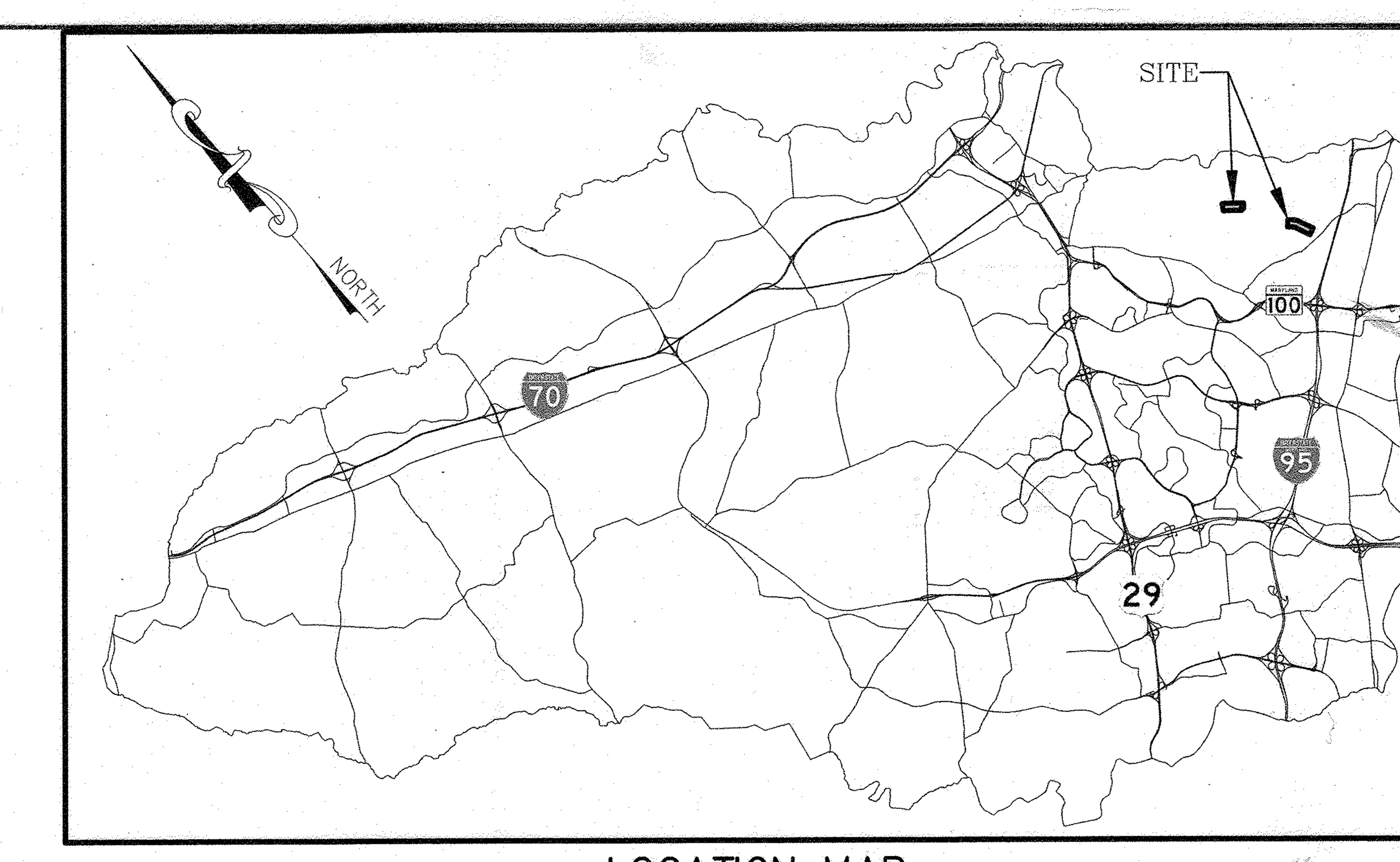
LANDING ROAD WATER MAIN LOOP

HOWARD COUNTY
DEPARTMENT OF PUBLIC WORKS
CAPITAL PROJECT NO. W8305
CONTRACT NO. 44-5059

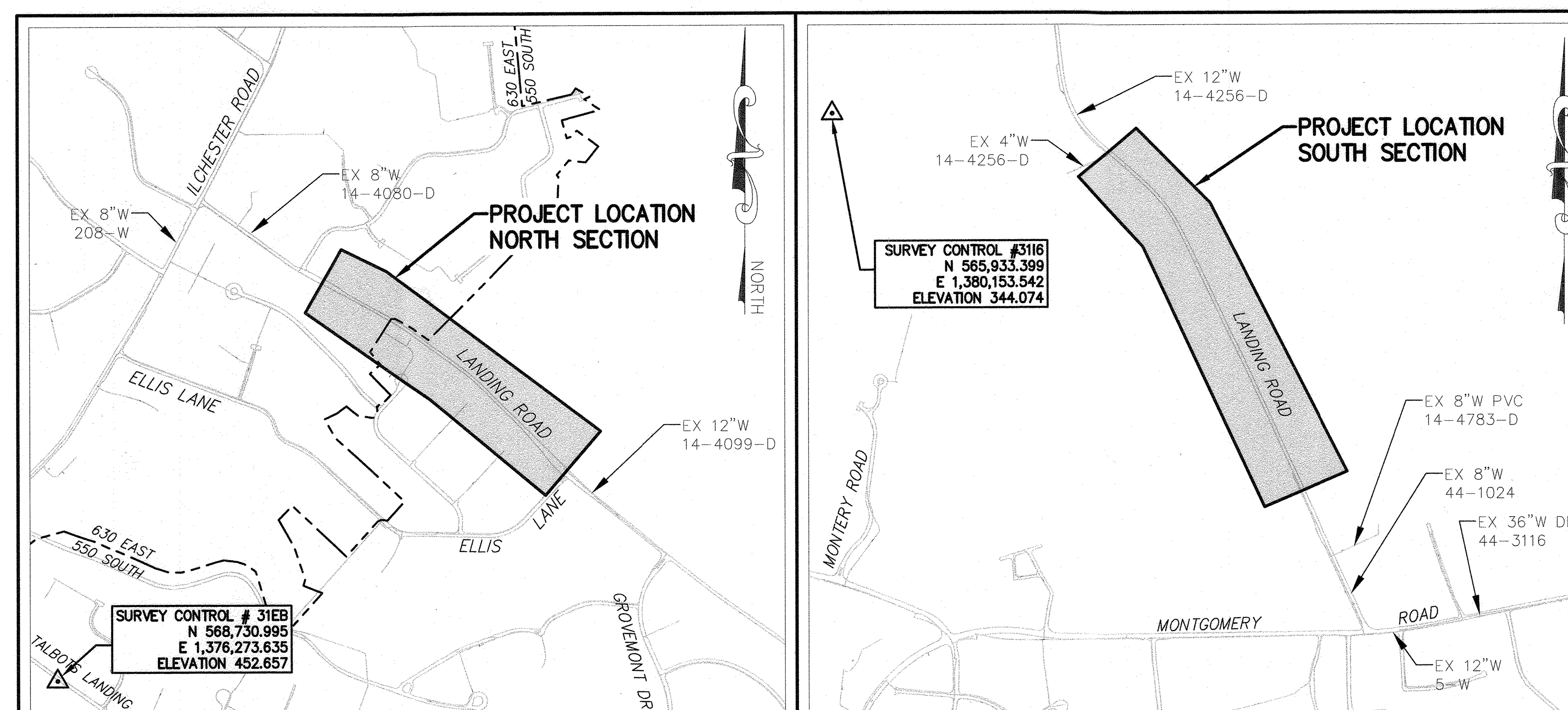
MDE 201960115/19-NT-3014

WATER NOTES:

1. ALL PROPOSED WATER MAINS SHALL BE POLYVINYL CHLORIDE (PVC) PRESSURE CLASS DR-14 IN ACCORDANCE WITH ANSI/AWWA C900, WITH DUCTILE IRON (DI) FITTINGS.
2. ALL HYDRANTS, MAINLINE GATE VALVES, WATER SERVICE VALVES AND PIPING, AND SIMILAR APPURTENANCES (FOR BOTH PERMANENT AND TEMPORARY INSTALLATIONS) SHALL BE RATED FOR A MINIMUM OPERATING PRESSURE OF 305 PSI.
3. TOPS OF ALL WATER MAINS SHALL HAVE A MINIMUM OF 3'-6" OF COVER UNLESS OTHERWISE NOTED.
4. VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
5. ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS UNLESS RESTRAINED JOINTS ARE INSTALLED AS SPECIFIED ON THE DRAWINGS.
6. 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 SPECIFICATIONS.
7. THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
8. ALL TIE-INS TO EXISTING WATER MAINS SHALL BE COORDINATED WITH THE HOWARD COUNTY BUREAU OF UTILITIES AT LEAST 10 WORKING DAYS PRIOR TO SCHEDULING THE WORK.
9. SALVAGEABLE VALVES AND APPURTENANCES TO BE REMOVED SHALL BE DELIVERED TO THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS – BUREAU OF UTILITIES, AS DIRECTED BY THE ENGINEER OR THE COUNTY.
10. IN ACCORDANCE WITH THE 10 STATE STANDARD REQUIREMENTS, WHERE PROPOSED WATER MAIN CROSSES EXISTING OR PROPOSED SEWER, THE WATER MAINS SHALL BE INSTALLED WITH MINIMUM 18-INCHES VERTICAL CLEARANCE (BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF THE SEWER). ALL CROSSINGS OF THE NEW WATER MAIN WITH EXISTING SANITARY OR STORM SEWER PIPING SHALL BE ACCOMPLISHED BY CENTERING A FULL LENGTH OF THE NEW WATER MAIN PIPING AT THE CROSSING TO MAXIMIZE THE DISTANCE OF ANY WATER MAIN JOINT FROM THE CROSSING.
11. NO WATER SHALL BE DISCHARGED FROM THE EXISTING WATER MAIN TO THE ENVIRONMENT, WITHOUT FIRST DECHLORINATING. THE CONTRACTOR SHALL SUBMIT THE DECHLORINATION METHOD TO THE ENGINEER FOR REVIEW.
12. TRACER WIRES AND CONTINUITY TEST STATIONS SHALL BE INSTALLED ON ALL DIP AND PVC WATER MAINS IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL.
13. 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.
14. 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.
15. 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.
16. 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 DEFLECTION COUPLINGS OR 5-DEGREE SWEEPS ARE TO BE INSTALLED, 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 DEFLECTION COUPLING OR 5-DEGREE SWEEP, TAKING CARE NOT TO USE COMPACTION EQUIPMENT DIRECTLY OVER THE FITTING.
17. PVC HIGH DEFLECTION COUPLINGS SHALL BE LIMITED TO A TOTAL DEFLECTION OF 3-DEGREES (1-1/2 DEGREE ON EITHER END OF THE COUPLING), SHALL BE RATED FOR A MINIMUM 235 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 235 PSI, DR-18, MEETING THE REQUIREMENTS OF ANSI/AWWA C900 AND SHALL BE MULTI FITTINGS (IPEX) BLUE BRUTE DR-18 OR EQUAL.
18. WITHIN THE LIMITS OF RESTRAINED JOINTS, RESTRAINED COUPLINGS SHALL BE USED IN LIEU OF HIGH DEFLECTION COUPLINGS. RESTRAINED COUPLINGS SHALL BE LIMITED TO A TOTAL DEFLECTION OF 3-DEGREES (1-1/2 DEGREE ON EITHER END OF THE COUPLING), THE PIPE SHALL BE INSERTED AN EQUAL DEPTH ON BOTH SIDES OF THE COUPLING. THE CONTRACTOR SHALL PROVIDE CORROSION PROTECTION AS PER STANDARD DETAILS AND AS SHOWN IN THESE DRAWINGS. RESTRAINED COUPLINGS SHALL BE RATED FOR A MINIMUM 305 PSI, DR-14, MEETING THE REQUIREMENTS OF ANSI/AWWA C900 AND SHALL BE SERIES 3800 MEGA-COUPLING, AS MANUFACTURED BY EBAA IRON, INC. OR APPROVED EQUAL.



LOCATION MAP
NOT TO SCALE



WATER ZONE: 550 SOUTH, 630 EAST
TEST GRADIENT: 880 FT (630 EAST ZONE)
805 FT (550 SOUTH ZONE)
TYPE OF BUILDINGS: N/A
NUMBER OF PARCELS: N/A
NO. OF WATER CONNECTIONS: 20
NO. OF SEWER CONNECTIONS: N/A
DRAINAGE AREA: PATAPSCO

VICINITY MAP
SCALE: 1" = 600'

HOWARD COUNTY GEODETIC SURVEY CONTROL POINTS:

STATION#	EAST	NORTH	ELEVATION
31EB	1,376,273.635	568,730.995	452.657
3116	1,380,153.542	565,933.399	344.074

GENERAL NOTES:

1. APPROXIMATE LOCATIONS OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
2. TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED IN NOVEMBER 2017 BY RUMMEL, KLEPPER & KAHL, LLP (RK&K).
3. HORIZONTAL AND VERTICAL SURVEY CONTROLS:
THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM NAD '83 (ADJUSTED 2011) AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATION NO. 31EB AND NO. 3116. ALL VERTICAL CONTROLS ARE BASED ON NAVD '88.
4. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
5. CLEAR ALL UTILITIES BY A MINIMUM OF 12 INCHES. CLEAR ALL POLES BY 5'-0" MINIMUM OR TUNNEL AS REQUIRED UNLESS OTHERWISE NOTED. THE OWNER HAS CONTACTED THE UTILITY COMPANIES AND HAS MADE ARRANGEMENTS FOR BRACING OF POLES AS SHOWN ON THE DRAWINGS. IN THE EVENT THE CONTRACTOR'S WORK REQUIRES THE BRACING OF ADDITIONAL POLES, 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 DRAWING OR DESCRIBED IN THE CONTRACT DOCUMENTS, 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. ALL EXISTING UTILITIES SHALL BE TEST PITTED/LOCATED AS NECESSARY AND IN ADVANCE OF THE PROPOSED CONSTRUCTION, IN ORDER TO PROPERLY MAKE ALL REQUIRED UTILITY CROSSINGS AND/OR CONNECTIONS. ANY DISCREPANCIES OR UTILITY CONFLICTS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER. WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL AT THE LOCATION OF THE TEST PIT. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PIT OR PITS ARE INCLUDED IN THE DRAWINGS OR SPECIFICATIONS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG, SHALL BE LOCATED BY THE CONTRACTOR TWO (2) WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
8. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE (5) WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:
AT&T....1-800-252-1133
BGE (CONSTRUCTION SERVICES)....410-637-8713
BGE (EMERGENCY)....800-685-0123
BUREAU OF UTILITIES....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
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. THE CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG THE 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 BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (410) 313-7450 AT LEAST FIVE (5) WORKING DAYS BEFORE OPEN CUTTING OR BORING/JACKING OF ANY COUNTY ROAD FOR LAYING WATER 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.

PURPOSE STATEMENT:

CONTRACT NO. 44-5059 WILL COMPLETE THE WATER MAIN LOOP ALONG LANDING ROAD, CONNECTING THE WATER SYSTEM BETWEEN ILCHESTER ROAD (630 EAST ZONE) AND MONTGOMERY ROAD (550 ZONE). THIS PROJECT IS REQUIRED UNDER THE HOWARD COUNTY MASTER PLAN FOR WATER AND SEWERAGE AND IS NEEDED TO PROVIDE ADEQUATE DOMESTIC WATER SUPPLY AND FIRE PROTECTION, AS WELL AS PROVIDING AN EMERGENCY CONNECTION BETWEEN THE 630 EAST AND 550 ZONES. THE PROJECT WILL ALSO PROVIDE ACCESS TO PUBLIC WATER FOR APPROXIMATELY EIGHTEEN (18) EXISTING PROPERTIES AND ONE (1) NEW DEVELOPMENT WHICH DO NOT CURRENTLY HAVE ACCESS TO PUBLIC WATER SERVICE.

INDEX OF DRAWINGS

AS-BUILT MAY 2020

OWNER/DEVELOPER CERTIFICATION:

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

ZACHARY C. KNIGHT, PROJECT MANAGER — 4/26/2019
Owner's/Developer's Signature — Date

HSCD: EP-19-27

HOWARD SOIL CONSERVATION DISTRICT CERTIFICATION:

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

6/6/19
Howard Soil Conservation District — Date

ENGINEER'S 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.

MD20566 — 04/25/2019
Engineer's Signature – Registration Number — Date

G-01

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

5/3/19		4/29/19	
DIRECTOR OF PUBLIC WORKS	DATE	CHIEF, BUREAU OF ENGINEERING	DATE
5-2-19		4/29/19	
CHIEF, BUREAU OF UTILITIES	DATE	CHIEF, UTILITY DESIGN DIVISION ZCK	DATE

RK&K
P: 410.728.2900
700 East Pratt Street, Suite 500 | Baltimore, MD 21202
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

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. 20566,
EXPIRATION DATE: 09/06/2020.

STATE OF MARYLAND — JOHN C. MOORE — PROFESSIONAL ENGINEER

DES: REG/WJG
DRN: RAD/REG
CHK: JCM/NKS
SIGN DATE: 04/25/2019

BY	NO.	REVISION	DATE

TITLE SHEET, GENERAL NOTES, AND INDEX OF DRAWINGS

600' SCALE MAP NO. 31, 37 — BLOCK NO. 5, 6, 10, 11, 17, 18, 24

PROJECT NO. W8305
CONTRACT NO. 44-5059

LANDING ROAD WATER MAIN LOOP

ELECTION DISTRICT NO. 7 — HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET NO. 01 OF 18

RKK21\SYS – \\balsrv01\v2012\2012\12154_HoCoBOA\Task 12 – Landing Road W8305\CADD\Plans\1-pGN-T001_LANDING RD.dwg Apr 17, 2019 – 2:29pm ENV.CTB Plot Scale 1=1 Plot By: bgross Tab:G-01

ABBREVIATIONS

ABAN	ABANDONED
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJUSTABLE, ADJACENT
ALT	ALTERNATE, ALTERNATIVE
APPROX	APPROXIMATE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AVE	AVENUE
BGE	BALTIMORE GAS AND ELECTRIC
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BLT(S)	BOLT(S)
BM	BENCHMARK
CC	CORROSION CONTROL
CFM	CUBIC FEET PER MINUTE
C&G	CURB AND GUTTER
CI	CAST IRON
CIP	CAST IRON PIPE
CL	CLASS, CLEARANCE, CENTER LINE
CLR	CLEAR, CLEARANCE
CO	CLEAN OUT
COMB	COMBINATION
CONC	CONCRETE
COND	CONDUIT
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS, CONTINUATION, CONTROL
COV	COVER
CP	CATHODIC PROTECTION
CPLG	COUPLING
CTV	CABLE TELEVISION
DEG	DEGREE
DEPT	DEPARTMENT
DET	DETAIL
DI	DROP INLET, DUCTILE IRON
DIA	DIAMETER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DIV	DIVISION
DN	DOWN
DOT	DEPARTMENT OF TRANSPORTATION
DR	DRAIN
DTL	DETAIL
DV	DIVISION VALVE
DWG(S)	DRAWING(S)
E	EAST, ELECTRIC
EA	EACH
EBOX	ELECTRICAL BOX
EL	ELEVATION
ELEC	ELECTRIC
ELEV	ELEVATION
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EQUIP	EQUIPMENT
EX	EXISTING
EXT	EXTENSION, EXTERIOR, EXTERNAL
FH	FIRE HYDRANT
FLEX	FLEXIBLE
FLG	FLANGE
FM	FORCE MAIN, FLOW METER
FO	FIBER OPTIC
FP	FLOOD PLAIN
FT	FEET, FOOT
G	GAS
GAB	GRADED AGGREGATE BASE
GALV	GALVANIZED
GPM	GALLONS PER MINUTE
GR	GRADE
GV	GATE VALVE, GRAVITY VENTILATOR
HB	HORIZONTAL BEND
HC	HOWARD COUNTY
HD	HIGH DEFLECTION
HMA	HOT MIX ASPHALT
HORIZ	HORIZONTAL
HR	HOUR
HWY	HIGHWAY
ID	INSIDE DIAMETER
IN	INCH, INCHES
INC	INCORPORATED
INCL	INCLUDING
INL	INLET
INSUL	INSULATE, INSULATION, INSULATING
INV	INVERT
JT	JOINT

ABBREVIATIONS (CONT'D)

L	LENGTH
LB(S)	POUND(S)
LF	LINEAR FEET
LG	LENGTH, LONG
LOC	LIMIT OF CONTRACT
LOD	LIMIT OF DISTURBANCE
LP	LOW POINT, LIGHT POLE
LT	LEFT
MAX	MAXIMUM
M.B.	MAILBOX
MDSHA	MARYLAND STATE HIGHWAY ADMINISTRATION
MECH	MECHANICAL
MED	MEDIUM
MFR(S)	MANUFACTURER(S)
MG	MILLION GALLONS
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM, MINUTE
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MPH	MILES PER HOUR
N	NORTH
NA	NOT APPLICABLE
N.I.C	NOT IN CONTRACT
NO.(S)	NUMBER(S)
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OD	OUTSIDE DIAMETER
OH	OVERHEAD
OPP	OPPOSITE, OPPOSING
PAV	PAVEMENT
PE	PLAIN END
PK	PK NAIL
PL	PLATE
PROP	PROPOSED
PSI	POUNDS PER SQUARE INCH
PT	POINT
PVC	POLYVINYL CHLORIDE
R	RADIUS, RISER, RIM ELEVATION
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REF	REFERENCE
REQD	REQUIRED
REV	REVISION, REVISED
ROW	RIGHT-OF-WAY
R/W	RIGHT-OF-WAY
RT	RIGHT
S	SOUTH, SEWER
SAN	SANITARY
SB	SOIL BORING
SD	STORM DRAIN
SECT	SECTION
SF	SILT FENCE
SHC	SANITARY SEWER HOUSE CONNECTION
SPEC(S)	SPECIFICATION(S)
SQ	SQUARE
SS	STAINLESS STEEL, SANITARY SEWER
STA	STATION
STD	STANDARD
SYS	SYSTEM
T	TOP
TBD	TO BE DETERMINED
TEL	TELEPHONE
TEMP	TEMPERATURE, TEMPORARY
TH	TEST HOLE
TOP	TOP (OF PIPE) ELEVATION
TP	TEST PIT
TRAV	TRAVERSE
TYP	TYPICAL
UFGS	UNIFIED FACILITIES GUIDE SPECIFICATIONS
USGS	UNITED STATES GEOLOGICAL SURVEY
V	VALVE, VERTICAL
VB	VERTICAL BEND
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
W	WEST, WIDTH, WATER
W/	WITH
WHC	WATER HOUSE CONNECTION
WM	WATER METER
W/O	WITHOUT
WSS	WATER SUPPLY SERVICE
WV	WATER VALVE

ABBREVIATIONS (CONT'D)

X	BY, TIMES
&	AND
@	AT
#	NUMBER
%	PERCENT

LEGEND

EXISTING

SANITARY SEWER
SANITARY SEWERS 12" AND OVER
SANITARY SEWER FORCE MAIN
WATER
STORM DRAIN
STORM DRAIN INLET
OVERHEAD ELECTRIC
UNDERGROUND ELECTRIC
UNDERGROUND TELEPHONE
UNDERGROUND CABLE
GAS
PROPERTY LINE
UTILITY EASEMENT
MINOR CONTOURS
MAJOR CONTOURS
100-YEAR FLOODPLAIN
WETLAND BOUNDARY
25' WETLAND BUFFER
STREAM BUFFER
WATERS OF THE US
FENCE
GUARDRAIL
RAILROAD TRACKS
TREE LINE OR WOODS
WATER FIRE HYDRANT
WATER VALVE
GAS METER
ELECTRIC POLE GUY
ELECTRIC POLE
UTILITY MARKER
SIGN
MAILBOX
SANITARY SEWER MANHOLE
STORM DRAIN MANHOLE
BORING
TRAVERSE LOCATION
TEST HOLE LOCATION

PROPOSED

WATER MAIN
WATER VALVE
WATER FIRE HYDRANT
WATER HOUSE CONNECTION

QUANTITIES

ITEM	ESTIMATED QUANTITY		AS-BUILT	SUPPLIER
12" C900 PVC DR-14 PIPE	4162	LF		
8" C900 PVC DR-14 PIPE	25	LF		
12" GATE VALVE	5	EA		
8" GATE VALVE	2	EA		
12" DIVISION VALVE	1	EA		
6" FIRE HYDRANT ASSEMBLY	7	EA		
12" - 11.25° (1/32) ELBOW	4	EA		
8" - 45° (1/8) ELBOW	3	EA		
12" - 5° SWEEP	3	EA		
12" HD COUPLING	17	EA		
12" RESTRAINED COUPLING	15	EA		
12" X 8" REDUCER	2	EA		
1" COPPER PIPE	211	LF		
1.5" COPPER PIPE	72	LF		
3/4" METER SETTING & VAULT	18	EA		
1" METER SETTING & VAULT	1	EA		
TWIN 1" METER SETTING & VAULT	1	EA		
12"X8" TEE	1	EA		
12" X 6" FH TEE	7	EA		
12" DI MJ SOLID SLEEVE	2	EA		
8" DI MJ SOLID SLEEVE	3	EA		
12"X12" DI OFFSET	1	EA		

FITTING SCHEDULE - LANDING ROAD (NORTH SECTION)

STATION	FITTING	NORTHING	EASTING
0+00	8" DI SOLID SLEEVE	571,157.1666	1,378,062.3571
0+05	8" VALVE	571,154.8578	1,378,066.8451
0+10	8" DI 45° HB	571,152.6077	1,378,071.2563
0+23	12"X8" REDUCER	571,156.5965	1,378,083.6146
0+36.50	12" DI 45° HB	571,160.7538	1,378,096.4959
3+64.50	12" VALVE	571,000.3552	1,378,382.5760
4+91.40	12"X6" FH TEE	570,929.5812	1,378,487.8213
5+28.20	12" VALVE	570,908.6107	1,378,518.0918
5+33.12	12"X8" TEE	570,905.8596	1,378,522.1670
9+80.70	12" VALVE	570,637.2148	1,378,879.9651
9+85.70	12"X6" FH TEE	570,633.9132	1,378,883.6566
14+60.85	12" VALVE	570,303.9649	1,379,225.5446
14+65.75	12"X6" FH TEE	570,300.5279	1,379,229.0438
18+25	12" DI SOLID SLEEVE	570,049.7632	1,379,462.7015

FITTING SCHEDULE - LANDING ROAD (SOUTH SECTION)

STATION	FITTING	NORTHING	EASTING
-0+51	12"X6" FH TEE	565,705.0798	1,381,868.5104
0+00	12" DI SOLID SLEEVE	565,671.5868	1,381,906.7404
5+95	12" VALVE	565,244.0938	1,382,314.9072
6+00	12"X6" FH TEE	565,239.7947	1,382,317.4549
12+25	12"X6" FH TEE	564,767.2793	1,382,545.9990
17+45	12" VALVE	564,208.2654	1,382,814.1211
17+50	12"X6" FH TEE	564,203.7075	1,382,816.1780
23+38	12"X8" REDUCER	563,702.1312	1,383,042.1312
23+45.33	8" DI 45° HB	563,682.3264	1,383,050.7495
23+54.42	8" DI 45° HB	563,673.8151	1,383,047.6223
23+58.46	8" VALVE	563,670.3467	1,383,050.0354
23+63	8" DI SOLID SLEEVE	563,665.6127	1,383,051.7063

AS-BUILT MAY 2020

G-02

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 5/3/19
CHIEF, BUREAU OF ENGINEERING — DATE 4/29/19
CHIEF, BUREAU OF UTILITIES — DATE 5-2-19
CHIEF, UTILITY DESIGN DIVISION — DATE 4/29/19

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PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 20566, EXPIRATION DATE: 09/06/2020.

STATE OF MARYLAND — JOHN C. MCCANN — No. 20566 — PROFESSIONAL ENGINEER

DES: REG/WJG
DRN: RAD/REG
CHK: JCM/NKS
SIGN DATE: 04/25/19

BY	NO.	REVISION	DATE

[redacted]

LEGEND, ABBREVIATIONS, AND FITTING SCHEDULES

600' SCALE MAP NO. 31, 37 — BLOCK NO. 5, 6, 10, 11, 17, 18, 24

PROJECT NO. W8305
CONTRACT NO. 44-5059

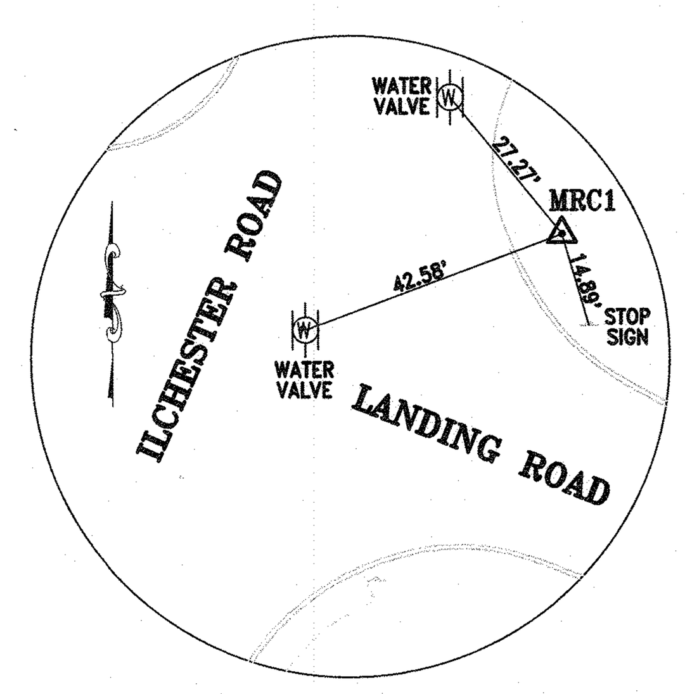
LANDING ROAD WATER MAIN LOOP

ELECTION DISTRICT NO. 7 — HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET NO. 02 OF 18

RK&K\SYS - \\baltan01\V2012\2012\12154_HoCoB0A\Task 12 - Landing Road W8305\CADD\Plans\2-pGN-T002_LANDING RD.dwg Apr 17, 2019 - 2:29pm ENV.CTB Plot Scale 1=1 Plot By: bgraas Tab:G-02



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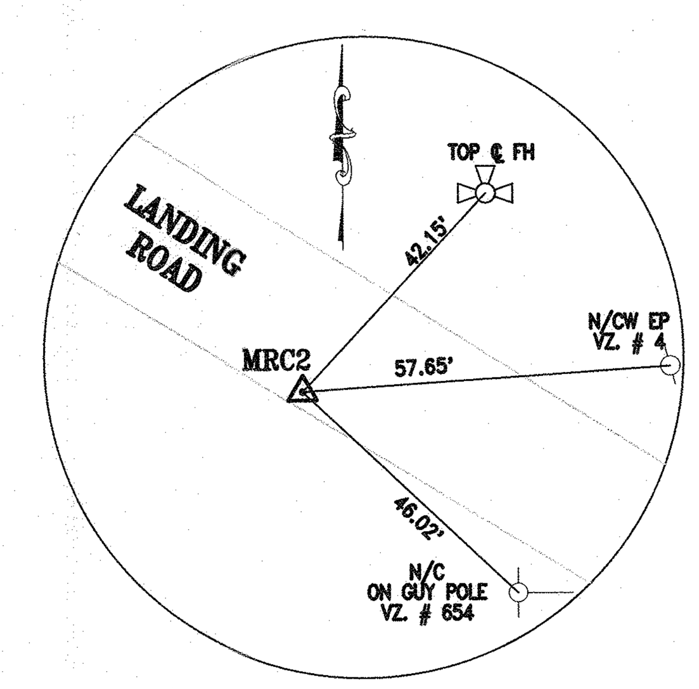
ELEVATION = 469.730



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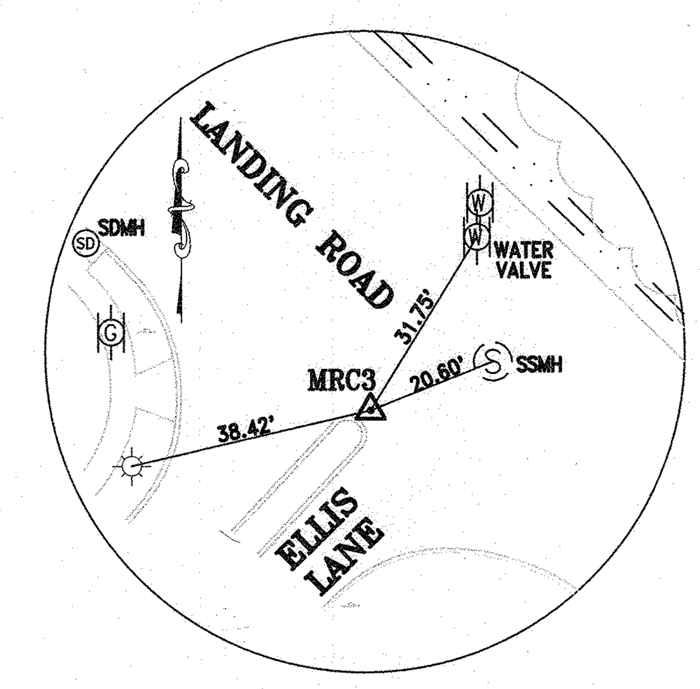

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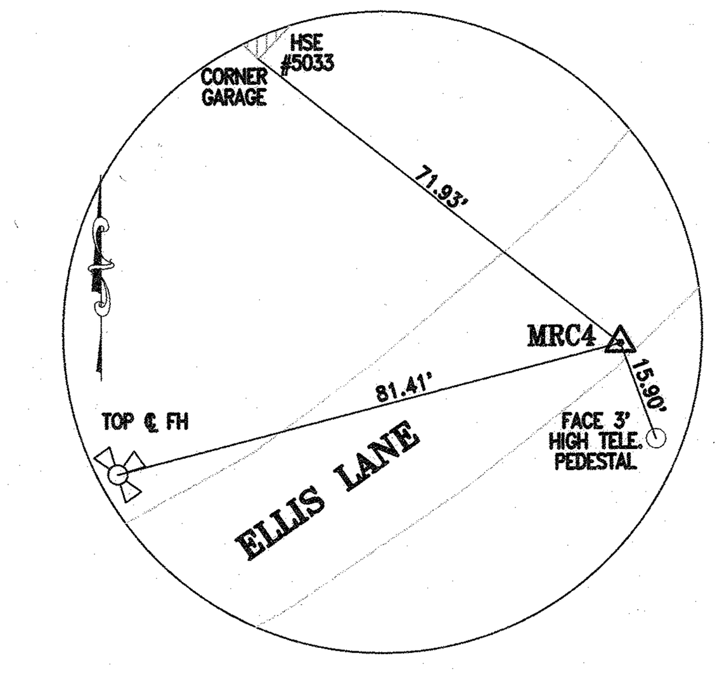

