

INDEX OF SHEETS	
TITLE SHEET	1
ROADWAY PLAN	2
GEOMETRY SHEET	3
TYPICAL SECTIONS AND DETAILS	4
ROADWAY PROFILE	5
MAINTENANCE OF TRAFFIC PLANS	6-8
PIPE PROFILES	9
EROSION AND SEDIMENT CONTROL PLANS	10-14
RETAINING WALL GENERAL PLAN AND ELEVATION	15
GEOMETRIC LAYOUT	16
RETAINING WALL TYPICAL SECTION	17
SUGGESTED SEQUENCE OF CONSTRUCTION	18
PRECAST LAGGING PANEL DETAILS - 1	19
PRECAST LAGGING PANEL DETAILS - 2	20
CAST-IN-PLACE LAGGING DETAILS AT SOLDIER PILE 1	21
CAST-IN-PLACE LAGGING DETAILS AT SOLDIER PILES 3-4	22
CAST-IN-PLACE LAGGING DETAILS AT SOLDIER PILE 13 AND MISCELLANEOUS DETAILS	23
BORINGS AND DRIVE TESTS - 1	24
BORINGS AND DRIVE TESTS - 2	25
STANDARD DETAILS	26
LANDSCAPE PLAN AND DETAILS	27

Howard County, Maryland - Department of Public Works

CAPITAL PROJECT NO. B-3853 REPAIRS TO RETAINING WALL ON MULLIGAN'S HILL LANE

GENERAL NOTES

- ALL STATIONING AND DIMENSIONING ARE TO BE FIELD VERIFIED BY THE CONTRACTOR.
- APPROXIMATE LOCATIONS OF THE EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE HOWARD COUNTY ENGINEER BY THE CONTRACTOR AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE (5) WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:

MISS UTILITY, 1-800-257-7777
CONSTRUCTION INSPECTION DIVISION, HOWARD COUNTY, 410-313-5712
BUREAU OF UTILITIES, HOWARD COUNTY, 410-313-4900
BALTIMORE GAS & ELECTRIC COMPANY, 410-685-0123

VERIZON OCCLS, 410-712-0202
COMCAST, 410-931-4600
COMCAST FIBER, 410-427-9600

- THE CONTRACTOR SHALL CONTACT THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION OF ENGINEERING FOR VERIFICATION AND /OR INFORMATION REGARDING:
 - EXISTING/PROPOSED RIGHT-OF-WAY
 - UTILITY RELOCATION
 - MAINTENANCE OF TRAFFIC DURING CONSTRUCTION
 - EROSION/SEDIMENT CONTROL CERTIFICATION AND PERMIT
 - HORIZONTAL/VERTICAL CONTROL
 - GRADING PERMIT

- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED IN ACCORDANCE WITH THE SEDIMENT CONTROL NOTES AND DETAILS.

- THE CURRENT EDITION OF THE "HOWARD COUNTY STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION - VOL IV" UTILIZES THE SHA "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS" (JAN, 2001) AS AN APPENDAGE. ALL REVISIONS, SPECIAL PROVISIONS INSERTS, AND SPECIAL PROVISIONS ARE MADE PART OF THE SPECIFICATIONS.

IN THE EVENT OF ANY DISCREPANCY BETWEEN THESE SPECIFICATIONS AND OTHER DOCUMENTS, THE FOLLOWING HIERARCHY WILL GOVERN:

- CONTRACT DRAWINGS
- CONTRACT SPECIFICATIONS
- SPECIAL PROVISIONS
- GENERAL CONDITIONS
- HOWARD COUNTY VOLUME IV STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION
- SHA SPECIAL PROVISION INSERTS AND SPECIAL PROVISIONS FOR JANUARY 2001 SPECIFICATIONS
- SHA "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS" (JAN, 2001)

FOR MORE INFORMATION, REFER TO THE PREFACE IN THE CURRENT EDITION OF THE HOWARD COUNTY DESIGN MANUAL VOLUME IV.

- STAGING AND STOCKPILE AREA WILL BE DETERMINED BY CONTRACTOR.

- SURVEY COMPLETED IN SEPTEMBER 2011 BY:
WHITMAN, REQUARDT, & ASSOCIATES, LLP
801 SOUTH CAROLINE STREET
BALTIMORE, MD 21231

HORIZONTAL DATUM SHOWN HEREON BASED ON THE FOLLOWING HOWARD COUNTY SURVEY CONTROL MONUMENTS (MARYLAND STATE PLANE COORDINATE SYSTEM NAD'83/2007)

0084: BRASS DISC
N 583158.794
E 1370739.952

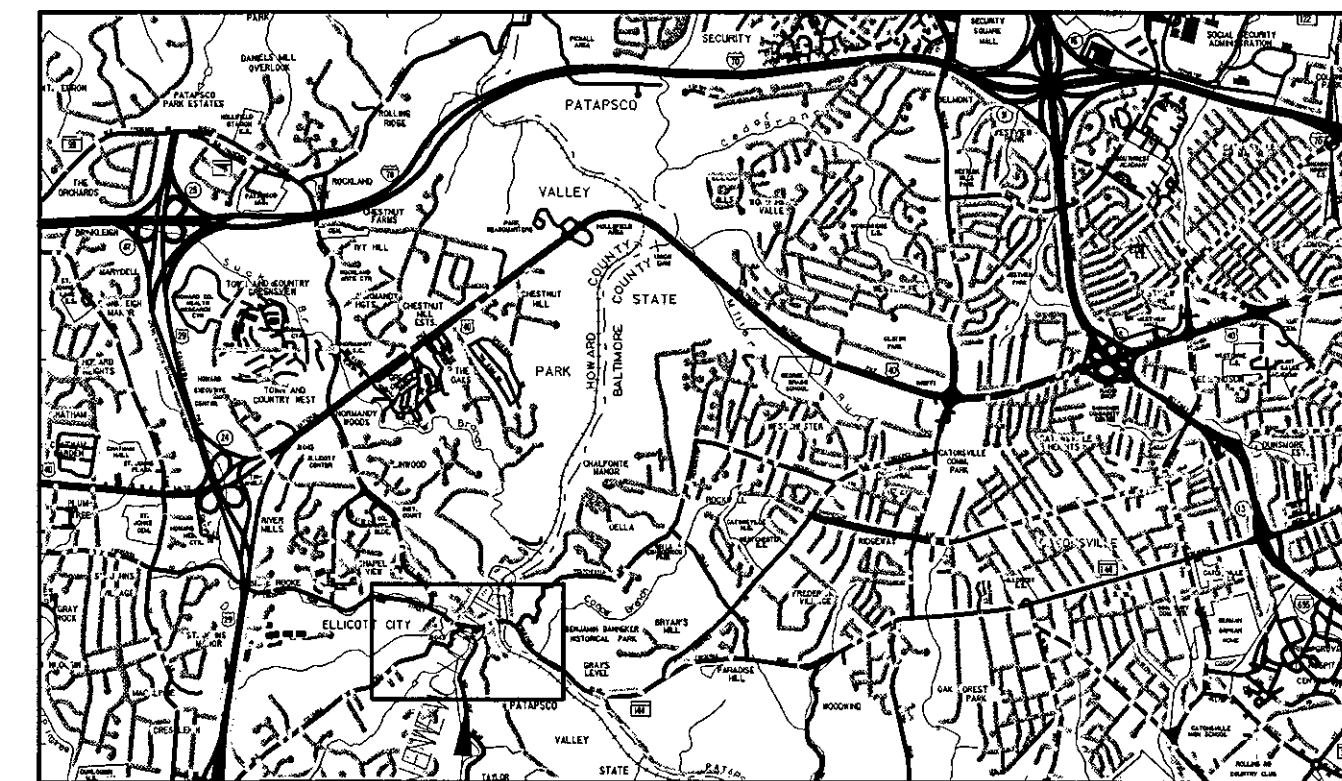
HOWARD COUNTY PROJECT SPECIFIC POINT 25 (SUPPLIED BY HOWARD COUNTY, MD)

25: R.R. SPIKE
N 582913.418
E 1370366.145

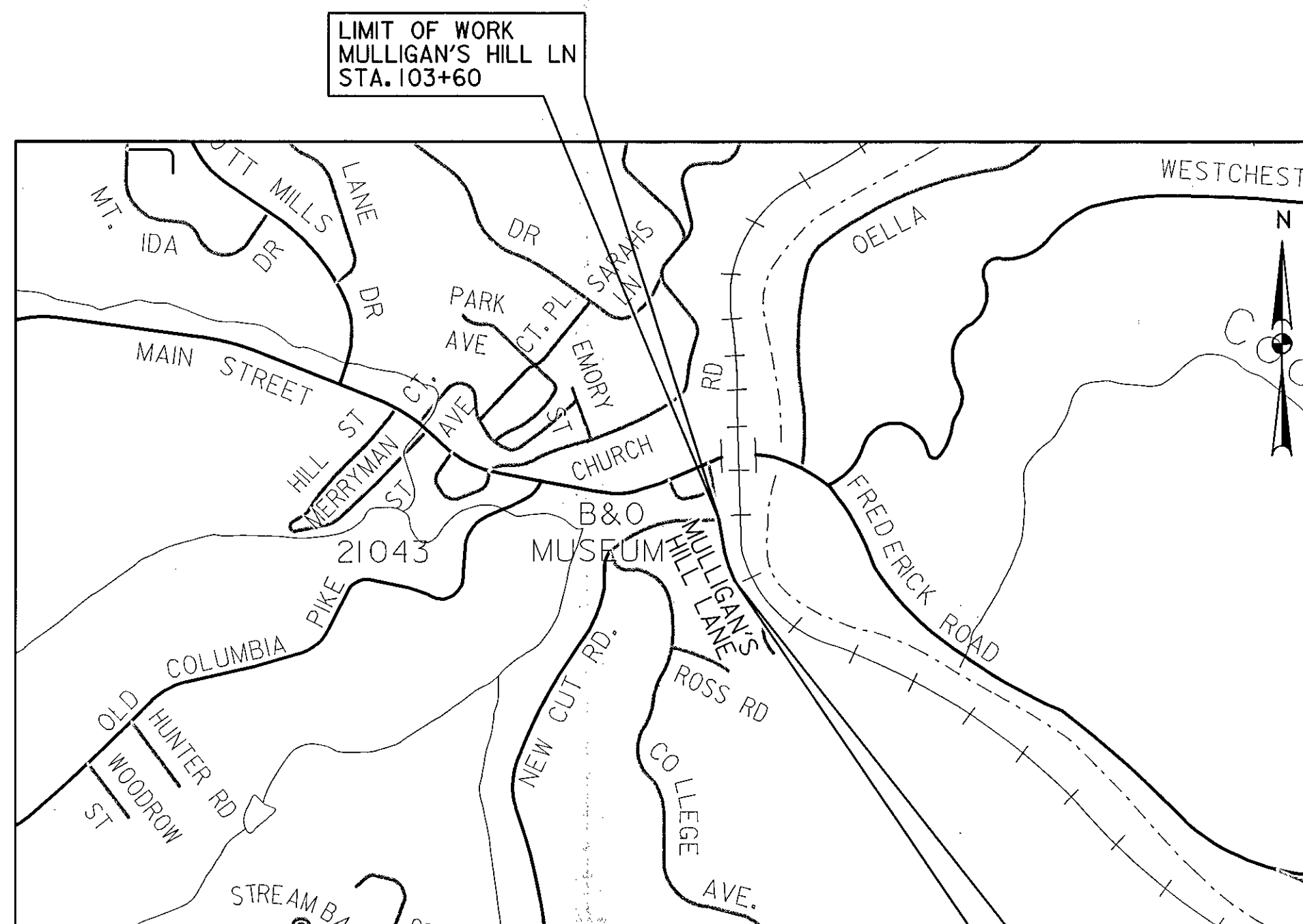
VERTICAL DATUM SHOWN HEREON BASED ON HOWARD COUNTY BENCHMARK (NAVD'88)

0084 (NGS#AE2449)
ELEV 124.823

"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. 18142, EXPIRATION DATE: 02-04-2015."



DETAIL AREA
VICINITY MAP
5000' 0 5000' 10000'
SCALE: 1" = 5000'



LOCATION MAP

600' 0 600' 1200'
SCALE: 1" = 600'

LIMIT OF WORK
MULLIGAN'S HILL LN
STA. 103+60

LIMIT OF WORK
MULLIGAN'S HILL LN
STA. 101+40

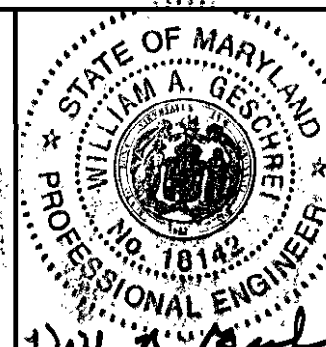
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 12/1/14
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 1/5/14
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 11/5/14
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS DATE

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231



DES:	MTR				
DRN:	NSP				
CHK:	MTR				
DATE:	01/13/2014	BY	NO.	DESCRIPTION	DATE

TITLE SHEET

CAPITAL PROJECT NO. B-3853
REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE

SCALE AS SHOWN

SHEET 1 OF 27

ADC MAP NO. 12 GRID G10 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

4" CONCRETE SIDEWALK HoCo STD. NO. R-3.05		
STATION TO STATION	SF	REMARKS
102+17 TO 103+60	987	MULLIGAN'S HILL / ST. PAUL LEFT

7" CONCRETE COMBINATION CURB AND GUTTER (REVERSE GUTTER PAN) HoCo STD. NO. R-3.01		
STATION TO STATION	LF	REMARKS
102+17 TO 103+39	144	MULLIGAN'S HILL / ST. PAUL LEFT

7" CONCRETE COMBINATION CURB AND GUTTER HoCo STD. NO. R-3.01		
STATION TO STATION	LF	REMARKS
103+39 TO 103+60	47	ST. PAUL LEFT

SIDEWALK RAMP HoCo STD. NO. R-4.02		
STATION	OFFSET	REMARKS
103+32	16' LT	MULLIGAN'S HILL LN LEFT

TYPE A SOIL STABILIZATION MATTING		
LOCATION	SY	REMARKS
102+36 TO 103+15, LT	85	AREA OF 2:1 SLOPES

DETECTABLE WARNING SURFACE HoCo STD. NO. R-4.07			
STATION	OFFSET	SF	REMARKS
103+32	16' LT	18	MULLIGAN'S HILL LN LEFT

PIPE SCHEDULE						
FROM	TO	SIZE	TYPE	LENGTH	INV.IN	INV.OUT
C-1	I-1	8"	CPP-S	7'	157.55	157.50
I-1	MH-3	15"	CPP-S	9'	155.00	150.75
MH-3	MH-2	15"	RCP, CL IV.	4'	136.72	136.70
MH-2	MH-1	15"	CPP-S	64'	136.60	136.27

DRAINAGE STRUCTURE SCHEDULE					
STRUCTURE NO.	STATION	OFFSET	TYPE	SIZE	REMARKS
I-1	102+68	34' LT	YARD INLET D-4.14	--	MULLIGAN'S HILL LN LEFT
MH-1	103+38	11' LT	SHALLOW MANHOLE G-5.12	48" DIA	MULLIGAN'S HILL LN LEFT
MH-2	102+70	14' LT	SHALLOW MANHOLE G-5.12	48" DIA	MULLIGAN'S HILL LN LEFT
MH-3	102+68	22' LT	MANHOLE G-5.12	48" DIA	MULLIGAN'S HILL LN LEFT
*C-1	102+68	42' LT.	8" CPP PIPE CONNECTION	8"	MULLIGAN'S HILL LN LEFT

*CPP-S DOWNSPOUT CONNECTIONS SHOWN UPSTREAM OF C-1 ARE FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR SHALL CONNECT THE EXISTING DOWNSPOUTS TO C-1 PER PIPE MANUFACTURER'S RECOMMENDATIONS AND WITH THE APPROVAL OF THE ENGINEER. PAYMENT FOR DOWNSPOUT CONNECTIONS INCLUDING ALL PIPE, FITTINGS, TRENCHING, BACKFILL, AND INCIDENTALS SHALL BE INCIDENTAL TO THE CONTRACT UNIT COST FOR C-1. THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS OF THE PROPOSED CONNECTION SCHEME OF C-1 TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING MATERIALS.

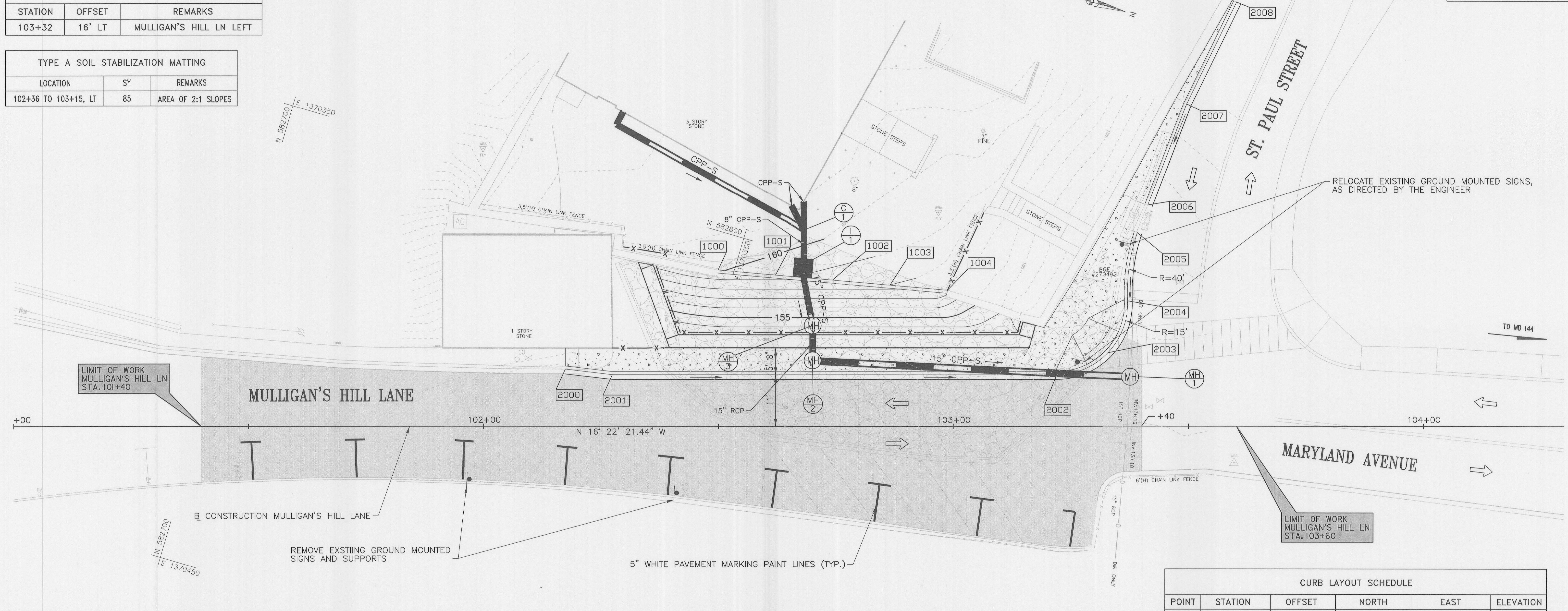
THE CONTRACTOR SHALL LOCATE ANY EXISTING UNDERGROUND UTILITIES WITHIN THE PROJECT LIMITS AND TEST PIT ANY POTENTIAL CONFLICTS WITH THE PROPOSED STORM DRAINAGE SYSTEM. NOTIFY THE ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY POTENTIAL CONFLICTS.

CONCRETE BARRIER CURB HoCo STD. NO. R-3.03		
STATION TO STATION	LF	REMARKS
102+50 TO 102+99	49	* MULLIGAN'S HILL LN LEFT

* - TIE CURB FACE TO BACK OF EXISTING RETAINING WALL

LEGEND

- FULL-DEPTH PAVEMENT
- SIDEWALK
- PR. CONTOUR
- LIMIT OF DISTURBANCE
- LIMIT OF FILL
- LIMIT OF CUT



HAIRPIN FENCE		
STATION TO STATION	LF	REMARKS
102+27 TO 102+40	12	MULLIGAN'S HILL LN LEFT (BACK OF SIDEWALK WITH ACCESS GATE)
102+35 TO 103+14	91	MULLIGAN'S HILL LN LEFT (TOP OF WALL)
102+30 TO 102+40	10	MULLIGAN'S HILL LN LEFT (BEHIND EXISTING WALL)
103+00 TO 103+06	18	MULLIGAN'S HILL LN LEFT (BACK OF CURB TO EXISTING STAIRS)

CURB LAYOUT SCHEDULE					
POINT	STATION	OFFSET	NORTH	EAST	ELEVATION
1000	102+49.90	33.23' LT.	582,796.6494	1,370,357.9974	EXST.
1001	102+62.10	32.16' LT.	582,808.6625	1,370,355.5837	159.50
1002	102+74.31	31.09' LT.	582,820.6756	1,370,353.1700	158.75
1003	102+86.52	30.02' LT.	582,832.6888	1,370,350.7563	157.00
1004	102+98.72	28.95' LT.	582,844.7019	1,370,348.3426	EX.

CURB LAYOUT SCHEDULE					
POINT	STATION	OFFSET	NORTH	EAST	ELEVATION
2000	102+17.40	12.17' LT.	582,771.4060	1,370,387.3616	EX.
2001	102+27.40	11.00' LT.	582,781.3312	1,370,385.6684	140.97
2002	103+22.02	11.00' LT.	582,872.1109	1,370,358.9976	140.36
2003	103+32.84	15.62' LT.	582,881.1973	1,370,351.5138	140.76
2004	103+37.00	26.63' LT.	582,882.0837	1,370,339.7757	EX.
2005	103+39.08	41.13' LT.	582,879.9857	1,370,325.2822	EX.
2006	103+41.32	47.05' LT.	582,881.0100	1,370,318.6336	EX.
2007	103+49.58	68.53' LT.	582,882.3417	1,370,296.0298	EX.
2008	103+60.18	90.15' LT.	582,886.4207	1,370,272.3007	EX.

"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. 18142, EXPIRATION DATE: 02-04-2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works
DATE: 1-17-14

Chief, Bureau of Engineering
DATE: 1/15/14

Chief, Division of Transportation and Special Projects
DATE: 1/15/14

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231

STATE OF MARYLAND
PROFESSIONAL ENGINEER
No. 18142
DATE: 01/13/2014

DES: MTR					
DRN: NSP					
CHK: MTR					
DATE: 01/13/2014					
BY	NO.	DESCRIPTION	DATE	ADC MAP NO. 12	GRID G10

ROADWAY PLAN

CAPITAL PROJECT NO. B-3853
FINAL SUBMISSION
REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE

SCALE: 1" = 10'

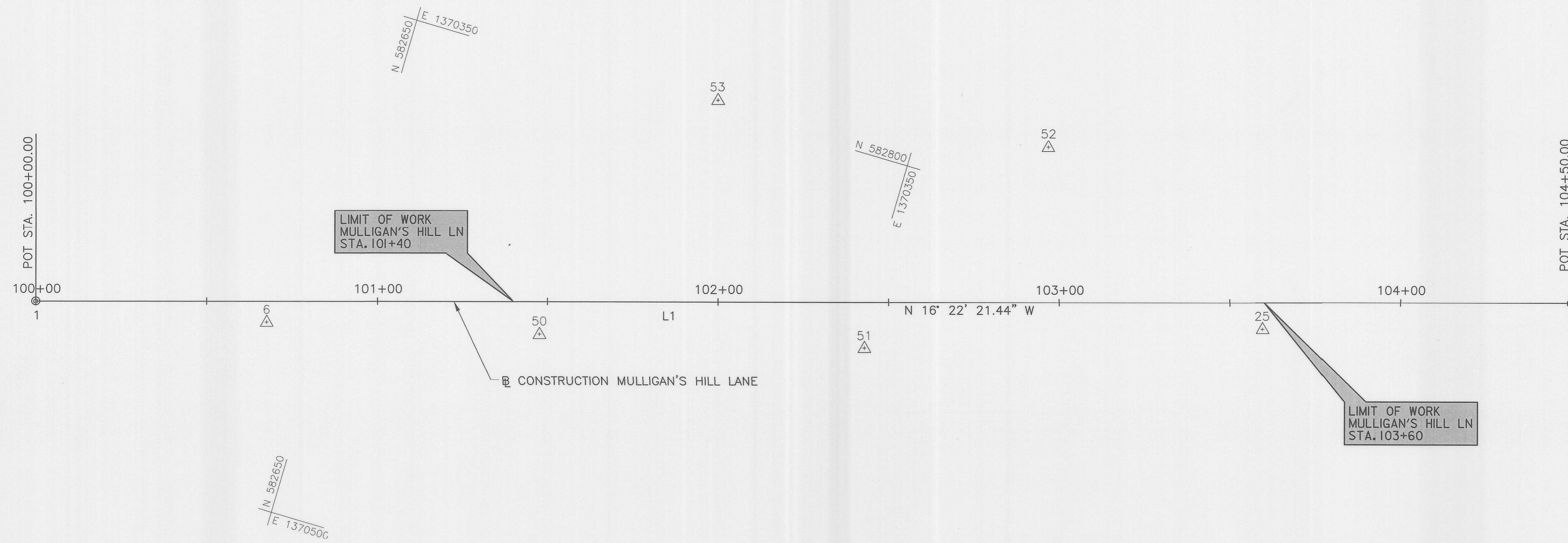
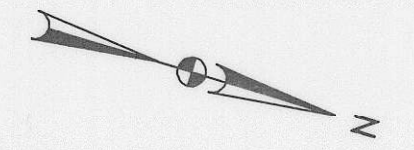
SHEET 2 OF 27

1ST ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

SURVEY CONTROL POINTS AND BENCHMARK ELEVATIONS			
TRAV. PT.	NORTH	EAST	EL. (FT.)
6	582,632.8390	1,370,447.1310	140.69
25	582,913.5190	1,370,366.3241	139.58
50	582,710.6372	1,370,427.7926	140.76
51	582,803.0791	1,370,404.6178	140.67
52	582,838.2020	1,370,333.0352	159.59
53	582,741.3692	1,370,347.3534	165.56

CURVE/TANGENT	STATION/TYPE	TANGENT LENGTH	CURVE LENGTH	DELTA	DC	RADIUS	BEARING	NORTHING	EASTING	NO.	DIRECTION	DISTANCE
L1	100+00.00 POT	450.00					N 16° 22' 21.44" W	582,566.2525	1,370,460.3227	L1	N 16° 22' 21.44" W	450.00
	104+50.00 POT							582,998.0044	1,370,333.4754			



"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. 18142, EXPIRATION DATE: 02-04-2015."

1/13/2014 10:17:58 AM C:\D00\31760034-ES01.dgn

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

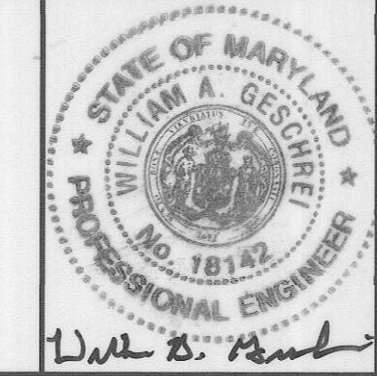
R. G. de 1/2/14
DIRECTOR OF PUBLIC WORKS DATE

Thomas J. Suttler 1/15/14
CHIEF, BUREAU OF ENGINEERING DATE

W. R. M. A. 1-17-14
CHIEF, BUREAU OF HIGHWAYS DATE

Steve Shuman 1/15/14
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS DATE

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231



DES:	MTR			
DRN:	NSP			
CHK:	MTR			
DATE:	01/13/2014			
BY	NO.	DESCRIPTION	DATE	

GEOMETRY SHEET

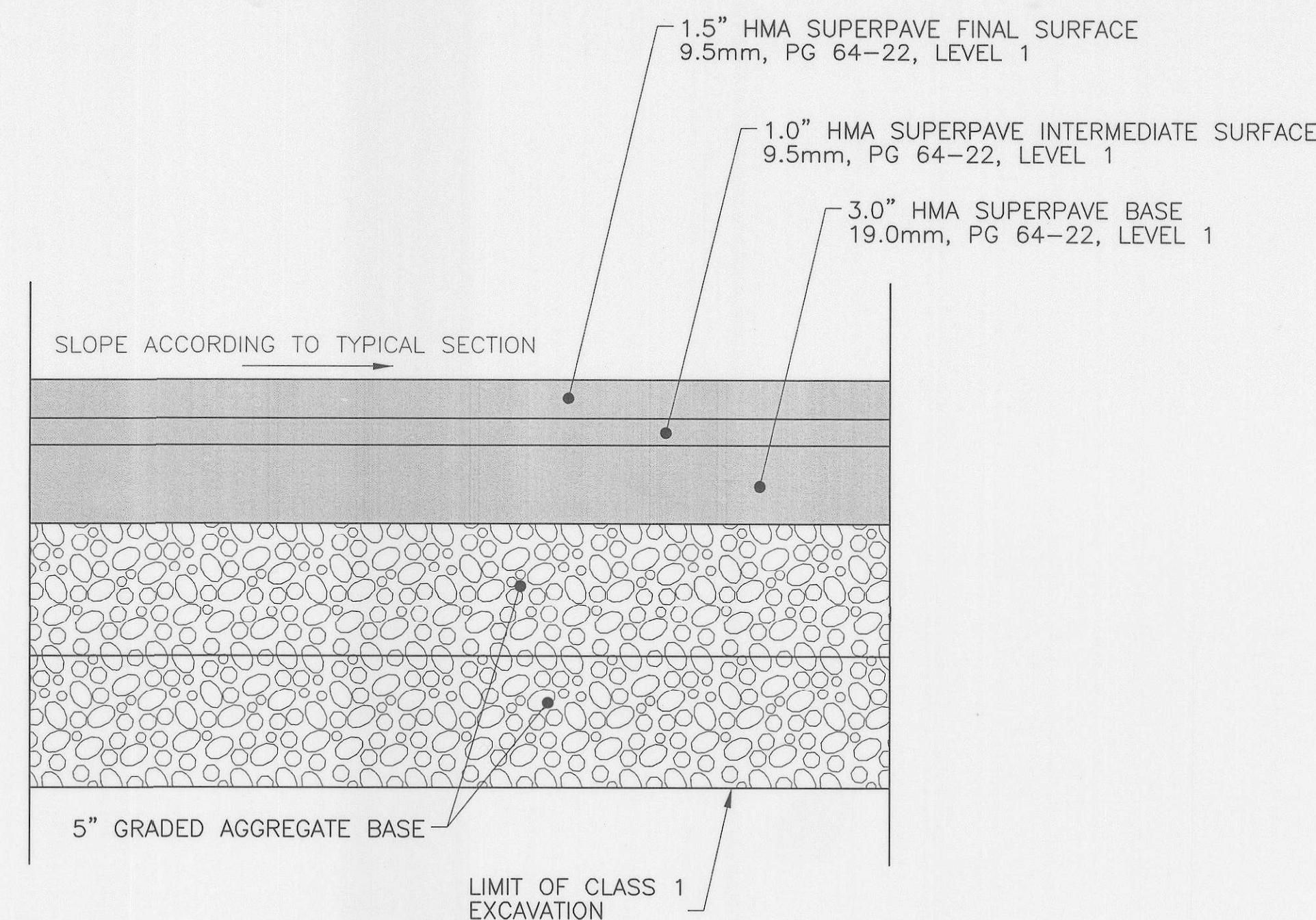
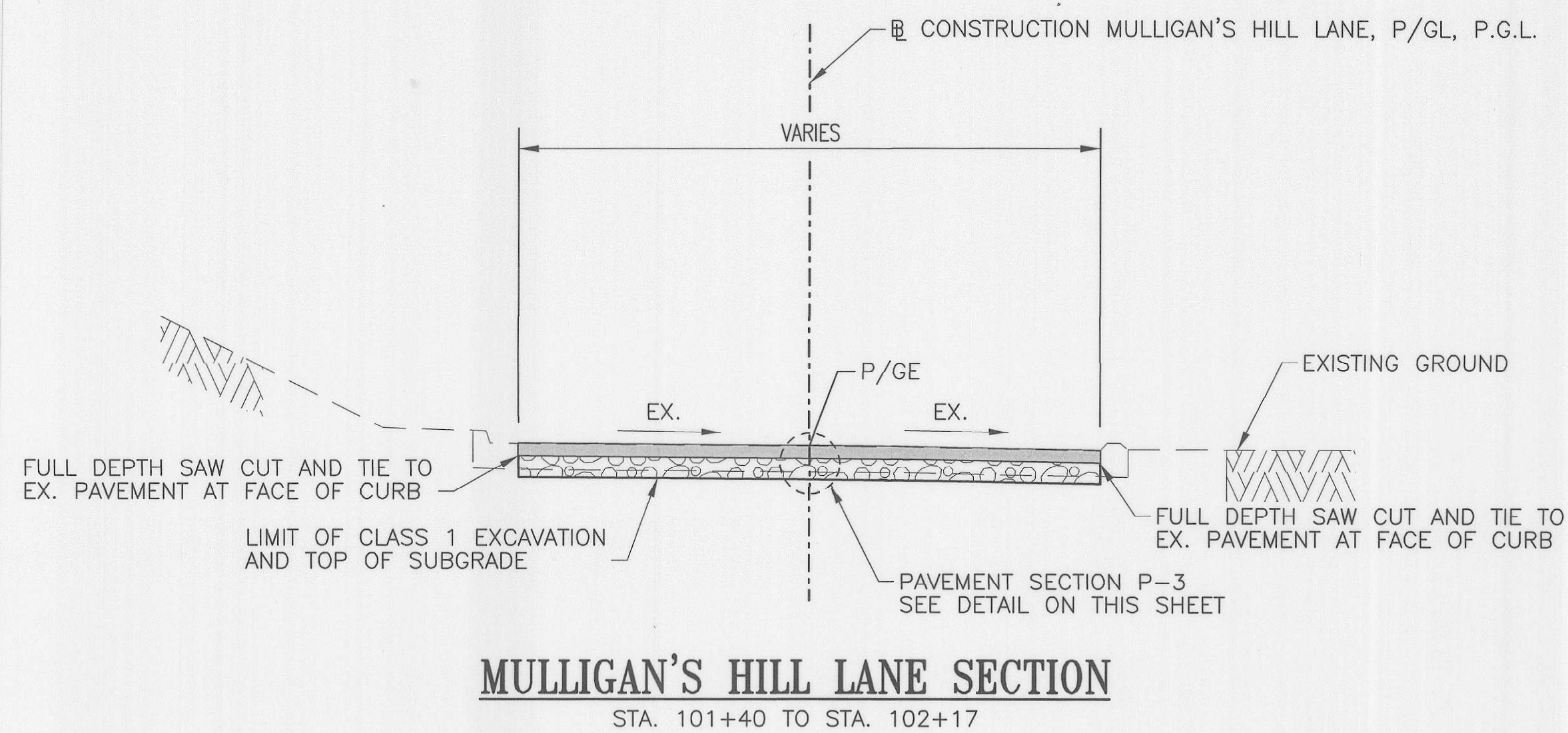
ADC MAP NO. 12 GRID G10

CAPITAL PROJECT NO. B-3853
FINAL SUBMISSION
REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE

1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE:
1" = 20'

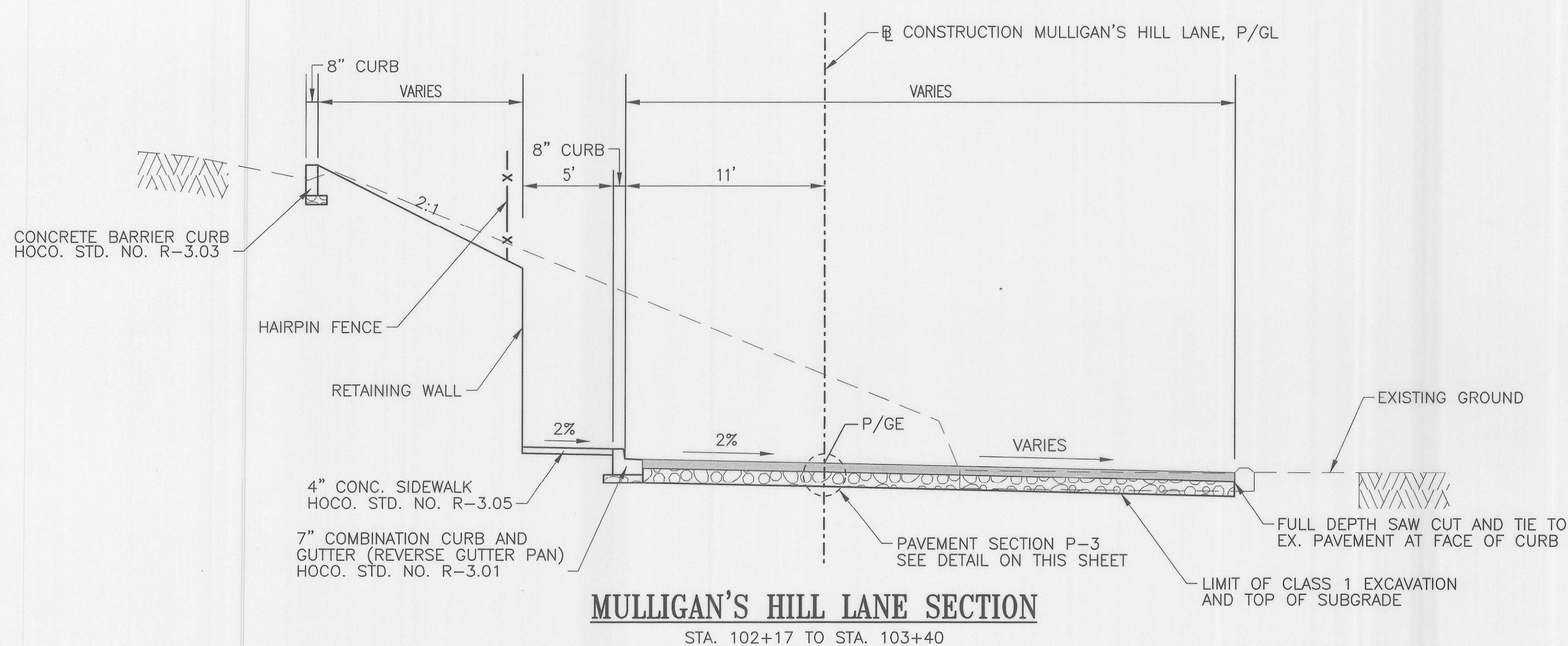
SHEET
3 OF 27



TYPICAL PAVEMENT SECTION, P-3
SCALE: 1/2" = 1'

NOTES:

- HMA SUPERPAVE LAYERS SHALL BE PLACED IN APPROPRIATE COMPACTED LIFT THICKNESS: 19.0 MM BASE (2.0' MIN TO 4.0' MAX) AND 9.5 MM SURFACE (1.0' MIN TO 2' MAX)
- GEOTEXTILE THAT MEETS THE REQUIREMENTS OF AASHTO DESIGNATION M-288, CLASS 2 SHALL BE PLACED ON THE SUBGRADE PRIOR TO THE PLACEMENT OF GRADED AGGREGATE BASE (GAB), GAB TO BE PLACED AND COMPACTED IN 5' MAX COMPACTED THICKNESS LAYERS.
- THE INTERMEDIATE SURFACE COURSE LAYER MUST BE PLACED WITHIN 2 WEEKS OF PLACEMENT OF BASE COURSE, AND IS REQUIRED PRIOR TO SUBSTANTIAL COMPLETION INSPECTION AND BOND REDUCTION.



NOTES:

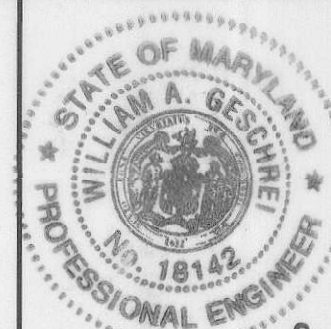
- FULL-DEPTH SAWCUTS SHALL BE INCIDENTAL TO THE COST OF CLASS 1 EXCAVATION.
- SEE ROADWAY PLAN FOR LIMITS OF CURB AND GUTTER.
- SEE SHEET 17 FOR SIDEWALK GROOVE DETAIL.

"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. 18142, EXPIRATION DATE: 02-04-2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Jan 7, 2014
DIRECTOR OF PUBLIC WORKS
Steve Shaper
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231



DES:	MTR				
DRN:	NSP				
CHK:	MTR				
DATE:	01/13/2014	BY	NO.	DESCRIPTION	DATE

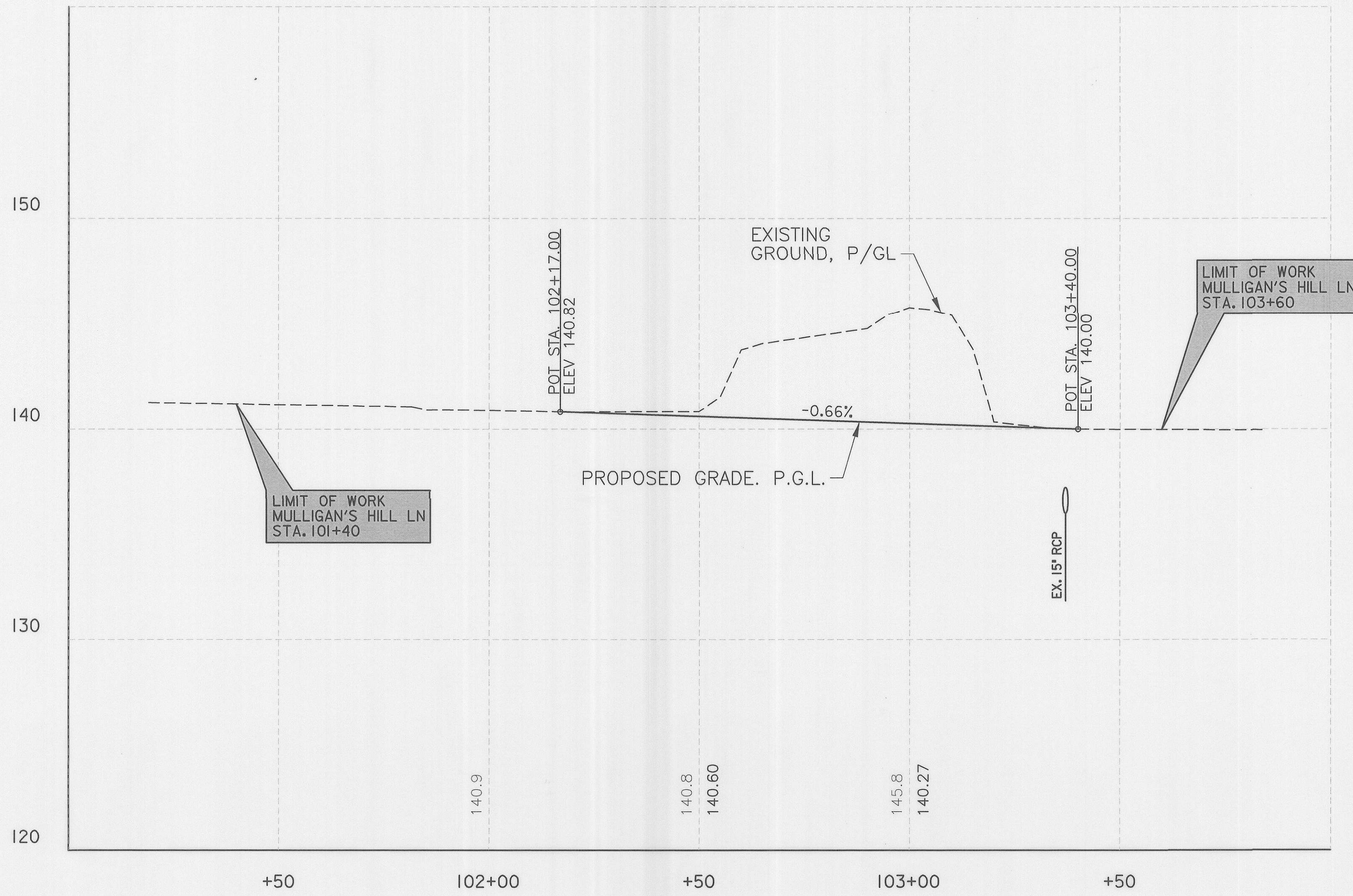
TYPICAL SECTIONS
+
DETAILS

CAPITAL PROJECT NO. B-3853
FINAL SUBMISSION
REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE

SCALE:
1" = 5'

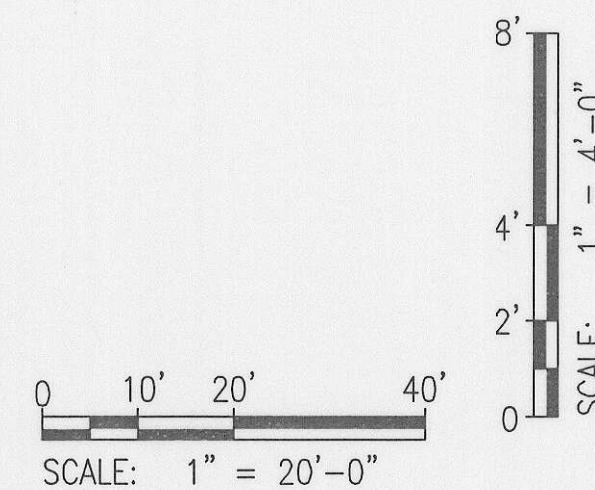
SHEET
4 OF 27

ADC MAP NO. 12 GRID G10 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND



MULLIGAN'S HILL LANE

SCALE:
H: 1" = 20'
V: 1" = 4'



"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. 18142, EXPIRATION DATE: 02-04-2015."

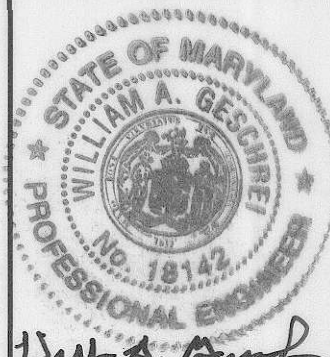
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 1/13/14
DIRECTOR OF PUBLIC WORKS
[Signature] 1/13/14
CHIEF, BUREAU OF HIGHWAYS

[Signature] 1/13/14
CHIEF, BUREAU OF ENGINEERING

[Signature] 1/13/14
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231



DES:	MTR			
DRN:	NSP			
CHK:	MTR			
DATE:	01/13/2014	BY	NO.	DESCRIPTION
				DATE

ROADWAY PROFILE

ADC MAP NO. 12 GRID G10

CAPITAL PROJECT NO. B-3853
FINAL SUBMISSION
REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE

1ST ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 5 OF 27

WORK ZONE TRAFFIC CONTROL PLAN GENERAL NOTES / WORK RESTRICTIONS

- ALL WORK SHALL BE CONDUCTED IN ACCORDANCE WITH THE LATEST VERSION OF THE MARYLAND STATE HIGHWAY ADMINISTRATION'S (MSHA) BOOK OF STANDARDS FOR HIGHWAY AND INCIDENTAL STRUCTURES AND MSHA'S MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MDMUTCD).
- EXISTING TRAFFIC SIGNS IN CONFLICT WITH THE WORK ZONE TRAFFIC CONTROL PLANS SHALL BE COVERED. TEMPORARY TRAFFIC SIGNS SHALL BE INSTALLED ONLY AS NECESSARY FOR EACH INDIVIDUAL PHASE OF CONSTRUCTION, WITH SIGNS RELOCATED AS APPLICABLE BETWEEN SEPARATE STAGES.
- ALL EXISTING PAVEMENT MARKINGS AND/OR TEMPORARY PAVEMENT MARKINGS FROM A PREVIOUS STAGE OF CONSTRUCTION IN CONFLICT WITH TEMPORARY PAVEMENT MARKINGS (IN CURRENT STAGE) SHALL BE REMOVED, AS DIRECTED BY THE ENGINEER.
- CONTRACTOR SHALL REMOVE ALL EQUIPMENT AND MATERIAL FROM THE TRAVELED PORTION OF THE ROADWAY. ALSO, EQUIPMENT AND MATERIALS SHOULD NOT BE STORED IN SUCH A MANNER AS TO OBSTRUCT SIGHT DISTANCE AT ANY INTERSECTING ROAD.
- WHEN FLAGGING IS NECESSARY REFERENCE MD STD. 104.02-10 AND MD STD. 104.02-14.
- ALL OPEN EXCAVATIONS AND TRENCHES SHALL BE PLATED AT THE END OF EACH WORK DAY WITH W8-B(4) (36"x36") STEEL PLATES' SIGNS DISPLAYED IN ADVANCE AND ALL EDGES OF PLATES SHALL HAVE COLD PATCH APPLIED.
- DROP-OFFS ADJACENT TO TRAVEL LANES IN EXCESS OF 2.5 INCHES SHALL BE CORRECTED AT THE END OF THE WORK DAY IN ACCORDANCE WITH SHA STD. MD 104.00-14 (PARAGRAPH 14) AND STD. NO. MD 104.01-28.

