OLD LAWYERS HILL ROAD
WATER SUPPLY MAIN REPLACEMENT
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS

CAPITAL PROJECT No. W8327

CONTRACT No. 44-5018

PURPOSE STATEMENT

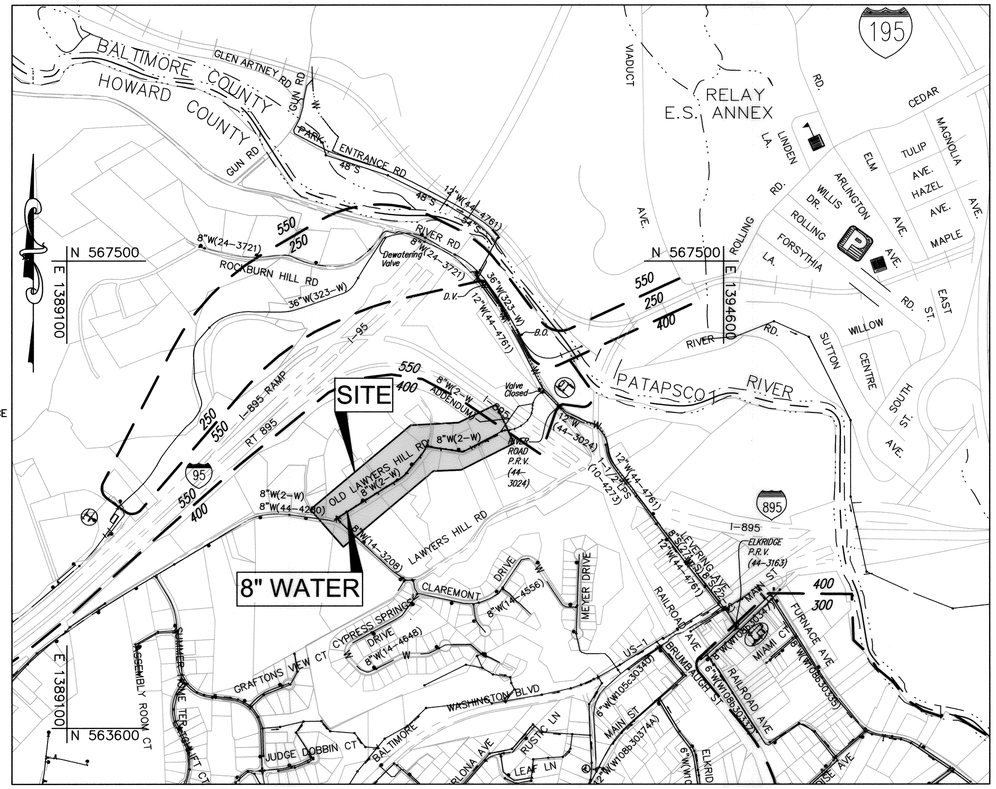
THE PURPOSE OF THIS PROJECT IS TO REPLACE THE CAST IRON WATER MAIN, INSTALLED UNDER CONTRACT 2-W, ALONG OLD LAWYERS HILL ROAD BETWEEN LAWYERS HILL ROAD AND THE DEAD END OF OLD LAWYERS HILL ROAD.

GENERAL NOTES

1. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES AND SERVICES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR EXPENSE.
2. TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED ON 9/14/2016 BY KCI TECHNOLOGIES, INC.
3. HORIZONTAL AND VERTICAL SURVEY CONTROLS:
   THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM NAD 83/91 AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 38AA, 3111, AND 0024 ALL VERTICAL CONTROLS ARE BASED ON NAVD 88. VERTICAL CONTROLS PROVIDED ON THE DRAWINGS ARE REBAR & CAP AND NAILS.
4. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
5. CLEAR ALL UTILITIES BY A MINIMUM OF 12". CLEAR ALL POLES BY 5'-0" MINIMUM OR TUNNEL AS REQUIRED. IN THE EVENT THE CONTRACTOR'S WORK REQUIRES THE BRACING OF ADDITIONAL POLES AS SHOWN ON THE DRAWINGS, ANY COST INCURRED BY THE OWNER FOR THE BRACING OF ADDITIONAL POLES OR DAMAGES SHALL BE DEDUCTED FROM MONIES OWED THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO SCHEDULE THE BRACING OF THE POLES.
6. FOR DETAILS NOT SHOWN ON THE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, USE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB.
7. WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL AT THE LOCATIONS OF THE TEST PITS. A TABLE CONTAINING THE RESULTS OF THE TEST PITS IS INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN NOTED SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
8. CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:
   AT&T.....1-800-252-1133
   BG&E (CONSTRUCTION SERVICES).....410-637-8713
   BG&E (EMERGENCY) 410-685-0123
   BUREAU OF UTILITIES (DPW).....410-313-4900
   COLONIAL PIPELINE CO. 410-795-1390
   MISS UTILITY 1-800-257-7777
   STATE HIGHWAY ADMINISTRATION 410-531-5533
   VERIZON. .....1-800-743-0033 / 410-224-9210
9. TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. TREES AND SHRUBS LOCATED WITHIN THE CONSTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR.
10. CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE MAIN.
11. THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (410)313-7450 AT LEAST FIVE WORKING DAYS BEFORE ANY OPEN CUT OF ANY COUNTY ROAD OR BORING/JACKING OPERATION IN COUNTY ROADS FOR LAYING WATER/SEWER MAINS OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 18.114(a) OF THE HOWARD COUNTY CODE.
12. THE CONTRACTOR SHALL PROVIDE SURVEY CONSTRUCTION STAKEOUT FOR ALL NECESSARY LINES.
13. THE CONTRACTOR SHALL PROVIDE STAGING/STORAGE AREA. THE WORK SHALL BE CONDUCTED UNDER STRICT ADHERENCE TO SECTION 308 – EROSION AND SEDIMENT CONTROL OF THE HOWARD COUNTY DESIGN MANUAL, VOLUME IV.
14. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE VARIOUS BUSINESSES AND RESIDENCES AND COORDINATE THE WORK ACTIVITIES SO AS NOT TO NEGATIVELY IMPACT THE CONNECTED CUSTOMERS. THE INSTALLATION OF WATER MAIN SHALL CAUSE MINIMUM DISTURBANCE TO THE EXISTING BUSINESSES AND RESIDENCES AND NOTIFICATION OF ANY INTERRUPTIONS OF SERVICE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE COUNTY REQUIRES THAT THE CONTRACTOR NOTIFY EACH AFFECTED BUSINESS AND RESIDENCE OF THE IMPENDING INTERRUPTION BY LETTER OR WITH DOOR TAGS AT LEAST 48 HOURS IN ADVANCE OF THE PLANNED INTERRUPTION. IN THE EVENT OF UNPLANNED INTERRUPTION, THE CONTRACTOR WILL BE RESPONSIBLE FOR NOTIFYING THE BUSINESSES AND RESIDENCES BY DOOR-TO DOOR CANVASSING.

