TAYLOR FARM

SECTION THREE PHASE TWO

ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS

GENERAL NOTES

1.) THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.

2.) THE EXISTING TOPOGRAPHY SHOWN ONSITE IS BASED ON A FIELD SURVEY PERFORMED BY BENCHMARK ENGINEERING, INC. IN FEBRUARY, 2003. EXISTING TOPOGRAPHY SHOWN ON ADJACENT TAYLOR FARM SUBDIVISIONS WAS TAKEN FROM SDP-99-138 AND SDP-01-97.

3.) THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 1012 AND 16C3 WERE USED FOR THIS PROJECT.

4.) WATER IS PUBLIC. THE CONTRACT NUMBER IS 14-4395-D. THE DRAINAGE AREA IS PATAPSCO.

5.) SEWER IS PUBLIC. THE CONTRACT NUMBER IS 14-4395-D. THE DRAINAGE AREA IS PATAPSCO.

6.) STORMWATER MANAGEMENT QUALITY AND QUANTITY CONTROL IS PROVIDED WITHIN THE EXISTING FACILITY CONSTRUCTED UNDER F-95-174 (GTW'S WAVERLY WOODS SECTION4, AREA 2).

7.) EXISTING UTILITIES ARE BASED ON CONTRACT DRAWINGS AND FIELD SURVEYED LOCATIONS.

8.) THE FLOODPLAIN STUDY WAS PERFORMED UNDER F-89-235. THE LIMITS SHOWN ON THESE PLANS WERE TAKEN FROM PLAT #9221.

9.) THE WETLANDS DELINEATION FOR THIS PROJECT WAS PREPARED BY ECO-SCIENCE PROFESSIONAL, INC. IN FEBRUARY, 2003.

10.) THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY MARS GROUP, INC. IN MAY, 2003 AND APPROVED ON FEBRUARY 20, 2004 AS PART OF S-03-019. THE REPORT INDICATED THAT MITIGATION WOULD BE NEEDED AT THE INTERSECTION OF MARRIOTTSVILLE ROAD AND ROUTE 99. A MITIGATION PLAN FOR THAT AREA WAS SUBMITTED ON 9-1-06 AS F-07-32 FOR GTW'S WAVERLY WOODS. THIS MITIGATION PLAN FULFILLS THE REQUIREMENTS OF THE MITIGATION NEEDED FOR THIS PLAN.

11.) A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT. THE 65 dBa NOISE CONTOUR LINE SHOWN ON THE PLANS WAS TAKEN FROM F-98-141. IT IS ADVISORY AS REQUIRED BY THE HOWARD COUNTY DESIGN MANUAL, CHAPTER 5, REVISED FEBRUARY, 1992 AND CANNOT BE CONSIDERED TO EXACTLY LOCATE THE 65 dBA NOISE EXPOSURE. THE 65 dBA NOISE LINE WAS ESTABLISHED BY HOWARD COUNTY TO ALERT DEVELOPERS, BUILDERS AND FUTURE RESIDENTS THAT AREAS BEYOND THIS THRESHOLD MAY EXCEED GENERALLY ACCEPTED NOISE LEVELS ESTABLISHED BY THE U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT.

12.) THE GEOTECHNICAL REPORT WAS PREPARED BY HILLIS CARNES ENGINEERING ASSOCIATES, INC. IN SEPTEMBER, 2005.

13.) THE SUBJECT PROPERTY IS ZONED R-20 PER THE 2-2-2004 COMPREHENSIVE ZONING PLAN AND THE "COMP LITE" ZONING AMENDMENTS EFFECTIVE 7-28-2006.

14.) TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO BURIAL GROUNDS OR CEMETERIES LOCATED ON THIS SITE.

15.) NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAMS, OR THEIR REQUIRED BUFFERS, 100-YEAR FLOODPLAIN OR 25% OR GREATER STEEP SLOPES THAT ARE AT LEAST 20,000 S.F. OF CONTIGUOUS AREA EXCEPT FOR THE DISTURBANCES TO THE STREAM BUFFER AT THE TAYLOR FARM ROAD CROSSING. THE PROPOSED STREAM CROSSING HAS BEEN DETERMINED BY THE DEPARTMENT OF PLANNING AND ZONING TO BE "NECESSARY" IN ACCORDANCE WITH SECTION 16.116.C.1.(i).

16.) BOUNDARY IS BASED ON A FIELD RUN MONUMENTED SUBURBAN BOUNDARY SURVEY PERFORMED BY BENCHMARK ENGINEERING, INC. IN FEBRUARY, 2003.

17.) FOREST STAND DELINEATION WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. IN FEBRUARY, 2003.

18.) THIS PROJECT WAS INCORPORATED INTO THE METROPOLITAN DISTRICT ON 11-6-2006 LIBER/FOLIO REFERENCES 10121/264 AND 10121/272.

19.) THIS PROJECT IS SUBJECT TO THE FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS PER COUNCIL BILL NO. 45-2003 AND THE ZONING REGULATIONS AS AMENDED BY COUNCIL BILL NO. 50-2001. DEVELOPMENT OR CONSTRUCTION ON THESE LOTS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE BUILDING OR GRADING PERMIT APPLICATION.

20.) THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.

21.) DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWINGMINIMUM REQUIREMENTS:

A) WIDTH – 12' (14' SERVING MORE THAN ONE RESIDENCE).
B) SURFACE – 6" OF COMPACT CRUSHER RUN BASE WITH TAR AND CHIP COATING.
C) GEOMETRY – MAX. 15% GRADE, MAX. 10% GRADE CHANGE & MIN. 45' TURNING RADIUS.
D) STRUCTURES(CULVERTS/BRIDGES) – CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOAD)
E) DRAINAGE ELEMENTS – CAPABLE OF SAFELY PASSING 100 YEAR FLOODPLAIN WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY.
F) VERTICAL CLEARANCES – MINIMUM 12 FEET.
G) MAINTENANCE – SUFFICIENT TO INSURE ALL WEATHER USE.

22.) LANDSCAPING FOR THIS SUBDIVISION IS PROVIDED IN ACCORDANCE WITH A "CERTIFIED LANDSCAPE PLAN INCLUDED WITH THIS ROAD CONSTRUCTION PLAN SET IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF $20,850.00 ($19,200.00 FOR 64 SHADE TREES, $1,650.00 FOR 11 EVERGREENS).

23.) THE FOREST CONSERVATION EASEMENTS HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT. NO CLEARING, GRADING, OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT; HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.

24.) THE TOTAL FOREST CONSERVATION OBLIGATION AMOUNT OF 3.14 ACRES SHALL BE MET BY THE RETENTION OF 1.87 AC. OF NET TRACT AREA FOREST WITHIN A FOREST CONSERVATION EASEMENT (1.76 AC. ON-SITE AND 0.11 AC. CREDITED FROM FCE #1 IN TAYLOR FARM SECT. 3 PHASE 1, F-05-162) AND THE ON-SITE AFFORESTATION OF 1.27 AC. WITHIN A FOREST CONSERVATION EASEMENT. FINANCIAL SURETY FOR THE REQUIRED FOREST CONSERVATION HAS BEEN POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF $42,993.72 ($15,333.12 FOR RETENTION OF 76,665.6 S.F. OF FOREST AND $27,660.6 FOR THE PLANTING OF 56,321.2 S.F. OF FOREST). SURETY FOR THE 0.11 AC. OF RETENTION IN FCE #1 HAS BEEN POSTED AS PART OF THE DEVELOPERS AGREEMENT FOR F-05-162.

25.) FOR FLAG OR PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM AND ROAD RIGHT-OF-WAY LINE AND NOT ONTO THE PIPESTEM LOT DRIVEWAY.

26.) THERE IS AN EXISTING DWELLING LOCATED ON LOT 62 TO REMAIN. NO NEW BUILDINGS, EXTENSIONS OR ADDITIONS TO THE EXISTING DWELLING IS TO BE CONSTRUCTED AT A DISTANCE LESS THAN THE ZONING REGULATIONS REQUIRE.

27.) RESERVATION OF PUBLIC UTILITY AND FOREST CONSERVATION EASEMENTS
DEVELOPER RESERVES UNTO ITSELF, ITS SUCCESSORS AND ASSIGNS, ALL EASEMENTS SHOWN ON THIS PLAN FOR WATER, SEWER, STORM DRAINAGE, OTHER PUBLIC UTILITIES AND FOREST CONSERVATION (DESIGNATED AS "FOREST CONSERVATION AREA"), LOCATED IN, ON, OVER AND THROUGH LOTS 58-59, 63-66, 68-97 AND OPEN SPACE LOTS 98-100, ANY CONVEYANCES OF THE AFORESAID LOTS/PARCELS SHALL BE SUBJECT TO THE EASEMENTS HEREIN RESERVED, WHETHER OR NOT EXPRESSLY STATED IN THE DEED(S) CONVEYING SAID LOT(S)/PARCELS. DEVELOPER SHALL EXECUTE AND DELIVER DEEDS FOR THE EASEMENTS HEREIN RESERVED TO HOWARD COUNTY WITH METES AND BOUNDS DESCRIPTION OF THE FOREST CONSERVATION AREA. UPON COMPLETION OF THE PUBLIC UTILITIES AND THEIR ACCEPTANCE BY HOWARD COUNTY, AND IN THE CASE OF THE FOREST CONSERVATION EASEMENT(S), UPON COMPLETION OF THE DEVELOPER'S OBLIGATION UNDER THE FOREST CONSERVATION INSTALLATION AND MAINTENANCE AGREEMENT EXECUTED BY THE DEVELOPER AND THE COUNTY, AND THE RELEASE OF DEVELOPER'S SURETY POSTED WITH SAID AGREEMENT, THE COUNTY SHALL ACCEPT THE EASEMENTS AND RECORD THE DEED(S) OF EASEMENT IN THE LAND RECORDS OF HOWARD COUNTY.

28.) WATER AND SEWER SERVICE TO THESE LOTS WILL BE GRANTED UNDER THE PROVISIONS OF SECTION 18.122B OF THE HOWARD COUNTY CODE. PUBLIC WATER AND PUBLIC SEWER ALLOCATIONS WILL BE GRANTED AT THE TIME OF THE ISSUANCE OF THE BUILDING PERMIT IF CAPACITY IS AVAILABLE AT THAT TIME.

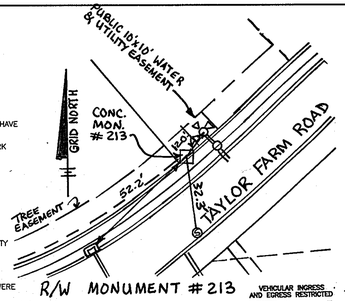
29.) THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.

