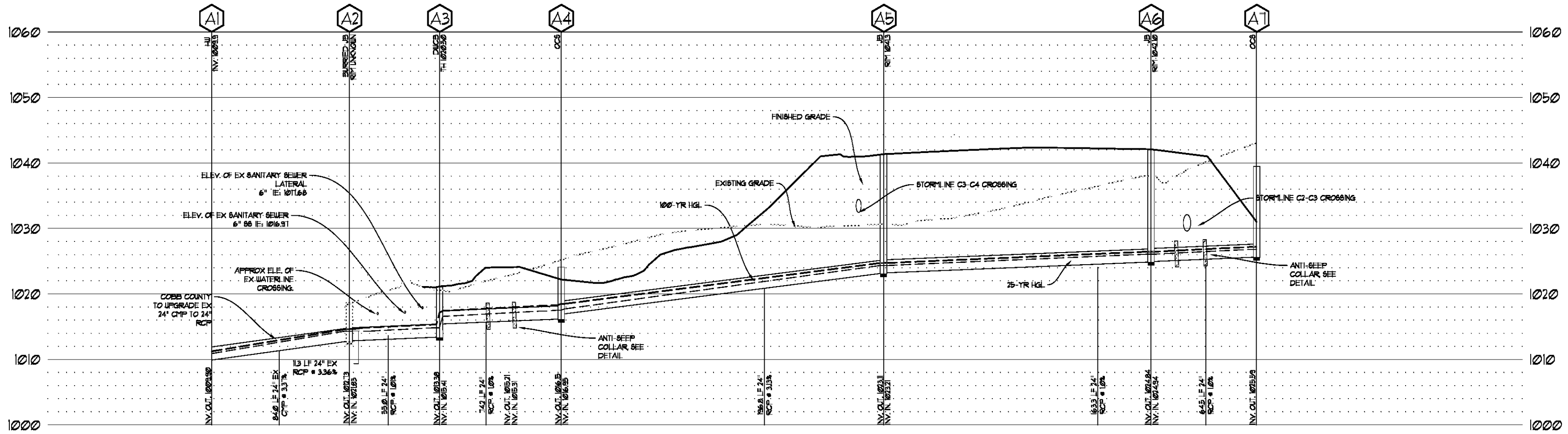

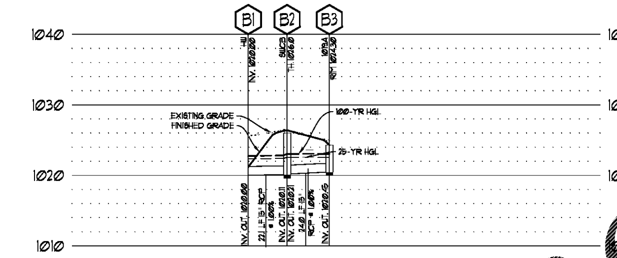

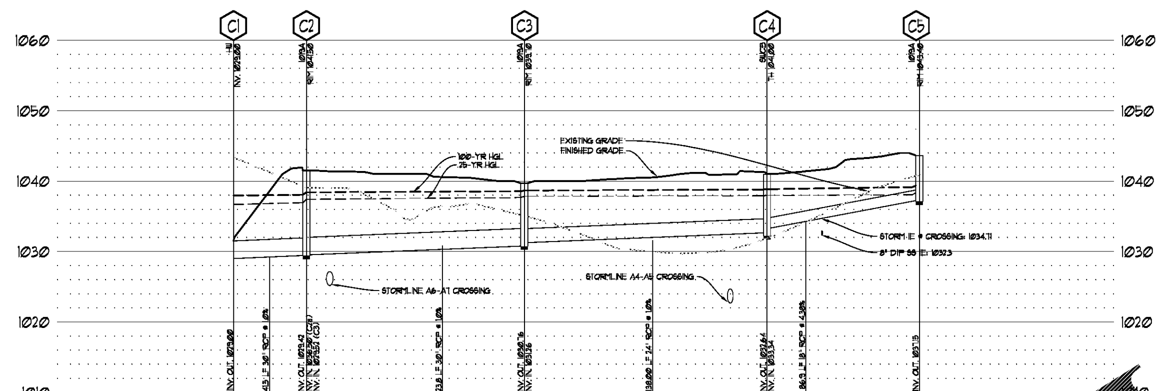

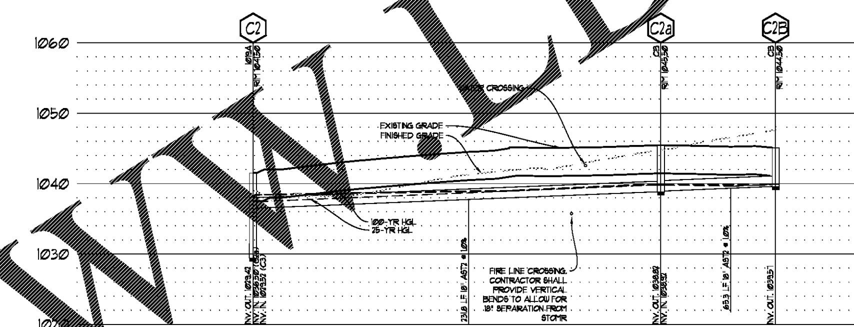

BREEDLOVE LAND PLANNING, INC. PIPECHART — **PROJECT: HARMONY LELAND [illegible] ES**

YEAR STORM EVENT: 25 — **PROJECT LOCATION: MABLET[illegible]GA**

	Upstream Structure	Downstream Structure	Drainage Area	c-factor	Inlet Time	Q	Total Q	Capacity	Pipe Size	Slope	n-value	Velocity	Depth	Inv. Up	Inv. Dn	HGL Up	HGL Dn
			(ac)	(C)	(min)	(cfs)	(cfs)	(cfs)	(in)	(%)		(ft/s)	(ft)	(ft)	(ft)	(ft)	(ft)
A	A7	A6	0.00	0.00	0.00	11.70	11.70	22.70	24.00	1.01	0.01	[illegible]	1.13	[illegible]	[illegible]	1026.82	1026.07
	A6	A5	0.00	0.00	0.00	0.00	11.70	22.60	24.00	1.00	0.01	[illegible]	1.13	[illegible]	[illegible]	1026.07	1024.34
	A5	A4	0.00	0.00	0.00	0.00	11.70	40.02	24.00	3.13	0.01	[illegible]	[illegible]	[illegible]	[illegible]	1024.34	1017.69
	A4	A3	0.00	0.00	0.00	2.60	14.30	22.59	24.00	1.00	0.01	6.94	[illegible]	[illegible]	[illegible]	1017.51	1016.57
	A3	A2	0.54	0.58	12.30	2.07	16.37	22.62	24.00	1.00	0.01	6.56	[illegible]	[illegible]	[illegible]	[illegible]	1014.34
	A2-A2a	A2	1.80	0.29	12.30	3.45	3.45	42.46	24.00	3.52	0.01	2.59	[illegible]	[illegible]	[illegible]	[illegible]	1014.34
	A2	Outfall	0.12	0.60	5.00	0.69	20.08	41.51	24.00	3.37	0.01	6.97	[illegible]	[illegible]	[illegible]	[illegible]	1011.79
B	B3	B2	0.09	0.81	5	0.7	0.7	7	15	1	0.012	[illegible]	[illegible]	[illegible]	1020.21	[illegible]	1022.53
	B2	B1	0.35	0.86	5	2.88	3.42	4.56	15	0.5	0.013	[illegible]	[illegible]	[illegible]	1020	[illegible]	1022.35
C	C5	C4	0.53	0.95	5.00	4.82	4.82	21.99	18.00	[illegible]	0.01	3.72	1.50	1037.15	[illegible]	1037.99 j	1037.22
	C4	C3	0.10	0.95	5.00	[illegible]	5.54	22.62	24.00	1.00	0.01	1.76	[illegible]	1032.64	[illegible]	1037.18	1037.10
	C3	C2	0.67	0.91	5.00	5.64	10.34	41.05	[illegible]	[illegible]	0.01	2.11	2.50	[illegible]	1029.52	1037.03	1036.96
	C2B	C2A	0.20	0.42	5.00	0.80	[illegible]	10.48	[illegible]	[illegible]	0.01	1.75	0.88	1039.57	1038.92	1039.90 j	1039.80
