

FINAL WATER AND SEWER CONSTRUCTION PLAN

GREENWOOD VILLAGE LOTS 1-4, NON BUILDABLE BULK PARCELS A-C AND OPEN SPACE LOTS 5-11

A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4
LOTS 2-4 (P.B. 3/51), 5R (L.16288 F.488), 8R (L.16288 F.502) AND 9
HOWARD COUNTY, MARYLAND

GENERAL NOTES

- PART I**
- 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.
 - THE EXISTING TOPOGRAPHY SHOWN HEREON IS TAKEN FROM AN AERIAL TOPOGRAPHIC SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC. DATED OCTOBER 2012 & JANUARY 2013. OFFSITE TOPOGRAPHIC DATA FROM HOWARD COUNTY GIS.
 - THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM NAD '83/91 AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS 53HA AND 35HB. ALL VERTICAL CONTROLS ARE BASED ON NAVD '88. VERTICAL CONTROLS PROVIDED ON DRAWINGS ARE:
GEODETIC SURVEY CONTROL 421A (N 543,390.41 E 1,364,912.66)
BRASS DISC SET ON TOP OF A CONCRETE MONUMENT.
GEODETIC SURVEY CONTROL 421B (N 542,107.89 E 1,362,386.04)
BRASS DISC SET ON TOP OF A CONCRETE MONUMENT.
 - ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED.
 - 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 DRAWINGS. IN THE EVENT THE CONTRACTOR'S WORK REQUIRES THE BRACING OF ADDITIONAL POLES, ANY COST INCURRED BY THE OWNER FOR 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.
 - FOR DETAILS NOT SHOWN ON THE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS USE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB.
 - WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL AT THE LOCATIONS OF THE TEST PITS. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PIT OR PITS IS INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATION AT HIS OWN EXPENSE.
 - THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:
AT&T _____ 1-800-252-1133
BGE (CONSTRUCTION SERVICES) _____ 410-637-8713
BGE (EMERGENCY) _____ 410-685-0123
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
 - 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.
 - 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 OF THE CONSTRUCTION OF THE MAIN.
 - THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (410) 313-7450 AT LEAST FIVE WORKING DAYS BEFORE OPEN CUTTING OR BORING/JACKING OF ANY COUNTY ROAD FOR LAYING WATER/SEWER MAINS OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 18.114(c) OF THE HOWARD COUNTY CODE.

PART II - WATER

- ALL WATER MAINS SHALL BE AWWA STANDARD C900 DR18 PVC UNLESS OTHERWISE NOTED.
- TOPS OF ALL WATER MAINS SHALL HAVE A MINIMUM OF 3'-6" OF COVER UNLESS OTHERWISE NOTED.
- VALVES ADJACENT TO TEES SHALL BE STRAPPED TO TEES.
- ALL FITTINGS SHALL BE BUTTRESSED OR ANCHORED WITH CONCRETE IN ACCORDANCE WITH STANDARD DETAILS UNLESS OTHERWISE PROVIDED FOR ON THE DRAWINGS.
- 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.
- THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
- TRACER WIRE AND CONTINUITY TEST STATIONS SHALL BE INSTALLED ON ALL DIP AND PVC WATER MAINS IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL.
- FOR PVC WATER MAINS, ALL RECORDS FOR THE QUALITY CONTROL AND QUALIFICATIONS TEST REQUIREMENTS NOTED IN SECTION 5.1 OF THE AWWA STANDARD C 900 FOR PVC PRESSURE PIPES 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.
- SPRINKLER SYSTEM FOR SINGLE RESIDENTIAL DWELLING UNITS SHALL HAVE WATER HOUSE CONNECTIONS AND WATER METERS THAT ARE SIZED IN ACCORDANCE WITH THE DESIGN OF THE SPRINKLER SYSTEMS. SPRINKLER SYSTEMS FOR SINGLE RESIDENTIAL DWELLINGS SHALL HAVE A MINIMUM OF 1.5" SERVICE CONNECTION WITH A 1" OUTSIDE METER SETTING.
- UNLESS OTHERWISE NOTED ON THE PLANS OR IN THE SPECIFICATIONS, SACRIFICIAL ANODES SHALL BE INSTALLED ON ALL VALVES AND METALLIC 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.
- 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.
- ALL CHANGES IN HORIZONTAL OR VERTICAL DIRECTION OF PVC WATER PIPE SHALL BE MADE WITH STANDARD BENDS, 5-DEGREE SWEEPS OR HIGH DEFINITION (HD) COUPLINGS. NO BENDING OF THE PIPE OR DEFLECTION OF PVC PIPE JOINTS IS PERMITTED, WHERE HIGH DEFLECTION COUPLINGS OR 5-DEGREE SWEEPS ARE PERMITTED, THE CONTRACTOR SHALL PROVIDE ONE FULL PIPE LENGTH (20-FOOT LONG) ON EITHER SIDE OF THE HIGH DEFLECTION COUPLING OR 5-DEGREE SWEEP. THE CONTRACTOR SHALL USE 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. PVC HIGH DEFLECTION COUPLINGS SHALL BE LIMITED TO A TOTAL DEFLECTION OF 3-DEGREES (1.5-DEGREE ON EITHER END OF THE COUPLING), SHALL BE RATED FOR A MINIMUM 200 PSI MEETING THE REQUIREMENTS OF AWWA C900, SHALL HAVE A MINIMUM LAY LENGTH OF 9-INCHES AND SHALL HAVE CENTER STOPS. PVC HIGH DEFLECTION COUPLINGS SHALL BE CERTAINTED PVC HIGH DEFLECTION (HD) STOP COUPLINGS OR EQUAL. 5-DEGREE SWEEPS SHALL BE BELL BY SPIGOT, RATED FOR A MINIMUM 225 PSI, DR18 MEETING THE REQUIREMENTS OF AWWA C900 AND SHALL BE MULTI FITTINGS (PEX) BLUE BRUTE DR18 OR EQUAL.
- WHEN PVC HIGH DEFLECTION COUPLINGS OR PVC 5-DEGREE SWEEPS ARE USED TO FACILITATE CHANGES IN HORIZONTAL OR VERTICAL ALIGNMENTS OF AWWA C900 PVC PIPELINES, THE CONTRACTOR SHALL INSTALL DEVICES FOR THE PREVENTION OF OVER-INSERTION OF THE PVC PIPE SPIGOTS OR FLAN ENDS INTO THE BELL JOINT ON BOTH SIDES OF THE HIGH DEFLECTION COUPLINGS AND 5-DEGREE SWEEPS. BELL STOPS SHALL BE PLACED AT THE PROPER INSERTION LINE FOR THE FITTING. THE BELL STOP SHALL BE MANUFACTURED OF DUCTILE IRON AND INCORPORATE AN EXPANSION RETENTION SPRING TO ALLOW FOR PIPE EXPANSION AND CONTRACTION. THE BELL STOPS SHALL BE SERIES 5000 MEGA-STOP, AS MANUFACTURED BY EBAA IRON, INC. OR APPROVED EQUAL.

PART III - SEWER

- ALL SEWER MAINS SHALL BE D.I.P. OR P.V.C. UNLESS OTHERWISE NOTED.
- ALL MANHOLES SHALL BE 4'-0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.
- FORCE MAINS SHALL BE D.I.P. ONLY.
- MANHOLES SHOWN WITH "12" AND "16" WALLS ARE FOR BRICK MANHOLES ONLY.
- MANHOLES DESIGNATED W.T. IN PLAN AND PROFILE SHALL HAVE WATERTIGHT FRAME AND COVERS, STANDARD DETAIL CS.52, WHERE WATERTIGHT FRAME AND COVER IS USED, SET TOP OF FRAME 1'-6" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- HOUSE(S) WITH THE SYMBOL "C.N.S." INDICATED THAT CELLAR CANNOT BE SERVED.

SEDIMENT CONTROL MEASURES WILL BE IMPLEMENTED IN ACCORDANCE WITH SECTION 308 OF THE SPECIFICATIONS AND WITH FINAL PLAN F-19-051.

