FINAL ROAD CONSTRUCTION PLAN

FOR

MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

STANDARD DRAWING LEGEND

FOR ENTIRE PLAN SET
(NOT TO SCALE)

EXISTING NOTE	TYPICAL NOTE TEXT	PROPOSED NOTE
LIMIT OF WORK	LOW LOW	
LIMIT OF DISTURBANCE	LOD LOD	
	ONSITE PROPERTY LINE / R.O.W. LINE	
	NEIGHBORING PROPERTY LINE / INTERIOR PARCEL LINE	
	EASEMENT LINE	
	SETBACK LINE	
	CONCRETE CURB & GUTTER	CURB AND GUTTER; SPILL | TRANSITION; DEPRESSED CURB AND GUTTER
	UTILITY POLE WITH LIGHT	
	POLE LIGHT	
	TRAFFIC LIGHT	
	UTILITY POLE	
	TYPICAL LIGHT	
	ACORN LIGHT	
	TYPICAL SIGN	
	PARKING COUNTS	
170 / 169	CONTOUR LINE	190 / 187
TC 516.4 OR 516.4	SPOT ELEVATIONS	FG 516.00 TC 516.00 BC 515.55
SAN #	SANITARY LABEL	SAN #
	STORM LABEL	
SL	SANITARY SEWER LATERAL	SL
W	UNDERGROUND WATER LINE	W
E	UNDERGROUND ELECTRIC LINE	E
G	UNDERGROUND GAS LINE	G
OH	OVERHEAD WIRE	OH
T	UNDERGROUND TELEPHONE LINE	T
C	UNDERGROUND CABLE LINE	C
	STORM SEWER	
S	SANITARY SEWER MAIN	S
	HYDRANT	
S	SANITARY MANHOLE	
D	STORM MANHOLE	
WM	WATER METER	
WV	WATER VALVE	
	GAS VALVE	
	GAS METER	
	TYPICAL END SECTION	
	HEADWALL OR ENDWALL	
	GRATE INLET	
	CURB INLET	
	CLEAN OUT	
E	ELECTRIC MANHOLE	E
T	TELEPHONE MANHOLE	T
EB	ELECTRIC BOX	EB
EP	ELECTRIC PEDESTAL	EP
	MONITORING WELL	
	TEST PIT	
	BENCHMARK	
	BORING	

STATE OF MARYLAND · DONALD ALAN MASON · No. 21443 · PROFESSIONAL ENGINEER

Donald Mason

AS- BUILT

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443, Expiration Date: 12-21-22

AS-BUILT CERTIFICATION
I hereby certify, to the best of my knowledge and belief, the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E. Date: 3/25/21

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MDSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410)313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
4. THE SUBJECT PROPERTY IS ZONED RC-DEO (RURAL CONSERVATION DISTRICT - DENSITY EXCHANGE OPTION) OVERLAY DISTRICT PER THE OCTOBER 13, 2017 COMPREHENSIVE ZONING PLAN.
5. THE ENTIRETY OF THE PARCEL FROM WHICH LAND IS BEING DEDICATED IS NOT BEING SHOWN IN ACCORDANCE WITH SECTION 16.102(C)(2) OF THE HOWARD COUNTY LAND DEVELOPMENT REGULATIONS DUE TO PAGE SIZE RESTRICTIONS.
6. TRAFFIC CONTROL DEVICES:
   a) ~~THE R1-1 ("STOP") SIGN AND THE STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED.~~
   b) THE TRAFFIC CONTROL DEVICE LOCATIONS WITHIN THE MDOT SHA RIGHT-OF-WAY WILL BE INSPECTED AND APPROVED BY MDOT SHA DISTRICT 7 TRAFFIC (301-624-8142). THE TRAFFIC CONTROL DEVICES SHOWN IN THE COUNTY RIGHT-OF-WAY ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
   c) ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MDMUTCD).
   d) ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED IN A 2" GALVANIZED STEEL, PERFORATED ("QUICK PUNCH") SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
7. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURES AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006), SECTION 5.5.A AND "THE ROUTE 108 DESIGN GUIDELINES." A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
8. THE EXISTING TOPOGRAPHY IS TAKEN FROM SURVEY WITH 1 FOOT CONTOUR INTERVALS PREPARED BY BENCHMARK ENGINEERING RECEIVED VIA ELECTRONIC CORRESPONDENCE ON 1/25/18.
9. ASSOCIATED DPZ PLANS FOR THE PROPERTY INCLUDE: SDP-18-044, ECP-17-023, AND WP-18-095.
10. A WAIVER (~~WP-18-096~~) WAS REQUESTED FROM HOWARD COUNTY DESIGN MANUAL VOLUME III, SECTION 2.3, TABLE 2.06 TO ALLOW THE REDUCTION OF THE MINIMUM RATE OF VERTICAL CURVATURE (K) FROM 49 TO 35, AND SECTION 2.3.1.A AND APPENDIX A TO REDUCE THE HORIZONTAL CURVES FROM 550' TO 375'. THE DESIGN MANUAL WAIVER WAS APPROVED ON MAY 22, 2018, SUBJECT TO PROVIDING STREET LIGHTS AT SUB-STANDARD CURVE TO COMPENSATE FOR THE DEFICIENT HEADLIGHT SIGHT DISTANCE.
11. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 0044 AND 29GC WERE USED OF THIS PROJECT.
12. THE SITE IS NOT LOCATED WITHIN THE METROPOLITAN DISTRICT. WATER IS PUBLIC
13. THE SITE IS NOT LOCATED WITHIN THE METROPOLITAN DISTRICT. SEWER IS PUBLIC.
14. AN F-6 BIORETENTION FACILITY AND A TWO (2) M-8 GRASS SWALES WILL BE UTILIZED FOR STORMWATER MANAGEMENT. THE BIORETENTION FACILITY WILL BE OWNED AND MAINTAINED BY MDSHA, AND THE GRASS SWALES WILL BE OWNED AND MAINTAINED BY HOWARD COUNTY.
15. THERE IS A 100-YEAR FLOODPLAIN NEAR SHEPPARD LANE, PER FEMA MAP #24027C0135D, DATED NOVEMBER 6, 2013, THAT WILL NOT BE IMPACTED BY THE PROPOSED ROAD IMPROVEMENTS.
16. THE PROPOSED DISTURBANCE TO THE 100' STREAM BUFFER IS ASSOCIATED WITH THE REALIGNMENT OF SHEPPARD LANE, A PUBLICLY OWNED AND MAINTAINED ROADWAY.

    IN CURRENT CONDITIONS, THE EXISTING SHEPPARD LANE ALIGNMENT CROSSES THE STREAM AND RESULTS IN A STREAM BUFFER ENCROACHMENT OF APPROXIMATELY 2,350 SQUARE FEET. AN EXISTING CULVERT IS IN PLACE AT THE CROSSING THAT ALLOWS THE STREAM TO CROSS BENEATH SHEPPARD LANE.

    THE PROPOSED REALIGNMENT WILL RESULT IN APPROXIMATELY 1,415 SQUARE FEET OF ADDITIONAL ENCROACHMENT INTO THE 100' STREAM BUFFER, OR A TOTAL OF 3,765 SQUARE FEET OF STREAM BUFFER DISTURBANCE.

    THE ADDITIONAL DISTURBANCE RESULTS FROM THE DESIRE TO PROVIDE A SAFER SHEPPARD LANE ALIGNMENT AND ROAD SECTION AS IT APPROACHES THE INTERSECTION WITH MD 108. THE ANGLE OF APPROACH THAT IS PROPOSED RESULTS IN AN IMPROVED ANGLE OF INTERSECTION AT MD 108 FROM EXISTING CONDITIONS AND THE ROAD SECTION IS BEING WIDENED, AT THE DIRECTION OF THE DEPARTMENT OF PLANNING AND ZONING, TO PROVIDE (2) 4' WIDE BIKE LANES ALONG THE SHOULDERS OF THE REALIGNED ROAD.

    THE PROPOSED IMPROVEMENTS ARE DESIGNED TO TIE BACK INTO THE EXISTING ROAD SECTION PRIOR TO THE STREAM CROSSING, THEREBY MINIMIZING THE IMPACTS TO THE STREAM BUFFER AND RESULTING IN NO IMPACTS TO THE STREAM CHANNEL ITSELF. THESE IMPACTS WILL NOT BE DETRIMENTAL TO THE PUBLIC OR CAUSE ANY ADJACENT OR DOWNSTREAM IMPACTS.

    IN SUMMARY, THE NECESSARY DISTURBANCE IS ESSENTIAL FOR THE IMPROVEMENT OF TRAFFIC MOVEMENTS AT THE MD 108/SHEPPARD LANE INTERSECTION AND PROVIDE BIKE LANES ALONG SHEPPARD LANE. ~~THE NECESSARY DISTURBANCE WAS REVIEWED AND APPROVED BY DPZ~~ 11/14/18. IN ACCORDANCE WITH SECTION 16.1603 OF THE HOWARD COUNTY SUBDIVISION REGULATIONS
17. THERE ARE NO WETLANDS ON THIS SITE PER WETLAND CERTIFICATION AND FOREST STAND DELINEATION REPORT PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DATED MAY 15, 2018.
18. THE TRAFFIC IMPACT STUDY WAS COMPLETED BY TRAFFIC CONCEPTS, INC., DATED NOVEMBER, 2017, AND APPROVED DECEMBER 19, 2017.
19. EXISTING UTILITIES ARE BASED ON A SUBSURFACE UTILITY SURVEY PREPARED BY AI DATA; ENTITLED: "SUBSURFACE UTILITY DESIGNATING & TEST HOLE LOCATION WORKSHEET; RIVER HILL SQUARE; HOWARD COUNTY, MARYLAND." AI/DATA PROJECT #: 18058.01; DATED: 05/11/18
20. FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1200 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL FOR THIS ROAD IMPROVEMENT PLAN WILL BE FULFILLED BY A FEE IN LIEU TO HOWARD COUNTY OF 0.40 ACRES FOR $16,552.
21. LANDSCAPING FOR THE STREET TREES WILL BE PROVIDED IN ACCORDANCE WITH THIS CERTIFIED LANDSCAPE PLAN AND IN ACCORDANCE WITH SECTION 15.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. STREET TREE SURETY IN THE AMOUNT OF $7,700.00 FOR THE INSTALLATION OF 19 SHADE TREES ($300.00 /EACH) AND 10 ORNAMENTAL TREES ($200.00) SHALL BE POSTED BY THE DEVELOPMENT ENGINEERING DIVISION (DED) COST ESTIMATE.
22. THERE WAS NO EVIDENCE OF A CEMETERY ON THE SITE.

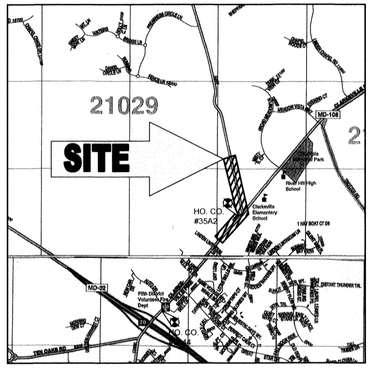
SITE ANALYSIS DATA / TABULATION

	TOTAL
TOTAL PROJECT AREA (GROSS)	2.68 AC.
AREA OF STREAM AND BUFFER	0.11 AC.
AREA OF 100-YR FLOODPLAIN	0.00 AC.
AREA OF FOREST	0.18 AC.
AREA OF STEEP SLOPES (15% OR GREATER)	0.00 AC.
HIGHLY ERODIBLE SOILS (K> 0.35)	0.09 AC.
NET TRACT AREA	2.68 AC.
LIMIT OF DISTURBED AREA	2.68 AC.
PRESENT ZONING DESIGNATION	B-1 (SOUTH OF MD-108)
PRESENT ZONING DESIGNATION	RC-DEO (NORTH OF MD-108)
PROPOSED USE	PUBLIC ROAD (MD-108 & SHEPPARD LANE
EX. IMPERVIOUS COVER	0.70 AC.

GENERAL NOTE
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJECT WORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE ACCEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND IN FULL CONFORMANCE WITH LOCAL REGULATIONS AND CODES.

LOCATION OF SITE

INTERSECTION OF CLARKSVILLE PIKE
(MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21029
HOWARD COUNTY, MD



LOCATION MAP
COPYRIGHT ADC THE MAP PEOPLE
PERMIT USE NO. 20602153-5
SCALE: 1"=2000'

ADC MAP: 25 GRID: D-8

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AS-BUILT NOTES:
1.) HORIZONTAL DATUM FOR THIS AS-BUILT IS BASED ON THE MARYLAND STATE REFERENCE SYSTEM NAD 83/ADJ 91 AS PROJECTED FROM HO.CO. GEODETIC CONTROL STATIONS 0044 AND 35A2. VERTICAL DATUM FOR THIS AS-BUILT IS NORTH AMERICAN VERTICAL DATUM NAVD 88 AS PROJECTED FROM THE ABOVE MENTIONED HOWARD COUNTY GEODETIC CONTROL STATIONS.
2.) THE INSTRUMENTS USED IN PERFORMING THE AS-BUILT WERE A 5" TOTAL STATION AND PRISM.
3.) THIS AS-BUILT WAS PERFORMED BY BENCHMARK ENGINEERING, INC.

FOR R/W CHART AND RECOVERY SKETCH SEE SHEET 4

REFERENCES

- ELECTRONIC FILE:
  PREPARED BY: BENCHMARK ENGINEERING, INC.
  ENTITLED, "8508,"
  DATE RECEIVED: 1/25/18
- SUBSURFACE UTILITY DESIGNATING & TEST HOLE LOCATION WORKSHEET:
  PREPARED BY: AI/DATA
  ENTITLED, "SUBSURFACE UTILITY DESIGNATING & TEST HOLE LOCATION WORKSHEET, RIVER HILL SQUARE, HOWARD COUNTY, MARYLAND,"
  AI/DATA PROJECT # 18058.01
  DATED: 5/11/2018
- SIGNING AND PAVEMENT MARKING PLAN:
  PREPARED BY: TRAFFIC CONCEPTS, INC.
  ENTITLED, "MD 108 (CLARKSVILLE PIKE AT SHEPPARD LANE, CLARKSVILLE, MARYLAND"
  DRAWING NO. SN-2.1
  DATED: 10/02/2018

ELECTRONIC FILE
- PREPARED BY: BENCHMARK ENGINEERING, INC.
- ENTITLED, "RIVER HILL SQUARE 2018-05-14,"
- DATED: 5/14/18

TRAFFIC IMPACT STUDY
- PREPARED BY: TRAFFIC CONCEPTS, INC.
- ENTITLED, "TRAFFIC IMPACT STUDY, RIVER HILL SQUARE, SPECIALTY RETAIL CENTER, HOWARD COUNTY, MARYLAND,"
- DATED: NOVEMBER, 2017

- MAINTENANCE OF TRAFFIC PLAN
  PREPARED BY: TRAFFIC CONCEPTS, INC.
  ENTITLED, "MAINTENANCE OF TRAFFIC PLAN, MD 108 (CLARKSVILLE PIKE) AND SHEPPARD LANE, HOWARD COUNTY,"
  DATED: 10/02/2018
- GEOTECHNICAL REPORT
  PREPARED BY: ECS MID ATLANTIC, LLC
  ENTITLED, "REPORT OF SUBSURFACE EXPLORATION, LABORATORY TESTING, AND GEOTECHNICAL ENGINEERING ANALYSES REPORT; ERICKSON LIVING AT LIMESTONE VALLEY, 5450 SHEPPARD LANE; CLARKSVILLE, HOWARD COUNTY, MARYLAND"
  PROJECT #: 02-8562
  DATED: 04/06/2018
- SIGNING AND PAVEMENT MARKING PLAN
  PREPARED BY: TRAFFIC CONCEPTS, INC.
  ENTITLED, "MD 108 (CLARKSVILLE PIKE) AT SHEPPARD LANE; HOWARD COUNTY"
  DATED: 10/02/2018
- SHA DONATION PLAT
  PREPARED BY: BENCHMARK ENGINEERING, INC.
  ENTITLED, "DONATION PLAT, STATE OF MARYLAND, DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION, STATE ROADS COMMISSION," DATED: 9/26/2018
- PLAT OF DEDICATION
  PREPARED BY: BOHLER ENGINEERING
  ENTITLED, "PLAT OF DEDICATION FOR ROAD REALIGNMENT OF SHEPPARD LANE, TAX MAP 28, GRID 24, PARCEL 0100, 5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
  DATED: 10/02/2018

UTILITIES:

THE FOLLOWING COMPANIES WERE NOTIFIED BY DELMARVA MISS UTILITY SYSTEM (1-800-257-7777) AND REQUESTED TO MARK OUT UNDERGROUND FACILITIES AFFECTING AND SERVICING THIS SITE. THE UNDERGROUND UTILITY INFORMATION SHOWN HEREON IS BASED UPON THE UTILITY COMPANIES RESPONSE TO THIS REQUEST. SERIAL NUMBER(S): 12499659

UTILITY COMPANY	PHONE NUMBER
VERIZON - LAMBERT CABLE	(410) 536-0070
BGE ELECTRIC-USIC	(800) 778-9140
BGE GAS-USIC	(800) 778-9140
COMCAST- FIBER/UTILIQUEST	(410) 536-0070
HOWARD COUNTY WATER/SEWER	(410) 313-4982
COMCAST/UTILIQUEST	(410) 536-0070
COLONIAL PIPELINE	(678) 762-2403
AT&T TRANSMISSION	(800) 252-1133
QWEST GOVERNMENT SERVICES	(703) 464-7592

SHEET INDEX

MDSHA STANDARD DETAILS NOTE

THE FOLLOWING STANDARDS (CONSTRUCTION AND TEMPORARY TRAFFIC CONTROL) ARE REQUIRED FOR THIS PROJECT:

MD-368.01 -	STANDARD CONCRETE END SECTION ROUND CONCRETE PIPE
MD-606.01 -	TRAFFIC BARRIER W BEAM WITH TYPE A END ANCHORAGE (SINGLE RAIL)
MD-374.62 -	PRECAST OR CAST-IN-PLACE CIRCULAR COG INLETS, 5', 10', 15', & 20'
MD-374.68 -	PRECAST OR CAST-IN-PLACE COG/COS OPENING FOR 8" CURB 5' OR 10' ONLY
MD-378.07 -	STANDARD TYPE K INLET DOUBLE FRAME AND GRATE
MD-387.11 -	LONGITUDINAL UNDERDRAIN LOCATED AT SHOULDER EDGE FOR FLEXIBLE PAVEMENT
MD-387.11.01 -	LONGITUDINAL UNDERDRAIN LOCATED AT CURB AND GUTTER EDGE FOR FLEXIBLE PAVEMENT
MD-605.03 -	TYPE C TRAFFIC BARRIER END TREATMENT
MD-605.10 -	TYPE K TRAFFIC BARRIER END TREATMENT OPTION 1 ANCHORAGE
MD-620.02 -	STANDARD TYPES A AND B CONCRETE CURB AND COMBINATION CONCRETE CURB AND GUTTER
MD-620.03 -	DEPRESSED CURB FOR COMBINATION CURB AND GUTTER AND DEPRESSED CURB FOR SIDEWALK RAMPS
MD-655.12 -	SIDEWALK RAMPS PARALLEL
MD-655.21 -	CUT-THROUGH MEDIAN AND ISLAND OPENINGS
MD-355.40 -	DETECTABLE WARNING SURFACE
MD-104.04-02 -	SHOULDER WORK/DIVIDED UNCON. EQUAL/LESS THAN 40 MPH
MD-104.04-06 -	RIGHT LANE CLOSURE/DIVIDE UNCON. EQUAL/LESS THAN 40 MPH
MD-104.06-09A -	PED AND CURB-LANE CONTROL / MULTILANE UNDIV. SPEED LESS THAN OR EQUAL TO 40 MPH / OVER 12 HRS. OR NIGHTTIME USE

FOR ALL STANDARDS REFERRED TO ON THE PLANS THE CONTRACTOR MUST GO TO THE BOOK OF STANDARDS WHICH WILL HAVE THE MOST CURRENT VERSION. THE BOOK OF STANDARDS CAN BE ACCESSED AT:

http://apps.roads.maryland.gov/businesswithsha/bizstdsspecs/desmanualstdpub/publications
online/ohd/bookstd/index.asp

ALL ITEMS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT VERSION OF THE REFERENCED STANDARD AT THE TIME OF CONSTRUCTION.

BENCH MARKS (NAD83)

HO. CO. NO. 0044 ELEV. 484.477
STAMPED BRASS DISK SET ON TOP OF CONCRETE (3' DEEP) COLUMN
1.3' EAST OF THE EDGE OF PAVEMENT MD ROUTE 108, 1'12" ± NORTH OF BGE #632720, AND 87.5' NORTHEAST PROJECTED WALL LINE OF KENDALL HARDWARE
N 562,176.494' E 1,329,641.911'

HO. CO. NO. 29GC ELEV. 490.714
STAMPED BRASS DISK SET ON TOP OF A 3' DEEP COLUMN OF CONCRETE.
N 565,530.801 E 1,332,248.776

APPROVED: DEPARTMENT OF PUBLIC WORKS	2/6/2019
CHIEF, BUREAU OF HIGHWAYS	DATE
APPROVED: DEPARTMENT OF PLANNING AND ZONING	3-6-19
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION	3/21/19 DATE

STORMWATER MANAGEMENT INFORMATION CHART			
FACILITY NAME & NUMBER	PRACTICE TYPE (QUANTITY)	PUBLIC (SHA)	PUBLIC (COUNTY)
BIORETENTION FACILITY # 1	MDE F-6	√	
GRASS SWALE #1	MDE M-8		√
GRASS SWALE #2	MDE M-8		√

PREVIOUS FILE No. : ECP - 17 - 023
SDP - 18 - 044
WP - 18 - 095

OWNER
STEPHEN A. KLEIN & ASSOCIATES
C/O STEPHEN A. KLEIN, INC.
12165 CLARKSVILLE PIKE
CLARKSVILLE, MD 21029
PHONE: (410) 465-4244

DEVELOPER
RIVER HILL SQUARE, LLC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
CONTACT: STEVE BREEDEN
PHONE: (410) 465-4244

PREPARED BY

BOHLER ENGINEERING™

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com
CONTACT: BRANDON R. ROWE, P.E.

OWNER:	DEVELOPER:
STEPHEN A. KLEIN & ASSOCIATES	RIVER HILL SQUARE, LLC.
C/O STEPHEN A. KLEIN, INC.	P.O. BOX 417
12165 CLARKSVILLE PIKE	ELLICOTT CITY, MARYLAND 21041
CLARKSVILLE, MD 21029	(410) 465-4244
(410) 465-4244	

TAX MAP: 35 GRID: 1 PARCEL: 1 ZONED: B-1 & RC-DEO
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

AS-BUILT

BOHLER™ ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	BY

KNOW WHAT'S BELOW
ALWAYS CALL 811
BEFORE YOU DIG
It's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	AS SHOWN
CAD I.D.:	SD2

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT
LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
1/10/19

SHEET TITLE:
COVER SHEET

SHEET NUMBER:
1

F-18-099

GENERAL NOTES:

CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH THE NOTES AND SPECIFICATIONS CONTAINED HEREIN. CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL SUBCONTRACTORS FULLY AND COMPLETELY CONFORM TO AND COMPLY WITH THESE REQUIREMENTS.

1. THE FOLLOWING DOCUMENTS ARE INCORPORATED BY REFERENCE AS PART OF THIS SITE PLAN: (SEE COVER SHEET)

   PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR MUST VERIFY THAT HE/SHE HAS THE LATEST EDITION OF THE DOCUMENTS REFERENCED ABOVE. THIS IS CONTRACTOR'S RESPONSIBILITY.

2. ALL ACCESSIBLE (A/K/A ADA) PARKING SPACES MUST BE CONSTRUCTED TO MEET, AT A MINIMUM, THE MORE STRINGENT OF THE REQUIREMENTS OF THE "AMERICANS WITH DISABILITIES ACT" (ADA) CODE (42 U.S.C. § 12101 et seq. AND 42 U.S.C. § 4151 et seq.) OR THE REQUIREMENTS OF THE JURISDICTION WHERE THE PROJECT IS TO BE CONSTRUCTED, AND ANY AND ALL AMENDMENTS TO BOTH WHICH ARE IN EFFECT WHEN THESE PLANS ARE COMPLETED.

3. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED THE COMMENTS TO ALL PLANS AND OTHER DOCUMENTS REVIEWED AND APPROVED BY THE PERMITTING AUTHORITIES AND CONFIRMED THAT ALL NECESSARY OR REQUIRED PERMITS HAVE BEEN OBTAINED. CONTRACTOR MUST HAVE COPIES OF ALL PERMITS AND APPROVALS ON SITE AT ALL TIMES.

4. THE OWNER/CONTRACTOR MUST BE FAMILIAR WITH AND RESPONSIBLE FOR THE PROCUREMENT OF ANY AND ALL CERTIFICATIONS REQUIRED FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

5. ALL WORK MUST BE PERFORMED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS AND CONDITIONS OF APPROVAL, AND ALL APPLICABLE REQUIREMENTS, RULES, REGULATIONS, STATUTORY REQUIREMENTS, CODES, LAWS AND STANDARDS OF ALL GOVERNMENTAL ENTITIES WITH JURISDICTION OVER THIS PROJECT.

6. THE GEOTECHNICAL REPORT AND RECOMMENDATIONS SET FORTH HEREIN ARE A PART OF THE REQUIRED CONSTRUCTION DOCUMENTS AND, IN CASE OF CONFLICT, DISCREPANCY OR AMBIGUITY, THE MORE STRINGENT REQUIREMENTS AND/OR RECOMMENDATIONS CONTAINED IN THE PLANS AND THE GEOTECHNICAL REPORT AND RECOMMENDATIONS SHALL TAKE PRECEDENCE UNLESS SPECIFICALLY NOTED OTHERWISE ON THE PLANS. THE CONTRACTOR MUST NOTIFY THE ENGINEER, IN WRITING, OF ANY SUCH CONFLICT, DISCREPANCY OR AMBIGUITY BETWEEN THE GEOTECHNICAL REPORTS AND PLANS AND SPECIFICATIONS PRIOR TO PROCEEDING WITH ANY FURTHER WORK.

7. THESE PLANS ARE BASED ON INFORMATION PROVIDED TO BOHLER ENGINEERING BY THE OWNER AND OTHERS PRIOR TO THE TIME OF PLAN PREPARATION. CONTRACTOR MUST FIELD VERIFY EXISTING CONDITIONS AND NOTIFY BOHLER ENGINEERING, IN WRITING, IMMEDIATELY IF ACTUAL SITE CONDITIONS DIFFER FROM THOSE SHOWN ON THE PLAN, OR IF THE PROPOSED WORK CONFLICTS WITH ANY OTHER SITE FEATURES.

8. ALL DIMENSIONS SHOWN ON THE PLANS MUST BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, IF ANY CONFLICTS, DISCREPANCIES, OR AMBIGUITIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION. NO EXTRA COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR WORK WHICH HAS TO BE REDONE OR REPAIRED DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS PRIOR TO CONTRACTOR GIVING ENGINEER WRITTEN NOTIFICATION OF SAME AND ENGINEER, THEREAFTER, PROVIDING CONTRACTOR WITH WRITTEN AUTHORIZATION TO PROCEED WITH SUCH ADDITIONAL WORK.

9. CONTRACTOR MUST REFER TO THE ARCHITECTURAL/BUILDING PLANS "OF RECORD" FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRY/EXIT POINTS, ELEVATIONS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY LOCATIONS.

10. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR MUST COORDINATE THE BUILDING LAYOUT BY CAREFUL REVIEW OF THE ENTIRE SITE PLAN AND THE LATEST ARCHITECTURAL PLANS (INCLUDING, BUT NOT LIMITED TO, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE SUPPRESSION PLAN, WHERE APPLICABLE). CONTRACTOR MUST IMMEDIATELY NOTIFY OWNER, ARCHITECT AND SITE ENGINEER, IN WRITING, OF ANY CONFLICTS, DISCREPANCIES OR AMBIGUITIES WHICH EXIST.

11. DEBRIS MUST NOT BE BURIED ON THE SUBJECT SITE AND ALL UNSUITABLE EXCAVATED MATERIAL AND DEBRIS (SOLID WASTE) MUST BE DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF ANY AND ALL GOVERNMENTAL AUTHORITIES WHICH HAVE JURISDICTION OVER THIS PROJECT OR OVER CONTRACTOR.

12. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING WHEN SHORING IS REQUIRED AND FOR INSTALLING ALL SHORING REQUIRED DURING EXCAVATION (TO BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS) AND ANY ADDITIONAL PRECAUTIONS TO BE TAKEN TO ASSURE THE STABILITY OF ADJACENT, NEARBY AND CONTIGUOUS STRUCTURES AND PROPERTIES.

13. THE CONTRACTOR IS TO EXERCISE EXTREME CARE WHEN PERFORMING ANY WORK ACTIVITIES ADJACENT TO PAVEMENT, STRUCTURES, ETC. WHICH ARE TO REMAIN EITHER FOR AN INITIAL PHASE OF THE PROJECT OR AS PART OF THE FINAL CONDITION. CONTRACTOR IS RESPONSIBLE FOR TAKING ALL APPROPRIATE MEASURES REQUIRED TO ENSURE THE STRUCTURAL STABILITY OF SIDEWALKS AND PAVEMENT, UTILITIES, BUILDINGS, AND INFRASTRUCTURE WHICH ARE TO REMAIN, AND TO PROVIDE A SAFE WORK AREA FOR THIRD PARTIES, PEDESTRIANS AND ANYONE INVOLVED WITH THE PROJECT.

14. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE DONE TO ANY NEW OR EXISTING CONSTRUCTION OR PROPERTY DURING THE COURSE OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURB, ETC. AND SHALL BEAR ALL COSTS ASSOCIATED WITH SAME TO INCLUDE, BUT NOT BE LIMITED TO, REDESIGN, RE-SURVEY, RE-PERMITTING AND CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR AND MUST REPLACE ALL SIGNAL INTERCONNECTION CABLE, WIRING CONDUITS, AND ANY UNDERGROUND ACCESSORY EQUIPMENT DAMAGED DURING CONSTRUCTION AND MUST BEAR ALL COSTS ASSOCIATED WITH SAME. THE REPAIR OF ANY SUCH NEW OR EXISTING CONSTRUCTION OR PROPERTY MUST RESTORE SUCH CONSTRUCTION OR PROPERTY TO A CONDITION EQUIVALENT TO OR BETTER THAN THE CONDITIONS PRIOR TO COMMENCEMENT OF THE CONSTRUCTION, AND IN CONFORMANCE WITH APPLICABLE CODES, LAWS RULES, REGULATIONS, STATUTORY REQUIREMENTS AND STATUTES. CONTRACTOR MUST BEAR ALL COSTS ASSOCIATED WITH SAME. CONTRACTOR IS RESPONSIBLE TO DOCUMENT ALL EXISTING DAMAGE AND TO NOTIFY THE OWNER AND THE CONSTRUCTION MANAGER PRIOR TO THE START OF CONSTRUCTION.

15. ALL CONCRETE MUST BE AIR ENTRAINED AND HAVE THE MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS UNLESS OTHERWISE NOTED ON THE PLANS, DETAILS AND/OR GEOTECHNICAL REPORT.

16. THE ENGINEER IS NOT RESPONSIBLE FOR CONSTRUCTION METHODS, MEANS, TECHNIQUES OR PROCEDURES, GENERALLY OR FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES OR PROCEDURES FOR COMPLETION OF THE WORK DEPICTED BOTH ON THESE PLANS, AND FOR ANY CONFLICTS/SCOPE REVISIONS WHICH RESULT FROM SAME. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE METHODS/MEANS FOR COMPLETION OF THE WORK PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

17. THE ENGINEER OF RECORD IS NOT RESPONSIBLE FOR JOB SITE SAFETY. THE ENGINEER OF RECORD HAS NOT BEEN RETAINED TO PERFORM OR BE RESPONSIBLE FOR JOB SITE SAFETY, SAME BEING WHOLLY OUTSIDE OF ENGINEER'S SERVICES AS RELATED TO THE PROJECT. THE ENGINEER OF RECORD IS NOT RESPONSIBLE TO IDENTIFY OR REPORT ANY JOB SITE SAFETY ISSUES, AT ANY TIME.

18. ALL CONTRACTORS MUST CARRY THE SPECIFIED STATUTORY WORKER'S COMPENSATION INSURANCE, EMPLOYER'S LIABILITY INSURANCE AND LIMITS OF COMMERCIAL GENERAL LIABILITY INSURANCE (CGL). ALL CONTRACTORS MUST HAVE THEIR CGL POLICIES ENDORSED TO NAME BOHLER ENGINEERING, AND ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AS ADDITIONAL NAMED INSURED AND TO PROVIDE CONTRACTUAL LIABILITY COVERAGE SUFFICIENT TO INSURE THIS HOLD HARMLESS AND INDEMNITY OBLIGATIONS ASSUMED BY THE CONTRACTORS. ALL CONTRACTORS MUST FURNISH BOHLER ENGINEERING WITH CERTIFICATIONS OF INSURANCE AS EVIDENCE OF THE REQUIRED INSURANCE PRIOR TO COMMENCING WORK AND UPON RENEWAL OF EACH POLICY DURING THE ENTIRE PERIOD OF CONSTRUCTION AND FOR ONE YEAR AFTER THE COMPLETION OF CONSTRUCTION. IN ADDITION, ALL CONTRACTORS WILL, TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, INDEMNIFY, DEFEND AND HOLD HARMLESS BOHLER ENGINEERING AND ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS FROM AND AGAINST ANY DAMAGES, INJURIES, CLAIMS, ACTIONS, PENALTIES, EXPENSES, PUNITIVE DAMAGES, TORT DAMAGES, STATUTORY CLAIMS, STATUTORY CAUSES OF ACTION, LOSSES, CAUSES OF ACTION, LIABILITIES OR COSTS, INCLUDING, BUT NOT LIMITED TO, REASONABLE ATTORNEYS' FEES AND DEFENSE COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH OR TO THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTORS, ALL CLAIMS BY THIRD PARTIES AND ALL CLAIMS RELATED TO THE PROJECT. CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, AT LEAST THIRTY (30) DAYS PRIOR TO ANY TERMINATION, SUSPENSION OR CHANGE OF ITS INSURANCE HEREUNDER.

19. BOHLER ENGINEERING WILL REVIEW OR TAKE OTHER APPROPRIATE ACTION ON THE CONTRACTOR SUBMITTALS, SUCH AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND OTHER DATA, WHICH THE CONTRACTOR IS REQUIRED TO SUBMIT, BUT ONLY FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH THE DESIGN INTENT AND THE INFORMATION SHOWN IN THE CONSTRUCTION CONTRACT DOCUMENTS. CONSTRUCTION MEANS AND/OR METHODS AND/OR TECHNIQUES OR PROCEDURES, COORDINATION OF THE WORK WITH OTHER TRADES, AND CONSTRUCTION SAFETY PRECAUTIONS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND BOHLER HAS NO RESPONSIBILITY OR LIABILITY FOR SAME HEREUNDER. BOHLER ENGINEERING'S SHOP DRAWING REVIEW WILL BE CONDUCTED WITH REASONABLE PROMPTNESS WHILE ALLOWING SUFFICIENT TIME TO PERMIT ADEQUATE REVIEW. REVIEW OF A SPECIFIC ITEM MUST NOT INDICATE THAT BOHLER ENGINEERING HAS REVIEWED THE ENTIRE ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. BOHLER ENGINEERING WILL NOT BE RESPONSIBLE FOR ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS NOT PROMPTLY AND IMMEDIATELY BROUGHT TO ITS ATTENTION, IN WRITING, BY THE CONTRACTOR. BOHLER ENGINEERING WILL NOT BE REQUIRED TO REVIEW PARTIAL SUBMISSIONS OR THOSE FOR WHICH SUBMISSIONS OF CORRELATED ITEMS HAVE NOT BEEN RECEIVED.

20. NEITHER THE PROFESSIONAL ACTIVITIES OF BOHLER ENGINEERING, NOR THE PRESENCE OF BOHLER ENGINEERING AND/OR ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AT A CONSTRUCTION/PROJECT SITE, SHALL RELIEVE THE GENERAL CONTRACTOR OF ITS OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, OVERSEEING, SUPERINTENDING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND COMPLIANCE ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES WITH JURISDICTION OVER THE PROJECT AND/OR PROPERTY. BOHLER ENGINEERING AND ITS PERSONNEL HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER ANY CONSTRUCTION CONTRACTOR OR ITS EMPLOYEES IN CONNECTION WITH THEIR WORK OR ANY HEALTH OR SAFETY PROGRAMS OR PROCEDURES. THE GENERAL CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SITE SAFETY. BOHLER ENGINEERING SHALL BE INDEMNIFIED BY THE GENERAL CONTRACTOR AND MUST BE NAMED AN ADDITIONAL INSURED UNDER THE GENERAL CONTRACTOR'S POLICIES OF GENERAL LIABILITY INSURANCE AS DESCRIBED ABOVE IN NOTE 19 FOR JOB SITE SAFETY.

21. IF THE CONTRACTOR DEVIATES FROM THE PLANS AND SPECIFICATIONS, INCLUDING THE NOTES CONTAINED HEREIN, WITHOUT FIRST OBTAINING THE PRIOR WRITTEN AUTHORIZATION OF THE ENGINEER FOR SUCH DEVIATIONS, THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PAYMENT OF ALL COSTS INCURRED IN CORRECTING ANY WORK DONE WHICH DEVIATES FROM THE PLANS, ALL FINES AND/OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM AND, FURTHER, SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS THE ENGINEER, TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, IN ACCORDANCE WITH PARAGRAPH 19 HEREIN, FOR AND FROM ALL FEES, ATTORNEYS' FEES, DAMAGES, COSTS, JUDGMENTS, PENALTIES AND THE LIKE RELATED TO SAME.

22. CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE AND PROTECTION OF TRAFFIC PLAN FOR ALL WORK THAT AFFECTS PUBLIC TRAVEL EITHER IN THE R.O.W. OR ON SITE. THE COST FOR THIS ITEM MUST BE INCLUDED IN THE CONTRACTOR'S PRICE.

23. ALL SIGNING AND PAVEMENT STRIPING MUST CONFORM TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES OR LOCALLY APPROVED SUPPLEMENT.

24. ENGINEER IS NOT RESPONSIBLE FOR ANY INJURY OR DAMAGES RESULTING FROM CONTRACTOR'S FAILURE TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH THE APPROVED PLANS. IF CONTRACTOR AND/OR OWNER FAIL BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH APPROVED PLANS, THEY AGREE TO JOINTLY AND SEVERALLY INDEMNIFY AND HOLD ENGINEER HARMLESS FOR ALL INJURIES AND DAMAGES THAT ENGINEER SUFFERS AND COSTS THAT ENGINEER INCURS.

25. OWNER MUST MAINTAIN AND PRESERVE ALL PHYSICAL SITE FEATURES AND DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS, IN STRICT ACCORDANCE WITH THE APPROVED PLAN(S) AND DESIGN AND, FURTHER ENGINEER IS NOT RESPONSIBLE FOR ANY FAILURE TO SO MAINTAIN OR PRESERVE SITE AND/OR DESIGN FEATURES. IF OWNER FAILS TO MAINTAIN AND/OR PRESERVE ALL PHYSICAL SITE FEATURES AND/OR DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS, OWNER AGREES TO INDEMNIFY AND HOLD ENGINEER HARMLESS FOR ALL INJURIES AND DAMAGES THAT ENGINEER SUFFERS AND COSTS THAT ENGINEER INCURS AS A RESULT OF SAID FAILURE.

26. ALL DIMENSIONS MUST BE TO FACE OF CURB, EDGE OF PAVEMENT, OR EDGE OF BUILDING, UNLESS NOTED OTHERWISE.

27. ALL CONSTRUCTION AND MATERIALS MUST COMPLY WITH AND CONFORM TO APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, LAWS, ORDINANCES, RULES AND CODES, AND ALL APPLICABLE OSHA REQUIREMENTS.

28. CONTRACTOR AND OWNER MUST INSTALL ALL ELEMENTS AND COMPONENTS IN STRICT COMPLIANCE WITH AND ACCORDANCE WITH MANUFACTURER'S STANDARDS AND RECOMMENDED INSTALLATION CRITERIA AND SPECIFICATIONS. IF CONTRACTOR AND/OR OWNER FAIL TO DO SO, THEY AGREE TO JOINTLY AND SEVERALLY INDEMNIFY AND HOLD ENGINEER HARMLESS FOR ALL INJURIES AND DAMAGES THAT ENGINEER SUFFERS AND COSTS THAT ENGINEER INCURS AS A RESULT OF SAID FAILURE.

29. CONTRACTOR IS RESPONSIBLE TO MAINTAIN ON-SITE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IN COMPLIANCE WITH EPA REQUIREMENTS FOR SITES WHERE ONE (1) ACRE OR MORE (UNLESS THE LOCAL JURISDICTION REQUIRES FEWER) IS DISTURBED BY CONSTRUCTION ACTIVITIES. CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL ACTIVITIES, INCLUDING THOSE OF SUBCONTRACTORS, ARE IN COMPLIANCE WITH THE SWPPP, INCLUDING BUT NOT LIMITED TO LOGGING ACTIVITIES (MINIMUM ONCE PER WEEK AND AFTER RAINFALL EVENTS) AND CORRECTIVE MEASURES, AS APPROPRIATE.

30. AS CONTAINED IN THESE DRAWINGS AND ASSOCIATED APPLICATION DOCUMENTS PREPARED BY THE SIGNATORY PROFESSIONAL ENGINEER, THE USE OF THE WORDS CERTIFY OR CERTIFICATION CONSTITUTES AN EXPRESSION OF "PROFESSIONAL OPINION" REGARDING THE INFORMATION WHICH IS THE SUBJECT OF THE UNDERSIGNED PROFESSIONAL KNOWLEDGE OR BELIEF AND IN ACCORDANCE WITH COMMON ACCEPTED PROCEDURE CONSISTENT WITH THE APPLICABLE STANDARDS OF PRACTICE, AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EITHER EXPRESSED OR IMPLIED.

ADA INSTRUCTIONS TO CONTRACTOR

CONTRACTORS SHALL EXERCISE APPROPRIATE CARE AND PRECISION IN CONSTRUCTION OF ADA (HANDICAP) ACCESSIBLE COMPONENTS AND ACCESS ROUTES FOR THE SITE. THESE COMPONENTS, AS CONSTRUCTED, MUST COMPLY WITH THE CURRENT ADA STANDARDS AND REGULATIONS' BARRIER FREE ACCESS AND ANY MODIFICATIONS, REVISIONS OR UPDATES TO SAME. FINISHED SURFACES ALONG THE ACCESSIBLE ROUTE OF TRAVEL FROM PARKING SPACE, PUBLIC TRANSPORTATION, PEDESTRIAN ACCESS, INTER-BUILDING ACCESS, TO POINTS OF ACCESSIBLE BUILDING ENTRANCE/EXIT, MUST COMPLY WITH THESE ADA CODE REQUIREMENTS. THESE INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

- PARKING SPACES AND PARKING AISLES - SLOPE SHALL NOT EXCEED 1:50 (2.0%) IN ANY DIRECTION.
- CURB RAMPS - SLOPE SHALL NOT EXCEED 1:12 (8.3%).
- LANDINGS - SHALL BE PROVIDED AT EACH END OF RAMPS, MUST PROVIDE POSITIVE DRAINAGE, AND MUST NOT EXCEED 1:50 (2.0%) IN ANY DIRECTION.
- PATH OF TRAVEL ALONG ACCESSIBLE ROUTE - MUST PROVIDE A 36-INCH OR GREATER UNOBSTRUCTED WIDTH OF TRAVEL (CAR OVERHANGS AND/OR HANDRAILS CANNOT REDUCE THIS MINIMUM WIDTH). THE SLOPE MUST BE NO GREATER THAN 1:20 (5.0%) IN THE DIRECTION OF TRAVEL, AND MUST NOT EXCEED 1:50 (2.0%) IN CROSS SLOPE. WHERE PATH OF TRAVEL WILL BE GREATER THAN 1:20 (5.0%), ADA RAMP REQUIREMENTS MUST BE ADHERED TO. A MAXIMUM SLOPE OF 1:12 (8.3%), FOR A MAXIMUM RISE OF 2.5 FEET, SHALL BE PROVIDED. THE RAMP MUST HAVE ADA HAND RAILS AND LEVEL LANDINGS ON EACH END THAT ARE CROSS SLOPED NO MORE THAN 1:50 IN ANY DIRECTION (2.0%) FOR POSITIVE DRAINAGE.
- DOORWAYS - MUST HAVE A "LEVEL" LANDING AREA ON THE EXTERIOR SIDE OF THE DOOR THAT IS SLOPED AWAY FROM THE DOOR NO MORE THAN 1:50 (2.0%) FOR POSITIVE DRAINAGE. THIS LANDING AREA MUST BE NO LESS THAN 60 INCHES (5 FEET) LONG, EXCEPT WHERE OTHERWISE PERMITTED BY ADA STANDARDS FOR ALTERNATIVE DOORWAY OPENING CONDITIONS. (SEE ICC/ANSI A117.1-2009 AND OTHER REFERENCED INCORPORATED BY COD.)
- WHEN THE PROPOSED CONSTRUCTION INVOLVES RECONSTRUCTION, MODIFICATION, REVISION OR EXTENSION OF OR TO ADA COMPONENTS FROM EXISTING DOORWAYS OR SURFACES, CONTRACTOR MUST VERIFY EXISTING ELEVATIONS SHOWN ON THE PLAN. NOTE THAT TABLE 405.2 OF THE DEPARTMENT OF JUSTICE'S ADA STANDARDS FOR ACCESSIBLE DESIGN ALLOWS FOR STEEPER RAMP SLOPES, IN RARE CIRCUMSTANCES. THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES AND/OR FIELD CONDITIONS THAT DIFFER IN ANY WAY OR ANY RESPECT FROM WHAT IS SHOWN ON THE PLANS, IN WRITING, BEFORE COMMENCEMENT OF WORK. CONSTRUCTED IMPROVEMENTS MUST FALL WITHIN THE MAXIMUM AND MINIMUM LIMITATIONS IMPOSED BY THE BARRIER FREE REGULATIONS AND THE ADA REQUIREMENTS.
- THE CONTRACTOR MUST VERIFY THE SLOPES OF CONTRACTOR'S FORMS PRIOR TO POURING CONCRETE. IF ANY NON-CONFORMANCE IS OBSERVED OR EXISTS, CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER PRIOR TO POURING CONCRETE. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS TO REMOVE, REPAIR AND REPLACE NON-CONFORMING CONCRETE.

IT IS STRONGLY RECOMMENDED THAT THE CONTRACTOR REVIEW THE INTENDED CONSTRUCTION WITH THE LOCAL BUILDING CODE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

GENERAL DEMOLITION NOTES:

1. THIS PLAN REFERENCES DOCUMENTS AND INFORMATION BY: (SEE COVER SHEET)
2. CONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, (29 U.S.C. 651 et seq.), AS AMENDED AND ANY MODIFICATIONS, AMENDMENTS OR REVISIONS TO SAME.
3. BOHLER ENGINEERING HAS NO CONTRACTUAL, LEGAL, OR OTHER RESPONSIBILITY FOR JOB SITE SAFETY OR JOB SITE SUPERVISION, OR ANYTHING RELATED TO SAME.
4. THE DEMOLITION PLAN IS INTENDED TO PROVIDE GENERAL INFORMATION, ONLY, REGARDING ITEMS TO BE DEMOLISHED AND/OR REMOVED. THE CONTRACTOR MUST ALSO REVIEW THE OTHER SITE PLAN DRAWINGS AND INCLUDE IN DEMOLITION ACTIVITIES ALL INCIDENTAL WORK NECESSARY FOR THE CONSTRUCTION OF THE NEW SITE IMPROVEMENTS.
5. CONTRACTOR MUST RAISE ANY QUESTIONS CONCERNING THE ACCURACY OR INTENT OF THESE PLANS OR SPECIFICATIONS, CONCERNS REGARDING THE APPLICABLE SAFETY STANDARDS, OR THE SAFETY OF THE CONTRACTOR OR THIRD PARTIES IN PERFORMING THE WORK ON THIS PROJECT, WITH BOHLER ENGINEERING, IN WRITING, AND RESPONDED TO BY BOHLER, IN WRITING, PRIOR TO THE INITIATION OF ANY SITE ACTIVITY AND ANY DEMOLITION ACTIVITY. ALL DEMOLITION ACTIVITIES MUST BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THESE PLANS AND SPECIFICATIONS AND ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, RULES, REQUIREMENTS, STATUTES, ORDINANCES AND CODES.
6. PRIOR TO STARTING ANY DEMOLITION, CONTRACTOR IS RESPONSIBLE FOR/TO:

   A. OBTAINING ALL REQUIRED PERMITS AND MAINTAINING THE SAME ON SITE FOR REVIEW BY THE ENGINEER AND OTHER PUBLIC AGENCIES HAVING JURISDICTION THROUGHOUT THE DURATION OF THE PROJECT, SITE WORK AND DEMOLITION WORK.

GENERAL GRADING & UTILITY NOTES

1. LOCATIONS OF ALL EXISTING AND PROPOSED SERVICES ARE APPROXIMATE AND MUST BE INDEPENDENTLY CONFIRMED WITH LOCAL UTILITY COMPANIES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION OR EXCAVATION. SANITARY SEWER AND ALL OTHER UTILITY SERVICE CONNECTION POINTS MUST BE INDEPENDENTLY CONFIRMED BY THE CONTRACTOR IN THE FIELD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ALL DISCREPANCIES MUST IMMEDIATELY BE REPORTED, IN WRITING, TO THE ENGINEER. CONSTRUCTION MUST COMMENCE BEGINNING AT THE LOWEST INVERT (POINT OF CONNECTION) AND PROGRESS UP GRADIENT. PROPOSED INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND UTILITIES SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. CONTRACTOR MUST VERTICALLY AND HORIZONTALLY LOCATE ALL UTILITIES AND SERVICES INCLUDING, BUT NOT LIMITED TO, GAS, WATER, ELECTRIC, SANITARY AND STORM SEWER, TELEPHONE, CABLE, FIBER OPTIC CABLE, ETC. WITHIN THE LIMITS OF DISTURBANCE OR WORK SPACE, WHICHEVER IS GREATER. THE CONTRACTOR MUST USE, REFER TO, AND COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE UTILITY NOTIFICATION SYSTEM TO LOCATE ALL THE UNDERGROUND UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL DAMAGE TO ANY EXISTING UTILITIES DURING CONSTRUCTION, AT NO COST TO THE OWNER. CONTRACTOR SHALL BEAR ALL COSTS ASSOCIATED WITH DAMAGE TO ANY EXISTING UTILITIES DURING CONSTRUCTION.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL CONSTRUCTION CONTRACT DOCUMENTS INCLUDING, BUT NOT LIMITED TO, ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THE PROJECT WORK SCOPE PRIOR TO THE INITIATION AND COMMENCEMENT OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT AND/OR DISCREPANCY BETWEEN THE DOCUMENTS RELATIVE TO THE SPECIFICATIONS OR THE RELATIVE OR APPLICABLE CODES, REGULATIONS, LAWS, RULES, STATUTES AND/OR ORDINANCES, IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD, IN WRITING, OF SAID CONFLICT AND/OR DISCREPANCY PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR'S FAILURE TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE CONTRACTOR'S FULL AND COMPLETE ACCEPTANCE OF ALL RESPONSIBILITY TO COMPLETE THE SCOPE OF WORK AS DEFINED BY THE DRAWINGS AND IN FULL COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS, LAWS, STATUTES, ORDINANCES AND CODES AND, FURTHER, CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH SAME.
4. THE CONTRACTOR MUST LOCATE AND CLEARLY AND UNAMBIGUOUSLY DEFINE VERTICALLY AND HORIZONTALLY ALL ACTIVE AND INACTIVE UTILITY AND/OR SERVICE SYSTEMS THAT ARE TO BE REMOVED. THE CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN ALL ACTIVE AND INACTIVE SYSTEMS THAT ARE NOT BEING REMOVED/RELOCATED DURING SITE ACTIVITY.
5. THE CONTRACTOR MUST FAMILIARIZE ITSELF WITH THE APPLICABLE UTILITY SERVICE PROVIDER REQUIREMENTS AND IS RESPONSIBLE FOR ALL COORDINATION REGARDING UTILITY DEMOLITION AS IDENTIFIED OR REQUIRED FOR THE PROJECT. THE CONTRACTOR MUST PROVIDE THE OWNER WITH WRITTEN NOTIFICATION THAT THE EXISTING UTILITIES AND SERVICES HAVE BEEN TERMINATED AND ABANDONED IN ACCORDANCE WITH THE JURISDICTION AND UTILITY COMPANY REQUIREMENTS AND ALL OTHER APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES.
6. THE CONTRACTOR MUST INSTALL ALL STORM SEWER AND SANITARY SEWER COMPONENTS WHICH FUNCTION BY GRAVITY PRIOR TO THE INSTALLATION OF ALL OTHER UTILITIES.
7. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF SITE PLAN DOCUMENTS AND ARCHITECTURAL DESIGN FOR EXACT BUILDING UTILITY CONNECTION LOCATIONS, GREASE TRAP REQUIREMENTS/DETAILS, DOOR ACCESS, AND EXTERIOR GRADING. THE ARCHITECT WILL DETERMINE THE UTILITY SERVICE SIZES. THE CONTRACTOR MUST COORDINATE INSTALLATION OF UTILITIES/SERVICES WITH THE INDIVIDUAL COMPANIES, TO AVOID CONFLICTS AND TO ENSURE THAT PROPER DEPTHS ARE ACHIEVED. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT INSTALLATION OF ALL IMPROVEMENTS COMPLIES WITH ALL UTILITY REQUIREMENTS WITH JURISDICTION AND/OR CONTROL OF THE SITE, AND ALL OTHER APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES AND, FURTHER, IS RESPONSIBLE FOR COORDINATING THE UTILITY TIE-INS/CONNECTIONS PRIOR TO CONNECTING TO THE EXISTING UTILITY/SERVICE. WHERE A CONFLICT(S) EXISTS BETWEEN THESE SITE PLANS AND THE ARCHITECTURAL PLANS, OR WHERE ARCHITECTURAL PLAN UTILITY CONNECTION POINTS DIFFER, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER, IN WRITING, AND PRIOR TO CONSTRUCTION, RESOLVE SAME.
8. WATER SERVICE MATERIALS, BURIAL DEPTH, AND COVER REQUIREMENTS MUST BE SPECIFIED BY THE LOCAL UTILITY COMPANY. CONTRACTOR'S PRICE FOR WATER SERVICE MUST INCLUDE ALL FEES, COSTS AND APPURTENANCES REQUIRED BY THE UTILITY TO PROVIDE FULL AND COMPLETE WORKING SERVICE. CONTRACTOR MUST CONTACT THE APPLICABLE MUNICIPALITY TO CONFIRM THE PROPER WATER METER AND VAULT, PRIOR TO COMMENCING CONSTRUCTION.
9. ALL NEW UTILITIES/SERVICES, INCLUDING ELECTRIC, TELEPHONE, CABLE TV, ETC. ARE TO BE INSTALLED UNDERGROUND. ALL NEW UTILITIES/SERVICES MUST BE INSTALLED IN ACCORDANCE WITH THE UTILITY/SERVICE PROVIDER INSTALLATION SPECIFICATIONS AND STANDARDS.
10. SITE GRADING MUST BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT REFERENCED IN THIS PLAN SET. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REPLACING UNSUITABLE MATERIALS WITH SUITABLE MATERIALS AS SPECIFIED IN THE GEOTECHNICAL REPORT. ALL EXCAVATED OR FILLED AREAS MUST BE COMPACTED AS OUTLINED IN THE GEOTECHNICAL REPORT. MOISTURE CONTENT AT TIME OF PLACEMENT MUST BE SUBMITTED IN A COMPACTION REPORT PREPARED BY A QUALIFIED GEOTECHNICAL ENGINEER, REGISTERED WITH THE STATE WHERE THE WORK IS PERFORMED, VERIFYING THAT ALL FILLED AREAS AND SUBGRADE AREAS WITHIN THE BUILDING PAD AREA AND AREAS TO BE PAVED HAVE BEEN COMPACTED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT AND ALL APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES. SUBBASE MATERIAL FOR SIDEWALKS, CURB, OR ASPHALT MUST BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIALS. SHOULD SUBBASE BE DEEMED UNSUITABLE BY OWNER/DEVELOPER, OR OWNER/DEVELOPER'S REPRESENTATIVE, SUBBASE IS TO BE REMOVED AND FILLED WITH APPROVED FILL MATERIAL COMPACTED AS DIRECTED BY THE GEOTECHNICAL REPORT. EARTHWORK ACTIVITIES INCLUDING, BUT NOT LIMITED TO, EXCAVATION, BACKFILL, AND COMPACTING MUST COMPLY WITH THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT AND ALL APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES. EARTHWORK ACTIVITIES MUST COMPLY WITH THE STANDARD STATE DOT SPECIFICATIONS FOR ROADWAY CONSTRUCTION (LATEST EDITION) AND ANY AMENDMENTS OR REVISIONS THERETO.
11. ALL FILL, COMPACTION, AND BACKFILL MATERIALS REQUIRED FOR UTILITY INSTALLATION MUST BE AS PER THE RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT AND MUST BE COORDINATED WITH THE APPLICABLE UTILITY COMPANY SPECIFICATIONS. WHEN THE PROJECT DOES NOT HAVE GEOTECHNICAL RECOMMENDATIONS, FILL AND COMPACTION MUST, AT A MINIMUM, COMPLY WITH THE STATE DOT REQUIREMENTS AND SPECIFICATIONS AND CONSULTANT SHALL HAVE NO LIABILITY OR RESPONSIBILITY FOR OR AS RELATED TO FILL, COMPACTION AND BACKFILL. FURTHER, CONTRACTOR IS FULLY RESPONSIBLE FOR EARTHWORK BALANCE.
12. THE CONTRACTOR MUST COMPLY, TO THE FULLEST EXTENT, WITH THE LATEST OSHA STANDARDS AND REGULATIONS, AND/OR ANY OTHER AGENCY WITH JURISDICTION FOR EXCAVATION AND TRENCHING PROCEDURES. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE "MEANS AND METHODS" REQUIRED TO MEET THE INTENT AND PERFORMANCE CRITERIA OF OSHA, AS WELL AS ANY OTHER ENTITY THAT HAS JURISDICTION FOR EXCAVATION AND/OR TRENCHING PROCEDURES AND CONSULTANT SHALL HAVE NO RESPONSIBILITY FOR OR AS RELATED FOR OR AS RELATED TO EXCAVATION AND TRENCHING PROCEDURES.
13. PAVEMENT MUST BE SAW CUT IN STRAIGHT LINES, AND EXCEPT FOR EDGE OF BUTT JOINTS, MUST EXTEND TO THE FULL DEPTH OF THE EXISTING PAVEMENT. ALL DEBRIS FROM REMOVAL OPERATIONS MUST BE REMOVED FROM THE SITE AT THE TIME OF EXCAVATION. STOCKPILING OF DEBRIS WILL NOT BE PERMITTED.
14. THE TOPS OF EXISTING MANHOLES, INLET STRUCTURES, AND SANITARY CLEANOUT TOPS MUST BE ADJUSTED, AS NECESSARY, TO MATCH PROPOSED GRADES IN ACCORDANCE WITH ALL APPLICABLE STANDARDS, REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES.
15. DURING THE INSTALLATION OF SANITARY SEWER, STORM SEWER, AND ALL UTILITIES, THE CONTRACTOR MUST MAINTAIN A CONTEMPORANEOUS AND THOROUGH RECORD OF CONSTRUCTION TO IDENTIFY THE AS-INSTALLED LOCATIONS OF ALL UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR MUST CAREFULLY NOTE ANY INSTALLATIONS THAT DEVIATE FROM THE INFORMATION CONTAINED IN THE UTILITY PLAN. THIS RECORD MUST BE KEPT ON A CLEAN COPY OF THE SITE PLAN, WHICH CONTRACTOR MUST PROMPTLY PROVIDE TO THE OWNER AT THE COMPLETION OF WORK.
16. WHEN THE SITE IMPROVEMENT PLANS INVOLVE MULTIPLE BUILDINGS, SOME OF WHICH MAY BE BUILT AT A LATER DATE, THE CONTRACTOR MUST EXTEND ALL LINES, INCLUDING BUT NOT LIMITED TO STORM SEWER, SANITARY SEWER, UTILITIES, AND IRRIGATION LINE, TO A POINT AT LEAST FIVE (5) FEET BEYOND THE PAVED AREAS FOR WHICH THE CONTRACTOR IS RESPONSIBLE. CONTRACTOR MUST CAP ENDS AS APPROPRIATE, MARK LOCATIONS WITH A 2X4, AND MUST NOTE THE LOCATION OF ALL OF THE ABOVE ON A CLEAN COPY OF THE SITE PLAN, WHICH CONTRACTOR MUST PROMPTLY PROVIDE TO THE OWNER UPON COMPLETION OF THE WORK.
17. THE CONTRACTOR IS FULLY RESPONSIBLE FOR VERIFICATION OF EXISTING TOPOGRAPHIC INFORMATION AND UTILITY INVERT ELEVATIONS PRIOR TO COMMENCING ANY CONSTRUCTION. CONTRACTOR MUST CONFIRM AND ENSURE 0.75% MINIMUM SLOPE AGAINST ALL ISLANDS, GUTTERS, AND CURBS; 1.0% ON ALL CONCRETE SURFACES; AND 1.5% MINIMUM ON ASPHALT (EXCEPT WHERE ADA REQUIREMENTS LIMIT GRADES), TO PREVENT PONDING. CONTRACTOR MUST IMMEDIATELY IDENTIFY, IN WRITING TO THE ENGINEER, ANY DISCREPANCIES THAT MAY OR COULD AFFECT THE PUBLIC SAFETY, HEALTH OR GENERAL WELFARE, OR PROJECT COST. IF CONTRACTOR PROCEEDS WITH CONSTRUCTION WITHOUT PROVIDING PROPER NOTIFICATION, MUST BE AT THE CONTRACTOR'S OWN RISK AND, FURTHER, CONTRACTOR SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS THE DESIGN ENGINEER FOR ANY DAMAGES, COSTS, INJURIES, ATTORNEY'S FEES AND THE LIKE WHICH RESULT FROM SAME.
18. PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 6" ABOVE EXISTING LOCAL ASPHALT GRADE UNLESS OTHERWISE NOTED. FIELD ADJUST TO CREATE A MINIMUM OF 0.75% GUTTER GRADE ALONG CURB FACE. IT IS CONTRACTOR'S OBLIGATION TO ENSURE THAT DESIGN ENGINEER APPROVES FINAL CURBING CUT SHEETS PRIOR TO INSTALLATION OF SAME.
19. REFER TO SITE PLAN FOR ADDITIONAL NOTES.
20. IN THE EVENT OF DISCREPANCIES AND/OR CONFLICTS BETWEEN PLANS OR RELATIVE TO OTHER PLANS, THE SITE PLAN WILL TAKE PRECEDENCE AND CONTROL. CONTRACTOR MUST IMMEDIATELY NOTIFY THE DESIGN ENGINEER, IN WRITING, OF ANY DISCREPANCIES AND/OR CONFLICTS.
21. CONTRACTOR IS REQUIRED TO SECURE ALL NECESSARY AND/OR REQUIRED PERMITS AND APPROVALS FOR ALL OFF SITE MATERIAL SOURCES AND DISPOSAL FACILITIES. CONTRACTOR MUST SUPPLY A COPY OF APPROVALS TO ENGINEER AND OWNER PRIOR TO INITIATING WORK.
22. WHERE RETAINING WALLS (WHETHER OR NOT THEY MEET THE JURISDICTIONAL DEFINITION) ARE IDENTIFIED ON PLANS, ELEVATIONS IDENTIFIED ARE FOR THE EXPOSED PORTION OF THE WALL. WALL FOOTINGS/FOUNDATION ELEVATIONS ARE NOT IDENTIFIED HEREIN AND ARE TO BE SET/DETERMINED BY THE CONTRACTOR BASED ON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSEE IN THE STATE WHERE THE CONSTRUCTION OCCURS.
23. STORM DRAINAGE PIPE:

    UNLESS INDICATED OTHERWISE, ALL STORM SEWER PIPE MUST BE REINFORCED CONCRETE PIPE (RCP) CLASS III WITH SILT TIGHT JOINTS. WHEN HIGH-DENSITY POLYETHYLENE PIPE (HDPE) IS CALLED FOR ON THE PLANS, IT MUST CONFORM TO AASHTO M294 AND TYPE S (SMOOTH INTERIOR WITH ANGULAR CORRUGATIONS) WITH GASKET FOR SILT TIGHT JOINT. PVC PIPE FOR ROOF DRAIN CONNECTION MUST BE SDR 26 OR SCHEDULE 40 UNLESS INDICATED OTHERWISE.
24. SANITARY SEWER PIPE MUST BE POLYVINYL CHLORIDE (PVC) SDR 35 EXCEPT WHERE INDICATED OTHERWISE. SANITARY LATERAL MUST BE PVC SCHEDULE 40 OR PVC SDR 26 UNLESS INDICATED, IN WRITING, OTHERWISE.
25. STORM AND SANITARY SEWER PIPE LENGTHS INDICATED ARE NOMINAL AND MEASURED CENTER OF INLET AND/OR MANHOLES STRUCTURE TO CENTER OF STRUCTURE.
26. STORMWATER ROOF DRAIN LOCATIONS ARE BASED ON PRELIMINARY ARCHITECTURAL PLANS. CONTRACTOR IS RESPONSIBLE TO AND FOR VERIFYING LOCATIONS OF SAME BASED ON FINAL ARCHITECTURAL PLANS.
27. SEWERS CROSSING STREAMS AND/OR LOCATION WITHIN 10 FEET OF THE STREAM EMBANKMENT, OR WHERE SITE CONDITIONS SO INDICATE, MUST BE CONSTRUCTED OF STEEL, REINFORCED CONCRETE, DUCTILE IRON OR OTHER SUITABLE MATERIAL.
28. SEWERS CONVEYING SANITARY FLOW, COMBINED SANITARY AND STORMWATER FLOW, OR INDUSTRIAL FLOW MUST BE SEPARATED FROM WATER MAINS BY A DISTANCE OF AT LEAST 10 FEET HORIZONTALLY. IF SUCH LATERAL SEPARATION IS NOT POSSIBLE, THE PIPES MUST BE IN SEPARATE TRENCHES WITH THE SEWER AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER MAIN, OR SUCH OTHER SEPARATION AS APPROVED BY THE GOVERNMENT AGENCY WITH JURISDICTION OVER SAME.
    - WHERE APPROPRIATE SEPARATION FROM A WATER MAIN IS NOT POSSIBLE, THE SEWER MUST BE ENCASED IN CONCRETE, OR CONSTRUCTED OF DUCTILE IRON PIPE USING MECHANICAL OR SLIP-ON JOINTS FOR A DISTANCE OF AT LEAST 10 FEET ON EITHER SIDE OF THE CROSSING. IN ADDITION, ONE FULL LENGTH OF SEWER PIPE SHOULD BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE WATER LINE AS POSSIBLE. WHERE A WATER MAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT FOR THE SEWER MUST BE PROVIDED.
29. WATER MAIN PIPING MUST BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE LOCAL WATER PURVEYOR. IN THE ABSENCE OF SUCH REQUIREMENTS, WATER MAIN PIPING MUST BE CEMENT-LINED DUCTILE IRON (DIP) MINIMUM CLASS 52 THICKNESS. ALL PIPE AND APPURTENANCES MUST COMPLY WITH THE APPLICABLE AWWA STANDARDS IN EFFECT AT THE TIME OF APPLICATION.
30. CONTRACTOR MUST ENSURE THAT ALL UTILITY TRENCHES LOCATED IN EXISTING PAVED ROADWAYS INCLUDING SEWER, WATER AND STORM SYSTEMS, MUST BE REPAIRED IN ACCORDANCE WITH REFERENCED MUNICIPAL, COUNTY AND/OR STATE DETAILS AS APPLICABLE. CONTRACTOR MUST COORDINATE INSPECTION AND APPROVAL OF COMPLETED WORK WITH THE AGENCY WITH JURISDICTION OVER SAME.
31. WHERE BASEMENTS ARE TO BE PROVIDED FOR PROPOSED DWELLING UNITS, THE DEVELOPER SHALL, BY BORING OR BY TEST PIT, DETERMINE THE DEPTH TO GROUNDWATER AT THE LOCATION OF THE PROPOSED DWELLINGS. WHERE GROUNDWATER IS ENCOUNTERED IN THE BASEMENT AREA, BASEMENTS WILL NOT BE INSTALLED UNLESS SPECIAL CONSTRUCTION METHODS ARE UTILIZED, TO BE REVIEWED AND APPROVED BY THE MUNICIPAL CONSTRUCTION CODE OFFICIAL. IF AND WHERE SUMP PUMPS ARE INSTALLED, ALL DISCHARGES MUST BE CONNECTED TO THE STORM SEWER. A CLEANOUT MUST BE PROVIDED PRIOR TO THE CONNECTION TO THE STORM DRAIN IN ORDER THAT BLOCKAGES CAN BE ADDRESSED.
32. FOR SINGLE AND TWO-FAMILY RESIDENTIAL PROJECTS, WHERE THE PROPOSED DWELLING AND ADJACENT SPOT ELEVATION(S) ARE SCHEMATIC FOR GENERIC BUILDING FOOTPRINT, GRADES MUST BE ADJUSTED BASED ON FINAL ARCHITECTURAL PLANS TO PROVIDE A MINIMUM OF SIX (6) INCHES BELOW TOP OF BLOCK AND /OR SIX (6) INCHES BELOW SIDING, WHICHEVER IS LOWEST, AND MUST PROVIDE POSITIVE DRAINAGE (2% MIN.) AWAY FROM DWELLING. ALL CONSTRUCTION, INCLUDING GRADING, MUST COMPLY WITH THE LATEST LOCAL AND STATE BUILDING CODE AND ALL OTHER APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES.
33. LOCATION OF PROPOSED UTILITY POLE RELOCATION IS AT THE SOLE DISCRETION OF UTILITY COMPANY.
34. CONSULTANT IS NEITHER LIABLE NOR RESPONSIBLE FOR ANY SUBSURFACE CONDITIONS AND FURTHER, SHALL HAVE NO LIABILITY FOR ANY HAZARDOUS MATERIALS, HAZARDOUS SUBSTANCES, OR POLLUTANTS ON, ABOUT OR UNDER THE PROPERTY.

LIGHTING NOTES:

1. THE LIGHTING PLAN DEPICTS PROPOSED SUSTAINED ILLUMINATION LEVELS CALCULATED USING DATA PROVIDED BY THE NOTED MANUFACTURER(S). ACTUAL SUSTAINED SITE ILLUMINATION LEVELS AND PERFORMANCE OF LUMINAIRES MAY VARY DUE TO VARIATIONS IN WEATHER, ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, THE SERVICE LIFE OF EQUIPMENT AND LUMINAIRES AND OTHER RELATED VARIABLE FIELD CONDITIONS.
2. THE LIGHT LOSS FACTORS USED IN THESE LIGHTING CALCULATIONS ARE 0.90 FOR ALL LED LUMINAIRES, 0.80 FOR ALL HIGH PRESSURE SODIUM LUMINAIRES OR 0.72 FOR ALL METAL HALIDE LUMINAIRES UNLESS OTHERWISE SPECIFIED. THESE FACTORS ARE INDICATIVE OF TYPICAL LIGHTING INDUSTRY MODELING STANDARDS.
3. THE LIGHTING VALUES AND CALCULATION POINTS DEPICTED ON THE PLAN ARE ALL ANALYZED ON A HORIZONTAL GEOMETRIC PLANE AT ELEVATION ZERO (GROUND LEVEL) UNLESS OTHERWISE NOTED. THE VALUES DEPICTED ON THE PLAN ARE IN FOOTCANDLES.
4. THE LUMINAIRES, LAMPS AND LENSES MUST BE REGULARLY INSPECTED/MAINTAINED TO ENSURE THAT THEY FUNCTION PROPERLY. THIS WORK SHOULD INCLUDE, BUT NOT BE LIMITED TO, FREQUENT VISUAL INSPECTIONS, CLEANING OF LENSES, AND RELAMPING (IF NECESSARY) AT LEAST ONCE EVERY SIX (6) MONTHS. FAILURE TO FOLLOW THE ABOVE STEPS COULD CAUSE THE LUMINARIES, LAMPS AND LENSES TO FAIL OR PROPERLY FUNCTION.
5. WHERE APPLICABLE, THE EXISTING CONDITION LIGHT LEVELS ILLUSTRATED ARE REPRESENTATIVE OF AN APPROXIMATION UTILIZING LABORATORY DATA FOR SIMILAR FIXTURES, UNLESS ACTUAL FIELD MEASUREMENTS ARE TAKEN WITH A LIGHT METER AND ARE, CONSEQUENTLY, APPROXIMATIONS ONLY. DUE TO FACTORS SUCH AS FIXTURE MAINTENANCE, EQUIPMENT TOLERANCES, WEATHER CONDITIONS, ETC, ACTUAL LIGHT LEVELS MAY DIFFER. EXISTING LIGHT LEVELS DEPICTED ON THIS PLAN SHOULD BE CONSIDERED APPROXIMATE.
6. THE LIGHTING PLAN IS INTENDED TO SHOW THE LOCATIONS AND TYPE OF LUMINAIRES, ONLY. POWER SYSTEM, CONDUITS, WIRING, VOLTAGES AND OTHER ELECTRICAL COMPONENTS ARE THE RESPONSIBILITY OF THE ARCHITECT, MEP AND/OR LIGHTING CONTRACTOR, AS INDICATED IN THE CONSTRUCTION CONTRACT DOCUMENTS. THESE ITEMS MUST BE INSTALLED AS REQUIRED BY STATE AND LOCAL REGULATIONS. CONTRACTOR IS RESPONSIBLE FOR INSTALLING LIGHTING FIXTURES AND APPURTENANCES IN ACCORDANCE WITH ALL APPLICABLE BUILDING AND ELECTRICAL CODES AND ALL OTHER APPLICABLE RULES, REGULATIONS, LAWS AND STATUTES.
7. CONTRACTOR MUST BRING TO DESIGNER'S ATTENTION, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ANY LIGHT LOCATIONS THAT CONFLICT WITH DRAINAGE, UTILITIES, OR OTHER STRUCTURES.
8. IT IS LIGHTING CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE PROJECT ARCHITECT OR OWNER REGARDING THE POWER SOURCE(S) FROM WITHIN THE BUILDING, AND TIMING DEVICES NECESSARY TO MEET THE DESIGN INTENT.
9. THE LIGHTING CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CONTRACTOR REQUIREMENTS INDICATED IN THE SITE PLAN, INCLUDING BUT NOT LIMITED TO, GENERAL NOTES, GRADING AND UTILITY NOTES, SITE SAFETY, AND ALL GOVERNMENTAL RULES, LAWS, ORDINANCES, REGULATIONS AND THE LIKE.
10. THE CONTRACTOR MUST VERIFY THAT INSTALLATION OF LIGHTING FIXTURES COMPLIES WITH THE REQUIREMENTS FOR SEPARATION FROM OVERHEAD ELECTRICAL WIRES AS INDICATED IN THE HIGH VOLTAGE PROXIMITY REGULATIONS N.J.A.C. 12-186.
11. WHEN A BANK ATM IS INCLUDED IN THE PLAN, THE LIGHTING DESIGN REPRESENTS BOHLER'S UNDERSTANDING AND INTERPRETATION OF THE REGULATORY LIGHTING LEVELS INTENDED BY PUBLISHED STANDARDS.
12. UPON OWNER'S ACCEPTANCE OF THE COMPLETED PROJECT, THE OWNER SHALL BE RESPONSIBLE FOR ALL MAINTENANCE, SERVICING, REPAIR AND INSPECTION OF THE LIGHTING SYSTEM AND ALL OF ITS COMPONENTS AND RELATED SYSTEMS, TO ENSURE ADEQUATE LIGHTING LEVELS ARE PRESENT AND FUNCTIONING AT ALL TIMES.

"NO AS-BUILT INFORMATION IS PROVIDED ON THIS SHEET"

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443, Expiration Date: 12/21/22

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER

AS-BUILT 3/25/21

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:	DEVELOPER:
STEPHEN A. KLEIN & ASSOCIATES C/O STEPHEN A. KLEIN, INC. 12165 CLARKSVILLE PIKE CLARKSVILLE, MD 21029 (410) 465-4244	RIVER HILL SQUARE, LLC. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 (410) 465-4244

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO PARCEL: 1

5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No.: ECP - 17 - 023, SDP - 18 - 044, WP - 18 -095

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

BOHLER ENGINEERING™

SITE CIVIL AND CONSULTING ENGINEERING
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LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	BY

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It's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	N/A
CAD I.D.:	SD2

PROJECT:

FINAL ROAD CONSTRUCTION PLANS

FOR

MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
1/10/19

SHEET TITLE:

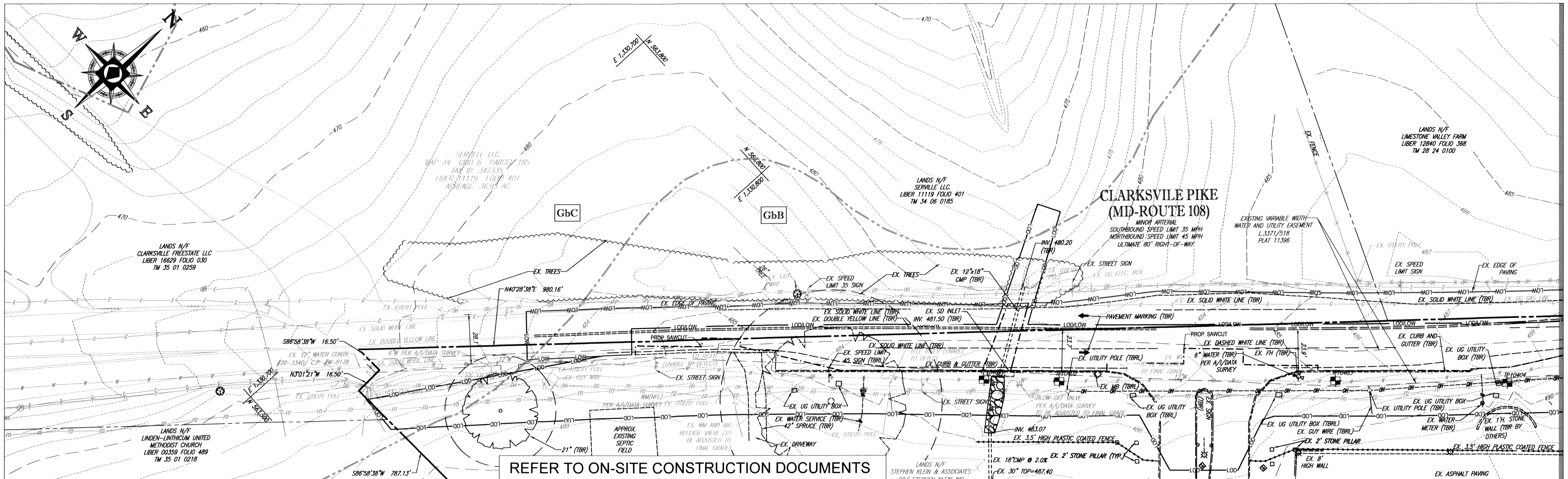
GENERAL NOTES

SHEET NUMBER:

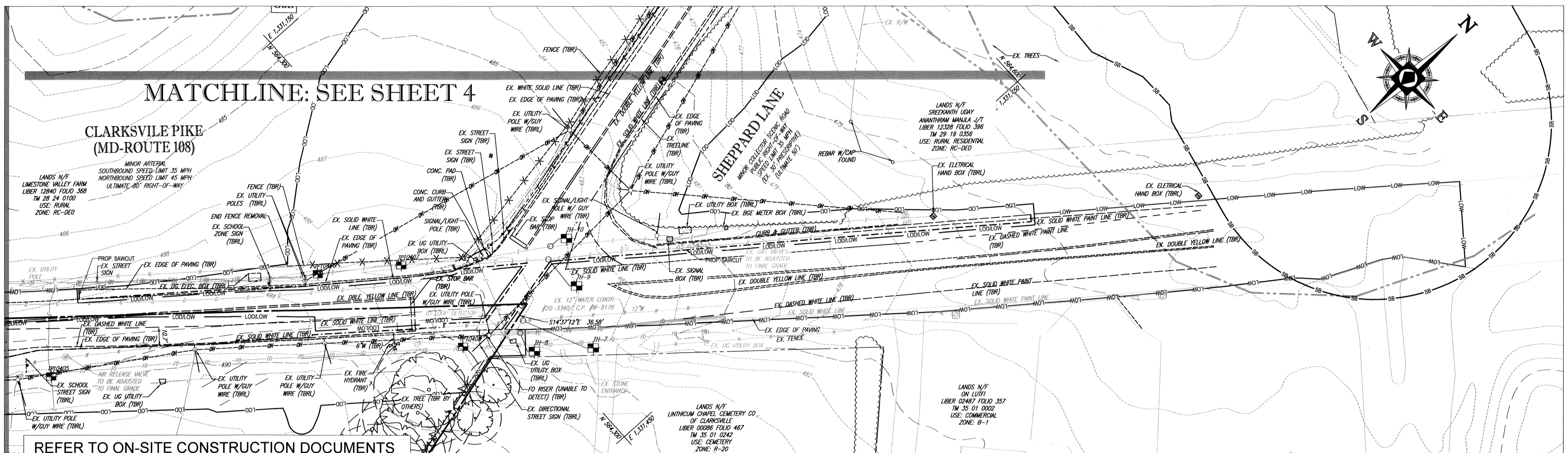
2

F-18-099

AS-BUILT



REFER TO ON-SITE CONSTRUCTION DOCUMENTS (SDP-18-044) FOR WORK ON PRIVATE PROPERTY.



REFER TO ON-SITE CONSTRUCTION DOCUMENTS (SDP-18-044) FOR WORK ON PRIVATE PROPERTY.

