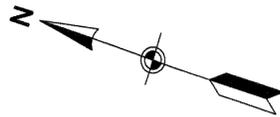
**PROFESSIONAL CERTIFICATION**  
 I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
 RLA-365 04-26-2015  
 License No. Expiration Date



NO.	DESCRIPTION	BY	DATE

REVISIONS

APPR. CHECK DRAWN DESIGN	JRH	RED LINE LIGHT RAIL TRANSIT SYSTEM REFORESTATION AND LANDSCAPING	CONTRACT NO. T-0862-1940
	JRH		DRAWING NO. LS-19C02
JRH	PRESIDENT STREET PLANTING PLAN SHEET 2	SHEET NO. 14 OF 22	
GGH	DATE: JUNE 2014	SCALE: 1" = 30'	



MATCH LINE-FOR CONT. SEE DWG NO. LS-19C02



MATCH LINE-FOR CONT. SEE DWG NO. LS-19C04

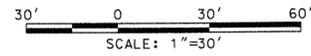
**PLANT LIST FOR THIS DRAWING**

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
LSR	1	LIOUIDAMBAR STYRACIFLUA 'ROTUNDILOBA'	ROTUNDILOBA SWEETGUM	2 IN. CAL.	
PPV	2	PARROTTIA PERSICA 'VANESSA'	COLUMNAR PERSIAN PARROTTIA	2 IN. CAL.	
OB	2	QUERCUS BICOLOR	SWAMP WHITE OAK	2 IN. CAL.	
OC	4	QUERCUS COCCINEA	SCARLET OAK	2 IN. CAL.	
ZS	3	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	2 IN. CAL.	

**NOTES:**  
 1. PROPOSED TREE PLANTING LOCATIONS THAT COINCIDE WITH EXISTING TREE LOCATIONS WILL BE AVAILABLE AFTER BALTIMORE CITY FORCES REMOVE THE EXISTING TREES.

**EXISTING UTILITIES LEGEND:**

ELECTRICAL DUCTBANK		STORM DRAIN	
CABLE TV		TELEPHONE	
ELECTRICAL		WATER	
GAS		MANHOLE COVER	
SANITARY SEWER		DRAIN INLET	
STEAM			



**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.  
 RLA-365      04-26-2015  
 License No.      Expiration Date

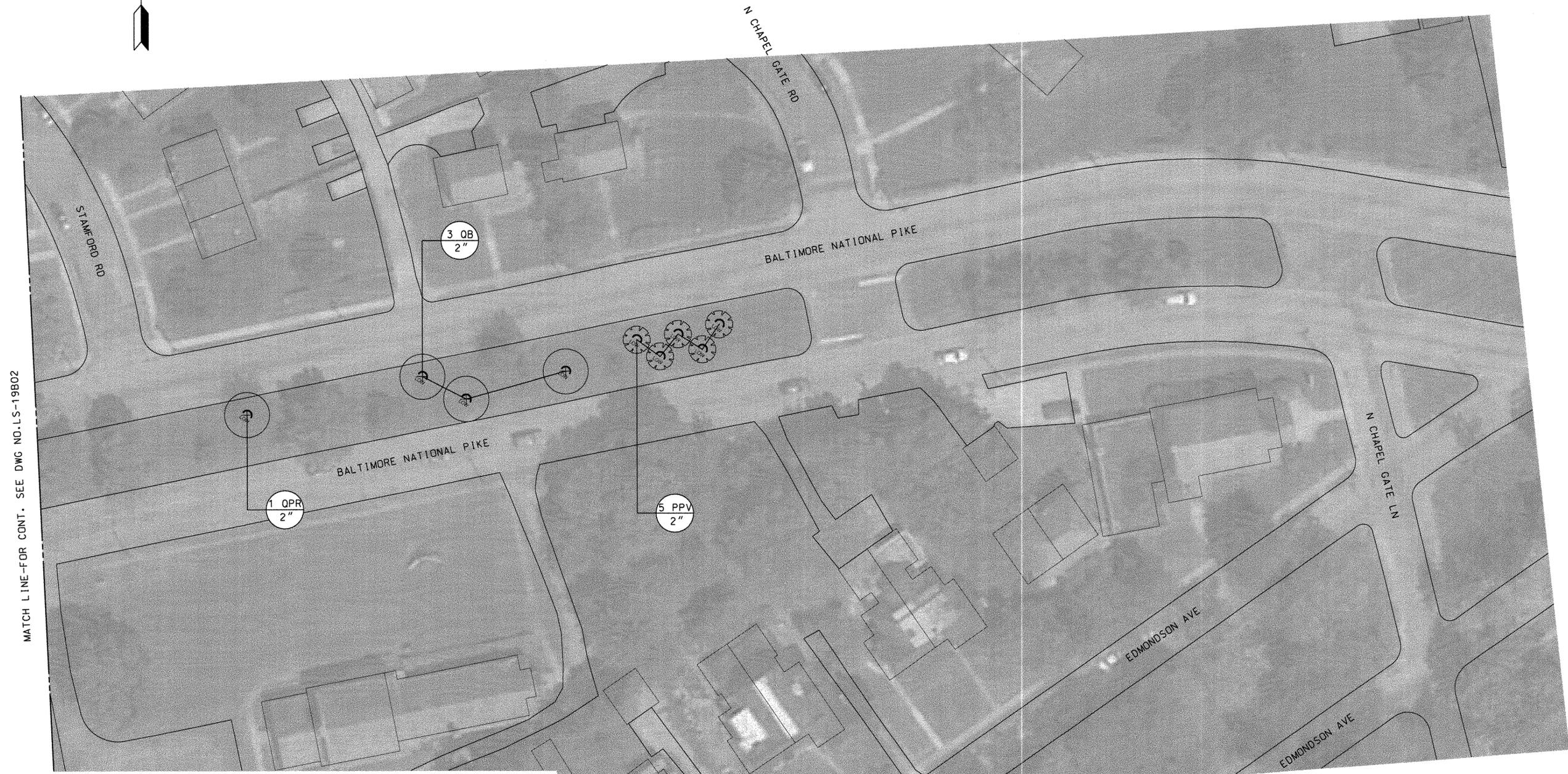


NO.	DESCRIPTION	BY	DATE

DESIGN	JRH
DRAWN	JRH
CHECK	GGH
APPROVED	GGH

RED LINE LIGHT RAIL TRANSIT SYSTEM  
 REFORESTATION AND LANDSCAPING  
 PRESIDENT STREET PLANTING PLAN  
 SHEET 3  
 DATE: JUNE 2014      SCALE: 1" = 30'

CONTRACT NO. T-0862-1940  
 DRAWING NO. LS-19C03  
 SHEET NO. 15 OF 22

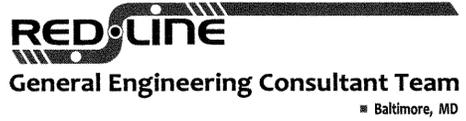
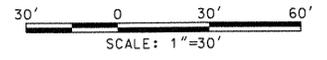


MATCH LINE-FOR CONT. SEE DWG NO. LS-19B02

**PLANT LIST FOR THIS DRAWING**

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
QB	3	QUERCUS BICOLOR	SWAMP WHITE OAK	2 IN. CAL.	
OPR	1	QUERCUS PRINUS	CHESTNUT OAK	2 IN. CAL.	
PPV	5	PARROTIA PERSICA 'VANESSA'	COLUMNAR PERSIAN PARROTIA	2 IN. CAL.	

**NOTES:**  
 1. PROPOSED TREE PLANTING LOCATIONS THAT COINCIDE WITH EXISTING TREE LOCATIONS WILL BE AVAILABLE AFTER BALTIMORE CITY FORCES REMOVE THE EXISTING TREES.



**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.  
 RLA-365 04-26-2015  
 License No. Expiration Date

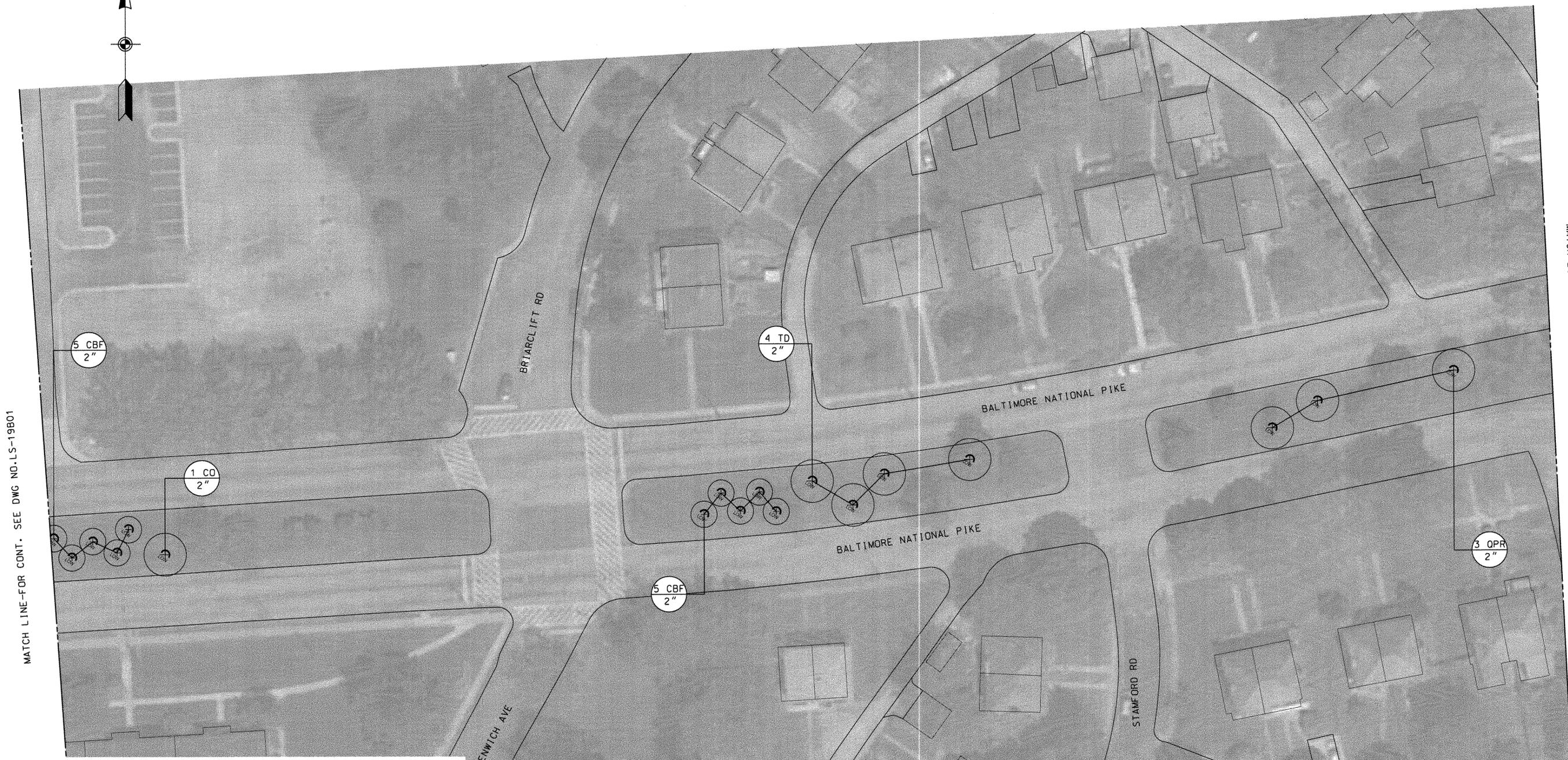


NO.	DESCRIPTION	BY	DATE

APPR. CHECK DRAWN DESIGN  
 JRH  
 JRH  
 GGH  
 GGH

**RED LINE LIGHT RAIL TRANSIT SYSTEM  
 REFORESTATION AND LANDSCAPING**  
 EDMONDSON AVENUE PLANTING PLAN  
 SHEET 3  
 DATE: JUNE 2014  
 SCALE: 1" = 30'

