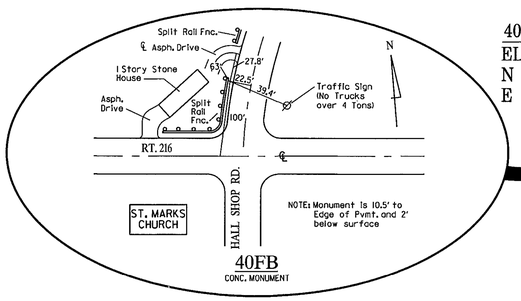
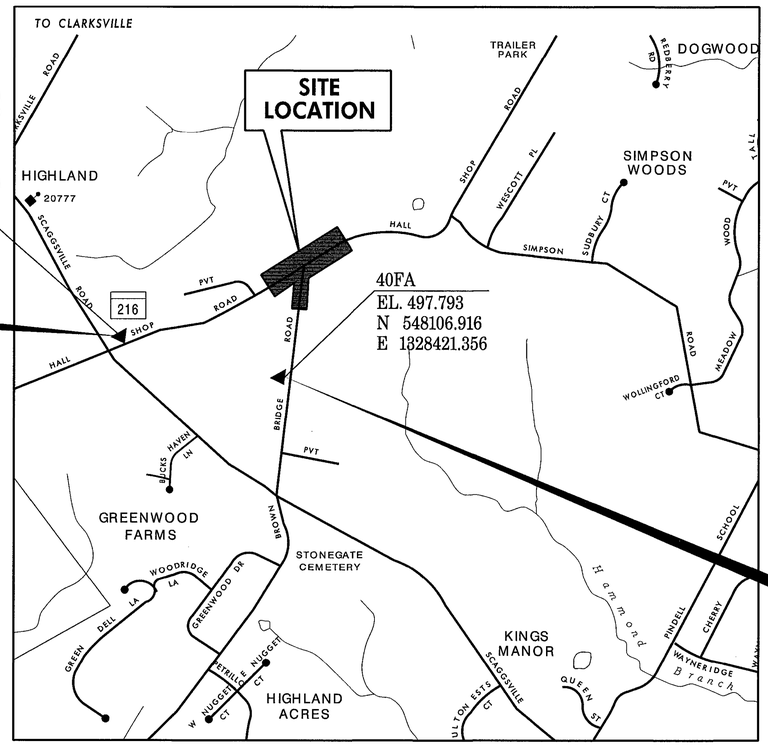
HALL SHOP ROAD AT BROWNS BRIDGE ROAD

5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
CAPITAL PROJECT NO. J-4164

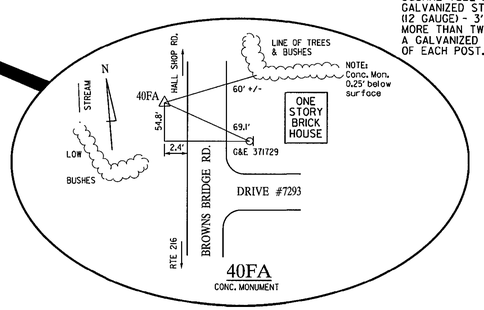
INDEX OF SHEETS



40FB
EL. 505.119
N 548470.381
E 1326000.771



LOCATION MAP
HOWARD COUNTY
1000' 0 1000' 2000'
SCALE: 1" = 1000'



GENERAL NOTES

1. THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AND MISS UTILITY AT 1-800-257-7777 AT LEAST FIVE (5) WORKING DAYS BEFORE STARTING WORK

2. COORDINATES SHOWN HEREON ARE BASED ON THE MARYLAND STATE REFERENCE SYSTEM NAD '83/'91 AS PROJECTED BY HOWARD COUNTY PROJECT CONSTROL STATIONS 40FA AND 40FB. VERTICAL DATUM IS NGVD29.

   40FA
   N: 548,106.916
   E: 1,328,421.356
   ELEV. 497.793 (NGVD29)
   HOWARD COUNTY DISK

   40FB
   N: 548,470.381
   E: 1,326,000.771
   ELEV. 505.119 (NGVD29)

3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY.

4. ALL WORK SHALL COMPLY WITH ALL APPLICABLE PROVISIONS OF THE '2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL,' ISSUED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT AND THE NATURAL RESOURCES CONSERVATION SERVICE.

5. TOPOGRAPHIC SURVEYS WERE PERFORMED BY URS CORPORATION (AECOM) IN NOVEMBER 2000.

6. THE PROPERTY LINES AND EASEMENT LINES ARE INDICATED ON PLAT NOS. J-4164-01 THROUGH J-4164-08.

7. SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND THE FIELD CONDITIONS, THE ENGINEER IS TO BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE ENGINEER, THEN THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.

8. CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHOD, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFETY PRECAUTIONS AND PROGRAMS.

9. APPROXIMATE UTILITIES ARE SHOWN FROM AVAILABLE RECORDS. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.

10. UTILITY CONTACTS:

    BGE: (410)-597-7920 (ELECTRIC)
    BGE: (410)-291-4844 (GAS)
    VERIZON: (410)-224-9285
    WORLDCOM(MCI): (301)-630-7094

11. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS.

12. 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 SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR THE THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.

    C.) ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATION 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 ON 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.

DESIGN CERTIFICATION:

'I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.'

DESIGNER'S SIGNATURE — DATE: 1-10-18

DAVID T. MORICONI
PRINTED NAME — MD REGISTRATION NO. 16156 (P.E., R.L.S., OR R.L.A. (CIRCLE ONE))

OWNERS/DEVELOPER CERTIFICATION:

'I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.'

OWNER'S/DEVELOPER'S SIGNATURE — DATE: 1/11/2018

Thomas Auyeung
PRINTED NAME & TITLE

HOWARD SCD SIGNATURE BLOCK:

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

HOWARD SOIL CONSERVATION DISTRICT — DATE: 1/11/18

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT 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. 16156, EXPIRATION DATE: 8/28/2018."

DESIGN DESIGNATION

ROADWAY	*HALL SHOP ROAD*	*BROWNS BRIDGE ROAD*
DESIGN SPEED	40 M.P.H.	35 M.P.H.
FUNCTIONAL CLASSIFICATION	COLLECTOR	COLLECTOR

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS-DATE 1/23/2018
CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18
DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

AECOM

STATE OF MARYLAND — DAVID THOMAS MORICONI — REG. NO. 16156 — REGISTERED PROFESSIONAL ENGINEER — 1/10/18

DES: RLL
DRN: BJK
CHK: DTM
DATE: 12/17

BY	NO.	REVISION	DATE

TITLE SHEET

SCALE MAP NO. 35 BLOCK NO. 19

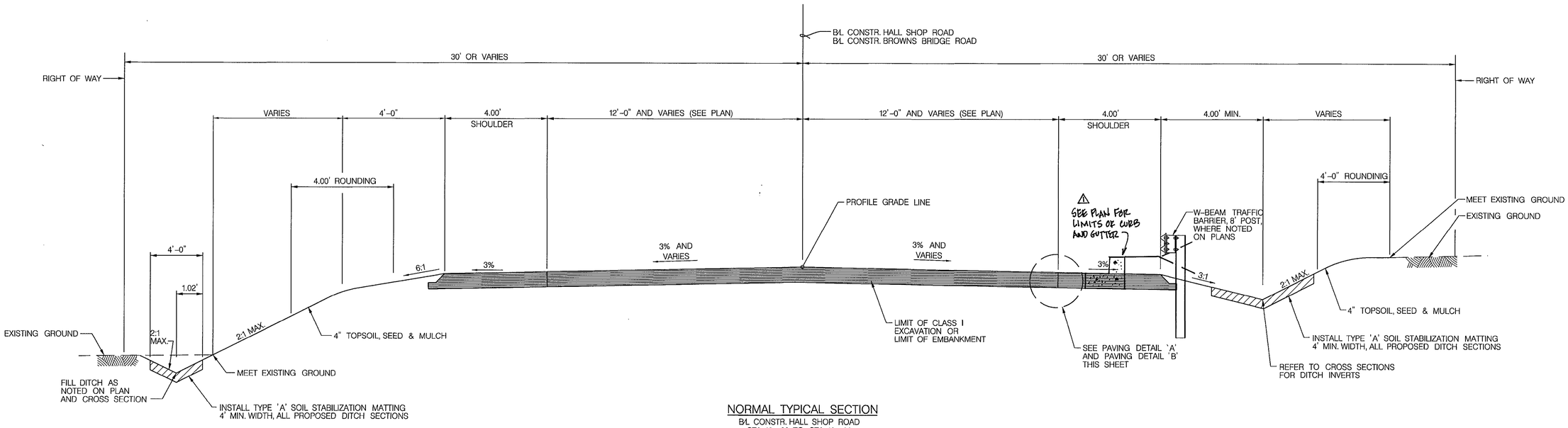
HALL SHOP ROAD AT BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE: AS SHOWN

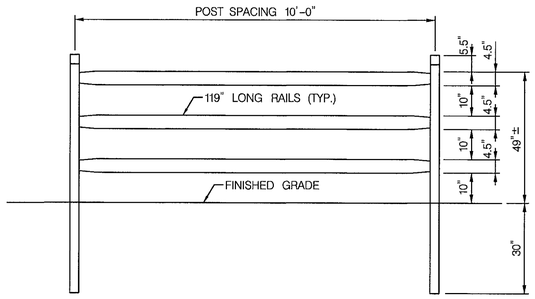
SHEET 1 OF 21

U:\Projects\H\HoCo\60415350\CAD\PlanSet\pGN-T000_HALL.dgn chris.flemingMonday, December 04, 2017 AT 01:44 PM



NORMAL TYPICAL SECTION

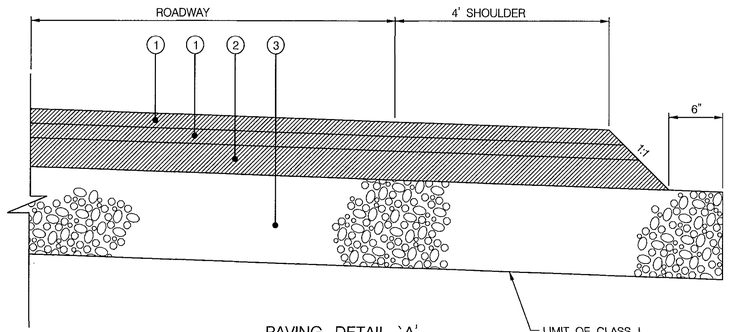
B\L CONSTR. HALL SHOP ROAD
STA. 10+00 TO STA. 19+00
B\L CONSTR. BROWNS BRIDGE ROAD
STA. 101+60.98 TO STA. 104+37.53
NOT TO SCALE



3 RAIL CEDAR SPLIT RAIL FENCE

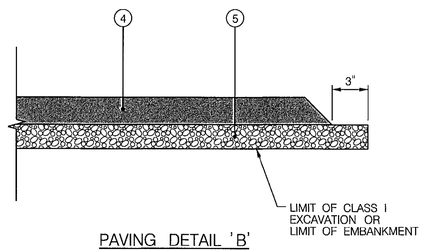
NOT TO SCALE

ALL DIMENSIONS ARE APPROXIMATE MEASUREMENTS. DIMENSIONS WILL VARY WITH POST INSTALLATION DEPTH. POST SPACING WILL VARY WITH LENGTH OF RAILS AND INSTALLATION PROCEDURE.



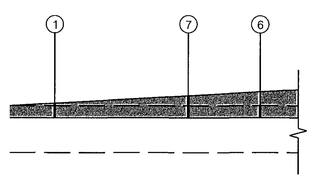
PAVING DETAIL 'A'

HALL SHOP ROAD AND BROWNS BRIDGE ROAD
NOT TO SCALE



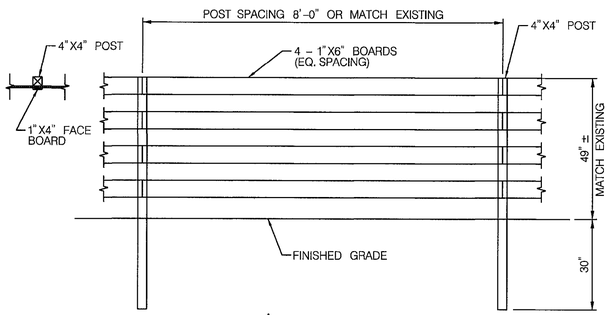
PAVING DETAIL 'B'

DRIVEWAYS
NOT TO SCALE



PAVING DETAIL 'C'

GRIND & OVERLAY AT TIE-INS
(TRANSITION AS PER SECTION 504.03.09)
NOT TO SCALE



⚠ NOT INSTALLED BOARD FENCE

NOT TO SCALE

LEGEND

1. 2" HOT MIX ASPHALT SUPERPAVE 12.5 MM FOR SURFACE, PG 64-22
2. 6" HOT MIX ASPHALT SUPERPAVE 19.0 MM FOR BASE, PG 64-22 (2-3" LIFTS)
3. 6" BASE COURSE USING GRADED AGGREGATE
4. 3" HOT MIX ASPHALT SUPERPAVE 12.5 MM FOR SURFACE, PG 64-22
5. 4" BASE COURSE USING GRADED AGGREGATE
6. GRINDING 0" TO 2"
7. HOT MIX ASPHALT SUPERPAVE 12.5 MM FOR WEDGE/LEVEL, PG 64-22

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. 16156, Expiration Date: 8.28.18

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS — DATE 1/23/2018
CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18
DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

AECOM

STATE OF MARYLAND — DAVID T. MCKAY FLEMING — No. 16156 — PROFESSIONAL ENGINEER — 1/10/18

DES: RLL				
DRN: BJK				
CHK: DTM				
DATE: 12/17	DTM BY	⚠ NO.	AS-BUILT SURVEY REVISION	4.28.19 DATE

TYPICAL SECTIONS & DETAILS

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE AS SHOWN

SHEET 2 OF 21

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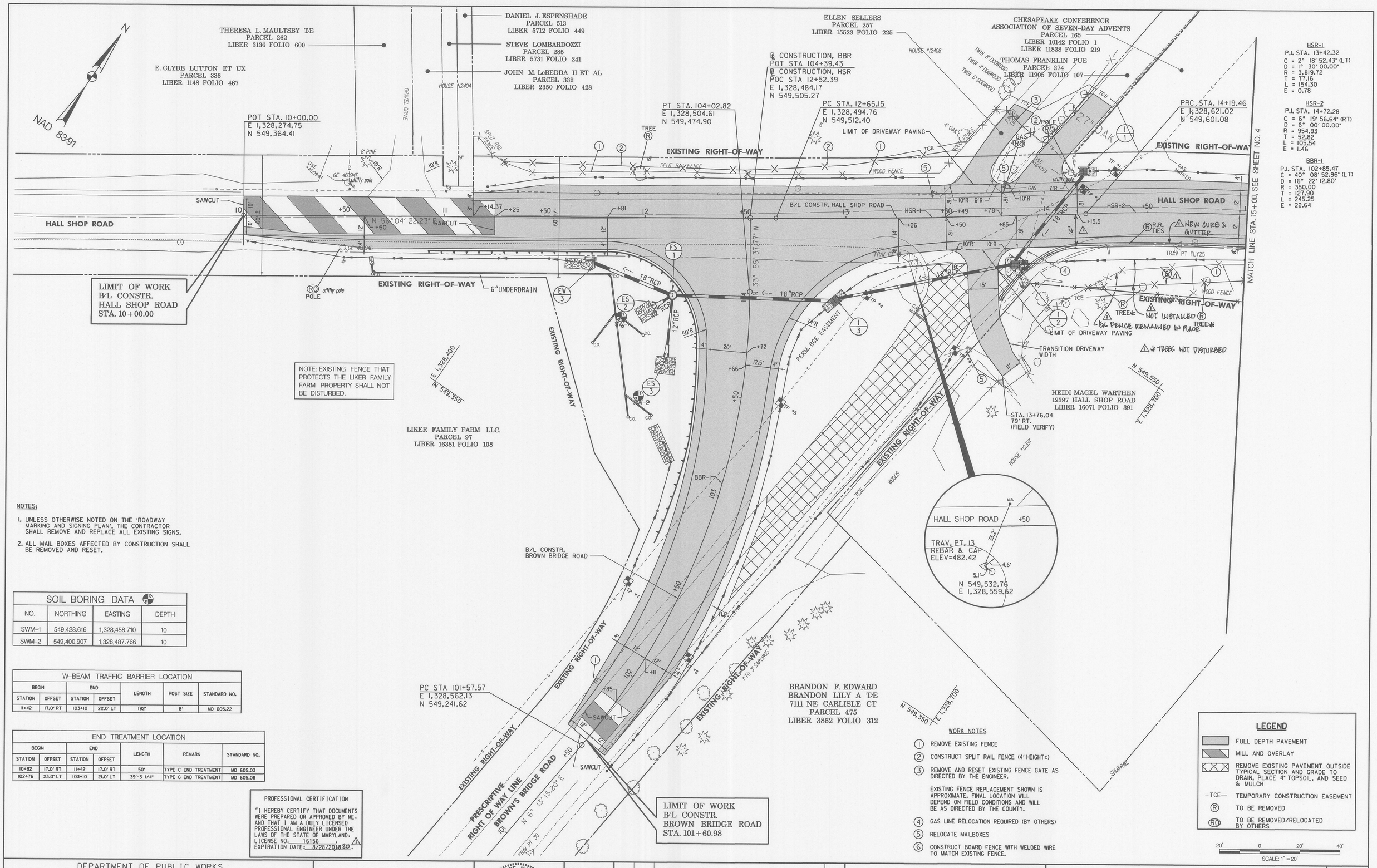

HSR-1
P.I. STA. 13+42.32
C = 2° 18' 52.43" (LT)
D = 1° 30' 00.00"
R = 3,819.72
T = 77.16
L = 154.30
E = 0.78

HSR-2
P.I. STA. 14+72.28
C = 6° 19' 56.64" (RT)
D = 6° 00' 00.00"
R = 954.93
T = 52.82
L = 105.54
E = 1.46

BBR-1
P.I. STA. 102+85.47
C = 40° 08' 52.96" (LT)
D = 16° 22' 12.80"
R = 350.00
T = 127.90
L = 245.25
E = 22.64

NOTES:

1. UNLESS OTHERWISE NOTED ON THE 'ROADWAY MARKING AND SIGNING PLAN', THE CONTRACTOR SHALL REMOVE AND REPLACE ALL EXISTING SIGNS.
2. ALL MAIL BOXES AFFECTED BY CONSTRUCTION SHALL BE REMOVED AND RESET.