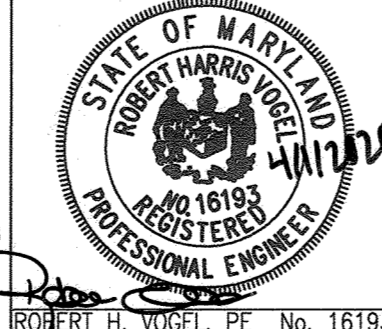
THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

John R. Robertson 2/20/20
CONSERVATION DISTRICT DATE

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND
DEPARTMENT OF PLANNING & ZONING HOWARD COUNTY, MARYLAND

Rough *Shapiro* *Al Chandra* 6.3.20
CHIEF, BUREAU OF UTILITIES DATE CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
3300 N. RIDGE ROAD, SUITE 110, ELICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.8961



PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2020

DRN: VETG DES: RHV
CHK: RHV
DATE: APRIL 2020

WRA QUANTITIES TABLE "AS BUILT" 4/12/22
BY NO. REVISION DATE

FINAL WATER AND SEWER CONSTRUCTION PLAN
CONTRACT 24-5066-D
COVER SHEET

GREENWOOD VILLAGE - PHASE 1
LOTS 1-4, NON BUILDABLE BULK PARCELS A-C AND OPEN SPACE LOTS 5-11
A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4
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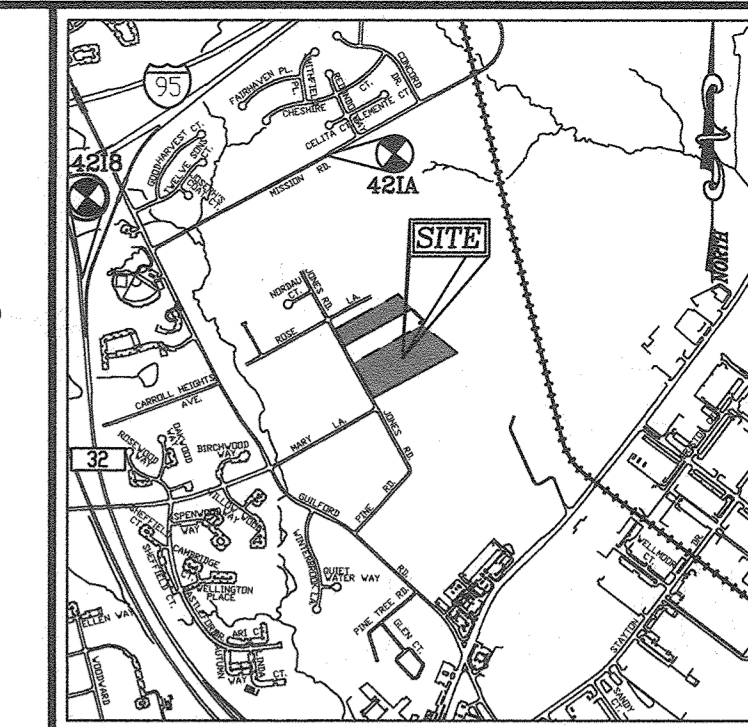
TAX MAP 42, GRID 24, PARCEL 136 & 138-140
ZONED: R-12
6TH ELECTION DISTRICT

OWNER/DEVELOPER
HOWARD COUNTY HOUSING COMMISSION
9770 PATUXENT WOODS DR., SUITE 100
COLUMBIA, MD 21046
ATTN: PETER ENGEL
(410) 313-6316

SCALE AS SHOWN
SHEET 1 OF 4

BENCHMARKS

HOWARD COUNTY BENCHMARK 421A
N 543,390.41 E 1,364,912.66 ELEV. 312.01
3/4" REBAR - NORTH EAST SIDE OF MISSION ROAD,
74.3' NORTH OF B&E E#297906
HOWARD COUNTY BENCHMARK 421B
N 542,107.89 E 1,362,386.04 ELEV. 301.47
CONCRETE MONUMENT - BETWEEN RT.32 WEST BOUND
AND RT. 95 NORTH RAMP



VICINITY MAP

SCALE: 1"=2000'
ADC MAP COORDINATES: PAGE: 41 BLOCK: A2

SHEET INDEX

DESCRIPTION	SHEET NO.
COVER SHEET & LOCATION MAP	1 OF 4
LAYOUT PLAN	2 OF 4
WATER PROFILES	3 OF 4
SEWER PROFILES	4 OF 4



LOCATION MAP
SCALE: 1"=600'

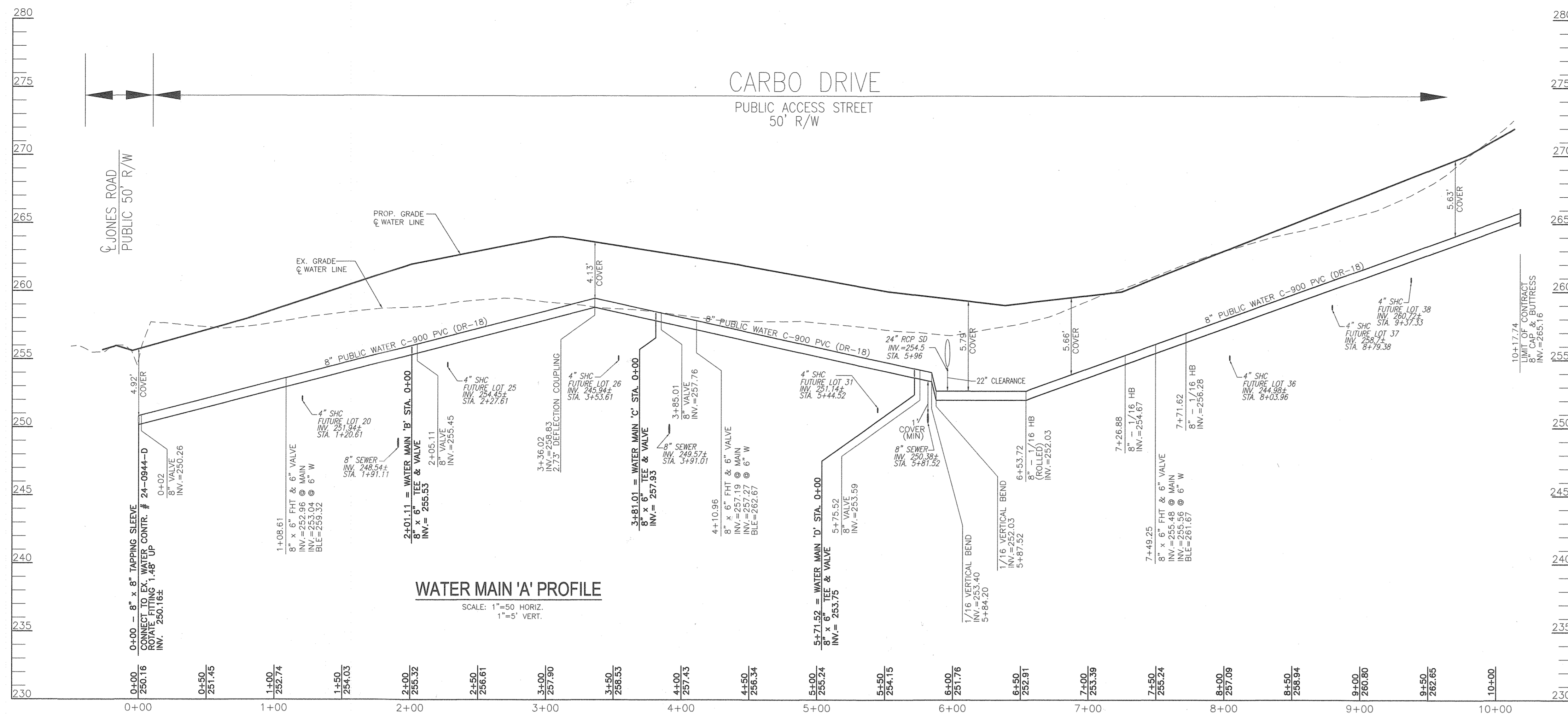
WATER ZONE: 400
TEST PRESSURE: 185 psi
TEST GRADIENT: 677

Type of Building :	RESIDENTIAL
No. of Lots/Parcels :	7 + 27 FUTURE = 34*
No. of single Water House Connections :	7 + 27 FUTURE = 34
No. of Twin Water House Connections :	0
No. of Sewer House Connections :	7 + 27 FUTURE = 34
No. of Twin Sewer House Connections :	0
Sewer Shed :	PATUXENT RIVER
Treatment Plant :	PATUXENT RIVER (MIDDLE)