WATER MAIN NOTES

1. ALL WATER MAINS SHALL BE C900 PVC PIPE UNLESS OTHERWISE NOTED. SEE THE HOWARD COUNTY DESIGN MANUAL VOLUME IV-STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION AND ALL SUBSEQUENT AMENDMENTS THERETO.
2. TOPS OF WATER MAIN SHALL HAVE A MINIMUM OF 4'-0" OF COVER UNLESS OTHERWISE NOTED.
3. VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
4. ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
5. FIRE HYDRANTS SHALL BE SET TO THE BURY LINE ELEVATIONS SHOWN ON THE DRAWINGS. ALL FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAILS. THE SOIL AROUND THE FIRE HYDRANT SHALL BE COMPACTED IN ACCORDANCE WITH SECTION 1000 AND SECTION 1005 OF THE STANDARD DETAIL AND SPECIFICATIONS. ALL FIRE HYDRANT LEADS SHALL BE DUCTILE IRON (DIP) PIPE AND CONSTRUCTED IN ACCORDANCE WITH HOWARD COUNTY DESIGN MANUAL VOLUME IV-STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.
6. THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
7. TRACER WIRES AND CONTINUITY TEST STATIONS SHALL BE INSTALLED ON ALL PVC WATER MAINS IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL.
8. FOR PVC WATER MAINS, ALL RECORDS FOR THE QUALITY CONTROL AND QUALIFICATION TEST REQUIREMENTS NOTED IN SECTION 5.1 OF THE AWWA STANDARD C900 FOR PVC PRESSURE PIPE SHALL BE SUBMITTED WITH THE PIPE MATERIAL CERTIFICATIONS OR SHOP DRAWINGS PRIOR TO APPROVAL OF THE MATERIAL FOR USE. THE TEST RECORDS SHALL BE FOR THE PIPE TO BE INSTALLED UNDER THIS CONTRACT. ALL PVC PIPE SHALL CONTAIN MARKINGS TO ALLOW CROSS REFERENCING OF THE PIPE SUPPLIED TO THE TEST RECORDS RECEIVED.
9. UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIFICATIONS SACRIFICIAL ANODES SHALL BE INSTALLED ON ALL VALVES AND METALLIC FITTINGS USED WITH PVC WATER MAINS IN ACCORDANCE WITH VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION. SEVENTEEN (17) POUND MAGNESIUM ANODES SHALL BE INSTALLED ON ALL VALVES AND DUCTILE IRON FITTINGS INCLUDING RESTRAINTS AND HARNESSES. TWELVE (12) POUND ZINC ANODES SHALL BE INSTALLED ON ALL STAINLESS STEEL FITTINGS AND SADDLES USED WITH PVC MAINS. ALL "TEES" USED WITH PVC MAINS SHALL BE DUCTILE IRON.
10. PROPER ASSEMBLY OF GASKETED PVC PIPE JOINTS: THE MANUFACTURER'S INSERTION LINE OF GASKETED PVC PIPE JOINTS INDICATES THE MAXIMUM DEPTH OF INSERTION OF THE SPIGOT INTO THE BELL. AFTER ASSEMBLY OF THE JOINT, THE INSERTION LINE SHALL REMAIN VISIBLE. DUAL INSERTION LINES ON GASKETED PVC PIPE INDICATE THE MAXIMUM AND MINIMUM DEPTH OF INSERTION OF THE SPIGOT INTO THE BELL. THE CONTRACTOR SHALL NOT OVER INSERT OR OVER HOME THE SPIGOT INTO THE BELL OF PVC PIPE.
11. ALL CHANGES IN HORIZONTAL OR VERTICAL DIRECTION OF PVC WATER PIPE SHALL BE MADE WITH STANDARD BENDS, 5-DEGREE SWEEPS OR HIGH DEFLECTION (HD) COUPLINGS. NO BENDING OF THE PIPE OR DEFLECTING OF PVC PIPE JOINTS IS PERMITTED. WHERE HIGH DEFECTION COUPLINGS OR 5-DEGREE SWEEPS ARE PERMITTED, THE CONTRACTOR SHALL PROVIDE ONE FULL PIPE LENGTH (20-FOOT LONG) ON EITHER SIDE OF THE HIGH DEFLECTION COUPLING OR 5-DEGREE SWEEP. THE CONTRACTOR SHALL USE A VIBRATORY PLATE COMPACTOR OR OTHER APPROVED MEANS TO THOROUGHLY COMPACT THE #57 STONE ON BOTH SIDES OF THE HIGH DEFECTION COUPLING OR 5-DEGREE SWEEP, TAKING CARE NOT TO USE COMPACTION EQUIPMENT DIRECTLY OVER THE FITTING.
    PVC HIGH DEFLECTION COUPLINGS SHALL BE LIMITED TO A TOTAL DEFECTION OF 3-DEGREES (1½-DEGREE ON EITHER END OF THE COUPLING), SHALL BE RATED FOR A MINIMUM 200 PSI MEETING THE REQUIREMENTS OF AWWA C900, SHALL HAVE A MINIMUM LAY LENGTH OF 9-INCHES AND SHALL HAVE CENTER STOPS. PVC HIGH DEFLECTION COUPLINGS SHALL BE CERTAINTEED PVC HIGH DEFLECTION (HD) STOP COUPLINGS OR EQUAL. FIVE DEGREE SWEEPS SHALL BE BELL BY SPIGOT, RATED FOR A MINIMUM 225 PSI, DR18 MEETING THE REQUIREMENTS OF AWWA C900 AND SHALL BE MULTI FITTINGS (IPEX) BLUE BRUTE DR18 OR EQUAL.
12. WHEN PVC HIGH DEFECTION COUPLINGS OR PVC 5-DEGREE SWEEPS ARE USED TO FACILITATE CHANGES IN HORIZONTAL OR VERTICAL ALIGNMENTS OF AWWA C-900 PVC PIPELINES, THE CONTRACTOR SHALL INSTALL DEVICES FOR THE PREVENTION OF OVER-INSERTION OF THE PVC PIPE SPIGOTS OR PLAIN ENDS INTO THE PUSH ON BELL JOINT ON BOTH SIDES OF THE HIGH DEFECTION COUPLINGS AND 5 DEGREE SWEEPS. BELL STOPS SHALL BE PLACED AT THE PROPER INSERTION LINE FOR THE FITTING. THE BELL STOP SHALL BE MANUFACTURED OF DUCTILE IRON AND INCORPORATE AN EXPANSION RETENTION SPRING TO ALLOW FOR PIPE EXPANSION AND CONTRACTION. THE BELL STOPS SHALL BE SERIES 5000 MEGA-STOP, AS MANUFACTURED BY EBAA IRON, INC. OR APPROVED EQUAL.
13. THE TEMPORARY BYPASS WATER MAIN PIPING SHALL BE CERTA-LOK YELOMINE RESTRAINED JOINT PVC PRESSURE PIPE AND COUPLING. TEMPORARY BYPASS WATER SHALL NOT BE USED BETWEEN NOVEMBER 15 AND MARCH 1.



LOCATION MAP

SCALE: 1"= 600'

HOWARD COUNTY GEODETIC SURVEY CONTROL

THE HORIZONTAL AND VERTICAL DATUM BASED ON
NAD83/91 (HORIZONTAL)
NAVD 88 (VERTICAL)

38AA	N 561158.85	3111	N 565004.73
	E 1389726.32		E 1381586.89
	ELEV.219.99		ELEV.305.93
0024	N 565065.48		
	E 1395212.08		
	ELEV.26.89		

DRAINAGE AREA:	PATAPSCO
PRESSURE ZONE:	400
WATER TEST GRADIENT:	608
NUMBER OF WATER HOUSE CONNECTIONS:	17

GRAPHIC SCALE

600 300 0 600

SCALE: 1"=600'

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. 31363 , Expiration Date 1/16/2020 .

INDEX OF SHEETS

QUANTITIES

ITEM	UNIT	ESTIMATE	AS-BUILT	MANUFACTURER
8" C900 DR14 FUSIBLE PVC	L.F.	1610	1611	
FIRE HYDRANT AND 6" VALVE	EA.	3	3	
8" VALVE	EA.	4	4	
1" WATER HOUSE CONNECTION	L.F.	280	296	
6" TEMPORARY WATER	LF.	1850	1728	
TEMPORARY FIRE HYDRANT CONNECTION	EA.	3	3	
NAME OF UTILITY CONTRACTOR:				
		CHECKBOX		
		AS-BUILT DATE		1-29-2020
		SURVEY AND DRAFTING DIVISION		

RESTORATION SCHEDULE

LOCATION	DISTANCE	TYPE
OLD LAWYERS HILL ROAD	129'	SEED & MULCH
OLD LAWYERS HILL ROAD	212'	MACADAM

LEGEND

PROPOSED	EXISTING
TRAVERSE POINT	DECIDUOUS TREE
WATER MAIN	CONIFEROUS TREE
FIRE HYDRANT	EXISTING FIRE HYDRANT
VALVE	EXISTING VALVE
CONTINUITY TEST STATION (C.T.S.)	EXISTING AIR RELEASE VALVE AND VAULT
TEST PIT	EXISTING WATER MAIN
SOIL BORING (COMPLETED, SEE GEOTECHNICAL REPORT)	EXISTING GAS MAIN
TEMPORARY WATER	EXISTING UNDERGROUND ELECTRIC
UTILITY EASEMENT	EXISTING OVERHEAD ELECTRIC
TEMPORARY CONSTRUCTION EASEMENT	WETLAND LIMIT
	WETLAND BUFFER
	100 YEAR FLOODPLAIN
	SOIL LIMITS AND MAPPING UNITS (MgD)

AS-BUILT
DATE 03-10-2020

OWNER'S/DEVELOPER'S CERTIFICATION

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

Silver Chai 03/10/2020
OWNERS / DEVELOPERS SIGNATURE DATE

SILVER CHAI PROJECT MANAGER
PRINTED NAME & TITLE

DESIGN CERTIFICATION

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

03/01/2019
DESIGNERS SIGNATURE DATE

GUIHUA WANG
PRINTED NAME

MD REGISTRATION NO. 31363
P.E. R.L.S. OR R.L.A. (CIRCLE ONE)

THIS SITE SHALL BE CONTROLLED IN ACCORDANCE WITH THE HOWARD SOIL CONSERVATION DISTRICT "STANDARD EROSION AND SEDIMENT CONTROL PLAN FOR MINOR EARTH DISTURBANCE", AND ADHERE TO THE LIMITATIONS, CONDITIONS AND REQUIREMENTS THEREIN. A COPY OF THE STANDARD PLAN SHALL BE ON-SITE FOR REFERENCE DURING WORKING HOURS.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/7/19
CHIEF, BUREAU OF UTILITIES — DATE 3-6-19
CHIEF, BUREAU OF ENGINEERING — DATE 3-5-19
CHIEF, UTILITY DESIGN DIVISION — DATE 3/5/19

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 Ridgebrook Road
Sparks, MD 21152
PHONE: (410) 316-7800
FAX: (410) 316-7817
www.kci.com

STATE OF MARYLAND — GUIHUA WANG — No. 31363 — PROFESSIONAL ENGINEER — 03/01/2019

DES: CB, KJ	BY	NO.	REVISION	DATE
DRN: KJ				
CHK: GW				
DATE: MARCH 2019				

TITLE SHEET

600' SCALE MAP NO. 32 BLOCK NO. 20,21

OLD LAWYERS HILL ROAD
WATER SUPPLY MAIN REPLACEMENT
CAPITAL PROJECT No. W8327
CONTRACT No. 44-5018
ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 1 OF 8