	C2A	C2	0.77	0.90	5.00	6.63	[illegible]	[illegible]	18.00	1.00	0.01	5.75	0.85	1038.82	1036.50	1039.80	1037.35
	C2	Outfall	0.25	0.95	5.00	[illegible]	[illegible]	[illegible]	30.00	1.01	0.01	3.57	2.50	1029.42	1029.00	1036.76	1036.68
D	D2	Outfall	1.12	0.35	5	3.75	[illegible]	[illegible]	18	[illegible]	0.013	2.12	1.5	1029.45	1029	1036.74	1036.68
E	E4	E3	[illegible]	0	0	[illegible]	[illegible]	66.6	36	1	0.013	7.4	1.6	1025.9	1025.18	1027.68	1026.78
	E3	E2	[illegible]	0	0	[illegible]	[illegible]	66.82	36	1	0.013	7.17	1.68	1025	1024.73	1026.78	1026.41
	E2	Outfall	[illegible]	0	[illegible]	[illegible]	[illegible]	68.02	36	1.04	0.013	6.79	1.84	1024.63	1024.5	1026.41 j	1026.34
[illegible]	F11	[illegible]	0.29	0.52	[illegible]	[illegible]	1.44	12.27	24	1	0.024	1.79	1.09	1040.25	1038.94	1040.7	1040.03
	[illegible]	F9	0.7	[illegible]	[illegible]	[illegible]	3.54	12.26	24	1	0.024	1.52	2	1038.84	1037.51	1039.98	1039.81
	[illegible]	F9D	2.33	[illegible]	[illegible]	6.67	6.67	15.44	18	2.16	0.013	5.75	0.88	1060.9	1055.7	1061.9	1056.58
	F9D	F9C	0	[illegible]	0	0	6.46	16.46	18	2.46	0.013	4.46	1.5	1055.6	1054.2	1056.58 j	1055.7
	F9C	[illegible]	0.67	[illegible]	5	4.43	8.85	0	18	0	0.013	5.01	1.5	1054	1054	1055.65	1055.5
	F9B	[illegible]	0	0	0	0	8.84	67.85	24	9	0.013	5.49	0.98	1042.11	1038.67	1043.17	1039.65
	F9A	[illegible]	0.23	0.35	5	0.77	9.2	22.59	24	1	0.013	4.23	1.75	1038.57	1038.06	1039.65	1039.81
	F9	[illegible]	0.42	0.56	5	2.25	12.84	22.65	24	1	0.013	4.09	2	1037.11	1036.23	1039.63	1039.34
	F8	[illegible]	0.47	0.54	5	2.43	14.02	40.89	30	0.99	0.013	2.86	2.5	1035.73	1034.97	1039.25	1039.16
	F7A	[illegible]	0.14	0.95	5	1.27	1.27	5.66	18	0.99	0.024	2.58	0.48	1039.24	1038.87	1039.72	1039.35
	F7	[illegible]	0.35	0.9	5	3.02	16.12	41.11	30	1	0.013	3.28	2.5	1034.67	1033.86	1039.03	1038.88
	F6B	[illegible]	0.05	0.95	5	0.45	0.45	11.37	18	4	0.024	2.75	0.2	1046.1	1041.14	1046.35	1041.35
	F6A	F6	0.48	0.63	5	2.89	2.25	5.67	18	0.99	0.024	3.02	0.66	1039.1	1038.66	1039.76	1039.32