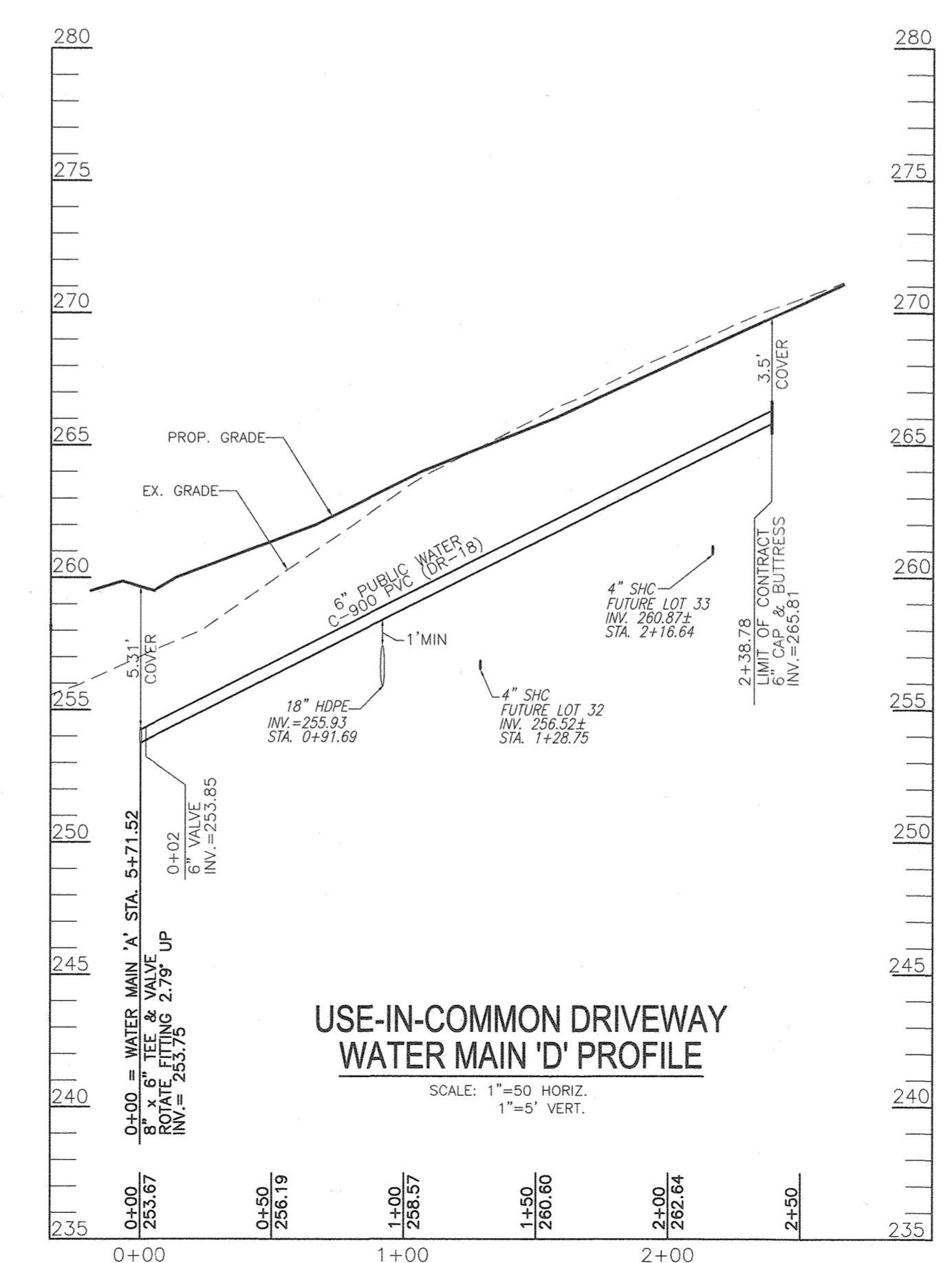
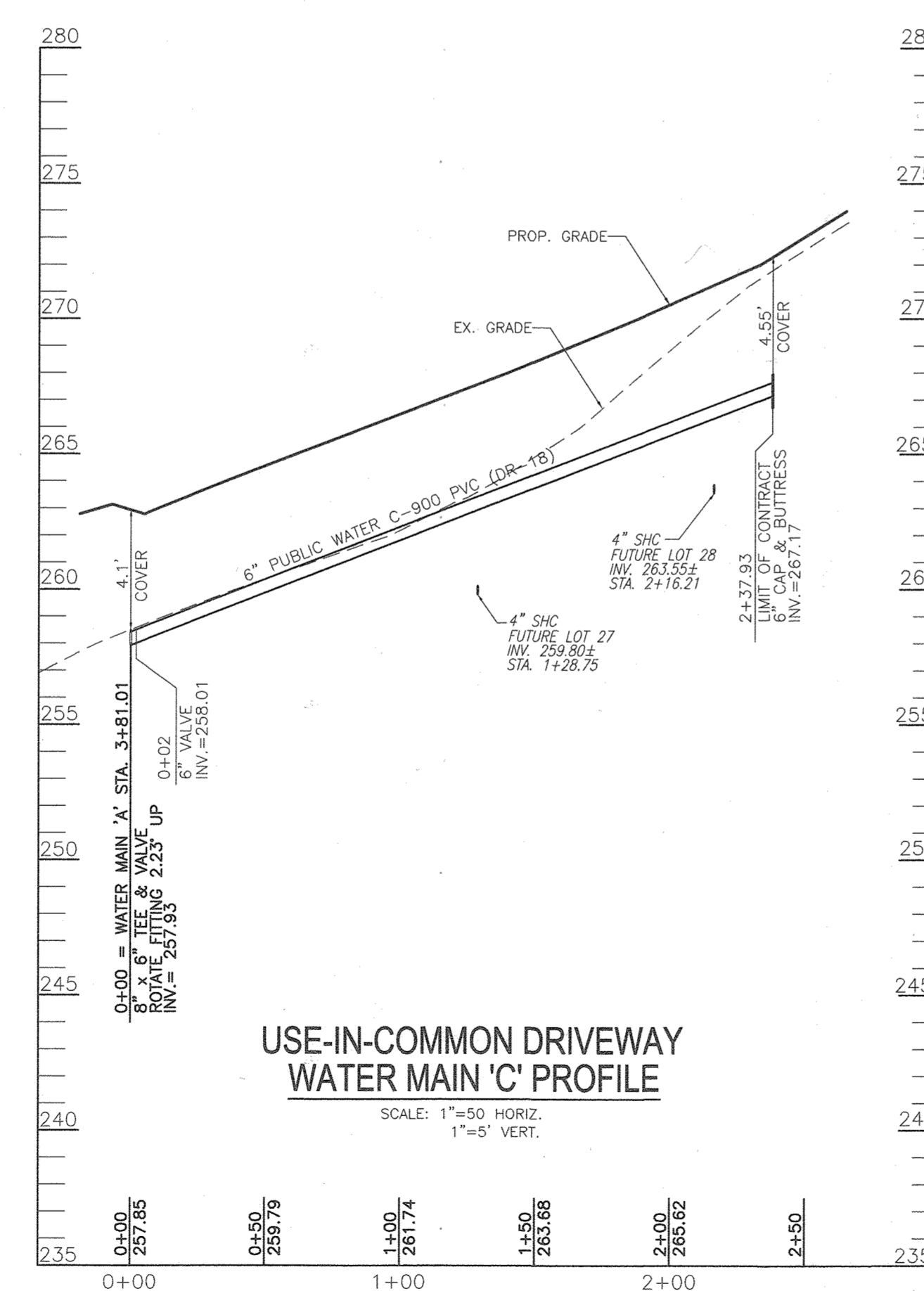
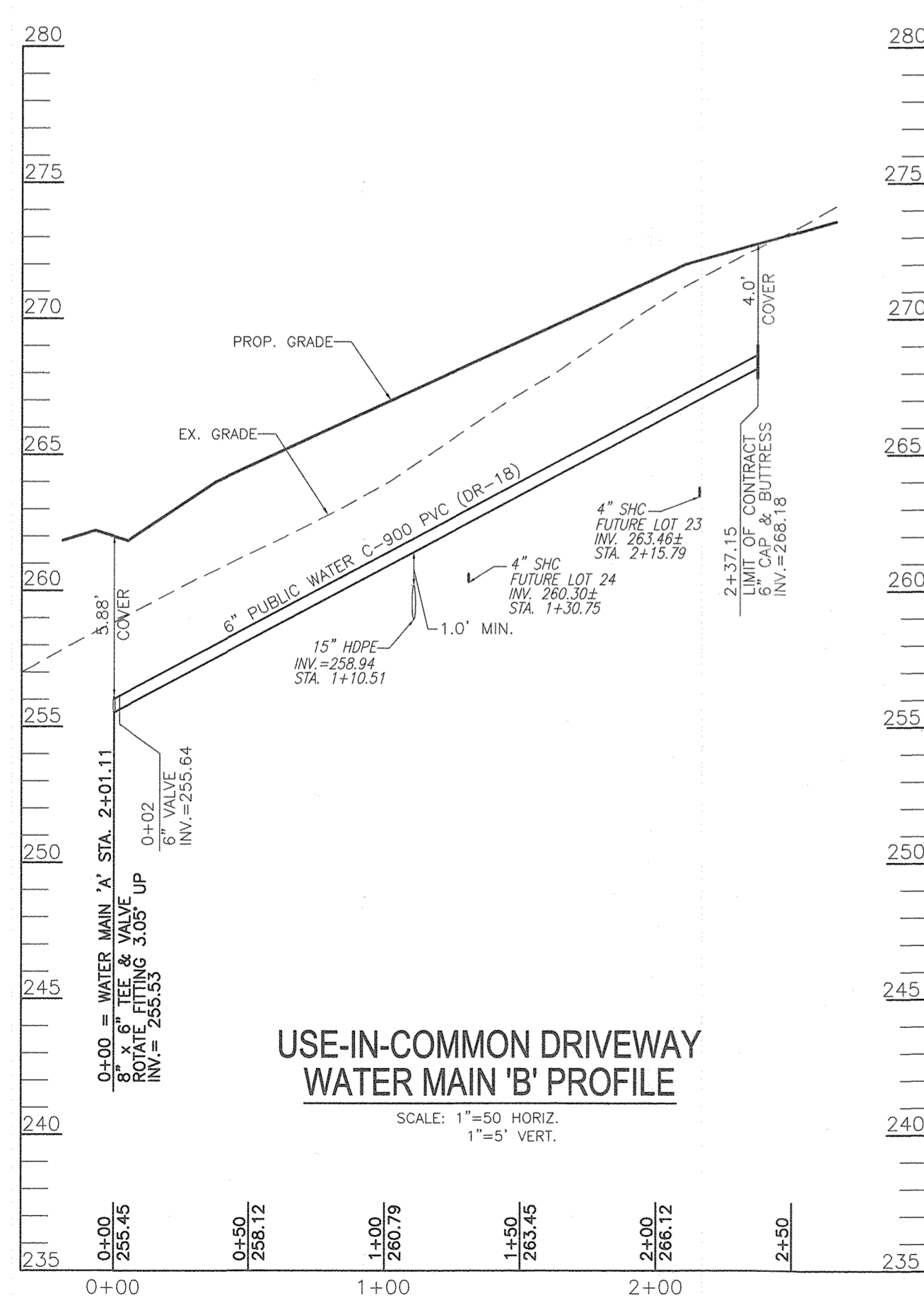
* 3 WATER AND 3 SEWER SERVICE CONNECTIONS HAVE BEEN PROVIDED HEREON AS REQUIRED UNDER THE F-17-061 MARGARET TILLMAN SUBDIVISION