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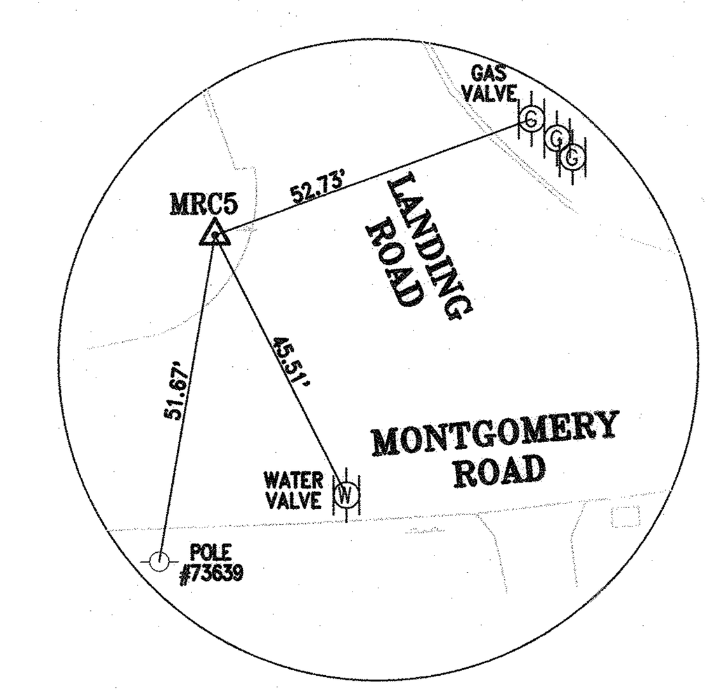

MRC5
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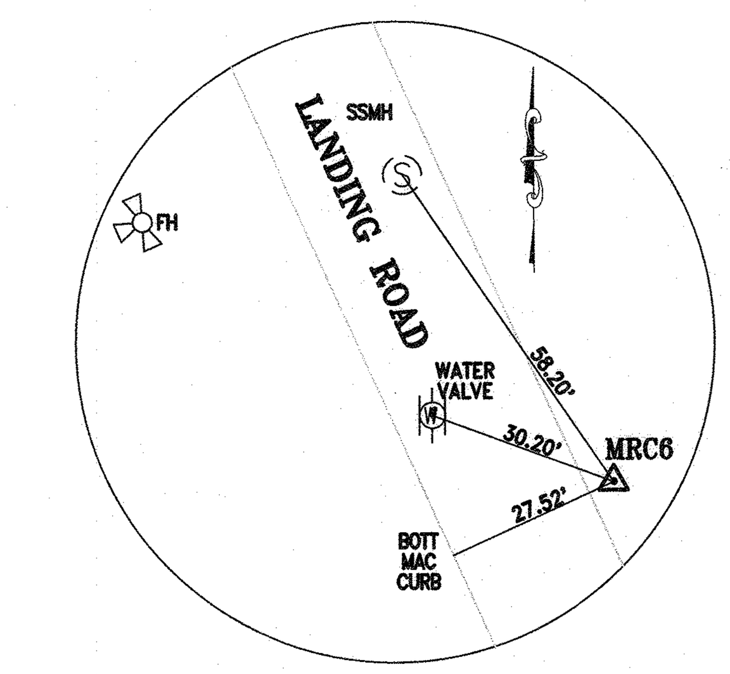

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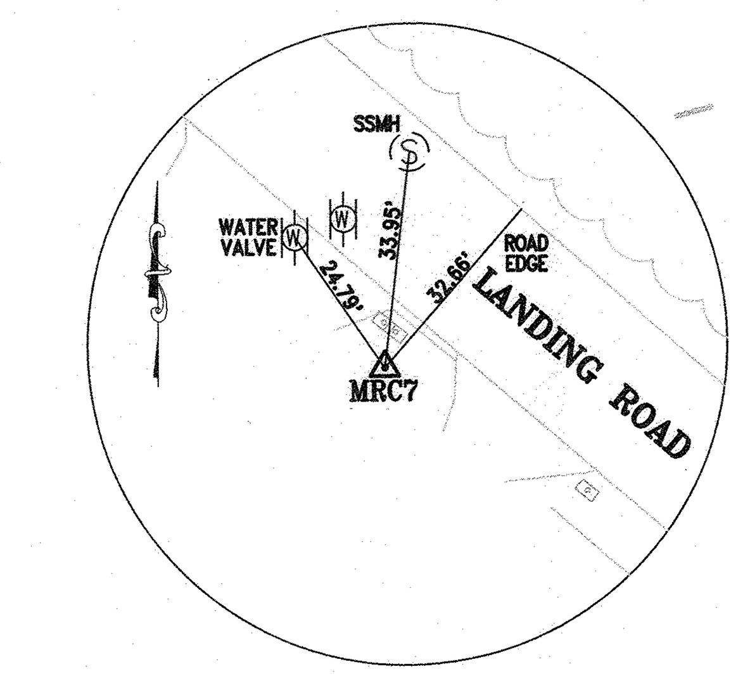

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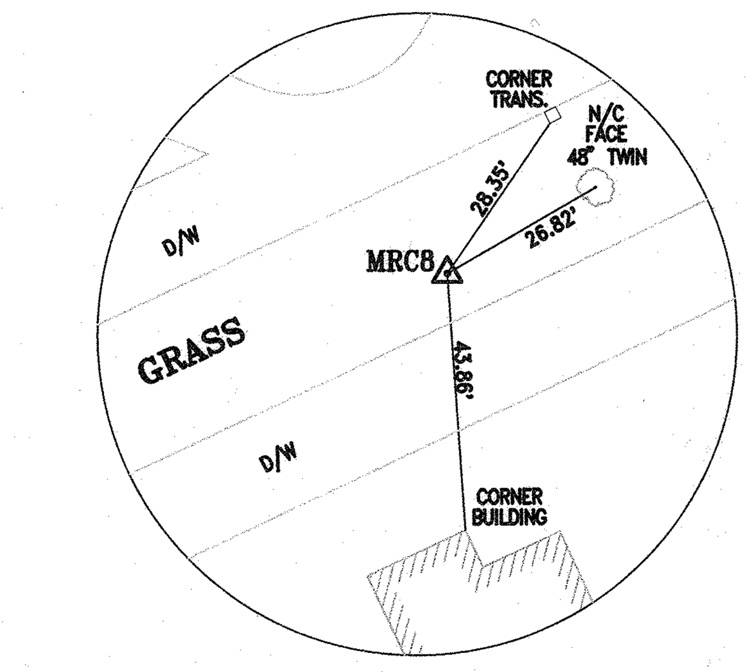

MRC8
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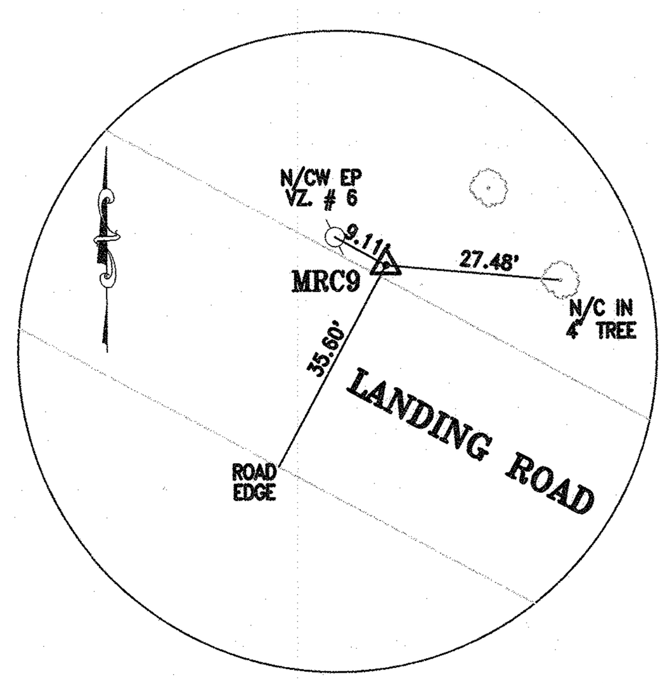
ELEVATION = 302.070



MRC9
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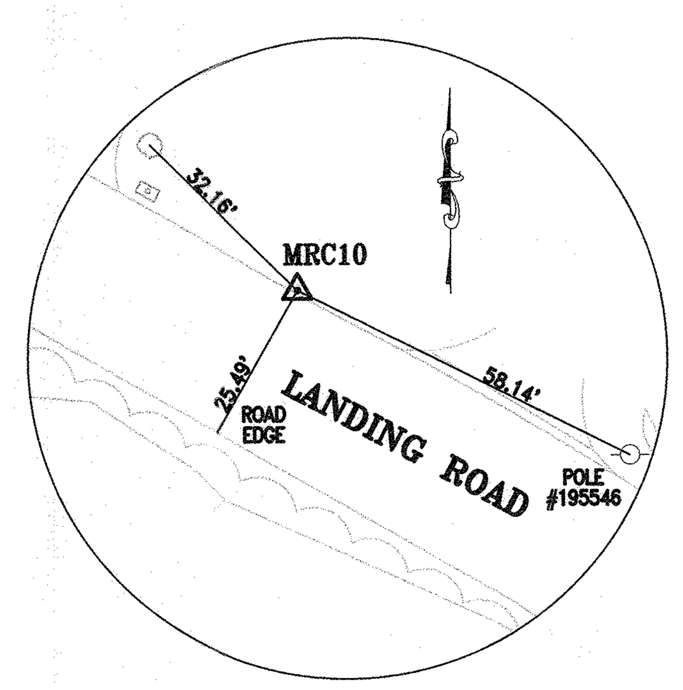
EASTING = 1377923.2405
ELEVATION = 421.400



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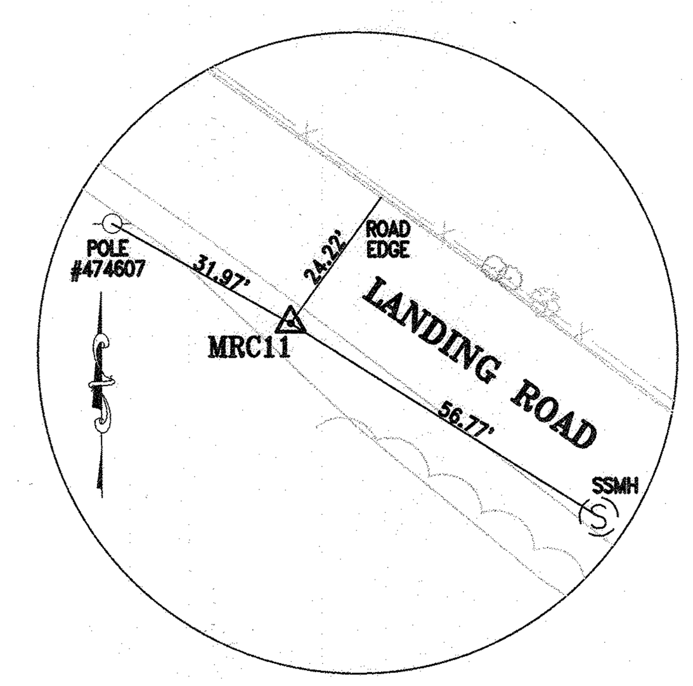

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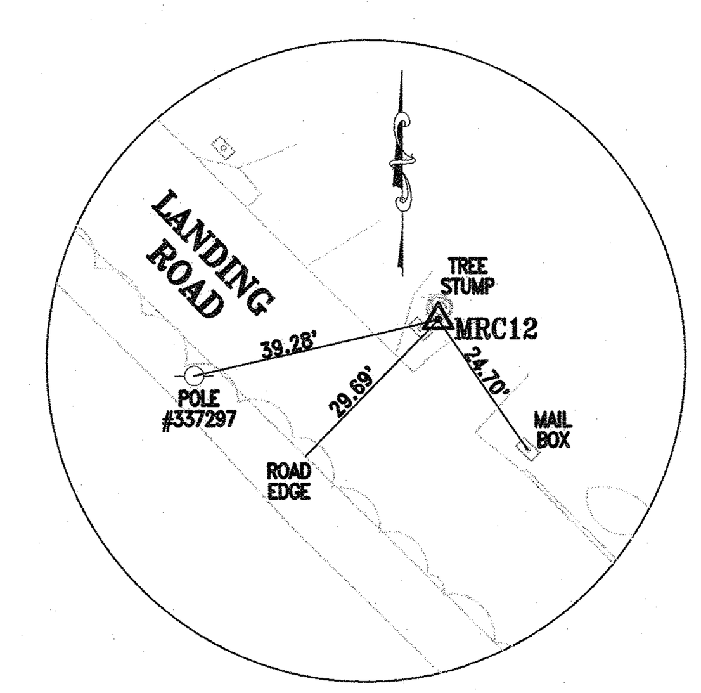

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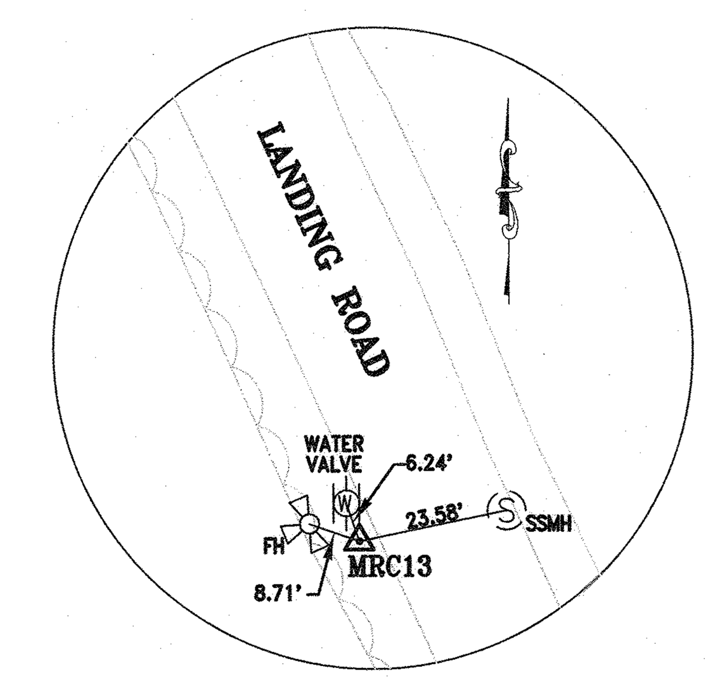

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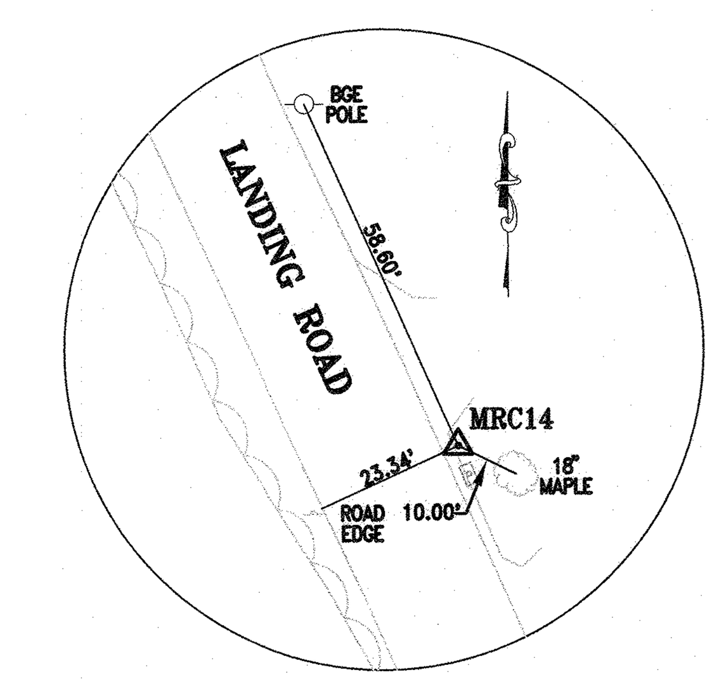

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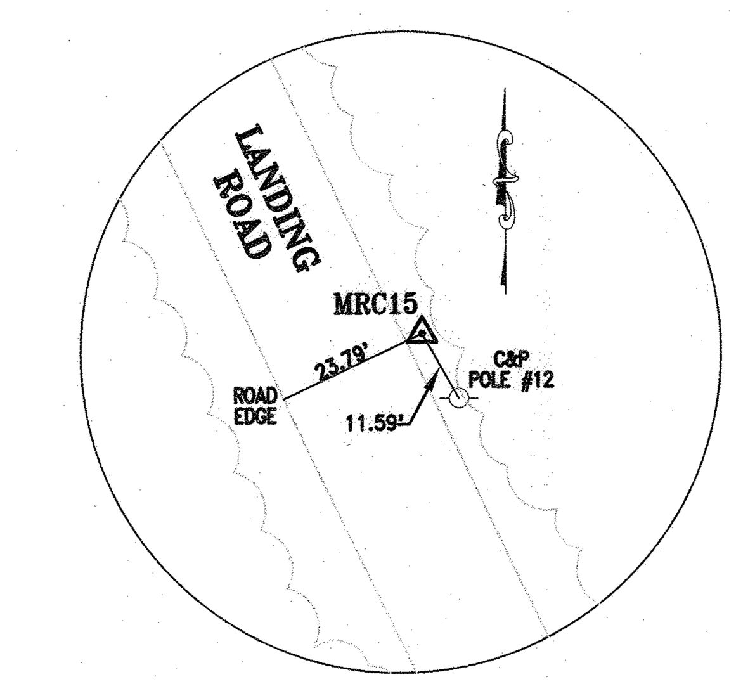

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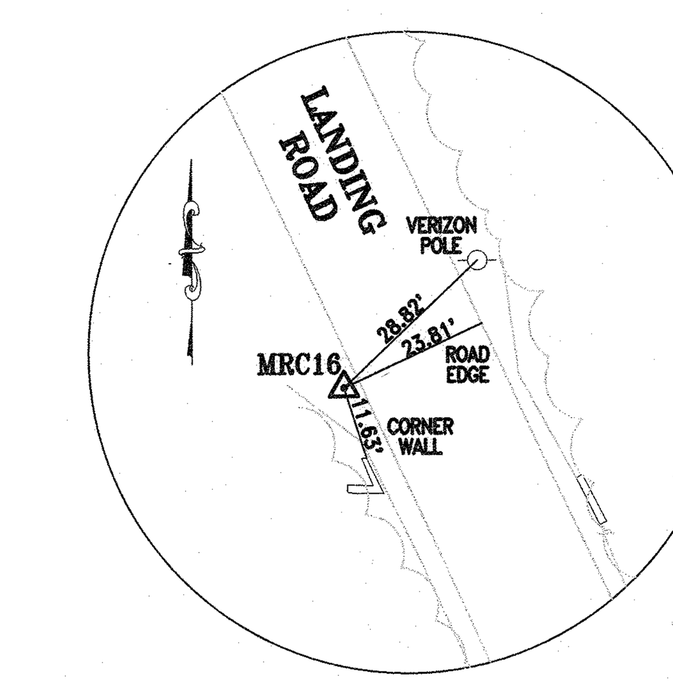

MRC16
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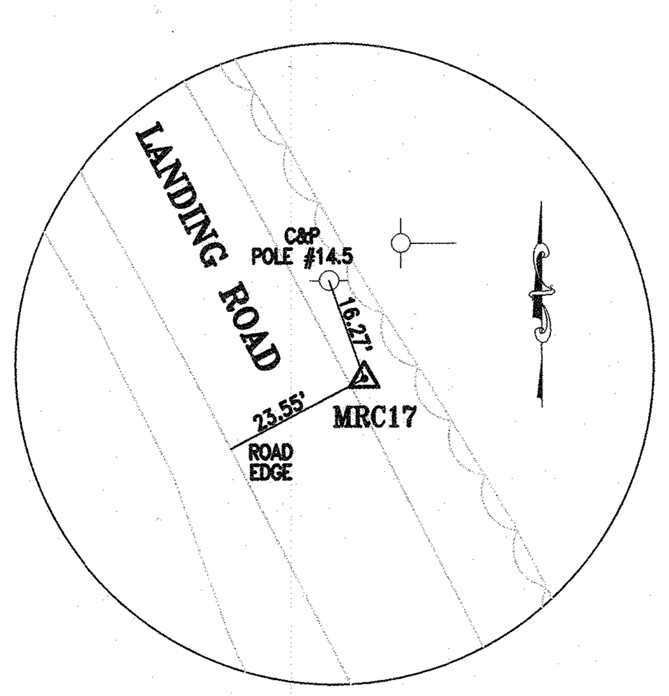

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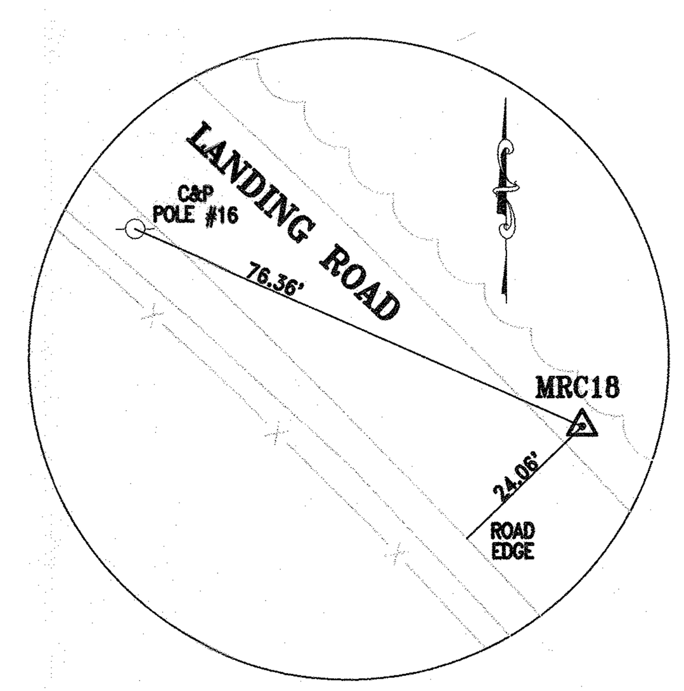

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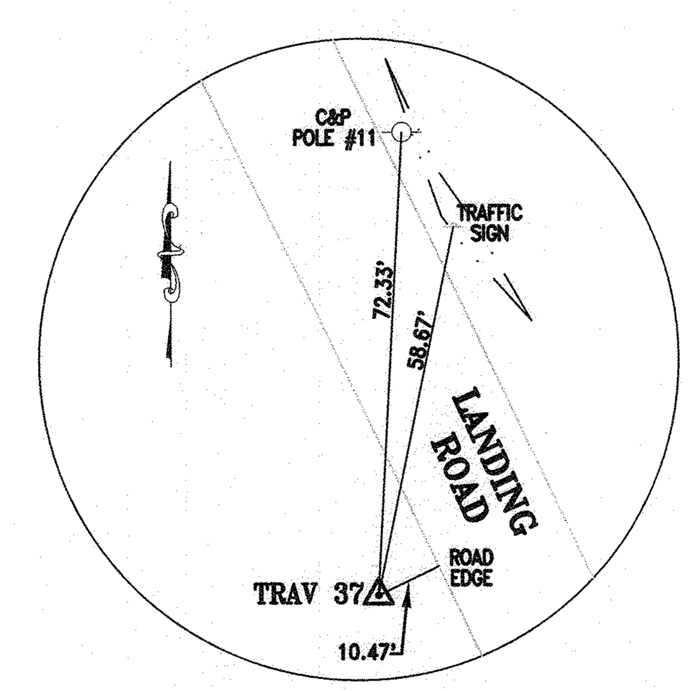
ELEVATION = 297.510



TRAV 37
NORTHING = 564321.5212
EASTING = 1382742.8353
ELEVATION = 256.894

AS-BUILT MAY 2020

G-03

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

5/3/19		4/29/19	
DIRECTOR OF PUBLIC WORKS	DATE	CHIEF, BUREAU OF ENGINEERING	DATE
5-2-19		4/29/19	
CHIEF, BUREAU OF UTILITIES	DATE	CHIEF, UTILITY DESIGN DIVISION	DATE

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LICENSE NO. 20566,
EXPIRATION DATE: 09/06/2020.

STATE OF MARYLAND
JOHN C. MOORE
No. 20566
REGISTERED
PROFESSIONAL ENGINEER

DES: REG/WJG
DRN: RAD/REG
CHK: JCM/NKS
SIGN DATE: 04/25/19

BY	NO.	REVISION	DATE

[redacted]

SURVEY CONTROL AND STAKEOUT

600' SCALE MAP NO. 31, 37
BLOCK NO. 5, 6, 10, 11, 17, 18, 24

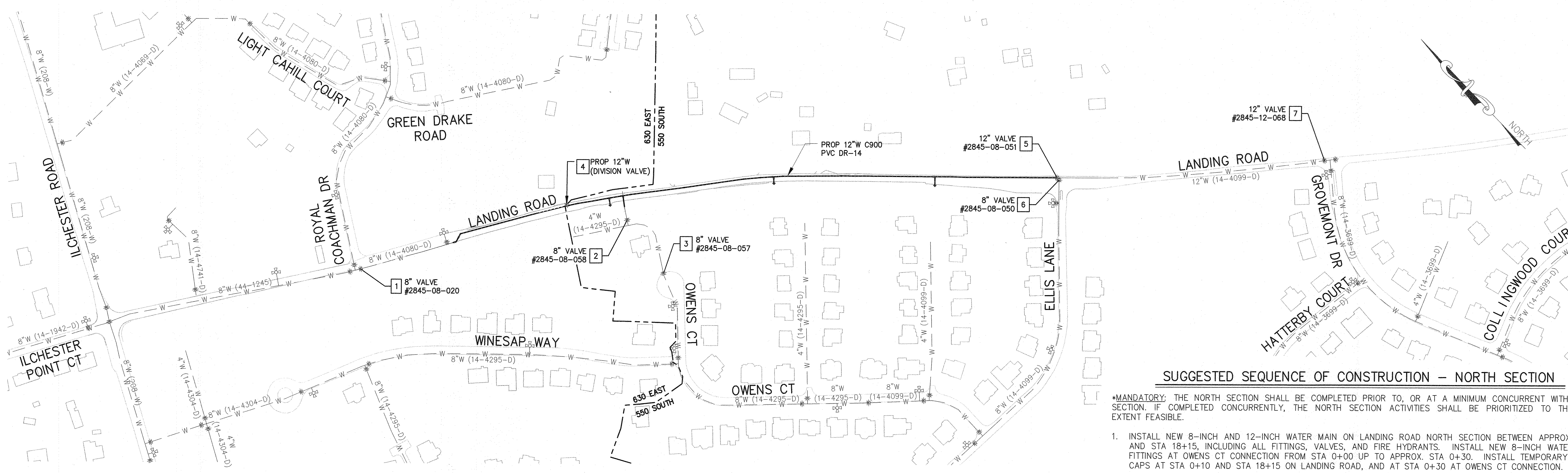
PROJECT NO. W8305
CONTRACT NO. 44-5059

LANDING ROAD WATER MAIN LOOP

ELECTION DISTRICT NO. 7
HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET NO.
03 OF 18



SHUTOFF PLAN – NORTH SECTION

SCALE: 1" = 150'

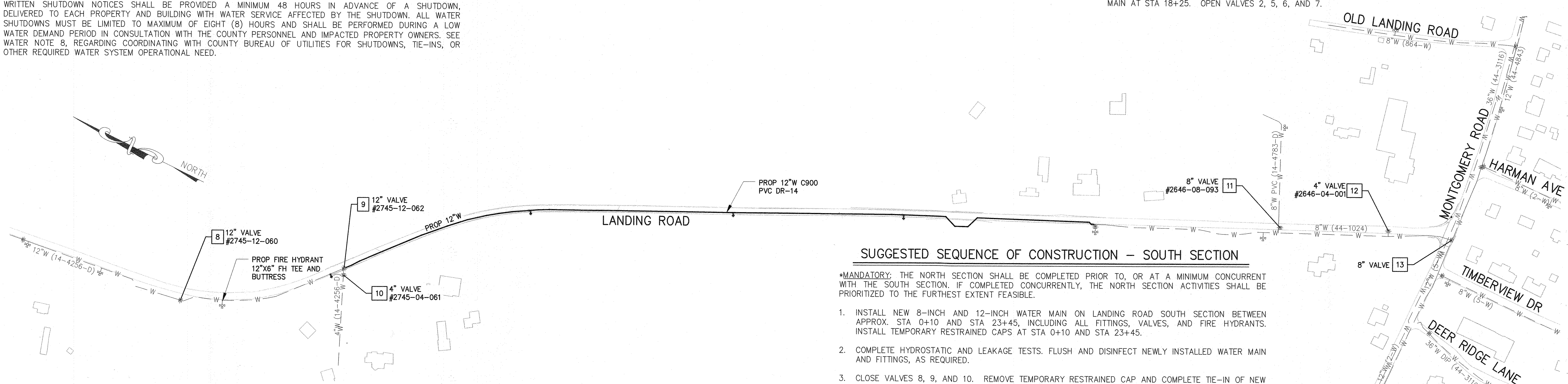
SEQUENCE OF CONSTRUCTION – GENERAL NOTES

1. THE SUGGESTED SEQUENCE OF CONSTRUCTION DOES NOT INCLUDE CONCURRENT SEDIMENT AND EROSION CONTROL MEASURES, AND MAINTENANCE OF TRAFFIC ACTIVITIES, WHICH SHALL ALSO BE FOLLOWED AS DESCRIBED IN THE CONTRACT DOCUMENTS.
2. THE CONTRACTOR SHALL VERIFY THAT THE EXISTING WATER MAINS AND VALVES ARE ADEQUATELY RESTRAINED PRIOR TO REMOVAL OF EXISTING WATER MAIN AT THE CONNECTION LOCATIONS. THE CONTRACTOR SHALL PROVIDE TEMPORARY THRUST BLOCKING ON THE EXISTING AND NEW WATER MAINS AS NEEDED TO COMPLETE CONNECTION TO THE NEW WATER MAIN AT NO ADDITIONAL COST TO THE COUNTY.
3. THE CONTRACTOR SHALL NOTIFY ALL PROPERTY OWNERS AFFECTED BY THE PROPOSED WATER SHUTDOWN. WRITTEN SHUTDOWN NOTICES SHALL BE PROVIDED A MINIMUM 48 HOURS IN ADVANCE OF A SHUTDOWN, DELIVERED TO EACH PROPERTY AND BUILDING WITH WATER SERVICE AFFECTED BY THE SHUTDOWN. ALL WATER SHUTDOWNS MUST BE LIMITED TO MAXIMUM OF EIGHT (8) HOURS AND SHALL BE PERFORMED DURING A LOW WATER DEMAND PERIOD IN CONSULTATION WITH THE COUNTY PERSONNEL AND IMPACTED PROPERTY OWNERS. SEE WATER NOTE 8, REGARDING COORDINATING WITH COUNTY BUREAU OF UTILITIES FOR SHUTDOWNS, TIE-INS, OR OTHER REQUIRED WATER SYSTEM OPERATIONAL NEED.

SUGGESTED SEQUENCE OF CONSTRUCTION – NORTH SECTION

*MANDATORY: THE NORTH SECTION SHALL BE COMPLETED PRIOR TO, OR AT A MINIMUM CONCURRENT WITH THE SOUTH SECTION. IF COMPLETED CONCURRENTLY, THE NORTH SECTION ACTIVITIES SHALL BE PRIORITIZED TO THE FURTHEST EXTENT FEASIBLE.

1. INSTALL NEW 8-INCH AND 12-INCH WATER MAIN ON LANDING ROAD NORTH SECTION BETWEEN APPROX. STA 0+10 AND STA 18+15, INCLUDING ALL FITTINGS, VALVES, AND FIRE HYDRANTS. INSTALL NEW 8-INCH WATER MAIN AND FITTINGS AT OWENS CT CONNECTION FROM STA 0+00 UP TO APPROX. STA 0+30. INSTALL TEMPORARY RESTRAINED CAPS AT STA 0+10 AND STA 18+15 ON LANDING ROAD, AND AT STA 0+30 AT OWENS CT CONNECTION.
2. COMPLETE HYDROSTATIC AND LEAKAGE TESTS. FLUSH AND DISINFECT NEWLY INSTALLED WATER MAIN AND FITTINGS, AS REQUIRED.
3. THE CONTRACTOR SHALL MAKE SURE TO KEEP THE NEWLY INSTALLED 12-INCH DIVISION VALVE 4, AT STA 2+73.80 IN THE CLOSED POSITION BEFORE COMPLETING THE TIE-INS.
4. CLOSE VALVE 1. REMOVE RESTRAINED CAP AND BUTTRESS AND COMPLETE TIE-IN OF NEW 12-INCH WATER MAIN AT STA 0+00 ON LANDING ROAD. OPEN VALVE 1.
5. CLOSE VALVES 2, AND 3. REMOVE TEMPORARY RESTRAINED CAPS AND COMPLETE TIE-IN OF NEW 8-INCH WATER MAIN AT STA 0+37 AT OWENS CT CONNECTION. OPEN VALVE 3; KEEP VALVE 2 CLOSED.
6. CLOSE VALVES 5, 6, AND 7. REMOVE TEMPORARY RESTRAINED CAP AND COMPLETE TIE-IN OF NEW 12-INCH WATER MAIN AT STA 18+25. OPEN VALVES 2, 5, 6, AND 7.



SUGGESTED SEQUENCE OF CONSTRUCTION – SOUTH SECTION

*MANDATORY: THE NORTH SECTION SHALL BE COMPLETED PRIOR TO, OR AT A MINIMUM CONCURRENT WITH THE SOUTH SECTION. IF COMPLETED CONCURRENTLY, THE NORTH SECTION ACTIVITIES SHALL BE PRIORITIZED TO THE FURTHEST EXTENT FEASIBLE.

1. INSTALL NEW 8-INCH AND 12-INCH WATER MAIN ON LANDING ROAD SOUTH SECTION BETWEEN APPROX. STA 0+10 AND STA 23+45, INCLUDING ALL FITTINGS, VALVES, AND FIRE HYDRANTS. INSTALL TEMPORARY RESTRAINED CAPS AT STA 0+10 AND STA 23+45.
2. COMPLETE HYDROSTATIC AND LEAKAGE TESTS. FLUSH AND DISINFECT NEWLY INSTALLED WATER MAIN AND FITTINGS, AS REQUIRED.
3. CLOSE VALVES 8, 9, AND 10. REMOVE TEMPORARY RESTRAINED CAP AND COMPLETE TIE-IN OF NEW 12-INCH WATER MAIN AT STA 0+00. INSTALL 12"X6" TEE, BUTTRESS AND FIRE HYDRANT AT -0+51. OPEN VALVES 8 AND 10; KEEP VALVE 8 CLOSED.
4. CLOSE VALVES 11, 12, AND 13. REMOVE TEMPORARY RESTRAINED CAP AND COMPLETE TIE-IN OF NEW 12-INCH WATER MAIN AT STA 23+63. OPEN VALVES 9, 11, 12, AND 13. RESTORE THE AREA.