	F6	F5	0.13	0.9	5	1.12	18.24	41.09	30	1	0.013	3.72	2.5	1033.76	1032.95	1038.67	1038.51
	F5	F4	0.51	0.95	5	4.64	20.47	66.57	36	1	0.013	2.9	3	1032.45	1031.68	1038.44	1038.36
	F4D	F4C	0.09	0.95	5	0.82	0.82	5.69	18	1	0.024	1.46	1.25	1039.67	1037.74	1040.04	1038.99
	F4C1	F4C	1.18	0.36	10	3.1	3.1	5.64	18	0.98	0.024	2.06	1.25	1037.9	1037.74	1039.03	1038.99
	F4C	F4B	0.21	0.89	5	1.79	4.67	12.24	24	1	0.024	1.56	2	1037.24	1036.04	1038.95	1038.79
	F4B	F4A	0.75	0.87	5	6.25	8.62	22.27	30	1	0.024	1.76	2.5	1035.54	1034.89	1038.76	1038.67
	F4A	F4	0.73	0.88	5	6.15	12.46	22.18	30	1	0.024	2.54	2.5	1034.79	1033.88	1038.65	1038.36
	F4	F3	0.16	0.91	5	1.39	30.71	66.74	36	1	0.013	4.35	3	1031.58	1029.99	1038.07	1037.74
	F3B	F3A	0.68	0.4	5	2.6	2.6	12.25	24	1	0.024	0.83	2	1035.62	1035.47	1037.89	1037.88
	F3A	F3	0.8	0.5	5	3.83	6.34	22.21	30	1	0.024	1.29	2.5	1034.97	1033.24	1037.88	1037.74
	F3	F2	0.7	0.93	5	6.23	36.62	66.79	36	1	0.013	5.18	3	1029.89	1028.45	1037.32	1036.89
	F2B	F2A	0.08	0.95	5	0.73	0.73	5.7	18	1	0.024	2.22	0.36	1039.98	1039.35	1040.34	1039.71
	F2A	F2	0.18	0.88	5	1.52	1.93	6.2	18	1.19	0.024	3.1	0.57	1038.85	1037.6	1039.42	1038.17
	F2	Outfall	0.29	0.55	5	1.53	38.07	66.57	36	1	0.013	5.39	3	1028.35	1028	1036.44	1036.32
G	G5	G4	0.22	0.54	5	1.14	1.14	8.24	15	1.39	0.012	3.19	0.41	1052.7	1052.1	1053.12	1052.51
	G4	G3	0.17	0.49	5	0.8	1.84	16.37	18	2.07	0.012	2.65	0.83	1052	1050.4	1052.51 j	1051.23
	G3	G2	0.2	0.83	5	1.59	3.12	7.42	18	0.42	0.012	3.21	1.05	1050.3	1049.6	1050.98	1050.65
	G2A	G2	0.12	0.4	5	0.46	0.46	8.04	18	0.5	0.012	1.38	0.95	1050.22	1049.7	1050.47	1050.65
	G2	G1	0.41	0.77	5	3.02	4.96	7.01	18	0.38	0.012	3.66	1.17	1049.4	1049.1	1050.41	1050.27
	G1C	G1B	2.56	0.49	25.5	5.61	5.61	9.87	18	0.75	0.012	4.93	0.93	1051.53	1050.1	1052.44 j	1051.03
	G1B	G1A	0.38	0.95	5	3.46	7.06	11.52	18	1.03	0.012	5.81	0.93	1050	1049.8	1051.03	1050.73
	G1A	G1	0	0	0	0	7.05	10.59	18	0.87	0.012	5.36	1.07	1049.7	1049.2	1050.73 j	1050.27
	G1	Outfall	0.18	0.95	5	1.64	10.93	13.54	18	1.42	0.012	7.7	1.02	1049	1048.7	1050.27	1049.72