CONTRACT NO.  
 T-0862-1940  
 DRAWING NO.  
 LS-19B03  
 SHEET NO.  
 12 OF 22



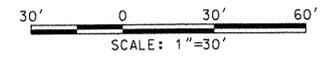
MATCH LINE-FOR CONT. SEE DWG NO. LS-19B01

MATCH LINE-FOR CONT. SEE DWG NO. LS-19B03

**PLANT LIST FOR THIS DRAWING**

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
CBF	10	CARPINUS BETULUS 'FASTIGIATA'	COLUMNAR EUROPEAN HORNBEEAM	2 IN. CAL.	
CO	1	CELTIS OCCIDENTALIS	HACKBERRY	2 IN. CAL.	
QPR	3	QUERCUS PRINUS	CHESTNUT OAK	2 IN. CAL.	
TD	4	TAXODIUM DISTICHUM	BALDCYPRESS	2 IN. CAL.	

**NOTES:**  
 1. PROPOSED TREE PLANTING LOCATIONS THAT COINCIDE WITH EXISTING TREE LOCATIONS WILL BE AVAILABLE AFTER BALTIMORE CITY FORCES REMOVE THE EXISTING TREES.



**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.  
 RLA-365 04-26-2015  
 License No. Expiration Date



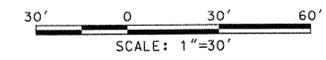
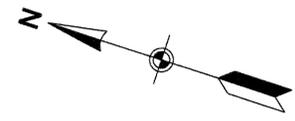
NO.	DESCRIPTION	BY	DATE

REVISIONS

RED LINE LIGHT RAIL TRANSIT SYSTEM  
 REFORESTATION AND LANDSCAPING  
 EDMONDSON AVENUE PLANTING PLAN  
 SHEET 2  
 DATE: JUNE 2014  
 SCALE: 1" = 30'

CONTRACT NO.  
 T-0862-1940  
 DRAWING NO.  
 LS-19B02  
 SHEET NO.  
 11 OF 22

MATCH LINE-FOR CONT. SEE DWG NO. LS-19C03



**PLANT LIST FOR THIS DRAWING**

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
ZS	3	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	2 IN. CAL.	

**NOTES:**

- PROPOSED TREE PLANTING LOCATIONS THAT COINCIDE WITH EXISTING TREE LOCATIONS WILL BE AVAILABLE AFTER BALTIMORE CITY FORCES REMOVE THE EXISTING TREES.

**EXISTING UTILITIES LEGEND:**

ELECTRICAL DUCTBANK		STORM DRAIN	
CABLE TV		TELEPHONE	
ELECTRICAL		WATER	
GAS		MANHOLE COVER	
SANITARY SEWER		DRAIN INLET	
STEAM			

**MARYLAND DEPARTMENT OF TRANSPORTATION**



**RED LINE**  
General Engineering Consultant Team  
Baltimore, MD

**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

RLA-365 04-26-2015  
License No. Expiration Date



NO.	DESCRIPTION	BY	DATE

DESIGN	JRH
DRAWN	JRH
CHECK	GGH
APPROVE	GGH

**RED LINE LIGHT RAIL TRANSIT SYSTEM  
REFORESTATION AND LANDSCAPING**

**PRESIDENT STREET PLANTING PLAN  
SHEET 4**

DATE: JUNE 2014 SCALE: 1" = 30'

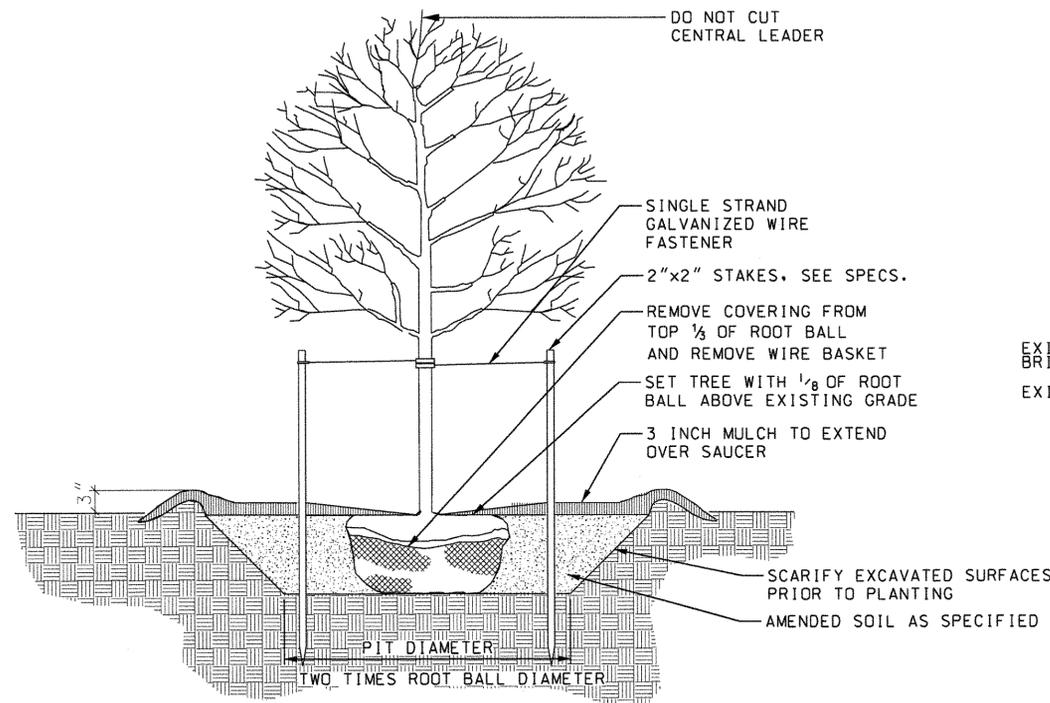
CONTRACT NO.	T-0862-1940
DRAWING NO.	LS-19C04
SHEET NO.	16 OF 22

**MASTER PLANT SCHEDULE FOR STREET TREE PLANTINGS ON EDMONDSON AVENUE (BALTIMORE NATIONAL PIKE) & PRESIDENT STREET**

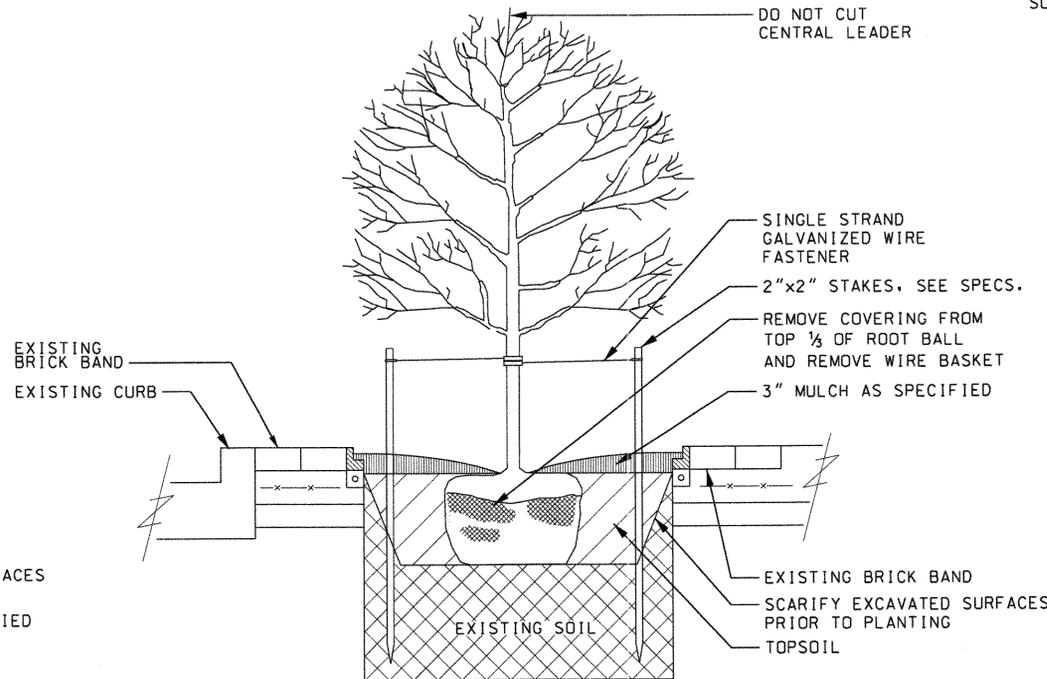
SYMBOL	TOTAL QUANTITY	BOTANICAL NAME	COMMON NAME	FALL DIGGING HAZARD	SIZE	ROOT	LS-19B01	LS-19B02	LS-19B03	LS-19C01	LS-19C02	LS-19C03	LS-19C04	REMARKS
CBF	11	CARPINUS BETULUS 'FASTIGIATA'	COLUMNAR EUROPEAN HORNBEAM	YES	2 IN. CAL.	B&B	1	10						4 FT. BRANCHING HEIGHT
CD	5	CELTIS OCCIDENTALIS	HACKBERRY	YES	2 IN. CAL.	B&B	4	1						4 TO 5 FT. BRANCHING HEIGHT
GT	3	GLEDITSIA TRIACANTHOS 'INERMIS'	THORNLESS HONEYLOCUST		2 IN. CAL.	B&B	3							4 TO 5 FT. BRANCHING HEIGHT
LSR	7	LIQUIDAMBAR STYRACIFLUA 'ROTUNDILOBA'	ROTUNDILOBA SWEETGUM	YES	2 IN. CAL.	B&B				6		1		4 TO 5 FT. BRANCHING HEIGHT
OB	5	QUERCUS BICOLOR	SWAMP WHITE OAK	YES	2 IN. CAL.	B&B			3			2		4 TO 5 FT. BRANCHING HEIGHT
OC	4	QUERCUS COCCINEA	SCARLET OAK	YES	2 IN. CAL.	B&B						4		4 TO 5 FT. BRANCHING HEIGHT
OP	3	QUERCUS PALUSTRIS	PIN OAK		2 IN. CAL.	B&B				1	2			4 TO 5 FT. BRANCHING HEIGHT
OPH	11	QUERCUS PHELLOS	WILLOW OAK	YES	2 IN. CAL.	B&B				5	6			4 TO 5 FT. BRANCHING HEIGHT
OPR	7	QUERCUS PRINUS	CHESTNUT OAK	YES	2 IN. CAL.	B&B		3	1		3			4 TO 5 FT. BRANCHING HEIGHT
TD	4	TAXODIUM DISTICHUM	BALDCYPRESS		2 IN. CAL.	B&B		4						4 TO 5 FT. BRANCHING HEIGHT
ZS	10	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	YES	2 IN. CAL.	B&B					4	3	3	4 TO 5 FT. BRANCHING HEIGHT
PP	2	PARROTIA PERSICA	PERSIAN PARROTIA		2 IN. CAL.	B&B				2				4 FT. BRANCHING HEIGHT
PPV	7	PARROTIA PERSICA 'VANESSA'	COLUMNAR PERSIAN PARROTIA		2 IN. CAL.	B&B			5			2		3 TO 4 FT. BRANCHING HEIGHT
PSK	6	PRUNUS SERRULATA 'KWANZAN'	KWANZAN CHERRY		2 IN. CAL.	B&B				4	2			4 FT. BRANCHING HEIGHT
PY	1	PRUNUS X. YEODOENSIS	YOSHINO CHERRY		2 IN. CAL.	B&B					1			4 FT. BRANCHING HEIGHT