SOIL TYPES ONSITE

SYMBOL	SOIL SERIES	HYDROLOGIC SOIL GROUP	HYDRIC SOIL	SLOPES	K FACTOR	ERODIBLE
GbB	GLADSTONE LOAM	A	NO	3 - 8%	.32	NO
GbC	GLADSTONE LOAM	A	NO	8 - 15%	.32	NO
GnB	GLENVILLE-BAILE SILT LOAMS	C	NO	0 - 8 %	.49	YES
MaD	MANOR LOAM	B	NO	15 - 25 %	.32	YES

LIMIT OF DISTURBANCE: 2.68 AC. OR 116,741 S.F.*
LIMIT OF WORK: 0.85 AC. OR 34,026 S.F.
*LIMIT OF DISTURBANCE INCLUDES ALL WORK WITH SOIL DISTURBANCE
**LIMIT OF WORK INCLUDES ALL WORK WITHOUT SOIL DISTURBANCE

EX. TEST PIT DATA

PER A/I DATA SURVEY DATED 5/11/2018

TEST PIT NO.	ELEV.	TOP PIPE ELEV.
10401	484.764	479.76
10402	484.39	479.39
10403	489.00	480.01
10404	491.401	486.40
10405	491.294	486.29
10406	488.195	482.20
10407	488.277	482.28
10408	488.242	
TH-7	483.98	479.84
TH-8	483.76	479.85
TH-9	483.37	479.49
TH-10	483.34	479.85

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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.

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AS-BUILT 3/25/21

30 15 7.5 0 30
1"= 30'

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OWNER:	DEVELOPER:
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C/O STEPHEN A. KLEIN, INC.	P.O. BOX 417
12165 CLARKSVILLE PIKE	ELLICOTT CITY, MARYLAND 21041
CLARKSVILLE, MD 21029	(410) 465-4244
(410) 465-4244	

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No.: ECP - 17 - 023
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AS-BUILT

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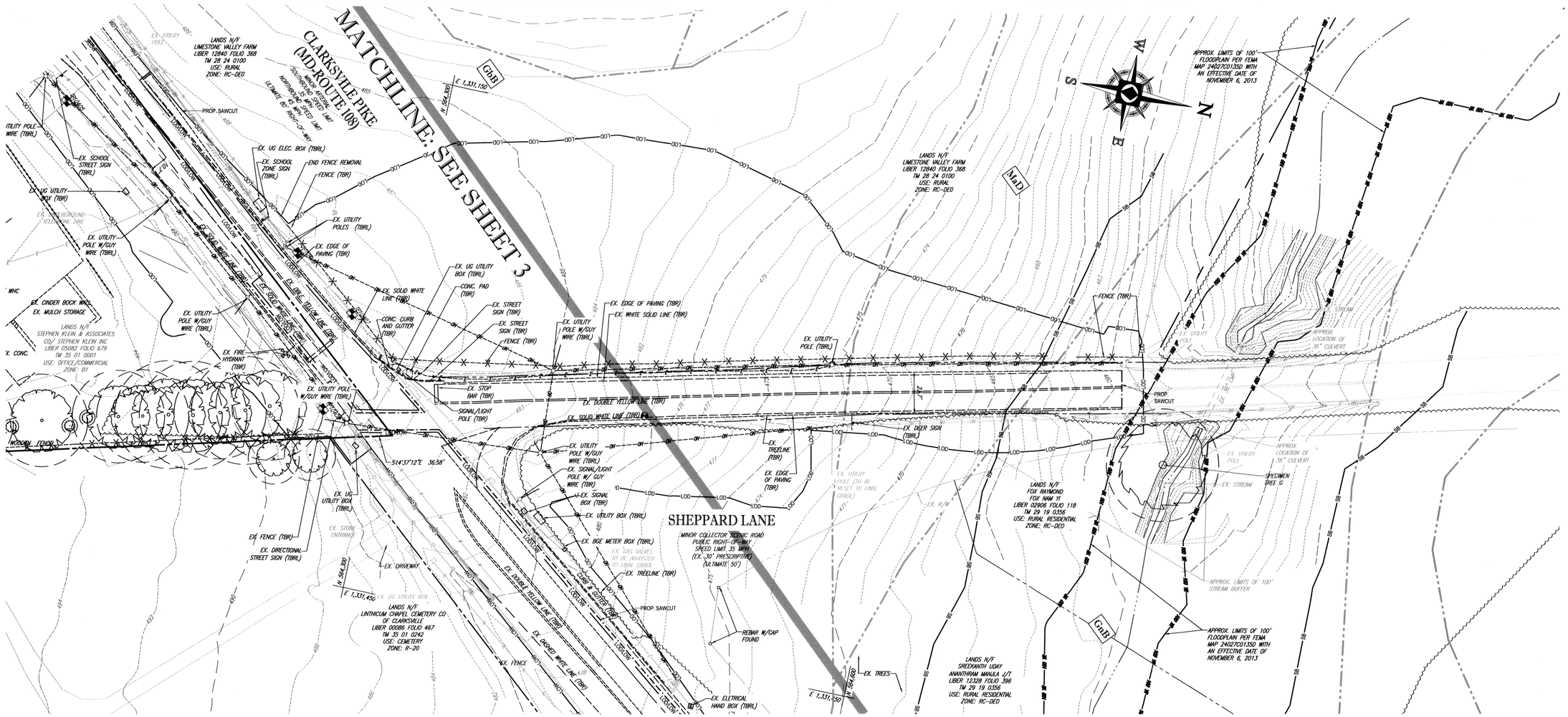
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808

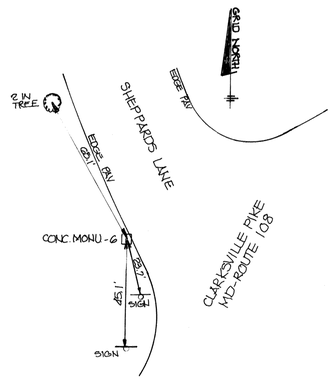
SHEET TITLE:
EXISTING CONDITIONS AND DEMOLITION PLAN

SHEET NUMBER:
3

F-18-099



RIGHT OF WAY ELEVATION		
R/W PT. NO.	DESCRIPTION	ELEVATION
5	REBAR & CAP	497.98'
6	CONC. MONU	481.62'
7	REBAR & CAP	476.65'
8	REBAR & CAP	466.69'
9	REBAR & CAP	459.07'
10	REBAR & CAP	458.20'
11	REBAR & CAP	482.96'
12	REBAR & CAP	475.12'
13	REBAR & CAP	474.50'
14	REBAR & CAP	465.86'
15	REBAR & CAP	461.89'
16	REBAR & CAP	466.05'
17	REBAR & CAP	474.98'
18	REBAR & CAP	473.30'
19	REBAR & CAP	476.13'
20	REBAR & CAP	480.99'



CONC. MON. #6

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E.

Date: 3-25-21

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443, Expiration Date: 12-21-22

STATE OF MARYLAND · DONALD ALAN MASON · No. 21443 · PROFESSIONAL ENGINEER

AS-BUILT 3/25/21

LIMIT OF DISTURBANCE: 2.68 AC. OR 116,741 S.F.*
LIMIT OF WORK: 0.85 AC. OR 34,026 S.F.
*LIMIT OF DISTURBANCE INCLUDES ALL WORK WITH SOIL DISTURBANCE
**LIMIT OF WORK INCLUDES ALL WORK WITHOUT SOIL DISTURBANCE

SOIL TYPES ONSITE

SYMBOL	SOIL SERIES	HYDROLOGIC SOIL GROUP	HYDRIC SOIL	SLOPES	K FACTOR	ERODIBLE
GbB	GLADSTONE LOAM	A	NO	3 - 8%	.32	NO
GbC	GLADSTONE LOAM	A	NO	8 - 15%	.32	NO
GnB	GLENVILLE-BAILE SILT LOAMS	C	NO	0 - 8 %	.49	YES
MaD	MANOR LOAM	B	NO	15 - 25 %	.32	YES

30 15 7.5 0 30
1"= 30'

PREVIOUS FILE No. : ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 3.21.19

OWNER:
STEPHEN A. KLEIN & ASSOCIATES
C/O STEPHEN A. KLEIN, INC.
12165 CLARKSVILLE PIKE
CLARKSVILLE, MD 21029
(410) 465-4244

DEVELOPER:
RIVER HILL SQUARE, LLC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
(410) 465-4244

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

AS-BUILT

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	BY

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BEFORE YOU DIG
it's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	1" = 30'
CAD I.D.:	EP2

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT
LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

BOHLER ENGINEERING
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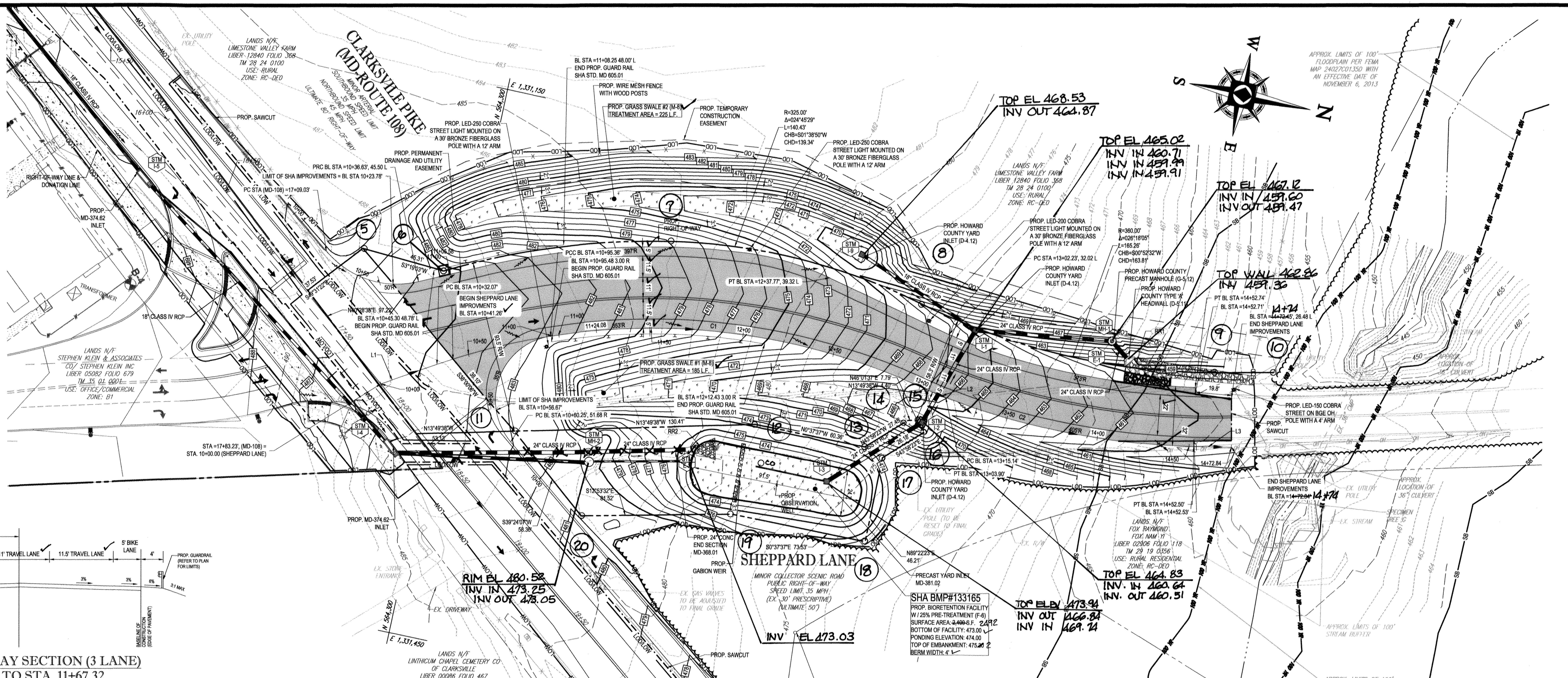
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

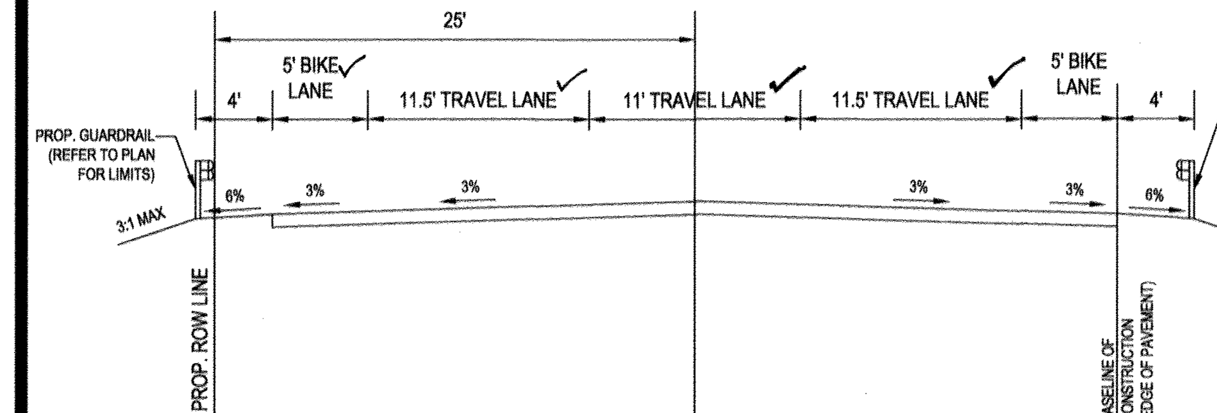
B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE NO. 40808
No. 40808 · PROFESSIONAL ENGINEER
1/10/19

SHEET TITLE:
EXISTING CONDITIONS AND DEMOLITION PLAN

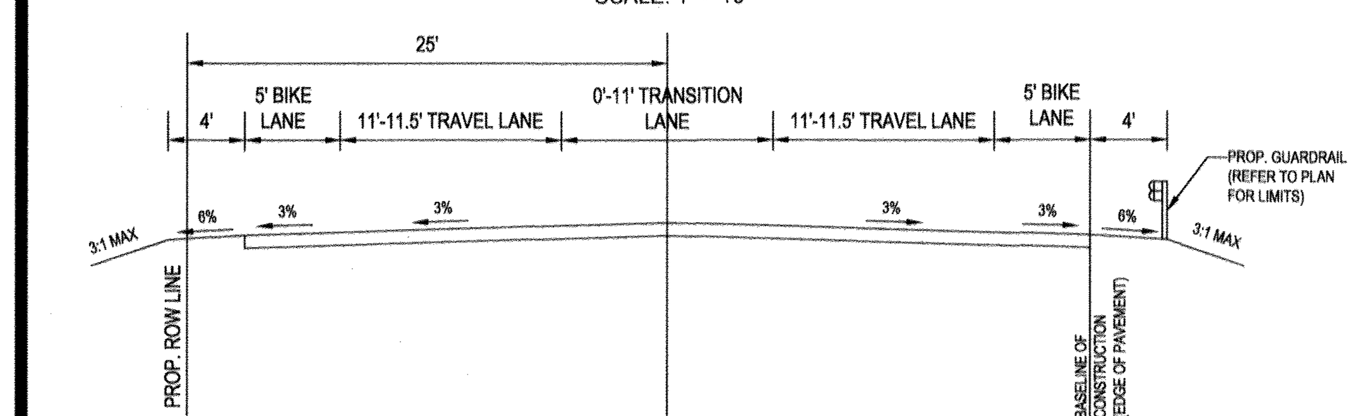
SHEET NUMBER:
4

F-18-099

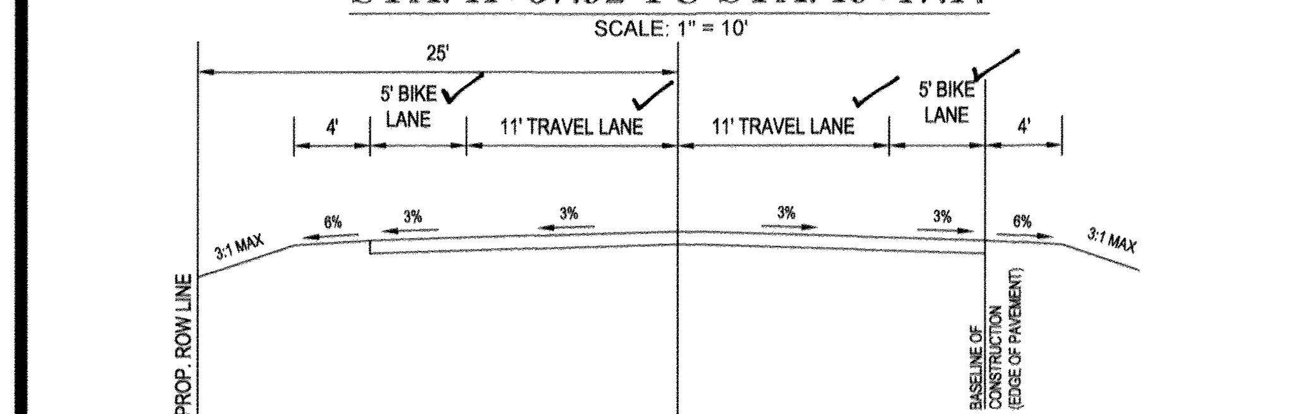




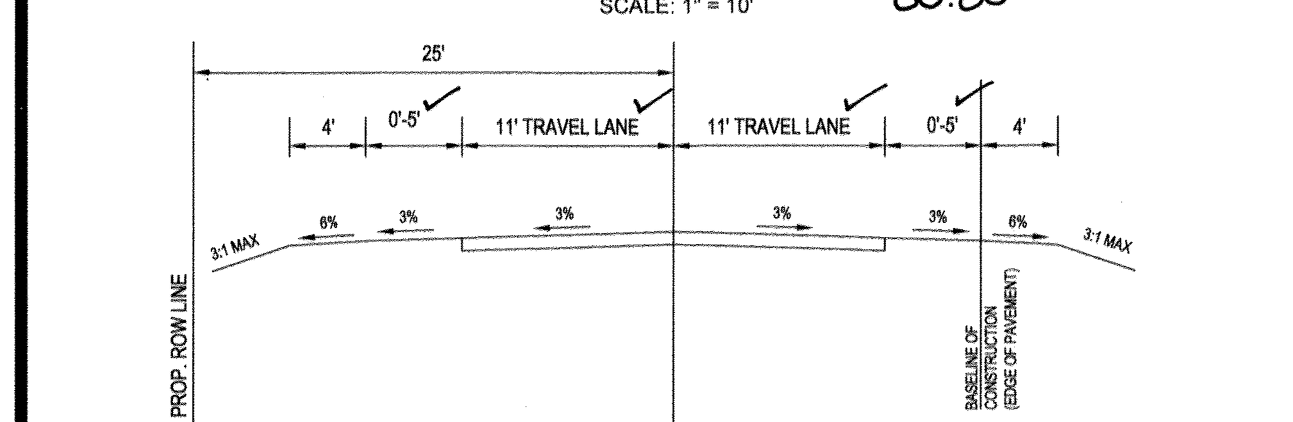
TYPICAL ROADWAY SECTION (3 LANE)
STA. 10+41.26 TO STA. 11+67.32
SCALE: 1" = 10'



TYPICAL ROADWAY SECTION (3 LANE - 2 LANE TRANSITION)
STA. 11+67.32 TO STA. 13+17.14
SCALE: 1" = 10'



TYPICAL ROADWAY SECTION (2 LANE)
STA. 13+17.14 TO STA. 14+~~52.50~~ 00.00
SCALE: 1" = 10'



TYPICAL ROADWAY SECTION (2 LANE - EX. PAVEMENT TRANSITION)
STA. 14+~~52.50~~ 00.00 TO STA. 14+~~72.84~~ 74.00
SCALE: 1" = 10'

LIMIT OF DISTURBANCE: 2.68 AC. OR 116,741 S.F.*
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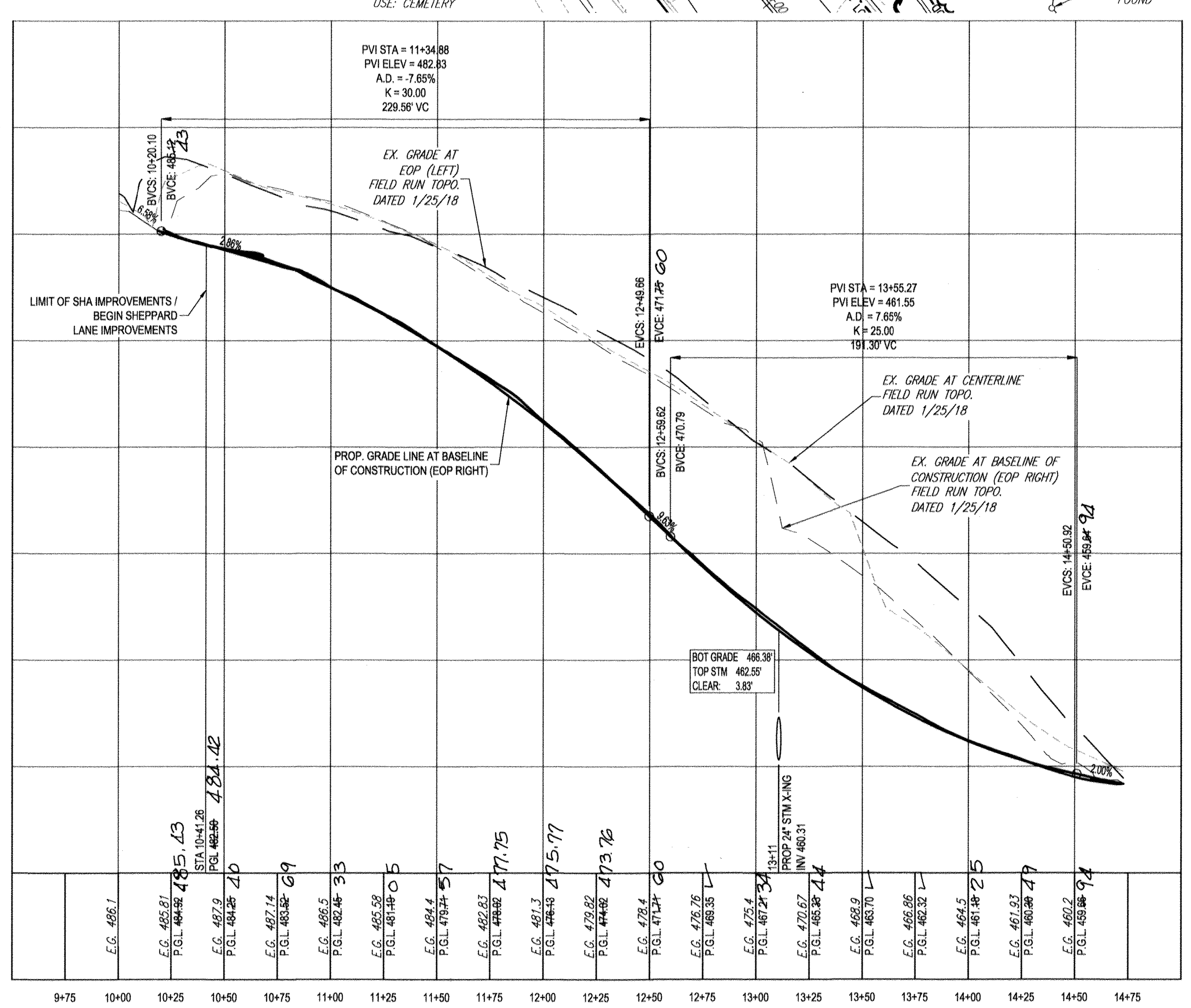

SHEPPARD LANE PROFILE
SCALE: 1" = 50' HORIZONTAL
1" = 5' VERTICAL
DESIGN SPEED: 35 MPH
CLASSIFICATION: MINOR COLLECTOR SCENIC ROAD

AS-BUILT

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443, Expiration Date: 12-21-22

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Donald Mason, P.E.

Date: 3/25/21

1"= 30'

LEGEND

- CONCRETE MULTIMODAL PEDESTRIAN PATHWAY
- HOWARD COUNTY P-4 PAVEMENT SECTION
- PROP. SWM FACILITIES

SHEPPARD LANE BASELINE - LINE TABLE

LINE	BEARING	LENGTH
L1	N31° 23' 13.50"W	32.07
L2	N10° 38' 37.54"E	11.24
L3	N11° 17' 24.51"W	20.33

SHEPPARD LANE BASELINE - CURVE TABLE

CURVE	RADIUS	LENGTH	CHORD BEARING	CHORD LENGTH	DELTA	TANGENT
C1	353.00	271.83	N09° 19' 34.81"W	265.17	044°07'17"	143.06
C2	405.23	137.36	N01° 09' 28.15"W	136.71	019°25'19"	69.35

ROADWAY INFORMATION CHART

ROAD NAME	CLASSIFICATION	DESIGN SPEED	PAVEMENT TYPE	R/W WIDTH	STATION
SHEPPARD LANE	MINOR COLLECTOR SCENIC ROAD	35 MPH	HOWARD COUNTY PAVEMENT SECTION P-4	VARIABLE WIDTH	10+41.26 - 14+72.84
MD-108 CLARKSVILLE PIKE	MINOR ARTERIAL	35 MPH (SOUTHBOUND) 45 MPH (NORTHBOUND)	2" SUPERPAVE 12.5mm FOR SURFACE - PG 64S-22, LEVEL 2 6" SUPERPAVE 19.0mm FOR SURFACE - PG 64S-22, LEVEL 2 (2 - 3" LIFTS) 12" GRADE AGGREGATE (2 - 6" LIFTS)	80'	9+54.78 - 23+21.78

RIPRAP SCHEDULE

SYMBOL	DESCRIPTION	TYPE	LENGTH	BOTTOM WIDTH	THICKNESS	D_{50}	D_{100}
RR1	CLASS I RIP-RAP ON NON-WOVEN GEOTEXTILE FABRIC	ROCK OUTLET PROTECTION I	70'	13.50'	19"	9.5"	15"
RR2	CLASS I RIP-RAP ON NON-WOVEN GEOTEXTILE FABRIC	ROCK OUTLET PROTECTION I	~~10'~~ 14'	12'	19"	9.5"	15"
RR3	CLASS I RIP-RAP ON NON-WOVEN GEOTEXTILE FABRIC	CLASS I RIP-RAP ON NON-WOVEN GEOTEXTILE FABRIC	7'	11'	19"	9.5"	15"

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2-21-19

OWNER:
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C/O STEPHEN A. KLEIN, INC.
12165 CLARKSVILLE PIKE
CLARKSVILLE, MD 21029
(410) 465-4244

DEVELOPER:
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TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No.: ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

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REVISIONS			
REV	DATE	COMMENT	BY

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NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	AS SHOWN
CAD I.D.:	SP2

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
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B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
1/10/19

SHEET TITLE:
SHEPPARD LANE PLAN AND PROFILE

SHEET NUMBER:
5

F-18-099

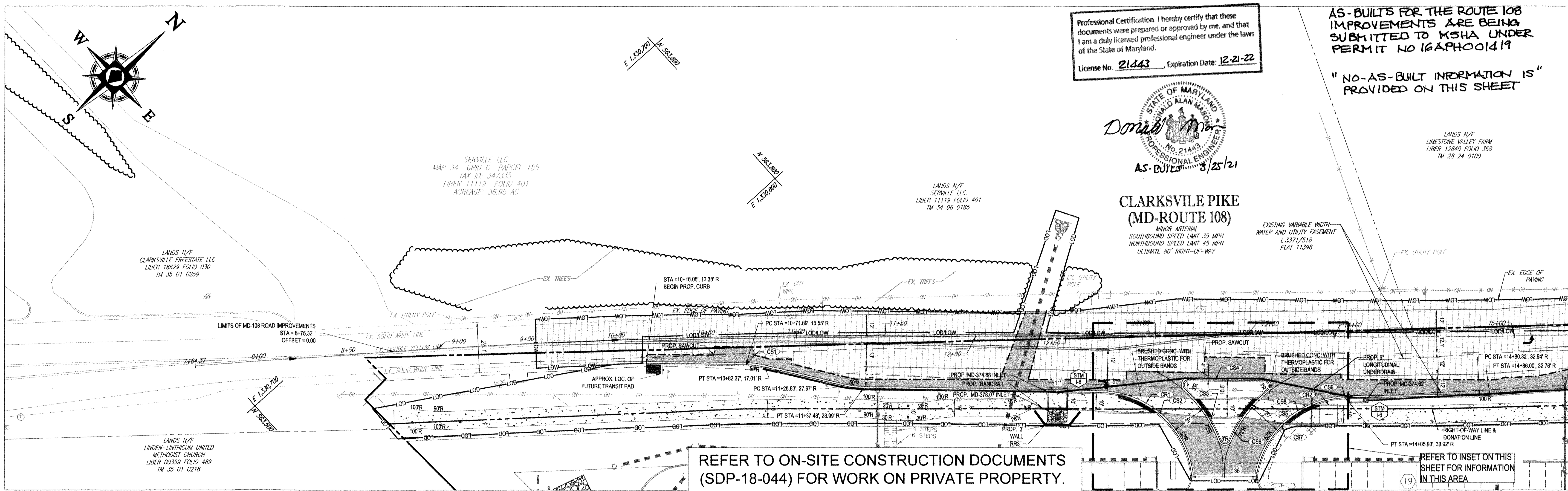
AS-BUILT

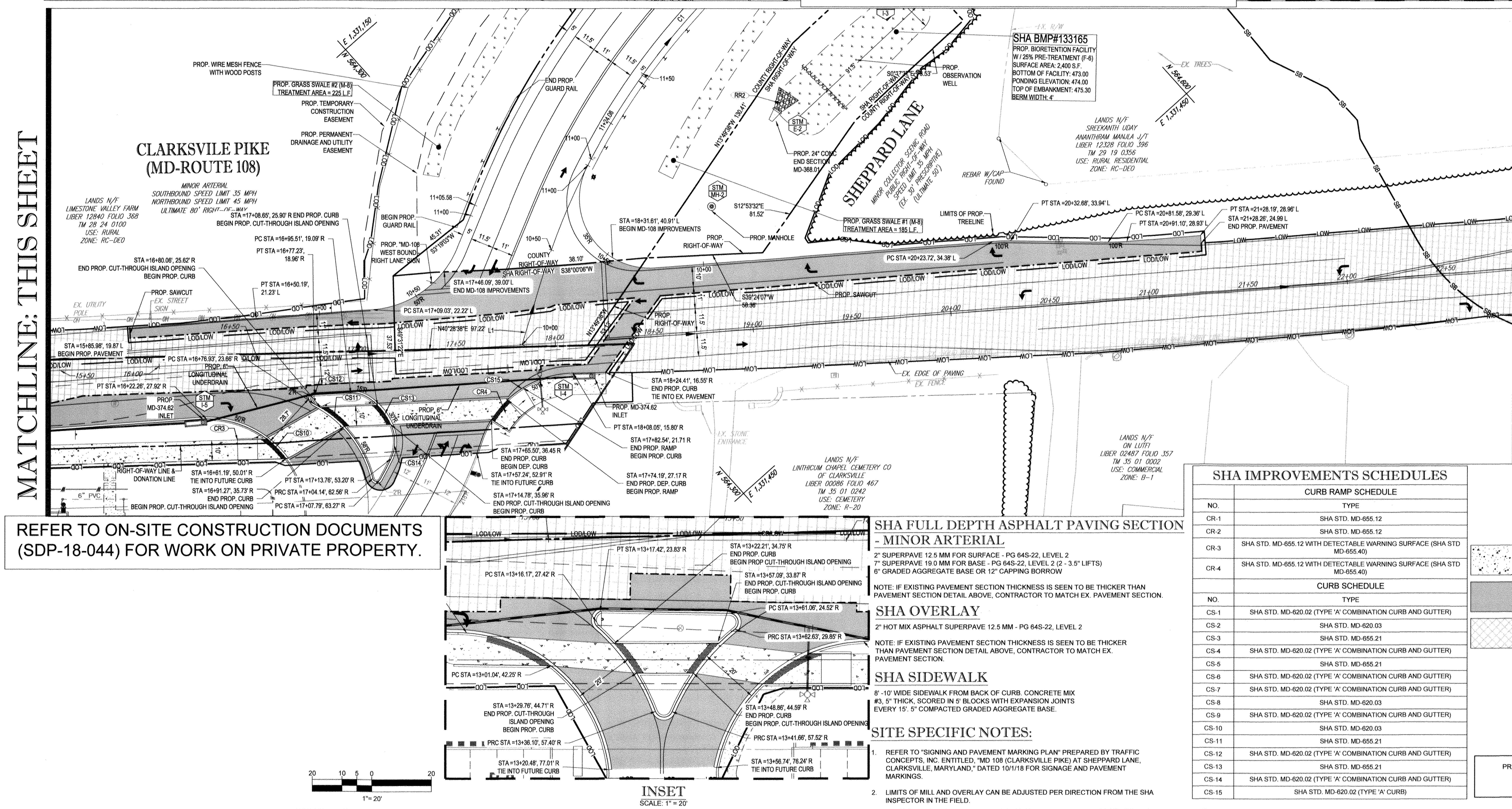
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12-21-22

AS-BUILTS FOR THE ROUTE 108 IMPROVEMENTS ARE BEING SUBMITTED TO MSHA UNDER PERMIT NO 16APHOO1419

"NO-AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

AS-BUILT 3/25/21





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**LIMIT OF WORK INCLUDES ALL WORK WITHOUT SOIL DISTURBANCE

UNDERDRAIN NOTE

IF ANY EXISTING LONGITUDINAL UNDERDRAIN IS ENCOUNTERED DURING EXCAVATION FOR FULL DEPTH RECONSTRUCTION, THE UNDERDRAIN PIPE SHOULD BE REMOVED UNLESS OTHERWISE DIRECTED BY THE ENGINEER. ANY VOID CREATED BY THE REMOVAL OF THE UNDERDRAIN PIPE SHALL BE BACKFILLED WITH MATERIAL SUITABLE FOR EMBANKMENT CONSTRUCTION. A NEW LINE OF UNDERDRAIN PIPE AS PER STANDARD NO. MD-387.11 SHALL BE PLACED AT THE OUTSIDE EDGE OF THE PAVEMENT AND CONNECTED TO THE EXISTING UNDERDRAIN OUTSIDE THE FULL DEPTH RECONSTRUCTION AREAS.

SHA FULL DEPTH ASPHALT PAVING SECTION - MINOR ARTERIAL

2" SUPERPAVE 12.5 MM FOR SURFACE - PG 64S-22, LEVEL 2
7" SUPERPAVE 19.0 MM FOR BASE - PG 64S-22, LEVEL 2 (2 - 3.5" LIFTS)
6" GRADED AGGREGATE BASE OR 12" CAPPING BORROW

NOTE: IF EXISTING PAVEMENT SECTION THICKNESS IS SEEN TO BE THICKER THAN PAVEMENT SECTION DETAIL ABOVE, CONTRACTOR TO MATCH EX. PAVEMENT SECTION.

SHA OVERLAY

2" HOT MIX ASPHALT SUPERPAVE 12.5 MM - PG 64S-22, LEVEL 2

NOTE: IF EXISTING PAVEMENT SECTION THICKNESS IS SEEN TO BE THICKER THAN PAVEMENT SECTION DETAIL ABOVE, CONTRACTOR TO MATCH EX. PAVEMENT SECTION.

SHA SIDEWALK

8' -10' WIDE SIDEWALK FROM BACK OF CURB. CONCRETE MIX #3, 5" THICK, SCORED IN 5' BLOCKS WITH EXPANSION JOINTS EVERY 15'. 5" COMPACTED GRADED AGGREGATE BASE.

SITE SPECIFIC NOTES:

1. REFER TO "SIGNING AND PAVEMENT MARKING PLAN" PREPARED BY TRAFFIC CONCEPTS, INC. ENTITLED, "MD 108 (CLARKSVILLE PIKE) AT SHEPPARD LANE, CLARKSVILLE, MARYLAND," DATED 10/1/18 FOR SIGNAGE AND PAVEMENT MARKINGS.
2. LIMITS OF MILL AND OVERLAY CAN BE ADJUSTED PER DIRECTION FROM THE SHA INSPECTOR IN THE FIELD.

SHA IMPROVEMENTS SCHEDULES

	CURB RAMP SCHEDULE
NO.	TYPE
CR-1	SHA STD. MD-655.12
CR-2	SHA STD. MD-655.12
CR-3	SHA STD. MD-655.12 WITH DETECTABLE WARNING SURFACE (SHA STD MD-655.40)
CR-4	SHA STD. MD-655.12 WITH DETECTABLE WARNING SURFACE (SHA STD MD-655.40)
	CURB SCHEDULE
NO.	TYPE
CS-1	SHA STD. MD-620.02 (TYPE 'A' COMBINATION CURB AND GUTTER)
CS-2	SHA STD. MD-620.03
CS-3	SHA STD. MD-655.21
CS-4	SHA STD. MD-620.02 (TYPE 'A' COMBINATION CURB AND GUTTER)
CS-5	SHA STD. MD-655.21
CS-6	SHA STD. MD-620.02 (TYPE 'A' COMBINATION CURB AND GUTTER)
CS-7	SHA STD. MD-620.02 (TYPE 'A' COMBINATION CURB AND GUTTER)
CS-8	SHA STD. MD-620.03
CS-9	SHA STD. MD-620.02 (TYPE 'A' COMBINATION CURB AND GUTTER)
CS-10	SHA STD. MD-620.03
CS-11	SHA STD. MD-655.21
CS-12	SHA STD. MD-620.02 (TYPE 'A' COMBINATION CURB AND GUTTER)
CS-13	SHA STD. MD-655.21
CS-14	SHA STD. MD-620.02 (TYPE 'A' COMBINATION CURB AND GUTTER)
CS-15	SHA STD. MD-620.02 (TYPE 'A' CURB)

LEGEND

- CONCRETE MULTIMODAL PEDESTRIAN PATHWAY BRUSHED CONCRETE - REFER TO CLARKSVILLE PIKE DESIGN GUIDELINES
- SHA FULL DEPTH ASPHALT PAVING
- SHA 2" MILL AND OVERLAY

1"= 30'

PREVIOUS FILE No. : ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:	DEVELOPER:
STEPHEN A. KLEIN & ASSOCIATES	RIVER HILL SQUARE, LLC.
C/O STEPHEN A. KLEIN, INC.	P.O. BOX 417
12165 CLARKSVILLE PIKE	ELLICOTT CITY, MARYLAND 21041
CLARKSVILLE, MD 21029	(410) 465-4244
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TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
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PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS			
REV	DATE	COMMENT	BY

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	AS NOTED
CAD I.D.:	SP2

PROJECT:

FINAL ROAD CONSTRUCTION PLANS FOR MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
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B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
1/10/19

SHEET TITLE:

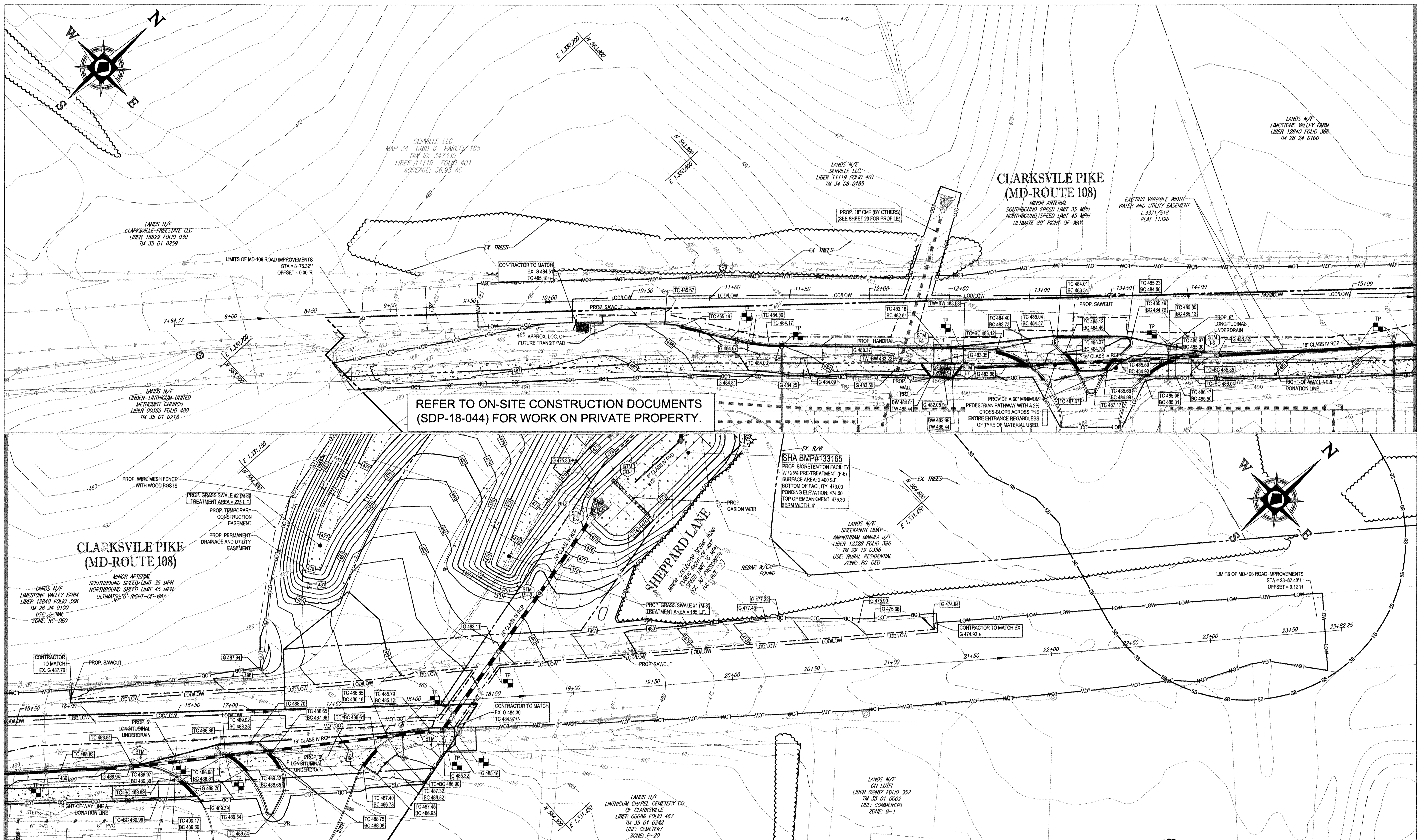
MD ROUTE 108 ROAD PLAN

SHEET NUMBER:
6

F-18-099

AS-BUILT

MATCHLINE: THIS SHEET



MATCHLINE: THIS SHEET

REFER TO ON-SITE CONSTRUCTION DOCUMENTS (SDP-18-044) FOR WORK ON PRIVATE PROPERTY.

RIPRAP SCHEDULE

SYMBOL	DESCRIPTION	TYPE	LENGTH	BOTTOM WIDTH	THICKNESS	D_{50}	D_{100}
RR1	CLASS I RIP-RAP ON NON-WOVEN GEOTEXTILE FABRIC	ROCK OUTLET PROTECTION I	70'	13.50'	19"	9.5"	15"
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RR3	CLASS I RIP-RAP ON NON-WOVEN GEOTEXTILE FABRIC	CLASS I RIP-RAP ON NON-WOVEN GEOTEXTILE FABRIC	7'	11'	19"	9.5"	15"

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License No. 21443 Expiration Date: 12/21/22

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER

AS-BUILT 3/25/21

AS BUILTS FOR THE ROUTE 108 IMPROVEMENTS ARE BEING SUBMITTED TO MSHA UNDER PERMIT NO 16APHOO419

"NO AS-BUILT INFORMATION IS PROVIDED ON THIS SHEET"

TEST PIT NOTE

CONTRACTOR TO TEST PIT 2 FEET BELOW PROPOSED UTILITY OR UNTIL EXACT LOCATION OF EXISTING UTILITY IS IDENTIFIED AND SUBMIT ANY DISCREPANCIES TO BOHLER ENGINEERING IN WRITING.

ADA CONSTRUCTION NOTES TO CONTRACTOR

1. NO SIDEWALK AND/OR CROSSWALK IS TO EXCEED 2.00% CROSS SLOPE.
2. NO ADA PARKING SPACE IS TO EXCEED 2.00% SLOPE IN ANY DIRECTION.
3. NO ADA CURB RAMP IS TO EXCEED 8.33%.
4. THE CONTRACTOR IS RESPONSIBLE DURING THE FORMING OF SIDEWALKS, RAMPS, CROSSWALKS, AND ADA PARKING TO VERIFY THAT ADA COMPLIANCE IS ACHIEVED.
5. IF DURING THAT CHECK ANY NON-CONFORMANCE IS DETERMINED, THE ENGINEER IS TO BE IMMEDIATELY NOTIFIED PRIOR TO POURING CONCRETE AND/OR LAYING ASPHALT.

30 15 7.5 0 30
1"= 30'

PREVIOUS FILE No.: ECP - 17 - 023, SDP - 18 - 044, WP - 18 -095

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:	DEVELOPER:
STEPHEN A. KLEIN & ASSOCIATES C/O STEPHEN A. KLEIN, INC. 12165 CLARKSVILLE PIKE CLARKSVILLE, MD 21029 (410) 465-4244	RIVER HILL SQUARE, LLC. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 (410) 465-4244

TAX MAP: 35 GRID: 1 PARCEL: 1 ZONED: B-1 & RC-DEO

5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

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PROJECT:

FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

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MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
1/10/19

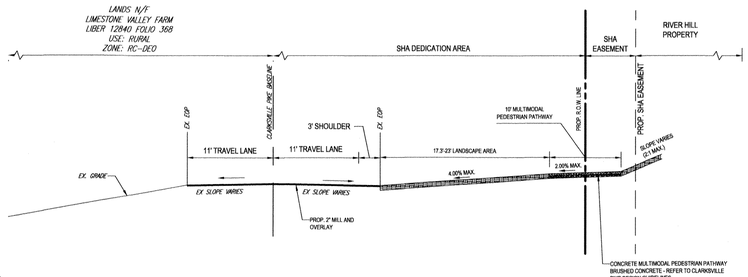
SHEET TITLE:

MD ROUTE 108 GRADING PLAN

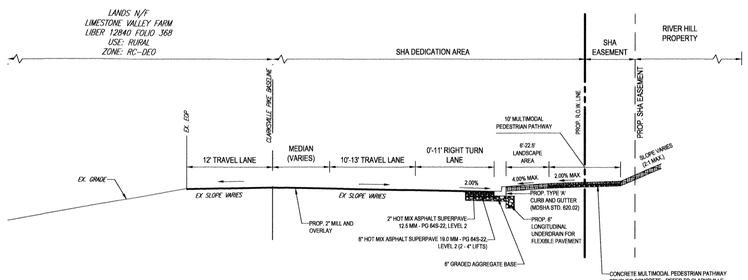
SHEET NUMBER:

7

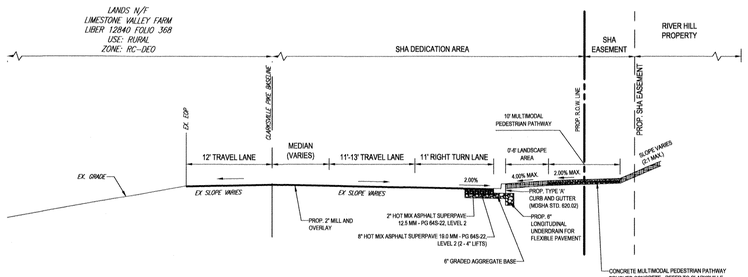
F-18-099



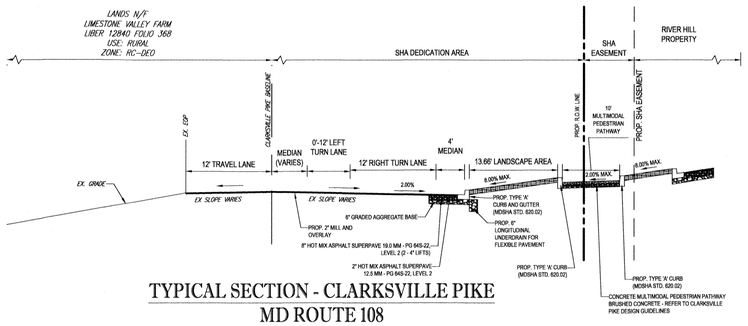
TYPICAL SECTION - CLARKSVILLE PIKE
MD ROUTE 108
STA. 8+75.59 TO STA. 10+16.05
NOT TO SCALE



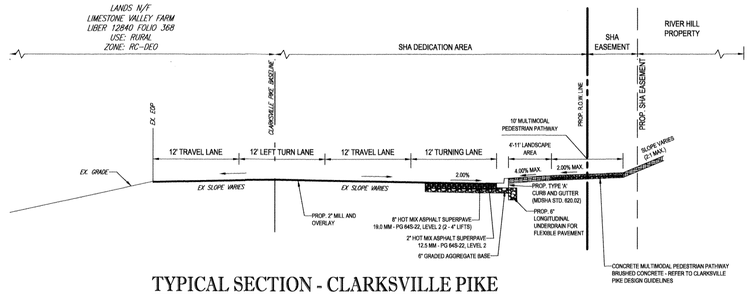
TYPICAL SECTION - CLARKSVILLE PIKE
MD ROUTE 108
STA. 10+16.05 TO STA. 11+37.48
NOT TO SCALE



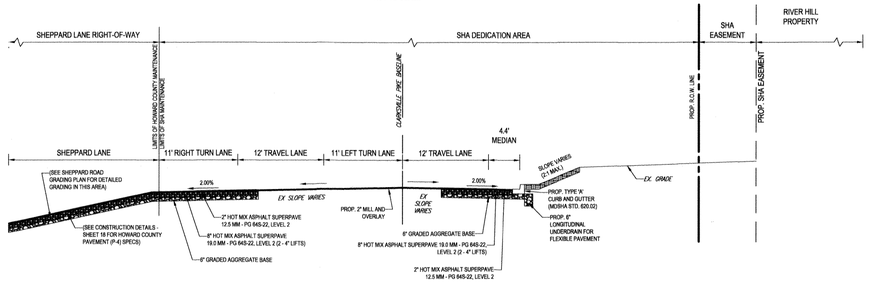
TYPICAL SECTION - CLARKSVILLE PIKE
MD ROUTE 108
STA. 11+37.48 TO STA. 12+72.51
NOT TO SCALE



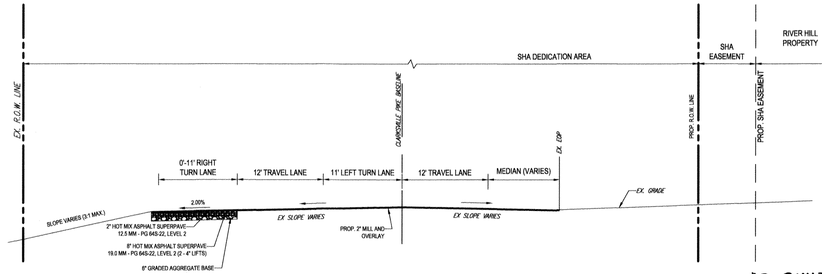
TYPICAL SECTION - CLARKSVILLE PIKE
MD ROUTE 108
STA. 12+72.51 TO STA. 14+04.78
NOT TO SCALE



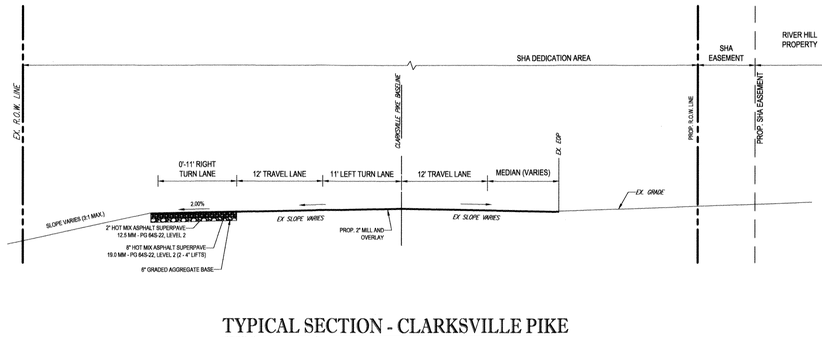
TYPICAL SECTION - CLARKSVILLE PIKE
MD ROUTE 108
STA. 14+04.78 TO STA. 16+22.26
NOT TO SCALE



TYPICAL SECTION - CLARKSVILLE PIKE
MD ROUTE 108
STA. 18+08.05 TO STA. 19+60.95
NOT TO SCALE



TYPICAL SECTION - CLARKSVILLE PIKE
MD ROUTE 108
STA. 19+60.95 TO STA. 20+55.03
NOT TO SCALE



TYPICAL SECTION - CLARKSVILLE PIKE
MD ROUTE 108
STA. 20+55.03 TO STA. 23+67.43
NOT TO SCALE

Donald Alan Massey
No. 21443
Professional Engineer
AS-BUILT 8/25/21

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443 Expiration Date: 12/21/22

AS-BUILTS FOR THE ROUTE 108 IMPROVEMENTS ARE BEING SUBMITTED TO MSHA UNDER PERMIT NO. 1GAP0014 19

" NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

10 5 2.5 0 10
1"= 10'

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:
STEPHEN A. KLEIN & ASSOCIATES
C/O STEPHEN A. KLEIN, INC.
12155 CLARKSVILLE PIKE
CLARKSVILLE, MD 21029
(410) 465-4244

DEVELOPER:
RIVER HILL SQUARE, LLC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
(410) 465-4244

TAX MAP: 35 GRID: 1 PARCEL: 1 ZONED: B-1 & RC-DEO
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No. : ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

AS-BUILT

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	BY

KNOW WHAT'S BELOW
ALWAYS CALL 811
BEFORE YOU DIG
It's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	1" = 10'
CAD I.D.:	SP2

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT
LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

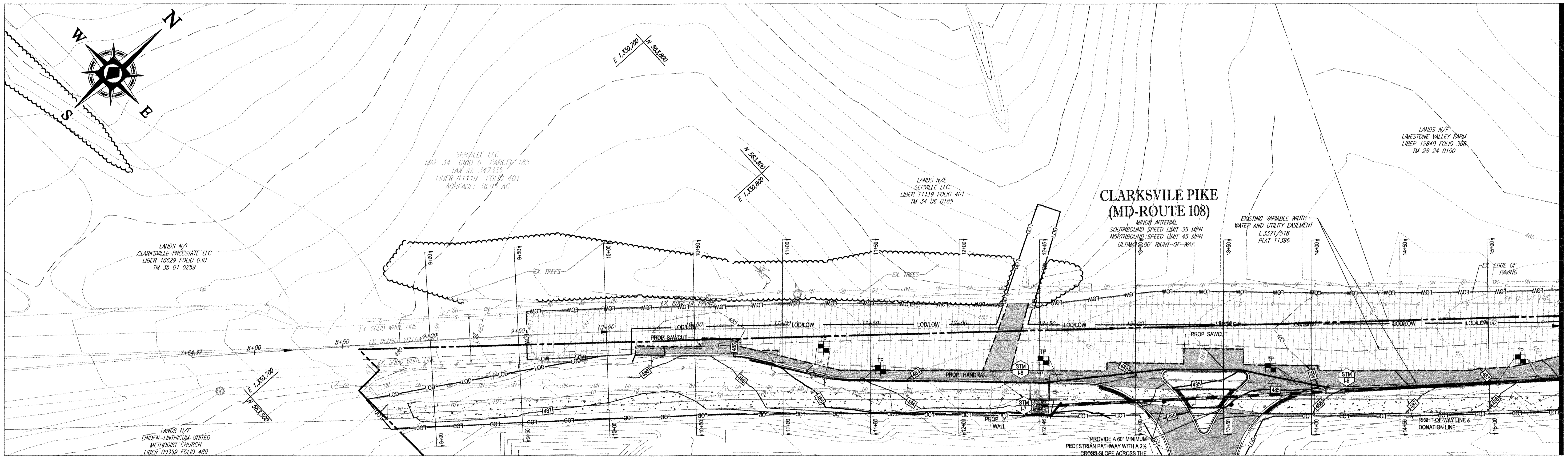
BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
4/10/19

SHEET TITLE:
MD ROUTE 108 TYPICAL SECTIONS

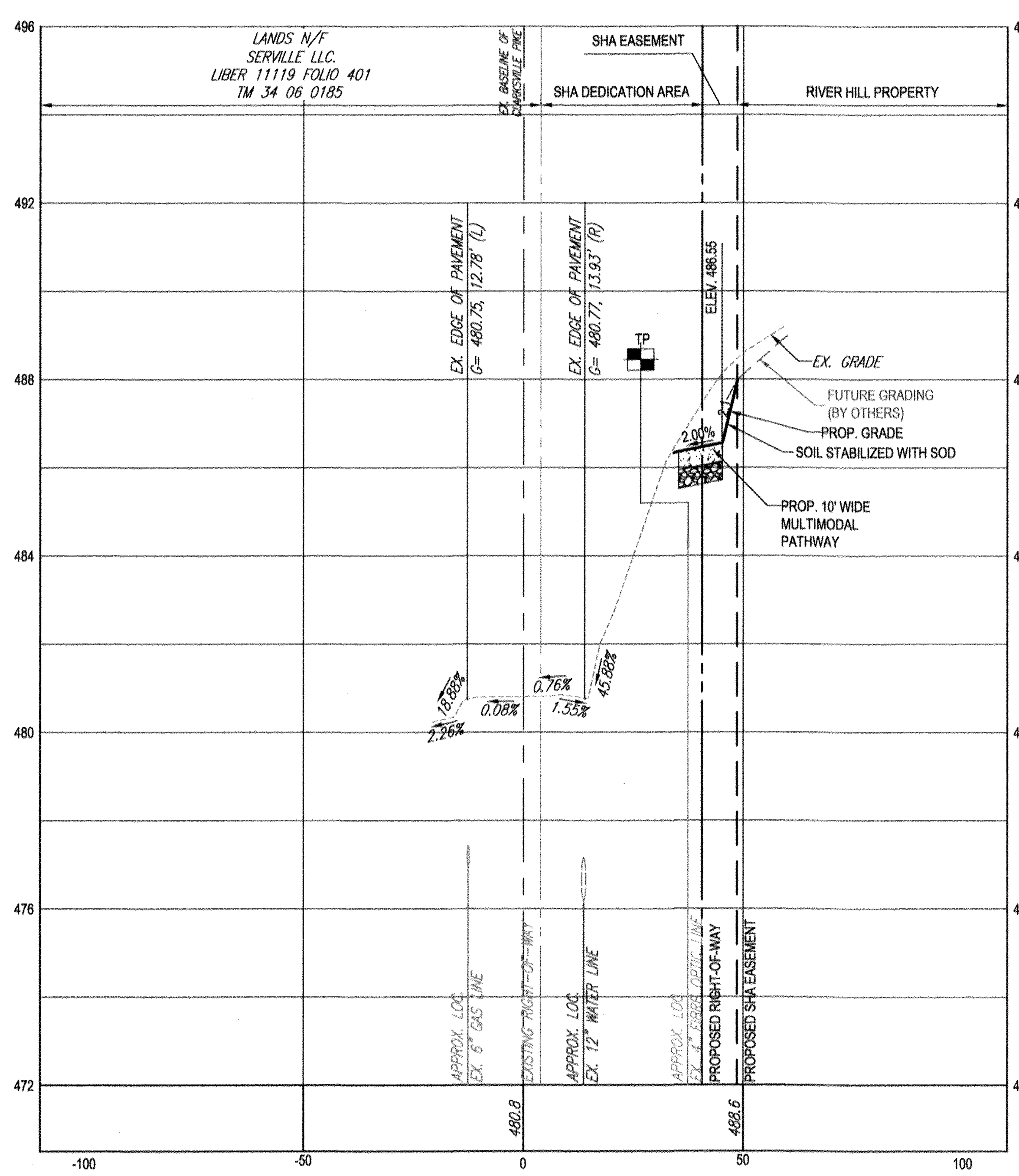
SHEET NUMBER:
8

F-18-099



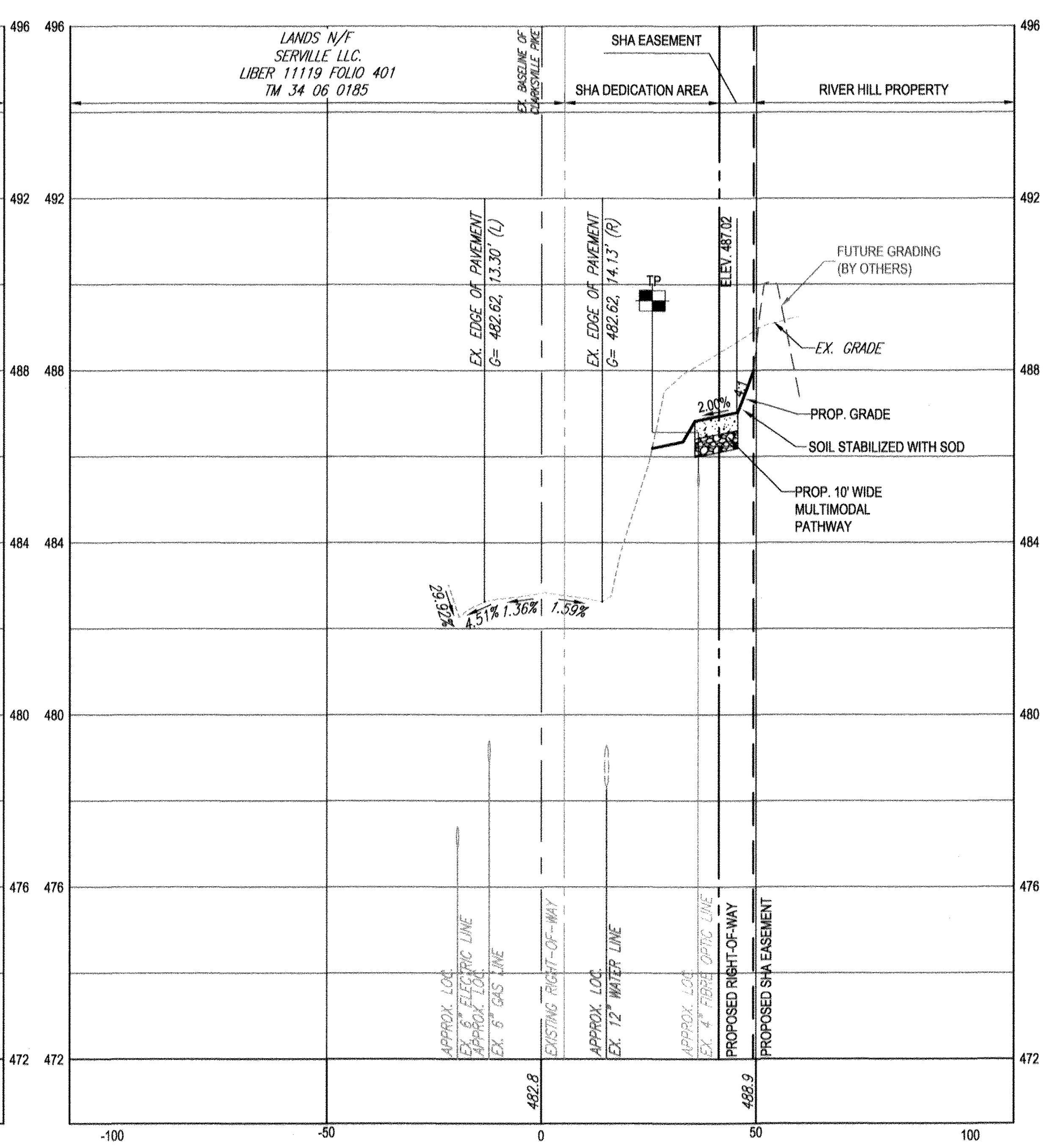
PLAN VIEW

SCALE: 1" = 30'



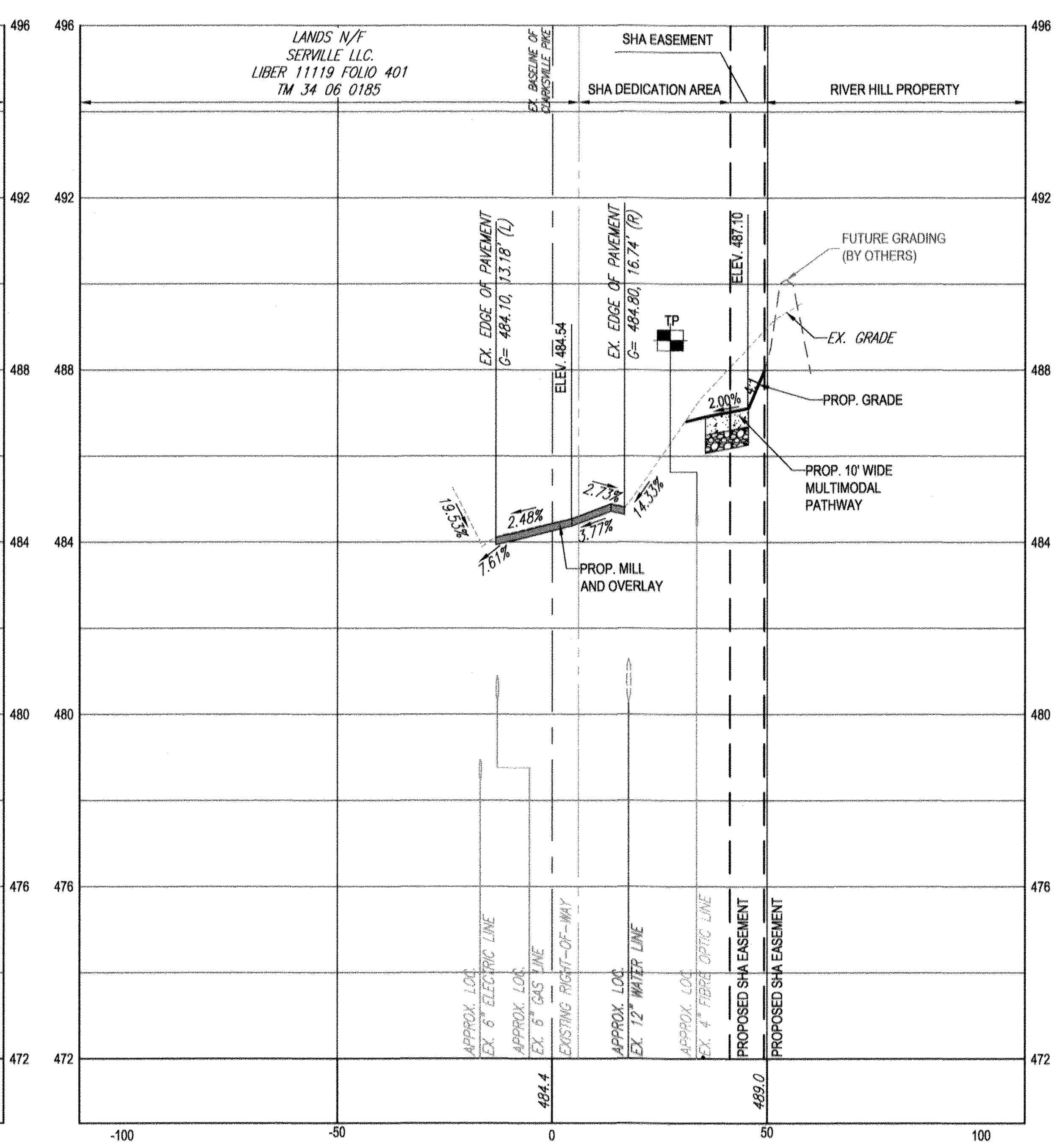
9+00

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



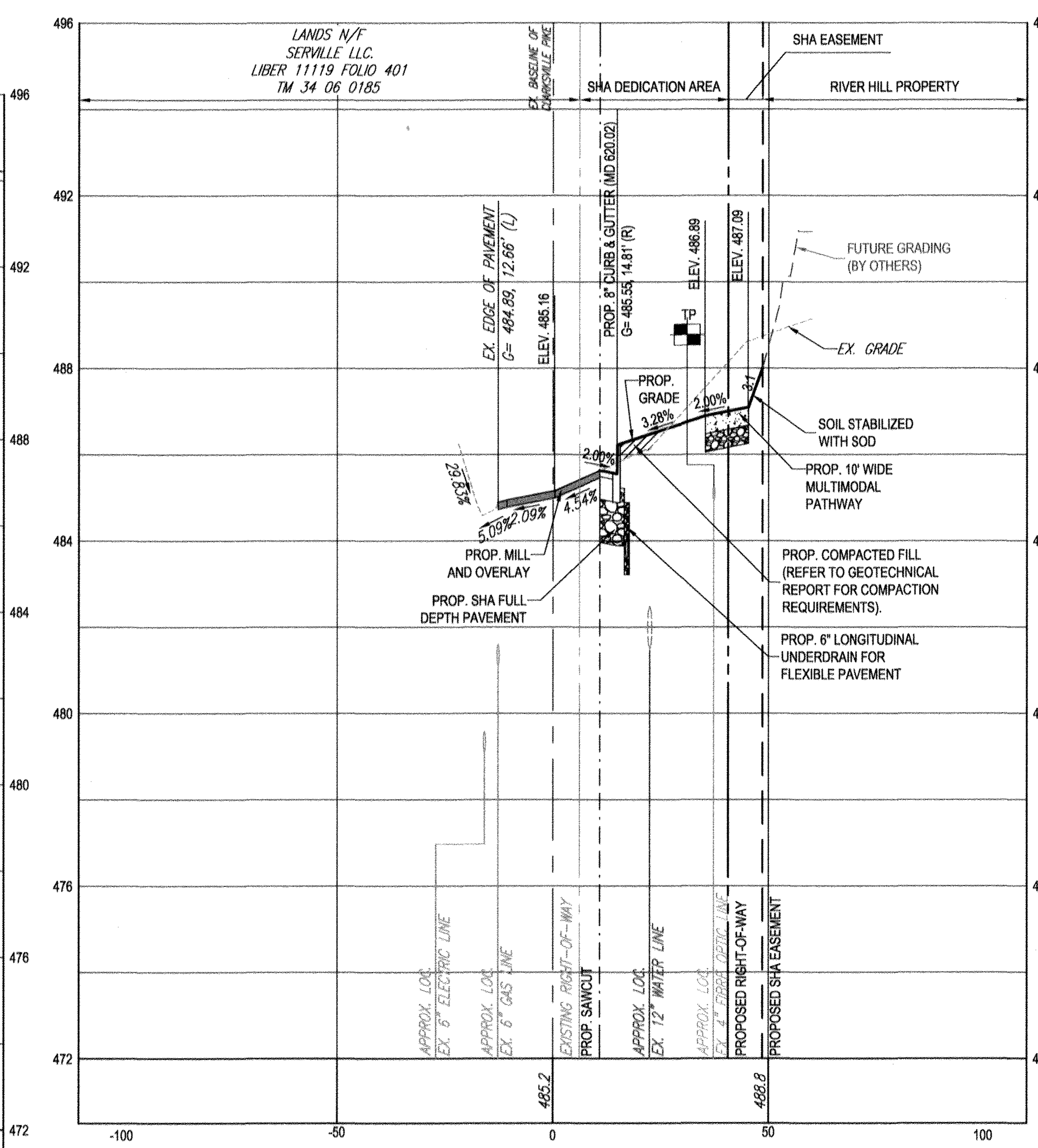
9+50

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



10+00

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



10+50

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

CLARKSVILLE PIKE (MD ROUTE 108) CROSS SECTIONS

AS-BUILTS FOR ROUTE 108 IMPROVEMENTS ARE BEING SUBMITTED TO MSHA UNER PERMIT NO. 16APHO 014 19

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

STATE OF MARYLAND
DONALD ALAN MASON
No. 21443
PROFESSIONAL ENGINEER

AS-BUILT 3/25/21

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443, Expiration Date: 12/21/22

REFER TO CONSTRUCTION DRAWINGS PREPARED BY BENCHMARK ENGINEERING FOR WORK ON PRIVATE PROPERTY.

LEGEND

- CONCRETE MULTIMODAL PEDESTRIAN PATHWAY BRUSHED CONCRETE - REFER TO CLARKSVILLE PIKE DESIGN GUIDELINES
- SHA FULL DEPTH ASPHALT PAVING
- SHA 2" MILL AND OVERLAY

ADA CONSTRUCTION NOTES TO CONTRACTOR

1. NO SIDEWALK AND/OR CROSSWALK IS TO EXCEED 2.00% CROSS SLOPE.
2. NO ADA PARKING SPACE IS TO EXCEED 2.00% SLOPE IN ANY DIRECTION.
3. NO ADA CURB RAMP IS TO EXCEED 8.33%.
4. THE CONTRACTOR IS RESPONSIBLE DURING THE FORMING OF SIDEWALKS, RAMPS, CROSSWALKS, AND ADA PARKING TO VERIFY THAT ADA COMPLIANCE IS ACHIEVED.
5. IF DURING THAT CHECK ANY NON-CONFORMANCE IS DETERMINED, THE ENGINEER IS TO BE IMMEDIATELY NOTIFIED PRIOR TO POURING CONCRETE AND/OR LAYING ASPHALT.

TEST PIT NOTE

TP

CONTRACTOR TO TEST PIT FOR EXACT LOCATION OF EXISTING UTILITY AND SUBMIT ANY DISCREPANCIES TO BOHLER ENGINEERING IN WRITING PRIOR TO CONSTRUCTION.

30 15 7.5 0 30
1"= 30'

PREVIOUS FILE No. : ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:	DEVELOPER:
STEPHEN A. KLEIN & ASSOCIATES	RIVER HILL SQUARE, LLC.
C/O STEPHEN A. KLEIN, INC.	P.O. BOX 417
12165 CLARKSVILLE PIKE	ELLICOTT CITY, MARYLAND 21041
CLARKSVILLE, MD 21029	(410) 465-4244
(410) 465-4244	

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

BOHLER ENGINEERING

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REV	DATE	COMMENT	BY

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It's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	AS SHOWN
CAD I.D.:	SPQ

PROJECT:

FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
1/10/19

SHEET TITLE:

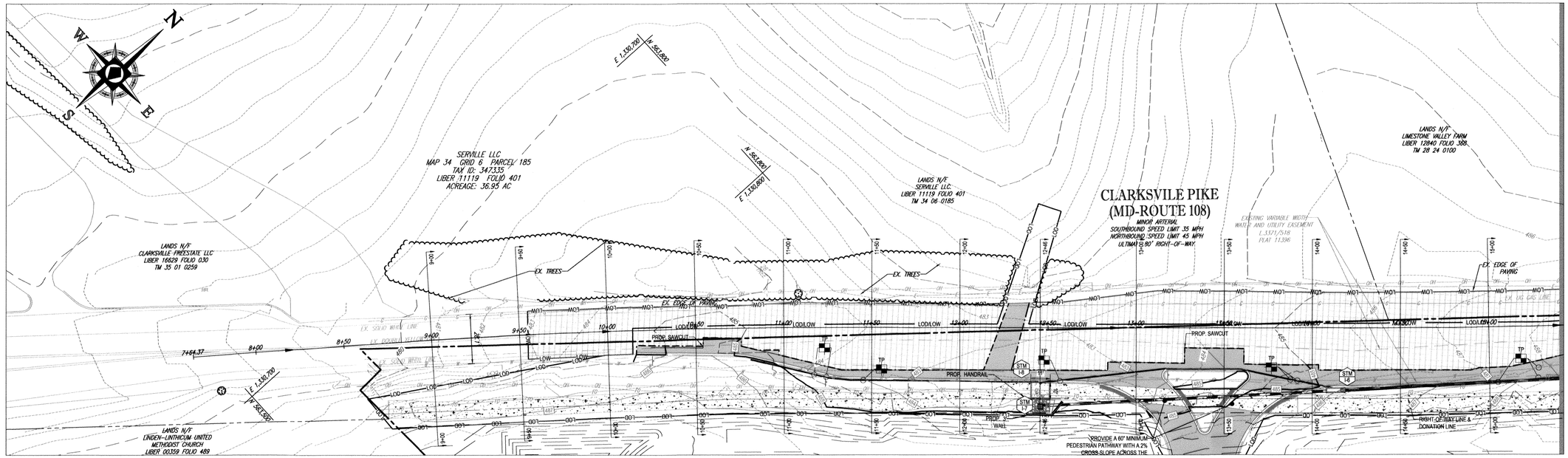
MD ROUTE 108 ROAD SECTIONS

SHEET NUMBER:

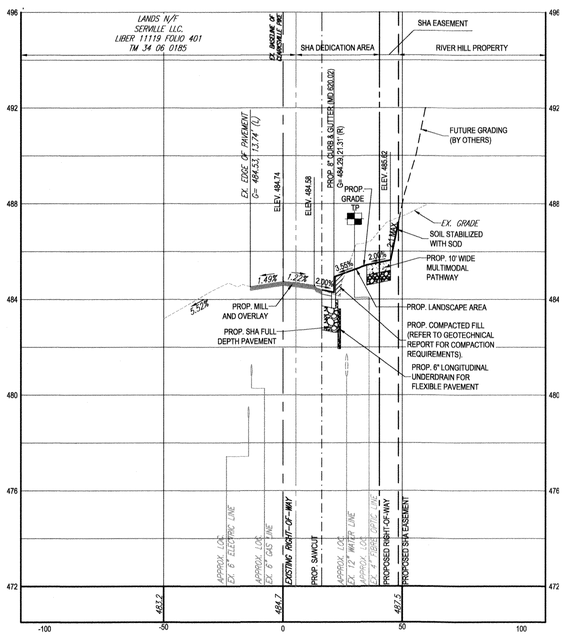
9

F-18-099

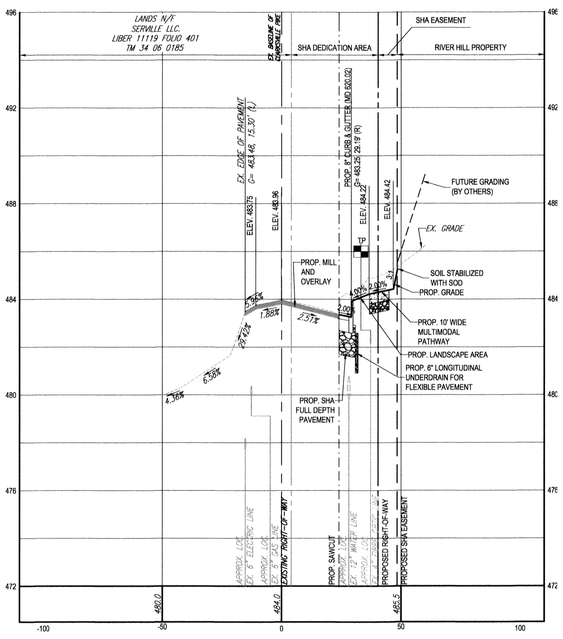
AS-BUILT



PLAN VIEW
SCALE: 1" = 30'



11+00
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



11+50
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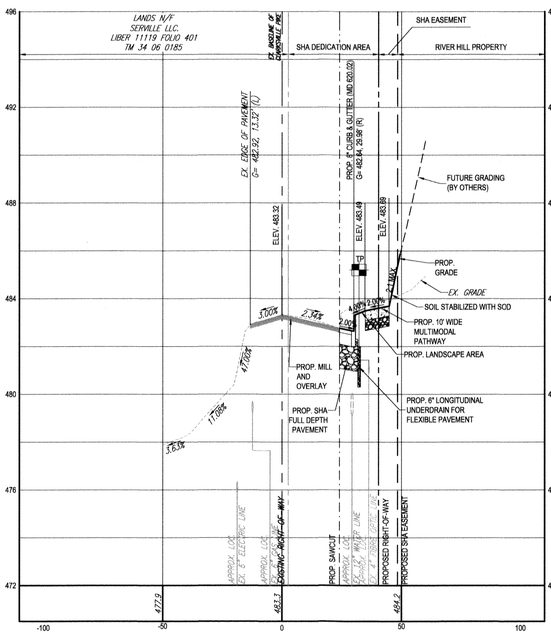
VERTICAL SCALE: 1" = 3'



12+00
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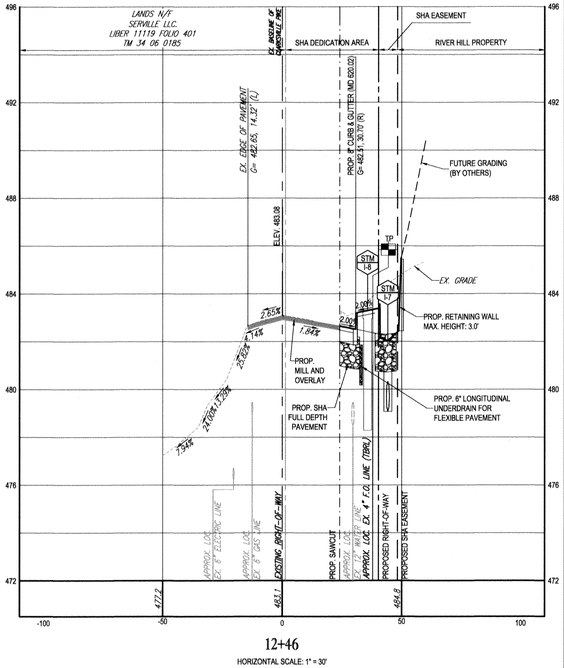
VERTICAL SCALE: 1" = 3'



12+46
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

CLARKSVILLE PIKE (MD ROUTE 108) CROSS SECTIONS

AS BUILTS FOR THE ROUTE 108 IMPROVEMENTS ARE BEING SUBMITTED TO MSHA UNDER PERMIT NO 16APH0016 19

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443, Expiration Date: 12/21/22

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER

AS-BUILT 8/25/21

LEGEND

- CONCRETE MULTIMODAL PEDESTRIAN PATHWAY BRUSHED CONCRETE - REFER TO CLARKSVILLE PIKE DESIGN GUIDELINES
- SHA FULL DEPTH ASPHALT PAVING
- SHA 2" MILL AND OVERLAY

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ADA CONSTRUCTION NOTES TO CONTRACTOR

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2. NO ADA PARKING SPACE IS TO EXCEED 2.00% SLOPE IN ANY DIRECTION.
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TEST PIT NOTE

TP — CONTRACTOR TO TEST PIT FOR EXACT LOCATION OF EXISTING UTILITY AND SUBMIT ANY DISCREPANCIES TO BOHLER ENGINEERING IN WRITING PRIOR TO CONSTRUCTION.