SHUTOFF PLAN – SOUTH SECTION

SCALE: 1" = 150'

LEGEND

– – – WATER PRESSURE ZONE BOUNDARY

AS-BUILT MAY 2020

1"=150' 150' 75' 0 150' 300'

C-01

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE	CHIEF, BUREAU OF ENGINEERING 4/29/19 DATE
CHIEF, BUREAU OF UTILITIES 5-2-19 DATE	CHIEF, UTILITY DESIGN DIVISION 4/29/19 DATE

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DES: REG/WJG
DRN: RAD/REG
CHK: JCM/NKS
SIGN DATE: 04/25/19

BY	NO.	REVISION	DATE

[redacted] [redacted]

WATER SHUTOFF PLAN AND SEQUENCE OF CONSTRUCTION

600' SCALE MAP NO. 31, 37 BLOCK NO. 5, 6, 10, 11, 17, 18, 24

PROJECT NO. W8305
CONTRACT NO. 44-5059

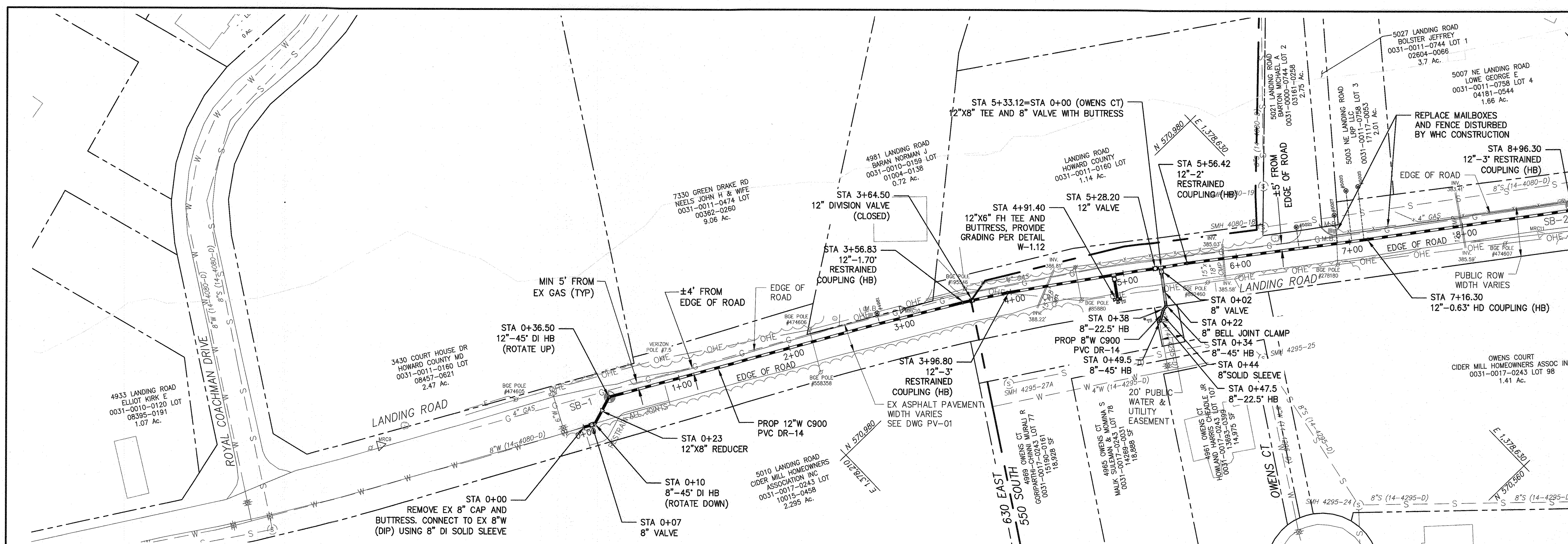
LANDING ROAD WATER MAIN LOOP

ELECTION DISTRICT NO. 7 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

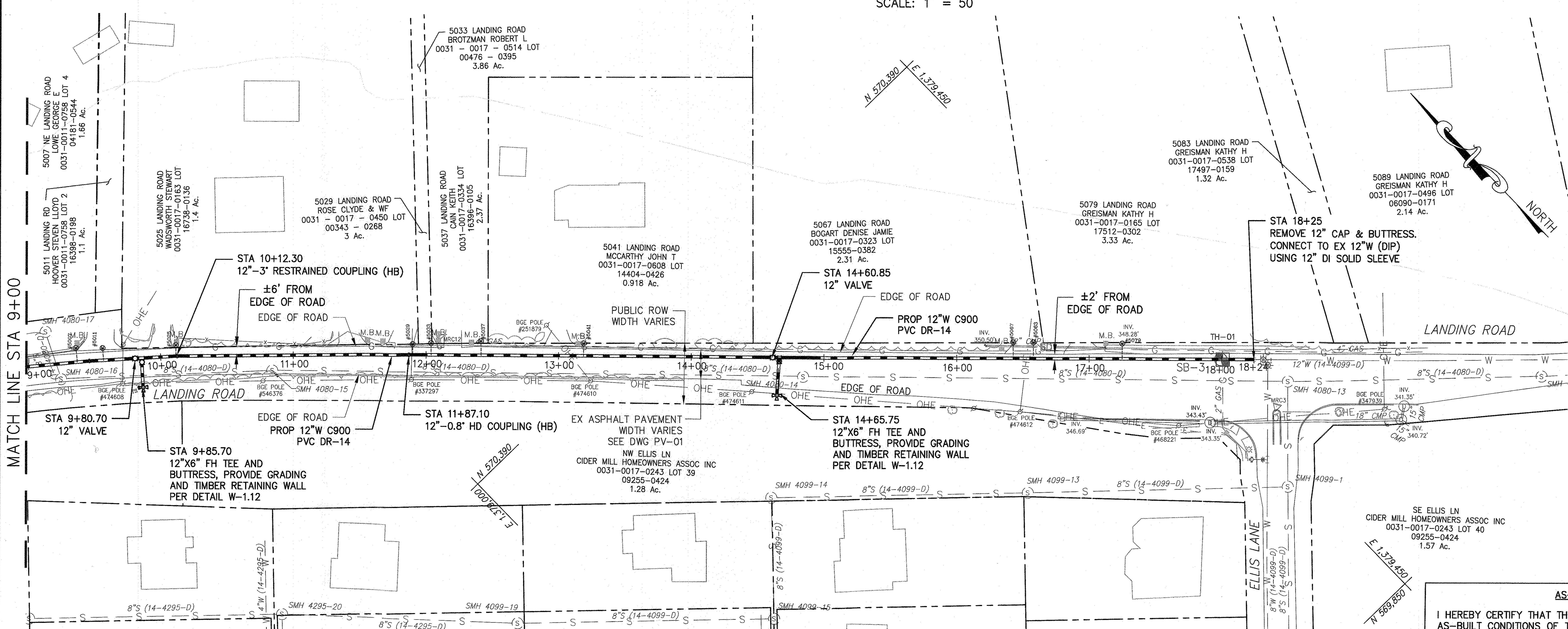
SHEET NO. 04 OF 18

RKK21\STS – \\ledarn01\v2012\2012\2154_HoCoBOA\Task 12 – Landing Road W8305\CADD\Plans\4-pUT-P001_LANDING RD.dwg Apr 17, 2019 – 2:31pm ENV.CTB Plot Scale 1=1 Plot By: bgross Tab: C-01



PLAN – LANDING ROAD NORTH SECTION

SCALE: 1" = 50'



PLAN – LANDING ROAD NORTH SECTION

SCALE: 1" = 50'

SOIL BORINGS				
BORING #	NORTHING	EASTING	ELEV.	PAVEMENT THICKNESS
SB-01	571,160.79	1,378,096.42	410.54	7"
SB-02	570,695.13	1,378,817.35	387.11	6"
SB-03	570,066.97	1,379,466.99	347.82	6"

UTILITY TEST HOLE					
TEST HOLE #	NORTHING	EASTING	TOP OF UTILITY	SURFACE ELEV.	DESCRIPTION
TH-01	570,066.15	1,379,468.34	344.81	347.76	GAS

NEW WATER HOUSE CONNECTIONS									
APPROX STATION	SERVICE ADDRESS	SERVICE SIZE	METER SIZE	METER TYPE (SINGLE/TWIN)	LENGTH OF WHC (LF)	TYPE OF SERVICE	NORTHING	EASTING	STD DETAIL
2+82	4981 LANDING RD	1"	3/4"	SINGLE	7'	RESIDENTIAL	571,041.7516	1,378,311.0846	W-3.27
6+55	5021 LANDING RD	1"	3/4"	SINGLE	17'	RESIDENTIAL	570,833.3821	1,378,620.8140	
6+95	5027 LANDING RD*	1"	3/4"	SINGLE	15'	RESIDENTIAL	570,828.6708	1,378,653.9479	
7+02	5003 LANDING RD	1.5"	1"	TWIN	43'	RESIDENTIAL	570,805.6321	1,378,658.0959	W-3.32
7+13		1.5"	1"	SINGLE	45'	RESIDENTIAL	570,799.2326	1,378,666.6924	W-3.28
9+37	5007 LANDING RD	1"	3/4"	SINGLE	9'	RESIDENTIAL	570,665.6170	1,378,846.8382	W-3.27
9+57	5011 LANDING RD	1"	3/4"	SINGLE	7'	RESIDENTIAL	570,652.8448	1,378,862.0128	
10+10	5025 LANDING RD	1"	3/4"	SINGLE	5'	RESIDENTIAL	570,622.8646	1,378,906.6423	
11+90	5029 LANDING RD	1"	3/4"	SINGLE	6'	RESIDENTIAL	570,499.6567	1,379,037.8529	
12+04	5033 LANDING RD	1"	3/4"	SINGLE	7'	RESIDENTIAL	570,484.0953	1,379,042.2150	
12+42	5037 LANDING RD	1"	3/4"	SINGLE	7'	RESIDENTIAL	570,457.7144	1,379,069.0646	
13+20	5041 LANDING RD	1"	3/4"	SINGLE	8'	RESIDENTIAL	570,409.6611	1,379,131.8094	
16+42	5067 LANDING RD	1"	3/4"	SINGLE	10'	RESIDENTIAL	570,185.3618	1,379,363.9718	
16+58	5063 LANDING RD	1"	3/4"	SINGLE	10'	RESIDENTIAL	570,174.7831	1,379,374.8589	
17+25	5079 LANDING RD	1"	3/4"	SINGLE	10'	RESIDENTIAL	570,119.2382	1,379,414.2468	

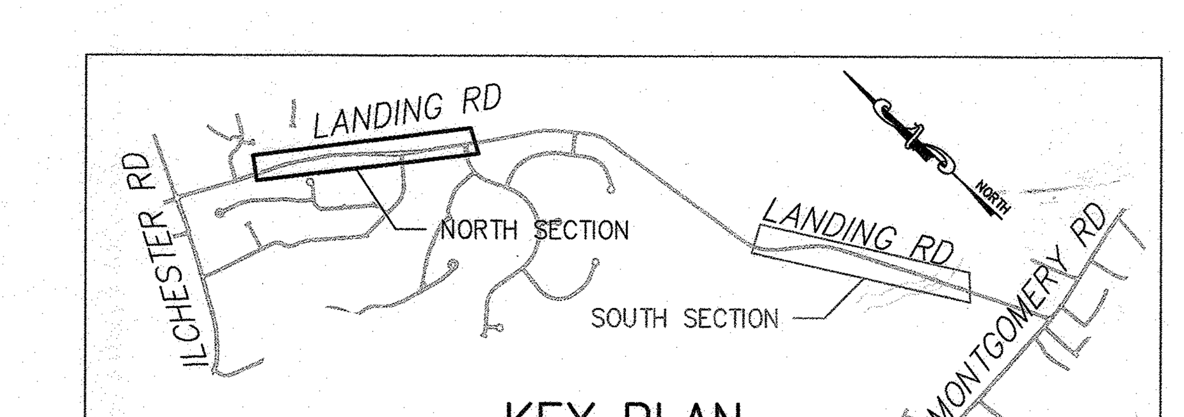
RESTRAINED LENGTHS – LANDING RD			
STATION (FROM)	STATION (TO)	SIZE	JOINTS TO BE RESTRAINED
0+00	0+23	8"	ALL JOINTS
0+23	0+91	12"	ALL JOINTS
2+42	6+50	12"	ALL JOINTS
8+58	11+03	12"	ALL JOINTS
13+38	15+83	12"	ALL JOINTS

AS-BUILT DRAWINGS:

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN REVISED TO REFLECT THE AS-BUILT CONDITIONS OF THE CAPITAL PROJECT W8305, LANDING ROAD WATER MAIN LOOP RECORDED BY HOWARD COUNTY'S CONTRACTOR AND INSPECTOR.

Nirav K. Shah 35329 — 8/20/20

Engineer's Signature – Registration Number — Date



KEY PLAN

AS-BUILT MAY 2020

1"=50' 50' 0 50' 100'

C-02

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — 11/4/2020 — DATE
CHIEF, BUREAU OF ENGINEERING — 9/16/20 — DATE
CHIEF, BUREAU OF UTILITIES — 11-4-2020 — DATE
CHIEF, UTILITY DESIGN DIVISION — 9/16/2020 — DATE

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DES: REG/WJG
DRN: RAD/REG
CHK: JCM/NKS
8/20/20
SIGN DATE:

BY	NO.	REVISION	DATE
RKK	2	AS-BUILT REPLACEMENT SHEET	5/2020

[redacted]

WATER PLAN – NORTH SECTION
(STA 0+00 TO STA 18+25)

600' SCALE MAP NO. 31, 37 — BLOCK NO. 5, 6, 10, 11, 17, 18, 24

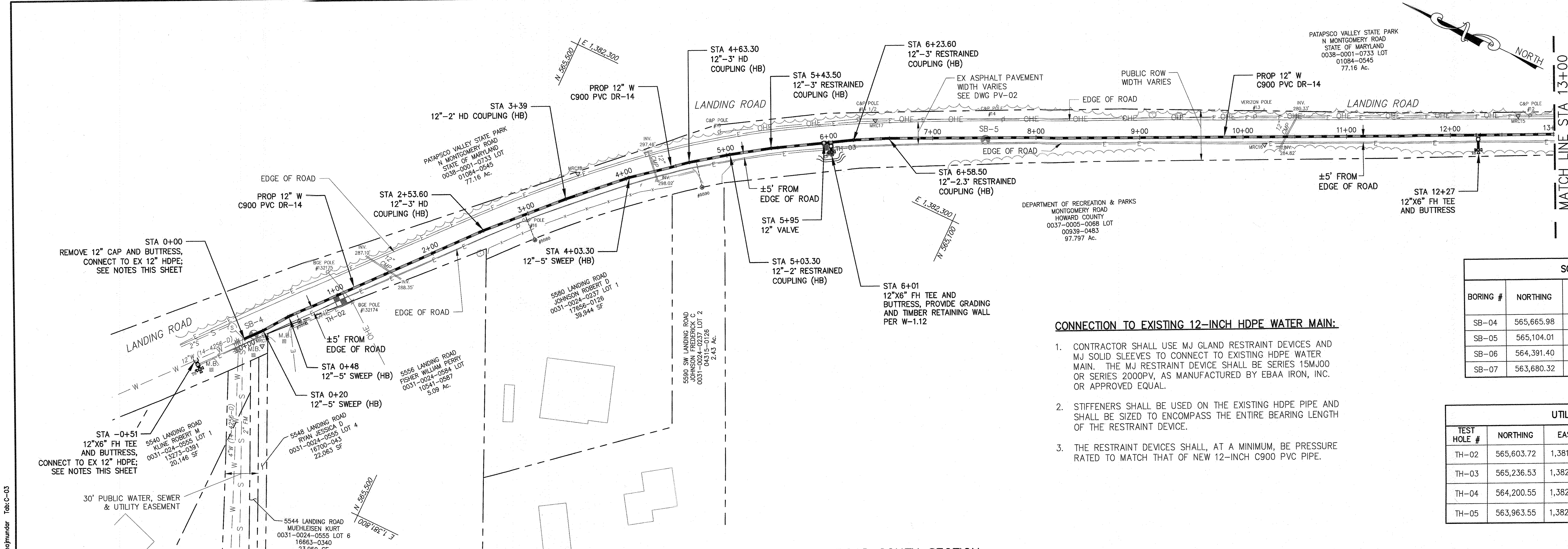
PROJECT NO. W8305
CONTRACT NO. 44-5059

LANDING ROAD WATER MAIN LOOP

ELECTION DISTRICT NO. 7 — HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET NO. 05 OF 18



PLAN – LANDING ROAD SOUTH SECTION

SCALE: 1" = 50'

CONNECTION TO EXISTING 12-INCH HDPE WATER MAIN:

1. CONTRACTOR SHALL USE MJ GLAND RESTRAINT DEVICES AND MJ SOLID SLEEVES TO CONNECT TO EXISTING HDPE WATER MAIN. THE MJ RESTRAINT DEVICE SHALL BE SERIES 15MJ00 OR SERIES 2000PV, AS MANUFACTURED BY EBAA IRON, INC. OR APPROVED EQUAL.
2. STIFFENERS SHALL BE USED ON THE EXISTING HDPE PIPE AND SHALL BE SIZED TO ENCOMPASS THE ENTIRE BEARING LENGTH OF THE RESTRAINT DEVICE.
3. THE RESTRAINT DEVICES SHALL, AT A MINIMUM, BE PRESSURE RATED TO MATCH THAT OF NEW 12-INCH C900 PVC PIPE.

SOIL BORINGS

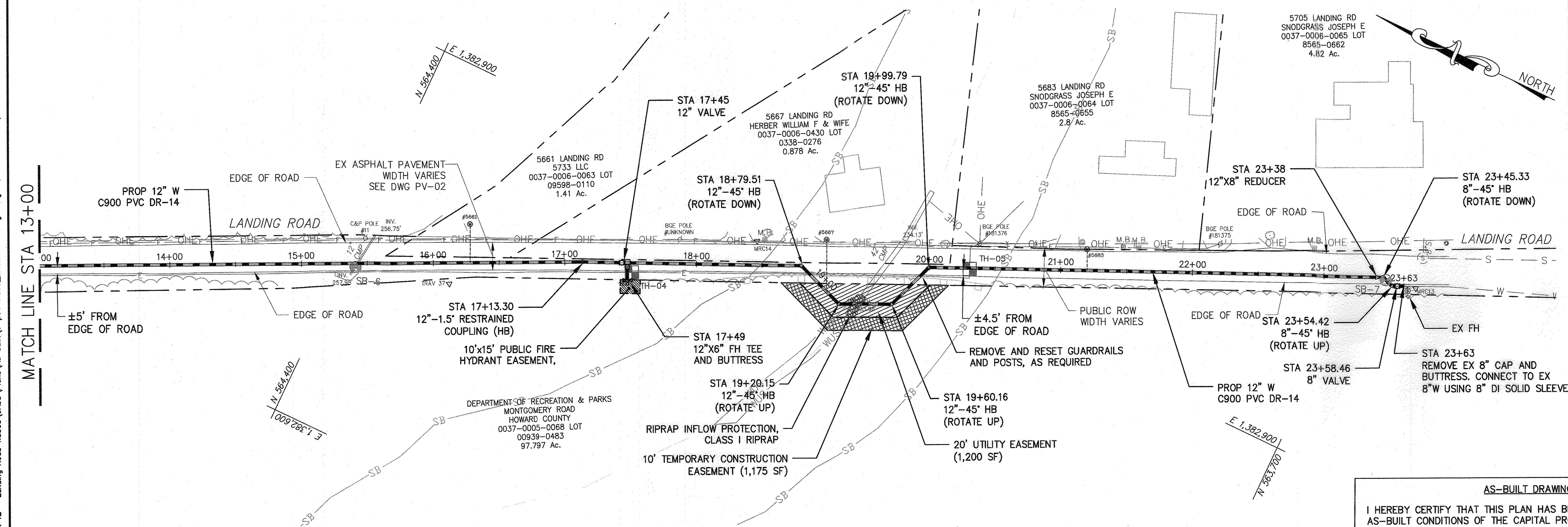
BORING #	NORTHING	EASTING	ELEV.	PAVEMENT THICKNESS
SB-04	565,665.98	1,381,914.04	285.82	6.5"
SB-05	565,104.01	1,382,384.00	301.80	8.5"
SB-06	564,391.40	1,382,723.39	260.19	8"
SB-07	563,680.32	1,383,049.65	253.28	8"

UTILITY TEST HOLE

TEST HOLE #	NORTHING	EASTING	TOP OF UTILITY	SURFACE ELEV.	DESCRIPTION
TH-02	565,603.72	1,381,980.01	285.36	288.44	(3) 1.5" ELECTRIC
TH-03	565,236.53	1,382,312.04	301.77	305.18	(3) 1.5" ELECTRIC
TH-04	564,200.55	1,382,312.04	246.09	249.38	(3) 1.5" ELECTRIC
TH-05	563,963.55	1,382,925.20	241.17	244.82	(3) 1.5" ELECTRIC

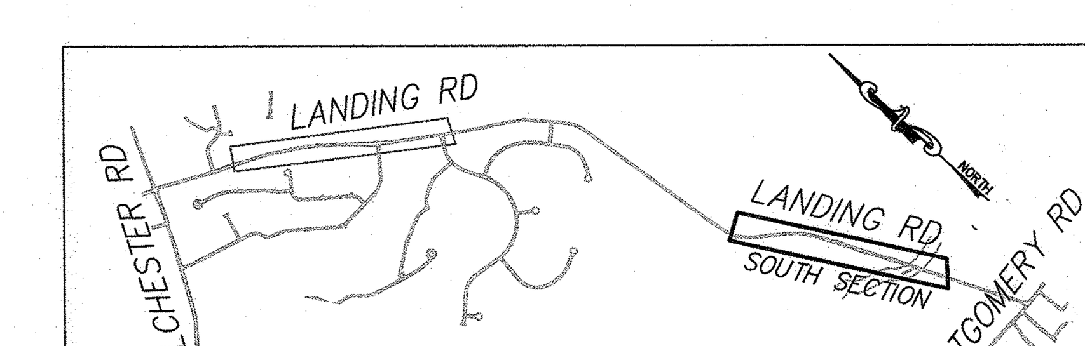
NEW WATER HOUSE CONNECTIONS

APPROX STATION	SERVICE ADDRESS	SERVICE SIZE	METER SIZE	METER TYPE (SINGLE/ TWIN)	PROP LENGTH OF WHC (LF)	TYPE OF SERVICE	NORTHING	EASTING	STD DETAIL
0+55	5556 LANDING RD	1"	3/4"	SINGLE	6'	RESIDENTIAL	565,631.3323	1,381,943.9782	W-3.27
2+98	5580 LANDING RD	1"	3/4"	SINGLE	23'	RESIDENTIAL	565,456.4618	1,382,115.6737	
4+70	5590 LANDING RD	1"	3/4"	SINGLE	24'	RESIDENTIAL	565,332.9086	1,382,226.4400	
16+28	5661 LANDING RD	1"	3/4"	SINGLE	25'	RESIDENTIAL	564,313.9996	1,382,764.0232	
19+07	5667 LANDING RD	1"	3/4"	SINGLE	35'	RESIDENTIAL	564,060.2126	1,382,860.3520	
21+20	5683 LANDING RD	1"	3/4"	SINGLE	14'	RESIDENTIAL	563,894.6184	1,382,973.3596	



RESTRAINED LENGTHS – LANDING RD

STATION (FROM)	STATION (TO)	SIZE	JOINTS TO BE RESTRAINED
0+00	1+25	12"	ALL JOINTS
4+72	7+17	12"	ALL JOINTS
11+95	12+55	12"	ALL JOINTS
16+23	20+51	12"	ALL JOINTS
22+50	23+38	12"	ALL JOINTS
23+38	23+63	8"	ALL JOINTS



KEY PLAN

PLAN – LANDING ROAD SOUTH SECTION

SCALE: 1" = 50'

AS-BUILT DRAWINGS:

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN REVISED TO REFLECT THE AS-BUILT CONDITIONS OF THE CAPITAL PROJECT W8305, LANDING ROAD WATER MAIN LOOP RECORDED BY HOWARD COUNTY'S CONTRACTOR AND INSPECTOR.

Nirav K. Shah 35329 8/20/20
Engineer's Signature – Registration Number Date

AS-BUILT MAY 2020

1"=50' 50' 0 50' 100'

C-03

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE 11/4/2020 — CHIEF, BUREAU OF ENGINEERING DATE 9/10/20
CHIEF, BUREAU OF UTILITIES DATE 11-4-2020 — CHIEF, UTILITY DESIGN DIVISION ZCK DATE 9/10/20

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STATE OF MARYLAND NIRAV K. SHAH 35329 REGISTERED PROFESSIONAL ENGINEER

DES: REG/WJG
DRN: RAD/REG
CHK: JCM/NKS
SIGN DATE: 8/20/20

BY	NO.	REVISION	DATE
RKK	2	AS-BUILT REPLACEMENT SHEET	5/2020

[redacted]

WATER PLAN – SOUTH SECTION
(STA 0+00 TO STA 23+63)

600' SCALE MAP NO. 31, 37 BLOCK NO. 5, 6, 10, 11, 17, 18, 24

PROJECT NO. W8305
CONTRACT NO. 44-5059

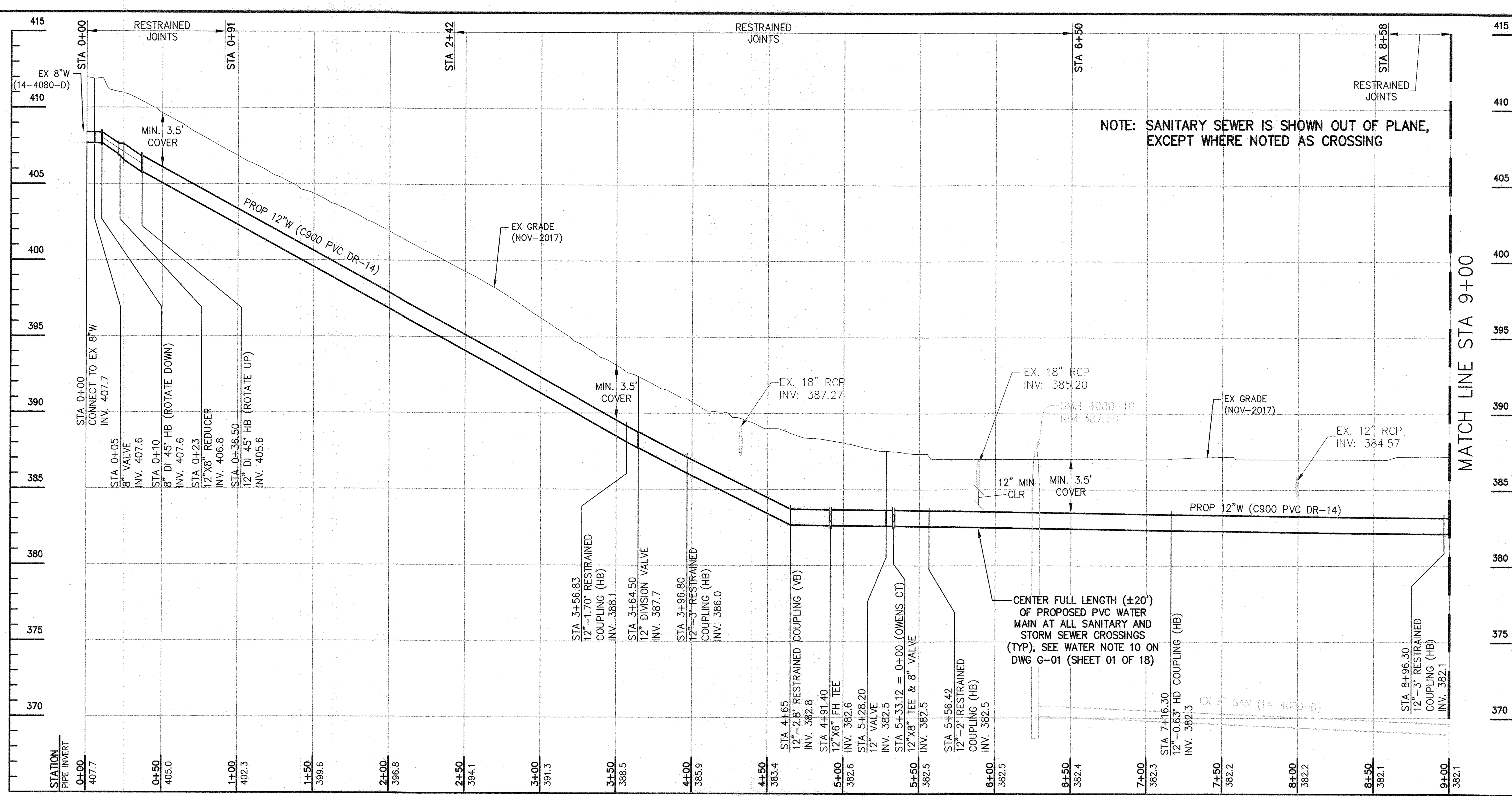
LANDING ROAD WATER MAIN LOOP

ELECTION DISTRICT NO. 7 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

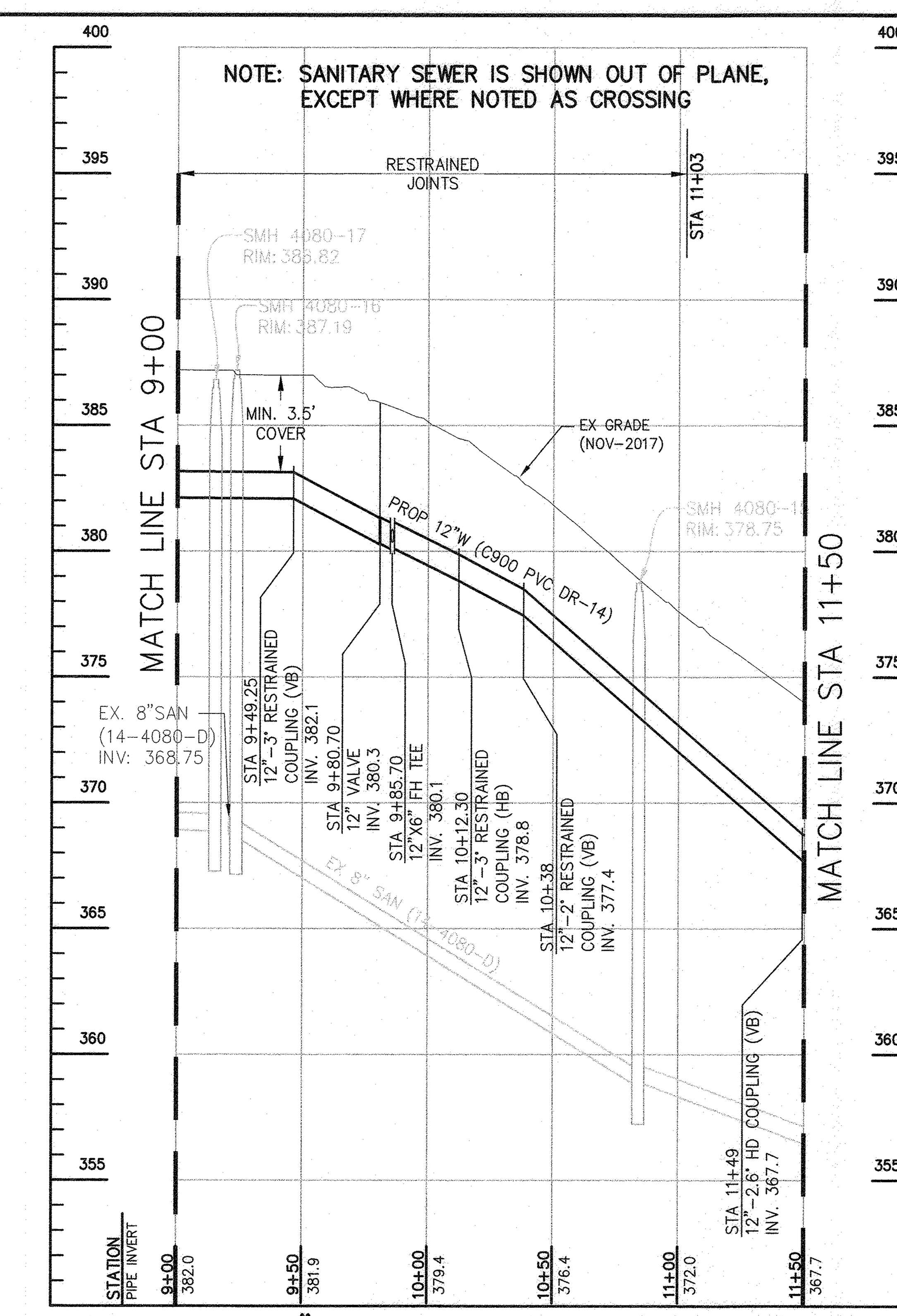
SHEET NO. 06 OF 18

RKK21\SYS – \\balsrv01\v2012\2012\12154_HoCoBOA\Task 12 – Landing Road W8305\CADD\Plans\As-built\6-pU1-P003_LANDING RD.dwg Aug 13, 2020 – 3:42pm ENV.CTB Plot Scale 1=1 Plot By: pmajmunder Tab:C-03



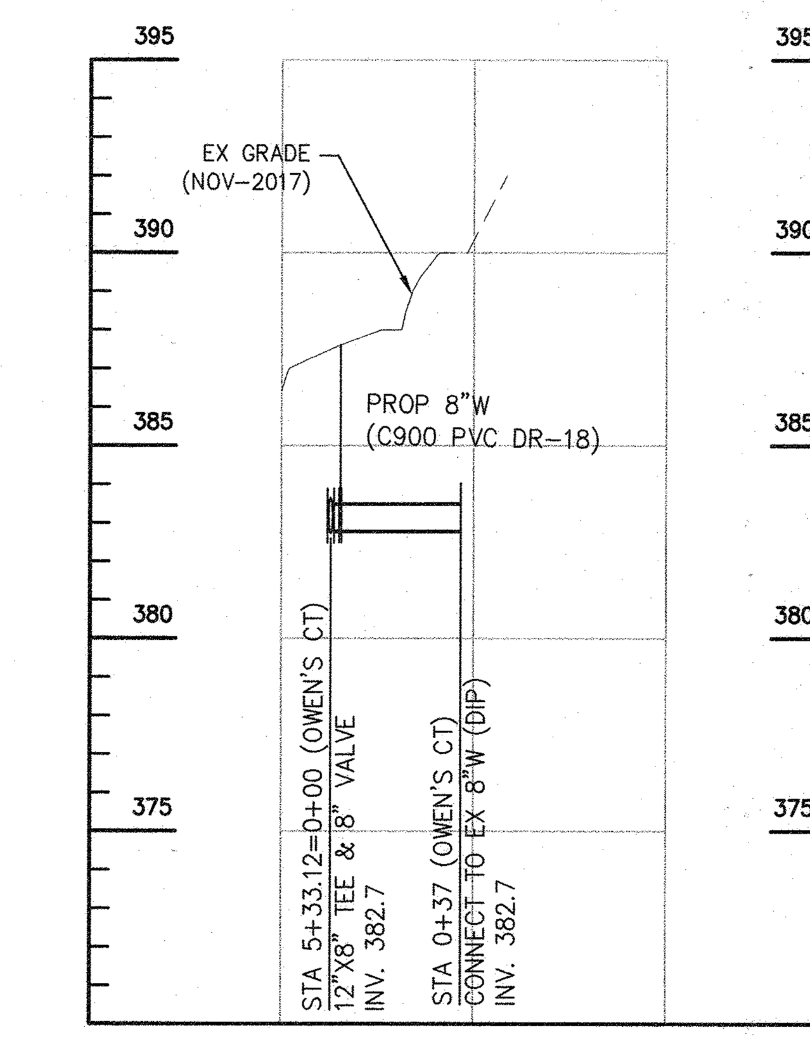
PROFILE – 12" W LANDING ROAD NORTH SECTION