100-YR STRUCTURE PONDING CALCS at SAG POINTS				
Structure Label	Structure Type	Top / Throat Elev.	100-Yr Pond Depth (in.)	100-Yr Pond Elev.
A3	Double Wing CB	1020.50	4.68	1020.89
C2B	CB	1044.50	1.32	1044.61
C3	CB	1039.70	6.84	1040.27
C5	CB	1043.40	3.36	1043.68
F2a	CB	1045.50	2.88	1045.74
F2b	CB	1045.50	1.8	1045.65
F3a	CB	1042.00	5.16	1042.43
F3b	CB	1042.00	4.08	1042.34
F4b	CB	1042.30	7.08	1042.89
F4c	CB	1043.50	3.24	1043.77
F4c1	CB	1043.50	5.52	1043.96
F5	CB	1045.20	5.88	1045.69
F6	CB	1045.20	2.40	1045.40
F7	CB	1045.50	4.44	1045.87
F7A	CB	1045.00	2.52	1045.21
F8	CB	1044.60	3.84	1044.92
F9	CB	1044.50	3.72	1044.81
F9A	CB	1054.30	1.92	1054.46
F10	CB	1045.00	4.56	1045.38
F11	CB	1044.50	2.76	1044.73
G1B	Double Wing CB	1054.00	5.76	1054.48
G2A	DI	1053.25	0.60	1053.30