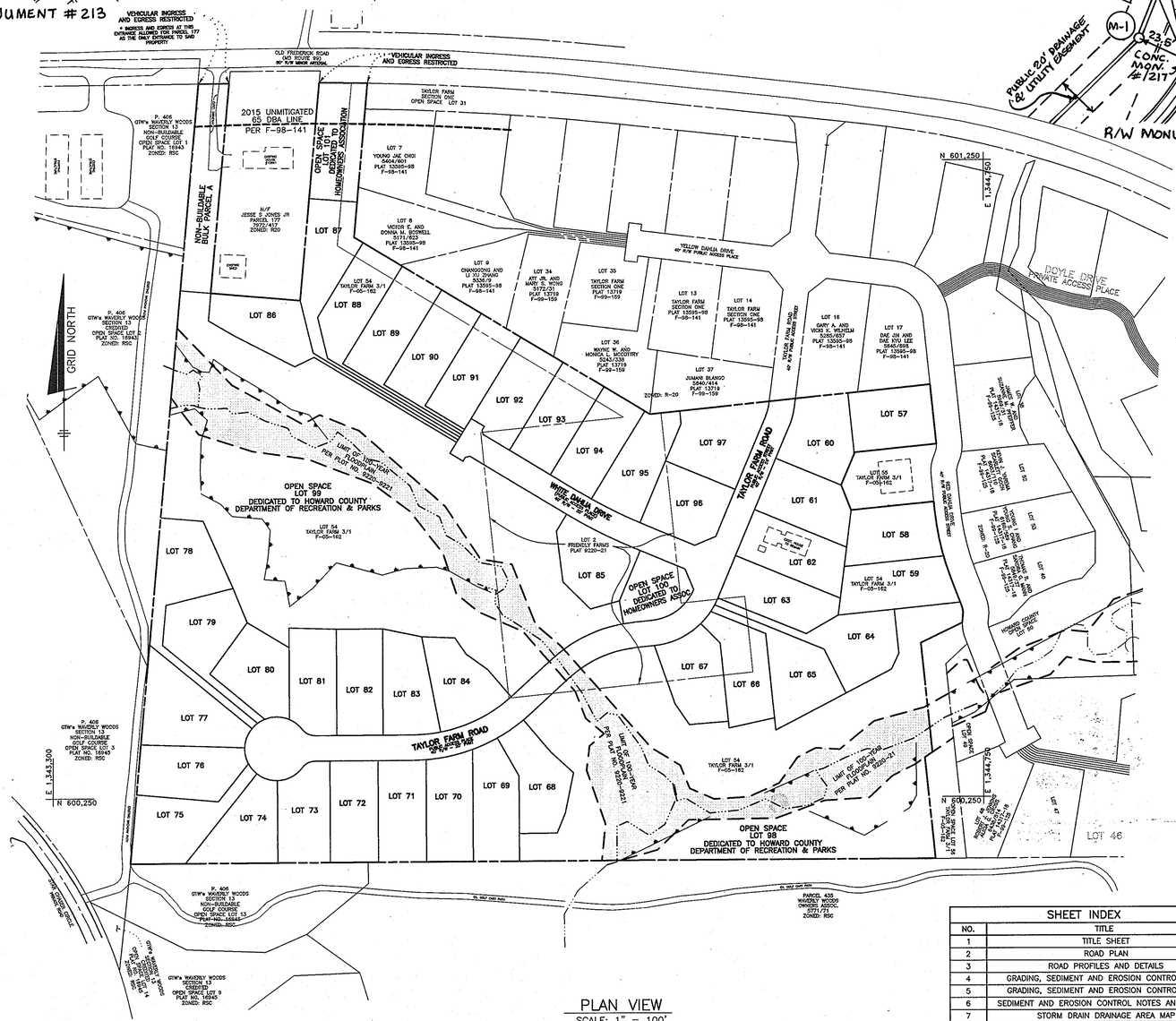
30.) THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

31.) TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO PLACEMENT OF ANY ASPHALT.

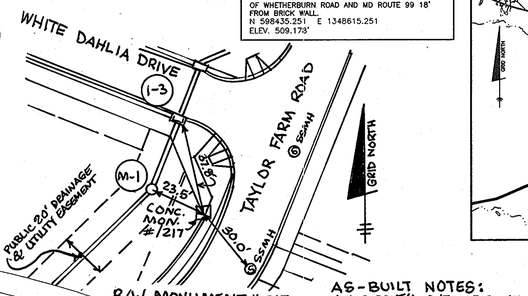
32.) STREET LIGHT PLACEMENT AND TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (1993) AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE 1993)." A MINIMUM SPACING OF 20 FEET SHALL BE MAINTAINED BETWEEN ANY STREETLIGHT AND ANY TREE.

33.) ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-½" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE)-3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.

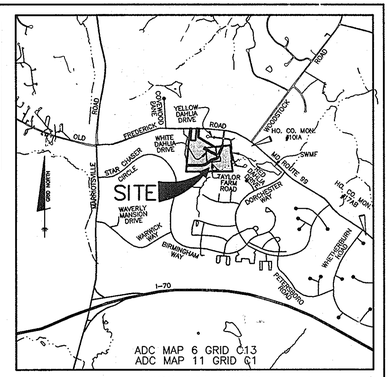




PLAN VIEW
SCALE: 1" = 100'



BENCH MARKS NAD'83 HORIZONTAL
HO. CO. #10A CONCRETE MONUMENT AT SOUTHEAST CORNER OF WOODSTOCK ROAD AND MD ROUTE 99 20.5' FROM CL OF ROUTE 99 N 600995.112 E 1345340.402 ELEV. 442.707'
HO. CO. #17AB CONCRETE MONUMENT AT SOUTHEAST CORNER OF WHETHERBURN ROAD AND MD ROUTE 99 18' FROM BRICK WALL. N 598435.251 E 1348615.251 ELEV. 509.173'



VICINITY MAP
SCALE: 1" = 2000'

AS-BUILT NOTES:
1) HORIZONTAL DATUM FOR THE AS-BUILT IS BASED ON THE MARYLAND STATE REFERENCE SYSTEM NAD 83/91 AS PROJECTED FROM HO.CO. GEODETIC CONTROL STATIONS 10IA AND 17AB. VERTICAL DATUM FOR THIS AS-BUILT IS NORTH AMERICAN VERTICAL DATUM NAD 29 AS PROJECTED FROM THE ABOVE MENTIONED HO.CO. GEODETIC CONTROL STATIONS.
2. THE INSTRUMENTS USED IN PERFORMING THE AS-BUILTS WERE A 5" TOTAL STATION AND PRISM.
3. THIS AS-BUILT WAS PERFORMED BY BENCHMARK ENGINEERING, INC.

SITE ANALYSIS DATA CHART

GENERAL SITE DATA

1.) PRESENT ZONING:	R-20
2.) APPLICABLE DPZ FILE REFERENCES:	F-89-235, F-99-125, S-03-19 P-04-16, F-05-162, P-06-007
3.) PROPOSED USE OF SITE:	RESIDENTIAL (SFD)
4.) PROPOSED WATER AND SEWER SYSTEMS:	PUBLIC

AREA TABULATION

1.) GROSS TRACT AREA	23.30 AC.±
2.) AREA WITHIN 100-YEAR FLOODPLAIN	2.37 AC.±
3.) TOTAL AREA OF 25% OR GREATER STEEP SLOPES AREA NOT IN FLOODPLAIN (FOR NTA CALC.)	0.00 AC.± 0.00 AC.±
4.) NET TRACT AREA	20.93 AC.±
5.) TOTAL NUMBER OF LOTS ALLOWED PER ZONING	N/A
6.) TOTAL NUMBER OF RESIDENTIAL UNITS/LOTS PROPOSED ON THIS SUBMISSION	41
7.) AREA OF BUILDABLE LOTS AREA OF OPEN SPACE LOTS AREA OF BULK PARCEL 'A' AREA OF PUBLIC RIGHT-OF-WAY	11.94± AC. 9.45± AC. 0.36± AC. 1.55± AC.

OPEN SPACE DATA

1.) MINIMUM RESIDENTIAL LOT SIZE SELECTED	12,000 S.F.
2.) OPEN SPACE REQUIRED (40% OF 23.93*AC.)	9.58± AC
3.) OPEN SPACE PROVIDED (41.0%) NON-CREDITED (LESS THAN 35' IN WIDTH) CREDITED	9.81± AC.** 0.00± AC 9.81± AC.
4.) AREA OF RECREATION OPEN SPACE REQUIRED	42 UNITS X 200 SF/UNIT = 8,400 SF***
5.) AREA OF RECREATION OPEN SPACE PROVIDED	8,884 S.F.

*23.93± AC. IS THE TOTAL TRACT ACREAGE OF SECTION 3 (PHASES 1 AND 2).

**9.45 AC. CREATED IN SECTION 3 PHASE 2 AND 0.36 AC. CREATED IN SECTION 3 PHASE 1 (F-05-162) WHICH IS CREDITED TOWARD THE OPEN SPACE OBLIGATION FOR SECTION 3 PHASE 2.

***RECREATIONAL OPEN SPACE OBLIGATION INCLUDES THE ONE UNIT CREATED UNDER F-05-162 (EXISTING LOT 55).

AS-BUILT CERTIFICATION
I hereby certify by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.
Donald Mason, P.E. No. 21443 Date 12-31-13

STATE OF MARYLAND DONALD MASON 21443 PROFESSIONAL ENGINEER

NO.	DATE	REVISION

SHEET INDEX	
NO.	TITLE
1	TITLE SHEET
2	ROAD PLAN
3	ROAD PROFILES AND DETAILS
4	GRADING, SEDIMENT AND EROSION CONTROL PLAN
5	GRADING, SEDIMENT AND EROSION CONTROL PLAN
6	SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
7	STORM DRAIN DRAINAGE AREA MAP
8	STORM DRAIN DRAINAGE AREA MAP
9	STORM DRAIN DRAINAGE AREA MAP FOR CON/SPAN BRIDGE
10	STORM DRAIN PROFILES
11	LANDSCAPE AND STREET TREE PLAN
12	LANDSCAPE AND STREET TREE PLAN
13	FOREST CONSERVATION PLAN
14	FOREST CONSERVATION PLAN
15	CON/SPAN BRIDGE TITLE SHEET AND GENERAL NOTES
16	CON/SPAN BRIDGE BRIDGE PLAN & DETAIL
17	CON/SPAN BRIDGE FOUNDATION PLAN
18	CON/SPAN BRIDGE FOOTING SECTION AND DETAILS
19	CON/SPAN BRIDGE ELEVATIONS
20	CON/SPAN BRIDGE SECTION & DETAILS
21	CON/SPAN BRIDGE SPECIFICATIONS
22	CON/SPAN BRIDGE SPECIFICATIONS

RIGHT OF WAY ELEVATION CHART NAD.83

R/W PT.NO.	DESCRIPTION	ELEVATION
1	REBAR & CAP	434.35'
2	REBAR & CAP	435.42'
5	REBAR & CAP	434.54'
6	REBAR & CAP	428.87'
7	REBAR & CAP	425.13'
8	REBAR & CAP	423.90'
32	REBAR & CAP	441.29'
33	REBAR & CAP	441.05'
200	REBAR & CAP	440.92'
201	REBAR & CAP	440.84'
202	REBAR & CAP	439.25'
203	REBAR & CAP	437.85'
204	REBAR & CAP	437.88

RIGHT OF WAY ELEVATION CHART NAD.83

R/W PT.NO.	DESCRIPTION	ELEVATION
205	REBAR & CAP	439.12'
208	X-MARK IN DW	455.46'
209	X-CUT IN WALK	456.01'
210	REBAR & CAP	456.01'
211	RE BAR & CAP	455.16'
213	CONCRETE MONUMENT	441.71'
214	REBAR & CAP	438.96'
215	REBAR & CAP	438.14'
216	REBAR & CAP	438.28'
217	CONCRETE MONUMENT	431.31'
218	REBAR & CAP	441.53'
219	REBAR & CAP	444.26'
220	REBAR & CAP	444.64'

RIGHT OF WAY ELEVATION CHART NAD.83

R/W PT. NO.	DESCRIPTION	ELEVATION
221	REBAR & CAP	442.31'
225	REBAR & CAP	442.88'
226	REBAR & CAP	443.41'
227	REBAR & CAP	442.90'
228	REBAR & CAP	442.76'
229	X-MARK IN DW	448.45'
233	REBAR & CAP	440.89'
234	REBAR & CAP	440.97'
301	REBAR & CAP	434.36'
302	REBAR & CAP	440.93'