30 15 7.5 0 30
1"= 30'

PREVIOUS FILE No. : ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 3.21.19

OWNER:
STEPHEN A. KLEIN & ASSOCIATES
C/O STEPHEN A. KLEIN, INC.
12185 CLARKSVILLE PIKE
CLARKSVILLE, MD 21029
(410) 465-4244

DEVELOPER:
RIVER HILL SQUARE, LLC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
(410) 465-4244

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

AS-BUILT

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE SERVICES
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	BY

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NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	AS SHOWN
CAD I.D.:	SPO

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT
LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

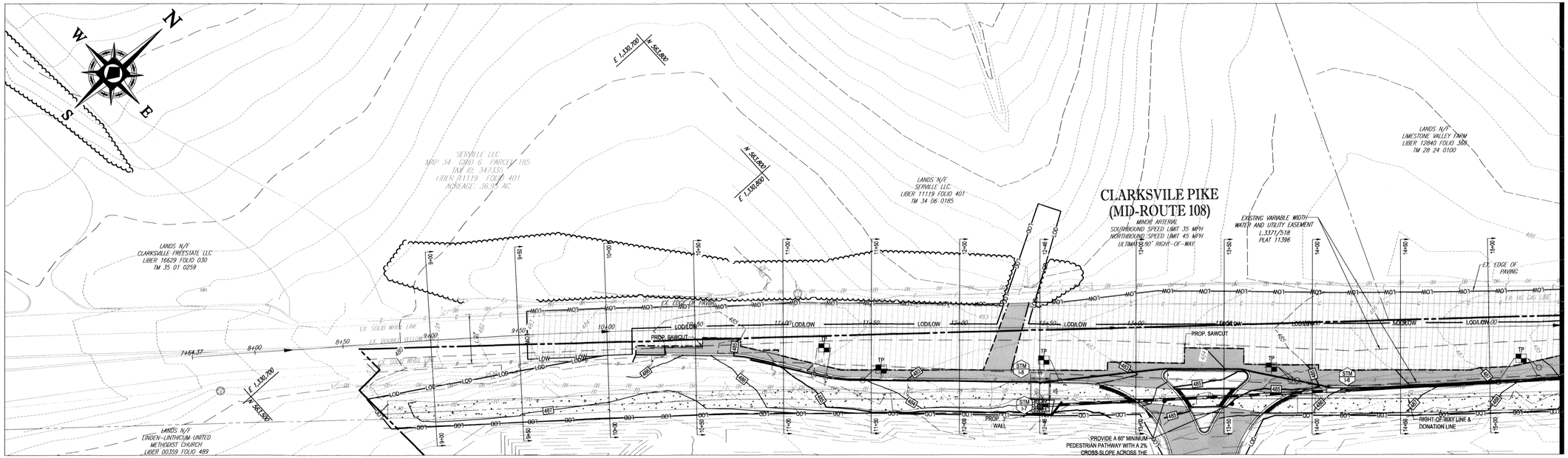
BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE NO. 40808
4/10/19

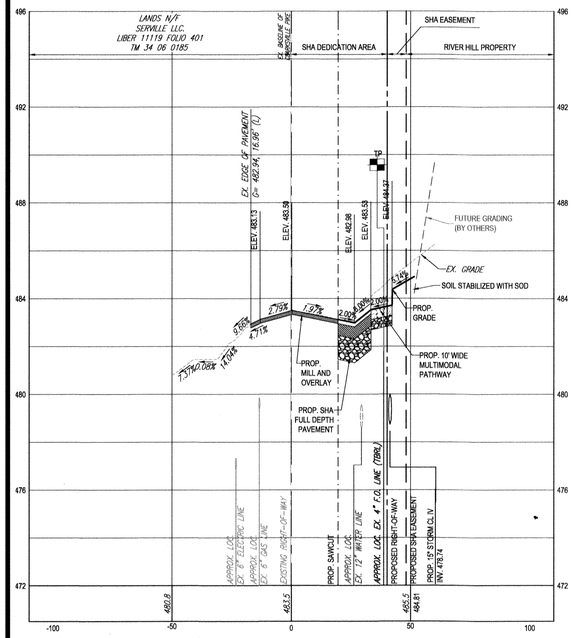
SHEET TITLE:
MD ROUTE 108 ROAD SECTIONS

SHEET NUMBER:
10

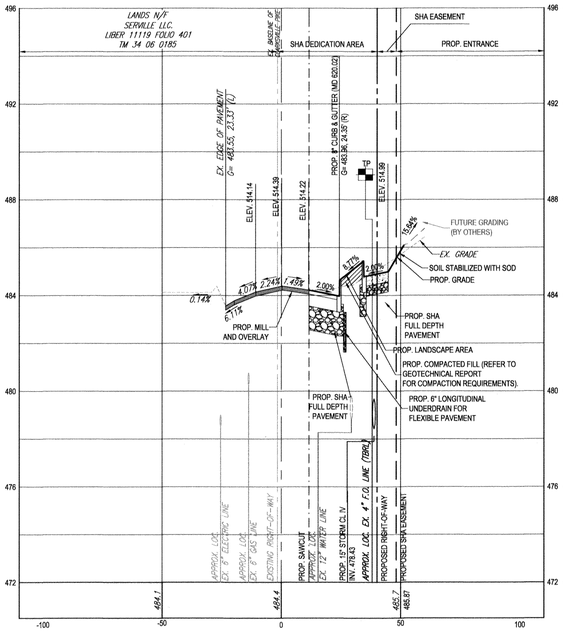
F-18-099



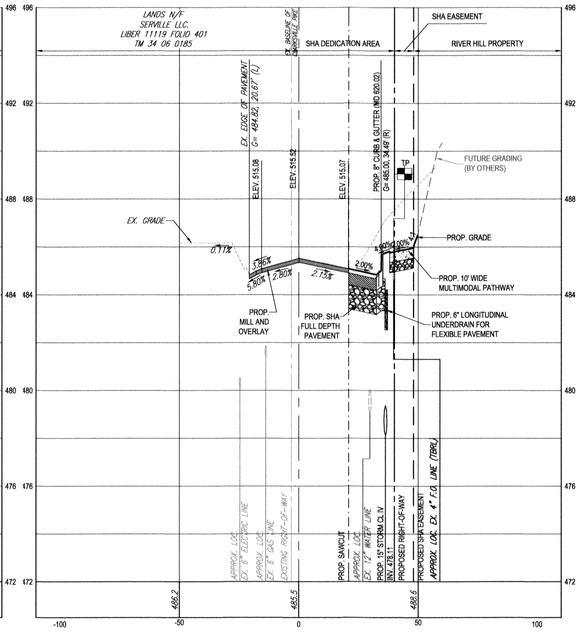
PLAN VIEW
SCALE: 1" = 30'



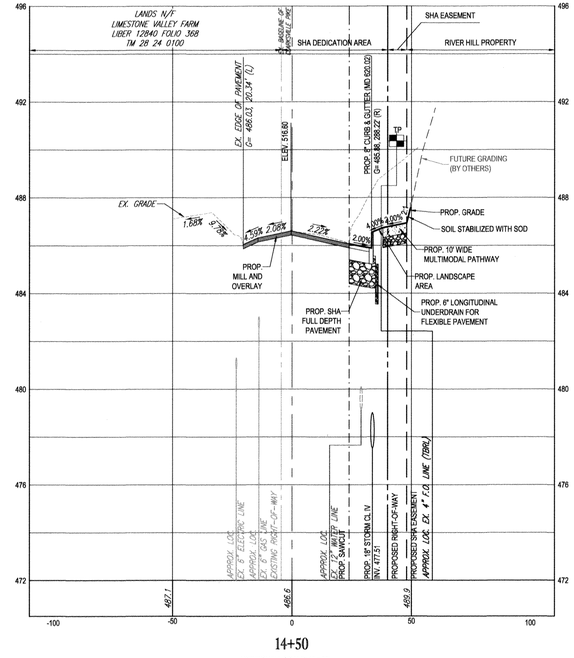
13+00
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



13+50
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



14+00
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



14+50
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

AS-BUILTS FOR THE ROUTE 108 IMPROVEMENTS ARE BEING SUBMITTED TO MSHA UNDER PERMIT NO 16AP-HO-0014 19

" NO AS-BUILT INFORMATION IS" PROVIDE ON THIS SHEET

STATE OF MARYLAND
DONALD ALAN MASON
No. 21443
PROFESSIONAL ENGINEER
AS-BUILT 3/25/21

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12/21/22

CLARKSVILLE PIKE (MD ROUTE 108) CROSS SECTIONS

REFER TO CONSTRUCTION DRAWINGS PREPARED BY BENCHMARK ENGINEERING FOR WORK ON PRIVATE PROPERTY.

LEGEND

- CONCRETE MULTIMODAL PEDESTRIAN PATHWAY BRUSHED CONCRETE - REFER TO CLARKSVILLE PIKE DESIGN GUIDELINES
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1"= 30'

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WP - 18 -095

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8.21.19

OWNER:
STEPHEN A. KLEIN & ASSOCIATES
C/O STEPHEN A. KLEIN, INC.
12165 CLARKSVILLE PIKE
CLARKSVILLE, MD 21029
(410) 465-4244

DEVELOPER:
RIVER HILL SQUARE, LLC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
(410) 465-4244

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 43808, EXPIRATION DATE: 7/3/2019

AS-BUILT

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	BY

KNOW WHAT'S BELOW
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NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	AS SHOWN
CAD I.D.:	SPG

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT
LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
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13TH ELECTION DISTRICT
HOWARD COUNTY

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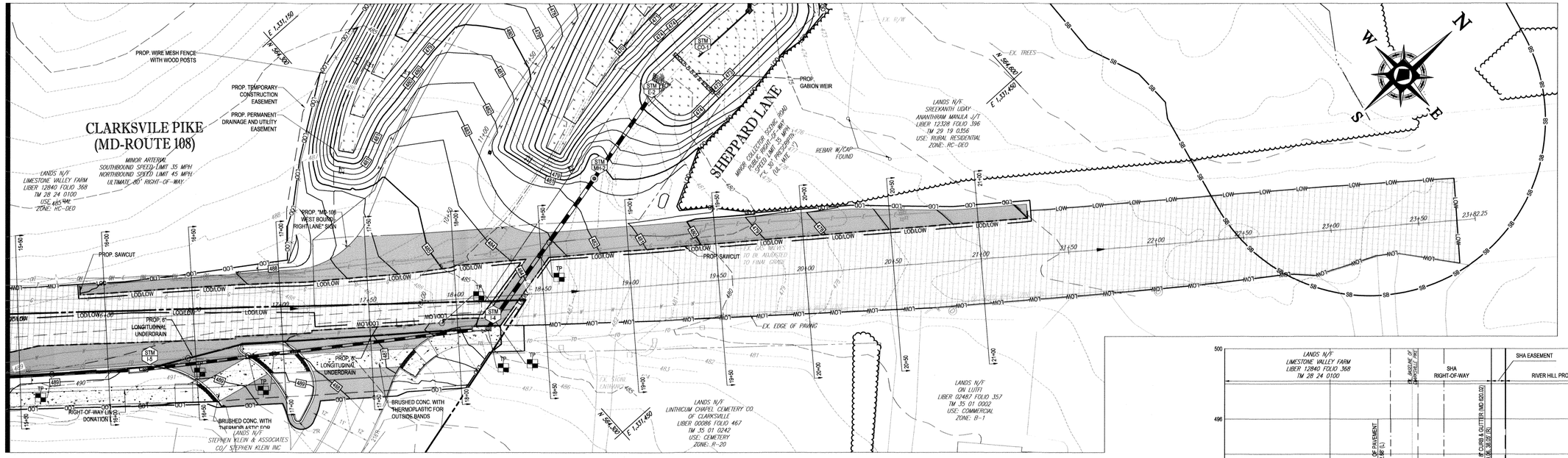
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 43808
7/3/19

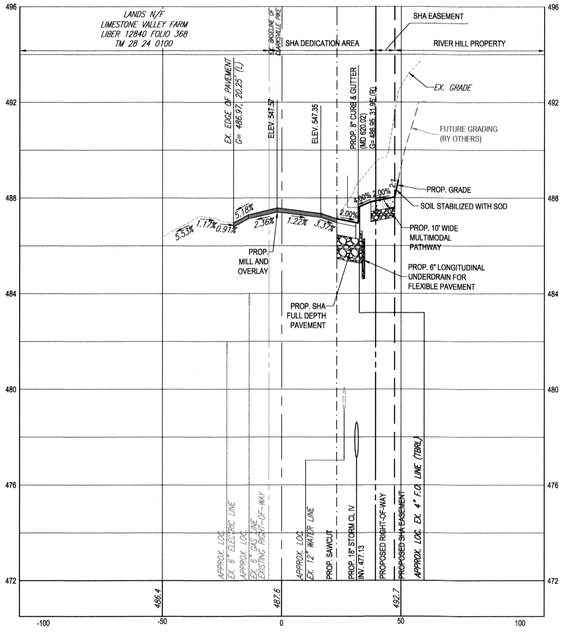
SHEET TITLE:
MD ROUTE 108 ROAD SECTIONS

SHEET NUMBER:
11

F-18-099



PLAN VIEW
SCALE: 1" = 30'



15+00
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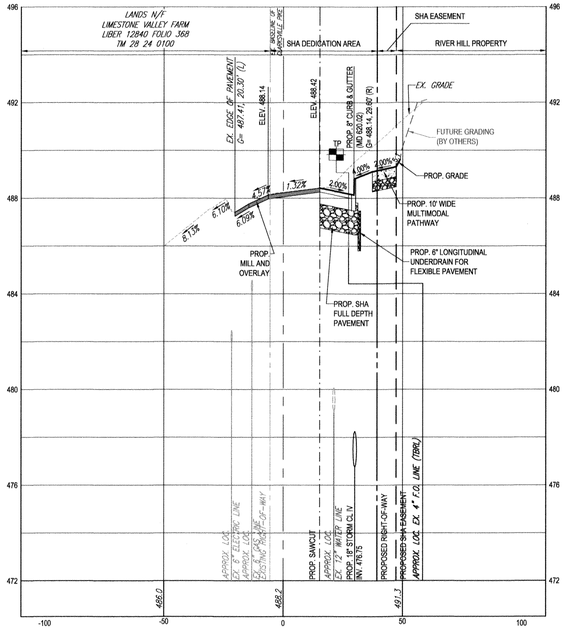

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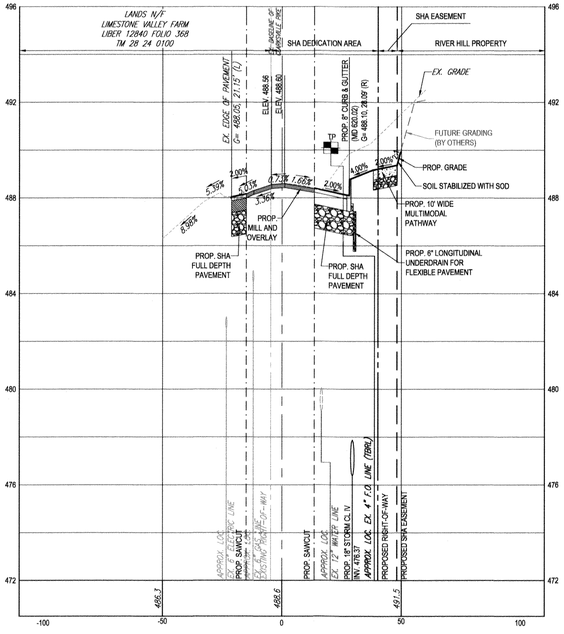

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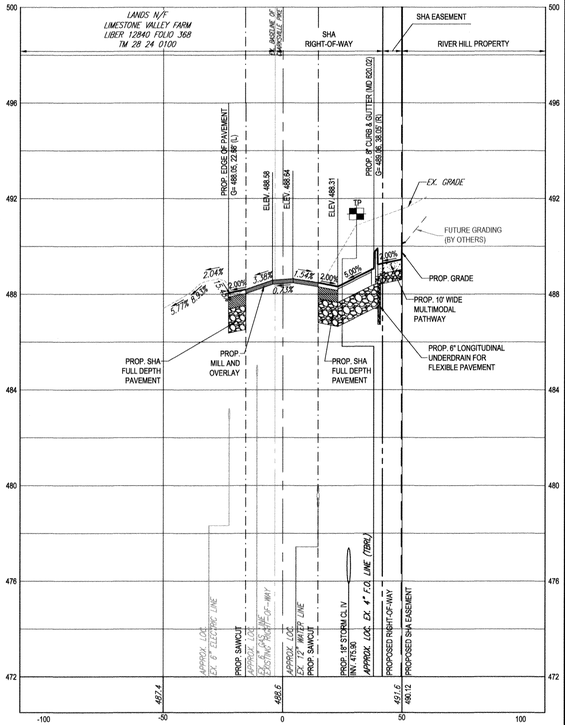

16+50
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CLARKSVILLE PIKE (MD ROUTE 108) CROSS SECTIONS

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443 Expiration Date: 12-21-22

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER
AS-BUILT 3/25/21

AS BUILTS FOR THE ROUTE 108 IMPROVEMENTS ARE BEING SUBMITTED TO MSHA UNDER PERMIT NO 1GAP1006 19

" NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

REFER TO CONSTRUCTION DRAWINGS PREPARED BY BENCHMARK ENGINEERING FOR WORK ON PRIVATE PROPERTY.

LEGEND

- CONCRETE MULTIMODAL PEDESTRIAN PATHWAY BRUSHED CONCRETE - REFER TO CLARKSVILLE PIKE DESIGN GUIDELINES
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- SHA 2" MILL AND OVERLAY

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TEST PIT NOTE

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30 15 7.5 0 30
1"= 30'

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SDP - 18 - 044
WP - 18 -095

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

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AS-BUILT

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LANDSCAPE ARCHITECTURE
FEASIBILITY STUDIES
PERMITTING SERVICES
TRANSPORTATION SERVICES

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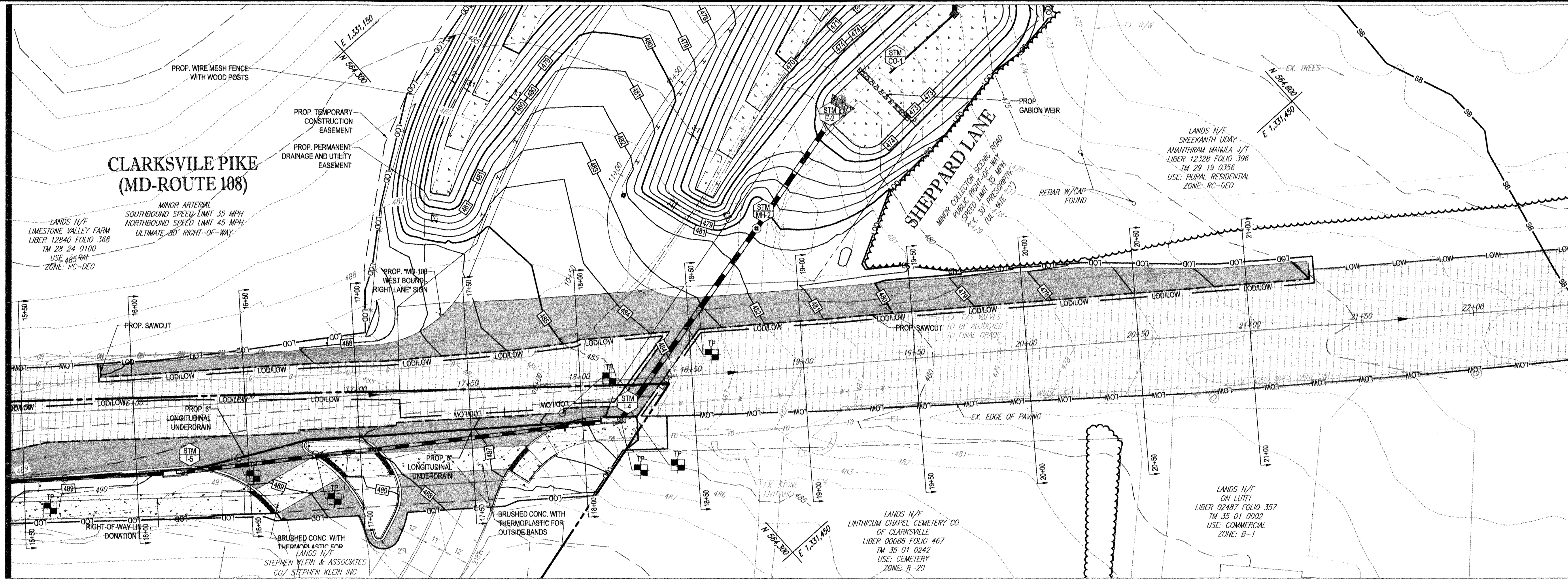
B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE NO. 40808

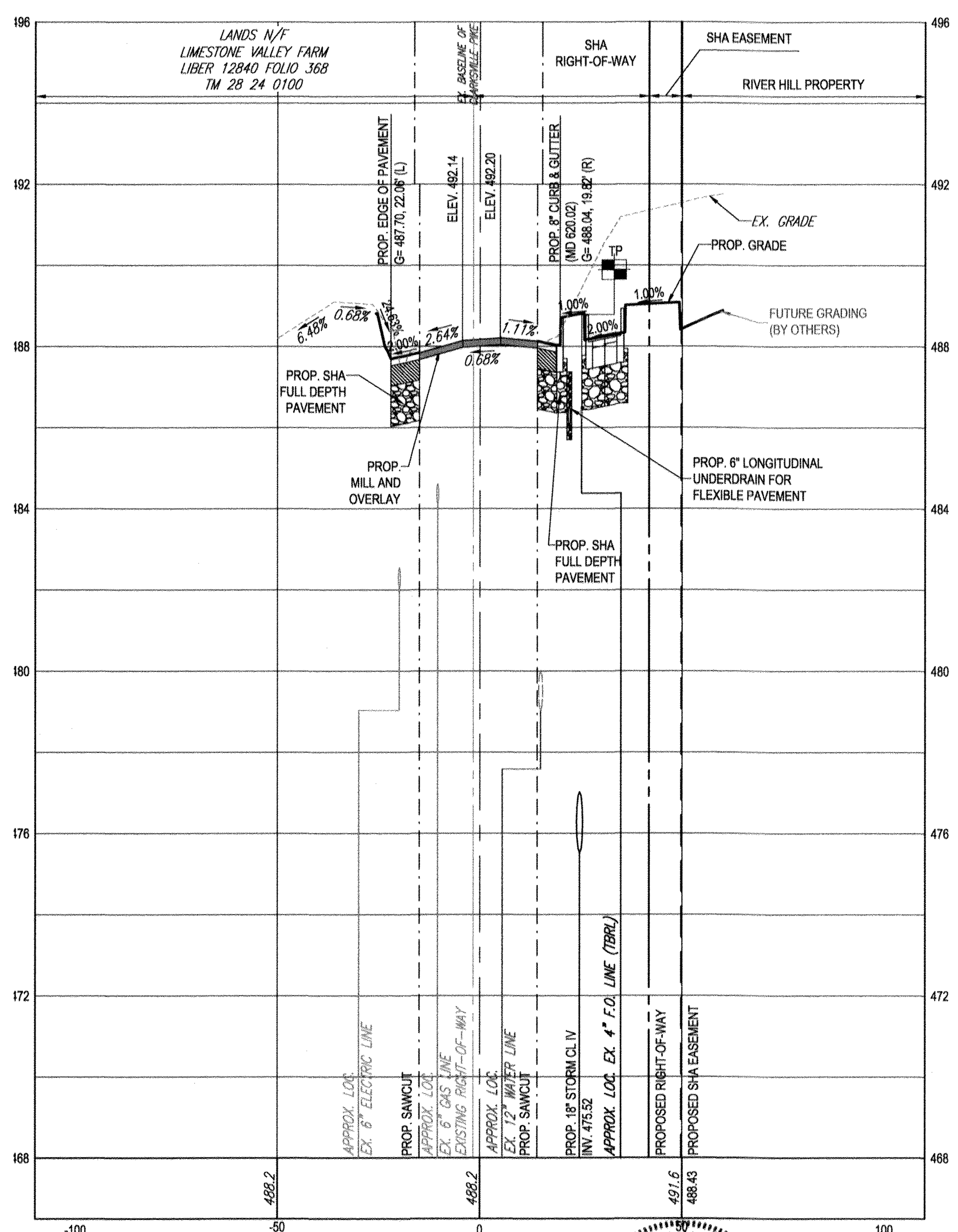
SHEET TITLE:
MD ROUTE 108 ROAD SECTIONS

SHEET NUMBER:
12

F-18-099



PLAN VIEW
SCALE: 1" = 30'



17+00
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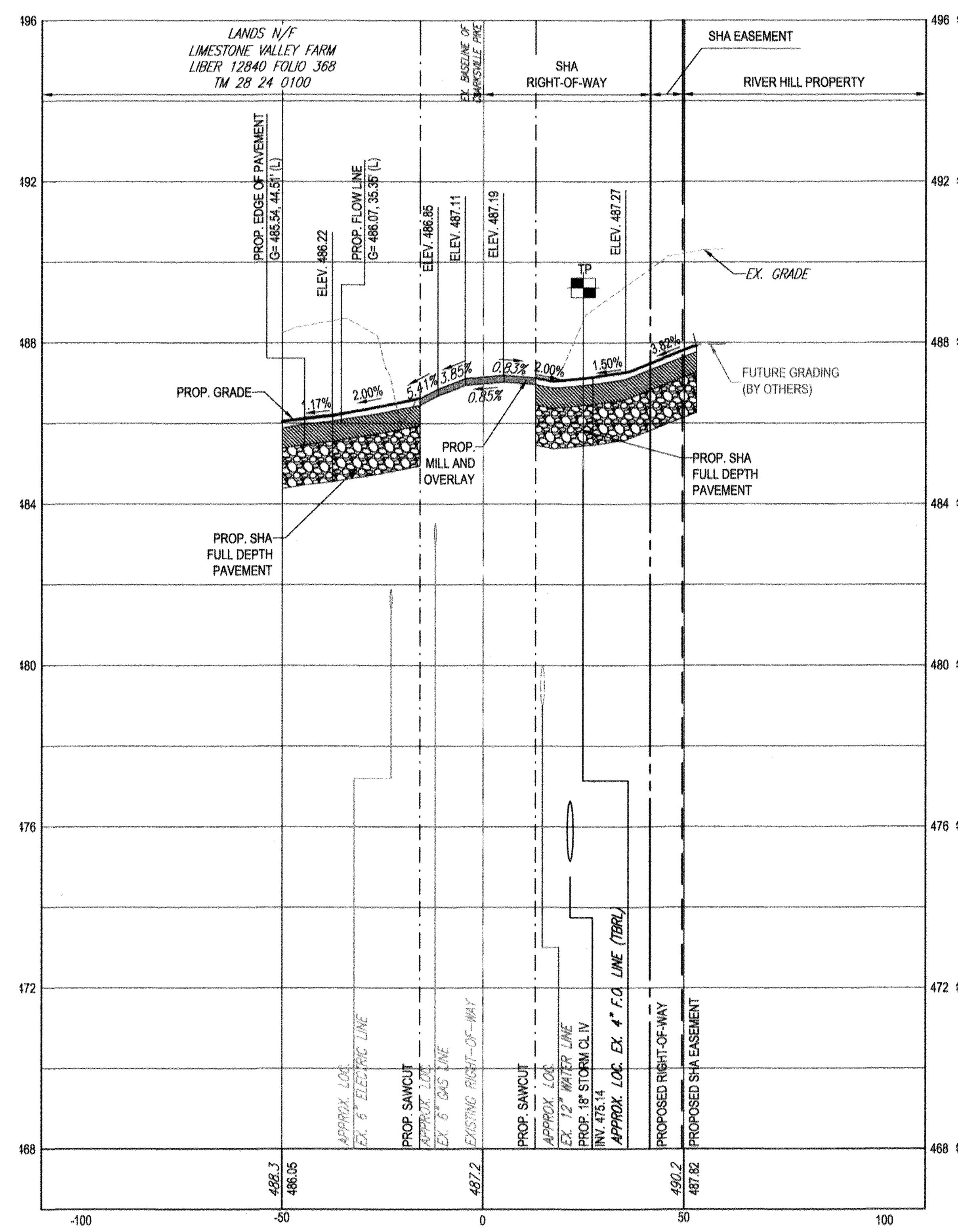

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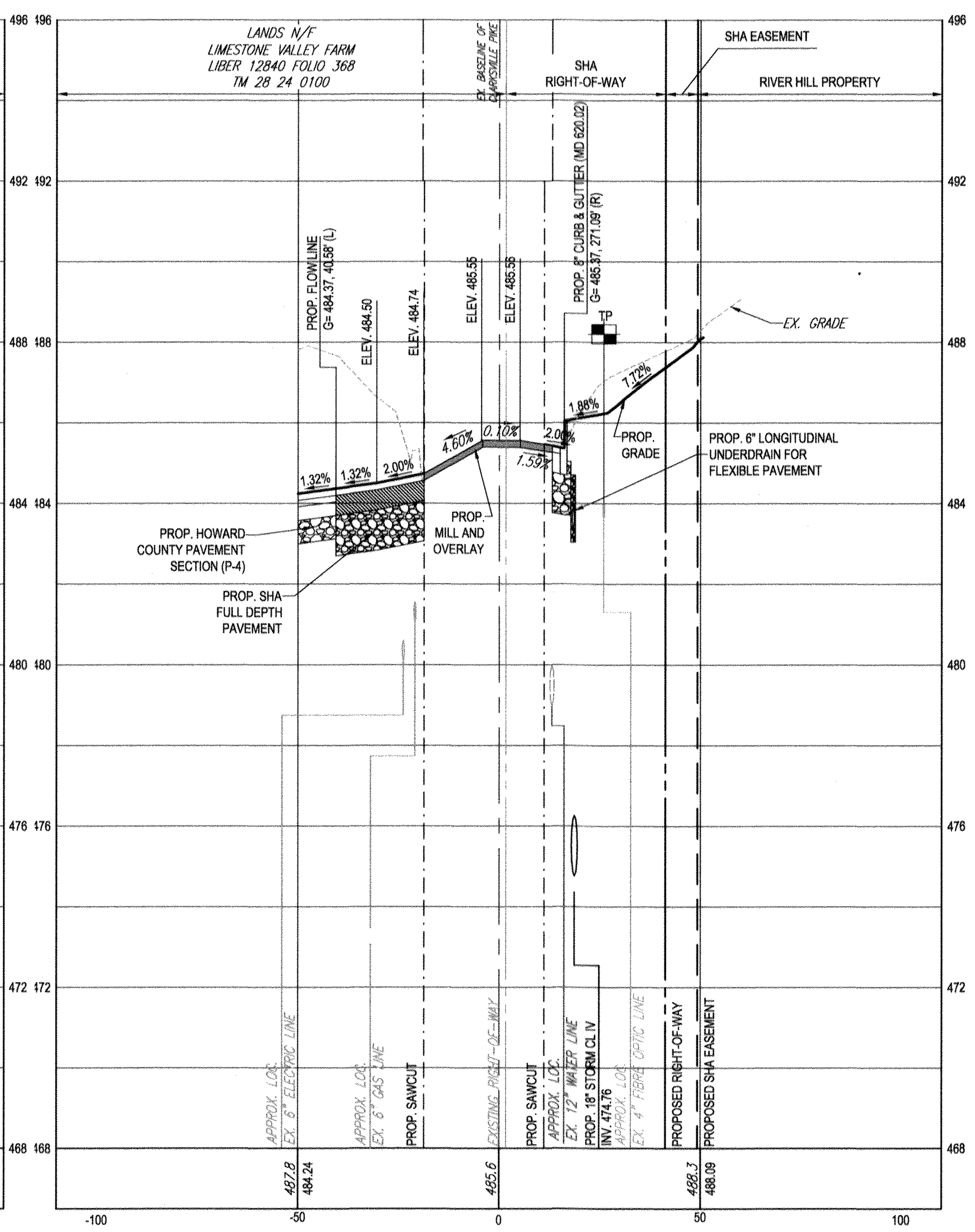

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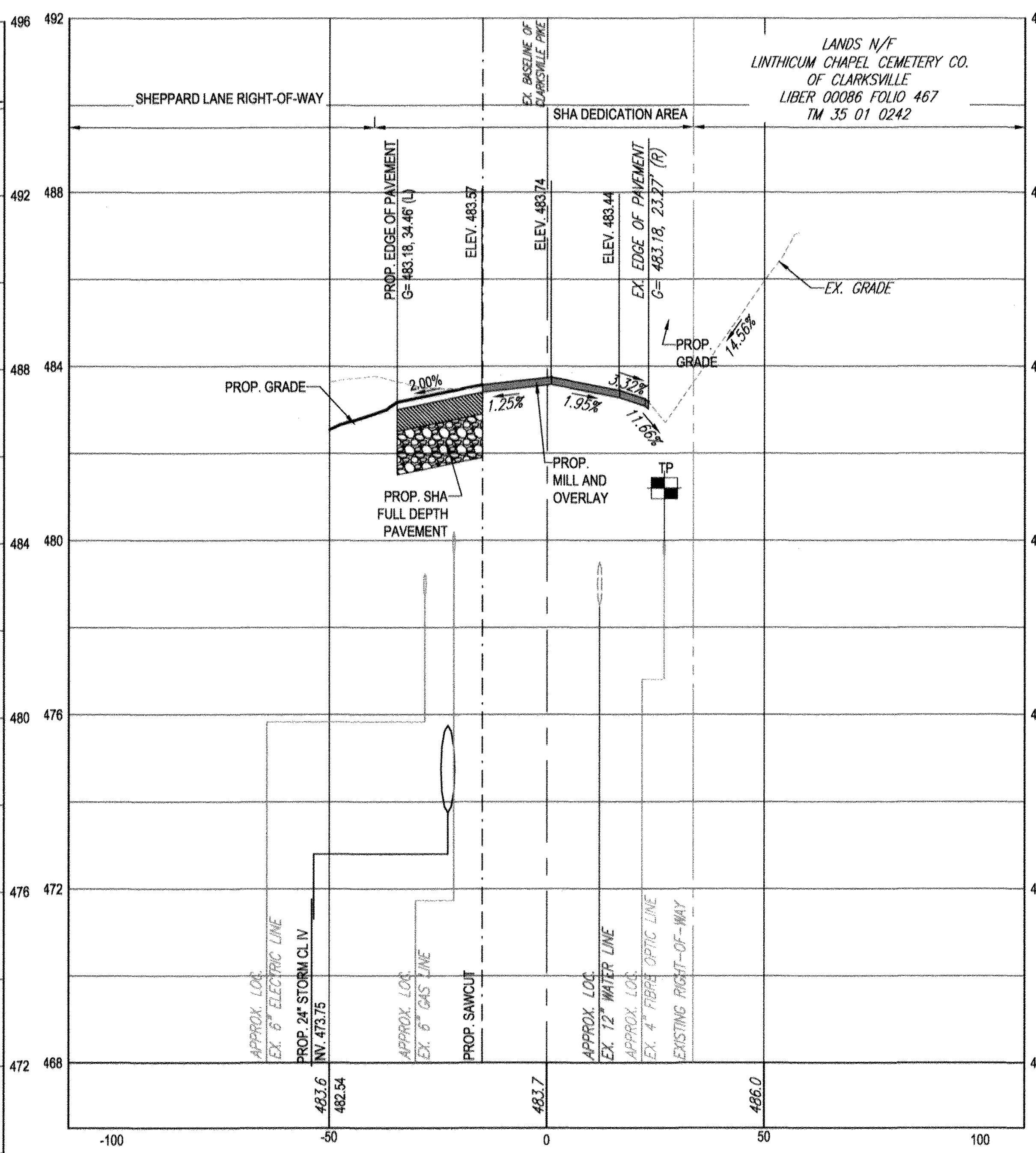

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AS-BUILTS FOR THE ROUTE 108 IMPROVEMENTS ARE BEING SUBMITTED TO MSHA UNDER PERMIT NO 16APH001419

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

STATE OF MARYLAND
DONALD ALAN MASON
No. 21443
PROFESSIONAL ENGINEER
AS-BUILT 3/25/21

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CLARKSVILLE PIKE (MD ROUTE 108) CROSS SECTIONS

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REV	DATE	COMMENT	BY

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CHECKED BY:	BRR
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SCALE:	AS SHOWN
CAD I.D.:	SPQ

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FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

LOCATION OF SITE
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ZONE: B-1, RC-DEO
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B.R. ROWE
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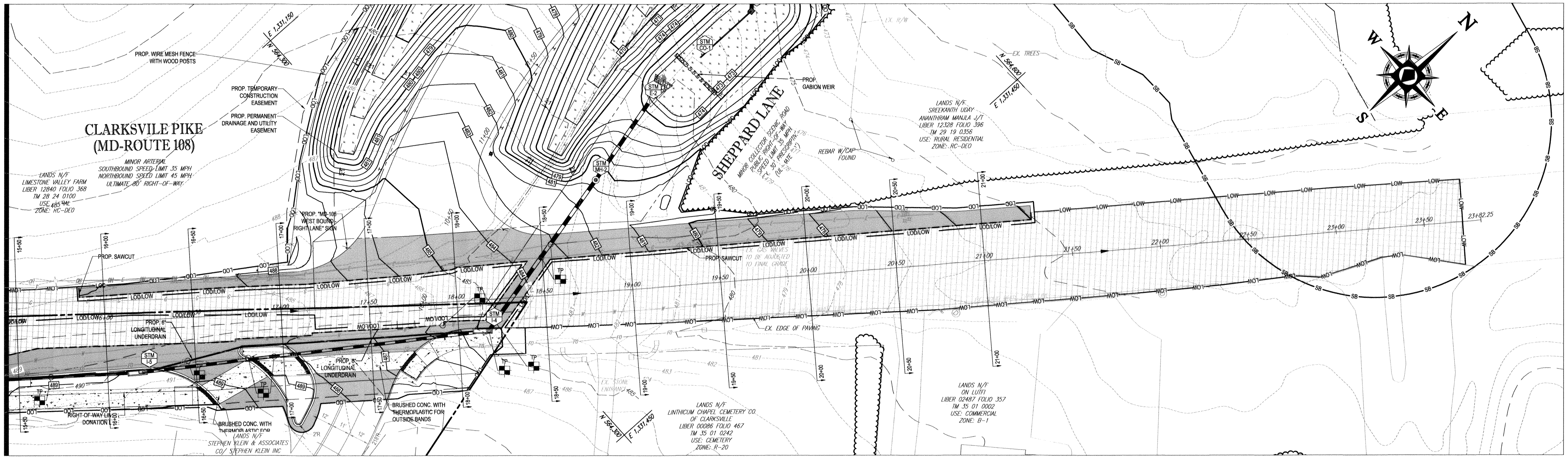
MARYLAND LICENSE No. 40808
1/10/19

SHEET TITLE:
MD ROUTE 108 ROAD SECTIONS

SHEET NUMBER:
13

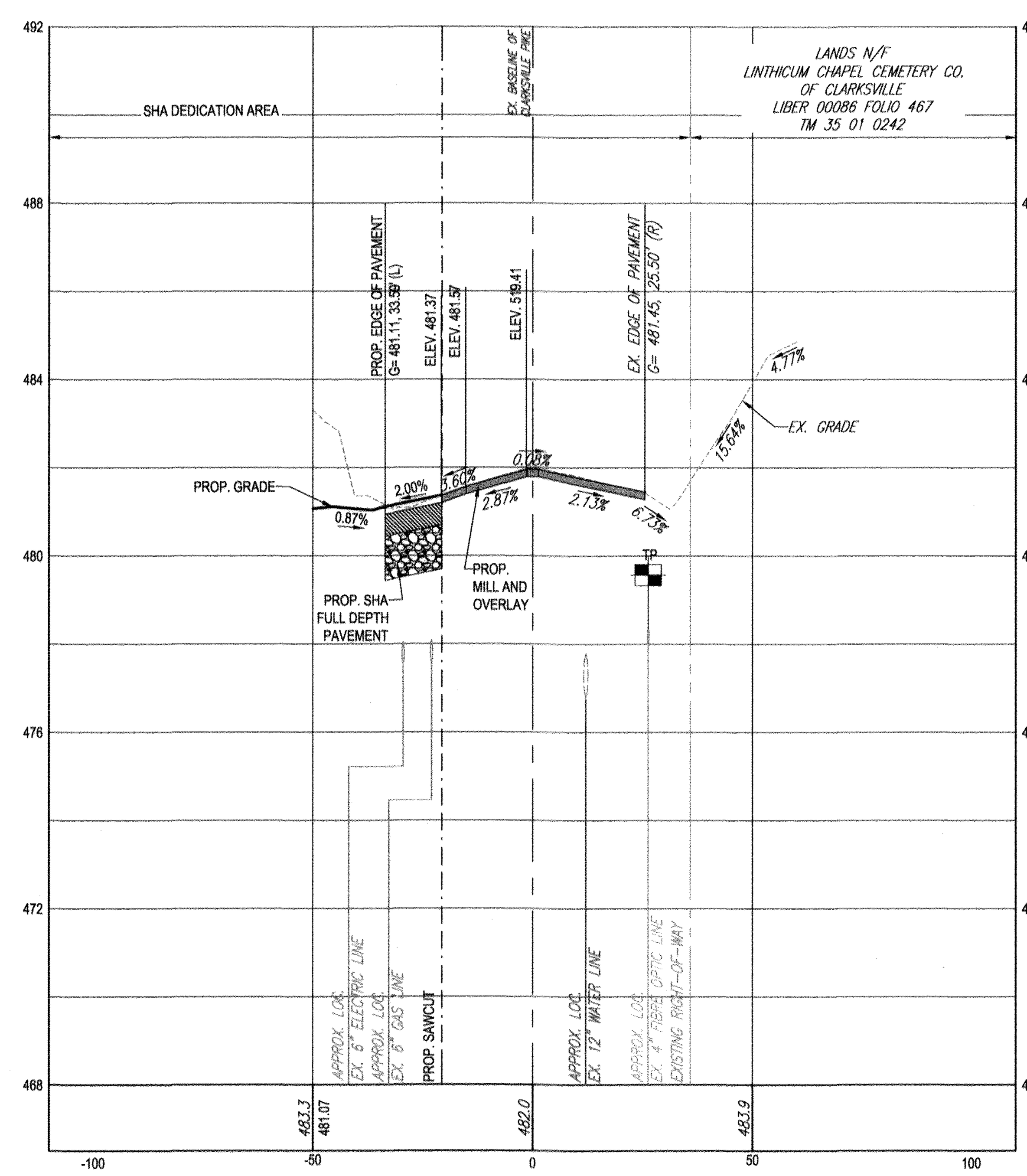
F-18-099

AS-BUILT



PLAN VIEW

SCALE: 1" = 30'



19+00

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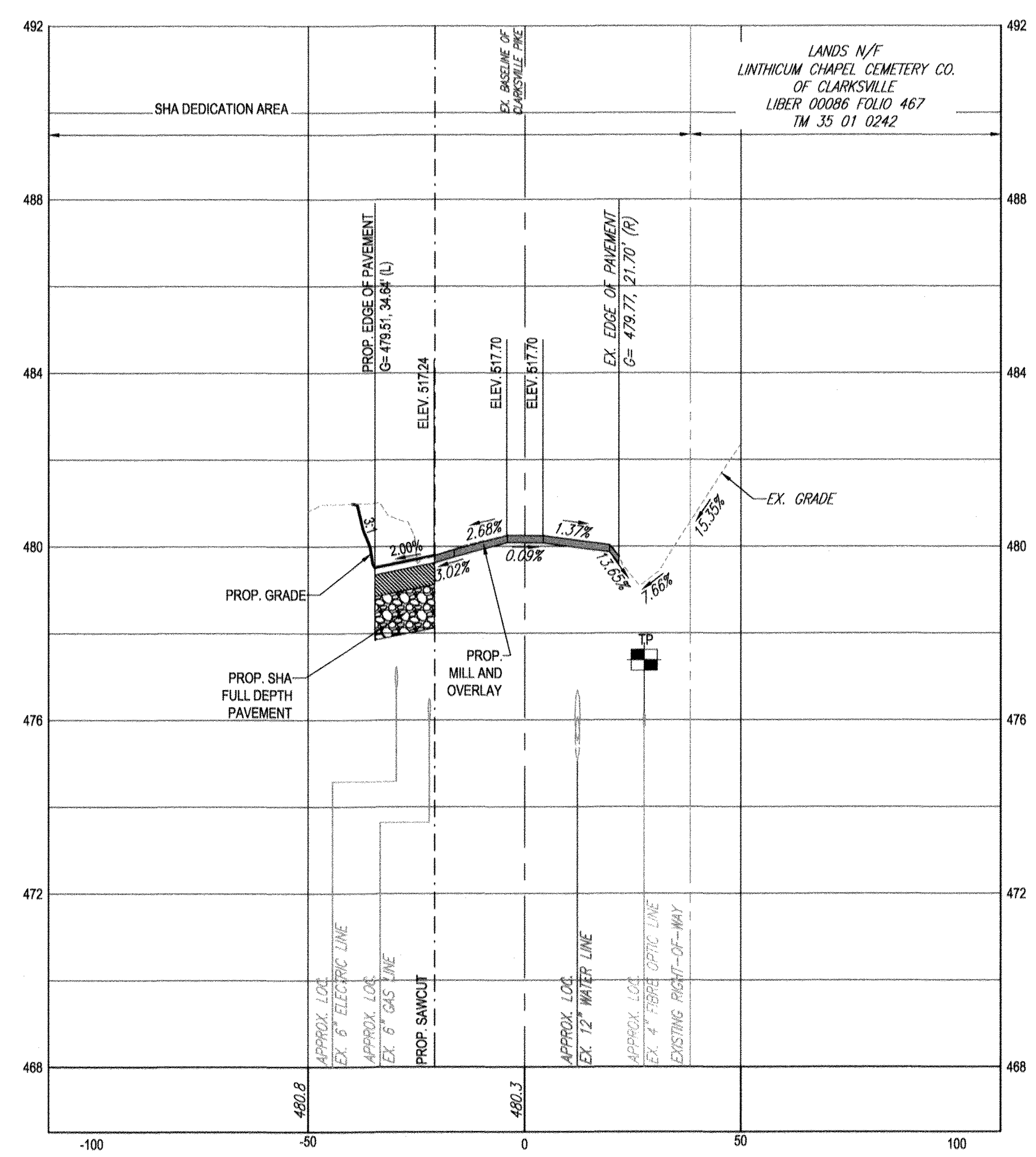

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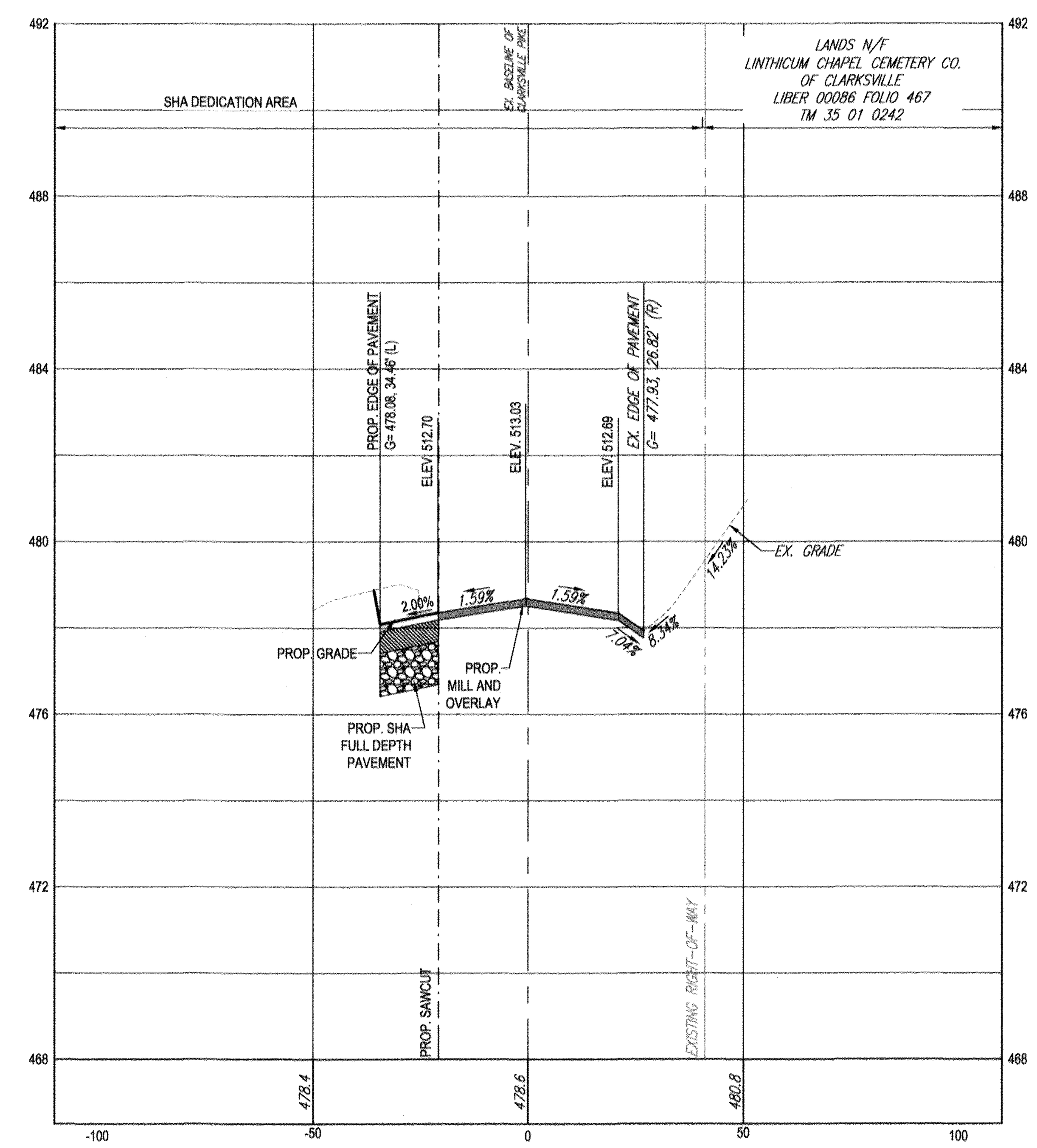

20+00

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CLARKSVILLE PIKE (MD ROUTE 108) CROSS SECTIONS

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STATE OF MARYLAND · DONALD ALAN MASON · No. 21443 · PROFESSIONAL ENGINEER

AS-BUILT 3/25/21

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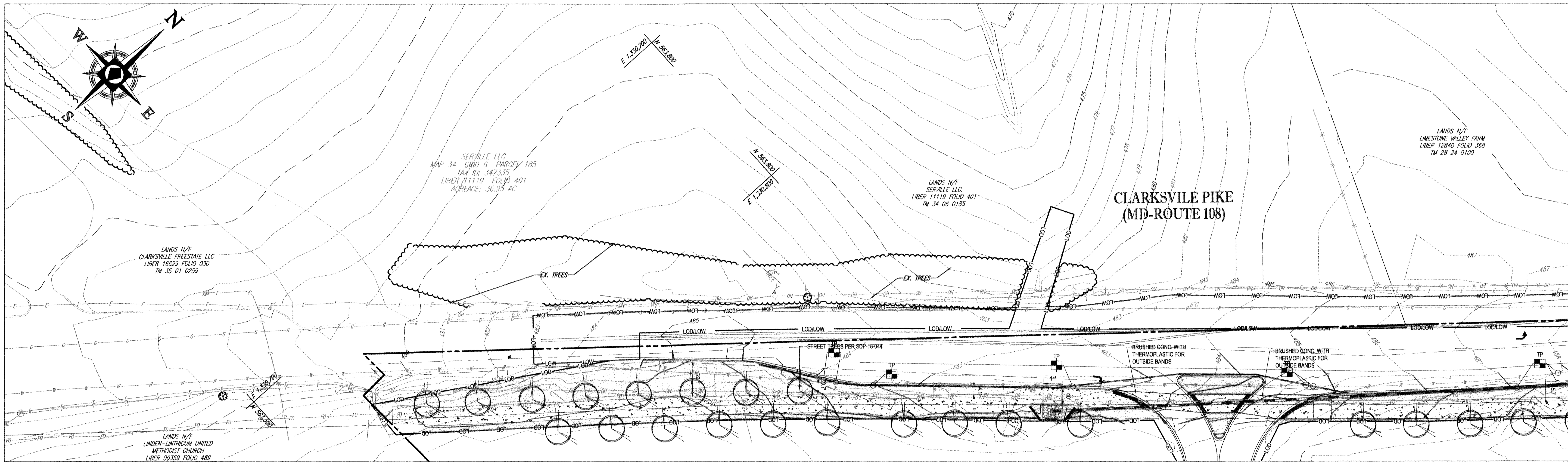
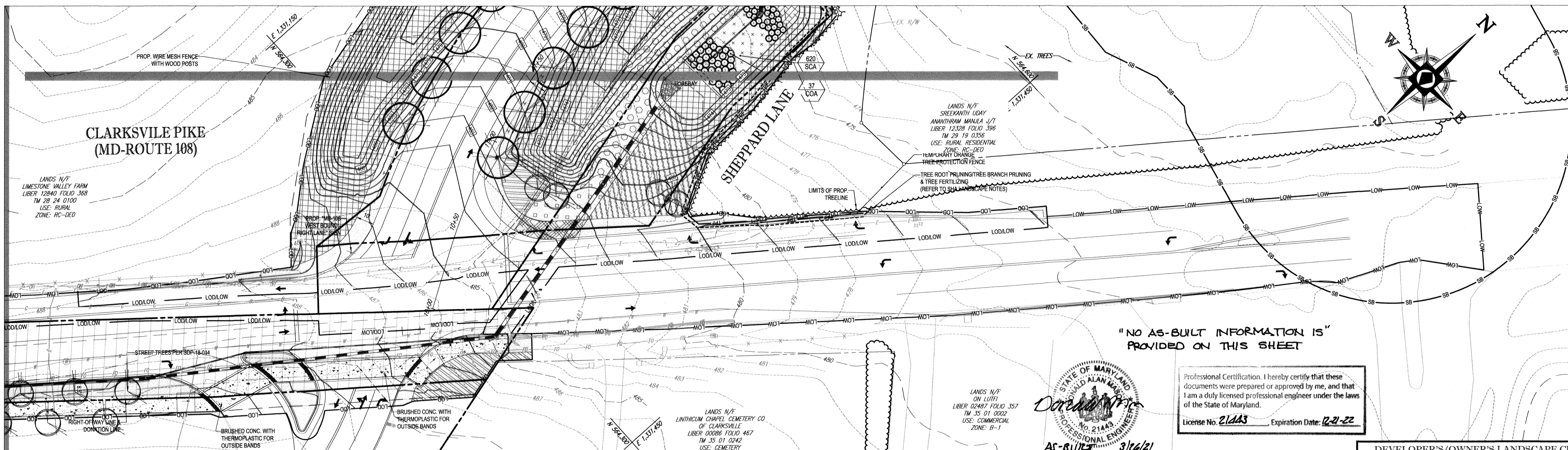
AS-BUILT





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AS-BUILT 3/26/21

OVERALL LANDSCAPE SCHEDULE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL.	CONT.
SHADE TREES					
PXAB	19	PLATANUS X ACERIFOLIA 'BLOODGOOD'	BLOODGOOD LONDON PLANETREE	2 1/2-3" CAL. / 12-14'	B+B
SUBTOTAL:	19				
ORNAMENTAL TREES					
CC	10	CERCIS CANADENSIS	EASTERN REDBUD	2-2 1/2" CAL. / 8-10'	B+B
SUBTOTAL:	10				
DECIDUOUS SHRUBS					
COA	37	CORNUS AMOMUM	SILKY DOGWOOD	18-24"	#3 CAN
IV	30	ITEA VIRGINICA 'HENRY'S GARNET'	GARNET SWEETSPIRE	24-30"	#5 CAN
SUBTOTAL:	67				
PERENNIALS					
JE	280	JUNCUS EFFUSUS	COMMON RUSH	PLUG	PERENNIAL(S)
SCA	620	SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	PLUG	PERENNIAL(S)
SUBTOTAL:	900				

LEGEND

- TURFGRASS SOD
- TURFGRASS ESTABLISHMENT NO STABILIZATION MATTING
- TURFGRASS ESTABLISHMENT WITH TYPE A SOIL STABILIZATION MATTING
- TURFGRASS ESTABLISHMENT WITH TYPE E SOIL STABILIZATION MATTING
- TURFGRASS SOD WITH 12" SUBSOIL FILL FOR REMOVAL OF EXCAVATED PAVEMENT
- TURFGRASS ESTABLISHMENT WITH TYPE A SOIL STABILIZATION MATTING & 12" SUBSOIL FILL FOR REMOVAL OF EXCAVATED PAVEMENT
- TPF — TEMPORARY ORANGE TREE PROTECTION FENCE
- TREE ROOT PRUNING, TREE BRANCH PRUNING AND TREE FERTILIZING

GENERAL LANDSCAPE NOTES

1. "SHOULD ANY TREE DESIGNATED FOR PRESERVATION FOR WHICH LANDSCAPING CREDIT IS GIVEN, DIE PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INCHES IN CALIPER AND INSTALLED AS REQUIRED IN THE HOWARD COUNTY LANDSCAPE MANUAL."

2. "THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, INCLUDING PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION AND WHEN NECESSARY, REPAIRED OR REPLACED."

3. "AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWITH LISTED AND APPROVED FOR THIS SITE, SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPING MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATES."

LIMIT OF DISTURBANCE: 2.68 AC. OR 116,741 S.F.*
LIMIT OF WORK: 0.85 AC. OR 34,026 S.F.
*LIMIT OF DISTURBANCE INCLUDES ALL WORK WITH SOIL DISTURBANCE
**LIMIT OF WORK INCLUDES ALL WORK WITHOUT SOIL DISTURBANCE

STREET TREE REQUIREMENTS

STREET	LINEAR FEET	SPACING	TREES REQUIRED	TREES PROVIDED
SHEPPARD LANE	449 LF 166 LF (OVERHEAD LINES)	40 L.F./ 30 L.F.	19 TREES	19 SHADE TREES 6 ORNAMENTAL TREES
CLARKSVILLE PIKE	113 LF	30 L.F.	4 TREES	4 ORNAMENTAL TREES
TOTAL TREES			29 TREES	29 TREES

1. FINANCIAL SURETY FOR THE REQUIRED 29 PUBLIC STREET TREES WILL BE POSTED FOR $7,700 AND WILL BE WITH THE DEVELOPMENT ENGINEERING DIVISION (DED) COST ESTIMATE.
2. SHADE TREES MUST BE PLANTED A MINIMUM OF 40 FEET AND ORNAMENTAL TREES MUST BE PLANTED A MINIMUM OF 25 FEET FROM POWER LINES FROM POWER LINES PER B.G.E. PLANTING GUIDE.
3. FINAL PLACEMENT OF STREET TREES WILL OCCUR IN THE FIELD AND BE PLACED A MINIMUM OF 30 FEET FROM ALL SIGNS AND INTERSECTIONS WHEN PLANTED BETWEEN SIDEWALK AND CURB, BE LOCATED WITH CONSIDERATION OF UNDERGROUND UTILITIES AND STRUCTURES AND MAINTAIN A MINIMUM 5 FEET DISTANCE ON CENTER FROM A DRAIN INLET STRUCTURE, 5 FEET FROM AN OPEN ACCESS STRIP AND 10 FEET FROM A DRIVEWAY.

30 15 7.5 0 30
1"= 30'

PREVIOUS FILE No. : ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

DEVELOPER'S/OWNER'S LANDSCAPE CERTIFICATE

I/WE CERTIFY THAT HE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

DEVELOPER'S / OWNER'S NAME RIVER HILL SQUARE LLC MEMBER STEVEN K BREEDEN DATE 1/11/19

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:	DEVELOPER:
STEPHEN A. KLEIN & ASSOCIATES C/O STEPHEN A. KLEIN, INC. 12165 CLARKSVILLE PIKE CLARKSVILLE, MD 21029 (410) 465-4244	RIVER HILL SQUARE, LLC. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 (410) 465-4244

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATION

I, ERIC R. McWILLIAMS, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 3697, EXPIRATION DATE: 9/20/20

AS-BUILT

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	BY

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It's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	1" = 30'
CAD I.D.:	LP2

PROJECT:

FINAL ROAD CONSTRUCTION PLANS FOR MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

E.R. McWILLIAMS
REGISTERED LANDSCAPE ARCHITECT

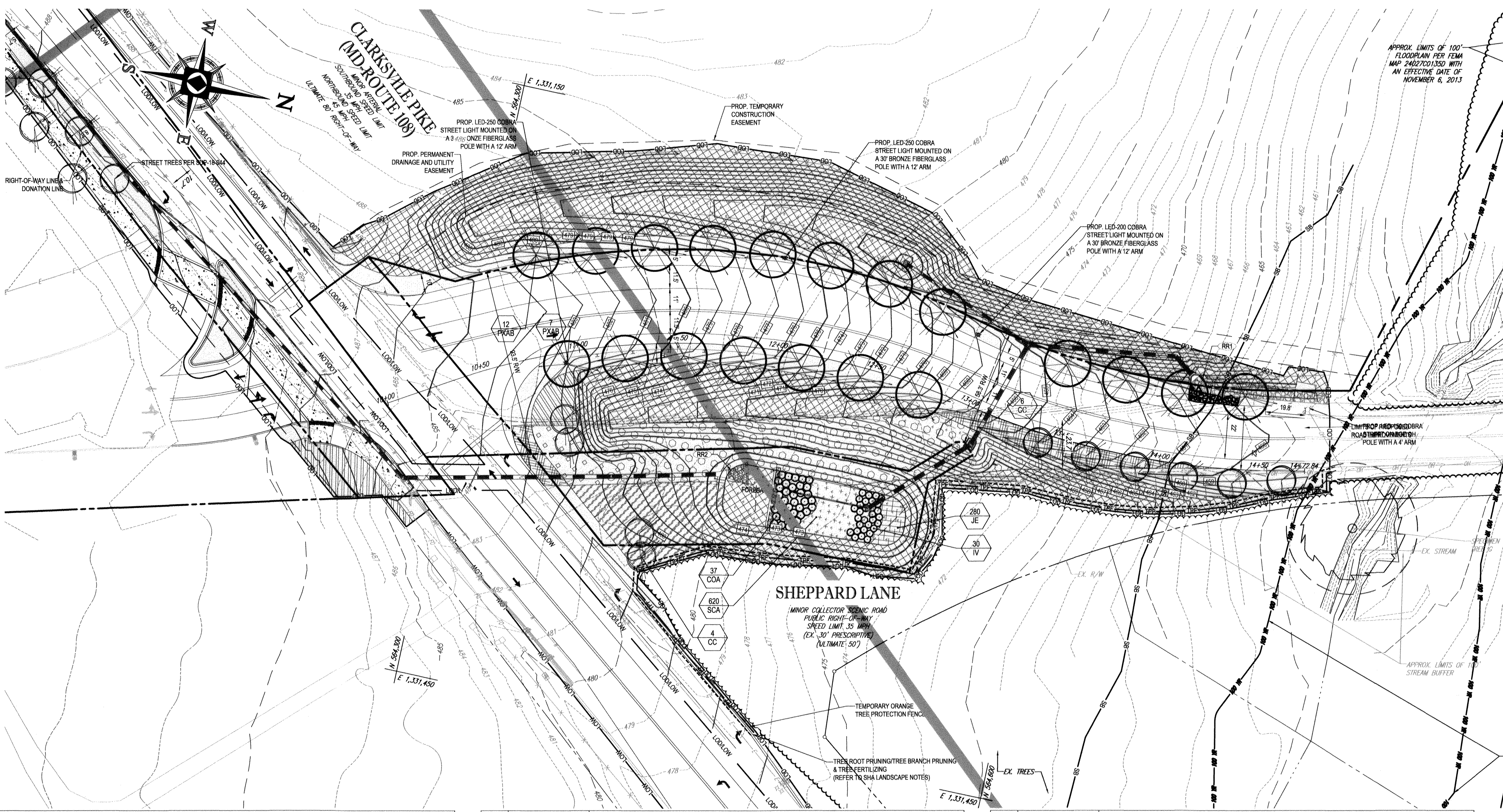
SHEET TITLE:

MD ROUTE 108 STREETSCAPE PLAN

SHEET NUMBER:

15

F-18-099



HOWARD COUNTY LANDSCAPE NOTES

1. LANDSCAPING FOR THE STREET TREES WILL BE PROVIDED IN ACCORDANCE WITH THIS CERTIFIED LANDSCAPE PLAN AND IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. STREET TREE SURETY IN THE AMOUNT OF $7,700.00 FOR THE INSTALLATION OF 19 SHADE TREES ($300.00 EACH) AND 10 ORNAMENTAL TREES ($200.00 EACH) SHALL BE POSTED BY THE DEVELOPMENT ENGINEERING DIVISION (DED) COST ESTIMATE.
2. NO CLEARING OF EXISTING VEGETATION IS PERMITTED WITHIN A LANDSCAPE EDGE FOR WHICH CREDIT IS BEING TAKEN; HOWEVER, LANDSCAPE MAINTENANCE IS AUTHORIZED.
3. AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWITH LISTED AND APPROVED FOR THE SITE SHALL BE OF PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVED FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATIONS.
4. SHOULD ANY TREE DESIGNATED FOR PRESERVATION, FOR WHICH CREDIT IS GIVEN, DIE PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INCHES IN CALIPER AND INSTALLED AS REQUIRED IN THE LANDSCAPE MANUAL.
5. THE OWNER, TENANT, AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, PLANT MATERIALS, BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.

LEGEND

- TURFGRASS SOD
- TURFGRASS ESTABLISHMENT NO STABILIZATION MATTING
- TURFGRASS ESTABLISHMENT WITH TYPE A SOIL STABILIZATION MATTING
- TURFGRASS ESTABLISHMENT WITH TYPE E SOIL STABILIZATION MATTING
- TURFGRASS SOD WITH 12" SUBSOIL FILL FOR REMOVAL OF EXCAVATED PAVEMENT
- TURFGRASS ESTABLISHMENT WITH TYPE A SOIL STABILIZATION MATTING & 12" SUBSOIL FILL FOR REMOVAL OF EXCAVATED PAVEMENT
- TPF — TEMPORARY ORANGE TREE PROTECTION FENCE
- TREE ROOT PRUNING, TREE BRANCH PRUNING AND TREE FERTILIZING

APPROX. LIMITS OF FLOODPLAIN PER FEMA MAP 24027C0135D AN EFFECTIVE DATE NOVEMBER 6, 2013

SHA LANDSCAPE NOTES

7.1	TITLE	LANDSCAPE CONSTRUCTION WITHIN RIGHTS OF WAY OF THE MARYLAND STATE HIGHWAY ADMINISTRATION (SHA) AND WITHIN SHA PROPERTY, EASEMENT AREAS AND LANDS TO BE CONVEYED TO SHA SHALL CONFORM TO THESE NOTES. FOR GUIDANCE REGARDING DESIGN MODIFICATIONS DURING CONSTRUCTION, REFER TO SHA LANDSCAPE DESIGN GUIDE, SHA LANDSCAPE ESTIMATING MANUAL, AND SHA ENVIRONMENTAL GUIDE FOR ACCESS AND DISTRICT PERMIT APPLICANTS AT HTTP://WWW.ROADS.MARYLAND.GOV/INDEX.ASPX?PAGEID=25
7.2	SPECIFICATIONS	LANDSCAPE CONSTRUCTION SHALL CONFORM TO SECTIONS 701 THROUGH 716, AND LANDSCAPE MATERIALS SHALL CONFORM TO SECTION 920 OF THE MOST RECENT REVISION OF SHA STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, INCLUDING ALL REVISIONS AND SUPPLEMENTS, AND AS SPECIFIED IN THESE NOTES. THESE REQUIREMENTS SHALL SUPERSEDE ALL OTHER SPECIFICATIONS FOR WORK ON SHA PROPERTY. ALL SHA SPECIFICATIONS FOR LANDSCAPING AND LANDSCAPE MATERIALS PUBLISHED IN 2008 HAVE BEEN REPLACED. CURRENT SPECIFICATIONS ARE AT HTTP://WWW.ROADS.MARYLAND.GOV/INDEX.ASPX?PAGEID=44.
7.3	E&S MANAGER (ESCM)	SOIL DISTURBANCE SUCH AS GRADING, EXCAVATION, SOIL PLACEMENT OR OTHER ACTIVITIES THAT INVOLVE SOIL DISTURBANCE SHALL BE SUPERVISED BY AN ESCM MANAGER WITH A VALID "SHA YELLOW CARD" IN CONFORMANCE WITH SHA STANDARD SPECIFICATIONS AND ANY APPLICABLE EROSION AND SEDIMENT CONTROL PERMIT.
7.4	STANDARD DETAILS	THE INSTALLATION OF TREES, SHRUBS, PLANTING BEDS AND OTHER LANDSCAPE CONSTRUCTION RELATED TO SECTION 710 OF THE SHA STANDARD SPECIFICATIONS SHALL CONFORM TO THE "SHA BOOK OF STANDARDS FOR HIGHWAY & INCIDENTAL STRUCTURES - CATEGORY 7" AT HTTP://APPS.ROADS.MARYLAND.GOV/ BUSINESSWITHSHA/BIZSTDSSPECS/DESMANUALSTDPUB/PUBLICATIONSONLINE/OHD/BOOKSTD/TOCCAT7.ASP .
7.5	TEMPORARY STABILIZATION	TEMPORARY STABILIZATION SHALL BE INSTALLED IN CONFORMANCE WITH SECTION 704 TO ENSURE THAT AREAS OF SOIL DISTURBANCE ARE PROTECTED FROM WIND, RAINFALL AND FLOWING WATER UNTIL PERMANENT STABILIZATION IS INSTALLED. 1. TEMPORARY MULCH, EITHER AS TEMPORARY STRAW MULCH OR TEMPORARY MATTING MULCH, SHALL BE INSTALLED AT THE END OF EACH WORKING DAY TO PROVIDE "SAME DAY STABILIZATION" UNLESS OTHER APPROVED STABILIZATION IS INSTALLED. 2. TEMPORARY STRAW MULCH SHALL BE INSTALLED ON AREAS AND SLOPES FLATTER THAN 4:1; TEMPORARY MATTING MULCH SHALL BE APPLIED ON SLOPES 4:1 AND STEEPER, AND TO AREAS WITHIN CHANNELS. 3. TEMPORARY SEED SHALL BE INSTALLED IN LIEU OF TEMPORARY MULCH WHEN SOIL REDISTURBANCE IS EXPECTED MORE THAN 30 DAYS AFTER SOIL DISTURBANCE. THE REQUIRED APPLICATION RATE SHALL BE 100 LBS PER ACRE OF 37-0-0 (SCU) FERTILIZER.
7.6	ROADWAY PAVEMENT REMOVAL	AREAS OF ROADWAY PAVEMENT REMOVAL SHALL BE EXCAVATED TO REMOVE PAVEMENTS, AGGREGATE BASE, AND COMPACTED SOIL TO A MINIMUM DEPTH OF 10 INCHES BELOW THE PAVEMENT SURFACE, OR AS NECESSARY TO REMOVE ALL MATERIALS UNSUITABLE FOR LANDSCAPING. THE EXCAVATED AREAS SHALL BE RESTORED WITH SUBSOIL AND TOPSOIL AS PART OF SOIL RESTORATION.
7.7	EXCAVATION AND DEBRIS REMOVAL	DEBRIS RELATED TO THE DEMOLITION OF SIDEWALKS, DRIVEWAYS, CURBS, TREES, STUMPS, ROOTS, FENCING, PIPES, AND OTHER MATERIALS THAT MAY INTERFERE WITH LANDSCAPE INSTALLATION OR FUTURE MAINTENANCE SHALL BE EXCAVATED AS NECESSARY FOR THEIR COMPLETE REMOVAL AND DISPOSAL.
7.8	SOIL RESTORATION	AREAS OF PAVEMENT REMOVAL, EXCAVATION OR DRILLING IN LANDSCAPED AREAS SHALL REMOVE EXCAVATED DEBRIS AND RESTORE THE SUBGRADE WITH APPROVED SUBSOIL AND TOPSOIL PLACED IN CONFORMANCE WITH SECTION 701 OF THE SHA STANDARD SPECIFICATIONS. 1. A LAYER OF APPROVED TOPSOIL OF AT LEAST A 4-INCH DEPTH SHALL BE PLACED ON ALL DISTURBED AREAS FLATTER THAN 2:1 AND IN ALL CHANNELS PRIOR TO SEEDING, SODDING OR OTHER LANDSCAPING, UNLESS OTHERWISE SPECIFIED. 2. A LAYER OF APPROVED TOPSOIL OF AT LEAST A 2-INCH DEPTH SHALL BE PLACED ON ALL DISTURBED AREAS 2:1 AND STEEPER PRIOR TO SEEDING, SODDING OR OTHER LANDSCAPING, UNLESS OTHERWISE SPECIFIED. 3. BIORETENTION SOIL MIX (BSM) AND OTHER MATERIALS INSTALLED IN CONJUNCTION WITH SPI 316 - STORMWATER FILTRATION FACILITIES AND SHA STORMWATER DETAILS SHALL BE INSTALLED IN CONFORMANCE WITH SHA LANDSCAPE NOTES AND LANDSCAPE PLANS. PLANT MATERIALS AND MULCH SHALL BE INSTALLED IN BSM IN CONFORMANCE WITH STORMWATER DETAILS, SECTION 710 OR OTHER SHA SPECIFICATIONS.
7.9	TURFGRASS SOD ESTABLISHMENT	TURFGRASS SOD ESTABLISHMENT SHALL BE PERFORMED IN ALL DISTURBED AREAS, OR WITHIN THE AREAS INDICATED IN THE PLANS, IN CONFORMANCE WITH SECTION 708 OF THE SHA STANDARD SPECIFICATIONS. THE REQUIRED APPLICATION RATE OF 20-16-12 FERTILIZER SHALL BE 200 LBS PER ACRE, AND NO FERTILIZER SHALL BE APPLIED FROM NOVEMBER 15 TO MARCH 1.
7.10	TURFGRASS ESTABLISHMENT	TURFGRASS ESTABLISHMENT SHALL BE PERFORMED IN ALL DISTURBED AREAS, OR WITHIN THE AREAS INDICATED IN THE PLANS, IN CONFORMANCE WITH SECTION 705 OF THE SHA STANDARD SPECIFICATIONS. THE REQUIRED APPLICATION RATE OF 20-16-12 FERTILIZER SHALL BE 200 LBS PER ACRE, AND NO FERTILIZER SHALL BE APPLIED FROM NOVEMBER 15 TO MARCH 1.
7.11	SOIL STABILIZATION MATTING	SOIL STABILIZATION MATTING SHALL BE INSTALLED IN CONFORMANCE WITH SECTION 709 OF THE SHA STANDARD SPECIFICATIONS, IN CONJUNCTION WITH TURFGRASS ESTABLISHMENT PER SECTION 705 OR MEADOW ESTABLISHMENT PER SECTION 707 AS FOLLOWS: 1. AREAS FLATTER THAN 6:1. TYPE A OR TYPE E MATTING MAY BE INSTALLED IN LIEU OF STRAW MULCH AND HYDROMULCH BINDER IN CONJUNCTION WITH TURFGRASS ESTABLISHMENT. 2. AREAS STEEPER THAN 6:1 AND FLATTER THAN 4:1. TYPE A OR TYPE E MATTING SHALL BE INSTALLED IN LIEU OF STRAW MULCH AND HYDROMULCH BINDER IN CONJUNCTION WITH TURFGRASS ESTABLISHMENT, UNLESS DELINEATED AND NOTED OTHERWISE. 3. CHANNELS, STORMWATER MANAGEMENT FACILITIES, AND SLOPES 4:1 AND STEEPER TYPE A SOIL STABILIZATION MATTING SHALL BE INSTALLED IN LIEU OF STRAW MULCH AND HYDROMULCH BINDER IN CONJUNCTION WITH TURFGRASS ESTABLISHMENT, UNLESS DELINEATED AND NOTED OTHERWISE. 4. IN AREAS OF MEADOW ESTABLISHMENT WITH TYPE D SOIL STABILIZATION MATTING, THE MATTING SHALL BE INSTALLED IN LIEU OF STRAW MULCH AND HYDROMULCH BINDER WITHIN THE DELINEATED AREAS. 5. IN HIGH VELOCITY CHANNELS WITH TURFGRASS ESTABLISHMENT, TYPE B SOIL STABILIZATION MATTING SHALL BE INSTALLED IN LIEU OF STRAW MULCH AND HYDROMULCH BINDER WITHIN THE DELINEATED AREAS.
7.13	TREE PRESERVATION AREAS	TREE PRESERVATION AREAS. TEMPORARY ORANGE CONSTRUCTION FENCE (TOCF) SHALL BE INSTALLED IN LOCATIONS DELINEATED ON THE PLANS AS TREE PRESERVATION AREAS (TPA) IN CONFORMANCE WITH SECTION 120 OF THE SHA STANDARD SPECIFICATION TO PROTECT EXISTING TREES AND OTHER VEGETATION DURING CONSTRUCTION. AREAS WITHIN TOCF SHALL BE PROTECTED FROM ALL PROHIBITED AND RESTRICTED ACTIVITIES, PER SECTION 120.
7.14	ROADSIDE TREE PERMIT	ROADSIDE TREE PERMIT. TREE REMOVAL, TREE INSTALLATION, TREE ROOT AND BRANCH PRUNING, AND OTHER REGULATED IMPACTS TO TREES IN THE SHA RIGHT OF WAY SHALL CONFORM TO THE REQUIREMENTS OF THE ROADSIDE TREE PERMIT (RTP) ISSUED BY THE MARYLAND DEPARTMENT OF NATURAL RESOURCES, OR THE APPROVED FOREST CONSERVATION PLAN (FCP) OF THE LOCAL AUTHORITY. 1. A COPY OF THE RTP OR FCP SHALL BE SUBMITTED TO THE SHA OFFICE OF ENVIRONMENTAL DESIGN BEFORE WORK IS PERFORMED, AND A COPY OF THE RTP OR FCP SHALL BE REPRODUCED IN THE PLANS OR BE IN POSSESSION OF THE APPLICANT AT THE PROJECT SITE WHEN THE PERMITTED WORK IS PERFORMED. 2. A MARYLAND LICENSED TREE EXPERT SHALL PERFORM THE SPECIFIED TREE OPERATIONS IN CONFORMANCE WITH THE SHA STANDARD SPECIFICATIONS AND ANSI A300 STANDARDS FOR TREE CARE OPERATIONS.
7.15	TREES, PLANT MATERIALS INSTALLATION	TREES AND OTHER PLANT MATERIAL INSTALLATION. TREES, SHRUBS, PERENNIALS, ANNUALS, BULBS, LANDSCAPE BEDS, BARK MULCH AND SIMILAR MATERIALS SHALL BE INSTALLED IN CONFORMANCE WITH SECTION 710 AND 711 OF THE SHA STANDARD SPECIFICATIONS. TREE AND SHRUBS SHALL BE PRUNED AT THE TIME OF INSTALLATION TO ENSURE SIDEWALK CLEARANCE FOR PEDESTRIANS IS MAINTAINED TO A HEIGHT OF 8 FEET. NO TREE OR SHRUB SHALL BE INSTALLED WITHIN 3 FEET OF CURBS, SIDEWALKS, OR PAVEMENT EDGES.
7.16	BRUSH REMOVAL	BRUSH REMOVAL SHALL BE PERFORMED IN CONFORMANCE WITH OPERATION 2 - BRUSH REMOVAL WITH STUMP TREATMENT OF SECTION 713. DEBRIS SHALL BE REMOVED, OR CHIPPED AND DISTRIBUTED ON SHA PROPERTY TO A MAXIMUM DEPTH OF 1 INCH WITHIN BRUSH REMOVAL AREAS, OR IN MEADOW OR FOREST AREAS.
7.20	STUMP REMOVAL	STUMP REMOVAL IN TURFGRASS OR MEADOW AREAS SHALL BE PERFORMED IN CONFORMANCE WITH OPERATION 5 - STUMP REMOVAL OF SECTION 714.
7.21	TREE BRANCH PRUNING	(MINOR BRANCHES) TREE BRANCH PRUNING SHALL BE PERFORMED OR DIRECTLY SUPERVISED BY A MARYLAND LICENSED TREE EXPERT IN CONFORMANCE WITH ANSI A300 STANDARDS PER SECTION 712 AS NECESSARY FOR ANY OF THE FOLLOWING: TO INSTALL TEMPORARY ORANGE CONSTRUCTION FENCE (TOCF) ALONG DELINEATIONS ON PLANS; TO PERFORM TREE ROOT PRUNING ALONG DELINEATIONS ON PLANS; TO PROVIDE 8-FOOT CLEARANCE ABOVE SIDEWALK PAVEMENTS AND 16-FOOT CLEARANCE ABOVE ROADWAY PAVEMENTS; TO REPAIR TREE WOUNDS; AND TO PERFORM OTHER RECOMMENDED CLEANING, THINNING, REDUCING, AND PRUNING NECESSARY TO ACCOMMODATE UTILITIES. ALL DEBRIS SHALL BE REMOVED FROM SHA PROPERTY. (MAJOR BRANCHES) TREE BRANCH PRUNING SHALL BE PERFORMED IN CONFORMANCE WITH SECTION 712 AS FOLLOWS: APPLICANT TO EXPLAIN GOALS AND LOCATIONS OF PRUNING. ALL DEBRIS SHALL BE REMOVED FROM SHA PROPERTY.
7.22	TREE ROOT PRUNING	TREE ROOT PRUNING SHALL BE PERFORMED ALONG THE LINE SHOWN ON THE PLANS IN CONFORMANCE WITH SECTION 715. TREE ROOT PRUNING SHALL BE COMPLETED BEFORE BEGINNING EXCAVATION OR CONSTRUCTION ADJACENT TO TREES TO BE PRESERVED.
7.23	TREE FERTILIZING	TREE FERTILIZING SHALL BE PERFORMED IN CONFORMANCE WITH OPERATION 3 - BROADCAST FERTILIZING PER SECTION 716. 20-16-12 FERTILIZER SHALL BE APPLIED TO THE SOIL SURFACE UNDER THE DRIPLINE OF TREES AT THE RATE OF 200 LBS. PER ACRE.
7.25	FUTURE MAINTENANCE	FUTURE MAINTENANCE. ADDITIONAL MAINTENANCE THAT MAY BE REQUIRED AFTER HARDSCAPE, STREET FURNITURE OR PLANT MATERIALS ARE INSTALLED AND ACCEPTED BY SHA SUCH AS REPLACEMENT, WATERING, WEEDING, MULCHING OR PEST CONTROL MAY BE PROVIDED BY THE APPLICANT WHEN A PERMIT FOR THE PROPOSED WORK IS ISSUED BY THE SHA DISTRICT OFFICE.