PIPE PROFILE LEGEND

(dotted line)	EXISTING GRADE
(solid line)	PROPOSED GRADE
RCP	REINFORCED CONCRETE PIPE (CLASS IV)
DIP	DUCTILE IRON PIPE (CLASS 50)
HDPE	HIGH-DENSITY POLYETHYLENE PIPE
AST2	ALUMINIZED STEEL TYPE 2
AST2-SB	ALUMINIZED STEEL TYPE 2 SMOOTH BORE (MANNING'S n=0.012)
PVC	POLYVINYL CHLORIDE PIPE (SCHEDULE 40)
HW	HEADWALL
DI	DROP INLET (PEDESTAL TOP)
JB	JUNCTION BOX
SWCB	SINGLE WING CATCH BASIN
DWCB	DOUBLE WING CATCH BASIN
CB	CATCH BASIN
BH	BEE HIVE CATCH BASIN
1019A	CURB INLET (GA. D.O.T. STD.)
FES	FLARED END SECTION
SES	SAFETY END SECTION
INV.	INVERT ELEVATION
HGL	HYDRAULIC GRADE LINE

GEORGIA REGISTERED No. PE042844 PROFESSIONAL ENGINEER KAYLOE TAB DAWSON

ENGINEER'S RUNOFF CONTROL CERTIFICATION:

THE PROPOSED EROSION AND RUNOFF CONTROL MEASURES ARE IN COMPLIANCE WITH THE COBB COUNTY SEDIMENT CONTROL AND FLOOD PROTECTION REGULATIONS AND WILL NOT INCREASE THE RUNOFF RATE FROM THE SITE FOR RAINSTORMS WITH A RETURN PERIOD OF 2, 5, 10, 25, 50 AND 100 YEARS.

SIGNED: [signature] DATE: 10-30-2018

COBB COUNTY STORMWATER NOTES:

1. THE DEPARTMENT OF TRANSPORTATION, STATE OF GEORGIA STANDARD "PIPE CULVERTS" NUMBER 1030D, LATEST EDITION SHALL BE USED IN DETERMINING THE CLASS OF REINFORCED CONCRETE PIPE OR GAGE OF CORRUGATED STEEL PIPE OR TYPE 2 CORRUGATED ALUMINUM PIPE UNDER FILL AND THE METHOD OF BACK-FILLING. THE MINIMUM GAGE FOR CORRUGATED STEEL PIPE ALLOWED UNDER COBB COUNTY STANDARDS IS 12 (0.109 INCHES). ALL CORRUGATED STEEL PIPES ARE TO BE FULL COATED. THE MINIMUM GAGE FOR TYPE 2 CORRUGATED ALUMINUM PIPE UNDER COBB COUNTY STANDARDS IS 14 (0.075 INCHES).