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 9-7-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/13/07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/12/07

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

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. 21443, Expiration Date: 12-31-2015.
2014
STATE OF MARYLAND DONALD MASON 21443 PROFESSIONAL ENGINEER
8/21/07

OWNER/DEVELOPER:
FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE, PHASE ONE (F-05-162) AND LOT 2 OF FRIENDLY FARMS (PLAT NO. 9220-9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: TITLE SHEET

DATE: AUGUST, 2007 PROJECT NO. 1585

DESIGN: DBT DRAFT: DBT CHECK: DAM SCALE: AS SHOWN SHEET 1 OF 22

AS-BUILT

F-07-051

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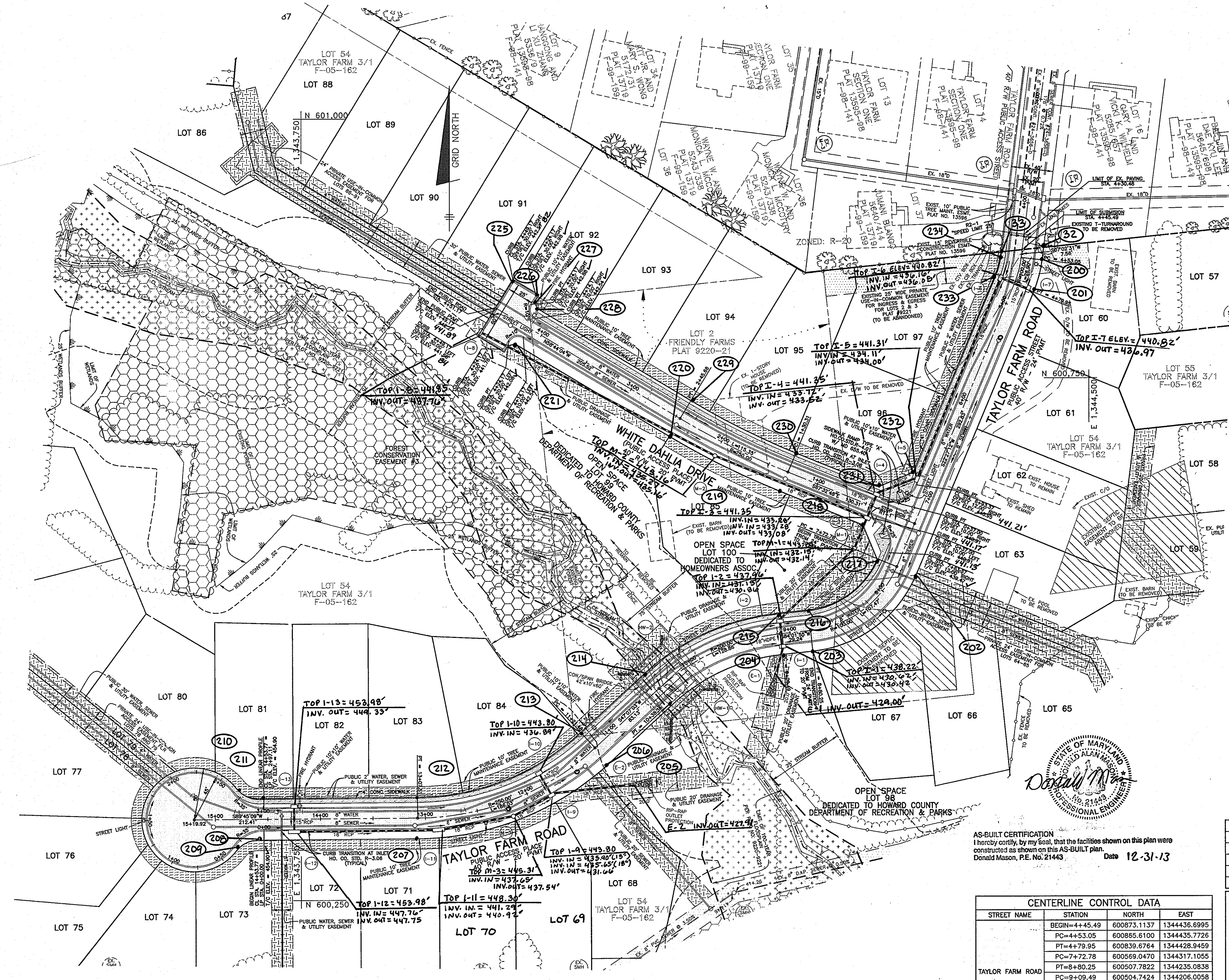
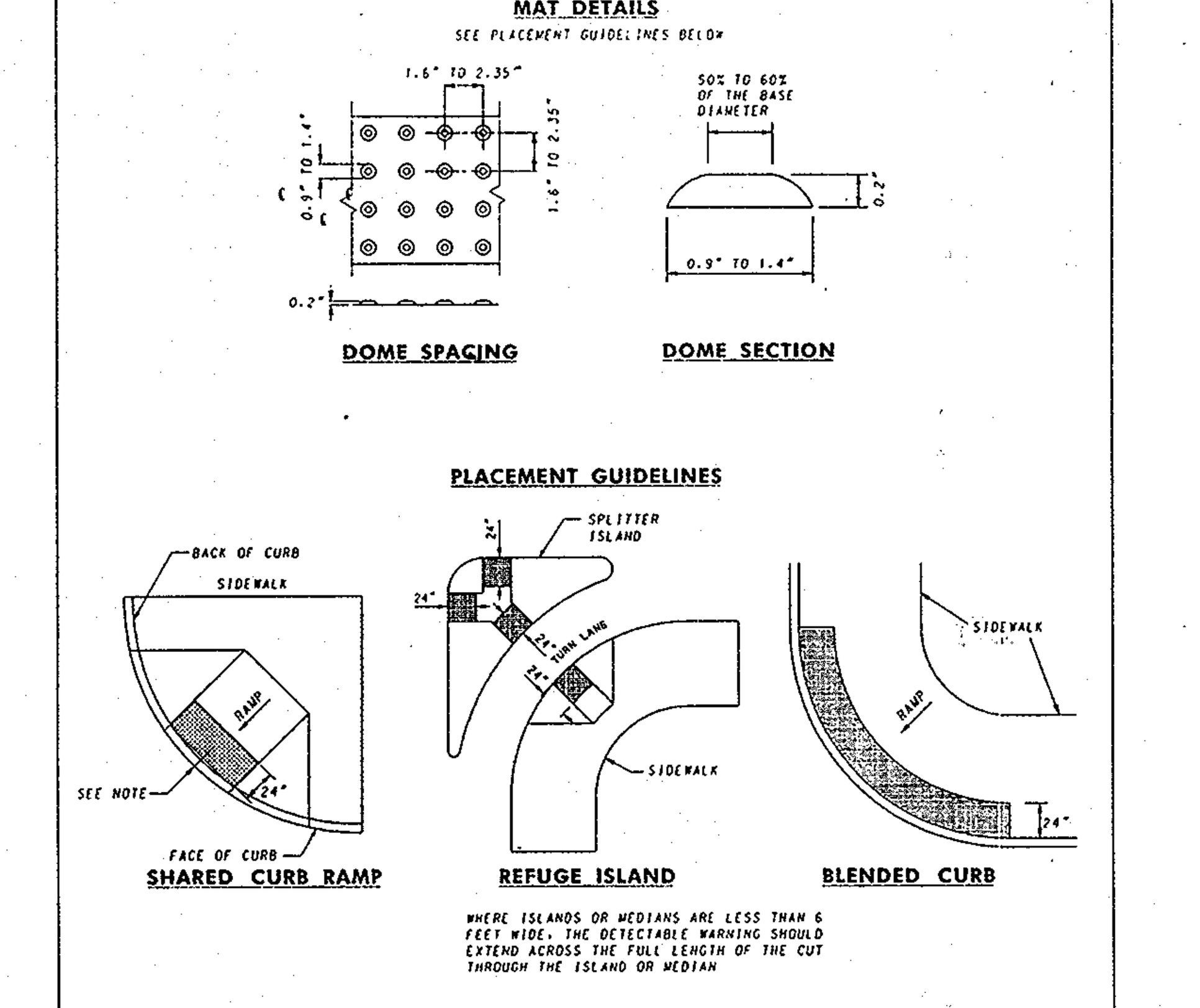


PLAN VIEW
SCALE: 1" = 50'

MAT DETAILS

SEE PLACEMENT GUIDELINES BELOW



WHERE ISLANDS OR MEDIANS ARE LESS THAN 6 FEET WIDE, THE DETECTABLE WARNING SHOULD EXTEND ACROSS THE FULL LENGTH OF THE CUT THROUGH THE ISLAND OR MEDIAN

NOTES

1. THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 TO 8 INCHES FROM THE FACE OF CURB.
2. FOR SKEWED APPLICATIONS DETECTABLE WARNING SHALL BE PLACED SUCH THAT THE DOMES CLOSEST TO THE BACK OF CURB ARE NO LESS THAN 0.5" AND NO MORE THAN 3.0" FROM THE BACK OF CURB. TRUNCATED DOME SURFACES SHALL BE FABRICATED TO PROVIDE FULL DOMES ONLY.
3. DETECTABLE WARNING SURFACE SHALL BE PAID FOR IN ACCORDANCE WITH SECTION 611 OF THE SPECIFICATIONS.
4. DETECTABLE WARNING SURFACES ARE REQUIRED AT STREET CROSSING & SIGNALIZED INTERSECTIONS.

SPECIFICATION 611	CATEGORY CODE ITEMS	Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
APPROVED	Kirk G. McClelland, DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	DETECTABLE WARNING SURFACES
SHA State Highway	APPROVAL - SHA REVISIONS: APPROVAL 2-10-04, REVISED 3-15-06; APPROVAL - FEDERAL HIGHWAY ADMINISTRATION: APPROVAL 3-31-04, REVISED 4-5-06	STANDARD NO. MD 655.40

LEGEND

- EXISTING FOREST
- EXISTING HEDGEROW, SCATTERED TREES & BRUSH
- EXISTING 100-YR FLOODPLAIN
- EXISTING STREAM
- EXISTING STREAM BANK (TOP OF BANK / BOTTOM OF BANK)
- EXISTING WETLANDS
- FOREST CONSERVATION EASEMENT
- PROPOSED UTILITY AND ACCESS EASEMENTS
- EXISTING UTILITY AND ACCESS EASEMENTS
- PROPOSED TREE MAINTENANCE EASEMENTS

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.
Donald Mason, P.E. No. 21443 Date 12-31-13

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER

CENTERLINE CONTROL DATA

STREET NAME	STATION	NORTH	EAST
TAYLOR FARM ROAD	BEGIN=4+45.49	600873.1137	1344436.6995
	PC=4+53.05	600865.6100	1344435.7726
	PT=4+79.95	600839.6764	1344428.9459
	PC=7+72.78	600569.0470	1344317.1055
	PT=8+80.25	600507.7822	1344235.0838
	PC=9+09.49	600504.7424	1344206.0058
	PT=10+38.34	600452.3767	1344090.7014
	PC=11+21.48	600395.8055	1344029.7860
	PT=13+07.51	600328.9958	1343860.7419
	END=15+19.92	600328.0783	1343648.3339
WHITE DAHLIA DRIVE	BEGIN=0+00	600610.0859	1344334.0653
	PC=1+30.31	600659.8538	1344213.6380
	PT=2+45.66	600711.9185	1344110.8327
	END=4+51.17	600818.5826	1343935.1633