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



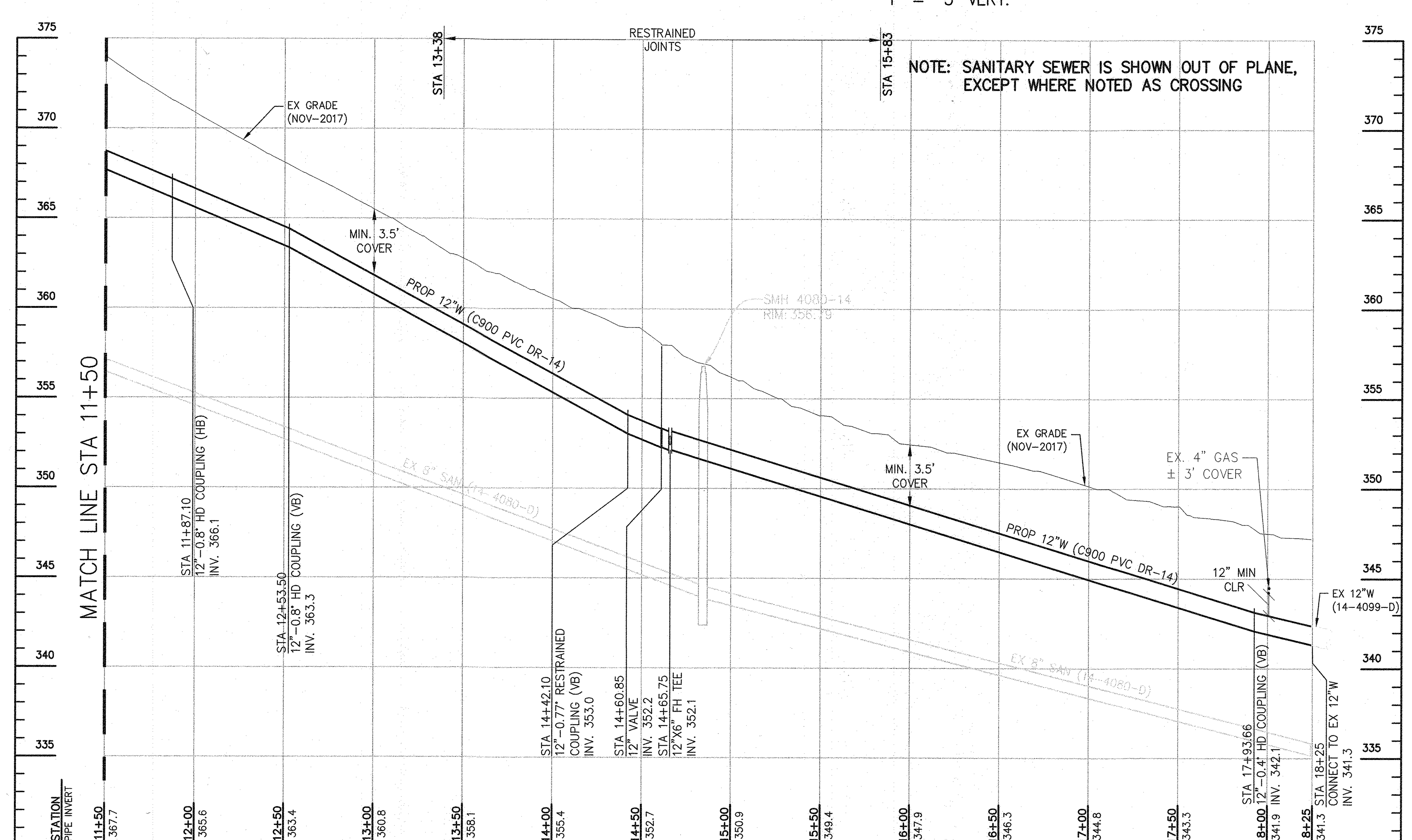
PROFILE – 12" W LANDING ROAD NORTH SECTION

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



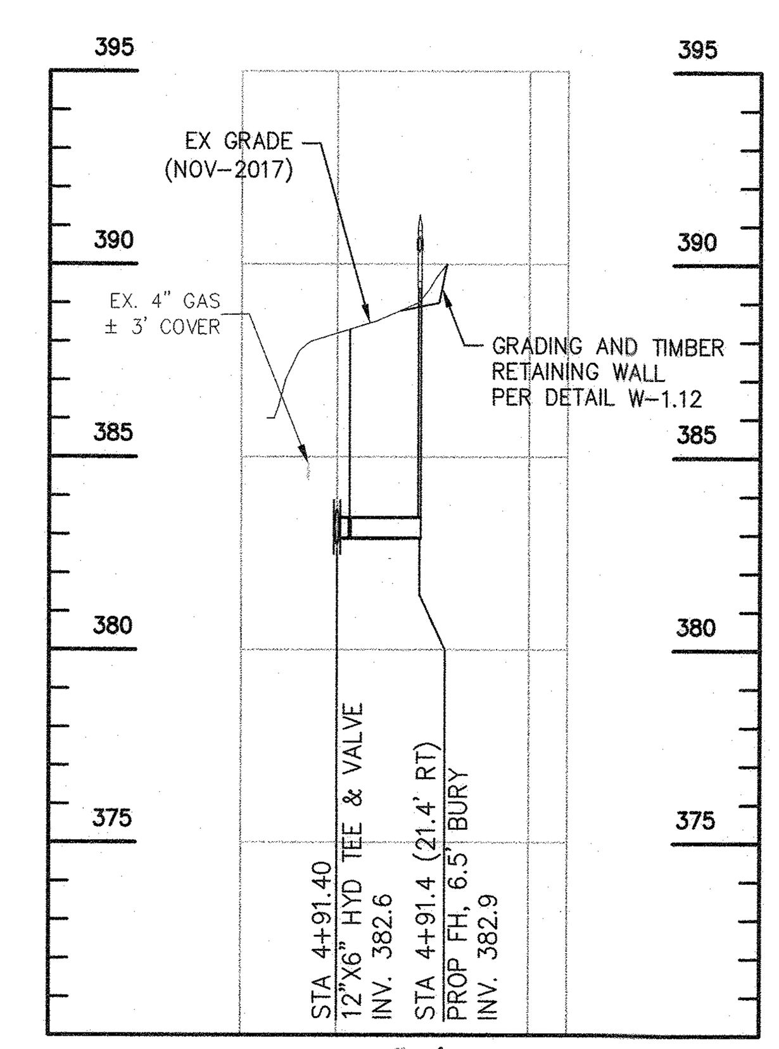
PROFILE – 8" W OWENS CT

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



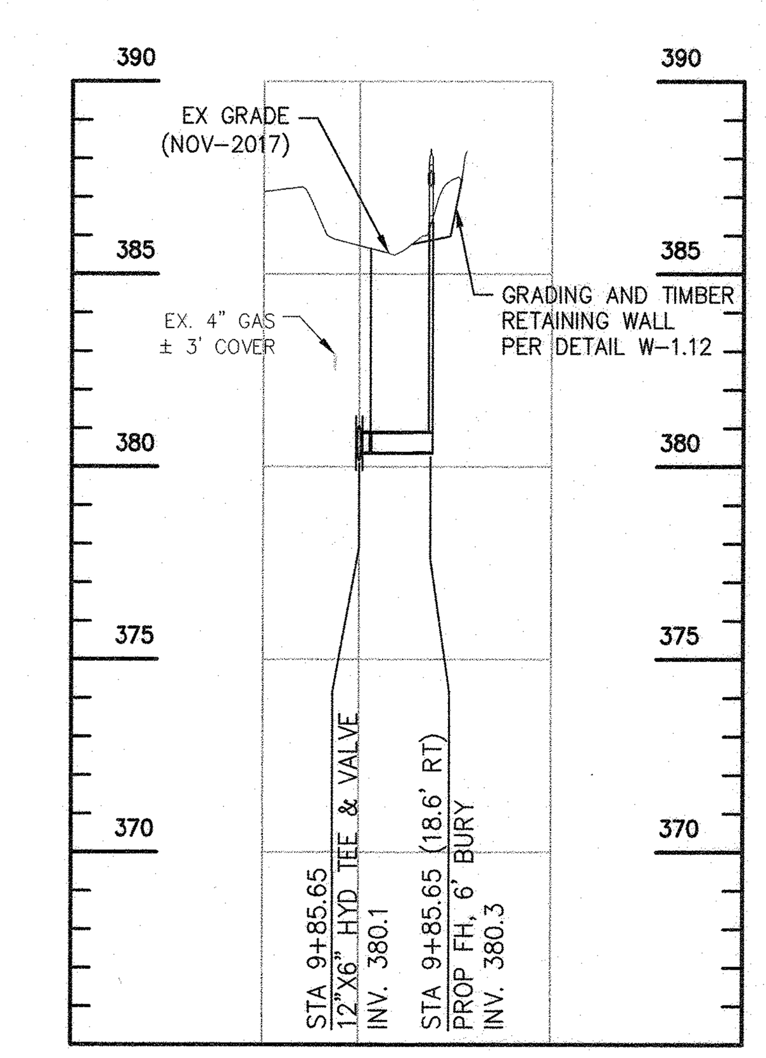
PROFILE – 12" W LANDING ROAD NORTH SECTION

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



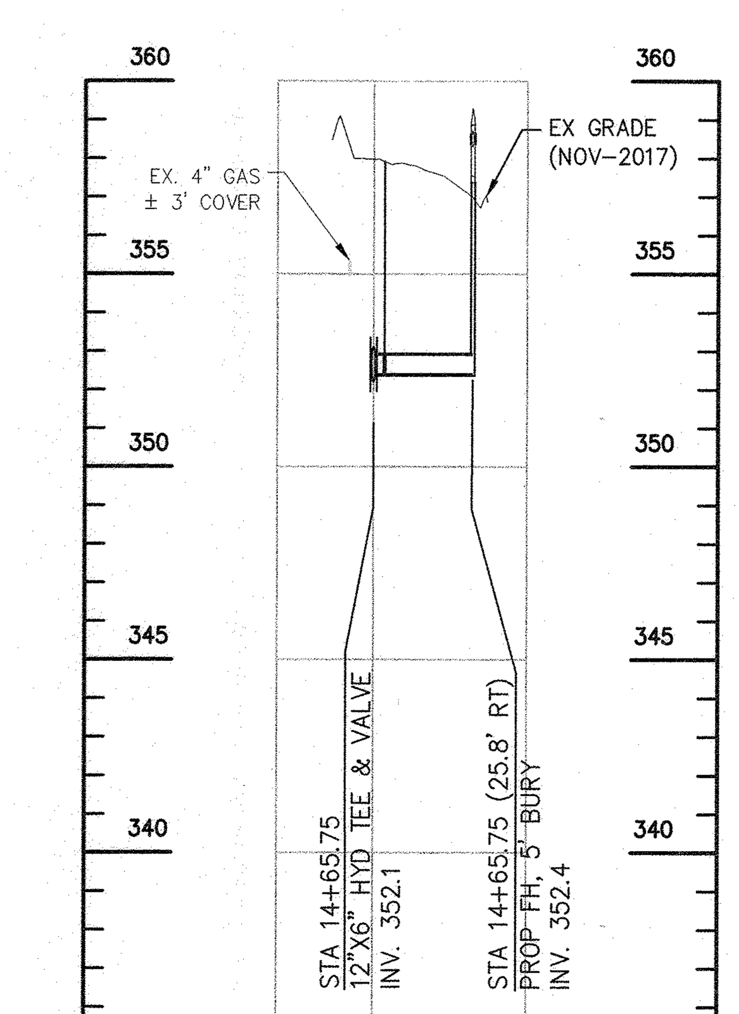
PROFILE – FH (STA 4+91.40)

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



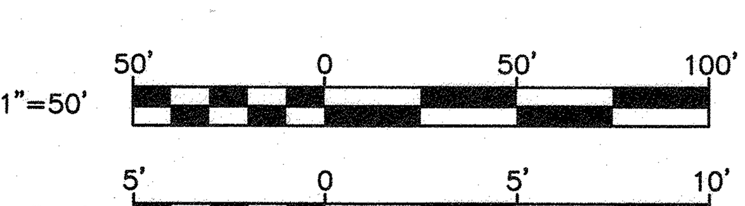
PROFILE – FH (STA 9+85.70)

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



PROFILE – FH (STA 14+65.75)

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



AS-BUILT MAY 2020

C-04

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

5/3/19 DIRECTOR OF PUBLIC WORKS DATE
4/29/19 CHIEF, BUREAU OF ENGINEERING DATE
5-2-19 CHIEF, BUREAU OF UTILITIES DATE
4/29/19 CHIEF, UTILITY DESIGN DIVISION DATE

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DES:	REG/WJG
DRN:	RAD/REG
CHK:	JCM/NKS
SIGN/DATE:	04/25/19

BY	NO.	REVISION	DATE

[redacted]

WATER PROFILE – NORTH SECTION
(STA 0+00 TO STA 18+25)

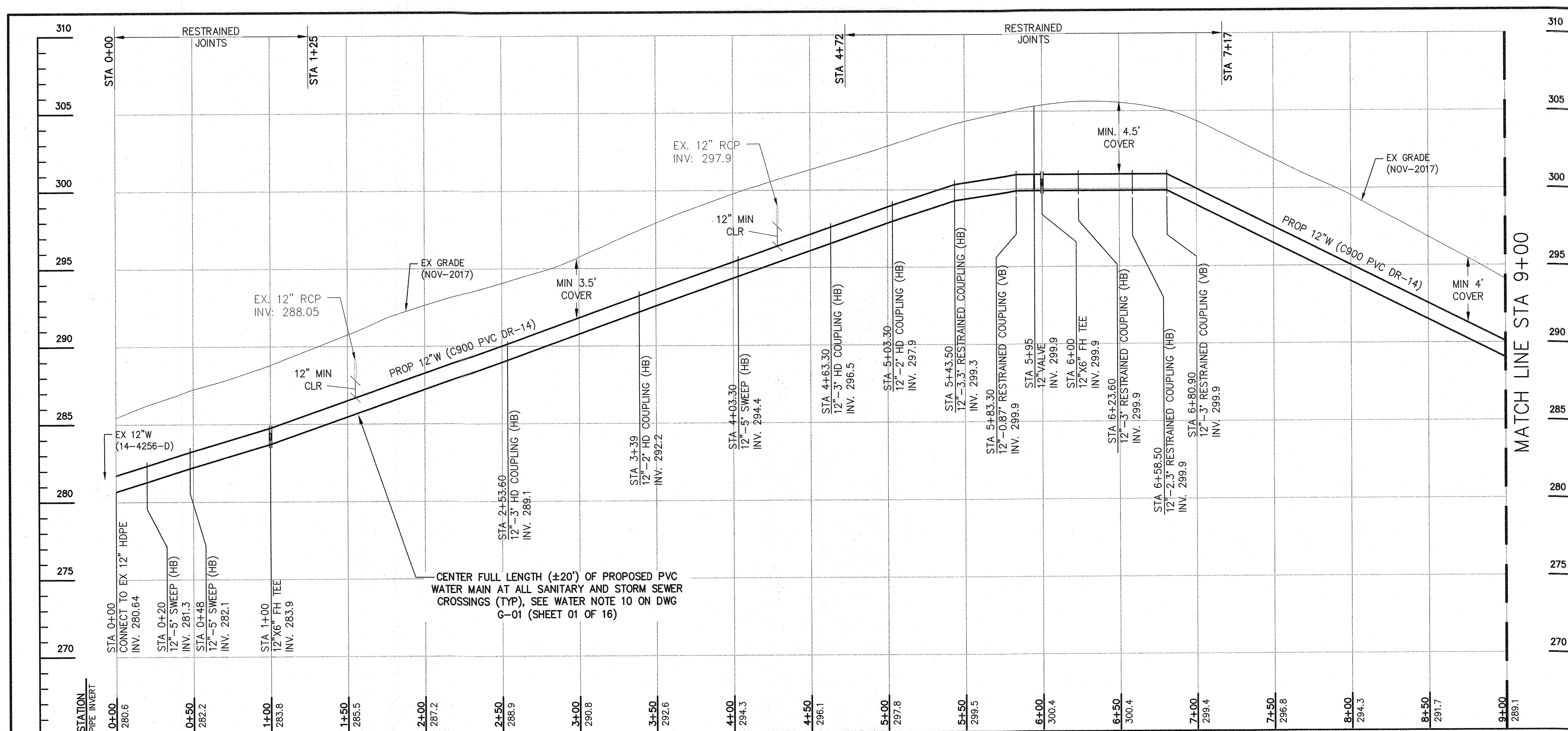
600' SCALE MAP NO. 31, 37 BLOCK NO. 5, 6, 10, 11, 17, 18, 24

PROJECT NO. W8305
CONTRACT NO. 44-5059

LANDING ROAD WATER MAIN LOOP

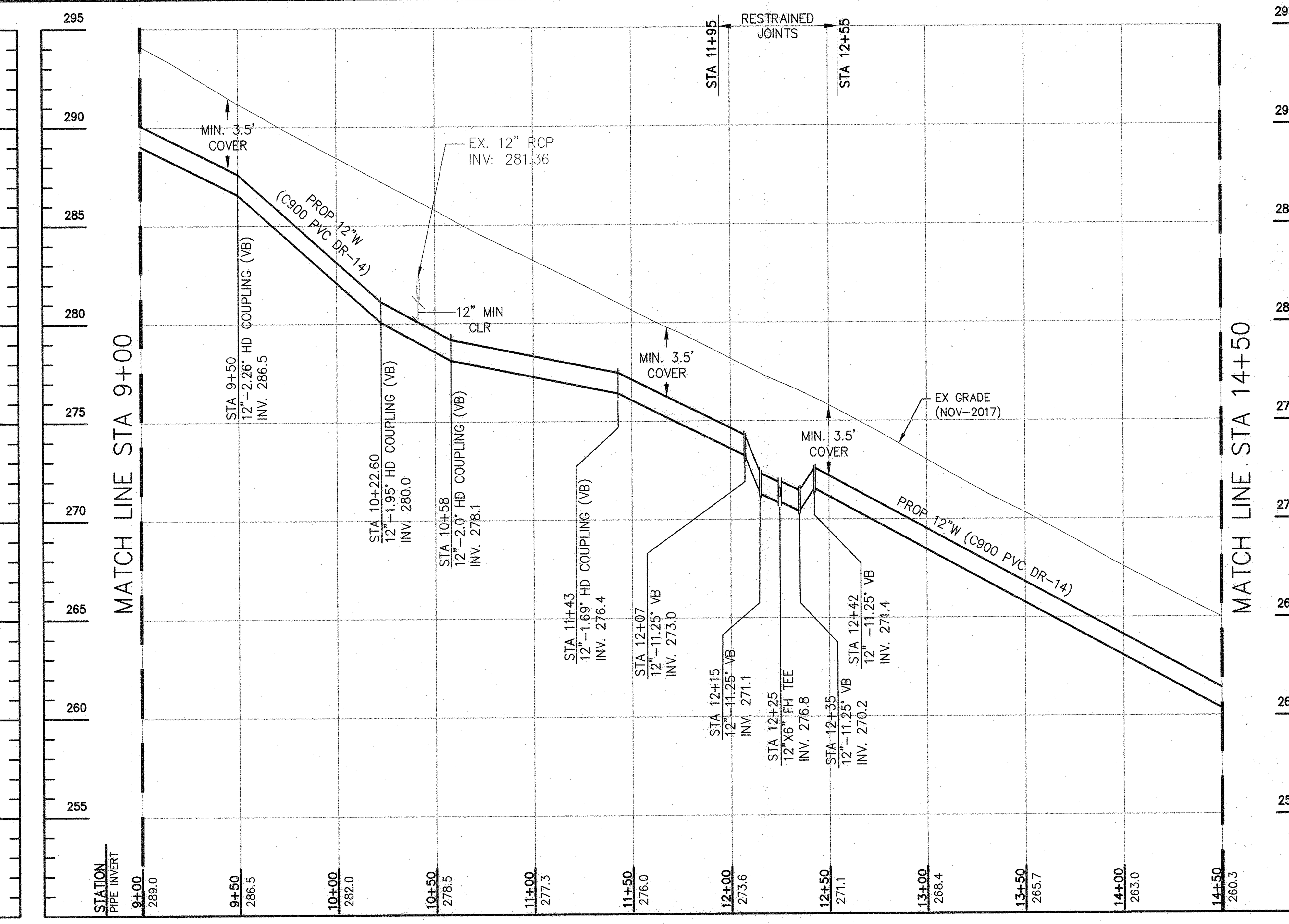
ELECTION DISTRICT NO. 7 HOWARD COUNTY, MARYLAND

SCALE	AS SHOWN
SHEET NO.	07 OF 18



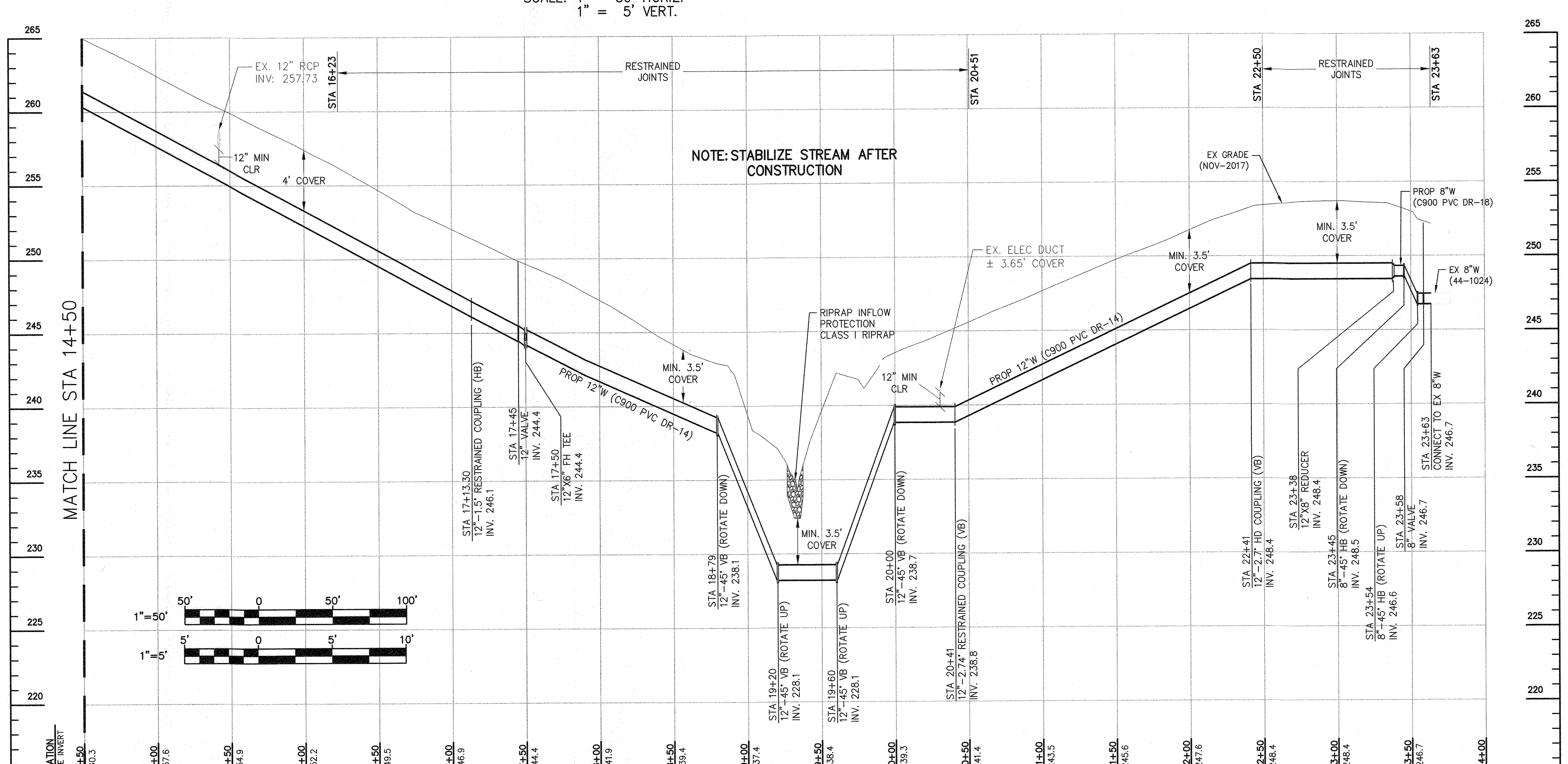
PROFILE – 12" W LANDING ROAD SOUTH SECTION

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



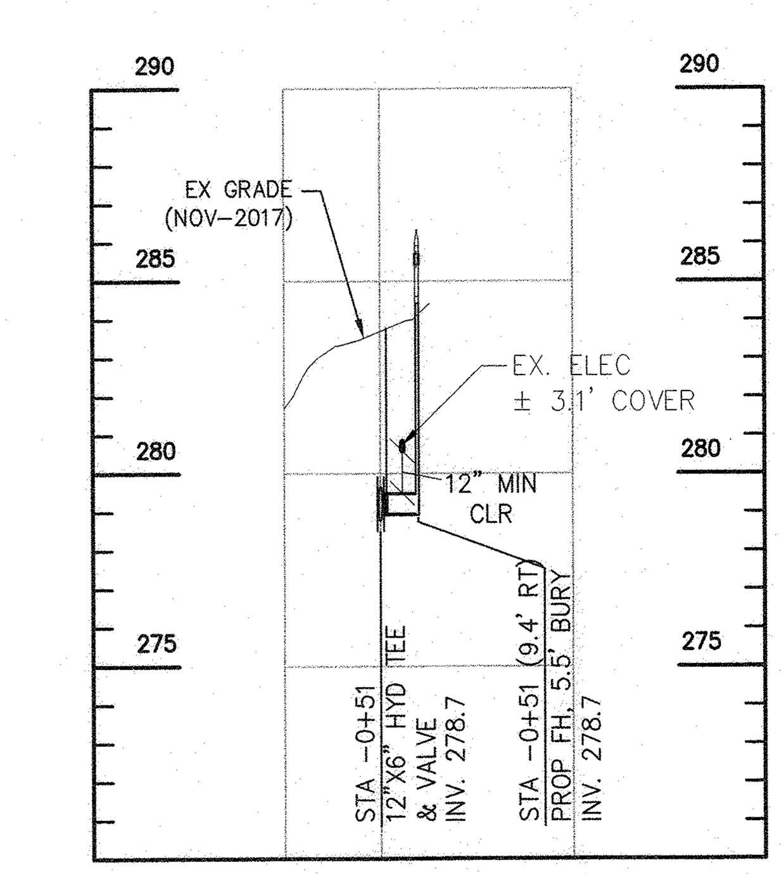
PROFILE – 12" W LANDING ROAD SOUTH SECTION

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



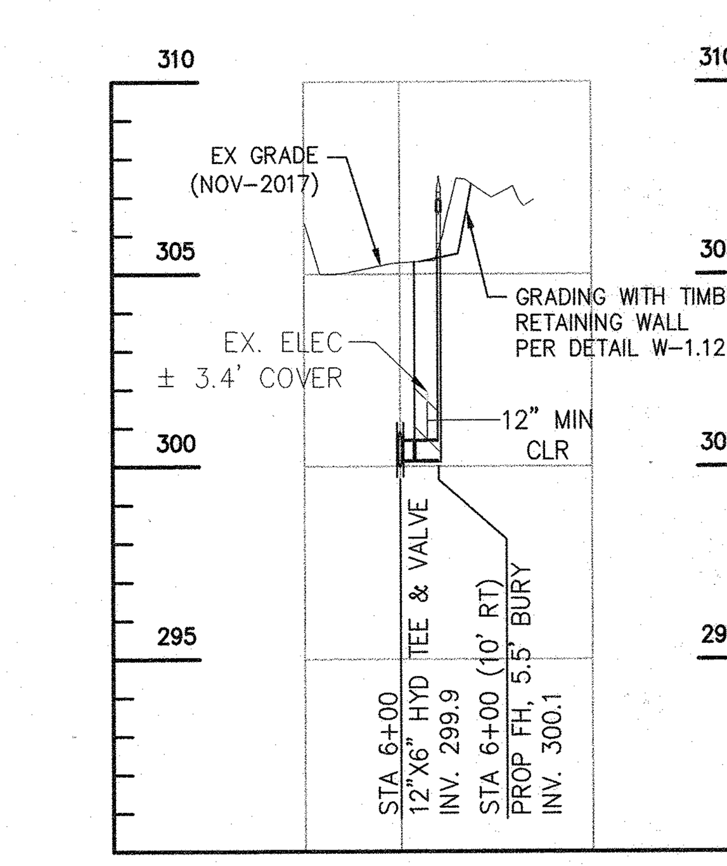
PROFILE – 12" W LANDING ROAD SOUTH SECTION

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



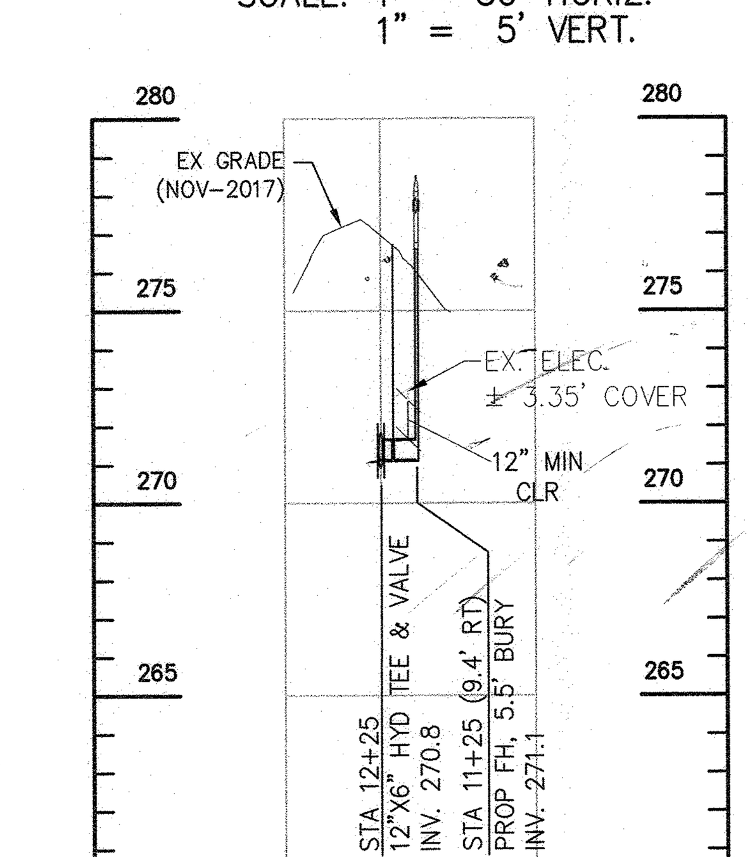
PROFILE – FH (STA 1+00)

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



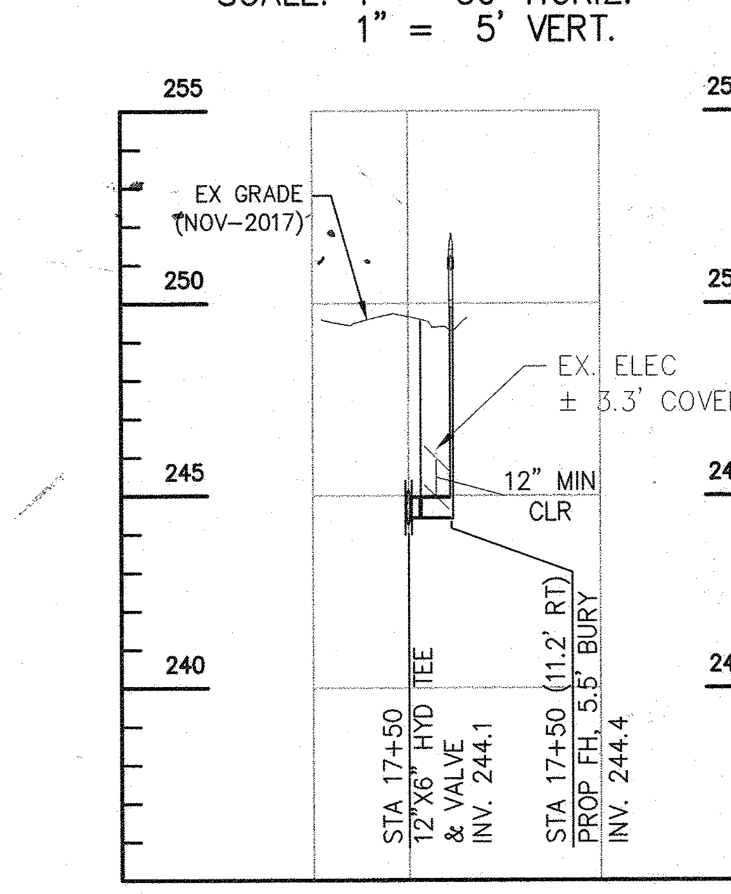
PROFILE – FH (STA 6+00)

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



PROFILE – FH (STA 11+25)

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



PROFILE – FH (STA 17+50)

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

AS-BUILT MAY 2020

C-05

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
DIRECTOR OF PUBLIC WORKS — DATE 5/3/19	CHIEF, BUREAU OF ENGINEERING — DATE 4/29/19
CHIEF, BUREAU OF UTILITIES — DATE 5-2-19	CHIEF, UTILITY DESIGN DIVISION — DATE 4/05/19

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DES: REG/WJG
DRN: RAD/REG
CHK: JCM/NKS
SIGN DATE: 04/25/19

BY	NO.	REVISION	DATE

[redacted]

WATER PROFILE – SOUTH SECTION
(STA 0+00 TO STA 23+63)