QUANTITIES

NAME OF UTILITY CONTRACTOR :		SURVEY AND DRAFTING DIVISION AS-BUILT DATE :		QUANTITIES		AS-BUILT	
ITEMS	ESTIMATED	QUANTITIES	TYPE	MANUFACTURER/SUPPLIER			
WATER							
8" WATER - PVC	1019 LF	1012	C-900	NATIONAL PIPE AND PLASTICS			
6" WATER - PVC	714 LF	712	C-900	NATIONAL PIPE AND PLASTICS			
8" x 6" TAPPING SLEEVE	1 EA		G65	SMITH BLAIR			
8" x 6" TEE	6 EA	6	C-153	TYLER/UNION			
8" VALVE	4 EA	4	C-153	MUELLER COMPANY			
6" VALVE	6 EA	6	C-153	MUELLER COMPANY			
6" FIRE HYDRANT	3 EA	3	C-153	MUELLER COMPANY			
6" CAP AND BUTTRESS	1 EA	1	C-153	TYLER/UNION			
6" CAP AND BUTTRESS	3 EA	3	C-153	TYLER/UNION			
1/16 BEND	3 EA	3	C-153	TYLER/UNION			
1/16 VERT. BEND	2 EA	2	C-153	TYLER/UNION			
VERT COUPLING	2 EA	2	-	CERTAINTEED			
SEWER							
MANHOLE	13 EA	13	-	CONTRACTOR PRECAST			
8" SEWER PVC	1,878 LF	1856	-	NATIONAL PIPE AND PLASTICS			



WATER MAIN LOCATION CHART			
STATION	APPURTENANCE	NORTHING	EASTING
WATER MAIN 'A'			
WL 0+00.00	CONNECT TO EX. 8" WATER LINE @ "X" TAPPING SLEEVE	541120.1487	1365267.0008
WL 0+02.00	8" VALVE	541121.1167	1365268.7510
WL 1+08.61	8" x 6" FHT & 6" VALVE	541172.7010	1365362.0172
WL 2+01.11	8" x 6" TEE @ WATER LINE "B"	541217.4701	1365442.9615
WL 2+05.11	8" VALVE	541219.4061	1365446.4617
WL 3+81.00	8" x 6" TEE @ WATER LINE "C"	541304.5735	1365600.4474
WL 3+85.01	8" VALVE	541306.5245	1365603.9749
WL 4+10.96	8" x 6" FHT & 6" VALVE	541319.0853	1365626.6853
WL 5+71.52	8" x 6" TEE @ WATER LINE "D"	541396.7979	1365767.1995
WL 5+75.52	8" VALVE	541398.7339	1365770.8929
WL 6+71.43	8" - 1/16 HB	541445.1547	1365854.9222
WL 7+26.88	8" - 1/16 HB	541450.1561	1365899.8411
WL 7+49.25	8" x 6" FHT & 6" VALVE	541443.3251	1365891.1444
WL 7+71.62	8" - 1/16 HB	541436.4941	1365892.4478
WL 10+17.74	8" CAP AND BUTTRESS	541281.3484	1366148.4316
WATER MAIN 'B'			
WL 0+00.00	8" x 6" TEE @ WATER LINE "A"	541217.4701	1365442.9615
WL 0+02.00	6" VALVE	541215.7200	1365443.9294
WL 2+37.15	6" CAP AND BUTTRESS	541009.9957	1365557.6976
WATER MAIN 'C'			
WL 0+00.00	8" x 6" TEE @ WATER LINE "A"	541304.5735	1365600.4746
WL 0+02.00	6" VALVE	541302.8384	1365601.4426
WL 2+37.93	6" CAP AND BUTTRESS	541096.3830	1365715.6302
WATER MAIN 'D'			
WL 0+00.00	8" x 6" TEE @ WATER LINE "A"	541396.7855	1365767.1995
WL 0+02.00	6" VALVE	541395.0478	1365768.1606
WL 2+38.78	6" CAP AND BUTTRESS	541187.8491	1365882.7593