SOIL BORING DATA			
NO.	NORTHING	EASTING	DEPTH
SWM-1	549,428.616	1,328,458.710	10
SWM-2	549,400.907	1,328,487.766	10

W-BEAM TRAFFIC BARRIER LOCATION						
BEGIN		END		LENGTH	POST SIZE	STANDARD NO.
STATION	OFFSET	STATION	OFFSET			
11+42	17.0' RT	103+10	22.0' LT	192'	8'	MD 605.22

END TREATMENT LOCATION						
BEGIN		END		LENGTH	REMARK	STANDARD NO.
STATION	OFFSET	STATION	OFFSET			
10+92	17.0' RT	11+42	17.0' RT	50'	TYPE C END TREATMENT	MD 605.03
102+76	23.0' LT	103+10	21.0' LT	39'-3 1/4"	TYPE C END TREATMENT	MD 605.08

PROFESSIONAL CERTIFICATION

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WORK NOTES

1. REMOVE EXISTING FENCE
2. CONSTRUCT SPLIT RAIL FENCE (4' HEIGHT±)
3. REMOVE AND RESET EXISTING FENCE GATE AS DIRECTED BY THE ENGINEER.

   EXISTING FENCE REPLACEMENT SHOWN IS APPROXIMATE. FINAL LOCATION WILL DEPEND ON FIELD CONDITIONS AND WILL BE AS DIRECTED BY THE COUNTY.
4. GAS LINE RELOCATION REQUIRED (BY OTHERS)
5. RELOCATE MAILBOXES
6. CONSTRUCT BOARD FENCE WITH WELDED WIRE TO MATCH EXISTING FENCE.

LEGEND

- FULL DEPTH PAVEMENT
- MILL AND OVERLAY
- REMOVE EXISTING PAVEMENT OUTSIDE TYPICAL SECTION AND GRADE TO DRAIN, PLACE 4" TOPSOIL, AND SEED & MULCH
- —TCE— TEMPORARY CONSTRUCTION EASEMENT
- Ⓡ TO BE REMOVED
- ⓇⓄ TO BE REMOVED/RELOCATED BY OTHERS

SCALE: 1" = 20'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS — DATE 1/23/2018
CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18
DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

AECOM

STATE OF MARYLAND — DAVID THOMAS MORGOVAN — REG. 16156 — REGISTERED PROFESSIONAL ENGINEER — 1-10-18 — 1-28-19

DES: RLL			
DRN: BJK			
CHK: DTM			
DATE: 12/17			
BY	NO.	REVISION	DATE
DTM	1	AS-BUILT SURVEY	1-28-19

ROADWAY PLAN
STA. 10+00 TO 15+00

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT
BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE 1" = 20'

SHEET 3 OF 21

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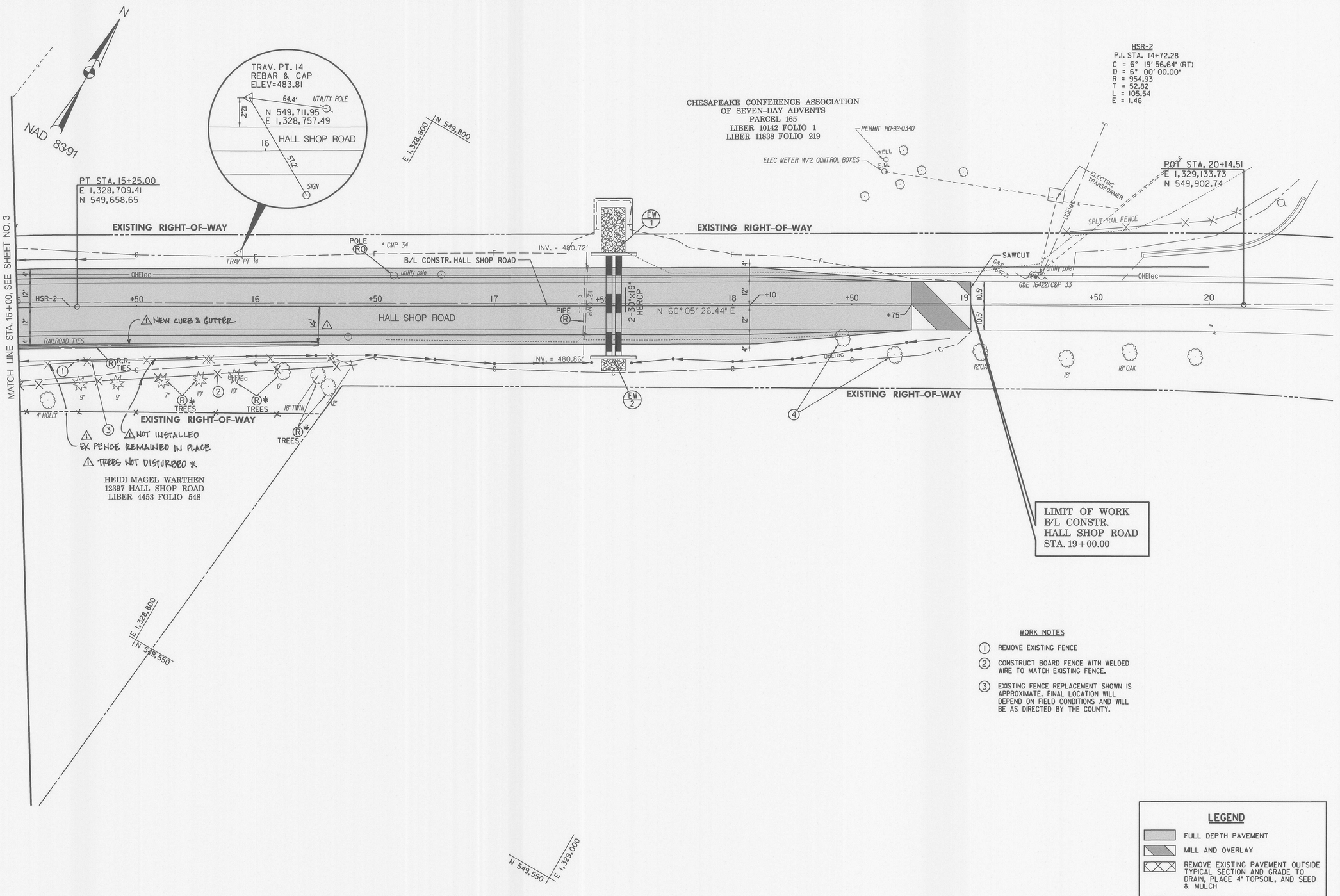
chris.fleming Wednesday, January 10, 2018 AT 07:50 AM



WORK NOTES

1. REMOVE EXISTING FENCE
2. CONSTRUCT BOARD FENCE WITH WELDED WIRE TO MATCH EXISTING FENCE.
3. EXISTING FENCE REPLACEMENT SHOWN IS APPROXIMATE. FINAL LOCATION WILL DEPEND ON FIELD CONDITIONS AND WILL BE AS DIRECTED BY THE COUNTY.

LEGEND

- FULL DEPTH PAVEMENT
- MILL AND OVERLAY
- REMOVE EXISTING PAVEMENT OUTSIDE TYPICAL SECTION AND GRADE TO DRAIN, PLACE 4" TOPSOIL, AND SEED & MULCH
- —TCE— TEMPORARY CONSTRUCTION EASEMENT
- (R) TO BE REMOVED
- (RO) TO BE REMOVED/RELOCATED BY OTHERS

SCALE: 1" = 20'

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS — DATE 1/23/2018
CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18
DIRECTOR, OF PUBLIC WORKS — DATE 1/23/18

AECOM

STATE OF MARYLAND — DAVID THOMAS MORROW — REG. 16156 — REGISTERED PROFESSIONAL ENGINEER — 1-10-18 — 1-28-19

DES: RLL			
DRN: BJK			
CHK: DTM			
DATE: 12/17	DTM	⚠	AS-BUILT SURVEY 1-28-19
	BY	NO.	REVISION DATE

ROADWAY PLAN
STA. 15+00 TO 19+00

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT
BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE 1" = 20'

SHEET 4 OF 21

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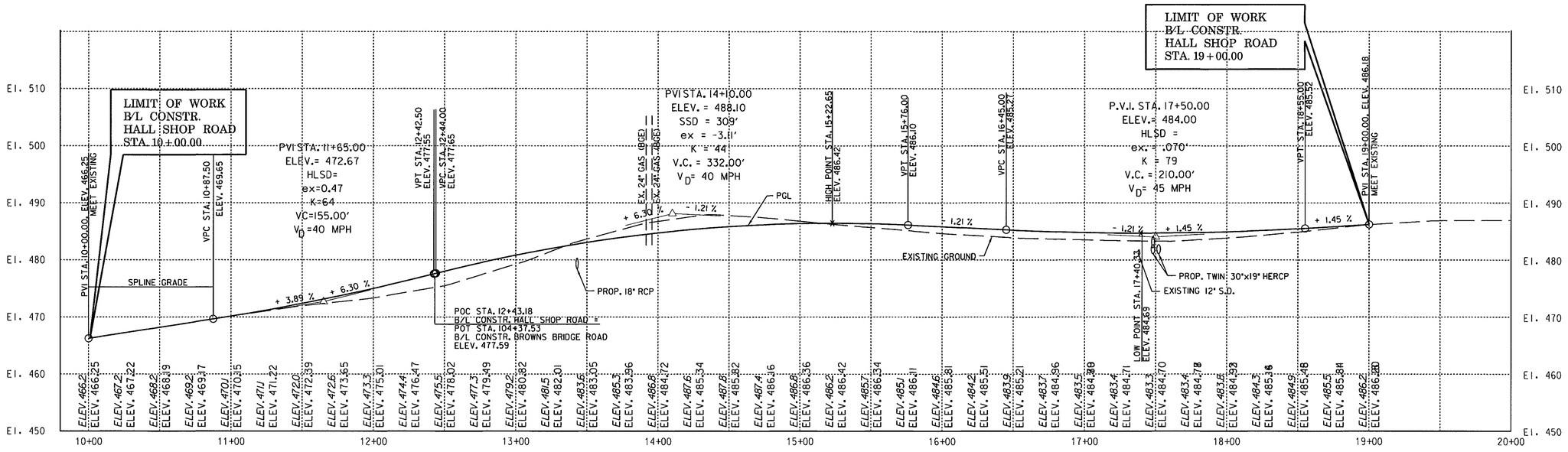
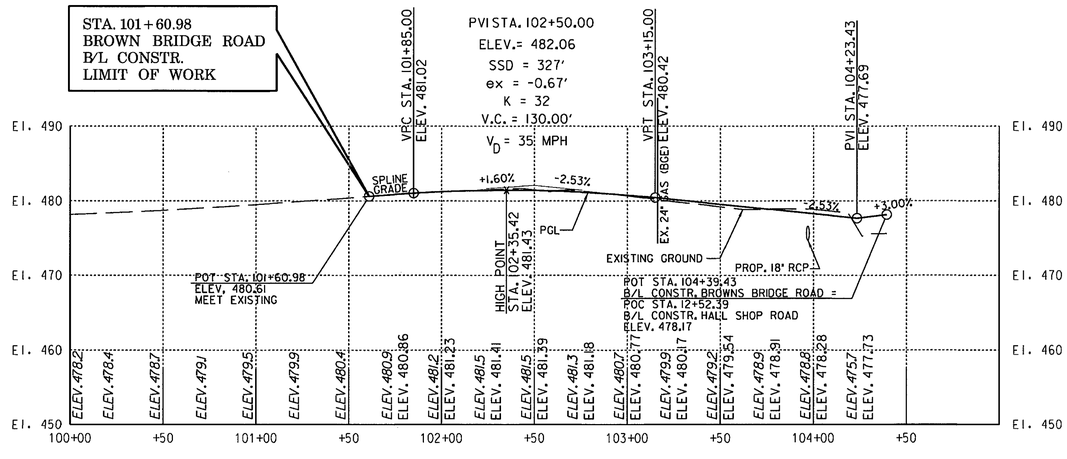


HALL SHOP ROAD PROFILE

SCALE: HORIZ 1"=40'
VERT 1"=10'



BROWNS BRIDGE ROAD PROFILE

SCALE: HORIZ 1"=40'
VERT 1"=10'

PROFESSIONAL CERTIFICATION

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS — DATE 1/22/2018
CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18
DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

AECOM

STATE OF MARYLAND — DAVID THOMAS MONDOROFF — REG. NO. 16156 — PROFESSIONAL ENGINEER — 1-10-18

DES: RLL
DRN: BJK
CHK: DTM
DATE: 12/17

BY	NO.	REVISION	DATE

ROADWAY PROFILES

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT
BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE AS SHOWN

SHEET 5 OF 21

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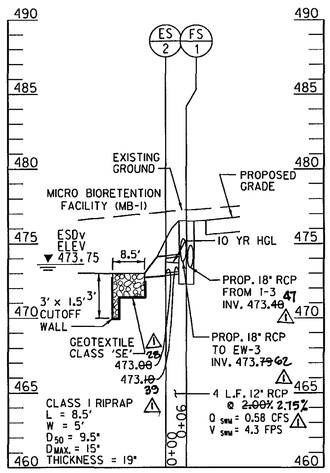
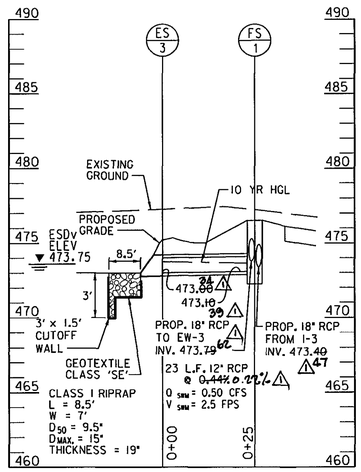
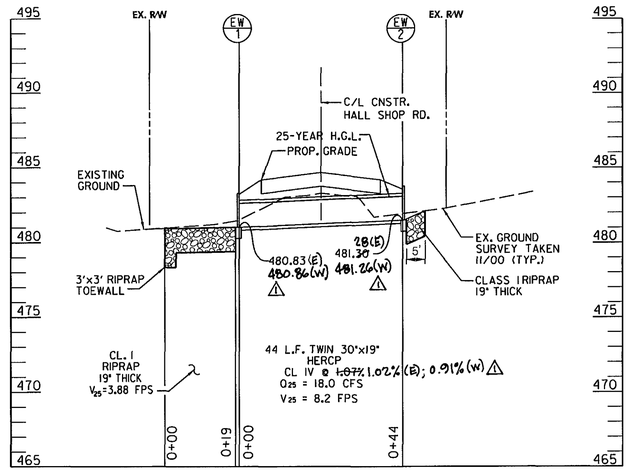


ES-2 TO FS-1



ES-3 TO FS-1



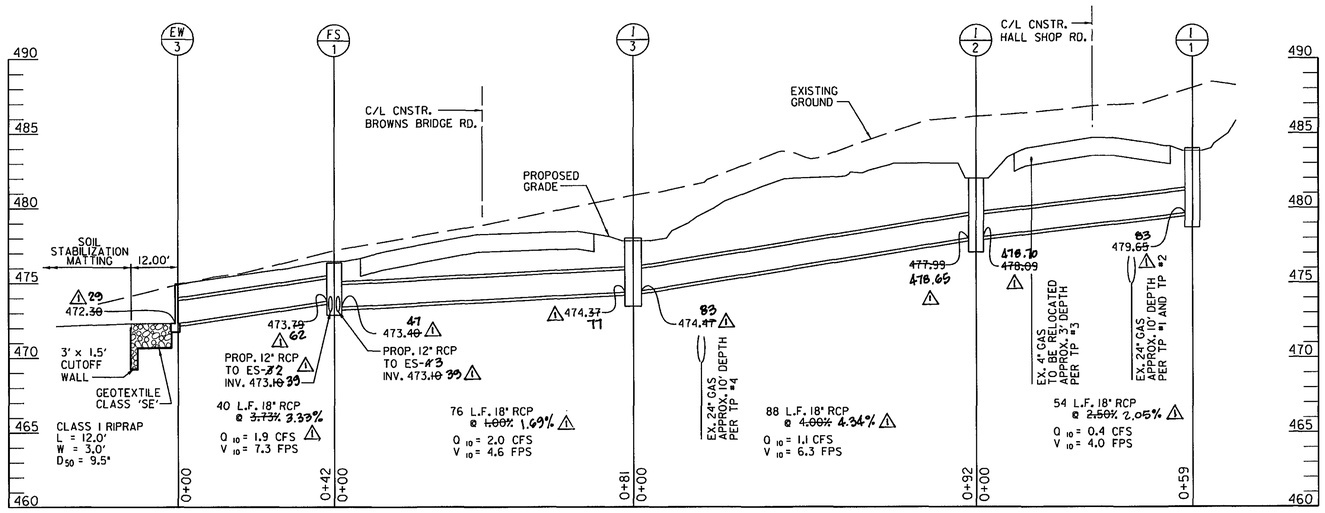
EW-2 TO EW-1

STORM DRAIN STRUCTURE SCHEDULE ⚠									
STATION NO.	WORK POINT				STRUCTURE TYPE	HOWARD COUNTY STD. NO. *	TOP OF GRATE OR COVER ELEVATION	INVERT ELEVATION		REMARKS
	STATION	OFFSET	NORTHING	EASTING				IN	OUT	
I-1	14+19.00	20.92' LT.	549,617.68	1,328,608.29	OPEN END GRATE-PRECAST	D-4.36	~~484.67~~ ~~483.50~~	---	479.~~65~~ 83	
I-2	13+83.44	24.31' RT.	549,560.19	1,328,606.06	OPEN END GRATE-PRECAST	D-4.36	~~483.22~~ ~~481.75~~	478.~~09~~ ~~70~~	~~477.99~~ ~~476.65~~	
I-3	12+94.31	41.20' RT.	549,494.75	1,328,542.15	OPEN END GRATE-PRECAST	D-4.36	477.~~75~~ 61	474.~~47~~ ~~83~~	474.~~37~~ ~~77~~	
ES-2	12+09.19	41.49' RT.	549,446.74	1,328,471.49	CONCRETE END SECTION	D-5.51	---	---	473.~~00~~ ~~26~~	
ES-3	12+11.42	63.19' RT.	549,429.97	1,328,485.45	CONCRETE END SECTION	D-5.51	---	---	473.~~00~~ ~~34~~	
EW-1	17+50.00	21.00' LT.	549,789.16	1,328,894.23	CONCRETE END WALL	MODIFIED D-5.21	---	---	480.83(E)	SEE NOTE 2
EW-2	17+50.00	21.00' RT.	549,752.65	1,328,914.92	CONCRETE END WALL	MODIFIED D-5.21	---	481.~~30~~ ~~28~~(E)	---	SEE NOTE 2
EW-3	11+74.88	22.80' RT.	549,443.09	1,328,432.58	CONCRETE END WALL	MD 356.01	---	---	472.~~30~~ ~~29~~	SHA STANDARD
FS-1	12+17.63	40.98' RT.	549,451.74	1,328,473.68	PRECAST MANHOLE	MD 384.03	~~477.44~~ ~~476.75~~	47 473.~~40~~	~~39~~ 39 473.~~10~~ / 473.~~10~~ 473.~~75~~ ~~62~~	FLOW SPLITTER USING FLAT SLAB TOP