600' SCALE MAP NO. 31, 37 — BLOCK NO. 5, 6, 10, 11, 17, 18, 24

PROJECT NO. W8305
CONTRACT NO. 44-5059

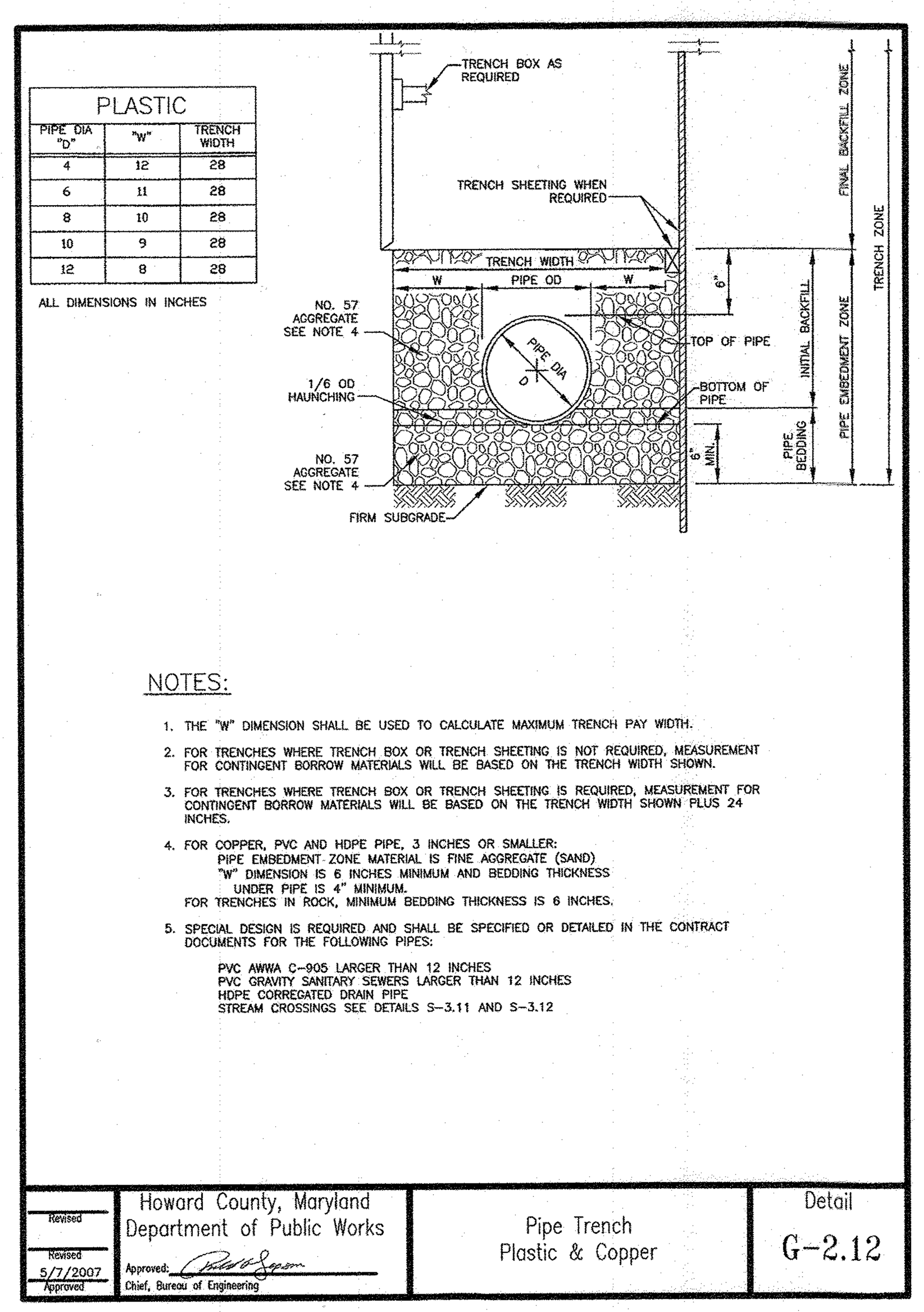
LANDING ROAD WATER MAIN LOOP

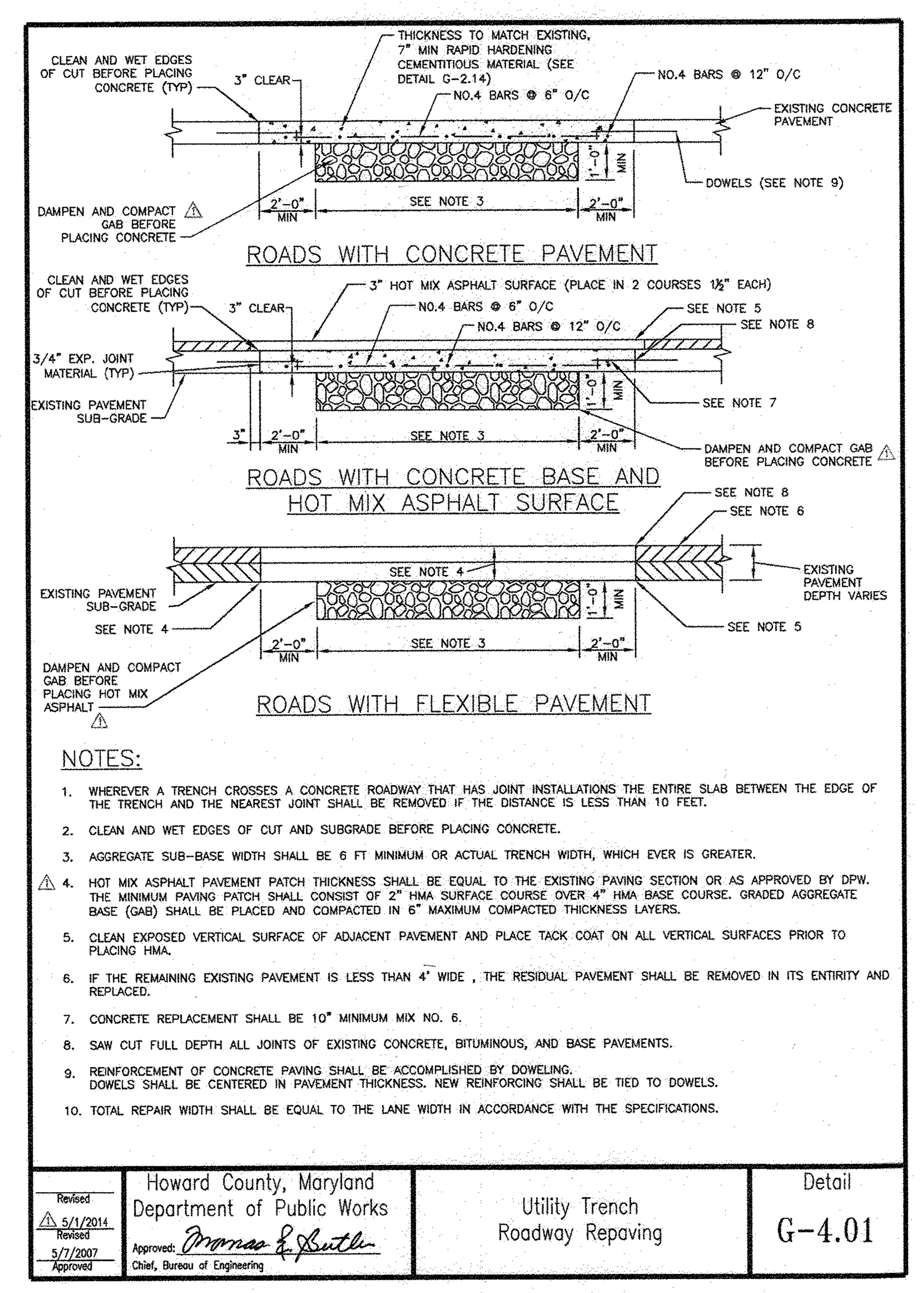
ELECTION DISTRICT NO. 7 — HOWARD COUNTY, MARYLAND

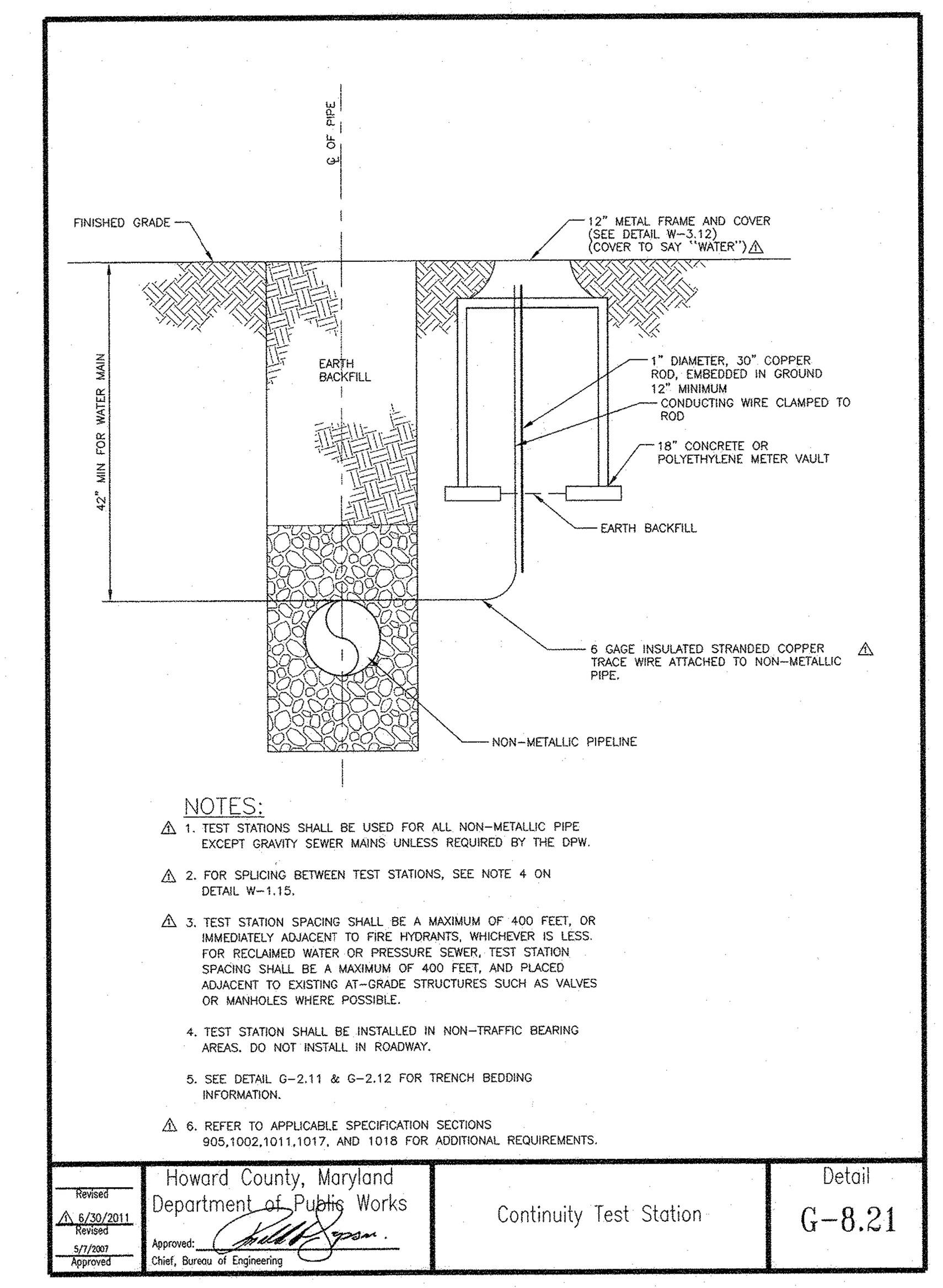
SCALE: AS SHOWN

SHEET NO. 08 OF 18

RKK21\SYS – \\bdsrv01\e2012\2012\2154_HoCoBOA\Task 12 – Landing Road W8305\CADD\Plans\8-pUT-P005_LANDING RD.dwg Apr 17, 2019 – 2:37pm ENV.CTB Plot Scale 1=1 Plot By bgross Tab:C-05

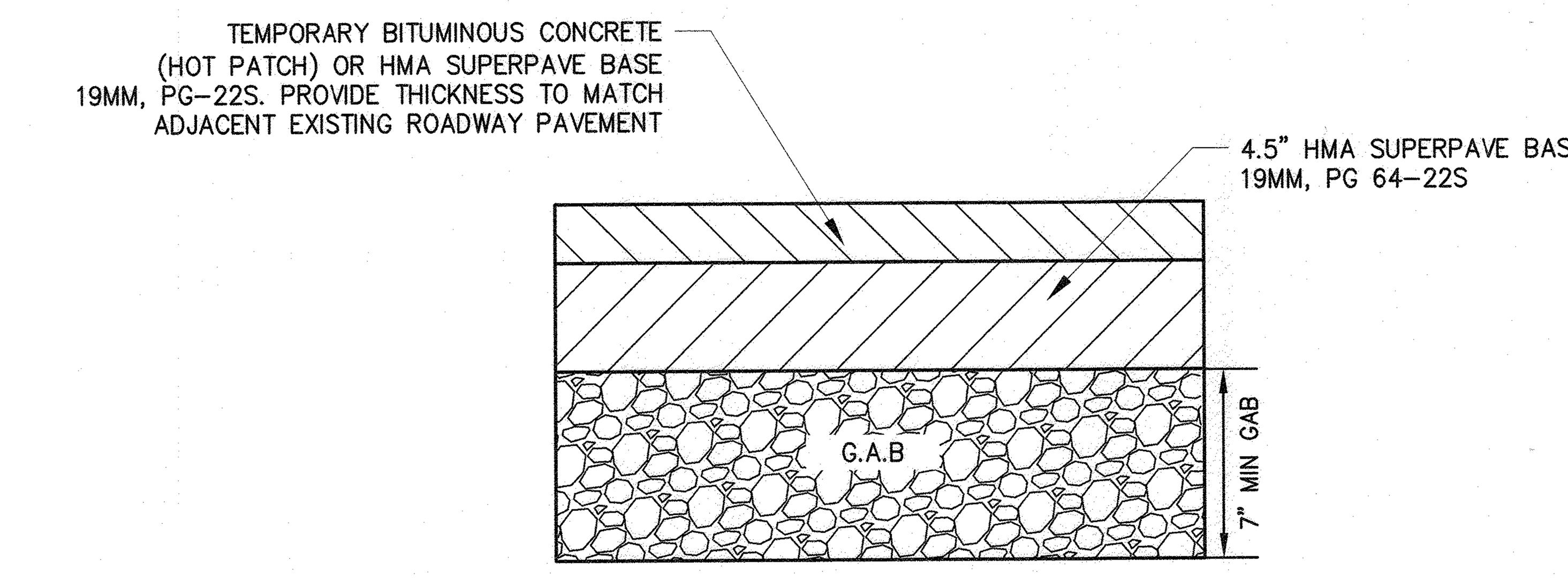






NOTES:

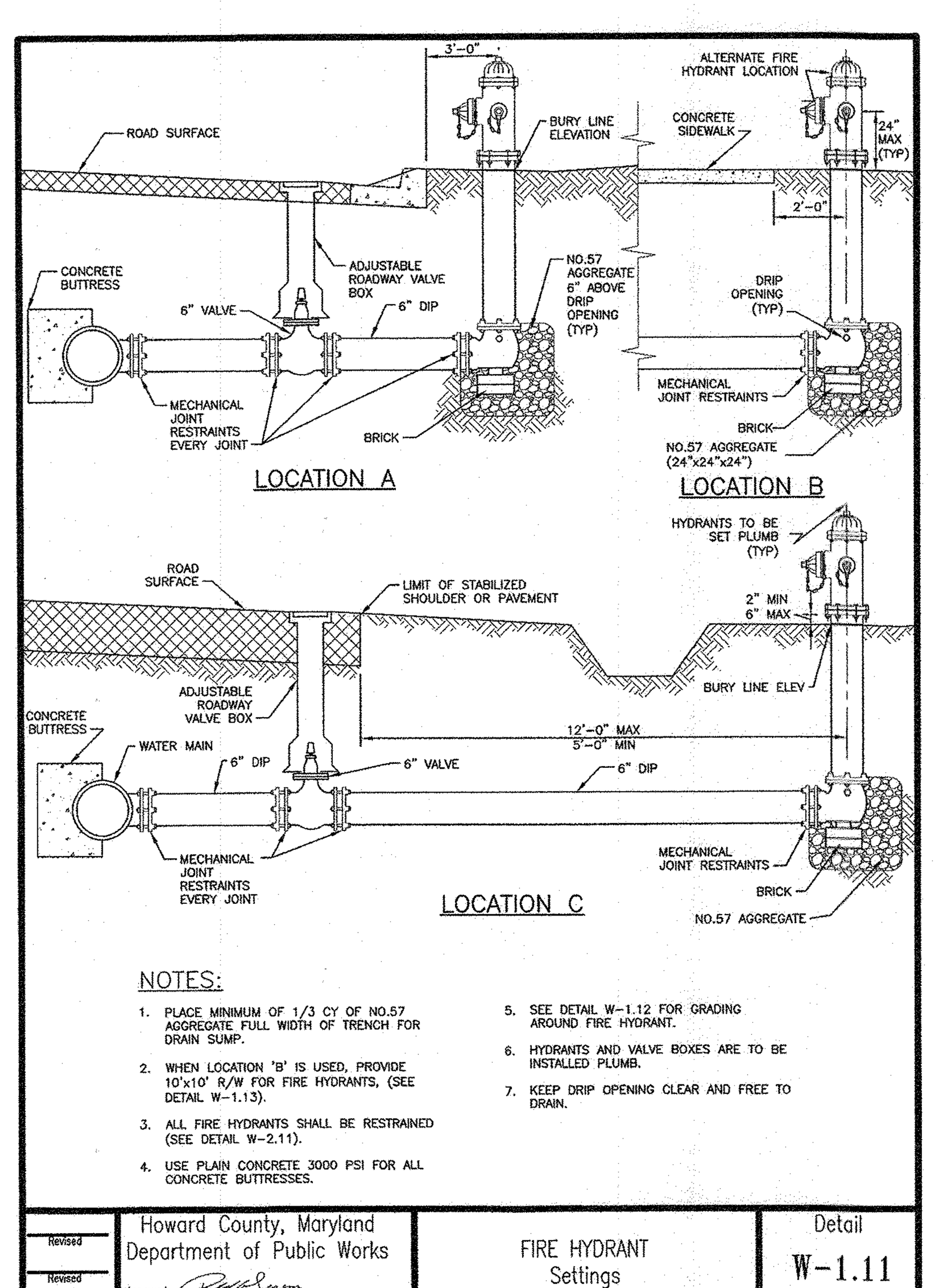
1. REFER TO DRAWING SHEETS C-02 AND C-03 FOR PAVING THICKNESS BASED ON SOIL BORING DATA.
2. REFER TO DRAWING SHEETS PV-01 AND PV-02 FOR LANE WIDTH DETERMINATION DURING PAVEMENT RESTORATION.

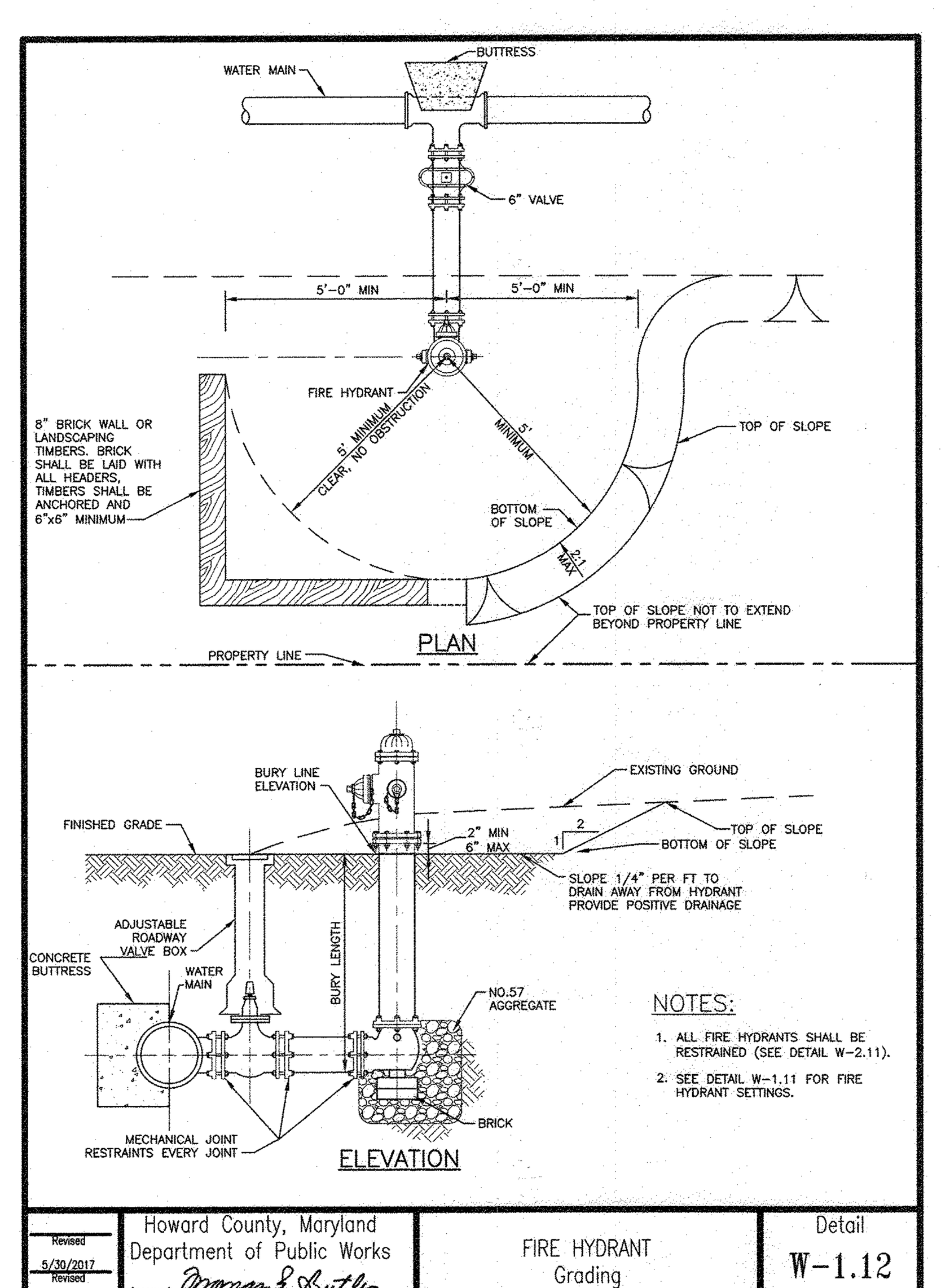


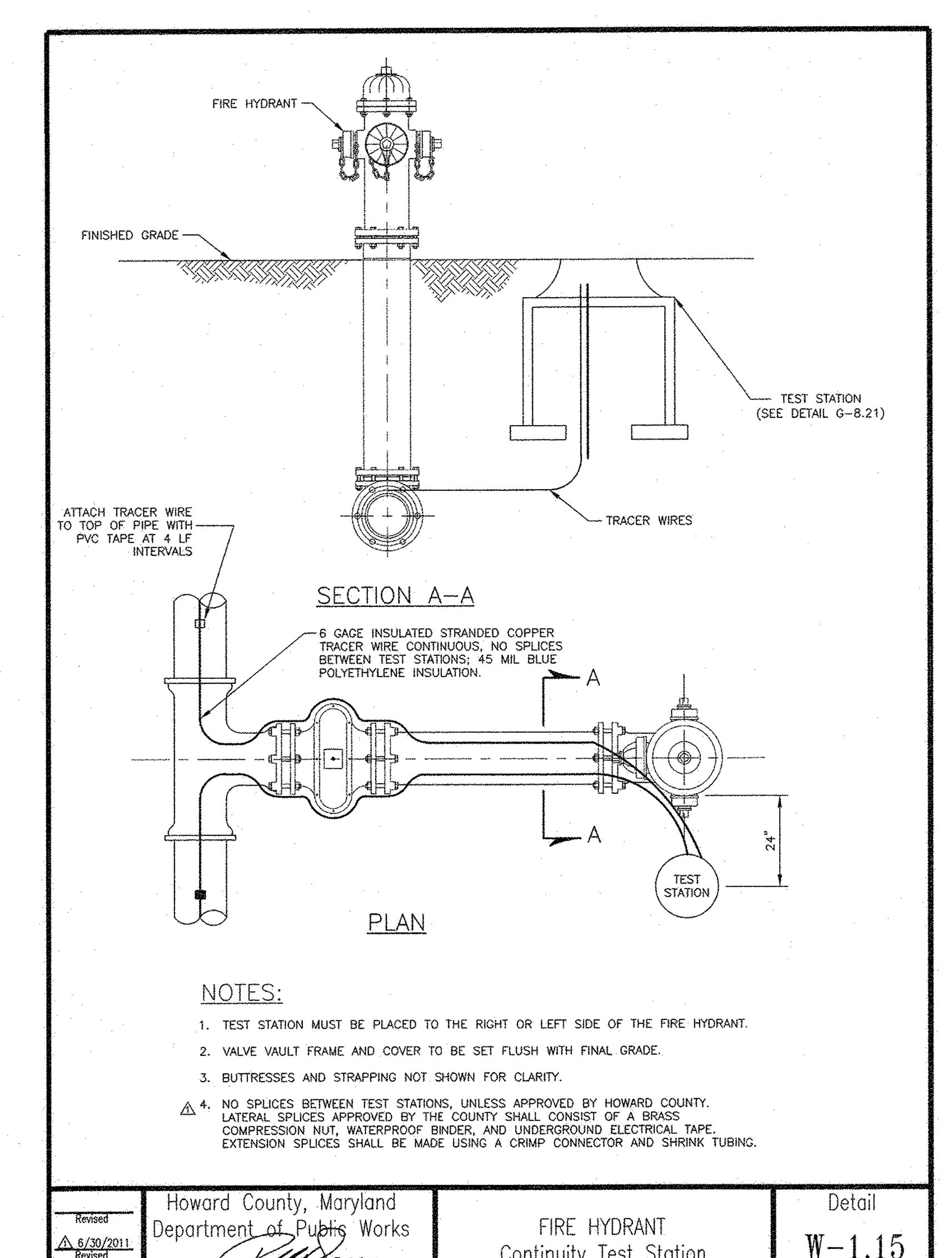
TEMPORARY UTILITY TRENCH PAVING RESTORATION

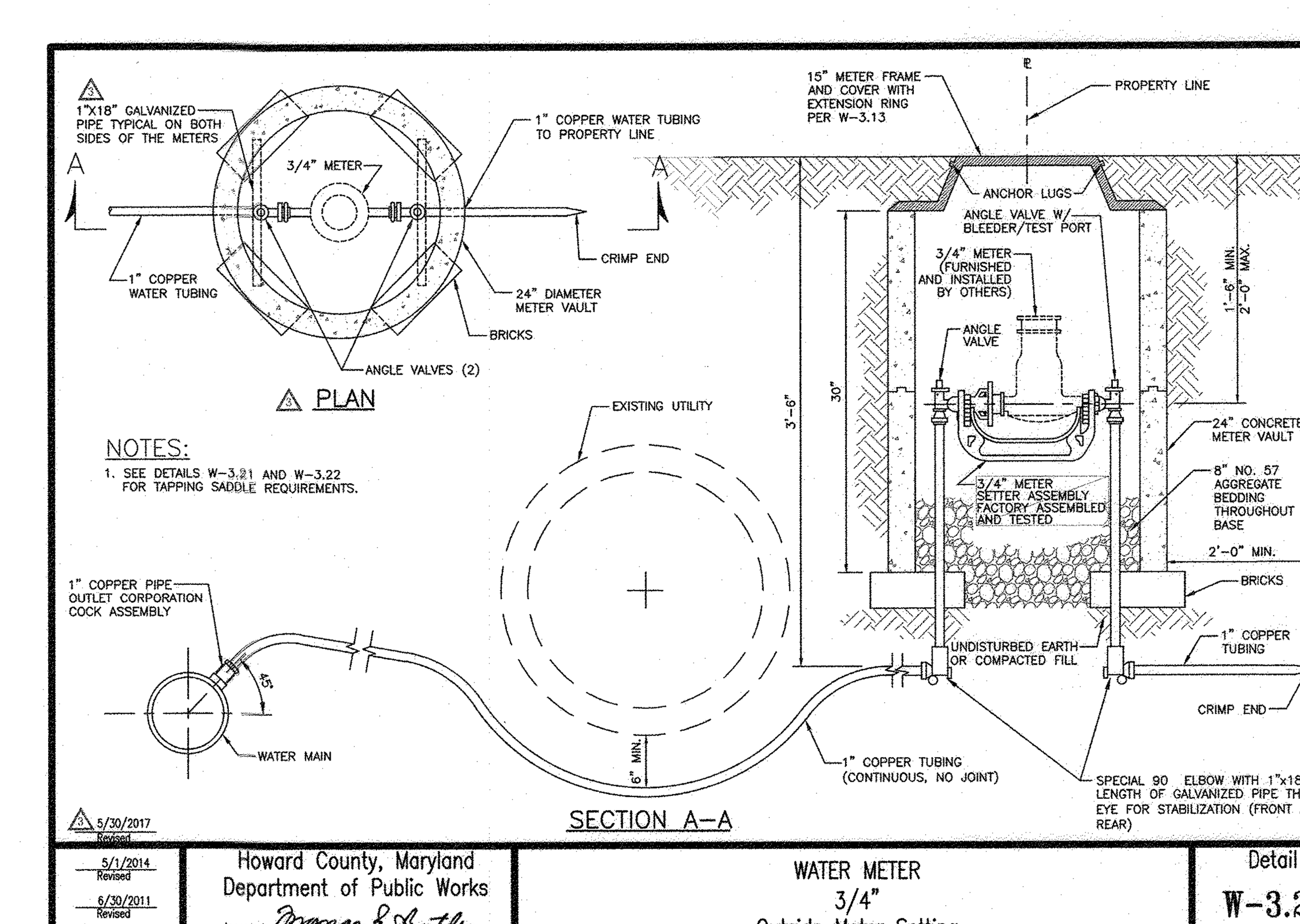
SCALE: NTS

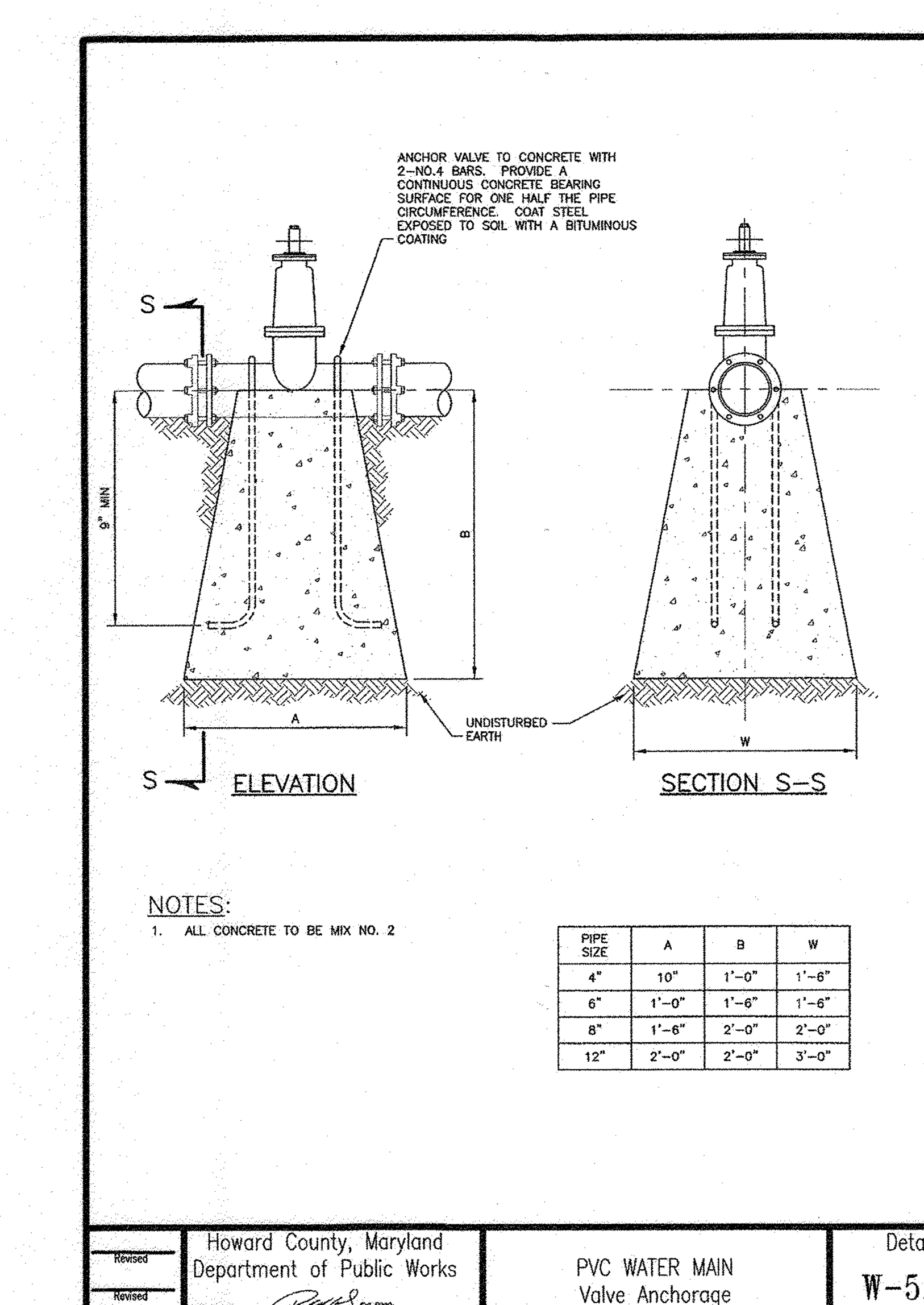
FOR TRENCH DETAIL REFER TO HOWARD COUNTY STANDARD DETAIL G-2.12 AND G-4.01











AS-BUILT MAY 2020

C-06

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 5/3/19
CHIEF, BUREAU OF ENGINEERING — DATE 4/29/19
CHIEF, BUREAU OF UTILITIES — DATE 5-2-19
CHIEF, UTILITY DESIGN DIVISION — DATE 4/29/19

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DES: REG/WJG
DRN: RAD/REG
CHK: JCM/NKS
SIGN/DATE: 04/25/19

BY	NO.	REVISION	DATE

[redacted]

WATER AND MISCELLANEOUS DETAILS

600' SCALE MAP NO. 31, 37 — BLOCK NO. 5, 6, 10, 11, 17, 18, 24

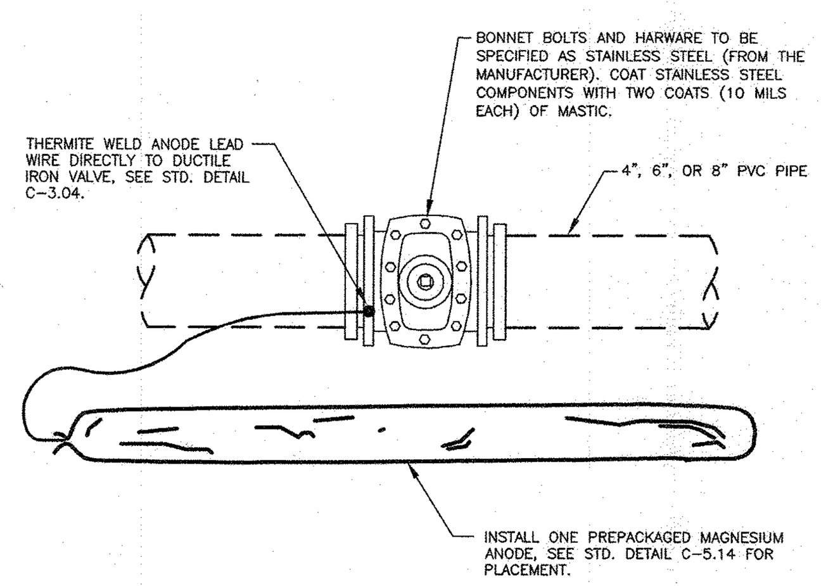
PROJECT NO. W8305
CONTRACT NO. 44-5059

LANDING ROAD WATER MAIN LOOP

ELECTION DISTRICT NO. 7 — HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

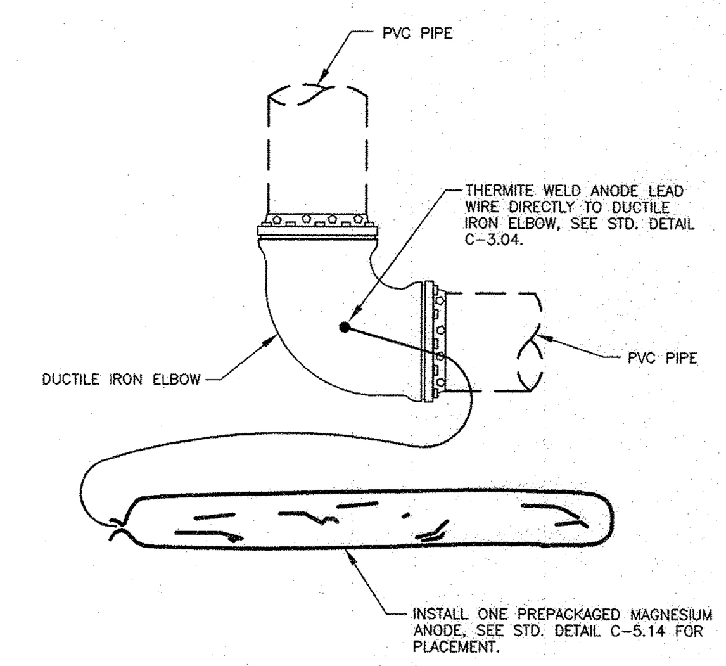
SHEET NO. 09 OF 18



NOTES:

1. BONNET BOLTS AND HARWARE TO BE SPECIFIED AS STAINLESS STEEL (FROM THE MANUFACTURER). COAT STAINLESS STEEL COMPONENTS WITH TWO COATS (10 MILS EACH) OF MASTIC.
2. ANODE PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE STD. DETAIL C-5.14.
3. DO NOT THERMITE WELD TO PVC PIPE.
4. ANODE SIZE TO BE DETERMINED IN CONTRACT DOCUMENTS.