BIORETENTION LANDSCAPE SCHEDULE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	CAL.	CONT.
DECIDUOUS SHRUBS					
COA	37	CORNUS AMOMUM	SILKY DOGWOOD	18-24"	#3 CAN
IV	30	ITEA VIRGINICA 'HENRY'S GARNET'	GARNET SWEETSPIRE	24-30"	#5 CAN
SUBTOTAL:	67				
PERENNIALS					
JE	280	JUNCUS EFFUSUS	COMMON RUSH	PLUG	PERENNIAL(S)
SCA	620	SCIRPUS ACUTUS	HARDSTEMMED BULLRUSH	PLUG	PERENNIAL(S)
SUBTOTAL:	900				

DEVELOPER'S/OWNER'S LANDSCAPE CERTIFICATE

I/WE CERTIFY THAT HE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

DEVELOPER'S / OWNER'S NAME RIVER HILL SQUARE LLC
By: [signature] MEMBER STEVEN K BREEDEN DATE 1/11/19
James R. Moxley III

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443 Expiration Date: 12-21-22

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER

AS-BUILT 3/26/21

LIMIT OF DISTURBANCE: 2.68 AC. OR 116,741 S.F.*
LIMIT OF WORK: 0.85 AC. OR 34,026 S.F.
*LIMIT OF DISTURBANCE INCLUDES ALL WORK WITH SOIL DISTURBANCE
**LIMIT OF WORK INCLUDES ALL WORK WITHOUT SOIL DISTURBANCE

30 15 7.5 0 30
1"= 30'

PREVIOUS FILE No.: ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:
STEPHEN A. KLEIN & ASSOCIATES
C/O STEPHEN A. KLEIN, INC.
12165 CLARKSVILLE PIKE
CLARKSVILLE, MD 21029
(410) 465-4244

DEVELOPER:
RIVER HILL SQUARE, LLC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
(410) 465-4244

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATION
I, ERIC R. McWILLIAMS, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 3697, EXPIRATION DATE: 9/20/20

AS-BUILT

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS			
REV	DATE	COMMENT	BY

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ALWAYS CALL 811
BEFORE YOU DIG
It's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	1" = 30'
CAD I.D.:	LP2

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

E.R. McWILLIAMS
REGISTERED LANDSCAPE ARCHITECT

SHEET TITLE:
SHEPPARD LANE STREETSCAPE PLAN

SHEET NUMBER:
16

F-18-099

LANDSCAPE SPECIFICATIONS

1. SCOPE OF WORK:
THE LANDSCAPE CONTRACTOR SHALL BE REQUIRED TO PERFORM ALL CLEARING, FINISHED GRADING, SOIL PREPARATION, PERMANENT SEEDING OR SODDING, PLANTING AND MULCHING INCLUDING ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT NECESSARY FOR THE COMPLETION OF THIS PROJECT, UNLESS OTHERWISE CONTRACTED BY THE GENERAL CONTRACTOR.

2. MATERIALS
A. GENERAL - ALL HARDSCAPE MATERIALS SHALL MEET OR EXCEED SPECIFICATIONS AS OUTLINED IN THE STATE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.

B. TOPSOIL - NATURAL, FRIABLE, LOAMY SILT SOIL HAVING AN ORGANIC CONTENT NOT LESS THAN 5%, A PH RANGE BETWEEN 4.5-7.0. IT SHALL BE FREE OF DEBRIS, ROCKS LARGER THAN ONE INCH (1"), WOOD, ROOTS, VEGETABLE MATTER AND CLAY CLODS.

C. LAWN - ALL DISTURBED AREAS ARE TO BE TREATED WITH A MINIMUM SIX INCH (6") THICK LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, AND SEEDED OR SODDED IN ACCORDANCE WITH THE PERMANENT STABILIZATION METHODS INDICATED WITHIN THE SOIL EROSION AND SEDIMENT CONTROL NOTES.
1.1. LAWN SEED MIXTURE SHALL BE FRESH, CLEAN NEW CROP SEED.
1.2. SOD SHALL BE STRONGLY ROOTED, WEED AND DISEASE/PEST FREE WITH A UNIFORM THICKNESS.
1.3. SOD INSTALLED ON SLOPES GREATER THAN 4:1 SHALL BE PEGGED TO HOLD SOD IN PLACE.

D. MULCH - THE MULCH AROUND THE PERIMETER OF THE BUILDING SHALL BE A 3" LAYER OF DOUBLE SHREDDED BLACK CEDAR MULCH ONLY. ALL OTHER AREAS SHALL BE MULCHED WITH A 3" LAYER OF DOUBLE SHREDDED DARK BROWN HARDWOOD BARK MULCH, UNLESS OTHERWISE STATED ON THE LANDSCAPE PLAN.

E. FERTILIZER
1.1. FERTILIZER SHALL BE DELIVERED TO THE SITE MIXED AS SPECIFIED IN THE ORIGINAL UNOPENED STANDARD BAGS SHOWING WEIGHT, ANALYSIS AND NAME OF MANUFACTURER. FERTILIZER SHALL BE STORED IN A WEATHERPROOF PLACE SO THAT IT CAN BE KEPT DRY PRIOR TO USE.
1.2. FOR THE PURPOSE OF BIDDING, ASSUME THAT FERTILIZER SHALL BE 10% NITROGEN, 6% PHOSPHORUS AND 4% POTASSIUM BY WEIGHT. A FERTILIZER SHOULD NOT BE SELECTED WITHOUT A SOIL TEST PERFORMED BY A CERTIFIED SOIL LABORATORY.

F. PLANT MATERIAL
1.1. ALL PLANTS SHALL IN ALL CASES CONFORM TO THE REQUIREMENTS OF THE "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z60.1), LATEST EDITION, AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION.
1.2. IN ALL CASES, BOTANICAL NAMES SHALL TAKE PRECEDENCE OVER COMMON NAMES FOR ANY AND ALL PLANT MATERIAL.
1.3. PLANTS SHALL BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE. TAGS ARE TO REMAIN ON AT LEAST ONE PLANT OF EACH SPECIES FOR VERIFICATION PURPOSES DURING THE FINAL INSPECTION.
1.4. TREES WITH ABRASION OF THE BARK, SUN SCALDS, DISFIGURATION OR FRESH CUTS OF LIMBS OVER 1¼", WHICH HAVE NOT BEEN COMPLETELY CALLUSED, SHALL BE REJECTED.PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES.
1.5. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH: WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE OF DISEASE, INSECTS, PESTS, EGGS OR LARVAE.
1.6. CALIPER MEASUREMENTS OF NURSERY GROWN TREES SHALL BE TAKEN AT A POINT ON THE TRUNK SIX INCHES (6") ABOVE THE NATURAL GRADE FOR TREES UP TO AND INCLUDING A FOUR INCH (4") CALIPER SIZE. IF THE CALIPER AT SIX INCHES (6") ABOVE THE GROUND EXCEEDS FOUR INCHES (4") IN CALIPER, THE CALIPER SHOULD BE MEASURED AT A POINT 12" ABOVE THE NATURAL GRADE.
1.7. SHRUBS SHALL BE MEASURED TO THE AVERAGE HEIGHT OR SPREAD OF THE SHRUB, AND NOT TO THE LONGEST BRANCH.
1.8. TREES AND SHRUBS SHALL BE HANDLED WITH CARE BY THE ROOT BALL.

3. GENERAL WORK PROCEDURES
A. CONTRACTOR TO UTILIZE WORKMANLIKE INDUSTRY STANDARDS IN PERFORMING ALL LANDSCAPE CONSTRUCTION. THE SITE IS TO BE LEFT IN A CLEAN STATE AT THE END OF EACH WORKDAY. ALL DEBRIS, MATERIALS AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF.

B. WASTE MATERIALS AND DEBRIS SHALL BE COMPLETELY DISPOSED OF AT THE CONTRACTOR'S EXPENSE. DEBRIS SHALL NOT BE BURIED, INCLUDING ORGANIC MATERIALS, BUT SHALL BE REMOVED COMPLETELY FROM THE SITE.

4. SITE PREPARATIONS
A. BEFORE AND DURING PRELIMINARY GRADING AND FINISHED GRADING, ALL WEEDS AND GRASSES SHALL BE DUG OUT BY THE ROOTS AND DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES OUTLINED HEREIN.

B. ALL EXISTING TREES TO REMAIN SHALL BE PRUNED TO REMOVE ANY DAMAGED BRANCHES. THE ENTIRE LIMB OF ANY DAMAGED BRANCH SHALL BE CUT OFF AT THE TRUNK. CONTRACTOR SHALL ENSURE THAT CUTS ARE SMOOTH AND STRAIGHT. ANY EXPOSED ROOTS SHALL BE CUT BACK WITH CLEAN, SHARP TOOLS AND TOPSOIL SHALL BE PLACED AROUND THE REMAINDER OF THE ROOTS. EXISTING TREES SHALL BE MONITORED ON A REGULAR BASIS FOR ADDITIONAL ROOT OR BRANCH DAMAGE AS A RESULT OF CONSTRUCTION. ROOTS SHALL NOT BE LEFT EXPOSED FOR MORE THAN ONE (1) DAY. CONTRACTOR SHALL WATER EXISTING TREES AS NEEDED TO PREVENT SHOCK OR DECLINE.

C. CONTRACTOR SHALL ARRANGE TO HAVE A UTILITY STAKE-OUT TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF ANY LANDSCAPE MATERIAL. UTILITY COMPANIES SHALL BE CONTACTED THREE (3) DAYS PRIOR TO THE BEGINNING OF WORK.

5. TREE PROTECTION
A. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING TREES TO REMAIN. A TREE PROTECTION ZONE SHALL BE ESTABLISHED AT THE DRIP LINE OR 15 FEET FROM THE TRUNK OR AT THE LIMIT OF CONSTRUCTION DISTURBANCE, WHICHEVER IS GREATER. LOCAL STANDARDS THAT MAY REQUIRE A MORE STRICT TREE PROTECTION ZONE SHALL BE HONORED.

B. A FORTY-EIGHT INCH (48") HIGH WOODEN SNOW FENCE OR ORANGE COLORED HIGH-DENSITY 'VISI-FENCE', OR APPROVED EQUAL, MOUNTED ON STEEL POSTS SHALL BE PLACED ALONG THE BOUNDARY OF THE TREE PROTECTION ZONE. POSTS SHALL BE LOCATED AT A MAXIMUM OF EIGHT FEET (8') ON CENTER OR AS INDICATED WITHIN THE TREE PROTECTION DETAIL.

C. WHEN THE TREE PROTECTION FENCING HAS BEEN INSTALLED, IT SHALL BE INSPECTED BY THE APPROVING AGENCY PRIOR TO DEMOLITION, GRADING, TREE CLEARING OR ANY OTHER CONSTRUCTION. THE FENCING ALONG THE TREE PROTECTION ZONE SHALL BE REGULARLY INSPECTED BY THE LANDSCAPE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.

D. AT NO TIME SHALL MACHINERY, DEBRIS, FALLEN TREES OR OTHER MATERIALS BE PLACED, STOCKPILED OR LEFT STANDING IN THE TREE PROTECTION ZONE.

6. SOIL MODIFICATIONS
A. CONTRACTOR SHALL ATTAIN A SOIL TEST FOR ALL AREAS OF THE SITE PRIOR TO CONDUCTING ANY PLANTING. SOIL TESTS SHALL BE PERFORMED BY A CERTIFIED SOIL LABORATORY.

B. LANDSCAPE CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF PLANT MATERIAL. SOIL MODIFICATIONS, AS SPECIFIED HEREIN, MAY NEED TO BE CONDUCTED BY THE LANDSCAPE CONTRACTOR DEPENDING ON SITE CONDITIONS.

C. THE FOLLOWING AMENDMENTS AND QUANTITIES ARE APPROXIMATE AND ARE FOR BIDDING PURPOSES ONLY. COMPOSITION OF AMENDMENTS SHOULD BE REVISED DEPENDING ON THE OUTCOME OF A TOPSOIL ANALYSIS PERFORMED BY A CERTIFIED SOIL LABORATORY.
1.1. TO INCREASE A SANDY SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS, THOROUGHLY TILL ORGANIC MATTER INTO THE TOP 6-12". USE COMPOSTED BARK, COMPOSTED LEAF MULCH OR PEAT MOSS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A PH HIGHER THAN 7.5.
1.2. TO INCREASE DRAINAGE, MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR AGRICULTURAL GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. SUBSURFACE DRAINAGE LINES MAY NEED TO BE ADDED TO INCREASE DRAINAGE.
1.3. MODIFY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.

7. FINISHED GRADING
A. UNLESS OTHERWISE CONTRACTED, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE-GRADING WITHIN THE DISTURBANCE AREA OF THE SITE.

B. LANDSCAPE CONTRACTOR SHALL VERIFY THAT SUBGRADE FOR INSTALLATION OF TOPSOIL HAS BEEN ESTABLISHED. THE SUBGRADE OF THE SITE MUST MEET THE FINISHED GRADE LESS THE REQUIRED TOPSOIL THICKNESS (1"±).

C. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THIS SET OF CONSTRUCTION PLANS, UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER OR LANDSCAPE ARCHITECT.

D. ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER IN AND AROUND THE PLANTING BEDS. STANDING WATER SHALL NOT BE PERMITTED IN PLANTING BEDS.

8. TOPSOILING
A. CONTRACTOR SHALL PROVIDE A SIX INCH (6") THICK MINIMUM LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, IN ALL PLANTING AREAS. TOPSOIL SHOULD BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS.

B. ON-SITE TOPSOIL MAY BE USED TO SUPPLEMENT THE TOTAL AMOUNT REQUIRED. TOPSOIL FROM THE SITE MAY BE REJECTED IF IT HAS NOT BEEN PROPERLY REMOVED, STORED AND PROTECTED PRIOR TO CONSTRUCTION.

C. CONTRACTOR SHALL FURNISH TO THE APPROVING AGENCY AN ANALYSIS OF BOTH IMPORTED AND ON-SITE TOPSOIL TO BE UTILIZED IN ALL PLANTING AREAS. THE PH AND NUTRIENT LEVELS MAY NEED TO BE ADJUSTED THROUGH SOIL MODIFICATIONS AS NEEDED TO ACHIEVE THE REQUIRED LEVELS AS SPECIFIED IN THE MATERIALS SECTION ABOVE.

D. ALL PLANTING AND LAWN AREAS ARE TO BE CULTIVATED TO A DEPTH OF SIX INCHES (6"). ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES SECTION ABOVE. THE FOLLOWING SHALL BE TILLED INTO THE TOP FOUR INCHES (4") IN TWO DIRECTIONS (QUANTITIES BASED ON A 1,000 SQUARE FOOT AREA):
1.1. 20 POUNDS 'GROW POWER' OR APPROVED EQUAL
1.2. 20 POUNDS NITRO-FORM (COURSE) 38-0-0 BLUE CHIP

E. THE SPREADING OF TOPSOIL SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN CONDITIONS.

9. PLANTING
A. INSOFAR THAT IT IS FEASIBLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT POSSIBLE, LANDSCAPE CONTRACTOR SHALL PROTECT UNINSTALLED PLANT MATERIAL. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY. PLANTS THAT WILL NOT BE PLANTED FOR A PERIOD OF TIME GREATER THAN THREE DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH TO HELP PRESERVE ROOT MOISTURE.

B. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS IN A MUDDY OR FROZEN CONDITION.

C. ANY INJURED ROOTS OR BRANCHES SHALL BE PRUNED TO MAKE CLEAN-CUT ENDS PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY INJURED OR DISEASED BRANCHING SHALL BE REMOVED.

D. ALL PLANTING CONTAINERS AND NON-BIODEGRADABLE MATERIALS SHALL BE REMOVED FROM ROOT BALLS DURING PLANTING. NATURAL FIBER BURLAP MUST BE CUT FROM AROUND THE TRUNK OF THE TREE AND FOLDED DOWN AGAINST THE ROOT BALL PRIOR TO BACKFILLING.

E. POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.

F. PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY, THE PROPOSED LANDSCAPE, AS SHOWN ON THE APPROVED LANDSCAPE PLAN, MUST BE INSTALLED, INSPECTED AND APPROVED BY THE APPROVING AGENCY. THE APPROVING AGENCY SHALL TAKE INTO ACCOUNT SEASONAL CONSIDERATIONS IN THIS REGARD AS FOLLOWS. THE PLANTING OF TREES, SHRUBS, VINES OR GROUND COVER SHALL OCCUR ONLY DURING THE FOLLOWING PLANTING SEASONS:
1.1. PLANTS: MARCH 15 TO DECEMBER 15
1.2. LAWN: MARCH 15 TO JUNE 15 OR SEPT. 1 TO DECEMBER 1

G. PLANTINGS REQUIRED FOR A CERTIFICATE OF OCCUPANCY SHALL BE PROVIDED DURING THE NEXT APPROPRIATE SEASON AT THE MUNICIPALITY'S DISCRETION. CONTRACTOR SHOULD CONTACT APPROVING AGENCY FOR POTENTIAL SUBSTITUTIONS.

H. FURTHERMORE, THE FOLLOWING TREE VARIETIES ARE UNUSUALLY SUSCEPTIBLE TO WINTER DAMAGE. WITH TRANSPLANT SHOCK AND THE SEASONAL LACK OF NITROGEN AVAILABILITY, THE RISK OF PLANT DEATH IS GREATLY INCREASED. IT IS NOT RECOMMENDED THAT THESE SPECIES BE PLANTED DURING THE FALL PLANTING SEASON:

ACER RUBRUM	PLATANUS X ACERIFOLIA
BETULA VARIETIES	POPULOUS VARIETIES
CARPINUS VARIETIES	PRUNUS VARIETIES
CRATAEGUS VARIETIES	PYRUS VARIETIES
KOELREUTERIA	QUERCUS VARIETIES
LIQUIDAMBER STYRACIFLUA	TILIA TOMENTOSA
LIRIODENDRON TULIPIFERA	ZELKOVA VARIETIES

I. PLANTING PITS SHALL BE DUG WITH LEVEL BOTTOMS, WITH THE WIDTH TWICE THE DIAMETER OF ROOT BALL. THE ROOT BALL SHALL REST ON UNDISTURBED GRADE. EACH PLANT PIT SHALL BE BACKFILLED IN LAYERS WITH THE FOLLOWING PREPARED SOIL MIXED THOROUGHLY:
- 1 PART PEAT MOSS
- 1 PART COMPOSTED COW MANURE BY VOLUME
- 3 PARTS TOPSOIL BY VOLUME
- 21 GRAMS 'AGRIFORM' PLANTING TABLETS (OR APPROVED EQUAL) AS FOLLOWS:
  A) 2 TABLETS PER 1 GALLON PLANT
  B) 3 TABLETS PER 5 GALLON PLANT
  C) 4 TABLETS PER 15 GALLON PLANT
  D) LARGER PLANTS: 2 TABLETS PER ½" CALIPER OF TRUNK

J. FILL PREPARED SOIL AROUND BALL OF PLANT HALF-WAY AND INSERT PLANT TABLETS. COMPLETE BACKFILL AND WATER THOROUGHLY.

K. ALL PLANTS SHALL BE PLANTED SO THAT THE TOP OF THE ROOT BALL, THE POINT AT WHICH THE ROOT FLARE BEGINS, IS SET AT GROUND LEVEL AND IN THE CENTER OF THE PIT. NO SOIL IS TO BE PLACED DIRECTLY ON TOP OF THE ROOT BALL.

L. ALL PROPOSED TREES DIRECTLY ADJACENT TO WALKWAYS OR DRIVEWAYS SHALL BE PRUNED AND MAINTAINED TO A MINIMUM BRANCHING HEIGHT OF 7' FROM GRADE.

M. GROUND COVER AREAS SHALL RECEIVE A ¼" LAYER OF HUMUS RAKED INTO THE TOP 1" OF PREPARED SOIL PRIOR TO PLANTING. ALL GROUND COVER AREAS SHALL BE WEEDED AND TREATED WITH A PRE-EMERGENT CHEMICAL AS PER MANUFACTURER'S RECOMMENDATION.

N. NO PLANT, EXCEPT GROUND COVERS, GRASSES OR VINES, SHALL BE PLANTED LESS THAN TWO FEET (2') FROM EXISTING STRUCTURES AND SIDEWALKS.

O. ALL PLANTING AREAS AND PLANTING PITS SHALL BE MULCHED AS SPECIFIED HEREIN TO FILL THE ENTIRE BED AREA OR SAUCER. NO MULCH IS TO TOUCH THE TRUNK OF THE TREE OR SHRUB.

P. ALL PLANTING AREAS SHALL BE WATERED IMMEDIATELY UPON INSTALLATION IN ACCORDANCE WITH THE WATERING SPECIFICATIONS AS LISTED HEREIN.

10. TRANSPLANTING (WHEN REQUIRED)
A. ALL TRANSPLANTS SHALL BE DUG WITH INTACT ROOT BALLS CAPABLE OF SUSTAINING THE PLANT.

B. IF PLANTS ARE TO BE STOCKPILED BEFORE REPLANTING, THEY SHALL BE HEALED IN WITH MULCH OR SOIL, ADEQUATELY WATERED AND PROTECTED FROM EXTREME HEAT, SUN AND WIND.

C. PLANTS SHALL NOT BE DUG FOR TRANSPLANTING BETWEEN APRIL 10 AND JUNE 30.

D. UPON REPLANTING, BACKFILL SOIL SHALL BE AMENDED WITH FERTILIZER AND ROOT GROWTH HORMONE.

E. TRANSPLANTS SHALL BE GUARANTEED FOR THE LENGTH OF THE GUARANTEE PERIOD SPECIFIED HEREIN.

F. IF TRANSPLANTS DIE, SHRUBS AND TREES LESS THAN SIX INCHES (6") DBH SHALL BE REPLACED IN KIND. TREES GREATER THAN SIX INCHES (6") DBH MAY BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE MUNICIPALITY'S TREE REPLACEMENT GUIDELINES.

11. WATERING
A. NEW PLANTINGS OR LAWN AREAS SHALL BE ADEQUATELY IRRIGATED BEGINNING IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACKFILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED. WATERING SHALL CONTINUE AT LEAST UNTIL PLANTS ARE ESTABLISHED.

B. SITE OWNER SHALL PROVIDE WATER IF AVAILABLE ON SITE AT TIME OF PLANTING. IF WATER IS NOT AVAILABLE ON SITE, CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER. THE USE OF WATERING BAGS IS RECOMMENDED FOR ALL NEWLY PLANTED TREES.

C. IF AN IRRIGATION SYSTEM HAS BEEN INSTALLED ON THE SITE, IT SHALL BE USED TO WATER PROPOSED PLANT MATERIAL, BUT ANY FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE CONTRACTOR'S RESPONSIBILITY OF MAINTAINING THE DESIRED MOISTURE LEVEL FOR VIGOROUS, HEALTHY GROWTH.

12. GUARANTEE
A. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF ONE (1) YEAR FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE APPROVING AGENCY. CONTRACTOR SHALL SUPPLY THE OWNER WITH A MAINTENANCE BOND FOR TEN PERCENT (10%) OF THE VALUE OF THE LANDSCAPE INSTALLATION WHICH WILL BE RELEASED AT THE CONCLUSION OF THE GUARANTEE PERIOD AND WHEN A FINAL INSPECTION HAS BEEN COMPLETED AND APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

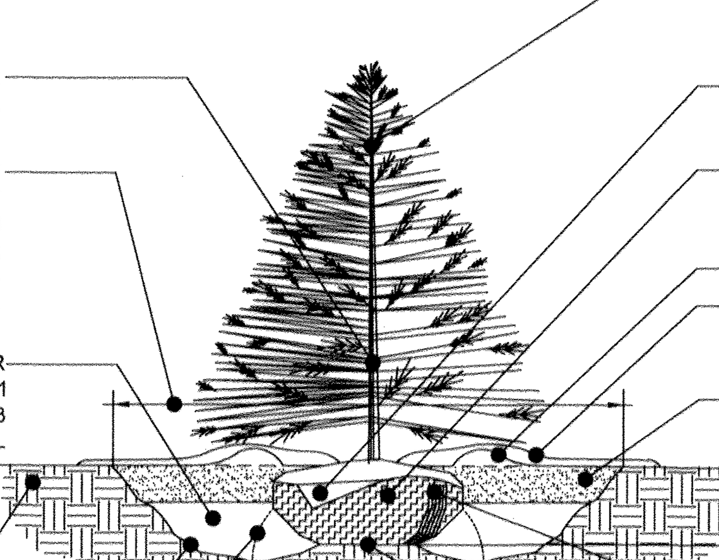
B. ANY DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED FOR THE LENGTH OF THE GUARANTEE PERIOD. REPLACEMENT OF PLANT MATERIAL SHALL BE CONDUCTED AT THE FIRST SUCCEEDING PLANTING SEASON. ANY DEBRIS SHALL BE DISPOSED OF OFF-SITE, WITHOUT EXCEPTION.

C. TREES AND SHRUBS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION AND THROUGHOUT THE 90 DAY MAINTENANCE PERIOD AS SPECIFIED HEREIN. CULTIVATION, WEEDING, WATERING AND THE PREVENTATIVE TREATMENTS SHALL BE PERFORMED AS NECESSARY TO KEEP PLANT MATERIAL IN GOOD CONDITION AND FREE OF INSECTS AND DISEASE.

D. LAWNS SHALL BE MAINTAINED THROUGH WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING AND OTHER OPERATIONS SUCH AS ROLLING, REGARDING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.

13. CLEANUP
A. UPON THE COMPLETION OF ALL LANDSCAPE INSTALLATION AND BEFORE THE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL UNUSED MATERIALS, EQUIPMENT AND DEBRIS FROM THE SITE. ALL PAVED AREAS ARE TO BE CLEANED.

B. THE SITE SHALL BE CLEANED AND LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

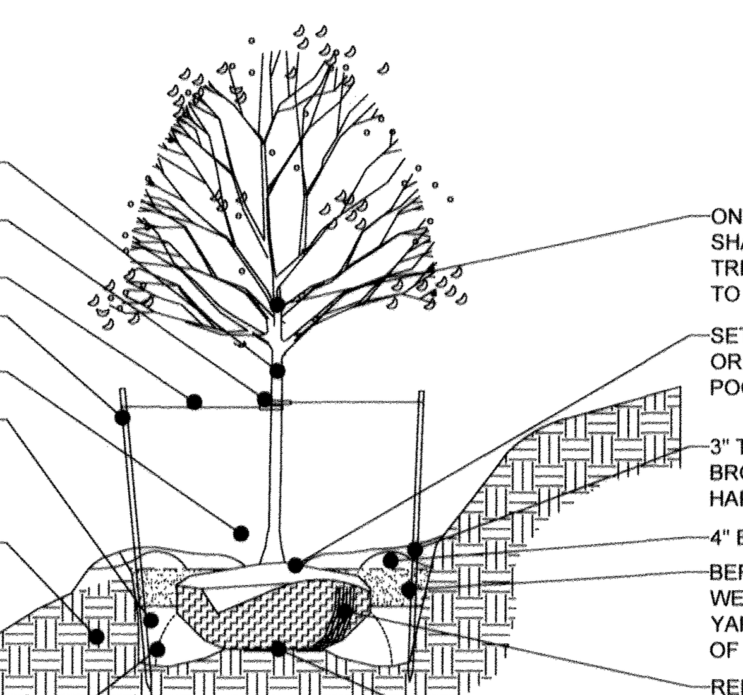


REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

EVERGREEN TREE PLANTING DETAIL

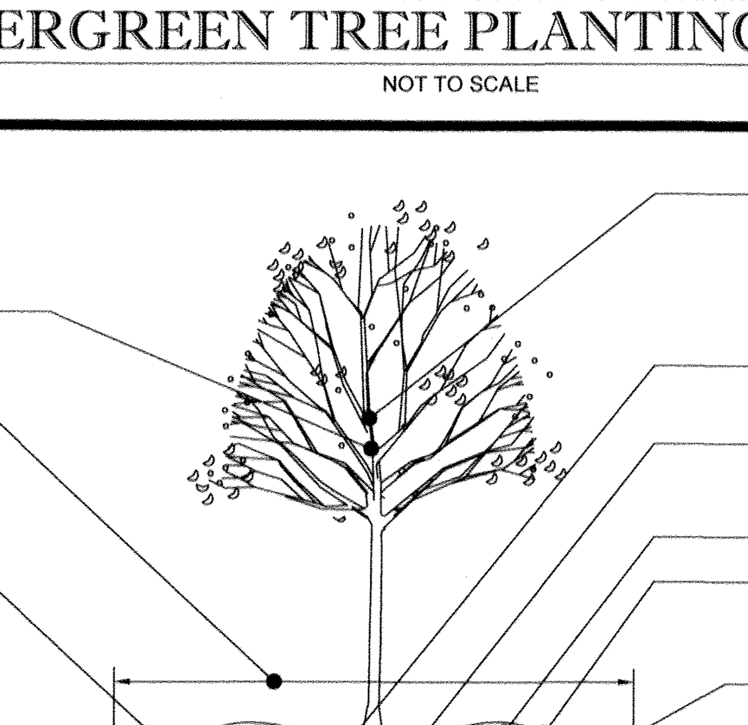
NOT TO SCALE

NOTE: TREE STAKING TO BE REMOVED AFTER 2 GROWING SEASONS



TREE PLANTING ON SLOPE DETAIL

NOT TO SCALE



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

DECIDUOUS TREE PLANTING DETAIL

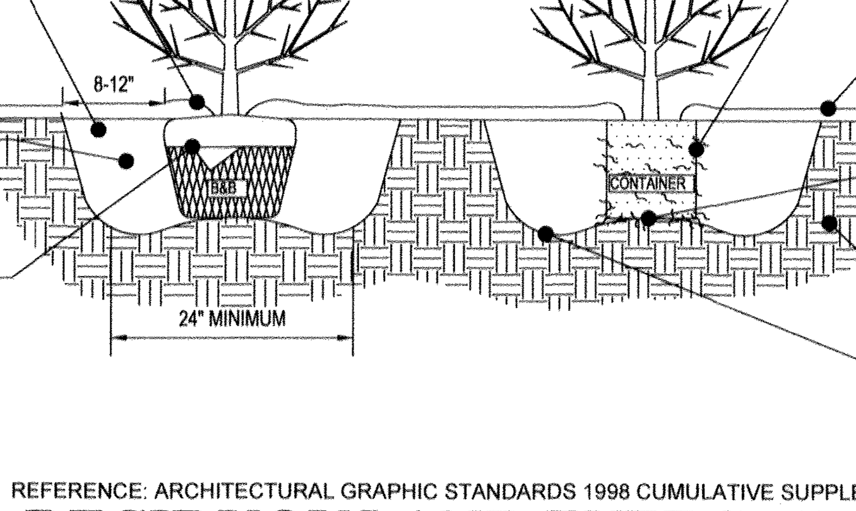
NOT TO SCALE

OWNER MAINTENANCE RESPONSIBILITIES

UPON OWNER'S (OR OWNER CONTRACTOR'S) COMPLETION OF LANDSCAPING WORK, THE OWNER IS FULLY RESPONSIBLE FOR ALL FUTURE MAINTENANCE, CARE, UPKEEP, WATERING, AND TRIMMING OF ALL INSTALLED VEGETATION, PLANTS, TREE, BUSHES, SHRUBS, GRASSES, GRASS, ORNAMENTAL PLANTS AND FLOWERS, FLOWERS, GROUND COVER, AND LANDSCAPING, INCLUDING ALL LANDSCAPE ISLANDS AND AREAS ADJACENT OR PART OF THE LANDSCAPED AREAS. THIS RESPONSIBILITY INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

- TREES ADJACENT TO WALKWAYS AND AREAS OF PEDESTRIAN TRAFFIC MUST BE MAINTAINED TO ASSURE THAT ANY BRANCHES MUST BE LIMBED UP TO A CLEARANCE HEIGHT OF 7 FT. (FROM ALL PEDESTRIAN SURFACES) OR PRUNED BACK TO AVOID ANY INTERFERENCE WITH THE TYPICAL PATH OF TRAVEL.
- TREES WITHIN VEHICULAR SIGHT LINES, AS ILLUSTRATED ON THE LANDSCAPE PLAN, ARE TO BE TRIMMED TO A CLEARANCE HEIGHT OF 7 FT. (FROM ALL PAVED, TRAVELED SURFACES), OR AS OTHERWISE INDICATED ON THE PLANS.
- VEGETATIVE GROUND COVER, SHRUBS AND ORNAMENTAL PLANTS AND GRASSES MUST BE TRIMMED SO THAT NO PORTION OF THE PLANT EXCEEDS 30 INCHES ABOVE GRADE (OF ALL PAVED, TRAVEL SURFACES) ALONG AND WITHIN THE SIGHT LINES OF PARKING LOTS AND INGRESS-EGRESS WAYS.
- FALLEN PLANT FLOWERS, FRUIT, SEEDS AND DEBRIS DROPPINGS ARE TO BE REMOVED IMMEDIATELY FROM VEHICULAR AND PEDESTRIAN TRAFFIC AREAS TO PREVENT TRIPPING, SLIPPING OR ANY OTHER HAZARDS.

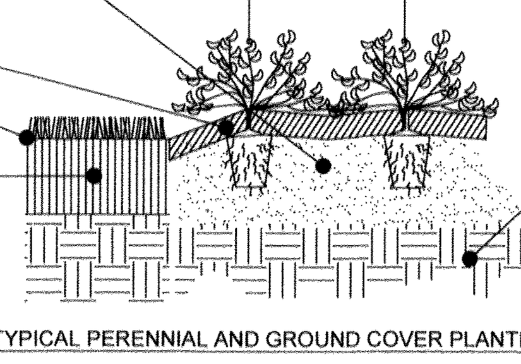
THESE REQUIREMENTS DO NOT AFFECT THE PLANT LIFE GUARANTEES THE LANDSCAPE CONTRACTOR IS REQUIRED TO PROVIDE.



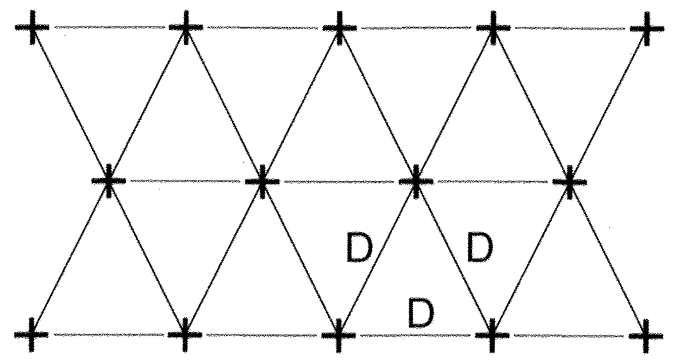
REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT

DECIDUOUS AND EVERGREEN SHRUB PLANTING DETAIL

NOT TO SCALE



TYPICAL PERENNIAL AND GROUND COVER PLANTING



TYPICAL PERENNIAL AND GROUND COVER SPACING & LAYOUT

PERENNIAL/GROUND COVER PLANTING DETAIL

NOT TO SCALE

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12/21/22

STATE OF MARYLAND · DONALD ALAN MASON · No. 21443 · PROFESSIONAL ENGINEER

AS-BUILT 8/26/21

PREVIOUS FILE No.: ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

DEVELOPER'S/OWNER'S LANDSCAPE CERTIFICATE

I/WE CERTIFY THAT HE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

DEVELOPER'S / OWNER'S NAME RIVER HILL SQUARE LLC
James R. Moxley III By: [signature] MEMBER DATE 1/11/19
James R. Moxley III STEVEN K BRESEMAN

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:	DEVELOPER:
STEPHEN A. KLEIN & ASSOCIATES	RIVER HILL SQUARE, LLC.
C/O STEPHEN A. KLEIN, INC.	P.O. BOX 417
12165 CLARKSVILLE PIKE	ELLICOTT CITY, MARYLAND 21041
CLARKSVILLE, MD 21029	(410) 465-4244
(410) 465-4244	

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATION
I, ERIC R. McWILLIAMS, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 3697, EXPIRATION DATE: 9/20/20

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	BY

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NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	AS SHOWN
CAD I.D.:	LP2

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT
LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

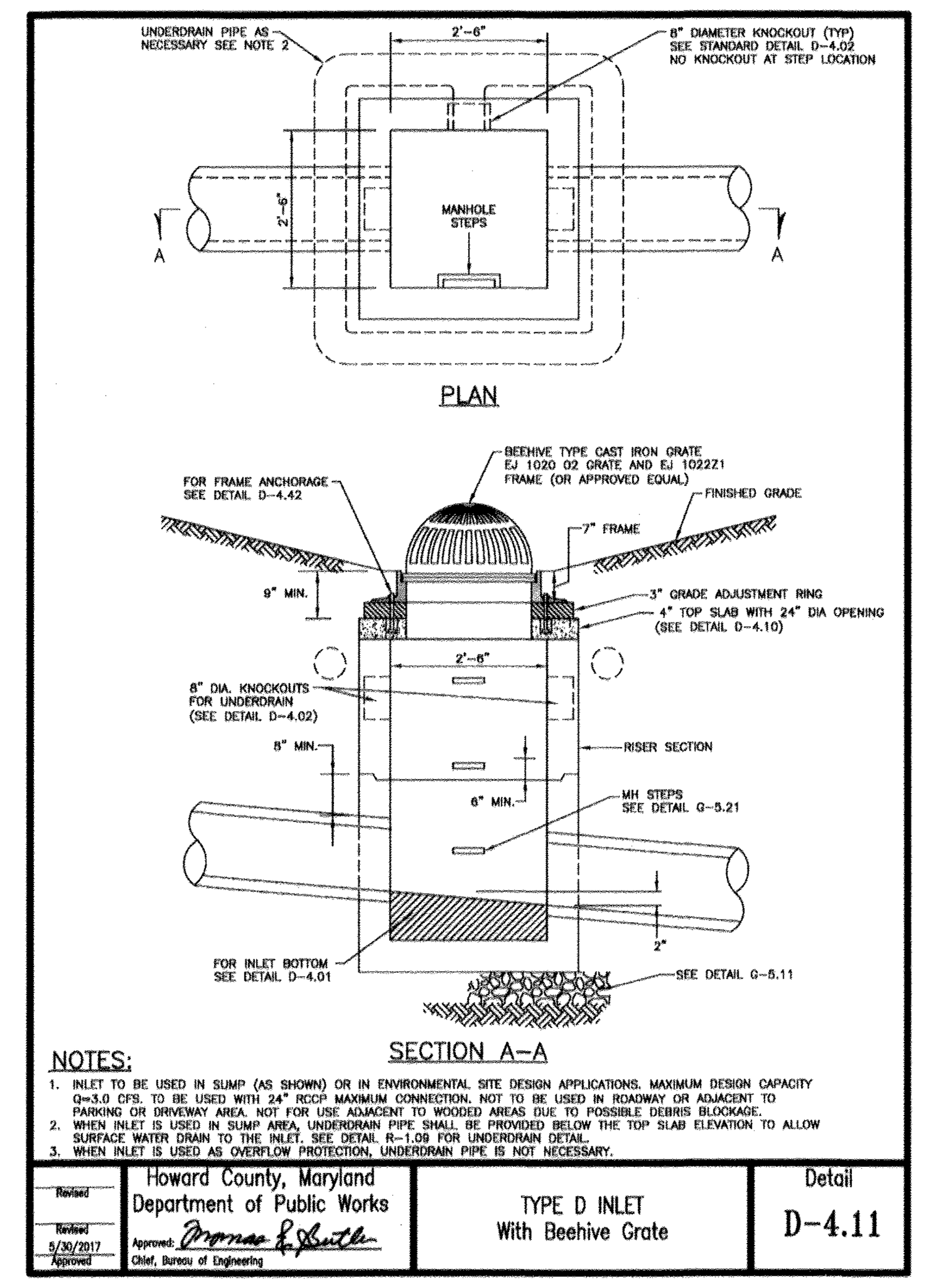
E.R. McWILLIAMS
STATE OF MARYLAND · ERIC R. McWILLIAMS · REGISTERED LANDSCAPE ARCHITECT · 3697

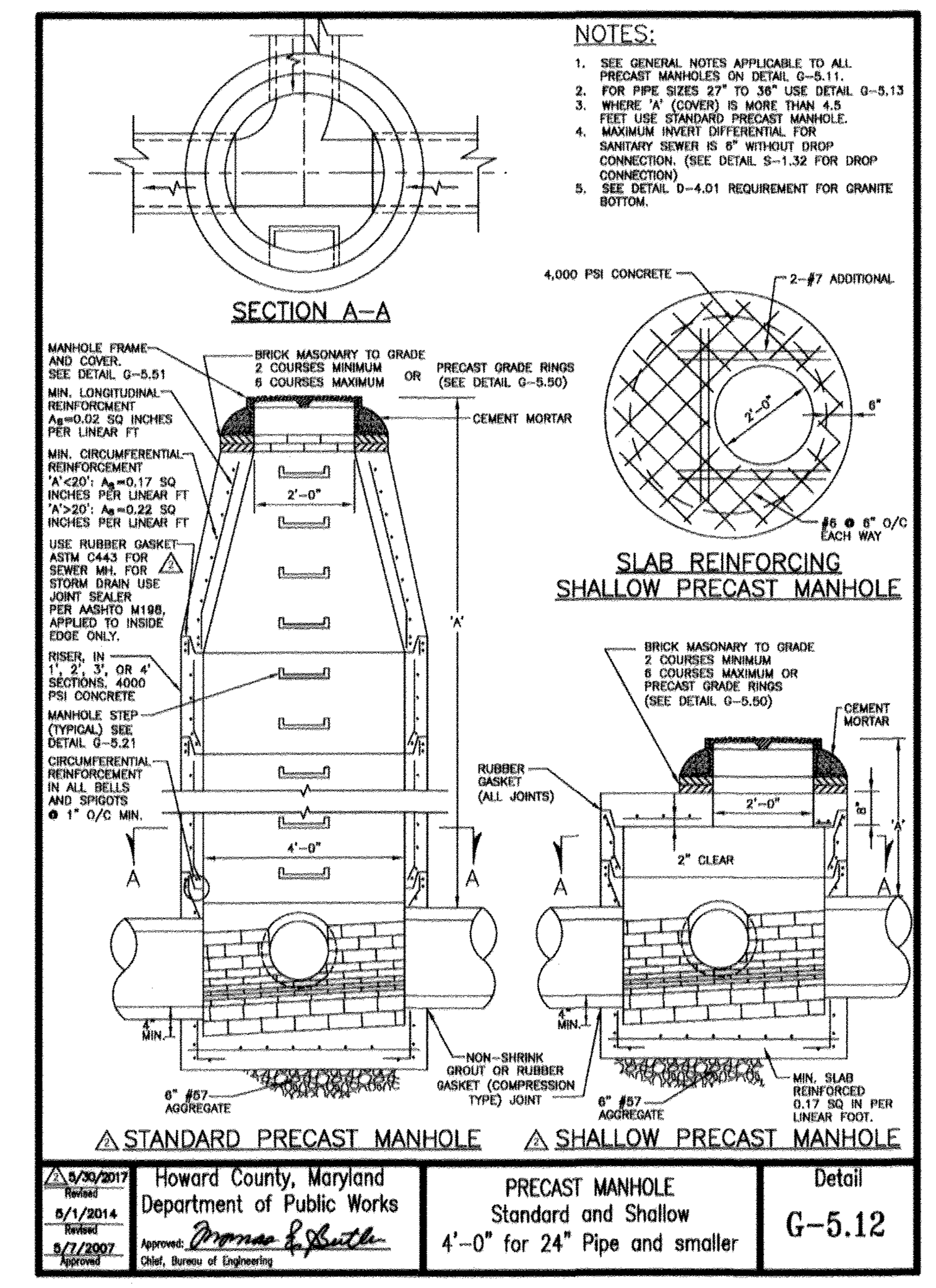
SHEET TITLE:
STREETSCAPE NOTES AND DETAILS

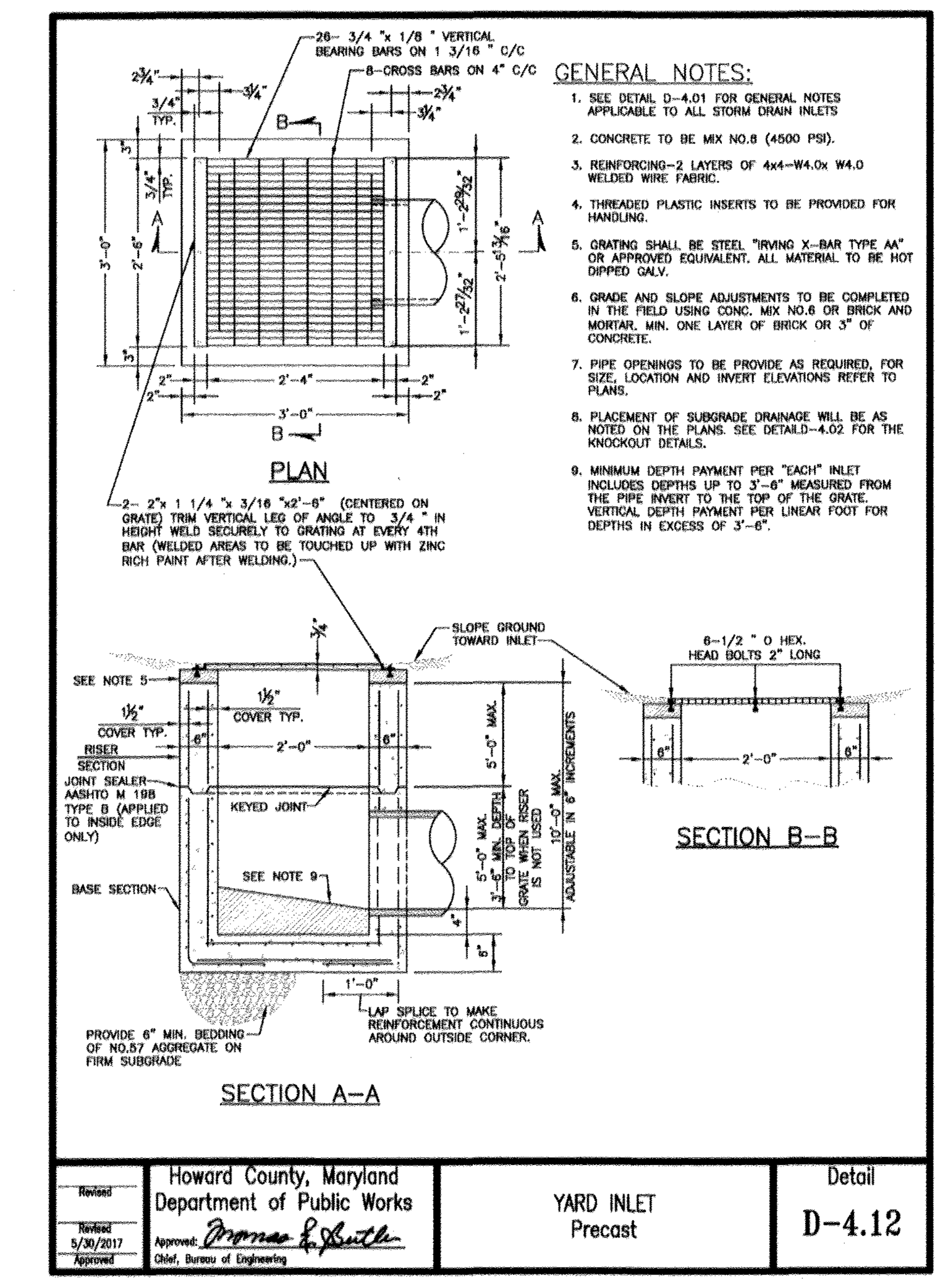
SHEET NUMBER:
17

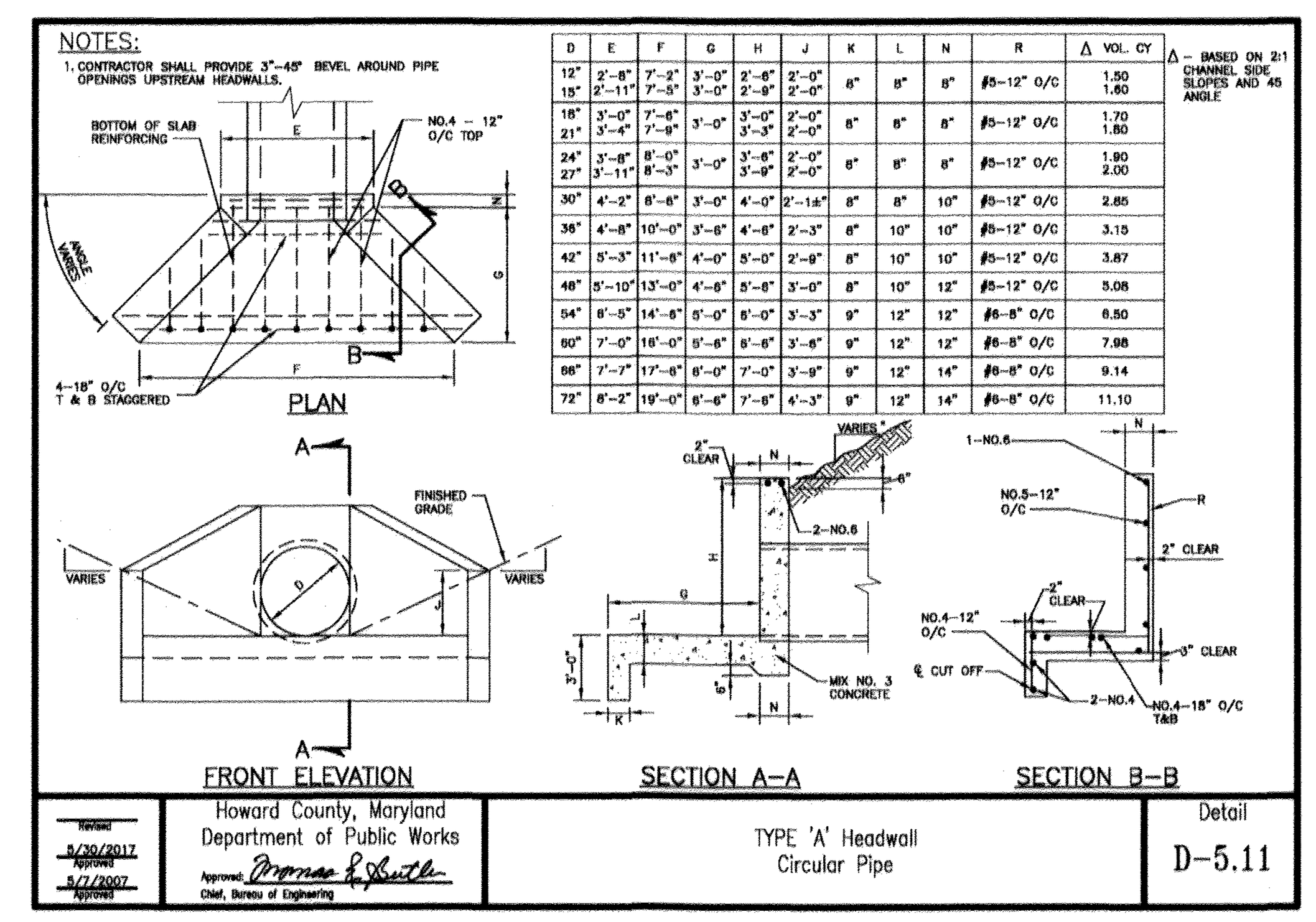
F-18-099

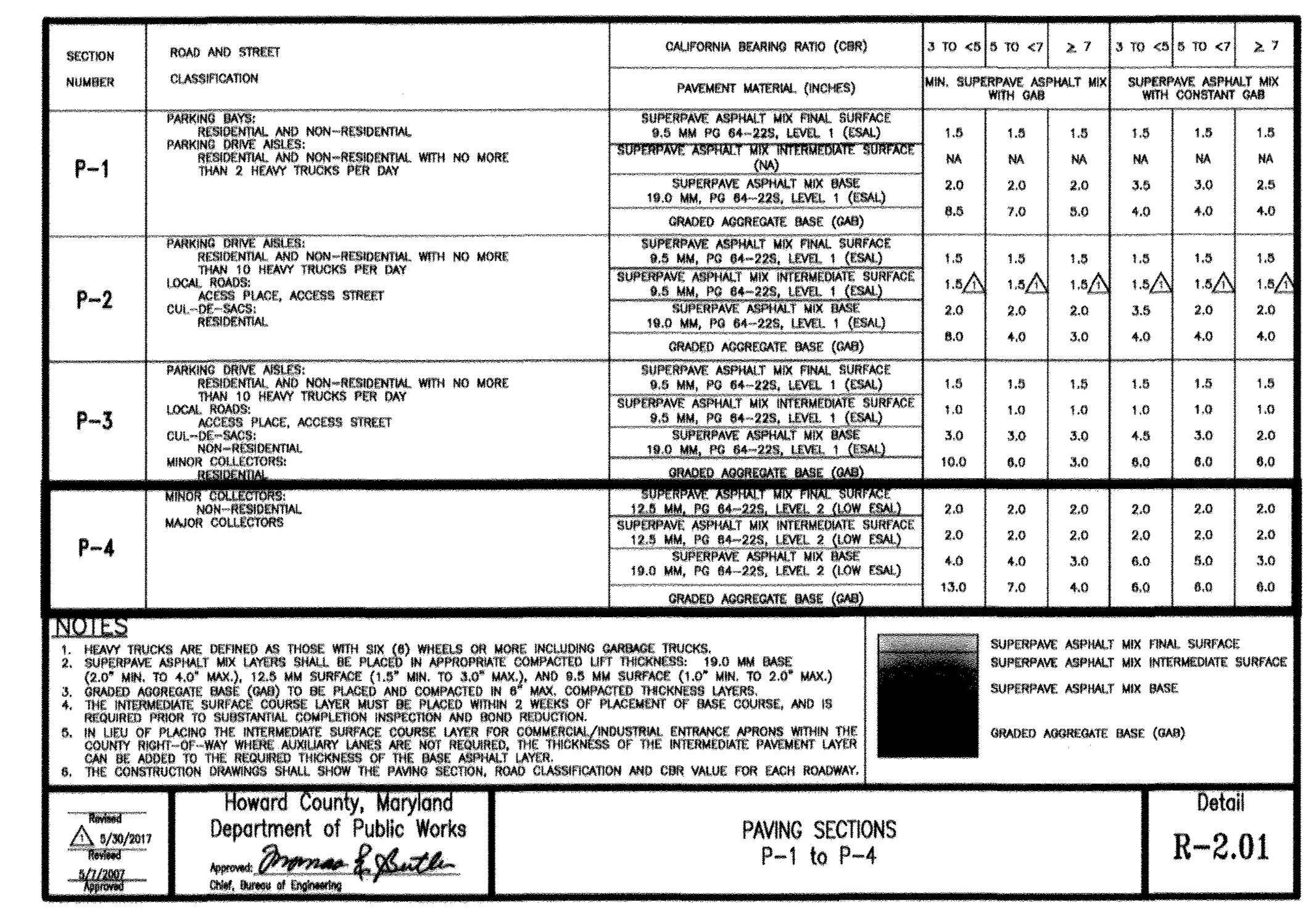
AS-BUILT

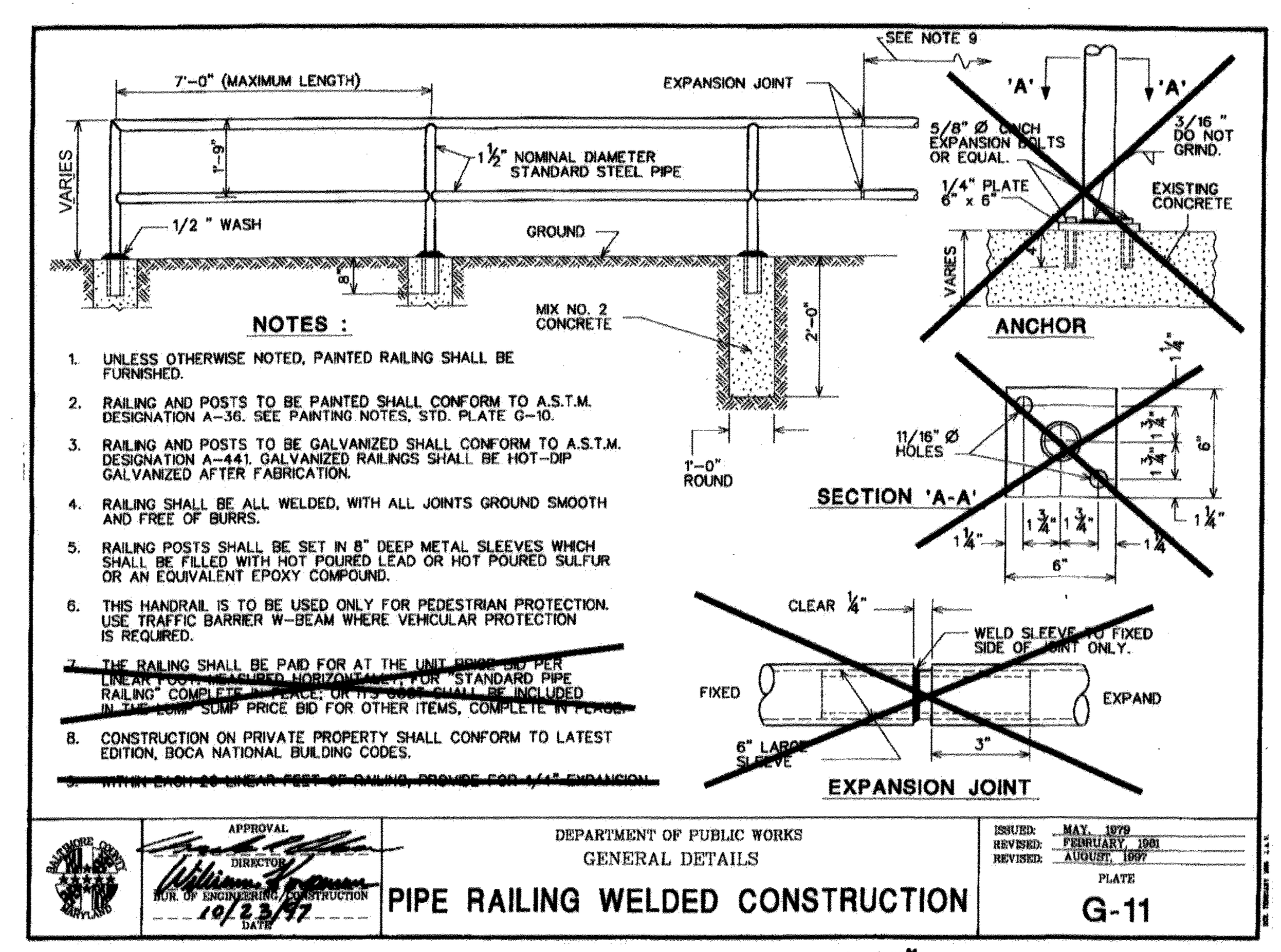


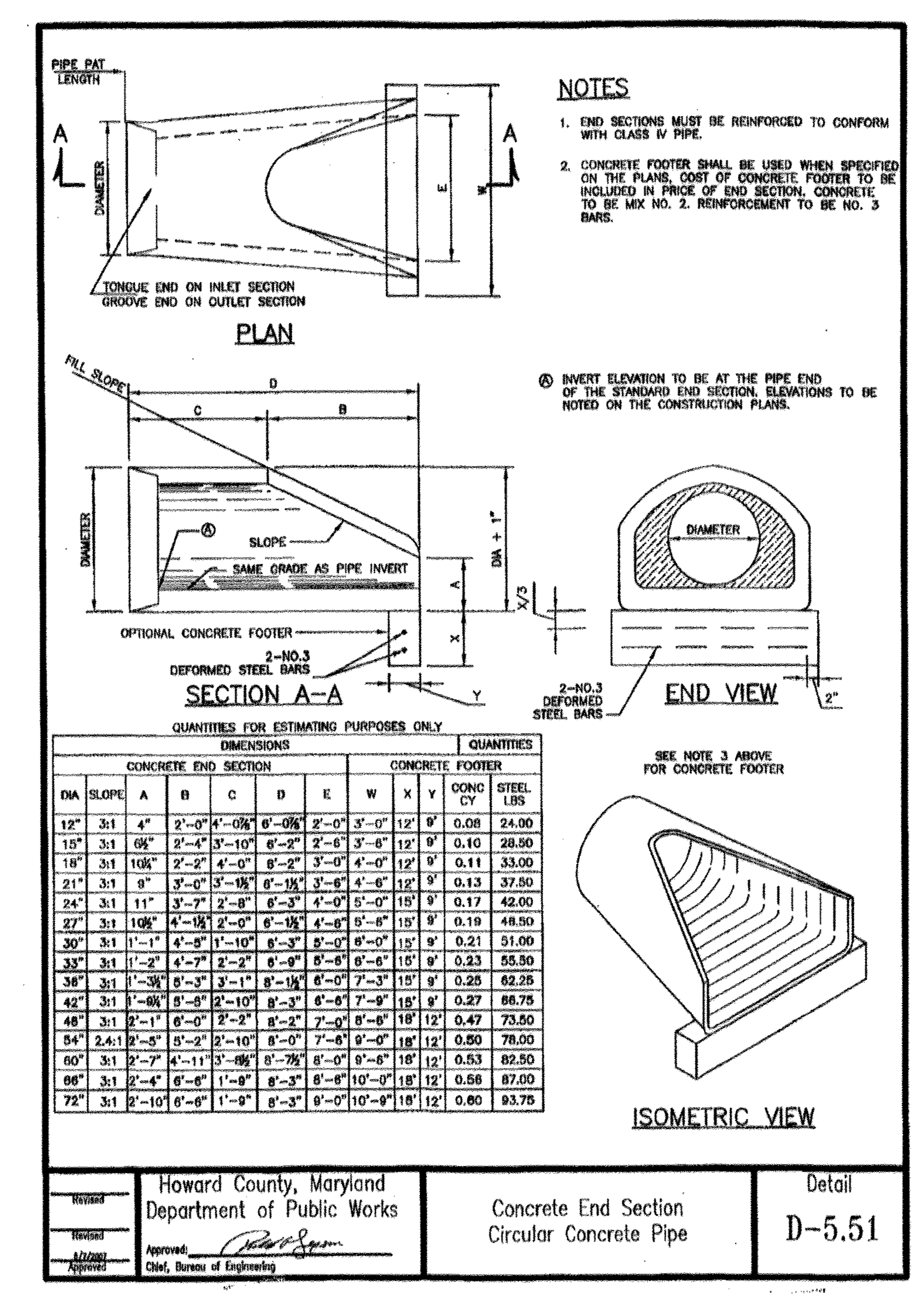












" NO AS-BUILT INFORMATION IS"
PROVIDED ON THIS SHEET

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443, Expiration Date: 12-21-22

STATE OF MARYLAND
DONALD ALAN MASON
No. 21443
PROFESSIONAL ENGINEER

AS-BUILT 3/26/21

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2-21-19

OWNER:	DEVELOPER:
STEPHEN A. KLEIN & ASSOCIATES C/O STEPHEN A. KLEIN, INC. 12165 CLARKSVILLE PIKE CLARKSVILLE, MD 21029 (410) 465-4244	RIVER HILL SQUARE, LLC. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 (410) 465-4244

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No.: ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

AS-BUILT

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REVISIONS			
REV	DATE	COMMENT	BY

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NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	NTS
CAD I.D.:	SD2

PROJECT:

FINAL ROAD CONSTRUCTION PLANS
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LOCATION OF SITE
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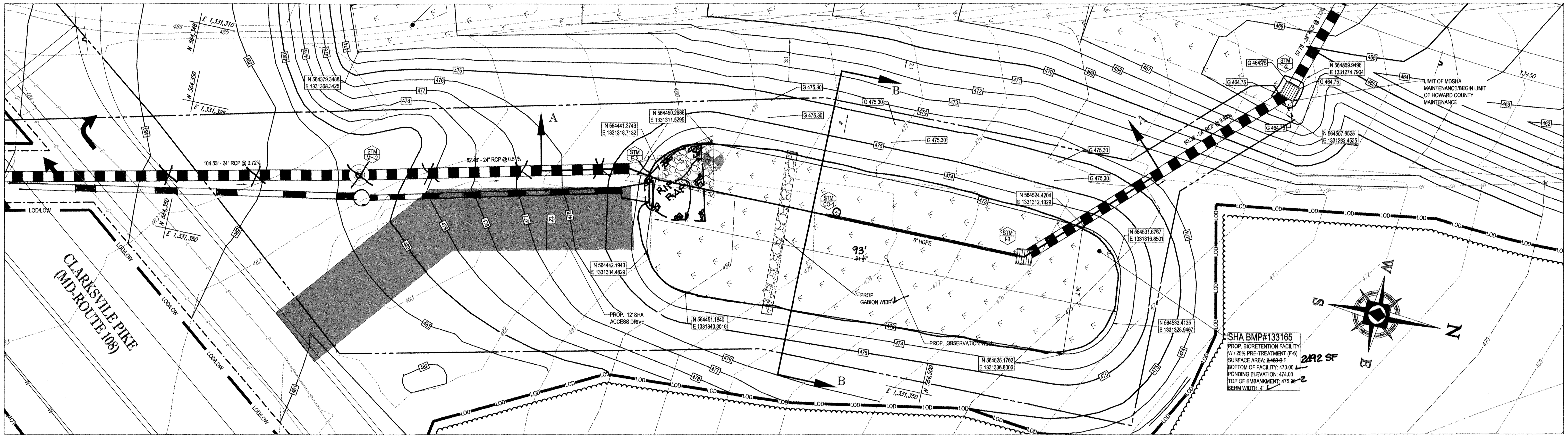
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
1/10/19

SHEET TITLE:
CONSTRUCTION DETAILS

SHEET NUMBER:
18

F-18-099

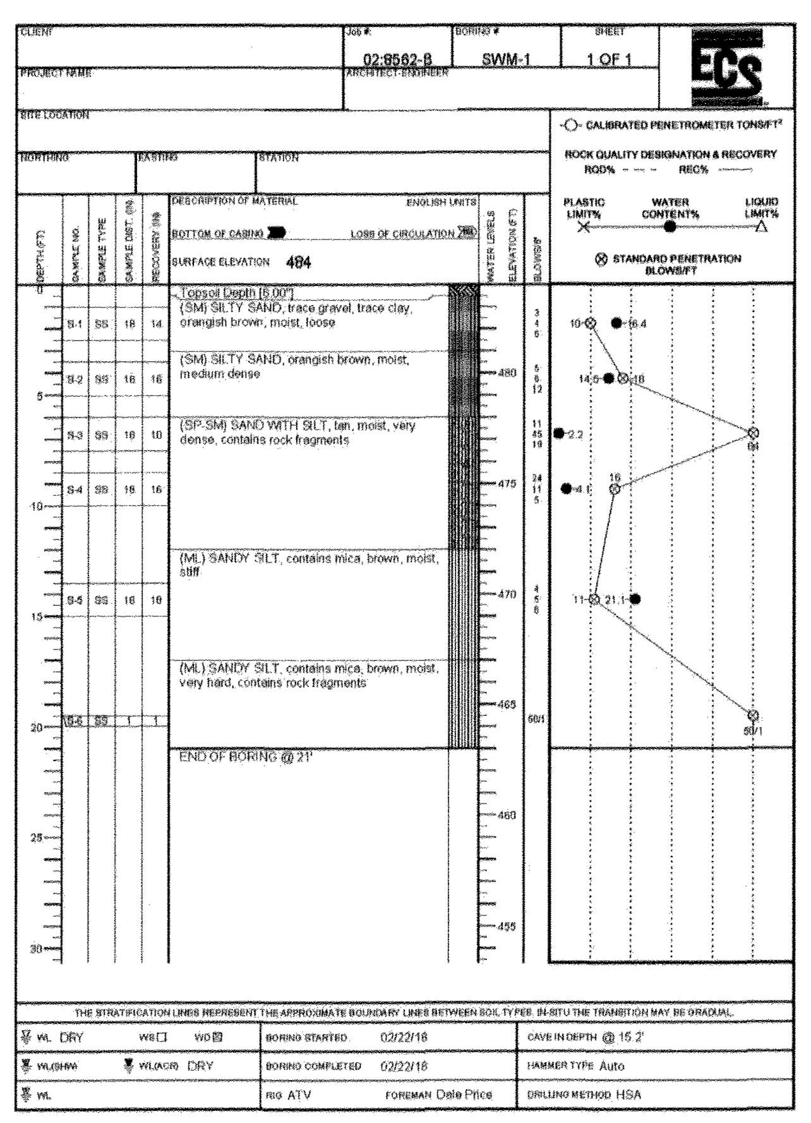


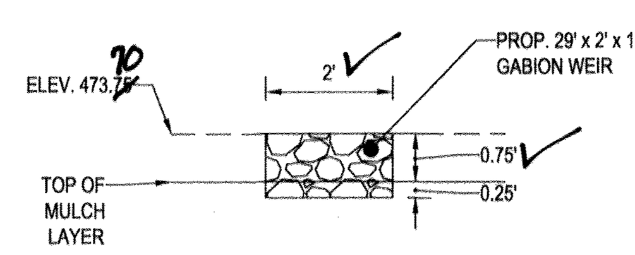
BIORETENTION FACILITY #1 PLAN VIEW

SCALE: 1" = 10'

NOTE:

CONSTRUCTION OF THE SHA BIORETENTION AREA WILL CONFORM TO THE 2017 SHA STANDARD SPECIFICATIONS 316 FOR "STORMWATER MANAGEMENT (SWM) FILTRATION FACILITIES" WHICH CAN BE FOUND AT THE FOLLOWING LINK: HTTPS://POLICYMANUAL.MDOT.MARYLAND.GOV/MEDIAWIKI/INDEX.PHP?TITLE=316_STORMWATER_MANAGEMENT_(SWM)_FILTRATION_FACILITIES





PROPOSED GABION WEIR

SCALE: 1" = 3'

SWM FACILITY AS-BUILT CERTIFICATION DATA TABLE FOR F-6 BIORETENTION

MAY ONLY BE COMPLETED AND/OR CERTIFIED BY THE AS-BUILT (AB) INSPECTOR AS REQUIRED BY COMAR 26.17.02.10.

SWM FACILITY NUMBER	MDE/PRD NUMBER	SHA CONTRACT NUMBER
000000	00-PR-0000	XX0005000

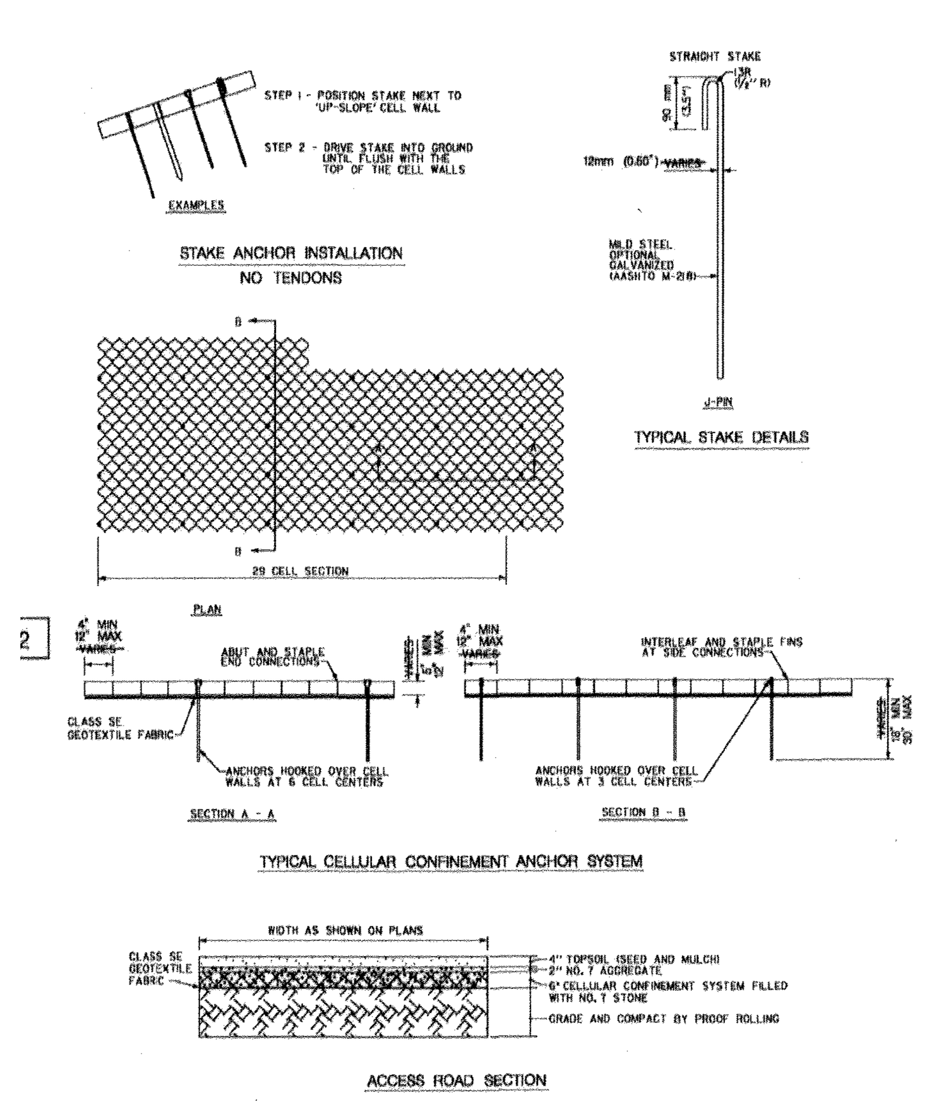
ACTIVITY	ADDITIONAL SUPPORTING DOCUMENTATION (SUBMIT WITH SWM FACILITY AS-BUILT CERTIFICATION PACKAGE)	DATE(S) OF INSPECTION
PRIOR TO SWM FACILITY EXCAVATION, VERIFIED ESC MEASURES ARE INSTALLED AROUND THE FACILITY OR CONFIRMED SURROUNDING AREA IS STABILIZED, AND CONFIRMED FACILITY STAKEOUT	☐ INSPECTION REPORT ☐ PHOTOGRAPHS ☐ OTHER (LIST:	
OBSERVED EXCAVATION AND GRADING OF SWM FACILITY	☐ PHOTOGRAPHS ☐ INSPECTION REPORT ☐ OTHER (LIST:	
OBSERVED INSTALLATION OF GEOTEXTILE AND VERIFIED INSTALLATION PERFORMED AS SPECIFIED	☐ INSPECTION REPORT ☐ PHOTOGRAPHS ☐ OTHER (LIST):	
OBSERVED INSTALLATION OF NO. 57 AGGREGATE BEDDING FOR SUB-DRAIN	☐ PHOTOGRAPHS ☐ INSPECTION REPORT ☐ OTHER (LIST):	
OBSERVED INSTALLATION OF SUB-DRAIN, VERIFIED TYPE IS PPWP OR CPP-S AND HAS SLOTTED PERFORATIONS	☐ PHOTOGRAPHS ☐ INSPECTION REPORT ☐ OTHER (LIST): PIPE TYPE: ☐ PPWP ☐ CPP-S	
OBSERVED INSTALLATION OF OBSERVATION WELL, VERIFIED TYPE IS PPWP OR CPP-S AND HAS SLOTTED PERFORATIONS, AND VERIFIED USE OF GEOTEXTILE SOCK	☐ PHOTOGRAPHS ☐ INSPECTION REPORT ☐ OTHER (LIST): PIPE TYPE: ☐ PPWP ☐ CPP-S	
OBSERVED INSTALLATION OF NO. 57 AGGREGATE AROUND AND ABOVE SUB-DRAIN	☐ PHOTOGRAPHS ☐ INSPECTION REPORT ☐ OTHER (LIST):	
OBSERVED INSTALLATION OF NO. 7 AGGREGATE	☐ PHOTOGRAPHS ☐ INSPECTION REPORT ☐ OTHER (LIST):	
OBSERVED INSTALLATION OF COARSE SAND	☐ PHOTOGRAPHS ☐ INSPECTION REPORT ☐ OTHER (LIST):	
OBSERVED INSTALLATION OF APPROVED BIORETENTION SOIL MIX (BSM)	☐ PHOTOGRAPHS ☐ MATERIAL APPROVAL FORM(S) ☐ OTHER (LIST):	
OBSERVED INSTALLATION OF RELEASE STRUCTURE	☐ PHOTOGRAPHS ☐ INSPECTION REPORT ☐ OTHER (LIST): RELEASE STRUCTURE: ☐ INLET ☐ WEIR ☐ OTHER (WRITE IN):	
OBSERVED INSTALLATION AND ESTABLISHMENT OF VEGETATION, VERIFIED SPECIES AND QUANTITIES SPECIFIED, AND OBSERVED HARDWOOD BARK MULCH INSTALLATION	☐ INSPECTION REPORT ☐ PHOTOGRAPHS ☐ OTHER (LIST):	

FEATURE	DESIGN	AS-BUILT	DIFFERENCE
BOTTOM WIDTH (FT.)	24.7'	24	-0.7'
BOTTOM LENGTH (FT.)	91.5'	93	+1.5'
LEFT SIDE SLOPE (H:V) – CANNOT BE STEEPER THAN 3:1	3:1	3:1	–
RIGHT SIDE SLOPE (H:V) – CANNOT BE STEEPER THAN 3:1	3:1	3:1	–
OBSERVATION WELL PIPE DIAMETER (IN.)	6	6	–
SUB-DRAIN PIPE DIAMETER (IN.)	6		
SUB-DRAIN INVERT OUT ELEVATION (FT.)	469.67	469.74	+0.07'
THICKNESS OF NO. 57 AGGREGATE (IN.)	18		
THICKNESS OF NO. 7 AGGREGATE (IN.)	4		
THICKNESS OF COARSE SAND (IN.)	4		
THICKNESS OF BSM (IN.)	48		
WQv DEPTH (IN.) – CANNOT EXCEED 12 IN.	9"		
FREEBOARD (IN.) – CANNOT BE LESS THAN 6 IN.	10.68"		

SWM FACILITY AS-BUILT CERTIFICATION ACCEPTANCE APPROVING AUTHORITY: ☐ MDE ☐ PRD

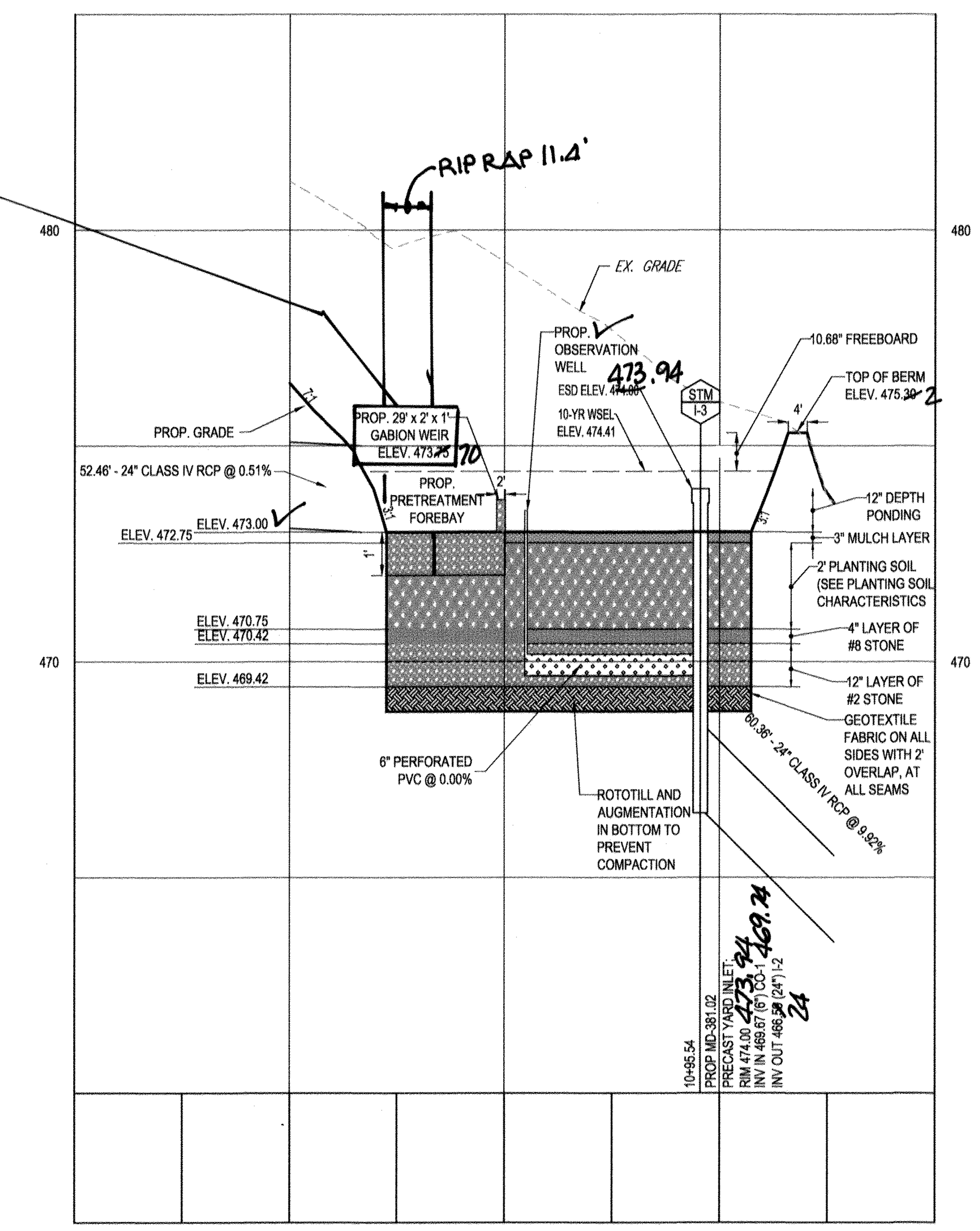
ACCEPTED BY: ______ (NAME) DATE: ______

REVISED 10-25-2017



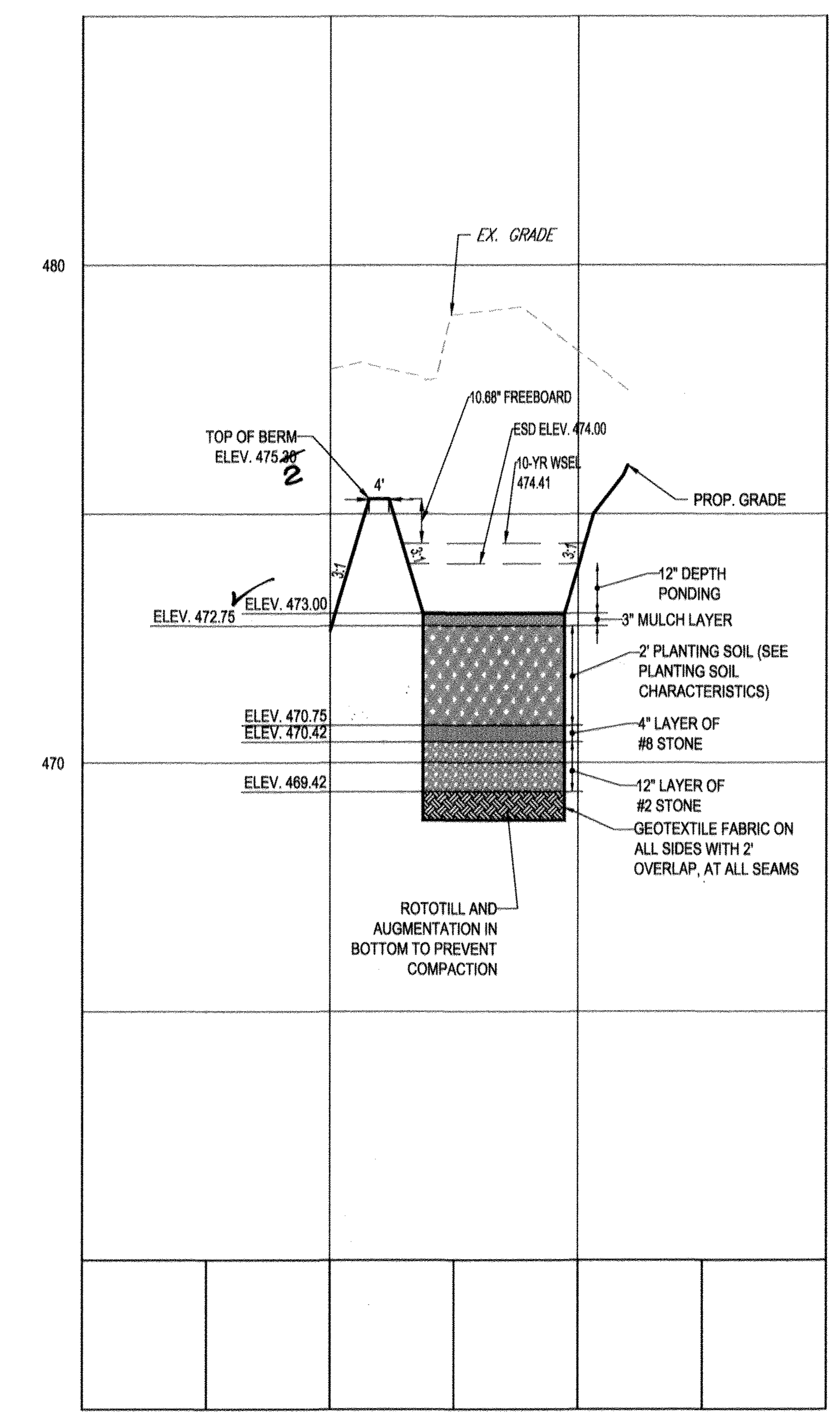
STORMWATER MANAGEMENT ACCESS ROAD CELLULAR CONFINEMENT LOAD SUPPORT SYSTEM

NOT TO SCALE



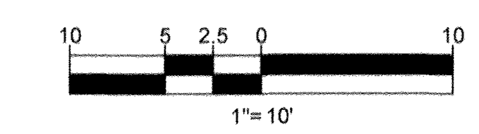
BIORETENTION FACILITY SECTION A-A

SCALE: 1"= 30' HORIZONTAL
1"= 3' VERTICAL

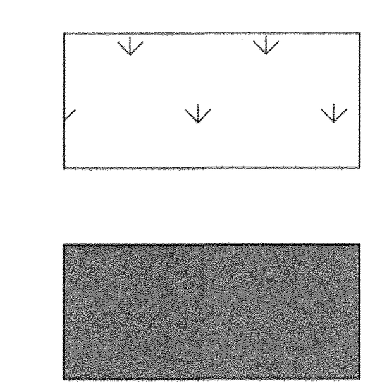


BIORETENTION FACILITY SECTION B-B

SCALE: 1"= 30' HORIZONTAL
1"= 3' VERTICAL



LEGEND



AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E. **Date:** 3/24/21

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443, Expiration Date: 12-21-22

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER

AS-BUILT

NOTE: REFER TO STORMDRAIN PROFILES ON SHEET #23 FOR STORMDRAIN INFORMATION.