WORK ZONE TRAFFIC CONTROL PLAN GENERAL NOTES / WORK RESTRICTIONS

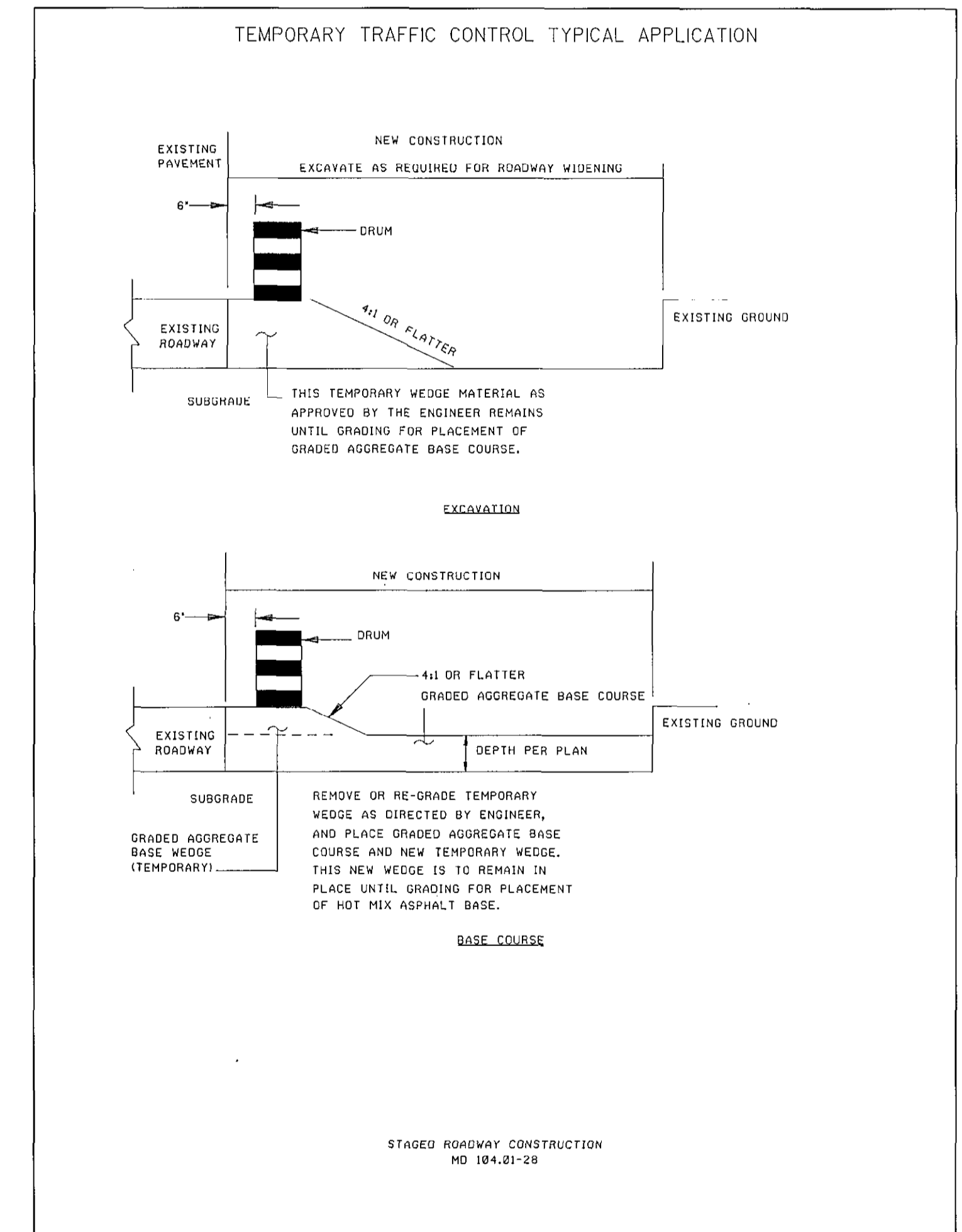
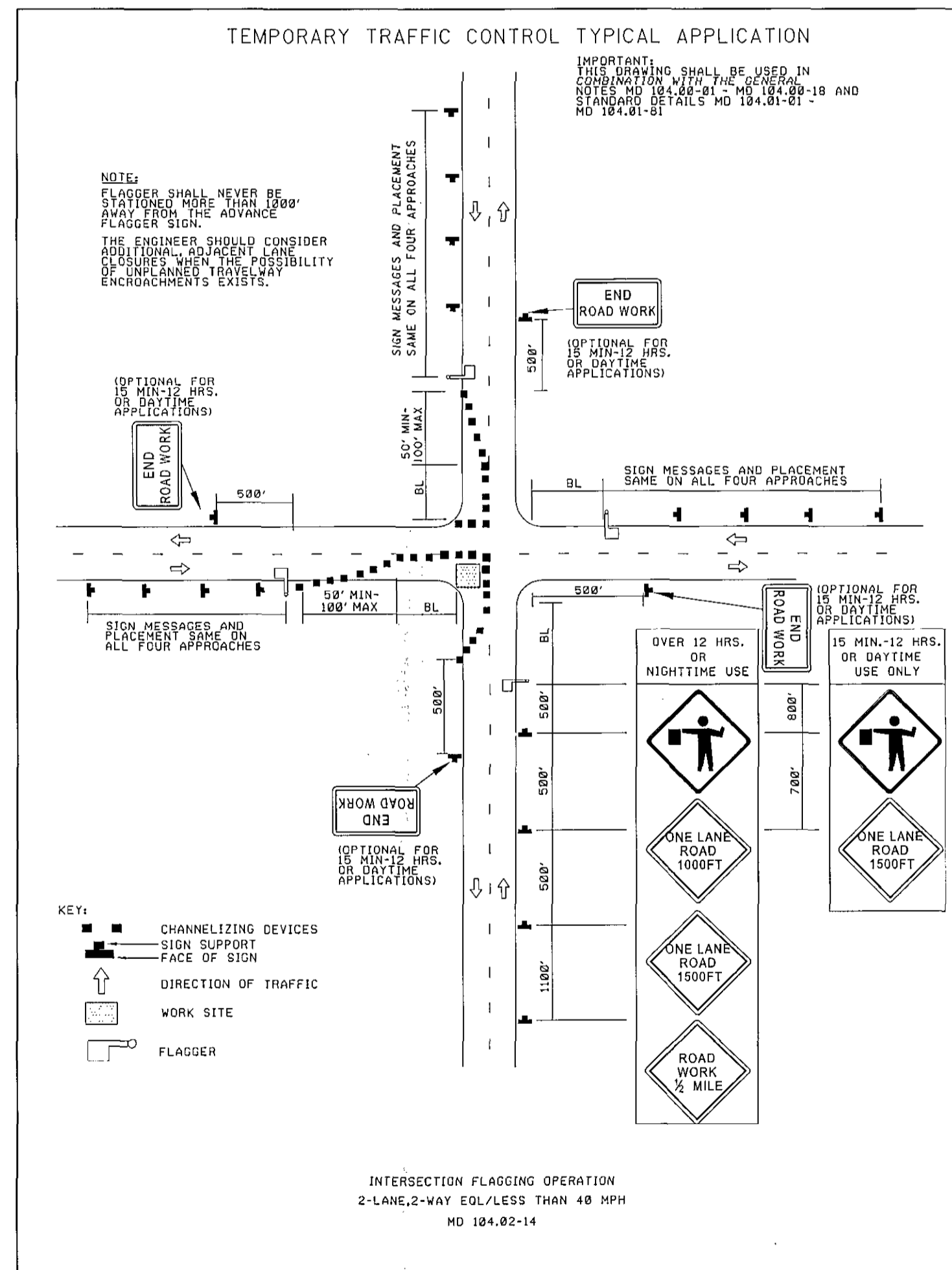
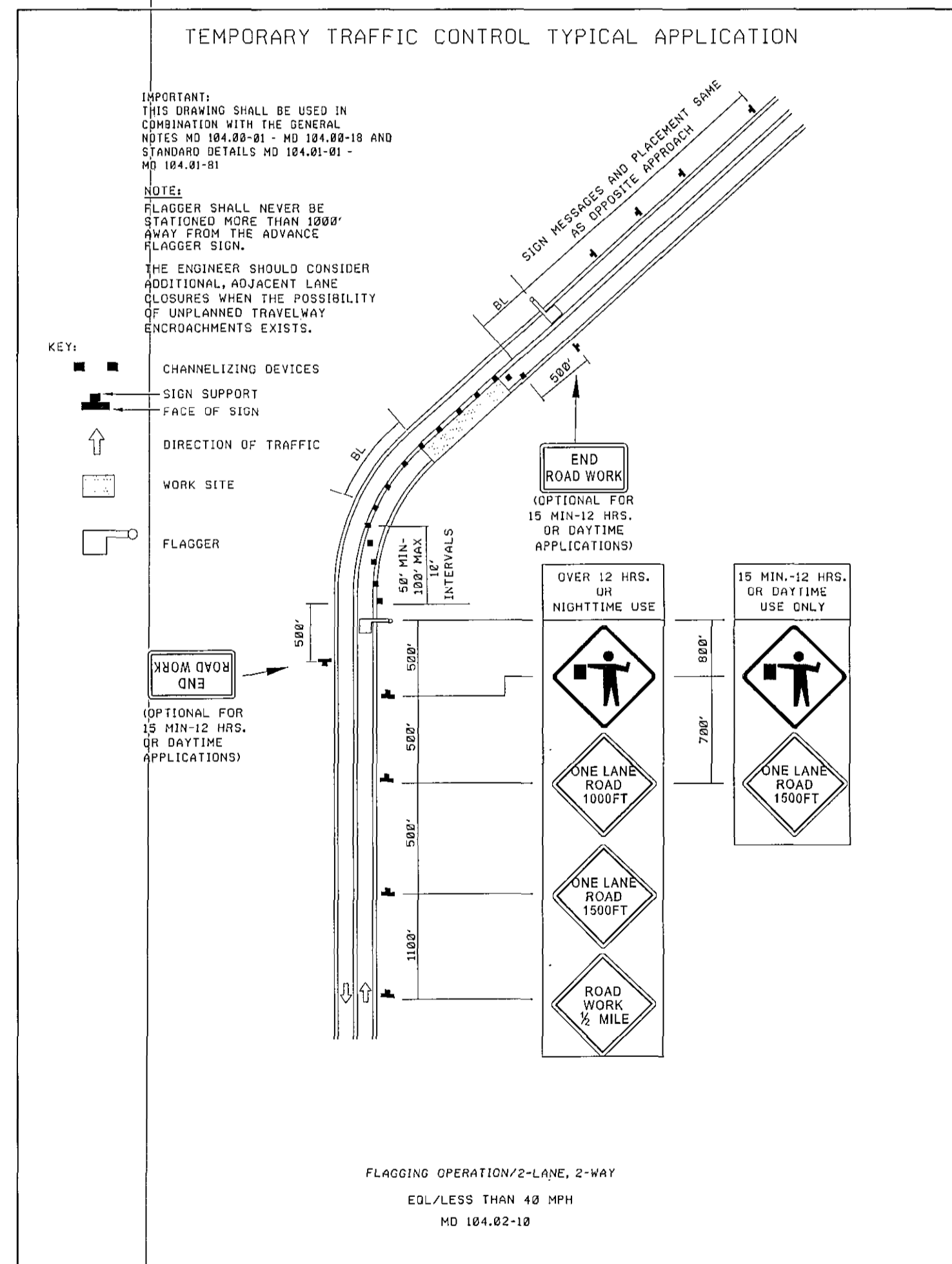
- PRIOR TO THE BEGINNING OF CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE RESIDENTS OF MULLIGAN'S HILL LANE TO PROVIDE A SCHEDULE OF CONSTRUCTION AND THE REQUIREMENTS FOR ROADWAY BLOCKAGE NOTIFICATION.
- PRIOR TO THE BEGINNING OF CONSTRUCTION, THE CONTRACTOR SHALL CONTACT LOCAL FIRE, RESCUE, AND POLICE TO PROVIDE A SCHEDULE OF CONSTRUCTION, THE REQUIREMENTS FOR ROADWAY BLOCKAGE NOTIFICATION, AND CONTACT INFORMATION FOR COORDINATING EMERGENCY ACCESS TO MULLIGAN'S HILL LANE.
- THE CONTRACTOR SHALL MAINTAIN ONE TRAVEL LANE WITH A MINIMUM WIDTH OF 10' DURING NON-WORKING HOURS. THE CONTRACTOR SHALL MAINTAIN ONE TRAVEL LANE WITH A MINIMUM WIDTH OF 10' DURING WORKING HOURS TO THE MAXIMUM EXTENT POSSIBLE. FULL BLOCKAGE OF THE ROADWAY SHALL BE PERMITTED FOR MAXIMUM 15 MINUTE PERIODS ONCE PER HOUR DURING WORKING HOURS WITHOUT ANY ADDITIONAL NOTIFICATION OF THE RESIDENTS OF MULLIGAN'S HILL LANE AND LOCAL FIRE, RESCUE, AND POLICE. WHEN FULL BLOCKAGE OF THE ROADWAY FOR LONGER PERIODS OF TIME IS REQUIRED THE CONTRACTOR SHALL PROVIDE NOTIFICATION OF THE DAY(S) AND DURATIONS OF THE BLOCKAGES TO THE RESIDENTS OF MULLIGAN'S HILL LANE AND LOCAL FIRE, RESCUE, AND POLICE A MINIMUM OF 48 HOURS PRIOR.
- IF LOCAL FIRE, RESCUE, AND POLICE REQUIRE EMERGENCY ACCESS TO MULLIGAN'S HILL LANE DURING ANY PERIOD OF FULL BLOCKAGE, THE CONTRACTOR SHALL DEMOBILIZE TO CLEAR THE ROADWAY AS QUICKLY AS POSSIBLE. THE CONTRACTOR SHALL NOT REBLOCK THE ROAD UNTIL ALL FIRE, RESCUE, AND POLICE HAVE LEFT MULLIGAN'S HILL LANE.

MAINTENANCE OF TRAFFIC ACTIVITIES

- STAGE 1
- INSTALL TEMPORARY TRAFFIC CONTROL DEVICES AS SHOWN ON THE PLANS.
- STAGE 2
- MAINTAIN TEMPORARY TRAFFIC CONTROL DEVICES AS SHOWN ON THE PLANS.

CONSTRUCTION ACTIVITIES

- STAGE 1
- CONSTRUCT RETAINING WALL, FULL DEPTH PAVEMENT, CURB AND GUTTER, AND SIDEWALK FROM STA. 101+40 TO 103+60 LEFT.
- STAGE 2
- CONSTRUCT FULL DEPTH PAVEMENT FROM STA. 101+40 TO 103+40 RIGHT.
 - INSTALL PERMANENT SIGNING, MARKINGS, AND LANDSCAPING.

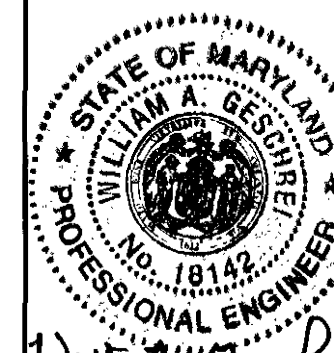


"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18142, EXPIRATION DATE: 02-04-2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *Jay De...* 1/16/14
 Chief, Bureau of Engineering: *Mona & Suttle* 1/15/14
 Chief, Division of Transportation and Special Projects: *Steve Shanaw* 1/15/14

WR&A
 WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21231



DES:	MTR				
DRN:	NSP				
CHK:	MTR				
DATE:	01/13/2014	BY	NO.	DESCRIPTION	DATE

MAINTENANCE OF TRAFFIC
GENERAL NOTES

ADC MAP NO. 12 GRID G10 1ST ELECTION DISTRICT






CAPITAL PROJECT NO. B-3853
FINAL SUBMISSION
REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE

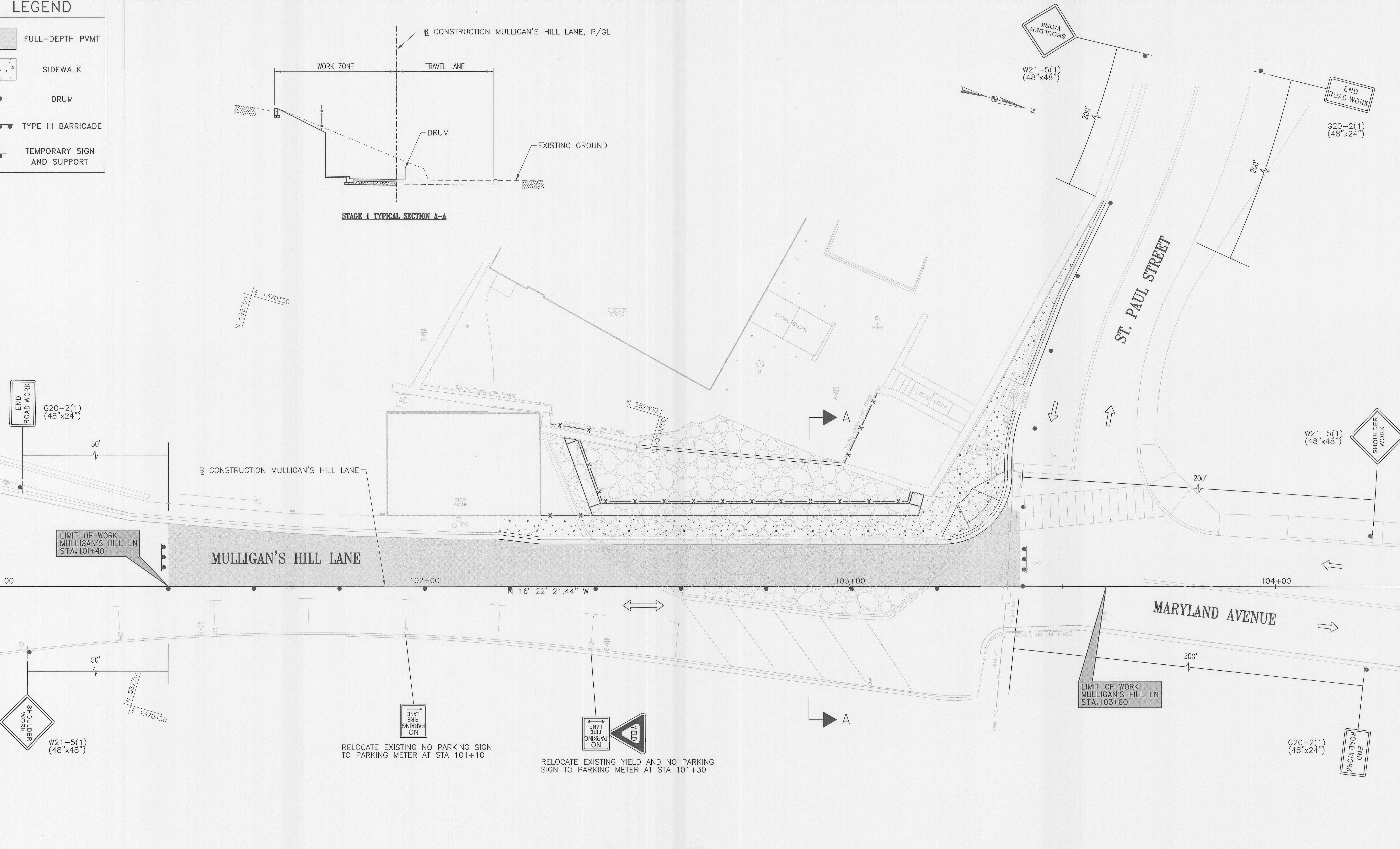
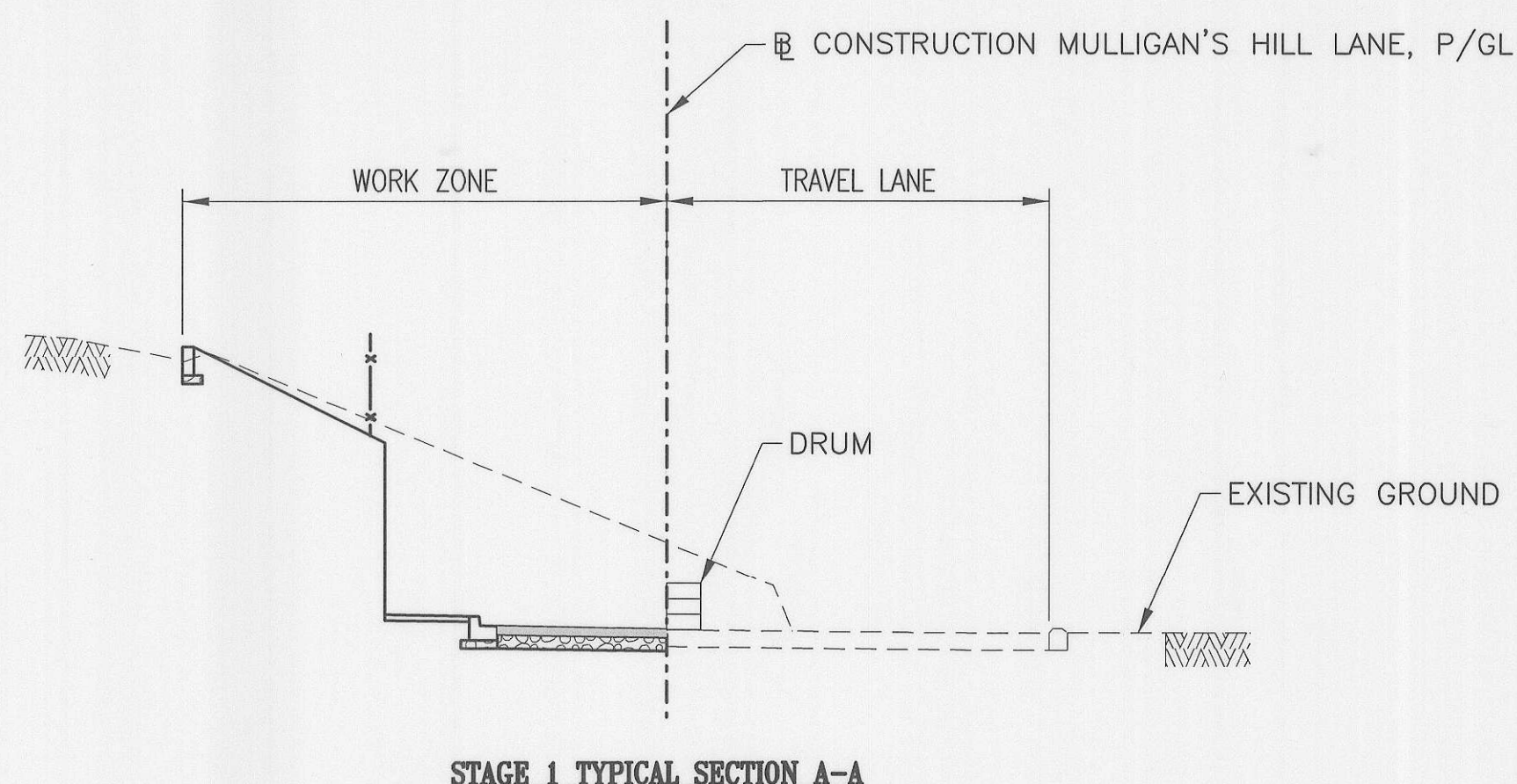
HOWARD COUNTY, MARYLAND

SCALE:
NONE

SHEET
6 OF 27

LEGEND

-  FULL-DEPTH PVMT
-  SIDEWALK
-  DRUM
-  TYPE III BARRICADE
-  TEMPORARY SIGN AND SUPPORT



"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. 18142, EXPIRATION DATE: 02-04-2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

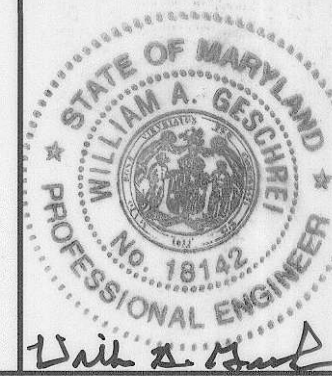
[Signature] 1/2/14
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 1/15/14
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 1-17-14
CHIEF, BUREAU OF HIGHWAYS DATE

[Signature] 1/15/14
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS DATE

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231



DES:	MTR			
DRN:	NSP			
CHK:	MTR			
DATE:	01/13/2014	BY	NO.	DESCRIPTION

MAINTENANCE OF TRAFFIC
STAGE 1

ADC MAP NO. 12 GRID G10

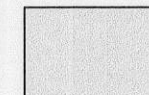
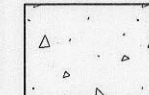

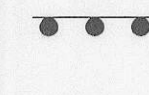

CAPITAL PROJECT NO. B-3853
FINAL SUBMISSION
REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE

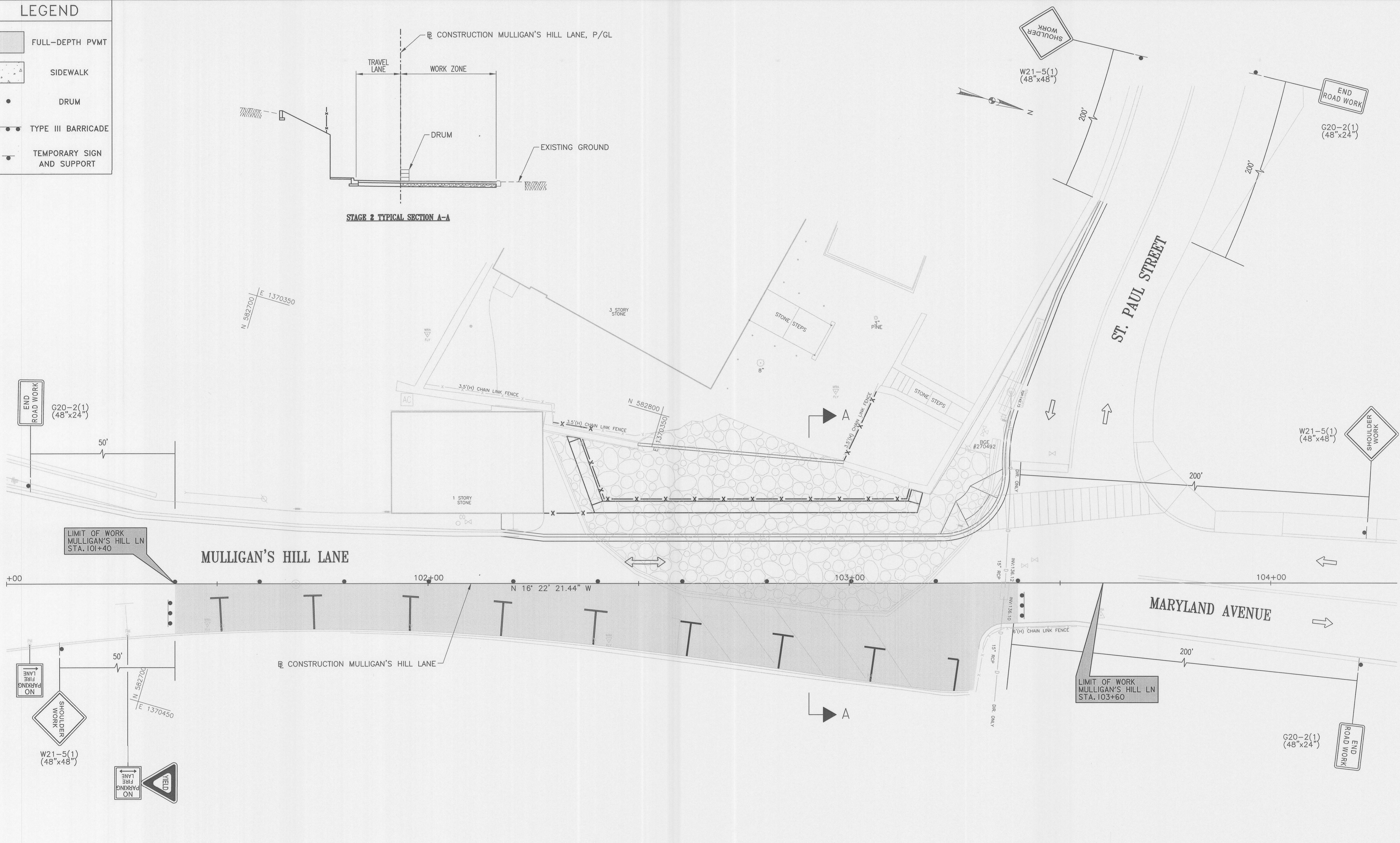
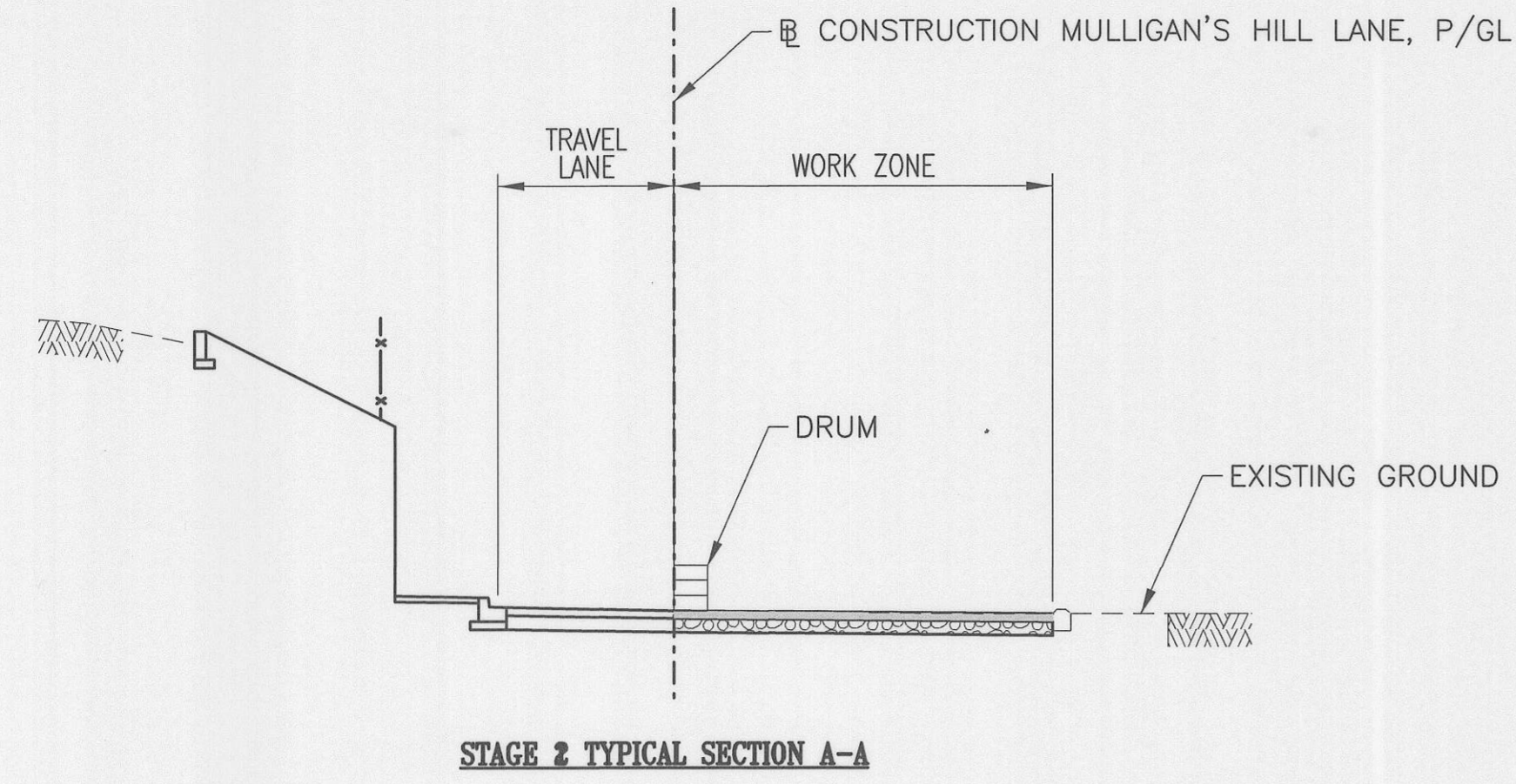
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE:
1" = 10'

SHEET
7 OF 27

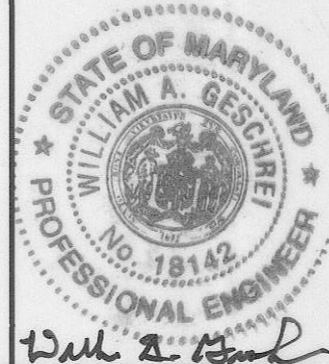
LEGEND

-  FULL-DEPTH PVMT
-  SIDEWALK
-  DRUM
-  TYPE III BARRICADE
-  TEMPORARY SIGN AND SUPPORT



"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. 18142, EXPIRATION DATE: 02-04-2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND



WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231

DES:	MTR				
DRN:	NSP				
CHK:	MTR				
DATE:	01/13/2014	BY	NO.	DESCRIPTION	DATE

MAINTENANCE OF TRAFFIC
STAGE 2

CAPITAL PROJECT NO. B-3853
FINAL SUBMISSION
REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE

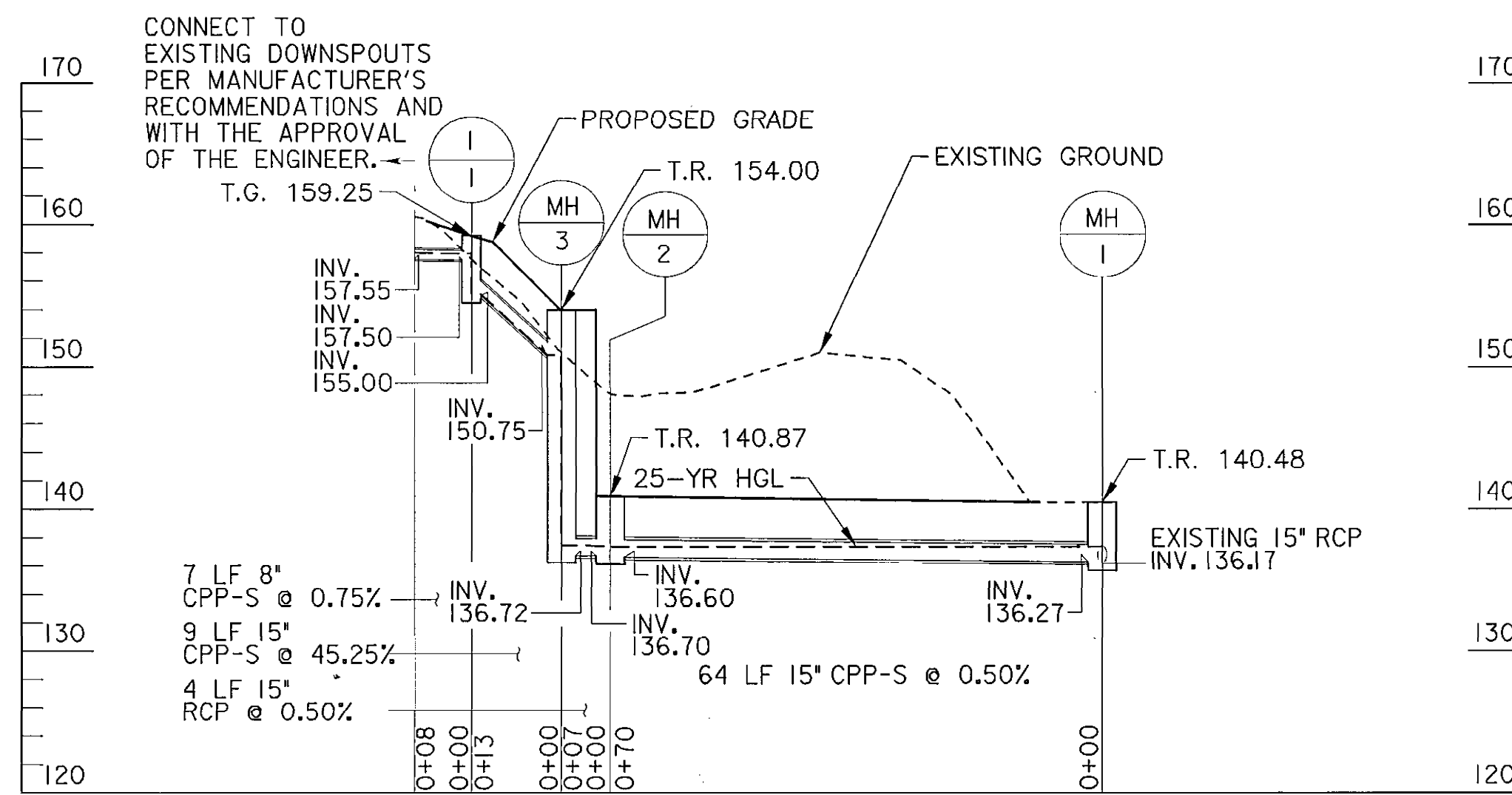
SCALE:
1" = 10'

SHEET
8 OF 27

John G. ... 1/21/14
DIRECTOR OF PUBLIC WORKS DATE
Thomas R. ... 1/15/14
CHIEF, BUREAU OF ENGINEERING DATE
Steve Shapen 1/15/14
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS DATE

ADC MAP NO. 12 GRID G10 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

1/13/2014 11:17:00 AM C:\Users\jgosciniak\Documents\31760000-H-MT02.dgn



PROFILE - C-1 TO MH-3
 SCALE: HORIZ.: 1" = 20'
 VERT.: 1" = 10'

"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. 18142, EXPIRATION DATE: 02-04-2015."

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

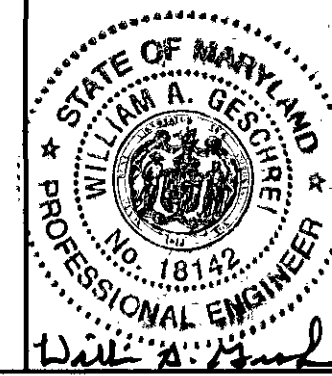
[Signature] 1/2/14
 DIRECTOR OF PUBLIC WORKS DATE

[Signature] 1/15/14
 CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 1-17-14
 CHIEF, BUREAU OF HIGHWAYS DATE

[Signature] 1/15/14
 CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS DATE

WR&A
 WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21231



DES: CSC				
DRN: CSC				
CHK: JDC				
DATE: 01/13/2014	BY	NO.	DESCRIPTION	DATE

PIPE PROFILES

ADC MAP NO. 12 GRID G10

CAPITAL PROJECT NO. B-3853
 FINAL SUBMISSION
 REPAIRS TO RETAINING WALL
 ON MULLIGAN'S HILL LANE

1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

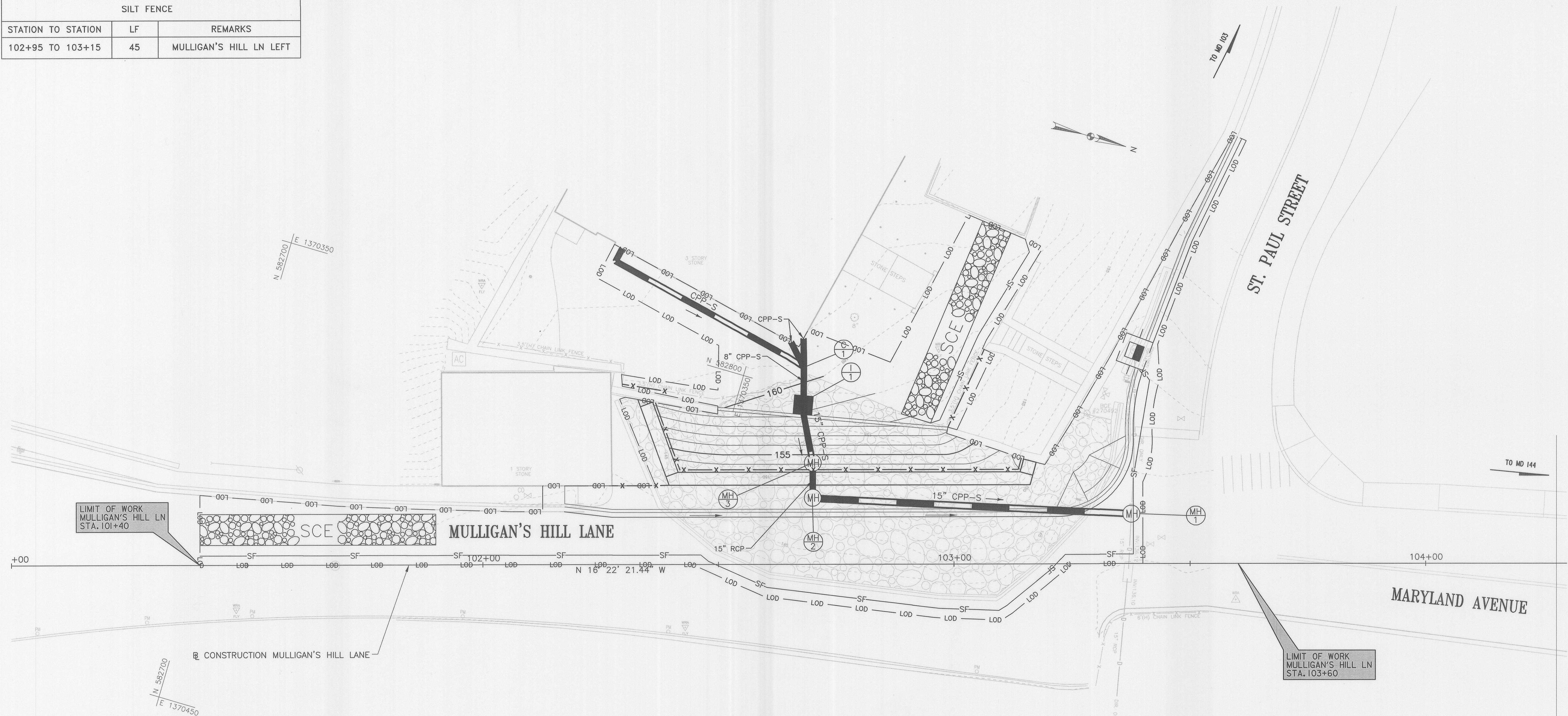
SHEET 9 OF 27

SILT FENCE ON PAVEMENT		
STATION TO STATION	LF	REMARKS
101+40 TO 103+40	245	MULLIGAN'S HILL LN LEFT

CURB INLET PROTECTION	
LOCATION	REMARKS
103+40, 44' LT.	MULLIGAN'S HILL LN LEFT

STABILIZED CONSTRUCTION ENTRANCE	
LOCATION	REMARKS
101+65, LT.	MULLIGAN'S HILL LN
103+00, LT.	MULLIGAN'S HILL LN

SILT FENCE		
STATION TO STATION	LF	REMARKS
102+95 TO 103+15	45	MULLIGAN'S HILL LN LEFT



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

Chris Cusek 11/22/13
 SIGNATURE OF ENGINEER DATE
 CHRISTOPHER S. CUSEK, P.E.

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

Steve Shanon 11/15/14
 SIGNATURE OF DEVELOPER DATE
 STEVE SHANON

- NOTES:**
1. EROSION AND SEDIMENT CONTROL STAGE I CONTROLS SHALL BE INSTALLED IN CONJUNCTION WITH STAGE I MAINTENANCE OF TRAFFIC OPERATIONS
 2. CONSTRUCTION EQUIPMENT SHALL BE LOADED AND UNLOADED INTO THE DISTURBED AREA. ANY SEDIMENT SHALL BE CLEANED FROM PAVEMENT AREAS AT THE END OF EACH WORKING DAY. ANY CONSTRUCTION VEHICLES EGRESSING THE DISTURBED AREA MUST UTILIZE A STABILIZED CONSTRUCTION ENTRANCE PER THIS PLAN.
 3. ANY DISTURBED AREAS NOT DRAINING TO AN APPROVED EROSION AND SEDIMENT CONTROL DEVICE SHALL BE IMMEDIATELY STABILIZED.

"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. 18142, EXPIRATION DATE: 02-04-2015."

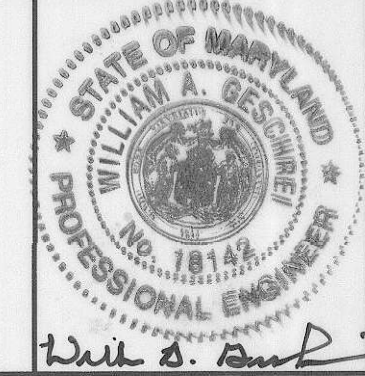
DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Jag de 1/21/14
 DIRECTOR OF PUBLIC WORKS DATE

Thomas E. Butler 1/15/14
 CHIEF, BUREAU OF ENGINEERING DATE

Steve Shanon 1/15/14
 CHIEF, BUREAU OF HIGHWAYS DATE
 AND SPECIAL PROJECTS

WR&A
 WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21231



DES:	CSC				
DRN:	CSC				
CHK:	JDC				
DATE:	01/13/2014	BY	NO.	DESCRIPTION	DATE

EROSION AND SEDIMENT CONTROL PLAN
 STAGE 1

CAPITAL PROJECT NO. B-3853
 FINAL SUBMISSION
 REPAIRS TO RETAINING WALL
 ON MULLIGAN'S HILL LANE

1ST ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

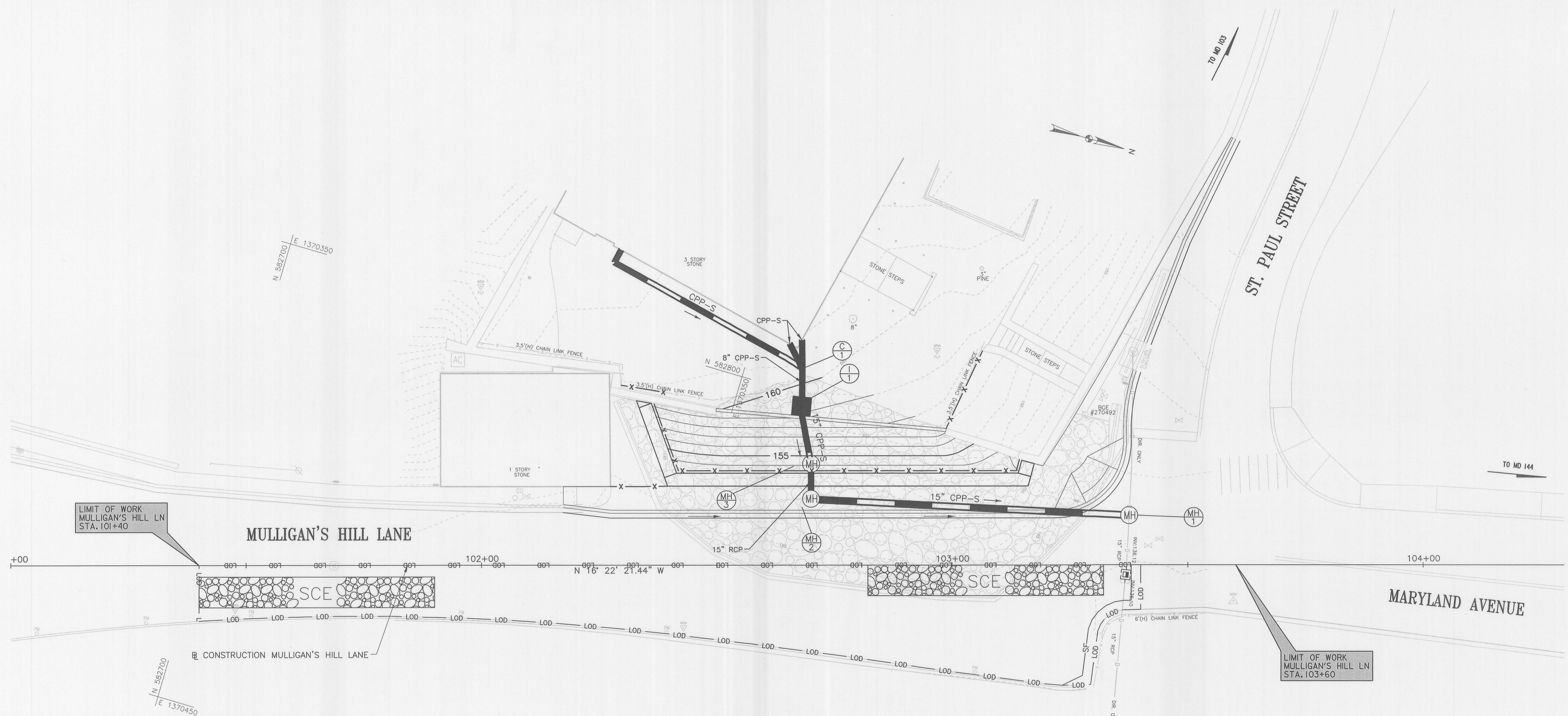
SCALE:
 1" = 10'

SHEET
 10 OF 27

SILT FENCE ON PAVEMENT		
STATION TO STATION	LF	REMARKS
103+23 TO 103+38	35	MULLIGAN'S HILL RIGHT

AT GRADE INLET PROTECTION	
LOCATION	REMARKS
103+37, 2' RT.	MULLIGAN'S HILL RIGHT.

STABILIZED CONSTRUCTION ENTRANCE	
LOCATION	REMARKS
101+65, RT.	MULLIGAN'S HILL LN
103+07, RT.	MULLIGAN'S HILL LN



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

Christopher S. Cusick
 SIGNATURE OF ENGINEER
 CHRISTOPHER S. CUSICK, P.E.