**GENERAL NOTES:**

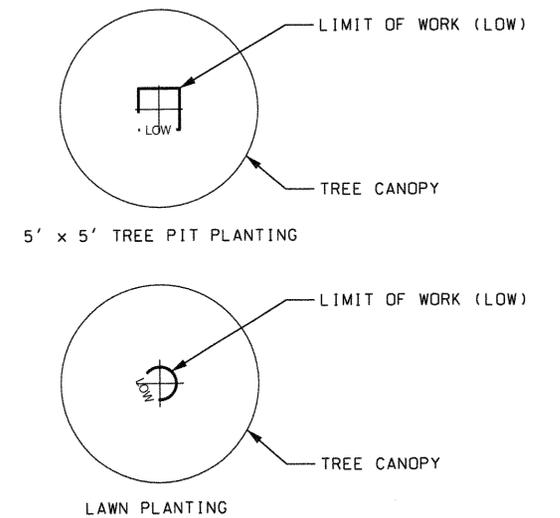
1. THE CONTRACTOR SHALL CALL "MISS UTILITY" AND HAVE ALL EXISTING UTILITIES LOCATED WITHIN THE PROPOSED TREE PLANTING LOCATIONS INDICATED ON THE PLANS PRIOR TO THE COMMENCEMENT OF TREE PIT EXCAVATIONS.
2. ALL PROPOSED TREE PLANTING LOCATIONS SHALL BE MARKED IN THE FIELD AND APPROVED BY THE ENGINEER PRIOR TO THE COMMENCEMENT OF PLANTING OPERATIONS. FIELD ADJUSTMENTS TO PLANTING LOCATIONS SHALL BE MADE BY THE ENGINEER IN CONSULTATION WITH THE LANDSCAPE ARCHITECT.
3. THE CITY OF BALTIMORE WILL REMOVE EXISTING TREES PRIOR TO THE COMMENCEMENT OF THE CONTRACTOR'S STREET TREE PLANTING OPERATIONS. TREE REMOVALS BY THE CITY WILL INCLUDE TRUNK AND ROOT REMOVAL FOR ALL TREES WHOSE TRUNKS ARE GREATER THAN 3 INCHES IN DIAMETER.
4. TREE TRUNKS LESS THAN 3 INCHES IN DIAMETER, AS WELL AS THEIR ROOTS, SHALL BE REMOVED BY THE CONTRACTOR.
5. THE CONTRACTOR SHALL EXCAVATE AND DISPOSE ALL SOIL AND ROOTS CONTAINED IN THE EXISTING 5-FOOT BY 5-FOOT TREE PITS. THE LIMITS OF SOIL REMOVAL SHALL BE AS INDICATED ON THE PLANS. SCARIFY ALL EXPOSED EXCAVATED TREE PIT SOIL SURFACES BEFORE PLACING THE TREE IN THE PIT.
6. THE CONTRACTOR SHALL REMOVE AND TRANSPORT EXISTING TREE GRATES TO A BALTIMORE CITY FACILITY IDENTIFIED BY THE ENGINEER.
7. THE CONTRACTOR SHALL REINSTALL THE EXISTING TREE GRATES AT THE LOCATIONS ON THE EAST SIDE OF PRESIDENT STREET AS NOTED ON DRAWINGS LS-19C01 AND LS-19C02.
8. THE CONTRACTOR SHALL NOT STAGE OR STORE ANY EQUIPMENT OR SUPPLIES WITHIN THE DRIPLEINES OF THE EXISTING TREES.



**1 TREE PLANTING DETAIL FOR LAWN AREAS**  
SCALE: NOT TO SCALE  
REF: GENERAL



**2 TREE PLANTING DETAIL FOR EXISTING 5' x 5' TREE PITS**  
SCALE: NOT TO SCALE  
REF: GENERAL



**3 LIMIT OF WORK DETAIL**  
SCALE: NOT TO SCALE  
REF: GENERAL

**STANDARD EROSION AND SEDIMENT CONTROL NOTES**

1. THE CONTRACTOR SHALL NOTIFY THE ADMINISTRATION (WMA) AT (410) 537-3510 SEVEN (7) DAYS BEFORE COMMENCING ANY LAND DISTURBING ACTIVITY AND, SHALL CONDUCT A PRE-CONSTRUCTION MEETING ONSITE WITH THE U.S. ARMY CORPS OF ENGINEERS, MDE NONTIDAL WETLANDS AND WATERWAYS, MTA, ENVIRONMENTAL MONITOR OR ENVIRONMENTAL COMPLIANCE MANAGER, SUBCONTRACTORS, AND OTHER FEDERAL, STATE, AND LOCAL REGULATORY AGENCIES TO PROVIDE THE OPPORTUNITY TO DISCUSS THE FINAL CONSTRUCTION PLANS AND PERMIT CONDITIONS. ALL ATTENDEES OF THIS MEETING SHALL BE NOTIFIED A MINIMUM OF 14 DAYS PRIOR TO THE DATE OF THE MEETING.
2. THE CONTRACTOR MUST NOTIFY WMA IN WRITING AND BY TELEPHONE AT THE FOLLOWING POINTS:
  - A. THE REQUIRED PRE-CONSTRUCTION MEETING.
  - B. FOLLOWING INSTALLATION OF SEDIMENT CONTROL MEASURES.
  - C. DURING THE INSTALLATION OF SEDIMENT BASINS (TO BE CONVERTED INTO PERMANENT STORMWATER MANAGEMENT STRUCTURES) AT THE REQUIRED INSPECTION POINTS (SEE INSPECTION CHECKLIST ON PLAN), NOTIFICATION PRIOR TO COMMENCING CONSTRUCTION OF EACH STEP IS MANDATORY.
  - D. PRIOR TO REMOVAL OR MODIFICATION OF ANY SEDIMENT CONTROL STRUCTURE(S).
  - E. PRIOR TO REMOVAL OF ALL SEDIMENT CONTROL DEVICES.
  - F. PRIOR TO FINAL ACCEPTANCE.
3. THE CONTRACTOR SHALL CONSTRUCT ALL EROSION AND SEDIMENT CONTROL MEASURES PER THE APPROVED PLAN AND CONSTRUCTION SEQUENCE AND SHALL HAVE THEM INSPECTED AND APPROVED BY THE AGENCY INSPECTOR OR WMA INSPECTOR PRIOR TO BEGINNING ANY OTHER LAND DISTURBANCES. MINOR SEDIMENT CONTROL DEVICE LOCATION ADJUSTMENTS MAY BE MADE IN THE FIELD WITH THE APPROVAL OF THE FROM WMA INSPECTOR. THE CONTRACTOR SHALL ENSURE THAT ALL RUNOFF FROM DISTURBED AREAS IS DIRECTED TO THE SEDIMENT CONTROL DEVICES AND SHALL NOT REMOVE ANY EROSION OR SEDIMENT CONTROL MEASURE WITHOUT PRIOR PERMISSION FROM WMA INSPECTOR AND AGENCY INSPECTOR. THE CONTRACTOR MUST OBTAIN PRIOR AGENCY AND WMA APPROVAL FOR CHANGES TO THE SEDIMENT CONTROL PLAN AND/OR SEQUENCE OF CONSTRUCTION.
4. THE CONTRACTOR SHALL PROTECT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS TO PREVENT THE DEPOSITION OF MATERIALS ONTO PUBLIC ROADS. ALL MATERIALS DEPOSITED ONTO PUBLIC ROADS SHALL BE REMOVED IMMEDIATELY.
5. THE CONTRACTOR SHALL INSPECT DAILY AND MAINTAIN CONTINUOUSLY IN AN EFFECTIVE OPERATING CONDITION ALL EROSION AND SEDIMENT CONTROL MEASURES UNTIL SUCH TIMES AS THEY ARE REMOVED WITH PRIOR PERMISSION FROM WMA INSPECTOR AND AGENCY INSPECTOR.
6. ALL SEDIMENT BASINS, TRAP EMBANKMENTS AND SLOPES, PERIMETER DIKES, SWALES AND ALL DISTURBED SLOPES STEEPER OR EQUAL TO 3:1 SHALL BE STABILIZED WITH SOD OR SEED AND ANCHORED STRAW MULCH, OR OTHER APPROVED STABILIZATION MEASURES, AS SOON AS POSSIBLE BUT NO LATER THAN THREE (3) CALENDAR DAYS AFTER ESTABLISHMENT. ALL AREAS DISTURBED OUTSIDE OF THE PERIMETER SEDIMENT CONTROL SYSTEM MUST BE MINIMIZED. MAINTENANCE MUST BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION. (REQUIREMENT FOR STABILIZATION MAY BE REDUCED TO THREE (3) DAYS FOR SENSITIVE AREAS.)
7. THE CONTRACTOR SHALL APPLY SOD OR SEED AND ANCHORED STRAW MULCH, OR OTHER APPROVED STABILIZATION MEASURES TO ALL DISTURBED AREAS AND STOCKPILES WITHIN SEVEN (7) CALENDAR DAYS AFTER STRIPPING AND GRADING ACTIVITIES HAVE CEASED IN THE AREA. MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION. (REQUIREMENT FOR STABILIZATION MAY BE REDUCED TO THREE (3) DAYS FOR SENSITIVE AREAS.)
8. PRIOR TO REMOVAL OF SEDIMENT CONTROL MEASURES, THE CONTRACTOR SHALL STABILIZE AND HAVE ESTABLISHED PERMANENT STABILIZATION FOR ALL CONTRIBUTORY DISTURBED AREAS USING SOD OR AN APPROVED PERMANENT SEED MIXTURE WITH REQUIRED SOIL AMENDMENTS AND AN APPROVED ANCHORED MULCH. WOOD FIBER MULCH MAY ONLY BE USED IN SEEDING SEASON WHERE THE SLOPE DOES NOT EXCEED 10% AND GRADING HAS BEEN DONE TO PROMOTE SHEET FLOW DRAINAGE. AREAS BROUGHT TO FINISHED GRADE DURING THE SEEDING SEASON SHALL BE PERMANENTLY STABILIZED AS SOON AS POSSIBLE, BUT NOT LATER THAN SEVEN (7) CALENDAR DAYS AFTER ESTABLISHMENT. WHEN PROPERTY IS BROUGHT TO FINISHED GRADE DURING THE MONTHS OF NOVEMBER THROUGH FEBRUARY, AND PERMANENT STABILIZATION IS FOUND TO BE IMPRACTICAL, TEMPORARY SEED AND ANCHORED STRAW MULCH SHALL BE APPLIED TO DISTURBED AREAS. THE FINAL PERMANENT STABILIZATION OF SUCH PROPERTY SHALL BE APPLIED BY MARCH 15 OR EARLIER IF GROUND AND WEATHER CONDITIONS ALLOW.
9. THE SITE'S APPROVAL LETTER, APPROVED EROSION AND SEDIMENT CONTROL PLANS, DAILY LOG BOOKS, AND TEST REPORTS SHALL BE AVAILABLE AT THE SITE FOR INSPECTION BY DULY AUTHORIZED OFFICIALS OF WMA AND THE AGENCY RESPONSIBLE FOR PROJECT.
10. SURFACE DRAINAGE FLOWS OVER UNSTABILIZED CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER PREVENTING DRAINAGE FLOWS FROM TRAVERSING THE SLOPES OR BY INSTALLING PROTECTIVE DEVICES TO LOWER THE WATER DOWNSLOPE WITHOUT CAUSING EROSION. DIKES SHALL BE INSTALLED AND MAINTAINED AT THE TOP OF A CUT OR FILL SLOPE UNTIL THE SLOPE AND DRAINAGE AREA TO IT ARE FULLY STABILIZED. AT WHICH TIME THEY MUST BE REMOVED AND FINAL GRADING DONE TO PROMOTE SHEET FLOW DRAINAGE. PROTECTIVE METHODS MUST BE PROVIDED AT POINTS OF CONCENTRATED FLOW WHERE EROSION IS LIKELY TO OCCUR.
11. PERMANENT SWALES OR OTHER POINTS OF CONCENTRATED WATER FLOW SHALL BE STABILIZED WITH SOD OR SEED WITH APPROVED EROSION CONTROL MATTING, RIP-RAP, OR BY OTHER APPROVED STABILIZATION MEASURES.
12. TEMPORARY SEDIMENT CONTROL DEVICES MAY BE REMOVED, WITH PERMISSION OF WMA INSPECTOR AND AGENCY INSPECTORS, WITHIN THIRTY (30) CALENDAR DAYS FOLLOWING ESTABLISHMENT OF PERMANENT STABILIZATION IN ALL CONTRIBUTORY DRAINAGE AREAS. STORMWATER MANAGEMENT STRUCTURES USED TEMPORARILY FOR SEDIMENT CONTROL SHALL BE CONVERTED TO THE PERMANENT CONFIGURATION WITHIN THIS TIME PERIOD AS WELL.
13. NO PERMANENT CUT OR FILL SLOPE WITH A GRADIENT STEEPER THAN 3:1 WILL BE PERMITTED IN LAWN MAINTENANCE AREAS. A SLOPE GRADIENT OF UP TO 2:1 WILL BE PERMITTED IN NON-MAINTENANCE AREAS PROVIDED THAT THOSE AREAS ARE INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN WITH A LOW-MAINTENANCE GROUND COVER SPECIFIED FOR PERMANENT STABILIZATION. SLOPE GRADIENT STEEPER THAN 2:1 WILL NOT BE PERMITTED WITH VEGETATIVE STABILIZATION.