PREVIOUS FILE No.: ECP - 17 - 023, SDP - 18 - 044, WP - 18 - 095

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:	DEVELOPER:
STEPHEN A. KLEIN & ASSOCIATES	RIVER HILL SQUARE, LLC.
C/O STEPHEN A. KLEIN, INC.	P.O. BOX 417
12165 CLARKSVILLE PIKE	ELLICOTT CITY, MARYLAND 21041
CLARKSVILLE, MD 21029	(410) 465-4244
(410) 465-4244	

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO PARCEL: 1

5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PROFESSIONAL CERTIFICATION

I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

AS-BUILT

BOHLER ENGINEERING

SITE CIVIL AND CONSULTING ENGINEERING · LAND SURVEYING · PROGRAM MANAGEMENT · LANDSCAPE ARCHITECTURE · SUSTAINABLE DESIGN · PERMITTING SERVICES · TRANSPORTATION SERVICES

REV	DATE	COMMENT	BY

REVISIONS

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PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	AS SHOWN
CAD I.D.:	SW2

PROJECT:

FINAL ROAD CONSTRUCTION PLANS FOR MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
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Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
1/10/19

SHEET TITLE:

MD ROUTE 108 SWM NOTES AND DETAILS

SHEET NUMBER:

19

F-18-099

STORMWATER MANAGEMENT AS-BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE STORMWATER MANAGEMENT FACILITY (FACILITIES) SHOWN ON THE PLANS AND INDIVIDUALLY IDENTIFIED BELOW HAS (HAVE) BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS INCLUDED UNDER THE STATE HIGHWAY ADMINISTRATION PLAN REVIEW DIVISION APPROVAL, NUMBER ___ - PR - _____ EXCEPT AS NOTED IN GREEN ON THE "AS-BUILT" DRAWINGS. FURTHERMORE, THE GREEN-NOTED EXCEPTIONS DO NOT ADVERSELY AFFECT THE DESIGN AND/OR THE INTENDED PERFORMANCE OF THE FACILITY (FACILITIES).

EACH SWM FACILITY IS IDENTIFIED INDIVIDUALLY BY A UNIQUE SWM FACILITY NUMBER

Name (Printed) Signature

Maryland Registration Number Date

PROFESSIONAL CERTIFICATION. "I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. __________, EXPIRATION DATE__________."

"CERTIFY" MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED ON SUFFICIENT AND APPROPRIATE ONSITE INSPECTIONS AND MATERIAL TESTS CONDUCTED DURING CONSTRUCTION.

NOTE: AS-BUILT CHECKLISTS CONTAINED IN THE CONTRACT DRAWINGS SHALL BE COMPLETED BY THE AS-BUILT INSPECTOR AND SUBMITTED TO THE SHA ALONG WITH THIS CERTIFICATION.

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

SPECIAL PROVISIONS INSERT CONTRACT NO. IFB_ContractNo
317 — STORMWATER MANAGEMENT (SWM) 1 of 7
FACILITY AS-BUILT CERTIFICATION

CATEGORY 300
DRAINAGE

SECTION 317 — STORMWATER MANAGEMENT (SWM) FACILITY AS-BUILT CERTIFICATION

317.01 DESCRIPTION. Submit a certification package that affirms that stormwater management (SWM) facilities and practices are constructed as specified or are functionally equivalent to the designs in the approved SWM Report, revising the certification package as needed until approved.

317.01.01 SWM As-Built Engineer. The SWM As-Built Engineer (ABE) is responsible for assembling and certifying the SWM certification package. Duties include adequately documenting that the SWM facilities have been constructed as specified, and performing inspections during pertinent construction activities for SWM facilities and practices. The ABE shall be a Professional Engineer (P.E.) registered and licensed in the State of Maryland and who has at least three years of experience in SWM facility design and SWM facility construction. Submit one copy of the ABE's resume to the Engineer. The resume shall include the following.

(a) Full name of the ABE, License No. and expiration date.

(b) Name of employing company or firm.

(c) Contact information.

(d) Relevant work experience.

(e) Proof of valid certification of the Maryland Department of the Environment (MDE) Responsible Personnel for Erosion and Sediment Control training course (formerly "Green Card"). Note: All certifications for the former course MDE Responsible Personnel Training for Erosion and Sediment Control ("Green Card") expired on December 31, 2016 and are no longer valid.

The ABE shall have the option to use designees, who are under the direct supervision of the ABE, to perform the following duties on behalf of the ABE.

(a) Documenting that the SWM facilities have been constructed as specified, including writing activity inspection reports, taking photographs, and obtaining copies of material approvals and material test results.

(b) Performing inspections during pertinent construction activities for SWM facilities and practices, completing the pertinent portions of the SWM facility as-built certification data tables.

04-03-18

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

SPECIAL PROVISIONS INSERT CONTRACT NO. IFB_ContractNo
317 — STORMWATER MANAGEMENT (SWM) 2 of 7
FACILITY AS-BUILT CERTIFICATION

When the ABE elects to use designees, submit the names and resumes indicating their experience in the design and inspection of SWM facilities, of those designees authorized by the ABE to represent the ABE to the Engineer. Only authorized designees may represent the ABE for the limited duties specified.

317.01.02 SWM Facility As-Built Certification Package. The SWM facility as-built certification package contains documentation that verifies that all SWM facilities and practices on the Contract have been constructed as specified or are functionally equivalent to the designs in the approved SWM Report.

The SWM facility as-built certification package shall include the following for each SWM facility in the Contract, presented neatly and legibly, and organized in an easy-to-follow format.

(a) SWM facility construction inspection reports. The inspection reports shall include the following.

(1) The SWM facility identification number (BMP No. or SWM Fac. No.) and type of SWM facility or practice.

(2) The date and location of the activity.

(3) Photographs, taken during inspections, that clearly show the construction activities as listed on the pertinent SWM facility as-built data tables, with narrative descriptions of what appears in the photographs, the dates the photographs were taken, and the locations.

(4) Verification of whether SWM facility as-built construction is as specified, noting any deviations from the Contract Documents and how the deviations have been addressed.

(b) Photographs of SWM facilities and practices after all landscaping has been installed and established, with narrative descriptions of what appears in the photographs.

(c) Copies of pertinent material approval forms.

(d) Copies of pertinent material and installation test reports and results.

(e) Completed as-built certification data tables.

(f) Green line as-built surveys of the SWM facilities and practices signed and sealed by a Professional Land Surveyor (PLS) who is registered and licensed in the State of Maryland. The as-built survey data shall be overlaid on the appropriate Contract plan sheet(s) and profile sheets, at the same scale and datum, and are coordinately correct. The as-built survey data shall be green in color, clearly legible and easily distinguishable from the

04-03-18

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

SPECIAL PROVISIONS INSERT CONTRACT NO. IFB_ContractNo
317 — STORMWATER MANAGEMENT (SWM) 3 of 7
FACILITY AS-BUILT CERTIFICATION

Contract Document information. The SWM facility as-built surveys shall include the following.

(1) **Contours.** One-foot contour intervals or otherwise match the contour intervals shown in the Contract Documents. Contours shall cover the entire footprint of the SWM facility or practice as well as inflow and outflow conveyances when ditches or similar features convey runoff into or out of SWM facilities and practices.

(2) **Drainage Structures.** Includes all drainage structures within the footprint of the SWM facility, including but not limited to inlets, manholes, flow splitters, risers, weirs, end sections, headwalls, and end walls. As-built data shall include but is not limited to top of structure elevations, structure lengths, and structure widths; pipe inverts; pipe sizes, materials, and flow directions; orifice elevations; opening sizes; weir dimensions and elevations; check dam locations and dimensions; grates; and trash racks.

(3) **Riprap and Aggregate.** Includes dimensions of riprap and other areas within the footprint of the SWM facility and practice that show a surface layer of aggregate or riprap, including forebays.

(4) **Embankment Information.** Includes embankment heights, widths, and elevations; clay core locations, dimensions, and elevations; cut-off trench locations, dimensions, and elevations; pertinent filter diaphragm information; and pertinent pipe cradle information. Data that cannot be obtained from a field survey shall be provided by the ABE for inclusion with the SWM facility as-built survey.

(5) **SWM Facility Maintenance Access Roads.**

(6) **Fences.** Includes fence that surrounds the footprint of the SWM facility or practice.

(7) **SWM Facility Profiles.** Includes an overlay of green line as-built data on SWM facility profiles and typical sections including but not limited to check dam spacing, check dam top elevations, check dam dimensions, invert elevations, subdrain sizes, subdrain materials, aggregate and soil thicknesses, material types, clay core dimensions, and cut-off trench dimensions. Data that cannot be obtained from a field survey shall be provided by the ABE for inclusion with the SWM facility as-built survey.

(8) **Certification.** Seal, signature, license number, and date of license expiration of the PLS who completes the SWM facility as-built survey.

(g) Applicable supporting computations demonstrating that the functionality of the SWM facilities and practices meet the approved designs as presented in the approved SWM Report. This is only necessary when tolerances are not met and shall include but is not limited to water surface elevations, freeboard, storage volumes, depths, and other pertinent

04-03-18

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

SPECIAL PROVISIONS INSERT CONTRACT NO. IFB_ContractNo
317 — STORMWATER MANAGEMENT (SWM) 4 of 7
FACILITY AS-BUILT CERTIFICATION

SWM functionality data that demonstrates the SWM facility performances meets the approved design.

(h) A narrative of justification for as-built deviations in SWM facilities and practices. This is only necessary when 317.01.02 (g) applies.

(i) A copy of Final Acceptance from the Administration's Landscape Operations Division for the landscaping establishment.

(j) Seal, signature, license number, and date of license expiration of the ABE.

317.01.03 Information Supplied by the Administration. Upon written request, the Administration will provide CADD files in DGN format and the approved Final SWM Report in PDF format to facilitate completion of the SWM facility as-built certification package. Submit requests to the Engineer.

317.01.04 Submittals and Approval Process. Partial submittals of the SWM facility as-built package may be made as construction of each individual SWM facility and practice is completed. Otherwise, submit the entire SWM facility as-built package within 45 days of completion of construction activities associated with all SWM facilities and practices but not including establishment of the specified landscaping items. The landscaping phase of SWM facilities and practices need not be completed to submit the SWM facility as-built certification package for Structural Acceptance but is required for Final Approval.

Resubmit the SWM facility as-built package with responses to all Administration comments that may be received. Resubmit as many times as necessary, updating the SWM facility as-built package as needed to address all Administration comments, and making any field adjustments as needed to correct deficiencies, until Structural Acceptance is issued. Some SWM facility types require approval from the Maryland Department of the Environment (MDE) in addition to approval from the Administration. Resubmit the SWM facility as-built package with responses to all MDE comments that may be received. The Administration will coordinate reviews and correspondence with MDE.

Concurrent with the Administration review of the SWM facility as-built certification package for Structural Acceptance, ensure establishment of landscaping items continues and ensure the area is permanently stabilized. Once landscaping is established, ensure the remaining data table information is completed and submit the SWM facility as-built certification package for Final Approval.

Submit the SWM facilities as-built package through the Quality Assurance (QA) Toolkit.

317.02 MATERIALS. Not applicable.

317.03 CONSTRUCTION. Designate an ABE prior to beginning construction of SWM facilities and practices.

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Failure to receive approval for the ABE, failure to submit information about the ABE designees, or failure of the ABE, or the ABE designees, to adequately monitor the specified construction activities will be grounds for replacement of the ABE and reconstruction of all work on SWM facilities and practices that may have already been performed.

Perform all construction activities on SWM facilities and practices only in the presence of the ABE or the ABE designee. Failure to perform work in the presence of the ABE or the ABE designee will be grounds for removal and replacement of the ABE, and reconstruction of all work that may have already been performed.

Prior to beginning or continuing construction activities of SWM facilities and practices, ensure the ABE or the ABE designee is present. If the ABE or ABE designee is not present, suspend work on SWM facilities and practices and do not resume until the ABE or ABE designee is present for the activities.

Whenever the ABE or the ABE designee indicates that SWM facilities and practices under construction do not match the Contract Documents, immediately correct the deficiencies before moving to the next construction activity associated with SWM facilities and practices. If it is not possible to correct deficiencies due to the site conditions or constraints and not due to negligence and inadequate quality of work, cease work on SWM facilities and notify the Engineer.

Upon completion of constructing SWM facilities and practices, perform an as-built survey of the completed facility per 317.01.02 (f). Complete installation and establishment of landscaping items need not be completed to perform the as-built survey of SWM facilities and practices.

Submit the SWM facility as-built certification package per 317.01.04. Update SWM facilities as-built surveys when adjustments are made to address comments that may be received.

317.03.01 ABE Responsibilities. Ensure that the ABE performs the following.

(a) Is present for all activities specified on the SWM facilities as-built certification data tables, performs duties as specified, and records requisite information for the SWM facility as-built certification package. The ABE may elect to use a designee as specified in 317.01.01. Ensure the data is available at the Site and on-demand.

(b) Prepares written inspection reports for construction activities associated with SWM facilities and practices. The ABE may elect to use a designee as specified in 317.01.01.

(c) Takes photographs during construction activities of the SWM facilities and practices and of the completed SWM facilities, including photographs with completed landscape planting installation and establishment. The ABE may elect to use a designee as specified in 317.01.01.

(d) Obtains copies of material approvals for items associated with the SWM facilities and practices. The ABE may elect to use a designee as specified in 317.01.01.

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(e) Obtains copies of compaction test results for SWM facility embankments. The ABE may elect to use a designee as specified in 317.01.01.

(f) Alerts the Contractor when SWM facilities and practices under construction do not match the Contract Documents. The ABE may elect to use a designee as specified in 317.01.01.

(g) When necessary, performs all computations that demonstrate SWM facilities and practices function in the manner as presented in the approved Final SWM Report, including with all revisions to the report that may result from Redline Revisions. At a minimum, the parameters examined by the ABE shall include but are not limited to storage volumes, discharge rates, velocities, detention times, water surface elevations, freeboard, and all other information as recommended by the ABE and as requested by the Administration.

(h) Obtains copies of as-built surveys for the SWM facilities and practices.

(i) Prepares the SWM facility as-built certification package.

317.03.02 Construction Tolerances. As follows. Values outside of tolerance may require computations per 317.03.01 (g).

(a) **Earthwork.** Elevations within 3 in. (0.25 ft) of values specified or as otherwise noted on the pertinent SWM facility as-built data table.

(b) **Embankments, Clay Cores, and Cut-Off Trenches.** Elevations not less than the values specified.

(c) **Drainage Structures.** Elevations within 1.25 in. (0.10 ft) of values specified.

(d) **Pipe Inverts.** Elevations within 1.25 in. (0.10 ft) of values specified.

(e) **Riprap.** Dimensions within 3 in. (0.25 ft) of values specified.

(f) **Freeboard.** Not less than the values specified.

(g) **Aggregate, Sand, Bioretention Soil Mix (BSM), and Mulch Thicknesses.** Not less than values specified.

When construction tolerances cannot be met due to unforeseen site conditions or constraints, ensure that calculations are performed by the ABE per 317.03.01 (g) before proceeding with the next construction activity associated with SWM facilities and practices. If, after performing computations, the ABE determines that the SWM facilities do not meet the functional parameters in the approved Final SWM Report as constructed, reconstruct the SWM facilities to meet the functional parameters. If this is not possible due to the site conditions or constraints and not due

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to negligence and inadequate quality of work, cease work on SWM facilities and notify the Engineer.

317.04 MEASUREMENT AND PAYMENT. Stormwater Management (SWM) Facility As-Built Certification will not be measured but will be paid for at the Contract lump sum price and incrementally distributed per the payment schedule. The payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work. No additional compensation will be considered for addressing comments received on the submitted SWM facilities as-built certification package, revisions to the SWM facility as-built certification package, or any construction activities necessary to address comments that may have been received or necessary to revise the SWM facility as-built certification package.

No adjustment to the payment schedule will be made for partial submittals of the SWM facility as-built certification package.

317.04.01 Payment Schedule. Payments will be made for the SWM facility as-built certification package as follows.

PAYMENT SCHEDULE	
ACTIVITY	PERCENTAGE OF PAYMENT
Initial submission of the entire SWM Facility As-Built Certification Package.	60
Structural Acceptance from the Highway Hydraulics Division and the Approving Authority.	30
Final Approval from the Highway Hydraulics Division and the Approving Authority.	10
TOTAL	100

317.04.02 Forfeiture of Payment. Failure to meet the requirements of the payment schedule will result in forfeiture of that percentage of payment.

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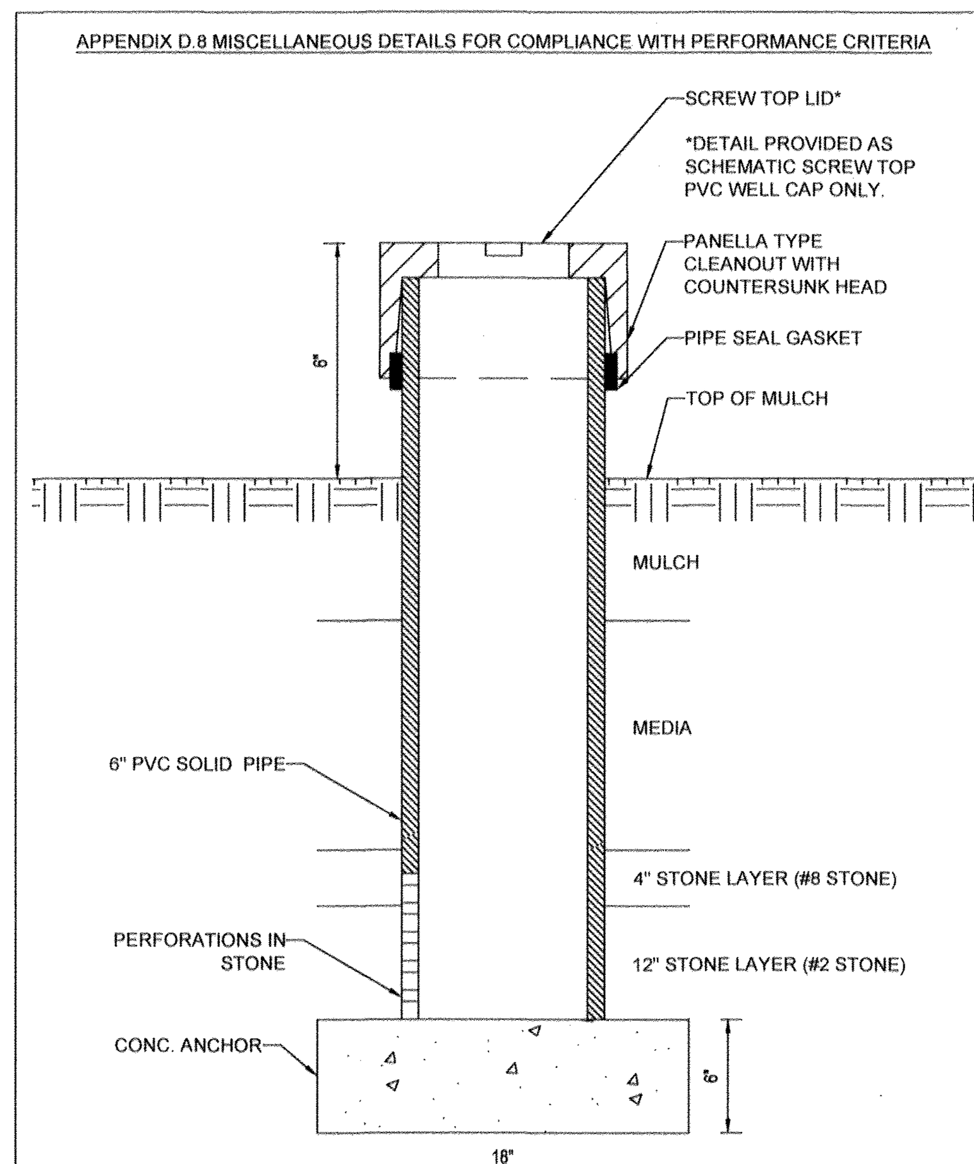
OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION FACILITIES

1. THE BIORETENTION FACILITY WILL BE OWNED BY THE MARYLAND STATE HIGHWAY ADMINISTRATION AND IT SHALL BE THE RESPONSIBILITY OF THE MARYLAND STATE HIGHWAY ADMINISTRATION TO PERIODICALLY INSPECT AND CLEAN THE FACILITY TO MAINTAIN IT'S OPERATION AND FUNCTION.
2. THE BIO-RETENTION FACILITIES SHALL BE INSPECTED YEARLY AT A MINIMUM AND AFTER ESPECIALLY SEVERE STORM EVENTS.
3. WHEN SEDIMENT ACCUMULATION OF MORE THAN 1" IS OBSERVED OR ANY DEBRIS THAT MIGHT OBSTRUCT THE OUTFALL IS OBSERVED, THE FACILITIES SHALL BE CLEANED. THE MARYLAND STATE HIGHWAY ADMINISTRATION SHALL FOLLOW PROPER CLEANING PROCEDURES AND PROPERLY DISPOSE OF THE REMOVED MATERIAL AND LIQUID.
4. THE TOP FEW INCHES OF MEDIA SHOULD BE REMOVED AND REPLACED WHEN WATER PONDS FOR MORE THAN 48 HOURS.
5. THE MULCH LAYER SHALL BE REPLACED ANNUALLY.
6. OCCASIONAL PRUNING AND REPLACEMENT OF DEAD VEGETATION IS NECESSARY. IF SPECIFIC PLANTS ARE NOT SURVIVING, MORE APPROPRIATE SPECIES SHOULD BE USED. WATERING MAY BE REQUIRED DURING PROLONGED DRY PERIODS.
7. THE INLET AND OUTLET PIPES SHALL BE CHECKED FOR ANY OBSTRUCTIONS AT LEAST ONCE EVERY SIX MONTHS. IF OBSTRUCTIONS ARE FOUND, THE MARYLAND STATE HIGHWAY ADMINISTRATION SHALL HAVE THEM REMOVED AND PROPERLY DISPOSED OF.
8. STORM DRAINAGE SYSTEMS - THE STORMWATER MANAGEMENT FACILITIES INCLUDING THE INLETS AND STORMWATER PIPING ON THIS SITE SHALL BE MAINTAINED IN PROPER WORKING ORDER IN ACCORDANCE WITH THESE PLANS AND PER THE RECOMMENDATION OF THE STRUCTURE(S) MANUFACTURER(S). MAINTENANCE OF THESE STORMWATER MANAGEMENT FACILITIES SHALL BE THE RESPONSIBILITY OF THE MARYLAND STATE HIGHWAY ADMINISTRATION UPON WHOSE PROPERTY THE FACILITIES ARE LOCATED.
9. ALL ONSITE INLETS, MANHOLES, AND STORMWATER PIPING SHALL BE CLEARED OF DEBRIS EVERY THREE (3) MONTHS OR WHEN ACCUMULATION HINDERS OPERATION OF THE FACILITY.
10. ALL SEDIMENT/DEBRIS/OIL REMOVED FROM THE STORMWATER MANAGEMENT SYSTEM SHALL BE DISPOSED PER LOCAL, STATE, AND FEDERAL STANDARDS.
11. SHOULD ONSITE EROSION OCCUR FROM THE LANDSCAPED AREAS, SOURCE OF EROSION SHALL BE IMMEDIATELY STABILIZED AND THE INLETS, MANHOLES, AND STORMWATER PIPING SHALL BE CHECKED FOR SEDIMENT ACCUMULATION AND CLEARED IF ACCUMULATION OF SEDIMENT EXISTS.
12. INSPECTION REPORTS FOR THE BIO-RETENTION FACILITIES TO BE MAINTAINED BY THE MARYLAND STATE HIGHWAY ADMINISTRATION SHALL INCLUDE:
    A. DATE OF INSPECTION
    B. NAME OF INSPECTOR
    C. AN ASSESSMENT OF THE QUALITY OF THE STORMWATER MANAGEMENT SYSTEM RELATED TO ESD TREATMENT PRACTICE EFFICIENCY AND THE CONTROL OF RUNOFF TO THE MAXIMUM EXTENT PRACTICABLE.
    D. CONDITION OF VEGETATION AND FILTER MEDIA, INLET AND OUTLET CHANNELS OR STRUCTURES, UNDERGROUND DRAINAGE, SEDIMENT AND DEBRIS ACCUMULATION IN STORAGE AREA, ANY NONSTRUCTURAL PRACTICES TO THE EXTENT PRACTICABLE, AND ANY OTHER ITEM THAT COULD AFFECT THE PROPER FUNCTION OF THE STORMWATER MANAGEMENT SYSTEM.
    E. DESCRIPTION OF NEEDED MAINTENANCE
13. UPON NOTIFYING HOWARD COUNTY OF INSPECTION RESULTS, THE MARYLAND STATE HIGHWAY ADMINISTRATION SHALL HAVE 30 DAYS TO CORRECT THE DEFICIENCIES DISCOVERED. HOWARD COUNTY DPW SHALL CONDUCT A SUBSEQUENT INSPECTION TO ENSURE COMPLETION OF REPAIRS.

DURING CONSTRUCTION INSPECTION OF BIO-RETENTION FACILITIES

1. THE DEVELOPER SHALL NOTIFY HOWARD COUNTY AT LEAST 72 HOURS BEFORE COMMENCING ANY WORK IN CONJUNCTION WITH SITE DEVELOPMENT, THE STORMWATER MANAGEMENT PLAN, AND UPON COMPLETION OF THE PROJECT.
2. REGULAR INSPECTIONS SHALL BE MADE AND DOCUMENTED FOR EACH ESD PLANNING TECHNIQUE AND PRACTICE AT THE STAGES OF CONSTRUCTION SPECIFIED IN THE DESIGN MANUAL BY THE CERTIFYING ENGINEER. AT A MINIMUM, ALL ESD AND OTHER NONSTRUCTURAL PRACTICES SHALL BE INSPECTED UPON COMPLETION OF FINAL GRADING, THE ESTABLISHMENT OF PERMANENT STABILIZATION, AND BEFORE ISSUANCE OF USE AND OCCUPANCY APPROVAL.
3. WRITTEN INSPECTION REPORTS SHALL INCLUDE:
   A. THE DATE AND LOCATION OF THE INSPECTION;
   B. WHETHER CONSTRUCTION WAS IN COMPLIANCE WITH THE APPROVED STORMWATER MANAGEMENT PLAN;
   C. ANY VARIATIONS FROM THE APPROVED CONSTRUCTION SPECIFICATIONS; AND
   D. ANY VIOLATIONS THAT EXIST.
4. THE OWNER/DEVELOPER AND ON-SITE PERSONNEL SHALL BE NOTIFIED IN WRITING WHEN VIOLATIONS ARE OBSERVED. WRITTEN NOTIFICATION SHALL DESCRIBE THE NATURE OF THE VIOLATION AND THE REQUIRED CORRECTIVE ACTION.
5. NO WORK SHALL PROCEED ON THE NEXT PHASE OF DEVELOPMENT UNTIL THE CERTIFYING ENGINEER INSPECTS AND APPROVES THE WORK PREVIOUSLY COMPLETED, AND FURNISHES THE COUNTY ENGINEER AND THE OWNER/DEVELOPER WITH THE REQUIRED INSPECTION REPORTS AS SOON AS POSSIBLE AFTER COMPLETION OF EACH REQUIRED INSPECTION.
6. AT A MINIMUM, REGULAR INSPECTIONS SHALL BE MADE AND DOCUMENTED BY THE CERTIFYING ENGINEER AT THE FOLLOWING SPECIFIED STAGES OF CONSTRUCTION:
   A. DURING EXCAVATION TO SUBGRADE;
   B. DURING PLACEMENT AND BACKFILL OF UNDER DRAIN SYSTEMS;
   C. DURING PLACEMENT OF GEOTEXTILES AND ALL FILTER MEDIA;
   D. DURING CONSTRUCTION OF APPURTENANT CONVEYANCE SYSTEMS SUCH AS FLOW DIVERSION STRUCTURES, PRE-FILTERS AND FILTERS, INLETS, OUTLETS, ORIFICES, AND FLOW DISTRIBUTION STRUCTURES; AND
   E. UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

APPENDIX D.8 MISCELLANEOUS DETAILS FOR COMPLIANCE WITH PERFORMANCE CRITERIA



OBSERVATION WELL DETAIL

NOT TO SCALE

EACH OBSERVATION WELL/CLEANOUT MUST INCLUDE THE FOLLOWING:

1. FOR AN UNDERGROUND FLUSH MOUNTED OBSERVATION WELL/CLEANOUT, PROVIDE A TUBE MADE OF NON-CORROSIVE MATERIAL, SCHEDULE 40 OR EQUAL, AT LEAST THREE FEET LONG WITH AN INSIDE DIAMETER OF AT LEAST 6 INCHES.

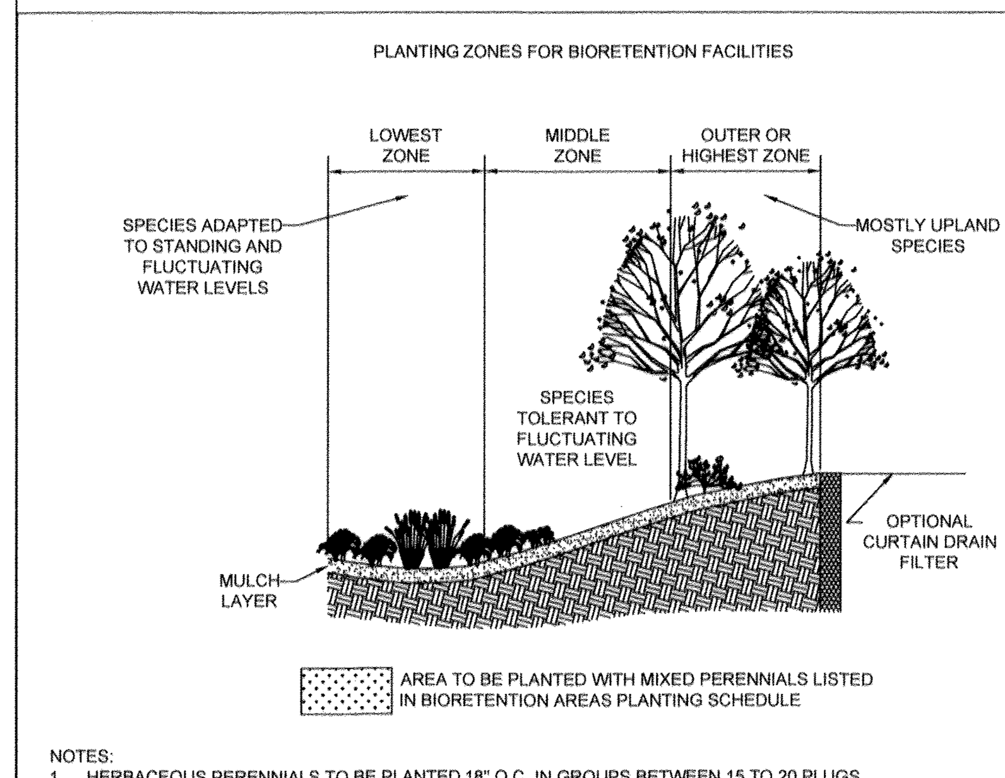
2. THE TUBE SHALL HAVE A FACTORY ATTACHED CAST IRON OR HIGH IMPACT PLASTIC COLLAR WITH RIBS TO PREVENT ROTATION WHEN REMOVING SCREW TOP LID. THE SCREW TOP SHALL BE CAST IRON OR HIGH IMPACT PLASTIC THAT WILL WITHSTAND ULTRA-VIOLET RAYS.

3. OBSERVATION WELL TO EXTEND 6" ABOVE THE TOP OF MULCH. THE 6" PVC PIPE IS TO BE PERFORATED WITH 3/8" PERFORATIONS AT 6" ON CENTER, 4 PER ROW WITHIN THE STONE LAYER.

NOTE: WELL CAP MUST BE PERMANENTLY MARKED WITH AS-BUILT DEPTH TO INVERT.

D.8.5

PLANTING ZONES FOR BIORETENTION FACILITIES



AREA TO BE PLANTED WITH MIXED PERENNIALS LISTED IN BIORETENTION AREAS PLANTING SCHEDULE

NOTES:
1. HERBACEOUS PERENNIALS TO BE PLANTED 18" O.C. IN GROUPS BETWEEN 15 TO 20 PLUGS
2. LANDSCAPE CONTRACTOR TO GROUP LIKE PLANTS TOGETHER IN EACH BED AS SHOWN IN PLANTING DISTRIBUTION PATTERN DETAIL.
3. ALL BIORETENTION AREAS ARE TO BE MULCHED WITH A 3" LAYER OF DOUBLE SHREDDED HARDWOOD BARK MULCH.
4. PLACEMENT OF THE PLANTING SOIL SHOULD BE IN 12" TO 18" LIFTS THAT ARE LOOSELY COMPACTED (TAMPED LIGHTLY WITH A BACKHOE BUCKET OR TRAVERSED BY DOZER TRACKS.

TYPICAL PLANTING FOR BIORETENTION AREAS

NOT TO SCALE

TABLE B.4.1 MATERIALS SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDENS & LANDSCAPE INFILTRATION - MDSHA FACILITIES ONLY

MATERIAL	SPECIFICATIONS	SIZE	NOTES
PLANTINGS	SEE APPENDIX A, TABLE A.4	N/A	PLANTINGS ARE SITE-SPECIFIC
PEA GRAVEL DIAPHRAGM	PEA GRAVEL: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
CURTAIN DRAIN	ORNAMENTAL STONE: WASHED COBBLES	STONE: 2" TO 5"	
GEOTEXTILE		N/A	PE TYPE 1 NONWOVEN
GRAVEL (UNDERDRAINS AND INFILTRATION BERMS)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" TO 3/4")	
UNDERDRAIN PIPING	F 758, TYPE PS 28 OR AASHTO M-278	4" TO 6" RIGID SCHEDULE 40 PVC OR SDR35	SLOTTED OR PERFORATED PIPE; 3/8" PERF. @ 6" ON CENTER, 4 HOLES PER ROW; MINIMUM OF 3" GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES. PERFORATED PIPE SHALL BE WRAPPED WITH 1/4-INCH GALVANIZED HARDWARE CLOTH
POURED IN PLACE CONCRETE (IF REQUIRED)	MSHA MIX NO. 3; f'c = 3500 psi @ 28 DAYS, NORMAL WEIGHT, AIR-ENTRAINED; REINFORCING TO MEET ASTM-615-60	N/A	ON-SITE TESTING OF POUR-IN-PLACE CONCRETE REQUIRED; 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST-IN-PLACE OR PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND - DESIGN TO INCLUDE MEETING ACI CODE 350.R/89; VERTICAL LOADING [H-10 OR H-20]; ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING
SAND	AASHTO-M-6 OR ASTM-C-33	0.02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE (AASHTO) #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.
COMPOSITE-BIORETENTION SOIL MIX (BSM)			REFER TO SHA SPECIFICATION 920.01.05
SHREEDED HARDWOOD BARK MULCH (SHB)			REFER TO SHA SPECIFICATION 920.01.05

B.3.B SPECIFICATIONS FOR BIORETENTION

1. MATERIAL SPECIFICATIONS

THE ALLOWABLE MATERIALS TO BE USED IN BIORETENTION AREA ARE DETAILED IN TABLE B.4.1.

2. PLANTING SOIL

THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE BIORETENTION AREA THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05.

THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET SHA SPECIFICATION 920.01.05

ALL BIORETENTION AREAS SHALL HAVE A MINIMUM OF ONE TEST. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, PHOSPHORUS, AND POTASSIUM AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOP SOIL WAS EXCAVATED.

SINCE DIFFERENT LABS CALIBRATE THEIR TESTING EQUIPMENT DIFFERENTLY, ALL TESTING RESULTS SHALL COME FROM THE SAME TESTING FACILITY.

SHOULD THE PH FALL OUT OF THE ACCEPTABLE RANGE, IT MAY BE MODIFIED (HIGHER) WITH LIME OR (LOWER) WITH IRON SULFATE PLUS SULFUR.

3. COMPACTION

IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF THE BIORETENTION AREA AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF BIORETENTION RUBBER TIRES WITH LARGE LUGS, OR HIGH PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS A CHISEL PLOW, RIPPER OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE.

WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER. FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE.

WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/ LOADER WITH MARSH TRACKS.

4. PLANT MATERIAL

RECOMMENDED PLANT MATERIAL FOR BIORETENTION AREAS CAN BE FOUND IN APPENDIX A. SECTION A.2.3.

5. PLANT INSTALLATION

MULCH SHOULD BE PLACED TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.

ROOT STOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION.

TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.

GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.

THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

6. UNDERDRAINS

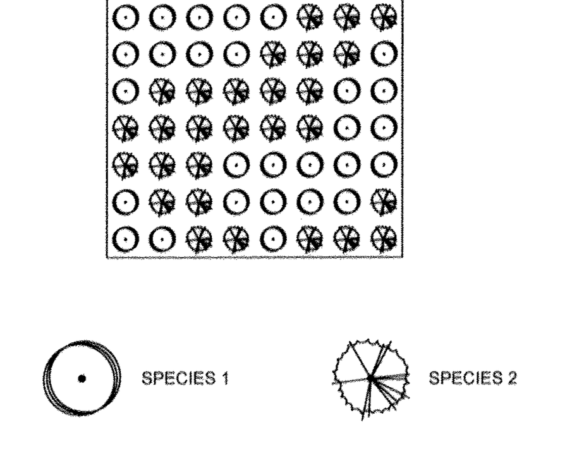
UNDERDRAINS ARE TO BE PLACED ON A 3'-0" WIDE SECTION OF FILTER CLOTH. PIPE IS PLACED NEXT, FOLLOWED BY THE GRAVEL BEDDING. THE ENDS OF UNDERDRAIN PIPES NOT TERMINATING IN AN OBSERVATION WELL SHALL BE CAPPED.

THE MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.00%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).

7. MISCELLANEOUS

THE BIORETENTION FACILITY MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

TYPICAL CLUMP BIORETENTION PLANTING DISTRIBUTION PATTERN



NOTE:
NATURALLY OCCURRING POPULATIONS TEND TO BE FOUND IN INFORMAL GROUPINGS. A CLUSTER OF PLANTS IS REALLY A MOSAIC OF DIFFERENT SPECIES GROUPS. THE OBJECTIVE IS TO SELECT THE APPROPRIATE SPECIES AND DISTRIBUTION PATTERN FOR A CHOSEN SITE THAT MIMIC NATURAL PATTERNS.

PLANTING DISTRIBUTION PATTERN DETAIL

NOT TO SCALE

BIO-RETENTION CONSTRUCTION SPECIFICATIONS

1. EROSION AND SEDIMENT CONTROL: BIO-RETENTION PRACTICES SHOULD NOT BE CONSTRUCTED UNTIL THE CONTRIBUTING DRAINAGE AREA IS STABILIZED. IF THIS IS IMPRACTICAL, RUN-OFF FROM DISTURBED AREAS SHALL BE DIVERTED AND NO SEDIMENT CONTROL PRACTICES SHALL BE USED NEAR THE PROPOSED LOCATION.
2. SOIL COMPACTION: EXCAVATION SHOULD BE CONDUCTED IN DRY CONDITIONS WITH EQUIPMENT LOCATED OUTSIDE OF THE PRACTICE TO MINIMIZE BOTTOM AND SIDEWALL COMPACTION. ONLY LIGHTWEIGHT, LOW GROUND-CONTACT EQUIPMENT SHOULD BE USED WITHIN BIO-RETENTION PRACTICES AND THE BOTTOM SCARIFIED BEFORE INSTALLING UNDERDRAINS AND FILTERING MEDIA.
3. UNDERDRAIN INSTALLATION: GRAVEL FOR THE UNDERDRAIN SYSTEM SHOULD BE CLEAN, WASHED, AND FREE OF FINES. UNDERDRAIN PIPES SHOULD BE CHECKED TO ENSURE THAT BOTH THE MATERIAL AND PERFORATIONS MEET SPECIFICATIONS. THE UPSTREAM ENDS OF THE UNDERDRAIN PIPE SHOULD BE CAPPED PRIOR TO INSTALLATION.
4. FILTER MEDIA INSTALLATION: BIORETENTION SOILS MAY BE MIXED ON-SITE BEFORE PLACEMENT. HOWEVER, SOILS SHOULD NOT BE PLACED UNDER SATURATED CONDITIONS. THE FILTER MEDIA SHOULD BE PLACED AND GRADED USING EXCAVATORS OR BACKHOES OPERATION ADJACENT TO THE PRACTICE AND BE PLACED IN HORIZONTAL LAYERS (12 INCHES PER LIFT MAXIMUM). PROPER COMPACTION OF THE MEDIA WILL OCCUR NATURALLY. SPRAYING OR SPRINKLING WATER ON EACH LIFT UNTIL SATURATED MAY QUICKEN SETTLING TIMES.
5. LANDSCAPE INSTALLATION: THE OPTIMUM PLANTING TIME IS DURING THE FALL. SPRING PLANTING IS ALSO ACCEPTABLE BUT MAY REQUIRE WATERING.

STORMWATER MANAGEMENT AS-BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE STORMWATER MANAGEMENT FACILITY (FACILITIES) SHOWN ON THE PLANS AND INDIVIDUALLY IDENTIFIED BELOW HAS (HAVE BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS INCLUDED UNDER THE MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVAL, NUMBER __________ - SF - __________ EXCEPT AS NOTED IN GREEN ON THE "AS-BUILT" DRAWINGS. FURTHERMORE, THE GREEN-NOTED EXCEPTIONS DO NOT ADVERSELY AFFECT THE DESIGN AND/OR THE INTENDED PERFORMANCE OF THE FACILITY (FACILITIES).

EACH SWM FACILITY IS IDENTIFIED INDIVIDUALLY BY A UNIQUE SWM FACILITY NUMBER.

NAME (PRINTED) SIGNATURE

MARYLAND REGISTRATION NUMBER DATE

PROFESSIONAL CERTIFICATION. "I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. ________, EXPIRATION DATE ___________.

"CERTIFY" MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED ON SUFFICIENT AND APPROPRIATE ONSITE INSPECTIONS AND MATERIAL TESTS CONDUCTED DURING CONSTRUCTION.

NOTE: AS-BUILT CHECKLISTS CONTAINED IN THE CONTRACT DRAWINGS SHALL BE COMPLETED BY THE AS-BUILT INSPECTOR AND SUBMITTED TO THE SHA ALONG WITH THIS CERTIFICATION.

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443 Expiration Date: 12/21/22

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER

AS-BUILT 3/26/21

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT NH DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 2.21.19

OWNER:
STEPHEN A. KLEIN & ASSOCIATES
C/O STEPHEN A. KLEIN, INC.
12165 CLARKSVILLE PIKE
CLARKSVILLE, MD 21029
(410) 465-4244

DEVELOPER:
RIVER HILL SQUARE, LLC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
(410) 465-4244

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No.: ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

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REVISIONS

REV	DATE	COMMENT	BY

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NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	AS SHOWN
CAD I.D.:	SW2

PROJECT:

FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
1/10/19

SHEET TITLE:

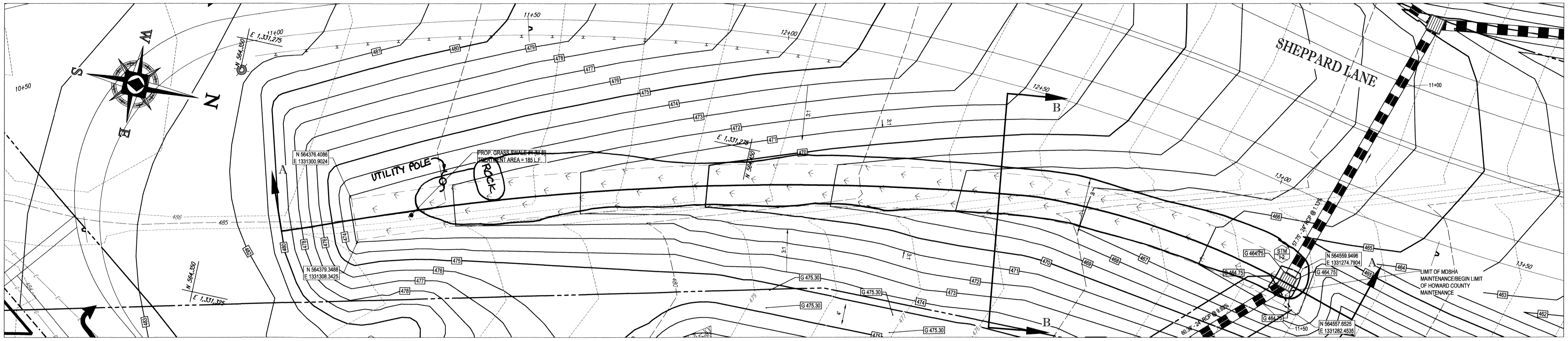
MD ROUTE 108 SWM NOTES AND DETAILS

SHEET NUMBER:

20

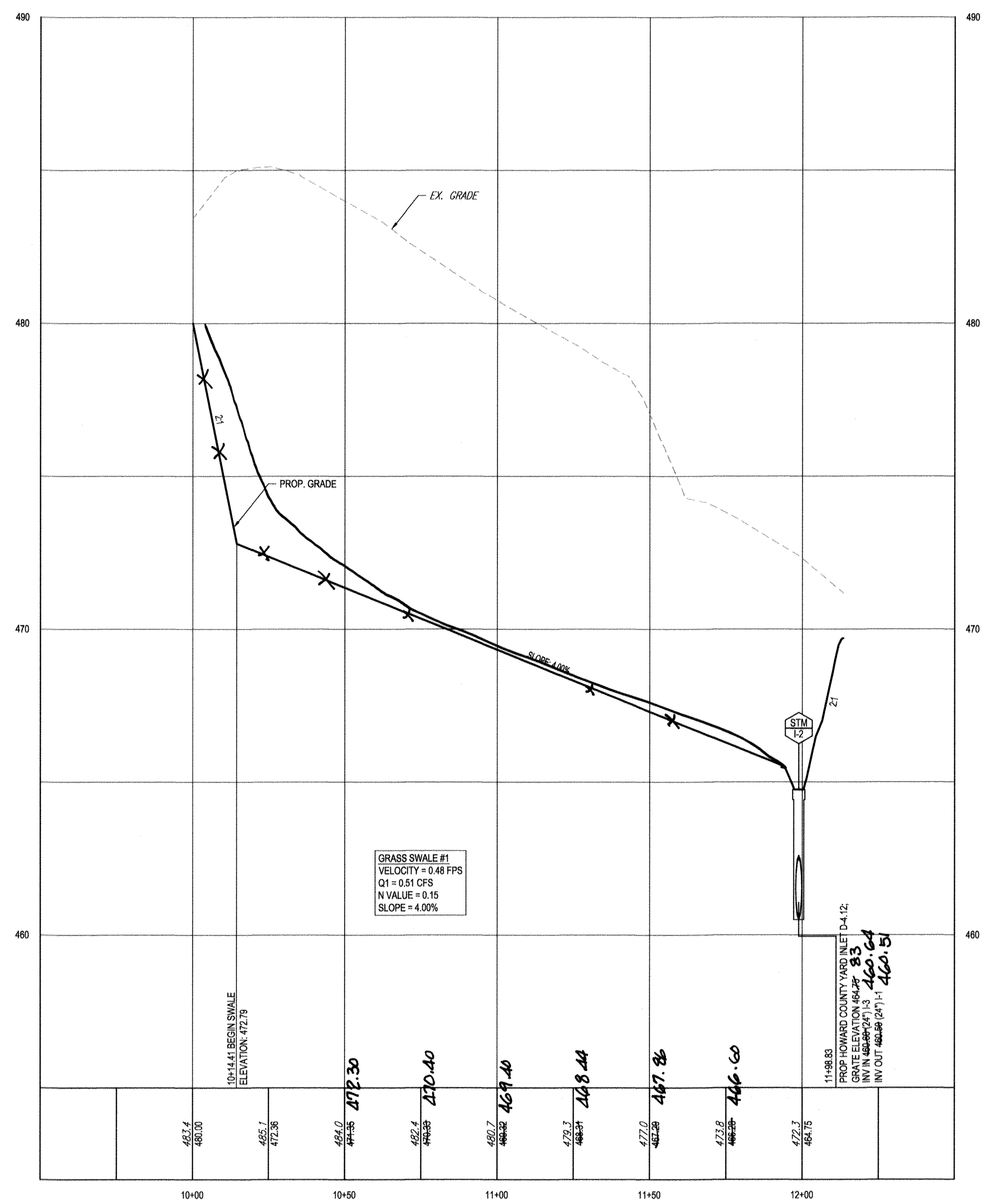
F-18-099

AS-BUILT



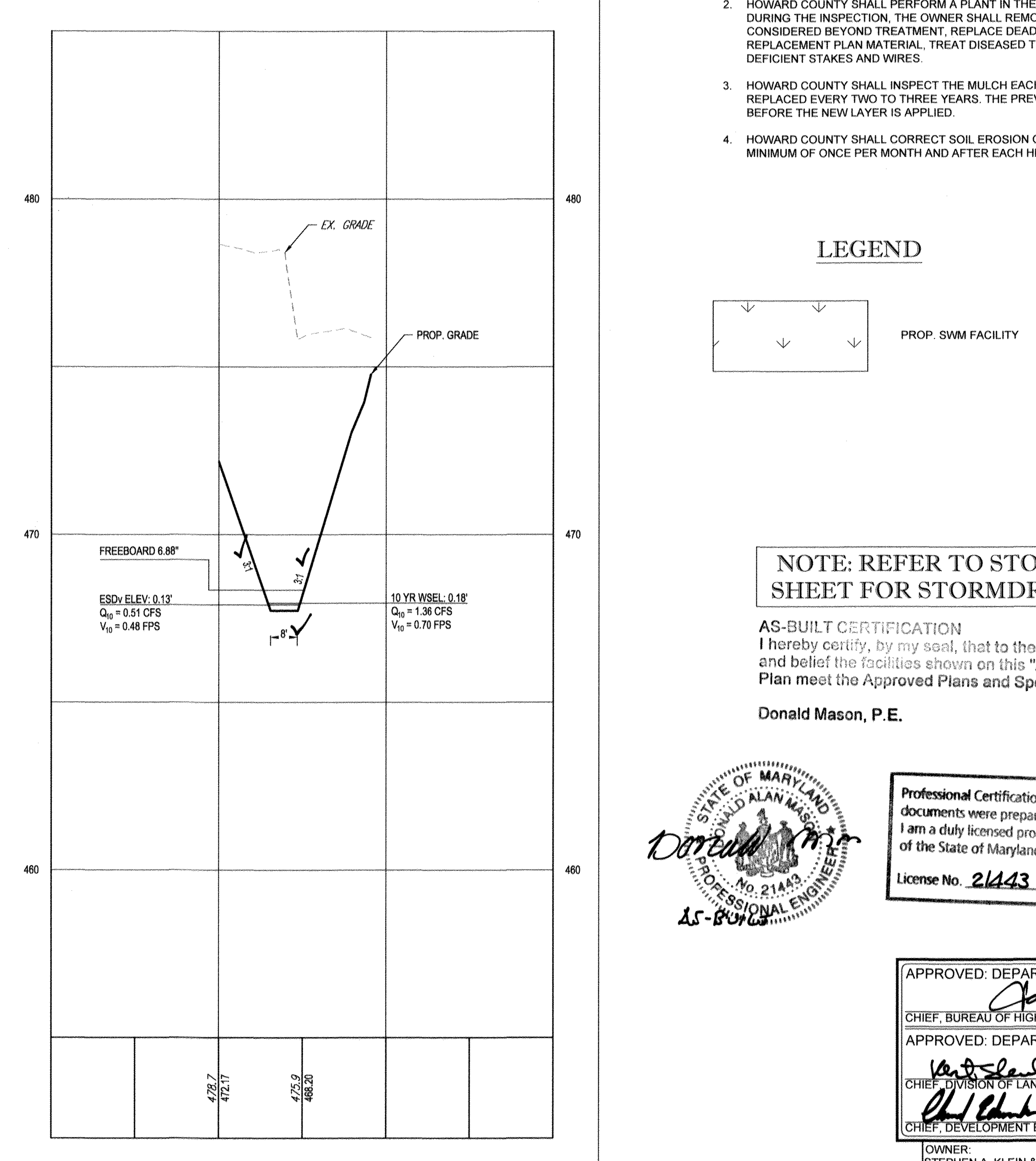
M-8 GRASS-SWALE #1 PLAN VIEW

SCALE: 1" = 10'



GRASS SWALE #1 - SECTION A-A

SCALE: 1"= 30' HORIZONTAL
1"= 3' VERTICAL



GRASS SWALE #1 - SECTION B-B

SCALE: 1"= 30' HORIZONTAL
1"= 3' VERTICAL

OPERATION AND MAINTENANCE SCHEDULE FOR GRASS-SWALES (M-8)

1. HOWARD COUNTY WILL OWN AND MAINTAIN THE GRASS SWALES. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.
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3. HOWARD COUNTY SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
4. HOWARD COUNTY SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

LEGEND

PROP. SWM FACILITY

NOTE: REFER TO STORMDRAIN PROFILE SHEET FOR STORMDRAIN INFORMATION.

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E. Date: 3/26/21

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443, Expiration Date: 12/21/22

AS-BUILT

APPROVED: DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	DATE 2/6/2019
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 2.21.19

OWNER:	DEVELOPER:
STEPHEN A. KLEIN & ASSOCIATES C/O STEPHEN A. KLEIN, INC. 12165 CLARKSVILLE PIKE CLARKSVILLE, MD 21029 (410) 465-4244	RIVER HILL SQUARE, LLC. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 (410) 465-4244

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No.: ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

AS-BUILT

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SUSTAINABLE DESIGN
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REVISIONS			
REV	DATE	COMMENT	BY

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NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	AS SHOWN
CAD I.D.:	SW2

PROJECT:

FINAL ROAD CONSTRUCTION PLANS

FOR

MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
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Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

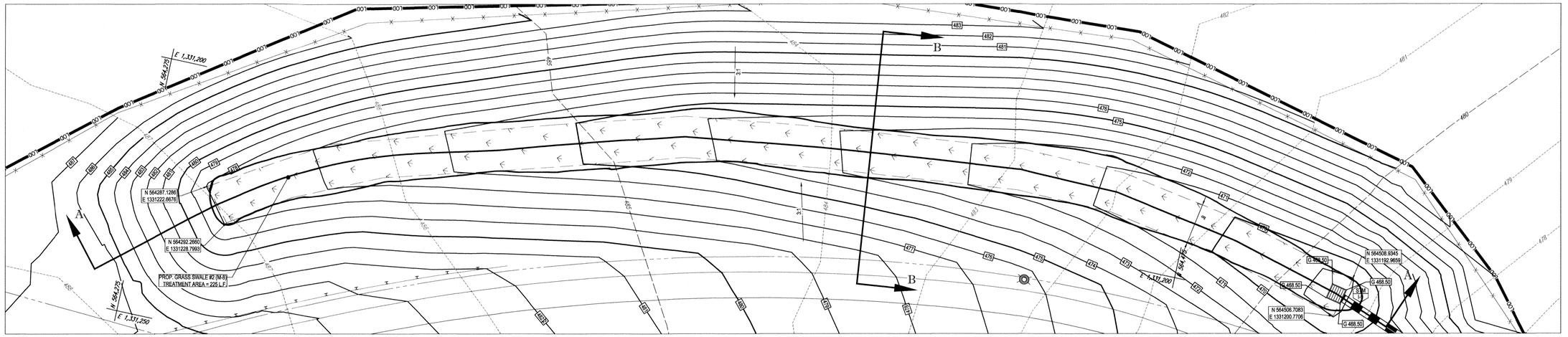
B.R. ROWE
PROFESSIONAL ENGINEER

SHEET TITLE:

SHEPPARD LANE SWM NOTES AND DETAILS

SHEET NUMBER:
21

F-18-099



M-8 GRASS-SWALE #2 PLAN VIEW

SCALE: 1" = 10'

10 5 2.5 0 10

1"= 10'

OPERATION AND MAINTENANCE SCHEDULE FOR GRASS-SWALES (M-8)

1. HOWARD COUNTY WILL OWN AND MAINTAIN THE GRASS SWALES. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.
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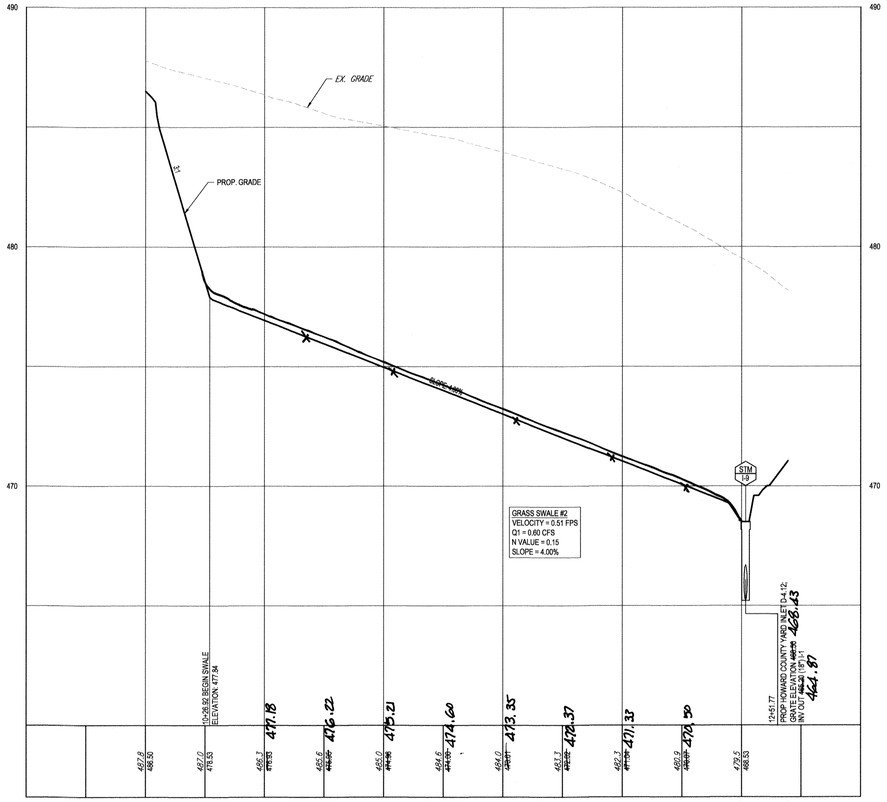
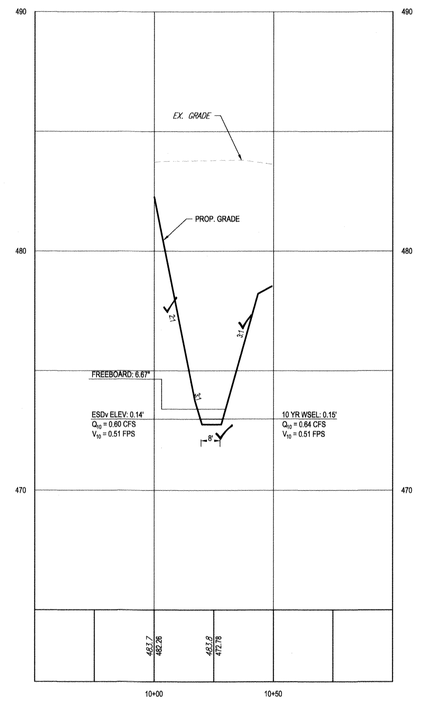


GS2 - SECTION A-A

SCALE: 1"= 30' HORIZONTAL
1"= 3' VERTICAL



GS2 - SECTION B-B

SCALE: 1"= 30' HORIZONTAL
1"= 3' VERTICAL

LEGEND

PROP. SWM FACILITY

PROP. 12' SHA ACCESS DRIVE

NOTE: REFER TO STORMDRAIN PROFILE SHEET FOR STORMDRAIN INFORMATION.

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E. Date: 3/26/21

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER

AS-BUILT

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443 Expiration Date: 12/21/22

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CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:
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C/O STEPHEN A. KLEIN, INC.
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CLARKSVILLE, MD 21029
(410) 465-4244

DEVELOPER:
RIVER HILL SQUARE, LLC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
(410) 465-4244

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No.: ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

AS-BUILT

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
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SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	BY

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NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	AS SHOWN
CAD I.D.:	SW2

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT
LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

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Phone: (410) 821-7900
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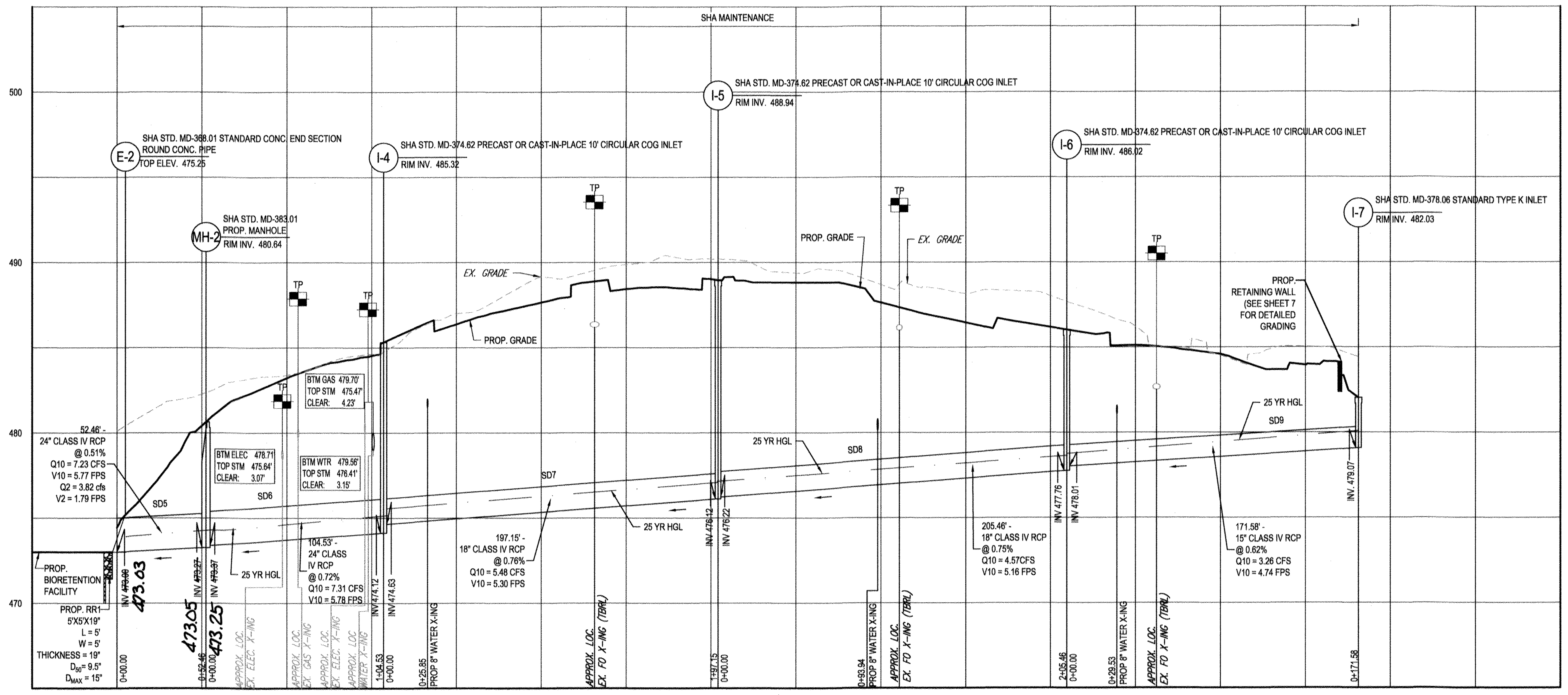
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE NO. 40808
1/6/19

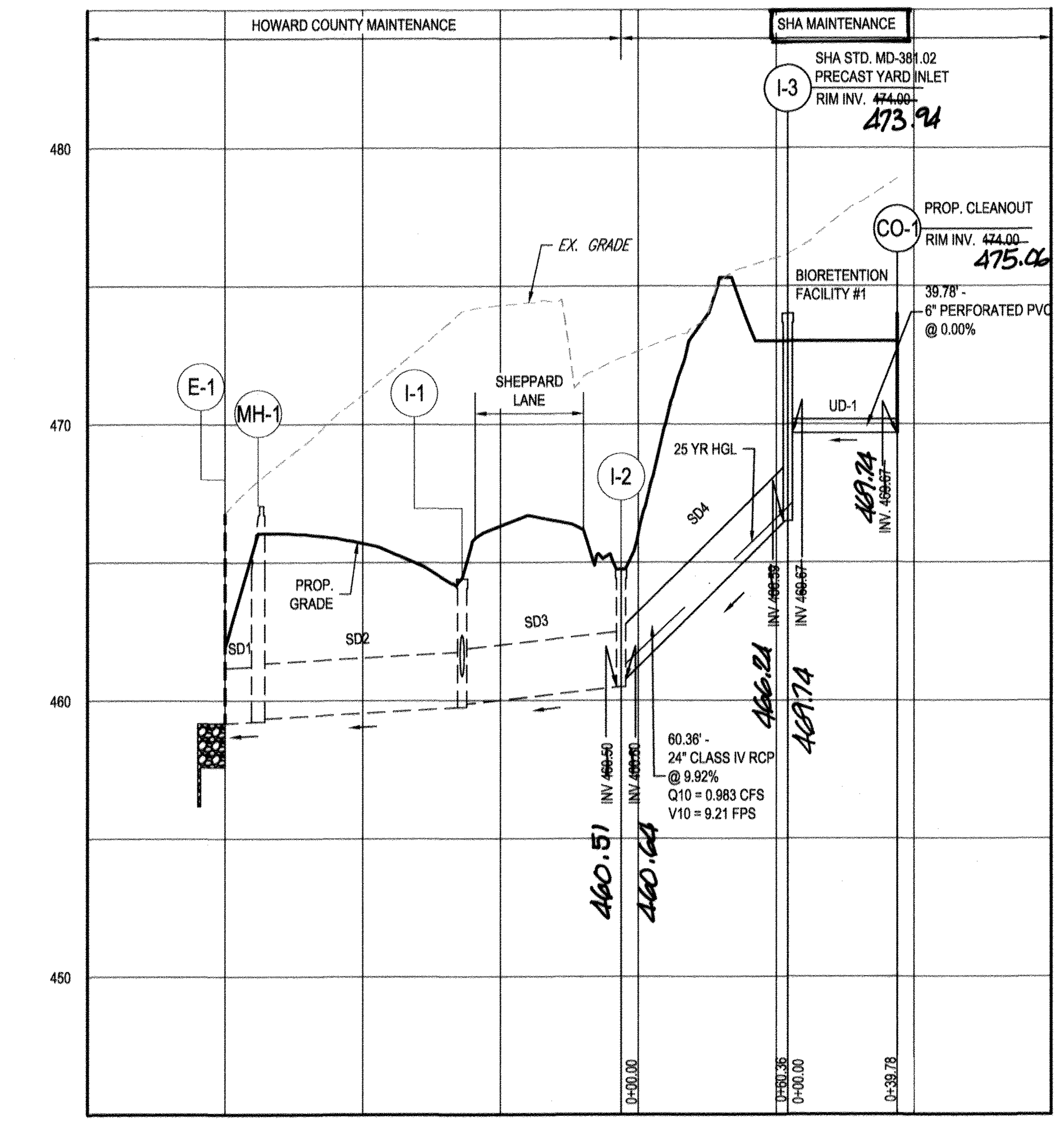
SHEET TITLE:
SHEPPARD LANE SWM NOTES AND DETAILS

SHEET NUMBER:
22

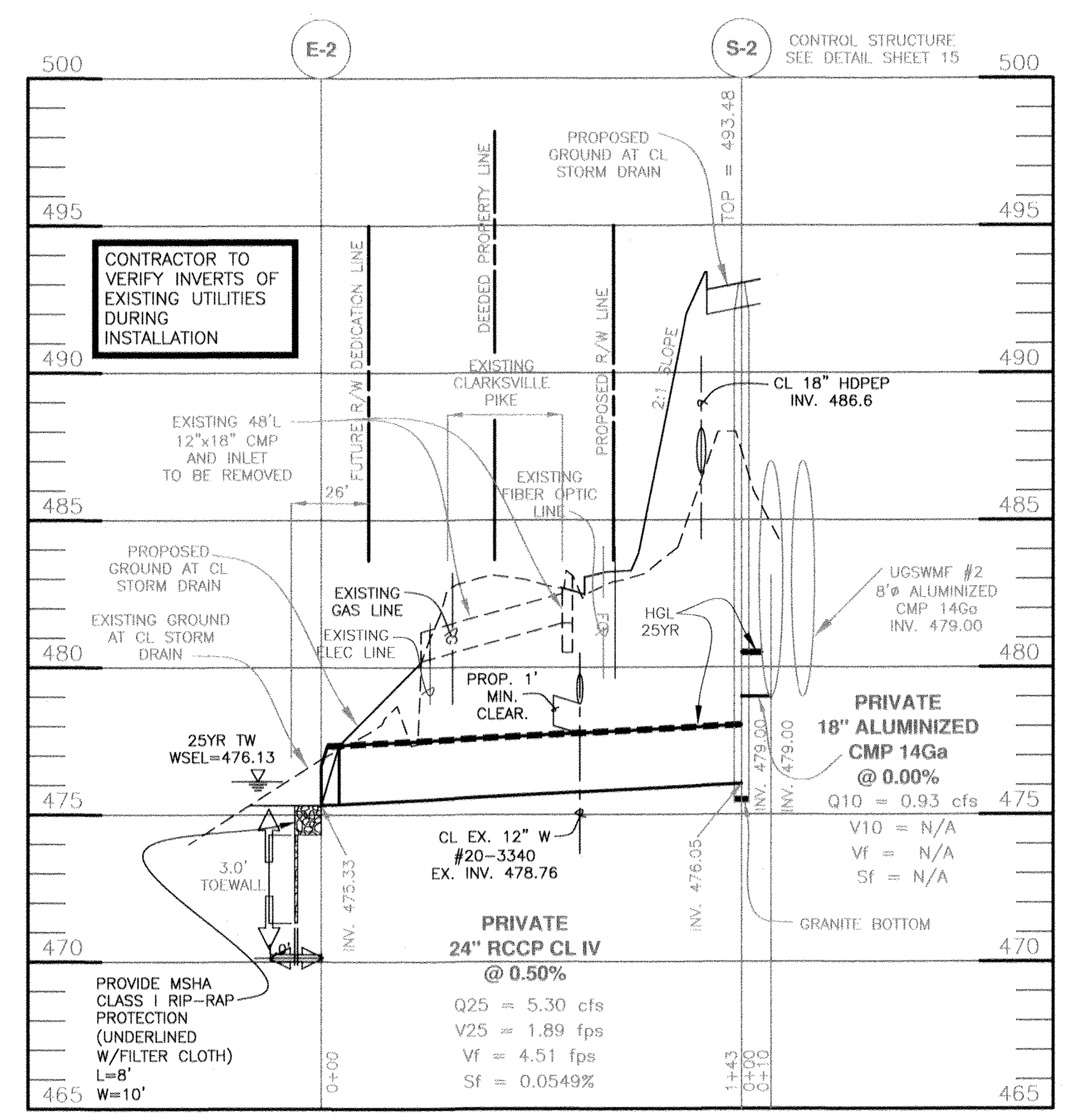
F-18-099



STORM DRAIN PROFILE - E-2 TO I-7
SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL



STORM DRAIN PROFILE I-2 TO CO-1
SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL



STORM DRAIN PROFILE (E-2 TO S-2)
SCALE: 1" = 50' HORIZONTAL
1" = 5' VERTICAL

THIS PROFILE IS PRIVATE AND TO BE MAINTAINED BY THE DEVELOPER.

THIS PROFILE IS FOR INFORMATIONAL PURPOSES ONLY. FINAL DESIGN TO BE PROVIDED BY SITE DEVELOPMENT PLANS SDP-18-044, PREPARED BY BENCHMARK ENGINEERING. BOHLER ENGINEERING SHALL BE HELD HARMLESS IN THE EVENT OF ERRONEOUS INFORMATION CONTAINED ON THIS PROFILE.

STORM STRUCTURE SCHEDULE

NAME	TYPE	RIM ELEV. (FT.)	INVERTS	COMMENTS
CO-1	PROP. CLEANOUT	474.00'	INV OUT = ~~469.67'~~ (6")	469.74
E-2	MD-368.01 STANDARD CONC. END SECTION ROUND CONC. PIPE	475.25'	INV IN = ~~473.00'~~ (24")	473.03
I-3	MD-381.02 PRECAST YARD INLET	474.00'	INV IN = ~~469.67'~~ (6") INV OUT = 466.59' (24")	469.74 466.24
I-4	MD-374.62 PRECAST OR CAST-IN-PLACE 10' CIRCULAR COG INLET	485.32'	INV IN = 474.63' (18") INV OUT = 474.12' (24")	
I-5	MD-374.62 PRECAST OR CAST-IN-PLACE 10' CIRCULAR COG INLET	488.94'	INV IN = 476.22' (18") INV OUT = 476.12' (18")	
I-6	MD-374.62 PRECAST OR CAST-IN-PLACE 10' CIRCULAR COG INLET	486.02'	INV IN = 478.01' (15") INV OUT = 477.76' (18")	
I-7	MD-378.06 STANDARD TYPE K INLET	482.03'	INV OUT = 479.07' (15")	
I-8	MD-374.68 PRECAST OR CAST-IN-PLACE 10' COG/COS OPENING	483.18'	N/A	
MH-2	MD-383.01 PROP. MANHOLE	480.64'	INV IN = 473.37' (24") INV OUT = 473.27' (24")	

STORM SEWER PIPE SCHEDULE

FROM	LOWER INVERT	PIPE NO.	PIPE LENGTH	SLOPE (%)	DIAMETER (IN.)	MATERIAL	UPPER INVERT	TO	COMMENTS
E-2	~~473.00'~~ 03	SD5	52.46'	0.51%	24"	RCP CLASS IV	~~473.27'~~ 05	MH-2	
MH-2	473.37'	SD6	104.53'	0.72%	24"	RCP CLASS IV	474.12'	I-4	
I-4	474.63'	SD7	197.15'	0.76%	18"	RCP CLASS IV	476.12'	I-5	
I-5	476.22'	SD8	205.46'	0.75%	18"	RCP CLASS IV	477.76'	I-6	
I-6	478.01'	SD9	171.58'	0.62%	15"	RCP CLASS IV	479.07'	I-7	
CO-1	469.67'	UD-1	39.78'	0.00%	6"	6" PERFORATED PVC	469.67'	I-3	

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E. Date: 3/26/21

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER
AS-BUILT

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12-21-22

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/14/2019
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

50 25 12.5 0 50
1"= 50'

OWNER:
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C/O STEPHEN A. KLEIN, INC.
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(410) 465-4244

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PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

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AS-BUILT

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DRAWN BY: CJB
CHECKED BY: BRR
DATE: 12/18/18
SCALE: AS SHOWN
CAD I.D.: PD2

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
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13TH ELECTION DISTRICT
HOWARD COUNTY

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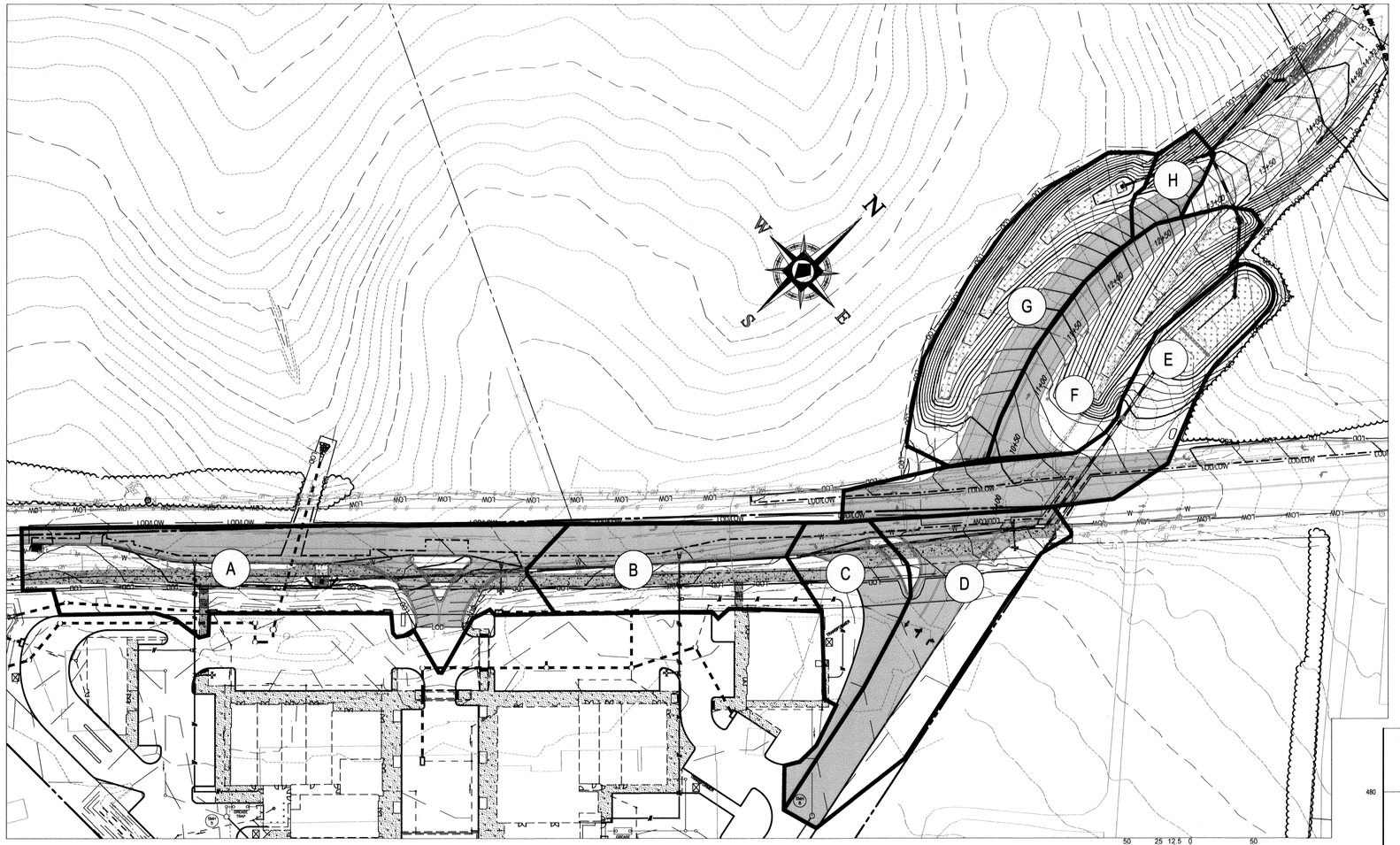
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
4/11/19

SHEET TITLE:
MD ROUTE 108 STORM DRAIN PROFILES

SHEET NUMBER:
23

F-18-099



STORM DRAIN DRAINAGE AREA MAP
SCALE: 1" = 50'

STORM DRAIN DRAINAGE AREAS

A — DRAINAGE AREA 'A'
IMPERVIOUS AREA: 0.43 ACRES
PERVIOUS AREA: 0.27 ACRES
TOTAL AREA: 0.70 ACRES
C = 0.57

B — DRAINAGE AREA 'B'
IMPERVIOUS AREA: 0.18 ACRES
PERVIOUS AREA: 0.14 ACRES
TOTAL AREA: 0.32 ACRES
C = 0.54

C — DRAINAGE AREA 'C'
IMPERVIOUS AREA: 0.14 ACRES
PERVIOUS AREA: 0.08 ACRES
TOTAL AREA: 0.22 ACRES
C = 0.59

D — DRAINAGE AREA 'D'
IMPERVIOUS AREA: 0.28 ACRES
PERVIOUS AREA: 0.16 ACRES
TOTAL AREA: 0.44 ACRES
C = 0.59

E — DRAINAGE AREA 'E'
IMPERVIOUS AREA: 0.21 ACRES
PERVIOUS AREA: 0.24 ACRES
TOTAL AREA: 0.45 ACRES
C = 0.51

F — DRAINAGE AREA 'F'
IMPERVIOUS AREA: 0.16 ACRES
PERVIOUS AREA: 0.19 ACRES
TOTAL AREA: 0.35 ACRES
C = 0.52

G — DRAINAGE AREA 'G'
IMPERVIOUS AREA: 0.16 ACRES
PERVIOUS AREA: 0.25 ACRES
TOTAL AREA: 0.41 ACRES
C = 0.40

H — DRAINAGE AREA 'H'
IMPERVIOUS AREA: 0.03 ACRES
PERVIOUS AREA: 0.05 ACRES
TOTAL AREA: 0.08 ACRES
C = 0.40

LEGEND

IMPERVIOUS AREA
LOD — LOD — LIMIT OF DISTURBANCE
DRAINAGE AREA DIVIDE
A — DRAINAGE AREA LABEL

REFER TO ON-SITE CONSTRUCTION DOCUMENTS (SDP-18-044) FOR WORK ON PRIVATE PROPERTY.