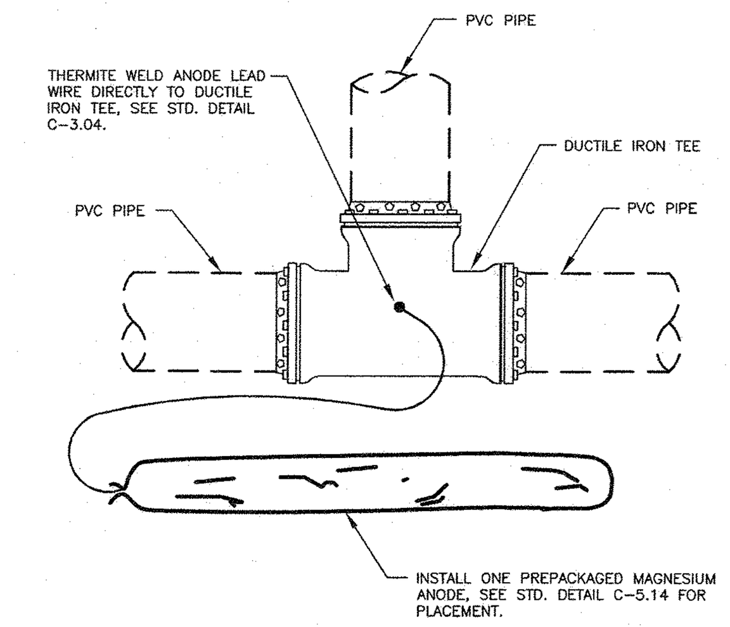
Revised / Revised / 6/30/2011 Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	PVC MAIN 4-Inch, 6-Inch, or 8-Inch Ductile Iron Valve	Detail C-5.01



NOTES:

1. ANODES REQUIRED ONLY IF ELBOW IS DUCTILE IRON.
2. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE STD. DETAIL C-5.14.
3. DO NOT THERMITE WELD TO PVC PIPE.
4. ANODE SIZE TO BE DETERMINED IN CONTRACT DOCUMENTS.

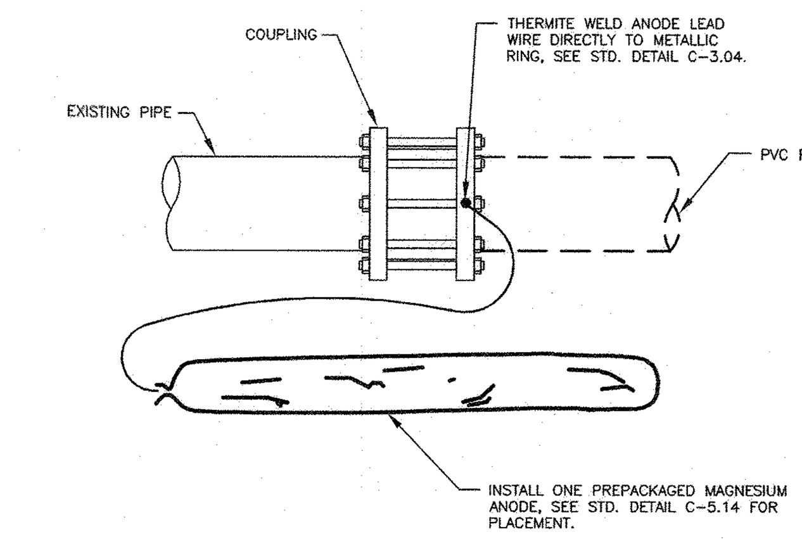
Revised / Revised / 6/30/2011 Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	PVC MAIN Ductile Iron Elbow	Detail C-5.04



NOTES:

1. ANODES REQUIRED ONLY IF TEE IS DUCTILE IRON.
2. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE STD. DETAIL C-5.14.
3. DO NOT THERMITE WELD TO PVC PIPE.
4. ANODE SIZE TO BE DETERMINED IN CONTRACT DOCUMENTS.

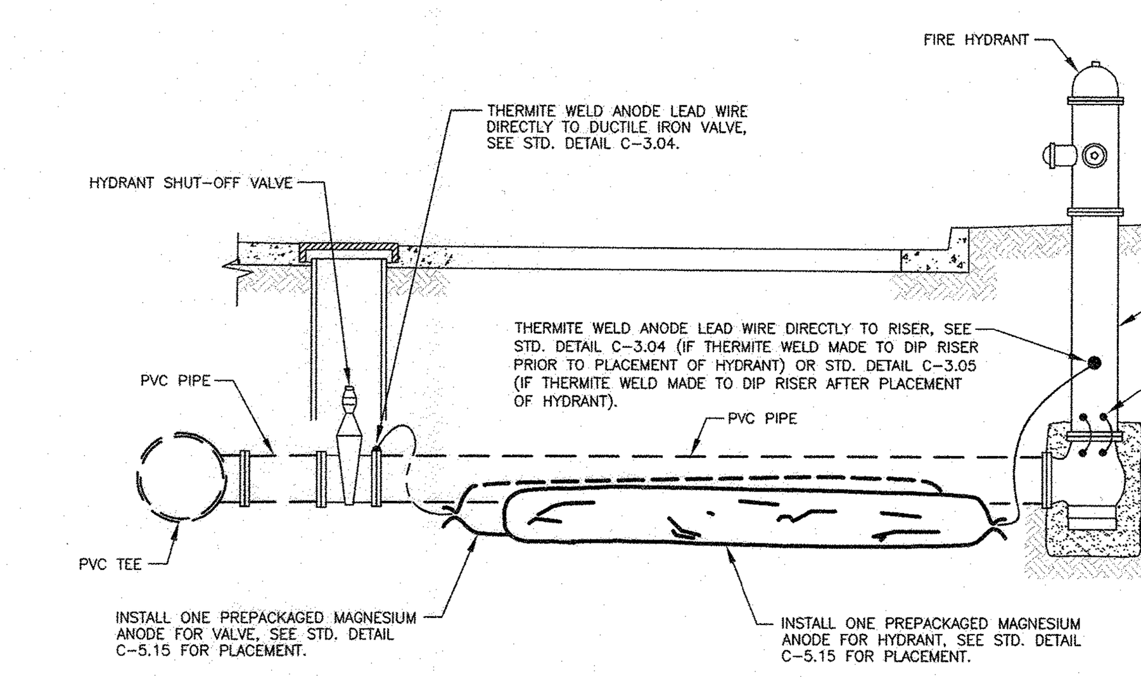
Revised / Revised / 6/30/2011 Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	PVC MAIN Ductile Iron Tee	Detail C-5.05



NOTES:

1. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE STD. DETAIL C-5.14.
2. DO NOT THERMITE WELD TO PVC PIPE.
3. ANODE SIZE TO BE DETERMINED IN CONTRACT DOCUMENTS.
4. IF COUPLING IS EPOXY COATED, REMOVE COATING FROM COUPLING RING WHERE BOLTS ARE MOVED.

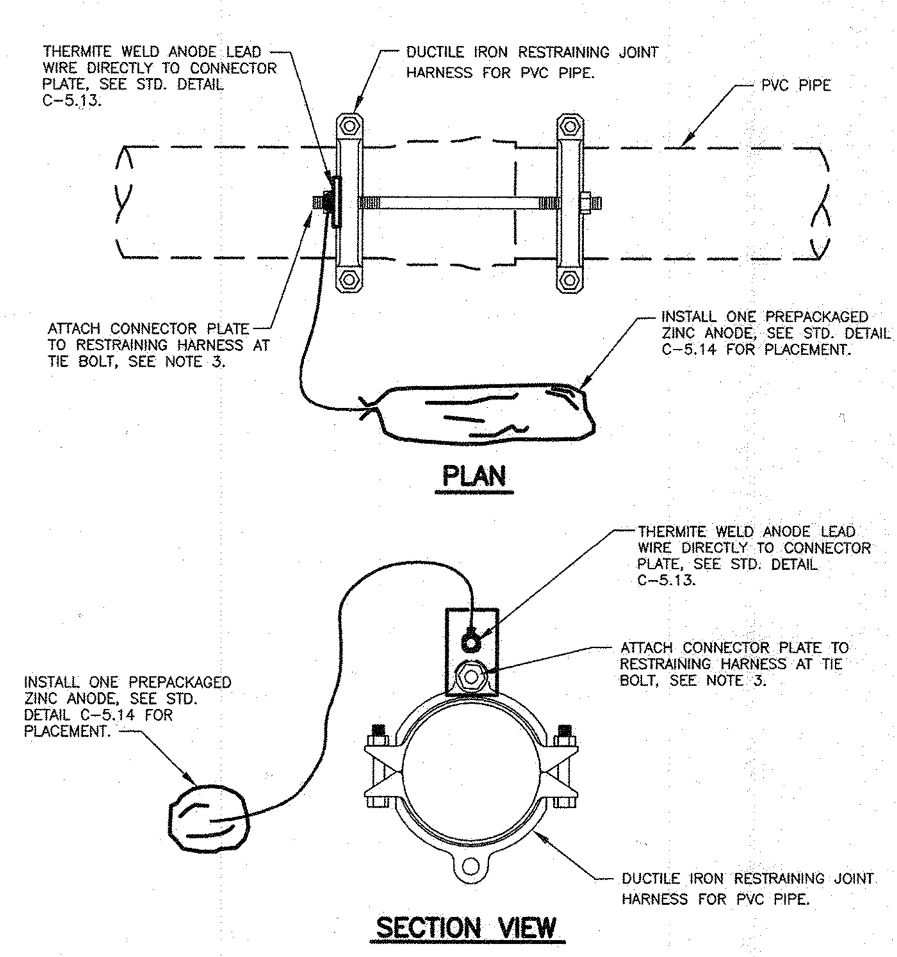
Revised / Revised / 6/30/2011 Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	PVC MAIN Ductile Iron Coupling	Detail C-5.08



NOTES:

1. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE STD. DETAIL C-5.15.
2. DO NOT THERMITE WELD TO PVC PIPE.
3. ANODE SIZE TO BE DETERMINED IN CONTRACT DOCUMENTS.

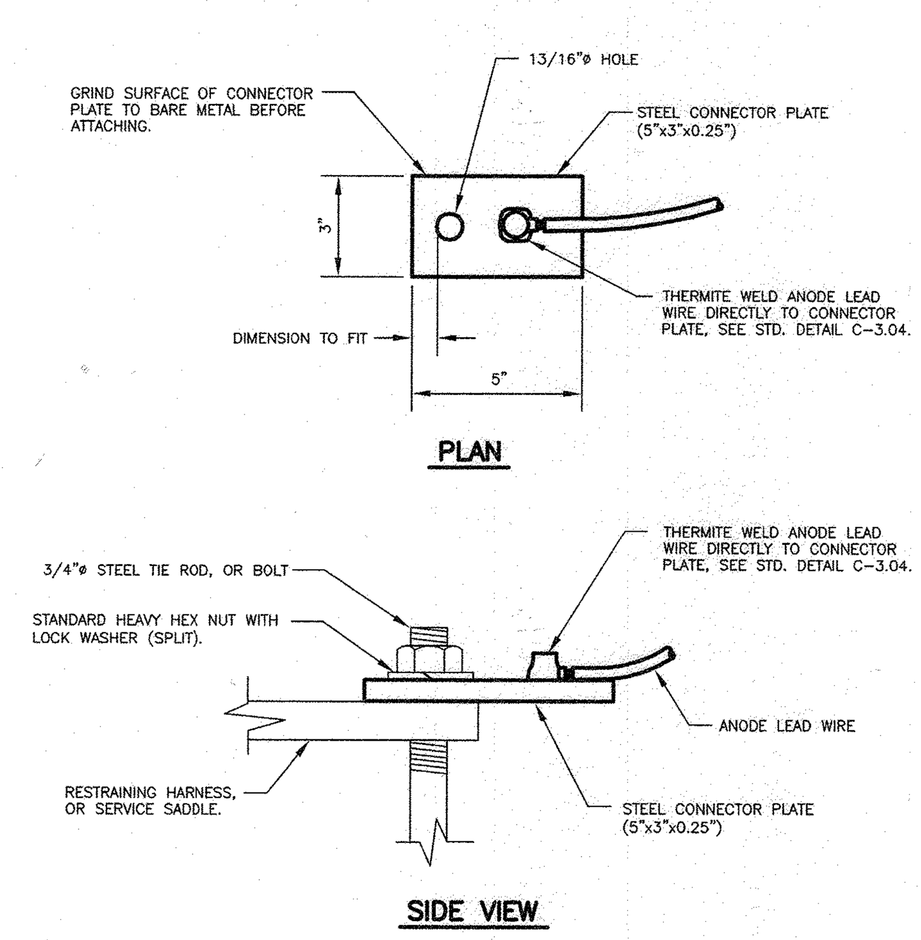
Revised / Revised / 6/30/2011 Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	PVC MAIN Fire Hydrant with PVC Lateral	Detail C-5.09



NOTES:

1. CONNECTOR PLATE TO BE THERMITE WELDED TO ANODE LEAD WIRE PRIOR TO ATTACHING CONNECTOR PLATE TO RESTRAINING HARNESS.
2. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE STD. DETAIL C-5.14.
3. REMOVE COATING FROM RESTRAINING HARNESS WHERE CONNECTOR PLATE IS TO BE MOUNTED. REMOVE COATING IMMEDIATELY PRIOR TO ATTACHING THE CONNECTOR PLATE.
4. DO NOT THERMITE WELD TO PVC PIPE.
5. ANODE SIZE TO BE DETERMINED IN CONTRACT DOCUMENTS.
6. COAT BOLTS WITH 20 MILS (TWO COATS 10 MILS EACH) OF BRUSH APPLIED MASTIC.

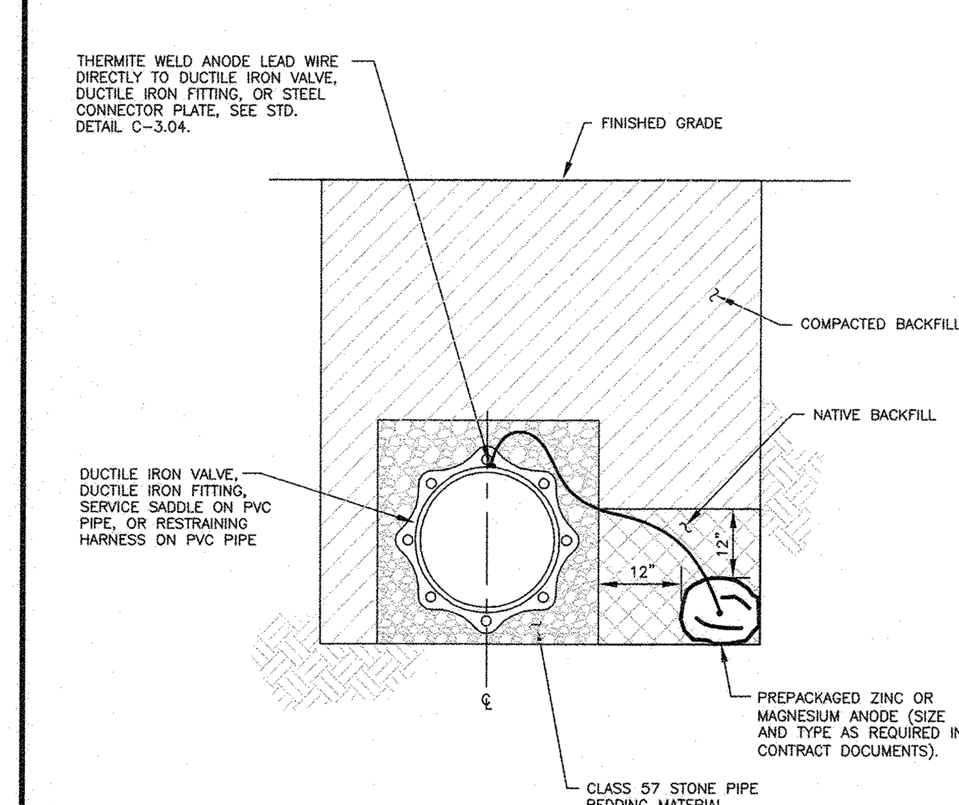
Revised / Revised / 6/30/2011 Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	PVC MAIN Restraining Harness	Detail C-5.10



NOTES:

1. CONNECTOR PLATE TO BE THERMITE WELDED TO ANODE LEAD WIRE PRIOR TO ATTACHING CONNECTOR PLATE TO RESTRAINING HARNESS, TAPPING SADDLE, OR SERVICE SADDLE.
2. THERMITE WELDS SHALL BE COATED WITH A PREFABRICATED ONE PIECE PLASTIC CAP FILLED WITH ELASTOMERIC MATERIAL, ROYSTON HANDY-CAP OR APPROVED EQUAL.

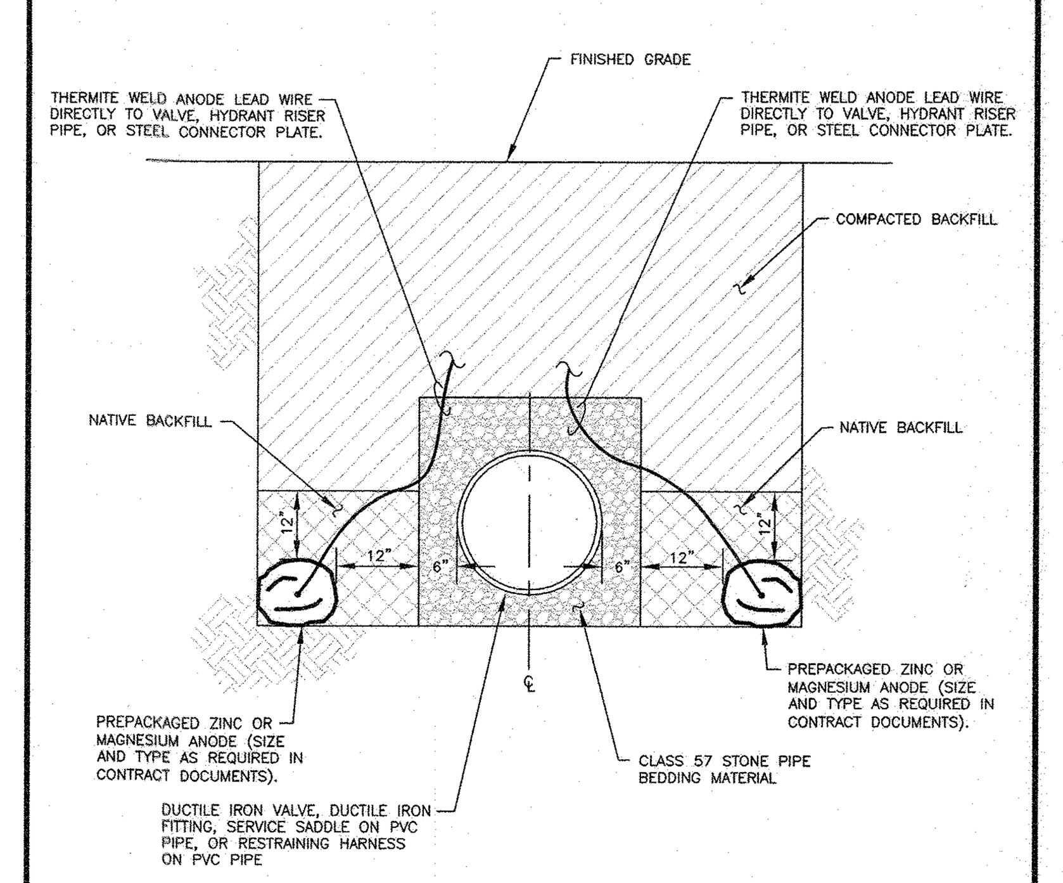
Revised / Revised / 6/30/2011 Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	PVC MAIN Connector Plate	Detail C-5.13



NOTES:

1. INSTALL ANODES A MINIMUM OF 12 INCHES FROM PIPE.
2. BACKFILL ANODES WITH NATIVE SOIL FOR A MINIMUM OF 12 INCHES ON ALL SIDES. DO NOT BACKFILL ANODES WITH SAND OR STONE.
3. DO NOT THERMITE WELD TO PVC PIPE.

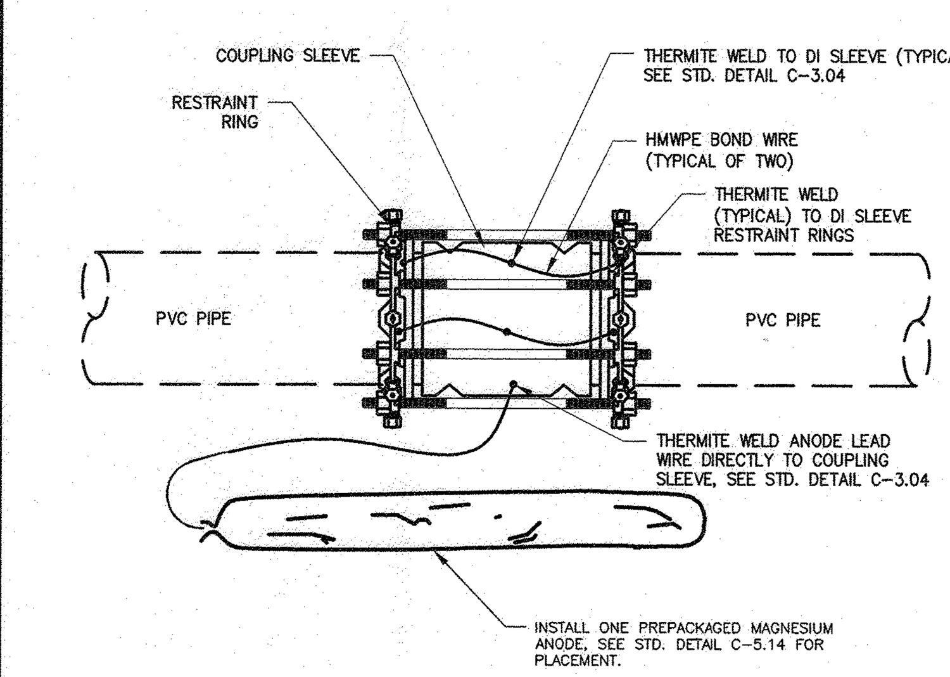
Revised / Revised / 6/30/2011 Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	PVC MAIN Single Anode Placement	Detail C-5.14



NOTES:

1. WHEN INSTALLING ANODES AT HYDRANTS, ATTACH ONE ANODE LEAD TO SHUT-OFF VALVE, AND ONE ANODE LEAD TO HYDRANT RISER PIPE, SEE STD. DETAIL C-5.09.
2. INSTALL ANODES A MINIMUM OF 12 INCHES FROM PIPE.
3. BACKFILL ANODES WITH NATIVE SOIL FOR A MINIMUM OF 12 INCHES ON ALL SIDES. DO NOT BACKFILL ANODES WITH SAND OR STONE.
4. DO NOT THERMITE WELD TO PVC PIPE.

Revised / Revised / 6/30/2011 Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	PVC MAIN Multiple Anode Placement	Detail C-5.15



NOTES:

1. ANODES PLACED AT SAME DEPTH AS THE BOTTOM OF PIPE AND AT A MINIMUM OF 12" FROM EDGE OF PIPE, SEE STD. DETAIL C-5.14.
2. DO NOT THERMITE WELD TO PVC PIPE.
3. ANODE SIZE TO BE DETERMINED IN CONTRACT DOCUMENTS.
4. IF COUPLING IS EPOXY COATED, REMOVE COATING FROM COUPLING RING WHERE BOLTS ARE MOVED.

		PVC MAIN Restrained Coupling	Detail C-5.X

AS-BUILT MAY 2020

CP-01

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 5/3/19	CHIEF, BUREAU OF ENGINEERING	DATE 4/29/19
CHIEF, BUREAU OF UTILITIES	DATE 5-2-19	CHIEF, UTILITY DESIGN DIVISION ZCK	DATE 4/29/19

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LICENSE NO. 20566,
EXPIRATION DATE: 09/06/2020.

STATE OF MARYLAND — JOHN C. MOORE — No. 20566 — REGISTERED — PROFESSIONAL ENGINEER

DES: REG/WJG
DRN: RAD/REG
CHK: JCM/NKS
SIGN DATE: 04/25/19

BY	NO.	REVISION	DATE

[redacted] [redacted]

CORROSION CONTROL DETAILS

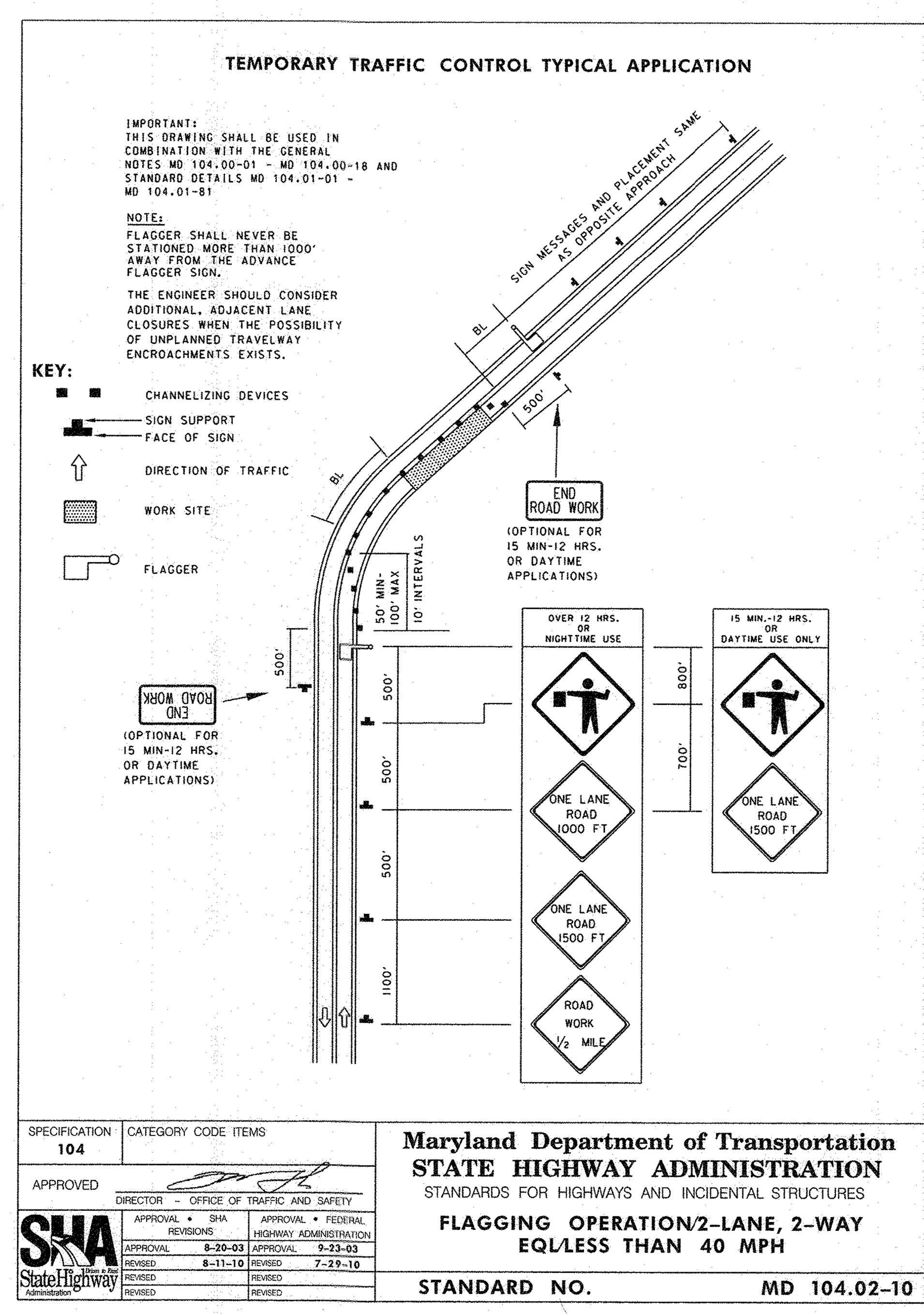
600' SCALE MAP NO. 31, 37 — BLOCK NO. 5, 6, 10, 11, 17, 18, 24

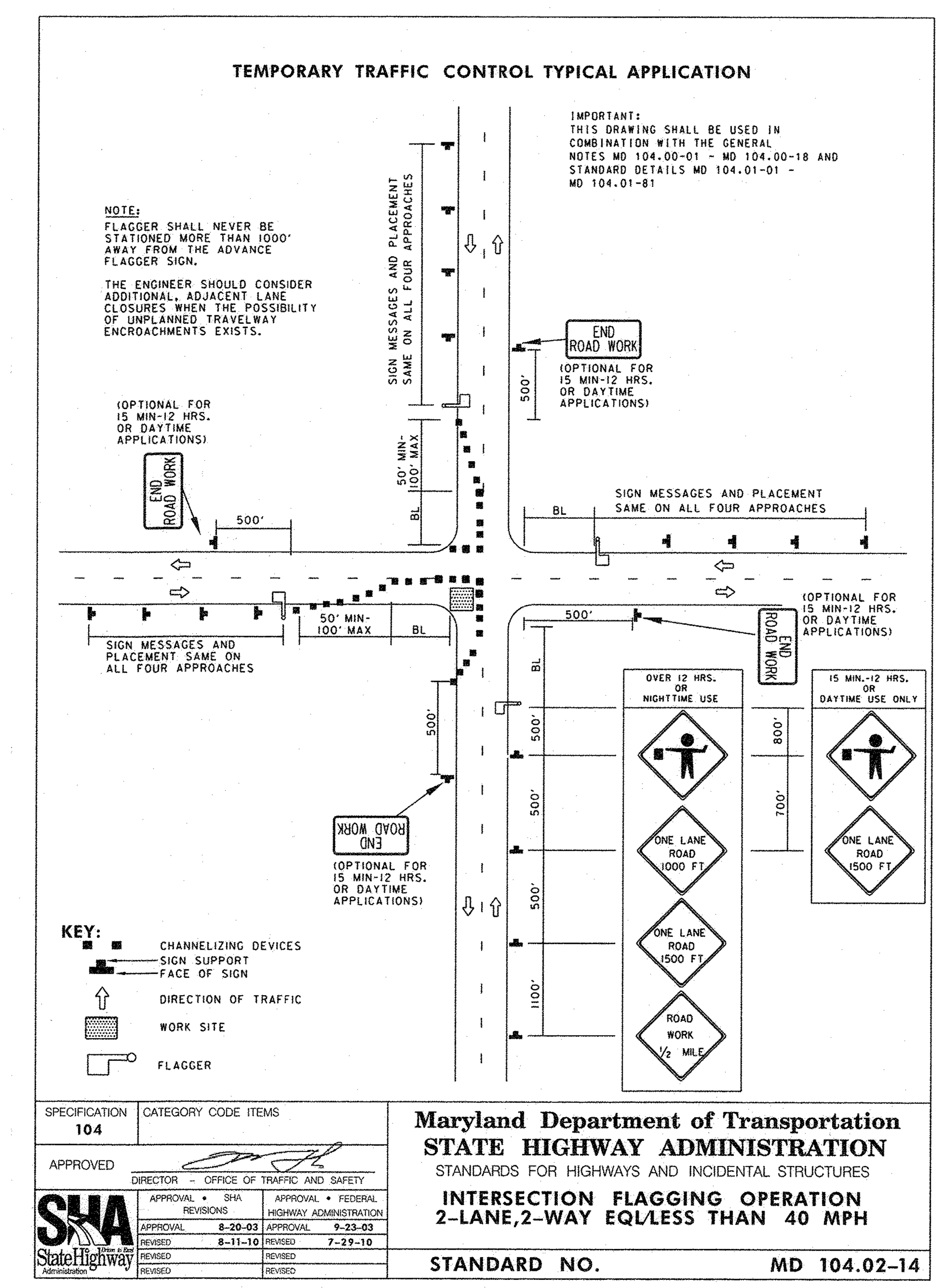
PROJECT NO. W8305
CONTRACT NO. 44-5059

LANDING ROAD WATER MAIN LOOP

ELECTION DISTRICT NO. 7 — HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN





TRAFFIC CONTROL PLAN – GENERAL NOTES

1. HOWARD COUNTY TRAFFIC SHALL BE NOTIFIED AT LEAST 3 DAYS PRIOR TO BEGINNING ANY WORK IN ORDER TO SCHEDULE A FIELD INSPECTION OF TRAFFIC CONTROL DEVICES. CONTACT THE TRAFFIC DIVISION AT (410) 313–2430.
2. ALL CONSTRUCTION AND MATERIALS FOR THE TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE STANDARDS CONTAINED IN THE LATEST EDITION OF THE STATE OF MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
3. TRAVEL LANES SHALL BE A MINIMUM OF TEN FEET IN WIDTH. WHEN ONLY ONE LANE IS OPEN, FLAGGERS AND THE APPROPRIATE SIGNING SHALL BE PROVIDED. THE ROADWAY SHALL BE REOPENED TO TWO WAY TRAFFIC AT THE END OF EACH WORK SHIFT.
4. REFLECTORIZED CHANNELIZING DEVICES SHALL BE USED AT NIGHT ALONG THE CONSTRUCTION AREA.
5. THE CONTRACTOR SHALL BACKFILL THE TRENCH IMMEDIATELY AFTER THE INSTALLATION OF A SECTION OF PIPE. IF STEEL PLATES ARE TO BE USED, APPROPRIATE SIGNING WILL BE REQUIRED. STEEL PLATES MUST BE PINNED. STEEL PLATES ON ALL COUNTY ROADWAYS MUST BE RECESSED, AS MUST ALL STEEL PLATES TO BE PLACED FOR MORE THAN 24 HOURS BETWEEN DECEMBER 1st AND MARCH 15th. THE CONTRACTOR SHALL NOT LEAVE AN OPEN TRENCH UNATTENDED.
6. THE CONTRACTOR SHALL INSTALL W8–8(4) "STEEL PLATES" SIGN (IN ACCORDANCE WITH LATEST EDITION OF MDOT SHA'S STANDARD SIGN BOOK) FOR EACH DIRECTION OF TRAFFIC APPROACHING THE STEEL PLATES, APPROXIMATELY 500 FEET IN ADVANCE OF THE STEEL PLATES.
7. ALL TEMPORARY SIGNS THAT DO NOT APPLY WHEN ROAD IS OPEN SHALL BE COVERED OR REMOVED, OR TURNED AWAY.
8. CHANNELIZING DEVICES AND TEMPORARY STRIPING SHALL BE REMOVED AS SOON AS PRACTICAL.
9. ALL TRAFFIC CONTROL DEVICES SHALL BE KEPT IN THEIR PROPER POSITION AT ALL TIMES AND SHALL BE REPAIRED, REPLACED OR CLEANED AS NECESSARY TO PRESERVE THEIR APPEARANCE AND CONTINUITY.
10. ALL CONSTRUCTION SIGNING SHALL BE IN ACCORDANCE WITH THE TYPICAL SIGN PLACEMENT SHOWN ON THESE PLANS AND SHALL NOT OBSTRUCT EXISTING TRAFFIC CONTROL DEVICES.
11. ANY CHANGES TO THE TCP SHALL BE SUBMITTED TO THE TRAFFIC ENGINEERING DIVISION FOR REVIEW AND APPROVAL. REQUESTS FOR DETOURS AND ROAD CLOSURES SHALL BE SUBMITTED TO THE TRAFFIC DIVISION AT 410–313–2430 5 DAYS IN ADVANCE WITH A DETOUR PLAN FOR APPROVAL.
12. CONSTRUCTION & WORKER'S VEHICLES SHALL NOT BE PARKED IN A MANNER THAT WILL IMPEDE TRAFFIC OR IMPAIR SIGHT DISTANCE. THESE VEHICLES SHOULD BE PARKED OFF–STREET ON THE CONSTRUCTION SITE OR ON A SIDE STREET NOT UNDER CONSTRUCTION.
13. FLAGGERS SHALL BE CERTIFIED FLAGGER AND SHALL HAVE THEIR CERTIFIED FLAGGER CARD WITH THEM AT ALL TIMES DURING FLAGGING OPERATIONS.
14. CONTRACTOR'S TRAFFIC MANAGER MUST HAVE A MDSHA TEMPORARY TRAFFIC CONTROL MANAGER'S TRAINING COURSE CARD.
15. THE HOWARD COUNTY PUBLIC SCHOOL SYSTEM, 410–313–6278, SHALL BE ADVISED OF WORK ACTIVITIES WHICH MAY AFFECT BUS ROUTE TIMING AS EARLY AS PRACTICAL.
16. PORTABLE VARIABLE MESSAGE SIGNS (PVMS), SHALL BE PLACED 10 DAYS PRIOR TO ROAD WORK. CONTACT THE TRAFFIC DIVISION FOR LOCATION AND MESSAGES ON THE PVMS.