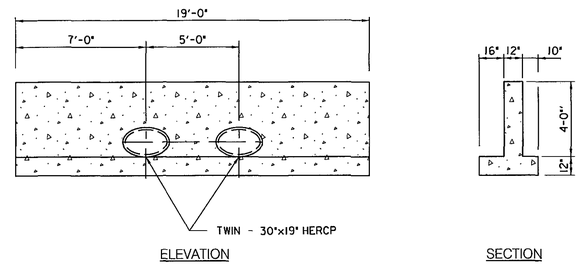
* UNLESS NOTED OTHERWISE

NOTES:

1. WORK POINT FOR INLETS ARE CENTER OF THE PROPOSED STRUCTURES. FOR END SECTIONS AND END WALLS, WORK POINT IS AT THE INVERT LOCATION AS SHOWN ON THE PROFILES.
2. EW-1 AND EW-2 SHALL BE DESIGNED TO ACCOMMODATE TWIN 30"x19" HERCP PIPES (SEE MODIFIED ENDWALL DETAIL THIS SHEET). HOWARD COUNTY STD. NO. SD-5.21 SHALL BE USED AS A BASIS FOR ENDWALL REINFORCEMENT WITH THE DIMENSIONS INDICATED ON ENDWALL DETAIL ADJUSTED ACCORDINGLY.



EW-3 TO I-1

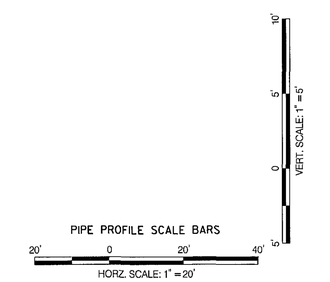


ELEVATION SECTION

MODIFIED ENDWALL DETAIL

SCALE 1"= 4'

REFER TO HOWARD COUNTY STANDARD NO. S-5.21 FOR ADDITIONAL INFORMATION. SEE NOTE 2 ABOVE



PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT 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. 16156 ⚠ EXPIRATION DATE: 8/28/2020."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS — DATE 1/23/2018
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18
CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18
DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

AECOM

STATE OF MARYLAND — DAVID THOMAS MORGOVI — NO. 16156 — REGISTERED PROFESSIONAL ENGINEER
1-10-18
1-28-19

DES: RLL
DRN: BJK
CHK: DTM
DATE: 12/17

BY	NO.	REVISION	DATE
DTM	⚠	AS-BUILT SURVEY	1-28-19

STORM DRAIN PROFILES AND DETAILS

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE AS SHOWN

SHEET 6 OF 21

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SOILS TABLE

MAP UNIT SYMBOL	MAP UNIT NAME	HSG	K-FACTOR	DRAINAGE CLASS
GbB	GLADSTONE LOAM, 3 TO 8% SLOPES	A	0.28	WELL DRAINED
GnB	GLENVILLE-BAILE SILT LOAM, 0 TO 8% SLOPES	C	0.43	MODERATELY WELL

TSOS No.	Drainage Area (Ac.)	TSOS Weir Length 'W'	TSOS Weir Elevation	Earth Dike Elevation	Storage Required (CF)	Storage Height (H, FT)	Ditch Storage Length (L, FT)	Excavated Ditch Storage Invert	Storage Provided (CF) *
1	0.26	6	480.50	481.00	**468.00**	2.00	40.00	478.50	**480.00**
2	0.17	6	479.00	479.50	**306.00**	2.00	40.00	477.00	**480.00**
3	0.05	6	478.50	479.00	**90.00**	1.00	30.00	477.50	**180.00**
4	0.1	6	484.50	485.00	**180.00**	1.00	30.00	483.50	**180.00**
5	0.2	6	483.50	484.00	**360.00**	1.50	40.00	482.00	**360.00**
6	0.1	6	471.50	472.00	**180.00**	1.00	30.00	470.50	**180.00**
7 **	0.94	6	467.00	467.50	**1692.00**	2.00	141.00	465.00	**1692.00**
8	0.15	6	480.50	481.00	**270.00**	1.00	45.00	479.50	**270.00**
9	0.5	6	484.00	484.50	**900.00**	1.50	100.00	482.50	**900.00**
10	0.25	6	484.00	484.50	**450.00**	1.50	50.00	482.50	**450.00**

*Storage Provided = W x L x H
**TGOS

DESIGN CERTIFICATION:

"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

DESIGNER'S SIGNATURE — DATE 1-10-18

DAVID T. MORICONI
PRINTED NAME

MD REGISTRATION NO. 16156
P.E., R.L.S., OR R.L.A. (CIRCLE ONE)

OWNERS/DEVELOPER CERTIFICATION:

"I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

OWNER'S/DEVELOPER'S SIGNATURE — DATE 1/11/2018

Thomas Fumerey
PRINTED NAME & TITLE

HOWARD SCD SIGNATURE BLOCK:

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

HOWARD SOIL CONSERVATION DISTRICT — 1/11/18

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT 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. 16156, EXPIRATION DATE: 8/28/2018

NOTES:
1. UNLESS NOTED OTHERWISE, ALL EARTH DIKE ADJACENT TO THE TSOS ARE TYPE 'A-1'.
2. SEE SHEET 9 FOR TSOS STORAGE DETAIL.

LEGEND

- STABILIZED CONSTRUCTION ENTRANCE
- SF — SILT FENCE
- PST — PORTABLE SEDIMENT TANK
- TSOS — TEMPORARY STONE OUTLET STRUCTURE
- LOD — LIMIT OF DISTURBANCE
- SOIL STABILIZATION MATTING
- REMOVE EXISTING PAVEMENT AND PLACE 4" TOPSOIL, SEED & MULCH
- IMMEDIATE STABLIZATION
- TSOS STORAGE BOTTOM
- DF — DIVERSION FENCE
- SANDBAG
- TEMPORARY FLEXIBLE DIVERSION PIPE
- A-1 — EARTH DIKE

SCALE: 1" = 20'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS — DATE 1/23/18
CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/23/18
DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

AECOM

STATE OF MARYLAND — DAVID THOMAS MORICONI — No. 16156 — REGISTERED PROFESSIONAL ENGINEER — 1-10-18

DES: RLL				
DRN: BJK				
CHK: DTM				
DATE: 12/17	DTM	1	AS-BUILT	1-28-19
	BY	NO.	REVISION	DATE

EROSION & SED. CONTROL PLAN
STA. 10+00 TO 15+00

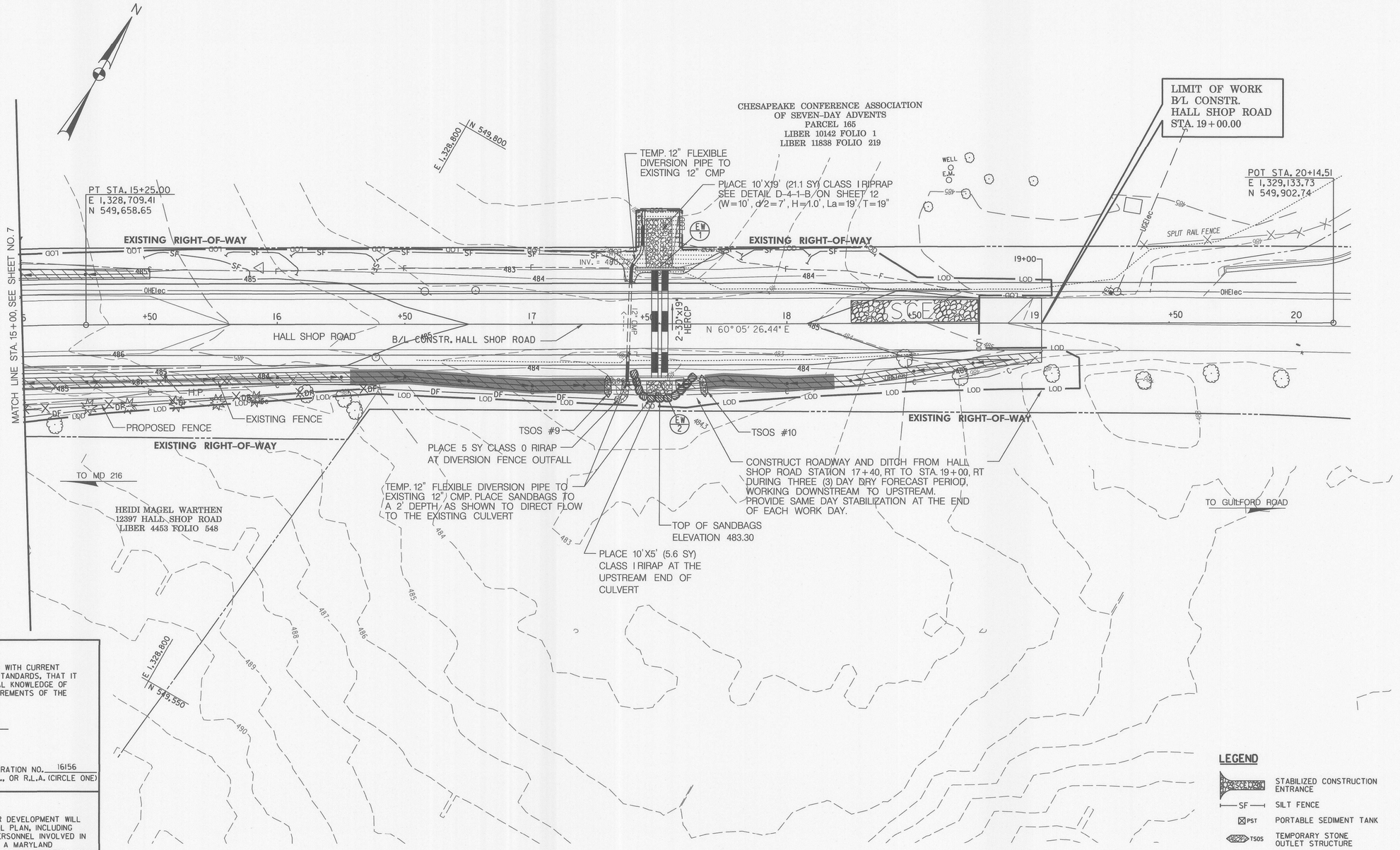
SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT
BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE 1" = 20'

SHEET 7 OF 21



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DESIGNER'S SIGNATURE — DATE: 1-10-18

DAVID T. MORICONI
PRINTED NAME

MD REGISTRATION NO. 16156
(P.E.) R.L.S., OR R.L.A. (CIRCLE ONE)

OWNERS/DEVELOPER CERTIFICATION:

"I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

Thomas Duryea — OWNER'S/DEVELOPER'S SIGNATURE — DATE: 1/11/2018

Thomas Duryea
PRINTED NAME & TITLE

HOWARD SCD SIGNATURE BLOCK:

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

HOWARD SOIL CONSERVATION DISTRICT — DATE: 1/11/18

PROFESSIONAL CERTIFICATION

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF BUREAU OF HIGHWAYS — DATE: 1/23/2018
CHIEF, BUREAU OF ENGINEERING — DATE: 1/22/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE: 1/22/18
DIRECTOR OF PUBLIC WORKS — DATE: 1/23/18

AECOM

STATE OF MARYLAND — DAVID THOMAS MORICONI — No. 16156 — PROFESSIONAL ENGINEER — 1-10-18

DES:	RLL
DRN:	BJK
CHK:	DTM
DATE:	12/17

BY	NO.	REVISION	DATE

NOTES:
1. UNLESS NOTED OTHERWISE, ALL EARTH DIKE ADJACENT TO THE TSOS ARE TYPE 'A-1'.
2. SEE SHEET 9 FOR TSOS STORAGE DETAIL.
3. ALL SOILS ARE GbB. SEE SHEET 7 FOR SOILS TABLE.

LEGEND

- SCE — STABILIZED CONSTRUCTION ENTRANCE
- SF — SILT FENCE
- PST — PORTABLE SEDIMENT TANK
- TSOS — TEMPORARY STONE OUTLET STRUCTURE
- LOD — LIMIT OF DISTURBANCE
- SOIL STABILIZATION MATTING
- REMOVE EXISTING PAVEMENT AND PLACE 4" TOPSOIL, SEED & MULCH
- IMMEDIATE STABLIZATION
- TSOS STORAGE BOTTOM
- DF — DIVERSION FENCE
- SANDBAG
- TEMPORARY FLEXIBLE DIVERSION PIPE
- A-1 — EARTH DIKE

20' 0 20' 40'
SCALE: 1" = 20'

EROSION & SED. CONTROL PLAN
STA. 15+00 TO 19+00

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE: 1" = 20'

SHEET 8 OF 21

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SEQUENCE OF CONSTRUCTION

THE FOLLOWING SEQUENCE OF CONSTRUCTION DESCRIBES, IN PART, THE STEPS REQUIRED TO COMPLETE THE PROPOSED WORK. CONTRACTOR IS RESPONSIBLE FOR DETERMINING INTERIM SEQUENCE OF CONSTRUCTION, MEANS, METHODS, MATERIALS, LABOR AND/OR EQUIPMENT NECESSARY TO SATISFACTORILY CONSTRUCT THE FEATURES AS SHOWN ON THE PLANSET. IT SHALL BE CLEARLY UNDERSTOOD THAT FAILURE TO SPECIFICALLY MENTION ANY WORK WHICH WOULD NORMALLY BE REQUIRED TO COMPLETE THE PROJECT SHALL NOT RELIEVE THE CONTRACTOR'S RESPONSIBILITY TO COMPLETE THE PROJECT TO THE OWNER'S SATISFACTION.

1. OBTAIN THE GRADING PERMITS PRIOR TO CONSTRUCTION. (1 DAY)
2. NOTIFY HOWARD COUNTY AT 410-313-1855 AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION (1 DAY).
3. REFER TO THE MAINTENANCE OF TRAFFIC PLANS CONTAINED IN THIS SET OF PLANS AND IMPLEMENT THE DETOUR (5 DAYS).
4. WITH THE APPROVAL OF THE INSPECTOR, INSTALL STABILIZED CONSTRUCTION ENTRANCES (SCE) AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLANS. THE SCE SHALL BE RELOCATED AND REHABILITATED AS NEEDED OR AS DIRECTED BY THE ENGINEER THROUGHOUT CONSTRUCTION.
5. CLEAR AND GRUB FOR THE INSTALLATION OF THE PERIMETER EROSION AND SEDIMENT CONTROL MEASURES AS NOTED BELOW (3 DAYS).
6. CONTRACTOR SHALL USE STAGING/STOCKPILE AREA AS INDICATED ON THE PLANS OR AS APPROVED BY THE ENGINEER. DO NOT REMOVE THE EXISTING PAVEMENT AT THE STAGING/STOCKPILE AREA UNTIL THE STAGING/STOCKPILE AREA IS NO LONGER NEEDED. INSTALL SILT FENCE AROUND LOW SIDE OF STOCKPILE AREA. (1 DAY)
7. INSTALL THE FOLLOWING PERIMETER EROSION AND SEDIMENT CONTROL DEVICES. (5 DAYS)

   A. SILT FENCE
   - STA. 15+50, LT TO STA. 18+40, LT, HALL SHOP RD, AS INDICATED
   - STA. 101+65, LT TO STA. 104+20, LT, BROWNS BRIDGE RD

   B. DIVERSION FENCE
   - STA. 10+00, RT TO STA. 11+65, RT, HALL SHOP RD
   - STA. 101+60, RT TO STA. 103+80, RT, BROWNS BRIDGE RD
   - STA. 11+20, LT TO STA. 13+40, LT, HALL SHOP RD
   - STA. 14+75, RT TO STA. 17+32, RT, HALL SHOP RD

   C. TEMPORARY STONE OUTLET STRUCTURE (TSOS) WITH EARTH DIKE
   - STA. 11+25, LT HALL SHOP RD (#6)
   - STA. 10+00, RT HALL SHOP RD (#7)
   - STA. 101+50, RT, BROWNS BRIDGE RD (#8)
   - STA. 17+30, RT HALL SHOP RD (#9)
   - STA. 17+68, RT HALL SHOP RD (#10)