KCI TECHNOLOGIES PROJECT No.: 13122677.47

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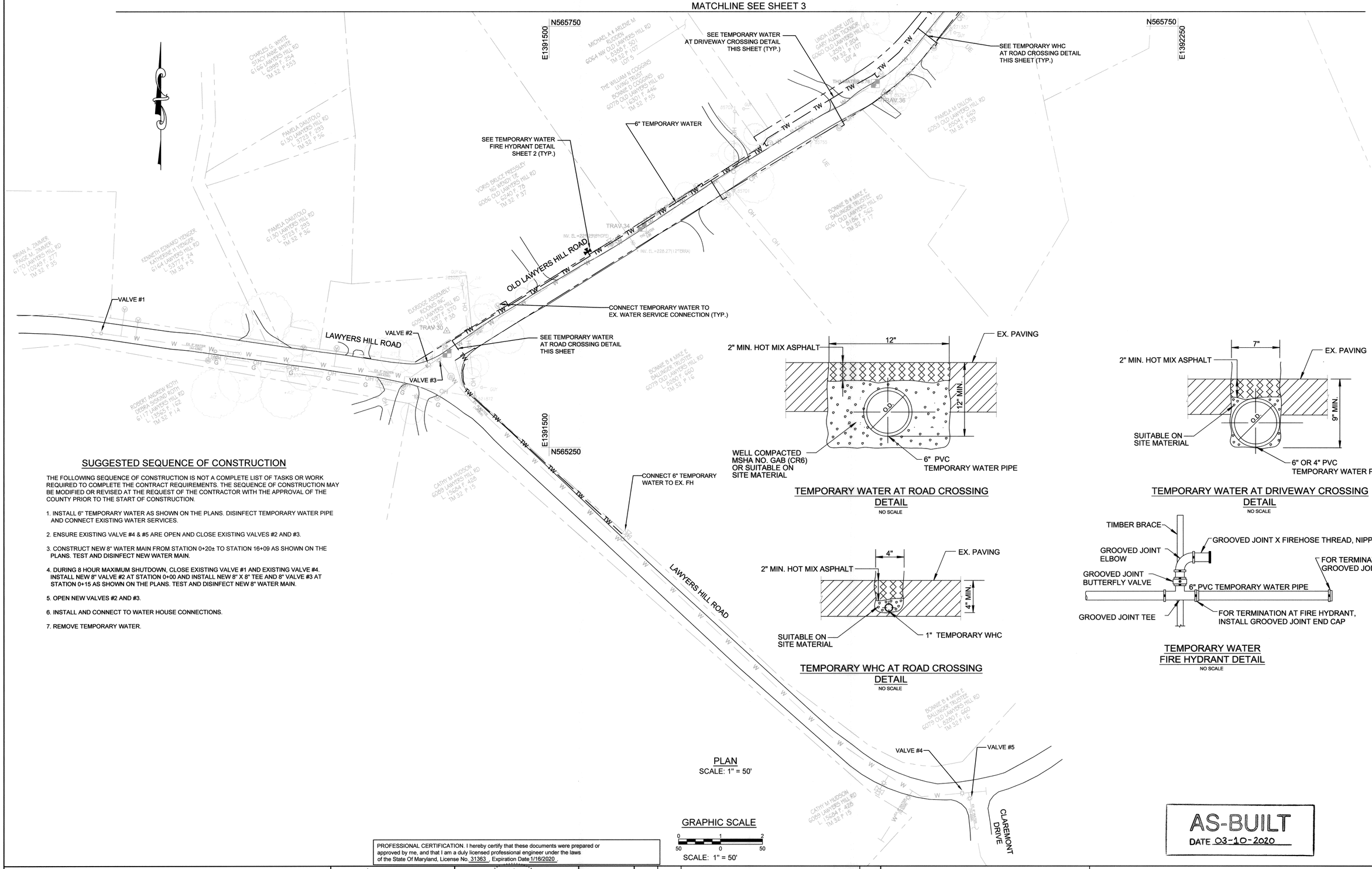
MATCHLINE SEE SHEET 3



SUGGESTED SEQUENCE OF CONSTRUCTION

THE FOLLOWING SEQUENCE OF CONSTRUCTION IS NOT A COMPLETE LIST OF TASKS OR WORK REQUIRED TO COMPLETE THE CONTRACT REQUIREMENTS. THE SEQUENCE OF CONSTRUCTION MAY BE MODIFIED OR REVISED AT THE REQUEST OF THE CONTRACTOR WITH THE APPROVAL OF THE COUNTY PRIOR TO THE START OF CONSTRUCTION.

1. INSTALL 6" TEMPORARY WATER AS SHOWN ON THE PLANS. DISINFECT TEMPORARY WATER PIPE AND CONNECT EXISTING WATER SERVICES.
2. ENSURE EXISTING VALVE #4 & #5 ARE OPEN AND CLOSE EXISTING VALVES #2 AND #3.
3. CONSTRUCT NEW 8" WATER MAIN FROM STATION 0+20± TO STATION 16+09 AS SHOWN ON THE PLANS. TEST AND DISINFECT NEW WATER MAIN.
4. DURING 8 HOUR MAXIMUM SHUTDOWN, CLOSE EXISTING VALVE #1 AND EXISTING VALVE #4. INSTALL NEW 8" VALVE #2 AT STATION 0+00 AND INSTALL NEW 8" X 8" TEE AND 8" VALVE #3 AT STATION 0+15 AS SHOWN ON THE PLANS. TEST AND DISINFECT NEW 8" WATER MAIN.
5. OPEN NEW VALVES #2 AND #3.
6. INSTALL AND CONNECT TO WATER HOUSE CONNECTIONS.
7. REMOVE TEMPORARY WATER.

PLAN
SCALE: 1" = 50'

GRAPHIC SCALE
0 1 2
50 0 50
SCALE: 1" = 50'

TEMPORARY WATER AT ROAD CROSSING DETAIL
NO SCALE

TEMPORARY WATER AT DRIVEWAY CROSSING DETAIL
NO SCALE

TEMPORARY WHC AT ROAD CROSSING DETAIL
NO SCALE

TEMPORARY WATER FIRE HYDRANT DETAIL
NO SCALE

AS-BUILT
DATE 03-10-2020

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. 31363 , Expiration Date 1/16/2020 .

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HOWARD COUNTY, MARYLAND

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CHIEF, BUREAU OF ENGINEERING — DATE 3-5-19
CHIEF, BUREAU OF UTILITIES — DATE 3-6-19
CHIEF, UTILITY DESIGN DIVISION — DATE 3/5/19

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FAX: (410) 316-7817
www.kci.com

STATE OF MARYLAND — GUIHUA WANG — No. 31363 — PROFESSIONAL ENGINEER
03/01/2019

DES: CB, KJ				
DRN: KJ				
CHK: GW				
DATE: MARCH 2019	BY	NO.	REVISION	DATE

TEMPORARY WATER PLAN

600' SCALE MAP NO. 32 BLOCK NO. 20,21

OLD LAWYERS HILL ROAD
WATER SUPPLY MAIN REPLACEMENT

CAPITAL PROJECT No. W8327
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ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 2 OF 8

KCI TECHNOLOGIES PROJECT No.: 13122677.47

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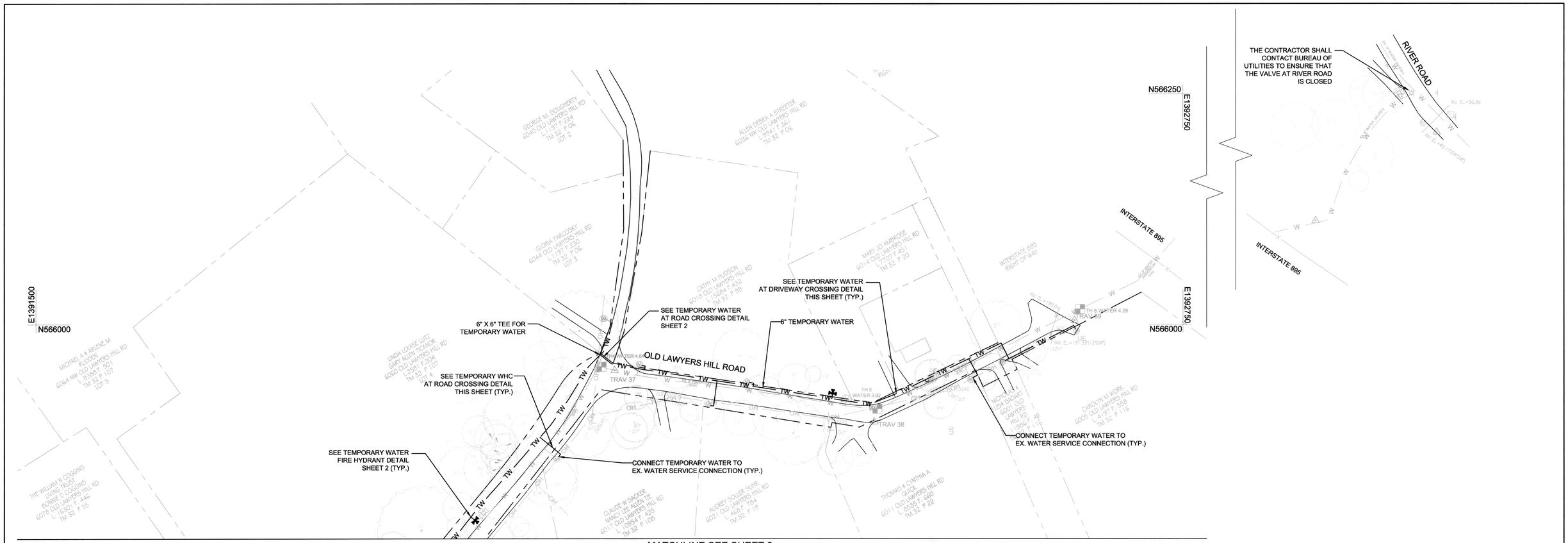
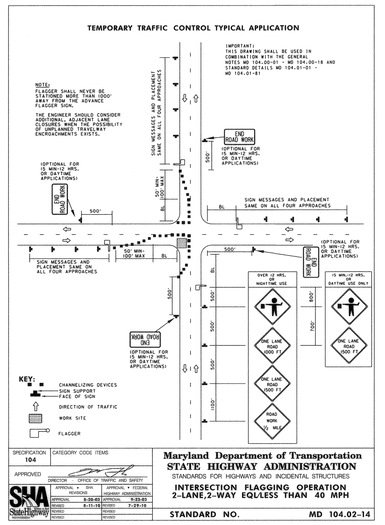
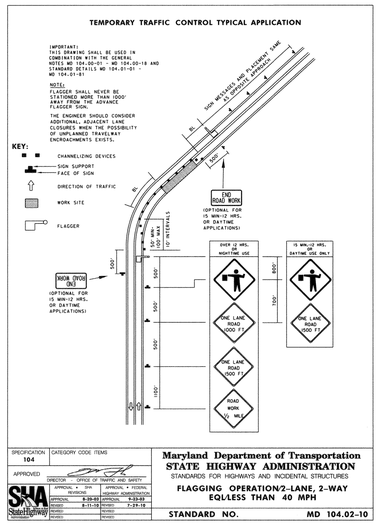