AS BUILT WATER AND SEWER CONNECTIONS					
LOT	STREET ADDRESS	SEWER HOUSE CONNECTION		WATER HOUSE CONNECTION	
		LOCATION DIMENSION 1	LOCATION DIMENSION 2	LOCATION DIMENSION 1	LOCATION DIMENSION 2
LOT 1	8701 CARBO DRIVE	FH 1-08.61 45.0	SMH-2 84.0	FH 1-08.61 50.0	SMH-2 62.0
LOT 2	8705 CARBO DRIVE	SMH-2 20.0	VALVE 2-05.11 35.0	SMH-2 29.0	VALVE 2-05.11 54.0
LOT 3	8709 CARBO DRIVE	SMH-2 81.0	VALVE 2-05.11 83.0	SMH-2 91.0	VALVE 2-05.11 74.0
LOT 4	8713 CARBO DRIVE	SMH-3 19.0	FH 4-10.95 22.0	SMH-3 30.0	FH 4-10.95 42.0
FUTURE LOT 12	8717 CARBO DRIVE	FH 4-10.95 68.0	SMH-3 73.0	FH 4-10.95 54.0	SMH-3 83.0
FUTURE LOT 13	8731 CARBO DRIVE	FH 7-49.25 56.5	SMH-7 60.0	FH 7-49.25 61.0	SMH-7 48.0
FUTURE LOT 14	8735 CARBO DRIVE	FH 7-49.25 46.5	SMH-7 23.0	FH 7-49.25 46.0	SMH-7 32.0
FUTURE LOT 15	8739 CARBO DRIVE	FH 7-49.25 70.0	SMH-7 40.5	FH 7-49.25 61.0	SMH-7 26.0
FUTURE LOT 16	8743 CARBO DRIVE	SMH-8 65.0	WHC-16 17.0	SMH-8 49.0	WHC-37 50.0
FUTURE LOT 17	8747 CARBO DRIVE	SMH-8 17.0	WHC-16 45.0	SMH-8 28.0	WHC-16 72.0
FUTURE LOT 18	8751 CARBO DRIVE	SMH-9 101.5	SMH-5 66.0	SMH-9 89.5	SMH-5 78.0
FUTURE LOT 19	8755 CARBO DRIVE	SMH-9 30.0	BGE 226217 33.0	SMH-9 31.0	BGE 226217 42.0
FUTURE LOT 20	8759 CARBO DRIVE	FH 1-08.61 50.0	SMH-2 77.5	FH 1-08.61 60.0	SMH-2 69.0
FUTURE LOT 21	8404 CARTER WAY	SMH-10 72.0	WHC-24 33.5	SMH-10 60.0	WHC-24 31.0
FUTURE LOT 22	8408 CARTER WAY	SMH-10 19.5	WHC-21 74.0	SMH-10 29.0	WHC-21 86.0
FUTURE LOT 23	8409 CARTER WAY	SMH-10 26.0	WHC-21 82.0	SMH-10 33.0	WHC-21 90.0
FUTURE LOT 24	8405 CARTER WAY	SMH-10 79.5	WHC-21 33.5	SMH-10 69.5	WHC-21 31.0
FUTURE LOT 25	8704 CARBO DRIVE	VALVE 2-05.11 30.0	SMH-2 49.0	2-05.11 36.0	SMH-2 56.0
FUTURE LOT 26	8708 CARBO DRIVE	FH 4-10.95 69.0	SMH-3 50.0	FH 4-10.95 77.0	SMH-3 58.0
FUTURE LOT 27	8504 GAITHER WAY	SMH-11 83.0	WHC-30 35.0	SMH-11 73.0	WHC-30 32.5
FUTURE LOT 28	8508 GAITHER WAY	SMH-11 26.0	WHC-30 85.0	SMH-11 32.0	WHC-30 94.0
FUTURE LOT 29	8509 GAITHER WAY	SMH-11 18.0	WHC-30 79.0	SMH-11 26.0	WHC-30 88.0
FUTURE LOT 30	8513 GAITHER WAY	SMH-11 76.5	1-19 60.0	SMH-11 65.0	1-19 71.0
FUTURE LOT 31	8720 CARBO DRIVE	SMH-5 52.0	VALVE 5-71.52 84.0	SMH-5 56.0	VALVE 5-71.52 46.0
FUTURE LOT 32	8604 SCHAPELL WAY	SDMH-4A 57.5	SMH-12 82.5	SDMH-4A 64.5	SMH-12 72.5
FUTURE LOT 33	8608 SCHAPELL WAY	SMH-12 25.0	WHC-35 71.0	SMH-12 35.0	WHC-35 81.0
FUTURE LOT 34	8609 SCHAPELL WAY	SMH-12 20.0	WHC-35 68.0	SMH-12 27.5	WHC-35 77.0
FUTURE LOT 35	8605 SCHAPELL WAY	SDMH-4A 62.0	SMH-12 60.0	SDMH-4A 70.0	SMH-12 52.0
FUTURE LOT 36	8730 CARBO DRIVE	FH 7-49.25 49.0	SMH-7 52.0	FH 7-49.25 59.0	SMH-7 58.0
FUTURE LOT 37	8742 CARBO DRIVE	SMH-8 61.0	WHC-16 52.0	SMH-8 59.0	WHC-16 50.0
FUTURE LOT 38	8746 CARBO DRIVE	SMH-8 35.0	WHC-16 72.0	SMH-8 45.0	WHC-16 73.0
1	8751 JONES ROAD	SMH-4 49.0	SMH-101 60.0	SMH-4 56.0	SMH-101 81.0
2	8755 JONES ROAD	SMH-4 83.0	SMH-101 84.0	SMH-4 76.0	SMH-101 87.0
3	8759 JONES ROAD	SMH-4 70.0	SMH-101 34.0	SMH-4 74.0	SMH-101 34.0

OWNER/DEVELOPER
 HOWARD COUNTY HOUSING COMMISSION
 3770 PATIENT WOODS DR., SUITE 100
 COLUMBIA, MD 21046
 ATTN: PETER ENGEL
 (410) 313-8316

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Chief, Bureau of Utilities
 Date: 5/11/2020

DEPARTMENT OF PLANNING & ZONING
 HOWARD COUNTY, MARYLAND
 Chief, Development Engineering Division
 Date: 6.3.20

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 3300 N. RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 TEL: 410.461.7666 FAX: 410.461.8961



PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS
 WERE PREPARED OR APPROVED BY ME, AND
 THAT I AM A DAILY LICENSED PROFESSIONAL
 ENGINEER UNDER THE LAWS OF THE STATE
 OF MARYLAND, LICENSE NO. 16193
 EXPIRATION DATE: 09-27-2025

DRN: VETG	DES: RHV
CHK: RHV	
DATE: APRIL 2020	
BY: WRA	NO. 1
REVISION	DATE
4/15/22	

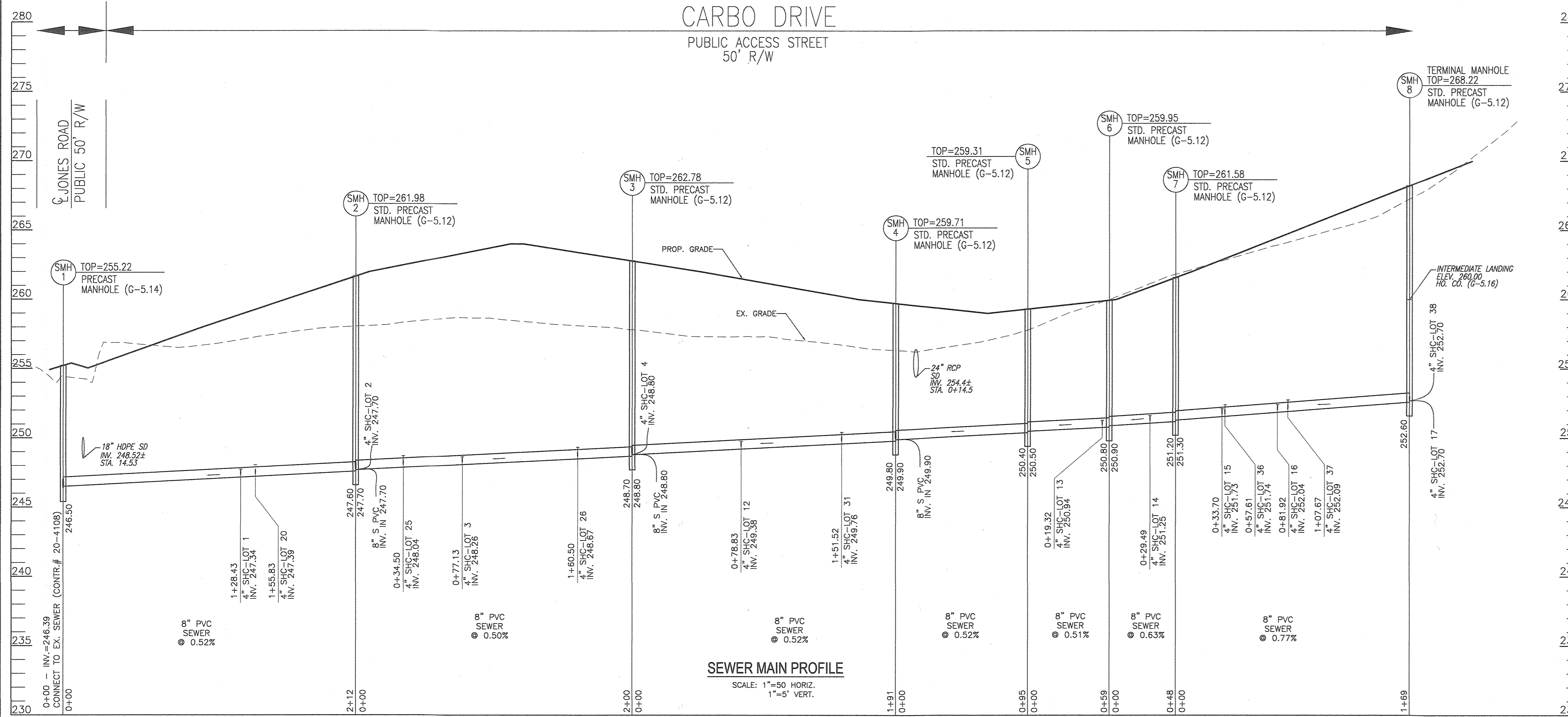
FINAL WATER AND SEWER CONSTRUCTION PLAN
CONTRACT 24-5066-D
WATER PROFILE
 600' SCALE MAP NO. 35 BLOCK NO. 21 & 16

GREENWOOD VILLAGE - PHASE 1
 LOTS 1-4, NON BUILDABLE BULK PARCELS A-C
 AND OPEN SPACE LOTS 5-11
 A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION" - SECTION E-4
 LOTS 2-4 (P.B. 3/51), SR (L16288 F.486), BR (L16288 F.502) AND 9
 TAX MAP 42, GRID 24, PARCEL 136 & 138-140
 ZONED: R-12
 6TH ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