   D. TEMPORARY CULVERT EXTENSION (12" FLEXIBLE PIPE)
   - STA. 17+40, LT/RT. HALL SHOP RD
8. WITH THE APPROVAL OF THE INSPECTOR, CLEAR AND GRUB THE REMAINDER OF THE SITE AS NEEDED. (2 DAYS)
9. CONSTRUCT AND STABILIZE DITCH FROM HALL SHOP ROAD STA. 10+00 TO 11+75, RT. EXCAVATE STORAGE AREA UPSLOPE OF TSOS #7. (5 DAYS)
10. INSTALL STORM DRAIN SYSTEM EW-3 TO FS-1, FS-1 TO I-3, I-3 TO I-2, I-2 TO I-1. INSTALL TSOS# 1, 2, 4 & 5 WITH STORAGE UPSLOPE OF EACH TSOS. PLUG FS-1 OUTLETS TO ES-2 & ES-3. (15 DAYS)
11. CONSTRUCT AND STABILIZE REMAINDER OF HALL SHOP ROAD AND BROWNS BRIDGE ROAD SIDE DITCHES AND TSOS #3 WITH UPSLOPE STORAGE. (10 DAYS)
12. BEGIN CONSTRUCTION OF HALL SHOP ROAD AND BROWNS BRIDGE ROAD. ONCE PAVEMENT BASE IS PLACED, BEGIN EXCAVATION FOR MICRO-BIORETENTION. INSTALL SILT FENCE FROM STA. 103+15, LT. TO STA. 114+20, LT BROWNS BRIDGE ROAD. CONSTRUCT NEW TWIN CULVERT, HEADWALLS AND RIPRAP. PLACE SANDBAGS AT EW-2. (35 DAYS)
13. CONSTRUCT REMAINDER OF MICRO-BIORETENTION, INSTALL UNDERDRAIN, UNDERDRAIN OUTLET, CLEANOUTS AND STABILIZED OUTLET. USE PORTABLE SEDIMENT TANKS TO DEWATER SEDIMENT LADEN WATER ENCOUNTERED. INSTALL ES-2 AND ES-3, PIPES TO FS-1, RIPRAP OUTLET PROTECTION; AND STABILIZE. (15 DAYS)
14. ONCE THE MICRO-BIORETENTION FACILITES ARE STABLE, UNPLUG OPENINGS TO MICRO-BIORETENTION AT FS-1. (2 DAYS)
15. COMPLETE PAVING FOR HALL SHOP ROAD. (10 DAYS)
16. REMOVE EXISTING BROWNS BRIDGE ROAD, STOCKPILE AREA AND GRADE TO FINAL GRADE AS SHOWN IN THE PLANS, WORKING UPSTREAM TO DOWNSTREAM. STABILIZE ANY DISTURBED AREAS AT THE END OF EACH WORK DAY. DO NOT REMOVE THE PAVEMENT AT THE STAGING/STOCKPILE AREA AT THIS TIME. (5 DAYS)

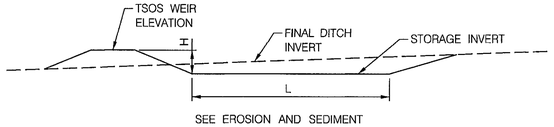
SEQUENCE OF CONSTRUCTION (CON'T)

17. ONCE THE SIDE DITCHES ARE STABILIZED AND WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, REMOVE TSOS. STABILIZE DITCHES TO FINAL GRADE. (10 DAYS)
18. REMOVE DIVERSION FENCES AND RIPRAP OUTFALLS. REMOVE SANDBAGS AT EW-2. (5 DAYS)
19. STABILIZE REMAINING DISTURBED AREAS WITH TOPSOIL, PERMANENT SEEDING AND MULCHING AS NEEDED. (5 DAYS)
20. CONTRACTOR SHALL CLEAN ALL PIPES INSTALLED AS PART OF THIS PROJECT AFTER ALL UPSTREAM AREAS HAVE BEEN STABILIZED, BUT PRIOR TO THE REMOVAL OF TSOS CONTROLS AS MENTIONED ABOVE. (2 DAYS)
21. UPON THE HOWARD CO. INSPECTOR'S APPROVAL, REMOVE ALL REMAINING EROSION AND SEDIMENT CONTROL DEVICES AND STABILIZE THE REMAINING AREAS WITH PERMANENT SEEDING. (5 DAYS)

NOTE: THE TIME LINE EXCLUDES WEATHER RELATED DELAYS.

SEQUENCE OF CONSTRUCTION - GENERAL NOTES

1. UTILITIES AND STORM DRAINS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLANS ARE FOR THE GUIDANCE OF THE CONTRACTOR ONLY. CONTRACTOR SHALL CALL "MISS UTILITY" AT 1-800-257-7777 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND UTILITIES IN THE AREA OF THE PROPOSED EXCAVATION AND HAVE THOSE UTILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION.
2. THE EROSION AND SEDIMENT CONTROL MEASURES MUST BE IN PLACE AND FUNCTIONING PRIOR TO CLEARING THE ENTIRE SITE. CLEAR AND GRUB FOR EROSION AND SEDIMENT CONTROL MEASURES OR DEVICES ONLY ON COMMENCEMENT OF CONSTRUCTION.
3. INSTALL STABILIZED CONSTRUCTION ENTRANCES, AND OTHER EROSION SEDIMENT CONTROL DEVICES AS PER THE EROSION AND SEDIMENT CONTROL PLANS. THE LOCATIONS FOR STABILIZED CONSTRUCTION ENTRANCES SHOWN ON THE PLANS ARE APPROXIMATE, AND EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD WITH APPROVAL FROM THE ENGINEER AND INSPECTOR.
4. MAINTAIN ALL SEDIMENT CONTROL PRACTICES ACCORDING TO THE MARYLAND 2011 STANDARDS UNTIL THE ENTIRE SITE IS STABILIZED.
5. CONTRACTOR SHALL LOCATE THE STAGING AND STOCKPILE AREA AND IS RESPONSIBLE FOR PROVIDING ANY ADDITIONAL E/S CONTROLS FOR STAGING AND STOCKPILE AREAS AS REQUIRED BY THE INSPECTOR.
6. CLEAR AND GRUB AND PROCEED TO CONSTRUCTION ACCORDING TO THE SEQUENCE SPECIFIED ON THE TRAFFIC CONTROL PLAN SHEETS.
7. STORM DRAIN SYSTEMS SHALL ALWAYS BE CONSTRUCTED FROM THE DOWNSTREAM ENDS. INLET PROTECTIONS SHALL BE INSTALLED AT EXISTING INLETS BEFORE ANY DISTURBANCE IN THE WORK AREA. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUN OFF IS DIRECTED TO AN MDE APPROVED SEDIMENT CONTROL DEVICE. CONTRACTOR SHALL USE PORTABLE SEDIMENT TANK TO DEWATER THE WORKING AREA DURING CONSTRUCTION.
8. CONSTRUCTION SHALL BE COMPLETED IN SEQUENCE LISTED ON THIS SHEET.
9. MAINTAIN ACCESS TO PRIVATE RESIDENCES AT ALL TIMES. ROADWAY SUBBASE SHALL BE STABILIZED WITH GRADED AGGREGATE BASE MATERIAL AT THE END OF EACH WORK DAY.



SEE EROSION AND SEDIMENT CONTROL PLAN FOR DESIGN TABLE

TSOS STORAGE DETAIL
NOT TO SCALE

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT 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. 16156, EXPIRATION DATE: 8/28/2018.

HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES

1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
   A. PRIOR TO THE START OF EARTH DISTURBANCE,
   B. UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING,
   C. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT,
   D. PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.
2. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN.
3. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERETO.
4. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES IF THE GROUND IS FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-1) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH >15' OF CUT AND/OR FILL. STOCKPILES (SEC. B-4-8) IN EXCESS OF 20 FT. MUST BE BENCHED WITH STABLE OUTLET. ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-6).
6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE, AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE CID.

   SITE ANALYSIS:

   TOTAL AREA OF SITE: 1.77 ACRES
   AREA DISTURBED: 1.77 ACRES
   AREA TO BE ROOFED OR PAVED: 0.92 ACRES
   AREA TO BE VEGETATIVELY STABILIZED: 0.85 ACRES
   TOTAL CUT: 2,280 CU. YDS.
   TOTAL FILL: 390 CU. YDS. HOCO LANDFILL /SITE WITH
   OFFSITE WASTE/BORROW AREA LOCATION: ACTIVE GRADING PERMIT
7. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE CID. THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY; AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST, IS PART OF EVERY INSPECTION AND SHOULD INCLUDE:
   - INSPECTION DATE
   - INSPECTION TYPE (ROUTINE, PRE-STORM EVENT, DURING RAIN EVENT)
   - NAME AND TITLE OF INSPECTOR
   - WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED PRECIPITATION)
   - BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES
   - EVIDENCE OF SEDIMENT DISCHARGES
   - IDENTIFICATION OF PLAN DEFICIENCIES
   - IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE
   - IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS
   - COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS
   - PHOTOGRAPHS
   - MONITORING/SAMPLING
   - MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED
   - OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES (NPDES, MDE).
9. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN AND SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
10. ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.
11. DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.O.D. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE CID. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE CID, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.
12. WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.
13. TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.
14. ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-CONTOUR, AND BE IMBRICATED AT 25' MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPHILL BY 2' IN ELEVATION.
15. STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE):

    USE I AND IP MARCH 1 – JUNE 15
    USE III AND IIIP OCTOBER 1 – APRIL 30
    USE IV MARCH 1 – MAY 31
16. A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.

DESIGN CERTIFICATION:

"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

DESIGNER'S SIGNATURE — DATE: 1-10-18

DAVID T. MORICONI
PRINTED NAME

MD REGISTRATION NO. 16156
(P.E.) R.L.S., OR R.L.A. (CIRCLE ONE)

OWNERS/DEVELOPER CERTIFICATION:

"I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

OWNER'S/DEVELOPER'S SIGNATURE — DATE: 1/11/2018

PRINTED NAME & TITLE

HOWARD SCD SIGNATURE BLOCK:

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

HOWARD SOIL CONSERVATION DISTRICT — DATE: 1/11/18

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF BUREAU OF HIGHWAYS — DATE 1/23/2018
CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18
DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

AECOM

STATE OF MARYLAND — DAVID THOMAS MORICONI — No. 16156 — REGISTERED PROFESSIONAL ENGINEER — 1-10-18

DES: RLL	BY	NO.	REVISION	DATE
DRN: BJK				
CHK: DTM				
DATE: 12/17				

EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE N/A

SHEET 9 OF 21

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B-4-2 STANDARDS AND SPECIFICATIONS

FOR

SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition

The process of preparing the soils to sustain adequate vegetative stabilization.

Purpose

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

Criteria

A. Soil Preparation

1. Temporary Stabilization
   a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
   b. Apply fertilizer and lime as prescribed on the plans.
   c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
2. Permanent Stabilization
   a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
      i. Soil pH between 6.0 and 7.0.
      ii. Soluble salts less than 500 parts per million (ppm).
      iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
      iv. Soil contains 1.5 percent minimum organic matter by weight.
      v. Soil contains sufficient pore space to permit adequate root penetration.
   b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
   c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
   d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
   e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

B. Topsoiling

1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
3. Topsoiling is limited to areas having 2:1 or flatter slopes where:
   a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
   b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
   c. The original soil to be vegetated contains material toxic to plant growth.
   d. The soil is so acidic that treatment with limestone is not feasible.
4. Areas having slopes steeper than 2:1 require special consideration and design.
5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
   a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 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 topsoil.
6. Topsoil Application
   a. Erosion and sediment control practices must be maintained when applying topsoil.
   b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
   c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading 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; P_2O_5 (phosphorous), 200 pounds per acre; K_2O (potassium), 200 pounds per acre.
      ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
      iii. Mix seed and fertilizer on site and seed immediately and without interruption.
      iv. When hydroseeding do not incorporate seed into the soil.

B. Mulching

1. Mulch Materials (in order of preference)
   a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty. **Note: Use only sterile straw mulch in areas where one species of grass is desired.**
   b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
      i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
      ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
      iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
      iv. WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic.
      v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.
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.

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT 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. 16156, EXPIRATION DATE: 8/28/2018."

B-4-4 STANDARDS AND SPECIFICATIONS

FOR

TEMPORARY STABILIZATION

Definition

To stabilize disturbed soils with vegetation for up to 6 months.

Purpose

To use fast growing vegetation that provides cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

Criteria

1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

Temporary Seeding Summary

Hardiness Zone (from Figure B.3): 6B **Seed Mixture** (from Table B.1): 6 OR 7					**Fertilizer Rate (10-20-20)**	**Lime Rate**
No.	**Species**	**Application Rate (lb/ac)**	**Seeding Dates**	**Seeding Depths**		
5	CEREAL RYE	112	3/1 – 5/15 8/1 – 11/15	1.0 IN.	436 lb/ac (10 lb/1000 sf)	2 tons/ac (90 lb/1000 sf)
6	FOXTAIL MILLET	30	5/16 – 7/31	0.5 IN.		

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

Hardiness Zone (from Figure B.3): 6B **Seed Mixture** (from Table B.3): 8					**Fertilizer Rate (10-20-20)**			**Lime Rate**
No.	**Species**	**Application Rate (lb/ac)**	**Seeding Dates**	**Seeding Depths**	**N**	**P_2O_5**	**K_2O**	
1	TALL FESCUE	100	3/1-5/15 8/1-10/15	½- ½ in	45 pounds per acre (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)
2	SOD	N/A	5/16-9/14 9/15-11/15	½- ½ in				
				½- ½ in				

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 ¼ 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 ½ 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.

DESIGN CERTIFICATION:

"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

DESIGNER'S SIGNATURE — DATE: 1-10-18

DAVID T. MORICONI
PRINTED NAME

MD REGISTRATION NO. 16156
(P.E. R.L.S., OR R.L.A. (CIRCLE ONE)

OWNERS/DEVELOPER CERTIFICATION:

"I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

OWNER'S/DEVELOPER'S SIGNATURE — DATE: 1/11/2018

Thomas Ruyang
PRINTED NAME & TITLE

HOWARD SCD SIGNATURE BLOCK:

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

HOWARD SOIL CONSERVATION DISTRICT — DATE: 1/11/18

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF BUREAU OF HIGHWAYS — DATE 1/23/2018
CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18
DIRECTOR OF PUBLIC WORKS — DATE 1/22/18

AECOM

STATE OF MARYLAND — DAVID THOMAS MORICONI — No. 16156 — REGISTERED PROFESSIONAL ENGINEER
1-10-18

DES: RLL
DRN: BJK
CHK: DTM
DATE: 12/17

BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

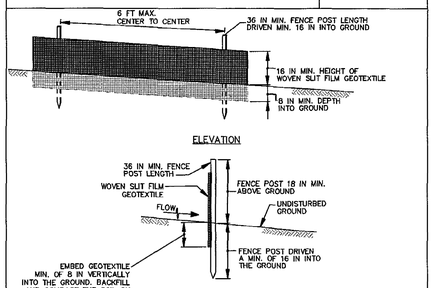
SCALE N/A

SHEET 10 OF 21

U:\Projects\H\HoCo\60415350\CAD\PlanSet\pES-N002_HALL.dgn chris.flemingMonday, December 04, 2017 AT 01:44 PM

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF



JOINING TWO ADJACENT SILT FENCE SECTIONS (TOP VIEW)

1 OF 2

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± 1/8 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.

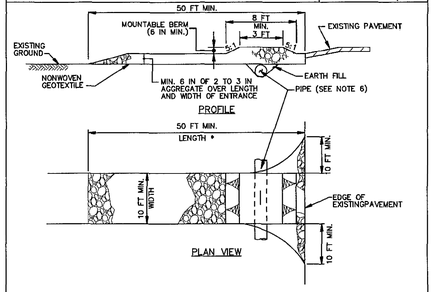
2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-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.

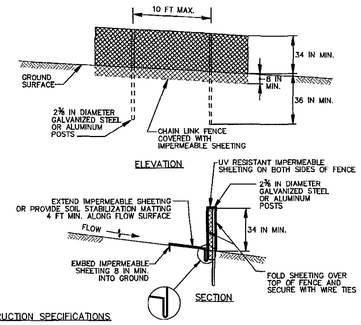
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-9 DIVERSION FENCE

STANDARD SYMBOL: DF

MAXIMUM DRAINAGE AREA = 2 ACRES



CONSTRUCTION SPECIFICATIONS

1. USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2⅜ INCH MAXIMUM OPENING).
2. USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
3. FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.
4. SECURE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.
5. EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.
6. WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE.
7. KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

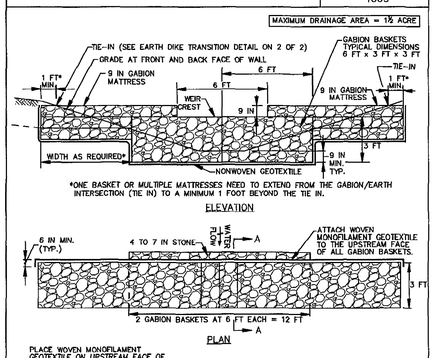
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

C.27

DETAIL E-8 TEMPORARY GABION OUTLET STRUCTURE

STANDARD SYMBOL: TGOS

MAXIMUM DRAINAGE AREA = 1½ ACRE



1 OF 2

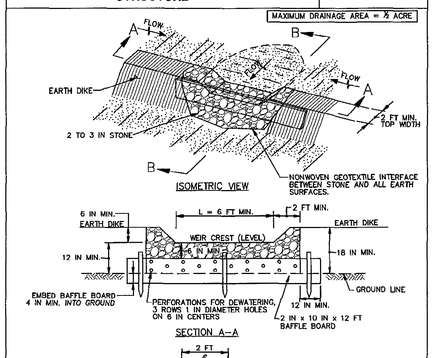
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-7 TEMPORARY STONE OUTLET STRUCTURE

STANDARD SYMBOL: TSOS

MAXIMUM DRAINAGE AREA = ½ ACRE



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± 1/8 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.