STREET LIGHT SCHEDULE

SYMBOL	LOCATION		DESCRIPTION
☼	TAYLOR FARM ROAD	CL STA. 4+57 OFFSET 15' LEFT	100 WATT HPS VAPOR PREMIERE COLONIAL POST TOP MOUNTED ON A 14' BLACK FIBERGLASS POLE
		CL STA. 7+04 OFFSET 18' RIGHT	
		CL STA. 8+12 OFFSET 15' LEFT	
		CL STA. 10+05 OFFSET 13' RIGHT	
		CL STA. 12+45 OFFSET 13' LEFT	
		LP STA. 1+50 OFFSET 3' LEFT	
	WHITE DAHLIA DRIVE	CL STA. 4+50 OFFSET 8' LEFT	

CENTER LINE CURVE DATA

STREET NAME	STATION	RADIUS	LENGTH	DELTA	TANGENT	CHORD	
TAYLOR FARM ROAD	STA. 4+53.05 TO 4+79.95	100.00'	26.90'	15°24'41"	13.53'	S14°44'52"W	26.82'
	STA. 7+72.78 TO 8+80.25	100.00'	107.47'	61°34'43"	59.59'	S53°14'34"W	102.38'
	STA. 9+09.49 TO 10+38.34	200.00'	128.86'	36°54'52"	66.75'	S65°34'29"W	126.64'
	STA. 11+21.48 TO 13+07.51	250.00'	186.03'	42°38'06"	97.56'	S68°26'06"W	181.77'
WHITE DAHLIA DRIVE	STA. 1+30.31 TO 2+45.66	750.00'	115.35'	8°48'44"	57.79'	N63°08'26"W	115.24'

APPROVED: DEPARTMENT OF PUBLIC WORKS

[signature] 9-7-07
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[signature] 9/18/07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 9/12/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

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. 21443, Expiration Date: 12-21-2009. 2014

[seal and signature] 8/21/07

OWNER/DEVELOPER:
FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 2 OF FRIENDLY FARMS (PLAT NO. 9220-9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: ROAD PLAN

DATE: AUGUST, 2007 — PROJECT NO. 1585
DESIGN: DBT — DRAFT: DBT — CHECK: DAM — SCALE: AS SHOWN — SHEET 2 OF 22

AS-BUILT

F-07-051

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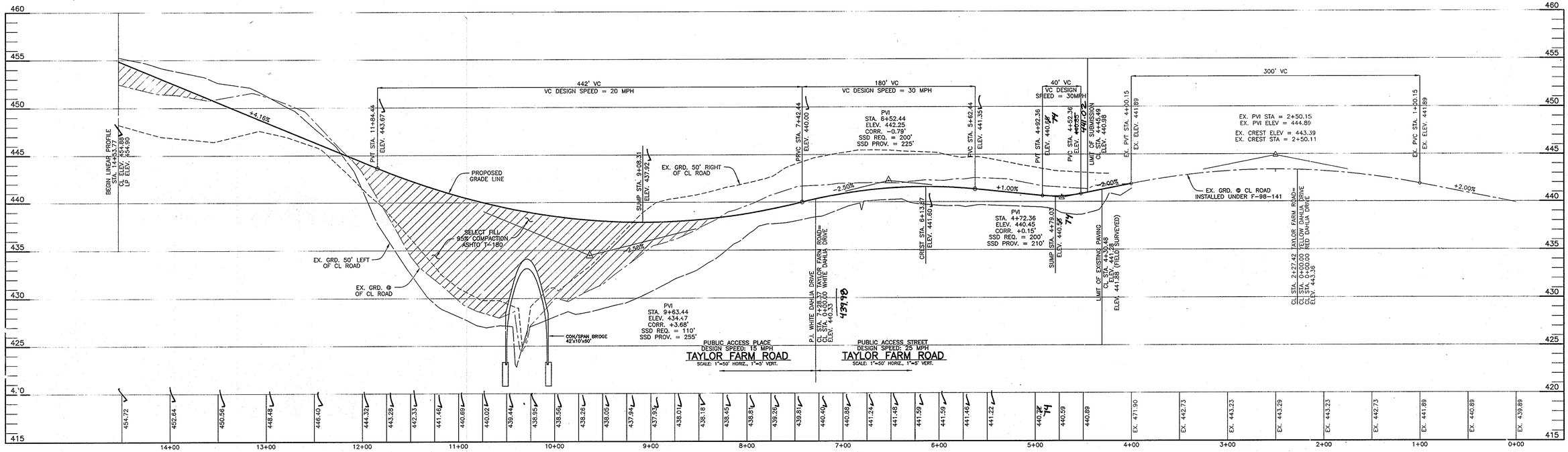
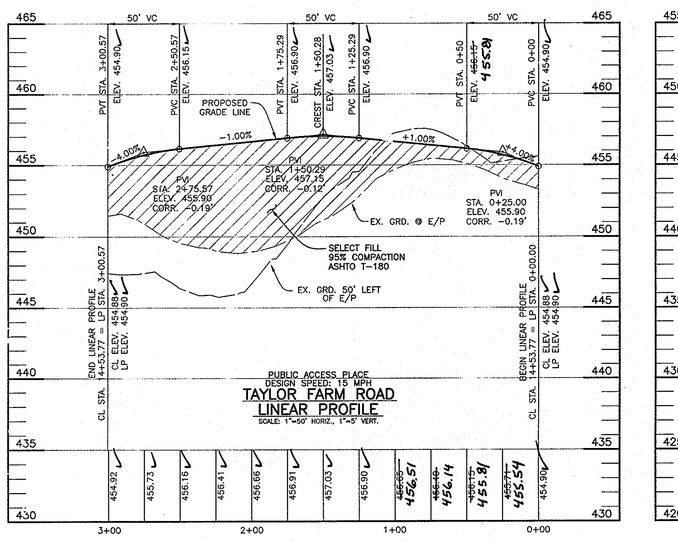
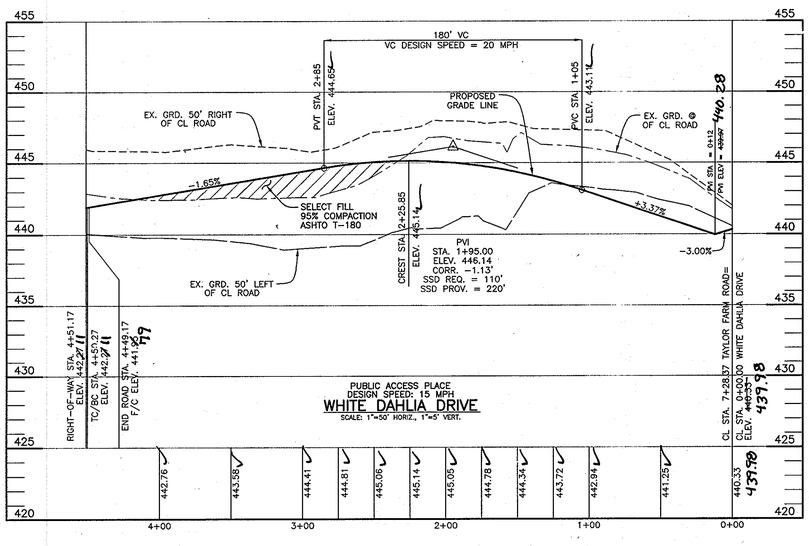
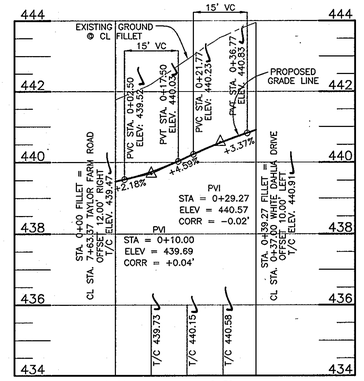
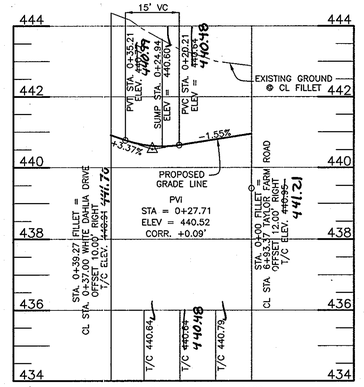








FILLET PROFILE – SOUTH CORNER
TAYLOR FARM RD/WHITE DAHLIA DR
SCALE: 1"=20' HORIZ., 1"=2' VERT.



FILLET PROFILE – NORTH CORNER
TAYLOR FARM RD/WHITE DAHLIA DR
SCALE: 1"=20' HORIZ., 1"=2' VERT.

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.
Donald Mason, P.E. No. 21443 Date 12-31-13

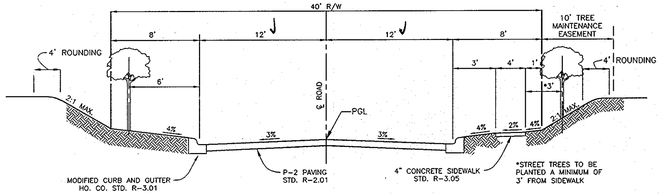
STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER

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. 21443 Expiration Date: 12-21-14

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 7-20-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/15/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/24/07

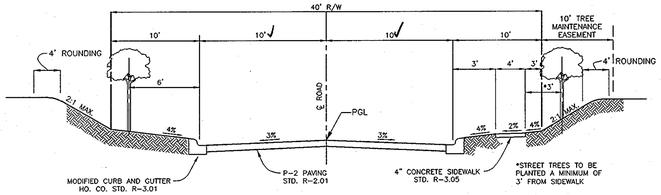
NO.	DATE	REVISION



(PUBLIC ACCESS STREET – LESS THAN 500 ADT)
DESIGN SPEED: 25 MPH

TAYLOR FARM ROAD
STA. 4+05.8 TO STA. 6+52.37
STA. 7+63.37 TO STA. 7+72.78

TYPICAL ROADWAY SECTION
NOT TO SCALE



(PUBLIC ACCESS PLACE – LESS THAN 200 ADT)
DESIGN SPEED: 15 MPH

WHITE DAHLIA DRIVE
STA. 0+37.00 TO STA. 4+19.17
TAYLOR FARM ROAD
STA. 8+80.25 TO STA. 14+53.77

TYPICAL ROADWAY SECTION
NOT TO SCALE

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER 12/31/13

OWNER/DEVELOPER:
FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 2 OF FRIENDLY FARMS (PLAT NO. 9220-9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: ROAD PROFILES