14. FOR FINISHED GRADING, THE CONTRACTOR SHALL PROVIDE ADEQUATE GRADIENTS TO PREVENT WATER FROM PONDING FOR MORE THAN TWENTY FOUR (24) HOURS AFTER THE END OF A RAINFALL EVENT. DRAINAGE COURSES AND SWALE FLOW AREAS MAY TAKE AS LONG AS FORTY-EIGHT (48) HOURS AFTER THE END OF A RAINFALL EVENT TO DRAIN. AREAS DESIGNED TO HAVE STANDING WATER SHALL NOT BE REQUIRED TO MEET THIS REQUIREMENT.
15. SEDIMENT TRAPS OR BASINS ARE NOT PERMITTED WITHIN 20 FEET OF A FOUNDATION THAT EXISTS OR IS UNDER CONSTRUCTION. NO STRUCTURE MAY BE CONSTRUCTED WITHIN 20 FEET OF AN ACTIVE SEDIMENT TRAP OR BASIN.
16. THE WMA INSPECTOR HAS THE OPTION OF REQUIRING ADDITIONAL SAFETY OR SEDIMENT CONTROL MEASURES, IF DEEMED NECESSARY.
17. ALL TRAP DEPTH DIMENSIONS ARE RELATIVE TO THE OUTLET ELEVATION. ALL TRAPS MUST HAVE A STABLE OUTFALL. ALL TRAPS AND BASINS SHALL HAVE STABLE INFLOW POINTS.
18. VEGETATIVE STABILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. REFER TO APPROPRIATE SPECIFICATIONS FOR TEMPORARY SEEDING, PERMANENT SEEDING, MULCHING, SODDING, AND GROUND COVERS.
19. SEDIMENT SHALL BE REMOVED AND THE TRAP OR BASIN RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE QUARTER OF THE TOTAL DEPTH OF THE TRAP OR BASIN. TOTAL DEPTH SHALL BE MEASURED FROM THE TRAP OR BASIN BOTTOM TO THE CREST OF THE OUTLET.
20. SEDIMENT REMOVED FROM TRAPS (AND BASINS) SHALL BE PLACED AND STABILIZED IN APPROVED AREAS, BUT NOT WITHIN A FLOODPLAIN, WETLAND OR TREE-SAVE AREA. WHEN PUMPING SEDIMENT LADEN WATER, THE DISCHARGE MUST BE DIRECTED TO A SEDIMENT TRAPPING DEVICE PRIOR TO RELEASE FROM THE SITE. A SUMP PIT MAY BE USED IF SEDIMENT TRAPS THEMSELVES ARE BEING PUMPED OUT.
21. ALL WATER REMOVED FROM EXCAVATED AREAS (E.G. UTILITY TRENCHES) SHALL BE PASSED THROUGH AN APPROVED DEWATERING PRACTICE OR PUMPED TO A SEDIMENT TRAP OR BASIN PRIOR TO DISCHARGE FROM THE SITE (I.E. VIA FUNCTIONAL STORM DRAIN SYSTEM OR TO STABLE GROUND SURFACE).
22. SEDIMENT CONTROL FOR UTILITY CONSTRUCTION FOR AREAS OUTSIDE OF DESIGNED CONTROLS OR AS DIRECTED BY ENGINEER OR WMA INSPECTOR:
  - A. CALL "MISS UTILITY" AT 1-800-257-7777 48 HOURS PRIOR TO THE START OF WORK.
  - B. EXCAVATED TRENCH MATERIAL SHALL BE PLACED ON THE HIGH SIDE OF THE TRENCH.
  - C. TRENCHES FOR UTILITY INSTALLATION SHALL BE BACKFILLED, COMPACTED, AND STABILIZED AT THE END OF EACH WORKING DAY. NO MORE TRENCH SHALL BE OPENED THAN CAN BE COMPLETED THE SAME DAY, UNLESS:
    - D. TEMPORARY SILT FENCE SHALL BE PLACED IMMEDIATELY DOWNSTREAM OF ANY DISTURBED AREA INTENDED TO REMAIN DISTURBED FOR MORE THAN ONE DAY.
23. WHERE DEEMED APPROPRIATE BY THE ENGINEER OR INSPECTOR, SEDIMENT BASINS AND TRAPS MAY NEED TO BE SURROUNDED WITH AN APPROVED SAFETY FENCE. THE FENCE MUST CONFORM TO LOCAL ORDINANCES AND REGULATIONS. THE DEVELOPER OR OWNER SHALL CHECK WITH LOCAL BUILDING OFFICIALS ON APPLICABLE IS SAFETY REQUIREMENTS. WHERE SAFETY FENCE DEEMED APPROPRIATE AND LOCAL ORDINANCES DO NOT SPECIFY FENCING SIZES AND TYPES, THE FOLLOWING SHALL BE USED AS A MINIMUM STANDARD: THE SAFETY FENCE MUST BE MADE OF WELDED WIRE AND AT LEAST 42 INCHES HIGH, HAVE POSTS SPACED NO FARTHER APART THAN 8 FEET, HAVE MESH OPENINGS NO GREATER THAN 2 INCHES IN WIDTH AND 4 INCHES IN HEIGHT WITH A MINIMUM OF 14 GAUGE WIRE. SAFETY FENCE MUST BE MAINTAINED AND IN GOOD CONDITION AT ALL TIMES.
24. OFF-SITE SPOIL OR BORROW AREAS ON STATE OR FEDERAL PROPERTY MUST HAVE PRIOR APPROVAL BY WMA AND OTHER APPLICABLE STATE, FEDERAL, AND LOCAL AGENCIES; OTHERWISE APPROVAL MUST BE GRANTED BY THE LOCAL AUTHORITIES. ALL WASTE AND BORROW AREAS OFF-SITE MUST BE PROTECTED BY SEDIMENT CONTROL MEASURES AND STABILIZED.
25. SITES WHERE INFILTRATION DEVICES ARE USED FOR THE CONTROL OF STORMWATER, EXTREME CARE MUST BE TAKEN TO PREVENT RUNOFF FROM UNSTABILIZED AREAS FROM ENTERING THE STRUCTURE DURING CONSTRUCTION. SEDIMENT CONTROL DEVICES PLACED IN INFILTRATION AREAS MUST HAVE BOTTOM ELEVATIONS AT LEAST TWO (2) FEET HIGHER THAN THE FINISH GRADE BOTTOM ELEVATION OF THE INFILTRATION PRACTICE. WHEN CONVERTING A SEDIMENT TRAP TO AN INFILTRATION DEVICE, ALL ACCUMULATED SEDIMENT MUST BE REMOVED AND DISPOSED OF PRIOR TO FINAL GRADING OF INFILTRATION DEVICE.
26. WHEN A STORM DRAIN SYSTEM OUTFALL IS DIRECTED TO A SEDIMENT TRAP OR SEDIMENT BASIN AND THE SYSTEM IS TO BE USED FOR TEMPORARILY CONVEYING SEDIMENT LADEN WATER, ALL STORM DRAIN INLETS IN NON-SUMP AREAS SHALL HAVE TEMPORARY ASPHALT BERMS CONSTRUCTED AT THE TIME OF BASE PAVING TO DIRECT GUTTER FLOW INTO THE INLETS TO AVOID SURCHARGING AND OVERFLOW OF INLETS IN SUMP AREAS.
27. SITE INFORMATION:
  - A. TOTAL AREA OF FACILITY (BASE, CAMPUS, PARK, ETC.) - 4.34 ACRES
  - B. TOTAL AREA OF PROJECT SITE - 4.34 ACRES
  - C. AREA DISTURBED - 4.34 ACRES
  - D. AREA TO BE ROOFED OR PAVED - 0.0 ACRES
  - E. TOTAL CUT - 2,689 CUBIC YARDS
  - F. TOTAL FILL - 4,034 CUBIC YARDS
  - G. OFF-SITE WASTE/BORROW AREA LOCATION - TO BE DETERMINED