STORM STRUCTURE SCHEDULE

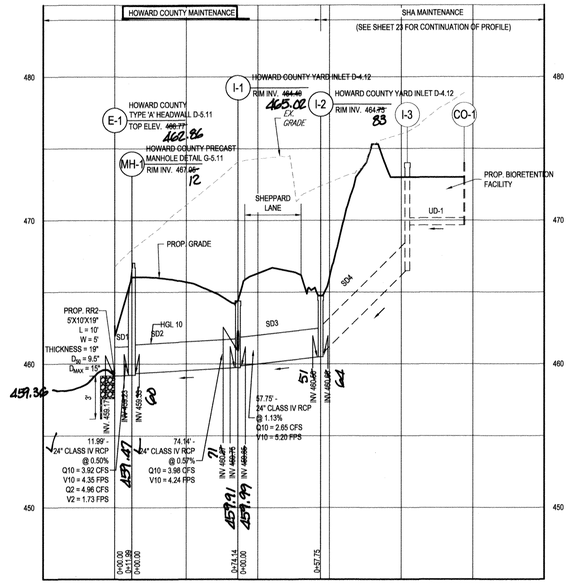
NAME	TYPE	RIM ELEV. (FT.)	INVERTS	COMMENTS
E-1	HOWARD COUNTY TYPE 'A' HEADWALL D-5.11	466.77	INV IN = 459.17' (24")	
I-1	HOWARD COUNTY YARD INLET D-4.12	~~464.40~~ 465.02	INV IN = 459.85' (24") INV IN = 460.87' (18") INV OUT = 459.70' (24")	
I-2	HOWARD COUNTY YARD INLET D-4.12	464.~~25~~ 83	INV IN = 460.60' (24") INV OUT = 460.50' (24")	
I-9	HOWARD COUNTY YARD INLET D-4.12	468.~~85~~ 53	INV OUT = 465.20' (18")	
MH-1	HOWARD COUNTY PRECAST MANHOLE DETAIL G-5.11	467.~~65~~ 12	INV IN = 459.33' (24") INV OUT = 459.23' (24")	

STORM SEWER PIPE SCHEDULE

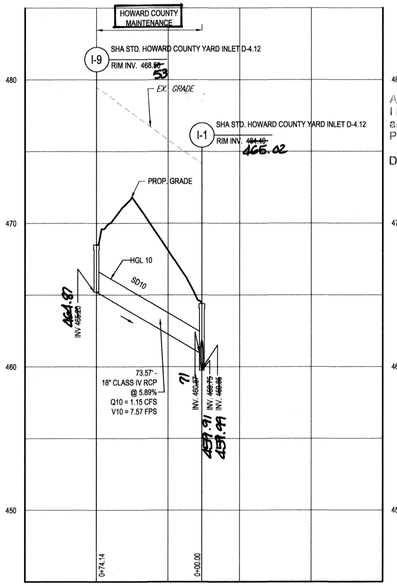
FROM	TO	LOWER INVERT	UPPER INVERT	SLOPE (%)	SIZE (IN.)	MATERIAL	
E-1	MH-1	459.~~17~~ 32	459.~~27~~ 42	0.50%	24"	RCP CLASS IV	
MH-1	I-1	459.~~33~~ 60	459.~~73~~ 91	0.57%	24"	RCP CLASS IV	
I-1	I-2	459.~~89~~ 59	460.~~95~~ 51	1.13%	24"	RCP CLASS IV	
I-1	I-9	460.~~87~~ 71	~~466.20~~ 463.87	5.89%	18"	RCP CLASS IV	

STORM DRAIN PIPE LENGTH

PIPE SIZE	TYPE	LENGTH	PUBLIC OR PRIVATE
18"	RCP CLASS IV	73.57'	PUBLIC
24"	RCP CLASS IV	143.88'	PUBLIC



STORM DRAIN PROFILE E-1 TO I-2
SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL
MINIMUM DESIGN SLOPE: 0.50%



STORM DRAIN PROFILE I-1 TO I-9
SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL
MINIMUM DESIGN SLOPE: 0.50%

AS-BUILT CERTIFICATION
I hereby certify, to my best, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E. Date: 3/26/21

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443, Expiration Date: 12/21/22

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER

AS-BUILT

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:
STEPHEN A. KLEIN & ASSOCIATES
C/O STEPHEN A. KLEIN, INC.
12166 CLARKSVILLE PIKE
CLARKSVILLE, MD 21029
(410) 465-4244

DEVELOPER:
RIVER HILL SQUARE, LLC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
(410) 465-4244

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No. : ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/5/2019

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
SURVEY AND UTILITY STUDIES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	BY

KNOW WHAT'S BELOW
ALWAYS CALL 811
BEFORE YOU DIG
It's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	AS SHOWN
CAD I.D.:	PD2

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT
LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

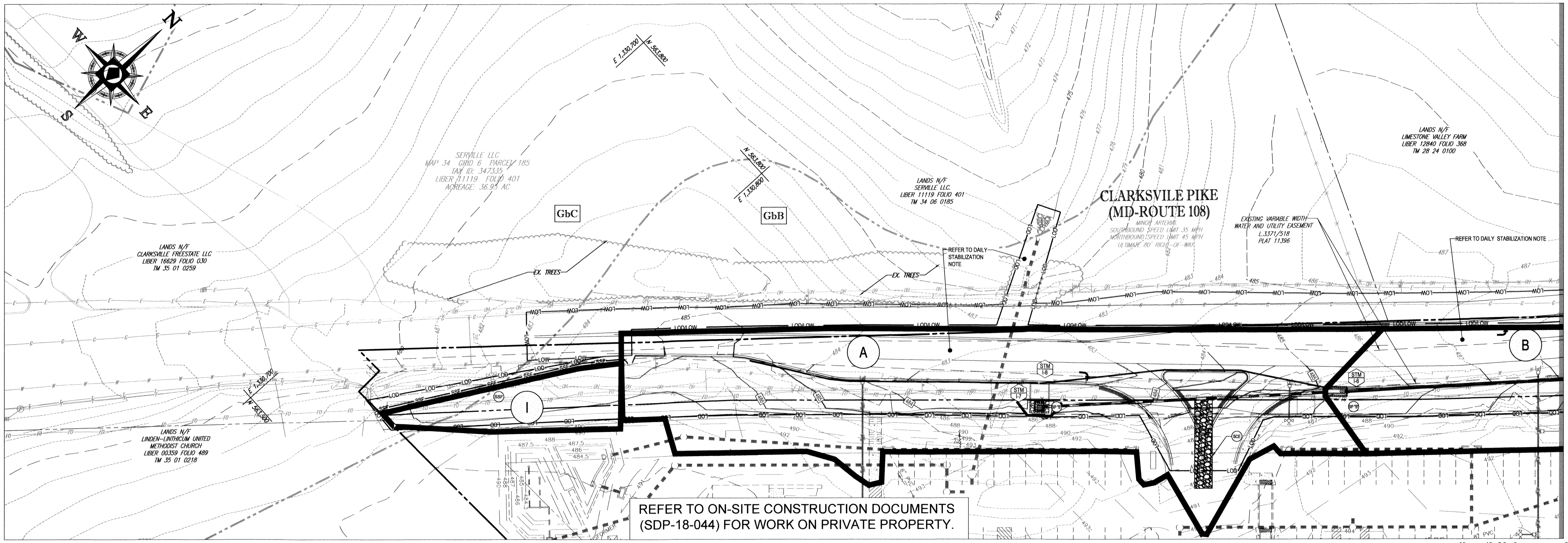
BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE — PROFESSIONAL ENGINEER — MARYLAND LICENSE No. 40808 — 11/01/19

SHEET TITLE:
SHEPPARD LANE STORM DRAIN PROFILES

SHEET NUMBER:
24

F-18-099



STANDARD SYMBOLS

FOR EROSION AND SEDIMENT CONTROL PRACTICES

TITLE	KEY	SYMBOL
SUPER SILT FENCE	SSF	SSF
STANDARD INLET PROTECTION "A"	SIP"A"	
STANDARD INLET PROTECTION "B"	SIP"B"	
CURB INLET PROTECTION	CIP	
GABION INLET PROTECTION	GIP	
PROP. CONTOUR		120
EX. CONTOUR		120
LIMIT OF DISTURBANCE (LOD)		LOD
DRAINAGE DIVIDE		
SOIL DIVIDE		
SOIL LABEL		XXX
LIMIT OF WORK (LOW)		LOW
DETAIL B-4-6-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION		
TEMPORARY GABION OUTLET STRUCTURE		
STABILIZED CONSTRUCTION ENTRANCE	SCE	
SILT FENCE	SF	SF
DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION		

"NO AS-BUILT INFORMATION IS PROVIDED ON THIS SHEET"

STATE OF MARYLAND
DONALD ALAN MASON
NO. 21443
PROFESSIONAL ENGINEER

AS-BUILT 3/26/21

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443 Expiration Date: 12-21-22

SOIL TYPES ONSITE

SYMBOL	SOIL SERIES	HYDROLOGIC SOIL GROUP	HYDRIC SOIL	SLOPES	K FACTOR	ERODIBLE
GbB	GLADSTONE LOAM	A	NO	3 - 8%	.32	NO
GbC	GLADSTONE LOAM	A	NO	8 - 15%	.32	NO
GnB	GLENVILLE-BAILE SILT LOAMS	C	NO	0 - 8 %	.49	YES
MaD	MANOR LOAM	B	NO	15 - 25 %	.32	YES

DAILY STABILIZATION NOTE:

CONTRACTOR SHALL ONLY DISTURB THAT AREA WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF EACH WORKING DAY.

STABILIZATION SHALL BE AS FOLLOWS:
1. FOR AREAS TO BE PAVED, THE APPLICATION OF STONE BASE.
2. FOR AREAS TO BE VEGETATIVELY STABILIZED:
   a. PERMANENT SEED AND SOIL STABILIZATION MATTING OR SOD FOR ALL STEEP SLOPES, CHANNELS OR SWALES.
   b. PERMANENT SEED AND MULCH FOR ALL OTHER AREAS.

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DRAINAGE AREAS

- (A) DA TO SIP "B": 0.69 AC.
- (B) DA TO SIP "B": 0.32 AC.
- (C) DA TO CIP: 0.22 AC.
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- (E) DA TO SIP "B": 0.26 AC.
- (F) DA TO TGOS: 0.36 AC.
- (G) DA TO TGOS: 0.38 AC.
- (H) DA TO SIP "B": 0.08 AC.
- (I) DA TO SSF: 0.08 AC.
- (J) DA TO SSF: 0.11 AC.
- (K) DA TO SSF: 0.02 AC.
- (L) DA TO SSF: 0.01 AC.
- (M) DA TO SSF: 0.17 AC.
- (N) DA TO SSF: 0.15 AC.
- (O) DA TO SIP "B": 0.06 AC. INCLUDING 0.38 AC. FROM D.A. G TOTAL AREA: 0.44 AC.
- (P) DA TO SIP "B": 0.06 AC. INCLUDING 0.36 AC. FROM D.A. F TOTAL AREA: 0.42 AC.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SCD — DATE 3/4/19

ENGINEER'S CERTIFICATE

"I HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

SIGNATURE OF ENGINEER — DATE 1/10/19
BRANDON R. ROWE, P.E.

DEVELOPER'S CERTIFICATE

"I/WE HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ONSITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

RIVERHILL SQUARE LLC By: MEMBER STEVEN K BREEDEN — James R. Moxley III 1/11/19

SIGNATURE OF DEVELOPER — DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:
STEPHEN A. KLEIN & ASSOCIATES
C/O STEPHEN A. KLEIN, INC.
12165 CLARKSVILLE PIKE
CLARKSVILLE, MD 21029
(410) 465-4244

DEVELOPER:
RIVER HILL SQUARE, LLC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
(410) 465-4244

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

LIMIT OF DISTURBANCE: 2.68 AC. OR 116,741 S.F.*
LIMIT OF WORK: 0.85 AC. OR 34,026 S.F.
*LIMIT OF DISTURBANCE INCLUDES ALL WORK WITH SOIL DISTURBANCE
**LIMIT OF WORK INCLUDES ALL WORK WITHOUT SOIL DISTURBANCE

PREVIOUS FILE No.: ECP - 17 - 023, SDP - 18 - 044, WP - 18 - 095

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

AS-BUILT

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
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LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS			
REV	DATE	COMMENT	BY

KNOW WHAT'S BELOW
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It's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	1" = 30'
CAD I.D.:	OP2

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

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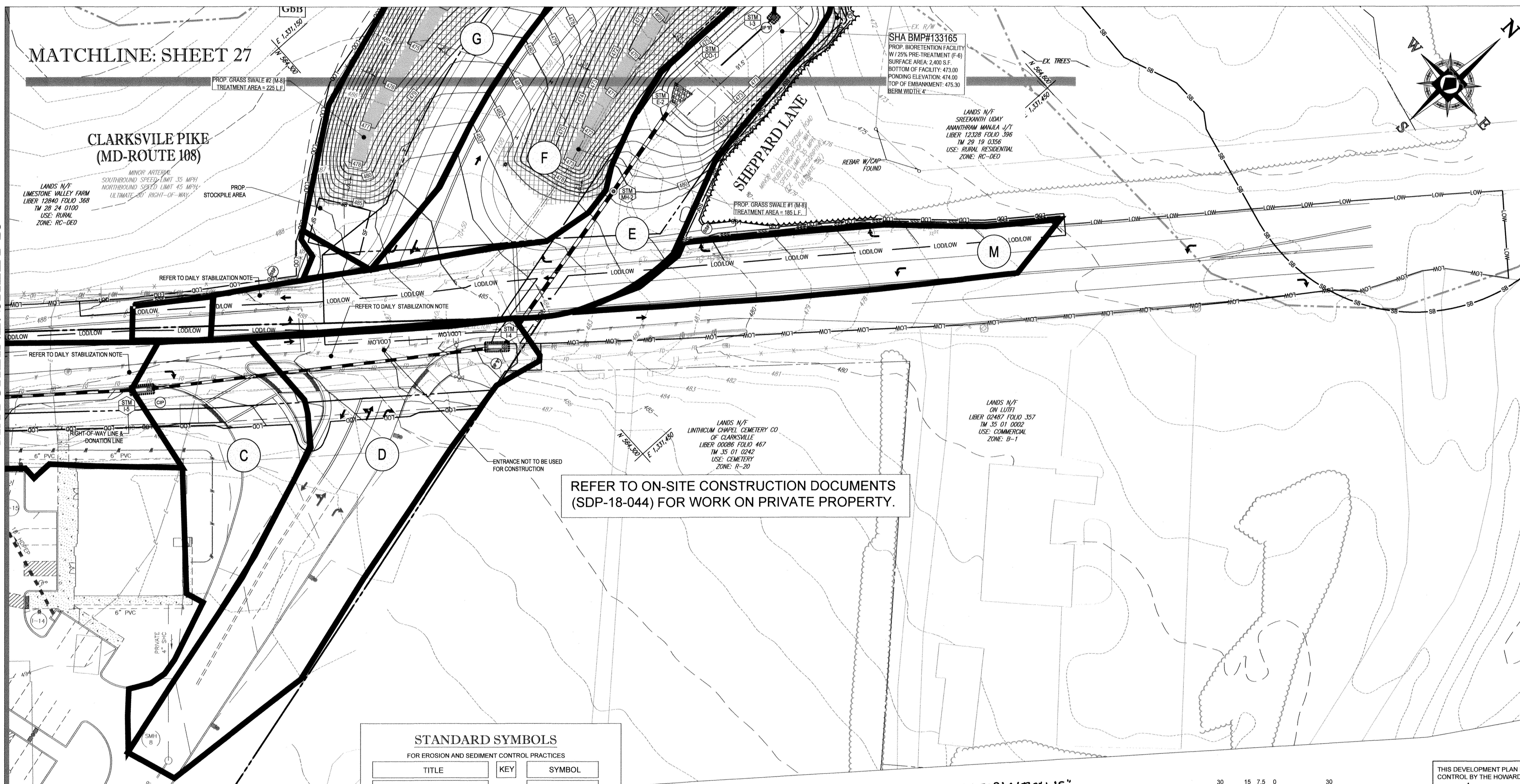
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
1/10/19

SHEET TITLE:
EROSION AND SEDIMENT CONTROL PLAN

SHEET NUMBER:
25

F-18-099



"NO AS-BUILT INFORMATION IS" PROVIDED THIS SHEET

STANDARD SYMBOLS

FOR EROSION AND SEDIMENT CONTROL PRACTICES

TITLE	KEY	SYMBOL
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STANDARD INLET PROTECTION "B"	SIP "B"	
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GABION INLET PROTECTION	GIP	
PROP. CONTOUR		120
EX. CONTOUR		120
LIMIT OF DISTURBANCE (LOD)		LOD
DRAINAGE DIVIDE		
SOIL DIVIDE		
SOIL LABEL		XXX
LIMIT OF WORK (LOW)		LOW
DETAIL B-4-6-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION		
TEMPORARY GABION OUTLET STRUCTURE		
STABILIZED CONSTRUCTION ENTRANCE	SCE	
SILT FENCE	SF	SF
DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION		

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STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER
AS-BUILT 8/26/21

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12/21/22

SOIL TYPES ONSITE

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30 15 7.5 0 30
1"= 30'

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PREVIOUS FILE No. : ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
HOWARD SCD — DATE 3/4/19

ENGINEER'S CERTIFICATE

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SIGNATURE OF ENGINEER BRANDON R. ROWE, P.E. — DATE 1/10/19

DEVELOPER'S CERTIFICATE

"I/WE HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ONSITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."
RIVER HILL SQUARE LLC By: MEMBER
SIGNATURE OF DEVELOPER — DATE 1/11/19

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

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C/O STEPHEN A. KLEIN, INC.
12165 CLARKSVILLE PIKE
CLARKSVILLE, MD 21029
(410) 465-4244

DEVELOPER:
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REVISIONS

REV	DATE	COMMENT	BY

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NOT APPROVED FOR CONSTRUCTION

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DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	1" = 30'
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FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

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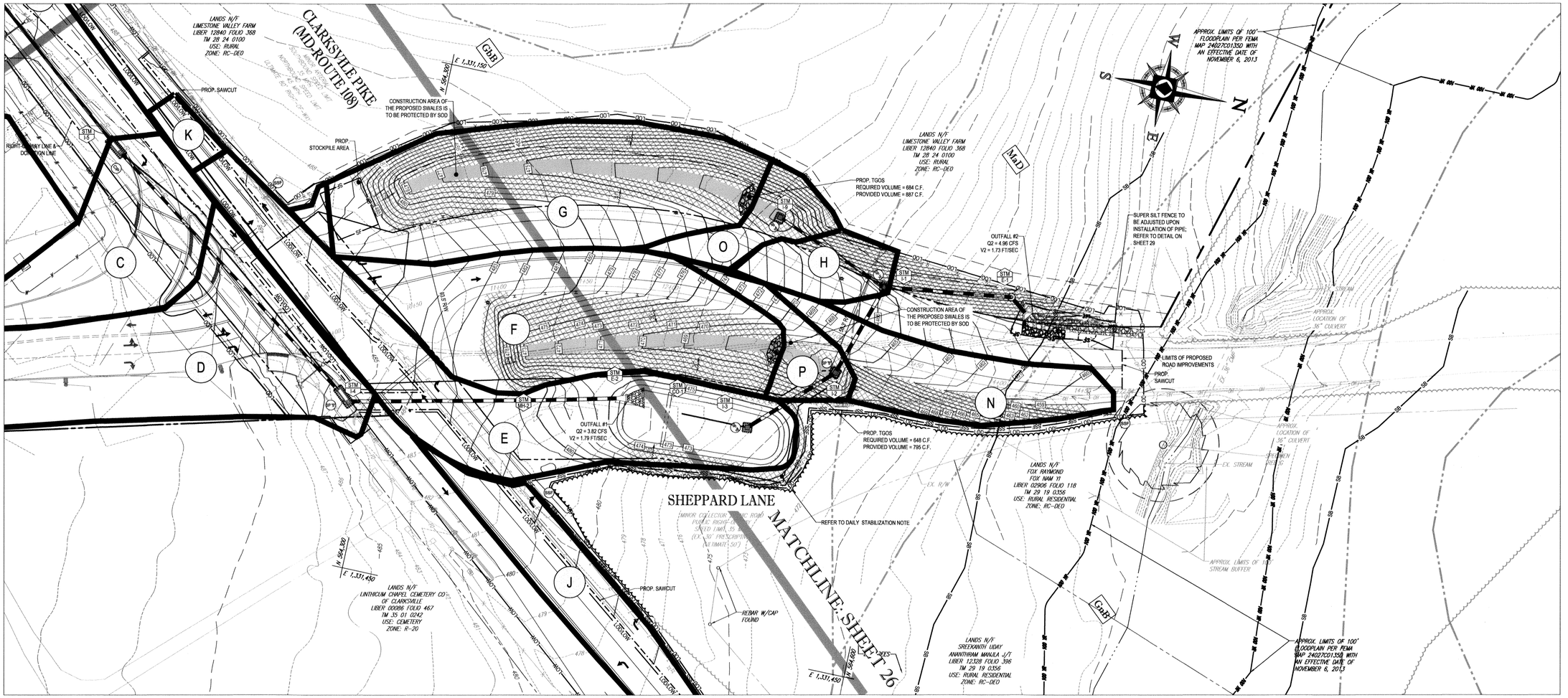
MD@BohlerEng.com

B.R ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
1/10/19

SHEET TITLE:
EROSION AND SEDIMENT CONTROL PLAN

SHEET NUMBER:
26

F-18-099



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FOR EROSION AND SEDIMENT CONTROL PRACTICES

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SOIL DIVIDE		
SOIL LABEL		XXX
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TEMPORARY GABION OUTLET STRUCTURE		
STABILIZED CONSTRUCTION ENTRANCE	(SCE)	
SILT FENCE	(SF)	SF
DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION		

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GnB	GLENVILLE-BAILE SILT LOAMS	C	NO	0 - 8 %	.49	YES
MaD	MANOR LOAM	B	NO	15 - 25 %	.32	YES

LIMIT OF DISTURBANCE: 2.68 AC. OR 116,741 S.F.*
LIMIT OF WORK: 0.85 AC. OR 34,026 S.F.
*LIMIT OF DISTURBANCE INCLUDES ALL WORK WITH SOIL DISTURBANCE
**LIMIT OF WORK INCLUDES ALL WORK WITHOUT SOIL DISTURBANCE

DAILY STABILIZATION NOTE:

CONTRACTOR SHALL ONLY DISTURB THAT AREA WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF EACH WORKING DAY.

STABILIZATION SHALL BE AS FOLLOWS:
1. FOR AREAS TO BE PAVED, THE APPLICATION OF STONE BASE.
2. FOR AREAS TO BE VEGETATIVELY STABILIZED:
   a. PERMANENT SEED AND SOIL STABILIZATION MATTING OR SOD FOR ALL STEEP SLOPES, CHANNELS OR SWALES.
   b. PERMANENT SEED AND MULCH FOR ALL OTHER AREAS.

ANY AREAS WHICH CAN NOT BE STABILIZED BY THE END OF EACH WORKING DAY MUST HAVE SILT FENCE INSTALLED ON DOWNSLOPE SIDE.

"NO AS-BUILT INFORMATION IS" PROVIDED THIS SHEET

DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER 3/26/21
AS-BUILT

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443 Expiration Date: 12/1/22

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
HOWARD SCD — DATE 3/4/19

ENGINEER'S CERTIFICATE

"I HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

SIGNATURE OF ENGINEER BRANDON R. ROWE, P.E. — DATE 1/10/19

DEVELOPER'S CERTIFICATE

"I/WE HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ONSITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

RIVER HILL SQUARE LLC By: MEMBER — James R. Moxley, III — DATE 1/11/19
SIGNATURE OF DEVELOPER STEVEN K. KLEIN

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.27.19

OWNER:
STEPHEN A. KLEIN & ASSOCIATES
C/O STEPHEN A. KLEIN, INC.
12165 CLARKSVILLE PIKE
CLARKSVILLE, MD 21029
(410) 465-4244

DEVELOPER:
RIVER HILL SQUARE, LLC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
(410) 465-4244

TAX MAP: 35 GRID: 1 PARCEL: 1 ZONED: B-1 & RC-DEO
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No. : ECP - 17 - 023, SDP - 18 - 044, WP - 18 -095

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

AS-BUILT

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	BY

KNOW WHAT'S BELOW ALWAYS CALL 811 **BEFORE YOU DIG**
It's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	1" = 30'
CAD I.D.:	OP2

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT
LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE PROFESSIONAL ENGINEER MARYLAND LICENSE No. 40808 1/10/19

SHEET TITLE:
EROSION AND SEDIMENT CONTROL PLAN

SHEET NUMBER:
27

F-18-099

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 GROUNDCOVER.
2. IF AN AREA HAS LESS THAN 40 PERCENT GROUNDCOVER, RESTABILIZE FOLLOWING THE ORIGINAL RECOMMENDATIONS FOR LIME, FERTILIZER, SEEDBED PREPARATION, AND SEEDING.
3. IF AN AREA HAS BETWEEN 40 AND 94 PERCENT GROUNDCOVER, 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.

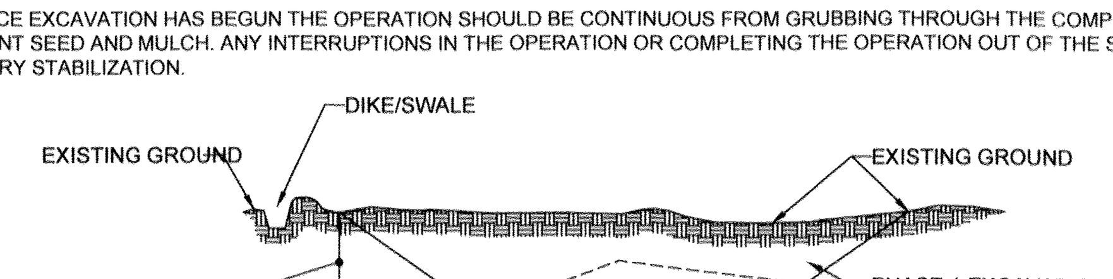

FIGURE B.1: INCREMENTAL STABILIZATION - CUT

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.

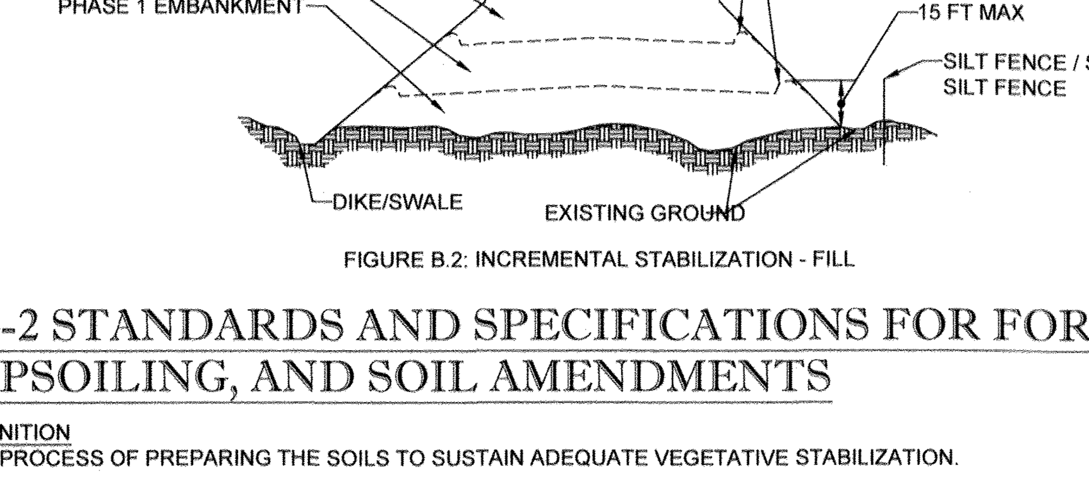

FIGURE B.2: INCREMENTAL STABILIZATION - FILL

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443 Expiration Date: 12/21/22

STATE OF MARYLAND
DONALD ALAN MAS...
No. 21443
PROFESSIONAL ENGINEER
AS-BUILT 3/26/21

B-4-2 STANDARDS AND SPECIFICATIONS FOR 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 1½ 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

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 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.

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; P2O5 (PHOSPHOROUS), 200 POUNDS PER ACRE; K2O (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 (WFCM) 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.
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 TAX 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.

TEMPORARY SEEDING SUMMARY

NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE (10-20-20)	LIME RATE
HARDINESS ZONE (from Figure B.3): ZONE 6B SEED MIXTURE (from Table B.1)						
COOL SEASON GRASSES						
1	ANNUAL RYEGRASS	40	3/1 - 5/15 8/1 - 10/15	0.5"	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
2	BARLEY	96	3/1 - 5/15 8/1 - 10/15	1"		
3	OATS	72	3/1 - 5/15 8/1 - 10/15	1"		
4	WHEAT	120	3/1 - 5/15 8/1 - 10/15	1"		
5	CEREAL RYE	112	3/1 - 5/15 8/1 - 11/15	1"		
WARM SEASON GRASSES						
6	FOXTAIL MILLET	30	5/16 - 7/31	0.5"	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
7	PEARL MILLET	20	5/16 - 7/31	0.5"		

1. SEEDING RATES FOR THE WARM-SEASON GRASSES ARE IN POUNDS OF PURE LIVE SEED (PLS). ACTUAL PLANTING RATES SHALL BE ADJUSTED TO REFLECT PERCENT SEED GERMINATION AND PURITY, AS TESTED. ADJUSTMENTS ARE USUALLY NOT NEEDED FOR THE COOL-SEASON GRASSES.
SEEDING RATES LISTED ABOVE ARE FOR TEMPORARY SEEDINGS, WHEN PLANTED ALONE. WHEN PLANTED AS A NURSE CROP WITH PERMANENT SEED MIXES, USE 1/3 OF THE SEEDING RATE LISTED ABOVE
FOR BARLEY, OATS, AND WHEAT. FOR SMALLER-SEEDED GRASSES (ANNUAL RYEGRASS, PEARL MILLET, FOXTAIL MILLET), DO NOT EXCEED MORE THAN 5% (BY WEIGHT) OF THE OVERALL PERMANENT
SEEDING MIX. CEREAL RYE GENERALLY SHOULD NOT BE USED AS A NURSE CROP, UNLESS PLANTING WILL OCCUR IN VERY LATE FALL BEYOND THE SEEDING DATES FOR OTHER TEMPORARY SEEDINGS.
CEREAL RYE HAS ALLELOPATHIC PROPERTIES THAT INHIBIT THE GERMINATION AND GROWTH OF OTHER PLANTS. IF IT MUST BE USED AS A NURSE CROP, SEED AT 1/3 OF THE RATE LISTED ABOVE.
OATS ARE THE RECOMMENDED NURSE CROP FOR WARM-SEASON GRASSES.
2. FOR SANDY SOILS, PLANT SEEDS AT TWICE THE DEPTH LISTED ABOVE.
3. THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE AND MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONE.

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.

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 ½ 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: 1½ 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 1½ 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 (½ 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

NO.	SPECIES	APPLICATION RATE (LB/AC)	*SEEDING DATES	SEEDING DEPTHS	N	P2O5	K2O	LIME RATE
HARDINESS ZONE (from Figure B.3): ZONE 6B SEED MIXTURE (from Table B.3)					FERTILIZER RATE (10-20-20)			
9	TALL FESCUE KENTUCKY BLUEGRASS PERENNIAL RYE GRASS	60 40 20	3/1 - 5/15 8/15 - 10/31	1/4" - 1/2"	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)
5	HARD FESCUE PERENNIAL RYE GRASS FLAT PEA	20 10 15	3/1 - 5/15 8/1 - 10/15	1/4" - 1/2"				
1	SWITCH GRASS CREEPING RED FESCUE PARTRIDGE PEA	10 15 4	3/1 - 5 /15 5/16 - 6/15	1/4" - 1/2"				

NOTES:
1. THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE. THESE DATES MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONES. WHEN SEEDING TOWARD THE END OF THE LISTED PLANTING DATES, OR WHEN CONDITIONS ARE EXPECTED TO BE LESS THAN OPTIMAL, SELECT AN APPROPRIATE NURSE CROP FROM TABLE B.1 TEMPORARY SEEDING FOR SITE STABILIZATION AND PLANT TOGETHER WITH THE PERMANENT SEEDING MIX.
2. WHEN PLANTED DURING THE GROWING SEASON, MOST OF THESE MATERIALS MUST BE PURCHASED AND KEPT IN A DORMANT CONDITION UNTIL PLANTING. BARE-ROOT GRASSES ARE THE EXCEPTION—THEY MAY BE SUPPLIED AS GROWING (NON-DORMANT) PLANTS.
♦ ADDITIONAL PLANTING DATES FOR THE LOWER COASTAL PLAIN, DEPENDENT ON ANNUAL RAINFALL AND TEMPERATURE TRENDS. RECOMMEND ADDING A NURSE CROP, AS NOTED ABOVE, IF PLANTING DURING THIS PERIOD.
♦♦WARM-SEASON GRASSES NEED A SOIL TEMPERATURE OF AT LEAST 50 DEGREES F IN ORDER TO GERMINATE. IF SOIL TEMPERATURES ARE COLDER THAN 50 DEGREES, OR MOISTURE IS NOT ADEQUATE, THE SEEDS WILL REMAIN DORMANT UNTIL CONDITIONS ARE FAVORABLE. IN GENERAL, PLANTING DURING THE LATTER PORTION OF THIS PERIOD ALLOWS MORE TIME FOR WEED EMERGENCE AND WEED CONTROL PRIOR TO PLANTING. WHEN SELECTING A PLANTING DATE, CONSIDER THE NEED FOR WEED CONTROL VS. THE LIKELIHOOD OF HAVING SUFFICIENT MOISTURE FOR LATER PLANTINGS, ESPECIALLY ON DROUGHTY SITES.
* ADDITIONAL PLANTING DATES DURING WHICH SUPPLEMENTAL WATERING MAY BE NEEDED TO ENSURE PLANT ESTABLISHMENT.
FREQUENT FREEZING AND THAWING OF WET SOILS MAY RESULT IN FROST-HEAVING OF MATERIALS PLANTED IN LATE FALL, IF PLANTS HAVE NOT SUFFICIENTLY ROOTED IN PLACE.
SOD USUALLY NEEDS 4 TO 6 WEEKS TO BECOME SUFFICIENTLY ROOTED. LARGE CONTAINERIZED AND BALLED-AND-BURLAPPED STOCK MAY BE PLANTED INTO THE WINTER MONTHS AS LONG AS THE GROUND IS NOT FROZEN AND SOIL MOISTURE IS ADEQUATE.
** FOR THE PERIOD 5/1 - 8/14 ADD EITHER FOXTAIL OR PEARL MILLET - 6 LBS/AC. TO MIX NO. 9, 2.25 LBS/AC. TO MIX NO. 5

B. SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).
1. GENERAL SPECIFICATIONS
a. CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.
b. SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF ¾ INCH, PLUS OR MINUS ¼ 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.
c. 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.
d. SOD MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
e. 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.
2. SOD INSTALLATION
a. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
b. 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.
c. 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.
d. 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.
3. SOD MAINTENANCE
a. 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.
b. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.
c. DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN ⅓ 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.

OVERALL QUANTITY TAKEOFF OF SEDIMENT CONTROL MEASURES

SUPER SILT FENCE:	1,364 L.F.
STANDARD INLET PROTECTION 'A':	1 EA.
STANDARD INLET PROTECTION 'B':	6 EA.
CURB INLET PROTECTION:	1 EA.
TGOS	2 EA.
SCE	1 EA.
SILT FENCE	110 L.F.

EARTH WORK

CUT:	13,020 CY
FILL:	365 CY
NET:	12,655 CY
LOD:	2.68 AC. OR 116,741 S.F.
LOW:	0.85 AC. OR 34,026 S.F.

SPOIL MATERIAL SHALL BE DISCARDED AT A SITE WITH AN ACTIVE GRADING PERMIT AND APPROVED SEDIMENT CONTROL PLAN. BORROW MATERIAL SHALL BE OBTAINED FROM AN APPROVED SITE WITH AN ACTIVE GRADING PERMIT AND AN APPROVED SEDIMENT CONTROL PLAN.

EARTH QUANTITIES LISTED ABOVE ARE FOR SEDIMENT CONTROL USE ONLY. CONTRACTOR SHALL NOT RELY ON THESE FIGURES FOR ESTIMATING AND BONDING PURPOSES.

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

DEFINITION
MATERIAL USED TO TEMPORARILY OR PERMANENTLY STABILIZE CHANNELS OR STEEP SLOPES UNTIL GROUNDCOVER IS ESTABLISHED.

PURPOSE
TO PROTECT THE SOILS UNTIL VEGETATION IS ESTABLISHED.

CONDITIONS WHERE PRACTICE APPLIES
ON NEWLY SEEDED SURFACES TO PREVENT THE APPLIED SEED FROM WASHING OUT; IN CHANNELS AND ON STEEP SLOPES WHERE THE FLOW HAS EROSIVE 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.

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.

INLET PROTECTION NOTE:

CONTRACTOR IS REQUIRED TO INSTALL INLET PROTECTION ON ALL STORM DRAIN INLETS. ALL INLET PROTECTION WILL BE INSTALLED AS DIRECTED BY THE INSPECTOR IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, PAGE E.23 (OR AS MAY BE AMENDED). THE REMOVAL OF ANY INLET PROTECTION DEVICES WILL REQUIRE APPROVAL FROM THE INSPECTOR.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
HOWARD SCD — DATE 3/4/19

ENGINEER'S CERTIFICATE

"I HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."
SIGNATURE OF ENGINEER — DATE 1/10/19
BRANDON R. ROWE, P.E.

DEVELOPER'S CERTIFICATE

"I/WE HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ONSITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT." RIVER HILL SQUARE LLC By: James R. Moxley, III
SIGNATURE OF DEVELOPER — DATE 1/11/19

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:	DEVELOPER:
STEPHEN A. KLEIN & ASSOCIATES C/O STEPHEN A. KLEIN, INC. 12165 CLARKSVILLE PIKE CLARKSVILLE, MD 21029 (410) 465-4244	RIVER HILL SQUARE, LLC. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 (410) 465-4244

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No. : ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	BY

KNOW WHAT'S BELOW
ALWAYS CALL 811
BEFORE YOU DIG
It's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	N/A
CAD I.D.:	OD2

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT
LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
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MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
1/10/19

SHEET TITLE:
EROSION AND SEDIMENT CONTROL NOTES

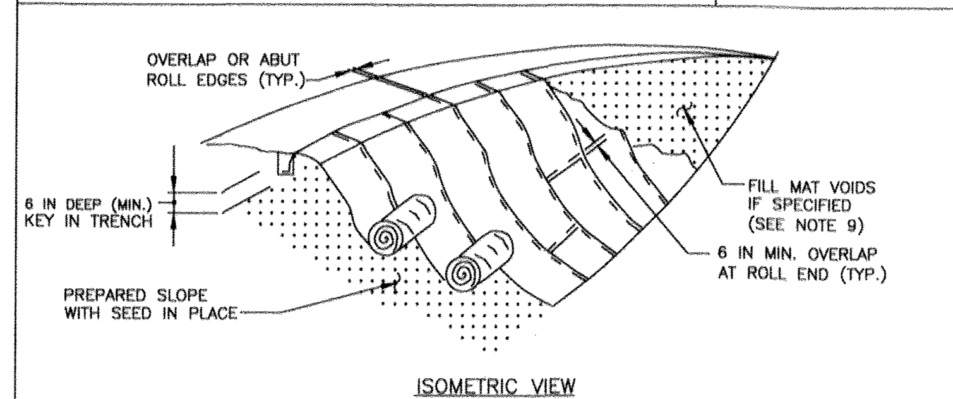
SHEET NUMBER:
28

F-18-099

AS-BUILT

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

STANDARD SYMBOL
PSSMS – 2.0 lb/ft² (* INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

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 2x2 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 1½ 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 MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH–SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 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 SEEDED 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 KEYED 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
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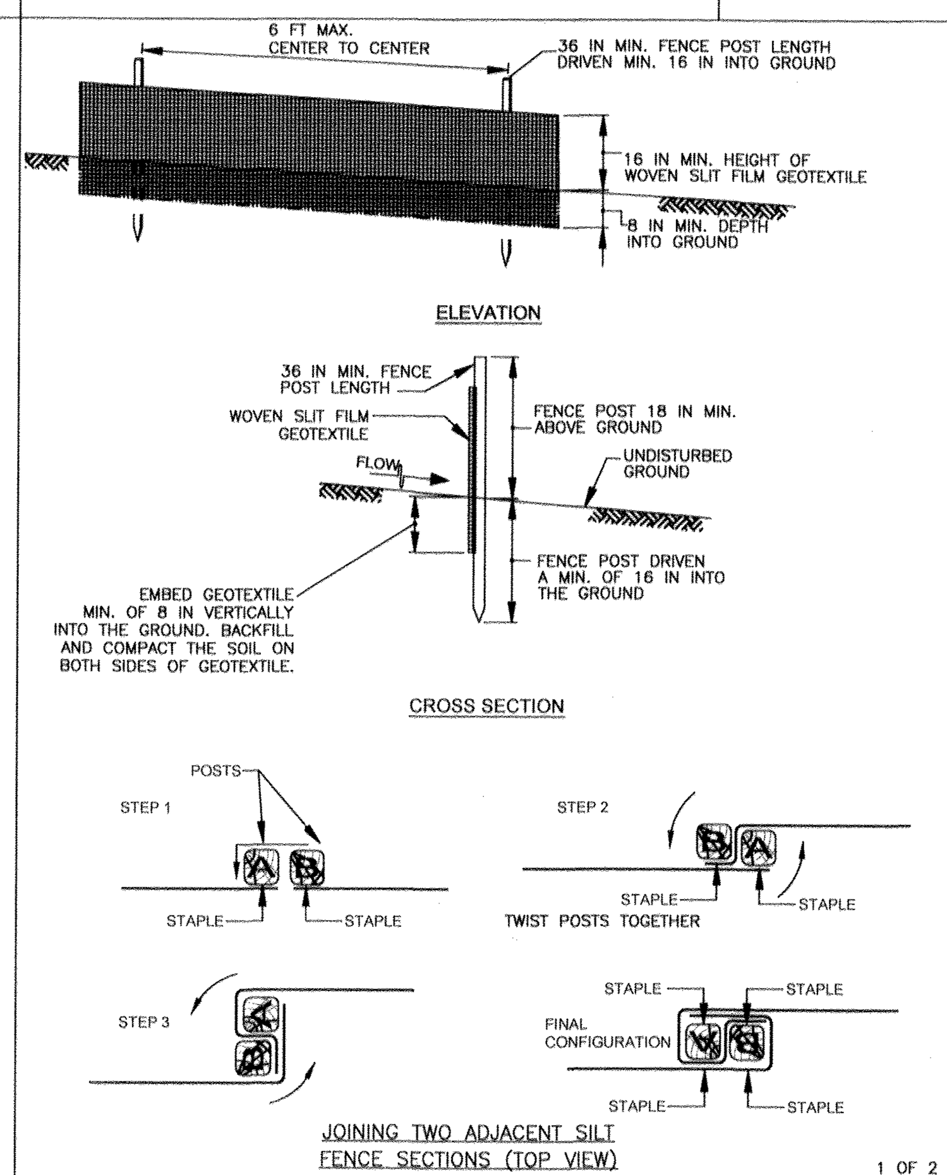
DETAIL E-1 SILT FENCE

STANDARD SYMBOL
——SF——



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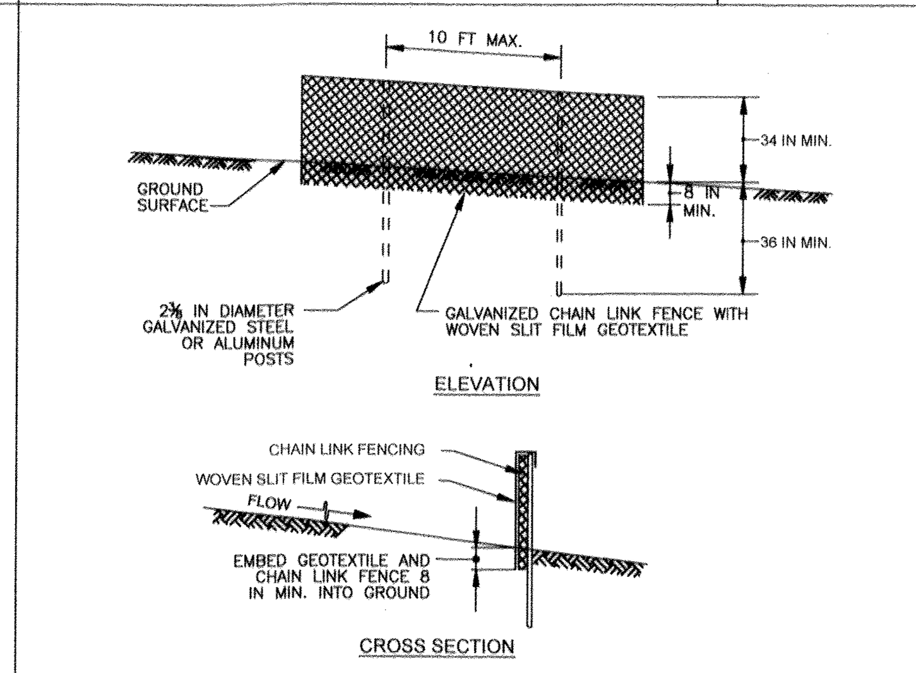
DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL
——SSF——



CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

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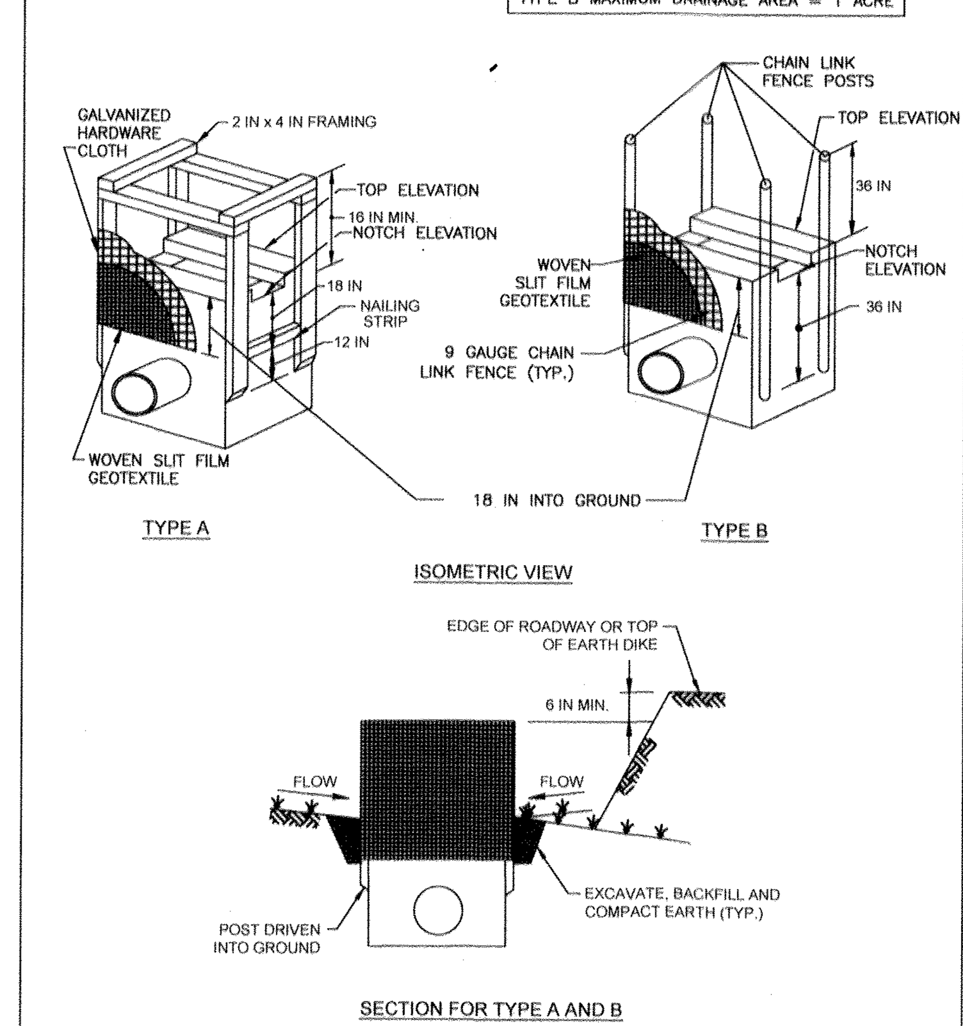
DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL
SIP

TYPE A MAXIMUM DRAINAGE AREA = ¼ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE



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DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL
SIP

CONSTRUCTION SPECIFICATIONS

1. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOWN. STRETCH ½ INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.

   FOR TYPE B, USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.
4. BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
5. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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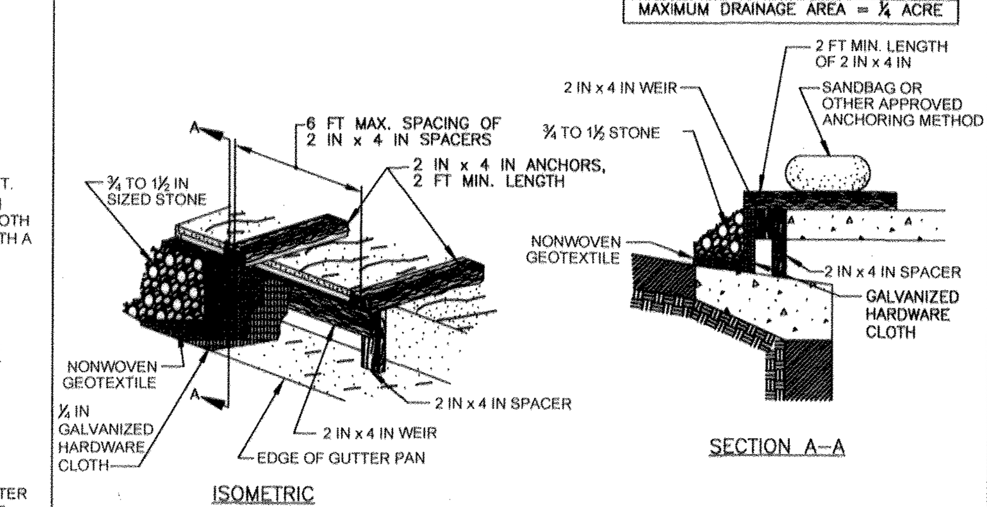
DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL
CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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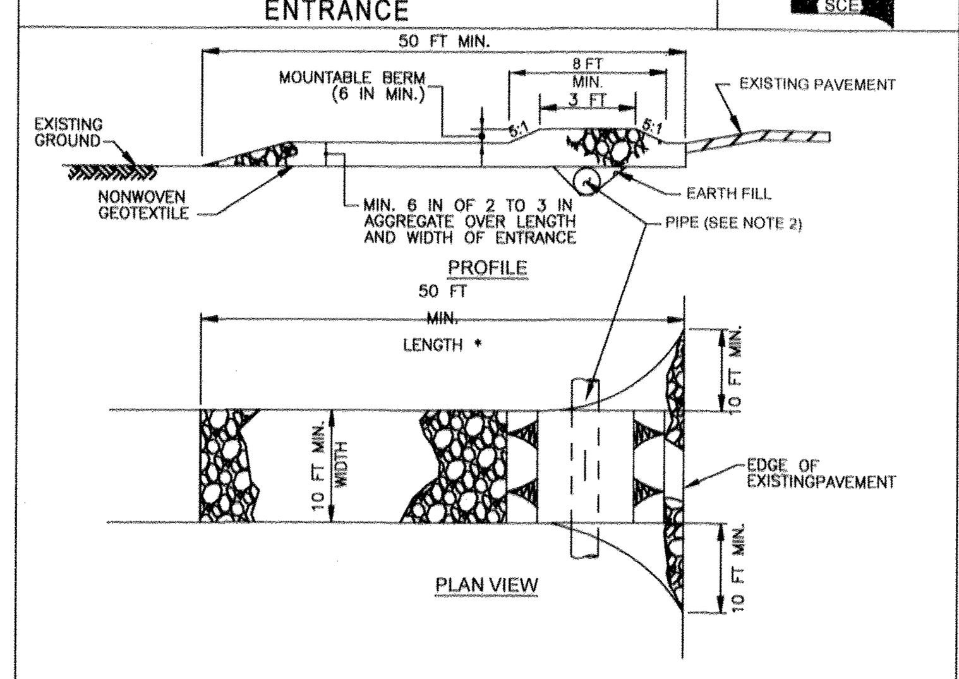
DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL
SCE



CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

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DETAIL E-1 SILT FENCE

STANDARD SYMBOL
——SF——

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± ¹⁄₁₆ INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. 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.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

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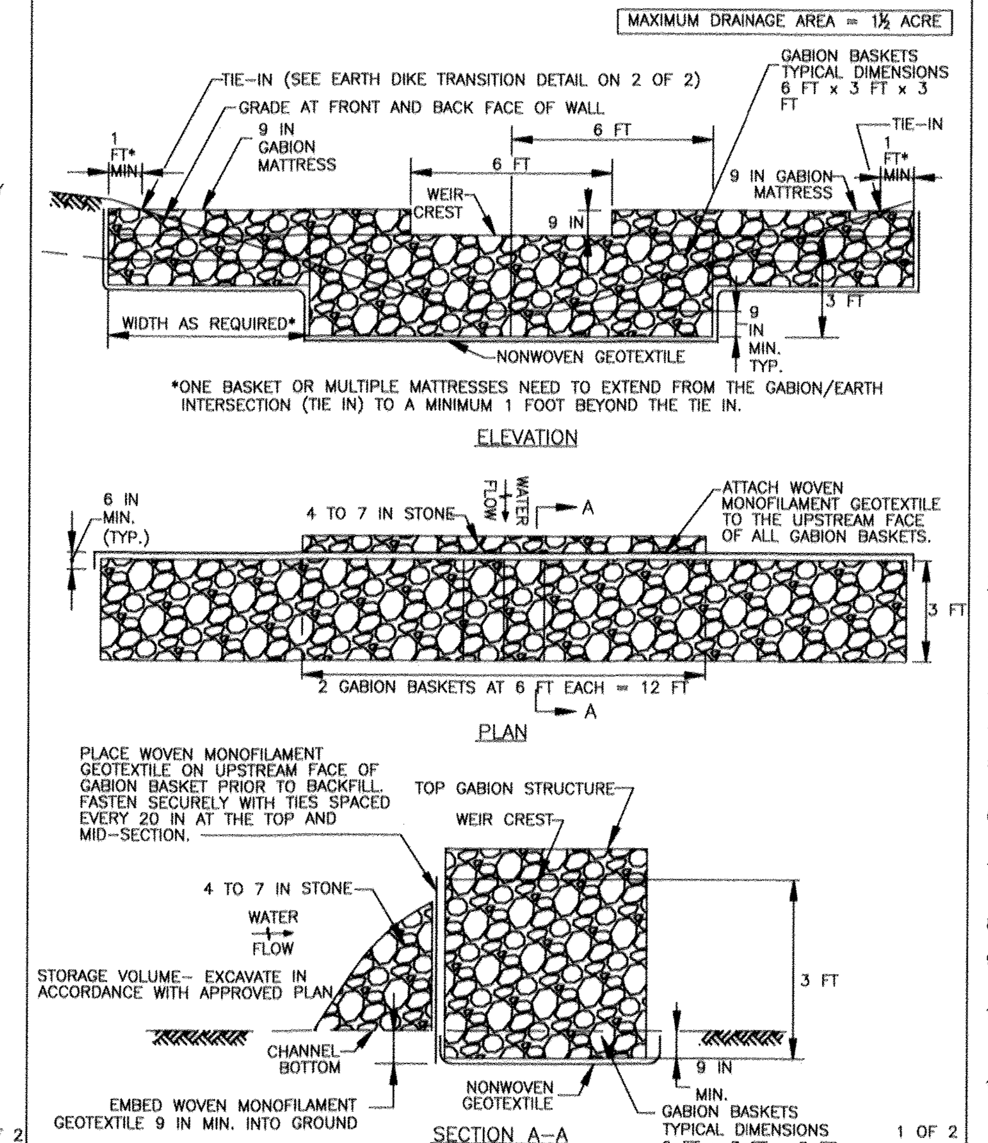
DETAIL E-8 TEMPORARY GABION OUTLET STRUCTURE

STANDARD SYMBOL
TGOS

MAXIMUM DRAINAGE AREA = 1½ ACRE



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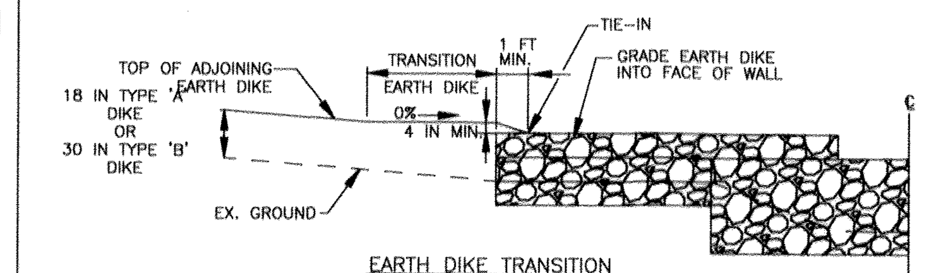
DETAIL E-8 TEMPORARY GABION OUTLET STRUCTURE

STANDARD SYMBOL
TGOS



NOTES:

1. PROVIDE TRANSITION LENGTH AND HEIGHT AS SPECIFIED ON PLAN. HEIGHT OF TRANSITION EARTH DIKE MUST EXCEED 4 INCH MINIMUM FREEBOARD ABOVE TOP OF GABION AND EXTEND AT THIS ELEVATION UNTIL IT INTERCEPTS THE TOP OF ADJOINING EARTH DIKE.
2. PROVIDE POSITIVE DRAINAGE ALONG EARTH DIKE TO GABION OUTLET STRUCTURE.
3. COMPACT FILL.
4. SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED ON PLAN. BANK PROJECTIONS OR IRREGULARITIES ARE NOT ALLOWED.

CONSTRUCTION SPECIFICATIONS

1. PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.
2. USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
3. USE NONWOVEN AND WOVEN MONOFILAMENT GEOTEXTILES AS SPECIFIED IN SECTION H–1 MATERIALS.
4. INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
5. EMBED THE GABION OUTLET STRUCTURE INTO THE SOIL A MINIMUM OF 9 INCHES. PROVIDE NONWOVEN GEOTEXTILE UNDER ALL GABIONS.
6. FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WIRE MESH.
7. MAKE THE WEIR CREST OF THE GABION OUTLET STRUCTURE 9 INCHES LOWER THAN THE TOP OF THE ADJACENT GABIONS.
8. PROVIDE A MINIMUM WEIR CREST OF 6 FEET.
9. ATTACH WOVEN MONOFILAMENT GEOTEXTILE TO THE UPSTREAM FACE OF GABION BASKETS AND COVER WITH 4 TO 7 INCH STONE.
10. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO WITHIN 12 INCHES OF THE WEIR CREST. REPLACE GEOTEXTILE AND STONE FACING WHEN STRUCTURE CEASES TO FUNCTION. MAINTAIN LINE, GRADE, AND CROSS SECTION.
11. UPON REMOVAL OF GABION OUTLET STRUCTURE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

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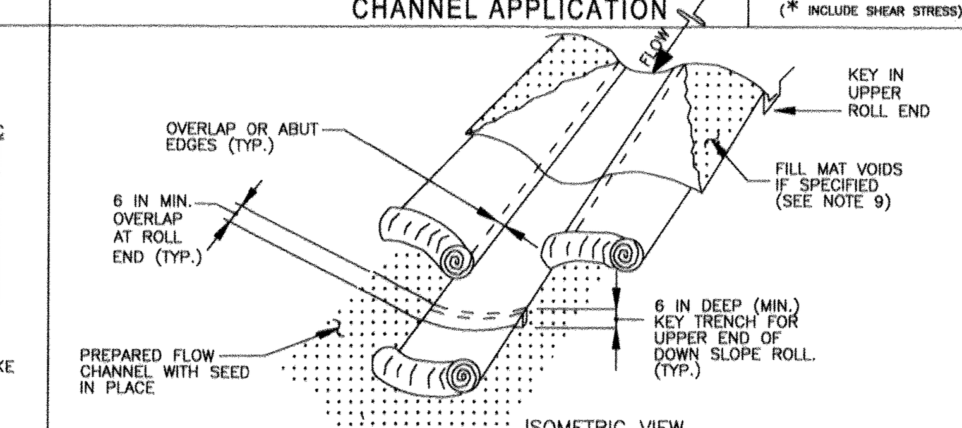
DETAIL B-4-6-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL
PSSMC – 0.53 lb/ft² (* INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

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 2x2 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 ½ 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 MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH–SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 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 SEEDED 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 DOWNSTREAM 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 KEYED 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.

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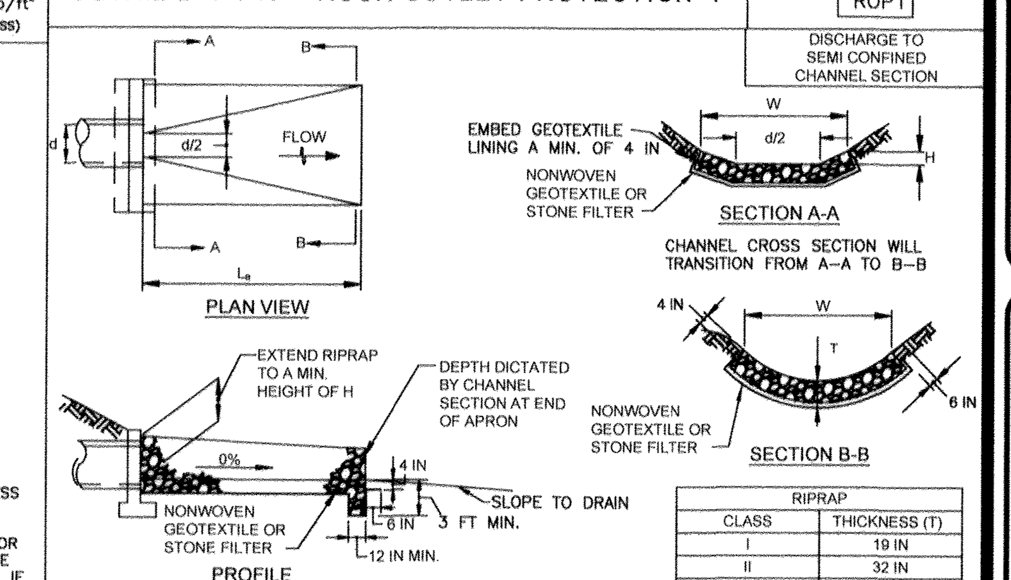
DETAIL D-4-1-A ROCK OUTLET PROTECTION I

STANDARD SYMBOL
ROP1
DISCHARGE TO SEMI CONFINED CHANNEL SECTION



RIPRAP	
CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS

1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (⅜ TO 1½ INCH STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF THE RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

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

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%)		
Slope Length (feet)*	0-30	30-60	60-120	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															

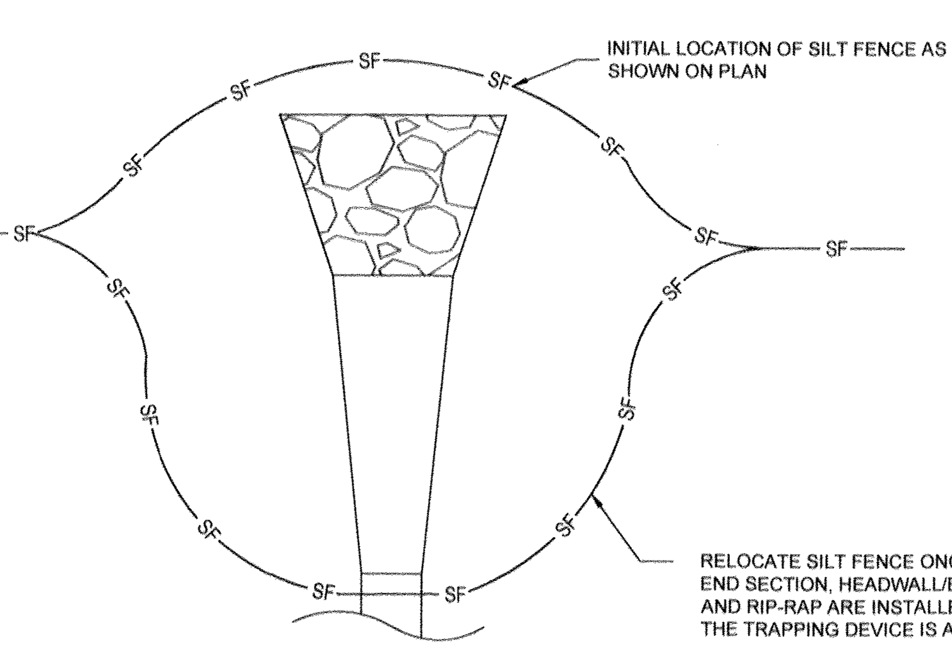
Effective range for all K values unless otherwise specified

TABLE B.7: SOIL STABILIZATION ON SLOPES

SHEAR STRESS FOR SLOPES CALCULATED FROM THIS TABLE

SEQUENCE OF CONSTRUCTION

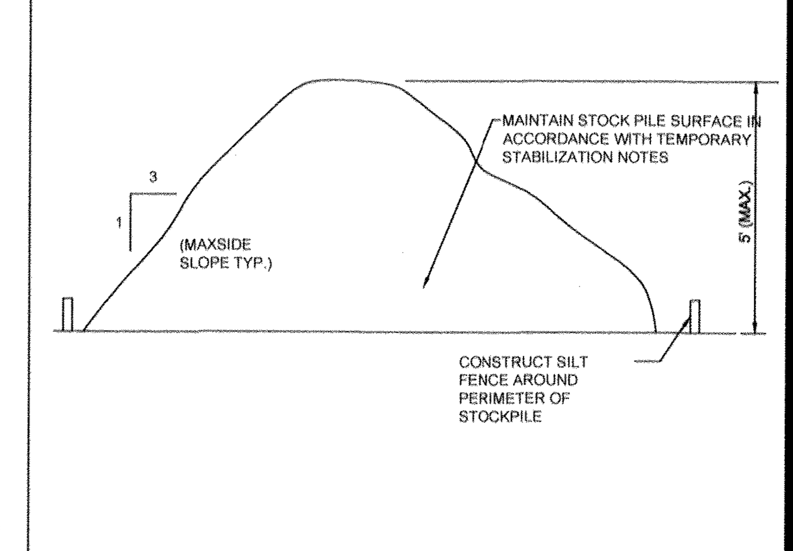
1. OBTAIN ALL NECESSARY PERMITS. CONDUCT A PRE-CONSTRUCTION MEETING: CONTRACTOR TO NOTIFY HOWARD COUNTY AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION. CONTACT THE MARYLAND STATE HIGHWAY ADMINISTRATION AT 410-277-6015 AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION. WORK MAY NOT COMMENCE UNTIL THE PERMITTEE OR THE RESPONSIBLE PERSONNEL HAVE MET ON-SITE WITH THE SEDIMENT AND EROSION CONTROL INSPECTOR AND THE MARYLAND STATE HIGHWAY ADMINISTRATION TO REVIEW THE APPROVED PLANS. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE APPROVED SHA ACCESS PERMIT PLANS AND THE HOWARD COUNTY APPROVED EROSION AND SEDIMENT CONTROL PLANS. (1 DAY)
2. CLEAR MINIMUM AREA NECESSARY TO INSTALL SEDIMENT CONTROLS. (3 DAYS)
3. INSTALL STABILIZED CONSTRUCTION ENTRANCE. (1 DAY)
4. INSTALL PERIMETER SUPER SILT FENCE AND SILT FENCE AS SHOWN ON THE PLANS. (1 WEEK).
5. UPON APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR, CLEAR AND GRUB THE AREAS IDENTIFIED ON THE PLANS. (2 WEEKS)
6. PERFORM ALL UTILITY TEST PITS (2-3 DAYS).
7. DISTURBED AREAS WITHIN THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED SHALL BE PERMANENTLY OR TEMPORARILY STABILIZED WITHIN:
   a. THREE CALENDAR DAYS ON SLOPES GREATER THAN 3:1, ALL WATERWAYS AND TO THE SURFACE OF ALL PERIMETER CONTROLS.
   b. SEVEN CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS OF THE PROJECT. ALL HARD SURFACE PUBLIC ROADS SHALL BE CLEANED AT THE END OF EACH WORK DAY.
8. PERIODIC MAINTENANCE OF ALL SEDIMENT CONTROL MEASURES IS REQUIRED TO ENSURE EFFECTIVE SEDIMENT CONTROL. INSPECTION OF ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE MADE AT LEAST WEEKLY AND AFTER EACH RAINFALL EVENT. REPAIRS SHALL BE MADE WITHIN 24 HOURS OF THE RAIN EVENT OR WHEN OTHERWISE IDENTIFIED. (ONGOING)
9. BEGIN DEMOLITION OF EXISTING CURB, UTILITIES, AND OTHER ITEMS TO BE DEMOLISHED AS OUTLINED ON THE DEMOLITION PLAN. DEMOLITION OF ITEMS LISTED AND SHOWN ON PLAN MAY OCCUR CONCURRENTLY. (1 WEEK)
10. ROUGH GRADE THE AREA OF THE PROPOSED ROAD IMPROVEMENTS AND STORMWATER MANAGEMENT FACILITIES WITH EROSION AND SEDIMENT CONTROL MEASURES AS SHOWN ON THE PLANS. BEGIN INSTALLATION OF STORM DRAIN AND ASSOCIATED STORM DRAIN STRUCTURES. ADJUST SUPER SILT FENCE ACCORDINGLY. IMMEDIATELY INSTALL INLET PROTECTION ON ALL INLETS AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLANS. CONTRACTOR SHALL PERFORM SUFFICIENT GRADING ON ALL INLETS TO ENSURE THAT IT IS CAPABLE OF FUNCTIONING AND CAPTURING ALL UPSLOPE FLOWS. CONTRACTOR TO INSTALL STORM DRAIN OUTLET, AND INSTALL STORM DRAIN BEGINNING FROM DOWNSTREAM END OF PIPE AND CONTINUING UPSTREAM. REMOVE SECTIONS OF SUPER SILT FENCE AS REQUIRED TO INSTALL UTILITIES OR PERFORM OTHER ROAD IMPROVEMENT RELATED CONSTRUCTION ACTIVITIES. IMMEDIATELY SHIFT AND REPLACE SUPER SILT FENCE IN THESE AREAS ONCE ACTIVITY IS COMPLETED. SUPER SILT FENCE SHALL ALSO BE REPLACED AT THE END OF EACH WORK DAY IF WORK ACTIVITY IS NOT COMPLETED AND PRIOR TO EACH RAIN EVENT AS NECESSARY. (3 WEEKS)
11. INSTALL CURB AND GUTTER, APPLY STONE SUBBASE AND ASPHALT PAVEMENT FOR ALL ROAD IMPROVEMENT AREAS. (1 WEEK)
12. FINE GRADE ALL REMAINING AREAS WITHIN THE SHA RIGHT-OF-WAY. AS SITE IS BROUGHT TO FINAL GRADE, PERMANENTLY STABILIZE ALL DISTURBED AREAS WITHIN SEVEN (7) CALENDAR DAYS. (1 WEEK)
13. AFTER THE SITE IS 95% STABILIZED, INSTALL STORMWATER MANAGEMENT QUALITY FACILITIES, AND PERMANENT LANDSCAPING WITHIN THE STORMWATER FACILITIES. (2 WEEKS)
14. AFTER ALL CONSTRUCTION HAS BEEN COMPLETED AND UPON APPROVAL FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT CONTROL MEASURES. (1 WEEK)
15. NOTIFY HOWARD COUNTY OFFICE OF INSPECTIONS AND PERMITS FOR FINAL INSPECTION OF THE COMPLETED PROJECT.



TYPICAL SILT/SUPER SILT FENCE INSTALLATION DETAIL AT PIPE OUTFALL

NOT TO SCALE

"NO AS-BUILT INFORMATION IS" PROVIDED THIS SHEET



TEMPORARY STOCKPILE DETAIL

NOT TO SCALE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SCD 3/4/19 DATE

ENGINEER'S CERTIFICATE

"I HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

SIGNATURE OF ENGINEER BRANDON R. ROWE, P.E. DATE 1/10/19

DEVELOPER'S CERTIFICATE

"I/WE HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ONSITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

River Hill Square LLC By: Member Steven K Breeden — James R. Moxley, III 1/11/19

SIGNATURE OF DEVELOPER DATE

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER

AS-BUILT 3/26/21

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12/21/22

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:
STEPHEN A. KLEIN & ASSOCIATES
C/O STEPHEN A. KLEIN, INC.
12165 CLARKSVILLE PIKE
CLARKSVILLE, MD 21029
(410) 465-4244

DEVELOPER:
RIVER HILL SQUARE, LLC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
(410) 465-4244

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No. : ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	BY

KNOW WHAT'S BELOW
ALWAYS CALL 811
BEFORE YOU DIG
It's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	N/A
CAD I.D.:	OD2

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

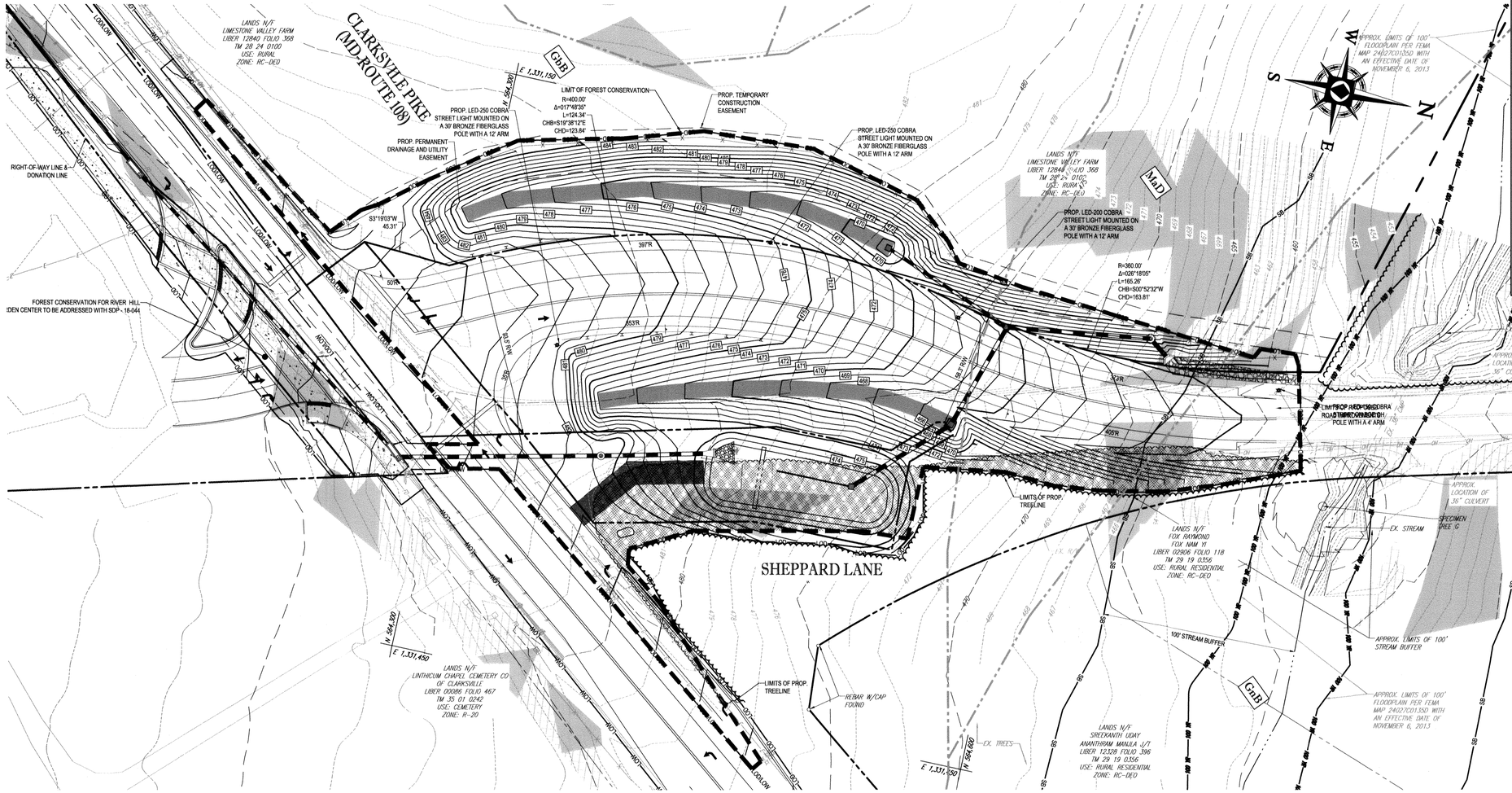
B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
1/10/19

SHEET TITLE:
EROSION AND SEDIMENT CONTROL DETAILS

SHEET NUMBER:
29

F-18-099

AS-BUILT



VICINITY FOREST COVER MAP

(ONE SQUARE MILE)
SCALE: 1"=1,000'

"NO AS-BUILT INFORMATION IS" PROVIDED THIS SHEET

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443 Expiration Date: 12/21/22

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER

AS-BUILT 3/26/21

LEGEND

- RIGHT OF WAY LINE
- WETLAND BUFFER LIMITS
- LOD — LOD — LIMIT OF DISTURBANCE
- .341 — EXISTING CONTOUR
- 341 — PROPOSED CONTOUR
- TPF — TREE PROTECTION FENCE
- ROOT PRUNING & FERTILIZATION
- SPECIMEN TREES WITH WITH CRITICAL ROOT ZONE
- SB — SB — 100-FOOT STREAM BUFFER
- SOILS BOUNDARY
- EXISTING TREE LINE
- STEEP SLOPES 15-24.99%
- STEEP SLOPES 25% +
- TREE CLEARING AREA

SOIL TYPES ONSITE

SYMBOL	SOIL SERIES	HYDROLOGIC SOIL GROUP	HYDRIC SOIL	SLOPES	K FACTOR
GbB	GLADSTONE LOAM	A	NO	3 - 8%	.32
GbC	GLADSTONE LOAM	A	NO	8 - 15%	.32
GnB	GLENVILLE-BAILE SILT LOAMS	C	NO	0 - 8 %	.49
MaD	MANOR LOAM	B	NO	15 - 25 %	.32

SPECIMEN TREE TABLE

KEY	SPECIES TYPE	SIZE	CONDITION	NOTES
G	TULIP POPLAR	52"	FAIR	TO REMAIN

SITE DATA SHEPPARD LANE IMPROVEMENTS

	TOTAL
LIMIT OF DISTURBANCE	1.65 AC.
AREA OF WETLANDS AND BUFFER	0.00 AC.
AREA OF 100-YR FLOODPLAIN	0.00 AC.
AREA OF STEEP SLOPES (15% OR GREATER)	0.00 AC.
AREA OF EXISTING IMPERVIOUS	0.31 AC.
NET TRACT AREA:	1.34 AC.
PRESENT ZONING DESIGNATION	RC-DEO
PROPOSED USE:	INTERSECTION IMPROVEMENTS

APPROVED
PLANNING BOARD OF HOWARD COUNTY
DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS DATE
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DEVELOPER'S/OWNER'S LANDSCAPE CERTIFICATE

I/WE CERTIFY THAT HE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

DEVELOPERS / OWNER'S NAME: STEPHEN K. KLEIN
DATE 1/11/19

NOTES :

1. THERE ARE NO CHAMPION TREES AND/OR TREES 75% FOR THE SIZE OF ANY CHAMPION TREE.
2. THERE ARE NO RARE, THREATENED AND ENDANGERED SPECIES OF THEIR HABITATS ON THIS SITE.

FOREST CONSERVATION FULFILLMENT NOTE:

1. FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1200 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL FOR THIS ROAD IMPROVEMENT PLAN WILL BE FULFILLED BY A FEE IN LIEU TO HOWARD COUNTY OF 0.40 ACRES FOR $16,552.