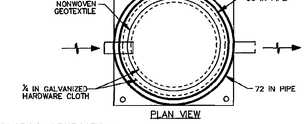
2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL F-3 PORTABLE SEDIMENT TANK

STANDARD SYMBOL: ⊠PST



CONSTRUCTION SPECIFICATIONS

1. PROVIDE 1 CUBIC FOOT OF STORAGE FOR EACH GALLON PER MINUTE OF PUMP CAPACITY. REQUIRED STORAGE VOLUME MAY BE ATTAINED BY PLACEMENT OF TANKS IN PARALLEL WITH INFLOW EVENLY DISTRIBUTED AMONG TANKS. OVERTOPPING OF TANKS IS NOT PERMITTED.
2. USE 60 INCH CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER FOR THE INNER PIPE. LINE PIPE WITH NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, SANDWICHED BETWEEN, AND ATTACHED TO, ¼ INCH HARDWARE CLOTH.
3. OVERLAP GEOTEXTILE 8 INCHES MINIMUM AT VERTICAL SEAM AND AT THE BOTTOM PLATE.
4. ANCHOR GEOTEXTILE AT BOTTOM OF TANK WITH 4 INCHES OF 2 TO 3 INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE.
5. USE 72 INCH CORRUGATED METAL OR PLASTIC OUTER PIPE WITH PERMANENT OUTFLOW PIPE WITH INVERT LOWER THAN INFLOW PIPE
6. INFLOW PIPE MUST DISCHARGE INTO INNER PIPE AND BE REMOVABLE.
7. PLACE TANK ON LEVEL SURFACE AND DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
8. A PORTABLE SEDIMENT TANK REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT FROM INNER PIPE WHEN IT REACHES TWO FEET IN DEPTH. IF SYSTEM CLOGS, PULL OUT INNER PIPE. REMOVE ACCUMULATED SEDIMENT, AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.

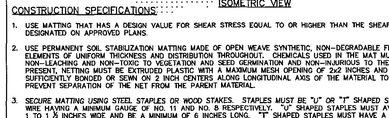
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

F.7

DETAIL B-4-8-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION

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



CONSTRUCTION SPECIFICATIONS

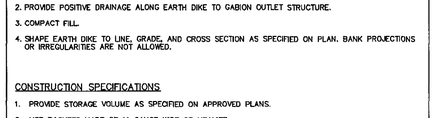
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 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 "I" 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. "I" 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.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-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.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-7 TEMPORARY STONE OUTLET STRUCTURE

STANDARD SYMBOL: TSOS

CONSTRUCTION SPECIFICATIONS

1. PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.
2. USE NONWOVEN GEOTEXTILE ON INTERFACE BETWEEN GROUND AND STONE.
3. PERFORATE BAFFLE BOARD WITH 3 ROWS OF 1 INCH DIAMETER HOLES 6 INCHES ON CENTER, EMBED A MINIMUM OF 4 INCHES INTO GROUND, AND EXTEND BAFFEL BOARD MINIMUM OF 12 INCHES INTO EARTH DIKE.
4. USE CLEAN 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE. PLACE WOVEN MONOFILAMENT GEOTILE ON UPSTREAM FACE AND COVER WITH A MINIMUM OF 6 INCHES OF ADDITIONAL STONE.
5. USE NONWOVEN AND WOVEN MONOFILAMENT GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
6. SET WEIR CREST OF STONE 6 INCHES LOWER THAN THE TOP OF EARTH DIKE. USE MINIMUM LENGTH OF 6 FEET FOR WEIR CREST.
7. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO WITHIN 6 INCHES OF WEIR CREST. REPLACE GEOTEXTILE AND STONE FACING WHEN STRUCTURE CEASES TO DRAIN. MAINTAIN LINE, GRADE, AND CROSS SECTION.
8. UPON REMOVAL OF STONE 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.

2 OF 2

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

HOWARD SCD SIGNATURE BLOCK:

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 1/11/18

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT 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. 16156 EXPIRATION DATE: 6/28/2018 ."

OWNERS/DEVELOPER CERTIFICATION:

"I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

OWNER'S/DEVELOPER'S SIGNATURE — DATE 1/11/2018

THOMAS AUGUSTINE

PRINTED NAME & TITLE

DESIGN CERTIFICATION:

"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

DESIGNER'S SIGNATURE — DATE 1-10-18

DAVID T. MORICONI

PRINTED NAME

MD REGISTRATION NO. 16156 (P.E. R.L.S., OR R.L.A. (CIRCLE ONE))

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS — DATE 1/23/2018

CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18

DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

AECOM

STATE OF MARYLAND — DAVID THOMAS MORICONI — No. 16156 — REGISTERED PROFESSIONAL ENGINEER — 1-10-18

DES: RLL				
DRN: BJK				
CHK: DTM				
DATE: 12/17	BY	NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE N/A

SHEET 11 OF 21

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B-4-8 STANDARDS AND SPECIFICATIONS

FOR

STOCKPILE AREA

Definition

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies

Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

MGWC 1.5: SANDBAG/STONE CHANNEL DIVERSION

Temporary measure for dewatering in-channel construction sites

DESCRIPTION

The work should consist of installing sandbag or stone flow diversions for the purpose of erosion control when construction activities occur within the stream channel.

EFFECTIVE USES & LIMITATIONS

Diversions are used to isolate work areas from flow during the construction of in-stream projects. Diversions which have an insufficient flow capacity can fail and severely erode the disturbed channel section under construction. Therefore, in-channel construction activities should occur only during periods of low rainfall. This temporary measure may not be practical in large channels.

MATERIAL SPECIFICATIONS

Materials for sandbag and stone stream diversions should meet the following requirements:

- *Riprap*: Riprap should be washed and have a minimum diameter of 6 inches (0.15 meters).
- *Sandbags*: Sandbags should consist of materials which are resistant to ultra-violet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of the fill material (i.e., sand, fine gravel, etc.).
- *Sheeting*: Sheeting should consist of polyethylene or other materials which are impervious and resistant to puncture and tearing.

INSTALLATION GUIDELINES

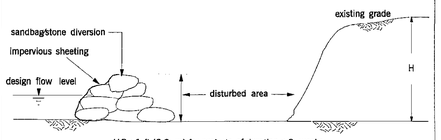
All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Installation should proceed from upstream to downstream during periods of low flow. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.

Sandbag/stone diversions can be used independently or as components of other stream diversion techniques. Installation of this measure should proceed as follows (refer to Detail 1.5):

1. The diversion structure should be installed from upstream to downstream.
2. The height of the sandbag/stone diversion should be a function of the duration of the project in the stream reach. For projects with a duration less than 2 weeks, the height of the diversion should be one half the streambank height, measured from the channel bed, plus 1 foot (0.3 meters) or bankfull height, whichever is greater. For projects of longer duration, the top of the sandbag or stone diversion should correspond to bankfull height. For diversion structures utilizing sandbags, the stream bed should be hand prepared prior to placement of the base layer of sandbags in order to ensure a water tight fit. Additionally, it may be necessary to prepare the bank in a similar fashion.
3. All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
4. Sediment-laden water from the construction area should be pumped to a dewatering basin.
5. Sheeting on the diversion should be positioned such that the upstream portion covers the downstream portion with at least a 18-inch (0.45 meters) overlap.
6. Sandbag or stone diversions should not obstruct more than 45% of the stream width. Additionally, bank stabilization measures should be placed in the constricted section if accelerated erosion and bank scour are observed during the construction time or if project time is expected to last more than 2 weeks.
7. Prior to removal of these temporary structures, any accumulated sediment should be removed, deposited and stabilized in an approved area outside the 100-year floodplain unless authorized by the WMA.
8. Sediment control devices are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspecting authority approves their removal.

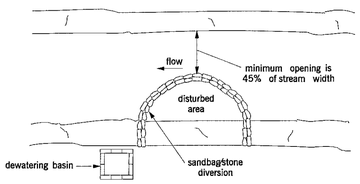
Maryland's Guidelines To Waterway Construction
DETAIL 1.5: SANDBAG/STONE DIVERSION

TRANSVERSE SECTION VIEW



H/2 + 1 ft (0.3 m) for projects of duration < 2 weeks;
2-year flood elevation for projects of longer duration

PLAN VIEW

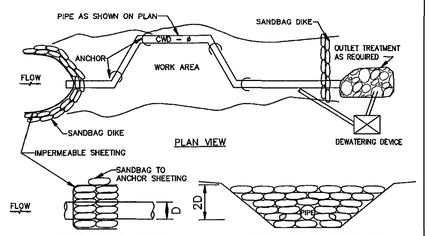


TEMPORARY INSTREAM CONSTRUCTION MEASURES | *REVISED NOVEMBER 2000 PAGE 1.5 - 3* | MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-6 CLEAR WATER DIVERSION PIPE

STANDARD SYMBOL: CWD – 12

DESIGNATION CWD-12 REFERS TO 12 INCH CLEAR WATER DIVERSION.



CONSTRUCTION SPECIFICATIONS

1. FLEXIBLE PIPE IS PREFERRED. HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. MAKE ALL JOINTS WATERTIGHT.
2. FOR SANDBAGS USE MATERIALS THAT ARE RESISTANT TO ULTRA-VIOLENT RADIATION, TEARING, AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL.
3. USE 10 MIL OR THICKER, UV RESISTANT, IMPERMEABLE SHEETING OR OTHER APPROVED MATERIAL THAT IS IMPERMEABLE AND RESISTANT TO PUNTURING AND TEARING.
4. PLACE IMPERMEABLE SHEETING SUCH THAT UPGRADE PORTION OVERLAPS DOWNGRADE PORTION BY A MINIMUM OF 18 INCHES.
5. SET HEIGHT OF SANDBAG DIKE AT TWICE THE PIPE DIAMETER. MAINTAIN HEIGHT ALONG LENGTH OF SANDBAG DIKE. PLACE DOUBLE ROW OF SANDBAGS.
6. AT A MINIMUM, SECURELY ANCHOR DIVERSION PIPE AT EACH DOWNGRADE JOINT.
7. SET OUTLET END OF DIVERSION PIPE LOWER THAN INLET END.
8. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
9. DEWATER WORK AREA USING AN APPROVED EROSION AND SEDIMENT CONTROL PRACTICE AS SPECIFIED ON APPROVED PLAN.
10. KEEP POINT OF DISCHARGE FREE OF EROSION. MAINTAIN WATER TIGHT CONNECTIONS AND POSITIVE DRAINAGE. REPLACE SANDBAGS AND IMPERMEABLE SHEETING IF TORN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-1 EARTH DIKE

STANDARD SYMBOL: A-1

SLOPE DESIGNATION (eg. A-1) ON FLOW CHANNEL SIDE OF DIKE.

	DIKE TYPE A	DIKE TYPE B
a – DIKE HEIGHT	18 IN MIN.	30 IN MIN.
b – DIKE WIDTH	24 IN MIN.	36 IN MIN.
c – FLOW WIDTH	4 FT MIN.	6 FT MIN.
d – FLOW DEPTH	12 IN MIN.	24 IN MIN.

FLOW CHANNEL STABILIZATION

A–1	SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)
A–2/B–2	SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.
A–3/B–3	4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.
2. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. COMPACT FILL.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
8. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

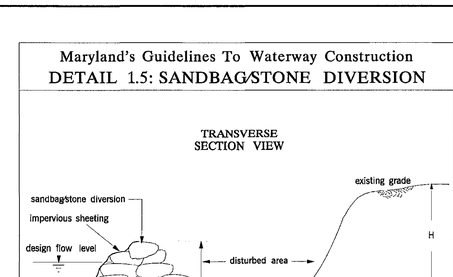
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 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

DETAIL D-4-1-B ROCK OUTLET PROTECTION II

STANDARD SYMBOL: ROPII

DISCHARGE TO 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 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 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.

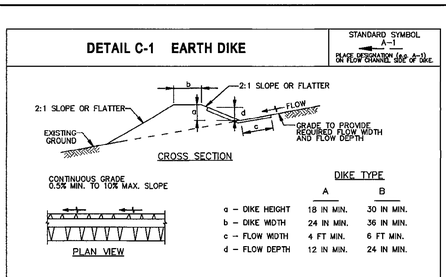
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL D-4-1-C ROCK OUTLET PROTECTION III

STANDARD SYMBOL: ROPIII

DISCHARGE TO AN UNCONFINED CHANNEL OR FLAT AREA



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 MINIMUM 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 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 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 RIPRAP 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

DESIGN CERTIFICATION:

"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

DESIGNER'S SIGNATURE — DATE 1-10-18

DAVID T. MORICONI
PRINTED NAME

MD REGISTRATION NO. 16156
(P.E.) R.L.S., OR R.L.A. (CIRCLE ONE)

OWNERS/DEVELOPER CERTIFICATION:

"I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

OWNER'S/DEVELOPER'S SIGNATURE — DATE 1/11/2018

Thomas Huyett
PRINTED NAME & TITLE

HOWARD SCD SIGNATURE BLOCK:

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 1/11/18

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT 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. 16156, EXPIRATION DATE: 8/28/2018."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS — DATE 1/23/2018
CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18
DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

AECOM

STATE OF MARYLAND — DAVID THOMAS MORICONI — REG. NO. 16156 — PROFESSIONAL ENGINEER — 1-10-18

DES: RLL				
DRN: BJK				
CHK: DTM				
DATE: 12/17				
BY	NO.	REVISION		DATE

EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

SCALE MAP NO. 35 BLOCK NO. 19

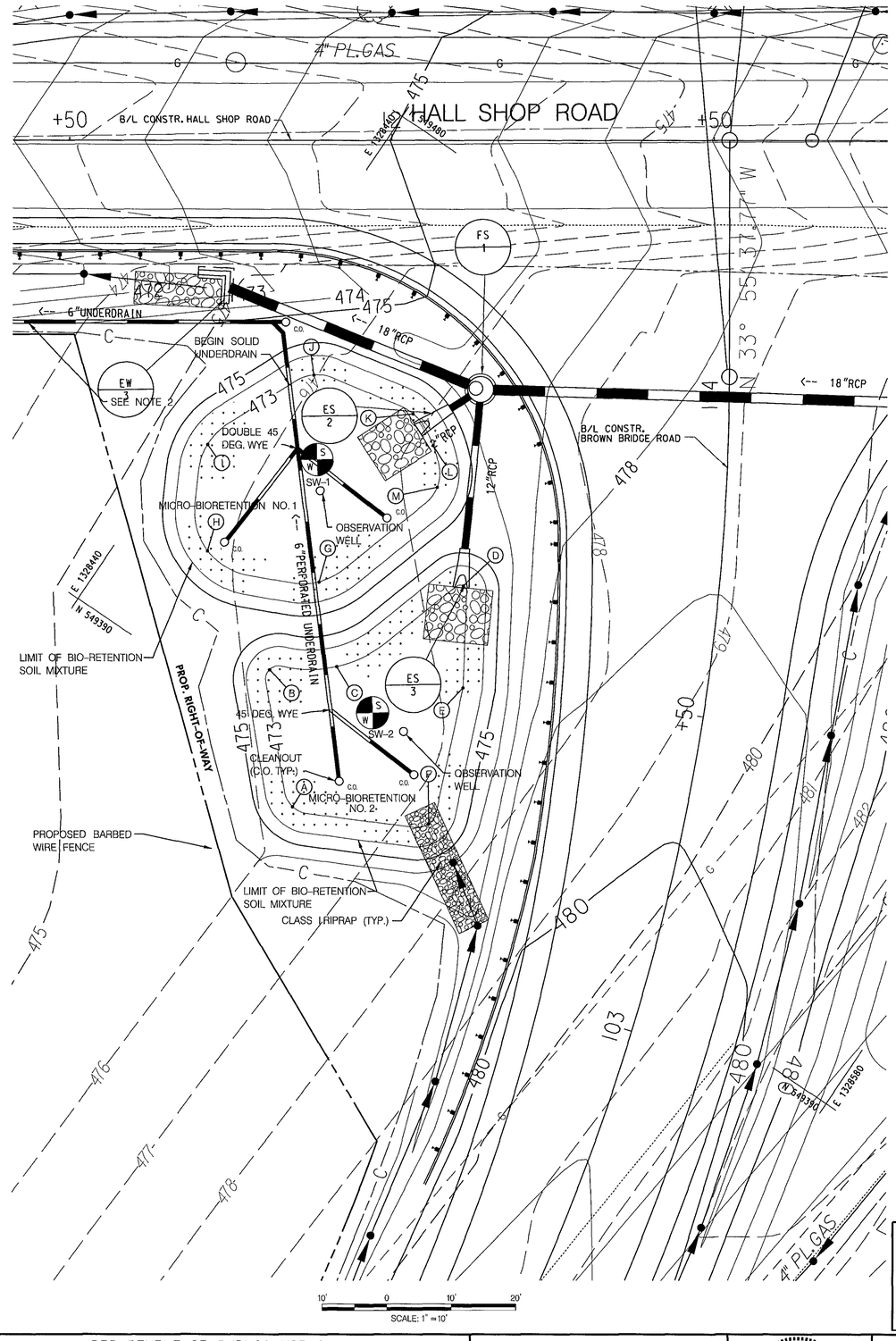
HALL SHOP ROAD AT BROWNS BRIDGE ROAD

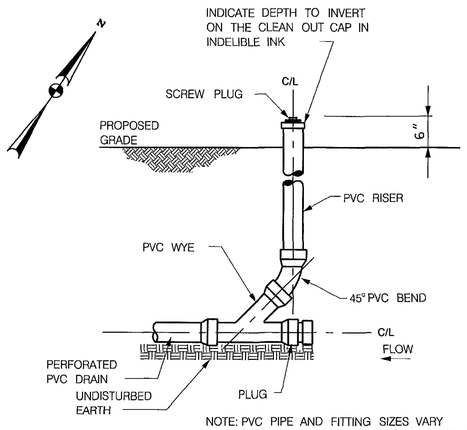
ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE N/A

SHEET 12 OF 21

U:\Projects\H\HoCo\60415350\CAD\PlanSet\pES-N004_HALL.dgn chris.fleming Monday, December 04, 2017 AT 01:47 PM

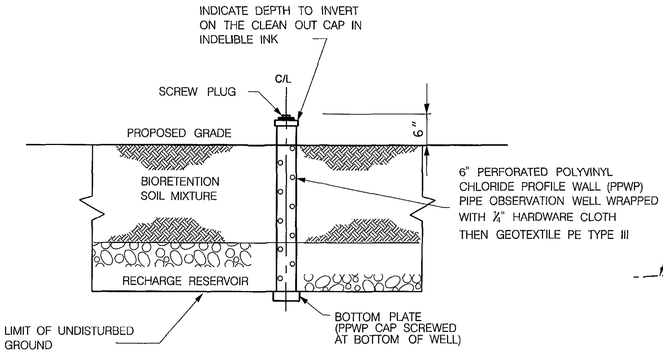




NOTE: PVC PIPE AND FITTING SIZES VARY FOR EACH LOCATION. REFER TO DETAILS FOR APPLICABLE SIZES. ALL PVC PIPE TO BE SCHEDULE 40.