11/22/13
 DATE

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

Steve Shanley
 SIGNATURE OF DEVELOPER
 STEVE SHANLEY

1/15/14
 DATE

- NOTES:**
1. EROSION AND SEDIMENT CONTROL STAGE I CONTROLS SHALL BE INSTALLED IN CONJUNCTION WITH STAGE I MAINTENANCE OF TRAFFIC OPERATIONS
 2. CONSTRUCTION EQUIPMENT SHALL BE LOADED AND UNLOADED INTO THE DISTURBED AREA. ANY SEDIMENT SHALL BE CLEANED FROM PAVEMENT AREAS AT THE END OF EACH WORKING DAY. ANY CONSTRUCTION VEHICLES EGRESSING THE DISTURBED AREA MUST UTILIZE A STABILIZED CONSTRUCTION ENTRANCE PER THIS PLAN.
 3. CONSTRUCTION ENTRANCE PER THIS PLAN.
- ANY DISTURBED AREAS NOT DRAINING TO AN APPROVED EROSION AND SEDIMENT CONTROL DEVICE SHALL BE IMMEDIATELY STABILIZED.

"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. 18142, EXPIRATION DATE: 02-04-2015."

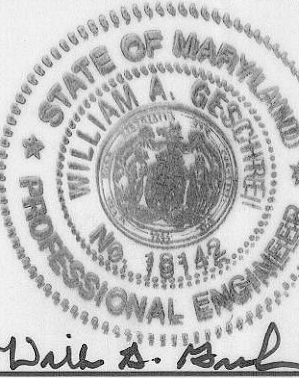
DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Janet De... 1/21/14
 DIRECTOR OF PUBLIC WORKS DATE

Michael... 1/15/14
 CHIEF, BUREAU OF ENGINEERING DATE

Steve Shanley 1/15/14
 CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS DATE

WR&A
 WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21231



DES:	CSC			
DRN:	CSC			
CHK:	JDC			
DATE:	01/13/2014	BY	NO.	DESCRIPTION

EROSION AND SEDIMENT CONTROL PLAN
 STAGE 2

ADC MAP NO. 12 GRID G10

CAPITAL PROJECT NO. B-3853
 FINAL SUBMISSION
 REPAIRS TO RETAINING WALL
 ON MULLIGAN'S HILL LANE

1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE:
 1" = 10'

SHEET
 11 OF 22

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

DEFINITION

PLACEMENT OF TOPSOIL OVER A PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION.

PURPOSE

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 GRADUATION.

CONDITIONS WHERE PRACTICE APPLIES

I. THIS PRACTICE 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 MATERIALS TOXIC TO PLANT GROWTH.

d. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

II. FOR THE PURPOSE OF THESE STANDARDS AND SPECIFICATIONS, AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN FOR ADEQUATE STABILIZATION. AREAS HAVING SLOPES STEEPER THAN 2:1 SHALL HAVE THE APPROPRIATE STABILIZATION SHOWN ON THE PLANS.

CONSTRUCTION AND MATERIAL SPECIFICATIONS

I. TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT 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-SCS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.

II. TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:

I. TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1" IN DIAMETER.

II. TOP SOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSONGRASS, NUTSEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.

III. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 4-8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTRIBUTED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.

IV. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:

I. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

IV. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:

I. ON SOIL MEETING TOPSOIL SPECIFICATIONS, OBTAIN TEST RESULTS DICTATING FERTILIZER AND LIME AMENDMENTS REQUIRED TO BRING THE SOIL INTO COMPLIANCE WITH THE FOLLOWING:

a. PH FOR TOPSOIL SHALL BE BETWEEN 6.0 AND 7.5. IF THE TESTED SOIL DEMONSTRATES A PH OF LESS THAN 6.0, SUFFICIENT LIME SHALL BE PRESCRIBED TO RAISE THE PH TO 6.5 OR HIGHER.

b. ORGANIC CONTENT OF TOPSOIL SHALL NOT BE LESS THAN 1.5 PERCENT BY WEIGHT.

c. TOPSOIL HAVING SOLUBLE SALT CONTENT GREATER THAN 500 PARTS PER MILLION SHALL NOT BE USED.

d. NO SOD OR SEED SHALL 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.

NOTE: 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.

II. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

V. TOPSOIL APPLICATION

I. WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOP SILT FENCE AND SEDIMENT TRAPS AND BASINS.

II. GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBEIT 4" - 8" HIGHER ELEVATION.

III. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4" - 8" LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4". SPREADING SHALL 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 SHALL BE CORRECTED TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKET.

IV. TOPSOIL SHALL NOT BE PLACED WHILE 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 PREPARATIONS.

VI. ALTERNATIVE FOR PERMANENT SEEDING - INSTEAD OF APPLYING THE FULL AMOUNTS OF LIME AND COMMERCIAL FERTILIZER, COMPOSTED SLUDGE AND AMENDMENTS MAY BE APPLIED AS SPECIFIED BELOW:

I. COMPOSTED SLUDGE MATERIAL FOR USE AS A SOIL CONDITIONER FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES SHALL BE TESTED TO PRESCRIBE AMENDMENTS AND FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS.

a. COMPOSTED SLUDGE SHALL BE SUPPLIED BY, OR ORIGINATE FROM, A PERSON OR PERSONS THAT ARE PERMITTED (AT THE TIME OF ACQUISITION OF THE COMPOST) BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT UNDER COMAR 26.04.06.

b. COMPOSTED SLUDGE SHALL CONTAIN AT LEAST 1 PERCENT NITROGEN, 1.5 PERCENT PHOSPHORUS, AND 0.2 PERCENT POTASSIUM AND HAVE PH OF 7.0 TO 8.0. IF COMPOST DOES NOT MEET THESE REQUIREMENTS, THE APPROPRIATE CONSTITUENTS MUST BE ADDED TO MEET THE REQUIREMENTS PRIOR TO USE.

c. COMPOSTED SLUDGE SHALL BE APPLIED AT A RATE OF 1 TON/1,000 SQUARE FEET.

v. COMPOSTED SLUDGE SHALL BE AMENDED WITH A POTASSIUM FERTILIZER APPLIED AT THE RATE OF 4LB/1,000 SQUARE FEET, AND 1/3 THE NORMAL LIME APPLICATION RATE.

REFERENCES: GUIDELINE SPECIFICATIONS, SOIL PREPARATION AND SODDING, MD-VA, PUB #1, COOPERATIVE EXTENSION SERVICE, UNIVERSITY OF MARYLAND AND VIRGINIA POLYTECHNIC INSTITUTES. REVISED 1973.

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

I. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).

2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.

3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

4. 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 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 DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.

5. 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 HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

6. SITE ANALYSIS: TOTAL AREA OF SITE: 0.23 ACRES AREA DISTURBED: 0.23 ACRES AREA TO BE ROOFED OR PAVED: 0.14 ACRES AREA TO BE VEGETATIVELY STABILIZED: 0.08 ACRES TOTAL CUT: 860 CU. YDS. TOTAL FILL: 290 CU. YDS. OFFSITE WASTE/BORROW ARE LOCATION

7. ANY SEDIMENT CONTROL PRACTICE THAT 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 HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

9. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.

10. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.

11. ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION.

12. 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 ENFORCEMENT AUTHORITY. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

HOWARD SOIL CONSERVATION DISTRICT TEMPORARY SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE RE-DISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: -- LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: -- APPLY 600 IBS/ACRE 10-10-10 FERTILIZER (14 IBS/1000 SQ. FT.).

SEEDING: -- FOR PERIODS MARCH 1 -- MAY 15 AND FROM AUGUST 15 -- OCTOBER 15, SEED WITH 2-1/2 BUSHEL PER ACRE OF ANNUAL RYE (3.2 IBS/1000 SQ. FT.) FOR THE PERIOD MAY 16 -- AUGUST 14, SEED WITH 3 IBS/ACRE OF WEEPING LOVEGRASS (1.07 IBS/1000 SQ. FT.). F0-- THE PERIOD OCTOBER 16 -- FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS/ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

MULCHING: -- APPLY 1-1/2 TO 2 TONS/ACRE (70 TO 90 IBS/1000 SQ. FT.) OF UNROTTED WEED-FREE, SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GAL. PER ACRE (5 GAL/1000 SQ. FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPE 8 FT. OR HIGHER, USE 348 GAL. PER ACRE (8 GAL/1000 SQ. FT.) FOR ANCHORING.

REFER TO THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR ADDITIONAL RATES AND METHODS NOT COVERED.

HOWARD SOIL CONSERVATION DISTRICT PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

1. PREFERRED -- APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92 IBS/1000 SQ. FT.) AND 600 IBS/ACRE 10-10-10 FERTILIZER (14 IBS/1000 SQ. FT.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 IBS/ACRE 30-0-0 UREAFORM FERTILIZER (9 IBS/1000 SQ. FT.)

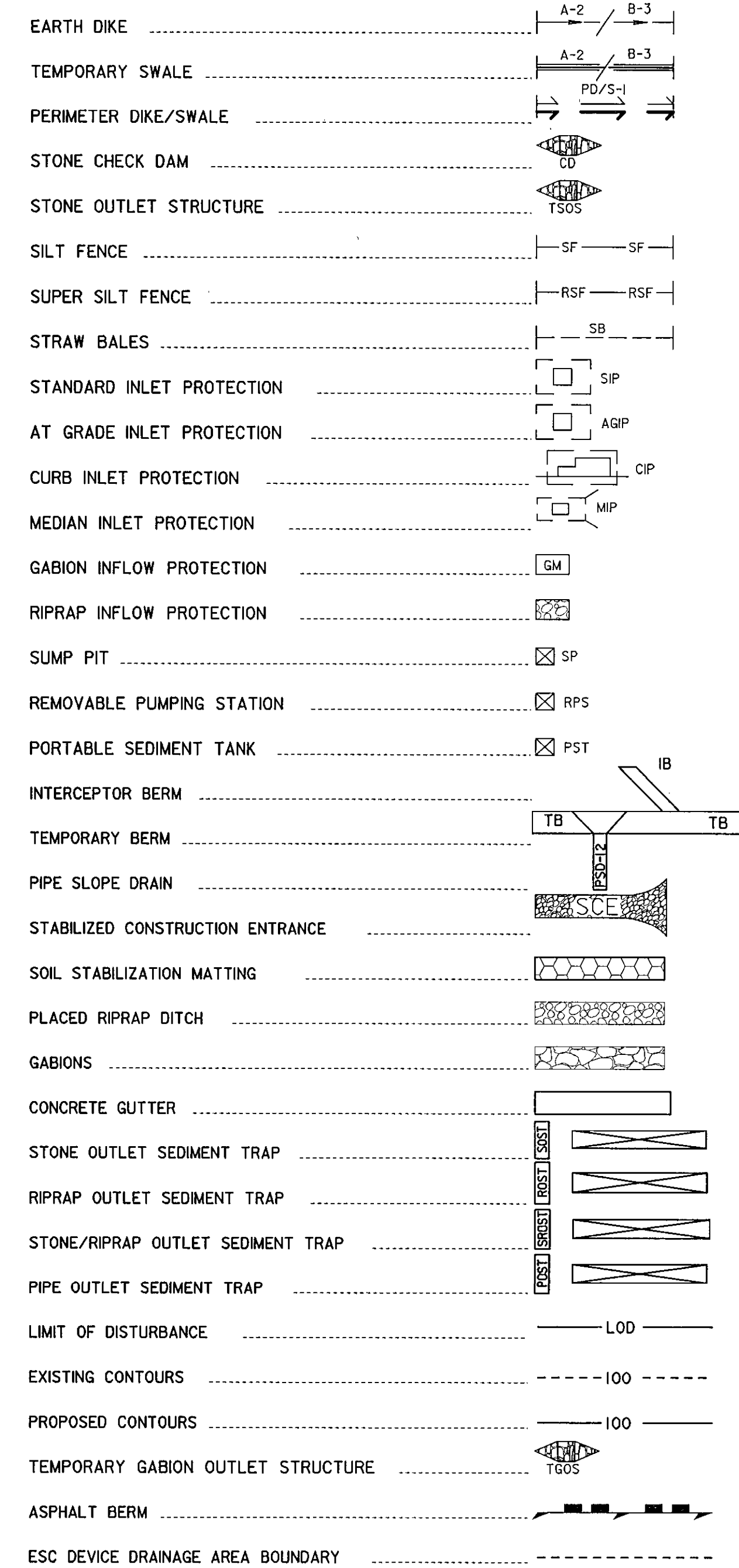
2. ACCEPTABLE -- APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92 IBS/1000 SQ. FT.) AND 1000 IBS/ACRE 10-10-10 FERTILIZER (23 IBS/1000 SQ. FT.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL.

SEEDING -- FOR THE PERIODS MARCH 1 -- MAY 15, AND AUGUST 15 -- OCTOBER 15, SEED WITH 60 IBS/ACRE (1.4 IBS/1000 SQ. FT.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 16 -- AUGUST 14, SEED WITH 60 IBS KENTUCKY 31 TALL FESCUE PER ACRE AND 2 IBS/ACRE (.05 IBS/1000 SQ. FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 -- FEBRUARY 28, PROTECT SITE BY: OPTION 1 - TWO TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION 2 - USE SOD. OPTION 3 - SEED WITH 60 IBS/ACRE KENTUCKY 30 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.

MULCHING -- APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 IBS/1000 SQ. FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ. FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPE 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ. FT.) FOR ANCHORING.

MAINTENANCE -- INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

STANDARD SYMBOLS



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

Signature of Engineer: Christopher S. Cusick, P.E.
Date: 11/22/13

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

Signature of Developer:
Date:

"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18142, EXPIRATION DATE: 02-04-2015."



WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231

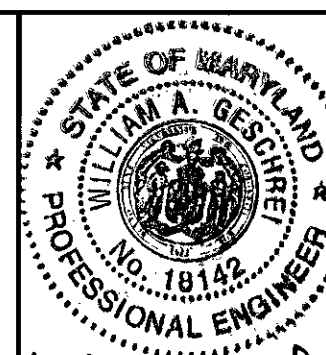


Table with columns: DES, DRN, CHK, DATE, BY, NO., DESCRIPTION, DATE, ADC MAP NO., GRID, DISTRICT.

EROSION AND SEDIMENT CONTROL NOTES

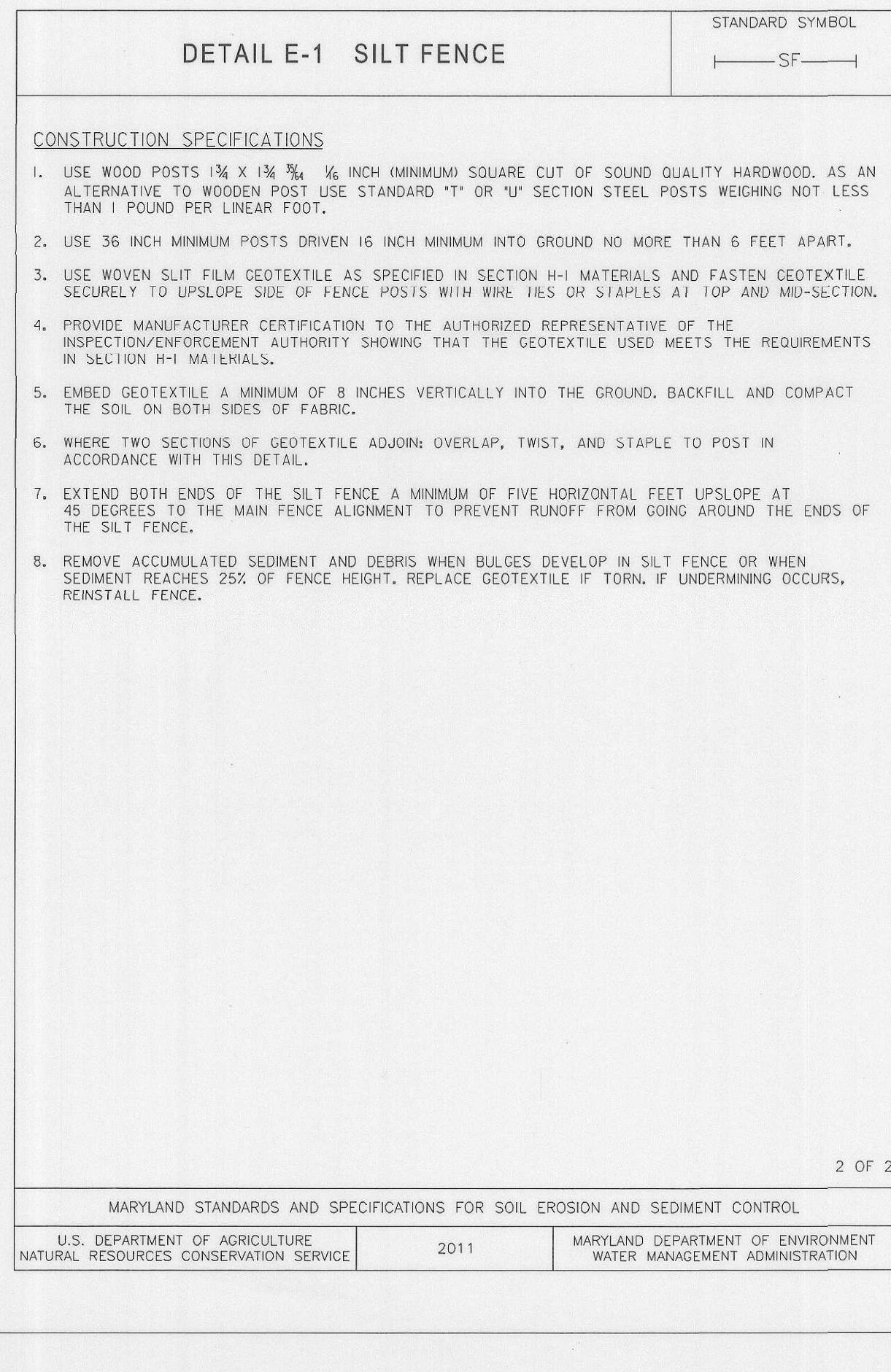
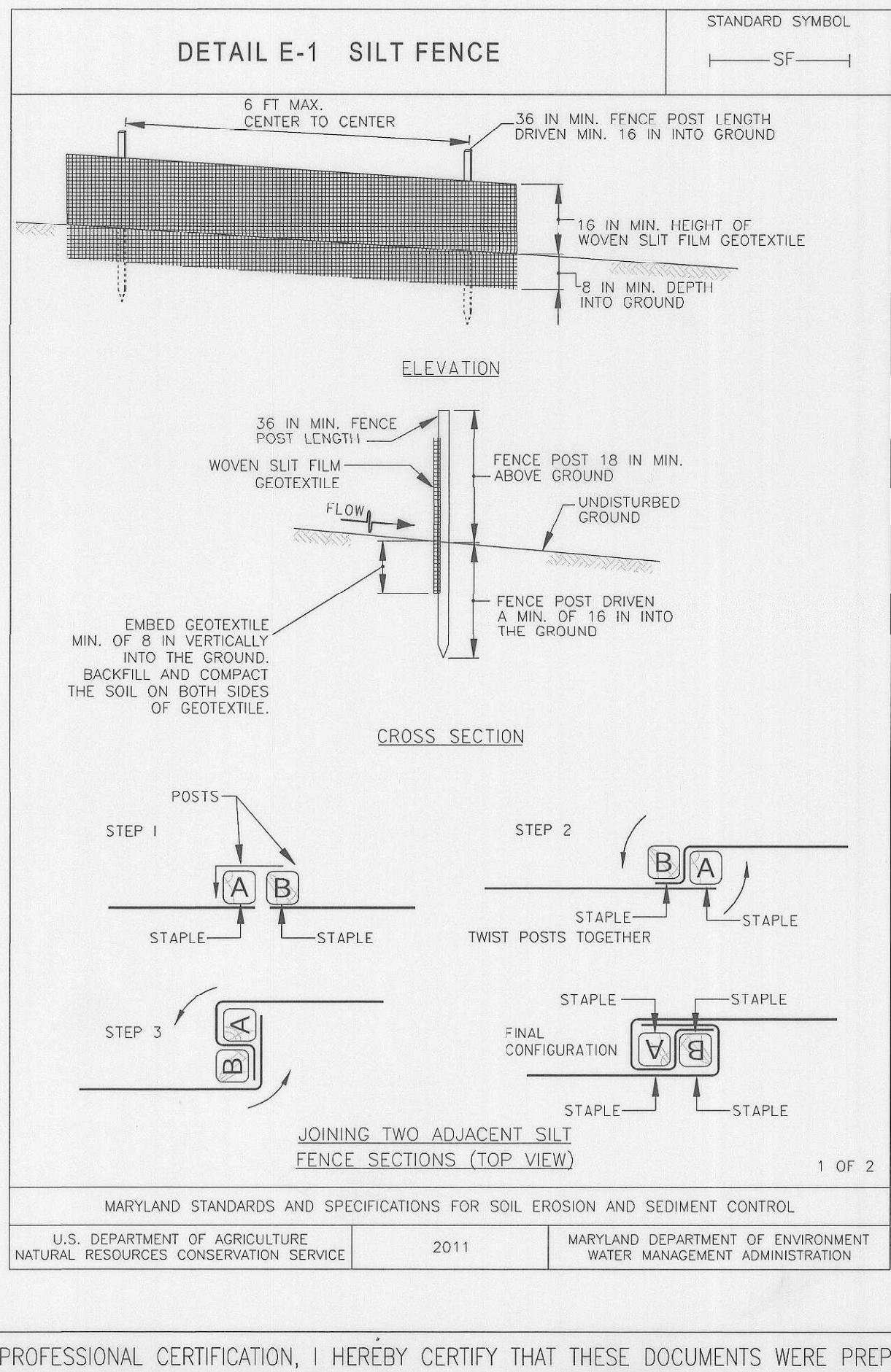
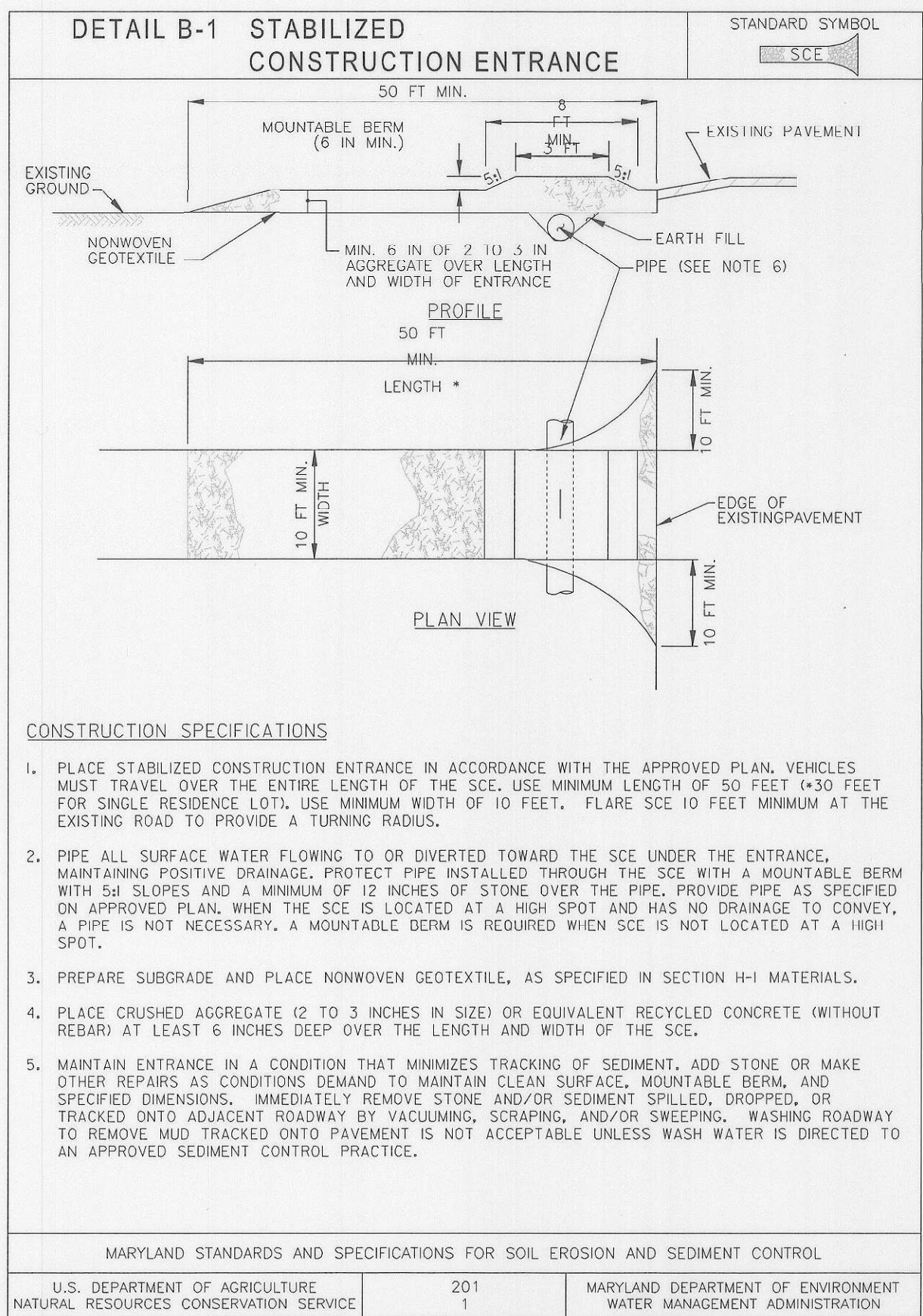
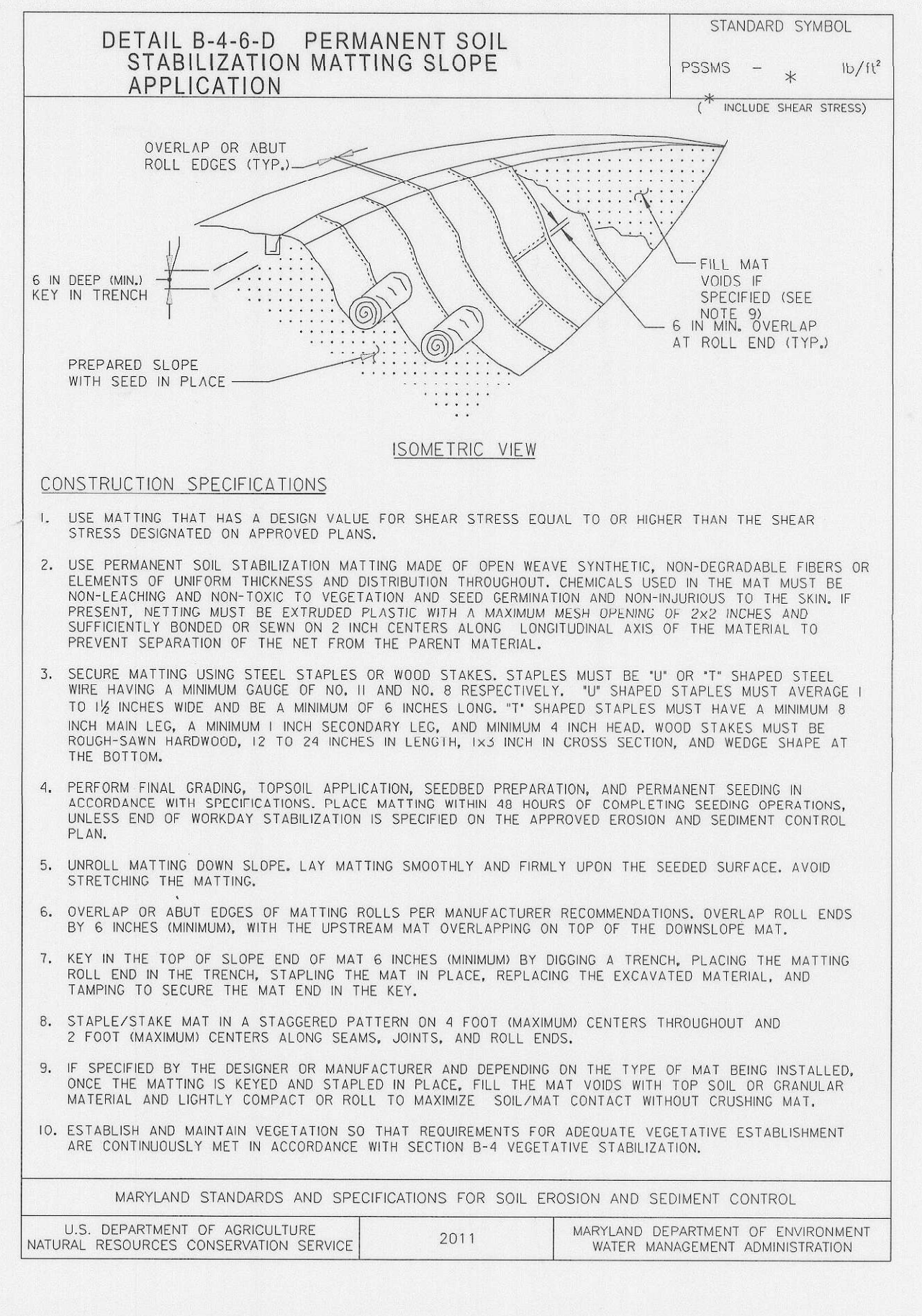
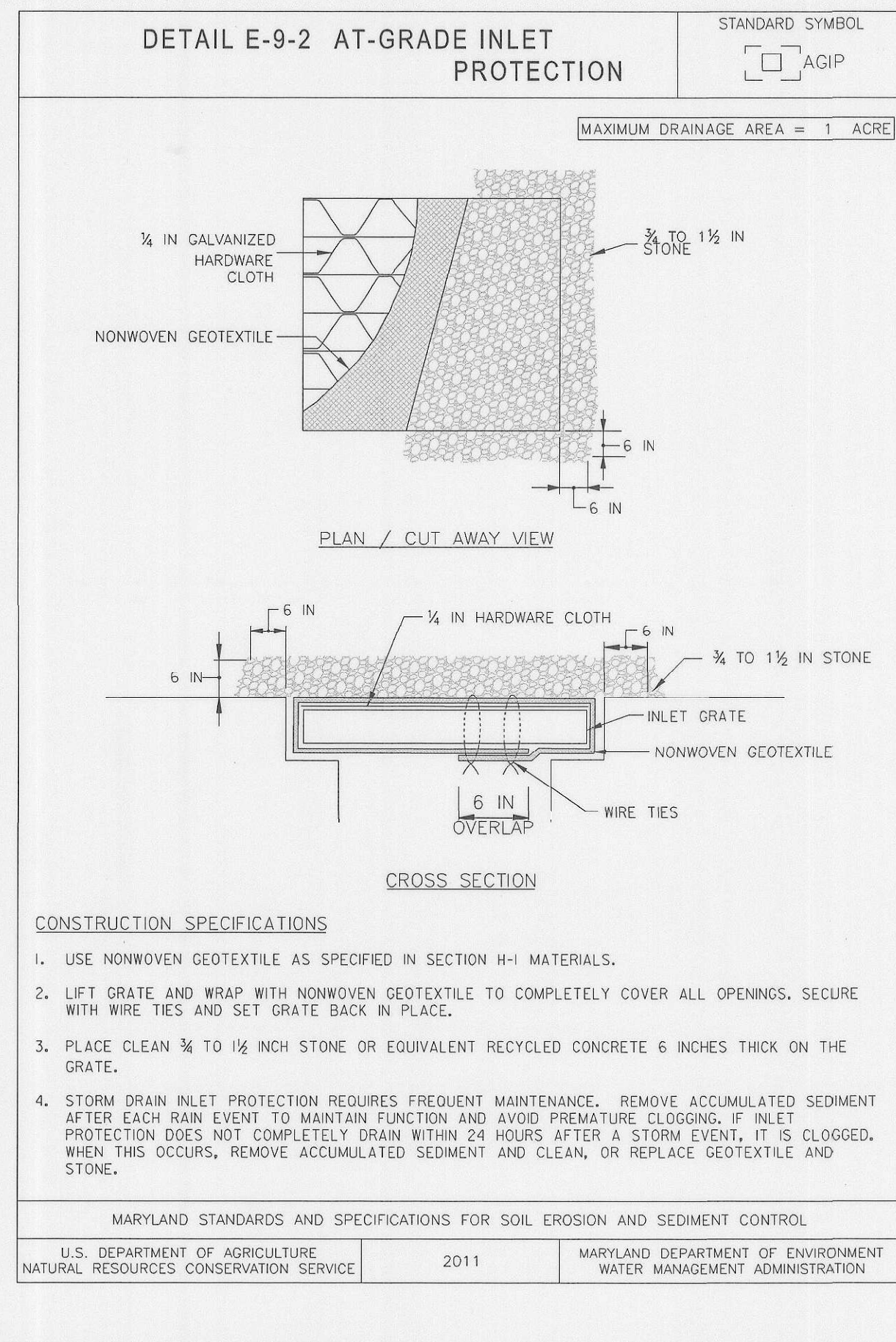
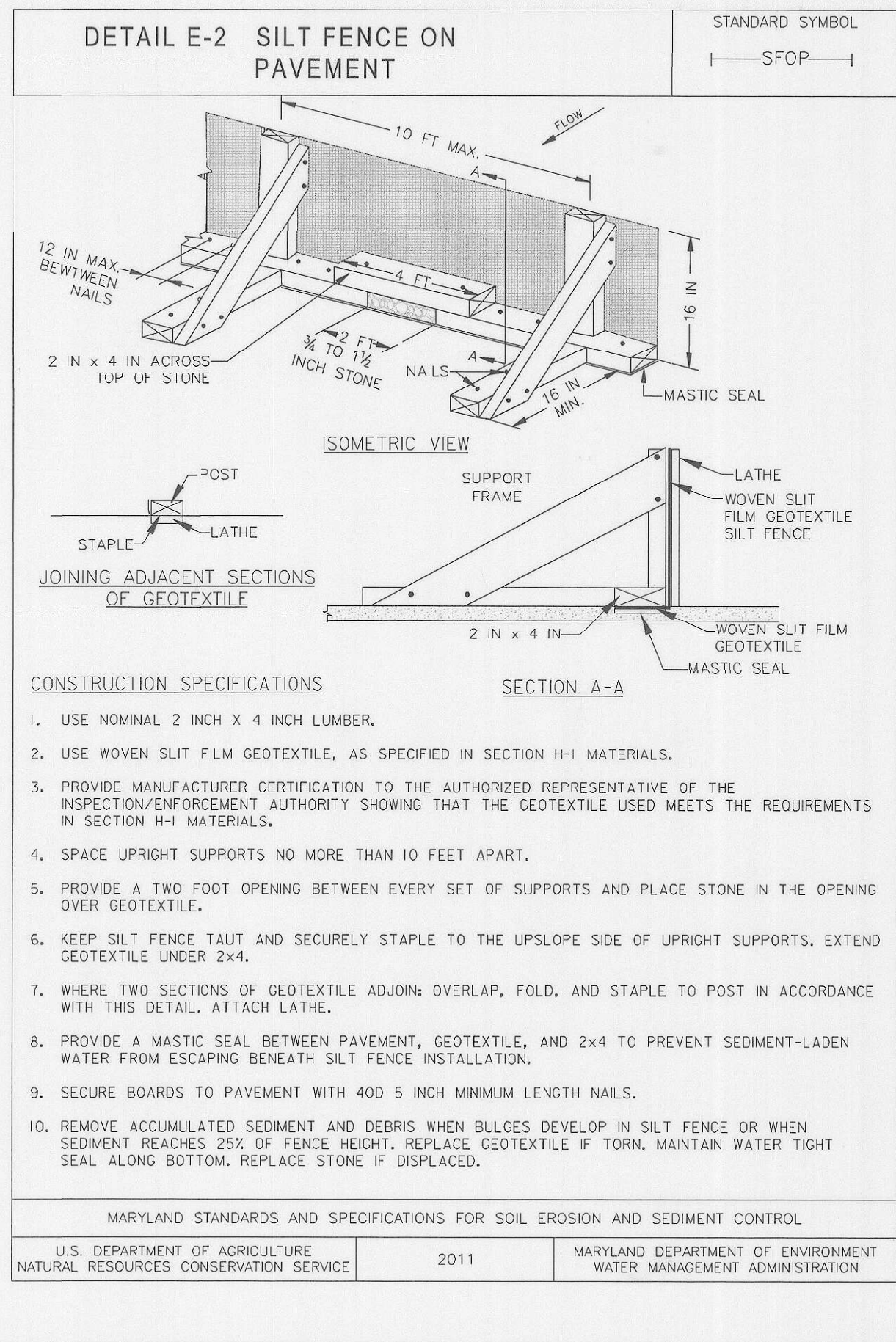
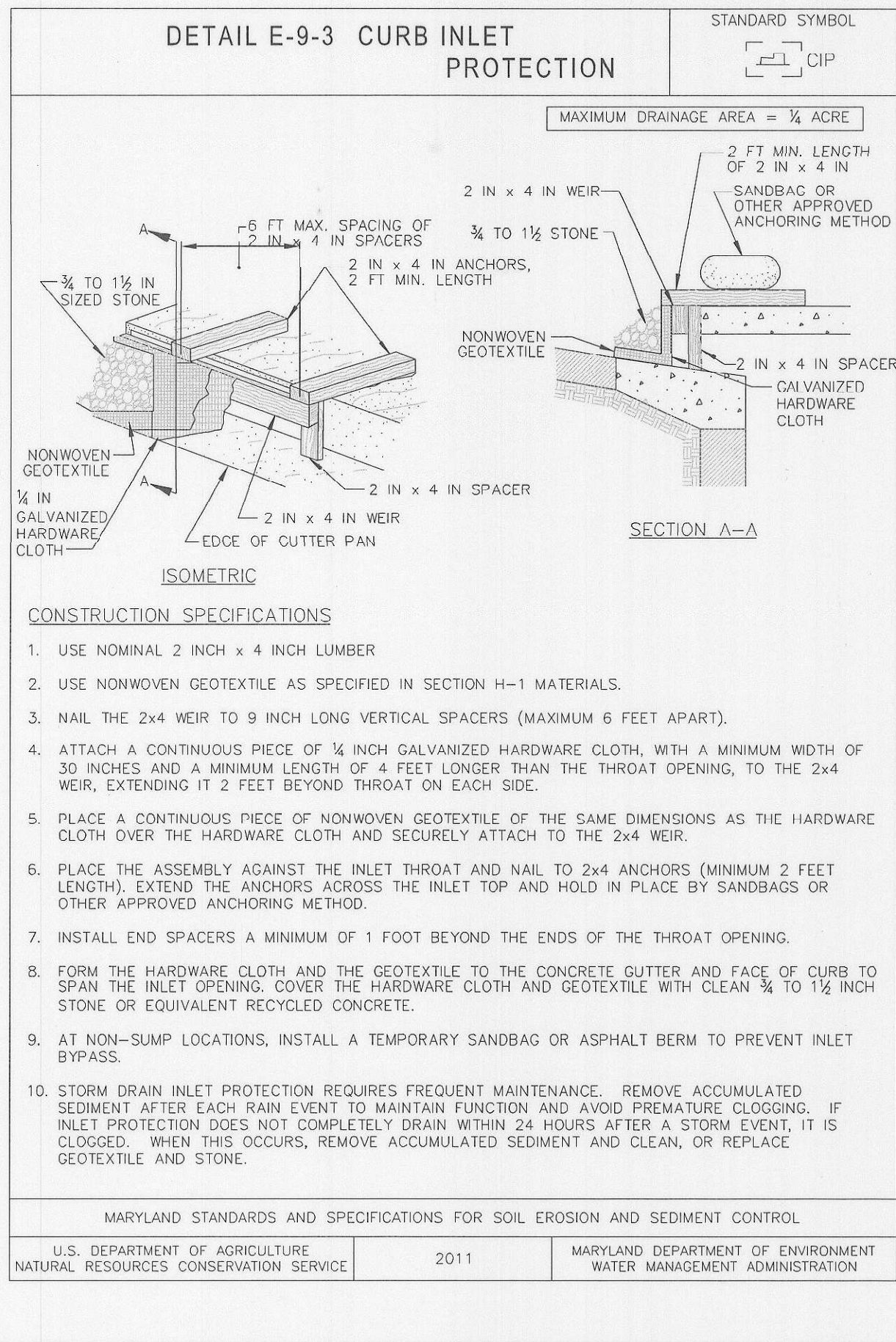
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

Signatures and dates for Director of Public Works, Chief, Bureau of Engineering, and Chief, Division of Transportation and Special Projects.

CAPITAL PROJECT NO. B-3853 FINAL SUBMISSION REPAIRS TO RETAINING WALL ON MULLIGAN'S HILL LANE

SCALE NONE

SHEET 13 OF 27



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John J. ... 1/2/14
DIRECTOR OF PUBLIC WORKS DATE

Marybeth Rutten 1/15/14
CHIEF, BUREAU OF ENGINEERING DATE

W. R. ... 1-17-14
CHIEF, BUREAU OF HIGHWAYS DATE

Steve Sharpe 1/15/14
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS DATE

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231

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. 18142, EXPIRATION DATE: 02-04-2015.

W. R. ...

DES: CSC							
DRN: CSC							
CHK: JDC							
DATE: 01/13/2014							
BY	NO.	DESCRIPTION	DATE	ADC MAP NO. 12	GRID G10	1ST ELECTION DISTRICT	HOWARD COUNTY, MARYLAND

EROSION AND SEDIMENT CONTROL DETAILS

CAPITAL PROJECT NO. B-3853
FINAL SUBMISSION
REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE

SCALE: NONE

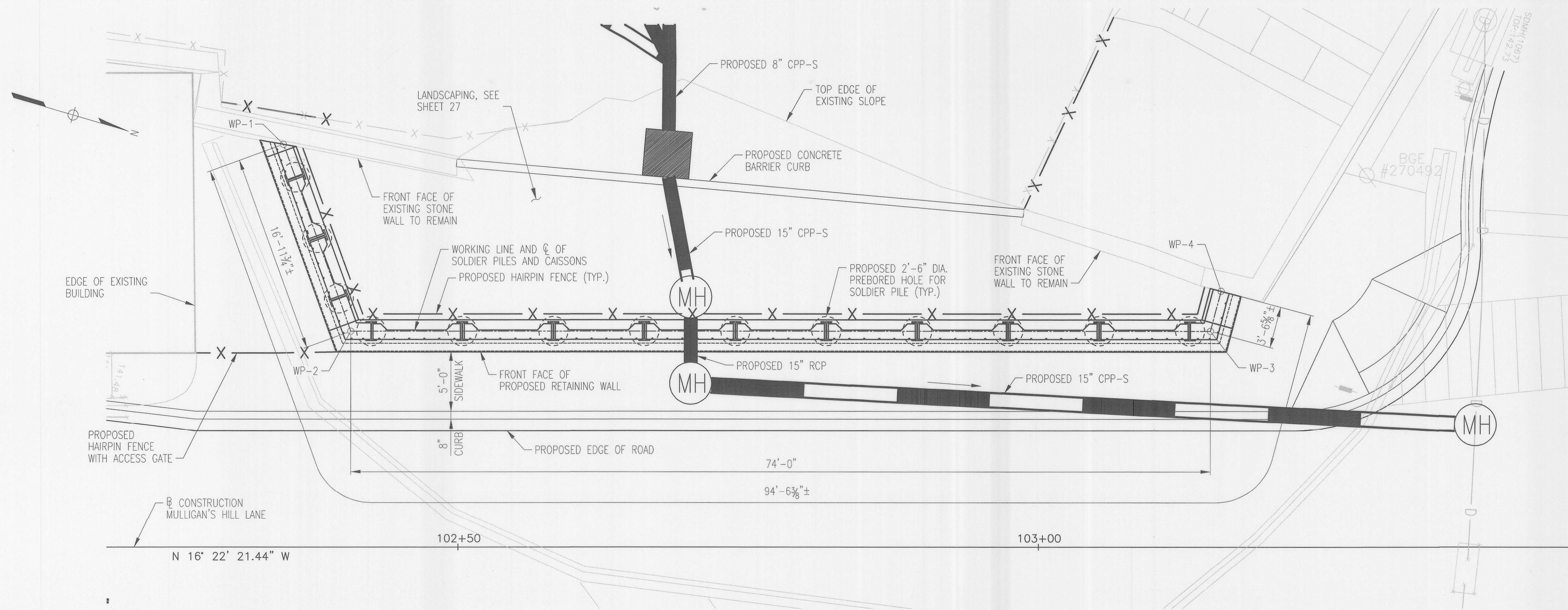
SHEET 14 OF 27

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

Christopher S. Cusick 1/22/13
SIGNATURE OF ENGINEER DATE
CHRISTOPHER S. CUSICK, P.E.

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

Steve Sharpe 1/15/14
SIGNATURE OF DEVELOPER DATE
STEVE SHARPE



RETAINING WALL PLAN

SCALE: 3/16" = 1'-0"

GENERAL NOTES

SPECIFICATIONS: -SHA SPECIFICATIONS DATED JULY, 2008.
 -REVISIONS THEREOF AND ADDITIONS THERETO AND SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS DATED 2012 FOR DESIGN, INCLUDING ALL INTERIM SPECIFICATIONS THROUGH 2013.

CONCRETE DESIGN: LOAD AND RESISTANCE FACTOR DESIGN METHOD.

REINFORCING STEEL DESIGN: $f = 60,000$ PSI.

CONCRETE: CONCRETE USED FOR THE PRECAST LAGGING PANELS SHALL BE 5,000 PSI. CONCRETE USED FOR THE CAST IN PLACE WALL SECTIONS AND CAST IN PLACE CONCRETE LEVELING PAD SHALL BE MIX NO. 6 (4,500 PSI). CONCRETE USED FOR THE PREBORED HOLES SHALL BE MIX NO. 4 (3,500 PSI).

STEEL: ALL STRUCTURAL STEEL SHALL CONFORM TO A 709, GRADE 50.

REINFORCING STEEL: REINFORCING STEEL SHALL CONFORM TO A 615, GRADE 60. ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS. MINIMUM COVER FOR ANY BAR SHALL BE 2" UNLESS OTHERWISE NOTED.

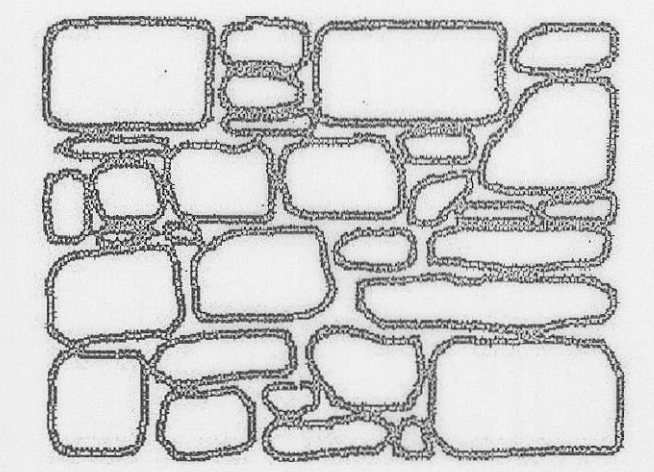
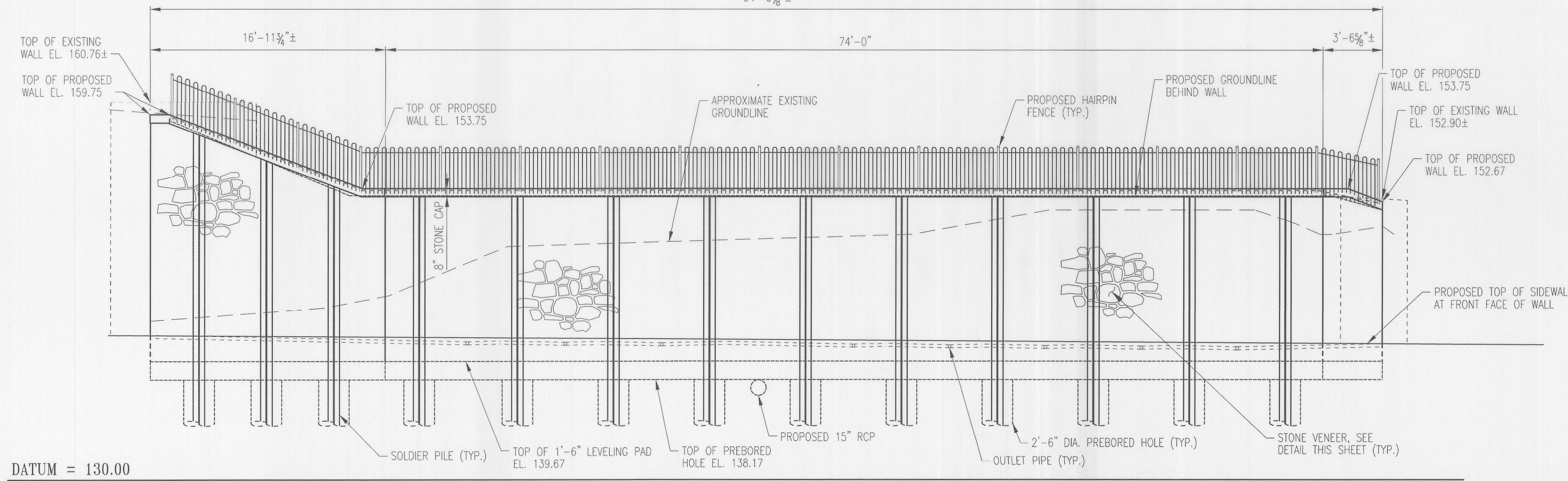
ONLY GRADE 60 CAN BE USED ON THIS PROJECT.