DESIGN: DBT | DRAFT: DBT | CHECK: DAM
DATE: JULY, 2007 | PROJECT NO. 1585
SCALE: AS SHOWN | SHEET 3 OF 22

AS-BUILT

F-07-051

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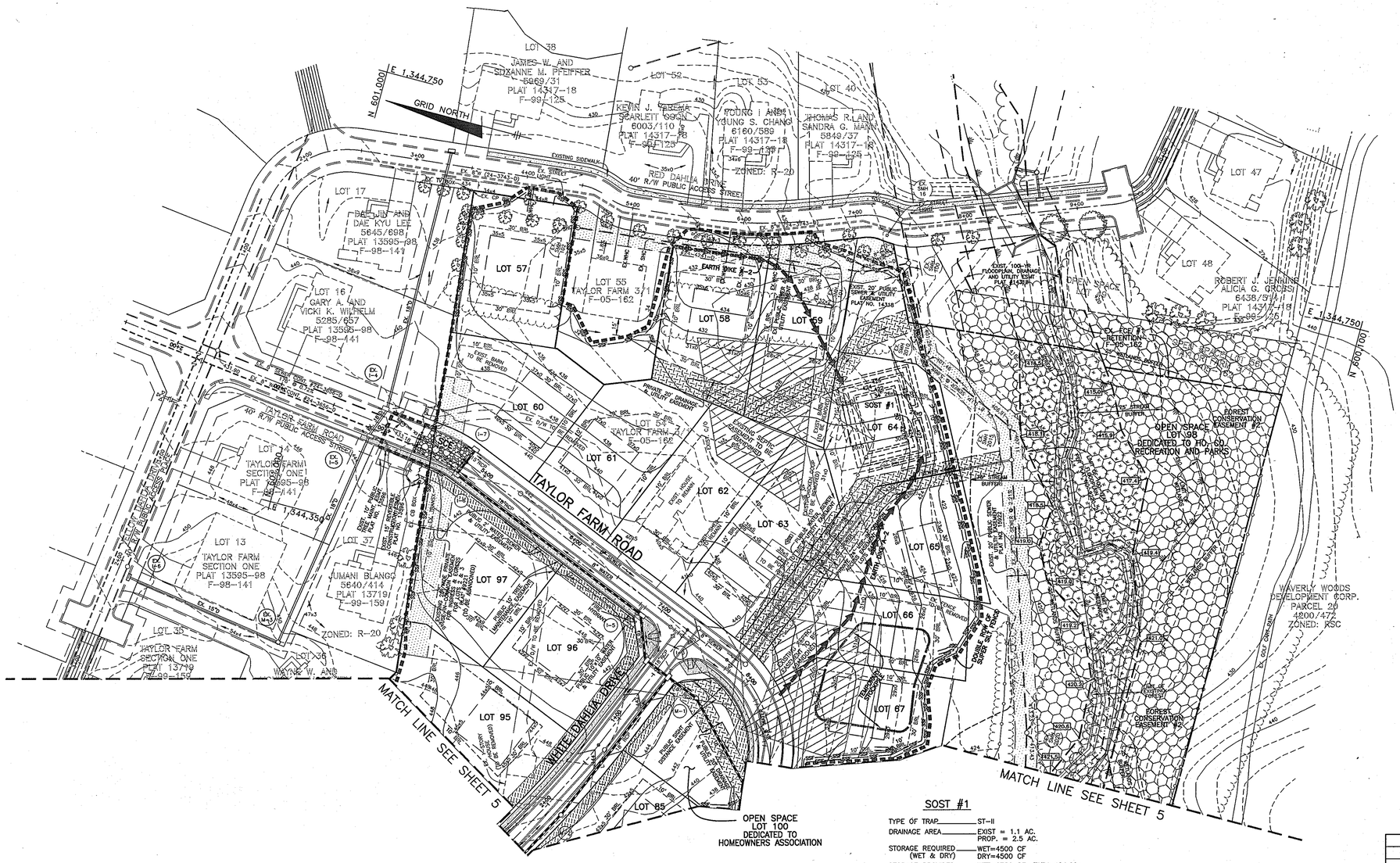

PLAN VIEW
SCALE: 1" = 50'

SOST #1

TYPE OF TRAP	ST-II
DRAINAGE AREA	EXIST = 1.1 AC. PROP. = 2.5 AC.
STORAGE REQUIRED (WET & DRY)	WET=4500 CF DRY=4500 CF
STORAGE PROVIDED (WET & DRY)	WET=6780 CF ELEV=424.00 DRY=6632 CF ELEV=426.00
WEIR LENGTH	10'
EMBANKMENT ELEV.	427.00 (4' WIDE)
WIER CREST ELEV.	426.00
CLEANOUT ELEV.	422.15
BOTTOM ELEV.	421.00
BOTTOM DIMENSIONS	50' 34'

No As-Built information is required on this sheet

STATE OF MARYLAND
DONALD ALAN MASON
No. 21443
PROFESSIONAL ENGINEER
12-31-13

NOTE:
LOT 55 IS OWNED BY FRIENDLY FARM LLC WHICH IS THE SAME OWNER AS THIS PROJECT. NO LETTER OF PERMISSION FOR GRADING IS REQUIRED.

LEGEND

- EXISTING CONTOURS
- EXISTING FOREST
- EXISTING HEDGEROW, SCATTERED TREES & BRUSH
- EXISTING 100-YR FLOODPLAIN
- EXISTING STREAM
- EXISTING STREAM BANK (TOP OF BANK / BOTTOM OF BANK)
- EXISTING WETLANDS
- FOREST CONSERVATION EASEMENT RETENTION
- PROPOSED UTILITY AND ACCESS EASEMENTS
- EXISTING UTILITY AND ACCESS EASEMENTS
- PROPOSED TREE MAINTENANCE EASEMENTS
- EARTH DIKE
- SUPER SILT FENCE
- LIMIT OF DISTURBANCE
- TEMP SED. TRAP CONTOURS
- HOUSE PAD

ENGINEER'S CERTIFICATE

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

Donald Mason 8/21/07
ENGINEER – DONALD A. MASON, P.E. # 21443 DATE

DEVELOPER'S CERTIFICATE

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

8/21/07 8/21/07
STEVEN K. BREEDEN DATE JAMES R. SCHMUTZ DATE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

8/29/07
U.S.D.A. – NATURAL RESOURCES CONSERVATION SERVICE DATE

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

8/29/07
HOWARD SCD DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

9-7-07
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

9/5/07
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

9/12/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

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. 21443, Expiration Date: 12-21-2008 2014

STATE OF MARYLAND
DONALD ALAN MASON
No. 21443
REGISTERED
PROFESSIONAL ENGINEER
Donald Mason 8/21/07

OWNER/DEVELOPER:

FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 2 OF FRIENDLY FARMS
(PLAT NO. 9220-9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: GRADING, SEDIMENT & EROSION CONTROL PLAN

DESIGN: DBT | DRAFT: DBT | CHECK: DAM
DATE: AUGUST, 2007 | PROJECT NO. 1585
SCALE: AS SHOWN | SHEET 4 OF 22

AS-BUILT

F-07-051

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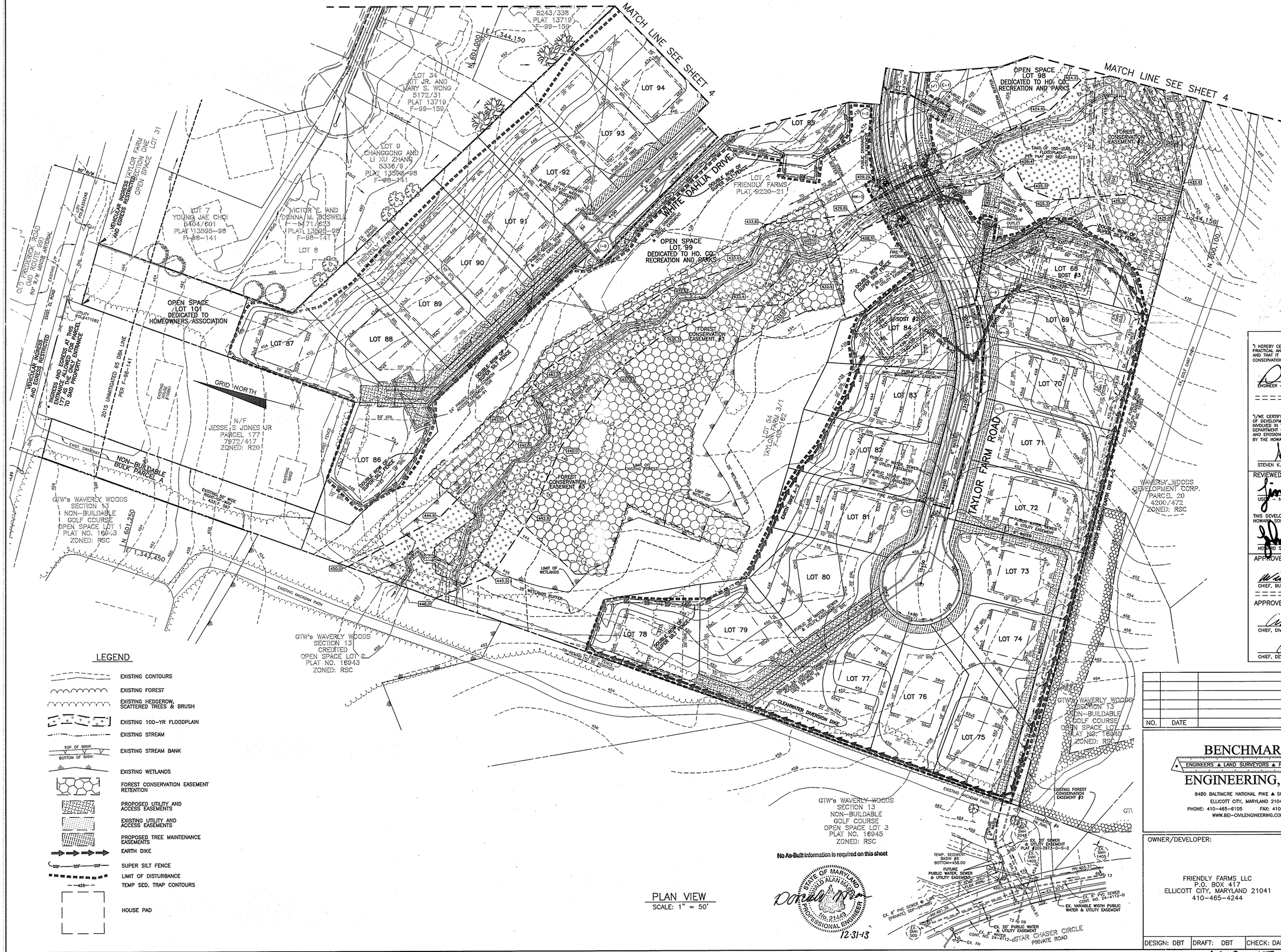

SOST #2

TYPE OF TRAP	ST-II
DRAINAGE AREA	EXIST = 0.6 AC. PROP. = 2.0 AC.
STORAGE REQUIRED (WET & DRY)	WET=3600 CF DRY=3600 CF
STORAGE PROVIDED (WET & DRY)	WET=5268 CF ELEV=436.00 DRY=5444 CF ELEV=438.00
WEIR LENGTH	10'
EMBANKMENT ELEV.	439.00 (4' WIDE)
WIER CREST ELEV.	438.00
CLEANOUT ELEV.	434.20
BOTTOM ELEV.	433.00
BOTTOM DIMENSIONS	50' x 25'

SOST #3

TYPE OF TRAP	ST-II
DRAINAGE AREA	EXIST = 1.5 AC. PROP. = 2.3 AC.
STORAGE REQUIRED (WET & DRY)	WET=4140 CF DRY=4140 CF
STORAGE PROVIDED (WET & DRY)	WET=6780 CF ELEV=428.00 DRY=6632 CF ELEV=430.00
WEIR LENGTH	10'
EMBANKMENT ELEV.	431.00 (4' WIDE)
WIER CREST ELEV.	430.00
CLEANOUT ELEV.	426.08
BOTTOM ELEV.	425.00
BOTTOM DIMENSIONS	50' x 34'