2. FIELD JOINTS FOR CORRUGATED PIPE SHALL BE MADE WITH BANDS OF THE SAME BASE METAL AND COATING AS THE CORRUGATED PIPE. BANDS SHALL BE OF THE HUGGER TYPE DESIGNED TO FULLY ENGAGE AT LEAST ONE ANNULAR CORRUGATION AT THE END OF EACH CORRUGATED PIPE AROUND ITS ENTIRE CIRCUMFERENCE. MINIMUM BAND WIDTH SHALL EQUAL THE CENTERLINE LENGTH OF FOUR (4) ANNULAR CORRUGATIONS. BANDS SHALL CONFORM TO CURRENT ASTM/AASHTO INDUSTRY STANDARDS AS TO SECURING BOLTS, THEIR NUMBER AND PLACEMENT.

3. CONCRETE PIPE SECTIONS MAY BE JOINED WITH BITUMINOUS PLASTIC CEMENT JOINTS, RUBBER-TYPE GASKET JOINTS, O-RING GASKET JOINTS OR PRE-FORMED PLASTIC GASKET JOINTS, IN BITUMINOUS PLASTIC CEMENT JOINTS, THE ANNULAR SPACE SHALL BE FILLED WITH JOINT MATERIAL, AND THE INSIDE OF EACH JOINT WIPED SMOOTH. RUBBER-TYPE, O-RING, AND PRE-FORMED PLASTIC GASKET JOINTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

4. ALL CATCH BASINS, DROP INLETS OR OTHER DRAINAGE STRUCTURES SHALL COMPLY WITH THE LATEST STANDARDS APPROVED AND PROMULGATED BY THE GEORGIA DEPARTMENT OF TRANSPORTATION IN 'STANDARDS SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES, LATEST EDITION.

5. ISOLATOR ROWS WITHIN THE UNDERGROUND CHAMBER SYSTEMS SHALL BE INSPECTED FOR SEDIMENT ACCUMULATION DURING CONSTRUCTION AFTER EACH RAINFALL EVENT. SEDIMENT SHALL BE REMOVED IMMEDIATELY TO AVOID RE-SUSPENSION AND CONTAMINATION OF THE GRAVEL BED.

6. USE OF HDPE REQUIRES THE FOLLOWING:
- GRANULAR BACKFILL TO TOP OF THE PIPE
- DEPTH NO GREATER THAN TEN (10') FEET AS MEASURED TO INVERT OF PIPE
- INSTALLATION MUST BE OUTSIDE COUNTY RIGH-OF-WAY
- WATERTIGHT BELL AND SPIGOT GASKETED JOINTS MUST BE PROVIDED
- 36 INCH DIAMETER OR GREATER MUST BE INSPECTED AND CERTIFIED BY A GEOTECHNICAL ENGINEER OR A MANUFACTURER'S REPRESENTATIVE
- SMOOTHBORE PIPE REQUIRED

7. MINIMUM 12 GAGE BCCMP OR MINIMUM 14 GAGE TYPE 2 ALUMINIZED CMP

8. ALL STORMWATER INFRASTRUCTURES ON THIS SITE ARE PRIVATELY OWNED, AND ANY MAINTENANCE OR REPLACEMENT IS THE OWNER'S RESPONSIBILITY.