PLAN
SCALE: 1" = 50'





GRAPHIC SCALE
0 1 2
50 0 50
SCALE: 1" = 50'

AS-BUILT
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600' SCALE MAP NO. 32 BLOCK NO. 20,21

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ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 3 OF 8

KCI TECHNOLOGIES PROJECT No.: 13122677.47

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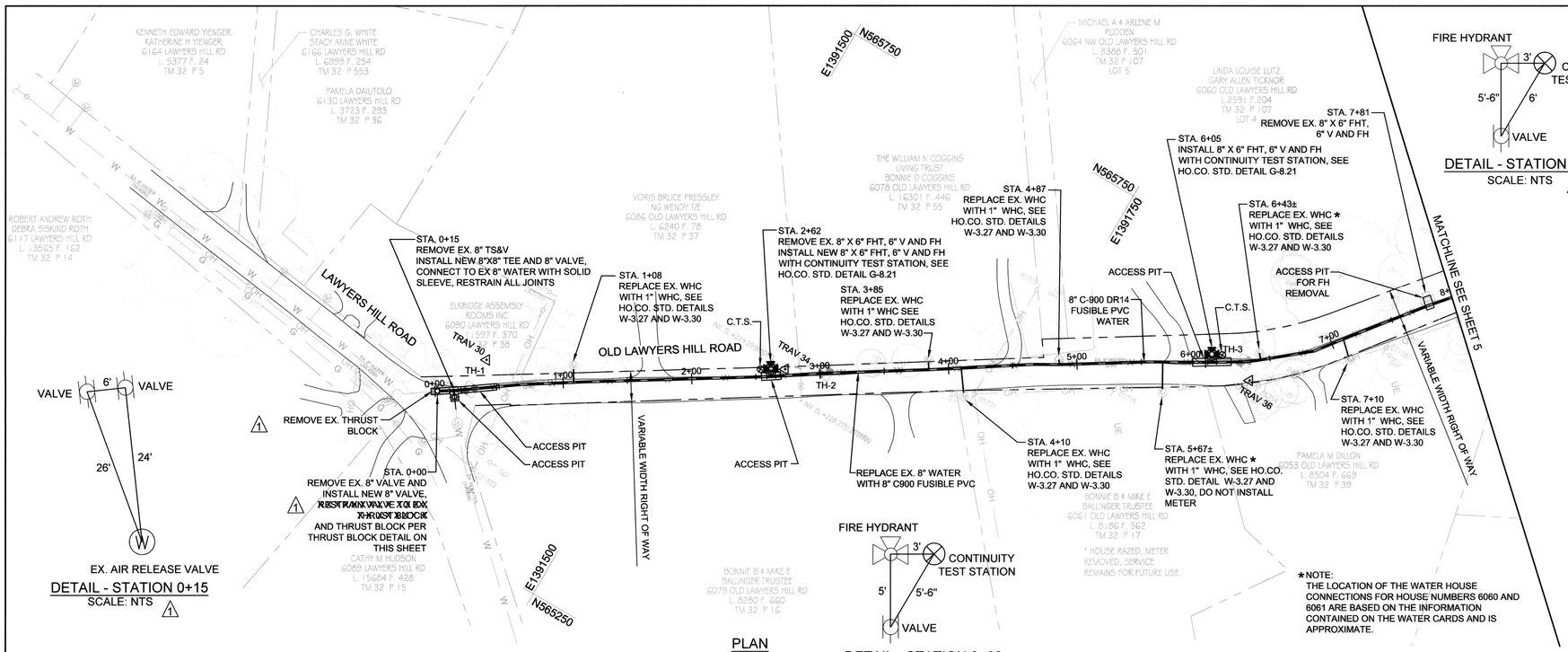
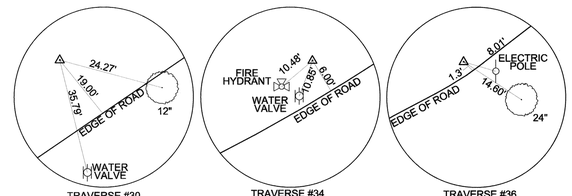
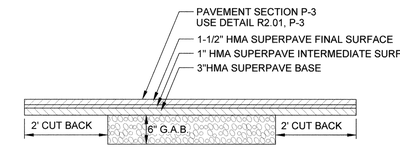


TEST HOLE TABLE			
NUMBER	UTILITY	GROUND ELEVATION	DEPTH TO TOP OF UTILITY
TH-1	8" WATER	237.01	3.98'
TH-2	8" WATER	231.02	3.98'
TH-3	8" WATER	236.82	3.76'

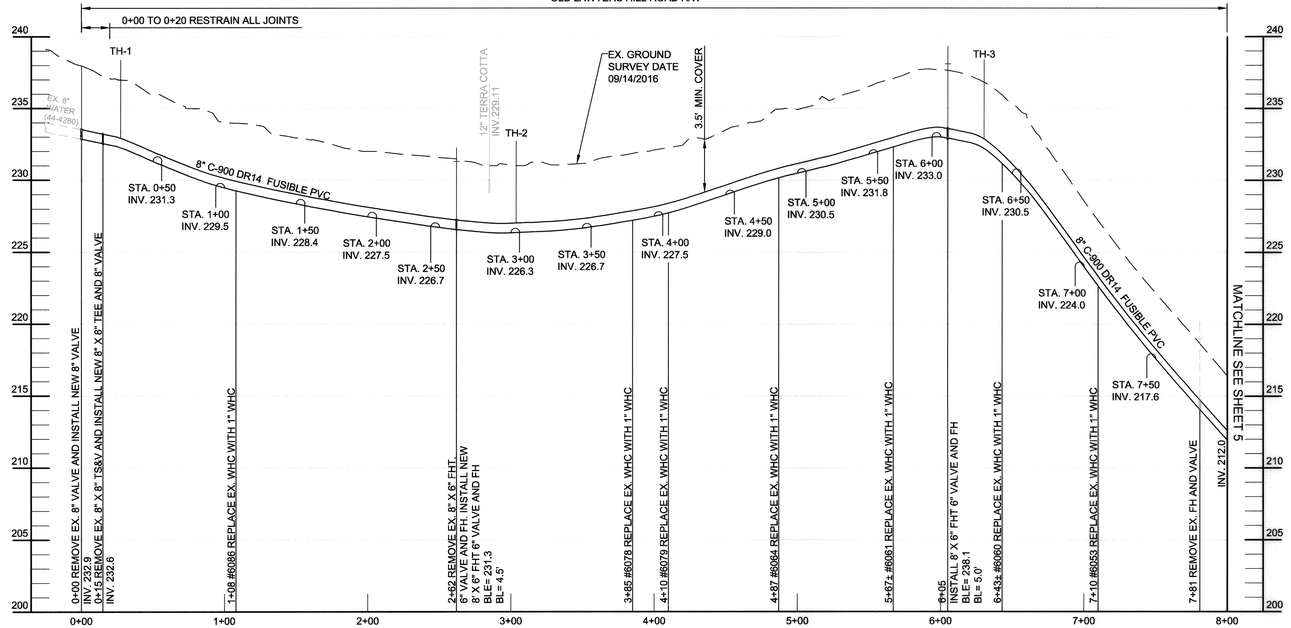




DETAIL PERMANENT PAVING RESTORATION

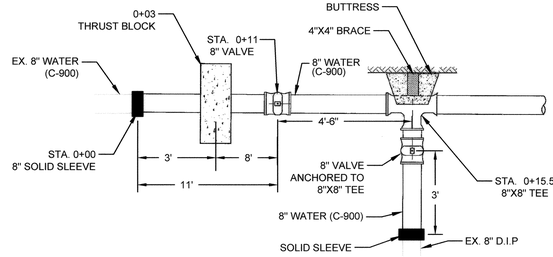
NOT TO SCALE

FOR TRENCH DETAIL REFER TO HOWARD COUNTY STANDARD DETAIL G-2.12



PROFILE

SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



THRUST BLOCK DETAIL (STA. 0+00 + STA. 0+16)