LEGEND

- EXISTING CONTOURS
- EXISTING FOREST
- EXISTING HEDGEROW, SCATTERED TREES & BRUSH
- EXISTING 100-YR FLOODPLAIN
- EXISTING STREAM
- EXISTING STREAM BANK (TOP OF BANK / BOTTOM OF BANK)
- EXISTING WETLANDS
- FOREST CONSERVATION EASEMENT RETENTION
- PROPOSED UTILITY AND ACCESS EASEMENTS
- EXISTING UTILITY AND ACCESS EASEMENTS
- PROPOSED TREE MAINTENANCE EASEMENTS
- EARTH DIKE
- SSF — SSF — SSF — SUPER SILT FENCE
- LIMIT OF DISTURBANCE
- 426 — TEMP SED. TRAP CONTOURS
- HOUSE PAD

PLAN VIEW
SCALE: 1" = 50'

ENGINEER'S CERTIFICATE

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

ENGINEER - DONALD A. MASON, P.E. # 21443 — DATE 8/21/07

DEVELOPER'S CERTIFICATE

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

STEVEN K. BREEDEN — DATE 8/21/07 — JAMES R. SCHULTE — DATE 8/21/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA - NATURAL RESOURCES CONSERVATION SERVICE — DATE 8/29/07

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

HOWARD SCD — DATE 8/29/07

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 9-7-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT CRH — DATE 9/5/07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/12/07

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
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PHONE: 410-465-6105 FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

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. 21443, Expiration Date: 12-31-2014

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — REGISTERED PROFESSIONAL ENGINEER — 8/21/07

OWNER/DEVELOPER:

FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 2 OF FRIENDLY FARMS (PLAT NO. 9220-9221)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: GRADING, SEDIMENT & EROSION CONTROL PLAN

DATE: AUGUST, 2007 — PROJECT NO. 1585

DESIGN: DBT — DRAFT: DBT — CHECK: DAM — SCALE: AS SHOWN — SHEET 5 OF 22

AS-BUILT

F-07-051

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SEDIMENT CONTROL NOTES

1. A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION, (313–1850).
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 SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL", REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDINGS (SEC. 51) SOD (SEC. 54), TEMPORARY SEEDING (SEC. 50) AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
6. 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.
7. SITE ANALYSIS:

TOTAL AREA OF SITE	23.3	ACRES
AREA DISTURBED	13.9	ACRES
AREA TO BE ROOFED OR PAVED	4.4	ACRES
AREA TO BE VEGETATIVELY STABILIZED	9.5	ACRES
TOTAL CUT	21,073	CY
TOTAL FILL	32,159	CY
OFFSITE WASTE AREA LOCATION	N/A	

8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN BE BACK FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

TEMPORARY SEEDBED PREPARATIONS

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT–TERM VEGETATIVE COVER IS NEEDED.

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

SOIL AMENDMENTS: APPLY 600 LBS PER ACRE 10–10–10 FERTILIZER (14 LBS/1000 SQ FT).

SEEDING: FOR PERIOD MARCH 1 THROUGH APRIL 30 AND FROM AUGUST 15 THROUGH NOVEMBER 15, SEED WITH 2–1/2 BUSHELS PER ACRE OF ANNUAL RYE (3.2 LBS/1000 SQ FT). FOR THE PERIOD MAY 1 THROUGH AUGUST 14, SEED WITH 3 LBS PER ACRE OF WEEPING LOVEGRASS (.07 LBS/1000 SQ FT). FOR THE PERIOD NOVEMBER 16 THROUGH FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

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

REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT COVERED.

PERMANENT SEEDBED PREPARATIONS

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

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

1. PREFERRED – APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ FT) AND 600 LBS PER ACRE 10–10–10 FERTILIZER (14 LBS/1000 SQ FT) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS PER ACRE 30–0–0– UREAFORM FERTILIZER (9 LBS/1000 SQ FT).
2. ACCEPTABLE – APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ FT) AND 1000 LBS PER ACRE 10–10–10 FERTILIZER (23 LBS/1000 SQ FT) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.

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

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

MAINTENANCE: INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

TOPSOIL SPECIFICATIONS

I. Topsoil salvaged from the existing site may be used provided that it meets that standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA–SCS in cooperation with Maryland Agricultural Experimental Station.

II. Topsoil Specifications – Soil to be used as topsoil must meet the following:

i. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting texture subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1–1/2" in diameter.

ii. Topsoil must be free of plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nutsedge, poison ivy, thistle, or others as specified.

iii. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4–8 tons/acre (200–400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

III. For sites having disturbed areas under 5 acres:

i. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization – Section I – Vegetative Stabilization Methods and Materials.

IV. For sites having disturbed areas over 5 acres:

i. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:

a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.

b. Organic content or topsoil shall be not less than 1.5 percent by weight.

c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.

d. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto–toxic materials.

Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

ii. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization – Section I – Vegetative Stabilization Methods and Materials.

V. Topsoil Application

i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, grade stabilization structures, earth dikes, slope silt fence and sediment traps and basins.

ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" – 8" higher in elevation.

iii. Topsoil shall be uniformly distributed in a 4" – 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.

iv. Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

VI. Alternative for Permanent Seeding – Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:

i. Composted Sludge Material for use as a soil conditioner for sites having distributed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following requirements:

a. Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.

b. Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a pH of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.

c. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.

iv. Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1,000 square feet, and 1/3 the normal lime application rate.

References: Guidelines Specifications, Soil Preparation and Sodding. MD–VA, Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes, Revised 1973.

30.0 DUST CONTROL

Definition

Controlling dust blowing and movement on construction sites and roads.

Purpose

To prevent blowing and movement of dust from exposed soil surfaces, reduce on and off–site damage, health hazards, and improve traffic safety.

Conditions Where Practice Applies

This practice is applicable to areas subject to dust blowing and movement where on and off–site damage is likely without treatment.

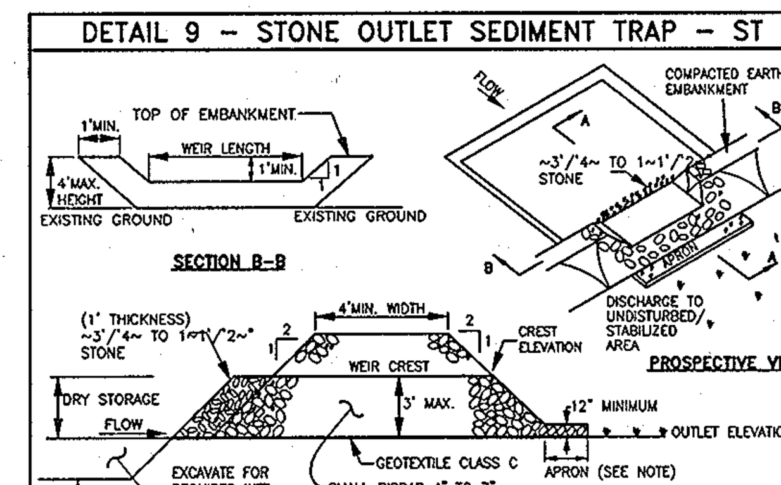
Specifications

Temporary Methods
1. Mulches – See standards for vegetative stabilization with mulches only. Mulch should be crimped or tracked to prevent blowing.
2. Vegetative Cover – See standards for temporary vegetative cover.
3. Tillage – To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel–type plows spaced about 12" apart, spring–toothed harrows, and similiar plows are examples of equipment which may produce the desired effect.
4. Irrigation – This is generally done as an emergency treatment. Site is sprinkled with water until the surface is moist. Repeat as needed. At no time should the site be irrigated to the point that runoff begins to flow.
5. Barriers – Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similiar material can be used to control air currents and soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 10 times their height are effective in controlling soil blowing.
6. Calcium Chloride – Apply at rates that will keep surface moist. May need retreatment.

Permanent Methods
1. Permanent Vegetation – See standards for permanent vegetative cover, and permanent stabilization with sod. Existing trees or large shrubs may afford valuable protection if left in place.
2. Topsoiling – Covering with less erosive soil materials. See standards for topsoiling.
3. Stone – Cover surface with crushed stone or coarse gravel.

References
1. Agriculture Handbook 346. Wind Erosion Forces in the United States and Their Use in Predicting Soil Loss.
2. Agriculture Information Bulletin 354. How to Control Wind Erosion, USDA–ARS.

DETAIL 9 – STONE OUTLET SEDIMENT TRAP – ST II



CONSTRUCTION SPECIFICATIONS

1. Area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots and other woody vegetation as well as over–sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
3. All cut and fill slopes shall be 2:1 or flatter.
4. The stone used in the outlet shall be small rip–rap 4" to 7" in size with a 1' thick layer of 3/4" to 1 1/2" washed aggregate placed on the upstream face of the outlet. Stone facing shall be an necessary to prevent clogging. Geotextile Class C may be substituted for the stone facing by placing it on the inside face of the stone outlet.
5. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to one half of the wet storage depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.

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STONE OUTLET SEDIMENT TRAP – ST II

CONSTRUCTION SPECIFICATIONS

6. The structure shall be inspected periodically and after each rain and repairs made as needed.
7. Construction of traps shall be carried out in such a manner that sediment pollution is abated. Once constructed, the top and outside face of the embankment shall be stabilized with seed and mulch. Points of concentration inflow shall be protected in accordance with grade stabilization structure criteria. The remainder of the interior slopes should be stabilized (one time) with seed and mulch upon trap completion and monitored and maintained erosion free during the life of the trap.
8. The Structure shall be dewatered by approved methods, removed and the area stabilized when the drainage area has been properly stabilized.
9. Refer to Section D for specifications concerning trap dewatering.
10. Minimum trap depth shall be measured from the weir elevation.
11. The elevation of the top if any dike directing water into the trap must equal or exceed the elevation of the trap embankment.
12. Geotextile Class C shall be placed over the bottom and sides of the outlet channel prior to the placement of stone. Sections of filter cloth must overlap at least 1' with the section nearest the entrance placed on top. The filter cloth shall be embedded at least 6" into existing ground at the entrance of the outlet channel.
13. Outlet – An outlet shall be provided, including a means of conveying the discharge in an erosion free manner to an existing stable channel.