**CIMAGLIA PARK SEQUENCE OF CONSTRUCTION**

1. CONTACT MDE WMA AT 410-537-3510 FOR THE REQUIRED, ONSITE PRE-CONSTRUCTION MEETING (MINIMUM SEVEN (7) WORKING DAYS PRIOR TO COMMENCING EARTH DISTURBING ACTIVITIES).
2. CONTACT MISS UTILITY (MINIMUM 2 DAYS PRIOR TO COMMENCING EARTH DISTURBING ACTIVITIES)
3. ESTABLISH STAGING AND STOCKPILE AREA. INSTALL SILT FENCE ON PAVEMENT.
4. REMOVE INVASIVE VEGETATION AS NECESSARY TO INSTALL FILTER LOG AND INSTALL FILTER LOG USING AN UNTRENCHED INSTALLATION.
5. ALL DISTURBED AREAS SHALL BE STABILIZED AT THE END OF EACH WORKING DAY. SEE SAME-DAY STABILIZATION NOTE IN THE SUPPLEMENTAL EROSION AND SEDIMENT CONTROL NOTES.
6. INSTALL ORANGE CONSTRUCTION FENCE.
7. BEGIN VEGETATION CONTROL INCLUDING REMOVAL OF DENSE STANDS OF INVASIVE TREE COVER AND HERBICIDE APPLICATION ON SITE USING SAME-DAY STABILIZATION. ALL WORK BETWEEN THE FILTER LOGS AND THE COLGATE CREEK WILL BE IMMEDIATELY STABILIZED.
8. INSTALL NATIVE TREE AND SHRUB PLANTINGS IN THE NATIVE RIPARIAN BUFFER, REFORESTATION, AND SHRUB AND HERBACEOUS AREAS USING SAME-DAY STABILIZATION.
9. INSTALL ALL TREES WITHIN THE LIMIT OF WORK (LOW) USING SAME-DAY STABILIZATION.
10. INSTALL NATIVE RIPARIAN AND GRASS/MEADOW SEEDING IN ALL AREAS. ALL WORK BETWEEN THE FILTER LOGS AND THE COLGATE CREEK WILL BE IMMEDIATELY STABILIZED.
11. REMOVE STAGING/STOCKPILE AND SWEEP THIS AREA. REMOVE THE SILT FENCE ON PAVEMENT, WITH PERMISSION FROM THE MDE INSPECTOR.
12. UPON FINAL STABILIZATION WITH A GOOD STAND OF VEGETATIVE COVER AND WITH PERMISSION OF MDE/WMA INSPECTOR REMOVE ANY REMAINING SEDIMENT CONTROLS AND PERMANENTLY STABILIZE ANY AREA DISTURBED BY SUCH REMOVAL.

**STANDARD STABILIZATION NOTE:**

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:

- A. THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND
- B. SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

**SUPPLEMENTAL EROSION AND SEDIMENT CONTROL NOTES**

**1. STAGING AND STOCKPILING:**

THE CONTRACTOR IS TO ESTABLISH STAGING AND STOCKPILE AREAS AS NECESSARY FOR NON-ERODIBLE LANDSCAPING MATERIAL ONLY AT THE AREA SHOWN ON THE PLANS. THE STAGING/STOCKPILE AREA SHALL BE ESTABLISHED SUCH THAT SUCH THAT WETLAND, WETLAND BUFFERS, FORESTED AREAS, STORMWATER MANAGEMENT FACILITIES AND OTHER ENVIRONMENTALLY SENSITIVE AREAS ARE NOT IMPACTED.

**2. SITE ACCESS**

THE CONTRACTOR IS TO DETERMINE SITE ACCESS TO THE WORK AREAS AND OBTAIN APPROVAL FROM THE ENGINEER, THE CITY OF BALTIMORE AND THE MDE INSPECTOR. ALL AREAS DISTURBED BY ACCESSING AREAS OF WORK WILL BE TREATED WITH SAME-DAY STABILIZATION.

WHERE NO STABILIZED CONSTRUCTION ENTRANCES ARE PROVIDED, THE CONTRACTOR IS TO DESIGNATE PIECES OF CONSTRUCTION EQUIPMENT THAT ARE ALLOWED WITHIN THE LOD. THIS EQUIPMENT SHALL BE KEPT WITHIN THE LOD UNTIL THE PROPOSED WORK IS COMPLETE AND WILL HAVE TREADS/TIRES CLEANED PRIOR TO LEAVING THE LOD. ALL MATERIAL REMOVAL/LOAD OUT WILL BE LIFTED FROM THE LOD AND ANY SEDIMENT TRACKED OR DROPPED OUTSIDE THE LOD SHALL BE CLEANED IMMEDIATELY.

**3. SAME-DAY STABILIZATION**

FOR AREAS WHERE THE METHOD OF SAME DAY STABILIZATION IS USED, NO MORE AREA SHALL BE DISTURBED THAN CAN BE STABILIZED BY THE END OF THE WORKDAY. ALL DISTURBED AREAS THAT DO NOT DRAIN TO A SEDIMENT CONTROL DEVICE SHALL BE STABILIZED BY THE END OF THE WORKDAY. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN MDE APPROVED SEDIMENT CONTROL DEVICE. DISTURBED AREAS SHALL BE STABILIZED WITH SEED AND MULCH, SOIL STABILIZATION MATTING, OR SOD.

**4. LIMIT OF WORK (LOW)**

WORK WITHIN THE LOW INCLUDES EXCAVATING FOR TREES, PLANTING, SPREADING SOILS, MULCHING AND WATERING. ALL TREE PLANTINGS, WILL BE STABILIZED IMMEDIATELY.

**MARYLAND DEPARTMENT OF TRANSPORTATION**



**RED LINE**  
General Engineering Consultant Team  
Baltimore, MD

**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

RLA-365 License No. 04-26-2015 Expiration Date



NO.	DESCRIPTION	BY	DATE
REVISIONS			

DESIGN	CPS	RED LINE LIGHT RAIL TRANSIT SYSTEM REFORESTATION AND LANDSCAPING	CONTRACT NO. T-0862-1940
DRAWING	DEA		DRAWING NO. ES-19001
CHECK	MBM		CIMAGLIA PARK EROSION & SEDIMENT CONTROL NOTES - SHEET 1
APPR	SAS		SHEET NO. 18 OF 22
DATE: JUNE 2014		SCALE: N.T.S.	

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

**DEFINITION**  
USING VEGETATION AS COVER TO PROTECT EXPOSED SOIL FROM EROSION.

**PURPOSE**  
TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL.

**CONDITIONS WHERE PRACTICE APPLIES**  
ON ALL DISTURBED AREAS NOT STABILIZED BY OTHER METHODS. THIS SPECIFICATION IS DIVIDED INTO SECTIONS ON INCREMENTAL STABILIZATION; SOIL PREPARATION, SOIL AMENDMENTS AND TOPSOILING; SEEDING AND MULCHING; TEMPORARY STABILIZATION; AND PERMANENT STABILIZATION.

**EFFECTS ON WATER QUALITY AND QUANTITY**  
STABILIZATION PRACTICES ARE USED TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL. WHEN SOIL IS STABILIZED WITH VEGETATION, THE SOIL IS LESS LIKELY TO ERODE AND MORE LIKELY TO ALLOW INFILTRATION OF RAINFALL, THEREBY REDUCING SEDIMENT LOADS AND RUNOFF TO DOWNSTREAM AREAS.

PLANTING VEGETATION IN DISTURBED AREAS WILL HAVE AN EFFECT ON THE WATER BUDGET, ESPECIALLY ON VOLUMES AND RATES OF RUNOFF, INFILTRATION, EVAPORATION, TRANSPIRATION, PERCOLATION, AND GROUNDWATER RECHARGE. OVER TIME, VEGETATION WILL INCREASE ORGANIC MATTER CONTENT AND IMPROVE THE WATER HOLDING CAPACITY OF THE SOIL AND SUBSEQUENT PLANT GROWTH.

VEGETATION WILL HELP REDUCE THE MOVEMENT OF SEDIMENT, NUTRIENTS, AND OTHER CHEMICALS CARRIED BY RUNOFF TO RECEIVING WATERS. PLANTS WILL ALSO HELP PROTECT GROUNDWATER SUPPLIES BY ASSIMILATING THOSE SUBSTANCES PRESENT WITHIN THE ROOT ZONE.

SEDIMENT CONTROL PRACTICES MUST REMAIN IN PLACE DURING GRADING, SEEDBED PREPARATION, SEEDING, MULCHING, AND VEGETATIVE ESTABLISHMENT.

**ADEQUATE VEGETATIVE ESTABLISHMENT**  
INSPECT SEEDED AREAS FOR VEGETATIVE ESTABLISHMENT AND MAKE NECESSARY REPAIRS, REPLACEMENTS, AND RESEEDINGS WITHIN THE PLANTING SEASON.

1. ADEQUATE VEGETATIVE STABILIZATION REQUIRES 95 PERCENT GROUND COVER.
2. IF AN AREA HAS LESS THAN 40 PERCENT GROUND COVER, RESTABILIZE FOLLOWING THE ORIGINAL RECOMMENDATIONS FOR LIME, FERTILIZER, SEEDBED PREPARATION, AND SEEDING.
3. IF AN AREA HAS BETWEEN 40 AND 94 PERCENT GROUND COVER, OVER-SEED AND FERTILIZE USING HALF OF THE RATES ORIGINALLY SPECIFIED.
4. MAINTENANCE FERTILIZER RATES FOR PERMANENT SEEDING ARE SHOWN IN TABLE B.6.

B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

**DEFINITION**  
ESTABLISHMENT OF VEGETATIVE COVER ON CUT AND FILL SLOPES.

**PURPOSE**  
TO PROVIDE TIMELY VEGETATIVE COVER ON CUT AND FILL SLOPES AS WORK PROGRESSES.

**CONDITIONS WHERE PRACTICE APPLIES**  
ANY CUT OR FILL SLOPE GREATER THAN 15 FEET IN HEIGHT. THIS PRACTICE ALSO APPLIES TO STOCKPILES.