SCALE: NTS

MATERIAL LIST		
ITEM	UNIT	QUANTITY
8" C-900	L.F.	19
8" VALVE	EA	2
8"X8" TEE	EA	1
8" SOLID SLEEVE	EA	2

WATER HOUSE CONNECTION SCHEDULE

SERVICE ADDRESS	BUILDING TYPE	EX. WHC SIZE	EX. METER LOCATION	EX. METER SIZE	PROP. TAP/WHC SIZE	NEW METER SIZE	APPROX LENGTH OF PROPOSED WHC (LF)	REMARKS/NOTES
6086 OLD LAWYERS HILL RD	RESIDENTIAL	3/4"	INSIDE	5/8"	1"	3/4"	10	INSTALL NEW OUTSIDE WATER METER SETTING
6078 OLD LAWYERS HILL RD	RESIDENTIAL	3/4"	OUTSIDE	5/8"	1"	3/4"	6	INSTALL NEW OUTSIDE WATER METER SETTING
6064 OLD LAWYERS HILL RD	RESIDENTIAL	3/4"	INSIDE	5/8"	1"	3/4"	4	INSTALL NEW OUTSIDE WATER METER SETTING
6060 OLD LAWYERS HILL RD	RESIDENTIAL	1"	UNKNOWN	3/4"	1"	3/4"	5	INSTALL NEW OUTSIDE WATER METER SETTING
6044 OLD LAWYERS HILL RD	RESIDENTIAL	3/4"	OUTSIDE	5/8"	1"	3/4"	53	INSTALL NEW OUTSIDE WATER METER SETTING
6040 OLD LAWYERS HILL RD	RESIDENTIAL	3/4"	OUTSIDE	5/8"	1"	3/4"	53	INSTALL NEW OUTSIDE WATER METER SETTING
6036 OLD LAWYERS HILL RD	RESIDENTIAL	1"	OUTSIDE	3/4"	1"	3/4"	9	INSTALL NEW OUTSIDE WATER METER SETTING
6018 OLD LAWYERS HILL RD	RESIDENTIAL	3/4"	INSIDE	5/8"	1"	3/4"	6	INSTALL NEW OUTSIDE WATER METER SETTING
6014 OLD LAWYERS HILL RD	RESIDENTIAL	UNKOWN			1"	3/4"	3	INSTALL NEW OUTSIDE WATER METER SETTING
6079 OLD LAWYERS HILL RD	RESIDENTIAL	3/4"	INSIDE	5/8"	1"	3/4"	19	INSTALL NEW OUTSIDE WATER METER SETTING
6061 OLD LAWYERS HILL RD	RESIDENTIAL	3/4"			1"		21	INSTALL NEW OUTSIDE WATER METER SETTING W/O METER
6053 OLD LAWYERS HILL RD	RESIDENTIAL	3/4"	OUTSIDE	5/8"	1"	3/4"	14	INSTALL NEW OUTSIDE WATER METER SETTING
6021 OLD LAWYERS HILL RD	RESIDENTIAL	1"	UNKNOWN	3/4"	1"	3/4"	18	INSTALL NEW OUTSIDE WATER METER SETTING
6017 OLD LAWYERS HILL RD	RESIDENTIAL	3/4"	OUTSIDE	5/8"	1"	3/4"	14	INSTALL NEW OUTSIDE WATER METER SETTING
6011 OLD LAWYERS HILL RD	RESIDENTIAL	3/4"	INSIDE	5/8"	1"	3/4"	12	INSTALL NEW OUTSIDE WATER METER SETTING
6005 OLD LAWYERS HILL RD	RESIDENTIAL	3/4"	UNKNOWN	5/8"	1"	3/4"	22	INSTALL NEW OUTSIDE WATER METER SETTING
6001 OLD LAWYERS HILL RD	RESIDENTIAL	1"	OUTSIDE	3/4"	1"	3/4"	11	INSTALL NEW OUTSIDE WATER METER SETTING

GRAPHIC SCALE

SCALE: 1" = 50'

SCALE: 1" = 5'

PROFESSIONAL CERTIFICATION. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State Of Maryland, License No. 31363 , Expiration Date 1/16/2022 .

AS-BUILT REPLACEMENT SHEET

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE

CHIEF, BUREAU OF ENGINEERING DATE

CHIEF, BUREAU OF UTILITIES DATE

CHIEF, UTILITY DESIGN DIVISION DATE

KCI TECHNOLOGIES
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 Ridgebrook Road
Sparks, MD 21152
PHONE: (410) 316-7800
FAX: (410) 316-7817
www.kci.com

STATE OF MARYLAND — QUINUA WANG — No. 31363 — PROFESSIONAL ENGINEER
03/13/2020

DES: CB, KJ			
DRN: KJ			
CHK: GW			
DATE: MARCH 2020	SPK	1	AS-BUILT 03/13/20
	BY	NO.	REVISION DATE

WATER MAIN PLAN

600' SCALE MAP NO. 32 BLOCK NO. 20,21

OLD LAWYERS HILL ROAD
WATER SUPPLY MAIN REPLACEMENT

CAPITAL PROJECT No. W8327
CONTRACT No. 44-5018

ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET: 4 OF 8

KCI TECHNOLOGIES PROJECT No.: 13122677.47

Mar 13, 2020 - 9:32am User: kevinjackson
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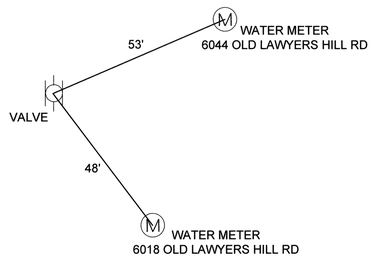
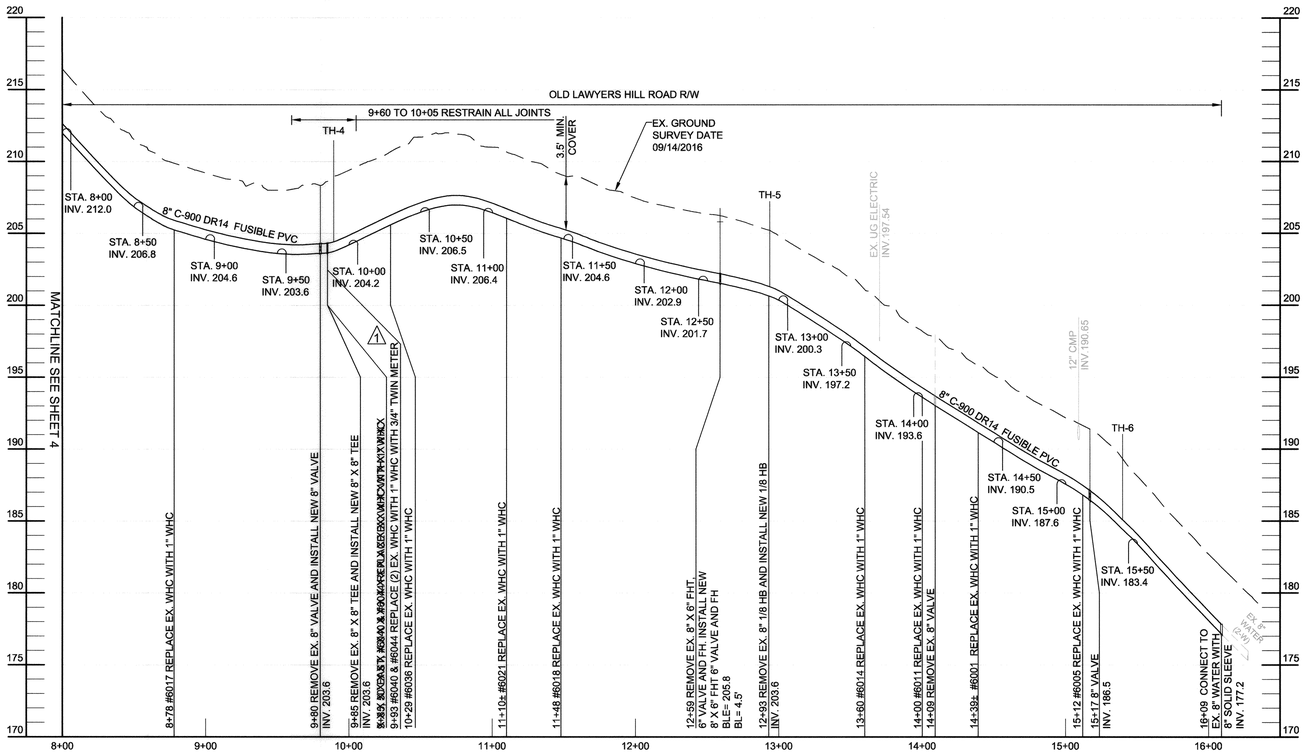
KCI TECHNOLOGIES PROJECT No.: 13122677.47