9. SUBMIT AS-BUILT DRAWINGS OF DAM/WALLS, OUTLET CONTROL STRUCTURE AND STORM DRAIN PIPE SYSTEM TO COBB SWM. ALL AS-BUILT SURVEYS OF STORMWATER INFRASTRUCTURE MUST BE SUBMITTED TO COBB COUNTY STORMWATER MANAGEMENT (770) 419-6435 PRIOR TO FINAL PLAT APPROVAL, OR PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY FOR COMMERCIAL SITES. A TABLE LISTING THE STRUCTURE NAME, NORTHING, EASTING, PIPE MATERIAL, INVERT, AND TOP ELEVATIONS FOR EACH STRUCTURE MUST BE INCLUDED ON THE AS-BUILT DRAWINGS SUBMITTED TO COBB COUNTY STORMWATER MANAGEMENT (NORTHING AND EASTINGS SHOULD BE BASED ON STATE PLANE COORDINATE SYSTEM). PROVIDE THE PROJECT LAND DISTURBANCE PERMIT (LDP) NUMBER ON THE AS-BUILT DRAWINGS.

10. AS-BUILT CERTIFICATION IS REQUIRED FOR DETENTION/ WATER QUALITY POND, PRIOR TO FINAL PLAT OR CERTIFICATE OF OCCUPANCY.

11. AS-BUILT RETAINING WALL CERTIFICATION IS REQUIRED FOR ALL DETENTION / WATER QUALITY WALLS, PRIOR TO FINAL PLAT APPROVAL OR CERTIFICATE OF OCCUPANCY.

HORIZONTAL SCALE: 1"=40'-0"

VERTICAL SCALE: 1"=10'-0"

DO NOT DUPLICATE DRAWINGS WITHOUT WRITTEN PERMISSION

CAUTION

THE UTILITIES SHOWN ARE SHOWN FOR THE CONTRACTOR'S CONVENIENCE ONLY. THERE MAY BE OTHER UTILITIES NOT SHOWN ON THESE PLANS. THE DESIGN PROFESSIONAL ASSUMES NO RESPONSIBILITY FOR THE LOCATIONS SHOWN AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATIONS OF UTILITIES WITHIN THE LIMITS OF THE WORK. DAMAGE TO EXISTING UTILITIES BY THE CONTRACTOR, FROM HIS/ HER OPERATIONS, SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

811 Know what's below. Call before you dig. Dial 811 Or Call 800-282-7411

CONTRACTOR SHALL BE RESPONSIBLE TO SECURE THE SERVICES OF A PRIVATE UTILITY LOCATOR FIRM DURING THE ENTIRE COURSE OF CONSTRUCTION. CONTRACTOR SHALL PAY FOR SAID SERVICES. CONTRACTOR SHALL IMMEDIATELY REPAIR ALL UTILITIES DAMAGED BY CONSTRUCTION ACTIVITIES, AT NO ADDITIONAL COST TO THE OWNER.

CONTRACTOR SHALL BE RESPONSIBLE FOR COMPACTION OF BACKFILL OF ALL UTILITY TRENCHES WITHIN SITE WORK LIMITS. THIS INCLUDES TRENCHES DUG AND BACKFILLED BY LOCAL UTILITIES, SUCH AS POWER, GAS, TELEPHONE, ETC. CONTRACTOR SHALL PROVIDE ADDITIONAL BACKFILL AND COMPACTION AS NECESSARY, IF SETTLEMENT OCCURS.

DO NOT DUPLICATE WITHOUT PERMISSION

BREEDLOVE LAND PLANNING
Landscape Architects • Civil Engineers
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BLP JOB #6814

DRAWING ISSUE RECORD		
DATE:	REVISIONS:	NO.
11-1-18	ISSUE TO BID	

STORM PIPE PROFILES

HARMONY LELAND-CLAY REPLACEMENT ELEMENTARY SCHOOL
6326 FACTORY SHOALS RD, SW
MABLETON, GA 30126
FOR COBB COUNTY SCHOOL DISTRICT
COBB COUNTY, GA
CCSD PROJECT No. A004 / DOE FACILITY CODE

DATE 2018-08-01 | JOB NO. SHL-D02-18 | DWG. BY KD

cunningham, forehand, matthews & moore, architects, inc. - 2011 manchester street, n.e. - atlanta, georgia 30324 - phone (404) 873-2152

C3.2

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