NOTES:

1. ELEVATION VIEWED FROM FRONT FACE OF WALL. THE DEVELOPED ELEVATION DEPICTS THE SCALED ELEVATION ALONG THE INDIVIDUAL CHORDED SEGMENTS OF THE RETAINING WALL.

2. FOR WORKING POINT COORDINATES, SEE SHEET 16.

3. ALL DIMENSIONS SHOWN MEASURED ALONG WORKING LINE.



Train Station — random, coursed ashlar, heavy but finished joints

STONE VENEER
SCALE: NOT TO SCALE

RETAINING WALL ELEVATION (DEVELOPED)

SCALE: 3/16" = 1'-0"

"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. 18142, EXPIRATION DATE: 02-04-2015."

1/13/2014 10:51:58 AM C:\Users\lgm\OneDrive\Engineering\31760003_001.dgn

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Jan. J. ... 12/14
DIRECTOR OF PUBLIC WORKS DATE

Thomas B. ... 1/15/14
CHIEF, BUREAU OF ENGINEERING DATE

Steve ... 1/15/14
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS DATE

WR&A

WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231

STATE OF MARYLAND
WILLIAM A. GEORGE
NO. 18142
PROFESSIONAL ENGINEER

DES:	SEB				
DRN:	WRA				
CHK:	WAG				
DATE:	01/13/2014				
BY	NO.	DESCRIPTION	DATE	ADC MAP NO. 12	GRID G10

CAPITAL PROJECT NO. B-3853

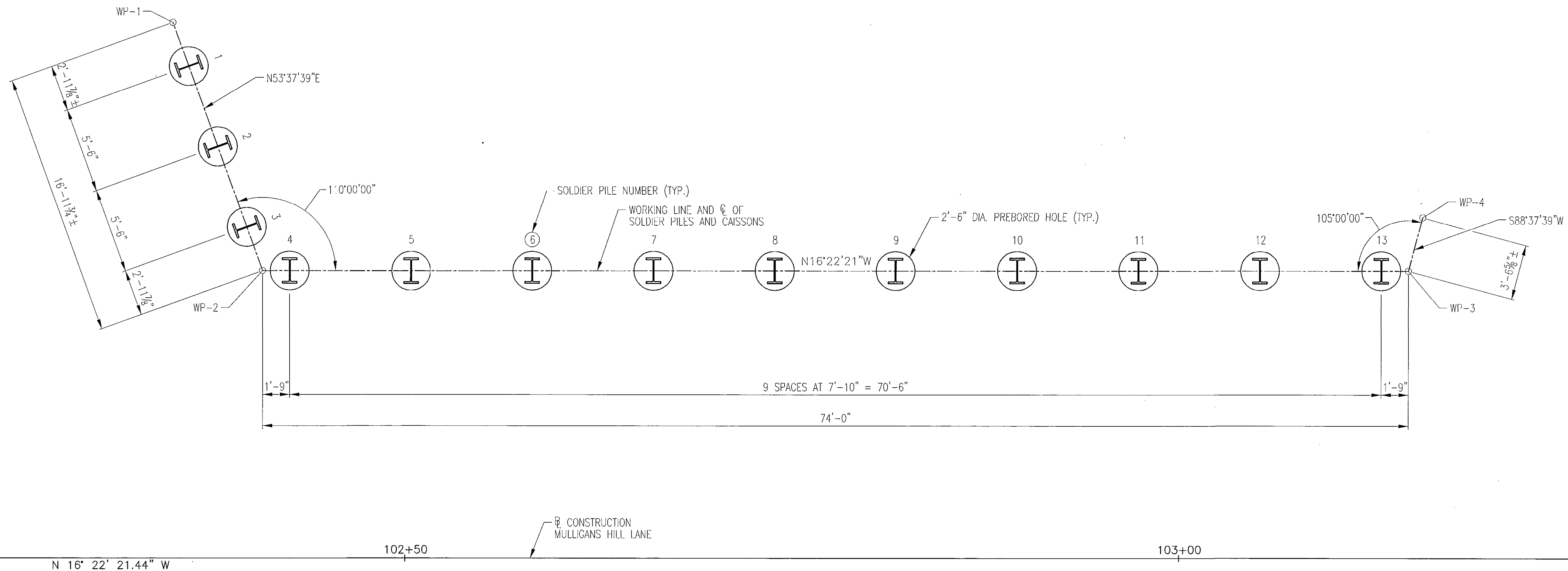
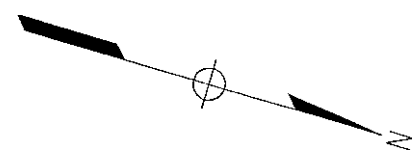
REPAIRS TO RETAINING WALL ON MULLIGAN'S HILL LANE

1ST ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 15 OF 27

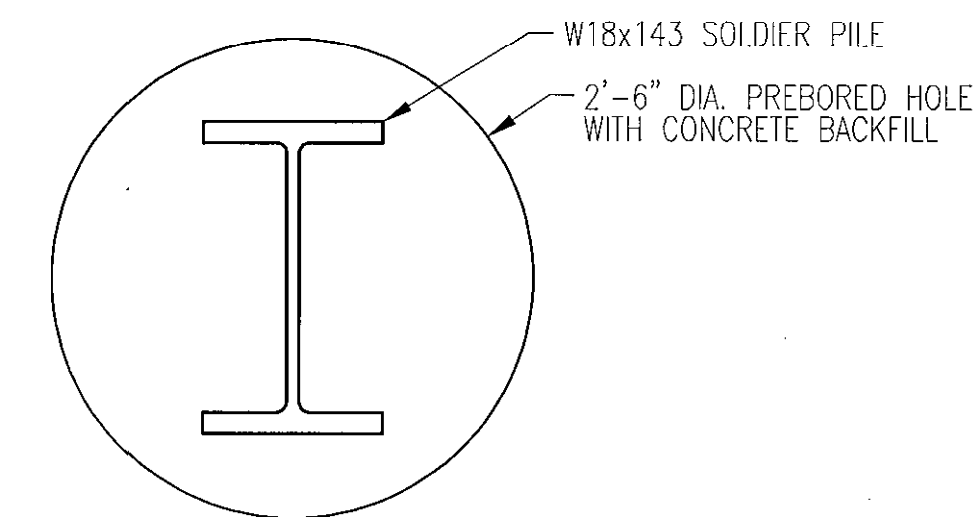


GEOMETRIC LAYOUT

SCALE: 1/4"=1'-0"

SOLDIER PILE LOCATION DATA			
SOLDIER PILE NO.	STATION	OFFSET	BOTTOM TIP ELEV.
1	102+36.00	31.68' LT.	118.00
2	102+37.89	26.51' LT.	118.00
3	102+39.77	21.35' LT.	118.00
4	102+42.54	18.54' LT.	121.00
5	102+50.37	18.54' LT.	121.00
6	102+58.21	18.54' LT.	121.00
7	102+66.04	18.54' LT.	121.00
8	102+73.87	18.54' LT.	121.00
9	102+81.71	18.54' LT.	121.00
10	102+89.54	18.54' LT.	121.00
11	102+97.37	18.54' LT.	121.00
12	103+05.21	18.54' LT.	121.00
13	103+13.04	18.54' LT.	121.00

WORKING POINT DATA				
WORKING POINT NO.	STATION	OFFSET	NORTH	EAST
WP-1	102+34.98	34.49' LT.	582781.9828	1370360.9921
WP-2	102+40.79	18.54' LT.	582792.0528	1370374.6645
WP-3	103+14.79	18.54' LT.	582863.0521	1370353.8051
WP-4	103+15.71	21.97' LT.	582862.9670	1370350.2527



SOLDIER PILE SECTION

SCALE: 1"=1'-0"

"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. 18142, EXPIRATION DATE: 02-04-2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

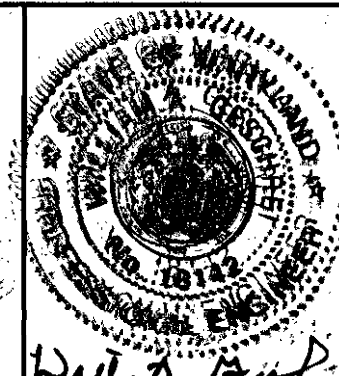
Ray G. De... 1/2/14
DIRECTOR OF PUBLIC WORKS DATE

Thomas P. Butler 1/15/14
CHIEF, BUREAU OF ENGINEERING DATE

Will R. M... 1-17-14
CHIEF, BUREAU OF HIGHWAYS DATE

Steve Shaver 1/15/14
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS DATE

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231



DES:	SEB			
DRN:	KPL			
CHK:	WAG			
DATE:	01/13/2014			
BY	NO.	DESCRIPTION	DATE	

GEOMETRIC LAYOUT

ADC MAP NO. 12 GRID G10

CAPITAL PROJECT NO. B-3853

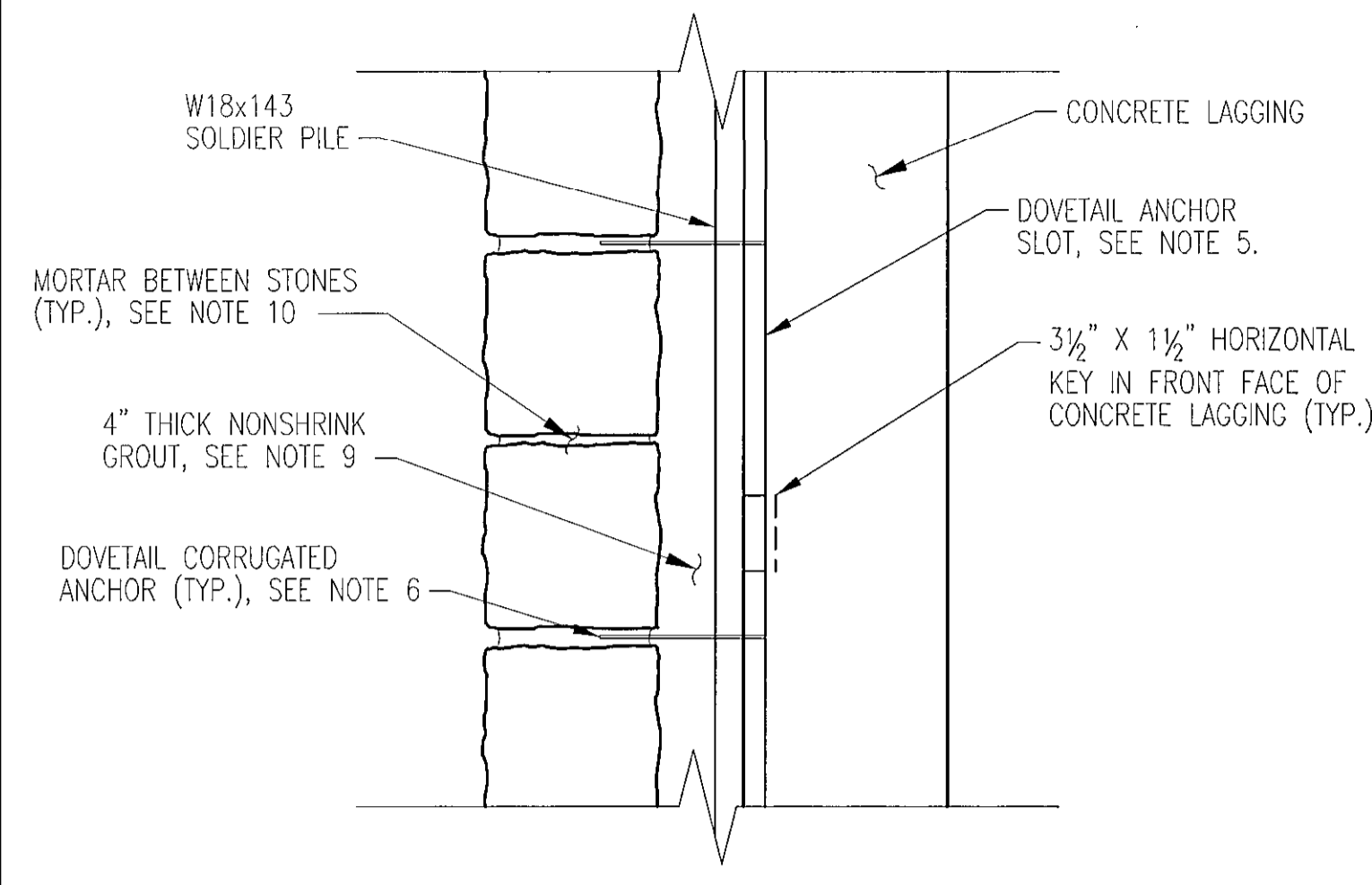
REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE

1ST ELECTION DISTRICT

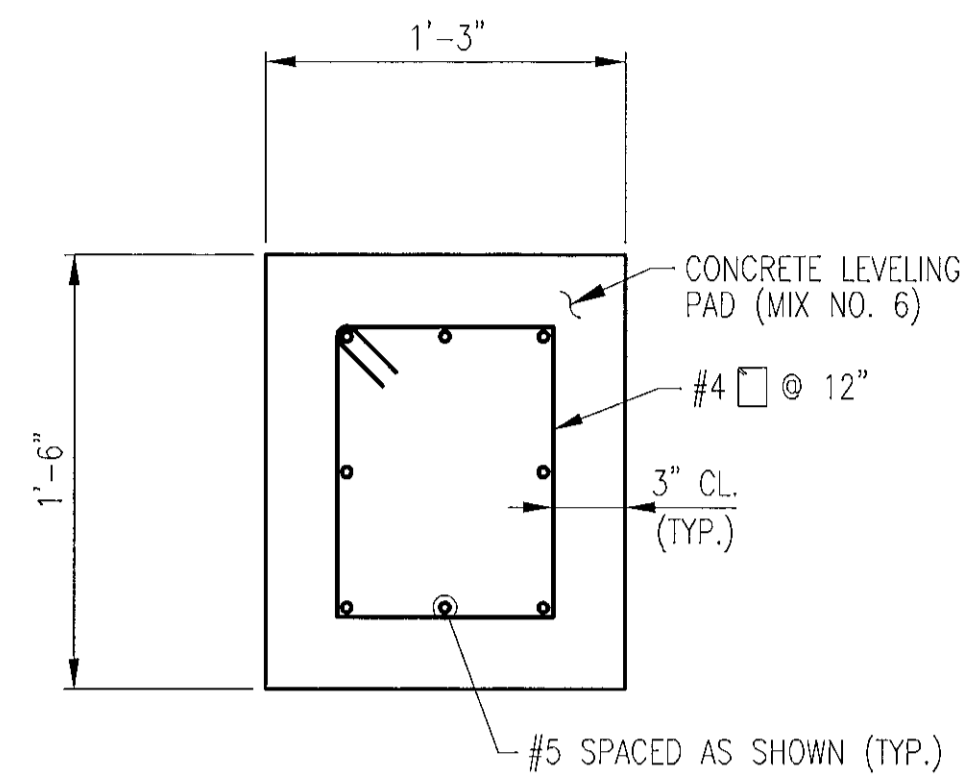
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

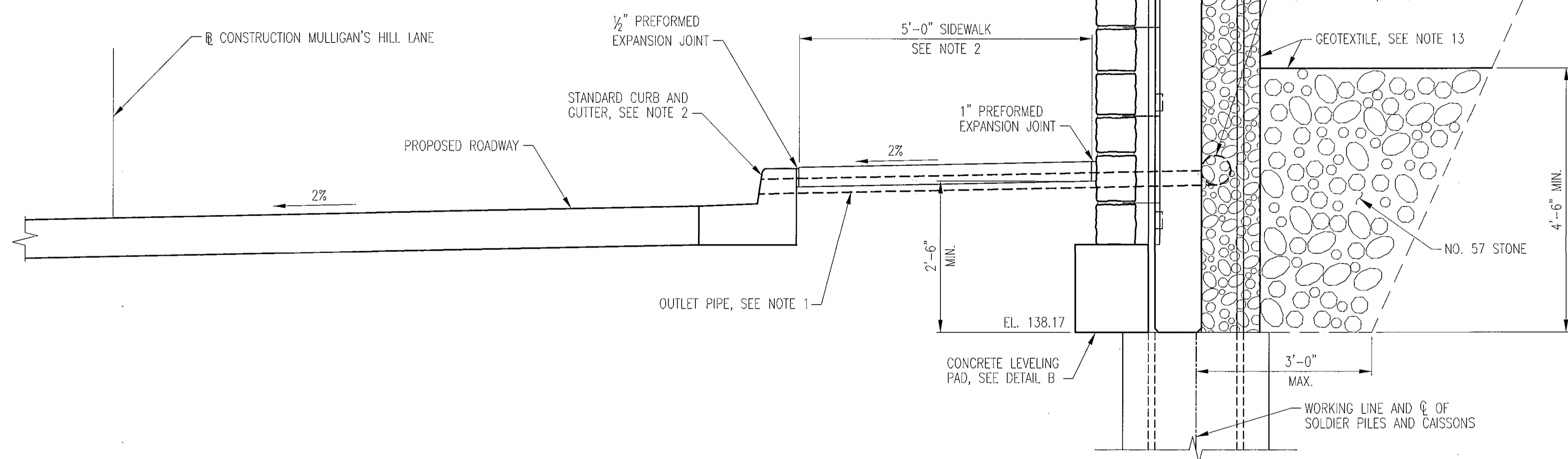
SHEET 16 OF 27



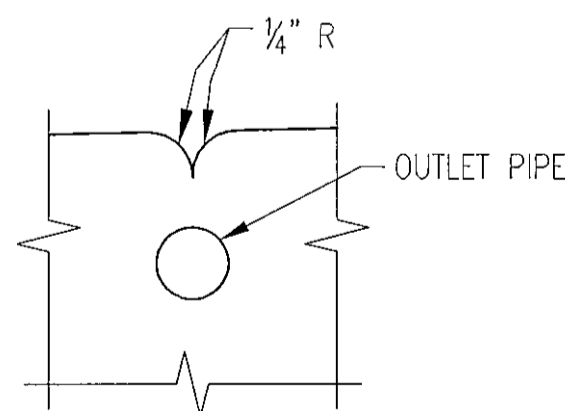
DETAIL A
SCALE: 1 1/2" = 1'-0"



DETAIL B
SCALE: 1 1/2" = 1'-0"



RETAINING WALL TYPICAL SECTION
SCALE: 3/4" = 1'-0"



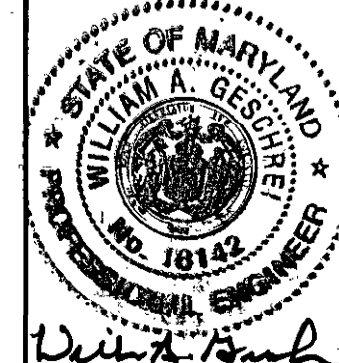
SIDEWALK GROOVE DETAIL
SCALE: NOT TO SCALE

NOTES:

- OUTLET PIPE SHALL CONSIST OF 3" DIA. PVC PIPE SLOPED 2% TO OUTLET. INVERT AT OUTLET TO BE 2" ABOVE GUTTER LINE. PIPE SHALL BE CUT FLUSH WITH THE FACE OF CURB. FOR OUTLET PIPE LOCATIONS, SEE SHEET 19.
- FOR PROPOSED ROADWAY, CURB AND GUTTER, AND SIDEWALK DETAILS SEE SHEET 4. SIDEWALK GROOVE AS SHOWN IN DETAIL SHALL BE PLACED TRANSVERSE TO THE CURB CENTERED OVER AND ON TOP OF THE OUTLET PIPE. SIDEWALK GROOVE SHALL BE SPACED A MAXIMUM OF 4'-0" ON CENTER.
- FOR HAIRPIN FENCE DETAILS, SEE SHEET 27.
- CONTRACTOR SHALL PLACE STONE VENEER SUCH THAT HORIZONTAL MORTAR JOINTS ARE NOT ALIGNED WITH THE TOP OF THE SIDEWALK ELEVATION.
- DOVETAIL ANCHOR SLOT SHALL BE HECKMANN BLDG. PRODUCTS, INC. #100 22 GAGE OR APPROVED EQUAL. THE ANCHOR SLOT SHALL BE CAST INTO THE CONCRETE.
- DOVETAIL ANCHOR SHALL BE HECKMANN BLDG. PRODUCTS, INC. #106 CORRUGATED ANCHOR 12 GAGE OR APPROVED EQUAL. VERTICAL ANCHOR SPACING SHALL BE A MAXIMUM OF 1'-6" ON CENTER. HORIZONTAL ANCHOR SPACING SHALL CORRESPOND WITH LOCATION OF ANCHOR SLOTS. ANCHORS SHALL BE EMBEDDED A MINIMUM OF 4" INTO STONE VENEER.
- WALL BACKFILL SHALL BE COMPACTED WITH HAND OPERATED EQUIPMENT. EQUIPMENT EXCEEDING 500 LBS. SHALL NOT BE USED WITHIN 5'-0" OF THE CONCRETE LAGGING.
- PRECAST PANELS SHALL BE USED BETWEEN SOLDIER PILES 1-3 AND 4-13. REMAINING SECTIONS SHALL USE CAST-IN-PLACE.
- NONSHRINK GROUT SHALL BE IN CONFORMANCE WITH 902.11-C.
- MORTAR BETWEEN STONES SHALL BE IN CONFORMANCE THE SPECIAL PROVISIONS.
- STONE VENEER SHALL BE PLACED IN 5'-0" MAX. HIGH INCREMENTS AND BACKGROUNDED PRIOR TO PLACING ADDITIONAL STONE VENEER.
- FOR TOP OF WALL ELEVATIONS, SEE SHEET 15.
- GEOTEXTILE SHALL BE PLACED BEHIND THE FULL HEIGHT OF THE POROUS BACKFILL LAYER AND ON TOP OF THE #57 STONE.

"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. 18142, EXPIRATION DATE: 02-04-2015."

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231



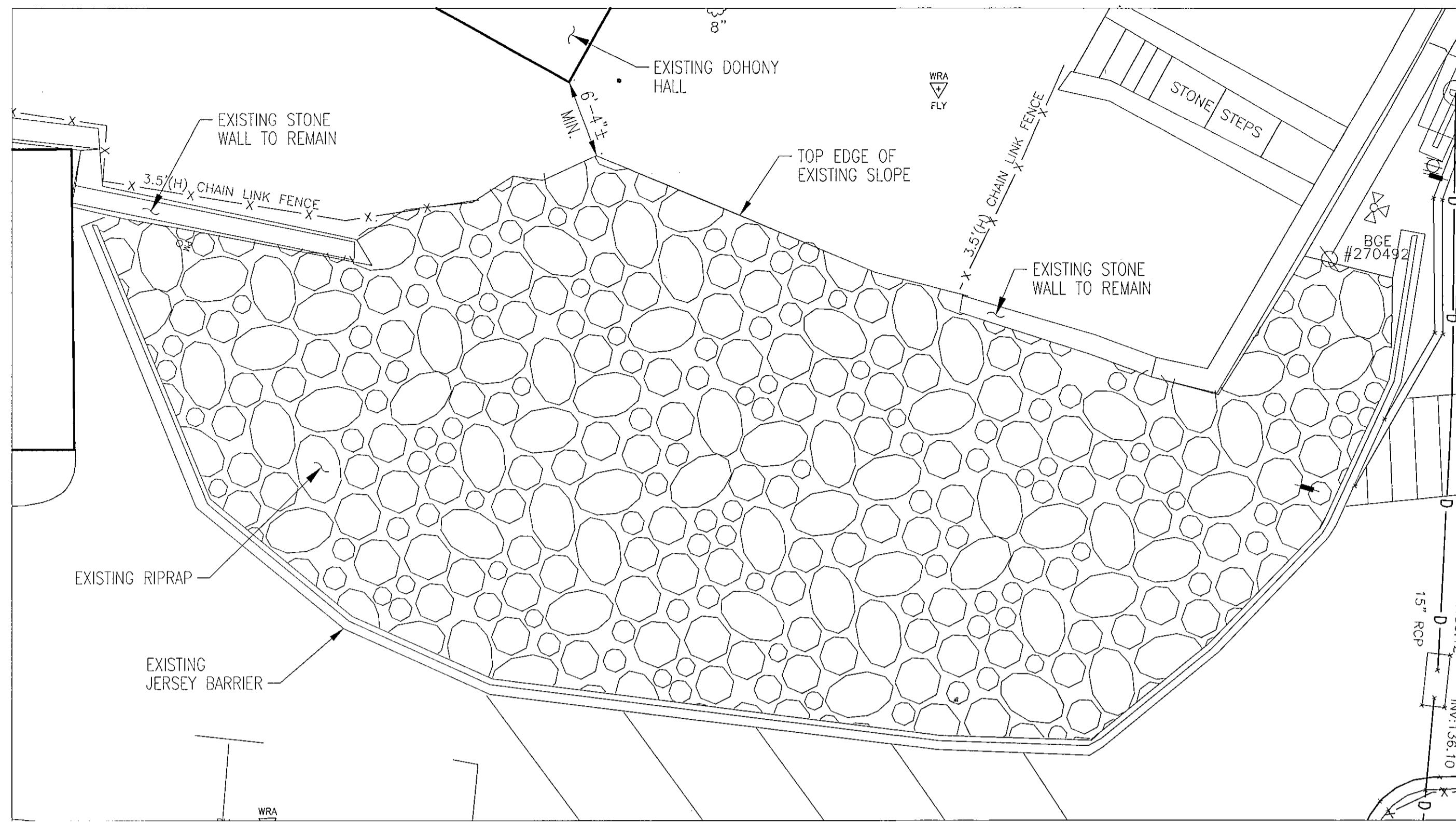
DES:	SEB			
DRN:	SEB			
CHK:	WAG			
DATE:	01/13/2014	BY	NO.	DESCRIPTION
				DATE

ADC MAP NO. 12	GRID G10
----------------	----------

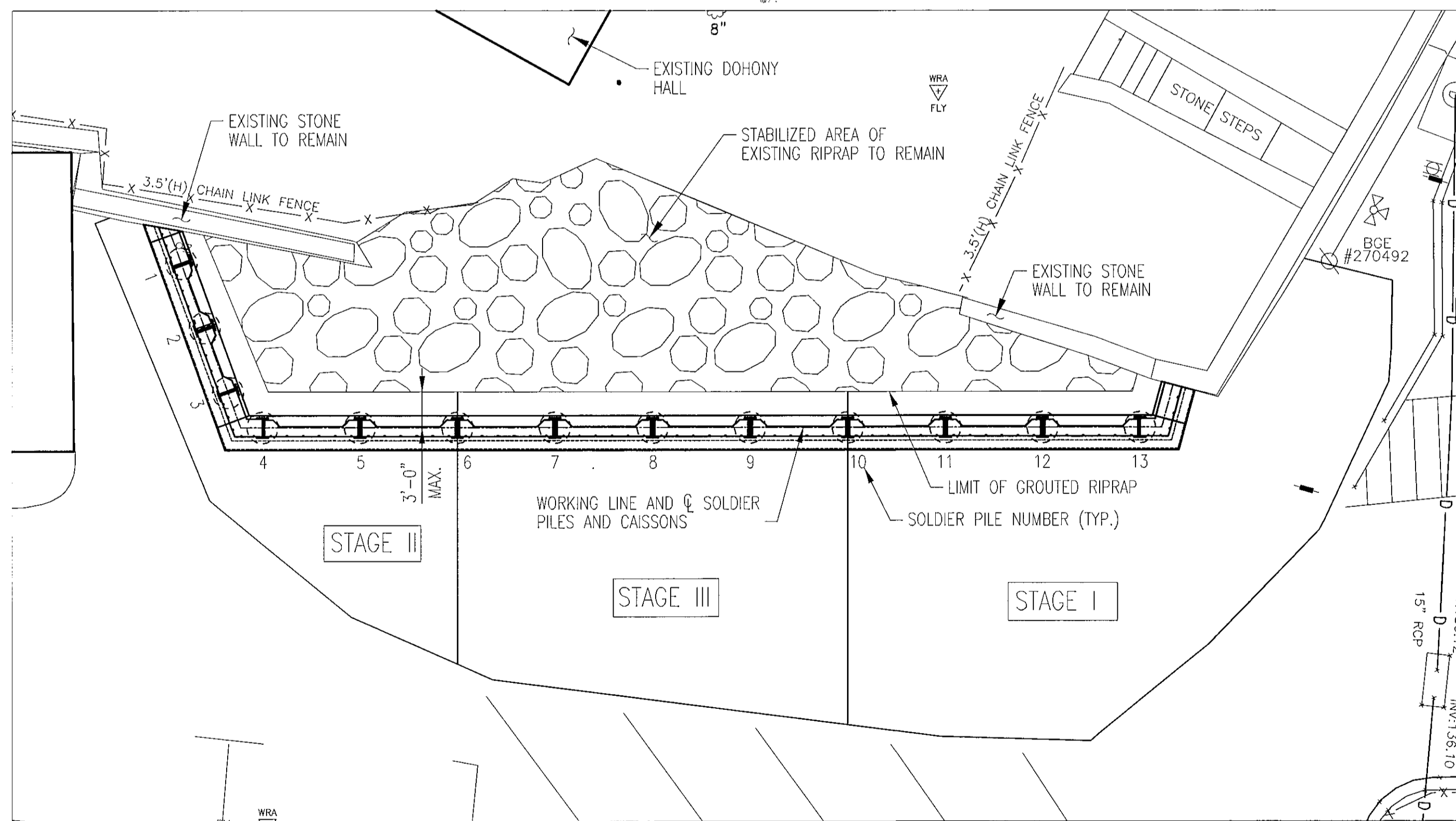
RETAINING WALL TYPICAL SECTION
CAPITAL PROJECT NO. B-3853
REPAIRS TO RETAINING WALL ON MULLIGAN'S HILL LANE
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 17 OF 27

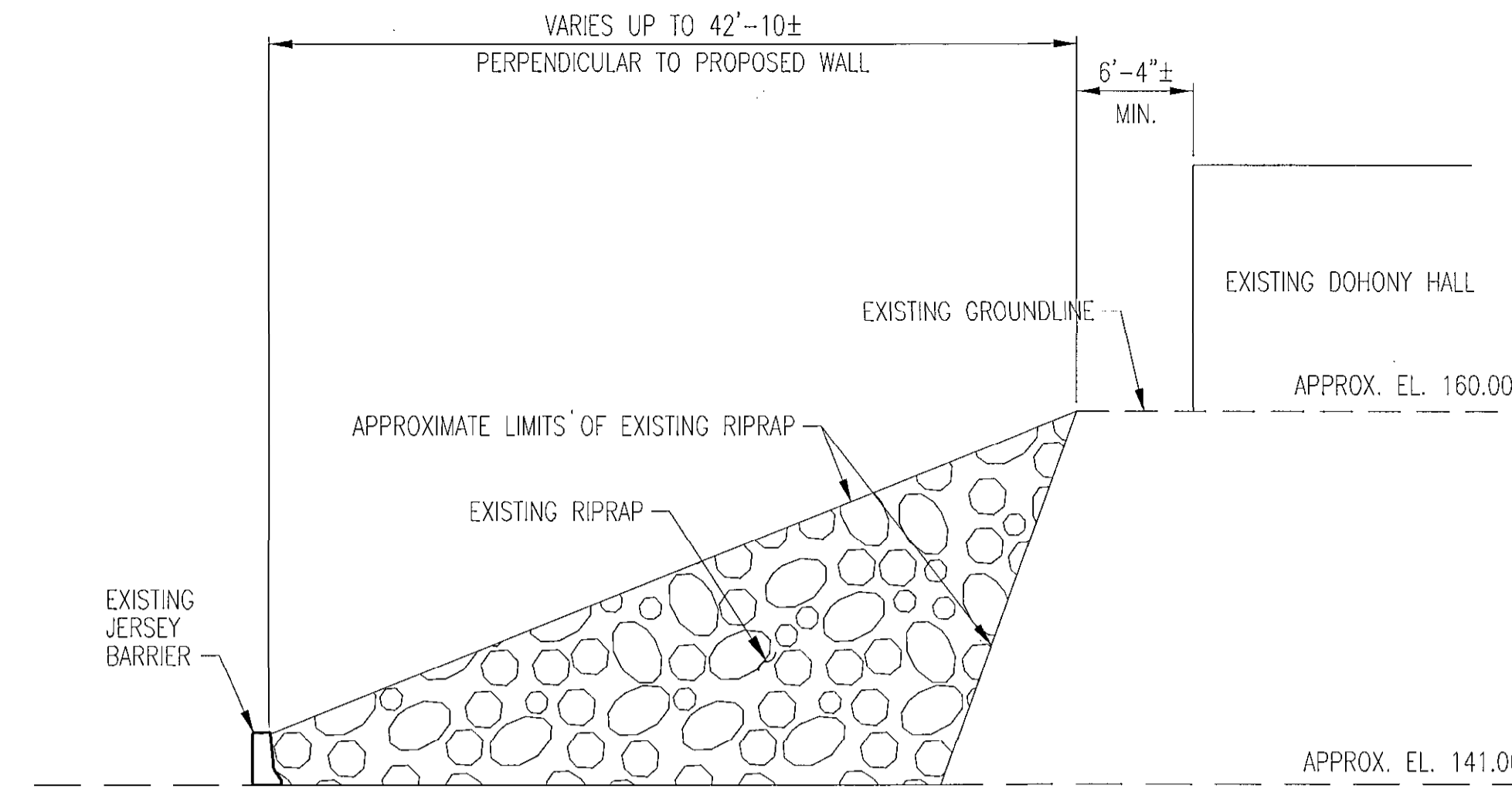
1/13/2014 10:57:26 AM C:\DWG\1431786003_1701.dwg



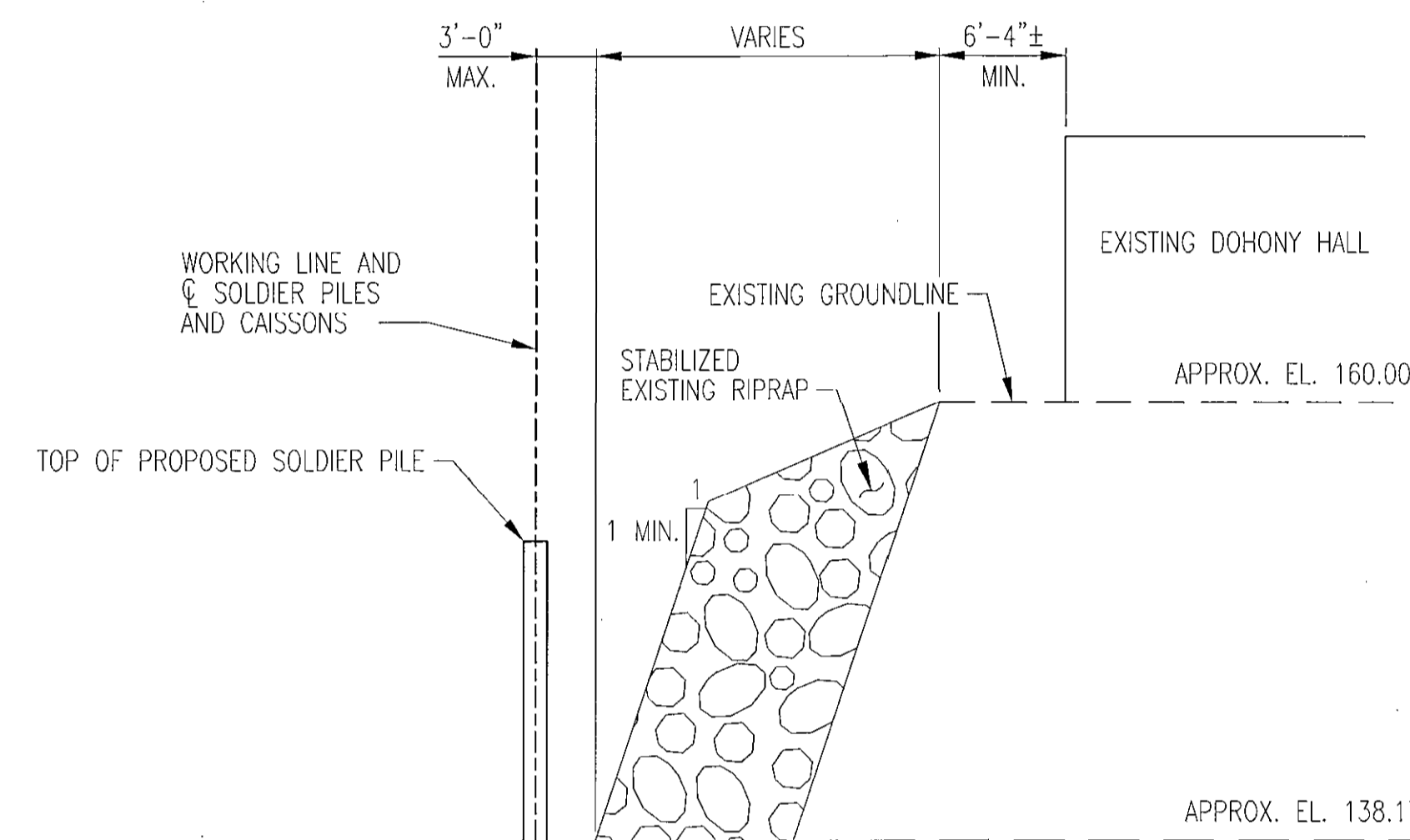
PLAN - EXISTING CONDITION
SCALE: 1/8" = 1'-0"



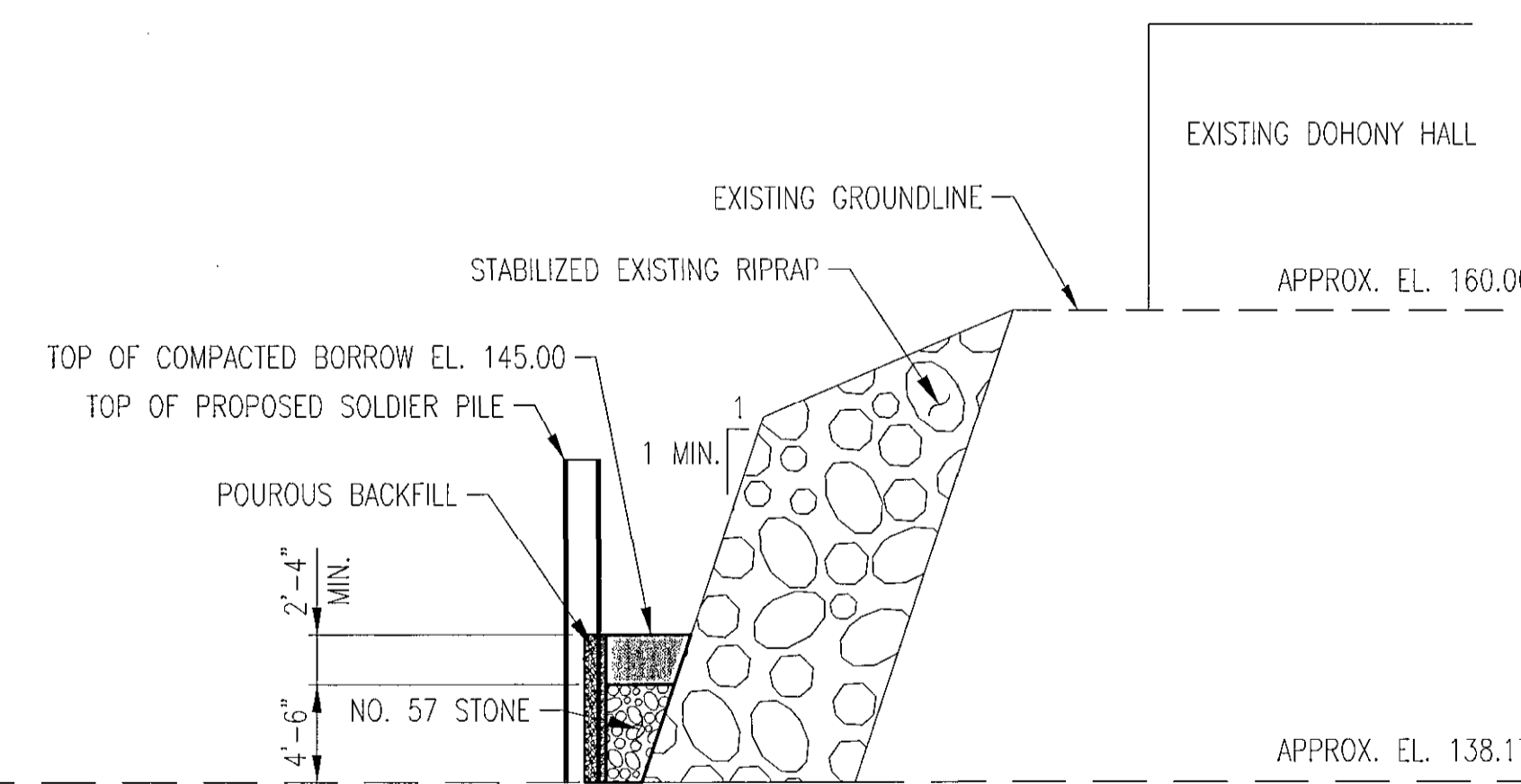
PLAN - STABILIZED CONDITION
SCALE: 1/8" = 1'-0"



TYPICAL SECTION 1 - EXISTING CONDITION
SCALE: 1/8" = 1'-0"



TYPICAL SECTION 2 - STABILIZED CONDITION
SCALE: 1/8" = 1'-0"



TYPICAL SECTION 3 - INTERMEDIATE BACKFILL BETWEEN STAGES
SCALE: 1/8" = 1'-0"

NOTES:

- ALL DIMENSIONS SHOWN IN TYPICAL SECTIONS ARE MEASURED PERPENDICULAR TO PROPOSED WALL.
- INDICATED AREA OF RIPRAP TO BE STABILIZED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR STABILIZATION BY PRESSURE GROUT INJECTION.
- EXCAVATE STABILIZED RIPRAP IN A MANNER THAT WILL MAINTAIN ITS INTEGRITY AS A SOLIDIFIED MASS.
- THE SOLDIER PILE WALL SHALL BE CONSTRUCTED IN THREE (3) SEPARATE STAGES. EACH STAGE SHALL BE CONSTRUCTED AND BACKFILLED TO A MINIMUM ELEVATION OF 145.00 PRIOR TO EXCAVATING THE RIPRAP IN THE FOLLOWING STAGE.
- SOLDIER PILES SHALL BE INSTALLED WITHIN 1 INCH OF THEIR HORIZONTAL LOCATION AND SHALL NOT BE OUT OF PLUMB MORE THAN 3/4" WITHIN A 10'-0" LENGTH. THE CONTRACTOR MAY DRILL LARGER CAISSONS AS NECESSARY TO FACILITATE PILE PLACEMENT TO THE SPECIFIED TOLERANCES.

SEQUENCE OF CONSTRUCTION NOTES:

- STAGE I**
- GROUT AND STABILIZE AREA OF EXISTING RIPRAP TO REMAIN AS SHOWN IN "PLAN - STABILIZED CONDITION".
 - EXCAVATE PORTION OF STABILIZED RIPRAP FOR STAGE I AS SHOWN IN TYPICAL SECTION 2.
 - DRILL PREBORED HOLES WITHIN STAGE I LIMITS AND INSTALL SOLDIER PILES 10, 11, 12, AND 13 WITH CONCRETE BACKFILL.
 - INSTALL PRECAST LAGGING PANELS (BETWEEN SOLDIER PILES 10-13) AND CAST-IN-PLACE CONCRETE LAGGING (BETWEEN SOLDIER PILE 13 AND EXISTING STONE MASONRY WALL).
 - INSTALL WALL DRAINAGE SYSTEM WITHIN STAGE I LIMITS INCLUDING LONGITUDINAL AND OUTLET PIPES.
 - BACKFILL BETWEEN CONSTRUCTED WALL AND STABILIZED RIPRAP WITHIN STAGE I LIMITS TO MINIMUM EL. 145.00 AS SHOWN IN TYPICAL SECTION 3 AND ON SHEET 17.
- STAGE II**
- EXCAVATE PORTION OF STABILIZED RIPRAP FOR STAGE II AS SHOWN IN TYPICAL SECTION 2.
 - DRILL PREBORED HOLES WITHIN STAGE II LIMITS AND INSTALL SOLDIER PILES 1, 2, 3, 4, 5, AND 6 WITH CONCRETE BACKFILL.
 - INSTALL PRECAST LAGGING PANELS (BETWEEN SOLDIER PILES 1-3 AND 4-6) AND CAST-IN-PLACE CONCRETE LAGGING (BETWEEN EXISTING STONE MASONRY WALL AND SOLDIER PILE 1, AND BETWEEN SOLDIER PILES 3 AND 4).
 - INSTALL WALL DRAINAGE SYSTEM WITHIN STAGE II LIMITS INCLUDING LONGITUDINAL AND OUTLET PIPES.
 - BACKFILL BETWEEN CONSTRUCTED WALL AND STABILIZED RIPRAP WITHIN STAGE II LIMITS TO MINIMUM EL. 145.00 AS SHOWN IN TYPICAL SECTION 3 AND ON SHEET 17.
- STAGE III**
- EXCAVATE PORTION OF STABILIZED RIPRAP FOR STAGE III AS SHOWN IN TYPICAL SECTION 2.
 - DRILL PREBORED HOLES WITHIN STAGE III LIMITS AND INSTALL SOLDIER PILES 7, 8, AND 9 WITH CONCRETE BACKFILL.
 - INSTALL PRECAST LAGGING PANELS (BETWEEN SOLDIER PILES 6-10).
 - INSTALL WALL DRAINAGE SYSTEM WITHIN STAGE III LIMITS INCLUDING LONGITUDINAL AND OUTLET PIPES.
 - INSTALL PORTIONS OF STORM DRAINAGE STRUCTURE AND PIPEWORK BEHIND AND BELOW WALL.
 - BACKFILL BETWEEN CONSTRUCTED WALL AND STABILIZED RIPRAP WITHIN STAGE III LIMITS TO MINIMUM EL. 145.00 AS SHOWN IN TYPICAL SECTION 3 AND ON SHEET 17.
- FOLLOWING COMPLETION OF STAGE III**
- PLACE REMAINING BACKFILL ALONG FULL LENGTH OF CONSTRUCTED WALL.
 - CONSTRUCT CAST-IN-PLACE CONCRETE LEVELING PAD.
 - INSTALL STONE VENEER AND BACKFILL BETWEEN VENEER AND CONSTRUCTED LAGGING WITH NONSHRINK GROUT IN 5'-0" MAX. LIFTS. SEE SHEET 17 FOR DETAILS.
 - INSTALL STONE CAP ALONG FULL LENGTH OF CONSTRUCTED WALL. SEE SHEET 20 FOR DETAILS.