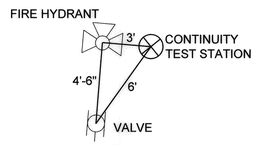
OLD LAWYERS HILL (W-8327, CONTRACT NO. 44-5018) TIES				
ADDRESS	LOCATION 1	MEASUREMENT	LOCATION 2	MEASUREMENT
6005 OLD LAWYERS HILL ROAD	WATER VALVE	54'	6001 METER PIT	104'
6001 OLD LAWYERS HILL ROAD	6005 METER PIT	104'	6011 METER PIT	40'
6011 OLD LAWYERS HILL ROAD	6005 METER PIT	40'	6014 METER PIT	46'
6014 OLD LAWYERS HILL ROAD	6011 METER PIT	46'	FH	92'
6018 OLD LAWYERS HILL ROAD	FH VALVE	109'	FH	107'
6036 OLD LAWYERS HILL ROAD	WATER VALVE	47'	6042 METER PIT	63'
6040 OLD LAWYERS HILL ROAD	WATER VALVE	52'	6036 METER PIT	63'
6044 OLD LAWYERS HILL ROAD	WATER VALVE	53'	6036 METER PIT	63'
6021 OLD LAWYERS HILL ROAD	WATER VALVE	101'	6017 METER PIT	7'
6017 OLD LAWYERS HILL ROAD	WATER VALVE	108'	6021 METER PIT	7'
6053 OLD LAWYERS HILL ROAD	FH	109'	FH VALVE	108'
6066 OLD LAWYERS HILL ROAD	FH VALVE	35'	FH	35'
6061 OLD LAWYERS HILL ROAD	FH	49'	FH	51'
6064 OLD LAWYERS HILL ROAD	6061 METER PIT	80'	6078 METER PIT	103'
6078 OLD LAWYERS HILL ROAD	6064 METER PIT	103'	6079 METER PIT	80'
6079 OLD LAWYERS HILL ROAD	6064 METER PIT	80'	6078 METER PIT	38'
6086 OLD LAWYERS HILL ROAD	FH VALVE	155'	FH VALVE	156'



DETAIL - STATION 9+81
SCALE: NTS

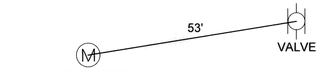


PROFILE
SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'

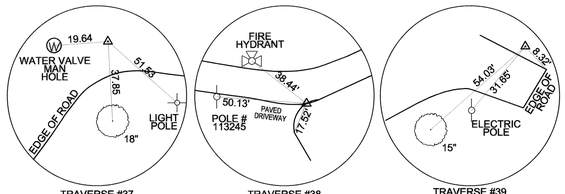


DETAIL - STATION 12+59
SCALE: NTS

TEST HOLE TABLE			
NUMBER	UTILITY	GROUND ELEVATION	DEPTH TO TOP OF UTILITY
TH-4	8" WATER	208.91	4.64'
TH-5	8" WATER	205.16	3.82'
TH-6	8" WATER	189.30	4.28'



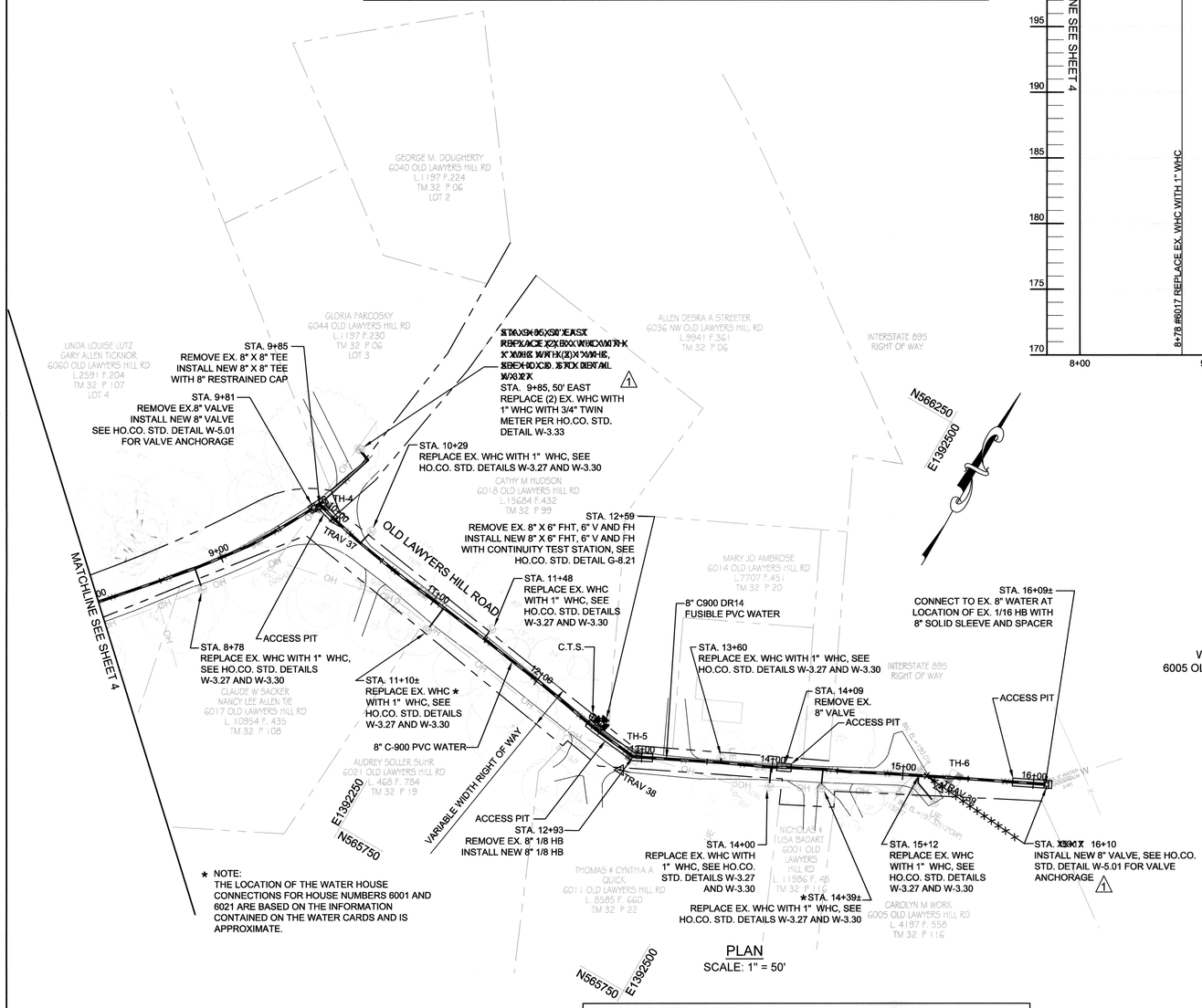
DETAIL - STATION 16+10
SCALE: NTS



TRAVERSE #37
MAG NAIL
N 565950.2569
E 1392130.8759
EL 209.51

TRAVERSE #38
MAG NAIL
N 565894.3680
E 1392413.8079
EL 205.62

TRAVERSE #39
MAG NAIL
N 566004.5511
E 1392631.8092
EL 190.96



★ NOTE:
THE LOCATION OF THE WATER HOUSE CONNECTIONS FOR HOUSE NUMBERS 6001 AND 6021 ARE BASED ON THE INFORMATION CONTAINED ON THE WATER CARDS AND IS APPROXIMATE.

PLAN
SCALE: 1" = 50'

GRAPHIC SCALE
SCALE: 1" = 50'
SCALE: 1" = 5'

PROFESSIONAL CERTIFICATION. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State Of Maryland, License No. 31363, Expiration Date 1/16/2022.

AS-BUILT REPLACEMENT SHEET

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE
CHIEF, BUREAU OF ENGINEERING DATE
CHIEF, BUREAU OF UTILITIES DATE
CHIEF, UTILITY DESIGN DIVISION DATE

KCI TECHNOLOGIES
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www.kci.com

STATE OF MARYLAND — GUIHUA WANG — No. 31363 — PROFESSIONAL ENGINEER
03/13/2020

DES: CB, KJ			
DRN: KJ			
CHK: GW			
DATE: MARCH 2020	SPK	1	AS-BUILT 03/13/20
	BY	NO.	REVISION DATE

WATER MAIN PLAN

600' SCALE MAP NO. 32 BLOCK NO. 20,21

OLD LAWYERS HILL ROAD
WATER SUPPLY MAIN REPLACEMENT
CAPITAL PROJECT No. W8327
CONTRACT No. 44-5018
ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 5 OF 8