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SEQUENCE OF CONSTRUCTION

NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF CONSTRUCTION

1. OBTAIN GRADING PERMIT. (DAY 1)
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE, TEMPORARY ACCESS BRIDGE, TREE PROTECTION FENCES, SUPER SILT FENCES, AND TEMPORARY CLEANWATER DIVERSION DIKES. (DAY 2–12)
3. INSTALL ALL 3 STONE OUTLET SEDIMENT TRAPS (DAY 13–60)
4. INSTALL EARTH DIKES AND ANY REMAINING SEDIMENT CONTROL DEVICES. (DAY 61–63)
5. REMOVE TEMPORARY ACCES BRIDGE. INSTALL CON/SPAN BRIDGE. (DAY 64–69)
5. UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, BRING ROAD BEDS TO SUBGRADE AND STABILIZE SLOPES IN ACCORDANCE WITH TEMPORARY SEEDBED NOTES. UTILIZE DUST CONTROL METHODS. NO MORE THAN 20 AC. MAY BE UNSTABILIZED AT ANY TIME. (DAY 70–81)
6. UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, INSTALL STORM DRAINS, WATER MAINS, SEWER MAINS AND SWALES. (DAY 82–112)
7. PAVE ROADWAYS. (DAY 113–128)
8. COMPLETE MASS GRADING OF SITE AND STABLIZE DISTURBED AREAS IN ACCORDANCE WITH THE PERMANENT SEEDBED NOTES. (DAY 129–144)
9. UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT CONTROL DEVICES, AND STABILIZED DISTURBED AREAS IN ACCORDANCE WITH THE PERMANENT SEEDBED NOTES. (DAY 154–161)

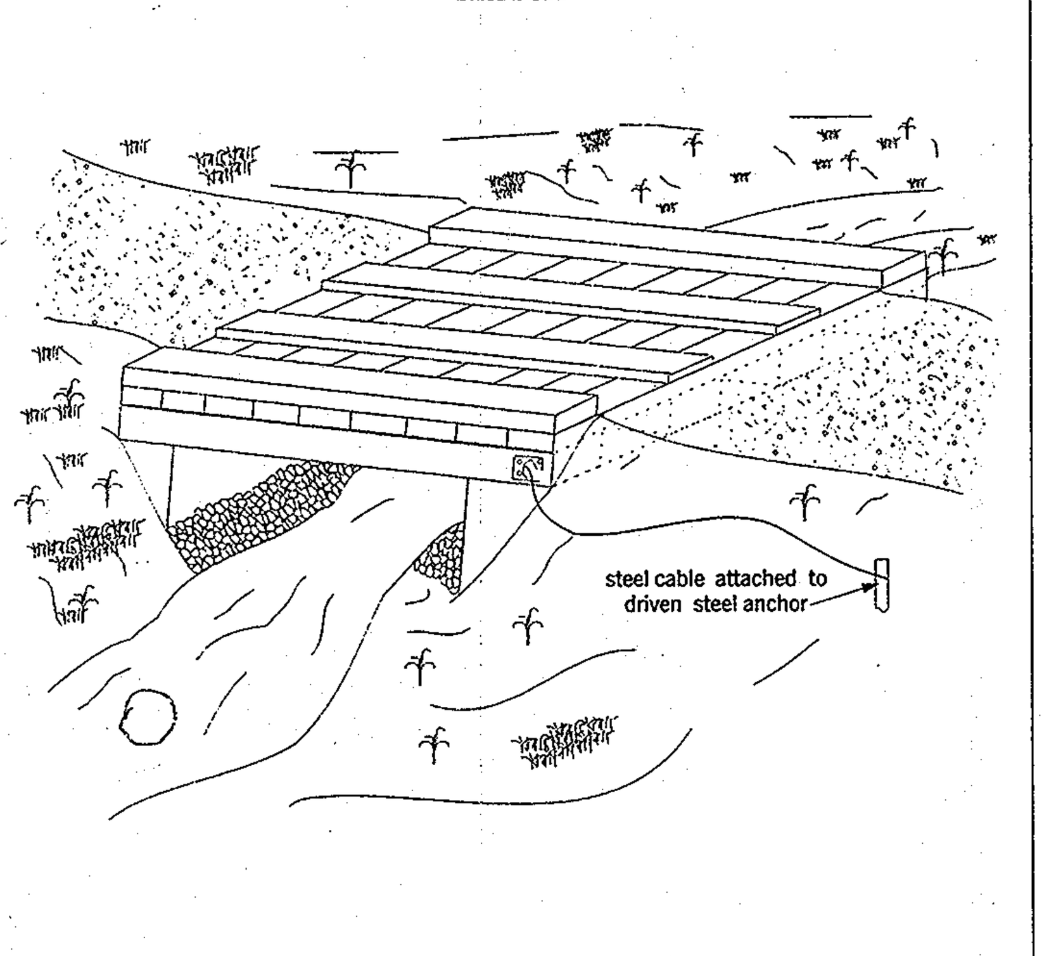
No As-Built information is required on this sheet

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. 21443 , Expiration Date: 12-21-14

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER 12-31-13

Maryland's Guidelines To Waterway Construction
DETAIL 4.8: TEMPORARY ACCESS BRIDGE

SKETCH



STREAM CROSSINGS	PAGE 4.8 – 3	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

MGWC 4.8: TEMPORARY ACCESS BRIDGE

Temporary stream crossing intended for minimum corridor disturbance

DESCRIPTION

A temporary access bridge is a stream crossing made of wood, metal, or other materials designed to limit the amount of disturbance to the stream banks and bed.

EFFECTIVE USES & LIMITATIONS

Temporary access bridges are the preferred method of waterway crossing since they typically cause the least disturbance to the waterway bed and banks, pose the least chance for interference with fish migration, and can be quickly removed and reused.

MATERIAL SPECIFICATIONS

- *Stringers*: Stringers should either be logs, sawn timber, prestressed concrete beams, metal beams, or other approved materials.
- *Deck Materials*: Deck materials should be of sufficient strength to support the anticipated load.

CONSTRUCTION SEQUENCE

All erosion and sediment control devices, including stream diversions, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Dewatering basins should be built as needed and swales or ditches should be used to prevent surface drainage from entering the stream via the bridge crossing. (See the *1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control*.) The proposed construction, maintenance, and removal sequence is as follows:

1. Abutments should be placed parallel to, and on, stable banks such that the structure is at or above bankfull depth to prevent the entrapment of floating materials and debris.
2. Temporary access bridges should be constructed to span the entire channel. If the bankfull channel width exceeds 8 feet (2.5 meters), then a footing, pier, or other bridge support may be constructed within the waterway. No support will be permitted within the channel for waterways less than 8 feet wide. One additional bridge support will be permitted for each additional 8-foot width of the channel.
3. All decking members should be placed perpendicularly to the stringers, butted tightly, and securely fastened to the stringers. Decking materials must be butted tightly to prevent any soil material tracked onto the bridge from falling into the waterway.
4. Although run planks are optional, they may be necessary to properly distribute loads. One run plank should be provided for each track of the equipment wheels and should be securely fastened to the length of the span.
5. Curbs or fenders may be installed along the outer sides of the deck to provide additional safety.
6. Bridges should be securely anchored at one end using steel cable or chain to prevent the bridge from floating downstream and possibly causing an obstruction to the flow. Anchoring at only one end will prevent channel obstruction in the event that flood waters float the bridge. Acceptable anchors are large trees, boulders, or driven steel anchors.

STREAM CROSSINGS — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

PAGE 4.8 - 1

MGWC 4.8: TEMPORARY ACCESS BRIDGE

7. All areas disturbed during installation should be stabilized within 14 calendar days in accordance with a revegetation plan approved by the WMA.
8. Periodic inspection should be performed by the user to ensure that the bridge, streambed, and stream banks are maintained and not damaged.
9. Maintenance should be performed as needed to ensure that the structure complies with all standards and specifications. This should include the removal of trapped sediment and debris which should then be disposed of and stabilized outside the floodplain.
10. When the temporary bridge is no longer needed, all structures including abutments and other bridging materials should be removed within 14 calendar days. In all cases, the bridge materials should be removed within 1 year of installation. Removal of the bridge and clean-up of the area, including protection and stabilization of disturbed stream banks, should be accomplished without the use of construction equipment in the waterway.

STREAM CROSSINGS — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

PAGE 4.8 - 2

ENGINEER'S CERTIFICATE

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

ENGINEER – DONALD A. MASON, P.E. # 21443 — DATE 6/29/07

DEVELOPER'S CERTIFICATE

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

STEVEN K. BREEDEN — DATE 6/28/07 — JAMES R. MOXLEY III — DATE 6/28/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

USDA – NATURAL RESOURCES CONSERVATION SERVICE — DATE 7/17/07

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

HOWARD SCD — DATE 7/17/07

APPROVED: DEPARTMENT OF PUBLIC WORKS

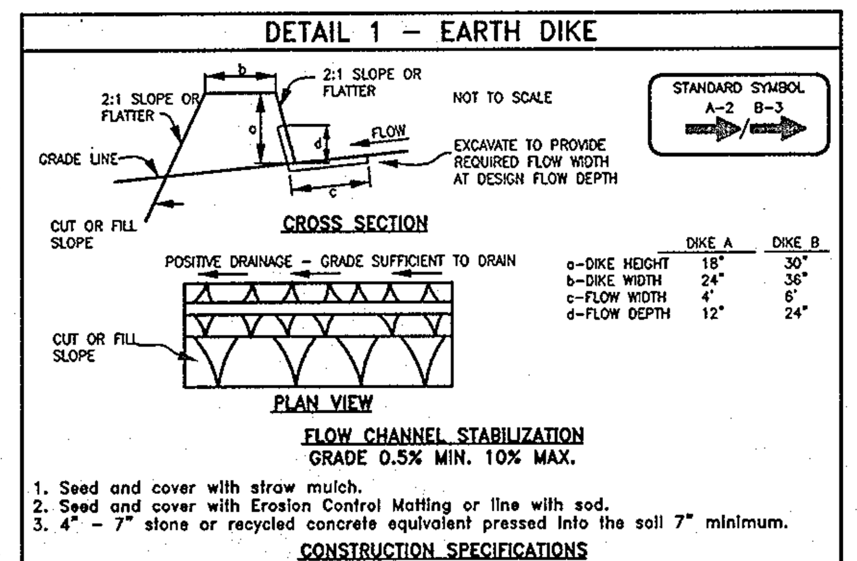
CHIEF, BUREAU OF HIGHWAYS — DATE 7-20-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/18/07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/24/07

DETAIL 1 – EARTH DIKE



	DIKE A	DIKE B
a–DIKE HEIGHT	18"	30"
b–DIKE WIDTH	24"	36"
c–FLOW WIDTH	4'	6'
d–FLOW DEPTH	12"	24"

FLOW CHANNEL STABILIZATION
GRADE 0.5% MIN. 10% MAX.

1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or line with sod.
3. 4" – 7" stone or recycled concrete equivalent pressed into the soil 7" minimum.

CONSTRUCTION SPECIFICATIONS

1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non–erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectional material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fill shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
8. Inspection and maintenance must be provided periodically and after each rain event.

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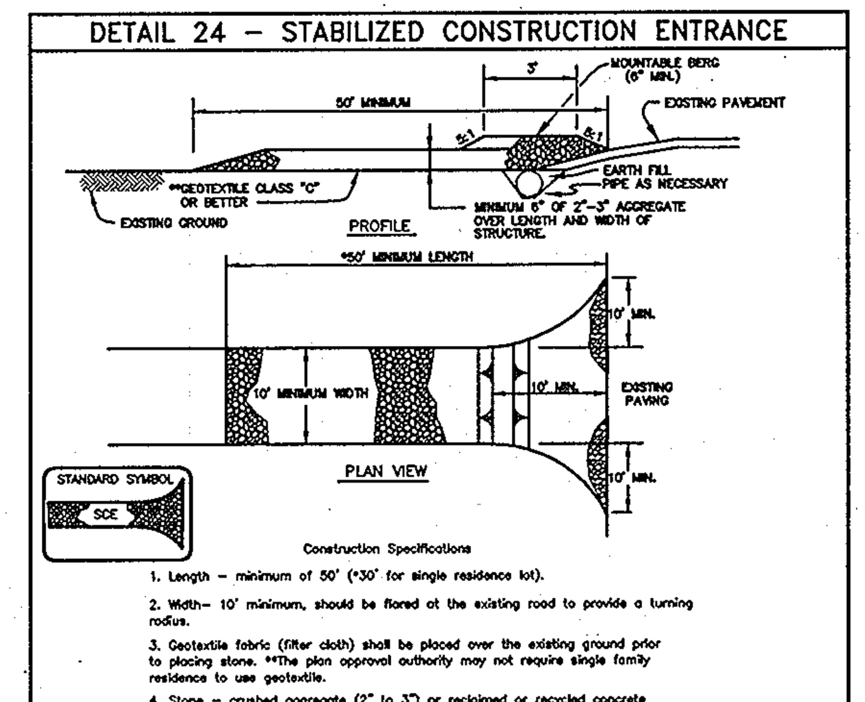
DETAIL 24 – STABILIZED CONSTRUCTION ENTRANCE