UNDERDRAIN CLEANOUT DETAIL

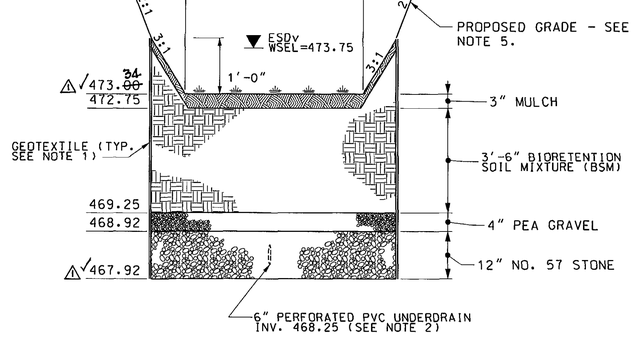
NOT TO SCALE



OBSERVATION WELL DETAIL

NOT TO SCALE

FACILITY CONTROL POINTS		
NO.	NORTHING	EASTING
A	549,381.869	1,328,485.668
B	549,397.498	1,328,470.807
C	549,403.676	1,328,479.183
D	549,425.034	1,328,488.454
E	549,411.930	1,328,497.252
F	549,391.430	1,328,504.688
G	549,413.025	1,328,469.572
H	549,407.361	1,328,452.543
I	549,421.052	1,328,443.342
J	549,439.146	1,328,450.986
K	549,442.741	1,328,467.095
L	549,440.421	1,328,472.448
M	549,435.436	1,328,476.576



MICRO-BIORETENTION TYPICAL SECTION

NOT TO SCALE

NOTES:
1. GEOTEXTILE, CLASS PE TYPE III, NON-WOVEN, TO COMPLETELY ENVELOPE SIDES (PERIMETER) OF FILTER MEDIA. FILTER FABRIC IS NOT TO BE PLACED ON THE BOTTOM OR TOP OR THE FILTER MEDIA.
2. GRADE PERFORATED PVC UNDERDRAIN AT A SLOPE OF 0.50% TO THE OUTFALL FROM UPSTREAM INVERT OF 468.25. REFER TO THE EROSION AND SEDIMENT CONTROL PLAN FOR THE EXTENT OF THE UNDERDRAIN OUTLET.
3. REFER TO THE SPECIFICATIONS FOR THE BIORETENTION SOIL MIX.
4. SEE DRAINAGE PROFILES FOR LIMITS OF RIPRAP.
5. PLACE 4" TOPSOIL AND STABILIZE WITH PERMANENT SEED AND MULCH.

As-Built Inspection Tabulations/Checklist for Microbioretention #1:
HSCD No..: EP-12-001

Accepted by Howard Soil Conservation District:

Name _____ Date _____

MICRO BIORETENTION TABULATIONS

ACTIVITY	DESIGNED	AS-BUILT	DIFFERENCE	INSPECTOR INITIALS	ACCEPTANCE DATE
As-Built Survey	N/A	-	-		
Filter Bed Area (L x W)	864 SF	✓	-		
Filter Bed Surface Elevation	473.00	473.28	+0.28		
Filter Inlet Pipe Size	N/A	-	-		
Filter Inlet Pipe Elevation	N/A	-	-		
Outlet Pipe (Underdrain) Size	6"	✓	✓		
Outlet Pipe (Underdrain) Elevation	467.89	N/A *	N/A *		

* CONNECTED TO MAIN 6" OUTFALL

BIORETENTION CONSTRUCTION CHECKLIST

ACTIVITY	ON SITE INSPECTION DATE	INSPECTOR INITIALS	ACCEPTANCE DATE
Runoff Diverted			
Drainage area stabilized prior to installation			
Facility area cleared			
Facility location staked out			
Excavated to proper size and location*			
Stable side slopes			
Lateral slopes finished according to plans			
Subsoils not compacted during construction			
Underdrain system and observation well installed according to plans*			
Planting soil tested and approved according to specifications			
Planting soil placed according to plans			
Placement of geotextiles and filter fabric according to plans*			
Placement of sand filter layer (if applicable)			
Placement of gravel diaphragm*			
Appurtenant conveyance systems (diversion structures, pre-filters, filters, inlet, outlets, orifices and flow distribution structures) installed according to plan*			
A drop of at least 6 inches at the inlet			
Pretreatment facilities in place			
Planting installed according to plans (see checklist on SWM planting plan)*			
Mulch Layer installed according to details			
Maintenance access installed according to plan and details			
Final grading and permanent stabilization completed			

* **AB Inspector required to perform inspection on site for these steps as required by COMAR 26.17.02.10**

As-Built Inspection Tabulations/Checklist for Microbioretention #2:
HSCD No..: EP-12-001

Accepted by Howard Soil Conservation District:

Name _____ Date _____

MICRO BIORETENTION TABULATIONS

ACTIVITY	DESIGNED	AS-BUILT	DIFFERENCE	INSPECTOR INITIALS	ACCEPTANCE DATE
As-Built Survey	N/A	✓	-		
Filter Bed Area (L x W)	755 SF	✓	-		
Filter Bed Surface Elevation	473.00	473.34	+0.34		
Filter Inlet Pipe Size	N/A	-	-		
Filter Inlet Pipe Elevation	N/A	-	-		
Outlet Pipe (Underdrain) Size	6"	✓	✓		
Outlet Pipe (Underdrain) Elevation	468.17	N/A *	N/A *		

BIORETENTION CONSTRUCTION CHECKLIST

ACTIVITY	ON SITE INSPECTION DATE	INSPECTOR INITIALS	ACCEPTANCE DATE
Runoff Diverted			
Drainage area stabilized prior to installation			
Facility area cleared			
Facility location staked out			
Excavated to proper size and location*			
Stable side slopes			
Lateral slopes finished according to plans			
Subsoils not compacted during construction			
Underdrain system and observation well installed according to plans*			
Planting soil tested and approved according to specifications			
Planting soil placed according to plans			
Placement of geotextiles and filter fabric according to plans*			
Placement of sand filter layer (if applicable)			
Placement of gravel diaphragm*			
Appurtenant conveyance systems (diversion structures, pre-filters, filters, inlet, outlets, orifices and flow distribution structures) installed according to plan*			
A drop of at least 6 inches at the inlet			
Pretreatment facilities in place			
Planting installed according to plans (see checklist on SWM planting plan)*			
Mulch Layer installed according to details			
Maintenance access installed according to plan and details			
Final grading and permanent stabilization completed			

* **AB Inspector required to perform inspection on site for these steps as required by COMAR 26.17.02.10**

PROFESSIONAL CERTIFICATION

"I HEREBY CERTIFY THAT 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. 16156, EXPIRATION DATE: 8/28/2018."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS — DATE 12/21/2018
CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18
DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

AECOM

STATE OF MARYLAND — DAVID THOMAS MORGONI — REG. NO. 21627 — PROFESSIONAL ENGINEER — 1-10-18

DES: RLL				
DRN: BJK				
CHK: DTM				
DATE: 12/17	DTM	⚠	AS-BUILT	1-28-19
	BY	NO.	REVISION	DATE

STORMWATER MANAGEMENT PLAN

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT
BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE AS SHOWN

SHEET 13 OF 21

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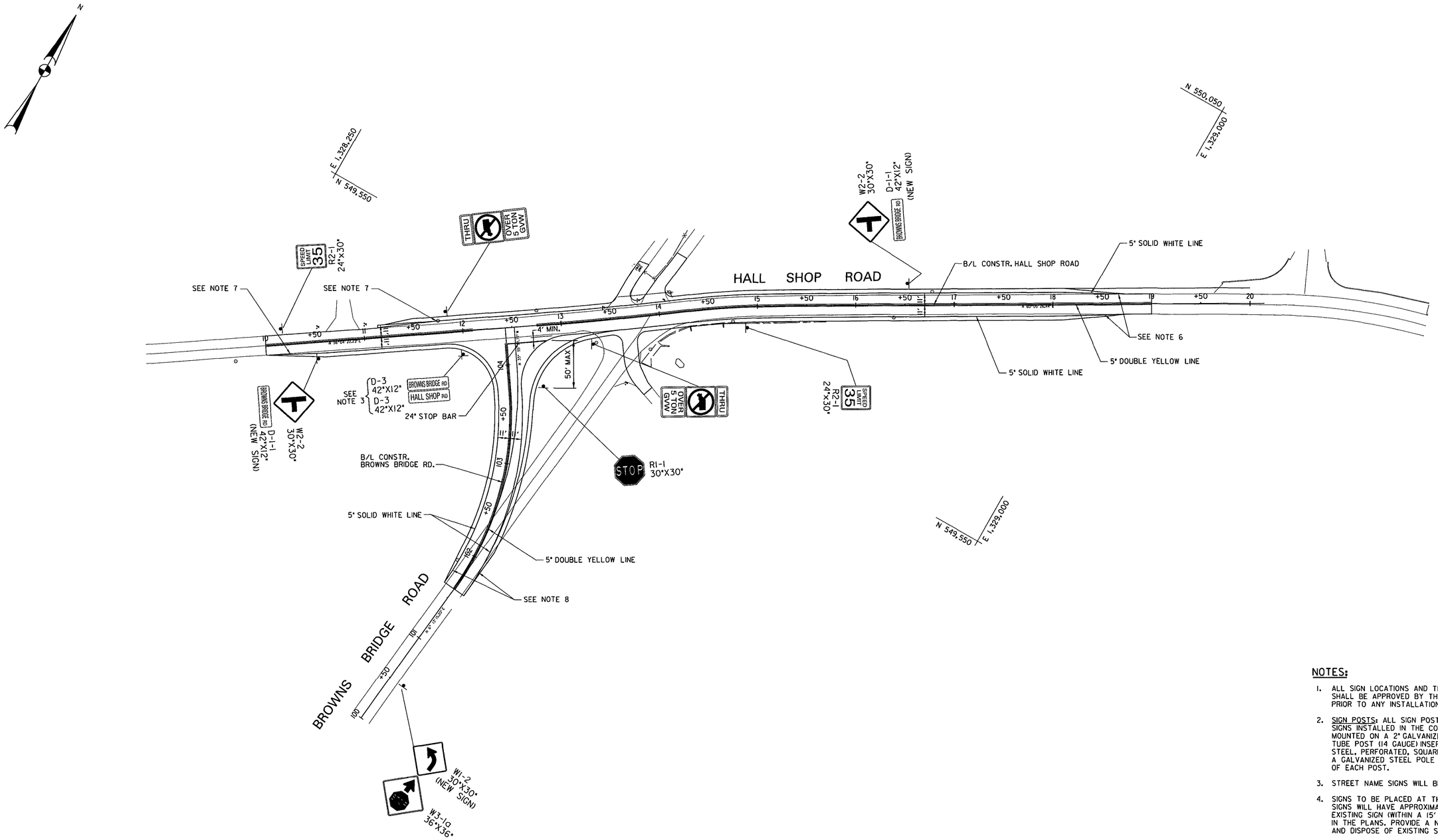

NOTES:

1. ALL SIGN LOCATIONS AND THE PAVEMENT MARKING LAYOUT SHALL BE APPROVED BY THE TRAFFIC DIVISION (410-313-5752) PRIOR TO ANY INSTALLATION.
2. SIGN POSTS: ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2½" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
3. STREET NAME SIGNS WILL BE PROVIDED BY THE COUNTY.
4. SIGNS TO BE PLACED AT THE SHOWN LOCATIONS. RELOCATED SIGNS WILL HAVE APPROXIMATELY THE SAME LOCATION AS THE EXISTING SIGN (WITHIN A 15' RANGE) UNLESS OTHERWISE INDICATED IN THE PLANS. PROVIDE A NEW SIGN AND SUPPORT AND REMOVE AND DISPOSE OF EXISTING SIGN AND SUPPORT. (SEE NOTE 2 ABOVE.)
5. ALL NEW MARKINGS (EXCEPT STOP BAR) SHALL BE 3M 380I-ES MARKING TAPE (5" WIDE). THE STOP BAR SHALL BE THERMOPLASTIC OR A HEAT APPLIED PREFORMED MARKING MATERIAL.
6. STRIPING SHALL BE TAPERED BEGINNING AT STA. 18+07 TO MEET EXISTING STRIPING AT STA. 18+75.
7. STRIPING SHALL BE TAPERED BEGINNING AT STA. 10+60 TO MEET EXISTING STRIPING AT STA. 10+00.
8. STRIPING SHALL BE TAPERED BEGINNING AT STA. 102+11 TO MEET EXISTING STRIPING AT STA. 101+61.

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50' 0 50' 100'
SCALE: 1" = 50'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS — DATE 1/23/2018
CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18
DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

AECOM

STATE OF MARYLAND — DAVID THOMAS MONIGOMERY — REG. NO. 19198 — REGISTERED PROFESSIONAL ENGINEER — 1-10-18

DES: RLL
DRN: BJK
CHK: DTM
DATE: 12/17

BY	NO.	REVISION	DATE

ROADWAY MARKING AND SIGNING PLAN

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE 1"=50'

SHEET 14 OF 21

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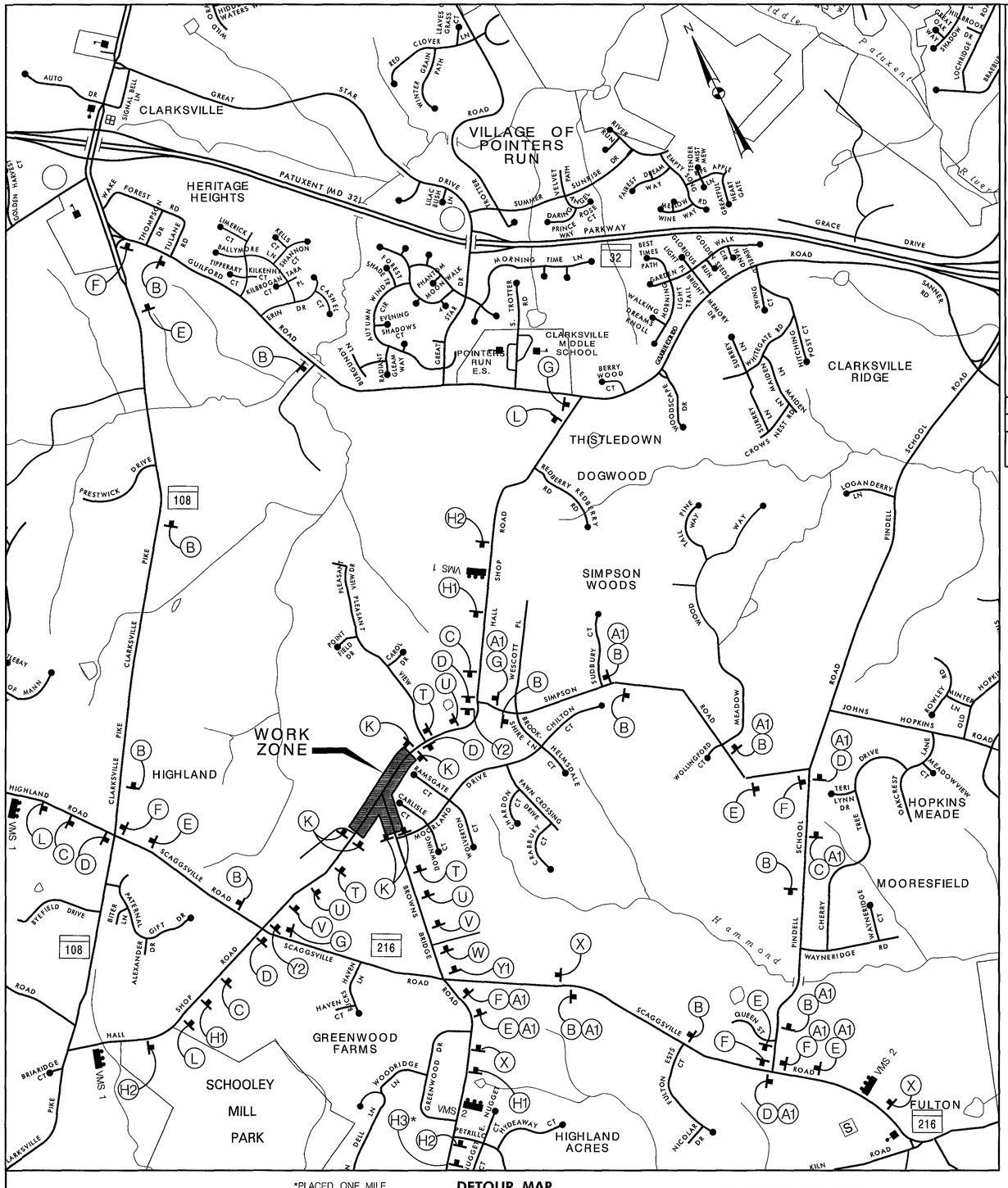

PROFESSIONAL CERTIFICATION

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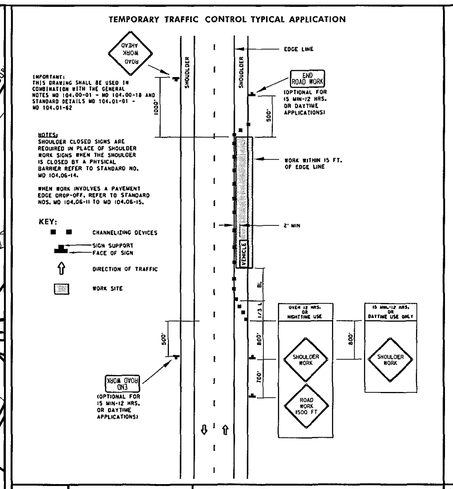
TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION



SPECIFICATION	CATEGORY CODE ITEMS
104	SECTION 100

APPROVED (DIRECTOR OF TRAFFIC ENGINEERING)

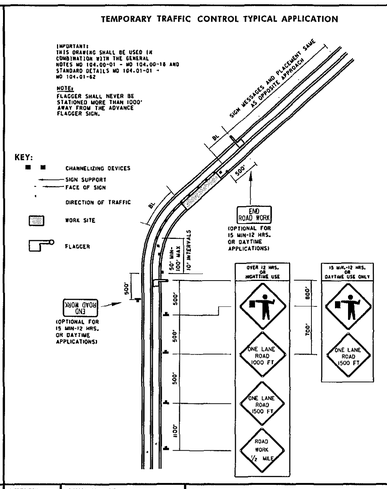
SHA	APPROVAL DATE	APPROVAL DATE
	8-23-03	9-23-03

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

SHOULDER WORK/2-LANE, 2-WAY EQL/LESS THAN 40 MPH

STANDARD NO. MD 104.02-02

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION



SPECIFICATION	CATEGORY CODE ITEMS
104	SECTION 100

APPROVED (DIRECTOR OF TRAFFIC ENGINEERING)

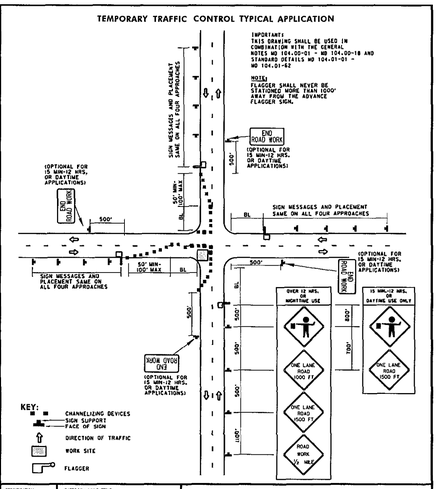
SHA	APPROVAL DATE	APPROVAL DATE
	8-23-03	9-23-03

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

FLAGGING OPERATION/2-LANE, 2-WAY EQL/LESS THAN 40 MPH

STANDARD NO. MD 104.02-10

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION



SPECIFICATION	CATEGORY CODE ITEMS
104	SECTION 100

APPROVED (DIRECTOR OF TRAFFIC ENGINEERING)

SHA	APPROVAL DATE	APPROVAL DATE
	8-23-03	9-23-03

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

INTERSECTION FLAGGING OPERATION 2-LANE,2-WAY EQL/LESS THAN 40 MPH

STANDARD NO. MD 104.02-14

5" LETTERS BROWNS BR RD

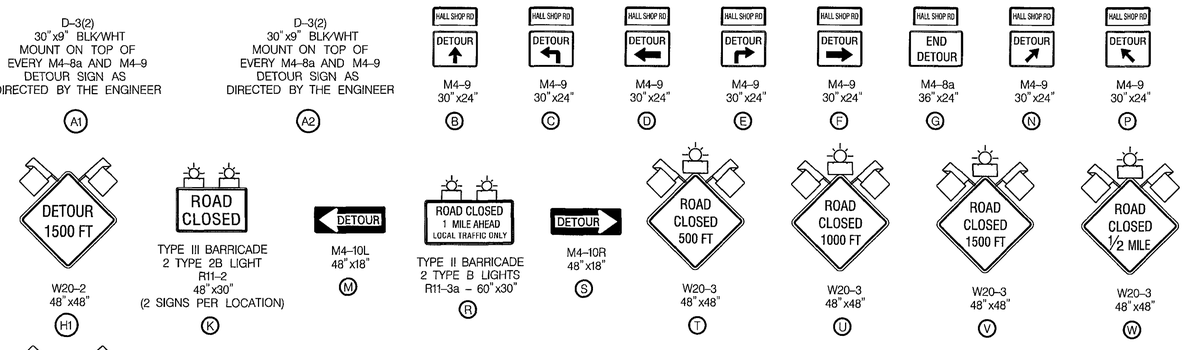
D-3(2)
30"x9" BLK/WHT
MOUNT ON TOP OF EVERY M4-8a AND M4-9 DETOUR SIGN AS DIRECTED BY THE ENGINEER

(A1)

5" LETTERS HALL SHOP RD

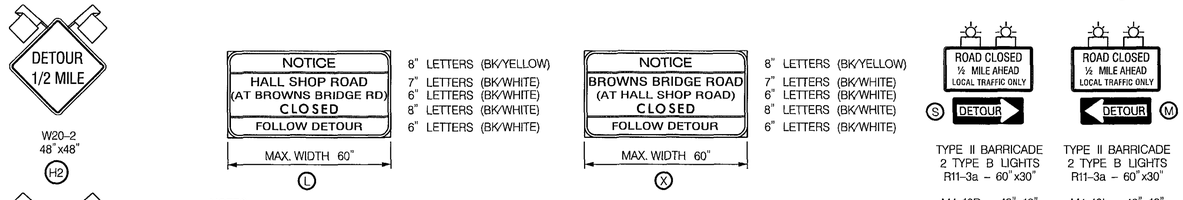
D-3(2)
30"x9" BLK/WHT
MOUNT ON TOP OF EVERY M4-8a AND M4-9 DETOUR SIGN AS DIRECTED BY THE ENGINEER

(A2)



M4-9 30"x24" (B) (C) (D) (E) (F)
M4-8a 36"x24" (G)
M4-9 30"x24" (N) (P)

W20-2 48"x48" (H1)
TYPE III BARRICADE 2 TYPE 2B LIGHT R11-2 48"x30" (2 SIGNS PER LOCATION) (K)
M4-10L 48"x18" (M)
TYPE II BARRICADE 2 TYPE B LIGHTS R11-3a – 60"x30" (R)
M4-10R 48"x18" (S)
W20-3 48"x48" (T) (U) (V) (W)



W20-2 48"x48" (H2)
W20-2 48"x48" (H3)

8" LETTERS (BK/YELLOW)
7" LETTERS (BK/WHITE)
6" LETTERS (BK/WHITE)
8" LETTERS (BK/WHITE)
6" LETTERS (BK/WHITE)
(L)

8" LETTERS (BK/YELLOW)
7" LETTERS (BK/WHITE)
6" LETTERS (BK/WHITE)
8" LETTERS (BK/WHITE)
6" LETTERS (BK/WHITE)
(X)

TYPE II BARRICADE 2 TYPE B LIGHTS R11-3a – 60"x30" M4-10R – 48"x18" (Y1)
TYPE II BARRICADE 2 TYPE B LIGHTS R11-3a – 60"x30" M4-10L – 48"x18" (Y2)

NOTES

1. THIS PLAN SHALL BE INSTALLED WITH TCP ON SHEET 16.
2. CONTACT TRAFFIC ENGINEER (410-313-5752) PRIOR TO FABRICATING SIGNS.
3. ALL SIGN LOCATIONS SHALL BE APPROVED BY THE TRAFFIC DIVISION PRIOR TO INSTALLATION OF ANY SIGNS.
4. ALL DETOUR SIGNS SHALL BE COVERED WITH OPAQUE MATERIAL UNTIL DAY ROAD IS CLOSED.
5. ALL SIGN LOCATIONS SHOWN ON THE PLAN ARE APPROXIMATE. EXACT LOCATIONS TO BE DETERMINED IN THE FIELD. CONTACT THE TRAFFIC DIVISION AT 410-313-2430 WHEN THE CONTRACTOR IS READY TO SPOT THE LOCATIONS FOR THE SIGNS.

VMS 1: HALL SHOP RD TO CLOSE → ON OR ABOUT XX-XX → INFO 410-313 XXXX
VMS 2: BROWN BRIDGE ROAD → TO CLOSE ON OR ABOUT XX-XX → INFO 410-313 XXXX

VARIABLE MESSAGE SIGN (VMS)
10 DAYS BEFORE CLOSURE TO CLOSURE

VMS 1: HALL SHOP RD CLOSED → FOLLOW DETOUR → INFO 410-313 XXXX
VMS 2: BROWN BRIDGE ROAD → CLOSED FOLLOW DETOUR → INFO 410-313 XXXX

VARIABLE MESSAGE SIGN (VMS)
AFTER CLOSURE FOR 7 DAYS

SUGGESTED SEQUENCE OF TRAFFIC CONTROL ACTIVITIES FOR MAINTENANCE OF TRAFFIC DURING CONSTRUCTION

I. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS FOR THIS PHASE.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS — DATE 1/23/2018
CHIEF, BUREAU OF ENGINEERING — DATE 1/23/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18
DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

AECOM

STATE OF MARYLAND — DAVID THOMAS MONROE — REG. NO. 21708 — REGISTERED PROFESSIONAL ENGINEER — 1-10-18

DES: RLL
DRN: BJK
CHK: DTM
DATE: 12/17

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC DETOUR PLAN PHASE I

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE AS SHOWN

SHEET 15 OF 21

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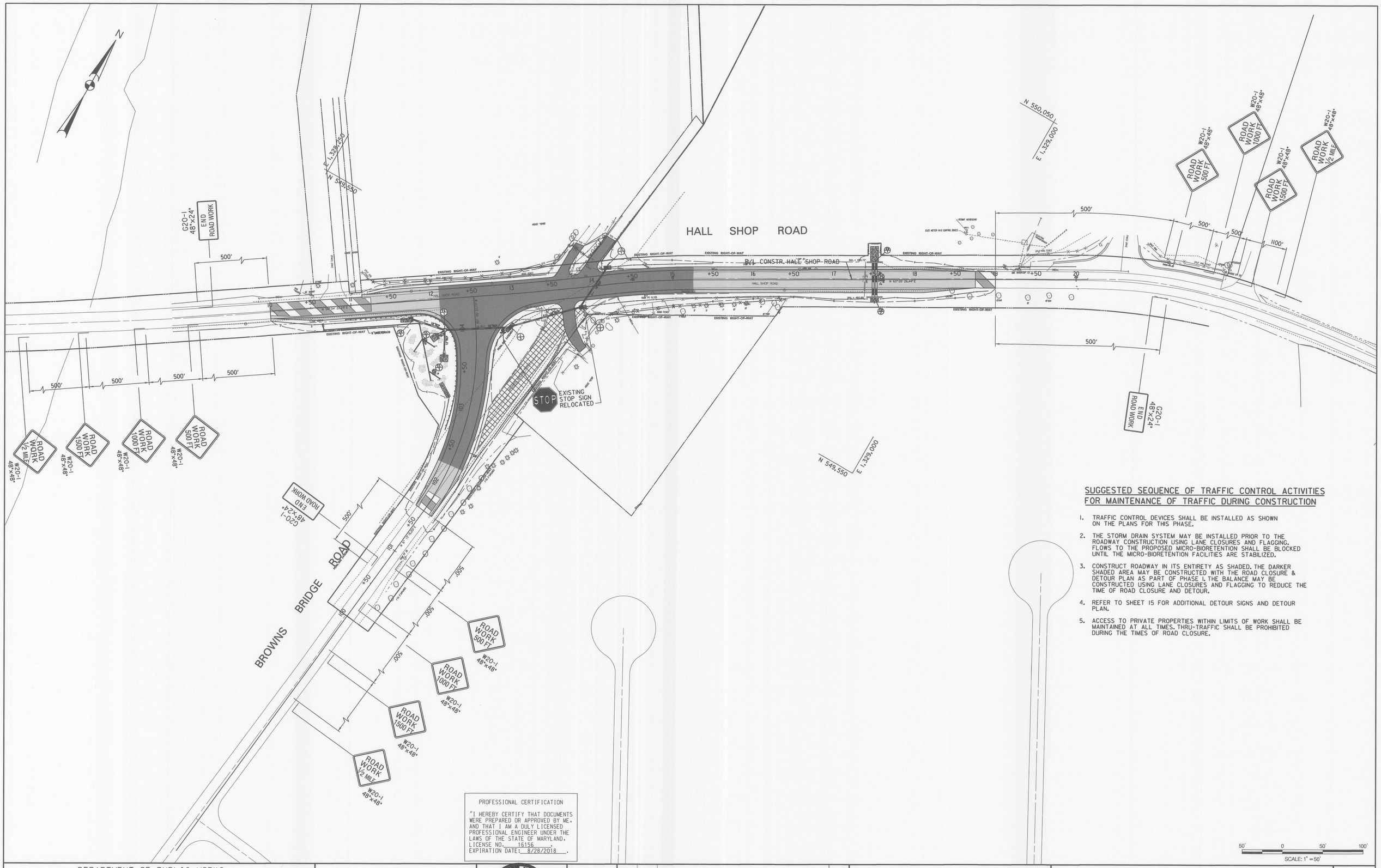

SUGGESTED SEQUENCE OF TRAFFIC CONTROL ACTIVITIES FOR MAINTENANCE OF TRAFFIC DURING CONSTRUCTION

1. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS FOR THIS PHASE.
2. THE STORM DRAIN SYSTEM MAY BE INSTALLED PRIOR TO THE ROADWAY CONSTRUCTION USING LANE CLOSURES AND FLAGGING. FLOWS TO THE PROPOSED MICRO-BIORETENTION SHALL BE BLOCKED UNTIL THE MICRO-BIORETENTION FACILITIES ARE STABILIZED.
3. CONSTRUCT ROADWAY IN ITS ENTIRETY AS SHADED. THE DARKER SHADED AREA MAY BE CONSTRUCTED WITH THE ROAD CLOSURE & DETOUR PLAN AS PART OF PHASE I. THE BALANCE MAY BE CONSTRUCTED USING LANE CLOSURES AND FLAGGING TO REDUCE THE TIME OF ROAD CLOSURE AND DETOUR.
4. REFER TO SHEET 15 FOR ADDITIONAL DETOUR SIGNS AND DETOUR PLAN.
5. ACCESS TO PRIVATE PROPERTIES WITHIN LIMITS OF WORK SHALL BE MAINTAINED AT ALL TIMES. THRU-TRAFFIC SHALL BE PROHIBITED DURING THE TIMES OF ROAD CLOSURE.

PROFESSIONAL CERTIFICATION

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SCALE: 1" = 50'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS — DATE 1/23/2018
CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18
DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

AECOM

DES: RLL
DRN: BJK
CHK: DTM
DATE: 12/17

BY	NO.	REVISION	DATE

MAINTENANCE OF TRAFFIC PLAN PHASE II

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE 1"=50'

SHEET 16 OF 21

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Project Name: Hall Shop Road at Browns Bridge Road				Borehole No.: SWM-1
Project Number: 20834588.00000			Location: Clarksville, Md	
Date Started: 2-20-13	Date Completed: 2-20-13		Driller: Andrew McCallister	
Drilling Company: TLB Associates, INC.			Elevation: 477	Sheet 1 of 1
North: 549428.616	East: 1328458.71		Station:	Offset:

Depth:	Sample No.	Blow Count:	Recovery:	Sampled:	Description:	Graphic Log:	USCS:	Remarks:
								Top Soil 3"
	B-1	1-3-3-5	10"		Brown CLAY , with sand, trace mica, moist, soft.		CL	
				2				
	B-2	5-12-10-7	12"		Brown SILT, with sand, moist, stiff.		ML	
				4				
5	B-3	5-5-6-6	15"		Tan brown SAND, with silt, moist, medium dense.		SM	
				6				
	B-4	10-11-9-11	12"		White and orange, Silty SAND, moist, medium dense.		SM	
	B-5	5-5-7-7	15"					
10				10				Boring caved at 3' at completion Dry at completion

URS
4 North Park Drive, Suite 300
Hunt Valley, MD 21030
Tel: (410)785-7220
Fax: (410)785-6818

Inspected By: Peter Daloni

Signature:

Project Name: Hall Shop Road at Browns Bridge Road				Borehole No.: SWM-2
Project Number: 20834588.00000			Location: Clarksville, Md	
Date Started: 2-20-13	Date Completed: 2-20-13		Driller: Andrew McCallister	
Drilling Company: TLB Associates, INC.			Elevation: 477	Sheet 1 of 1
North: 549400.907	East: 1328487.766		Station:	Offset:

Depth:	Sample No.	Blow Count:	Recovery:	Sampled:	Description:	Graphic Log:	USCS:	Remarks:
								Top Soil 3"
	B-1	1-1-3-3	15"		Brown SILT, trace sand, some clay, moist, soft.		ML	
				2				
	B-2	4-7-9-12	18"		Brown SILT, some sand, moist, medium stiff.		ML	
				4				
5	B-3	4-7-9-9	10"		Tan brown Sandy SILT, moist, stiff.		ML	
				6				
	B-4	9-9-9-9	20"		Grey and brown, Silty SAND, moist, medium dense.		SM	
				8				
	B-5	5-4-5-3	18"		White coarse SAND, some silt, moist, loose.		SM	
10				10				Boring caved at 3' at completion Dry at completion

URS
4 North Park Drive, Suite 300
Hunt Valley, MD 21030
Tel: (410)785-7220
Fax: (410)785-6818

Inspected By: Peter Daloni

Signature:

PROFESSIONAL CERTIFICATION

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS — DATE 1/23/2018

CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 11/22/18

DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

AECOM

STATE OF MARYLAND — DAVID THOMAS MORICONI — 21918 — REGISTERED PROFESSIONAL ENGINEER — 1-10-18

DES: RLL
DRN: BJK
CHK: DTM
DATE: 12/17

BY	NO.	REVISION	DATE

SOIL BORING LOGS

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT
BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE
N.T.S.