Mar 13, 2020 - 9:33am User: kevin.jackson
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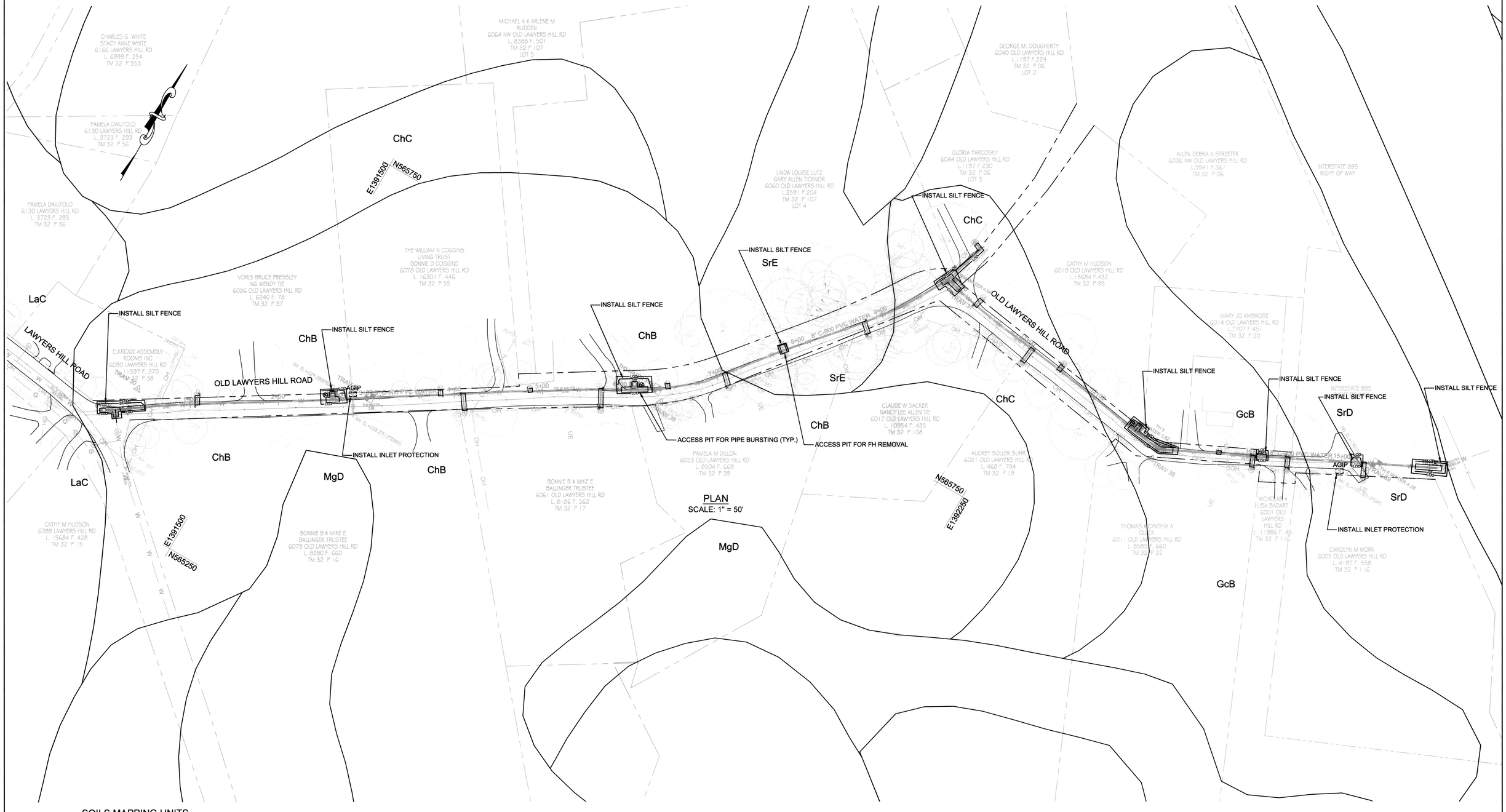
KCI TECHNOLOGIES PROJECT No.: 13122677.47



PLAN
SCALE: 1" = 50'

SOILS MAPPING UNITS

ChB	CHILLUM-RUSSET LOAMS, 2 TO 5 PERCENT SLOPES
ChC	CHILLUM-RUSSET LOAMS, 5 TO 10 PERCENT SLOPES
GcB	GLADSTONE-LEGORE COMPLEX, 3 TO 8 PERCENT SLOPES
LaC	LEGORE SILT LOAM, 8 TO 15 PERCENT SLOPES
MgD	MANOR-BANNERTON SANDY LOAMS, 15 TO 25 PERCENT SLOPES
SrD	SASSAFRAS AND CROOM SOILS, 10 TO 15 PERCENT SLOPES
SrE	SASSAFRAS AND CROOM SOILS, 15 TO 25 PERCENT SLOPES

GRAPHIC SCALE
0 1 2
50 0 50
SCALE: 1" = 50'

AS-BUILT
DATE 03-10-2020

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. 31383, Expiration Date 1/16/2020.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/7/19
CHIEF, BUREAU OF ENGINEERING — DATE 3-5-19
CHIEF, BUREAU OF UTILITIES — DATE 3-6-19
CHIEF, UTILITY DESIGN DIVISION — DATE 3/5/19

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www.kci.com

STATE OF MARYLAND — GUIHUA WANG — No. 31383 — PROFESSIONAL ENGINEER — 03/01/2019

DES: CB, KJ					
DRN: KJ					
CHK: GW					
DATE: MARCH 2019	BY	NO.	REVISION	DATE	

EROSION AND SEDIMENT CONTROL PLAN

600' SCALE MAP NO. 32 BLOCK NO. 20,21

OLD LAWYERS HILL ROAD WATER SUPPLY MAIN REPLACEMENT

CAPITAL PROJECT No. W8327
CONTRACT No. 44-5018

ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 6 OF 8

Mar 01, 2019 - 1:42pm User: kevinjackson
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HOWARD SOIL CONSERVATION DISTRICT (HSCD)
STANDARD SEDIMENT CONTROL NOTES

1. A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID), 410-313-1855 after the future LOD and protected areas are marked clearly in the field. A minimum of 48 hour notice to CID must be given at the following stages:

   a. Prior to the start of earth disturbance,
   b. Upon completion of the installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading,
   c. Prior to the start of another phase of construction or opening of another grading unit,
   d. Prior to the removal or modification of sediment control practices.

   Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made. Other related state and federal permits shall be referenced, to ensure coordination and to avoid conflicts with this plan.

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 2011 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 is required within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed areas on the project site except for those areas under active grading.

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 topsoil (Sec. B-4-2), permanent seeding (Sec. B-4-5), temporary seeding (Sec. B-4-4) and mulching (Sec. B-4-3). Temporary stabilization with mulch alone can only be applied between the fall and spring seeding dates if the ground is frozen. Incremental stabilization (Sec. B-4-1) specifications shall be enforced in areas with >15' of cut and/or fill. Stockpiles (Sec. B-4-8) in excess of 20 ft. must be benched with stable outlet. All concentrated flow, steep slope, and highly erodible areas shall receive soil stabilization matting (Sec. B-4-6).

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 CID.

6. Site Analysis:

Total Area of Site:	0.554	Acres
Area Disturbed:	0.127	Acres
Area to be roofed or paved:	0.066	Acres
Area to be vegetatively stabilized:	0.061	Acres
Total Cut:	191	Cu. Yds.
Total Fill:	191	Cu. Yds.
Offsite waste/borrow area location:	N/A	

7. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.

8. Additional sediment control must be provided, if deemed necessary by the CID. The site and all controls shall be inspected by the contractor weekly; and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and should include:

   - Inspection date
   - Inspection type (routine, pre-storm event, during rain event)
   - Name and title of inspector
   - Weather information (current conditions as well as time and amount of last recorded precipitation)
   - Brief description of project's status (e.g., percent complete) and/or current activities
   - Evidence of sediment discharges
   - Identification of plan deficiencies
   - Identification of sediment controls that require maintenance
   - Identification of missing or improperly installed sediment controls
   - Compliance status regarding the sequence of construction and stabilization requirements
   - Photographs
   - Monitoring/sampling
   - Maintenance and/or corrective action performed
   - Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MDE).

9. Trenches for the construction of utilities is limited to three pipe lengths or that which can and shall be back-filled and stabilized by the end of each workday, whichever is shorter.

10. Any major changes or revisions to the plan or sequence of construction must be reviewed and approved by the HSCD prior to proceeding with construction. Minor revisions may allowed by the CID per the list of HSCD-approved field changes.

11. Disturbance shall not occur outside the L.O.D. A project is to be sequenced so that grading activities begin on one grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the HSCD. Unless otherwise specified and approved by the HSCD, no more than 30 acres cumulatively may be disturbed at a given time.

12. Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structure.

13. Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.

14. All Silt Fence and Super Silt Fence shall be placed on-the-contour, and be imbricated at 25' minimum intervals, with lower ends curled uphill by 2' in elevation.

15. Stream channels must not be disturbed during the following restricted time periods (inclusive):
   - Use I and IP March 1 - June 15
   - Use III and IIIP October 1 - April 30
   - Use IV March 1 - May 31

16. A copy of this plan, the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site and available when the site is active.

Rev. 7.2016

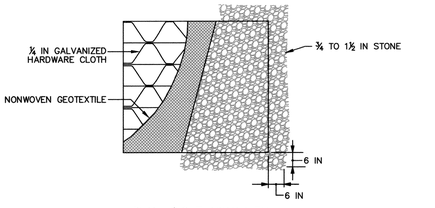
SEQUENCE OF CONSTRUCTION

1. OBTAIN GRADING PERMIT.
2. REQUEST PRE-CONSTRUCTION MEETING ON-SITE WITH REPRESENTATIVE OF HOWARD COUNTY CONSTRUCTION & INSPECTION DIVISION.
3. LAYOUT ALIGNMENT AT SITE. (2 DAYS)
4. THE CONTRACTOR SHALL INSTALL SEDIMENT CONTROL DEVICES PER THE "HOWARD SOIL CONSERVATION DISTRICT STANDARD EROSION & SEDIMENT CONTROL PLAN FOR EARTH DISTURBANCES BETWEEN 5,000 SF AND 30'000 SF.
5. INSTALL TEMPORARY WATER AND CONNECT TO EXISTING WATER SERVICES AS SHOWN ON THE PLANS.
6. EXCAVATE ACCESS PITS TO THE GRADE NECESSARY, INSTALL WATER MAIN, BACKFILL ACCESS PITS, STABILIZE / RESURFACE AS APPROPRIATE (30 DAYS). ALL VEGETATED AREAS DISTURBED DURING THE COURSE OF CONSTRUCTION SHALL BE TEMPORARILY STABILIZED IN ACCORDANCE WITH THE TEMPORARY SEEDING SUMMARY SHOWN ON SHEET 6 OF 6 AND THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, SECTION B-4-4. AT THE END OF EACH WORKING DAY ALL DISTURBED PAVING AREAS WITHIN THE EXISTING ROAD SHALL BE PLATED UNTIL ACCESS PIT WORK IS COMPLETED AND CAN BE BACKFILLED, REPLACED WITH PERMANENT SUBGRADE AND BASE ASPHALT, THEN TEMPORARILY PATCHED, SEE TEMPORARY PAVING DETAIL ON SHEET 2.
7. UPON COMPLETION OF PIPE BURSTING OPERATION AND INSPECTOR'S APPROVAL, PERMANENTLY STABILIZE ALL DISTURBED VEGETATED AREAS IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION SHOWN ON SHEET 6 OF 6 AND THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, SECTION B-4-5.
8. CLEAN UP CONSTRUCTION SITE. (1 DAY)
9. REMOVE SEDIMENT CONTROL DEVICES AFTER PERMISSION IS GRANTED BY THE HOWARD COUNTY INSPECTOR. (1 DAY)