AS-BUILT MAY 2020

MT–01

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS 5/3/19 DATE
CHIEF, BUREAU OF ENGINEERING 4/29/19 DATE
CHIEF, BUREAU OF UTILITIES 5-2-19 DATE
CHIEF, UTILITY DESIGN DIVISION 4/25/19 DATE

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SIGN DATE: 04/25/19

BY	NO.	REVISION	DATE

[redacted]

MAINTENENCE OF TRAFFIC
NOTES AND DETAILS

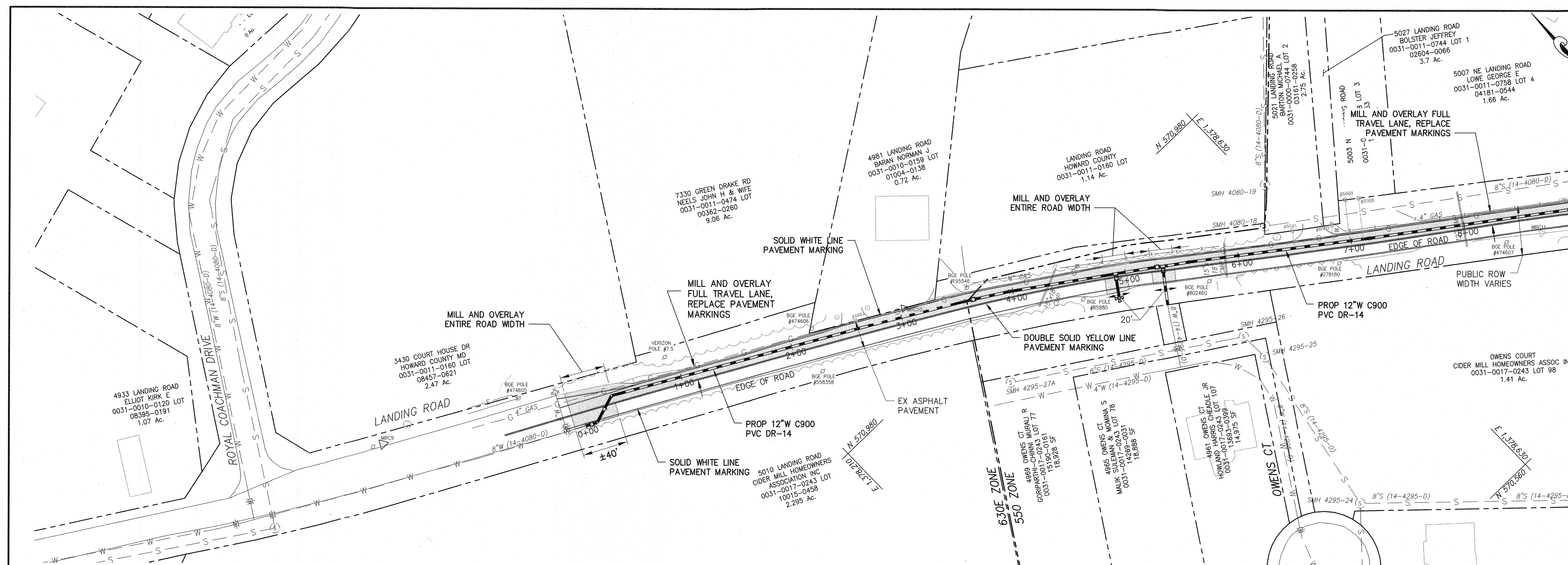
600' SCALE MAP NO. 31, 37 BLOCK NO. 5, 6, 10, 11, 17, 18, 24

PROJECT NO. W8305
CONTRACT NO. 44-5059

LANDING ROAD WATER MAIN LOOP

ELECTION DISTRICT NO. 7 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN
SHEET NO. 11 OF 18



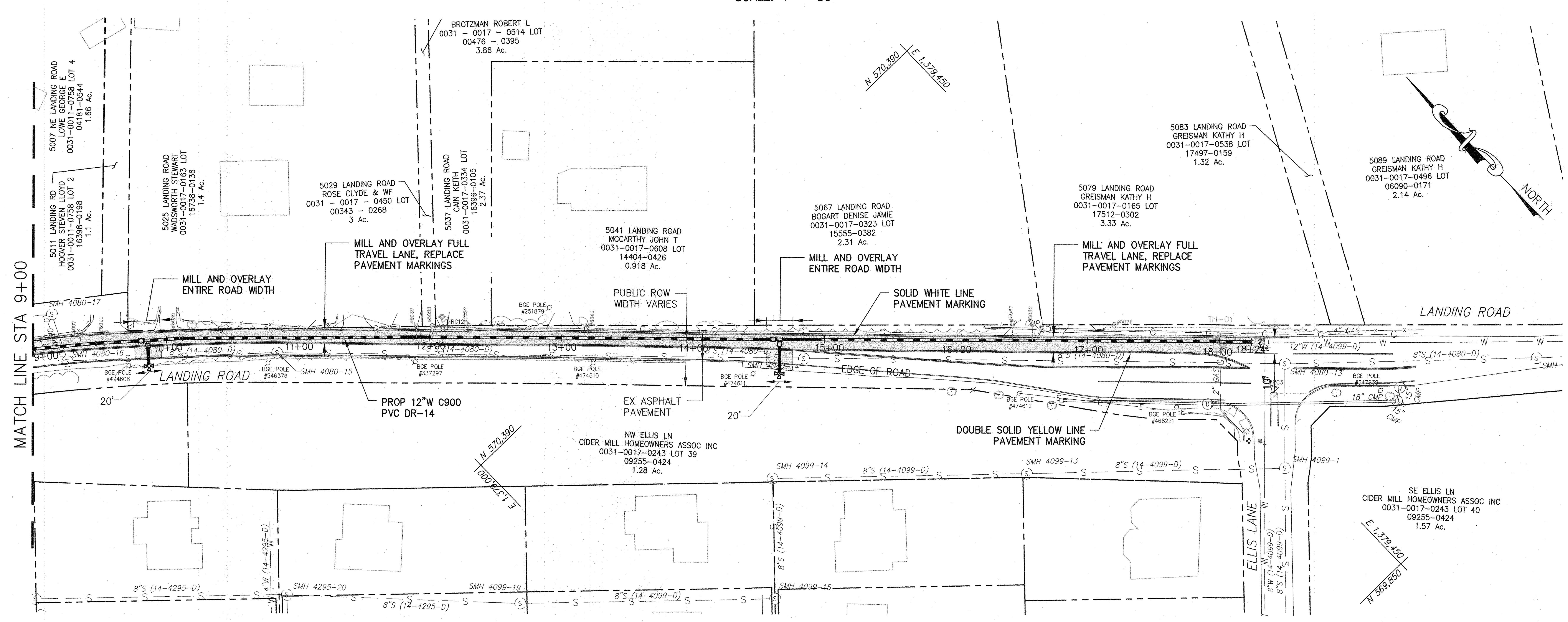
PLAN – LANDING ROAD NORTH SECTION

SCALE: 1" = 50'

LIMITS OF PAVEMENT REPAIR (PROVIDE 2" MILL AND OVERLAY OUTSIDE OF THE WATER MAIN TRENCH REPAIR)

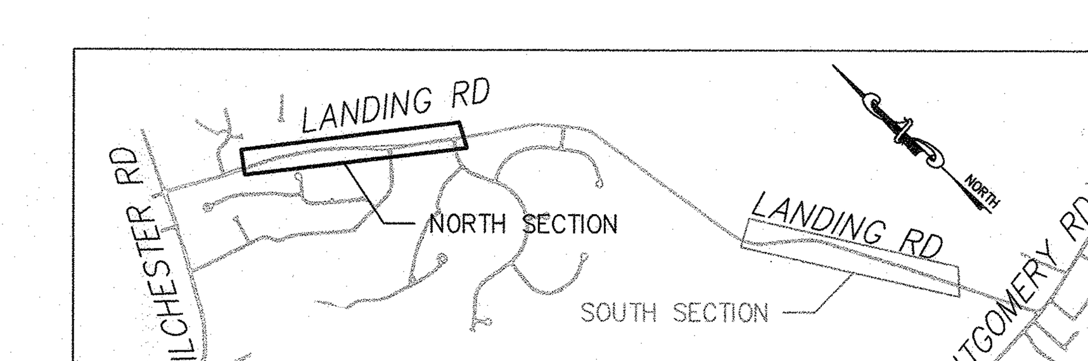
NOTES:

1. PAVEMENT REPAIR: REFER TO THE LATEST EDITION HOWARD COUNTY STANDARD SPECIFICATION SECTION 504 – ASPHALT PAVEMENT, STANDARD DETAILS G-4.01 UTILITY TRENCH ROADWAY REPAVING AND R-2.01 PAVING SECTION P-4, CBR 5 TO <7.
2. PAVEMENT MARKINGS: ALL EXISTING PAVEMENT MARKINGS SHALL REMAIN IN PLACE OR SHALL BE IMMEDIATELY REPLACED IN KIND. REFER TO THE LATEST EDITION HOWARD COUNTY STANDARD SPECIFICATION SECTION 549 PAVEMENT MARKINGS, STANDARD DETAILS T-7.01 TYPICAL INTERSECTION PAVEMENT MARKING LAYOUT AND T-7.03 SIGNING AND MARKING DETAILS.



PLAN – LANDING ROAD NORTH SECTION

SCALE: 1" = 50'



KEY PLAN

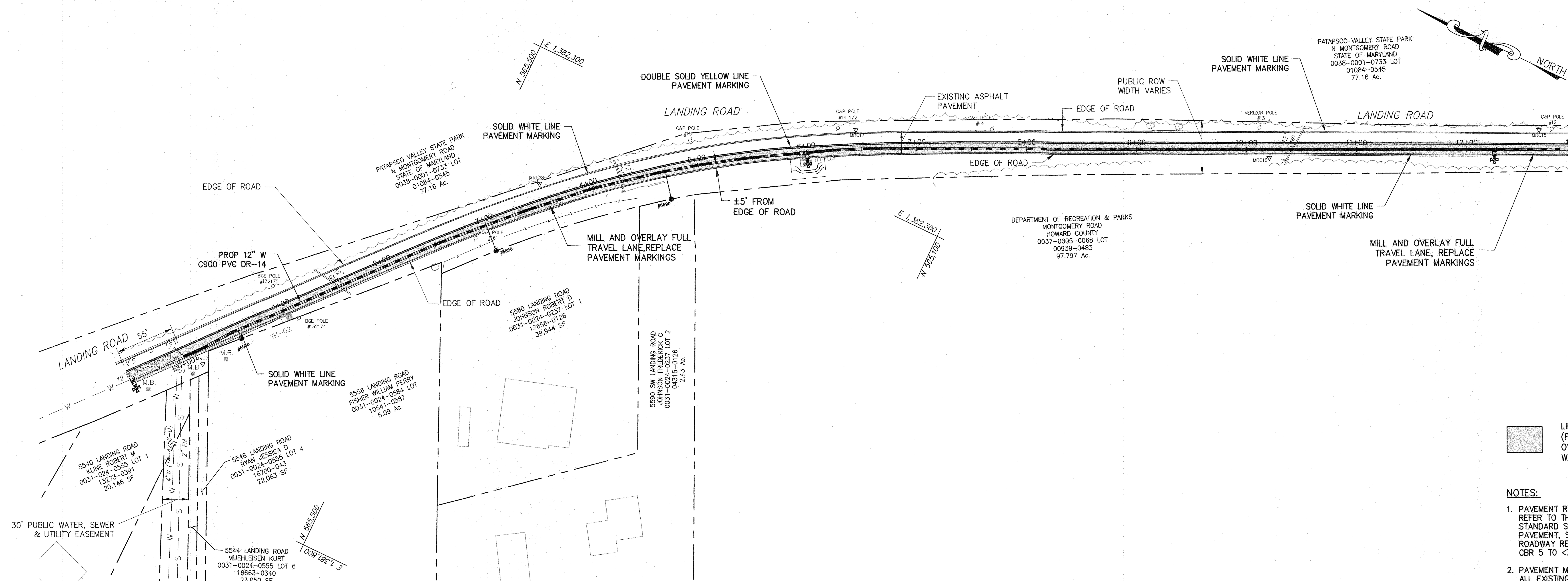
AS-BUILT MAY 2020

1"=50'

PV-01

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	RK&K	PROFESSIONAL CERTIFICATION	DES/DRN/CHK	REVISION	TITLE	PROJECT	SCALE
DIRECTOR OF PUBLIC WORKS 5/3/19 DATE; CHIEF, BUREAU OF ENGINEERING 4/29/19 DATE; CHIEF, BUREAU OF UTILITIES 5-2-19 DATE; CHIEF, UTILITY DESIGN DIVISION 4/25/19 DATE	P: 410.728.2900 700 East Pratt Street, Suite 500 | Baltimore, MD 21202 Engineers | Construction Managers | Planners | Scientists www.rkk.com Responsive People | Creative Solutions	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. 20566, EXPIRATION DATE: 09/06/2020	DES: REG/WJG; DRN: RAD/REG; CHK: JCM/NKS; SIGN DATE: 04/25/19	BY / NO. / REVISION / DATE	[redacted] PAVING PLAN – NORTH SECTION (STA 0+00 TO STA 18+25)	PROJECT NO. W8305 CONTRACT NO. 44-5059 LANDING ROAD WATER MAIN LOOP	AS SHOWN; SHEET NO. 12 OF 18

600' SCALE MAP NO. 31, 37 BLOCK NO. 5, 6, 10, 11, 17, 18, 24 ELECTION DISTRICT NO. 7 HOWARD COUNTY, MARYLAND



PLAN – LANDING ROAD SOUTH SECTION

SCALE: 1" = 50'

LIMITS OF PAVEMENT REPAIR (PROVIDE 2" MILL AND OVERLAY OUTSIDE OF THE WATER MAIN TRENCH REPAIR)

NOTES:

1. PAVEMENT REPAIR:
   REFER TO THE LATEST EDITION HOWARD COUNTY STANDARD SPECIFICATION SECTION 504 – ASPHALT PAVEMENT, STANDARD DETAILS G-4.01 UTILITY TRENCH ROADWAY REPAVING AND R-2.01 PAVING SECTION P-4, CBR 5 TO <7.

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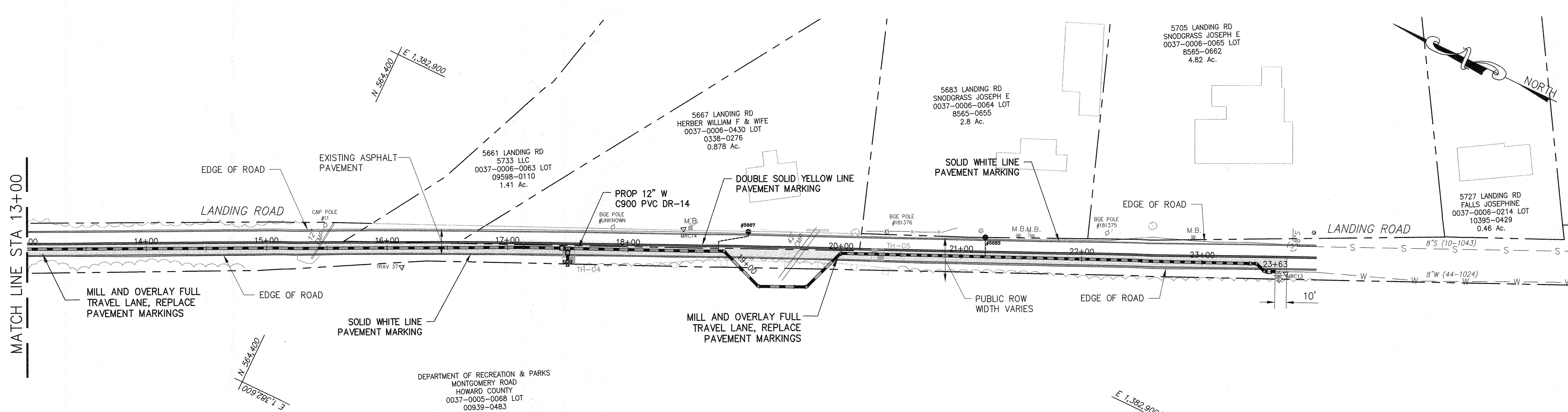
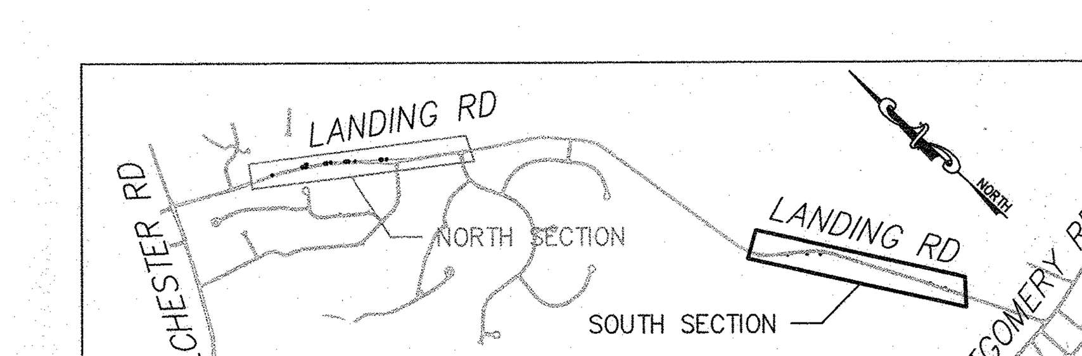


PLAN – LANDING ROAD SOUTH SECTION

SCALE: 1" = 50'



KEY PLAN

AS-BUILT MAY 2020

1"=50' 50' 0 50' 100'

PV-02

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE 5/3/19
CHIEF, BUREAU OF ENGINEERING DATE 4/29/19
CHIEF, BUREAU OF UTILITIES DATE 5-2-19
CHIEF, UTILITY DESIGN DIVISION DATE 4/29/19

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LICENSE NO. 20566,
EXPIRATION DATE: 09/06/2020.

DES: REG/WJG
DRN: RAD/REG
CHK: JCM/NKS
SIGN DATE: 04/25/19

BY	NO.	REVISION	DATE

[redacted] [redacted]

PAVING PLAN – SOUTH SECTION
(STA 0+00 TO STA 23+63)

600' SCALE MAP NO. 31, 37 BLOCK NO. 5, 6, 10, 11, 17, 18, 24

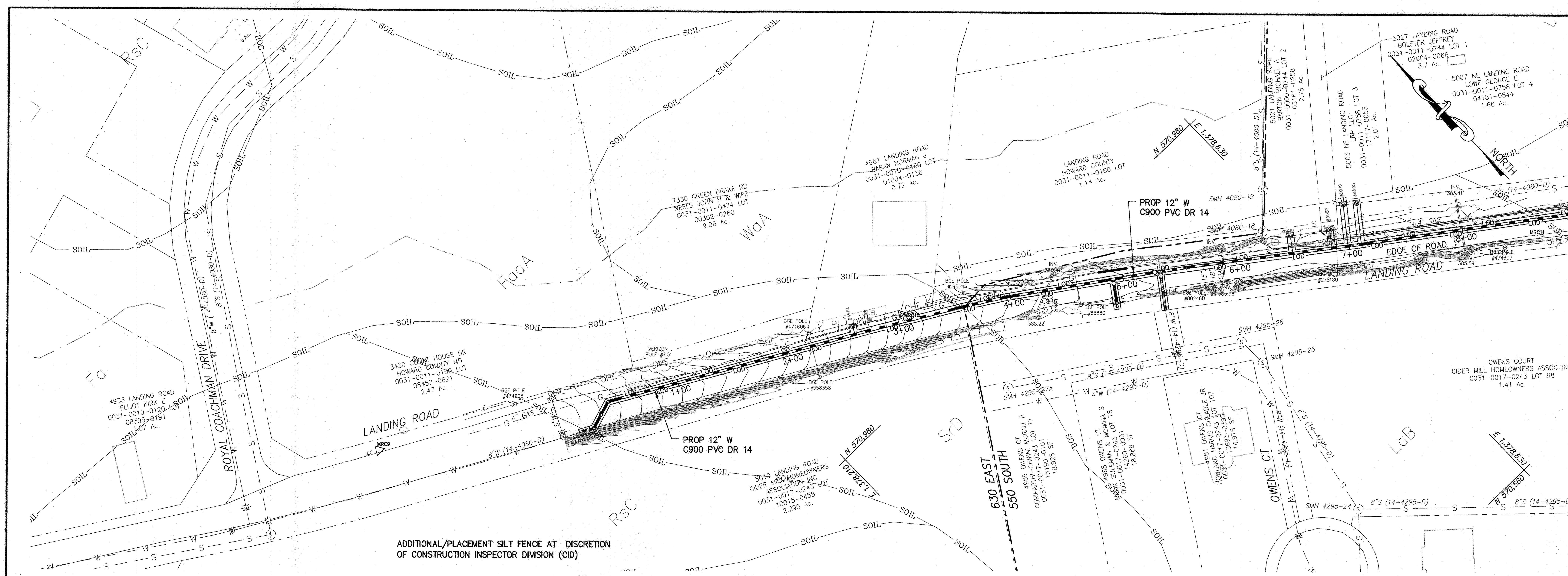
PROJECT NO. W8305
CONTRACT NO. 44-5059

LANDING ROAD WATER MAIN LOOP

ELECTION DISTRICT NO. 7 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET NO. 13 OF 18



PLAN – LANDING ROAD NORTH SECTION

SCALE: 1" = 50'

SOIL NOTES

1. SOIL DATA IS BASED ON THE WEB SOIL SURVEY WEBSITE BY THE USDA NATURAL RESOURCES CONSERVATION SERVICE:

FaaA FALLSINGTON SANDY LOAMS, 0 TO 2 PERCENT SLOPES, Kw=0.24
GdD GLADSTONE–LEGORE COMPLEX, STONY, 15 TO 25 PERCENT SLOPES Kw=0.28
LaB LEGORE SILT LOAM, 3 TO 8 PERCENT SLOPES Kw=0.64
LaC LEGORE SILT LOAM, 8 TO 15 PERCENT SLOPES, Kw=0.64
RsC RUSSETT FINE SANDY LOAM, 5 TO 10 PERCENT SLOPES, Kw=0.43
SrD SASSAFRAS AND CROOM SOILS, 10 TO 15 PERCENT SLOPES, Kw=0.37
WaA WATCHUNG SILT LOAM, 0 to 3 PERCENT SLOPES, Kw=0.43

2. TOP SOIL SHALL BE PROVIDED IN ACCORDANCE WITH THE LATEST EDITION OF THE SHA STANDARD SPECIFICATIONS OF CONSTRUCTION AND MATERIALS. SECTION 920 – LANDSCAPING MATERIALS.

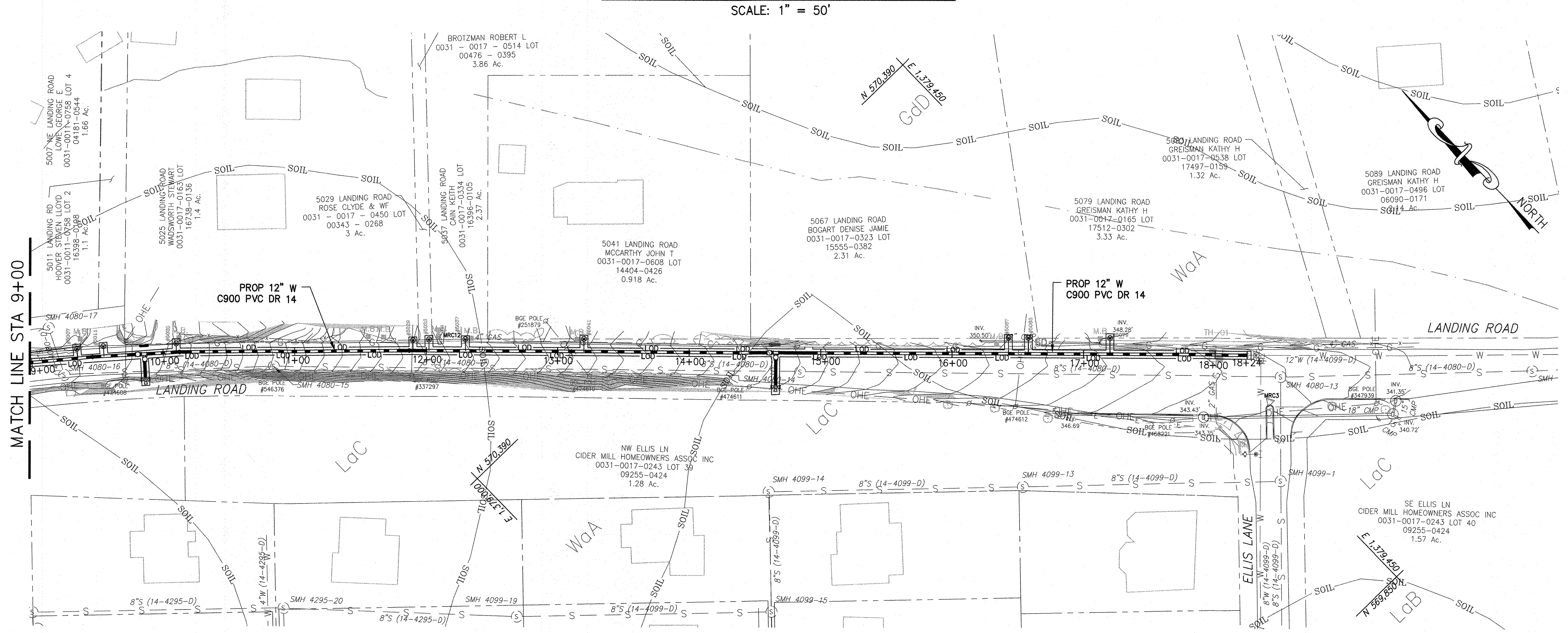
UTILITY TRENCH SEDIMENT CONTROL PROCEDURES

1. EXCAVATE TRENCH MATERIAL SHALL BE PLACED ON THE HIGH SIDE OF THE TRENCH.
2. IMMEDIATELY FOLLOWING PIPE INSTALLATION THE TRENCH SHALL BE BACKFILLED, COMPACTED AND STABILIZED AT THE END OF EACH WORKING DAY. SEE HSCD NOTE #9 ON DWG. ES-03 (SHT 16 OF 18).
3. TEMPORARY STEEL PLATES SHALL BE PLACED ON ANY DISTURBED AREA DAILY.

STANDARD STABILIZATION NOTE

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

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

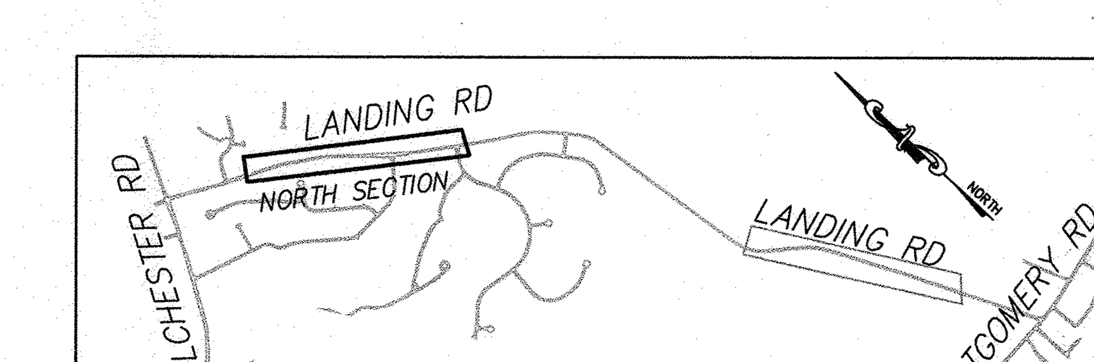


PLAN – LANDING ROAD NORTH SECTION

SCALE: 1" = 50'

SEQUENCE OF CONSTRUCTION NORTH SECTION

1. A PRECONSTRUCTION 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 HOURS NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
   a. PRIOR TO THE START OF EACH DISTURBANCE
   b. UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING
   c. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT,
   d. PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.
2. INSTALL PERIMETER CONTROLS AS NECESSARY.... ONE (1) DAY
3. CONTACT CID PER 1.b ABOVE.
4. COMPLETE WATER MAIN CONSTRUCTION.... FIFTEEN (25) DAYS
5. COMPLETE TIE-INS TO EXISTING WATER MAINS.... THREE (3) DAYS
6. RESTORE PAVING AND SURROUNDING AREAS.... FIVE (5) DAYS
7. ONCE THE PROJECT SITE IS STABILIZED AND CONTROLS CAN BE REMOVED, CONTACT CID PER 1.d ABOVE.
8. REMOVE ANY REMAINING SEDIMENT CONTROLS AND STABILIZE AREAS DISTURBED BY REMOVAL OF SEDIMENT CONTROLS.... ONE (1) DAY



KEY PLAN

AS-BUILT MAY 2020

1"=50' 50' 0 50' 100'

ES-01

MDE PERMIT #201960115/19-NT-3014

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 5/3/19
CHIEF, BUREAU OF ENGINEERING — DATE 4/29/19
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STATE OF MARYLAND — JOHN C. MOORE — PROFESSIONAL ENGINEER

DES:	BY	NO.	REVISION	DATE
REG/WJG				
DRN: RAD/REG				
CHK: JCM/NKS				
SIGN DATE: 04/25/19				

[redacted]

EROSION AND SEDIMENT CONTROL PLAN – NORTH SECTION

600' SCALE MAP NO. 31, 37 BLOCK NO. 5, 6, 10, 11, 17, 18, 24

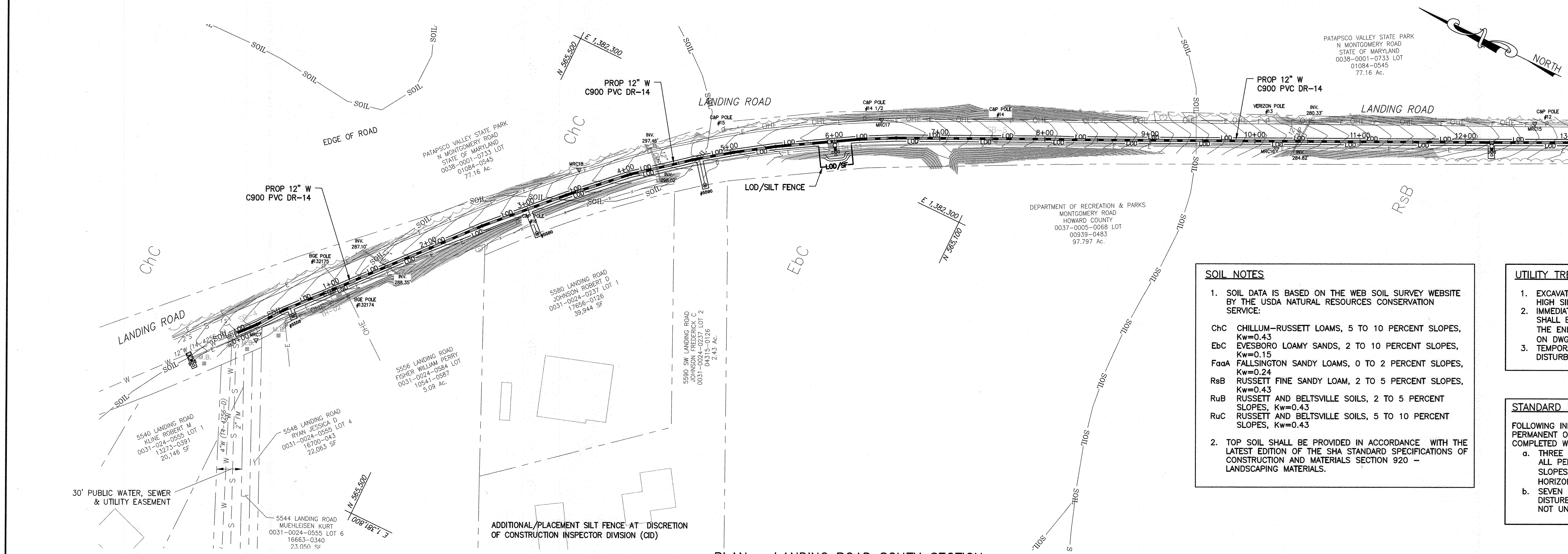
PROJECT NO. W8305
CONTRACT NO. 44-5059

LANDING ROAD WATER MAIN LOOP

ELECTION DISTRICT NO. 7 HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET NO. 14 OF 18



PLAN – LANDING ROAD SOUTH SECTION

SCALE: 1" = 50'

SOIL NOTES

1. SOIL DATA IS BASED ON THE WEB SOIL SURVEY WEBSITE BY THE USDA NATURAL RESOURCES CONSERVATION SERVICE:

ChC CHILLUM–RUSSETT LOAMS, 5 TO 10 PERCENT SLOPES, Kw=0.43
EbC EVESBORO LOAMY SANDS, 2 TO 10 PERCENT SLOPES, Kw=0.15
FaaA FALLSINGTON SANDY LOAMS, 0 TO 2 PERCENT SLOPES, Kw=0.24
RsB RUSSETT FINE SANDY LOAM, 2 TO 5 PERCENT SLOPES, Kw=0.43
RuB RUSSETT AND BELTSVILLE SOILS, 2 TO 5 PERCENT SLOPES, Kw=0.43
RuC RUSSETT AND BELTSVILLE SOILS, 5 TO 10 PERCENT SLOPES, Kw=0.43

2. TOP SOIL SHALL BE PROVIDED IN ACCORDANCE WITH THE LATEST EDITION OF THE SHA STANDARD SPECIFICATIONS OF CONSTRUCTION AND MATERIALS SECTION 920 – LANDSCAPING MATERIALS.