**CRITERIA**  
A. INCREMENTAL STABILIZATION - CUT SLOPES

1. EXCAVATE AND STABILIZE CUT SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL CUT SLOPES AS THE WORK PROGRESSES.
2. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.1):
  - A. CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO CONVEY RUNOFF AROUND THE EXCAVATION.
  - B. PERFORM PHASE 1 EXCAVATION, PREPARE SEEDBED, AND STABILIZE.
  - C. PERFORM PHASE 2 EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PHASE 1 AREAS AS NECESSARY.
  - D. PERFORM FINAL PHASE EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDED AREAS AS NECESSARY.

**NOTE:** ONCE EXCAVATION HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

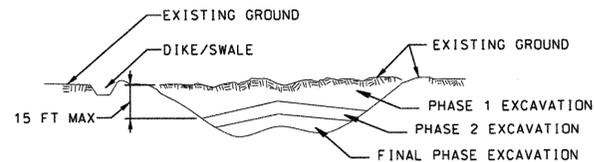


FIGURE B.1: INCREMENTAL STABILIZATION - CUT

**B. INCREMENTAL STABILIZATION - FILL SLOPES**

1. CONSTRUCT AND STABILIZE FILL SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL SLOPES AS THE WORK PROGRESSES.
2. STABILIZE SLOPES IMMEDIATELY WHEN THE VERTICAL HEIGHT OF A LIFT REACHES 15 FEET, OR WHEN THE GRADING OPERATION CEASES AS PRESCRIBED IN THE PLANS.
3. AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.
4. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.2):
  - A. CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO DIVERT RUNOFF AROUND THE FILL. CONSTRUCT SILT FENCE ON LOW SIDE OF FILL UNLESS OTHER METHODS SHOWN ON THE PLANS ADDRESS THIS AREA.
  - B. AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.
  - C. PLACE PHASE 1 FILL, PREPARE SEEDBED, AND STABILIZE.
  - D. PLACE PHASE 2 FILL, PREPARE SEEDBED, AND STABILIZE.
  - E. PLACE FINAL PHASE FILL, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDED AREAS AS NECESSARY.

**NOTE:** ONCE THE PLACEMENT OF FILL HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

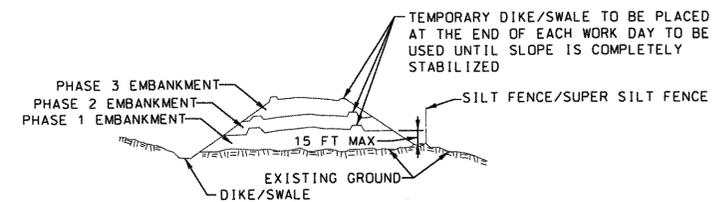


FIGURE B.2: INCREMENTAL STABILIZATION - FILL

B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

**DEFINITION**  
THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

**PURPOSE**  
TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

**CONDITIONS WHERE PRACTICE APPLIES**  
WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

**CRITERIA**

A. SOIL PREPARATION

1. TEMPORARY STABILIZATION

A. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.

B. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.

C. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

2. PERMANENT STABILIZATION

A. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:

- I. SOIL PH BETWEEN 6.0 AND 7.0.
  - II. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
  - III. SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION: IF LOVEGRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.
  - IV. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.
  - V. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
- B. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.
- C. GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES.
- D. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.
- E. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRIABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

B. TOPSOILING

1. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.
2. TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.
3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
  - A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
  - B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
  - C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
  - D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.
5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
  - A. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2 INCHES IN DIAMETER.
  - B. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
  - C. TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.
6. TOPSOIL APPLICATION
  - A. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.
  - B. UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
  - C. TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING B.14 AND SEEDBED PREPARATION.

C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)

1. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.
2. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARRANTY OF THE PRODUCER.
3. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.
4. LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
5. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

MARYLAND DEPARTMENT OF TRANSPORTATION



**RED LINE**  
General Engineering Consultant Team  
Baltimore, MD

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

RLA-365 License No. 04-26-2015 Expiration Date



NO.	DESCRIPTION	BY	DATE
REVISIONS			

DESIGN	CPS	RED LINE LIGHT RAIL TRANSIT SYSTEM REFORESTATION AND LANDSCAPING	CONTRACT NO. T-0862-1940
DRAWN	DEA		DRAWING NO. ES-19002
CHECK	MBM	CIMAGLIA PARK EROSION & SEDIMENT CONTROL NOTES - SHEET 2	SHEET NO. 19 OF 22
APPR	SAS		DATE: JUNE 2014

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

DEFINITION  
THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

PURPOSE  
TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

CONDITIONS WHERE PRACTICE APPLIES  
TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

CRITERIA

A. SEEDING

1. SPECIFICATIONS

- A. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.
- B. MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAWS.
- C. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
- D. SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

2. APPLICATION

- A. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.
  - I. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.
  - II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.
- B. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
  - I. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.
  - II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.
- C. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).
  - I. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P205 (PHOSPHOROUS), 200 POUNDS PER ACRE; K20 (POTASSIUM), 200 POUNDS PER ACRE.
  - II. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING), NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.
  - III. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.
  - IV. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

B. MULCHING

- 1. MULCH MATERIALS (IN ORDER OF PREFERENCE)
  - A. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.
  - B. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.
    - I. WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY.
    - II. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.
    - III. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER. ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.
    - IV. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.
    - V. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM CONTACT.
- 2. APPLICATION
  - A. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.
  - B. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING A MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE.
  - C. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
- 3. ANCHORING
  - A. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:
    - I. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR.
    - II. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
    - III. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRA TACK II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED.
    - IV. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

DEFINITION  
TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

PURPOSE  
TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES  
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

CRITERIA

- 1. SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3), AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONG WITH APPLICATION RATES, SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLAN AND COMPLETED, THEN TABLE B.1 PLUS FERTILIZER AND LIME RATES MUST BE PUT ON THE PLAN.
- 2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING.
- 3. WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3.A.1.B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

TEMPORARY SEEDING SUMMARY

HARDINESS ZONE (FROM FIGURE B.3): 7A SEED MIXTURE (FROM TABLE B.1)					FERTILIZER RATE (10-20-20)		LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS			
	ANNUAL RYEGRASS	40 LB/ACRE	2/15 - 4/30 8/15 - 11/30	1/2"	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)	
	FOXTAIL MILLET	30 LB/ACRE	5/1 - 8/14	1/2"			

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

DEFINITION  
TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

PURPOSE  
TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES  
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

CRITERIA

A. SEED MIXTURES

1. GENERAL USE

- A. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE B.2. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
  - B. ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING.
  - C. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
  - D. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3 1/2 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.
2. TURFGRASS MIXTURES
- A. AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
  - B. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
    - I. KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
    - II. KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE: FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MANAGEMENT. CERTIFIED PERENNIAL RYEGRASS CULTIVARS/CERTIFIED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
    - III. TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES: CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.
    - IV. KENTUCKY BLUEGRASS/FINE FESCUE: SHADE MIXTURE: FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES: CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 TO 70 PERCENT. SEEDING RATE: 1 1/2 TO 3 POUNDS PER 1000 SQUARE FEET.

NOTES:

SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND"

CHOOSE CERTIFIED MATERIAL. CERTIFIED MATERIAL IS THE BEST GUARANTEE OF CULTIVAR PURITY. THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE, TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE

C. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES

WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDINESS ZONES: 5B, 6A)  
CENTRAL MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 6B)  
SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7A, 7B)

- D. TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES. LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1 1/2 INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.
- E. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (1/2 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

PERMANENT SEEDING SUMMARY

HARDINESS ZONE (FROM FIGURE B.3): 7A SEED MIXTURE (FROM TABLE B.3)					FERTILIZER RATE (10-20-20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P205	K20	
1	SWITCH GRASS CREEPING RED FESCUE PATRIDGE PEA	10 15 4	2/15 - 4/30 5/1 - 5/31		45 LB/AC (1.0 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
8	TALL FESCUE (85%)	100	2/15 - 4/30 8/15 - 10/31 11/1 - 11/30	1/4" - 1/2"				
9	TALL FESCUE KENTUCKY BLUEGRASS PERENNIAL RYEGRASS	60 40 20	2/15 - 4/30 8/15 - 10/31 11/1 - 11/30					

MARYLAND DEPARTMENT OF TRANSPORTATION



RED LINE

General Engineering Consultant Team  
Baltimore, MD

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

RLA-365 License No. 04-26-2015 Expiration Date



DESIGN	CPS		
DRAWN	DEA		
CHECK	MBM		
APPR	SAS		
NO.	DESCRIPTION	BY	DATE
REVISIONS			

RED LINE LIGHT RAIL TRANSIT SYSTEM  
REFORESTATION AND LANDSCAPING

CIMAGLIA PARK EROSION & SEDIMENT CONTROL  
NOTES - SHEET 3

DATE: JUNE 2014 SCALE: N.T.S.

CONTRACT NO.  
T-0862-1940

DRAWING NO.  
ES-19003

SHEET NO.  
20 OF 22

**TABLE B.7: SOIL STABILIZATION ON SLOPES**

SLOPE	20:1 OR FLATTER (<5%)		<20:1 TO 4:1 (>5-25%)		<4:1 TO 3:1 (>25-33%)		<3:1 TO 2.5:1 (>33-40%)		<2.5:1 TO 2:1** (>40-50%)			
	0-30	30-60	60-120	0-30	30-60	60-120	0-30	30-60	60-120	0-30	30-60	60-120
STRAW MULCH/WOOD CELLULOSE FIBER				FOR K < 0.35***								
TEMPORARY MATTING WITH DESIGN SHEAR STRESS > 1.5 LB/SF												
TEMPORARY MATTING WITH DESIGN SHEAR STRESS > 1.75 LB/SF												
TEMPORARY MATTING WITH DESIGN SHEAR STRESS > 2.0 LB/SF												
TEMPORARY MATTING WITH DESIGN SHEAR STRESS > 2.25 LB/SF												

■ EFFECTIVE RANGE FOR ALL K VALUES UNLESS OTHERWISE SPECIFIED

- \* SLOPE LENGTH INCLUDES CONTRIBUTING FLOW LENGTH.
- \*\* SLOPES STEEPER THAN 2:1 MUST BE ENGINEERED.
- \*\*\* SOIL HAVING A K VALUE LESS THAN OR EQUAL TO 0.35 CAN BE STABILIZED EFFECTIVELY WITH STRAW MULCH OR WOOD CELLULOSE FIBER WHEN LOCATED ON SLOPES STEEPER THAN 5%. SOIL STABILIZATION MATTING IS REQUIRED ON ALL SLOPES STEEPER THAN 5% THAT HAVE SOIL WITH A K FACTOR GREATER THAN 0.35. K FACTOR RATINGS ARE PUBLISHED IN THE NRCS SOIL SURVEY HTTP://WEBSOILSURVEY.NRCS.USDA.GOV/APP. DURING CONSTRUCTION OR RECLAMATION, THE SOILERODIBILITY K VALUE SHOULD REPRESENT THE UPPER 6 INCHES OF THE FINAL FILL MATERIAL RE-SPREAD AS THE LAST LIFT. ONLY THE EFFECTS OF ROCK FRAGMENTS WITHIN THE SOIL PROFILE ARE CONSIDERED IN THE ESTIMATION OF THE K VALUE. DO NOT ADJUST K VALUES TO ACCOUNT FOR ROCKS ON THE SOIL SURFACE OR INCREASES IN SOIL ORGANIC MATTER RELATED TO MANAGEMENT ACTIVITIES.