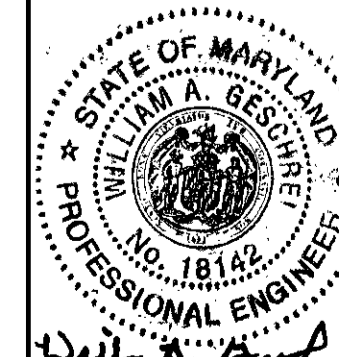
"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18142, EXPIRATION DATE: 02-04-2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 1/21/14
DIRECTOR OF PUBLIC WORKS
[Signature] 1-17-14
CHIEF, BUREAU OF HIGHWAYS

[Signature] 1/15/14
CHIEF, BUREAU OF ENGINEERING
[Signature] 1/15/14
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231



DES:	JB			
DRN:	SEB			
CHK:	WAG			
DATE:	01/13/2014			
BY	NO.	DESCRIPTION	DATE	

SUGGESTED SEQUENCE OF CONSTRUCTION

ADC MAP NO. 12 GRID G10

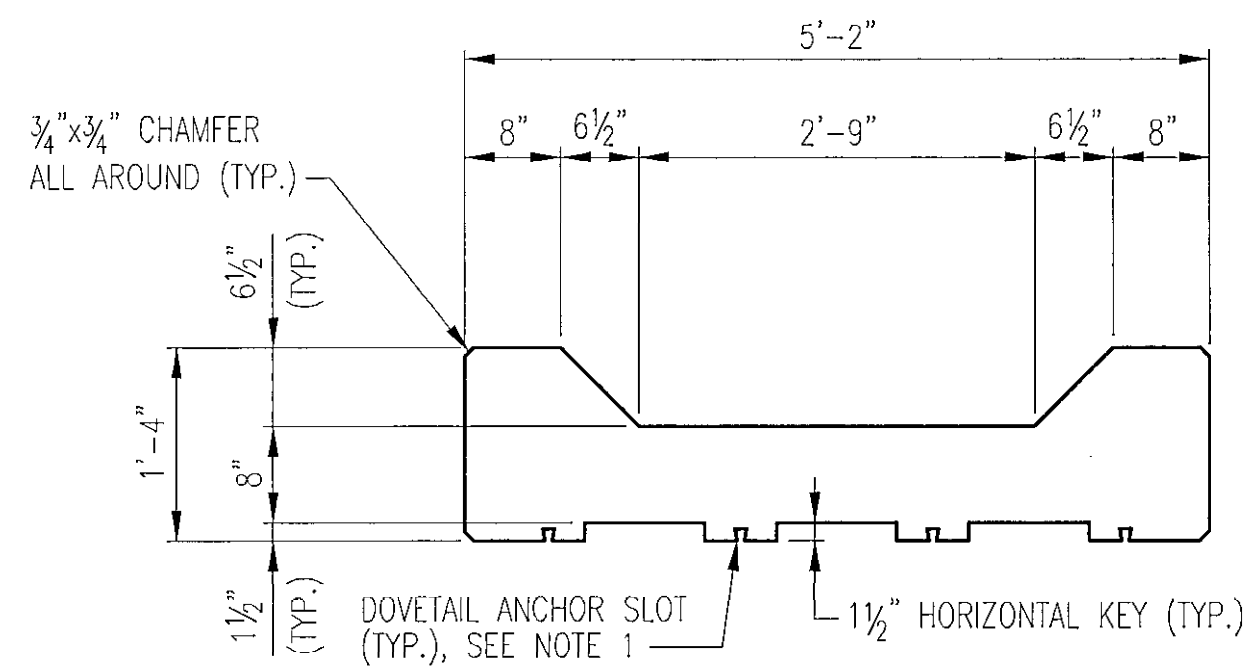
CAPITAL PROJECT NO. B-3853
REPAIRS TO RETAINING WALL ON MULLIGAN'S HILL LANE

SCALE AS SHOWN

SHEET 18 OF 27

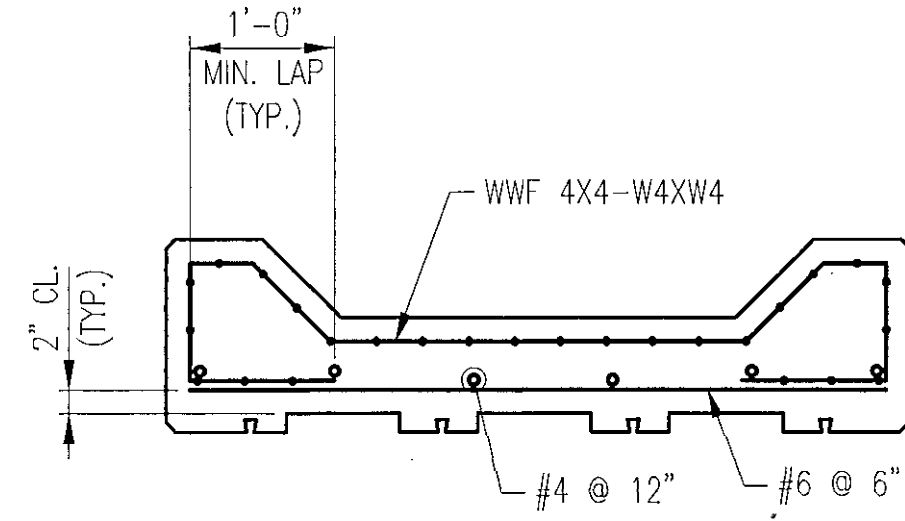
1ST ELECTION DISTRICT

HOWARD COUNTY, MARYLAND



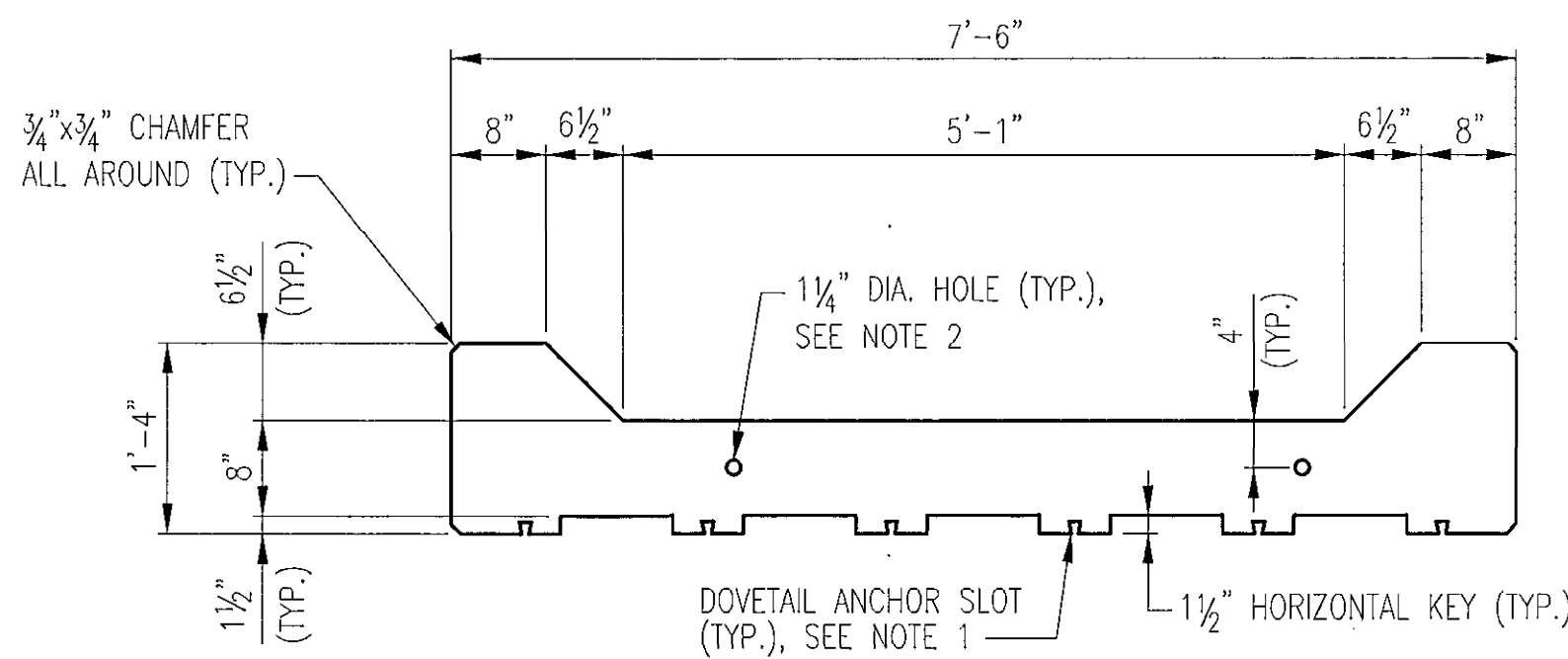
PLAN - 5'-6" LAGGING PANEL

SCALE: 3/4"=1'-0"



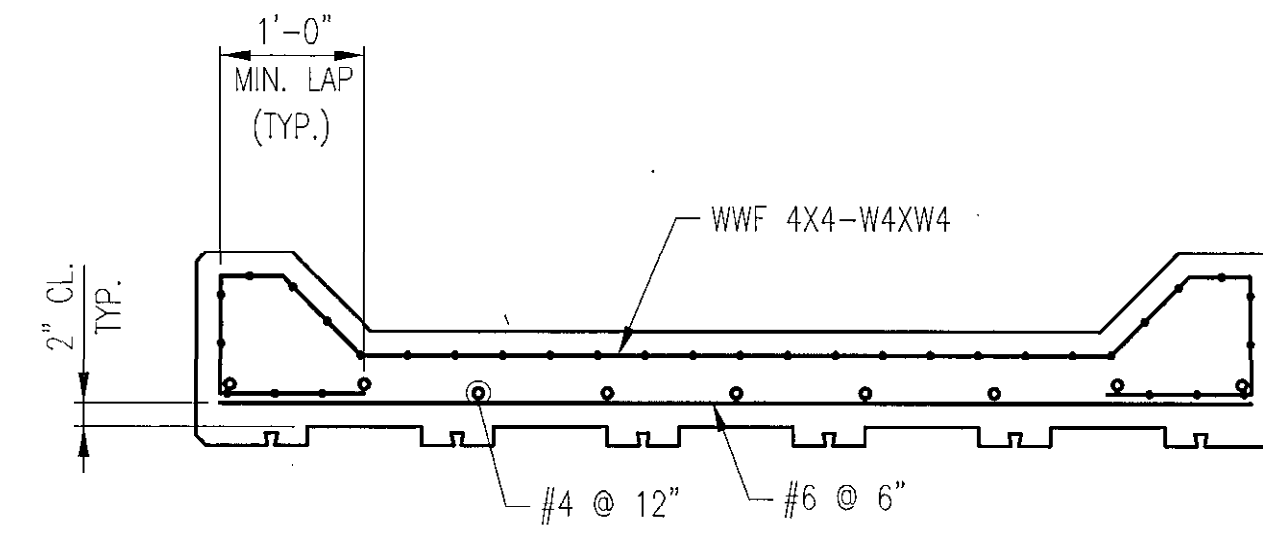
**REINFORCEMENT PLAN
5'-6" LAGGING PANEL**

SCALE: 3/4"=1'-0"



PLAN - 7'-10" LAGGING PANEL

SCALE: 3/4"=1'-0"

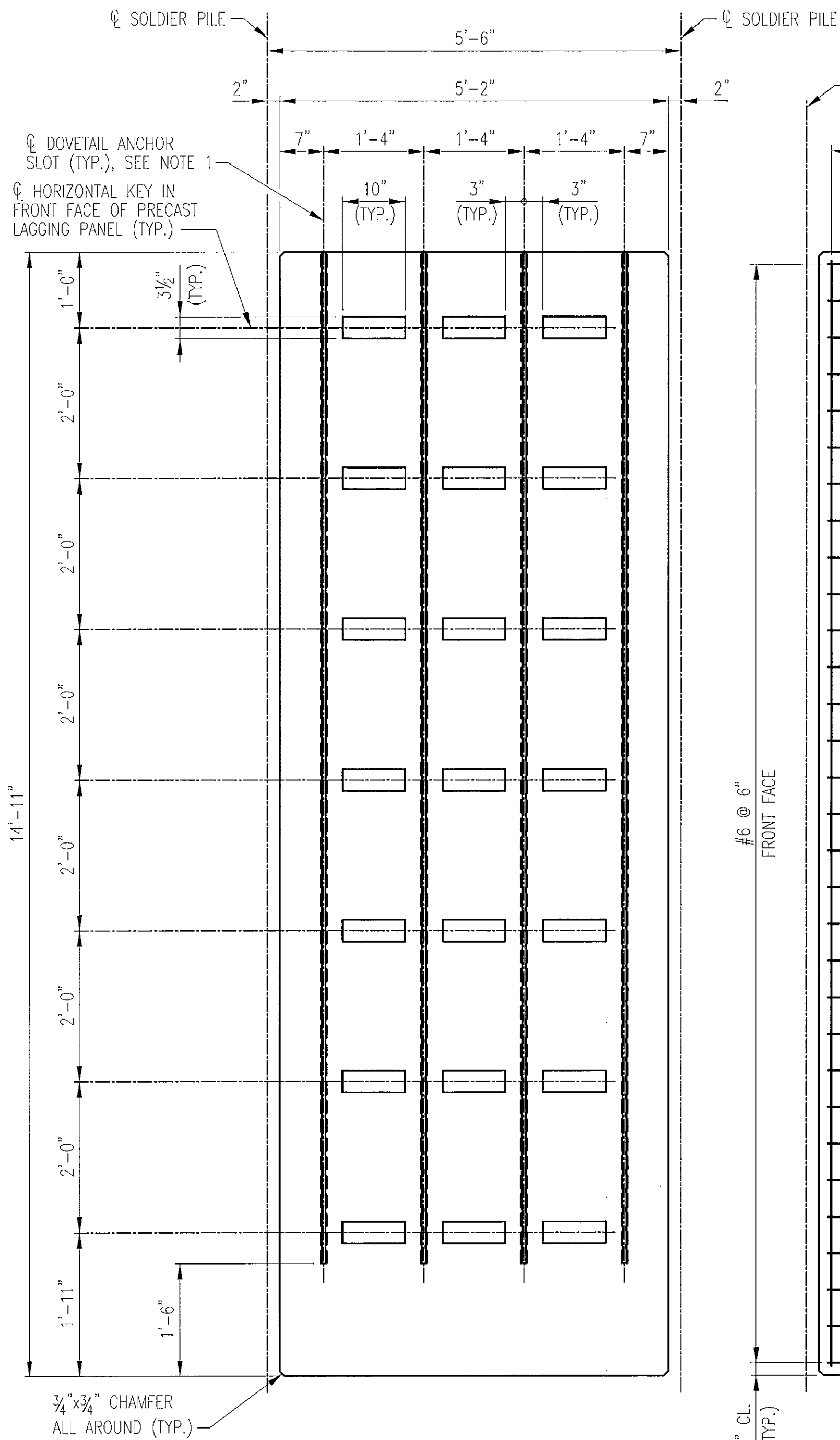


**REINFORCEMENT PLAN
7'-10" LAGGING PANEL**

SCALE: 3/4"=1'-0"

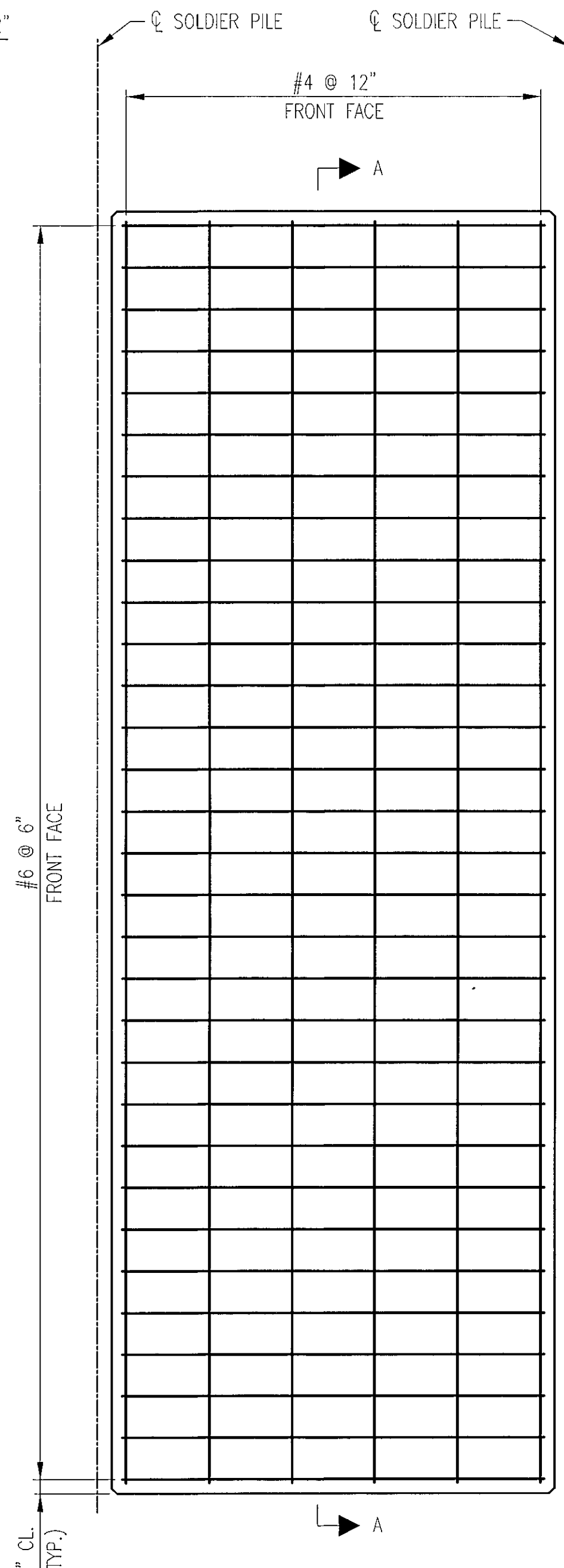
NOTES:

- DOVETAIL ANCHOR SLOT SHALL BE HECKMANN BLDG. PRODUCTS, INC. #100 22 GAGE OR APPROVED EQUAL. THE ANCHOR SLOT SHALL BE CAST INTO THE CONCRETE.
- 1 1/4" DIA. CAPSTONE CONNECTION HOLE SHALL BE SET PERPENDICULAR TO TOP OF PANEL. SEE CAPSTONE CONNECTION DETAIL ON SHEET 20 FOR FURTHER DETAILS.
- CONTRACTOR SHALL DETERMINE VERTICAL PLACEMENT OF 4" DIA. HOLE BASED ON OUTLET PIPE ELEVATION AT FACE OF CURB. SEE SHEET 17 FOR FURTHER INFORMATION.
- A TOTAL OF TWO (2) 5'-6" LAGGING PANELS SHALL BE FABRICATED FOR PLACEMENT BETWEEN SOLDIER PILES 1-2 AND 2-3. THE 5'-6" LAGGING PANELS SHALL BE FABRICATED WITHOUT 4" DIA. HOLES.
- A TOTAL OF NINE (9) 7'-6" LAGGING PANELS SHALL BE FABRICATED FOR PLACEMENT BETWEEN SOLDIER PILES 4-13. EIGHT (8) OF THESE NINE (9) PANELS SHALL BE FABRICATED AS SHOWN. ONE (1) OF THESE NINE (9) PANELS SHALL BE FABRICATED WITHOUT A 4" DIA. HOLE AND SHALL BE PLACED BETWEEN SOLDIER PILES 7 AND 8.



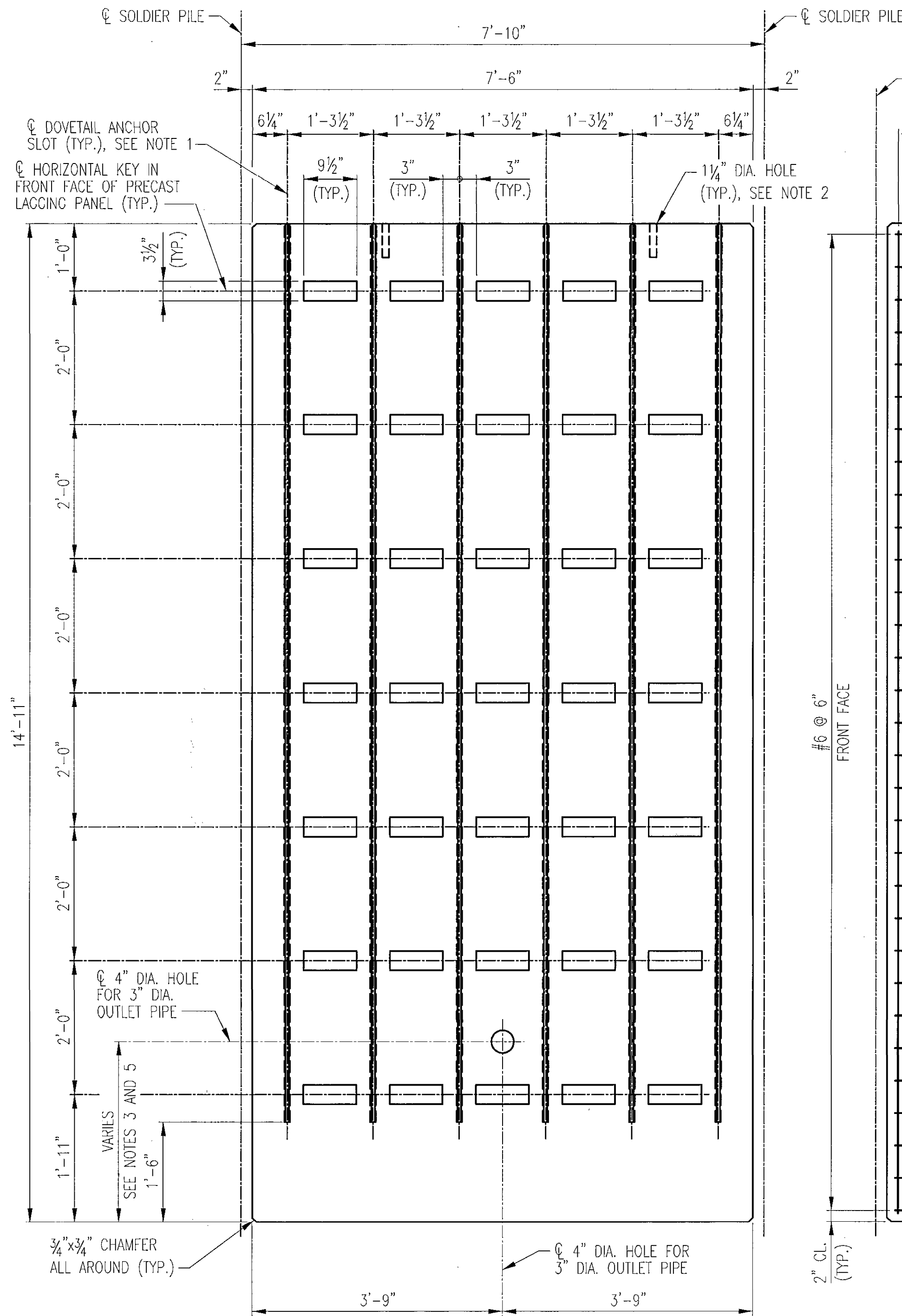
ELEVATION - 5'-6" LAGGING PANEL

SCALE: 3/4"=1'-0"



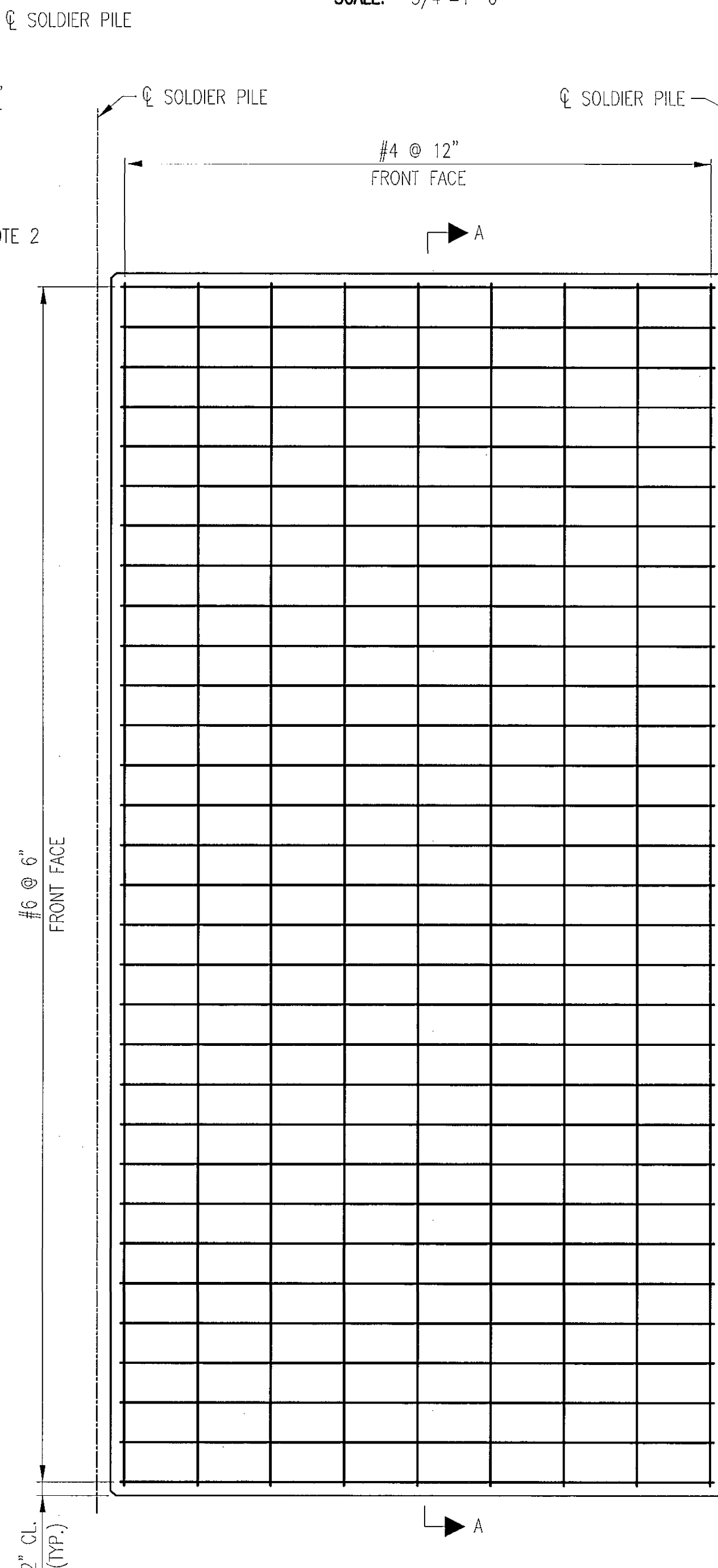
**REINFORCEMENT ELEVATION
5'-6" LAGGING PANEL**

SCALE: 3/4"=1'-0"



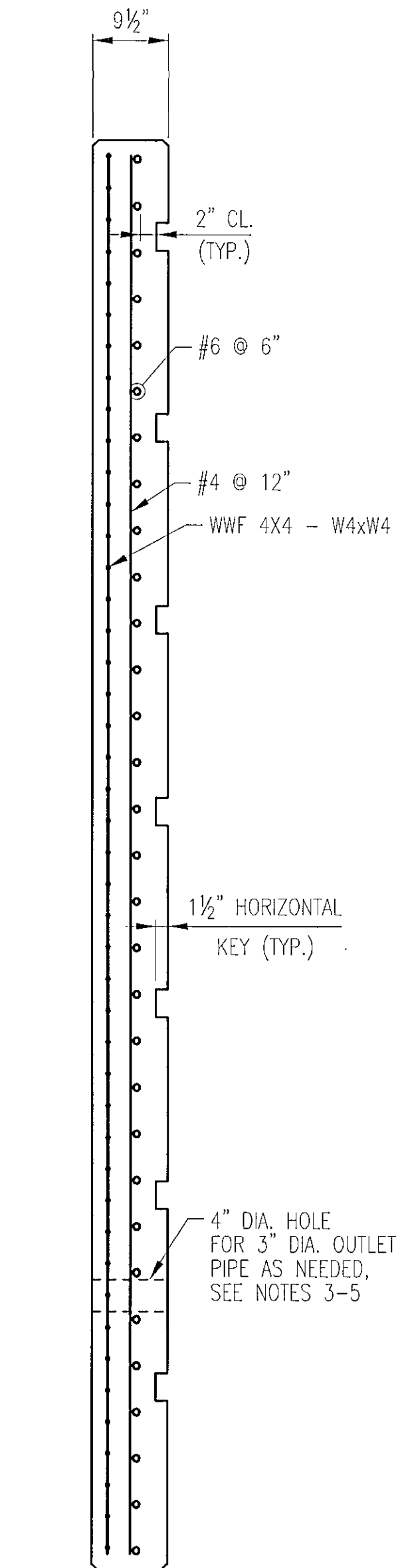
ELEVATION - 7'-10" LAGGING PANEL

SCALE: 3/4"=1'-0"



**REINFORCEMENT ELEVATION
7'-10" LAGGING PANEL**

SCALE: 3/4"=1'-0"



SECTION A-A

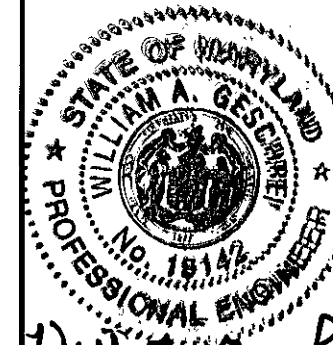
SCALE: 3/4"=1'-0"

"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. 18142, EXPIRATION DATE: 02-04-2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John A. ... 1/2/14
DIRECTOR OF PUBLIC WORKS
Thomas E. Butler 1/15/14
CHIEF, BUREAU OF ENGINEERING
Steve Slaven 1/15/14
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231



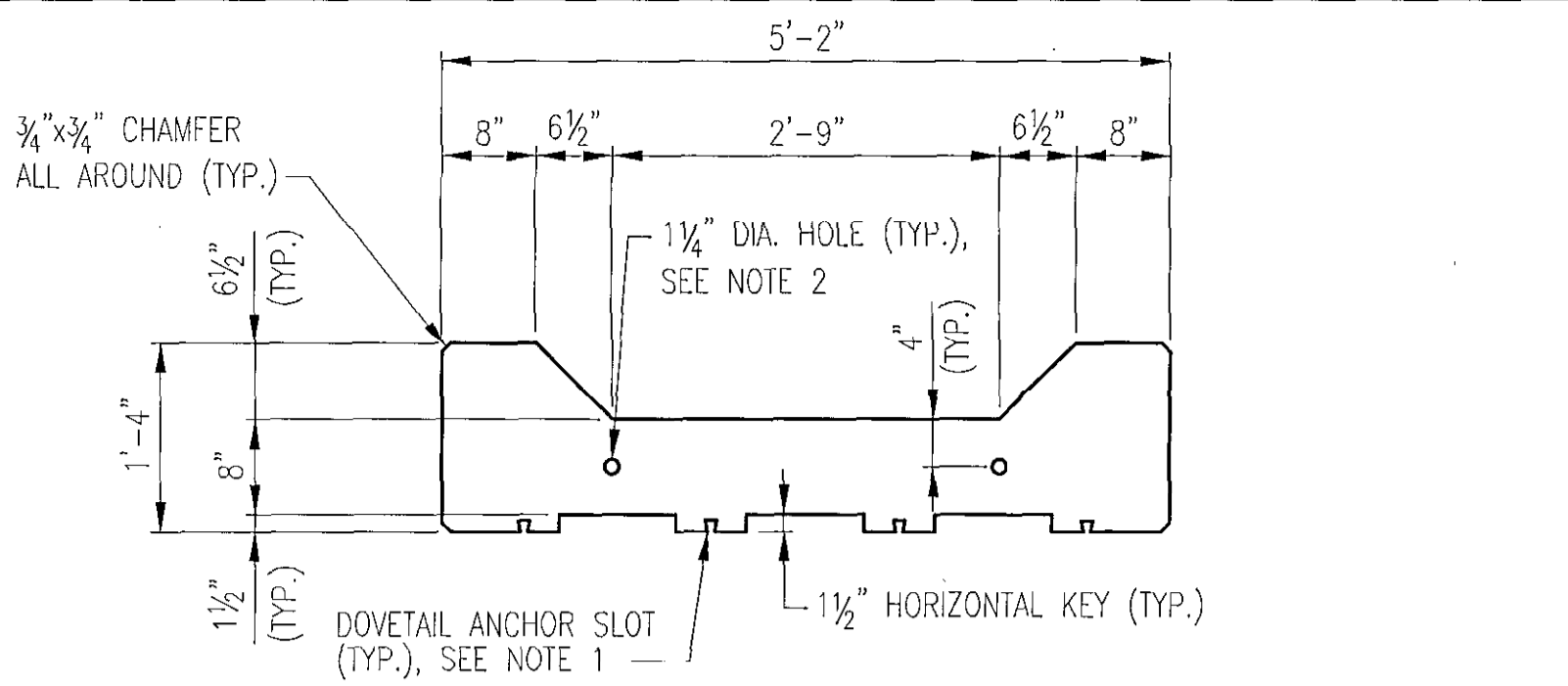
DES:	AC			
DRN:	AC			
CHK:	WAG			
DATE:	01/13/2014			
BY:	NO.	DESCRIPTION	DATE	

PRECAST LAGGING PANEL
DETAILS - 1

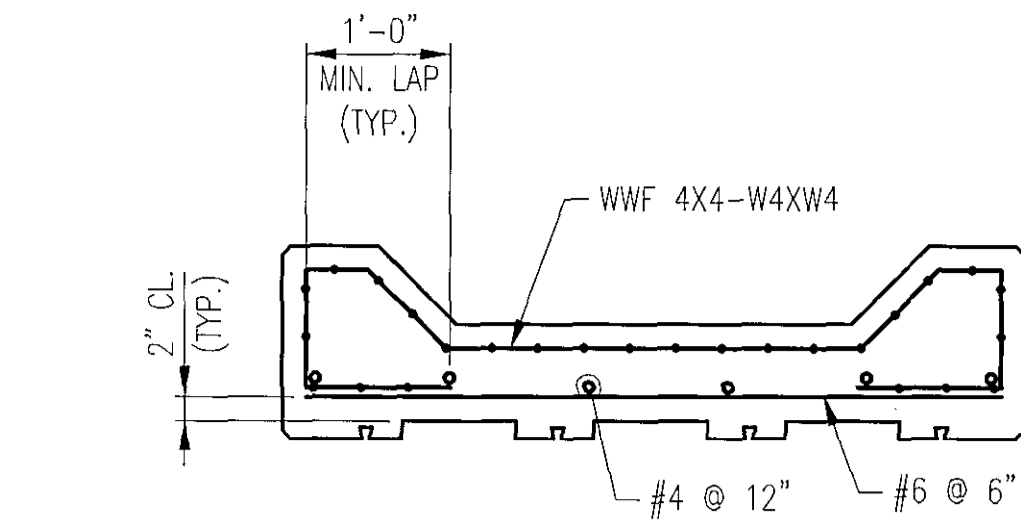
CAPITAL PROJECT NO. B-3853
REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE

SCALE AS SHOWN
SHEET 19 OF 27

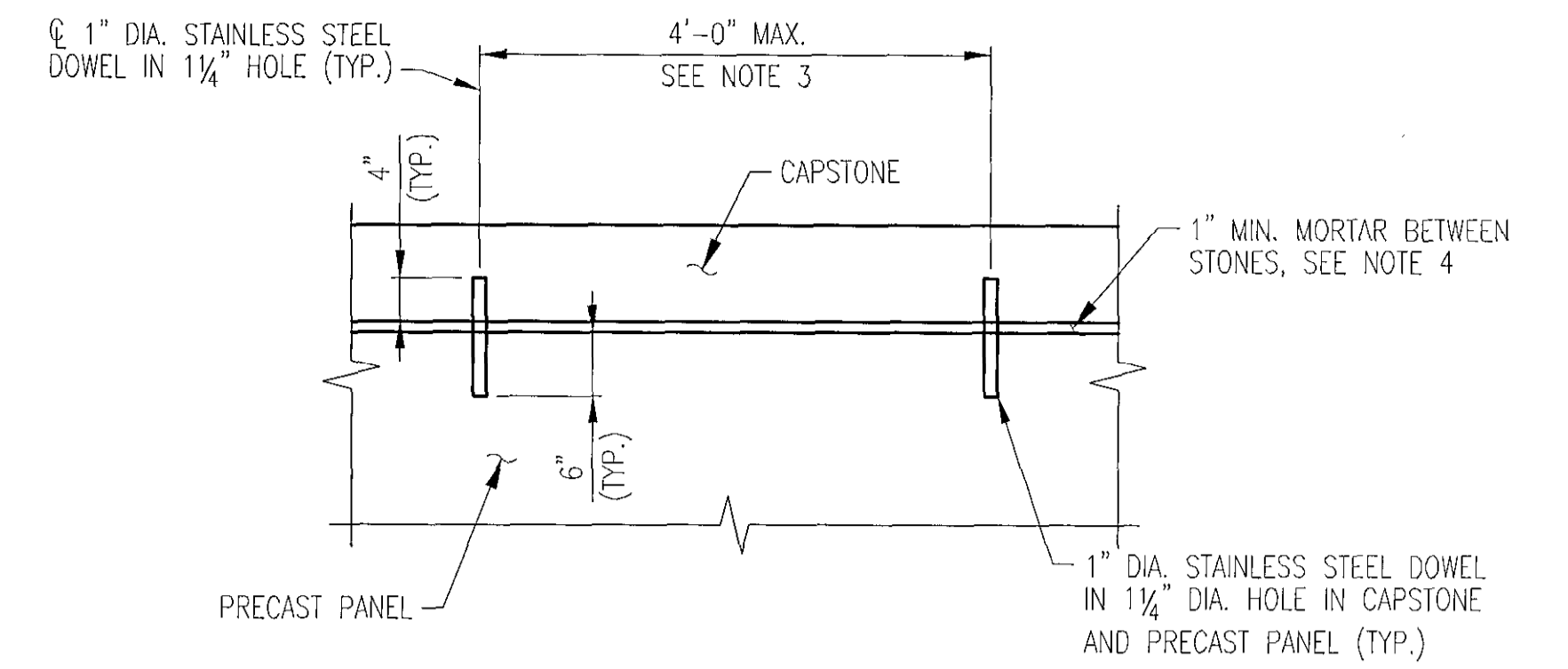
ADC MAP NO. 12 GRID G10 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND



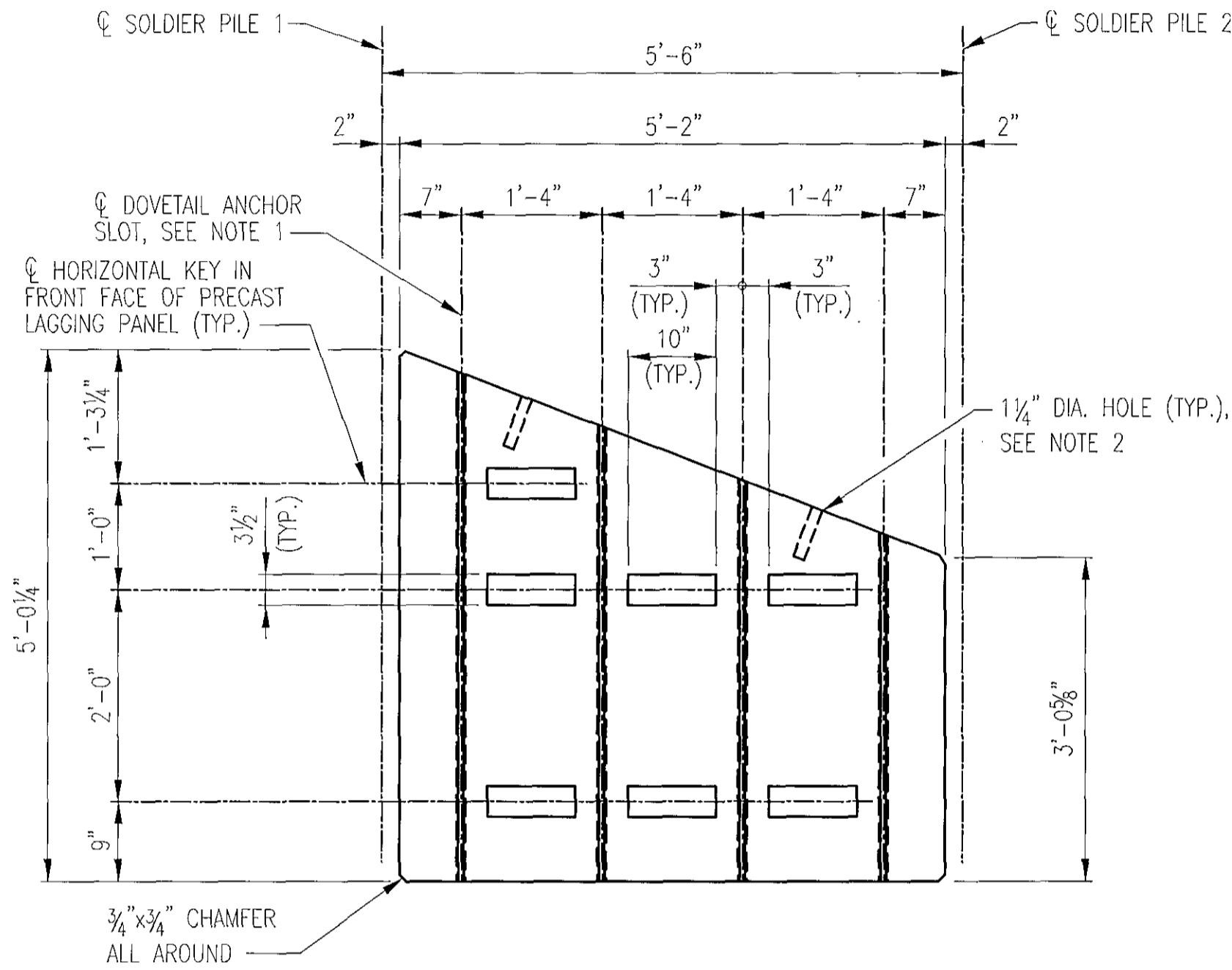
PLAN - 5'-6" TAPERED LAGGING PANELS 1 AND 2
SCALE: 3/4"=1'-0"



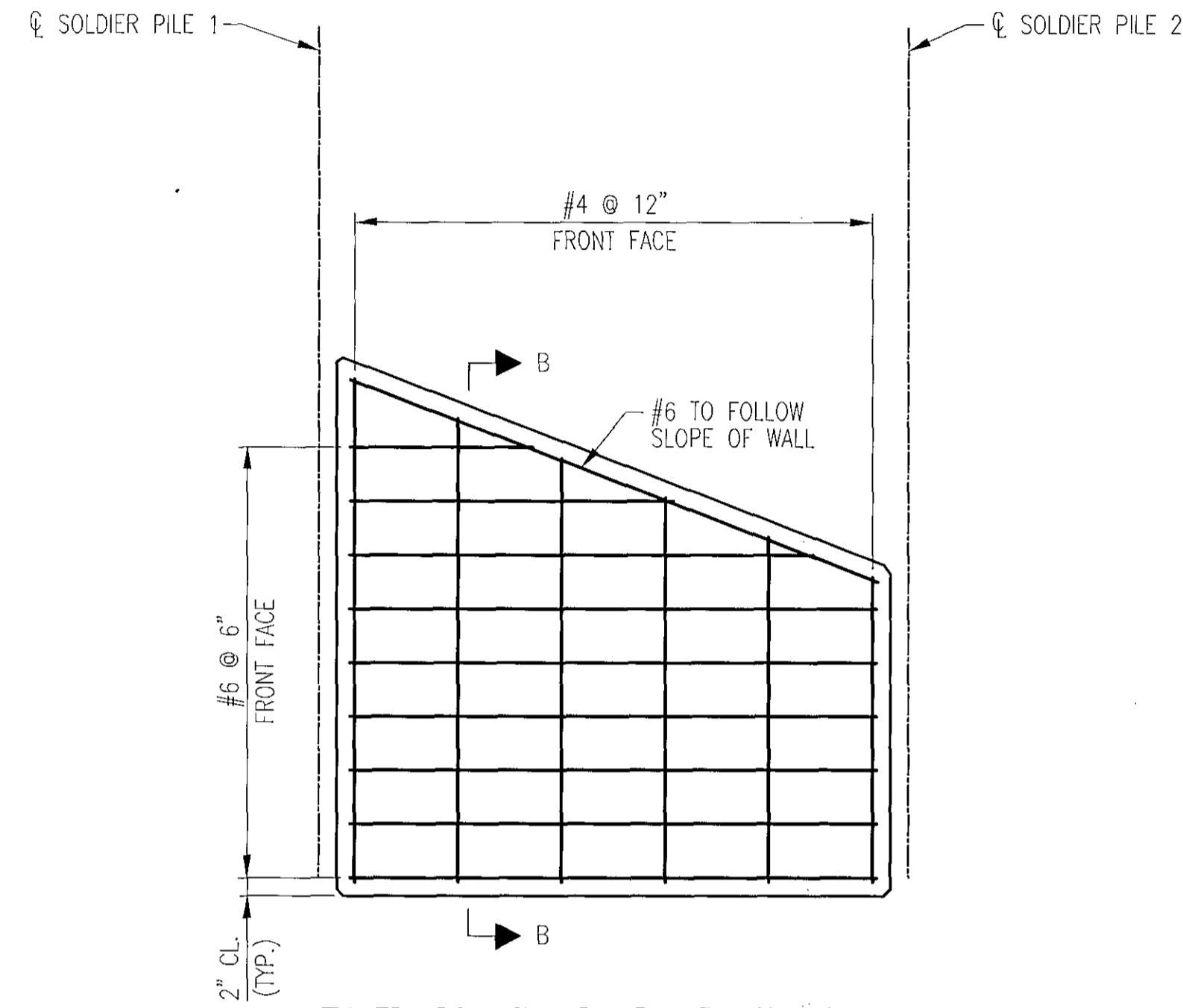
REINFORCEMENT PLAN
5'-6" TAPERED LAGGING PANELS 1 AND 2
SCALE: 3/4"=1'-0"



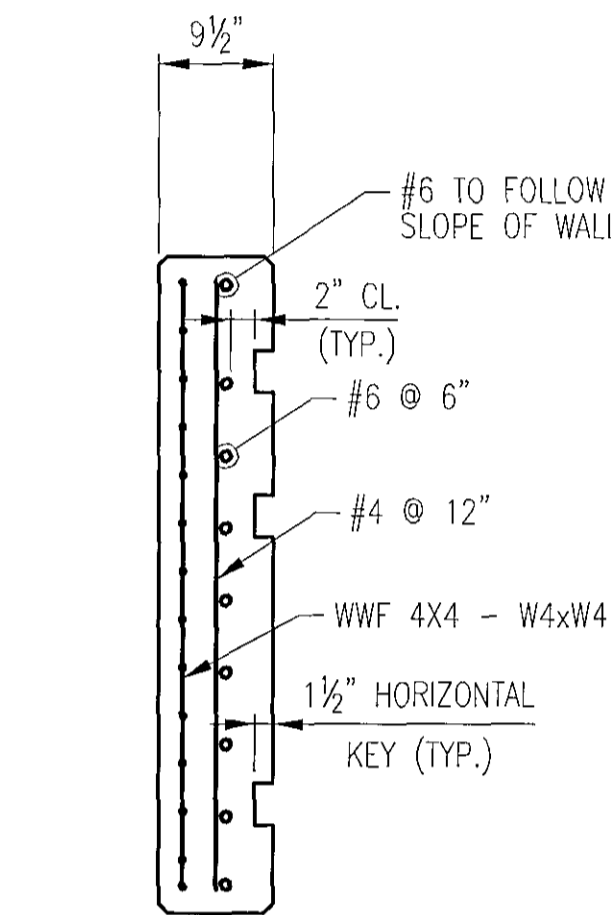
CAPSTONE CONNECTION DETAIL
SCALE: 3/4"=1'-0"



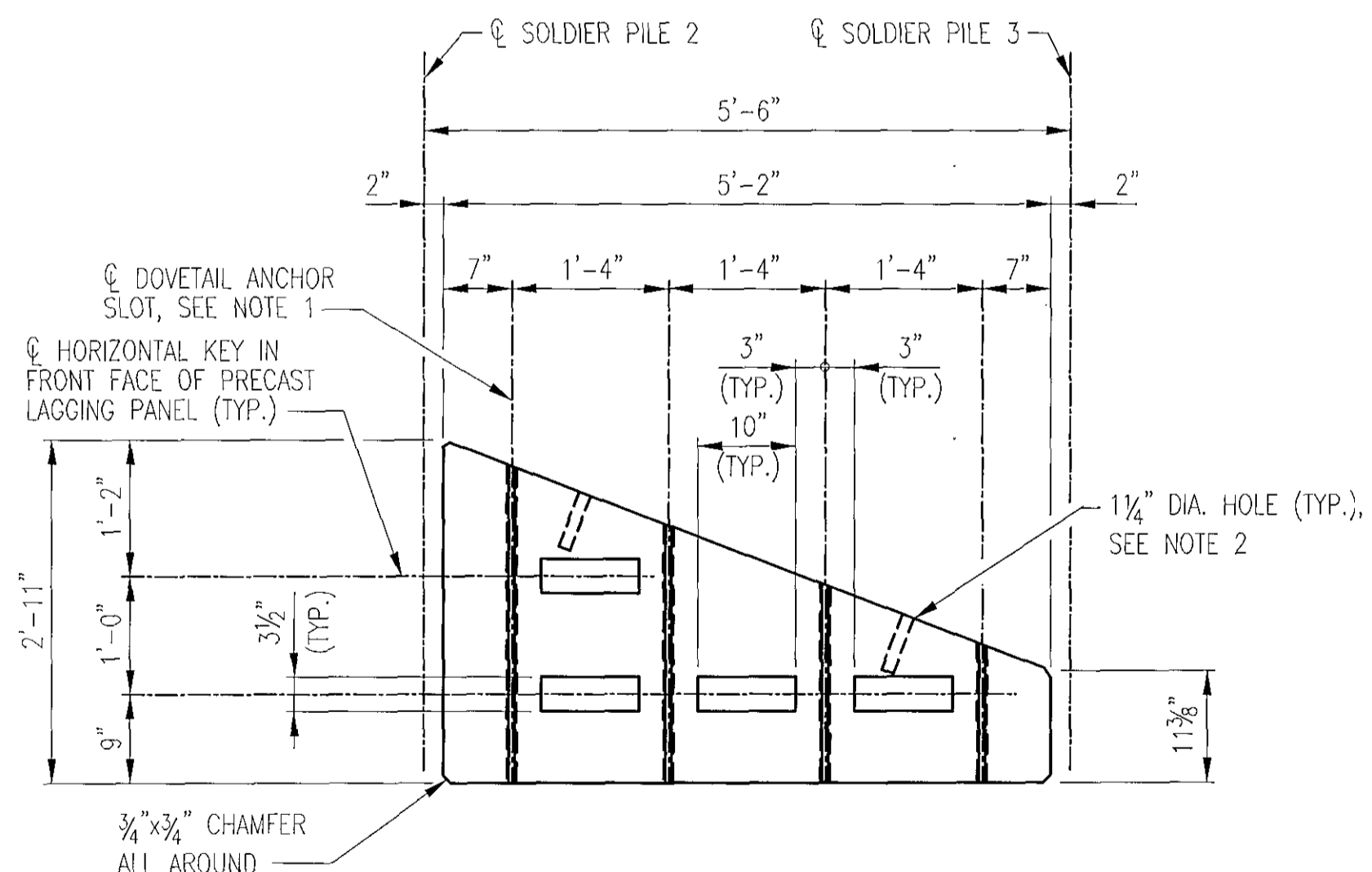
ELEVATION - 5'-6" TAPERED LAGGING PANEL - 1
SCALE: 3/4"=1'-0"



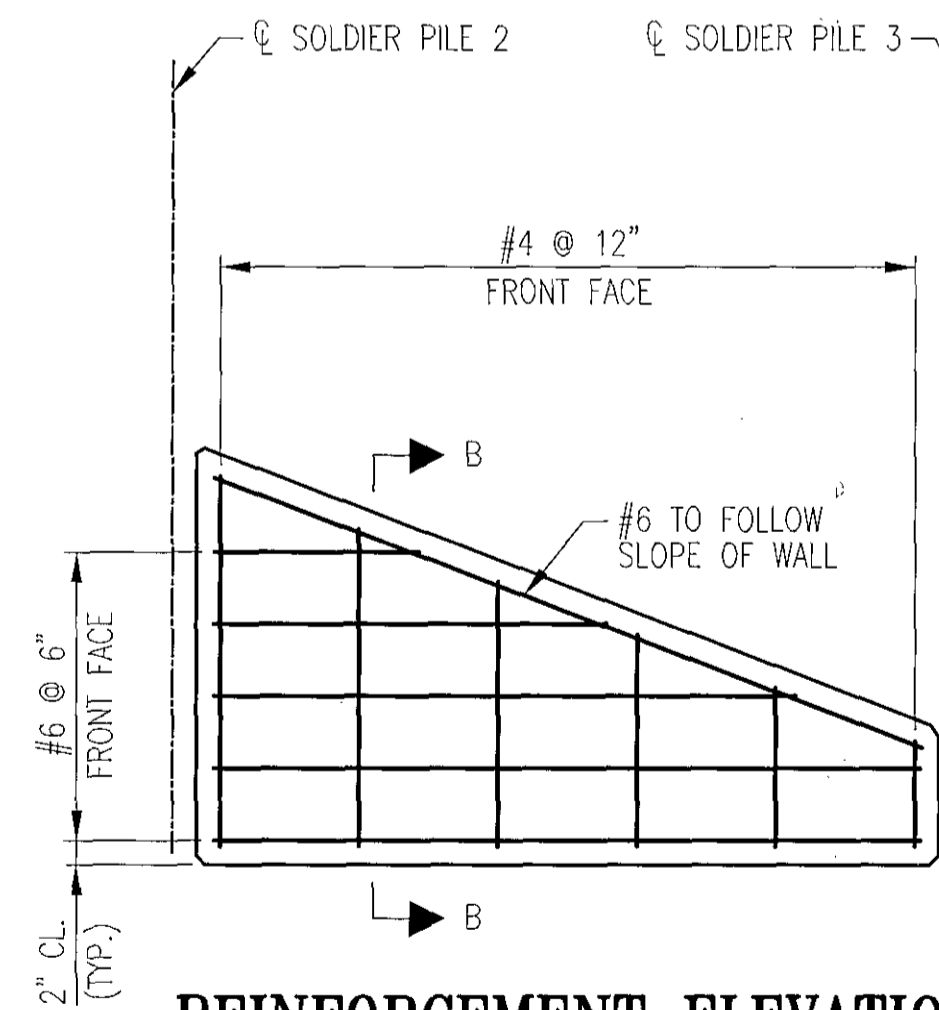
REINFORCEMENT ELEVATION
5'-6" TAPERED LAGGING PANEL - 1
SCALE: 3/4"=1'-0"



SECTION B-B
SCALE: 3/4"=1'-0"



ELEVATION - 5'-6" TAPERED LAGGING PANEL - 2
SCALE: 3/4"=1'-0"



REINFORCEMENT ELEVATION
5'-6" TAPERED LAGGING PANEL - 2
SCALE: 3/4"=1'-0"

NOTES:

- DOVETAIL ANCHOR SLOT SHALL BE HECKMANN BLDG. PRODUCTS, INC. #100 22 GAGE OR APPROVED EQUAL. THE ANCHOR SLOT SHALL BE CAST INTO THE CONCRETE.
- 1 1/4" DIA. CAPSTONE CONNECTION HOLE SHALL BE SET PERPENDICULAR TO SLOPED TOP OF PANEL. SEE CAPSTONE CONNECTION DETAIL FOR FURTHER DETAILS.
- DOWELS SHALL BE SPACED SUCH THAT THERE ARE AT LEAST TWO (2) DOWELS PER PANEL OR TWO (2) DOWELS PER CAPSTONE.
- MORTAR BETWEEN STONES SHALL BE IN CONFORMANCE WITH THE SPECIAL PROVISIONS.