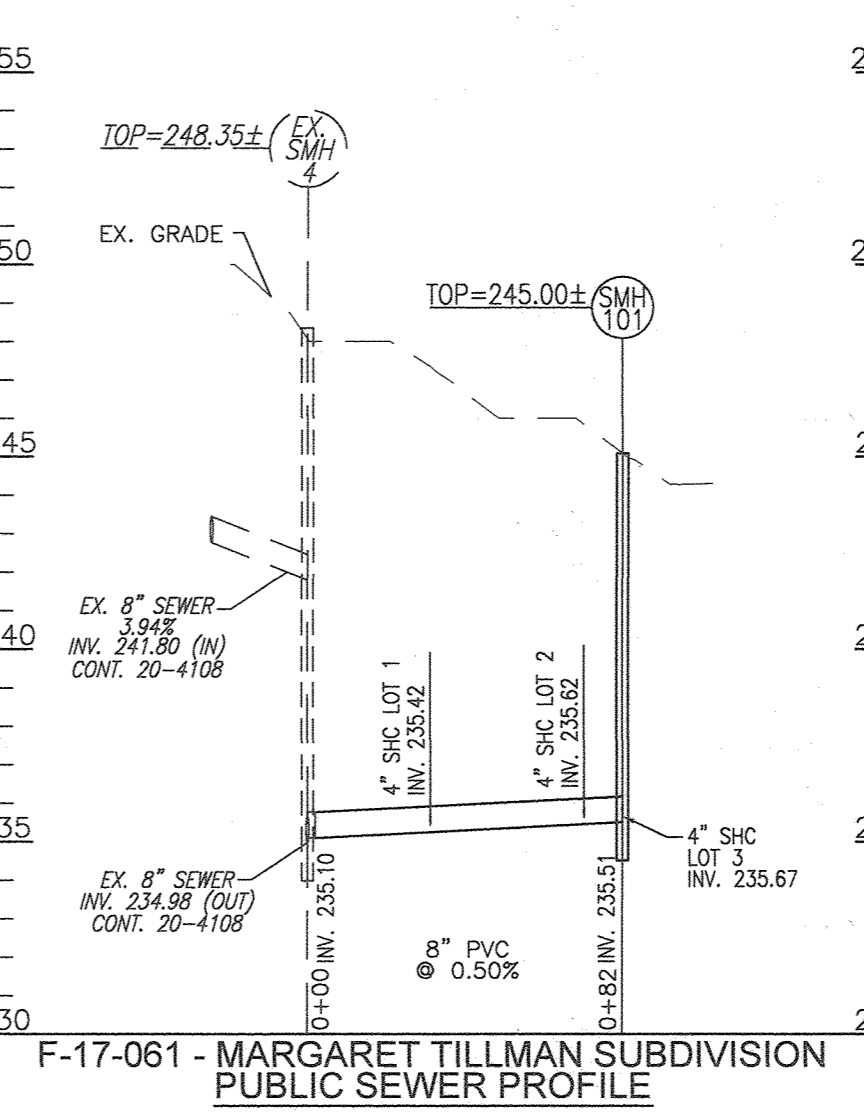
SCALE AS SHOWN
 SHEET 3 OF 4

CARBO DRIVE

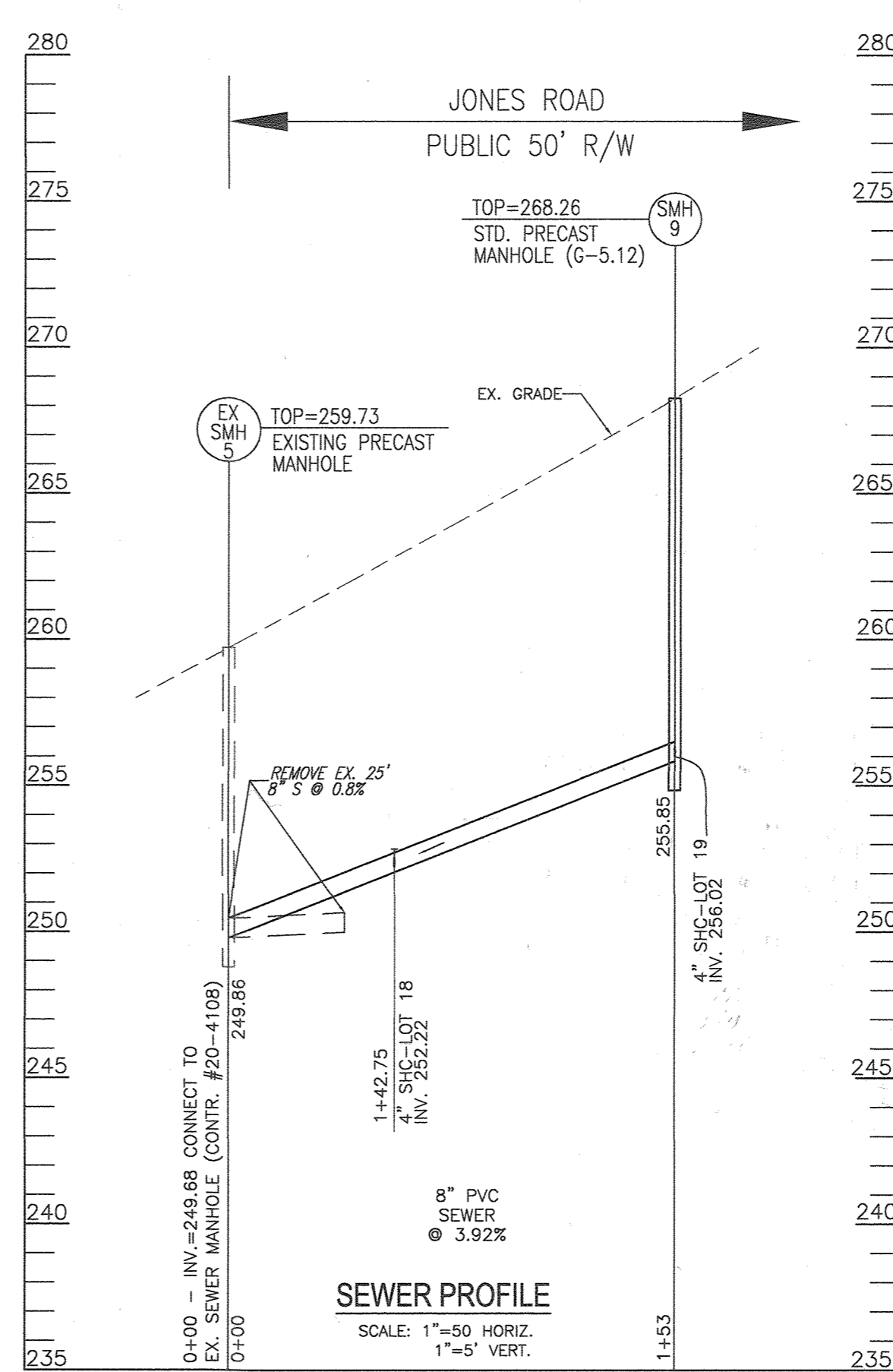