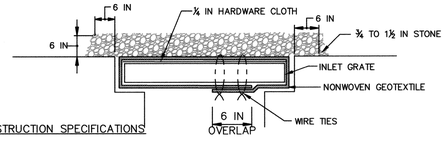
DETAIL E-9-2 AT-GRADE INLET PROTECTION

STANDARD SYMBOL: AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE



PLAN / CUT AWAY VIEW



CROSS SECTION

CONSTRUCTION SPECIFICATIONS

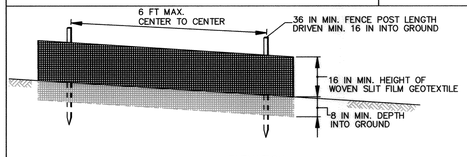
1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
3. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
4. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

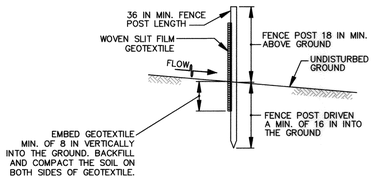
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

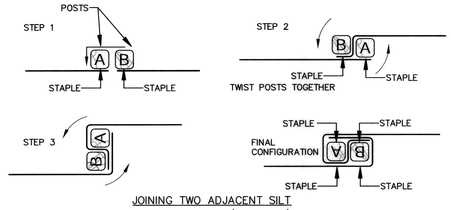
STANDARD SYMBOL: SF



ELEVATION



CROSS SECTION



JOINING TWO ADJACENT SILT FENCE SECTIONS (TOP VIEW)

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

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

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

AS-BUILT
DATE 03-10-2020

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/7/19
CHIEF, BUREAU OF ENGINEERING — DATE 3-5-19
CHIEF, BUREAU OF UTILITIES — DATE 3-6-19
CHIEF, UTILITY DESIGN DIVISION — DATE 3/5/19

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STATE OF MARYLAND — GUINIVA WARD LAWRENCE — NO. 31363 — PROFESSIONAL ENGINEER
03/01/2019

DES: CB, KJ					
DRN: KJ					
CHK: GW					
DATE: MARCH 2019	BY	NO.	REVISION	DATE	600' SCALE MAP NO. 32 BLOCK NO. 20,21

EROSION & SEDIMENT CONTROL NOTES AND DETAILS

OLD LAWYERS HILL ROAD
WATER SUPPLY MAIN REPLACEMENT
CAPITAL PROJECT No. W8327
CONTRACT No. 44-5018
ELECTION DISTRICT NO. 1 — HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN
SHEET: 7 OF 8

KCI TECHNOLOGIES PROJECT No.: 13122677.47

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B-4-2 STANDARDS AND SPECIFICATIONS

FOR

SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition

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

Purpose

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

Criteria

A. Soil Preparation

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

B. Topsoiling

1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
3. Topsoiling is limited to areas having 2:1 or flatter slopes where:
   a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
   b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
   c. The original soil to be vegetated contains material toxic to plant growth.
   d. The soil is so acidic that treatment with limestone is not feasible.
4. Areas having slopes steeper than 2:1 require special consideration and design.
5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
   a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter.
   b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
   c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
6. Topsoil Application
   a. Erosion and sediment control practices must be maintained when applying topsoil.
   b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
   c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)

1. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.
4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

B-4-3 STANDARDS AND SPECIFICATIONS

FOR

SEEDING AND MULCHING

Definition

The application of seed and mulch to establish vegetative cover.

Purpose

To protect disturbed soils from erosion during and at the end of construction.

Conditions Where Practice Applies

To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

Criteria

A. Seeding

1. Specifications
   a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
   b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
   c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
   d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.
2. Application
   a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
      i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
   b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
      i. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
   c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
      i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P_2O_5 (phosphorous), 200 pounds per acre; K_2O (potassium), 200 pounds per acre.
      ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
      iii. Mix seed and fertilizer on site and seed immediately and without interruption.
      iv. When hydroseeding do not incorporate seed into the soil.

B. Mulching

1. Mulch Materials (in order of preference)
   a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty. **Note: Use only sterile straw mulch in areas where one species of grass is desired.**
   b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
      i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
      ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
      iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
      iv. WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic.
      v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.
2. Application
   a. Apply mulch to all seeded areas immediately after seeding.
   b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre.
   c. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
3. Anchoring
   a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard:
      i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour.
      ii. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
      iii. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. **Use of asphalt binders is strictly prohibited**.
      iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000 feet long.

B-4-4 STANDARDS AND SPECIFICATIONS

FOR

TEMPORARY STABILIZATION

Definition

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

Purpose

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

Conditions Where Practice Applies

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

Criteria

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

Temporary Seeding Summary

Hardiness Zone (from Figure B.3): 6b **Seed Mixture** (from Table B.1): _____					**Fertilizer Rate (10-20-20)**	**Lime Rate**
No.	**Species**	**Application Rate (lb/ac)**	**Seeding Dates**	**Seeding Depths**		
	ANNUAL RYEGRASS	40	3/15 – 5/31 8/1 – 9/30	0.5"	436 lb/ac (10 lb/1000 sf)	2 tons/ac (90 lb/1000 sf)
	BARLEY	96	3/15 – 5/31 8/1 – 9/30	1.0"		
	OATS	72	3/15 – 5/31 8/1 – 9/30	1.0"		
	FOXTAIL MILLET	30	6/1 – 7/31	0.5"		

NOTES:

1/ Seeding rates for the warm-season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as tested. Adjustments are usually not needed for the cool-season grasses.

Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for barley, oats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 5% (by weight) of the overall permanent seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur in very late fall beyond the seeding dates for other temporary seedings. Cereal rye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

Oats are the recommended nurse crop for warm-season grasses.

2/ For sandy soils, plant seeds at twice the depth listed above.

3/ The planting dates listed are averages for each Zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.

B-4-5 STANDARDS AND SPECIFICATIONS

FOR

PERMANENT STABILIZATION

Definition

To stabilize disturbed soils with permanent vegetation.

Purpose

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for 6 months or more.

AS-BUILT
DATE 03-10-2020

Criteria

A. Seed Mixtures

1. General Use
   a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
   b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
   c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.
   d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary .
2. Turfgrass Mixtures
   a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
   b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
      i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
      iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1½ to 3 pounds per 1000 square feet.

      Notes:
      Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland"

      Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line
   c. Ideal Times of Seeding for Turf Grass Mixtures

      Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)

      Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)

      Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)
   d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1½ inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.
   e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

Permanent Seeding Summary

Hardiness Zone (from Figure B.3): 6b **Seed Mixture** (from Table B.3): 6					**Fertilizer Rate (10-20-20)**			**Lime Rate**
No.	**Species**	**Application Rate (lb/ac)**	**Seeding Dates**	**Seeding Depths**	**N**	**P_2O_5**	**K_20**	
	TALL FESCUE	40	3/1 – 6/15 8/1 – 10/15	¼- ½ in	45 pounds per acre (1.0 lb/ 1000 sf)	90 lb/acc (2 lb/ 1000 sf)	90 lb/acc (2 lb/ 1000 sf)	2 tons/ac (90 lb/ 1000 sf)
	PERENNAIL RYEGRASS	25	3/1 – 6/15 8/1 – 10/15	¼- ½ in				
	WHITE CLOVER	5	3/1 – 6/15 8/1 – 10/15	¼- ½ in				

B. Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).

1. General Specifications
   a. Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
   b. Sod must be machine cut at a uniform soil thickness of ¾ inch, plus or minus ¼ inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
   c. Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
   d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
   e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.
2. Sod Installation
   a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
   b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
   c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
   d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.
3. Sod Maintenance
   a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
   b. After the first week, sod watering is required as necessary to maintain adequate moisture content.
   c. Do not mow until the sod is firmly rooted. No more than ⅓ of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

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. 31363 , Expiration Date 1/16/2020 .

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 3/7/19
CHIEF, BUREAU OF UTILITIES — DATE 3-6-19
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STATE OF MARYLAND — GUIHUA WANG — No. 31363 — PROFESSIONAL ENGINEER — 03/01/2019

DES: CB, KJ
DRN: KJ
CHK: GW
DATE: MARCH 2019

BY	NO.	REVISION	DATE

EROSION & SEDIMENT CONTROL NOTES

600' SCALE MAP NO. 32 BLOCK NO. 20,21

OLD LAWYERS HILL ROAD
WATER SUPPLY MAIN REPLACEMENT
CAPITAL PROJECT No. W8327
CONTRACT No. 44-5018
ELECTION DISTRICT NO. 1 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 8 OF 8