"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. 18142, EXPIRATION DATE: 02-04-2015."

1/13/2014 11:51:56 AM \\s1760-003\cadd\pdr\p31780003_0102.dwg

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 1/22/14
DIRECTOR OF PUBLIC WORKS DATE

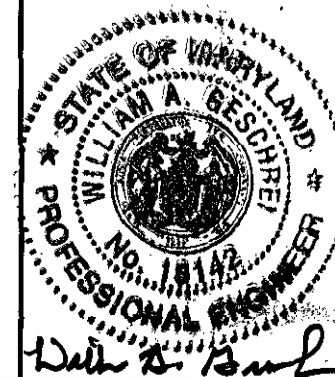
[Signature] 1/15/14
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 1-17-14
CHIEF, BUREAU OF HIGHWAYS DATE

[Signature] 1/16/14
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS DATE

WR&A

WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21201



DRS: AC				
DRN: KPL				
CHK: WAG				
DATE: 01/13/2014	BY: NO.	DESCRIPTION	DATE	ADC MAP NO. 12
				GRID G10

CAPITAL PROJECT NO. B-3853

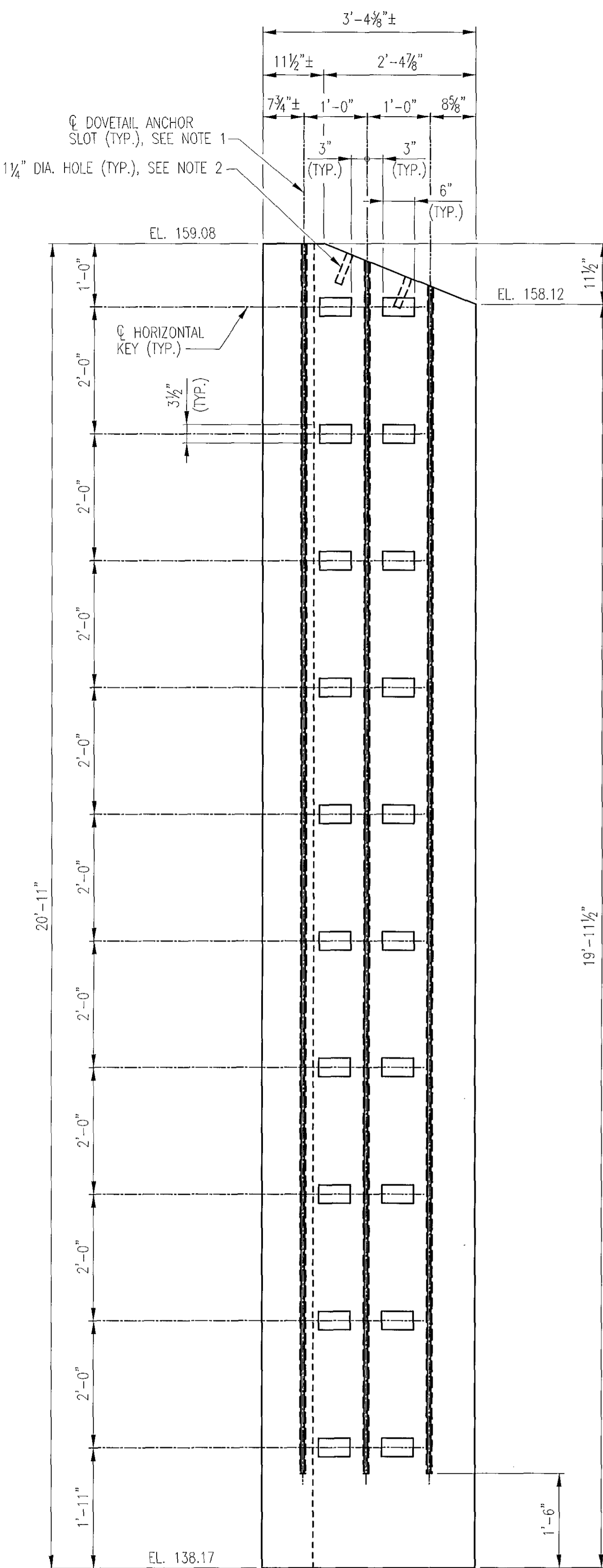
REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE

1ST ELECTION DISTRICT

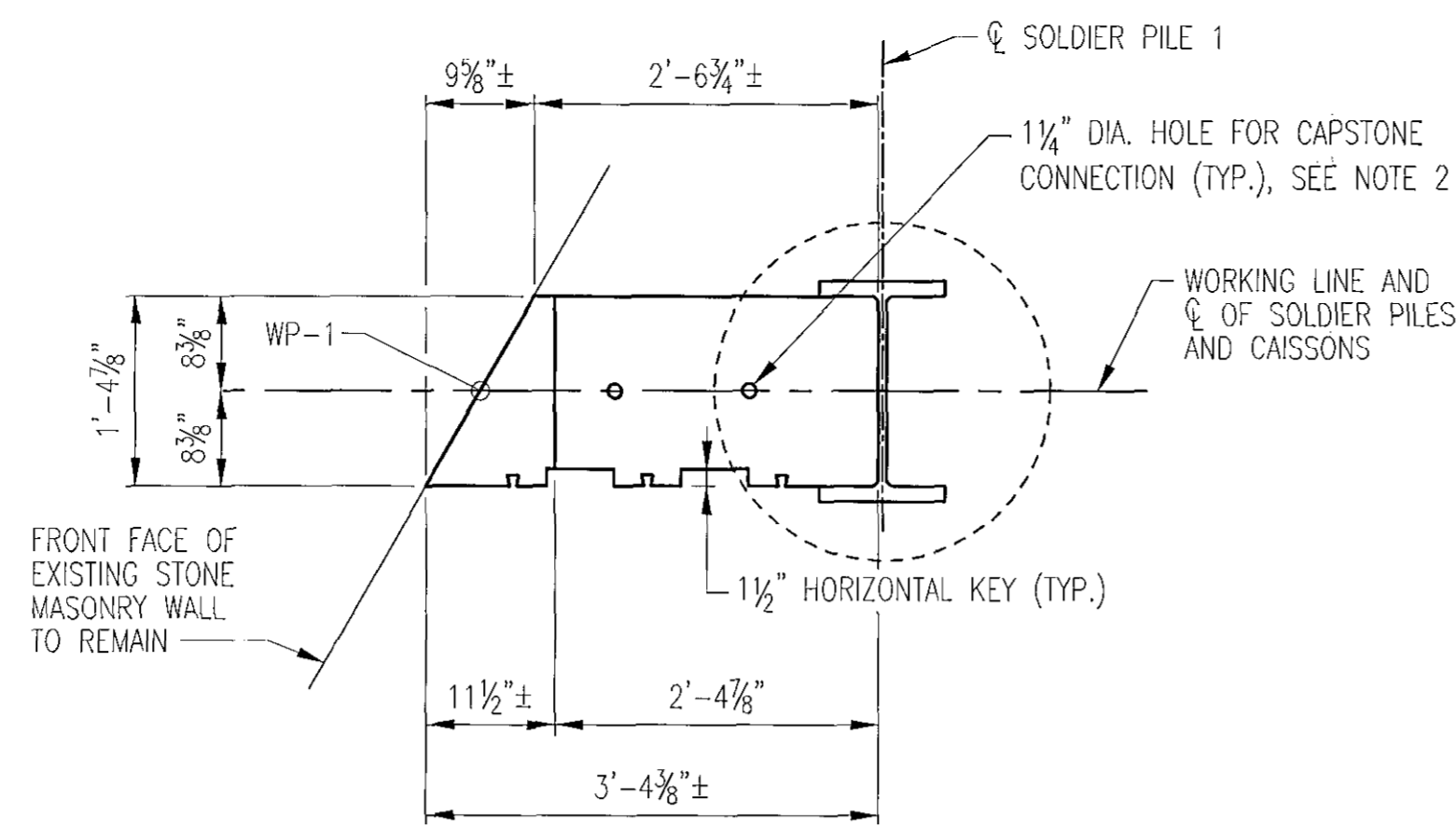
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

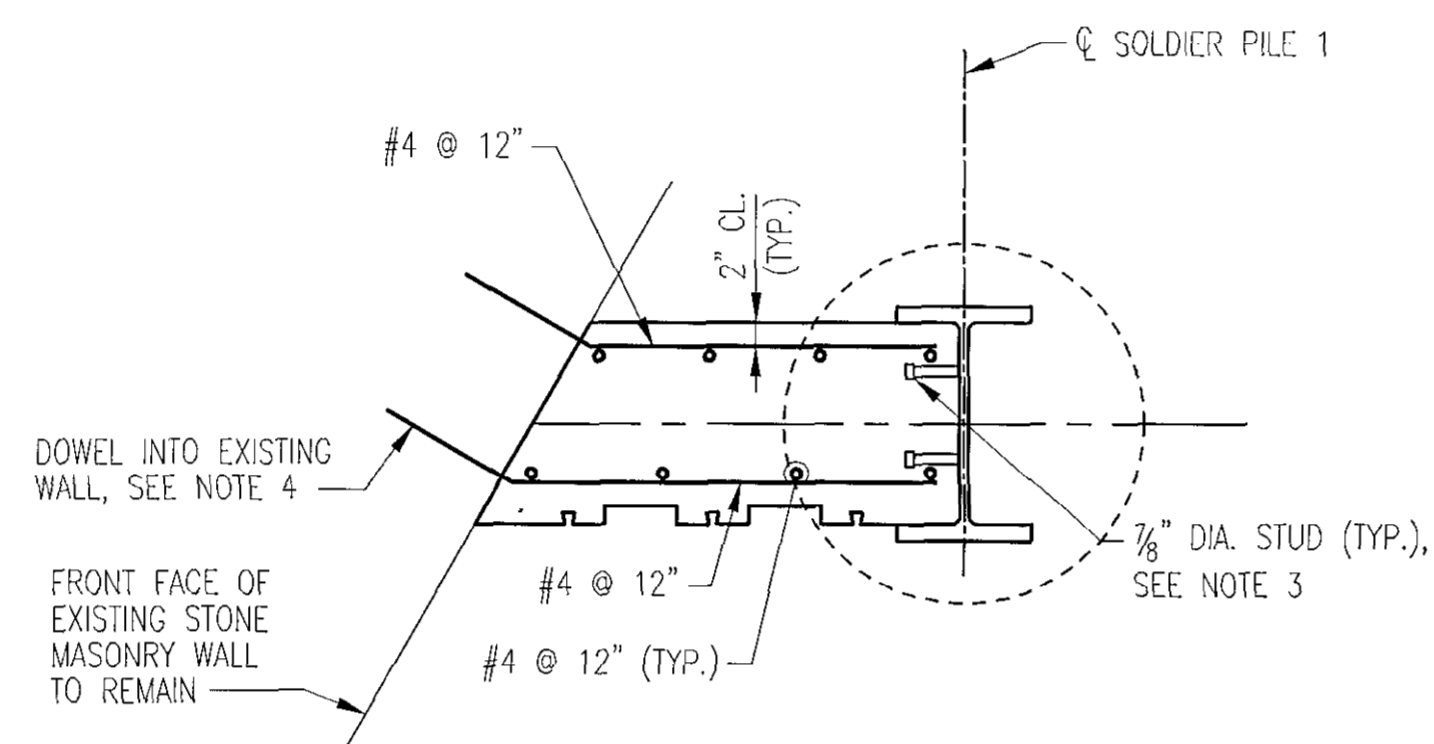
SHEET 20 OF 27



ELEVATION
SCALE: 3/4" = 1'-0"



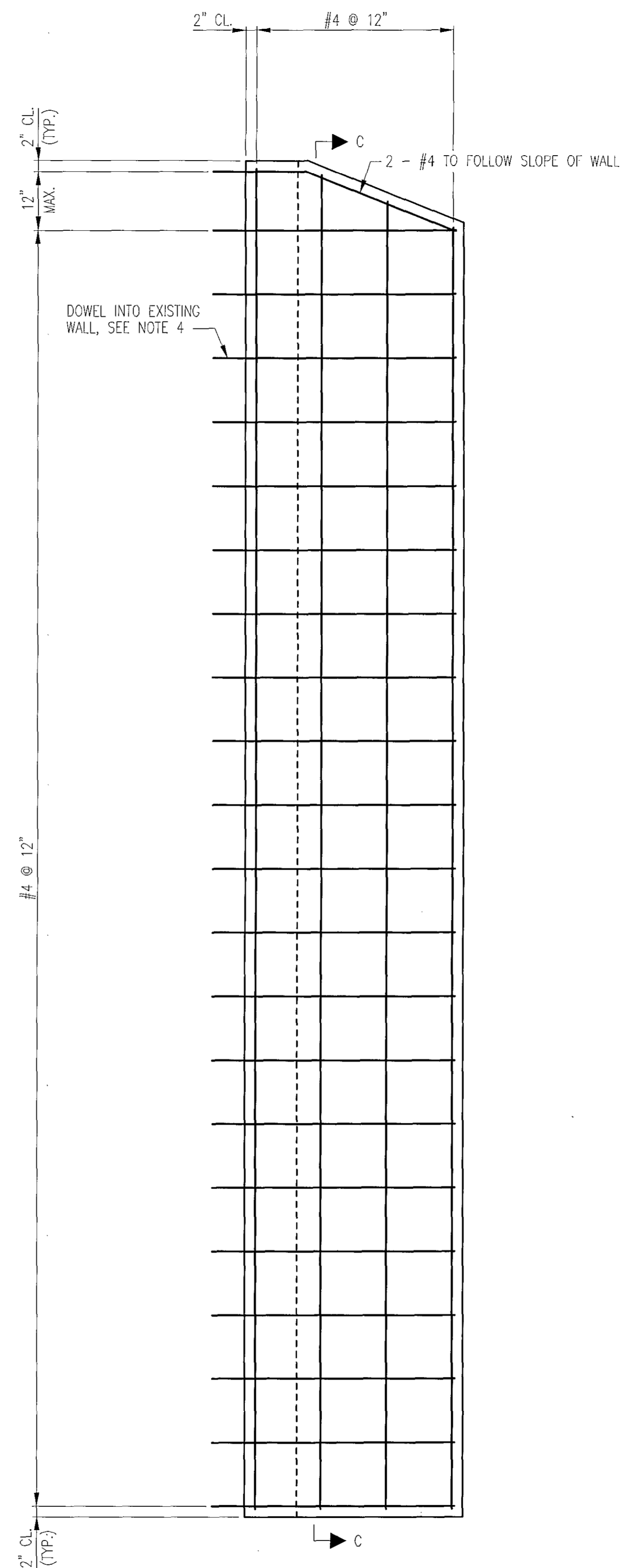
PLAN
SCALE: 3/4" = 1'-0"



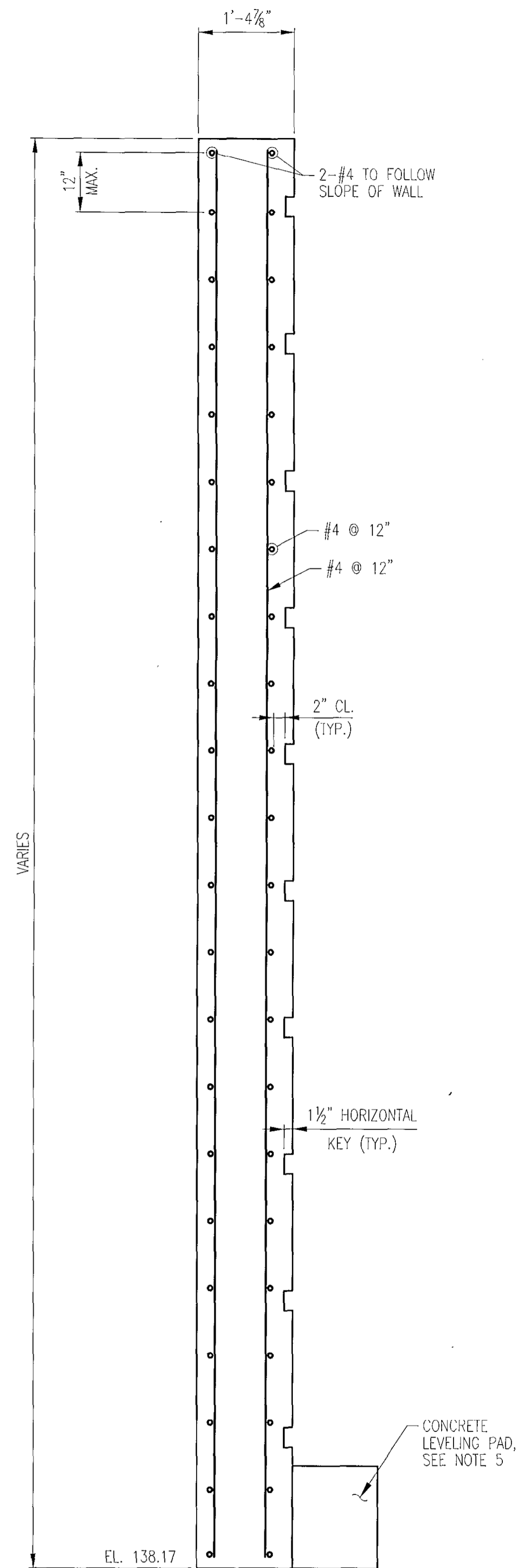
REINFORCEMENT PLAN
SCALE: 3/4" = 1'-0"

NOTES:

- DOVETAIL ANCHOR SLOT SHALL BE HECKMANN BLDG. PRODUCTS, INC. #100 22 GAGE OR APPROVED EQUAL. THE ANCHOR SLOT SHALL BE CAST INTO THE CONCRETE.
- 1/4" DIA. CAPSTONE CONNECTION HOLE SHALL BE SET PERPENDICULAR TO SLOPED TOP OF PANEL. SEE CAPSTONE CONNECTION DETAIL ON SHEET 20 FOR FURTHER DETAILS.
- SEE SHEET 23 FOR STUD DETAILS.
- THE #4 BARS SHALL BE ANCHORED TO THE EXISTING STONE MASONRY WALL WITH AN EPOXY ADHESIVE. DOWEL HOLES SHALL BE LOCATED WITHIN EXISTING STONES AND SHALL NOT BE PERMITTED IN EXISTING MORTAR JOINTS. THE EMBEDMENT PROVIDED SHALL FULLY DEVELOP THE STRENGTH OF THE DOWEL BAR. PRIOR TO ORDERING MATERIALS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL THE MATERIAL TO BE USED. THIS SUBMITTAL SHALL INDICATE THE HOLE DIAMETER AND DEPTH OF EMBEDMENT REQUIRED TO FULLY DEVELOP THE BAR AS DIRECTED BY THE MANUFACTURER. THIS SUBMITTAL SHALL INCLUDE ANY AND ALL REQUIRED CONSTRUCTION PROCEDURES TO PROVIDE PROPER ANCHORAGE OF THE DOWEL BARS. NO ADDITIONAL COMPENSATION OR CONTRACT TIME EXTENSION WILL BE ALLOWED TO THE CONTRACTOR FOR WHICHEVER ANCHORAGE METHOD IS USED.
- SEE SHEET 17 FOR CONCRETE LEVELING PAD DETAILS.



REINFORCEMENT ELEVATION
SCALE: 3/4" = 1'-0"

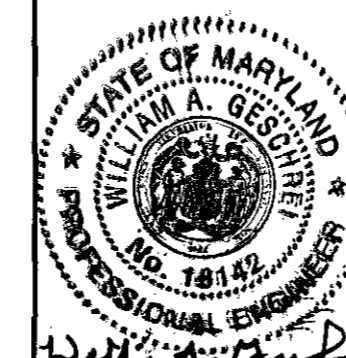


SECTION C-C
SCALE: 3/4" = 1'-0"

"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. 18142, EXPIRATION DATE: 02-04-2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
1/2/14
1/5/14
1-17-14

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231

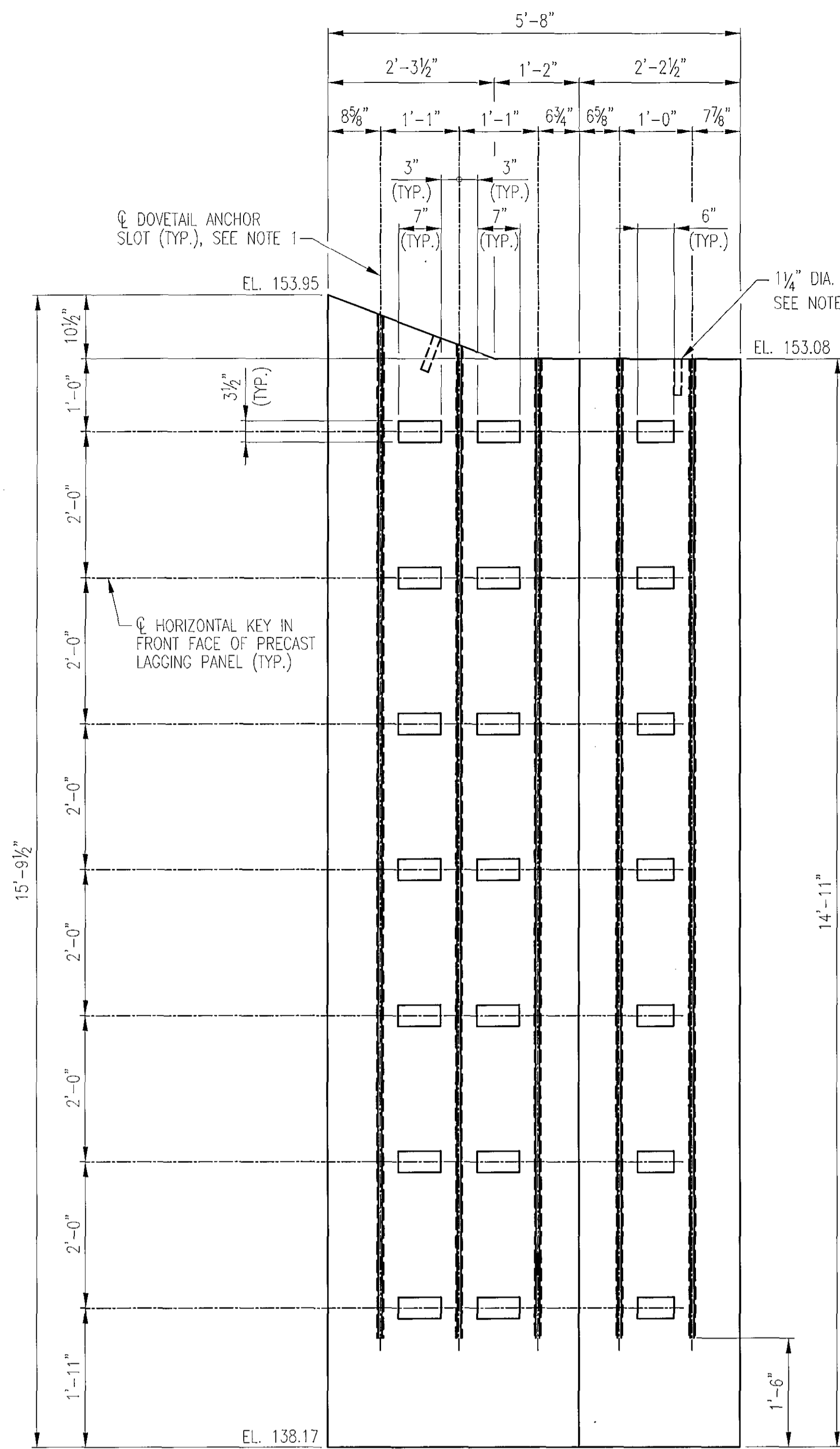


DES:	AC				
DRN:	KPL				
CHK:	WAG				
DATE:	01/13/2014	BY	NO.	DESCRIPTION	DATE

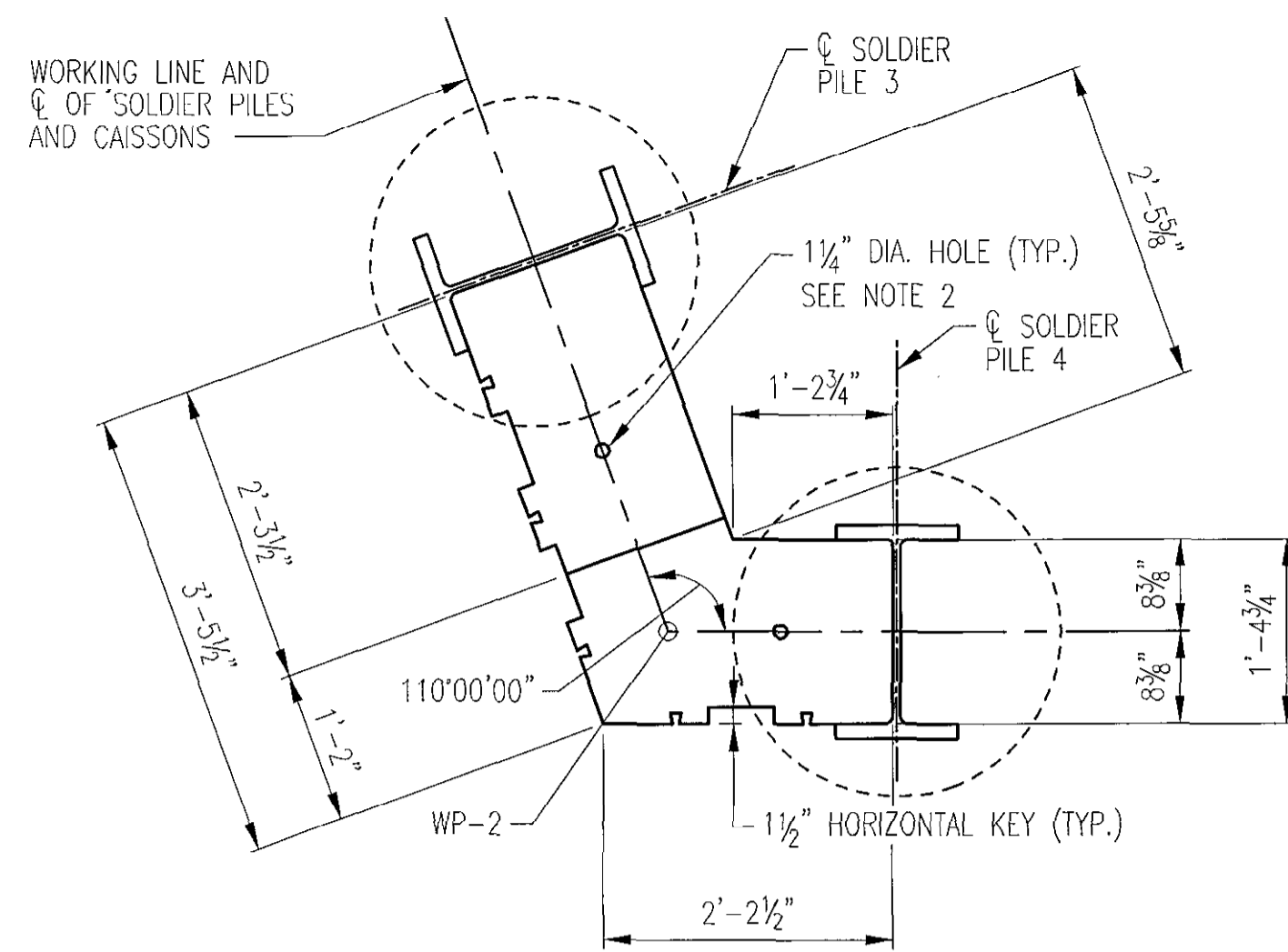
CAST-IN-PLACE LAGGING
DETAILS AT SOLDIER PILE 1
ADC MAP NO. 12
GRID G10

CAPITAL PROJECT NO. B-3853
REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

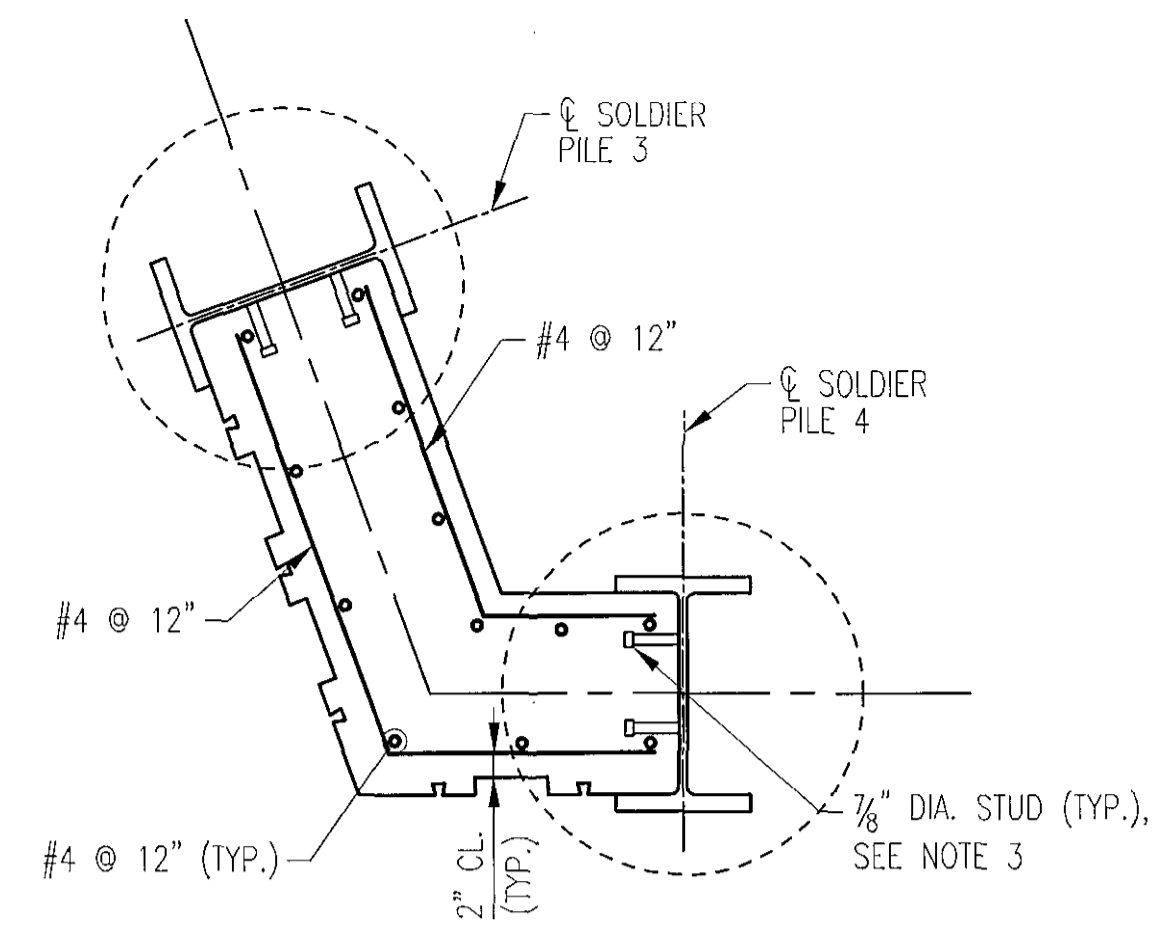
SCALE AS SHOWN
SHEET 21 OF 27



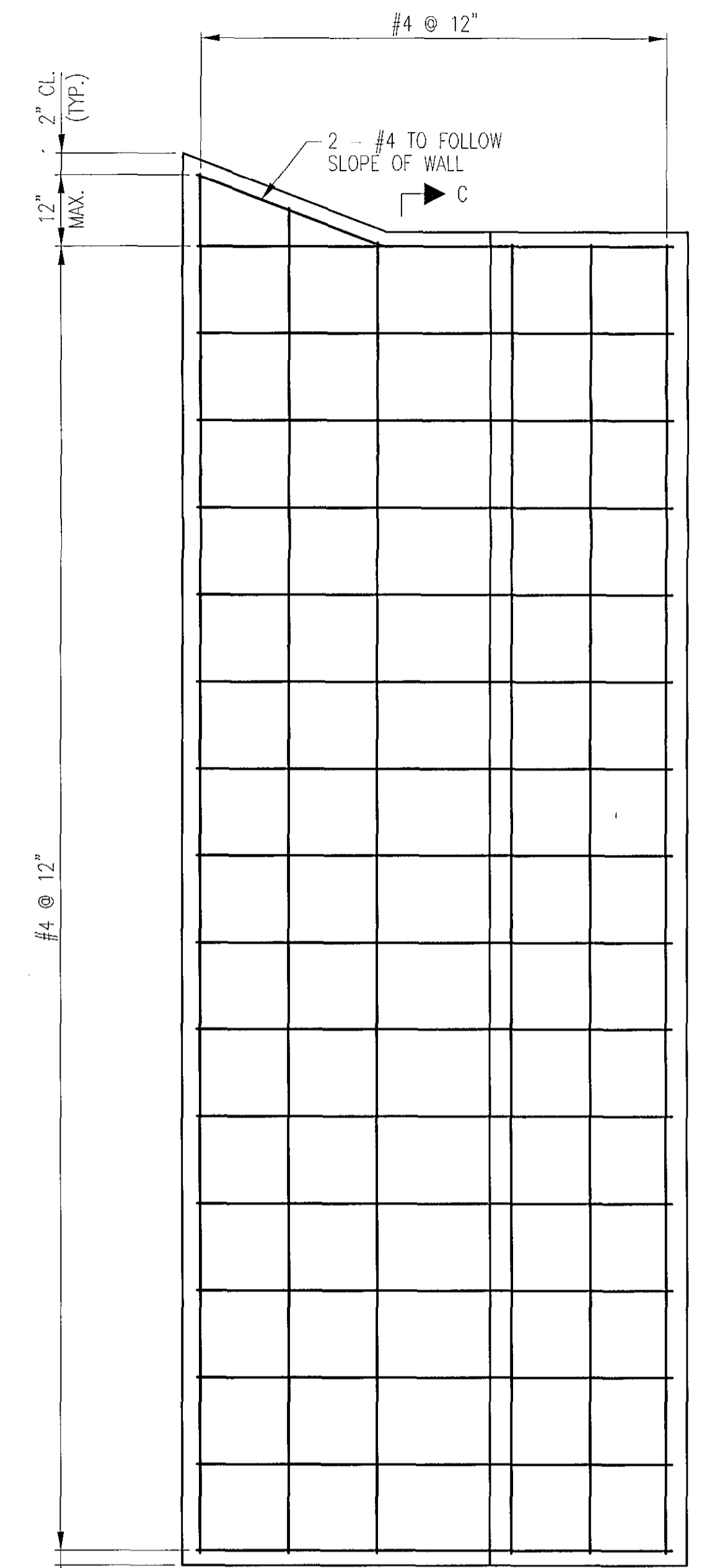
ELEVATION
SCALE: 3/4"=1'-0"



PLAN
SCALE: 3/4"=1'-0"



REINFORCEMENT PLAN
SCALE: 3/4"=1'-0"



REINFORCEMENT ELEVATION
SCALE: 3/4"=1'-0"

NOTES:

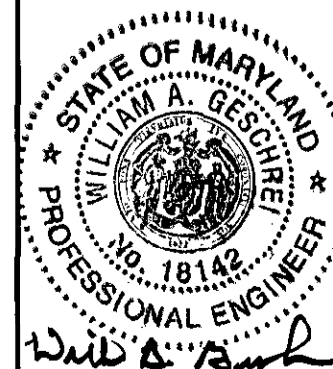
- DOVETAIL ANCHOR SLOT SHALL BE HECKMANN BLDG. PRODUCTS, INC. #100 22 GAGE OR APPROVED EQUAL. THE ANCHOR SLOT SHALL BE CAST INTO THE CONCRETE.
- 1 1/4" DIA. CAPSTONE CONNECTION HOLE SHALL BE SET PERPENDICULAR TO SLOPED TOP OF PANEL. SEE CAPSTONE CONNECTION DETAIL ON SHEET 20 FOR FURTHER DETAILS.
- SEE SHEET 23 FOR STUD DETAILS.
- SEE SHEET 21 FOR SECTION C-C.

"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. 18142, EXPIRATION DATE: 02-04-2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

J. J. ... 1/20/14
DIRECTOR OF PUBLIC WORKS
Thomas R. ... 1/15/14
CHIEF, BUREAU OF ENGINEERING
Steve Shaper 1/16/14
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231



DES:	AC				
DRN:	KPL				
CHK:	WAG				
DATE:	01/13/2014	BY	NO.	DESCRIPTION	DATE

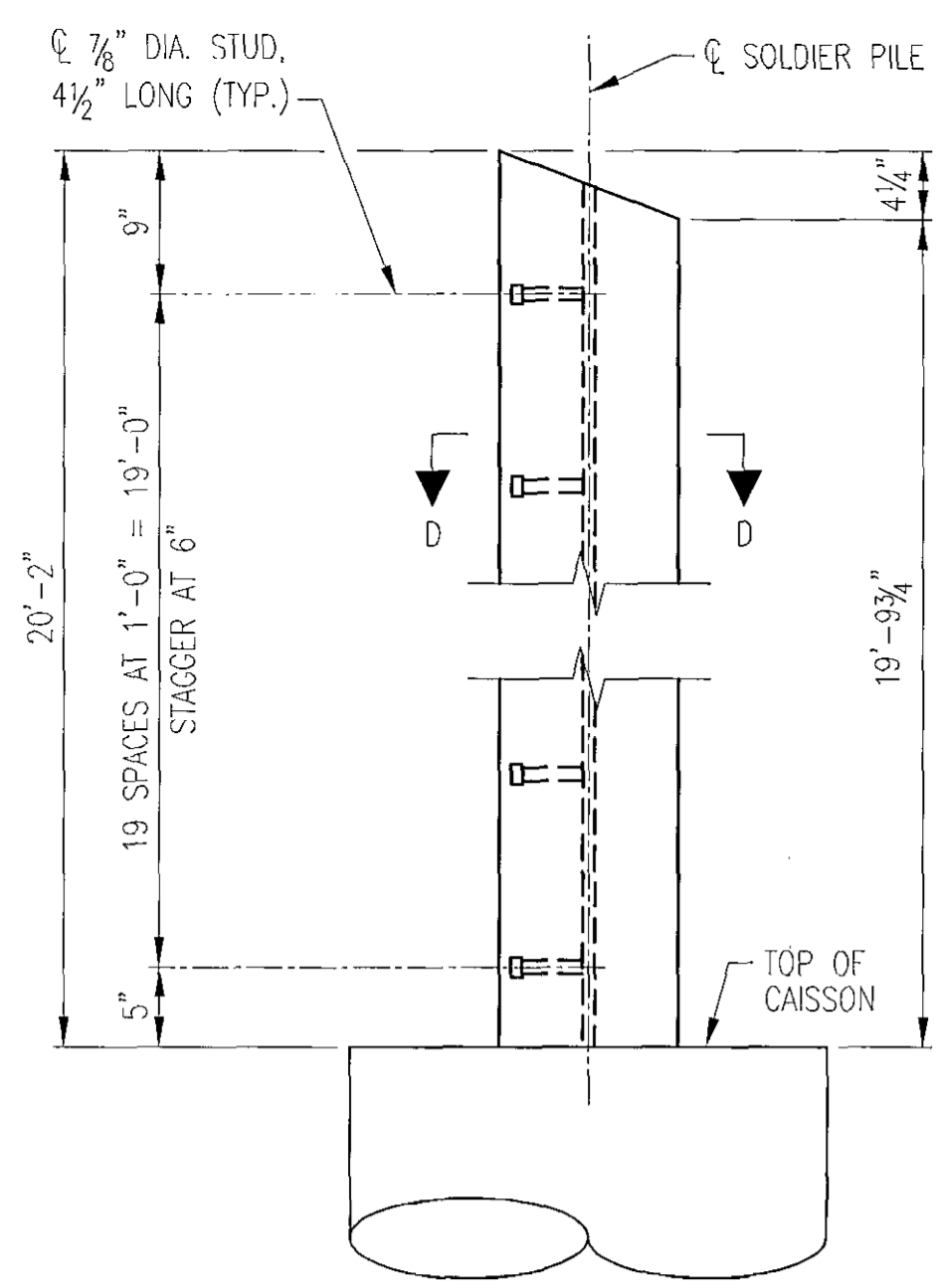
CAST-IN-PLACE LAGGING
DETAILS AT SOLDIER PILES 3-4

ADC MAP NO. 12	GRID G10	1ST ELECTION DISTRICT
----------------	----------	-----------------------

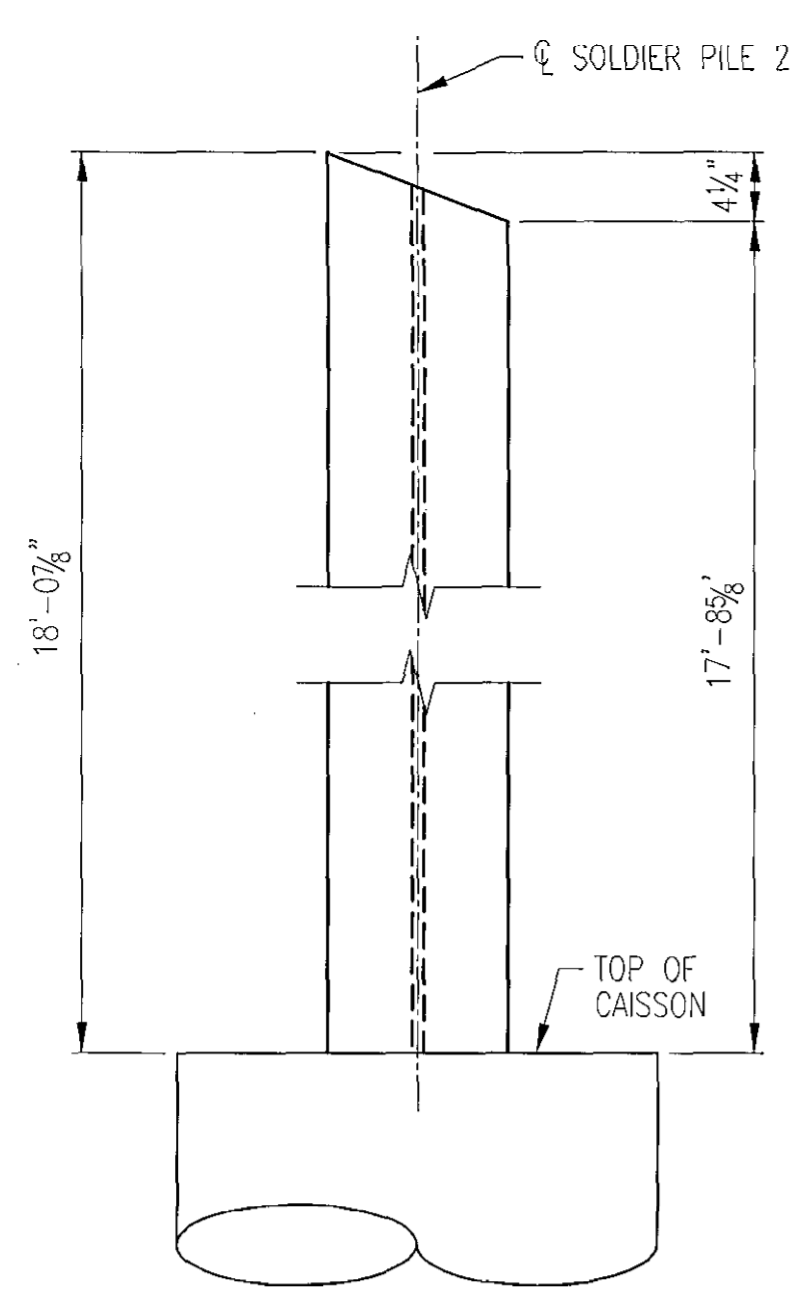
CAPITAL PROJECT NO. B-3853
REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE

SCALE AS SHOWN
SHEET 22 OF 27

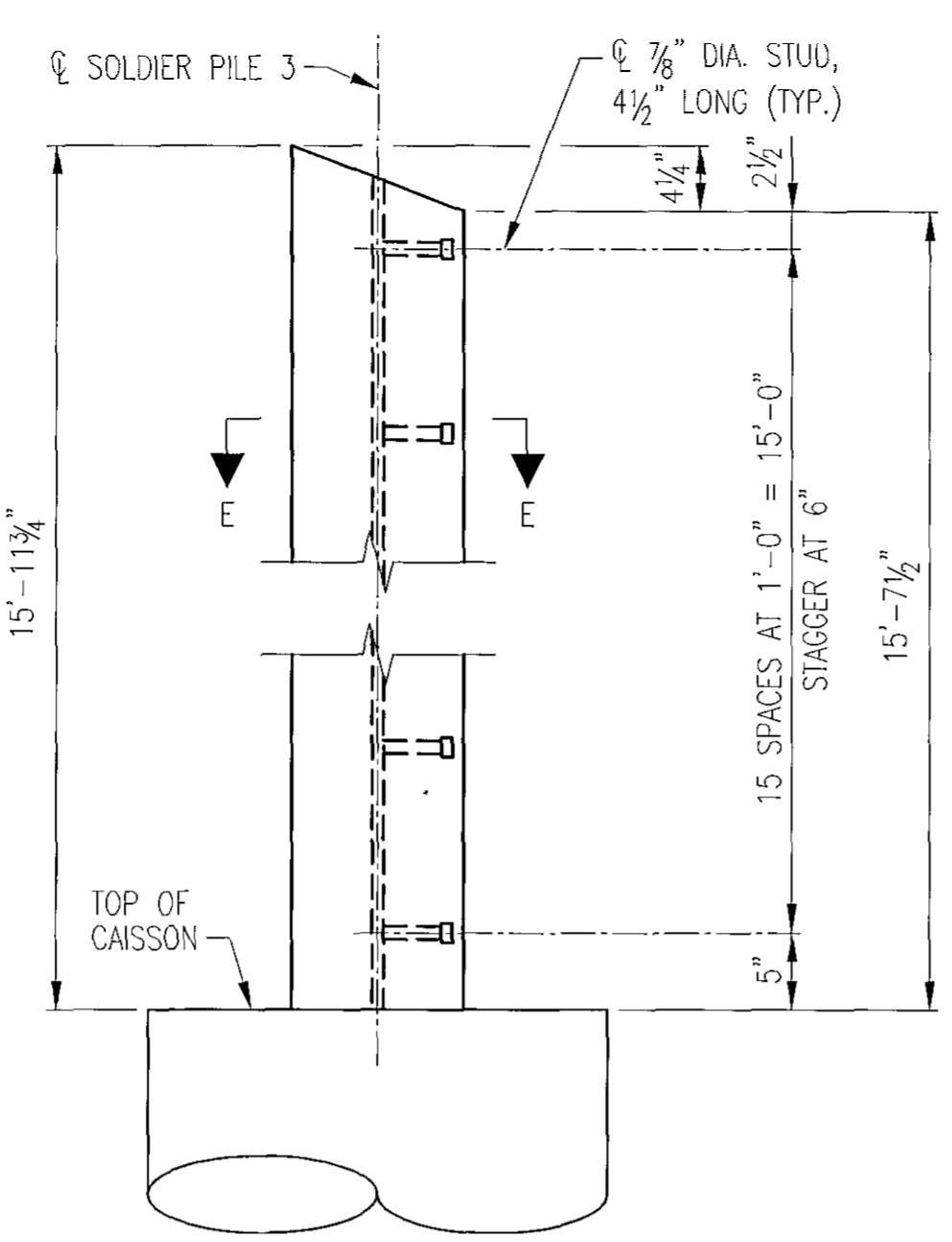
HOWARD COUNTY, MARYLAND



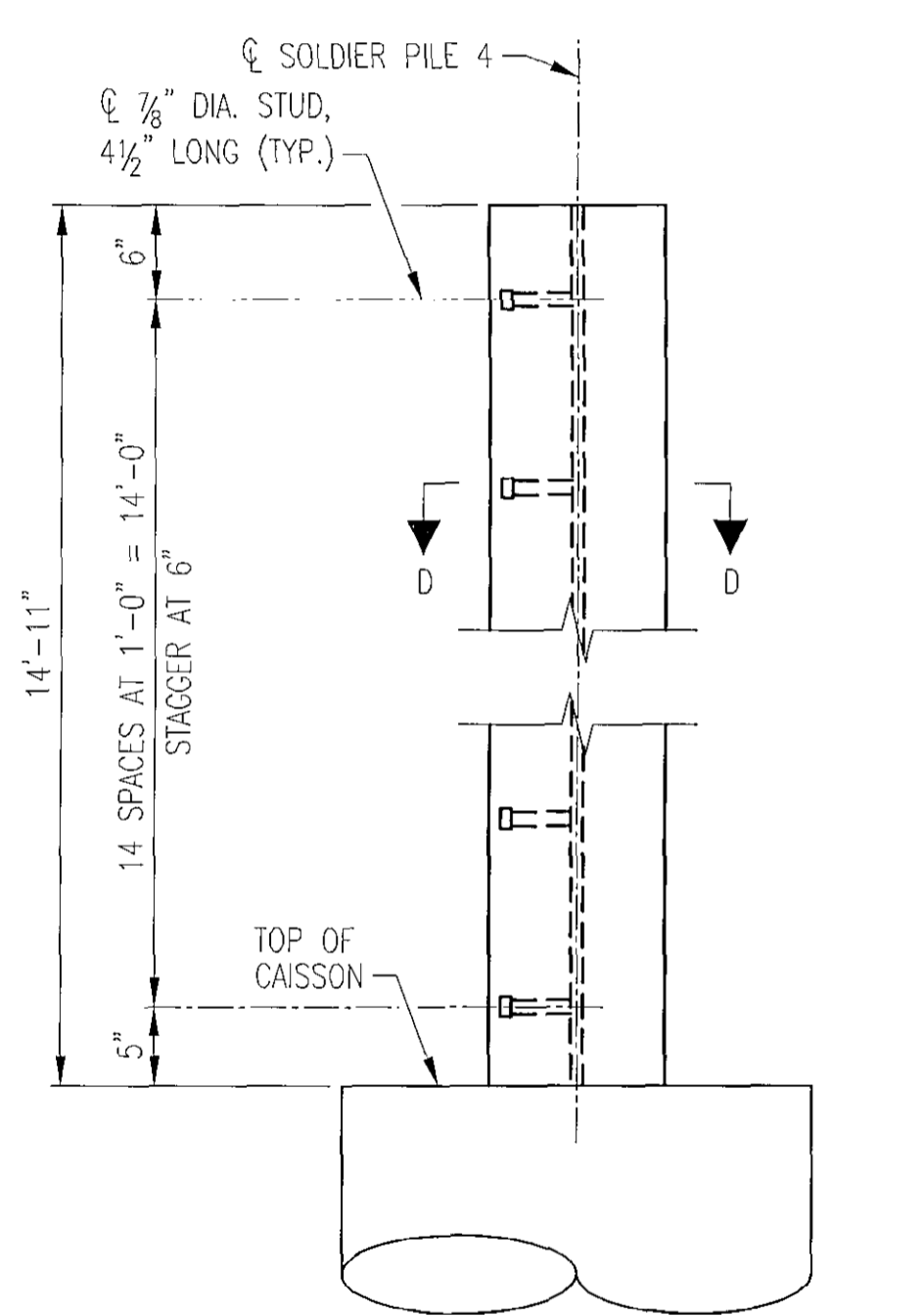
SOLDIER PILE 1 DETAIL
SCALE: 1"=1'-0"



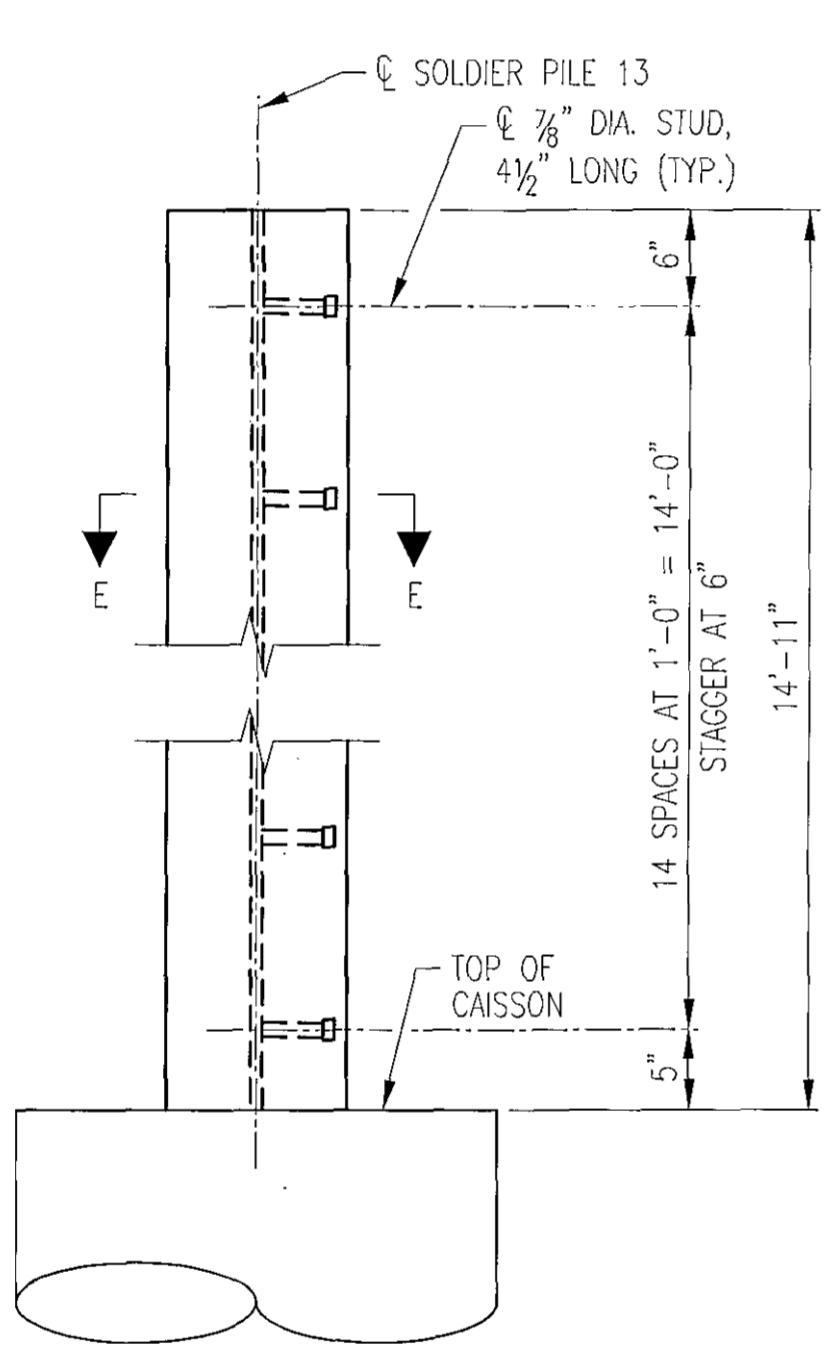
SOLDIER PILE 2 DETAIL
SCALE: 1"=1'-0"



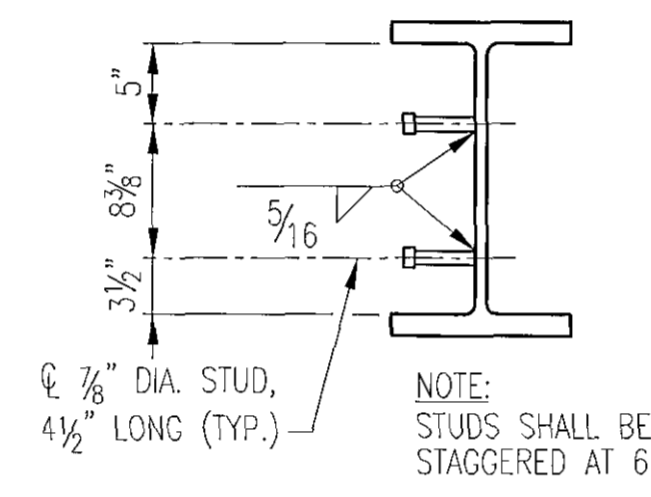
SOLDIER PILE 3 DETAIL
SCALE: 1"=1'-0"



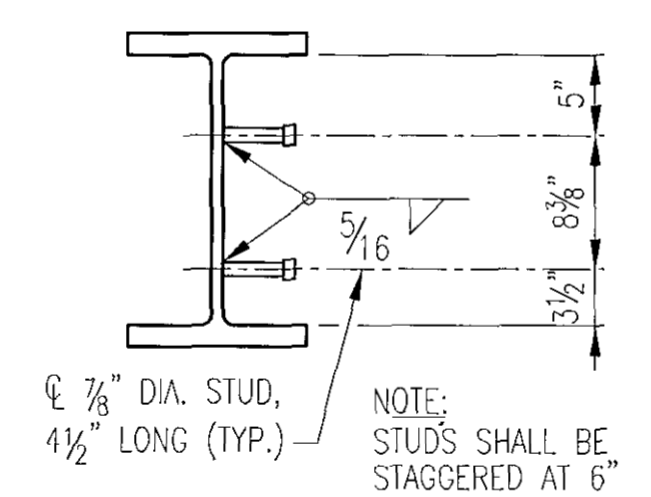
SOLDIER PILE 4 DETAIL
SCALE: 1"=1'-0"



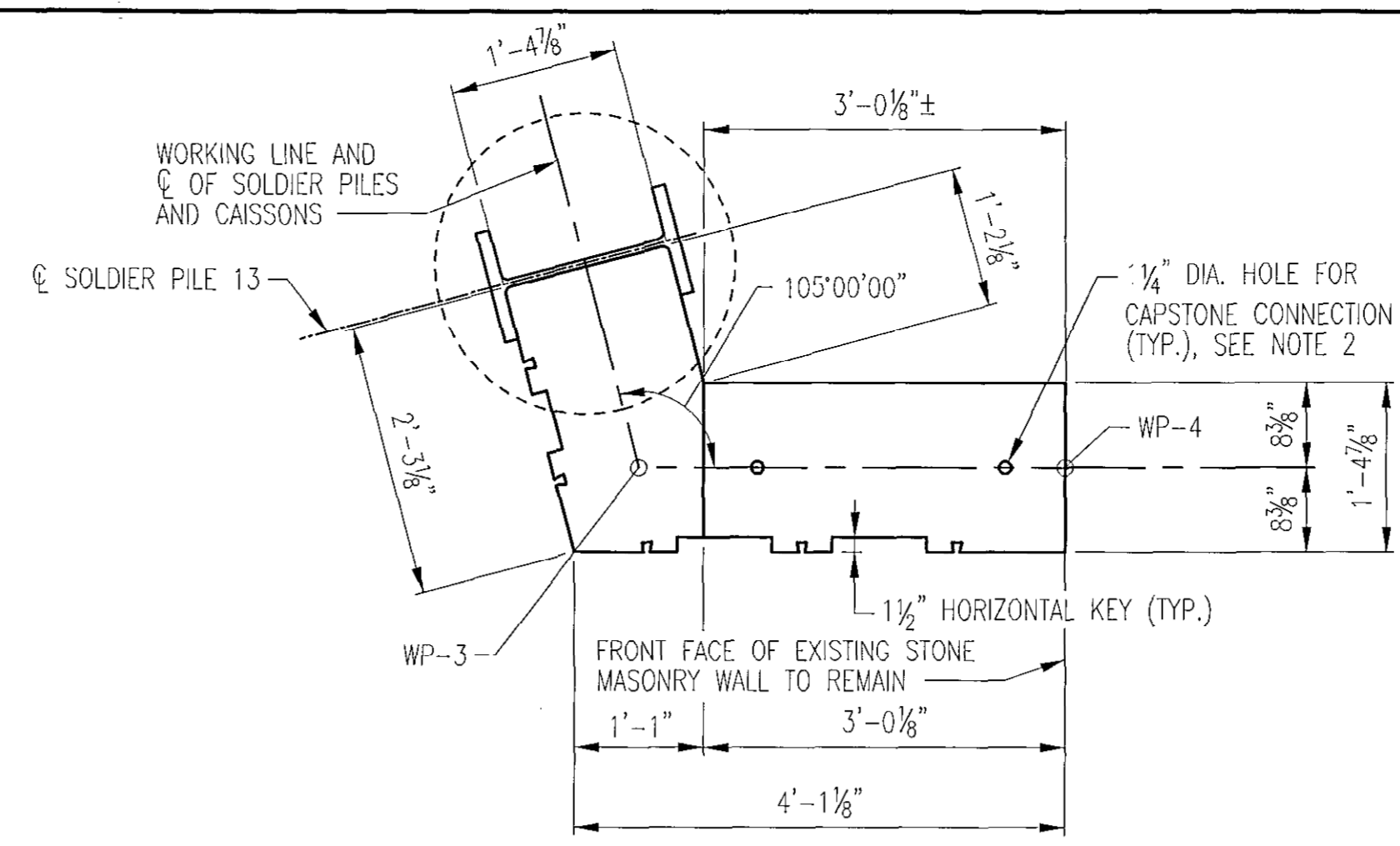
SOLDIER PILE 13 DETAIL
SCALE: 1"=1'-0"



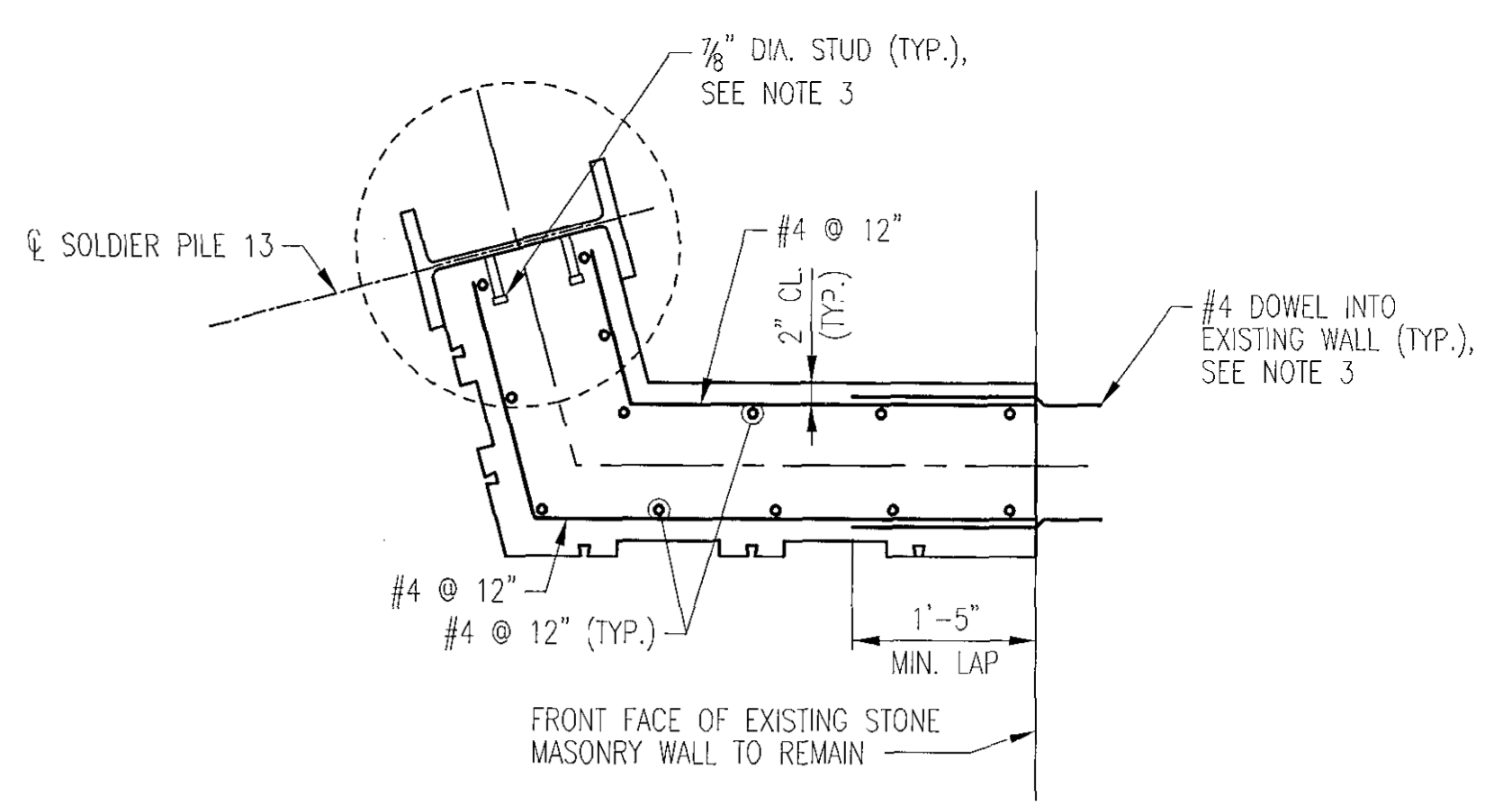
SECTION D-D
SCALE: 1"=1'-0"



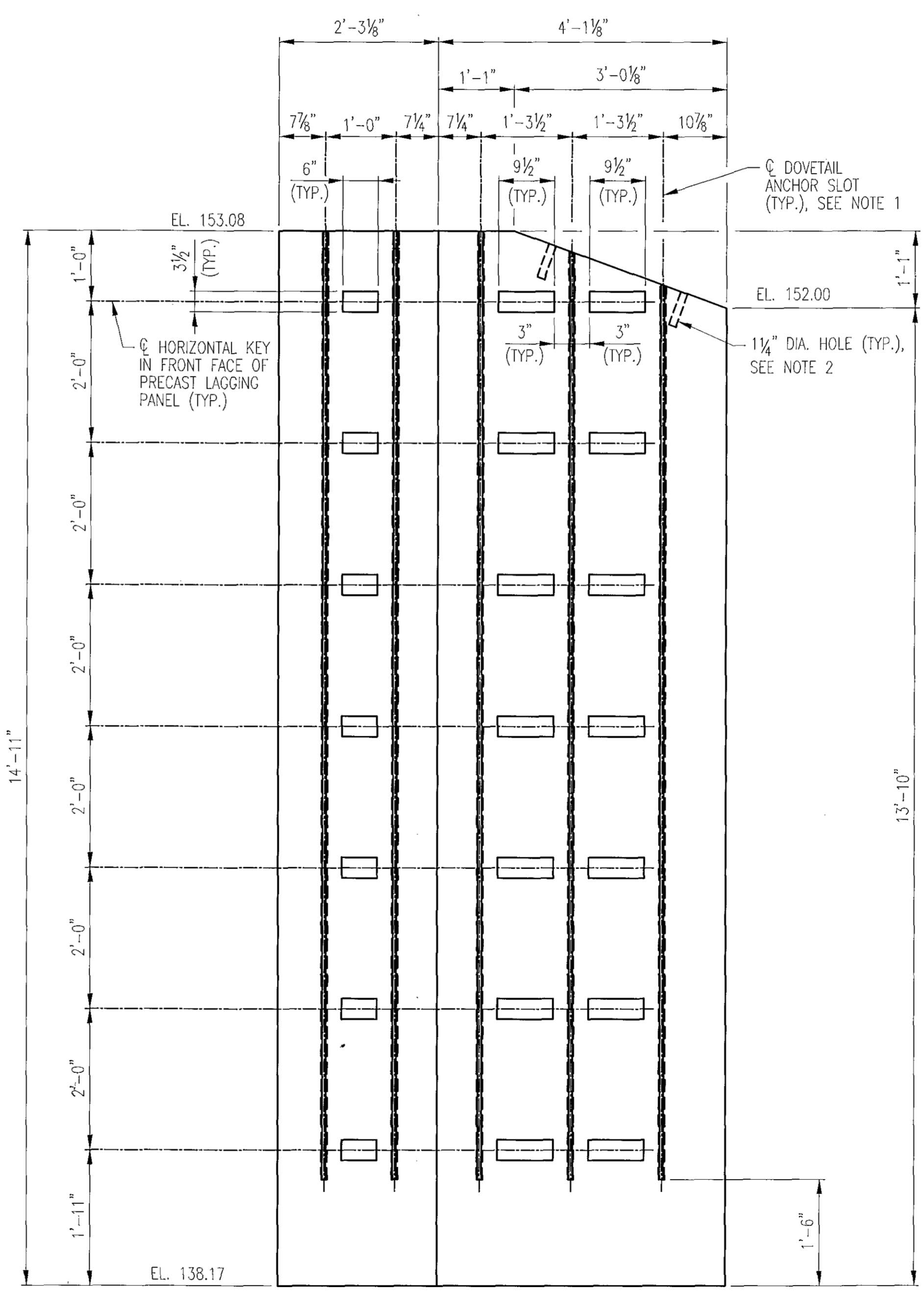
SECTION E-E
SCALE: 1"=1'-0"



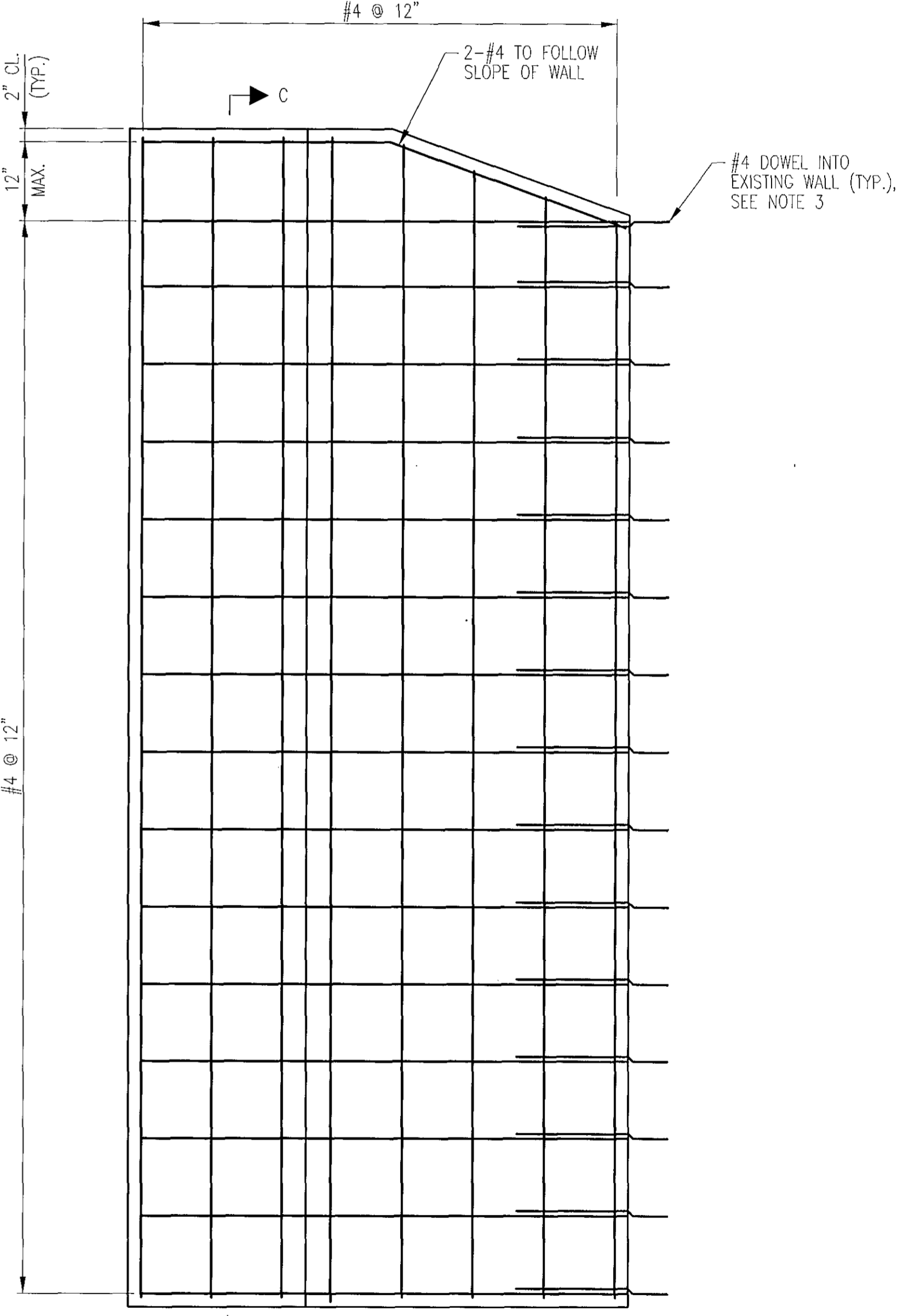
PLAN
SCALE: 3/4"=1'-0"



REINFORCEMENT PLAN
SCALE: 3/4"=1'-0"



ELEVATION
SCALE: 3/4"=1'-0"

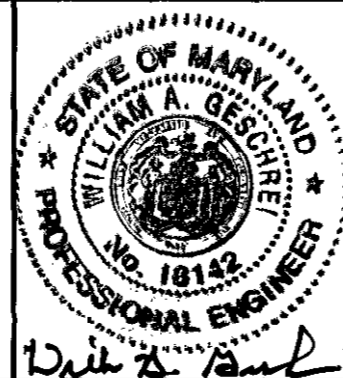


REINFORCEMENT ELEVATION
SCALE: 3/4"=1'-0"

- NOTES:**
- DOVETAIL ANCHOR SLOT SHALL BE HECKMANN BLDG. PRODUCTS, INC. #100 22 GAGE OR APPROVED EQUAL. THE ANCHOR SLOT SHALL BE CAST INTO THE CONCRETE.
 - 1 1/4" DIA. CAPSTONE CONNECTION HOLE SHALL BE SET PERPENDICULAR TO SLOPED TOP OF PANEL. SEE CAPSTONE CONNECTION DETAIL ON SHEET 20 FOR FURTHER DETAILS.
 - THE #4 BARS SHALL BE ANCHORED TO THE EXISTING STONE MASONRY WALL WITH AN EPOXY ADHESIVE. DOWEL HOLES SHALL BE LOCATED WITHIN EXISTING STONES AND SHALL NOT BE PERMITTED IN EXISTING MORTAR JOINTS. THE EMBEDMENT PROVIDED SHALL FULLY DEVELOP THE STRENGTH OF THE DOWEL BAR. PRIOR TO ORDERING MATERIALS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL THE MATERIAL TO BE USED. THIS SUBMITTAL SHALL INDICATE THE HOLE DIAMETER AND DEPTH OF EMBEDMENT REQUIRED TO FULLY DEVELOP THE BAR AS DIRECTED BY THE MANUFACTURER. THIS SUBMITTAL SHALL INCLUDE ANY AND ALL REQUIRED CONSTRUCTION PROCEDURES TO PROVIDE PROPER ANCHORAGE OF THE DOWEL BARS. NO ADDITIONAL COMPENSATION OR CONTRACT TIME EXTENSION WILL BE ALLOWED TO THE CONTRACTOR FOR WHICHEVER ANCHORAGE METHOD IS USED.
 - SEE SHEET 21 FOR SECTION C-C.

"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. 18142, EXPIRATION DATE: 02-04-2015."

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21203



DES:	AC			
DRN:	KPL			
CHK:	WAG			
DATE:	01/13/2014	BY	NO.	DESCRIPTION
				DATE

CAST-IN-PLACE LAGGING DETAILS AT SOLDIER PILE 13 AND MISCELLANEOUS DETAILS

CAPITAL PROJECT NO. B-3853
REPAIRS TO RETAINING WALL ON MULLIGAN'S HILL LANE
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 23 OF 27

1/13/2014 10:53:03 AM C:\DWG\1317603.DWG

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *Janet A. Stalio* 1/13/14
Chief, Bureau of Engineering: *Thomas E. Ruttle* 1/13/14
Chief, Bureau of Highways: *W. P. Wall* 1-17-14
Chief, Division of Transportation and Special Projects: *Steve Slavan* 1/13/14

SOIL BORING LOG

Client: Whitman, Requardt & Associates, LLP Boring # B-1
 Project Name: Wall Repair At Mulligan Hill Job # WRGA H.O.# 31780-003
 Location: Mulligan Hill Lane and Saint Paul Street--Ellicott City Maryland 21043

Date: _____ Driller: Paul Suit Hammer Type: 140 LB Boring Method: HA
 Surf. Elev.: FT Inspector: Jessie Cunningham Sampler Type: SPT Borehole Diameter: 3" In.
 Date Started: 10/10/2011 Date Completed: 10/10/2011 Rig Type: TRIPOD Rock Core Size: NA

ELEV. (FEET)	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV. (FEET)	SPT No.	SPT Type	Blows/ft	REMARKS	CORING & SAMPLING NOTES
0.00							1) No water encountered.
2.0	Brown, damp, medium dense, medium to coarse, sand, with trace of mica and brick fragments, FILL	1	SPT	8-9-5	8"		
	Brown and white, dry, medium dense to very dense, medium to coarse, sand, with trace of mica, DECOMPOSED ROCK	2	SPT	8-9-9	15"		2) Hand auger refusal at 15.16 feet.
		3	SPT	8-14-18	13"		3) Boring grouted from 0.0 to 15.16 feet with portland cement.
		4	SPT	9-19-17	11"		
		5	SPT	7-14-18	10"		
15.16	Bottom of test boring 15.16 feet.	6	SPT	5 1/2"	2"		
20							
25							

BORING METHOD: HSA - HOLLOW STEM AUGERS
 SAMPLER TYPE: SPT - STANDARD PENETRATION TEST SPLIT SPOON
 GROUNDWATER DEPTH: AT COMPLETION _____ FT. AFTER 24 HRS. _____ FT. CAVED AT _____ FT.

Geomatrix Drilling Inc. 410-242-9220 Baltimore MD

SOIL BORING LOG

Client: Whitman, Requardt & Associates, LLP Boring # B-1A
 Project Name: Wall Repair At Mulligan Hill Job # WRGA H.O.# 31780-003
 Location: Mulligan Hill Lane and Saint Paul Street--Ellicott City Maryland 21043

Date: _____ Driller: Paul Suit Hammer Type: 140 LB Safety Boring Method: HSA
 Surf. Elev.: FT Inspector: Jessie Cunningham Sampler Type: SPT Borehole Diameter: 3" In.
 Date Started: 10/10/2011 Date Completed: 10/10/2011 Rig Type: CME-45 Rock Core Size: NA

ELEV. (FEET)	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV. (FEET)	SPT No.	SPT Type	Blows/ft	REMARKS	CORING & SAMPLING NOTES
0.00							1) No water encountered.
7.0	Tan and white, dry, loose, medium to coarse, sand, with trace of mica, POSSIBLE FILL	1	SPT	3-3-4	14"		
		2	SPT	4-3-2	8"		2) Hard to extremely hard augering from 15.0 to 25.0 feet.
		3	SPT	2-3-3	10"		3) Boring grouted with portland cement from 0.0 to 17.5 feet at completion.
	Brown, moist, very loose, medium to coarse, sand, with a little clay and trace of mica, POSSIBLE FILL	4	SPT	2-2-2	14"		
	Brown and white, dry, medium dense to very dense, medium to coarse, sand, with trace of mica, DECOMPOSED ROCK	5	SPT	8-0-10	16"		
		6	SPT	19-12-20	18"		
		7	SPT	5 1/5"	5"		
25.16	Bottom of test boring 25.16 feet.	8	SPT	5 1/2"	2"		
30							

BORING METHOD: HSA - HOLLOW STEM AUGERS
 SAMPLER TYPE: SPT - STANDARD PENETRATION TEST SPLIT SPOON
 GROUNDWATER DEPTH: AT COMPLETION _____ FT. AFTER 24 HRS. _____ FT. CAVED AT _____ FT.

Geomatrix Drilling Inc. 410-242-9220 Baltimore MD

SOIL BORING LOG

Client: Whitman, Requardt & Associates, LLP Boring # B-2
 Project Name: Wall Repair At Mulligan Hill Job # WRGA H.O.# 31780-003
 Location: Mulligan Hill Lane and Saint Paul Street--Ellicott City Maryland 21043

Date: _____ Driller: Paul Suit Hammer Type: 140 LB Safety Boring Method: HSA
 Surf. Elev.: FT Inspector: Jessie Cunningham Sampler Type: SPT Borehole Diameter: 3" In.
 Date Started: 10/10/2011 Date Completed: 10/10/2011 Rig Type: CME-45 Rock Core Size: NA

ELEV. (FEET)	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV. (FEET)	SPT No.	SPT Type	Blows/ft	REMARKS	CORING & SAMPLING NOTES
0.00							1) No water encountered.
2.0	Gray and black, dry, loose, medium to coarse, sand, with trace of mica and gravel, FILL	1	SPT	3-5-5	11"		
	Tan and white, dry, loose to very loose, medium to coarse, sand, with trace of mica, POSSIBLE FILL	2	SPT	4-4-4	13"		2) Hard to extremely hard augering from 17.0 to 20.0 feet.
		3	SPT	2-2-2	14"		3) 2" Monitoring well installed from 0.0 to 18.0 feet at completion.
	Brown, moist, loose to medium dense, medium to coarse, sand, with trace of mica and a little clay, POSSIBLE FILL	4	SPT	3-2-2	16"		
		5	SPT	4-5-7	16"		
	Brown and white, dry, medium dense to very dense, medium to coarse, sand, with trace of mica, DECOMPOSED ROCK	6	SPT	4-0-10	18"		
20.91	Bottom of test boring 20.91 feet.	7	SPT	33-5 1/5"	11"		
25							

BORING METHOD: HSA - HOLLOW STEM AUGERS
 SAMPLER TYPE: SPT - STANDARD PENETRATION TEST SPLIT SPOON
 GROUNDWATER DEPTH: AT COMPLETION _____ FT. AFTER 24 HRS. _____ FT. CAVED AT _____ FT.

Geomatrix Drilling Inc. 410-242-9220 Baltimore MD

WELL CONSTRUCTION LOG

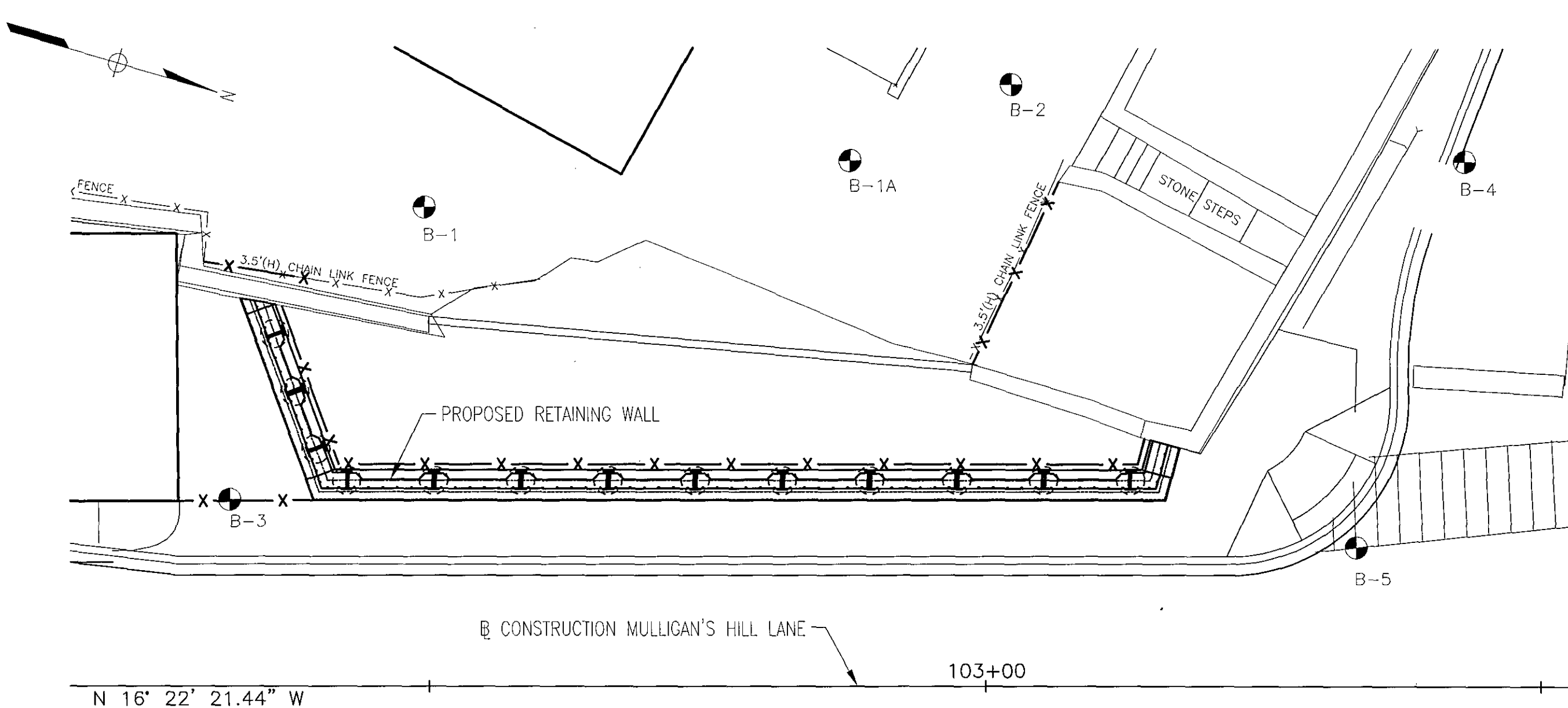
Client: Whitman, Requardt & Associates, LLP Well # B-2
 Project Name: Wall Repair At Mulligan Hill Job # WRGA H.O.# 31780-003
 Location: Mulligan Hill Lane and Saint Paul Street--Ellicott City Maryland 21043

Date: _____ Driller: Paul Suit Drilling Method: HSA Well Diameter: 2" In.
 Surf. Elev.: FT Inspector: Jessie Cunningham Casing Diameter: 2" In. Hole Diameter: 2" In.
 Date Started: 10/10/2011 Date Completed: 10/10/2011 Mud Type: NA Rock Core Dia: NA

AS BUILT WELL DIAGRAM

WELL TYPING: HSA - HOLLOW STEM AUGERS
 OC - DRIVING CASING
 RR - MET ROTARY
 AR - AIR ROTARY/AIR HAMMER
 CT - CABLE TOOL
 MR - MET ROTARY

BORINGS AND DRIVE TESTS
 SCALE: NO SCALE



BORING NO.	STATION	OFFSET	ESTIMATED BOTTOM OF CAISSON ELEV.	COORDINATE	
				NORTH	EAST
B-1	102+49.45	43.08 LT.	118.00	582793.4396	1370348.6770
B-1A	102+87.68	47.26 LT.	121.00	582828.9483	1370333.8818
B-2	103+02.11	54.09 LT.	121.00	582840.8610	1370323.2723

- NOTES:**
- THE BORINGS AND DRIVE TESTS WERE TAKEN IN OCTOBER 2011 BY GEOMATRIX DRILLING INC.
 - BORINGS AND SAMPLINGS CONFORM TO AASHTO DESIGNATION T-206.
 - SOIL HAS BEEN CLASSIFIED VISUALLY BY THE DRILLER.

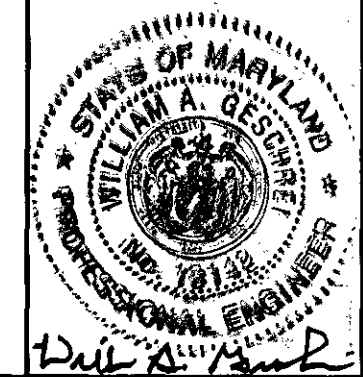
"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18142, EXPIRATION DATE: 02-04-2015."

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

James E. Butcher 1/15/14
 CHIEF, BUREAU OF ENGINEERING

Steve Shuman 1/16/14
 CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS

WR&A
 WHITMAN, REQUARDT & ASSOCIATES, LLP
 801 South Caroline Street, Baltimore, Maryland 21231



DES: SEB							
DRN: SEB							
CHK: WAG							
DATE: 01/13/2014							
BY NO.		DESCRIPTION	DATE	ADC MAP NO. 12	GRID G10	1ST ELECTION DISTRICT	HOWARD COUNTY, MARYLAND

CAPITAL PROJECT NO. B-3853
 REPAIRS TO RETAINING WALL
 ON MULLIGAN'S HILL LANE

SCALE AS SHOWN
 SHEET 24 OF 27

SOIL BORING LOG

Client: **Whitman, Requardt & Associates, LLP.** Boring # **B-3**
 Project Name: **Wall Repair At Mulligan Hill** Job # **WR&A W.O.# 31760-003**
 Location: **Mulligan Hill Lane and Saint Paul Street--Ellicott City, Maryland 21043**

Datum: **Chiller - Dane Logans** Hammer Type: **140 LB Safety** Boring Method: **HSA**
 Surf. Elev.: **Fl.** Inspector: **Mr. Jeff Bedford** Sampler Type: **SPT** Borehole Diameter: **8" In.**
 Date Started: **09/19/2011** Date Completed: **09/19/2011** Rig Type: **Mobil-B47** Rock Core Size: **NA**

ELEV. (FT.)	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV. (FT.)	SPT No.	Type	Blows/ft.	Rec.	PID (ppm)	BORING & SAMPLING NOTES
0.00	8" Asphalt, over top of 34" silty sand and coal cinders with trace of gravel, base, PAVEMENT.		1	SPT	3-8-12	10"		1) No water encountered.
3.5	Tan and white to gray and white, dry, very dense, medium to coarse sand with trace of mica, DECOMPOSED ROCK		2	SPT	17-18-25	10"		2) Boring offset 24.0 feet east of wall.
			3	SPT	27-51/3"	5"		
			4	SPT	30-54/3"	9"		3) Very hard to extremely hard augering.
			5	SPT	32-51/4"	7"		
19.75	Bottom of test boring 19.75 feet.		6	SPT	51/5"	5"		4) Boring grouted with portland cement at completion from 0.0 to 18.25 feet.
			7	SPT	82-51/3"	9"		

Geomatrix Drilling Inc.
410-242-9220
Baltimore, MD

SPT - Standard Penetration Test: Driving 2 Inch OD Sampler 10 feet with 140 pound Hammer Falling 30 inches; Blow Count Recorded at 6 inch Intervals
 PID - Photoionization Detector (parts per million)

SOIL BORING LOG

Client: **Whitman, Requardt & Associates, LLP.** Boring # **B-4**
 Project Name: **Wall Repair At Mulligan Hill** Job # **WR&A W.O.# 31760-003**
 Location: **Mulligan Hill Lane and Saint Paul Street--Ellicott City, Maryland 21043**

Datum: **Chiller - Dane Logans** Hammer Type: **140 LB Safety** Boring Method: **HSA**
 Surf. Elev.: **Fl.** Inspector: **Mr. Jeff Bedford** Sampler Type: **SPT** Borehole Diameter: **8" In.**
 Date Started: **09/19/2011** Date Completed: **09/19/2011** Rig Type: **Mobil-B47** Rock Core Size: **NA**

ELEV. (FT.)	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV. (FT.)	SPT No.	Type	Blows/ft.	Rec.	PID (ppm)	BORING & SAMPLING NOTES
0.00	8" Asphalt, over top of 4" silty sand and coal cinders with trace of gravel, base, PAVEMENT.		1	SPT	5-9-12	15"		1) No water encountered.
1.0	Tan and white to gray and white, dry, medium dense to very dense, medium to coarse sand, with trace of mica, DECOMPOSED ROCK		2	SPT	7-8-12	14"		2) Hard to extremely hard augering from 5.0 to 13.5 feet.
			3	SPT	51/5"	5"		
			4	SPT	49-51/3"	9"		
			5	SPT	9-42-51/3"	12"		
13.5	Bottom of test boring 13.5 feet.		6	SPT	51/0"	0"		

Geomatrix Drilling Inc.
410-242-9220
Baltimore, MD

SPT - Standard Penetration Test: Driving 2 Inch OD Sampler 10 feet with 140 pound Hammer Falling 30 inches; Blow Count Recorded at 6 inch Intervals
 PID - Photoionization Detector (parts per million)

SOIL BORING LOG

Client: **Whitman, Requardt & Associates, LLP.** Boring # **B-5**
 Project Name: **Wall Repair At Mulligan Hill** Job # **WR&A W.O.# 31760-003**
 Location: **Mulligan Hill Lane and Saint Paul Street--Ellicott City, Maryland 21043**

Datum: **Chiller - Dane Logans** Hammer Type: **140 LB Safety** Boring Method: **HSA**
 Surf. Elev.: **Fl.** Inspector: **Mr. Jeff Bedford** Sampler Type: **SPT** Borehole Diameter: **8" In.**
 Date Started: **09/19/2011** Date Completed: **09/19/2011** Rig Type: **Mobil-B47** Rock Core Size: **NA**

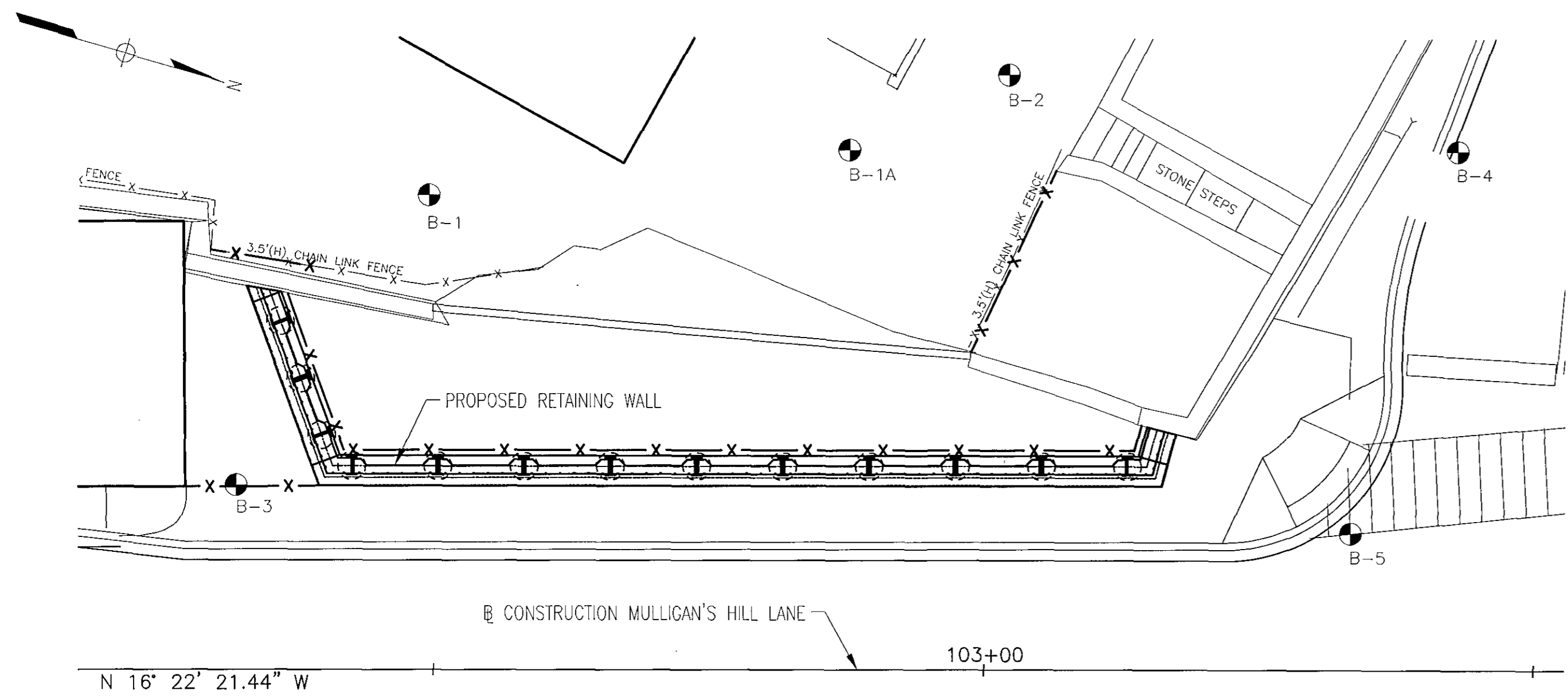
ELEV. (FT.)	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV. (FT.)	SPT No.	Type	Blows/ft.	Rec.	PID (ppm)	BORING & SAMPLING NOTES
0.00	8" Asphalt, over top of 4" silty sand and coal cinders with trace of gravel, base, PAVEMENT.		1	SPT	11-17-24	15"		1) No water encountered.
1.0	Tan and white to gray and white, dry, dense to very dense, medium to coarse sand, with trace of mica, DECOMPOSED ROCK		2	SPT	18-27-27	14"		2) Hard to extremely hard augering from 5.0 to 18.5 feet.
			3	SPT	15-28-51/0"	13"		3) Boring grouted with portland cement from 0.0 to 6.33 feet at completion.
			4	SPT	61/3"	3"		
			5	SPT	61/5"	3"		
18.66	Bottom of test boring 18.66 feet.		6	SPT	51/2"	1"		
			7	SPT	100/2"	2"		

Geomatrix Drilling Inc.
410-242-9220
Baltimore, MD

SPT - Standard Penetration Test: Driving 2 Inch OD Sampler 10 feet with 140 pound Hammer Falling 30 inches; Blow Count Recorded at 6 inch Intervals
 PID - Photoionization Detector (parts per million)

BORINGS AND DRIVE TESTS

SCALE: NO SCALE



BORINGS AND DRIVE TESTS LOCATION PLAN

SCALE: 1" = 10'-0"

BORING NO.	STATION	OFFSET	ESTIMATED BOTTOM OF CAISSON ELEV.	COORDINATE	
				NORTH	EAST
B-3	102+32.01	16.82 LT.	118.00	582784.1178	1370378.7842
B-4	103+42.97	47.20 LT.	121.00	582882.0115	1370318.3590
B-5	103+33.34	12.49 LT.	121.00	582882.5499	1370354.3728

NOTES:

- THE BORINGS AND DRIVE TESTS WERE TAKEN IN OCTOBER 2011 BY GEOMATRIX DRILLING INC.
- BORINGS AND SAMPLINGS CONFORM TO AASHTO DESIGNATION T-206.
- SOIL HAS BEEN CLASSIFIED VISUALLY BY THE DRILLER.