UTILITY TRENCH SEDIMENT CONTROL PROCEDURES

1. EXCAVATE TRENCH MATERIAL SHALL BE PLACED ON THE HIGH SIDE OF THE TRENCH.
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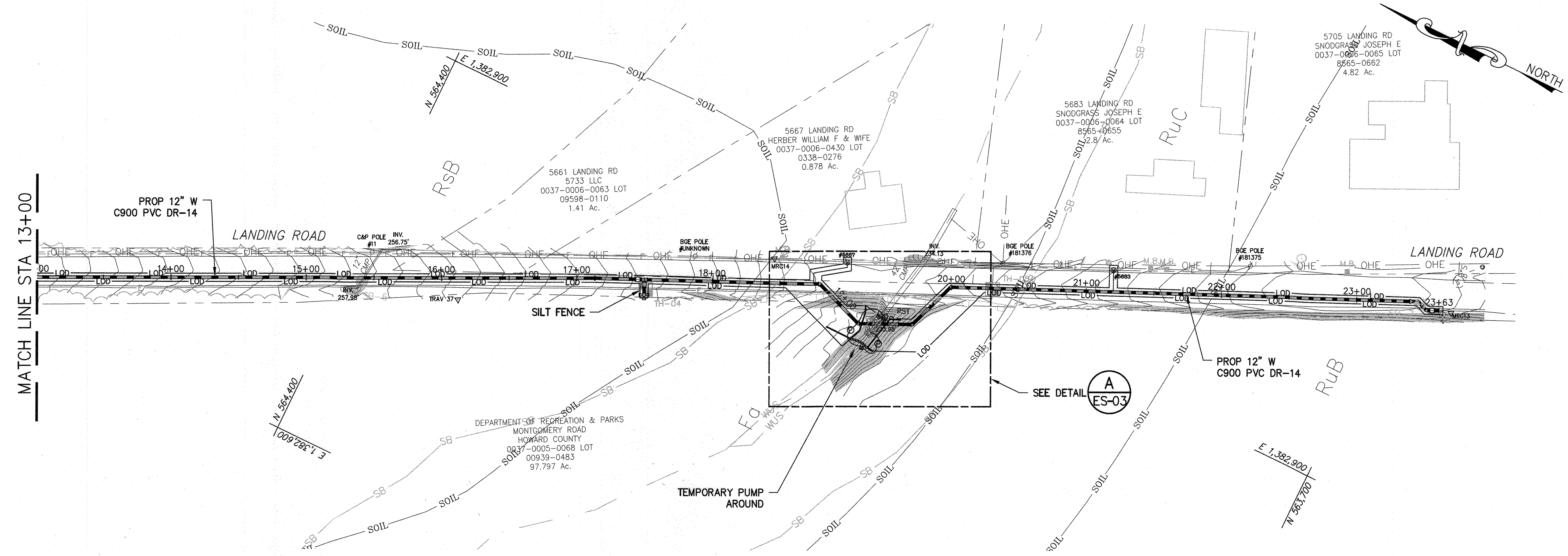
b. SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.



PLAN – LANDING ROAD SOUTH SECTION

SCALE: 1" = 50'

SEQUENCE OF CONSTRUCTION
SOUTH SECTION

1. A PRECONSTRUCTION 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 HOURS NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
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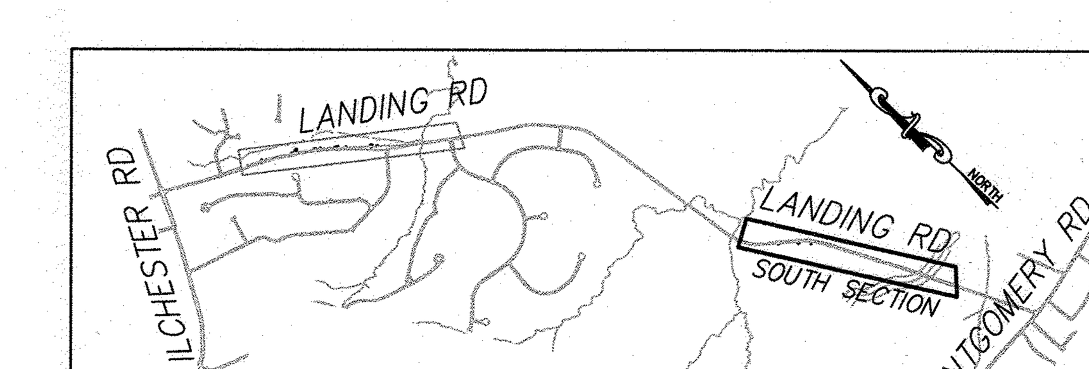
   b. UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING
   c. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT,
   d. PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.
2. INSTALL PERIMETER CONTROLS AS NECESSARY.... ONE (1) DAY
3. CONTACT CID PER 1.b ABOVE.
4. COMPLETE WATER MAIN CONSTRUCTION.... TWENTY (35) DAYS
4.1. INSTALL TEMPORARY PUMP AROUND, MGWC 1.2, AT STA 19+50 DURING IN-STREAM CONSTRUCTION. SANDBAGS TO BE REMOVED AND STREAM FLOW RESTORED AT THE END OF EVERY WORK DAY.
5. COMPLETE TIE-INS TO EXISTING WATER MAINS.... TWO (2) DAYS
6. RESTORE PAVING AND SURROUNDING AREAS.... FIVE (5) DAYS
7. ONCE THE PROJECT SITE IS STABILIZED AND CONTROLS CAN BE REMOVED, CONTACT CID PER 1.d ABOVE.
8. REMOVE ANY REMAINING SEDIMENT CONTROLS AND STABILIZE AREAS DISTURBED BY REMOVAL OF SEDIMENT CONTROLS.... ONE (1) DAY



KEY PLAN

AS-BUILT MAY 2020

1"=50' 50' 0 50' 100'

ES-02

MDE PERMIT #201960115/19-NT-3014

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	RK&K	PROFESSIONAL CERTIFICATION	DES: REG/WJG	BY	NO.	REVISION	DATE	[redacted] EROSION AND SEDIMENT CONTROL PLAN – SOUTH SECTION	PROJECT NO. W8305 CONTRACT NO. 44-5059	SCALE
DIRECTOR OF PUBLIC WORKS 5/3/19 DATE; CHIEF, BUREAU OF ENGINEERING 4/29/19 DATE	P: 410.728.2900 700 East Pratt Street, Suite 500 | Baltimore, MD 21202	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. 20566, EXPIRATION DATE: 09/06/2020	DRN: RAD/REG						LANDING ROAD WATER MAIN LOOP	AS SHOWN
CHIEF, BUREAU OF UTILITIES 5-2-19 DATE; CHIEF, UTILITY DESIGN DIVISION 4/30/19 DATE	Engineers | Construction Managers | Planners | Scientists www.rkk.com Responsive People | Creative Solutions		CHK: JCM/NKS							SHEET NO.
			SIGN DATE: 04/25/19					600' SCALE MAP NO. 31, 37 BLOCK NO. 5, 6, 10, 11, 17, 18, 24	ELECTION DISTRICT NO. 7 HOWARD COUNTY, MARYLAND	15 OF 18

RKK21\SYS – \\balsn01\c2012\2012\12154_HoCoBOA\Task 12 – Landing Road W8305\CADD\Plans\15–pES–P002_LANDING RD.dwg Apr 22, 2019 – 12:01pm ENV.CTB Plot Scale 1=1 Plot By: bgross Tab:ES-02

HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES

1. A PRECONSTRUCTION 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 HOURS NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
   - PRIOR TO THE START OF EACH DISTURBANCE
   - UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING
   - PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT,
   - 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 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 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 HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
6. SITE ANALYSIS:

TOTAL AREA OF SITE:	5.70 ACRES	(LINEAR PUBLIC UTILITY PROJECT WITHIN LANDING ROAD)
AREA DISTURBED:	0.72 ACRES	
AREA TO BE ROOFED OR PAVED:	1.12 ACRES	
AREA TO BE VEGETATIVELY STABILIZED:	0.14 ACRES	(MINOR SHOULDER WORK)
TOTAL CUT:	3,700 CU. YDS.	(ALL TRENCH EXCAVATION FOR 12" AND 8" WATER)
TOTAL FILL:	3,700 CU. YDS.	
OFFSITE WASTE/BORROW AREA LOCATION:	TO BE DETERMINED BY CONTRACTOR, SITE SHALL HAVE AN ACTIVE GRADING PERMIT	

7. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. 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 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 STORM ASSOCIATED WITH CONSTRUCTION ACTIVITIES (NPDES, MDE).
9. 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 WORK DAY, WHICHEVER IS SHORTER.
10. ANY MAJOR CHANGES OR REVISIONS ON 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 LIST OF HSCD-APPROVED FIELD CHANGES.
11. DISTURBANCE SHALL NOT OCCUR OUTSIDE THE LOD. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE CID. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE CID, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.
12. WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.
13. TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.
14. ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-CONTOUR, AND BE IMBRICATED AT 25' MINIMUM INTERVALS, WITH LOWER ANDS 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.

MDE PERMIT #201960115/19-NT-3014

SUPPLEMENTAL EROSION AND SEDIMENT CONTROL NOTES

1. STAGING AND STOCKPILING:

   NO STAGING OR STOCKPILE AREAS ALLOWED ON-SITE.
2. STABILIZED CONSTRUCTION ENTRANCE (SCE) AND EQUIPMENT CLEANING AREA (ECA):

   THERE ARE NO SCEs INCLUDED IN THIS PROJECT. PROVIDE AN EQUIPMENT CLEANING AREA (ECA) DURING CONSTRUCTION, AS DIRECTED BY THE ENGINEER. REFER TO ECA DETAIL ON DRAWING ES-05 (SHEET 18 OF 18). REMOVE ACCUMULATED STONE AND SEDIMENT PRIOR TO DISMANTLING THE ECA.
3. COORDINATION WITH MAINTENANCE OF TRAFFIC PLAN:

   THE SEDIMENT AND EROSION CONTROL SEQUENCES SHALL BE COORDINATED WITH THE MAINTENANCE OF TRAFFIC PLANS TO MAINTAIN CONTINUITY OF THE PRACTICES DURING ALL PHASES OF THE PROPOSED WORK. CONCURRENT CONSTRUCTION WITHIN THE VARIOUS PHASES MAY BE UNDERTAKEN IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLAN. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE PRIOR TO BEGINNING CONCURRENT WORK. SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED UPON COMPLETION OF THEIR INTENDED FUNCTION. PERMANENT STABILIZATION OF CONTRIBUTORY DRAINAGE AREA AND PRIOR APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR. SEDIMENT AND EROSION CONTROL MEASURES NECESSARY FOR SUBSEQUENT PHASE OF THE WORK SHALL BE MAINTAINED AS REQUIRED BY THE STANDARDS AND SPECIFICATIONS.
4. DEWATERING

   ANY EFFLUENT FROM DEWATERING FOUNDATIONS, TRENCHES AND OTHER DISTURBED AREAS MUST BE TREATED BY AN APPROVED SEDIMENT CONTROL DEVICE BEFORE BEING DISCHARGED. CONTRACTOR TO USE PORTABLE SEDIMENT TANKS.
5. SEQUENCE OF CONSTRUCTION

   THE SEQUENCE OF CONSTRUCTION INCLUDED IN THESE PLANS IS APPROVED BY HOWARD COUNTY. THIS SEQUENCE OF CONSTRUCTION MAY BE MODIFIED BY THE CONTRACTOR. HOWEVER, THE CONTRACTOR MUST OBTAIN HOWARD COUNTY APPROVAL FOR ANY MODIFICATIONS PRIOR TO IMPLEMENTING A REVISED SEQUENCE OF CONSTRUCTION IN THE FIELD.

   NO DISTURBED AREAS SHALL BE LEFT UNSTABILIZED OVERNIGHT, UNLESS RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
6. CONTRACTOR SHALL REMOVE SPOILS TO A SITE WITH AN APPROVED SEDIMENT AND EROSION CONTROL PERMIT.

LEGEND

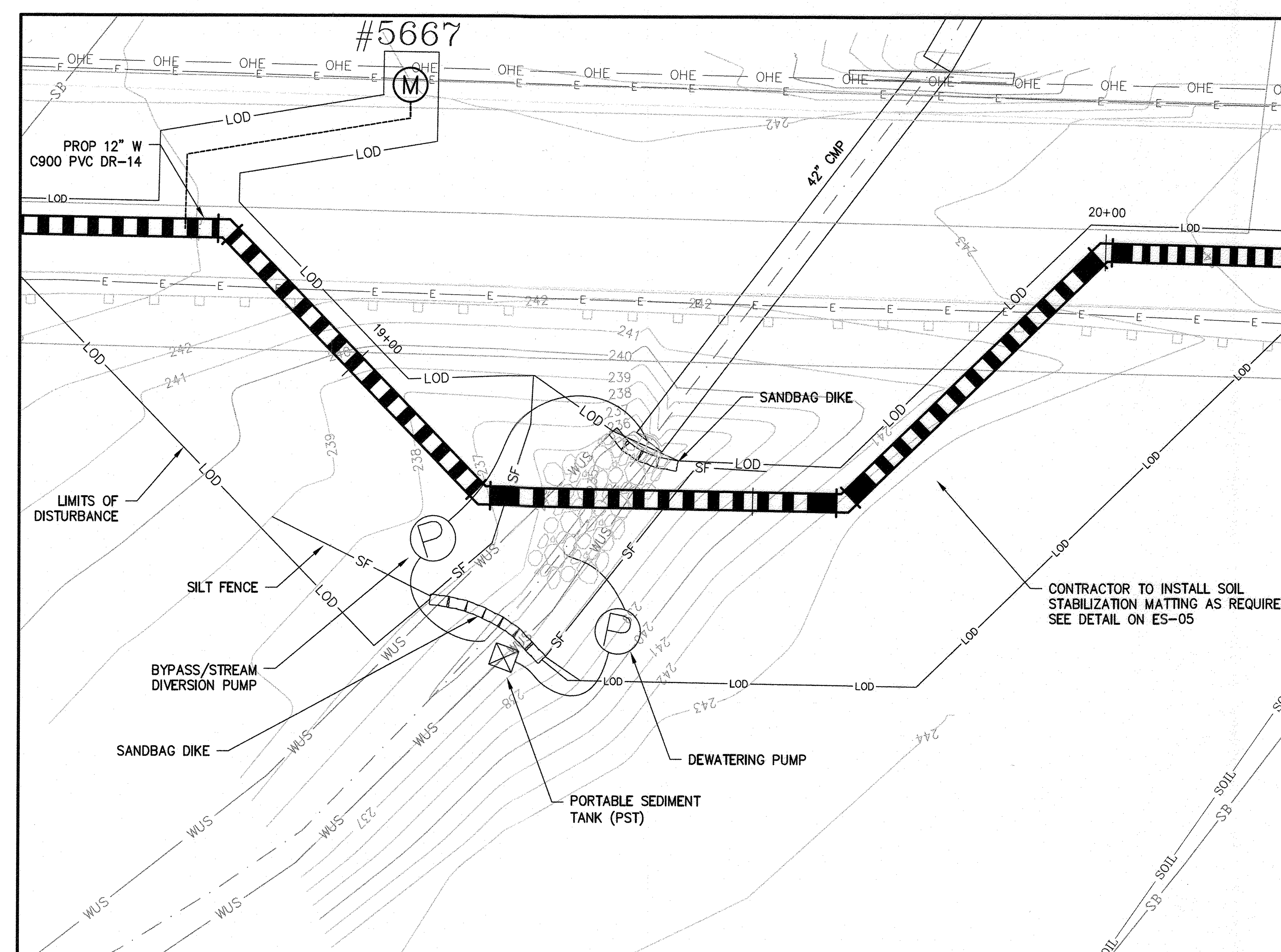
ROADWAY RIGHT OF WAY AND PROPERTY LINE
LIMIT OF DISTURBANCE
SILT FENCE
STEEP SLOPES (>25%)

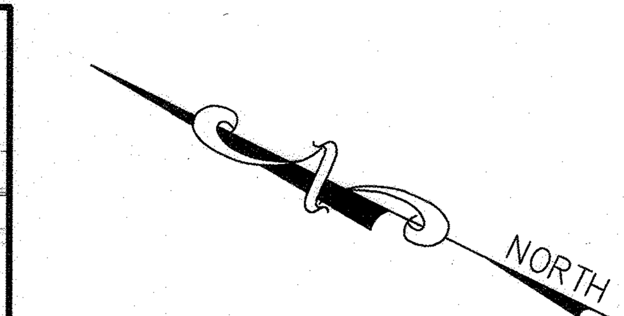
PROPOSED

WATER MAIN
WATER VALVE
WATER FIRE HYDRANT
WATER HOUSE CONNECTION

EXISTING

WATER
UNDERGROUND ELECTRIC
UNDERGROUND TELEPHONE
MINOR CONTOURS
MAJOR CONTOURS
100-YEAR FLOODPLAIN
WATER FIRE HYDRANT
WATER VALVE
STREAM CENTERLINE
STREAM BUFFER
WATERS OF THE US
TREE LINE OR WOODS
GUARDRAIL





TEMPORARY PUMP AROUND NOTES:

1. THE CONTRACTOR SHALL CLOSE SILT FENCE ONTO SANDBAG ENDS, ENDS TO BE CURLED UPHILL.
2. THE CONTRACTOR SHALL INCLUDE 3-DAY CLEAR (NO PRECIPITATION) NWS FORECAST, AND PERMISSION FROM INSPECTOR, BEFORE ANY DISTURBANCE WITHIN STREAM.
3. THE PUMP CAPACITY FOR TEMPORARY BYPASS/DIVERSION PUMPS SHALL BE MINIMUM 25.8 GPM, BASED ON ONE CFS/SQ. MILE OF DRAINAGE AREA.

AS-BUILT
MAY 2020

A / ES-03 TEMPORARY PUMP AROUND DETAIL
SCALE: 1" = 10'

1"=10' 10' 0 10' 20'

ES-03

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS 5/3/19 DATE — CHIEF, BUREAU OF ENGINEERING 4/29/19 DATE
CHIEF, BUREAU OF UTILITIES 5-2-19 DATE — CHIEF, UTILITY DESIGN DIVISION 4/29/19 DATE

RK&K
P: 410.728.2900
700 East Pratt Street, Suite 500 | Baltimore, MD 21202
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

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. 20566, EXPIRATION DATE: 09/06/2020.

STATE OF MARYLAND JOHN C. MOORE PROFESSIONAL ENGINEER

DES: REG/WJG
DRN: RAD/REG
CHK: JCM/NKS
SIGN DATE: 04/25/19

BY	NO.	REVISION	DATE

[redacted]

EROSION AND SEDIMENT CONTROL NOTES

600' SCALE MAP NO. 31, 37 — BLOCK NO. 5, 6, 10, 11, 17, 18, 24

PROJECT NO. W8305
CONTRACT NO. 44-5059

LANDING ROAD WATER MAIN LOOP

ELECTION DISTRICT NO. 7 — HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN
SHEET NO. 16 OF 18

RKK21\SYS_\\balsrv01\v2012\2012\12154_HoCoBOA\Task 12 - Landing Road W8305\CADD\Plans\16-pES-D001_LANDING RD.dwg Apr 22, 2019 - 12:23pm ENV.CTB Plot Scale 1=1 Plot By: bgross Tab:ES-03

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

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. TOPSOILING 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

CRITERIA:

A. SEEDING
1. SPECIFICATIONS
   a. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.
   b. MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAWS.
   c. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
   d. SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.
2. APPLICATION
   a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS
   I. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.
   II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.
   b. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
   I. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.
   ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION
   c. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).
   I. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P205 (PHOSPHOROUS), 200 POUNDS PER ACRE; K20 (POTASSIUM), 200 POUNDS PER ACRE.
   II. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.
   III. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.
   IV. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

B. MULCHING
1. MULCH MATERIALS (IN ORDER OF PREFERENCE)
   a. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.
   b. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.
   I. WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY.
   II. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.
   III. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.
   IV. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.
   V. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.
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: 7A SEED MIXTURE:					FERTILIZER RATE (10-20-20)	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		
1	ANNUAL RYE	40	2/1- 4/30	0.5"	436 LB/AC (10 LB/1000SF)	2 TONS/AC (90 LB/1000SF)
2	FOXTAIL MILLET	30	5/1- 8/14	0.5"	436 LB/AC (10 LB/1000SF)	2 TONS/AC (90 LB/1000SF)
3	ANNUAL RYE	40	8/15- 11/30	0.5"	436 LB/AC (10 LB/1000SF)	2 TONS/AC (90 LB/1000SF)

PERMANENT SEEDING SUMMARY

HARDINESS ZONE: 7A SEED MIXTURE: 8, 9 OR 11					FERTILIZER RATE (10-20-20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P_2O_5	K_2O	
8	TALL FESCUE	100	5/1- 8/30	0.5"	45 LB/AC (1.0 LB/1000SF)	90 LB/AC (2.0 LB/1000SF)	90 LB/AC (2.0 LB/1000SF)	2 TONS/AC (90 LB/1000SF)
9	HARD FESCUE	40	3/1- 6/15	0.5"				
	KENTUCKY BLUEGRASS	40						
	PERENNIAL RYEGRASS	20						
11	CREEPING RED FESCUE	30	3/1- 6/15	0.5"				
	CHEWINGS FESCUE	30						
	KENTUCKY BLUEGRASS	20						

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION 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.

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.

AS-BUILT MAY 2020

ES-04

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS	DATE 5/3/19	CHIEF, BUREAU OF ENGINEERING	DATE 4/29/19
CHIEF, BUREAU OF UTILITIES	DATE 5-2-19	CHIEF, UTILITY DESIGN DIVISION ZCK	DATE 4/25/19

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PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND,
LICENSE NO. 20566,
EXPIRATION DATE: 09/06/2020.

DES: REG/WJG
DRN: RAD/REG
CHK: JCM/NKS
SIGN DATE: 04/25/19

BY	NO.	REVISION	DATE

[redacted]

EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS

600' SCALE MAP NO. 31, 37 BLOCK NO. 5, 6, 10, 11, 17, 18, 24

PROJECT NO. W8305
CONTRACT NO. 44-5059

LANDING ROAD WATER MAIN LOOP

ELECTION DISTRICT NO. 7 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET NO. 17 OF 18

MGWC 1.2: PUMP-AROUND PRACTICE

Temporary measure for dewatering in-channel construction sites

DESCRIPTION

The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites.

IMPLEMENTATION SEQUENCE

Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):

1. Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility company's satisfaction.
2. The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
3. The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority.
4. Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
5. Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.
6. Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags.

TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

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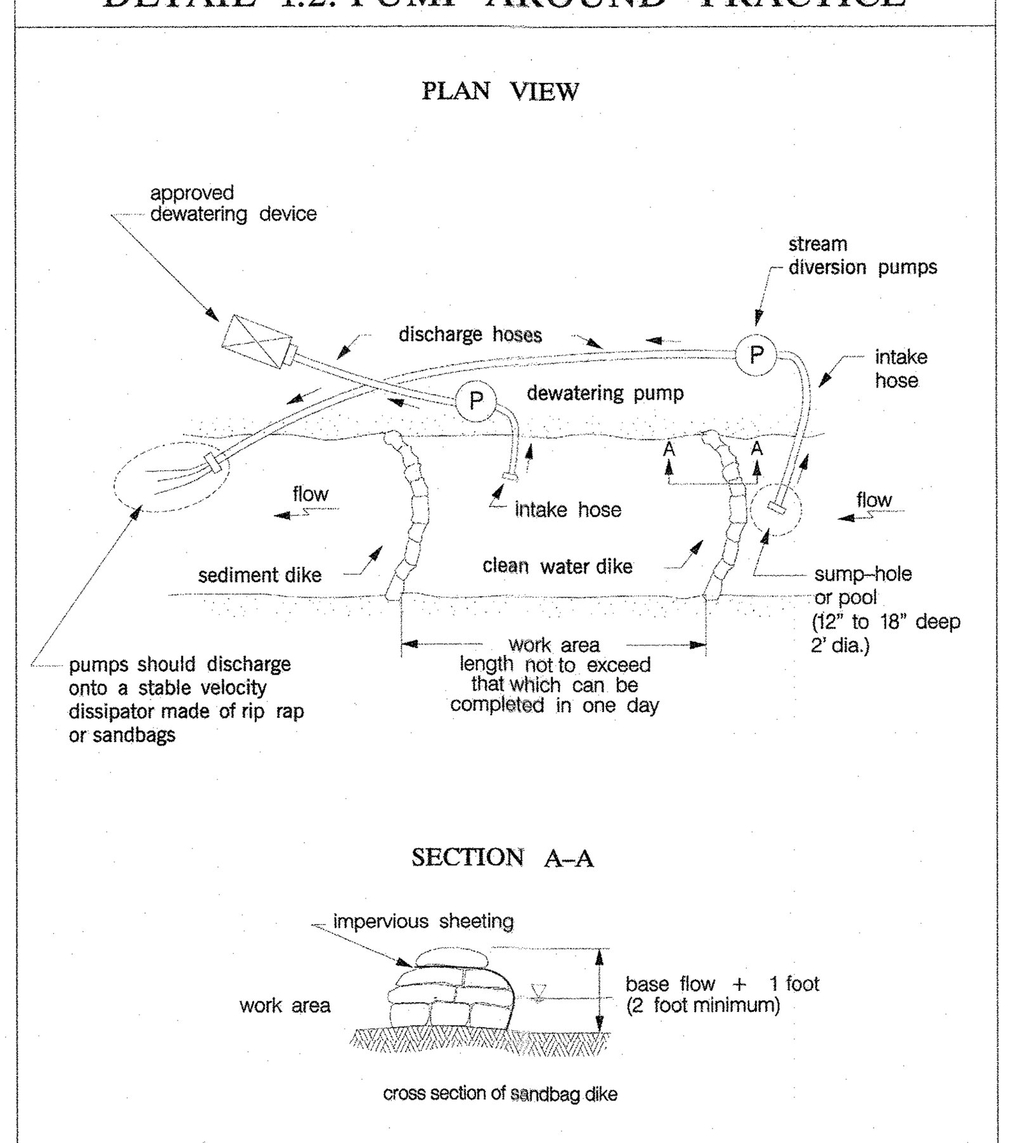
MGWC 1.2: PUMP-AROUND PRACTICE

7. Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
8. Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. *(See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction).*
9. All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross- sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
10. After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.
11. A pump around must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.
12. If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work area in the main stem.
13. The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
14. After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

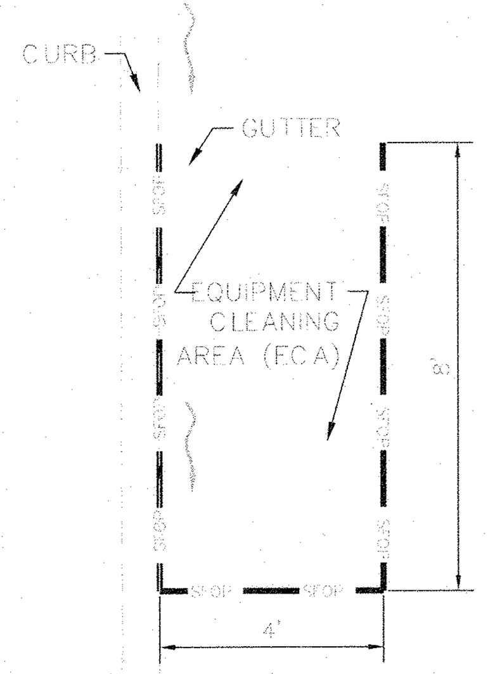
TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

PAGE 1.2 - 2

Maryland's Guidelines To Waterway Construction
DETAIL 1.2: PUMP-AROUND PRACTICE



TEMPORARY INSTREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.2 - 3	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

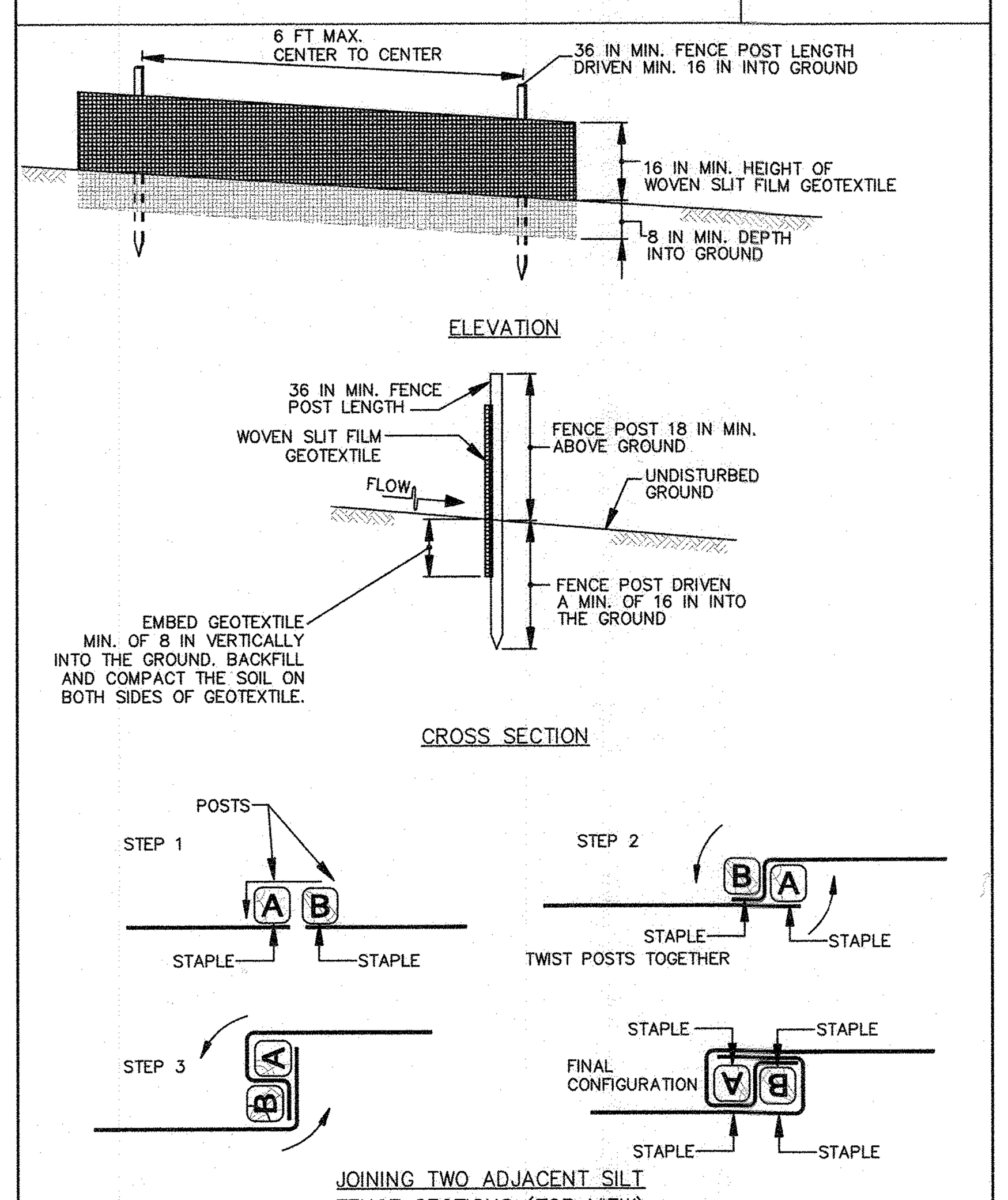


NOTES:
1. SFOP TO MEET DETAIL E-2 AND CONSTRUCTION SPECIFICATIONS THEREOF.
2. ECA TO BE PLACED AT LOWEST END OF LOD AND CLEANED DAILY.
3. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING.
4. CID MAY WAIVE INSTALLATION OF EAC WHERE INSPECTOR ACCEPTS SAME-DAY STABILIZATION WITH SEED/SSM OR SOD.

U-SHAPED EQUIPMENT CLEANING AREA

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: ⊢—SF—⊣



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.

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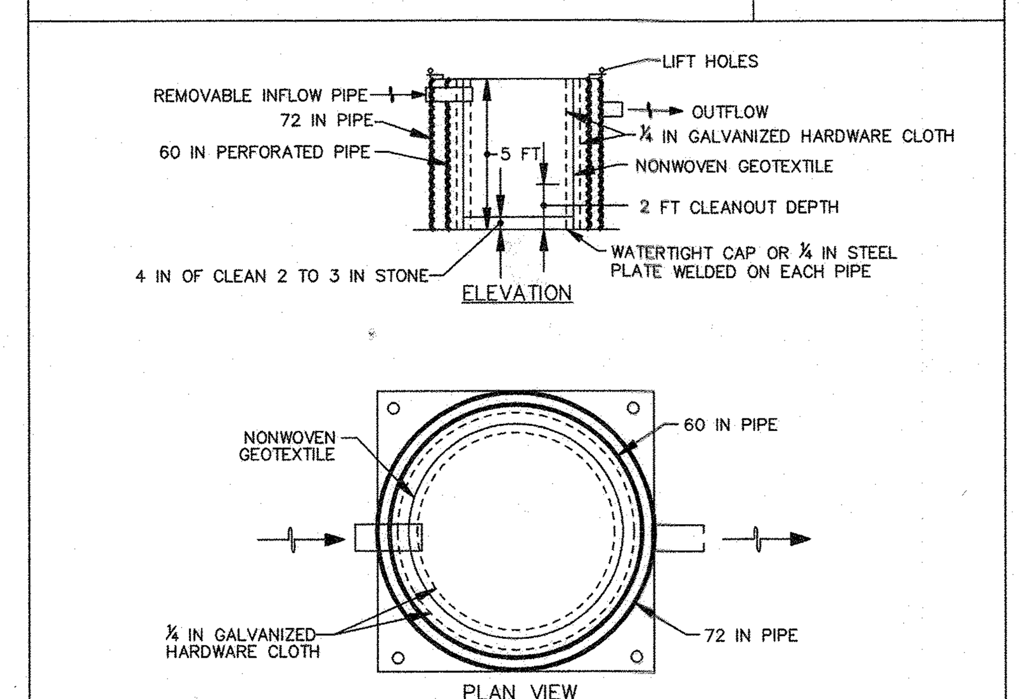
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL F-3 PORTABLE SEDIMENT TANK

STANDARD SYMBOL: PST



CONSTRUCTION SPECIFICATIONS

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL		
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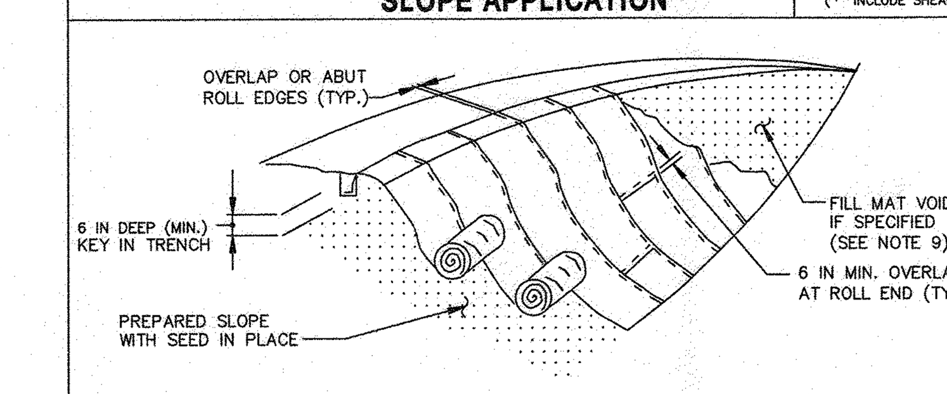
DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION

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



CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

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

AS-BUILT MAY 2020

ES-05

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE 5/3/19
CHIEF, BUREAU OF ENGINEERING — DATE 4/29/19
CHIEF, BUREAU OF UTILITIES — DATE 5-2-19
CHIEF, UTILITY DESIGN DIVISION ZCK — DATE 4/29/19

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PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND,
LICENSE NO. 20566,
EXPIRATION DATE: 09/06/2020.

STATE OF MARYLAND — JOHN C. MOORE — No. 20566 — REGISTERED PROFESSIONAL ENGINEER

DES: REG/WJG
DRN: RAD/REG
CHK: JCM/NKS
SIGN DATE: 04/25/19

BY	NO.	REVISION	DATE

[redacted] [redacted]

EROSION AND SEDIMENT CONTROL DETAILS

600' SCALE MAP NO. 31, 37 — BLOCK NO. 5, 6, 10, 11, 17, 18, 24

PROJECT NO. W8305
CONTRACT NO. 44-5059

LANDING ROAD WATER MAIN LOOP

ELECTION DISTRICT NO. 7 — HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN

SHEET NO. 18 OF 18

RKK21\SYS_ \\balsrv01\v2012\2012\12154_HoCoBOA\Task 12 – Landing Road W8305\CADD\Plans\18-pES-D003_LANDING RD.dwg Apr 19, 2019 - 1:07pm ENV.CTB Plot Scale 1=1 Plot By: pmojmundar Tab:ES-05