**MAINTENANCE**  
VEGETATION MUST BE ESTABLISHED AND MAINTAINED SO THAT THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

**B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION** Continued

- B. SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).**
- GENERAL SPECIFICATIONS**
    - CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.
    - SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4 INCH, PLUS OR MINUS 1/4 INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS AND TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE.
    - STANDARD SIZE SECTIONS OF SOD MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.
    - SOD MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
    - SOD MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPLANTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.
  - SOD INSTALLATION**
    - DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
    - LAY THE FIRST ROW OF SOD IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS.
    - WHEREVER POSSIBLE, LAY SOD WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS. ROLL AND TAMP. PEG OR OTHERWISE SECURE THE SOD TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOLID CONTACT EXISTS BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE.
    - WATER THE SOD IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD WITHIN EIGHT HOURS.
  - SOD MAINTENANCE**
    - IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF 4 INCHES. WATER SOD DURING THE HEAT OF THE DAY TO PREVENT WILTING.
    - AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.
    - DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN 25% OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

**B-4-6 STANDARDS AND SPECIFICATIONS FOR SOIL STABILIZATION MATTING**

**DEFINITION**  
MATERIAL USED TO TEMPORARILY OR PERMANENTLY STABILIZE CHANNELS OR STEEP SLOPES UNTIL GROUND COVER IS ESTABLISHED.

**PURPOSE**  
TO PROTECT THE SOILS UNTIL VEGETATION IS ESTABLISHED.

**CONDITIONS WHERE PRACTICE APPLIES**  
ON NEWLY SEEDD SURFACES TO PREVENT THE APPLIED SEED FROM WASHING OUT; IN CHANNELS AND ON STEEP SLOPE WHERE THE FLOW HAS ERODIVE VELOCITIES OR CONVEYS CLEAR WATER; ON TEMPORARY SWALES, EARTH DIKES, AND PERIMETER DIKE SWALES AS REQUIRED BY THE RESPECTIVE DESIGN STANDARD; AND, ON STREAM BANKS WHERE MOVING WATER IS LIKELY TO WASH OUT NEW VEGETATIVE PLANTINGS.

**DESIGN CRITERIA**

- THE SOIL STABILIZATION MATTING THAT IS USED MUST WITHSTAND THE FLOW VELOCITIES AND SHEAR STRESSES DETERMINED FOR THE AREA, BASED ON THE 2-YEAR, 24-HOUR FREQUENCY STORM FOR TEMPORARY APPLICATIONS AND THE 10-YEAR, 24-HOUR FREQUENCY STORM FOR PERMANENT APPLICATIONS. DESIGNATE ON THE PLAN THE TYPE OF SOIL STABILIZATION MATTING USING THE STANDARD SYMBOL AND INCLUDE THE CALCULATED SHEAR STRESS FOR THE RESPECTIVE TREATMENT AREA.
- MATting IS REQUIRED ON PERMANENT CHANNELS WHERE THE RUNOFF VELOCITY EXCEEDS TWO AND HALF FEET PER SECOND (2.5 FPS) OR THE SHEAR STRESS EXCEEDS TWO POUNDS PER SQUARE FOOT (2 LBS/FT<sup>2</sup>). ON TEMPORARY CHANNELS DISCHARGING TO A SEDIMENT TRAPPING PRACTICE, PROVIDE MATTING WHERE THE RUNOFF VELOCITY EXCEEDS FOUR FEET PER SECOND (4 FPS).
- TEMPORARY SOIL STABILIZATION MATTING IS MADE WITH DEGRADABLE (LASTS 6 MONTHS MINIMUM), NATURAL, OR MANMADE FIBERS OF UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND IS SMOLDER RESISTANT. THE MAXIMUM PERMISSIBLE VELOCITY FOR TEMPORARY MATTING IS 6 FEET PER SECOND.
- PERMANENT SOIL STABILIZATION MATTING IS AN OPEN WEAVE, SYNTHETIC MATERIAL CONSISTING OF NONDEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION OF WEAVE THROUGHOUT. THE MAXIMUM PERMISSIBLE VELOCITY FOR PERMANENT MATTING IS 8.5 FEET PER SECOND.
- CALCULATE CHANNEL VELOCITY AND SHEAR STRESS USING THE FOLLOWING PROCEDURE:  
SHEAR STRESS ( $\tau$ ) IS A MEASURE OF THE FORCE OF MOVING WATER AGAINST THE SUBSTRATE AND IS CALCULATED AS:

$\tau = \gamma_w R S$ , WHERE:  
 $\tau$  = SHEAR STRESS (LB/FT<sup>2</sup>)  
 $\gamma_w$  = WEIGHT DENSITY OF WATER (62.4 LB/FT<sup>3</sup>)  
 $R$  = AVERAGE WATER DEPTH (HYDRAULIC RADIUS) (FT)  
 $S$  = WATER SURFACE SLOPE (FT/FT)

VELOCITY (V) MEASURES THE RATE OF FLOW THROUGH A DEFINED AREA AND IS CALCULATED AS:

$V = 1.486 R^{2/3} S^{1/2} / N$   
 WHERE:  
 $V$  = VELOCITY (FT/SEC)  
 $N$  = MANNING'S ROUGHNESS COEFFICIENT  
 $R$  = HYDRAULIC RADIUS (FT)  
 $S$  = CHANNEL SLOPE (FT/FT)

- USE TABLE B.7 TO ASSIST IN SELECTING THE APPROPRIATE SOIL STABILIZATION MATTING FOR SLOPE APPLICATIONS BASED ON THE SLOPE, THE SLOPE LENGTH, AND THE SOIL-ERODIBILITY K FACTOR.

DETAIL B-4-6-A TEMPORARY SOIL STABILIZATION MATTING CHANNEL APPLICATION STANDARD SYMBOL TSSMC - 1.5 lb/ft <sup>2</sup> (* INCLUDE SHEAR STRESS)	DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION STANDARD SYMBOL TSSMS - 2.25 lb/ft <sup>2</sup> (* INCLUDE SHEAR STRESS)
<p><b>CONSTRUCTION SPECIFICATIONS</b></p> <ol style="list-style-type: none"> <li>USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.</li> <li>USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2.2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.</li> <li>SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1 1/2 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.</li> <li>PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.</li> <li>UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTERLINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDBED SURFACE, AVOID STRETCHING THE MATTING.</li> <li>KEY-IN UPSTREAM END OF EACH MAT ROLL BY DIGGING A 6 INCH (MINIMUM) TRENCH AT THE UPSTREAM END OF THE MATTING, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END.</li> <li>OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.</li> <li>STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.</li> <li>ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.</li> </ol>	<p><b>CONSTRUCTION SPECIFICATIONS</b></p> <ol style="list-style-type: none"> <li>USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.</li> <li>USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2.2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.</li> <li>SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1 1/2 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.</li> <li>PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION &amp; SEDIMENT CONTROL PLAN.</li> <li>UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDBED SURFACE. AVOID STRETCHING THE MATTING.</li> <li>OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.</li> <li>KEY IN THE UPSLOPE END OF MAT BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.</li> <li>STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.</li> <li>ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.</li> </ol>
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011	MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011

<p>MARYLAND DEPARTMENT OF TRANSPORTATION</p> <p>MARYLAND TRANSIT ADMINISTRATION</p> <p>MTA Maryland</p>	<p>RED LINE</p> <p>General Engineering Consultant Team</p> <p>Baltimore, MD</p>	<p>PROFESSIONAL CERTIFICATION</p> <p>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.</p> <p>RLA-365 License No. 04-26-2015 Expiration Date</p>	<p>NO. DESCRIPTION BY DATE</p> <p>REVISIONS</p>	<p>DESIGN</p> <p>CPS</p>	<p>RED LINE LIGHT RAIL TRANSIT SYSTEM</p> <p>REFORESTATION AND LANDSCAPING</p>	<p>CONTRACT NO.</p> <p>T-0862-1940</p>	
				<p>CHECK DRAWING</p> <p>DEA</p>		<p>DATE: JUNE 2014</p> <p>SCALE: N.T.S.</p>	<p>DRAWING NO.</p> <p>ES-19004</p>
					<p>APPR. CHECK DRAWING DESIGN</p> <p>SAS</p>	<p>CIMAGLIA PARK EROSION &amp; SEDIMENT CONTROL</p> <p>NOTES - SHEET 4</p>	<p>SHEET NO.</p> <p>21 OF 22</p>

**B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA**

**DEFINITION**  
A MOUND OR PILE OF SOIL PROTECTED BY APPROPRIATELY DESIGNED EROSION AND SEDIMENT CONTROL MEASURES.

**PURPOSE**  
TO PROVIDE A DESIGNATED LOCATION FOR THE TEMPORARY STORAGE OF SOIL THAT CONTROLS THE POTENTIAL FOR EROSION, SEDIMENTATION, AND CHANGES TO DRAINAGE PATTERNS.

**CONDITIONS WHERE PRACTICE APPLIES**  
STOCKPILE AREAS ARE UTILIZED WHEN IT IS NECESSARY TO SALVAGE AND STORE SOIL FOR LATER USE.

- CRITERIA**
1. THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
  2. THE FOOTPRINT OF THE STOCKPILE MUST BE SIZED TO ACCOMMODATE THE ANTICIPATED VOLUME OF MATERIAL AND BASED ON A SIDE SLOPE RATIO NO STEEPER THAN 2:1. BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.
  3. RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE.
  4. ACCESS TO THE STOCKPILE AREA FROM THE UPGRADE SIDE.
  5. CLEAR WATER RUNOFF INTO THE STOCKPILE AREA MUST BE MINIMIZED BY USE OF A DIVERSION DEVICE SUCH AS AN EARTH DIKE, TEMPORARY SWALE OR DIVERSION FENCE. PROVISIONS MUST BE MADE FOR DISCHARGING CONCENTRATED FLOW IN A NON-EROSIVE MANNER.
  6. WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL, AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
  7. STOCKPILES MUST BE STABILIZED IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION REQUIREMENT AS WELL AS STANDARD B-4-1 INCREMENTAL STABILIZATION AND STANDARD B-4-4 TEMPORARY STABILIZATION.
  8. IF THE STOCKPILE IS LOCATED ON AN IMPERVIOUS SURFACE, A LINER SHOULD BE PROVIDED BELOW THE STOCKPILE TO FACILITATE CLEANUP. STOCKPILES CONTAINING CONTAMINATED MATERIAL MUST BE COVERED WITH IMPERMEABLE SHEETING.