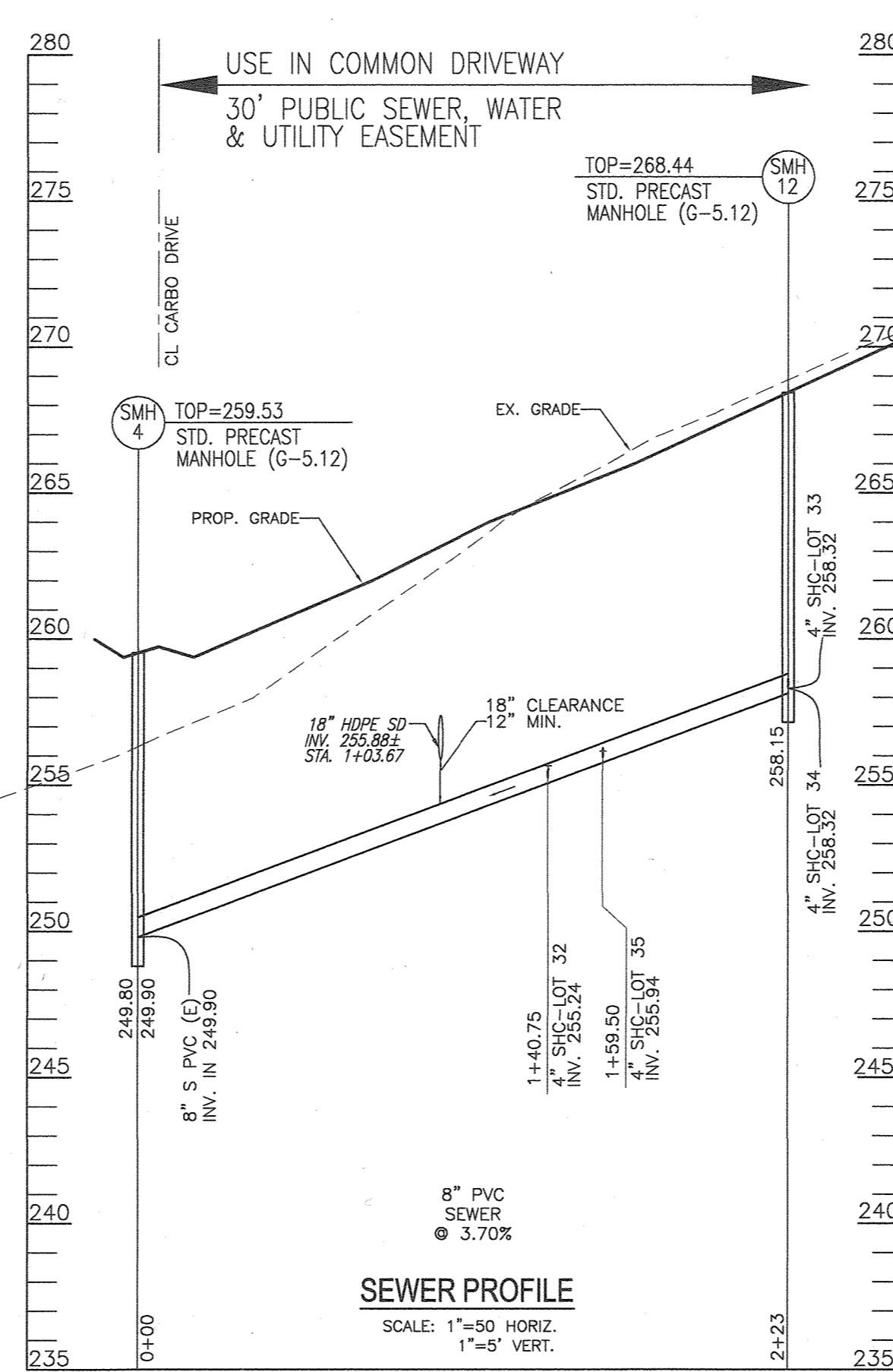
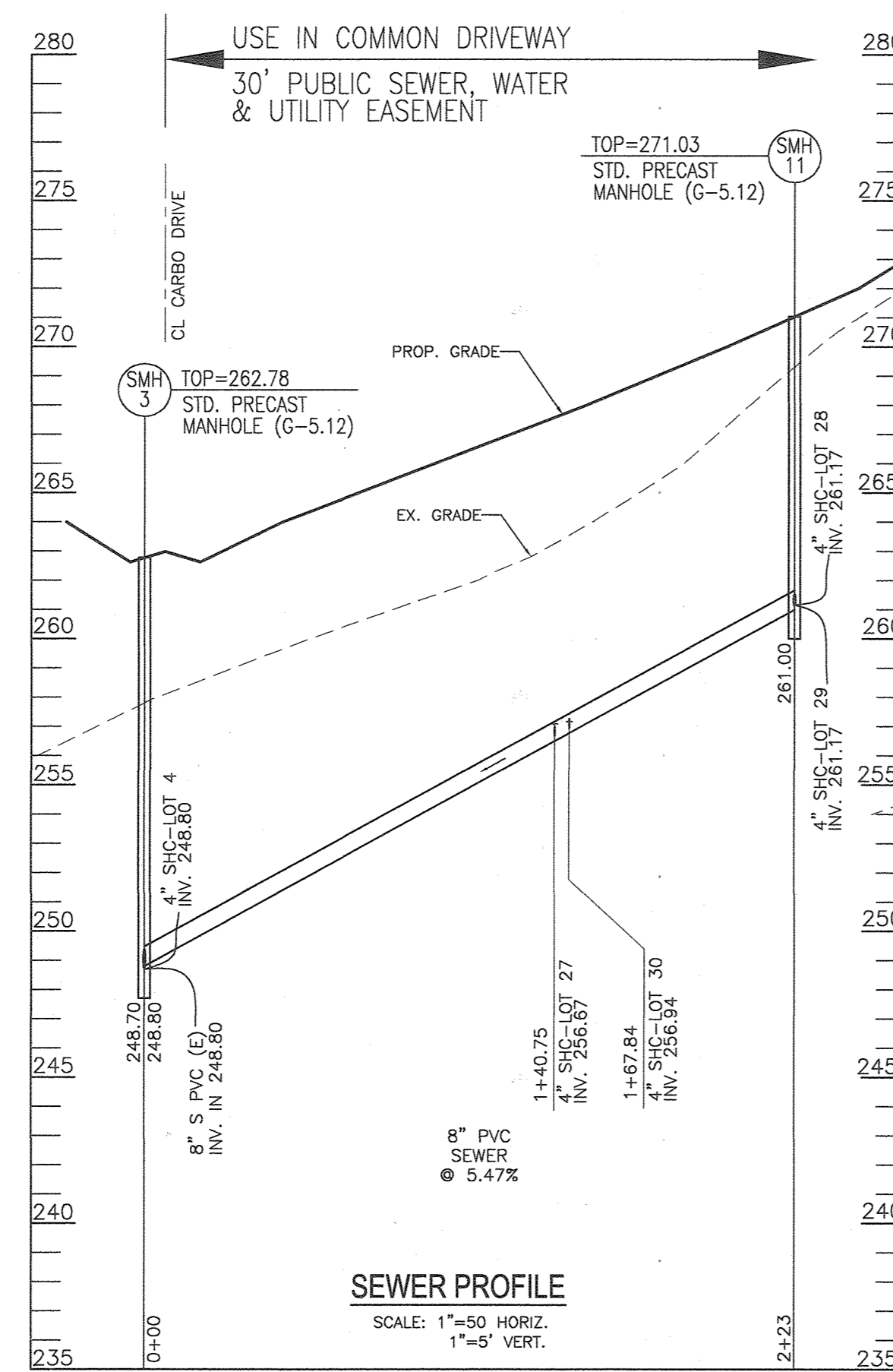
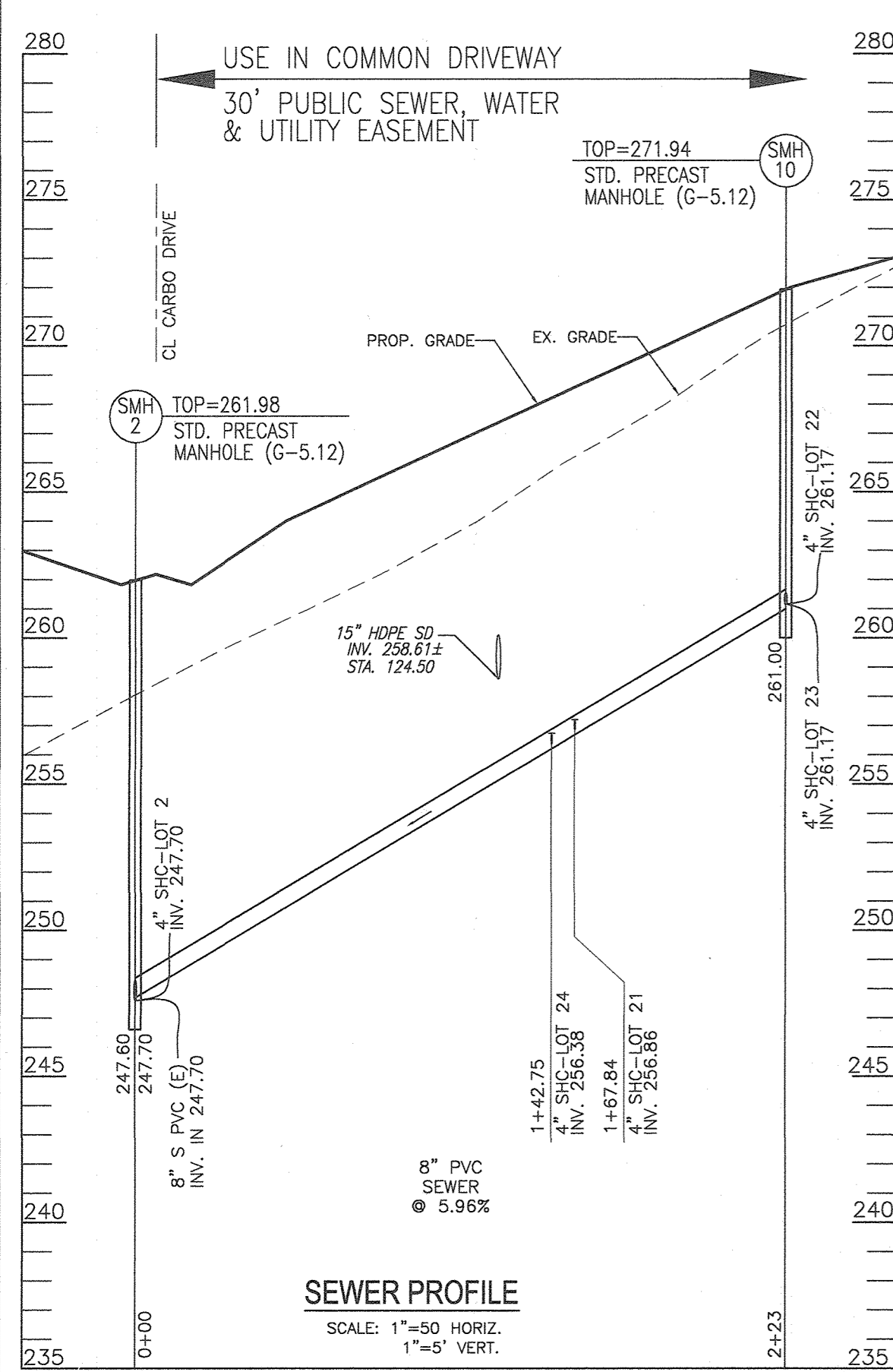
PUBLIC ACCESS STREET
50' R/W