FOREST CONSERVATION SEQUENCE OF CONSTRUCTION

1. PRE CONSTRUCTION MEETING SHALL BE HELD BETWEEN DEVELOPER, CONTRACTOR, AND COUNTY INSPECTOR.
2. SEDIMENT CONTROL SHALL BE INSTALLED IN ACCORDANCE WITH THE GENERAL CONSTRUCTION PLAN FOR SITE. TEMPORARY TREE PROTECTIVE FENCING SPECIFICALLY AROUND SPECIMEN TREE G PRIOR TO ANY GRADING.
3. SITE SHALL BE GRADED, INFRASTRUCTURE INSTALLED AND CONSTRUCTED. DISTURBED AREAS SHALL BE STABILIZED. PERMANENT SIGNAGE IN POOR CONDITION SHALL BE REPLACED.
4. POSTCONSTRUCTION MEETING SHALL BE HELD WITH COUNTY INSPECTOR TO ENSURE COMPLIANCE WITH DEVELOPMENT PLAN. SEDIMENT CONTROL AND TEMPORARY PROTECTIVE FENCING UPON STABILIZATION OF SITE AND COMPLETION OF CONSTRUCTION ACTIVITIES.

FOREST CLEARING

FOREST TO BE CLEARED = 0.20 AC

FCP NOTES

1. ANY FOREST CONSERVATION EASEMENT (FCE) SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF HOWARD COUNTY AND WHICH RESTRICT THE DISTURBANCE AND USE OF THESE AREAS.
2. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION, OR DISTURBANCE OF VEGETATION AS OUTLINED IN THE FOREST CONSERVATION DEED OF EASEMENT EXCEPT AS PERMITTED BY HOWARD COUNTY.
3. NO STOCKPILE, PARKING AREAS, EQUIPMENT CLEANING AREAS, ETC. SHALL OCCUR WITHIN AREAS DESIGNATED IN THE FOREST CONSERVATION EASEMENT.
4. PERMANENT SIGNAGE SHALL BE PLACED EVERY 50-100 FEET APART ALONG THE BOUNDARIES OF ALL AREAS INCLUDED IN FOREST CONSERVATION EASEMENTS.

FOREST CONSERVATION NARRATIVE:

THIS FOREST CONSERVATION PLAN PROPOSES THE REMOVAL OF 0.20 ACRES OF FOREST FROM THE PROPOSED LIMIT OF DISTURBANCE. THIS FOREST CLEARING IS UNAVOIDABLE WITH THE ROAD IMPROVEMENTS. THIS PROJECT IS FOR PUBLIC SAFETY IMPROVEMENTS WHICH IS CONSIDERED INSTITUTIONAL. THE PROPOSED CLEARING WILL NOT IMPACT HIGH PRIORITY FOREST OR FOREST AREAS.

NET TRACT AREA:

A. Total tract area	=	1.34
B. Area within 100 year floodplain	=	0.00
C. Area to remain in agricultural production	=	0.00
D. Net tract area	=	1.34

LAND USE CATEGORY: (from table 3.2.1, page 40, Manual)

Input the number "1" under the appropriate land use zoning, and limit to only one entry.

ARA	MDR	IDA	HDR	MPD	CIA
0	0	1	0	0	0

E. Afforestation Threshold	15% x D =		0.20
F. Conservation Threshold	20% x D =		0.27

EXISTING FOREST COVER:

G. Existing forest cover (excluding floodplain)	=	0.20
H. Area of forest above afforestation threshold	=	0.00
I. Area of forest above conservation threshold	=	0.00

BREAK EVEN POINT:

J. Forest retention above threshold with no mitigation	=	0.00
K. Clearing permitted without mitigation	=	0.00

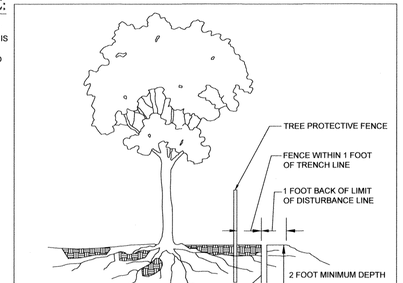
PROPOSED FOREST CLEARING:

L. Total area of forest to be cleared	=	0.20
M. Total area of forest to be retained	=	0.00

PLANTING REQUIREMENTS:

N. Reforestation for clearing above conservation threshold	=	0.00
P. Reforestation for clearing below conservation threshold	=	0.40
Q. Credit for retention above conservation threshold	=	0.00
R. Total reforestation required	=	0.40
S. Total afforestation required	=	0.00
T. Total reforestation and afforestation required	=	0.40

NOTE: NET TRACT AREA BASED ON L.O.D. EXCEPTING THE PORTION OVERLAPPING THE RIVER HILL GARDEN CENTER SDP-18-044 WHICH CONSISTS OF 1.34 AC. (GROSS TOTAL FOR THE PROJECT IS 2.68 AC.)



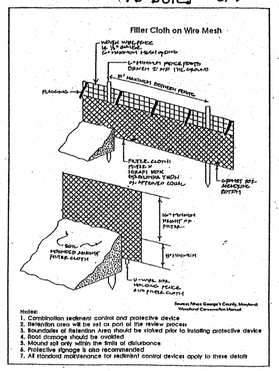
NOTES:

1. RETENTION AREAS WILL BE SET AS PART OF THE REVIEW PROCESS.
2. BOUNDARIES OF RETENTION AREAS SHOULD BE STAKED FLAGGED PRIOR TO TRENCHING.
3. EXACT LOCATION OF TRENCH SHOULD BE IDENTIFIED.
4. TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR OTHER HIGH ORGANIC SOIL.
5. ROOTS SHOULD BE CLEANLY CUT USING VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT.

ROOT PRUNING DETAIL

NOT TO SCALE

30 15 7.5 0 30
1"= 30'



PROTECTIVE TREE FENCE DETAIL

NOT TO SCALE

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS DATE 2/6/2019
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 2.21.19

OWNER:	DEVELOPER:
STEPHEN A. KLEIN & ASSOCIATES	RIVER HILL SQUARE, LLC.
C/O STEPHEN A. KLEIN, INC.	P.O. BOX 417
12165 CLARKSVILLE PIKE	ELLICOTT CITY, MARYLAND 21041
CLARKSVILLE, MD 21029	(410) 465-4244
(410) 465-4244	

TAX MAP: 35 GRID: 1 PARCEL: 1 ZONED: B-1 & RC-DEO

5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No. : ECP - 17 - 023, SDP - 18 - 044, WP - 18 -095

PROFESSIONAL CERTIFICATION
I, ERIC R. McWILLIAMS, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 3697, EXPIRATION DATE: 9/20/20

AS-BUILT

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRAFFIC ENGINEERING

REVISIONS

REV	DATE	COMMENT	BY

KNOW WHAT'S BELOW ALWAYS CALL 811 **BEFORE YOU DIG**
It's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MID182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	AS SHOWN
CAD I.D.:	FC2

PROJECT:

FINAL ROAD CONSTRUCTION PLANS

FOR

MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

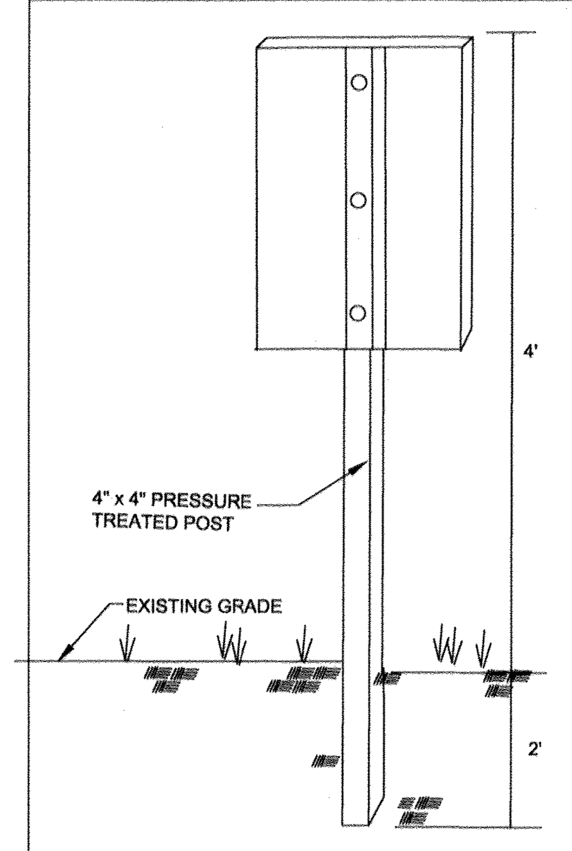
E.R. McWILLIAMS — REGISTERED LANDSCAPE ARCHITECT — No. 3697

SHEET TITLE:

FOREST CONSERVATION PLAN

SHEET NUMBER: 30

F-18-099



MIN 11"

MIN 15"

FOREST RETENTION AREA

MACHINERY, DUMPING OR STORAGE OF ANY MATERIALS *PROHIBITED*

VIOLATORS ARE SUBJECT TO FINES IMPOSED BY THE MARYLAND FOREST CONSERVATION ACT OF 1991

MIN 11"

MIN 15"

SPECIMEN TREE

DO NOT REMOVE

MACHINERY, DUMPING OR STORAGE OF ANY MATERIALS *PROHIBITED*

VIOLATORS ARE SUBJECT TO FINES IMPOSED BY THE MARYLAND FOREST CONSERVATION ACT OF 1991

MIN 11"

MIN 15"

Forest Conservation Area

REFORESTATION PROJECT

Trees for Your Future

FOREST CONSERVATION SIGN DETAIL

NOT TO SCALE

9. PLANTING

A. INSOFAR THAT IT IS FEASIBLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT POSSIBLE, LANDSCAPE CONTRACTOR SHALL PROTECT UNINSTALLED PLANT MATERIAL. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY. PLANTS THAT WILL NOT BE PLANTED FOR A PERIOD OF TIME GREATER THAN THREE DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH TO HELP PRESERVE ROOT MOISTURE.

B. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS IN A MUDDY OR FROZEN CONDITION.

C. ANY INJURED ROOTS OR BRANCHES SHALL BE PRUNED TO MAKE CLEAN-CUT ENDS PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY INJURED OR DISEASED BRANCHING SHALL BE REMOVED.

D. ALL PLANTING CONTAINERS AND NON-BIODEGRADABLE MATERIALS SHALL BE REMOVED FROM ROOT BALLS DURING PLANTING. NATURAL FIBER BURLAP MUST BE CUT FROM AROUND THE TRUNK OF THE TREE AND FOLDED DOWN AGAINST THE ROOT BALL PRIOR TO BACKFILLING.

E. POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.

F. PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY, THE PROPOSED LANDSCAPE, AS SHOWN ON THE APPROVED LANDSCAPE PLAN, MUST BE INSTALLED, INSPECTED AND APPROVED BY THE APPROVING AGENCY. THE APPROVING AGENCY SHALL TAKE INTO ACCOUNT SEASONAL CONSIDERATIONS IN THIS REGARD AS FOLLOWS. THE PLANTING OF TREES, SHRUBS, VINES OR GROUND COVER SHALL OCCUR ONLY DURING THE FOLLOWING PLANTING SEASONS:
1.1. PLANTS: MARCH 15 TO DECEMBER 15
1.2. LAWN: MARCH 15 TO JUNE 15 OR SEPT. 1 TO DECEMBER 1

G. PLANTINGS REQUIRED FOR A CERTIFICATE OF OCCUPANCY SHALL BE PROVIDED DURING THE NEXT APPROPRIATE SEASON AT THE MUNICIPALITY'S DISCRETION. CONTRACTOR SHOULD CONTACT APPROVING AGENCY FOR POTENTIAL SUBSTITUTIONS.

H. FURTHERMORE, THE FOLLOWING TREE VARIETIES ARE UNUSUALLY SUSCEPTIBLE TO WINTER DAMAGE. WITH TRANSPLANT SHOCK AND THE SEASONAL LACK OF NITROGEN AVAILABILITY, THE RISK OF PLANT DEATH IS GREATLY INCREASED. IT IS NOT RECOMMENDED THAT THESE SPECIES BE PLANTED DURING THE FALL PLANTING SEASON:

ACER RUBRUM	PLATANUS X ACERIFOLIA
BETULA VARIETIES	POPULOUS VARIETIES
CARPINUS VARIETIES	PRUNUS VARIETIES
CRATAEGUS VARIETIES	PYRUS VARIETIES
KOELREUTERIA	QUERCUS VARIETIES
LIQUIDAMBER STYRACIFLUA	TILIA TOMENTOSA
LIRIODENDRON TULIPIFERA	ZELKOVA VARIETIES

I. PLANTING PITS SHALL BE DUG WITH LEVEL BOTTOMS, WITH THE WIDTH TWICE THE DIAMETER OF ROOT BALL. THE ROOT BALL SHALL REST ON UNDISTURBED GRADE. EACH PLANT PIT SHALL BE BACKFILLED IN LAYERS WITH THE FOLLOWING PREPARED SOIL MIXED THOROUGHLY:
- 1 PART PEAT MOSS
- 1 PART COMPOSTED COW MANURE BY VOLUME
- 3 PARTS TOPSOIL BY VOLUME
- 21 GRAMS 'AGRIFORM' PLANTING TABLETS (OR APPROVED EQUAL) AS FOLLOWS:
  - A) 2 TABLETS PER 1 GALLON PLANT
  - B) 3 TABLETS PER 5 GALLON PLANT
  - C) 4 TABLETS PER 15 GALLON PLANT
  - D) LARGER PLANTS: 2 TABLETS PER ½" CALIPER OF TRUNK

J. FILL PREPARED SOIL AROUND BALL OF PLANT HALF-WAY AND INSERT PLANT TABLETS. COMPLETE BACKFILL AND WATER THOROUGHLY.

K. ALL PLANTS SHALL BE PLANTED SO THAT THE TOP OF THE ROOT BALL, THE POINT AT WHICH THE ROOT FLARE BEGINS, IS SET AT GROUND LEVEL AND IN THE CENTER OF THE PIT. NO SOIL IS TO BE PLACED DIRECTLY ON TOP OF THE ROOT BALL.

L. ALL PROPOSED TREES DIRECTLY ADJACENT TO WALKWAYS OR DRIVEWAYS SHALL BE PRUNED AND MAINTAINED TO A MINIMUM BRANCHING HEIGHT OF 7' FROM GRADE.

M. GROUND COVER AREAS SHALL RECEIVE A ¼" LAYER OF HUMUS RAKED INTO THE TOP 1" OF PREPARED SOIL PRIOR TO PLANTING. ALL GROUND COVER AREAS SHALL BE WEEDED AND TREATED WITH A PRE-EMERGENT CHEMICAL AS PER MANUFACTURER'S RECOMMENDATION.

N. NO PLANT, EXCEPT GROUND COVERS, GRASSES OR VINES, SHALL BE PLANTED LESS THAN TWO FEET (2') FROM EXISTING STRUCTURES AND SIDEWALKS.

O. ALL PLANTING AREAS AND PLANTING PITS SHALL BE MULCHED AS SPECIFIED HEREIN TO FILL THE ENTIRE BED AREA OR SAUCER. NO MULCH IS TO TOUCH THE TRUNK OF THE TREE OR SHRUB.

P. ALL PLANTING AREAS SHALL BE WATERED IMMEDIATELY UPON INSTALLATION IN ACCORDANCE WITH THE WATERING SPECIFICATIONS AS LISTED HEREIN.

10. TRANSPLANTING (WHEN REQUIRED)

A. ALL TRANSPLANTS SHALL BE DUG WITH INTACT ROOT BALLS CAPABLE OF SUSTAINING THE PLANT.

B. IF PLANTS ARE TO BE STOCKPILED BEFORE REPLANTING, THEY SHALL BE HEALED IN WITH MULCH OR SOIL, ADEQUATELY WATERED AND PROTECTED FROM EXTREME HEAT, SUN AND WIND.

C. PLANTS SHALL NOT BE DUG FOR TRANSPLANTING BETWEEN APRIL 10 AND JUNE 30.

D. UPON REPLANTING, BACKFILL SOIL SHALL BE AMENDED WITH FERTILIZER AND ROOT GROWTH HORMONE.

E. TRANSPLANTS SHALL BE GUARANTEED FOR THE LENGTH OF THE GUARANTEE PERIOD SPECIFIED HEREIN.

F. IF TRANSPLANTS DIE, SHRUBS AND TREES LESS THAN SIX INCHES (6") DBH SHALL BE REPLACED IN KIND. TREES GREATER THAN SIX INCHES (6") DBH MAY BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE MUNICIPALITY'S TREE REPLACEMENT GUIDELINES.

11. WATERING

A. NEW PLANTINGS OR LAWN AREAS SHALL BE ADEQUATELY IRRIGATED BEGINNING IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACKFILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED. WATERING SHALL CONTINUE AT LEAST UNTIL PLANTS ARE ESTABLISHED.

B. SITE OWNER SHALL PROVIDE WATER IF AVAILABLE ON SITE AT TIME OF PLANTING. IF WATER IS NOT AVAILABLE ON SITE, CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER. THE USE OF WATERING BAGS IS RECOMMENDED FOR ALL NEWLY PLANTED TREES.

C. IF AN IRRIGATION SYSTEM HAS BEEN INSTALLED ON THE SITE, IT SHALL BE USED TO WATER PROPOSED PLANT MATERIAL, BUT ANY FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE CONTRACTOR'S RESPONSIBILITY OF MAINTAINING THE DESIRED MOISTURE LEVEL FOR VIGOROUS, HEALTHY GROWTH.

12. GUARANTEE

A. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF ONE (1) YEAR FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE APPROVING AGENCY. CONTRACTOR SHALL SUPPLY THE OWNER WITH A MAINTENANCE BOND FOR TEN PERCENT (10%) OF THE VALUE OF THE LANDSCAPE INSTALLATION WHICH WILL BE RELEASED AT THE CONCLUSION OF THE GUARANTEE PERIOD AND WHEN A FINAL INSPECTION HAS BEEN COMPLETED AND APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

B. ANY DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED FOR THE LENGTH OF THE GUARANTEE PERIOD. REPLACEMENT OF PLANT MATERIAL SHALL BE CONDUCTED AT THE FIRST SUCCEEDING PLANTING SEASON. ANY DEBRIS SHALL BE DISPOSED OF OFF-SITE, WITHOUT EXCEPTION.

C. TREES AND SHRUBS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION AND THROUGHOUT THE 90 DAY MAINTENANCE PERIOD AS SPECIFIED HEREIN. CULTIVATION, WEEDING, WATERING AND THE PREVENTATIVE TREATMENTS SHALL BE PERFORMED AS NECESSARY TO KEEP PLANT MATERIAL IN GOOD CONDITION AND FREE OF INSECTS AND DISEASE.

D. LAWNS SHALL BE MAINTAINED THROUGH WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING AND OTHER OPERATIONS SUCH AS ROLLING, REGARDING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.

13. CLEANUP

A. UPON THE COMPLETION OF ALL LANDSCAPE INSTALLATION AND BEFORE THE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL UNUSED MATERIALS, EQUIPMENT AND DEBRIS FROM THE SITE. ALL PAVED AREAS ARE TO BE CLEANED.

B. THE SITE SHALL BE CLEANED AND LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

REFORESTATION PLAN

THE REFORESTATION AREA WILL BE PLACED INTO A FOREST CONSERVATION EASEMENT.

A. PLANTING PLAN AND METHODS

PLANT SPECIES SELECTION WAS BASED ON OUR KNOWLEDGE REGARDING PLANT COMMUNITIES IN MARYLAND'S PIEDMONT PLATEAU AND INFORMATION PROVIDED IN THE SOIL SURVEY ON TYPICAL VEGETATION FOR THE SOIL TYPE ON THE PLANTING SITE. SPECIES SELECTION WAS ALSO BASED ON OUR KNOWLEDGE OF PLANT AVAILABILITY IN THE NURSERY INDUSTRY.

REFORESTATION WILL BE ACCOMPLISHED THROUGH A MIXED PLANTING OF WHIPS AND BRANCHED TRANSPLANTS. CONTAINER GROWN STOCK IS RECOMMENDED BUT BAREROOT STOCK MAY BE USED TO HELP CONTROL AFFORESTATION COSTS. IF BAREROOT STOCK IS USED THE ROOT SYSTEMS OF ALL PLANTS WILL BE DIPPED IN AN ANTI-DESICCANT GEL PRIOR TO PLANTING TO IMPROVE MOISTURE RETENTION IN THE ROOT SYSTEMS.

PRIOR TO PLANTING THE PROPOSED FOREST CONSERVATION EASEMENTS ALL MULTIFLORA ROSE IN THE PLANTING AREA SHALL BE REMOVED. REMOVAL OF THE ROSE MAY BE PERFORMED WITH MOWING AND HERBICIDE TREATMENTS. PHYSICAL REMOVAL OF ALL TOP GROWTH FOLLOWING BY A PERIODIC HERBICIDE TREATMENT OF STUMP SPROUTS IS RECOMMENDED. NATIVE TREE AND SHRUB SPECIES OCCURRING WITHIN THE ROSE THICKETS SHOULD BE RETAINED WHEREVER POSSIBLE. HERBICIDES TREATMENTS SHALL OCCUR ON 2 MONTH INTERVALS DURING THE FIRST GROWING SEASON AND ONCE EACH IN THE SPRING AND FALL FOR SUBSEQUENT YEARS. HERBICIDE USED SHALL BE MADE SPECIFICALLY TO ADDRESS WOODY PLANT MATERIAL AND SHALL BE APPLIED AS PER MANUFACTURERS SPECIFICATIONS. CARE SHOULD BE TAKEN NOT TO SPRAY PLANTED TREES OR NATURALLY OCCURRING NATIVE TREE/SHRUB SEEDLINGS. IT IS RECOMMENDED THAT INITIATION OF ROSE REMOVAL BEGIN AT LEAST SIX MONTHS PRIOR TO PLANTING.

B. PLANTING AND SOIL SPECIFICATIONS

PLANT MATERIAL WILL BE INSTALLED IN ACCORDANCE WITH THE PLANTING DETAIL AND PLANTING SPECIFICATIONS SHOWN ON THE FOREST CONSERVATION PLAN.

AMENDMENTS TO EXISTING SOIL WILL BE IN ACCORDANCE WITH THE PLANTING SPECIFICATIONS SHOWN ON THE FOREST CONSERVATION PLAN. SOIL DISTURBANCE WILL BE LIMITED TO INDIVIDUAL PLANTING LOCATIONS.

C. MAINTENANCE OF PLANTINGS

SEE POST CONSTRUCTION NOTES

D. GUARANTEE REQUIREMENTS

A 90 PERCENT SURVIVAL RATE OF THE REFORESTATION PLANTINGS WILL BE REQUIRED AFTER ONE GROWING SEASON. ALL PLANT MATERIAL BELOW THE 90 PERCENT SURVIVAL THRESHOLD WILL BE REPLACED AT THE BEGINNING OF THE SECOND GROWING SEASON. AT THE END OF THE SECOND GROWING SEASON, A 75 PERCENT SURVIVAL RATE WILL BE REQUIRED. ALL PLANT MATERIAL BELOW THE 75 PERCENT SURVIVAL THRESHOLD WILL BE REPLACED BY THE BEGINNING OF THE NEXT GROWING SEASON.

E. SECURITY FOR REFORESTATION

SECTION 16-1209 OF THE HOWARD COUNTY FOREST CONSERVATION ACT REQUIRES THAT A DEVELOPER SHALL POST A SECURITY (BOND, LETTER OF CREDIT, ETC.) WITH THE COUNTY TO INSURE THAT ALL WORK IS DONE IN ACCORDANCE WITH THE FCP.

CONSTRUCTION PERIOD PROTECTION PROGRAM

A. FOREST PROTECTION TECHNIQUES

1. SOIL PROTECTION AREA (CRITICAL ROOT ZONE)

THE SOIL PROTECTION AREA, OR CRITICAL ROOT ZONE, OF A TREE IS THAT PORTION OF THE SOIL COLUMN WHERE MOST OF A ITS ROOTS MAY BE FOUND. THE MAJORITY OF ROOTS RESPONSIBLE FOR WATER AND NUTRIENT UPTAKE ARE LOCATED JUST BELOW THE SOIL SURFACE. TEMPORARY FENCING SHALL BE PLACED AROUND THE CRITICAL ROOT ZONE OF THE FOREST IN AREAS WHERE THE FOREST LIMITS OCCUR WITHIN 25 FEET OF THE LIMIT OF DISTURBANCE.

2. FENCING AND SIGNAGE

EXISTING FOREST LIMITS OCCURRING WITHIN 25 FEET OF THE LIMITS OF DISTURBANCE SHALL BE PROTECTED USING TEMPORARY PROTECTIVE FENCING. PERMANENT SIGNAGE SHALL BE PLACED AROUND THE AFFORESTATION AREA PRIOR TO PLANT INSTALLATION, AS SHOWN ON THE PLAN.

B. PRE-CONSTRUCTION MEETING

UPON STAKING OF LIMITS OF DISTURBANCE A PRE-CONSTRUCTION MEETING WILL BE HELD BETWEEN THE DEVELOPER, CONTRACTOR AND APPROPRIATE COUNTY INSPECTOR. THE PURPOSE OF THE MEETING WILL BE TO
VERIFY THAT ALL SEDIMENT CONTROL IS IN ORDER, AND TO NOTIFY THE CONTRACTOR OF POSSIBLE PENALTIES FOR NON-COMPLIANCE WITH THE FCP.

C. STORAGE FACILITIES/EQUIPMENT CLEANING

ALL EQUIPMENT STORAGE, PARKING, SANITARY FACILITIES, MATERIAL STOCKPILING, ETC. ASSOCIATED WITH CONSTRUCTION OF THE PROJECT WILL BE RESTRICTED TO THOSE AREAS OUTSIDE OF THE PROPOSED FOREST CONSERVATION EASEMENT. CLEANING OF EQUIPMENT WILL BE LIMITED TO AREA WITHIN THE LOD OF THE PROPOSED HOMESITES. WASTEWATER RESULTING FROM EQUIPMENT CLEANING WILL BE CONTROLLED TO PREVENT RUNOFF INTO ENVIRONMENTALLY SENSITIVE AREAS.

D. SEQUENCE OF CONSTRUCTION

THE FOLLOWING TIMETABLE REPRESENTS THE PROPOSED TIMETABLE FOR DEVELOPMENT. THE ITEMS OUTLINED IN THE FOREST CONSERVATION PLAN WILL BE ENACTED WITHIN TWO (2) YEARS OF SUBDIVISION APPROVAL.

BELOW FIND A PROPOSED SEQUENCE OF CONSTRUCTION.

1. INSTALL ALL SIGNAGE AND SEDIMENT CONTROL DEVICES.
2. HOLD PRE-CONSTRUCTION MEETING BETWEEN DEVELOPER, CONTRACTOR AND COUNTY INSPECTOR.
3. BUILD ACCESS ROADS, INSTALL WELL AND SEPTIC SYSTEMS, AND CONSTRUCT HOUSES. STABILIZE ALL DISTURBED AREAS ACCORDINGLY.
4. INSTALL PERMANENT PROTECTIVE SIGNAGE FOR EASEMENTS AND INITIATE PLANTINGS IN ACCORDANCE WITH FOREST CONSERVATION PLAN. PLANTINGS WILL BE COMPLETED WITHIN TWO (2) YEARS OF SUBDIVISION APPROVAL.
5. REMOVE SEDIMENT CONTROL.
6. HOLD POST-CONSTRUCTION MEETING WITH COUNTY INSPECTORS TO ASSURE COMPLIANCE WITH FCP. SUBMIT CERTIFICATION OF INSTALLATION.
7. MONITOR AND MAINTAIN PLANTINGS FOR 2 YEARS.

E. CONSTRUCTION MONITORING

ECO-SCIENCE PROFESSIONALS, OR ANOTHER QUALIFIED PROFESSIONAL DESIGNATED BY THE DEVELOPER, WILL MONITOR CONSTRUCTION OF THE PROJECT TO ENSURE THAT ALL ACTIVITIES ARE IN COMPLIANCE WITH THE FOREST CONSERVATION PLAN.

F. POST-CONSTRUCTION MEETING

UPON COMPLETION OF CONSTRUCTION, ECO-SCIENCE PROFESSIONALS, OR ANOTHER QUALIFIED PROFESSIONAL DESIGNATED BY THE DEVELOPER, WILL NOTIFY THE COUNTY THAT CONSTRUCTION HAS BEEN COMPLETED AND ARRANGE FOR A POST-CONSTRUCTION MEETING TO REVIEW THE PROJECT SITE. THE MEETING WILL ALLOW THE COUNTY INSPECTOR TO VERIFY THAT AFFORESTATION PLANTINGS HAVE BEEN INSTALLED.

POST-CONSTRUCTION MANAGEMENT PLAN

HOWARD COUNTY REQUIRES A TWO YEAR POST-CONSTRUCTION MANAGEMENT PLAN BE PREPARED AS PART OF THE FOREST CONSERVATION PLAN. THE PLAN GOES INTO EFFECT UPON ACCEPTANCE OF THE CONSTRUCTION CERTIFICATION OF COMPLETION BY THE COUNTY. ECO-SCIENCE PROFESSIONALS, OR ANOTHER QUALIFIED PROFESSIONAL DESIGNATED BY THE DEVELOPER, WILL BE RESPONSIBLE FOR IMPLEMENTATION OF THE POST-CONSTRUCTION MANAGEMENT PLAN.

THE FOLLOWING ITEMS WILL BE INCORPORATED INTO THE PLAN:

A. FENCING AND SIGNAGE

PERMANENT SIGNAGE INDICATING THE LIMITS OF THE RETENTION/REFORESTATION AREA SHALL BE MAINTAINED.

B. GENERAL SITE INSPECTIONS/MAINTENANCE OF PLANTINGS

SITE INSPECTIONS WILL BE PERFORMED A MINIMUM OF THREE TIMES DURING THE GROWING SEASON. THE PURPOSE OF THE INSPECTIONS WILL BE TO ASSESS THE HEALTH OF THE AFFORESTATION PLANTINGS. APPROPRIATE MEASURES WILL BE TAKEN TO RECTIFY ANY PROBLEMS WHICH MAY ARISE.

IN ADDITION, MAINTENANCE OF THE AFFORESTATION PLANTINGS WILL INVOLVE THE FOLLOWING STEPS:

1. WATERING - ALL PLANT MATERIAL SHALL BE WATERED TWICE A MONTH DURING THE 1ST GROWING SEASON, MORE OR LESS FREQUENTLY DEPENDING ON WEATHER CONDITIONS. DURING THE SECOND GROWING SEASON, ONCE A MONTH DURING MAY-SEPTEMBER, IF NEEDED.
2. REMOVAL OF INVASIVE EXOTICS AND NOXIOUS WEEDS. OLD FIELD SUCCESSIONAL SPECIES WILL BE RETAINED.
3. IDENTIFICATION OF SERIOUS PLANT PESTS AND DISEASES, TREATMENT WITH APPROPRIATE AGENT.
4. PRUNING OF DEAD BRANCHES.
5. AFTER 12 AND 24 MONTHS, REPLACEMENT OF PLANTS, IF REQUIRED, IN ACCORDANCE WITH THE GUARANTEE REQUIREMENTS SHOWN ON THE FCP.

C. EDUCATION

THE DEVELOPER WILL PROVIDE APPROPRIATE MATERIALS TO PROPERTY OWNERS INFORMING THEM OF THE LOCATION AND PURPOSE OF THE AFFORESTATION AREA. MATERIALS MAY INCLUDE SITE PLANS AND INFORMATION EXPLAINING THE INTENT OF THE FOREST CONSERVATION LAW.

D. FINAL INSPECTION

AT THE END OF THE TWO YEAR POST-CONSTRUCTION MANAGEMENT PERIOD, ECO-SCIENCE PROFESSIONALS, OR ANOTHER QUALIFIED PROFESSIONAL, WILL SUBMIT TO THE ADMINISTRATOR OF THE HOWARD COUNTY FOREST CONSERVATION PROGRAM CERTIFICATION THAT ALL RETENTION/AFFORESTATION REQUIREMENTS HAVE BEEN MET. UPON ACCEPTANCE OF THIS CERTIFICATION, THE COUNTY WILL RELEASE THE DEVELOPER FROM ALL FUTURE OBLIGATIONS AND RELEASE THE DEVELOPER'S BOND.

PLANTING/SOIL SPECIFICATIONS

1. PLANTING OF NURSERY STOCK SHALL TAKE PLACE BETWEEN MARCH 15TH AND APRIL 30TH OR SEPTEMBER 15TH - NOVEMBER 15TH.
2. A TWELVE (12) INCH LAYER OF TOPSOIL SHALL BE SPREAD OVER ALL FORESTATION AREAS IMPACTED BY SITE GRADING TO ASSURE A SUITABLE PLANTING AREA. DISTURBED AREAS SHALL BE SEEDED AND STABILIZED AS PER GENERAL CONSTRUCTION PLAN FOR PROJECT. PLANTING AREAS NOT IMPACTED BY SITE GRADING SHALL HAVE NO ADDITIONAL TOPSOIL INSTALLED.
3. ALL BAREROOT PLANTING STOCK SHALL HAVE THEIR ROOT SYSTEMS DIPPED INTO AN ANTI-DESICCANT GEL PRIOR TO PLANTING.
4. PLANTS SHALL BE INSTALLED SO THAT THE TOP OF ROOT MASS IS LEVEL WITH THE TOP OF EXISTING GRADE. BACKFILL IN THE PLANTING PITS SHALL CONSIST OF 3 PARTS EXISTING SOIL TO 1 PART PINE FINES OR EQUIVALENT.
5. FERTILIZER SHALL CONSIST OF AGRIFORM 22-8-2, OR EQUIVALENT, APPLIED AS PER MANUFACTURER'S SPECIFICATIONS.
6. A TWO (2) INCH LAYER OF HARDWOOD MULCH SHALL BE PLACED OVER THE ROOT AREA OF ALL PLANTINGS.
7. PLANT MATERIAL SHALL BE TRANSPORTED TO THE SITE IN A TARPED OR COVERED TRUCK. PLANTS SHALL BE KEPT MOIST PRIOR TO PLANTING.
8. ALL NON-ORGANIC DEBRIS ASSOCIATED WITH THE PLANTING OPERATION SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.

SEQUENCE OF CONSTRUCTION

1. SEDIMENT CONTROL AND TREE PROTECTION DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH GENERAL CONSTRUCTION PLAN FOR SITE. SITE SHALL BE GRADED IN ACCORDANCE WITH GENERAL CONSTRUCTION PLANS.
2. PROPOSED FORESTATION AREAS IMPACTED BY SITE GRADING SHALL BE TOPSOILED AND STABILIZED AS PER #2 OF PLANTING/SOIL SPECIFICATIONS FOR PROJECT.
3. PLANTS SHALL BE INSTALLED AS PER PLANT SCHEDULE AND THE PLANTING/SOIL SPECIFICATIONS FOR THE PROJECT.
4. UPON COMPLETION OF THE PLANTING, SIGNAGE SHALL BE INSTALLED AS PER THE FOREST PROTECTION DEVICES SHOWN ON THE FOREST CONSERVATION PLAN.
5. PLANTINGS SHALL BE MAINTAINED AND GUARANTEED IN ACCORDANCE WITH THE MAINTENANCE AND GUARANTEE REQUIREMENTS FOR PROJECT.

MAINTENANCE OF PLANTINGS

1. MAINTENANCE OF PLANTINGS SHALL LAST FOR A PERIOD OF 24 MONTHS.
2. ALL PLANT MATERIAL SHALL BE WATERED TWICE A MONTH DURING THE 1ST GROWING SEASON. WATERING MAY BE MORE OR LESS FREQUENT DEPENDING ON WEATHER CONDITIONS. DURING SECOND GROWING SEASON, ONCE A MONTH DURING MAY-SEPTEMBER, IF NEEDED.
3. INVASIVE EXOTICS AND NOXIOUS WEEDS WILL BE REMOVED FROM FORESTATION AREAS. OLD FIELD SUCCESSIONAL SPECIES WILL BE RETAINED.
4. PLANTS WILL BE EXAMINED A MINIMUM TWO TIMES DURING THE GROWING SEASON FOR SERIOUS PLANT PESTS AND DISEASES. SERIOUS PROBLEMS WILL BE TREATED WITH THE APPROPRIATE AGENT.
5. DEAD BRANCHES WILL BE PRUNED FROM PLANTINGS.

GUARANTEE REQUIREMENTS

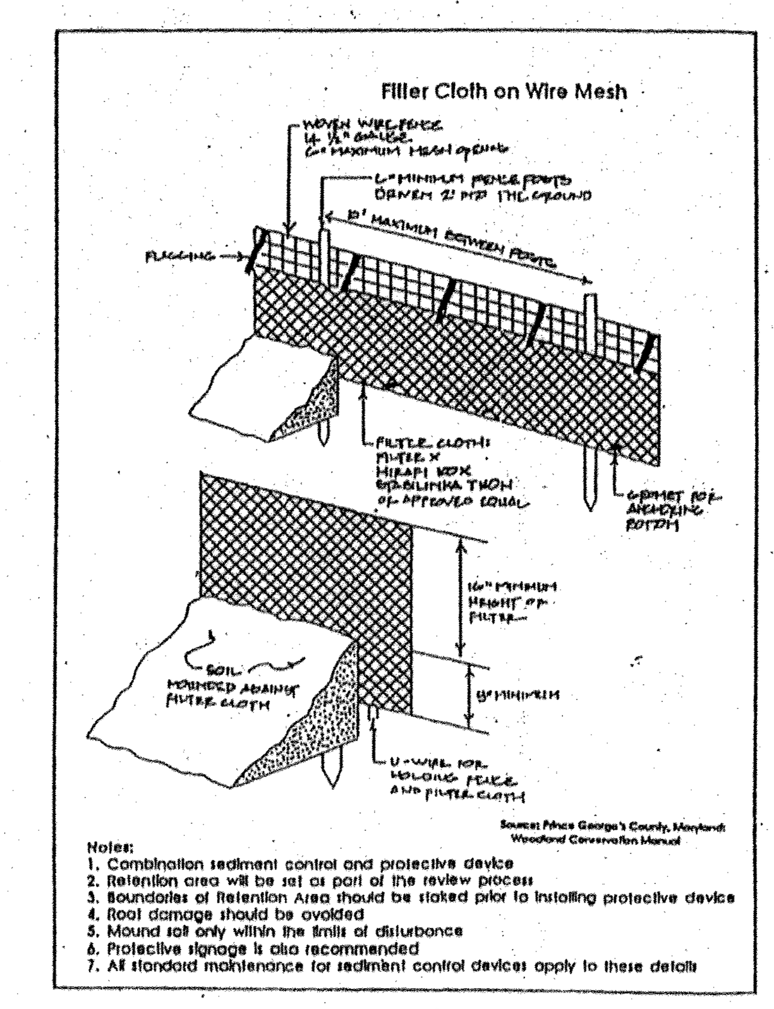
1. A 75 PERCENT SURVIVAL RATE OF FORESTATION PLANTINGS WILL BE REQUIRED AT THE END OF THE 24 MONTH MAINTENANCE PERIOD. ALL PLANT MATERIAL BELOW THE 75 PERCENT THRESHOLD WILL BE REPLACED AT THE BEGINNING OF THE NEXT GROWING SEASON.

SURETY FOR FORESTATION

1. THE DEVELOPER SHALL POST A SURETY (BOND, LETTER OF CREDIT) TO ENSURE THAT FORESTATION PLANTINGS ARE COMPLETED. UPON ACCEPTANCE OF THE PLANTINGS BY THE COUNTY, THE BOND SHALL BE RELEASED.

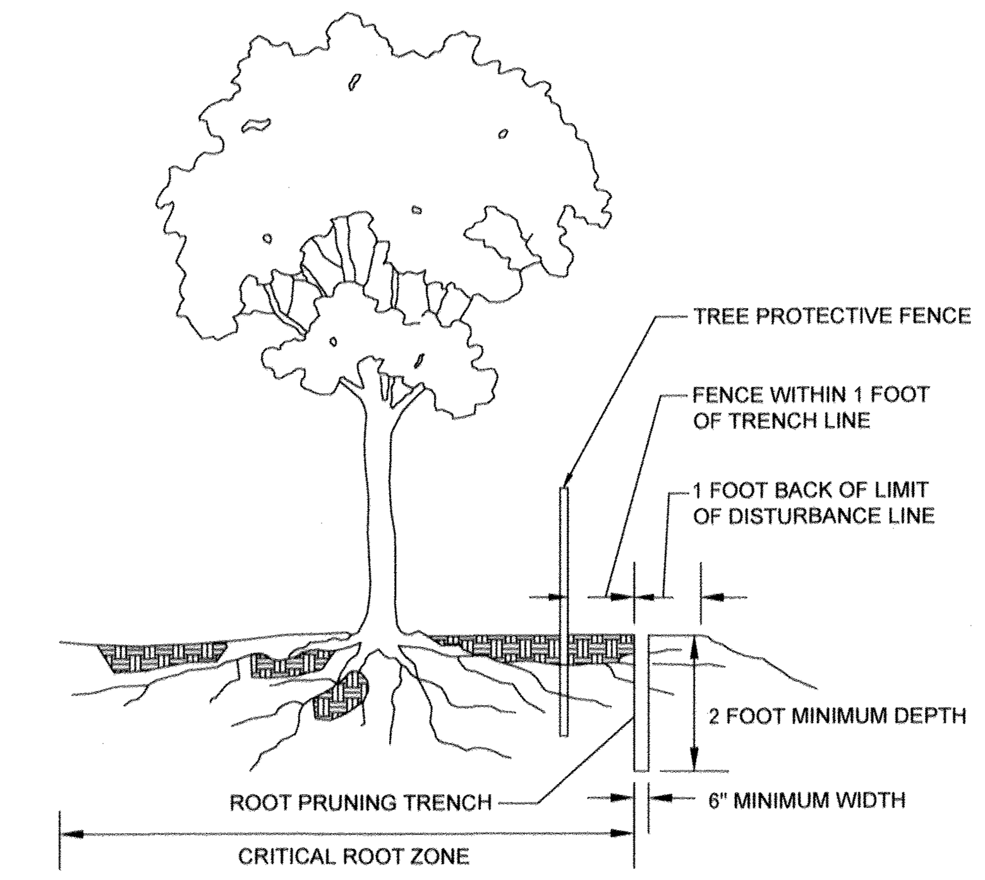
FCP NOTES

1. ANY FOREST CONSERVATION EASEMENT (FCE) AREA SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF HOWARD COUNTY WHICH RESTRICT THE DISTURBANCE AND USE OF THESE AREAS.
2. FORESTED AREAS OCCURRING OUTSIDE OF THE FCE SHALL NOT BE CONSIDERED PART OF THE FCE AND SHALL NOT BE SUBJECT TO PROTECTIVE LAND COVENANTS.
3. LIMITS OF DISTURBANCE SHALL BE RESTRICTED TO AREAS OUTSIDE THE LIMIT OF TEMPORARY FENCING OR THE FCE BOUNDARY, WHICHEVER IS GREATER.
4. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST CONSERVATION EASEMENT, EXCEPT AS PERMITTED BY HOWARD COUNTY DPZ.
5. NO STOCKPILES, PARKING AREAS, EQUIPMENT CLEANING AREAS, ETC. SHALL OCCUR WITHIN AREAS DESIGNATED AS FOREST CONSERVATION EASEMENTS.
6. TEMPORARY FENCING SHALL BE USED TO PROTECT FOREST RESOURCES DURING CONSTRUCTION. FENCING SHALL BE INSTALLED ALONG LIMITS OF DISTURBANCE OCCURRING WITHIN 50 FEET OF THE PROPOSED FCE LIMITS.
7. PERMANENT SIGNAGE WILL BE POSTED A AT 50-100 FOOT INTERVALS ALONG ALL FCE LIMITS.
8. THE FOREST CONSERVATION ACT REQUIREMENTS FOR THIS PROJECT WILL BE MET THROUGH ~~THE RETENTION OF 17.61 ACRES OF NET TRACT AREA FOREST WITHIN THE LIMITS OF A FOREST CONSERVATION EASEMENT AND A REFORESTATION OBLIGATION OF 22.60 ACRES. THE REFORESTATION OBLIGATION WILL BE MET WITH 21.60 ACRES OF ONSITE PLANTING AND 1.0 ACRES OF OFFSITE REFORESTATION OR WITH THE PURCHASE OF CREDIT IN A FOREST CONSERVATION BANK.~~ PAYMENT OF A FEE-IN-LIEU TO HOWARD COUNTY OF 0.40 ACRES FOR $6,552.
9. EXISTING FOREST CALCULATIONS DIFFER BETWEEN THE APPROVED FOREST STAND DELINEATION AND THE FOREST CONSERVATION PLAN. THE DIFFERENCE IS ATTRIBUTED TO A DIFFERENCE IN THE MAPPED FLOODPLAIN LIMITS. THE APPROXIMATE FLOODPLAIN LIMITS ON THE FSD WERE LARGER THAN THE CALCULATED LIMITS AND RESULTED IN A CALCULATION OF LESS NET TRACT AREA FOREST. THE EXISTING FOREST CALCULATION SHOWN IN THE FOREST CONSERVATION WORKSHEET REFLECTS THE REVISED FLOODPLAIN LIMITS AND COMPUTER CALCULATED FOREST AREA.



PROTECTIVE TREE FENCE DETAIL

NOT TO SCALE

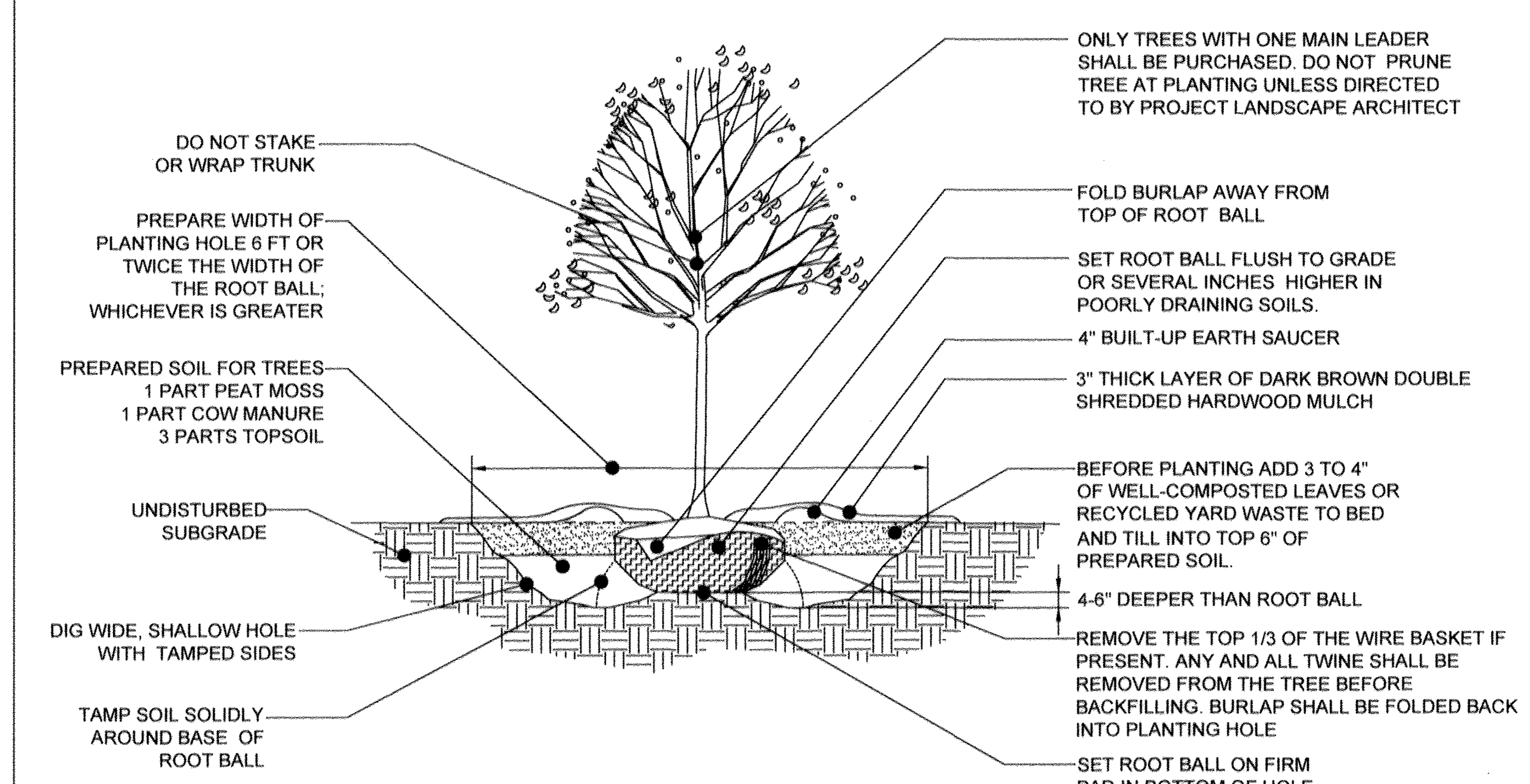


NOTES:

1. RETENTION AREAS WILL BE SET AS PART OF THE REVIEW PROCESS.
2. BOUNDARIES OF RETENTION AREAS SHOULD BE STAKED FLAGGED PRIOR TO TRENCHING.
3. EXACT LOCATION OF TRENCH SHOULD BE IDENTIFIED.
4. TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR OTHER HIGH ORGANIC SOIL.
5. ROOTS SHOULD BE CLEANLY CUT USING VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT.

ROOT PRUNING DETAIL

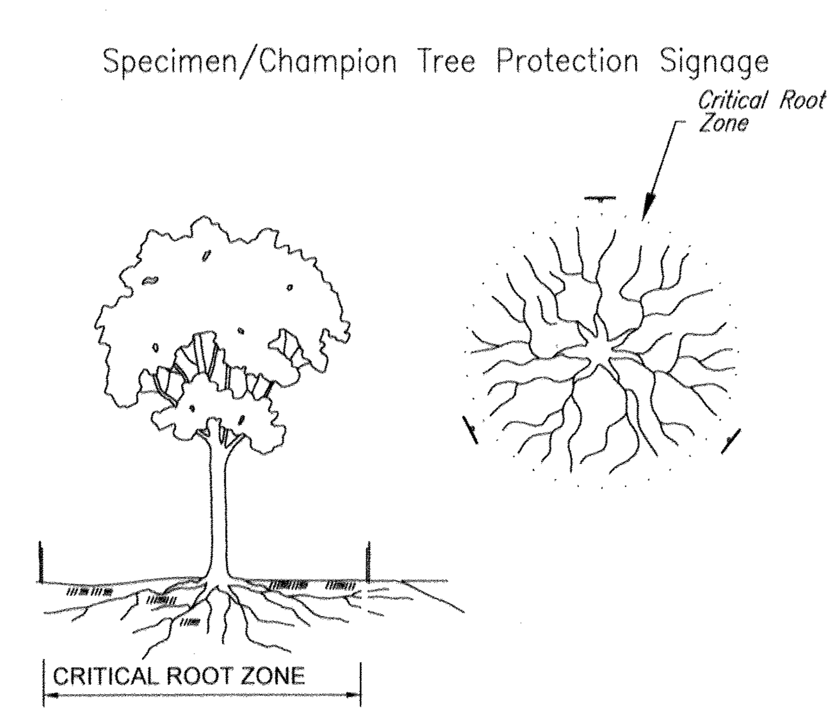
NOT TO SCALE



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

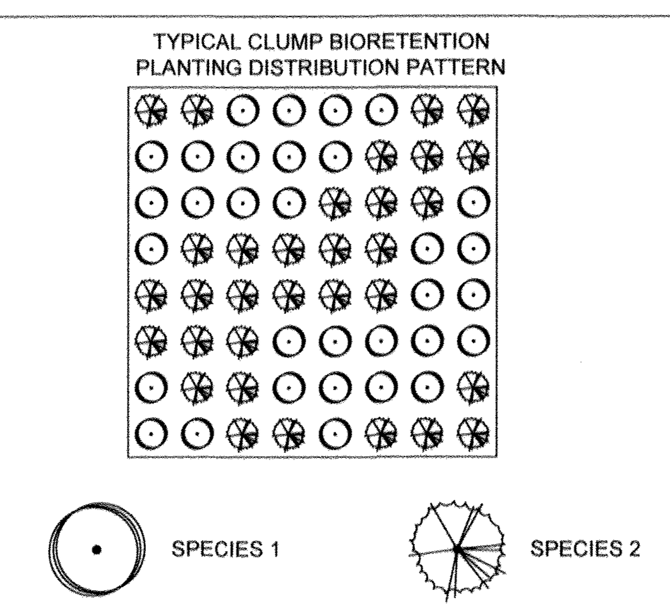
DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE



Notes:

1. *Retention Areas will be set as part of the review process*
2. *Boundaries of Retention Areas/Critical Root Zones should be marked with signage prior to construction.*
3. *Signs should be placed at edge or 1-foot outside the Critical Root Zone.*
4. *Signs should be placed around each specimen tree as indicated on the plan.*



NOTE:
NATURALLY OCCURRING POPULATIONS TEND TO BE FOUND IN INFORMAL GROUPINGS. A CLUSTER OF PLANTS IS REALLY A MOSAIC OF DIFFERENT SPECIES GROUPS. THE OBJECTIVE IS TO SELECT THE APPROPRIATE SPECIES AND DISTRIBUTION PATTERN FOR A CHOSEN SITE THAT MIMIC NATURAL PATTERNS.

PLANTING DISTRIBUTION PATTERN DETAIL

NOT TO SCALE

" NO AS-BUILT INFORMATION IS" PROVIDED THIS SHEET

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443, Expiration Date: 12/21/22

AS-BUILT 3/22/21

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3/6/19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:	DEVELOPER:
STEPHEN A. KLEIN & ASSOCIATES	RIVER HILL SQUARE, LLC.
C/O STEPHEN A. KLEIN, INC.	P.O. BOX 417
12165 CLARKSVILLE PIKE	ELLICOTT CITY, MARYLAND 21041
CLARKSVILLE, MD 21029	(410) 465-4244
(410) 465-4244	

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No.: ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

PROFESSIONAL CERTIFICATION
I, ERIC R. McWILLIAMS, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 3697, EXPIRATION DATE: 9/20/20

BOHLER ENGINEERING™
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	BY

KNOW WHAT'S BELOW
ALWAYS CALL 811
BEFORE YOU DIG
It's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	AS SHOWN
CAD I.D.:	FC2

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT

LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

E.R. McWILLIAMS
REGISTERED LANDSCAPE ARCHITECT

SHEET TITLE:
FOREST CONSERVATION PLAN NOTES AND DETAILS

SHEET NUMBER:
31

F-18-099

AS-BUILT

DRILL HOLES

DRILL HOLES

DRILL HOLES

BORDER REV. DATE: SEPTEMBER 6, 2017

BY: Max

PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE RECONSTRUCTION OF THE TRAFFIC CONTROL SIGNAL AT THE INTERSECTION OF MD 108 (CLARKSVILLE PIKE) AND SHEPPARD LANE IN HOWARD COUNTY. MD 108 (CLARKSVILLE PIKE) IS ASSUMED TO RUN IN AN EAST–WEST DIRECTION.

INTERSECTION OPERATION

THE INTERSECTION WILL OPERATE IN A NEMA SIX–PHASE, FULLY–ACTUATED MODE WITH EXCLUSIVE–PERMISSIVE LEFT TURN PHASES FOR MD 108 (CLARKSVILLE PIKE) AND SIDE STREET SPLIT PHASING. VIDEO DETECTION WILL BE USED.

CONTROLLER REQUIREMENTS

INSTALL EIGHT–PHASE, FULLY–ACTUATED CONTROLLER WITH VIDEO INTERFACE EQUIPMENT, 2–WIRE CENTRAL CONTROL UNIT, CELLULAR MODEM AND ALL OTHER NECESSARY EQUIPMENT IN A BASE MOUNTED 'S' TYPE CABINET.

APS NOTES

TO CROSS RIVER HILL ENTRANCE

A. WHEN PEDESTRIAN LOCATES AND PRESSES PUSHBUTTON FOR AN EXTENDED TIME, THE PUSHBUTTON UNIT WILL ANNOUNCE "WAIT TO CROSS RIVER HILL ENTRANCE AT CLARKSVILLE, WAIT."

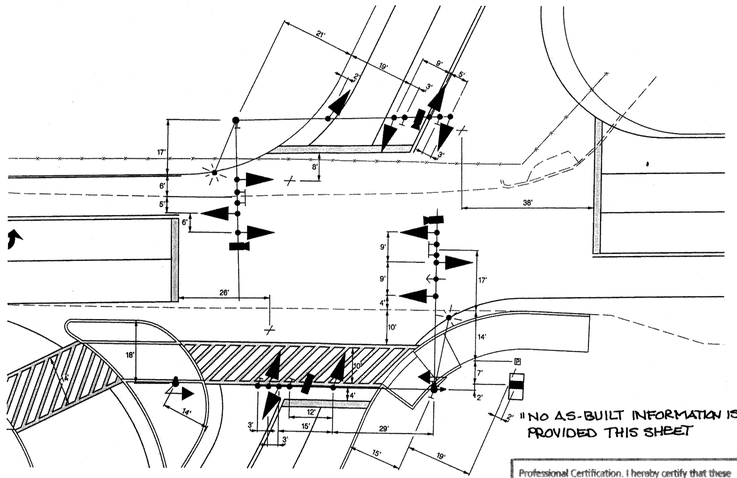
B. WHEN WALK PHASE BEGINS, THE MESSAGE WILL BE A RAPID TICK, WHICH WILL LAST FOR THE DURATION OF THE WALK PHASE

APS PEDESTRIAN SIGNAL NOTES

1. PUSHBUTTONS ARE TO BE LOCATED SO THEY CAN BE ACTIVATED BY A PERSON IN A WHEELCHAIR REACHING LESS THAN 18" FROM A 60" X 60" LEVEL LANDING AREA WITH A CROSS SLOPE OF LESS THAN OR EQUAL TO 2%.
2. THE 10' SEPARATION BETWEEN PUSHBUTTONS IS TO BE MEASURED FROM THE FACE OF THE PUSHBUTTON TO THE FACE OF THE PUSHBUTTON, NOT CENTER TO CENTER OF POLE.
3. PUSHBUTTON ARROWS ARE TO BE PARALLEL TO THE CROSSING FOR WHICH THEY ARE INTENDED.
4. LOCATION OF ACCESSIBLE PEDESTRIAN SIGNAL PUSHBUTTONS MUST MEET LOCATION REQUIREMENTS OF MUTCD SEC. 4E.08 + 4E.10 AND FIG. 4E–3 + 4E–4 AND THE NCHRP PUBLICATION, "ACCESSIBLE PEDESTRIAN SIGNALS: GUIDE TO BEST PRACTICE". IF NOT MET THE CONTRACTOR IS TO STOP WORK ON PUSHBUTTON LOCATION UNTIL A DESIGN WAIVER IS OBTAINED AND APPROVED BY THE DIRECTOR, OFFICE OF TRAFFIC AND SAFETY.
5. ALL APS CENTRAL CONTROL UNITS SHALL BE DELIVERED TO THE SHA SIGNAL SHOP FOR PROGRAMMING AND TESTING PRIOR TO INSTALLATION. CONTACT MR. EDWARD RODENHIZER AT 410–787–7650 TO COORDINATE.

SIGNAL DETAIL

SCALE 1" = 20'



"NO AS-BUILT INFORMATION IS PROVIDED THIS SHEET"

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21403, Expiration Date: 12/21/22

AS-BUILT 3/26/21

TRAFFIC CONCEPTS, INC.
7525 Connelley Drive
Suite B
Hanover, MD 21076
(410) 760–2911
FAX: (410) 760–2915
EMAIL: TRAFFIC@TRAFFIC–CONCEPTS.COM

STATE OF MARYLAND — JAMES KYLE HENKEL — No. 42413 — PROFESSIONAL ENGINEER — 12/10/2018

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 42413, EXPIRATION DATE: 8/8/2020"

PLOTTED: Monday, December 10, 2018 AT 03:46 PM
FILE: M:\2800\2848\Signal\2018-08-09.dgn

CONTACT PERSONS FOR DISTRICT 7 ARE AS FOLLOWS:

MR. PUSKAR KAR
ASSISTANT DISTRICT ENGINEER – TRAFFIC
(301) 624–8140 / 8141

MR. DAN HOUCK
ASSISTANT DISTRICT ENGINEER – MAINTENANCE
(301) 624–8108

MRS. ANDREA BARKO
UTILITY ENGINEER
(301) 624–8115 / 8116

CONTACTS FOR OFFICE OF TRAFFIC AND SAFETY:

MS. VIVIAN BERRA–FIGUEREO
CHIEF, TRAFFIC OPERATIONS
(410) 787–7630

MR. PAUL STOUT
ASSISTANT DIVISION CHIEF
SIGNS, INVENTORY AND SUPPORT
(410) 787–7637

MS. REBECCA LICHTENSTEIN
ASSISTANT DIVISION CHIEF,
TRAFFIC OPERATIONS
(410) 787–7631

MR. MICHAEL BOYLE
SUPPLY OFFICER IV
SIGNAL SHOP WAREHOUSE
(410) 787–7673

MR. ED RODENHIZER
CHIEF, SIGNAL OPERATIONS SECTION
(410) 787–7650

EQUIPMENT LIST "A"

A. EQUIPMENT TO BE FURNISHED BY THE SHA AND INSTALLED BY THE CONTRACTOR

ITEM NO.	QUANTITY	DESCRIPTION
9197	1 EA	CELLULAR MODEM, ANTENNA AND 50 FT. LEAD–IN CABLE

EQUIPMENT LIST "B"

B. EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY CONTRACTOR. ALL EQUIPMENT SHALL HAVE CATALOG CUTS SUBMITTED TO THE OFFICE OF TRAFFIC AND SAFETY FOR APPROVAL PRIOR TO INSTALLATION.

ITEM NO.	QUANTITY	DESCRIPTION
120500	1 LS	MAINTENANCE OF TRAFFIC
203030	6 CY	TEST PIT EXCAVATION
549409	450 LF	12 IN. WHITE THERMOPLASTIC PAVEMENT MARKINGS
549419	145 LF	24 IN. WHITE THERMOPLASTIC PAVEMENT MARKINGS
801004	12 CY	CONCRETE FOR SIGNAL FOUNDATION
801010	3 EA	THIRD PARTY CONCRETE TESTING
801104	75 LF	WOOD SIGN SUPPORTS 4 INCH X 4 INCH
801106	20 LF	WOOD SIGN SUPPORTS 4 INCH X 6 INCH
801605	165 SF	SHEET ALUMINUM SIGNS
		1 EACH – SHIELD ASSEMBLY (30" X 48") – POLE MOUNT
		2 EACH – SHIELD ASSEMBLY (48" X 72") – POLE MOUNT
		2 EACH – D–3(1) (VAR X 16") SINGLE FACE SIGN – MAST ARM MOUNT
		6 EACH – S1–1 (36" X 36") SIGN – GROUND MOUNT
		3 EACH – W16–7P(R) (24" X 12") SIGN – GROUND MOUNT
		3 EACH – W16–7P(L) (24" X 12") SIGN – GROUND MOUNT
		1 EACH – M3–3 (24" X 12") SIGN – GROUND MOUNT
		1 EACH – M1–5(1) (30" X 24") SIGN – GROUND MOUNT
		1 EACH – M6–1 (21" X 15") SIGN – GROUND MOUNT
		1 EACH – R3–6L (30" X 36") SIGN – MAST ARM MOUNT
		1 EACH – R3–6R (30" X 36") SIGN – MAST ARM MOUNT
		1 EACH – R3–5L (30" X 30") SIGN – MAST ARM MOUNT
		1 EACH – R3–5R (30" X 36") SIGN – MAST ARM MOUNT
802501	260 LF	NO.6 AWG STRANDED BARE COPPER GROUND WIRE
805115	130 LF	3 IN. SCHEDULE 80 RIGID PVC CONDUIT – BORED
805118	430 LF	4 IN. SCHEDULE 80 RIGID PVC CONDUIT – BORED
805125	35 LF	2 IN. SCHEDULE 80 RIGID PVC CONDUIT – TRENCHED
805135	55 LF	3 IN. SCHEDULE 80 RIGID PVC CONDUIT – TRENCHED
805140	260 LF	4 IN. SCHEDULE 80 RIGID PVC CONDUIT – TRENCHED
806025	2 EA	LED ROADWAY LUMINAIRE
807202	1 EA	METERED SERVICE PEDESTAL
810019	365 LF	ELECTRICAL CABLE 3 – CONDUCTOR NO.12 AWG COPPER TYPE T / C
810601	2 EA	NONINVASIVE DETECTOR, 500 FOOT LEAD IN CABLE
811000	1 EA	OVERSIZED ELECTRICAL HANDHOLE
811001	8 EA	FURNISH AND INSTALL ELECTRICAL HANDHOLE
815425	1 EA	INSTALL CELLULAR ANTENNA AND LEAD–IN CABLE
816002	4 EA	IP–BASED VIDEO DETECTION CAMERA & ANY LENGTH LEAD–IN CABLE
816201	1 EA	DISCRIMINATOR MODULE, 4 CHANNEL, NO. 764
816215	1 EA	OPTICOM NO. 721 DETECTOR EYE
818004	1 EA	10 FT. BREAKAWAY PEDESTAL POLE
818021	1 EA	27 FT. STEEL POLE WITH TWIN 50 FT. MAST ARMS
818050	1 EA	27 FT. STEEL POLE WITH TWIN 50 FT. / 60 FT. MAST ARMS
832017	20 LF	CABLE – 1 CONDUCTOR, NO. 4 AWG
837001	6 EA	GROUND ROD – 3 / 4 IN. DIAMETER X 10 FT. LENGTH
860284	51 EA	12 IN. LED VEHICULAR TRAFFIC SIGNAL HEAD SECTION
860285	2 EA	16 IN. LED COUNTDOWN PEDESTRIAN SIGNAL
860288	95 LF	FURNISH AND INSTALL 4 CONDUCTOR OPTICOM CABLE
861105	180 LF	ELECTRICAL CABLE – 2 CONDUCTOR (NO.14 AWG)
861107	300 LF	ELECTRICAL CABLE – 5 CONDUCTOR (NO.14 AWG)
861108	1595 LF	ELECTRICAL CABLE – 7 CONDUCTOR (NO.14 AWG)
865210	2 EA	AUDIBLE / TACTILE PEDESTRIAN PUSHBUTTON AND SIGNS
865300	1 EA	2–WIRE CENTRAL CONTROL UNIT
866103	1 EA	15 FT. LIGHTING ARM ON SIGNAL STRUCTURE
866104	1 EA	20 FT. LIGHTING ARM ON SIGNAL STRUCTURE
873002	1 LS	REMOVE AND DISPOSE OF EXISTING SIGNAL EQUIPMENT
800000	1 EA	CONTROLLER CABINET, SIZE "S" WITH CONTROLLER AND VIDEO DETECTOR INTERFACE EQUIPMENT: 1–8 CAMERAS

EQUIPMENT LIST "C"

C. EXISTING EQUIPMENT TO BE REMOVED BY THE CONTRACTOR AND DELIVERED TO THE STATE HIGHWAY ADMINISTRATION, 7491 CONNELLEY DRIVE, HANOVER, MARYLAND 21076. THE CONTRACTOR SHALL NOTIFY THE SHA AT (410) 787–7652 AT LEAST THREE DAYS IN ADVANCE OF DELIVERY.

QUANTITY	DESCRIPTION
NONE	

ALL SIGNAL EQUIPMENT TO BE REMOVED AND NOT RETURNED TO THE SHA SHALL BECOME THE PROPERTY OF THE CONTRACTOR.

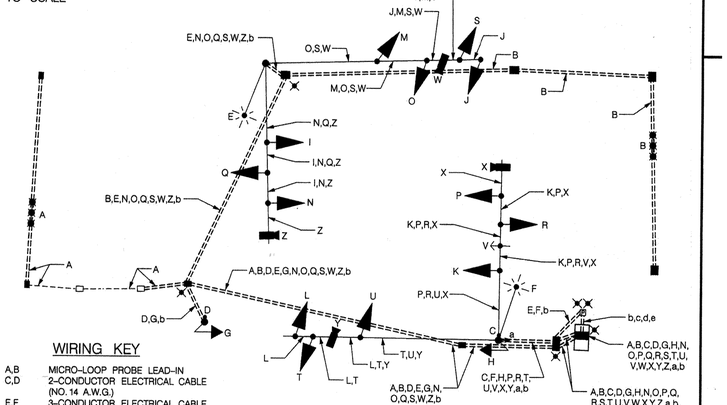
PHASE CHART

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PHASE 1 & 5	R G	R G	R	R G	R G	R	R	R	R	R	R	R	R	DW	DW
1 & 5 CHANGE	PHASE 1 & 5 MAY CHANGE TO PHASE 1 & 6,2 & 5, OR 2 & 6														
PHASE 1 & 6	R G	R G	G	R	R	R	R	R	R	R	R	R	R	DW	DW
1 CHANGE	R Y	R Y	G	R	R	R	R	R	R	R	R	R	R	DW	DW
PHASE 2 & 5	R	R	R	R G	R G	G	R	R	R	R	R	R	R	DW	DW
5 CHANGE	R	R	R	R Y	R Y	G	R	R	R	R	R	R	R	DW	DW
PHASE 2 & 6	G	G	G	G	G	G	R	R	R	R	R	R	R	WK	WK
PED CLEAR	G	G	G	G	G	G	R	R	R	R	R	R	R	FL DW	FL DW
2 & 6 CHANGE	Y	Y	Y	Y	Y	Y	R	R	R	R	R	R	R	DW	DW
PHASE 3	R	R	R	R	R	R	R G	R G	G	R	R	R	R	DW	DW
3 CHANGE	R	R	R	R	R	R	Y	Y	Y	R	R	R	R	DW	DW
PHASE 4	R	R	R	R	R	R	R	R	R	G	G	G	G	DW	DW
4 CHANGE	R	R	R	R	R	R	R	R	R	Y	Y	Y	Y	DW	DW
FLASHING OPERATION	FLY	FLY	FLY	FLY	FLY	FLY	FLR	FLR	FLR	FLR	FLR	FLR	FLR	DARK	DARK

PRE–EMPTION	G	G	G	G	G	G	R	R	R	R	R	R	R	R	R
PRE–EMPTION CHANGE	Y	Y	Y	Y	Y	Y	R	R	R	R	R	R	R	R	R

WIRING DIAGRAM

NOT TO SCALE



WIRING KEY

A,B	MICRO–LOOP PROBE LEAD–IN
C,D	2–CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
E,F	3–CONDUCTOR ELECTRICAL CABLE (NO. 12 A.W.G.) TRAY CABLE
G–M	5–CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
N–U	7–CONDUCTOR ELECTRICAL CABLE (NO. 14 A.W.G.)
V	OPTICOM DETECTOR CABLE
W–Z	VIDEO DETECTION CABLE
a	CELLULAR ANTENNA CABLE
b	STRANDED BARE COPPER GROUND WIRE (NO. 6 A.W.G.)
c–e	1–CONDUCTOR ELECTRICAL CABLE (NO. 4 A.W.G.)
PS	PROPOSED ELECTRIC SERVICE
	GROUND ROD
P	METERED SERVICE PEDESTAL

SHA TRACKING NO. 16APHO014xx

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

OFFICE OF TRAFFIC & SAFETY
TRAFFIC ENGINEERING DESIGN DIVISION

MD 108 (CLARKSVILLE PIKE)
AT SHEPPARD LANE
–
CLARKSVILLE, MARYLAND

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3.6.19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

GENERAL INFORMATION PLAN

SCALE AS SHOWN	DATE 12–10–2018	CONTRACT NO. BW996M82	
DESIGNED BY A. M. ROSEN		COUNTY HOWARD	
DRAWN BY A. M. ROSEN		LOGMILE 13010F04.49	
CHECKED BY J. HENKEL		TIMS NO. 0472	
MDE/PRD –		TOD NO.	
TS NO. 4826A GI	DRAWING SG–02	OF 02	SHEET NO. 32 OF 41

AS-BUILT

F-15-099

DRILL HOLES

DRILL HOLES

DRILL HOLES

BORDER REV. DATE: SEPTEMBER 6, 2017

CRITERIA

THE CONTRACTOR SHALL BE GOVERNED BY THE STANDARDS AND REQUIREMENTS OF THE FOLLOWING PUBLICATIONS, EXCEPT AS MODIFIED BY THE SPECIAL PROVISIONS OF THIS CONTRACT:

DESIGN

MDSHA - "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", 2011 EDITION AND SUBSEQUENT REVISIONS. (MdMUTCD)

A A S H T O - "HIGHWAY SAFETY DESIGN AND OPERATIONS GUIDE" -1997

A A S H T O - "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS LUMINAIRES AND TRAFFIC SIGNALS", 2001 EDITION (CATEGORY II FOR ALL OVERHEAD AND CANTILEVER SIGN STRUCTURES).

MATERIALS AND CONSTRUCTION

MDSHA - "STANDARD SPECIFICATIONS FOR CONSTRUCTION & MATERIALS", 2017 EDITION AND SUBSEQUENT SUPPLEMENTS.

DESIGN WIND

100 MPH - WOOD SUPPORTS
10 YEAR RECURRENCE INTERVAL

100 MPH - GROUND MOUNT SIGN STEEL SUPPORTS
10 YEAR RECURRENCE INTERVAL

100 MPH - OVERHEAD AND CANTILEVER STRUCTURES
50 YEAR RECURRENCE INTERVAL

} ALL DISTRICTS

DESIGN STRESS

SOIL BEARING PRESSURE - S = 3,000 P.S.F. (ASSUMED)
SEE MATERIAL & CONSTRUCTION ABOVE AND SPECIAL PROVISIONS FOR DESIGN STRESSES FOR STRUCTURAL STEEL, ALUMINUM, REINFORCING STEEL AND CONCRETE.

CHAMFER

ALL EXPOSED EDGES OF CONCRETE SHALL HAVE A 3/4" X 3/4" CHAMFER.

CLASSIFICATION OF SIGNS

SIGNS ARE DIVIDED INTO TWO (2) GENERAL CATEGORIES.

1. GUIDE SIGNS
   - A) STRUCTURAL TYPES
     - OH - OVERHEAD
     - C - CANTILEVER
     - GM - GROUND MOUNT, BREAKAWAY OR NON-BREAKWAY
     - BM - BRIDGE MOUNTED
   - B) PANELS
     - MATERIAL - EXTRUDED ALUMINUM
     - COPY - DIRECT APPLIED
       - I) HIGH INTENSITY (NEW SIGNS AND REVISIONS TO EXISTING SIGNS)
2. STANDARD SIGNS (REGULATORY, WARNING, ETC.)
   - A) STRUCTURAL TYPES
     - WOOD SUPPORTS
     - SQUARE TUBE
   - B) PANELS
     - MATERIAL - SHEET ALUMINUM
     - COPY - DIRECT APPLIED

IDENTIFICATION OF SIGNS AND PANELS

GUIDE SIGNS

EACH GUIDE SIGN IS IDENTIFIED BY A SIGN NUMBER ON THE PLANS AND IN THE TABULATIONS. (GM-1, GM-2, GM-3, etc)
SIGNS ON STRUCTURES ARE IDENTIFIED WITH A NUMBER AND WHERE VARIATIONS OCCUR, A LOWER CASE LETTER. (OH-1a, OH-1b, OH-1c)

STANDARD SIGNS

STANDARD SIGNS ARE IDENTIFIED BY PANEL NUMBERS AND ARE CLASSIFIED AS FOLLOWS
- R - REGULATORY
- W - WARNING
- M - ROUTE MARKERS AND ACCESSORIES
- D - DESTINATION AND MILEAGE PANELS
- S - SCHOOL

PANELS SHALL BE DESIGNATED TO AGREE WITH MARYLAND STANDARD SIGN BOOK. EACH STANDARD SIGN IS IDENTIFIED FIRST BY THE SHEET NUMBER, THEN BY THE NUMERICAL ORDER OF THE SIGN AS IT APPEARS ON THE PLAN.
FOR EXAMPLE SHEET SN 2.1-101,102,103, ETC. SHEET SN 2.2-201,202,203,ETC.

PANEL LAYOUT AND ALPHABETS

1. GUIDE SIGN PANEL LAYOUTS ARE BASED ON THE A.A.S.H.T.O. MANUALS NOTED ABOVE.
2. STANDARD SIGN PANEL LAYOUTS ARE BASED ON THE MdMUTCD WITH SPECIFICATIONS DETAILED IN THE MARYLAND STATE HIGHWAY ADMINISTRATION PUBLICATION, "STANDARD SIGN BOOK", AVAILABLE ONLINE @ https:/www.marylandroads.com/businesswithsha/bIzStdsSpecs/desManualStdPub/publicationsonline/oots/Internet_signbook.asp

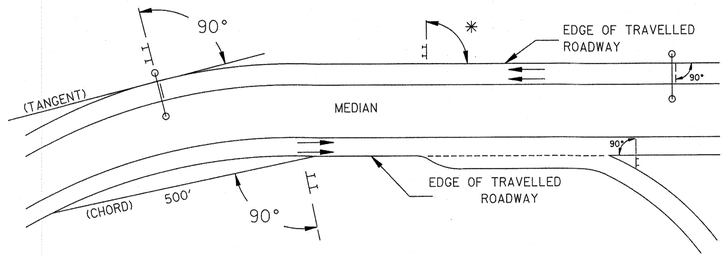
REFLECTORIZATION

BACKGROUNDS, BORDERS, TEXTS AND ALL OTHER ELEMENTS OF SIGN PANELS SHALL BE REFLECTORIZED EXCEPT WHERE NOTED. REFER TO PROJECT REQUIREMENTS FOR MORE DETAIL.

TRAFFIC CONCEPTS, INC.
7525 Connelley Drive
Suite B
Hanover, MD 21076
(410) 760-2911
FAX: (410) 760-2915
EMAIL: TRAFFIC@TRAFFIC-CONCEPTS.COM

BY: Max

ORIENTATION OF SIGN FACES



* UNDER 30 FEET FROM TRAVELLED ROADWAY TO NEAR EDGE OF SIGN - 93° AWAY FROM THE ROAD TO AVOID SPECULAR REFLECTION AS INDICATED IN 813.03 OF THE MARYLAND STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS.

OVER 30 FEET FROM TRAVELLED ROADWAY TO NEAR EDGE OF SIGN - 90°

SIGN LOCATIONS

1. GUIDE SIGNS ARE LOCATED ON THE PLANS BY DIMENSION TO SURVEY STATIONS, OR WHEN NECESSARY, TO IDENTIFIABLE PHYSICAL FEATURES.
2. ALL CHANGES IN THE LOCATIONS OF SIGNS AS SHOWN ON THE PLAN SHALL HAVE THE PRIOR APPROVAL OF THE ENGINEER.

EXISTING UTILITIES

THE ENGINEER DOES NOT WARRANT OR GUARANTEE THE ACCURACY OR COMPLETENESS OF UTILITY INFORMATION SHOWN ON THE PLAN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE AND PROTECT ALL EXISTING FACILITIES WHICH MIGHT BE AFFECTED BY THIS WORK OR HIS OPERATION.

ROADSIDE SIGNS

1. VERTICAL ALIGNMENT
   POSITION PANEL SO FACE IS PLUMB.
2. HORIZONTAL ALIGNMENT (SEE DIAGRAM ABOVE)
   - A) ON STRAIGHT ROADWAY SECTIONS, ANGLE OF SIGN FACE TO ROADWAY VARIES WITH DISTANCE FROM TRAVELLED ROADWAY TO NEAR EDGE OF SIGN - SEE DIAGRAM.
   - B) ON THE INSIDE OF HORIZONTAL CURVES, POSITION SIGN SO FACE OF PANEL MAKES AN ANGLE OF 90° WITH A CHORD BETWEEN A POINT ON NEAR EDGE OF PAVEMENT AT SIGN LOCATION AND A POINT ON EDGE OF PAVEMENT 500' IN ADVANCE OF SIGN.
   - C) ON THE OUTSIDE OF HORIZONTAL CURVES, POSITION SIGN SO FACE OF PANEL IS AT RIGHT ANGLES TO THE TANGENT OF THE CURVE AT THE SIGN LOCATION.
   - D) POSITIONING OF SIGNS AT GORES AND RAMP SEPARATIONS IS REFERRED TO THE NORMAL EDGE OF THE MAINLINE ROADWAY.

OVERHEAD SIGNS

1. VERTICAL ALIGNMENT
   POSITION PANELS FOR ALL OVERHEAD STRUCTURES SO THAT PANEL FACE IS PLUMB.
2. OVERHEAD SIGN STRUCTURES SHALL NOT BE ERECTED WITHOUT ATTACHING LUMINAIRES, SUPPORTS, AND/OR SIGNS.
3. HORIZONTAL ALIGNMENT
   - A) POSITION ALL OVERHEAD SIGNS SO THAT THE FACE OF THE PANEL IS AT RIGHT ANGLES TO THE NORMAL EDGE OF ROADWAY, IF ON A STRAIGHT ROADWAY SECTION.
   - B) POSITION ALL OVERHEAD SIGNS SO THAT THE FACE OF THE PANEL IS AT RIGHT ANGLES TO THE TANGENT OF THE CURVE AT SIGN LOCATION, IF ON A HORIZONTAL CURVE.
   - C) POSITIONING OF SIGNS AT GORES AND RAMP SEPARATIONS IS REFERRED TO THE NORMAL EDGE OF THE MAINLINE ROADWAY.
4. VERTICAL CLEARANCE
   - A) OVERHEAD SIGNS SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 17'-9" FROM ROADWAY TO THE BOTTOM OF LIGHT FIXTURES. ALL LIGHT FIXTURES ARE TO BE AT THE SAME ELEVATION.
   - B) IF THE CONTRACTOR CANNOT OBTAIN 17'-9" (SEE 3A) CLEARANCE, HE IS TO CEASE WORK AND CONTACT THE PROJECT ENGINEER FOR FURTHER INSTRUCTIONS. THE PROJECT ENGINEER MAY CONTACT THE TRAFFIC ENGINEERING DESIGN DIVISION FOR ASSISTANCE.
   - C) ON ALL OVERHEAD SIGNS, THE MINIMUM CLEARANCE TO BOTTOM OF SIGN: 20'-9".