**MAINTENANCE**  
THE STOCKPILE AREA MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. SIDE SLOPES MUST BE MAINTAINED AT NO STEEPER THAN A 2:1 RATIO. THE STOCKPILE AREA MUST BE KEPT FREE OF EROSION. IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 20 FEET FOR 2:1 SLOPES, 30 FEET FOR 3:1 SLOPES, OR 40 FEET FOR 4:1 SLOPES, BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.

**B-4-7 STANDARDS AND SPECIFICATIONS FOR HEAVY USE AREA**

**DEFINITION**  
THE STABILIZATION OF AREAS FREQUENTLY AND INTENSIVELY USED BY SURFACING WITH SUITABLE MATERIALS (E.G., MULCH AND AGGREGATE).

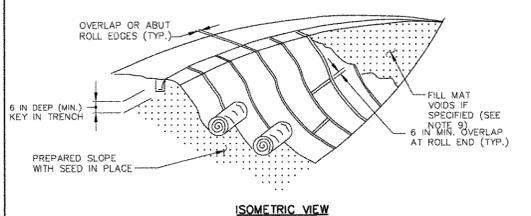
**PURPOSE**  
TO PROVIDE A STABLE, NON-ERODING SURFACE FOR AREAS FREQUENTLY USED AND TO IMPROVE THE WATER QUALITY FROM THE RUNOFF OF THESE AREAS.

**CONDITIONS WHERE PRACTICE APPLIES**  
THIS PRACTICE APPLIES TO INTENSIVELY USED AREAS (E.G., EQUIPMENT AND MATERIAL STORAGE, STAGING AREAS, HEAVILY USED TRAVEL LANES).

- CRITERIA**
1. A MINIMUM 4-INCH BASE COURSE OF CRUSHED STONE OR OTHER SUITABLE MATERIALS INCLUDING WOOD CHIPS OVER NONWOVEN GEOTEXTILE SHOULD BE PROVIDED AS SPECIFIED IN SECTION H-1 MATERIALS.
  2. SELECT THE STABILIZING MATERIAL BASED ON THE INTENDED USE, DESIRED MAINTENANCE FREQUENCY, AND RUNOFF CONTROL.
  3. THE TRANSPORT OF SEDIMENTS, NUTRIENTS, OILS, CHEMICALS, PARTICULATE MATTER ASSOCIATED WITH VEHICULAR TRAFFIC AND EQUIPMENT, AND MATERIAL STORAGE NEEDS TO BE CONSIDERED IN THE SELECTION OF MATERIAL. ADDITIONAL CONTROL MEASURES MAY BE NECESSARY TO CONTROL SOME OF THESE POTENTIAL POLLUTANTS.
  4. SURFACE EROSION CAN BE A PROBLEM ON LARGE HEAVY USE AREAS. IN THESE SITUATIONS, MEASURES TO REDUCE THE FLOW LENGTH OF RUNOFF OR EROSION VELOCITIES NEED TO BE CONSIDERED. MAINTENANCE THE HEAVY USE AREAS MUST BE MAINTAINED IN A CONDITION THAT MINIMIZES EROSION. THIS MAY REQUIRE ADDING SUITABLE MATERIAL, AS SPECIFIED ON THE APPROVED PLANS, TO MAINTAIN A CLEAN SURFACE.

**DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION**

STANDARD SYMBOL  
PSSMS - 1.5 lb/ft<sup>2</sup>  
(\* INCLUDE SHEAR STRESS)

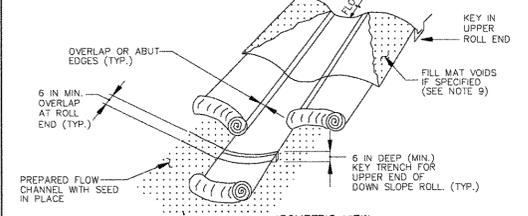


- CONSTRUCTION SPECIFICATIONS**
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
  2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2/2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
  3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE 4 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1 1/2 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
  4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
  5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDBED SURFACE. AVOID STRETCHING THE MATTING.
  6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
  7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
  8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
  9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYPED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
  10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

**DETAIL B-4-6-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION**

STANDARD SYMBOL  
PSSMC - 2.25 lb/ft<sup>2</sup>  
(\* INCLUDE SHEAR STRESS)

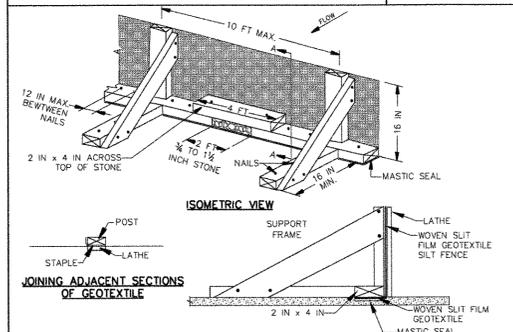


- CONSTRUCTION SPECIFICATIONS**
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
  2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2/2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
  3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE 4 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1 1/2 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
  4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
  5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDBED SURFACE. AVOID STRETCHING THE MATTING.
  6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSLOPE MAT.
  7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
  8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
  9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYPED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
  10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

**DETAIL E-2 SILT FENCE ON PAVEMENT**

STANDARD SYMBOL  
SFOP

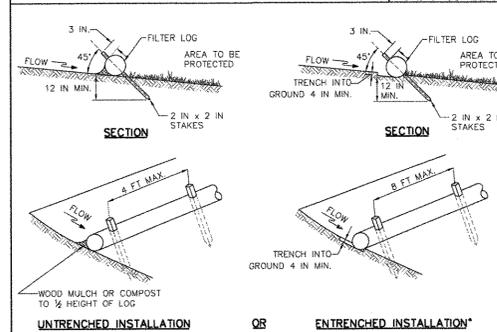


- CONSTRUCTION SPECIFICATIONS**
1. USE NOMINAL 2 INCH X 4 INCH LUMBER.
  2. USE WOVEN SLIT FILM GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
  3. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
  4. SPACE UPRIGHT SUPPORTS NO MORE THAN 10 FEET APART.
  5. PROVIDE A TWO FOOT OPENING BETWEEN EVERY SET OF SUPPORTS AND PLACE STONE IN THE OPENING OVER GEOTEXTILE.
  6. KEEP SILT FENCE TAUT AND SECURELY STAPLE TO THE UPSLOPE SIDE OF UPRIGHT SUPPORTS. EXTEND GEOTEXTILE UNDER 2x4.
  7. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, FOLD, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL. ATTACH LATHE.
  8. PROVIDE A MASTIC SEAL BETWEEN PAVEMENT, GEOTEXTILE, AND 2x4 TO PREVENT SEDIMENT-LADEN WATER FROM ESCAPING BENEATH SILT FENCE INSTALLATION.
  9. SECURE BOARDS TO PAVEMENT WITH 40D 6 INCH MINIMUM LENGTH NAILS.
  10. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 2/3 OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. MAINTAIN WATER TIGHT SEAL ALONG BOTTOM. REPLACE STONE IF DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

**DETAIL E-6 FILTER LOG**

STANDARD SYMBOL  
FL-18  
DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG



- CONSTRUCTION SPECIFICATIONS**
1. PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.
  2. FILL LOG NETTING UNIFORMLY WITH COMPOST (IN ACCORDANCE WITH SECTION H-1 MATERIALS), OR OTHER APPROVED BIODEGRADABLE MATERIAL TO DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
  3. INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE WITH THE BEGINNING AND END OF THE INSTALLATION POINTING SLIGHTLY UP THE SLOPE CREATING A "J" SHAPE AT EACH END TO PREVENT BYPASS.
  4. FOR UNTRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.
  5. STAKE FILTER LOG EVERY 4 FEET OR CLOSER ALONG ENTIRE LENGTH OF LOG OR TRENCH LOG INTO GROUND A MINIMUM OF 4 INCHES AND STAKE LOG EVERY 8 FEET OR CLOSER.
  6. USE STAKES WITH A MINIMUM NOMINAL CROSS SECTION OF 2X2 INCH AND OF SUFFICIENT LENGTH TO ATTAIN A MINIMUM OF 12 INCHES INTO THE GROUND AND 3 INCHES PROTRUDING ABOVE LOG.
  7. WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.
  8. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF 1/2 THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH. REPLACE FILTER LOG IF TORN. REINSTALL FILTER LOG IF UNDERMINING OR DISLODGING OCCURS. REPLACE CLOGGED FILTER LOGS. FOR PERMANENT APPLICATIONS, ESTABLISH AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

**DETAIL E-6 FILTER LOG**

STANDARD SYMBOL  
FL-18  
DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG

- CONSTRUCTION SPECIFICATIONS**
1. PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.
  2. FILL LOG NETTING UNIFORMLY WITH COMPOST (IN ACCORDANCE WITH SECTION H-1 MATERIALS), OR OTHER APPROVED BIODEGRADABLE MATERIAL TO DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
  3. INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE WITH THE BEGINNING AND END OF THE INSTALLATION POINTING SLIGHTLY UP THE SLOPE CREATING A "J" SHAPE AT EACH END TO PREVENT BYPASS.
  4. FOR UNTRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.
  5. STAKE FILTER LOG EVERY 4 FEET OR CLOSER ALONG ENTIRE LENGTH OF LOG OR TRENCH LOG INTO GROUND A MINIMUM OF 4 INCHES AND STAKE LOG EVERY 8 FEET OR CLOSER.
  6. USE STAKES WITH A MINIMUM NOMINAL CROSS SECTION OF 2X2 INCH AND OF SUFFICIENT LENGTH TO ATTAIN A MINIMUM OF 12 INCHES INTO THE GROUND AND 3 INCHES PROTRUDING ABOVE LOG.
  7. WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.
  8. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF 1/2 THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH. REPLACE FILTER LOG IF TORN. REINSTALL FILTER LOG IF UNDERMINING OR DISLODGING OCCURS. REPLACE CLOGGED FILTER LOGS. FOR PERMANENT APPLICATIONS, ESTABLISH AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

**MARYLAND DEPARTMENT OF TRANSPORTATION**

**MARYLAND TRANSIT ADMINISTRATION**

**MTA Maryland**

**RED LINE**

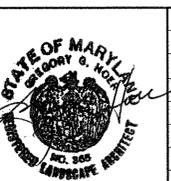
**General Engineering Consultant Team**

Baltimore, MD

**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

RLA-365 License No. 04-26-2015 Expiration Date



DESIGN	CPS		
DRAWN	DEA		
CHECK	MBM		
APPR	SAS		
NO.	DESCRIPTION	BY	DATE
REVISIONS			

**RED LINE LIGHT RAIL TRANSIT SYSTEM**

**REFORESTATION AND LANDSCAPING**

**CIMAGLIA PARK EROSION & SEDIMENT CONTROL**

**NOTES - SHEET 5**

DATE: JUNE 2014 SCALE: N.T.S.

CONTRACT NO.	T-0862-1940
DRAWING NO.	ES-19005
SHEET NO.	22 OF 22