SEWER MANHOLE SCHEDULE					
NO.	TYPE	LOCATION	TOP ELEV.	INV. IN	INV. OUT
SMH 1	STD. PRECAST MD HO. CO. STD. DET. G-5.14	N 541122.49 E 1365242.30	255.22	246.50	246.39
SMH 2	STD. PRECAST MD HO. CO. STD. DET. G-5.12	N 541224.88 E 1365427.43	261.98	(3) 247.7	247.60
SMH 3	STD. PRECAST MD HO. CO. STD. DET. G-5.12	N 541321.68 E 1365602.45	262.78	(3) 248.8	248.70
SMH 4	STD. PRECAST MD HO. CO. STD. DET. G-5.12	N 541413.89 E 1365769.17	259.71	(2) 249.9	249.80
SMH 5	STD. PRECAST MD HO. CO. STD. DET. G-5.12	N 541460.03 E 1365852.60	259.31	250.50	250.40
SMH 6	STD. PRECAST MD HO. CO. STD. DET. G-5.12	N 541465.37 E 1365911.52	259.95	250.90	250.80
SMH 7	STD. PRECAST MD HO. CO. STD. DET. G-5.12	N 541450.76 E 1365957.10	261.58	251.30	251.20
SMH 8	STD. PRECAST MD HO. CO. STD. DET. G-5.12	N 541344.17 E 1366088.30	268.22	(2) 252.70	252.60
SMH 9	STD. PRECAST MD HO. CO. STD. DET. G-5.12	N 540915.62 E 1365357.29	268.26	256.02	255.85
SMH 10	STD. PRECAST MD HO. CO. STD. DET. G-5.12	N 541029.74 E 1365535.36	271.94	(2) 261.17	261.00
SMH 11	STD. PRECAST MD HO. CO. STD. DET. G-5.12	N 541126.54 E 1365710.38	271.03	(2) 261.17	261.00
SMH 12	STD. PRECAST MD HO. CO. STD. DET. G-5.12	N 541218.75 E 1365877.10	268.44	(2) 258.32	258.15
SMH 101	STD. PRECAST MD HO. CO. STD. DET. G-5.12	N 541299.55 E 1365144.39	245.00	235.67	235.50
EX-SMH 4	EXISTING SEWER MANHOLE (CONTR. # 20-4108)	N 541224.91 E 1365185.79	248.35	235.10/241.80	234.98
EX-SMH 5	EXISTING SEWER MANHOLE (CONTR. # 20-4108)	N 541049.20 E 1365282.74	259.73	249.86	249.68



SEWER HOUSE CONNECTION - AS-BUILT LOCATION TABLE			
LOT	STREET ADDRESS	LOCATION DIMENSION 1	LOCATION DIMENSION 2
LOT 1			
LOT 2			
LOT 3			
LOT 4			
FUTURE LOT 12			
FUTURE LOT 13			
FUTURE LOT 14			
FUTURE LOT 15			
FUTURE LOT 16			
FUTURE LOT 17			
FUTURE LOT 18			
FUTURE LOT 19			
FUTURE LOT 20			
FUTURE LOT 21			
FUTURE LOT 22			
FUTURE LOT 23			
FUTURE LOT 24			
FUTURE LOT 25			
FUTURE LOT 26			
FUTURE LOT 27			
FUTURE LOT 28			
FUTURE LOT 29			
FUTURE LOT 30			
FUTURE LOT 31			
FUTURE LOT 32			
FUTURE LOT 33			
FUTURE LOT 34			
FUTURE LOT 35			
FUTURE LOT 36			
FUTURE LOT 37			
FUTURE LOT 38			
F-17-061 LOT 1			
F-17-061 LOT 2			
F-17-061 LOT 3			



MIN CELLAR ELEV'S									
LOT#	EL@MAIN	TYPE	DIST TO ESMT/ROW	EL@ESMT/ROW	DIST TO HSE	SHC SLOPE	EL @ HOUSE	MCE	BF
1	247.34	SHC	19	247.72	58	2%	248.88	251.38	255.50
2	247.70	MH	18	248.06	58	2%	249.22	251.72	257.50
3	248.26	SHC	19	248.64	58	2%	249.80	252.30	259.00
4	248.80	MH	18	249.16	58	2%	250.32	252.82	258.50
12	249.38	SHC	19	249.76	58	2%	250.92	253.42	257.00
13	250.94	SHC	17	251.28	73	1%	252.01	254.51	255.10
14	251.25	SHC	18	251.61	76	2%	253.13	255.63	257.00
15	251.73	SHC	19	252.11	62	2%	253.35	255.85	259.10
16	252.04	SHC	19	252.42	67	2%	253.76	256.26	262.30
17	252.70	MH	18	253.06	70	2%	254.46	256.96	265.00
18	252.22	SHC	31	252.84	58	2%	254.00	256.50	261.00
19	256.02	MH	30	256.62	60	2%	257.82	260.32	266.00
20	247.39	SHC	33	248.05	60	2%	249.25	251.75	256.00
21	256.86	SHC	17	257.20	50	2%	258.20	260.70	264.00
22	261.17	MH	24	261.65	50	2%	262.65	265.15	267.20
23	261.17	MH	21	261.59	50	2%	262.59	265.09	267.20
24	256.38	SHC	18	256.74	50	2%	257.74	260.24	264.00
25	248.04	SHC	33	248.70	60	2%	249.90	252.40	258.50
26	248.67	SHC	33	249.33	60	2%	250.53	253.03	259.00
27	256.67	SHC	21	257.09	50	2%	258.09	260.59	263.50
28	261.17	MH	25	261.67	50	2%	262.67	265.17	267.30
29	261.17	MH	18	261.53	51	2%	262.55	265.05	267.30
30	256.94	SHC	11	257.16	51	2%	258.18	260.68	263.00
31	249.76	SHC	33	250.42	60	2%	251.62	254.12	255.20
32	255.24	SHC	21	255.66	49	2%	256.64	259.14	260.20
33	258.32	MH	25	258.82	49	2%	259.80	262.30	264.60
34	258.32	MH	18	258.68	49	2%	259.66	262.16	264.60
35	255.94	SHC	11	256.16	49	2%	257.14	259.64	261.00
36	251.74	SHC	33	252.40	58	2%	253.56	256.06	259.00
37	252.09	SHC	33	252.75	67	2%	254.09	256.59	262.90
38	252.70	MH	32	253.34	71	2%	254.76	257.26	265.00

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PLANNING & ZONING
HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
3300 N. RIDGE ROAD, SUITE 110, ELICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.8961



PROFESSIONAL CERTIFICATE
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. 16193, EXPIRATION DATE: 09-27-2020

DRN:	VETG	DES:	RHV
CHK:	RHV		
DATE:	APRIL 2020	BY:	NO.
		REVISION	DATE

FINAL WATER AND SEWER CONSTRUCTION PLAN
CONTRACT 24-5066-D
SEWER PROFILES

GREENWOOD VILLAGE - PHASE 1
LOTS 1-4, NON BUILDABLE BULK PARCELS A-C AND OPEN SPACE LOTS 5-11
A RE-SUBDIVISION OF THE "NORDAU SUBDIVISION", SECTION E-4, LOTS 2-4 (P.B. 3/51), SR (L.16288 F.496), BR (L.16288 F.502) AND 9

SCALE AS SHOWN
SHEET 4 OF 4

TAX MAP 42, GRID 24, PARCEL 136 & 138-140
ZONING: R-12
RTM ELECTION DISTRICT

600' SCALE MAP NO. 35 BLOCK NO. 21 & 16