PROJECT REQUIREMENTS

ALL NEW SIGNS ON THIS PROJECT SHALL BE FABRICATED FROM SHEETING WHICH MEETS ALL OF THE FOLLOWING REQUIREMENTS, UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS, OR AS DIRECTED BY THE ENGINEER:

1. SHEETING SHALL MEET THE REQUIREMENTS OF SECTIONS 813 AND 950.03 OF MDSHA'S STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS (2017) AND SUBSEQUENT REVISIONS
2. LISTED ON MDSHA OFFICE OF TRAFFIC AND SAFETY'S QUALIFIED PRODUCTS LIST (QPL)

PROJECT REQUIREMENTS CONT'D

3. THE FOLLOWING TYPES OF SHEETING SHALL BE USED FOR THE SPECIFIED SIGN CLASSIFICATIONS

A) GUIDE, EXIT GORE, AND GENERAL INFORMATION SIGNS- RETROREFLECTIVE SHEETING FOR GUIDE SIGNS, EXIT GORE, AND GENERAL INFORMATION (INCLUDES WHITE ON GREEN, WHITE ON BLUE, WHITE ON BROWN AND THE REVERSE OF THESE COLORS) SHALL MEET OR EXCEED THE REQUIREMENTS FOR ASTM TYPE IX LEGEND ON ASTM TYPE IX BACKGROUND. REGULATORY AND WARNING MESSAGES WITHIN GUIDE SIGNS SHALL BE NON-REFLECTIVE BLACK LEGEND ON BACKGROUND SHEETING WHICH MEETS OR EXCEEDS THE REQUIREMENTS FOR ASTM TYPE IX SHEETING.

B) WARNING SIGNS - RETROREFLECTIVE SHEETING FOR BLACK ON FLUORESCENT YELLOW WARNING SIGNS SHALL BE NON-REFLECTIVE BLACK LEGEND ON BACKGROUND SHEETING WHICH MEETS OR EXCEEDS THE REQUIREMENTS FOR ASTM TYPE IX SHEETING. REGULATORY MESSAGES WITHIN WARNING SIGNS SHALL FOLLOW THE GUIDELINES FOR REGULATORY SIGNS.

C) SCHOOL SIGNS - RETROREFLECTIVE SHEETING FOR SCHOOL SIGNS (BLACK ON FLUORESCENT YELLOW AND BLACK ON FLUORESCENT YELLOW GREEN) SHALL BE NON-REFLECTIVE BLACK LEGEND ON BACKGROUND SHEETING WHICH MEETS OR EXCEEDS THE REQUIREMENTS FOR ASTM TYPE IX SHEETING. REGULATORY MESSAGES WITHIN SCHOOL SIGNS SHALL FOLLOW THE REQUIREMENTS FOR REGULATORY SIGNS.

D) REGULATORY SIGNS - FALL INTO THREE SUBCATEGORIES:

I. "RED" REGULATORY SIGNS (STOP, YIELD, DO NOT ENTER AND WRONG WAY) RETROREFLECTIVE SHEETING FOR THESE SIGNS AND THEIR SUPPLEMENTAL PANELS (INCLUDES WHITE ON RED AND RED ON WHITE) SHALL MEET OR EXCEED THE REQUIREMENTS FOR ASTM TYPE IX SHEETING.

II. ALL R7 AND R8 SERIES PARKING RELATED SIGNS AND THEIR SUPPLEMENTAL PANELS, NO TRESPASSING SIGNS, AND SIGNS DIRECTED AT PEDESTRIANS AND BICYCLISTS ONLY (INCLUDES RED ON WHITE, GREEN ON WHITE, BLUE ON WHITE, BLACK ON WHITE AND THE REVERSE OF THESE COLORS) SHALL BE ASTM TYPE I LEGEND ON ASTM TYPE I BACKGROUND.

III. ALL OTHER REGULATORY SIGNS - RETROREFLECTIVE SHEETING FOR THESE SIGNS AND THEIR SUPPLEMENTAL PANELS (INCLUDES BLACK ON WHITE) SHALL BE NON-REFLECTIVE BLACK LEGEND ON ASTM TYPE IV BACKGROUND. WHERE RED IS SPECIFIED, OR WHERE THE COLOR OF THE SIGN IS WHITE ON BLACK, THE LEGEND SHALL BE ASTM TYPE IV RETROREFLECTIVE SHEETING ON NON-REFLECTIVE BLACK BACKGROUND. WARNING MESSAGES WITHIN REGULATORY SIGNS SHALL FOLLOW THE GUIDELINES FOR WARNING SIGNS.

E) ROUTE MARKERS - RETROREFLECTIVE SHEETING FOR ROUTE MARKERS (INCLUDES BLACK ON WHITE , GREEN ON WHITE, WHITE ON GREEN, WHITE ON RED/BLUE) SHALL MEET THE REQUIREMENTS OF GUIDE SIGNS ABOVE WHEN SPECIFIED AS THE LEGEND OF A GUIDE SIGN. RETROREFLECTIVE SHEETING FOR ALL INDEPENDENT ROUTE MARKERS AND THEIR AUXILIARY PANELS SHALL BE ASTM TYPE IV AND/OR NON-REFLECTIVE BLACK LEGEND ON ASTM TYPE IV BACKGROUND.

F) LOGOS AND/OR GRAPHICS - WITHIN SIGNS SHALL FOLLOW THE GUIDELINES FOR THE RESPECTIVE SIGN CLASSIFICATION UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS, OR AS DIRECTED BY THE ENGINEER.

G) CIVIL DEFENSE SIGNS AND OTHER SIGNS - NOT SPECIFICALLY FALLING INTO ONE OF THE CATEGORIES ABOVE, SHALL FOLLOW THE GUIDELINES FOR THE SIGN CLASSIFICATION THAT MOST CLOSELY MATCHES THE COLOR(S) OF THE PROPOSED SIGN.

4. THE FOLLOWING MINIMUM THICKNESS SHALL BE USED FOR THE APPROPRIATE WIDTH OF SHEET ALUMINUM BLANKS.

LONGEST DIMENSION	MINIMUM THICKNESS
UP TO 12"	0.040"
GREATER THAN 12" TO 24"	0.063"
GREATER THAN 24" TO 36"	0.080"
GREATER THAN 36" TO 48"	0.100"
OVER 48"	0.125"

"NO AS-BUILT INFORMATION IS PROVIDED THIS SHEET"

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12/9/22

STATE OF MARYLAND · DONALD ALAN MASON · No. 21443 · PROFESSIONAL ENGINEER

AS-BUILT 3/2/21

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/5/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2-21-19

STATE OF MARYLAND · JAMES KYLE SHROUD · No. 42419 · PROFESSIONAL ENGINEER — 12/10/2018

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 42419, EXPIRATION DATE: 6/8/2020"

APPROVALS

TEAM LEADER — 12/12/18
ASST. DIV. CHIEF — 12-12-18
DIVISION CHIEF — 12-17-18
OFFICE DIRECTOR — 12/19/18

PLOTTED: Monday, December 10, 2018 AT 03:47 PM
FILE: M:\2800\2848\Signal\2018-08-09.dgn

SHA TRACKING NO. 16APHO014xx

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

OFFICE OF TRAFFIC & SAFETY
TRAFFIC ENGINEERING DESIGN DIVISION

MD 108 (CLARKSVILLE PIKE)
AT SHEPPARD LANE
–
CLARKSVILLE, MARYLAND

GENERAL NOTES AND PROPOSALS

SCALE	NONE	DATE	12-10-2018
CONTRACT NO.	BW996M82		
DESIGNED BY	A. M. ROSEN	COUNTY	HOWARD
DRAWN BY	A. M. ROSEN	LOGMILE	13010804.49
CHECKED BY	J. HENKEL	TIMS NO.	0472
MDE/PRD	N / A	TOD NO.	
DRAWING NO.	SN - 1	SHEET NO.	33 OF 41

AS-BUILT

F-18-099

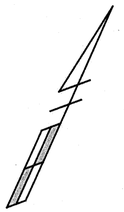
DRILL HOLES

DRILL HOLES

DRILL HOLES

BORDER REV. DATE: SEPTEMBER 6, 2017

BY: Max



MD 108 (CLARKSVILLE PIKE)
IS ASSUMED TO RUN IN AN
EAST–WEST DIRECTION

CONSTRUCTION DETAILS

A. INSTALL 5 IN. SOLID WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE
B. INSTALL 5 IN. SOLID YELLOW PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE
C. INSTALL 5 IN. DOTTED WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE (3 FT. LINE – 9 FT. GAP)
D. INSTALL 10 IN. SOLID WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE
E. 12 IN. SOLID WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE WITH DIAGONAL HATCHING (45 DEGREES AT 24 IN. SPACING) – SEE TRAFFIC SIGNAL PLAN
F. 24 IN. SOLID WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE – SEE TRAFFIC SIGNAL PLAN
G. INSTALL WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING ARROW

WESTBOUND MD 108	
RIGHT–TURN LANE PAVEMENT MARKING LOCATION TABLE	
TRAFFIC CONTROL DEVICE	DISTANCE FROM STOPBAR
END SOLID – BEGIN 3'–9' SKIP LINE	100'
ARROW	100'
ARROW	196'
END 3'–9' SKIP LINE – BEGIN TAPER	200'
END TAPER	300'

WESTBOUND MD 108	
LEFT–TURN LANE PAVEMENT MARKING LOCATION TABLE	
TRAFFIC CONTROL DEVICE	DISTANCE FROM STOPBAR
ARROW	50'
END SOLID – BEGIN 3'–9' SKIP LINE	186'
ARROW	211'
ARROW	368'
END 3'–9' SKIP LINE – BEGIN TAPER	372'
END TAPER	472'

EASTBOUND MD 108	
DECEL LANE PAVEMENT MARKING LOCATION TABLE	
TRAFFIC CONTROL DEVICE	DISTANCE FROM GORE
END SOLID – BEGIN 3'–9' SKIP LINE	82'
END 3'–9' SKIP LINE	164'

GENERAL NOTES

1. CONTACT THE ASSISTANT DISTRICT ENGINEER–TRAFFIC, PRIOR TO FINAL PAVEMENT MARKING INSTALLATION.
2. NEW PAVEMENT MARKINGS SHALL TRANSITION TO TIE INTO EXISTING MARKINGS AS DIRECTED BY THE ENGINEER.
3. ALL WOOD SUPPORTS LARGER THAN 4" X 4" SHALL BE DRILLED IN ACCORDANCE WITH MDSHA STD. NO. 812.01.
4. ALL EXISTING SIGNING WITHIN THE PROJECT LIMITS ARE TO REMAIN UNLESS OTHERWISE NOTED.
5. FOR ADDITIONAL SIGNING AND PAVEMENT MARKING SEE TRAFFIC SIGNAL PLAN (TS NO. 4826A)
6. ALL DIMENSIONS ARE MEASURED TO FACE OF CURB (WHERE APPLICABLE).

"NO AS-BUILT INFORMATION IS" PROVIDED THIS SHEET

SIGNING LEGEND

- EXISTING SIGN
- EXISTING SIGN (TO BE REMOVED)
- PROPOSED SIGN
- EXISTING SIGN (TO BE RELOCATED)

TRAFFIC CONCEPTS, INC.
7525 Connelley Drive
Suite B
Hanover, MD 21076
(410) 760–2911
FAX: (410) 760–2915
EMAIL: TRAFFIC@TRAFFIC–CONCEPTS.COM

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2-21-19

STATE OF MARYLAND · JAMES KYLE SCHMID · No. 42413 · PROFESSIONAL ENGINEER — 12/10/2018

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 42413, EXPIRATION DATE: 9.28.2020."

REVISIONS

STATE OF MARYLAND · DONALD ALAN MASON · No. 21443 · PROFESSIONAL ENGINEER
AS-BUILT 3/24/21

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12-21-22

SHA TRACKING NO. 16APHO014xx

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION — STATE HIGHWAY ADMINISTRATION

OFFICE OF TRAFFIC & SAFETY
TRAFFIC ENGINEERING DESIGN DIVISION

MD 108 (CLARKSVILLE PIKE)
AT SHEPPARD LANE
–
CLARKSVILLE, MARYLAND

SIGNING AND PAVEMENT MARKING PLAN

SCALE 1" = 40' DATE 12–10–2018 CONTRACT NO. BW996M82

DESIGNED BY	A. M. ROSEN	COUNTY	HOWARD
DRAWN BY	A. M. ROSEN	LOGMILE	13010804.49
CHECKED BY	J. HENKEL	TIMS NO.	0472
MDE/PRD	N / A	TOD NO.	

DRAWING NO. SN–2.1 — SHEET NO. 34 OF 41

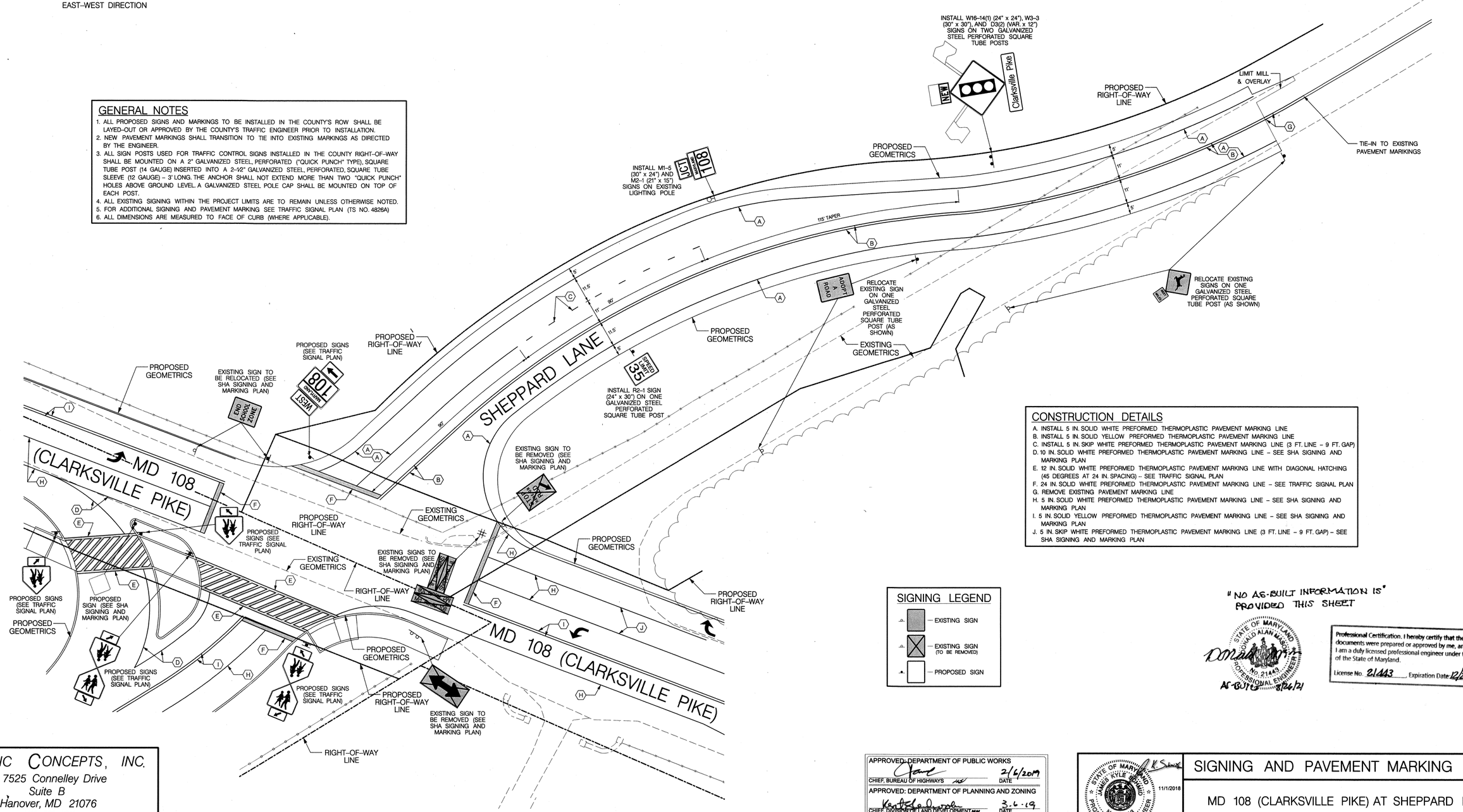
AS-BUILT F-18-099

PLOTTED: Monday, December 10, 2018 AT 03:47 PM
FILE: M:\2800\2848\Signal\2018–08–09.dgn

MD 108 (CLARKSVILLE PIKE)
IS ASSUMED TO RUN IN AN
EAST–WEST DIRECTION

GENERAL NOTES

1. ALL PROPOSED SIGNS AND MARKINGS TO BE INSTALLED IN THE COUNTY'S ROW SHALL BE LAYED–OUT OR APPROVED BY THE COUNTY'S TRAFFIC ENGINEER PRIOR TO INSTALLATION.
2. NEW PAVEMENT MARKINGS SHALL TRANSITION TO TIE INTO EXISTING MARKINGS AS DIRECTED BY THE ENGINEER.
3. ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT–OF–WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED ("QUICK PUNCH" TYPE), SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2–1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) – 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
4. ALL EXISTING SIGNING WITHIN THE PROJECT LIMITS ARE TO REMAIN UNLESS OTHERWISE NOTED.
5. FOR ADDITIONAL SIGNING AND PAVEMENT MARKING SEE TRAFFIC SIGNAL PLAN (TS NO. 4826A)
6. ALL DIMENSIONS ARE MEASURED TO FACE OF CURB (WHERE APPLICABLE).



CONSTRUCTION DETAILS

A. INSTALL 5 IN. SOLID WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE
B. INSTALL 5 IN. SOLID YELLOW PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE
C. INSTALL 5 IN. SKIP WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE (3 FT. LINE – 9 FT. GAP)
D. 10 IN. SOLID WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE – SEE SHA SIGNING AND MARKING PLAN
E. 12 IN. SOLID WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE WITH DIAGONAL HATCHING (45 DEGREES AT 24 IN. SPACING) – SEE TRAFFIC SIGNAL PLAN
F. 24 IN. SOLID WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE – SEE TRAFFIC SIGNAL PLAN
G. REMOVE EXISTING PAVEMENT MARKING LINE
H. 5 IN. SOLID WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE – SEE SHA SIGNING AND MARKING PLAN
I. 5 IN. SOLID YELLOW PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE – SEE SHA SIGNING AND MARKING PLAN
J. 5 IN. SKIP WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE (3 FT. LINE – 9 FT. GAP) – SEE SHA SIGNING AND MARKING PLAN

SIGNING LEGEND

- EXISTING SIGN
- EXISTING SIGN (TO BE REMOVED)
- PROPOSED SIGN

"NO AS-BUILT INFORMATION IS" PROVIDED THIS SHEET

STATE OF MARYLAND · DONALD ALAN MASON · No. 21443 · PROFESSIONAL ENGINEER

AS-BUILT 8/26/24

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date 12/31/22.

TRAFFIC CONCEPTS, INC.
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EMAIL: TRAFFIC@TRAFFIC–CONCEPTS.COM

M:\2800\2848\Signal\2018–08–09.dgn
Thursday, November 01, 2018 AT 03:11 PM

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT NN — DATE 3.6.19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

STATE OF MARYLAND · JAMES KYLE HENKEL · No. 42413 · PROFESSIONAL ENGINEER — 11/1/2018

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 42413, EXPIRATION DATE 6/8/2020."

SIGNING AND PAVEMENT MARKING PLAN

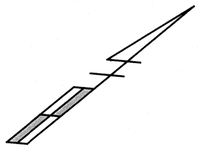
MD 108 (CLARKSVILLE PIKE) AT SHEPPARD LANE

HOWARD COUNTY

DRAWN BY: A. M. ROSEN	DESIGNED BY: A. M. ROSEN	CHECKED BY: J. HENKEL
DATE: 11–01–2018	SHEET NO: 38 OF 41	SCALE: 1" = 20'

AS-BUILT

F-18-099



MAINTENANCE OF TRAFFIC NOTES

1. DURING WORK HOURS, WHEN CONSTRUCTION IS TAKING PLACE, MAINTAIN TRAFFIC IN ACCORDANCE WITH THE FOLLOWING MSHA TRAFFIC CONTROL TYPICALS:

2 LANE /2 WAY ROADWAY
(GREATER THAN 40 MPH)

GENERAL	MD 104.00-A TO MD 104.01-81	WORK IN CENTER OF ROAD	MD 104.02-05
SHOULDER WORK	MD 104.02-01	FLAGGING OPERATION	MD 104.02-09
LANE SHIFT RIGHT OR LEFT SIDE	MD 104.02-03	INTERSECTION FLAGGING OPERATION	MD 104.02-13

THE LATEST TYPICALS CAN BE FOUND AT THE MSHA WEBSITE
– WWW.MARYLANDROADS.COM
– BUSINESS CENTER
– BUSINESS STANDARDS AND SPECIFICATIONS
– BOOK OF STANDARDS & INCIDENTAL STRUCTURES
– CATEGORY 1 PRELIMINARY

2. SEE SHA ACCESS PERMIT FOR WORKING HOURS, LANE CLOSURE RESTRICTIONS / NOTIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING A LANE CLOSURE APPLICATION TO THE DISTRICT OFFICE.
3. ALL SIGNING, CHANNELIZING DEVICES AND OTHER TRAFFIC CONTROL DEVICES SHALL BE IN CONFORMANCE WITH "THE MARYLAND MANUAL ON TRAFFIC CONTROL DEVICES" (MDMUTCD) 2011 EDITION.
4. EXCAVATION ALONG THE ROAD EDGE NOT PROTECTED BY TEMPORARY TRAFFIC BARRIERS, SHALL BE IN ACCORDANCE WITH THE MSHA "STANDARDS FOR HIGHWAYS AND INCIDENTIAL STRUCTURES", STANDARD NO. 104.01-28 – STAGED ROADWAY CONSTRUCTION AND STANDARD NOS. 104.06-13 TO MD 104.06-19 – PAVEMENT EDGE DROP OFF. IF CORRECT DROP OFF SLOPES CAN'T BE MAINTAINED TEMPORARY TRAFFIC BARRIERS SHALL BE SET UP.
5. TRAVEL LANES SHALL BE A MINIMUM OF TEN FEET IN WIDTH.
6. ALL OPEN TRENCHES SHALL BE CLOSED AT THE END OF THE DAY. IF STEEL PLATES ARE TO BE USED, APPROPRIATE ANCHORING AND SIGNING WILL BE REQUIRED.
7. ALL SIGNS THAT DO NOT APPLY SHALL BE COMPLETELY COVERED, REMOVED OR RELOCATED AS DIRECTED BY THE ENGINEER.
8. ACCESS SHALL BE PROVIDED TO ALL EXISTING DRIVEWAYS AT ALL TIMES.
9. ALL CONSTRUCTION SIGNING SHALL BE IN ACCORDANCE WITH THE TYPICAL SIGN PLACEMENT SHOWN ON THE TYPICALS AND SHALL NOT OBSTRUCT EXISTING TRAFFIC CONTROL DEVICES.
10. WHEN WORK NECESSITATES ONLY ONE LANE TO BE OPEN, FLAGGERS AND THE APPROPRIATE SIGNING SHALL BE INSTALLED. THE ROADWAY SHOULD BE REOPENED TO TWO LANES AT THE END OF EACH WORKDAY.
11. ANY FLAGGING OR CONSTRUCTION OPERATION THAT WILL AFFECT A SIGNALIZED INTERSECTION SHALL BE COORDINATED WITH POLICE.
12. THE CONTRACTOR SHALL NOT MAKE ANY MODIFICATION TO THE SIGNAL OPERATION WITHOUT PRIOR APPROVAL OF THE SHA, DISTRICT TRAFFIC ENGINEER AND THE SHA SIGNAL SHOP. IF FLAGGING OF THE INTERSECTION IS NECESSARY THE TRAFFIC SIGNAL SHOULD BE PLACED ON FLASH AND AN OFFICER SHOULD BE PRESENT TO DIRECT TRAFFIC.
13. TEMPORARY PAVEMENT MARKINGS ON FINAL PAVEMENT SURFACE SHALL BE REMOVABLE TAPE AND NOT PAINT.
14. BEFORE THE INTERSECTION IS OPEN TO TRAFFIC A PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) MUST BE PLACED IN BOTH DIRECTIONS OF MD 108 FOR AT LEAST ONE WEEK PRIOR TO THE OPENING TO ALERT MOTORISTS AND IT SHOULD STAY IN PLACE FOR AT LEAST ONE WEEK AFTER OPENING. THE CONTRACTOR SHOULD CONTACT THE ADE-T FOR THE MESSAGES TO THE DISPLAYED.
15. THE CONTRACTOR SHALL NOT STORE EQUIPMENT OR MATERIALS WITHIN 30 FEET OF THE TRAVEL LANE DURING NON-WORKING HOURS.
16. THE CONTRACTOR SHALL COORDINATE WITH THE MDOT SHA SIGNAL SHOP FOR NECESSARY ADJUSTMENTS TO THE SIGNAL VIDEO DETECTION PRIOR TO MODIFYING PAVEMENT MARKINGS IN EACH MOT PHASE.

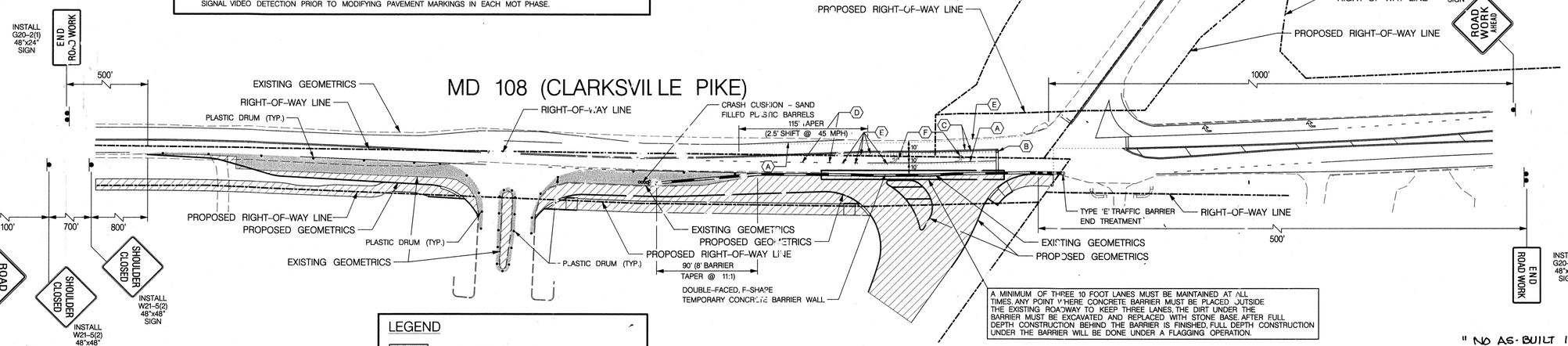
PHASE 1

SEQUENCE OF CONSTRUCTION – PHASE 1

1. REMOVE EXISTING MARKINGS AND INSTALL NEW TEMPORARY MARKINGS
2. SET BARRIER AND SIGNS
3. ROUGH GRADE OUTSIDE EDGE OF ROAD
4. CONSTRUCT FULL DEPTH PAVING AND ANY OTHER REQUIRED ACTIVITIES

PAVEMENT MARKING CONSTRUCTION DETAILS

A. INSTALL 5 IN. TEMPORARY SOLID WHITE PAVEMENT MARKING LINE
B. INSTALL 24 IN. TEMPORARY SOLID WHITE PAVEMENT MARKING LINE
C. INSTALL 5 IN. TEMPORARY SOLID YELLOW PAVEMENT MARKING LINE
D. INSTALL 5 IN. TEMPORARY SKIP WHITE PAVEMENT MARKING LINE (3 FT. LINE – 9 FT. GAP)
E. REMOVE EXISTING PAVEMENT MARKING LINE
F. REMOVE EXISTING PAVEMENT MARKING ARROW



A MINIMUM OF THREE 10 FOOT LANES MUST BE MAINTAINED AT ALL TIMES. ANY POINT WHERE CONCRETE BARRIER MUST BE PLACED OUTSIDE THE EXISTING ROADWAY TO KEEP THREE LANES, THE DIRT UNDER THE BARRIER MUST BE EXCAVATED AND REPLACED WITH STONE BASE AFTER FULL DEPTH CONSTRUCTION BEHIND THE BARRIER IS FINISHED, FULL DEPTH CONSTRUCTION UNDER THE BARRIER WILL BE DONE UNDER A FLAGGING OPERATION.

LEGEND

- AREA CLOSED TO TRAFFIC
- WORK AREA
- PROPOSED SIGNS (1 POST, 2 POSTS) — SEE MSHA STANDARD NUMBERS: MD 104.01-17A, MD 104.01-17B, MD 104.01-17C, MD 104.01-17D
- PLASTIC DRUM — -SPACED AT 40' IN TANGENT SECTIONS; -SPACED AT 40' IN TAPER SECTIONS; -SPACED AT 80' IN BUFFER ZONES; -SPACED AT 15' ON RADIUS SECTIONS
- DOUBLE-FACED, F-SHAPE TEMPORARY CONCRETE BARRIER WALL — SEE MSHA STANDARD NUMBERS: MD 104.01-23A, MD 104.01-23B, MD 104.01-25, MD 104.01-26
- CRASH CUSHION – SAND FILLED PLASTIC BARRELS — SEE MSHA STANDARD NUMBERS: MD 104.01-70, MD 104.01-71, MD 104.01-72, MD 104.01-73, MD 104.01-23A, MD 104.01-23B
- TYPE 'E' TRAFFIC BARRIER END TREATMENT — SEE MSHA STANDARD NUMBERS: MD 605.05-02, MD 605.06, MD 605.06-01

"NO AS-BUILT INFORMATION IS" PROVIDED THIS SHEET

STATE OF MARYLAND — DONALD ALAN MUSE — No. 21443 — PROFESSIONAL ENGINEER
AS-BUILT 3/22/21

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443 Expiration Date: 12/21/22

TRAFFIC CONCEPTS, INC.
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(410) 760-2911
FAX: (410) 760-2915
EMAIL: TRAFFIC@TRAFFIC-CONCEPTS.COM

M:\2800\2848\MOT\5-15-2018.dgn
Monday, January 07, 2019 AT 12:54 PM

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8.21.19

STATE OF MARYLAND — JAMES KYLE SCHMID — No. 42413 — PROFESSIONAL ENGINEER — 1/7/2019

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 42413, EXPIRATION DATE: 8/8/2020"

PHASE 1

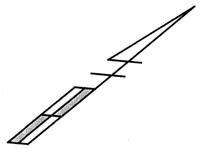
MAINTENANCE OF TRAFFIC PLAN

MD 108 (CLARKSVILLE PIKE) AND SHEPPARD LANE
HOWARD COUNTY

DRAWN BY: B. SCHMID	DESIGNED BY: B. SCHMID	CHECKED BY: K. SCHMID
DATE: 01-07-2019	SHEET NO: 36 OF 41	SCALE: 1" = 50'

AS-BUILT

F-18-099



MAINTENANCE OF TRAFFIC NOTES

1. DURING WORK HOURS, WHEN CONSTRUCTION IS TAKING PLACE, MAINTAIN TRAFFIC IN ACCORDANCE WITH THE FOLLOWING MSHA TRAFFIC CONTROL TYPICALS:

2 LANE /2 WAY ROADWAY
(GREATER THAN 40 MPH)

GENERAL	MD 104.00-A TO MD 104.01-81	WORK IN CENTER OF ROAD	MD 104.02-05
SHOULDER WORK	MD 104.02-01	FLAGGING OPERATION	MD 104.02-09
LANE SHIFT RIGHT OR LEFT SIDE	MD 104.02-03	INTERSECTION FLAGGING OPERATION	MD 104.02-13

THE LATEST TYPICALS CAN BE FOUND AT THE MSHA WEBSITE
– WWW.MARYLANDROADS.COM
– BUSINESS CENTER
– BUSINESS STANDARDS AND SPECIFICATIONS
– BOOK OF STANDARDS & INCIDENTAL STRUCTURES
– CATEGORY 1 PRELIMINARY

2. SEE SHA ACCESS PERMIT FOR WORKING HOURS, LANE CLOSURE RESTRICTIONS / NOTIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING A LANE CLOSURE APPLICATION TO THE DISTRICT OFFICE.
3. ALL SIGNING, CHANNELIZING DEVICES AND OTHER TRAFFIC CONTROL DEVICES SHALL BE IN CONFORMANCE WITH "THE MARYLAND MANUAL ON TRAFFIC CONTROL DEVICES" (MDMUTCD) 2011 EDITION.
4. EXCAVATION ALONG THE ROAD EDGE NOT PROTECTED BY TEMPORARY TRAFFIC BARRIERS, SHALL BE IN ACCORDANCE WITH THE MSHA "STANDARDS FOR HIGHWAYS AND INCIDENTIAL STRUCTURES", STANDARD NO. 104.01-28 – STAGED ROADWAY CONSTRUCTION AND STANDARD NOS. 104.06-13 TO MD 104.06-19 – PAVEMENT EDGE DROP OFF. IF CORRECT DROP OFF SLOPES CAN'T BE MAINTAINED TEMPORARY TRAFFIC BARRIERS SHALL BE SET UP.
5. TRAVEL LANES SHALL BE A MINIMUM OF TEN FEET IN WIDTH.
6. ALL OPEN TRENCHES SHALL BE CLOSED AT THE END OF THE DAY. IF STEEL PLATES ARE TO BE USED, APPROPRIATE ANCHORING AND SIGNING WILL BE REQUIRED.
7. ALL SIGNS THAT DO NOT APPLY SHALL BE COMPLETELY COVERED, REMOVED OR RELOCATED AS DIRECTED BY THE ENGINEER.
8. ACCESS SHALL BE PROVIDED TO ALL EXISTING DRIVEWAYS AT ALL TIMES.
9. ALL CONSTRUCTION SIGNING SHALL BE IN ACCORDANCE WITH THE TYPICAL SIGN PLACEMENT SHOWN ON THE TYPICALS AND SHALL NOT OBSTRUCT EXISTING TRAFFIC CONTROL DEVICES.
10. WHEN WORK NECESSITATES ONLY ONE LANE TO BE OPEN, FLAGGERS AND THE APPROPRIATE SIGNING SHALL BE INSTALLED. THE ROADWAY SHOULD BE REOPENED TO TWO LANES AT THE END OF EACH WORKDAY.
11. ANY FLAGGING OR CONSTRUCTION OPERATION THAT WILL AFFECT A SIGNALIZED INTERSECTION SHALL BE COORDINATED WITH POLICE.
12. THE CONTRACTOR SHALL NOT MAKE ANY MODIFICATION TO THE SIGNAL OPERATION WITHOUT PRIOR APPROVAL OF THE SHA, DISTRICT TRAFFIC ENGINEER AND THE SHA SIGNAL SHOP. IF FLAGGING OF THE INTERSECTION IS NECESSARY THE TRAFFIC SIGNAL SHOULD BE PLACED ON FLASH AND AN OFFICER SHOULD BE PRESENT TO DIRECT TRAFFIC.
13. TEMPORARY PAVEMENT MARKINGS ON FINAL PAVEMENT SURFACE SHALL BE REMOVABLE TAPE AND NOT PAINT.
14. BEFORE THE INTERSECTION IS OPEN TO TRAFFIC A PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) MUST BE PLACED IN BOTH DIRECTIONS ON MD 108 FOR AT LEAST ONE WEEK PRIOR TO THE OPENING TO ALERT MOTORISTS AND IT SHOULD STAY IN PLACE FOR AT LEAST ONE WEEK AFTER OPENING. THE CONTRACTOR SHOULD CONTACT THE ADE-T FOR THE MESSAGES TO THE DISPLAYED.
15. THE CONTRACTOR SHALL NOT STORE EQUIPMENT OR MATERIALS WITHIN 30 FEET OF THE TRAVEL LANE DURING NON-WORKING HOURS.
16. THE CONTRACTOR SHALL COORDINATE WITH THE MDOT SHA SIGNAL SHOP FOR NECESSARY ADJUSTMENTS TO THE SIGNAL VIDEO DETECTION PRIOR TO MODIFYING PAVEMENT MARKINGS IN EACH MOT PHASE.

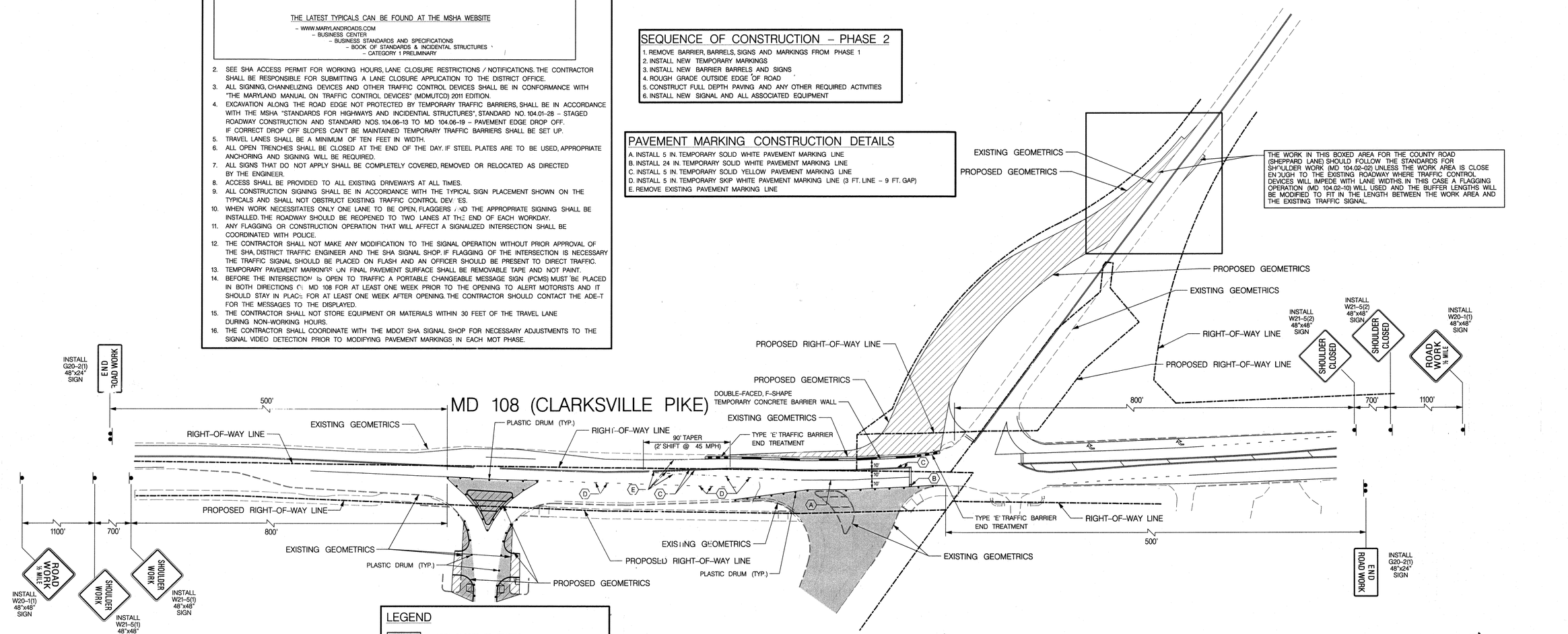
PHASE 2

SEQUENCE OF CONSTRUCTION – PHASE 2

1. REMOVE BARRIER, BARRELS, SIGNS AND MARKINGS FROM PHASE 1
2. INSTALL NEW TEMPORARY MARKINGS
3. INSTALL NEW BARRIER BARRELS AND SIGNS
4. ROUGH GRADE OUTSIDE EDGE OF ROAD
5. CONSTRUCT FULL DEPTH PAVING AND ANY OTHER REQUIRED ACTIVITIES
6. INSTALL NEW SIGNAL AND ALL ASSOCIATED EQUIPMENT

PAVEMENT MARKING CONSTRUCTION DETAILS

A. INSTALL 5 IN. TEMPORARY SOLID WHITE PAVEMENT MARKING LINE
B. INSTALL 24 IN. TEMPORARY SOLID WHITE PAVEMENT MARKING LINE
C. INSTALL 5 IN. TEMPORARY SOLID YELLOW PAVEMENT MARKING LINE
D. INSTALL 5 IN. TEMPORARY SKIP WHITE PAVEMENT MARKING LINE (3 FT. LINE – 9 FT. GAP)
E. REMOVE EXISTING PAVEMENT MARKING LINE



LEGEND

- AREA CLOSED TO TRAFFIC
- WORK AREA
- 1 POST / 2 POSTS — PROPOSED SIGNS
  SEE MSHA STANDARD NUMBERS:
  MD 104.01-17A
  MD 104.01-17B
  MD 104.01-17C
  MD 104.01-17D
- PLASTIC DRUM
  -SPACED AT 40' IN TANGENT SECTIONS
  -SPACED AT 40' IN TAPER SECTIONS
  -SPACED AT 80' IN BUFFER ZONES
  -SPACED AT 15' ON RADIUS SECTIONS
- DOUBLE-FACED, F-SHAPE TEMPORARY CONCRETE BARRIER WALL
  SEE MSHA STANDARD NUMBERS:
  MD 104.01-23A
  MD 104.01-23B
  MD 104.01-25
  MD 104.01-26
- TYPE 'E' TRAFFIC BARRIER END TREATMENT
  SEE MSHA STANDARD NUMBERS:
  MD 605.05-02
  MD 605.06
  MD 605.06-01

"NO AS-BUILT INFORMATION IS PROVIDED THIS SHEET"

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER
AS-BUILTS 3/24/21

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12/21/22

TRAFFIC CONCEPTS, INC.
7525 Connelley Drive
Suite B
Hanover, MD 21076
(410) 760-2911
FAX: (410) 760-2915
EMAIL: TRAFFIC@TRAFFIC-CONCEPTS.COM

M:\2800\2848\MOT\5-15-2018.dgn
Monday, January 07, 2019 AT 12:55 PM

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 3-21-19

STATE OF MARYLAND — JAMES KYLE SCHMID — No. 42413 — PROFESSIONAL ENGINEER — 1/7/2019

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 42413, EXPIRATION DATE: 8/9/2020."

PHASE 2

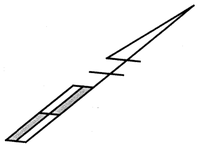
MAINTENANCE OF TRAFFIC PLAN

MD 108 (CLARKSVILLE PIKE) AND SHEPPARD LANE
HOWARD COUNTY

DRAWN BY: B. SCHMID	DESIGNED BY: B. SCHMID	CHECKED BY: K. SCHMID
DATE: 01-07-2019	SHEET NO: 37 OF 42	SCALE: 1" = 50'

AS-BUILT

F-18-099



MAINTENANCE OF TRAFFIC NOTES

1. DURING WORK HOURS, WHEN CONSTRUCTION IS TAKING PLACE, MAINTAIN TRAFFIC IN ACCORDANCE WITH THE FOLLOWING MSHA TRAFFIC CONTROL TYPICALS:

2 LANE /2 WAY ROADWAY
(GREATER THAN 40 MPH)

GENERAL	MD 104.00-A TO MD 104.01-81	WORK IN CENTER OF ROAD	MD 104.02-05
SHOULDER WORK	MD 104.02-01	FLAGGING OPERATION	MD 104.02-09
LANE SHIFT RIGHT OR LEFT SIDE	MD 104.02-03	INTERSECTION FLAGGING OPERATION	MD 104.02-13

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  - BUSINESS CENTER
    - BUSINESS STANDARDS AND SPECIFICATIONS
      - BOOK OF STANDARDS & INCIDENTAL STRUCTURES
        - CATEGORY 1 PRELIMINARY

2. SEE SHA ACCESS PERMIT FOR WORKING HOURS, LANE CLOSURE RESTRICTIONS / NOTIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING A LANE CLOSURE APPLICATION TO THE DISTRICT OFFICE.
3. ALL SIGNING, CHANNELIZING DEVICES AND OTHER TRAFFIC CONTROL DEVICES SHALL BE IN CONFORMANCE WITH "THE MARYLAND MANUAL ON TRAFFIC CONTROL DEVICES" (MDMUTCD) 2011 EDITION.
4. EXCAVATION ALONG THE ROAD EDGE NOT-PROTECTED BY TEMPORARY TRAFFIC BARRIERS, SHALL BE IN ACCORDANCE WITH THE MSHA "STANDARDS FOR HIGHWAYS AND INCIDENTIAL STRUCTURES", STANDARD NO. 104.01-28 – STAGED ROADWAY CONSTRUCTION AND STANDARD NOS. 104.06-13 TO MD 104.06-19 – PAVEMENT EDGE DROP OFF. IF CORRECT DROP OFF SLOPES CAN'T BE MAINTAINED TEMPORARY TRAFFIC BARRIERS SHALL BE SET UP.
5. TRAVEL LANES SHALL BE A MINIMUM OF TEN FEET IN WIDTH.
6. ALL OPEN TRENCHES SHALL BE CLOSED AT THE END OF THE DAY. IF STEEL PLATES ARE TO BE USED, APPROPRIATE ANCHORING AND SIGNING WILL BE REQUIRED.
7. ALL SIGNS THAT DO NOT APPLY SHALL BE COMPLETELY COVERED, REMOVED OR RELOCATED AS DIRECTED BY THE ENGINEER.
8. ACCESS SHALL BE PROVIDED TO ALL EXISTING DRIVEWAYS AT ALL TIMES.
9. ALL CONSTRUCTION SIGNING SHALL BE IN ACCORDANCE WITH THE TYPICAL SIGN PLACEMENT SHOWN ON THE TYPICALS AND SHALL NOT OBSTRUCT EXISTING TRAFFIC CONTROL DEVICES.
10. WHEN WORK NECESSITATES ONLY ONE LANE TO BE OPEN, FLAGGERS AND THE APPROPRIATE SIGNING SHALL BE INSTALLED. THE ROADWAY SHOULD BE REOPENED TO TWO LANES AT THE END OF EACH WORKDAY.
11. ANY FLAGGING OR CONSTRUCTION OPERATION THAT WILL AFFECT A SIGNALIZED INTERSECTION SHALL BE COORDINATED WITH POLICE.
12. THE CONTRACTOR SHALL NOT MAKE ANY MODIFICATION TO THE SIGNAL OPERATION WITHOUT PRIOR APPROVAL OF THE SHA, DISTRICT TRAFFIC ENGINEER AND THE SHA SIGNAL SHOP. IF FLAGGING OF THE INTERSECTION IS NECESSARY THE TRAFFIC SIGNAL SHOULD BE PLACED ON FLASH AND AN OFFICER SHOULD BE PRESENT TO DIRECT TRAFFIC.
13. TEMPORARY PAVEMENT MARKINGS ON FINAL PAVEMENT SURFACE SHALL BE REMOVABLE TAPE AND NOT PAINT.
14. BEFORE THE INTERSECTION IS OPEN TO TRAFFIC A PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) MUST BE PLACED IN BOTH DIRECTIONS OF MD 108 FOR AT LEAST ONE WEEK PRIOR TO THE OPENING TO ALERT MOTORISTS AND IT SHOULD STAY IN PLACE FOR AT LEAST ONE WEEK AFTER OPENING. THE CONTRACTOR SHOULD CONTACT THE ADE-T FOR THE MESSAGES TO THE DISPLAYED.
15. THE CONTRACTOR SHALL NOT STORE EQUIPMENT OR MATERIALS WITHIN 30 FEET OF THE TRAVEL LANE DURING NON-WORKING HOURS.
16. THE CONTRACTOR SHALL COORDINATE WITH THE MDOT SHA SIGNAL SHOP FOR NECESSARY ADJUSTMENTS TO THE SIGNAL VIDEO DETECTION PRIOR TO MODIFYING PAVEMENT MARKINGS IN EACH MOT PHASE.

PHASE 3

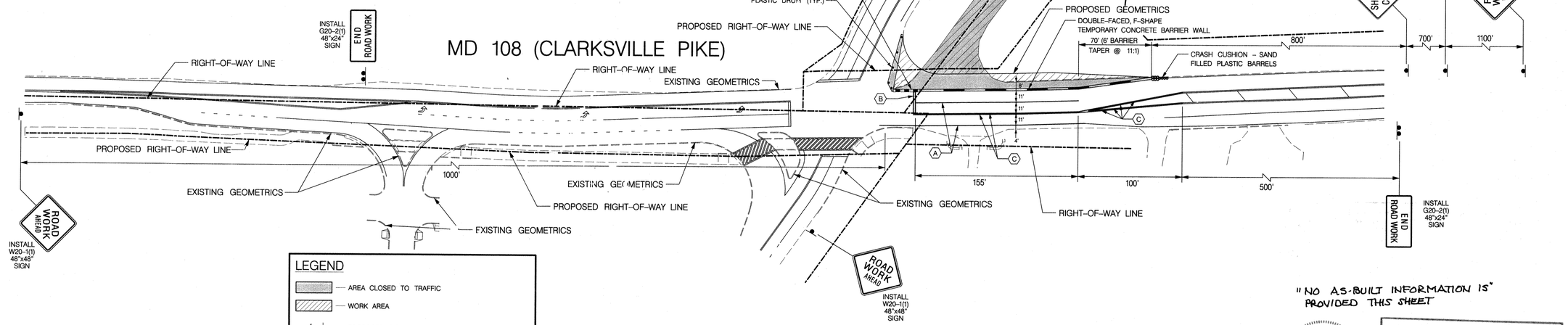
PAVEMENT MARKING CONSTRUCTION DETAILS

A. INSTALL 5 IN. TEMPORARY SOLID WHITE PAVEMENT MARKING LINE
B. INSTALL 24 IN. TEMPORARY SOLID WHITE PAVEMENT MARKING LINE
C. INSTALL 5 IN. TEMPORARY SOLID YELLOW PAVEMENT MARKING LINE

NOTE: ALL PAVEMENT MARKINGS, EXCEPT THOSE ON MD 108 (CLARKSVILLE PIKE) EAST OF SHEPPARD LANE, ARE TO BE INSTALLED AS SHOWN ON THE FINAL PAVEMENT MARKING PLAN AND WILL ALSO BE TEMPORARY MARKINGS UNTIL THE FINAL ROAD SURFACE HAS BEEN PUT DOWN. REFER TO THE SHA SIGNING AND PAVEMENT MARKING PLAN FOR MORE INFORMATION ON PAVEMENT MARKING INSTALLATION.

SEQUENCE OF CONSTRUCTION – PHASE 3

1. REMOVE BARRIER, BARRELS, SIGNS AND MARKINGS FROM PHASE 2
2. REMOVE ANY EXISTING MARKINGS AND PUT DOWN ALL TEMPOARARY MARKINGS
3. SWITCH FROM USING THE OLD SIGNAL TO THE NEW SIGNAL
4. SET BARRIER AND SIGNS
5. REMOVE OLD EXISTING SIGNAL
6. CONSTRUCT FULL DEPTH PAVING AND ANY OTHER REQUIRED ACTIVITIES
7. MILL AND OVERLAY



LEGEND

- AREA CLOSED TO TRAFFIC
- WORK AREA
- PROPOSED SIGNS (1 POST / 2 POSTS)
  SEE MSHA STANDARD NUMBERS:
  MD 104.01-17A
  MD 104.01-17B
  MD 104.01-17C
  MD 104.01-17D
- DOUBLE-FACED, F-SHAPE TEMPORARY CONCRETE BARRIER WALL
  SEE MSHA STANDARD NUMBERS:
  MD 104.01-23A
  MD 104.01-23B
  MD 104.01-25
  MD 104.01-26
- CRASH CUSHION – SAND FILLED PLASTIC BARRELS
  SEE MSHA STANDARD NUMBERS:
  MD 104.01-70 MD 104.01-23A
  MD 104.01-71 MD 104.01-23B
  MD 104.01-72
  MD 104.01-73
- TYPE 'E' TRAFFIC BARRIER END TREATMENT
  SEE MSHA STANDARD NUMBERS:
  MD 605.06-02
  MD 605.06
  MD 605.06-01

"NO AS-BUILT INFORMATION IS" PROVIDED THIS SHEET

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER
AS-BUILT 3/24/21

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12/2/22

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M:\2800\2848\MOT\5-15-2018.dgn
Monday, January 07, 2019 AT 12:55 PM

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

STATE OF MARYLAND JAMES KYLE SCHMID No. 42413 PROFESSIONAL ENGINEER
1/7/2019
"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 42413, EXPIRATION DATE: 6/8/2020"

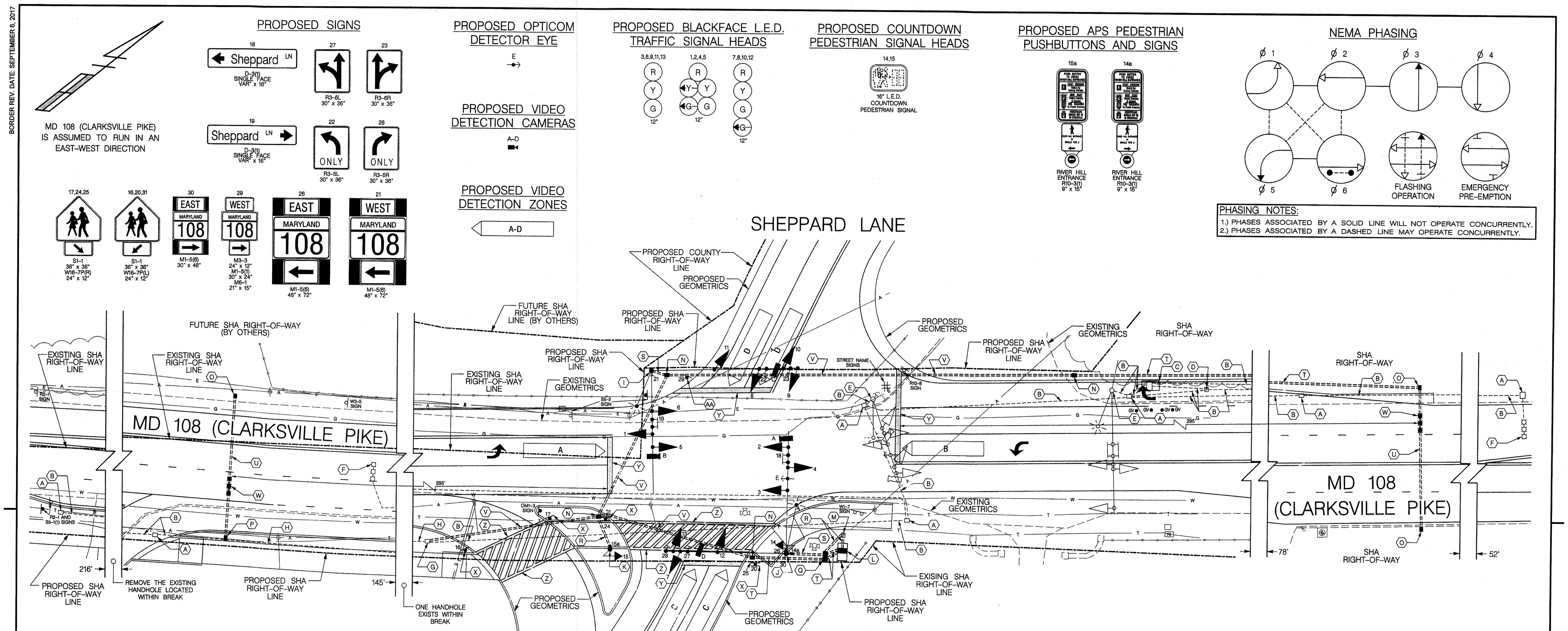
PHASE 3

MAINTENANCE OF TRAFFIC PLAN

MD 108 (CLARKSVILLE PIKE) AND SHEPPARD LANE
HOWARD COUNTY

DRAWN BY: B. SCHMID	DESIGNED BY: B. SCHMID	CHECKED BY: K. SCHMID
DATE: 01-07-2019	SHEET NO: 30 OF 41	SCALE: 1" = 50'

AS-BUILT F-18-099



GENERAL NOTES

1. THESE PLANS ARE APPROVED FOR CONSTRUCTION FOR A PERIOD OF ONE YEAR FROM THE DATE OF APPROVAL. SHOULD CONSTRUCTION NOT BEGIN WITHIN THIS TIME FRAME THESE PLANS SHALL BE NULL AND VOID WITHOUT A REVIEW FROM THE TRAFFIC ENGINEERING DESIGN DIVISION.
2. ALL UNDERGROUND AND OVERHEAD UTILITIES SHOWN ON THESE PLANS ARE SCHEMATIC ONLY AND MAY NOT BE COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING MISS UTILITY PRIOR TO CONSTRUCTION SO THAT ALL UTILITIES MAY BE LOCATED IN THE FIELD. IF THE CONTRACTOR PERCEIVES THAT A CONFLICT BETWEEN UTILITIES AND TRAFFIC SIGNAL EQUIPMENT WILL OCCUR, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IMMEDIATELY SO THE CONFLICT MAY BE RESOLVED.
3. ALL TRAFFIC SIGNAL FOUNDATIONS SHALL BE INSTALLED AT THE FINAL SIDEWALK OR CURB GRADE FOR CLOSED SECTIONS, HIGHEST ROADWAY PROFILE GRADE FOR OPEN SECTIONS, TO MEET CLEARANCE AS SPECIFIED IN MD 816.03, MD 818.01, MD 818.02, MD 818.04. THE CONTRACTOR SHALL VERIFY ULTIMATE GRADES PRIOR TO THE INSTALLATION OF ALL SIGNAL EQUIPMENT.
4. ALL INTERNAL CABINET WIRING IS TO BE PERFORMED BY THE STATE HIGHWAY ADMINISTRATION SIGNAL SHOP.
5. THE CONTRACTOR SHALL REMOVE ALL UNUSED CABLE.
6. FOR ADDITIONAL SIGNING AND PAVEMENT MARKING SEE SIGNING AND PAVEMENT MARKING PLANS.
7. ALL EXISTING TRAFFIC SIGNAL EQUIPMENT BEING REMOVED SHALL BECOME THE PROPERTY OF THE SIGNAL CONTRACTOR UPON COMPLETION OF THE WORK.
8. THE LOCATION OF PROPOSED GEOMETRICS MUST BE CONFIRMED PRIOR TO THE INSTALLATION OF THE SIGNAL EQUIPMENT.
9. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS OPERATION OF ALL INTERCONNECT, VEHICULAR, PEDESTRIAN DETECTORS AND LIGHTING DEVICES. IF ANY DEVICE IS DAMAGED BY THE CONTRACTORS, IT SHALL BE REPAIRED WITHIN 72 HOURS BY THE CONTRACTOR AT NO COST TO SHA AFTER NOTIFICATION BY THE ENGINEER.
10. VIDEO CAMERA LOCATION / ALIGNING SHALL BE COORDINATED WITH SHA ENGINEER.
11. ALL PROPOSED LUMINAIRES SHALL BE SUPPLIED WITH PHOTOCELL. CONTRACTOR SHALL DETERMINE OPERATING VOLTAGE AND PHOTOCELL REQUIREMENTS.

CONSTRUCTION DETAILS

A. REMOVE EXISTING HANDHOLE
B. CAP AND ABANDON EXISTING CONDUIT
C. REMOVE EXISTING CABINET AND CONTROLLER (REMOVE CONCRETE FOUNDATION 1 FT. BELOW GRADE AND BACKFILL)
D. REMOVE EXISTING METERED SERVICE PEDESTAL (REMOVE CONCRETE FOUNDATION 1 FT. BELOW GRADE AND BACKFILL)
E. REMOVE EXISTING MAST ARM POLE AND ALL ATTACHED EQUIPMENT (REMOVE CONCRETE FOUNDATION 1 FT. BELOW GRADE AND BACKFILL)
F. ABANDON EXISTING MICRO-LOOP PROBE
G. USE EXISTING HANDHOLE
H. USE EXISTING CONDUIT
I. INSTALL 27 FT. MAST ARM POLE WITH TWIN 50 FT./ 60 FT. MAST ARMS, VEHICLE SIGNAL HEADS, SIGNS, VIDEO DETECTION CAMERAS AND 15 FT. STREET LIGHTING ARM WITH LED LUMINAIRE (NOTE: INSTALL 2-3 IN. SCHEDULE 80, RIGID PVC, 90 DEGREE CONDUIT BENDS)
J. INSTALL 27 FT. MAST ARM POLE WITH TWIN 50 FT. MAST ARMS, VEHICLE SIGNAL HEADS, SIGNS, VIDEO DETECTION CAMERAS, OPTICOM DETECTOR, PEDESTRIAN SIGNAL HEAD, PUSHBUTTON WITH SIGN, CELLULAR ANTENNA AND 20 FT. STREET LIGHTING ARM WITH LED LUMINAIRE (NOTE: INSTALL 2-3 IN. SCHEDULE 80, RIGID PVC, 90 DEGREE CONDUIT BENDS)
K. INSTALL 10 FT. BREAKAWAY PEDESTAL POLE ON MODIFIED BASE WITH PEDESTRIAN SIGNAL HEAD, PUSHBUTTON AND SIGN (NOTES: INSTALL 1-2 IN. SCHEDULE 80, RIGID PVC, 90 DEGREE CONDUIT BEND. SEE STD MD-801.01-01 FOR FOUNDATION DETAIL.)
L. INSTALL BASE MOUNTED, SIZE "S" CABINET AND CONTROLLER WITH ALL NECESSARY EQUIPMENT (NOTE: INSTALL 2-2 IN. AND 2-4 IN. SCHEDULE 80, RIGID PVC, 90 DEGREE CONDUIT BENDS)
M. INSTALL METERED SERVICE PEDESTAL
N. INSTALL ELECTRICAL HANDHOLE
O. INSTALL ELECTRICAL HANDHOLE (ALIGNED PERPENDICLAR TO ROADWAY)
P. INSTALL ELECTRICAL HANDHOLE OVER EXISTING CONDUIT (ALIGNED PERPENDICULAR TO ROADWAY)
Q. INSTALL OVERSIZED ELECTRICAL HANDHOLE
R. INSTALL 2 IN. SCHEDULE 80, RIGID PVC, ELECTRICAL CONDUIT - TRENCHED
S. INSTALL 2-3 IN. SCHEDULE 80, RIGID PVC, ELECTRICAL CONDUITS - TRENCHED
T. INSTALL 4 IN. SCHEDULE 80, RIGID PVC, ELECTRICAL CONDUIT - TRENCHED
U. INSTALL 3 IN. SCHEDULE 80, RIGID PVC, ELECTRICAL CONDUIT - BORED
V. INSTALL 4 IN. SCHEDULE 80, RIGID PVC, ELECTRICAL CONDUIT - BORED
W. INSTALL NON-INVASIVE, MICRO-LOOP PROBE
X. INSTALL S1-1 AND W16-7P SIGNS ON ONE 4 IN. x 4 IN. WOOD POST
Y. INSTALL 24 IN. SOLID WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE
Z. INSTALL 12 IN. SOLID WHITE PREFORMED THERMOPLASTIC PAVEMENT MARKING LINE WITH DIAGONAL HATCHING (45 DEGREES AT 24 IN. SPACING)
AA. INSTALL SHIELD ASSEMBLY SIGNS ON ONE 4 IN. x 6 IN. WOOD POST

"NO AS-BUILT INFORMATION IS" PROVIDE THIS SHEET

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443 Expiration Date 12/21/22

AS-BUILT 3/26/21

GEOMETRIC LEGEND	
EXISTING	
PROPOSED	

UTILITY LEGEND	
AERIAL CABLE	A
ELECTRICAL	E
TELEPHONE	T
GAS	G
SEWER	S
WATER	W
CABLE TV	TV

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"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 42413, EXPIRATION DATE: 6/8/2020."
12/10/2018

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2-21-19

APPROVALS: TEAM LEADER / ASST. DIV. CHIEF / DIVISION CHIEF / OFFICE DIRECTOR — ORIGINAL ON FILE

REVISIONS: Ⓐ SIGNAL RECONSTRUCT — SHA NO. BW996M82 TIMS# O472 12-10-2018 — AMR JAH CMR MV MC OR CJW

SHA TRACKING NO. 16APHO014xx

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

OFFICE OF TRAFFIC & SAFETY
TRAFFIC ENGINEERING DESIGN DIVISION

MD 108 (CLARKSVILLE PIKE)
AT SHEPPARD LANE
-
CLARKSVILLE, MARYLAND

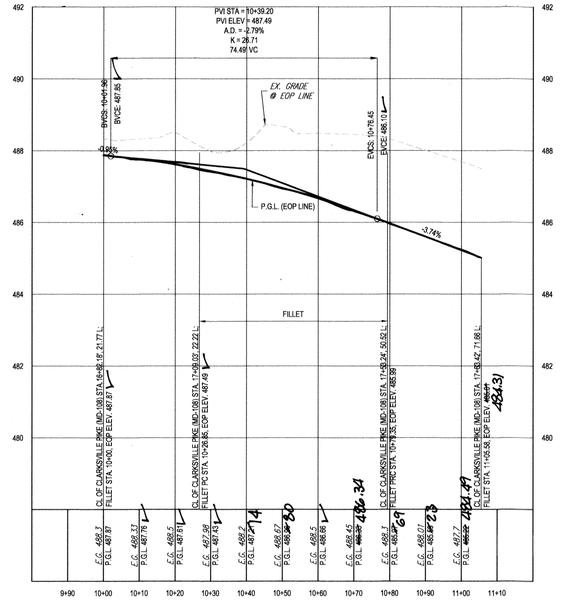
TRAFFIC SIGNAL PLAN

SCALE 1" = 20' DATE 01-06-2011 CONTRACT NO. XX6505185

DESIGNED BY	B. DONOWAY	COUNTY	HOWARD
DRAWN BY	B. DONOWAY	LOGMILE	13010804.49
CHECKED BY	N. LEARY	TIMS NO.	L099
MDE/PRD	-	TOD NO.	

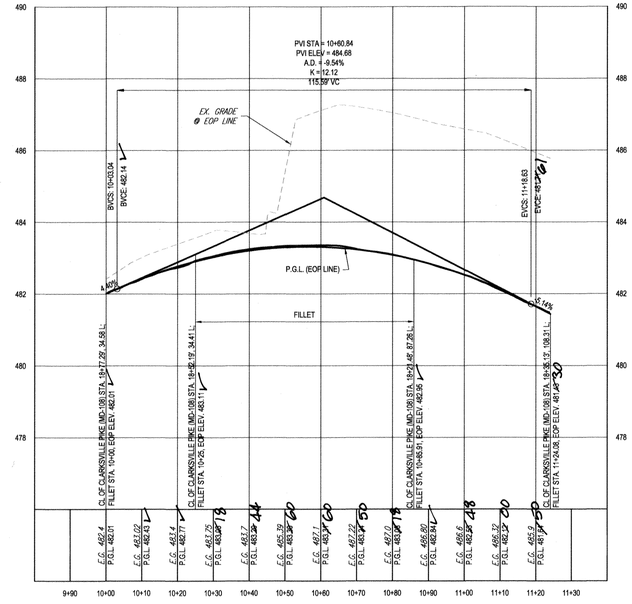
TS NO. 4826A DRAWING SG-01 OF 02 SHEET NO. 39 OF 41

AS-BUILT F-18-099



CLARKSVILLE PIKE (MD-108) & SHEPPARD LANE (NW QUADRANT) - FILLET PROFILE

SCALE: 1"= 10 ' HORIZONTAL
1"= 1 ' VERTICAL



CLARKSVILLE PIKE (MD-108) & SHEPPARD LANE (NE QUADRANT) - FILLET PROFILE

SCALE: 1"= 10 ' HORIZONTAL
1"= 1 ' VERTICAL

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443, Expiration Date: 12/21/22

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER

AS-BUILT

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E. Date: 3/25/21

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 2/6/2019

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 3-6-19

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 2.21.19

OWNER:
STEPHEN A. KLEIN & ASSOCIATES
C/O STEPHEN A. KLEIN, INC.
12165 CLARKSVILLE PIKE
CLARKSVILLE, MD 21029
(410) 465-4244

DEVELOPER:
RIVER HILL SQUARE, LLC.
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
(410) 465-4244

TAX MAP: 35 GRID: 1 ZONED: B-1 & RC-DEO
PARCEL: 1
5TH ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

PREVIOUS FILE No. : ECP - 17 - 023
SDP - 18 - 044
WP - 18 -095

PROFESSIONAL CERTIFICATION
I, BRANDON R. ROWE, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 40808, EXPIRATION DATE: 7/3/2019

AS-BUILT

BOHLER ENGINEERING
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	BY

KNOW WHAT'S BELOW
ALWAYS CALL 811
BEFORE YOU DIG
It's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT No.:	MD182002
DRAWN BY:	CJB
CHECKED BY:	BRR
DATE:	12/18/18
SCALE:	AS SHOWN
CAD I.D.:	SP2

PROJECT:
FINAL ROAD CONSTRUCTION PLANS
FOR
MD ROUTE 108 IMPROVEMENTS AND SHEPPARD LANE RE-ALIGNMENT
LOCATION OF SITE
INTERSECTION OF CLARKSVILLE PIKE (MD RTE. 108) AND SHEPPARD LANE
CLARKSVILLE, MD 21209
ZONE: B-1, RC-DEO
13TH ELECTION DISTRICT
HOWARD COUNTY

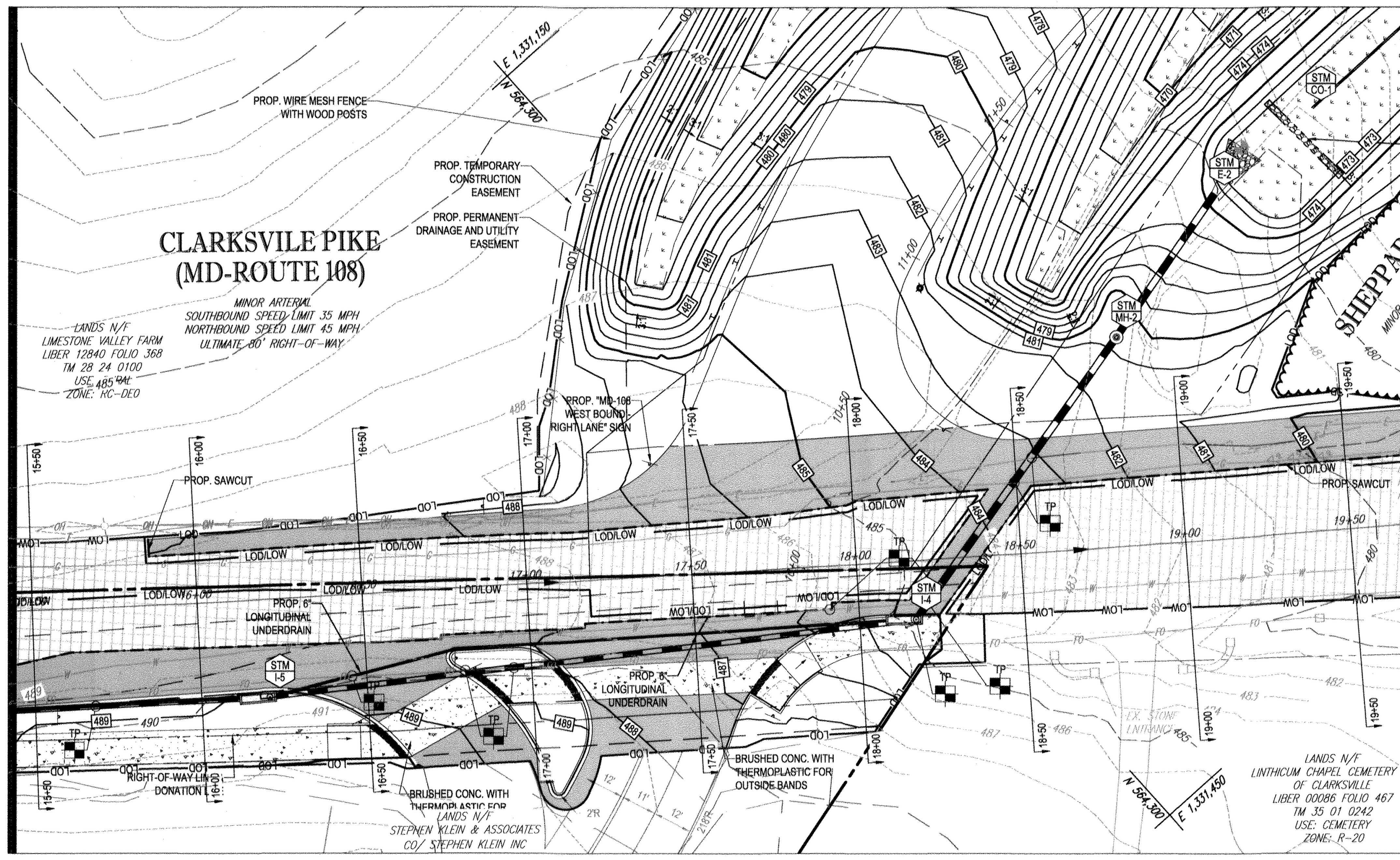
BOHLER ENGINEERING
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
4/10/19

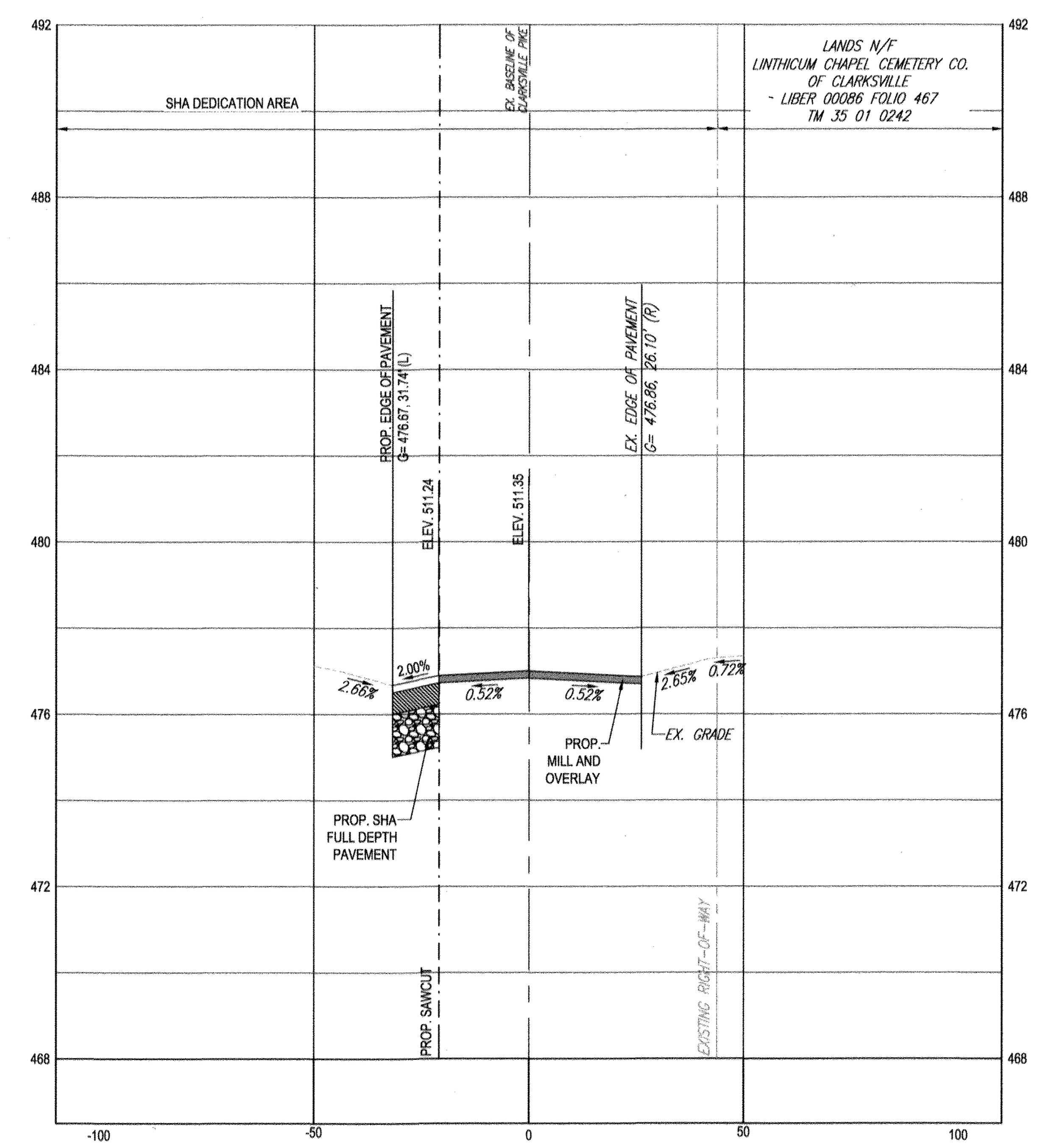
SHEET TITLE:
SHEPPARD LANE EDGE OF PAVING RETURN PROFILES

SHEET NUMBER:
40

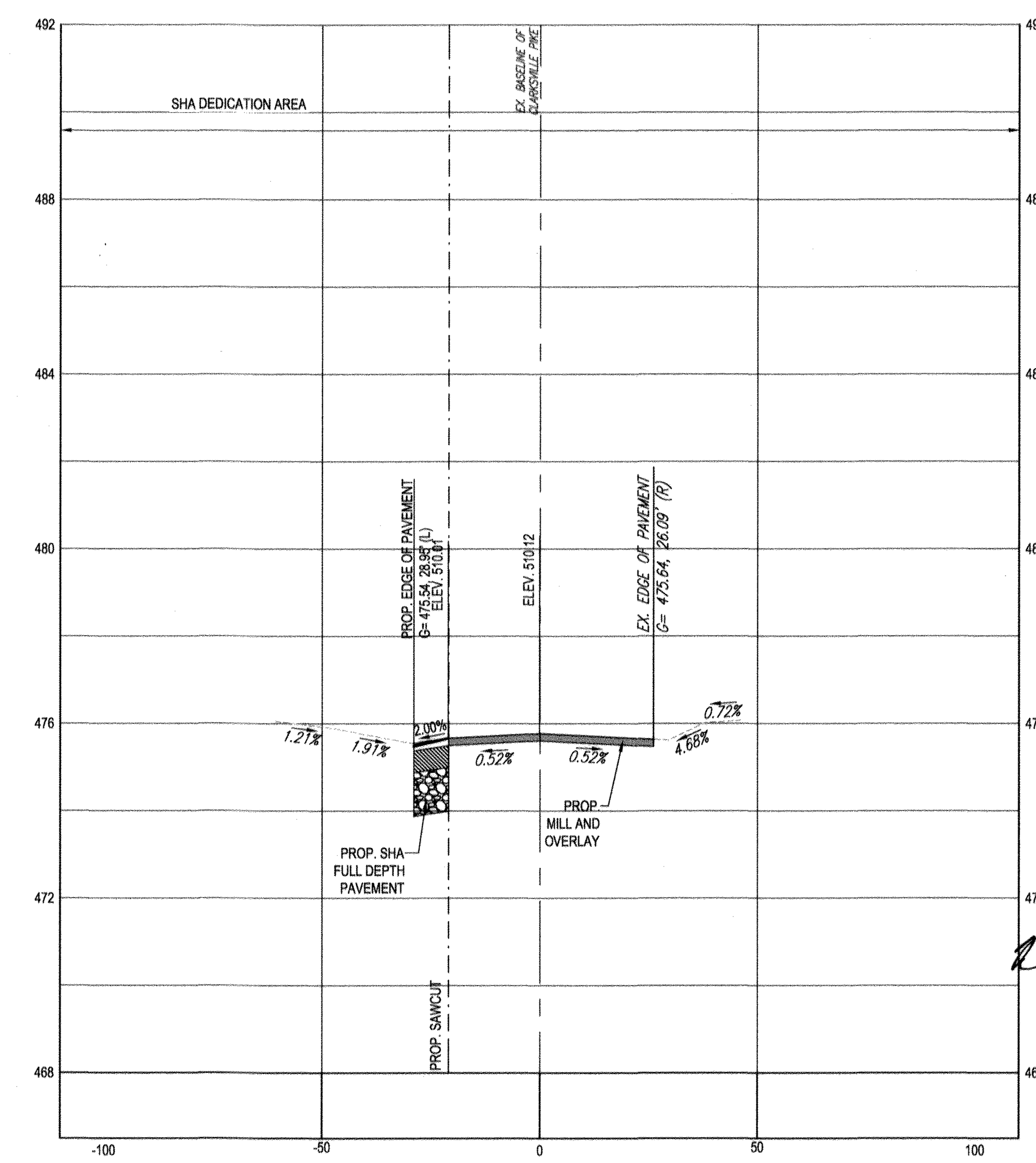
F-18-099



PLAN VIEW
SCALE: 1" = 30'



20+50
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



21+00
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

CLARKSVILLE PIKE (MD ROUTE 108) CROSS SECTIONS

AS-BUILTS FOR THE ROUTE 108 IMPROVEMENTS ARE BEING SUBMITTED TO MSHA UNDER PERMIT NO. 16APH0014 19

"NO AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12/21/22

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER
AS-BUILT 3/26/21

TEST PIT NOTE

TP — CONTRACTOR TO TEST PIT FOR EXACT LOCATION OF EXISTING UTILITY AND SUBMIT ANY DISCREPANCIES TO BOHLER ENGINEERING IN WRITING PRIOR TO CONSTRUCTION.

LEGEND

- CONCRETE MULTIMODAL PEDESTRIAN PATHWAY BRUSHED CONCRETE - REFER TO CLARKSVILLE PIKE DESIGN GUIDELINES
- SHA FULL DEPTH ASPHALT PAVING
- SHA 2" MILL AND OVERLAY

REFER TO CONSTRUCTION DRAWINGS PREPARED BY BENCHMARK ENGINEERING FOR WORK ON PRIVATE PROPERTY.

ADA CONSTRUCTION NOTES TO CONTRACTOR

1. NO SIDEWALK AND/OR CROSSWALK IS TO EXCEED 2.00% CROSS SLOPE.
2. NO ADA PARKING SPACE IS TO EXCEED 2.00% SLOPE IN ANY DIRECTION.
3. NO ADA CURB RAMP IS TO EXCEED 8.33%.
4. THE CONTRACTOR IS RESPONSIBLE DURING THE FORMING OF SIDEWALKS, RAMPS, CROSSWALKS, AND ADA PARKING TO VERIFY THAT ADA COMPLIANCE IS ACHIEVED.
5. IF DURING THAT CHECK ANY NON-CONFORMANCE IS DETERMINED, THE ENGINEER IS TO BE IMMEDIATELY NOTIFIED PRIOR TO POURING CONCRETE AND/OR LAYING ASPHALT.

30 15 7.5 0 30
1"= 30'

PREVIOUS FILE No. : ECP - 17 - 023
SDP - 18 - 044
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MD@BohlerEng.com

B.R. ROWE
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 40808
1/10/19

SHEET TITLE:
MD ROUTE 108 ROAD SECTIONS

SHEET NUMBER:
41

F-18-099