"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. 18142, EXPIRATION DATE: 02-04-2015."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

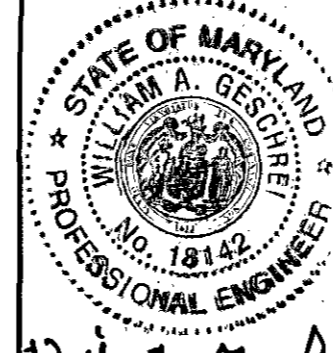
La. J. Jan 1/2/12
DIRECTOR OF PUBLIC WORKS DATE

Thomas E. Butler 1/15/14
CHIEF, BUREAU OF ENGINEERING DATE

W. J. Cantel 1-17-14
CHIEF, BUREAU OF HIGHWAYS DATE

Steve Shavan 1/16/14
CHIEF, DIVISION OF TRANSPORTATION AND SPECIAL PROJECTS DATE

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21231



DES: SEB					
DRN: SEB					
CHK: WAG					
DATE: 01/13/2014	BY NO.	DESCRIPTION	DATE	ADC MAP NO. 12	GRID G10

CAPITAL PROJECT NO. B-3853

REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE

1ST ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 25 OF 27

BAR SIZE	LOCATION CATEGORY		
	A	B	C
#4	2'-5"	1'-9"	1'-5"
#5	3'-0"	2'-2"	1'-9"
#6	3'-7"	2'-7"	2'-1"
#7	4'-4"	3'-1"	2'-6"
#8	5'-8"	4'-1"	3'-3"
#9	7'-2"	5'-1"	4'-1"
#10	9'-1"	6'-6"	5'-2"
#11	11'-4"	7'-11"	6'-4"

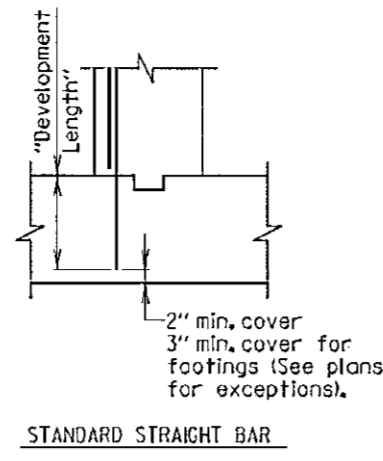
LOCATION CATEGORY

- A - Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in footings, pier caps, etc.
- B - All bars not in Category A spaced less than 6" apart.
- C - All bars not in Category A spaced 6" or more apart.

Notes

- When bar top is not specified on the Plans, the above dimensions shall be used.
- These bar tops do not apply when bar is in lightweight concrete. Greater lengths are required for this material.
- These bar tops only apply where the General Notes indicate Reinforcing Steel Design, fy = 60 ksi."

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DESIGNER	BAR LAP DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO. 6 (4500 P.S.I.) CONCRETE NON-EPOXY COATED REINFORCING
CHECKER	
DATE	STANDARD NO. REBAR-001051-90-122(L)



BAR SIZE	LOCATION CATEGORY		
	A	B	C
#4	1'-5"	1'-0"	1'-0"
#5	1'-9"	1'-3"	1'-0"
#6	2'-2"	1'-6"	1'-3"
#7	2'-7"	1'-10"	1'-6"
#8	3'-4"	2'-5"	1'-11"
#9	4'-3"	3'-0"	2'-5"
#10	5'-4"	3'-10"	3'-1"
#11	6'-7"	4'-8"	3'-9"

LOCATION CATEGORY

- A - Bars in horizontal layers in top of pour with 12" or more of concrete below them such as in footings, pier caps, etc.
- B - All bars not in Category A spaced less than 6" apart.
- C - All bars not in Category A spaced 6" or more apart.

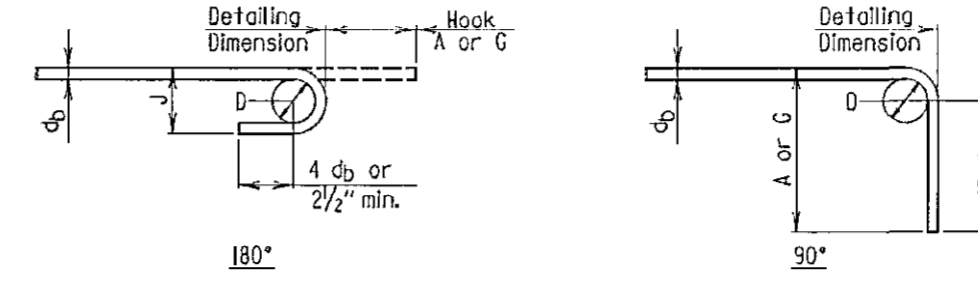
Notes

- When development length is not specified on the Plans, the above dimensions shall be used.
- These development lengths do not apply when bar is in lightweight concrete or any other strength of concrete.
- These development lengths only apply where the General Notes indicate Reinforcing Steel Design, fy = 60 ksi."
- If depth of member does not allow bar development length indicated in Categories A, B, and C, then hook shall be added to all bars not conforming, as per D, E, and F per Std. No. M6J01-96-180.

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DESIGNER	BAR DEVELOPMENT LENGTH DIMENSIONS FOR GRADE 60 REINFORCING STEEL IN MIX NO. 6 (4500 P.S.I.) CONCRETE NON-EPOXY COATED REINFORCING
CHECKER	
DATE	STANDARD NO. M6,161-90-216(L)

**HOOKS
TABLE I
REFERENCES**

- ACI Types I thru 26
- SHA Standard Pin Bending
- SHA Radius Bending

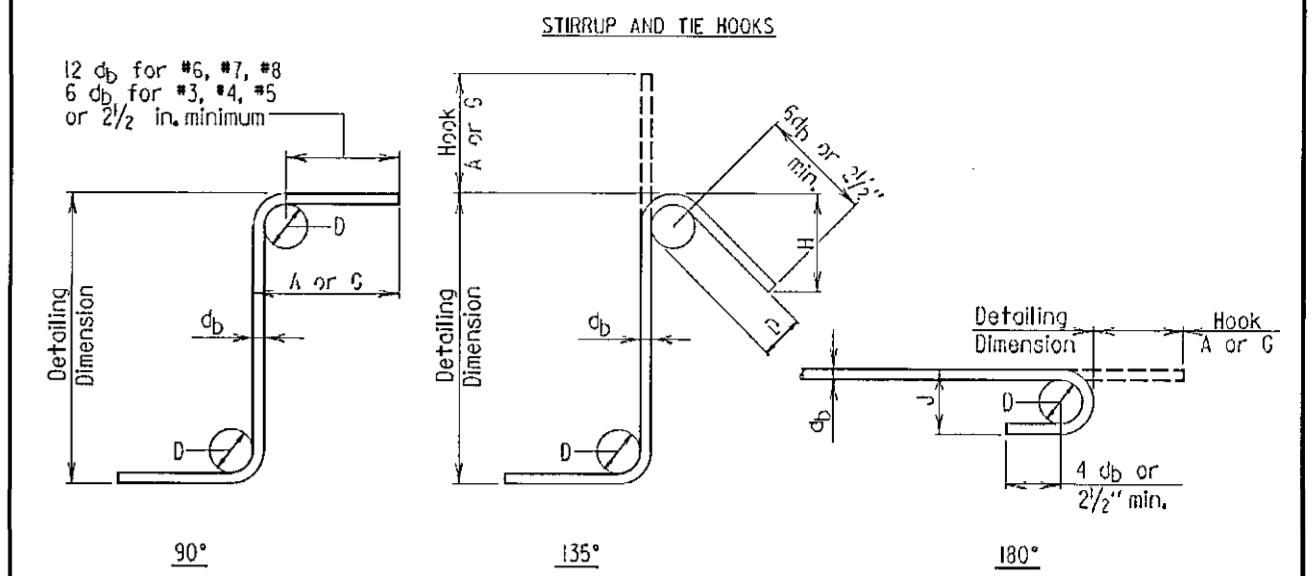


BAR SIZE	Finished bar diameter D, in.	180 - deg hook		90 - deg hook	
		A or C in.	J, in.	A or C in.	H, approx.
#3	3/8	5	3	6	3
#4	1/2	6	4	8	4
#5	5/8	7	5	10	5
#6	3/4	8	6	12	6
#7	7/8	10	7	14	7
#8	1	11	8	16	8
#9	1 1/8	13	11	18	9
#10	1 1/4	15	12	20	10
#11	1 3/8	17	14	22	11
#14	1 3/4	21	17	26	14
#18	2 1/4	30	24	36	18

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DESIGNER	REINFORCING STEEL HOOK TABLES AND DIAGRAMS
CHECKER	
DATE	STANDARD NO. REBAR-001051-91-120

**HOOKS
TABLE II
REFERENCES**

- ACI Types S1 thru S11
 - ACI Types T1 thru T9
 - SHA Ties and Stirrups
- Note: Ties and stirrup types supplied in sizes #3-#8



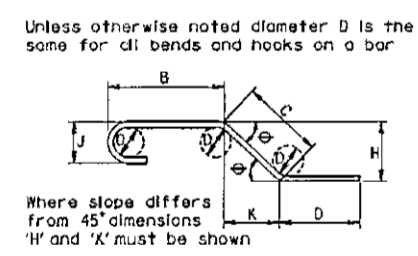
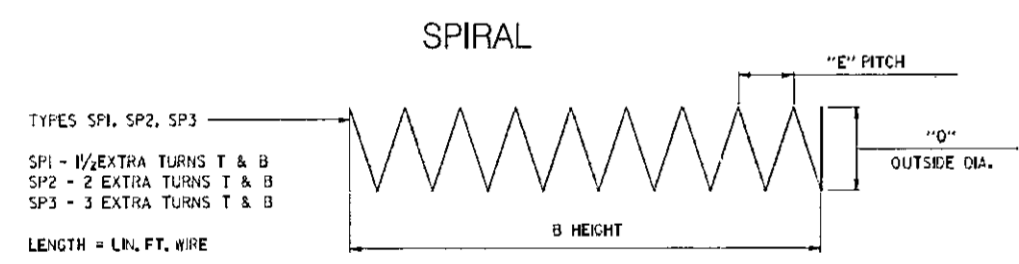
BAR SIZE	D, in.	90 - deg hook		135 - deg hook	
		A or C	H, approx.	A or C	H, approx.
#3	3/8	4	3	4	2 1/2
#4	1/2	4 1/2	4	5	3
#5	5/8	5	5	6	4
#6	3/4	6	6	7	5
#7	7/8	7	7	8	6
#8	1	8	8	9	7

BAR SIZE	Finished bar diameter D, in.	180 - deg hook		90 - deg hook	
		A or C in.	J, in.	A or C in.	H, approx.
#3	3/8	5	3	6	3
#4	1/2	6	4	8	4
#5	5/8	7	5	10	5
#6	3/4	8	6	12	6
#7	7/8	10	7	14	7
#8	1	11	8	16	8

APPROVAL	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
DESIGNER	REINFORCING STEEL HOOK TABLES AND DIAGRAMS
CHECKER	
DATE	STANDARD NO. REBAR-001051-91-120

TYPICAL BAR BENDS

DETAILS AND NOTES



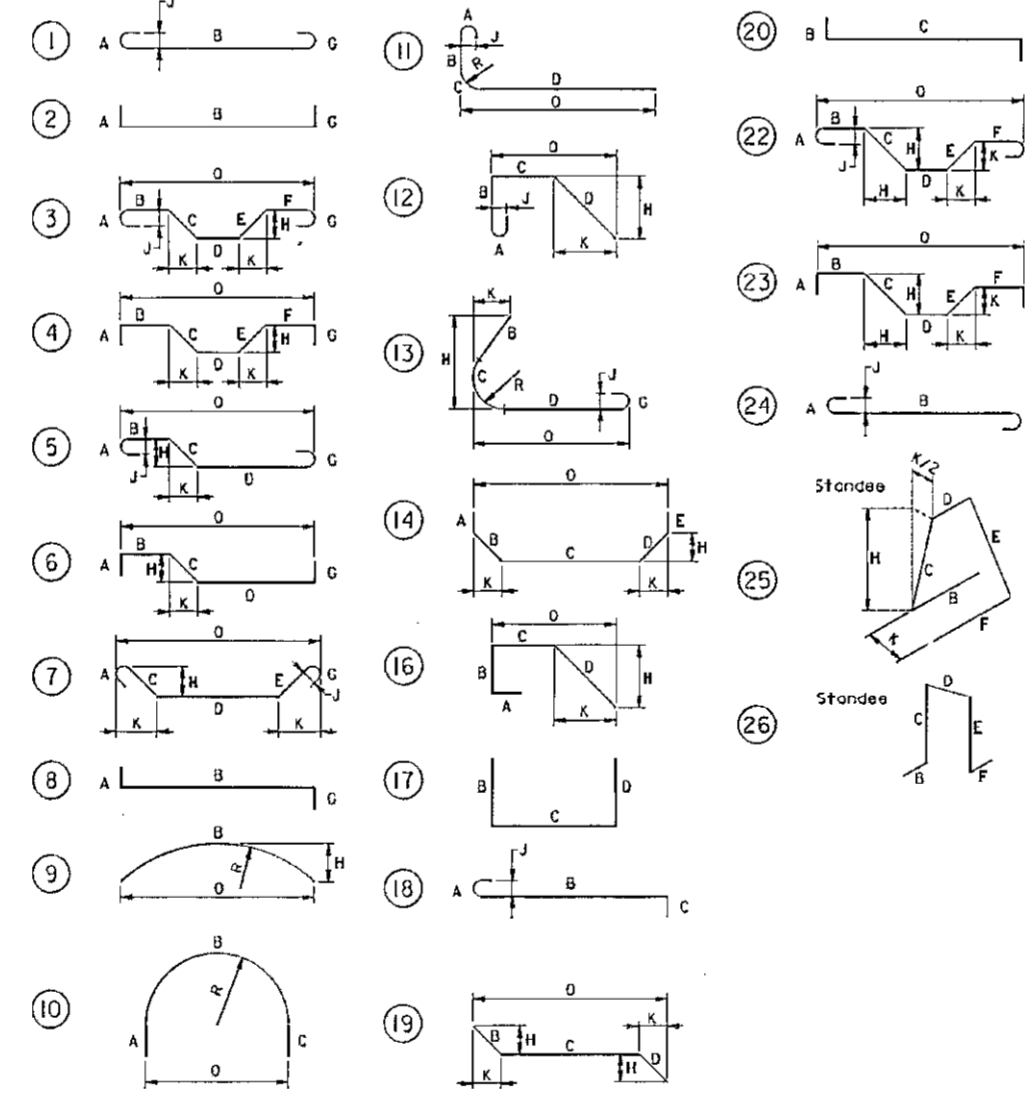
- Notes**
- Lap dimensions are out-to-out of bar or to tangent points for 135° and 180° hooks.
 - Lap dimensions on 180° hooks to be shown only where necessary to restrict hook slip. Otherwise standard hooks are to be used.
 - Where "L" is not shown, it will be kept equal to or less than "H" on truss bars, where "L" can exceed "H" it should be shown.
 - Lap dimension on stirrups to be shown where necessary to fit within concrete.
 - Where bars are to be bent more accurately than standard bending tolerances, bending dimensions when required closer fabrication should have limits indicated.

NOTE TO FABRICATOR

REBAR TOLERANCE NOTE	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
REINFORCING STEEL SHALL BE BENT WITH A PLUS AND RICH (1-1/2) TIMES NORMAL ACE REBAR TOLERANCES	BAR BEND TYPES GENERAL NOTES
APPROVAL	
DESIGNER	
CHECKER	
DATE	STANDARD NO. REBAR-001001-94-296

ACI TYPICAL BAR BENDS

STANDARD PIN BENDING

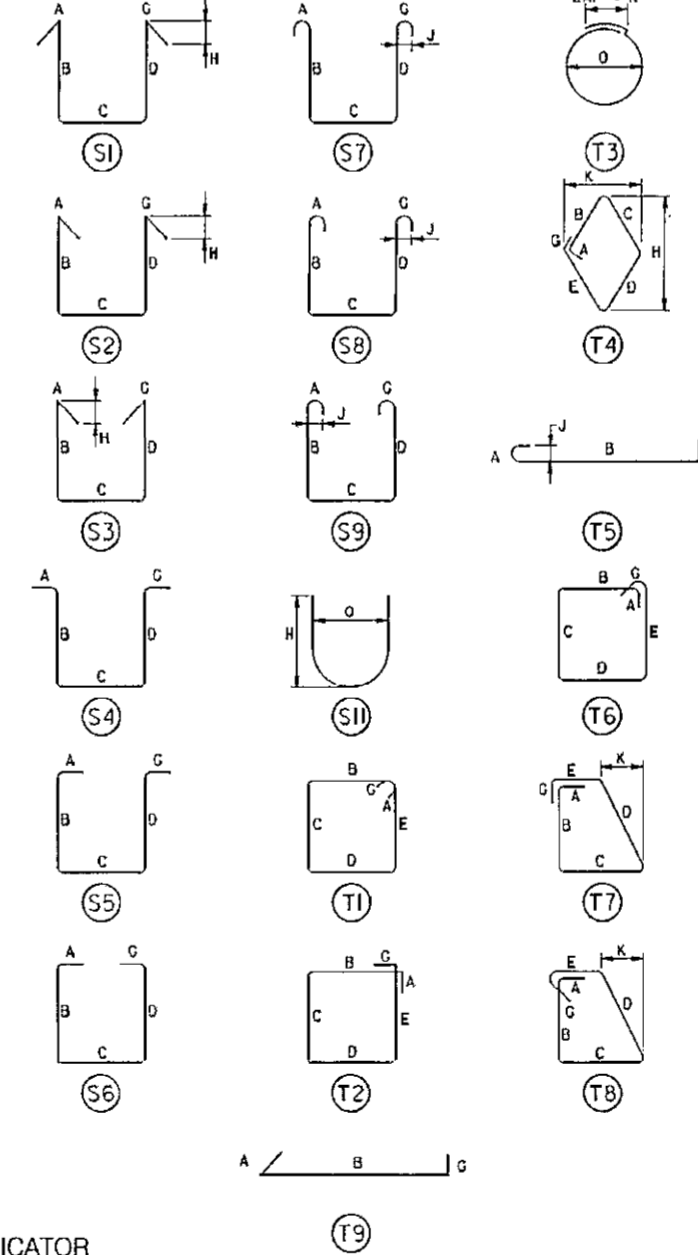


NOTE TO FABRICATOR

REBAR TOLERANCE NOTE	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
REINFORCING STEEL SHALL BE BENT WITH A PLUS AND RICH (1-1/2) TIMES NORMAL ACE REBAR TOLERANCES	BAR BEND TYPES ACI - STANDARD PIN BENDING
APPROVAL	
DESIGNER	
CHECKER	
DATE	STANDARD NO. REBAR-001001-94-296

ACI TYPICAL BAR BENDS

TIES AND STIRRUPS



NOTE TO FABRICATOR

REBAR TOLERANCE NOTE	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
REINFORCING STEEL SHALL BE BENT WITH A PLUS AND RICH (1-1/2) TIMES NORMAL ACE REBAR TOLERANCES	BAR BEND TYPES ACI - TIES A
APPROVAL	
DESIGNER	
CHECKER	
DATE	STANDARD NO. REBAR-001001-94-296

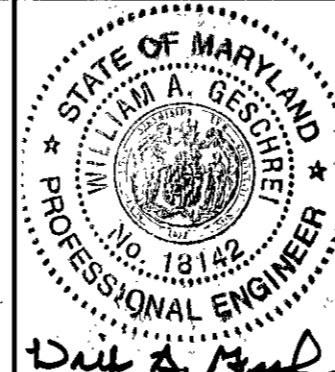
"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18142, EXPIRATION DATE: 02-04-2015."

**DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND**

Director of Public Works: *1/16/14*
 Chief, Bureau of Engineering: *1/15/14*
 Chief, Bureau of Highways: *1-17-14*
 Chief, Division of Transportation and Special Projects: *1/15/14*

WR&A

WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21203



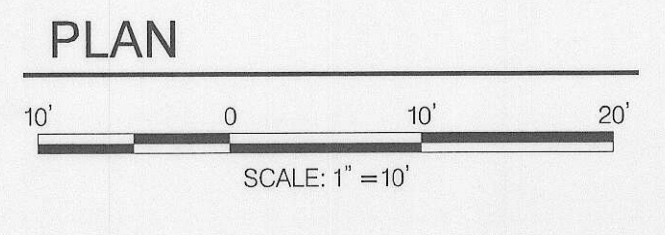
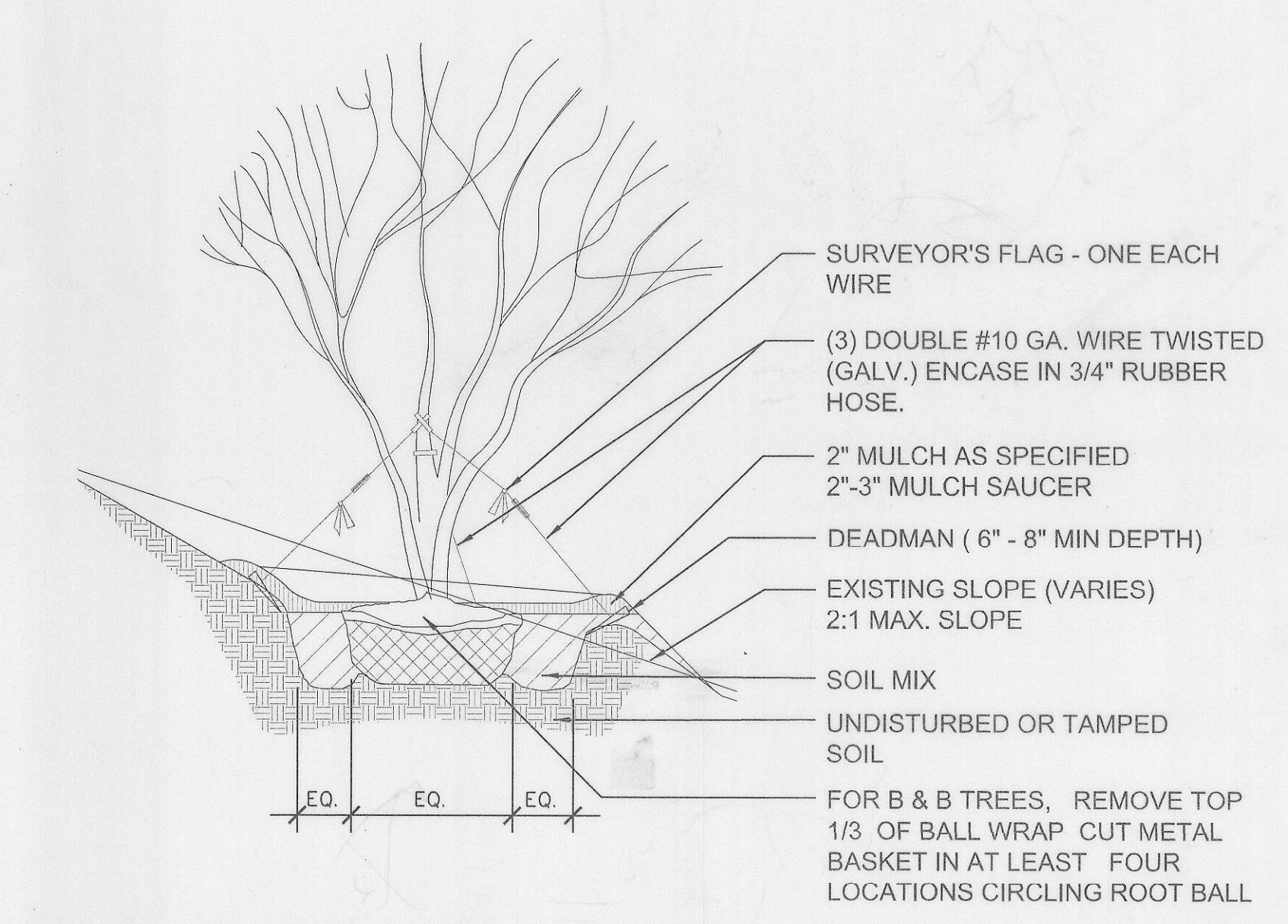
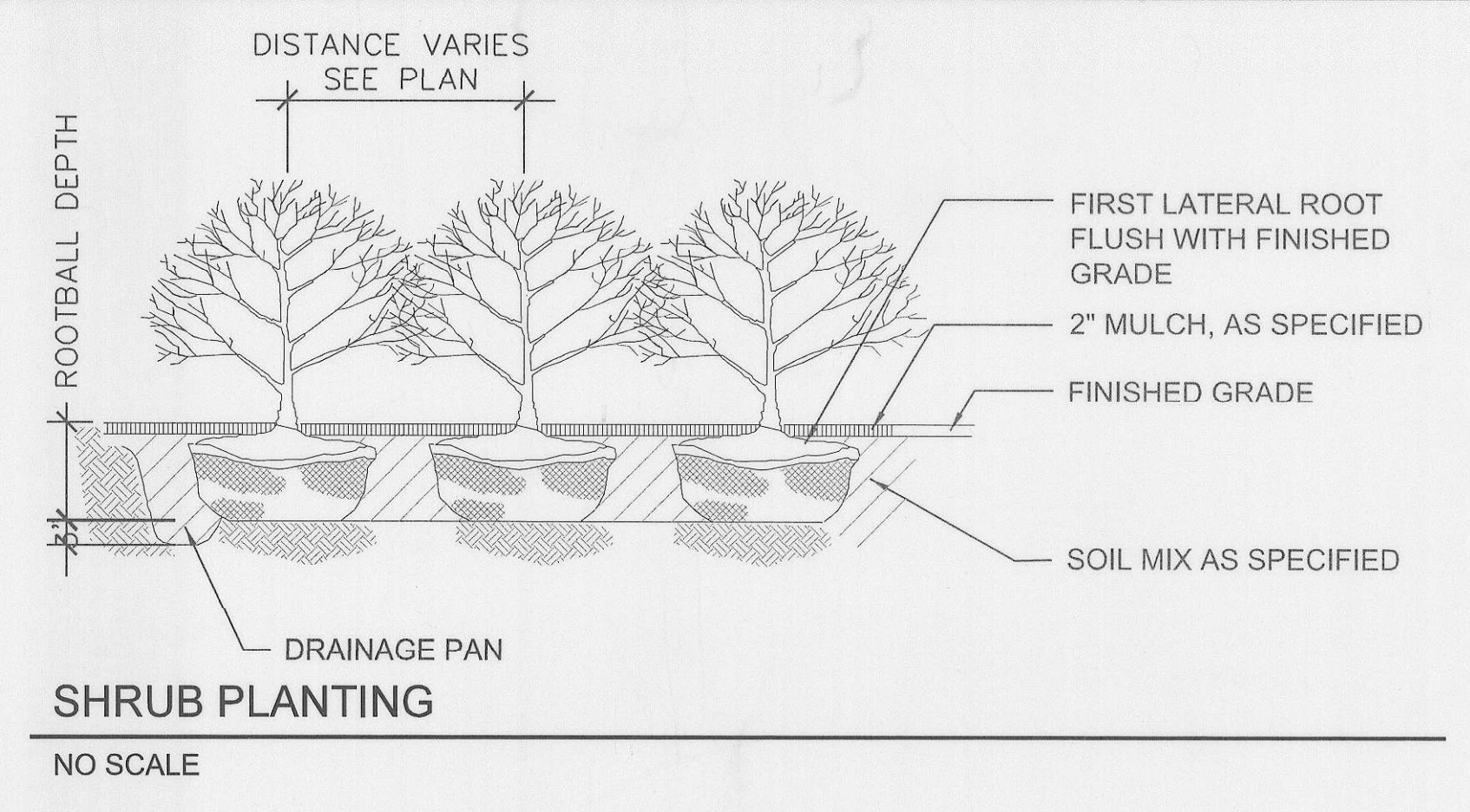
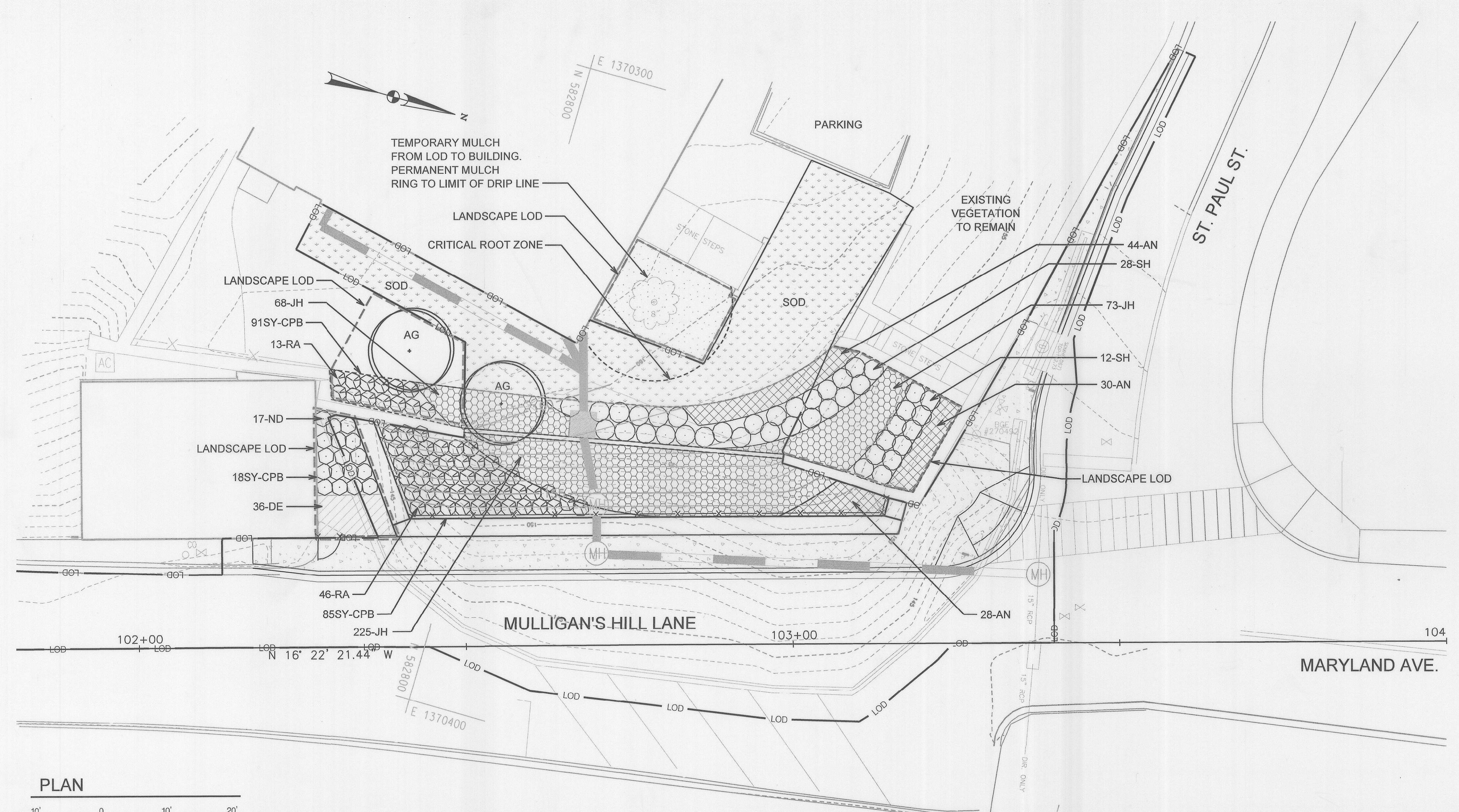
DES:	SEB								
DRN:	SEB								
CHK:	WAG								
DATE:	01/13/2014								
	BY	NO.	DESCRIPTION	DATE	ADC MAP NO. 12	GRID G10	1ST ELECTION DISTRICT	HOWARD COUNTY, MARYLAND	

STANDARD DETAILS

**CAPITAL PROJECT NO. B-3853
REPAIRS TO RETAINING WALL
ON MULLIGAN'S HILL LANE**

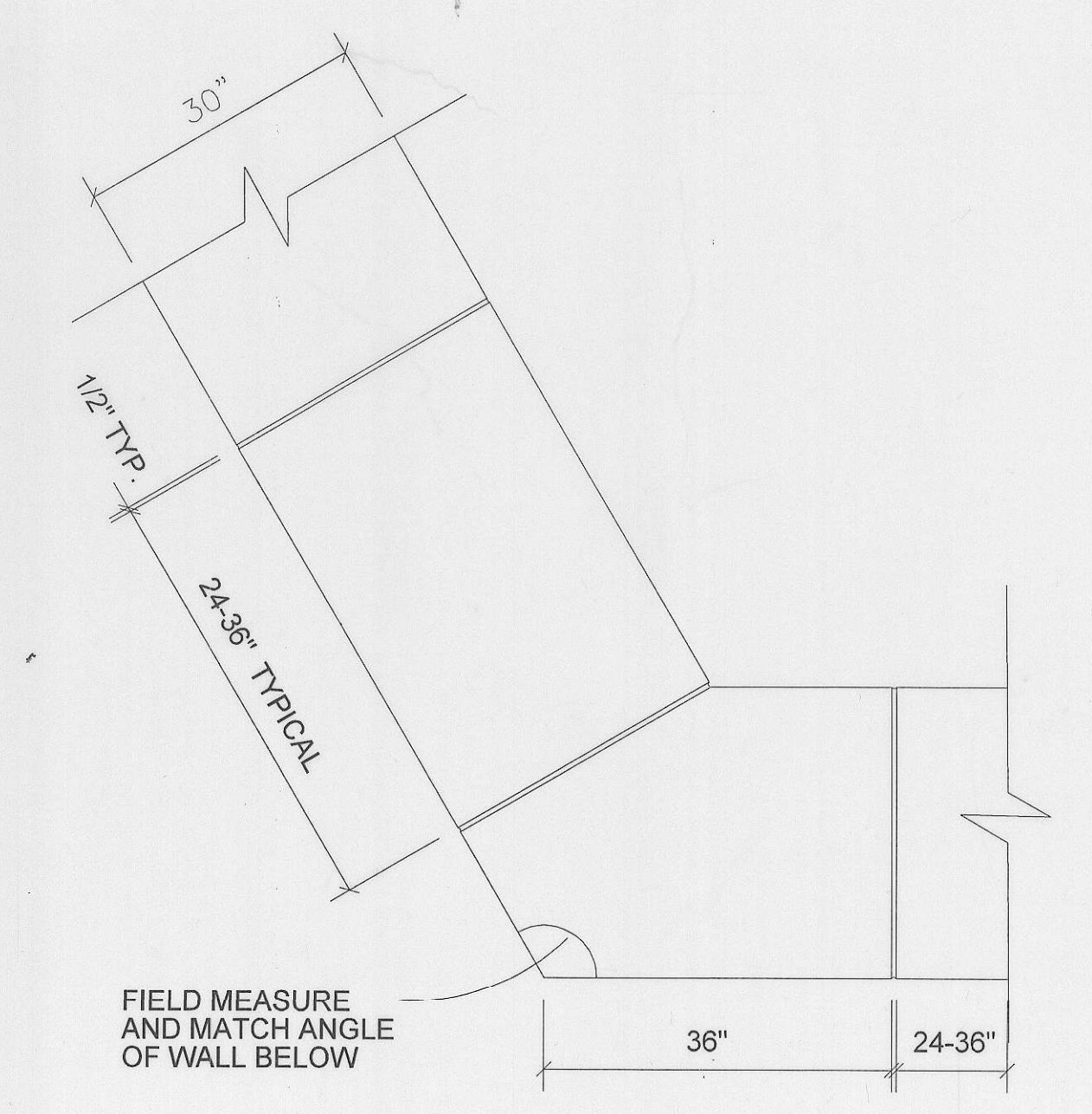
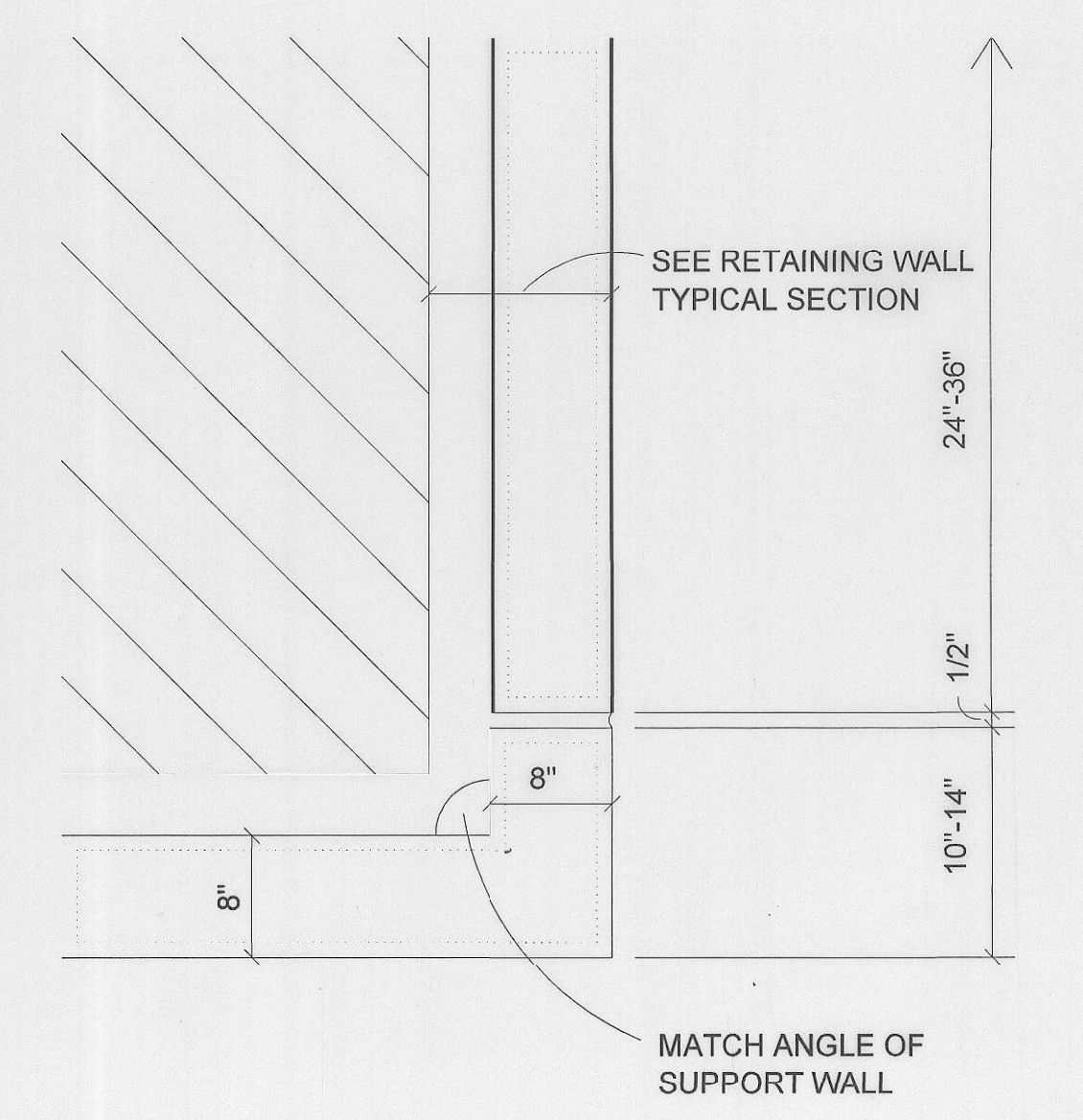
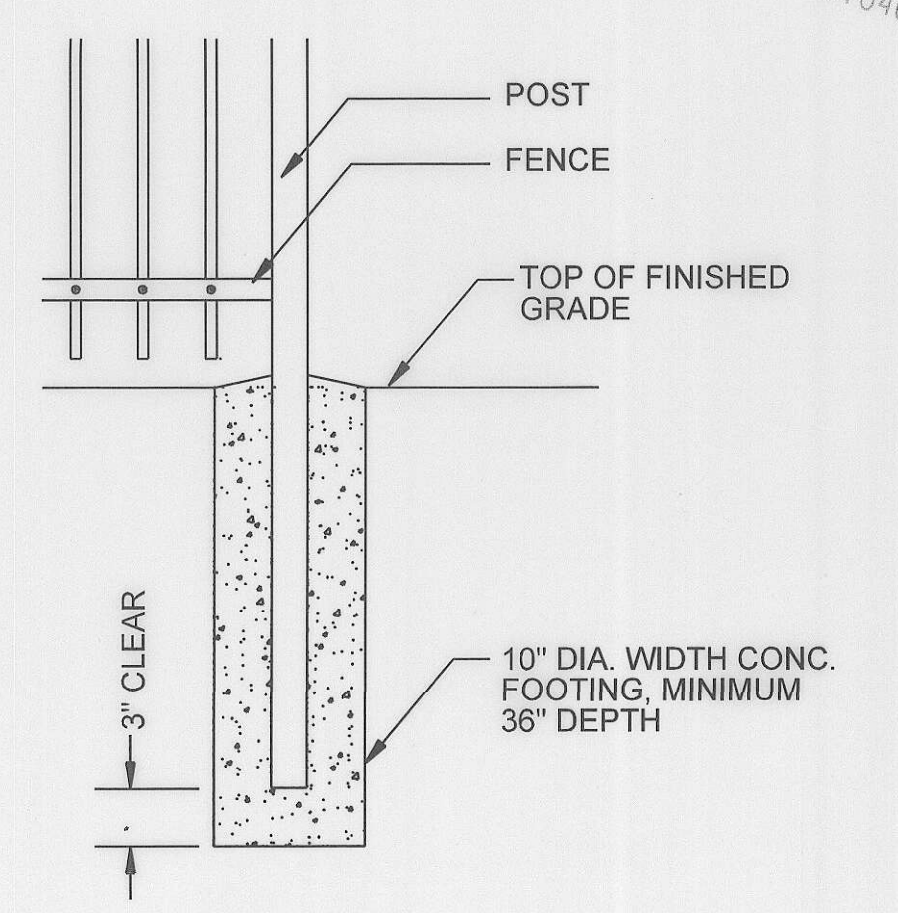
SCALE AS SHOWN

SHEET 26 OF 27



PLANT SCHEDULE

KEY	QTY	BOTANICAL/Common Name	SIZE	ROOT	COMMENTS
TREES					
AG	2	Amelanchier x grandiflora / 'Autumn Brilliance'	8' Ht.	B&B	
SHRUBS					
JH	366	Juniper horizontalis 'Blue Chip' / Blue Chip Juniper	#3	Cont.	15"-18" spread, 18" O.C. spacing
ND	17	Nandina domestica 'Harbour Dwarf' / Harbour Dwarf Heavenly Bamboo	#3	Cont.	15"-18"Ht., 30" O.C. spacing
RA	59	Rhus aromatica 'Gro-Low' / Gro-Low Fragrant Sumac	#3	Cont.	18"-24" spread, 24" O.C. spacing
ORNAMENTAL GRASSES/PERRENIALS					
AN	102	Aster novae-angliae 'Purple Dome' / New England Aster	#1	Cont.	18" O.C. Spacing
DE	36	Dryopteris erythrosora 'Brilliance' / Brilliance Autumn Fern	#2	Cont.	18" O.C. spacing
SH	40	Sporobolus heterolepis / Prairie Dropseed	#1	Cont.	24" O.C. spacing
135 SY		TURFGRASS SOD ESTABLISHMENT			
30 SY		MULCH			
CPB	194 SY	CONSTRUCTING PLANTING BEDS			



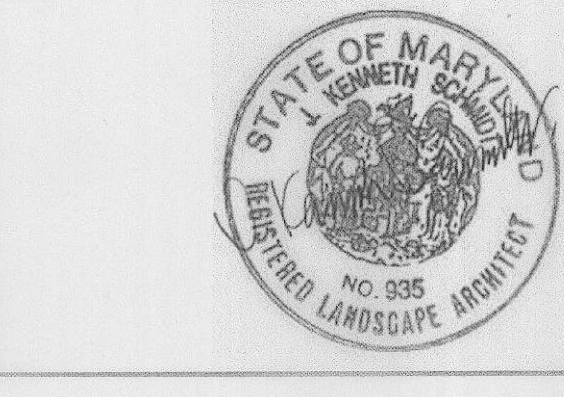
"PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 935, EXPIRATION DATE: 03-28-2014."

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Director of Public Works: *W. J. Conroy* 1-17-14
 Chief, Bureau of Engineering: *Thomas R. Butler* 1/15/14
 Chief, Division of Transportation and Special Projects: *Steve Swanson* 1/15/14

WR&A
WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Caroline Street, Baltimore, Maryland 21201

MAHAN RYKIEL
LANDSCAPE ARCHITECTURE
URBAN DESIGN & PLANNING



DES:	XXX
DRN:	M.BLOW
CHK:	JTT
DATE:	01/13/2014
BY:	NO.
DESCRIPTION:	
DATE:	

LANDSCAPE PLAN AND DETAILS

ADC MAP NO. 12 GRID G10

CAPITAL PROJECT NO. B-3853

REPAIRS TO RETAINING WALL ON MULLIGAN'S HILL LANE

1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 27 OF 27