SHEET
17 OF 21

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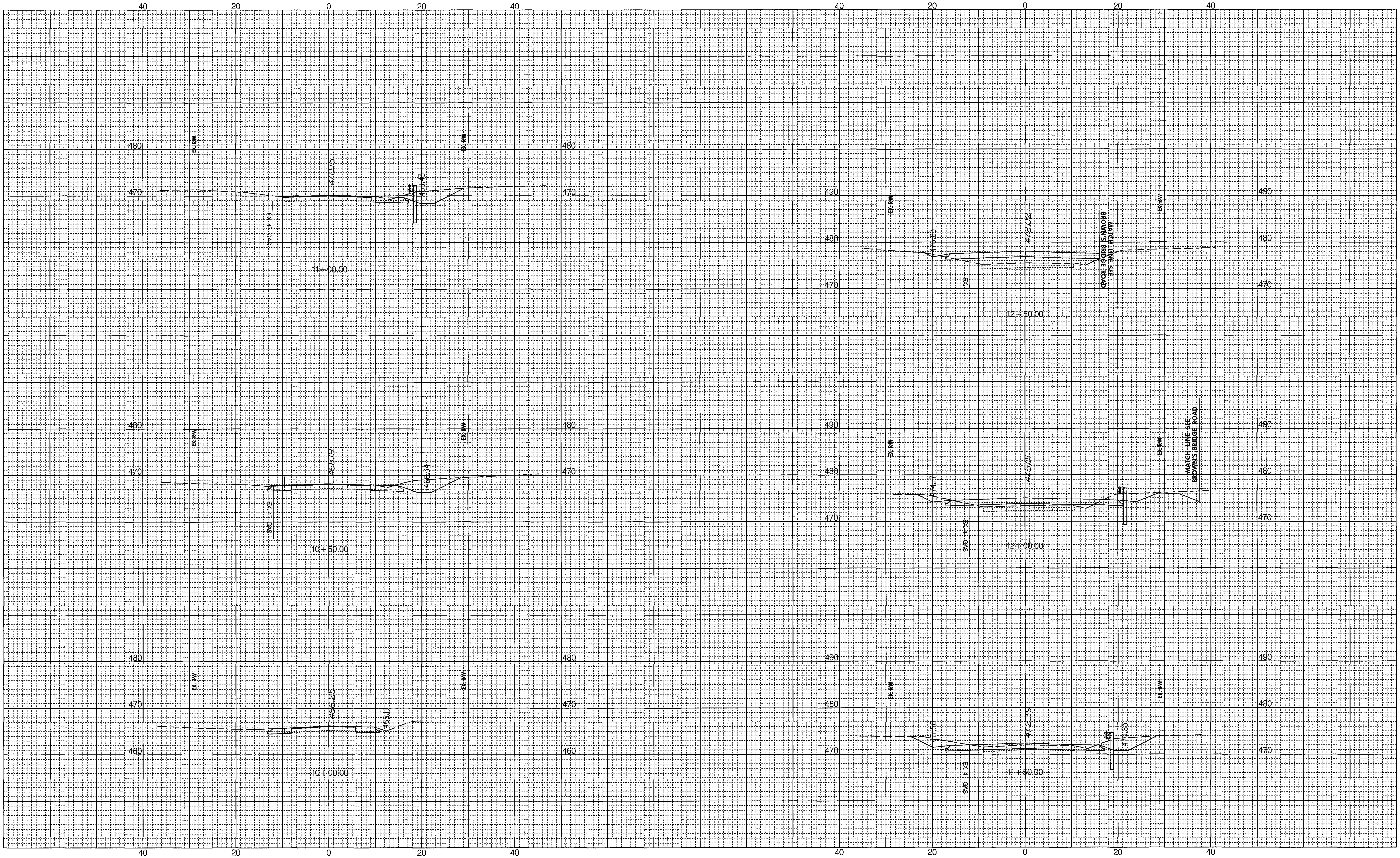


Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 16156, Expiration Date 8.28.18

HALL SHOP ROAD

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS — DATE 1/23/2018
CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18
DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

PREPARED BY
URS
4 NORTH PARK DRIVE
HUNT VALLEY, MARYLAND
TEL: (410) 785-7220

DES: RLL				
DRN: BJK				
CHK: DTM				
DATE: 10/17	BY	NO.	REVISION	DATE

CROSS SECTIONS
STA. 10+00.00 TO 12+50.00

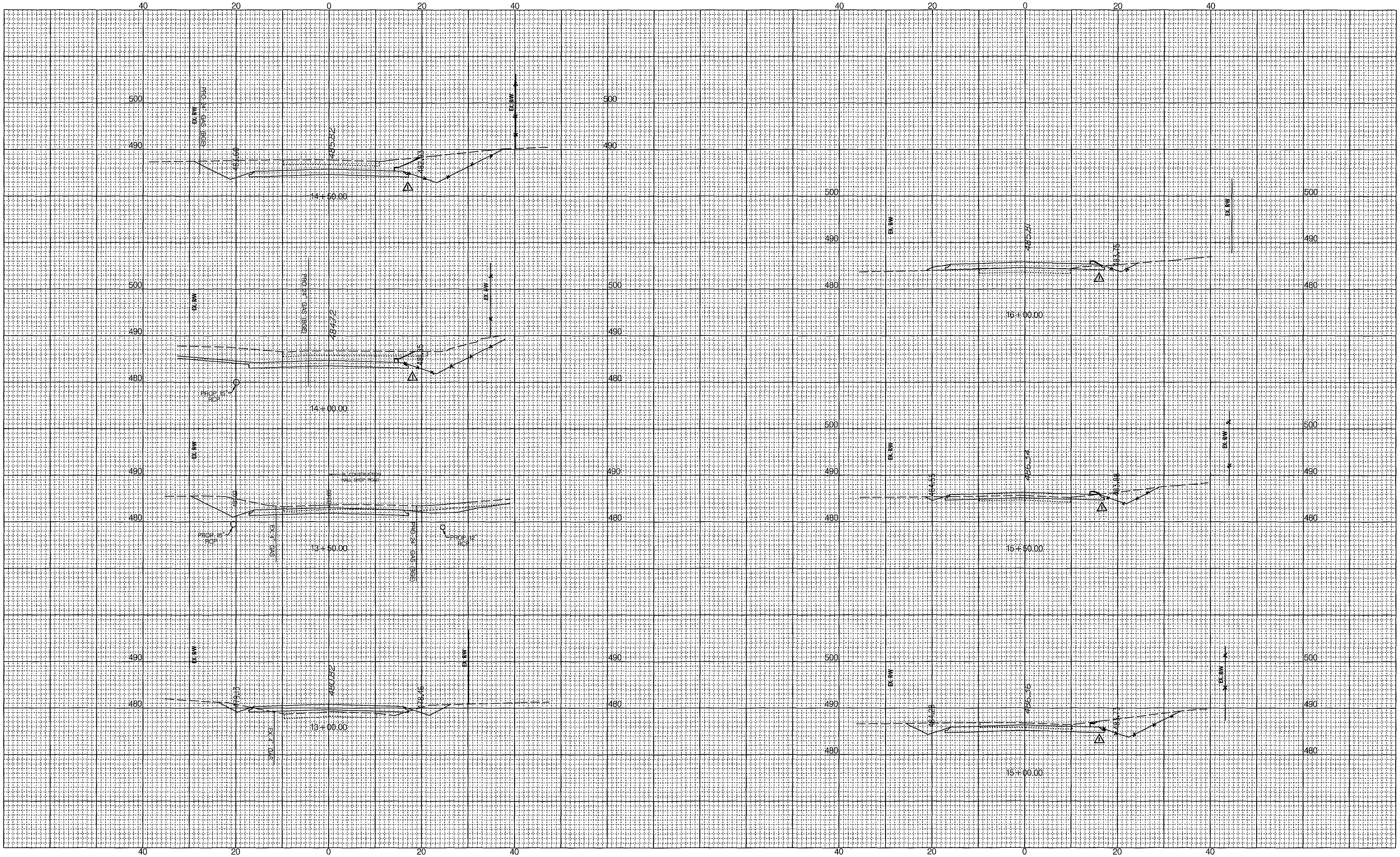
SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT
BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE
H 1"=10'
V 1"=10'

SHEET
18 OF 21



HALL SHOP ROAD

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. 16156 , Expiration Date 8-28-18 20

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	PREPARED BY URS 4 NORTH PARK DRIVE HUNT VALLEY, MARYLAND TEL: (410) 785-7220	DES: RLL DRN: BJK CHK: DTM DATE: 10/17	CROSS SECTIONS STA. 13+00.00 TO 16+00.00	HALL SHOP ROAD AT BROWNS BRIDGE ROAD
CHIEF BUREAU OF HIGHWAYS 1/23/2018 DATE		DTM 1 AS-BUILT 1-28-19	SCALE MAP NO. 35 BLOCK NO. 19	ELECTION DISTRICT NO. 5
CHIEF, BUREAU OF ENGINEERING 1/22/18 DATE		BY NO. REVISION DATE		CAPITAL PROJECT J-4164
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION 1/22/18 DATE				SCALE H 1"=1 V 1"=1
DIRECTOR OF PUBLIC WORKS 1/23/18 DATE				SHEET 19 OF 2

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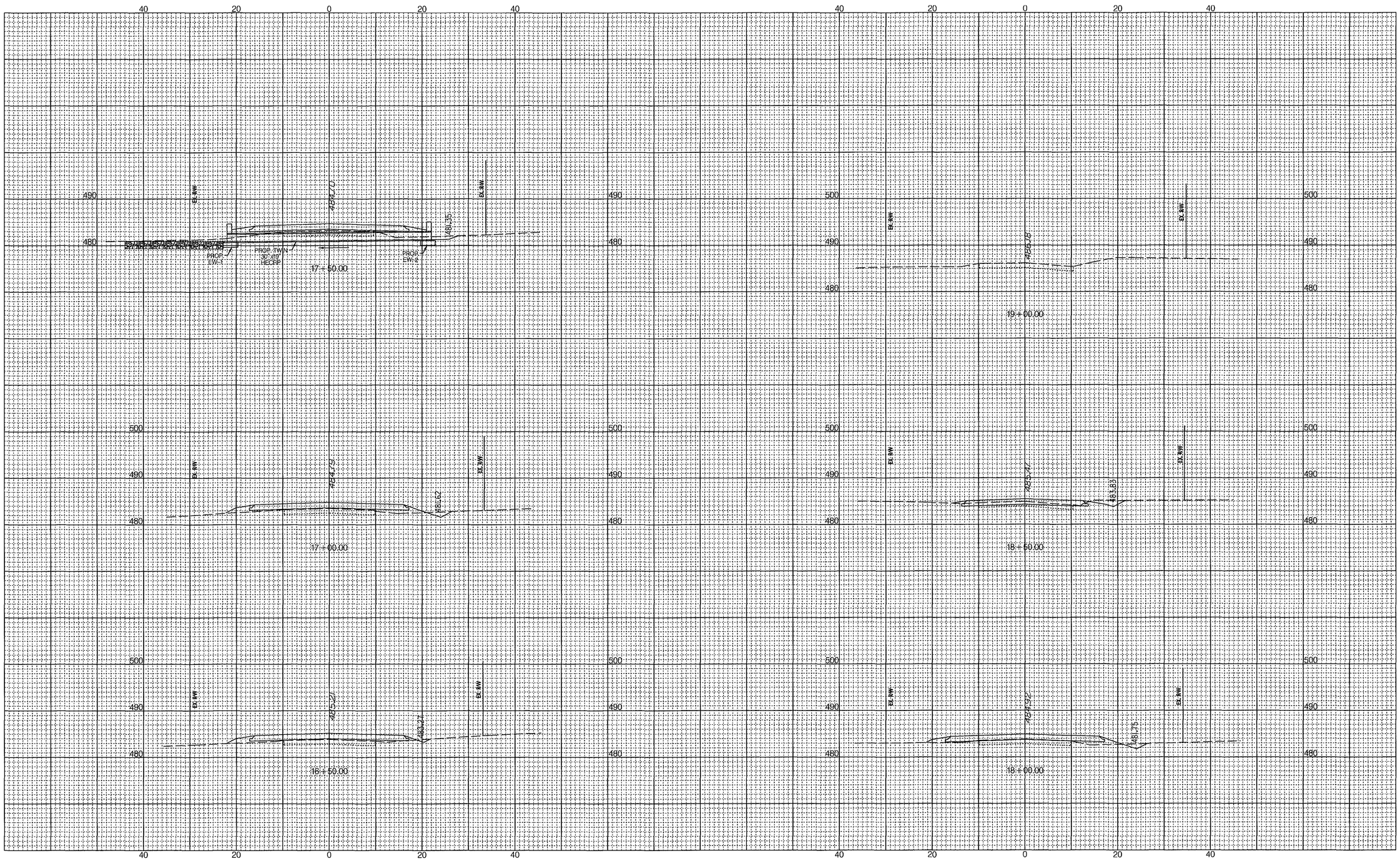

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License No. 16156, Expiration Date: 8-28-18

HALL SHOP ROAD

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS — DATE 1/23/2018
CHIEF, BUREAU OF ENGINEERING — DATE 1/22/18
CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION — DATE 1/22/18
DIRECTOR OF PUBLIC WORKS — DATE 1/23/18

PREPARED BY
URS
4 NORTH PARK DRIVE
HUNT VALLEY, MARYLAND
TEL: (410) 785-7220

STATE OF MARYLAND — CHRISTOPHER J. FLEMING — 16156 — PROFESSIONAL ENGINEER — 1-10-18

DES:	RLL
DRN:	BJK
CHK:	DTM
DATE:	10/17

BY	NO.	REVISION	DATE

CROSS SECTIONS
STA. 16+50.00 TO 19+00.00

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE
H 1"=10'
V 1"=10'

SHEET
20 OF 21

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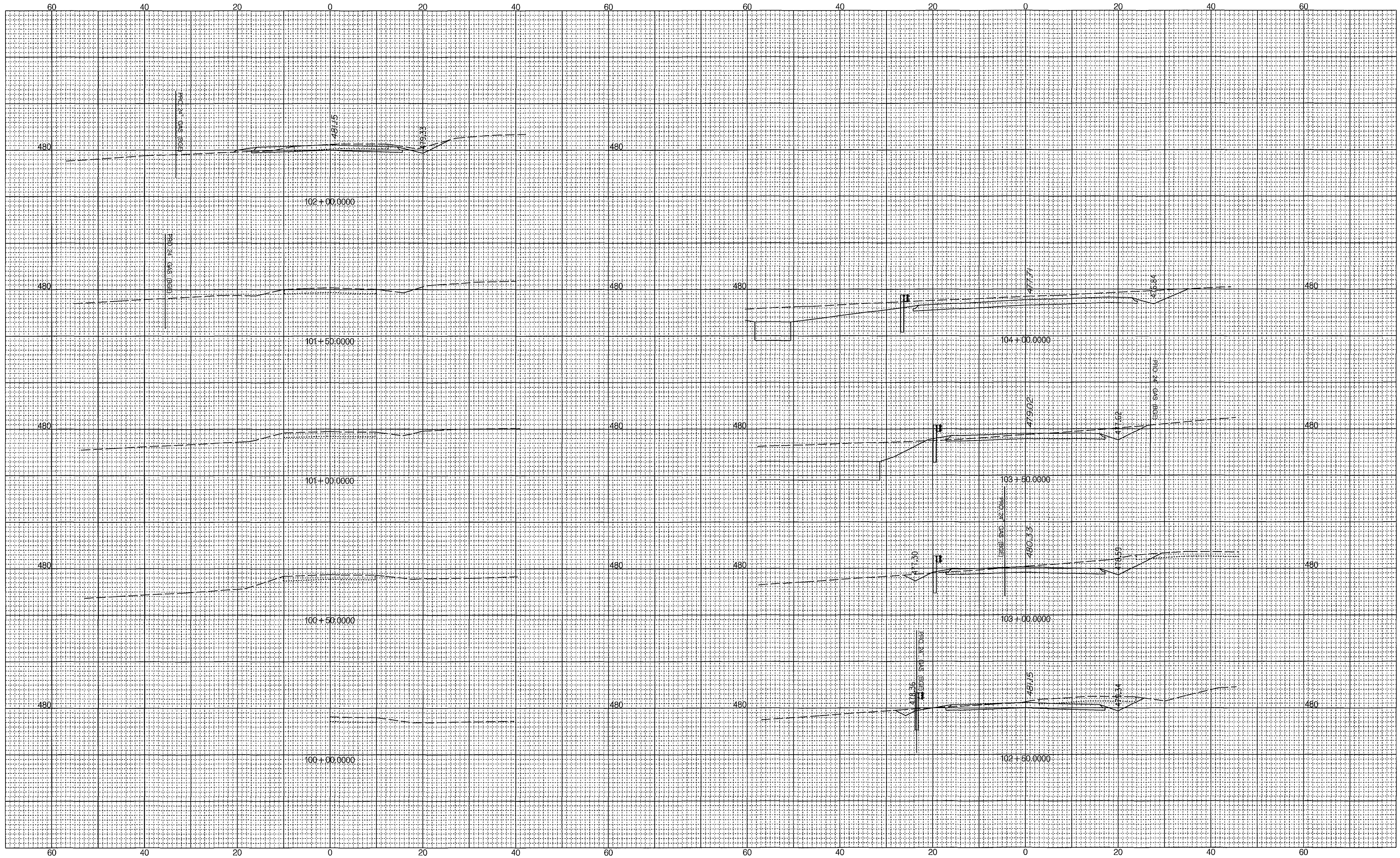

BROWN'S BRIDGE ROAD

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. 16156, Expiration Date: 8·28·18

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF HIGHWAYS 1/23/2018 DATE

CHIEF, BUREAU OF ENGINEERING 1/22/18 DATE

CHIEF, TRANSPORTATION AND SPECIAL PROJECTS DIVISION 1/22/18 DATE

DIRECTOR OF PUBLIC WORKS 1/23/18 DATE

PREPARED BY
URS
4 NORTH PARK DRIVE
HUNT VALLEY, MARYLAND
TEL: (410) 785-7220

1-10-18

DES: RLL
DRN: BJK
CHK: DTM
DATE: 10/17

BY	NO.	REVISION	DATE

CROSS SECTIONS
STA. 100+00.00 TO 104+00.00

SCALE MAP NO. 35 BLOCK NO. 19

HALL SHOP ROAD AT
BROWNS BRIDGE ROAD

ELECTION DISTRICT NO. 5
CAPITAL PROJECT J-4164

SCALE 1"=10'

SHEET 21 OF 21

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