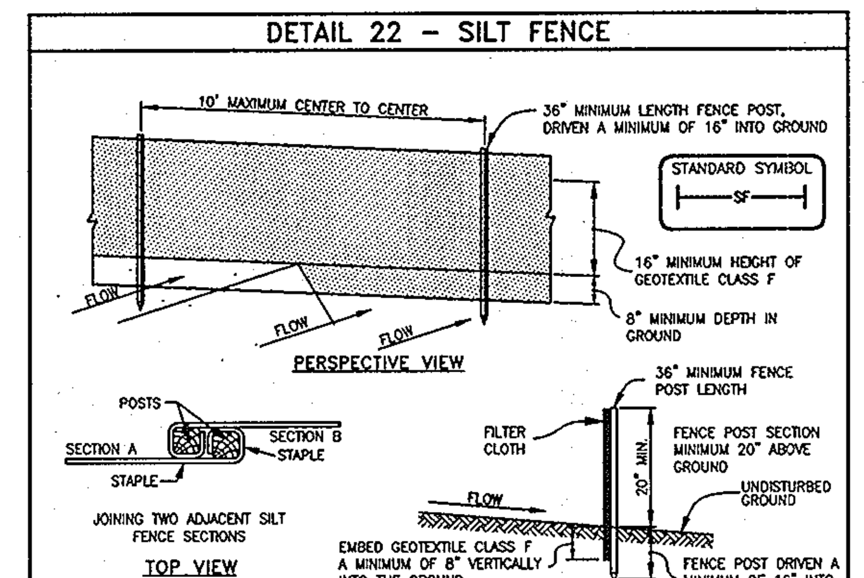


Construction Specifications

1. Length – minimum of 50' (*30' for single residence lot).
2. Width– 10' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residence to use geotextile.
4. Stone – crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
5. Surface Water – all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berg with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
6. Location – A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F – 17 – 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 22 – SILT FENCE



CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

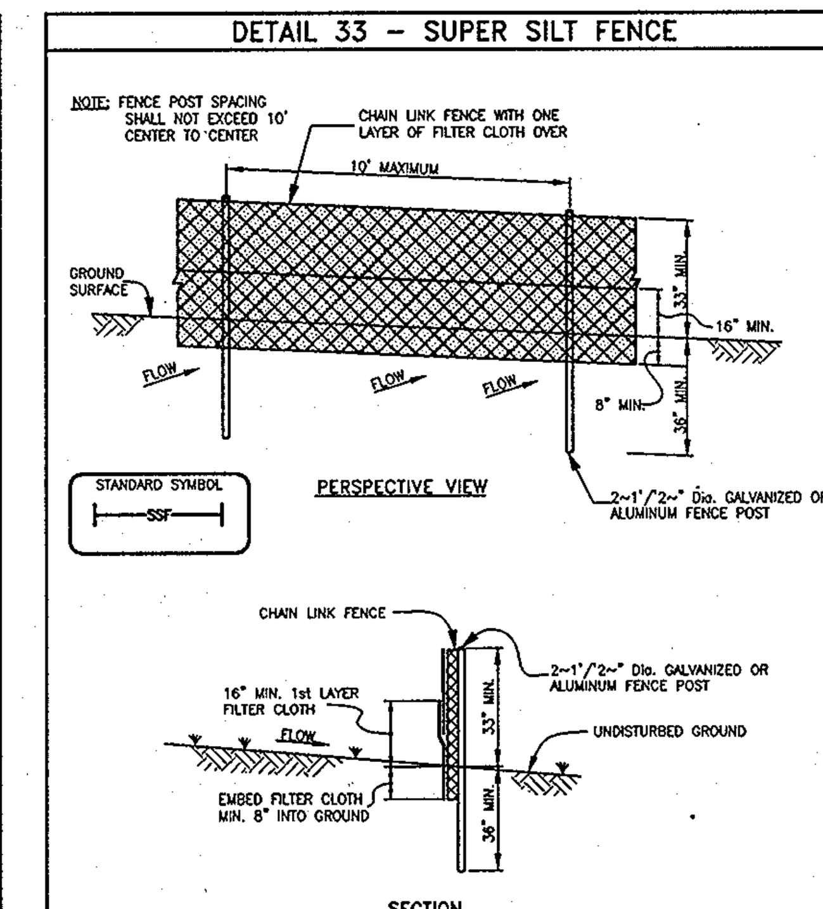
1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing not less than 1.00 pond per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid–section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft / minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E – 15 – 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 33 – SUPER SILT FENCE



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H – 26 – 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

SUPER SILT FENCE

CONSTRUCTION SPECIFICATIONS

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
4. Filter cloth shall be embedded a minimum of 8" into the ground.
5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height
7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft /minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

SUPER SILT FENCE DESIGN CRITERIA

Slope	Slope Steepness	Slope Length (maximum)	Silt Fence Length (maximum)
0 – 10%	0 – 10:1	Unlimited	Unlimited
10 – 20%	10:1 – 5:1	200 feet	1,500 feet
20 – 33%	5:1 – 3:1	100 feet	1,000 feet
33 – 50%	3:1 – 2:1	100 feet	500 feet
50% +	2:1 +	50 feet	250 feet

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E – 26 – 3A	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410–465–6105 FAX: 410–465–6644
WWW.BEI–CIVILENGINEERING.COM

STATE OF MARYLAND DONALD ALAN MASON No. 21443 REGISTERED PROFESSIONAL ENGINEER 6/29/07

OWNER/DEVELOPER:
FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410–465–4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON–BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 2 OF FRIENDLY FARMS (PLAT NO. 9220–9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R–20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: SEDIMENT AND EROSION CONTROL NOTES AND DETAILS

DATE:	JULY, 2007	PROJECT NO.	1585
SCALE:	AS SHOWN	SHEET 6 OF 22	

DESIGN: DBT | DRAFT: DBT | CHECK: DAM

AS-BUILT

F–07–051

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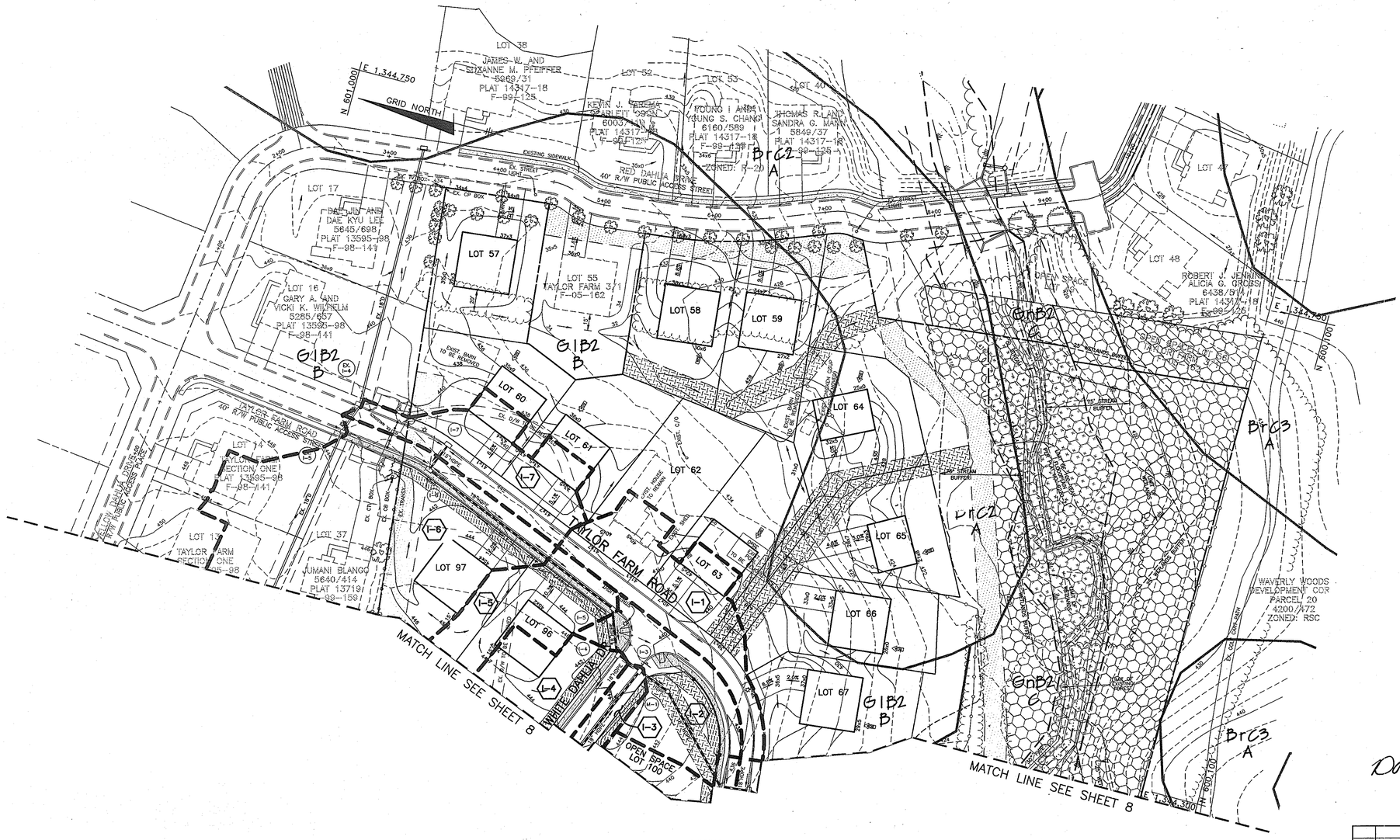

PLAN VIEW
SCALE: 1" = 50'

LEGEND

- EXISTING CONTOURS
- EXISTING FOREST
- EXISTING HEDGEROW, SCATTERED TREES & BRUSH
- EXISTING 100-YR FLOODPLAIN
- EXISTING STREAM
- EXISTING STREAM BANK (TOP OF BANK / BOTTOM OF BANK)
- EXISTING WETLANDS
- PROPOSED UTILITY AND ACCESS EASEMENTS
- EXISTING UTILITY AND ACCESS EASEMENTS
- PROPOSED TREE MAINTENANCE EASEMENTS
- FOREST CONSERVATION EASEMENT
- SOILS DELINEATION LINE
- SOILS TYPE (GnB2 C)
- DRAINAGE AREA DIVIDE
- DRAINAGE AREA DESIGNATION (I-4)

STATE OF MARYLAND — DONALD ALAN MASON — No. 21419 — PROFESSIONAL ENGINEER
12-31-13

No As-Built information is required on this sheet

STORM DRAIN DATA

INLET NO.	AREA (AC)	'C' FACTOR	SOIL CLASS	ZONING	% IMPERVIOUS
I-1	0.48	0.45	B,C	RC-20	50.0
I-2	0.40	0.60	B,C	RC-20	63.5
I-3	0.10	0.51	B	RC-20	50.0
I-4	0.37	0.43	B	RC-20	53.1
I-5	0.41	0.35	B	RC-20	44.0
I-6	1.80	0.30	B	RC-20	35.2
I-7	0.26	0.40	B	RC-20	46.5
I-8	1.09	0.40	B	RC-20	49.9
I-9	0.20	0.43	B	RC-20	53.5
I-10	0.36	0.46	B	RC-20	56.9
I-11	0.61	0.35	B	RC-20	44.1
I-12	1.12	0.31	B	RC-20	35.9
I-13	0.30	0.50	B,C	RC-20	60.7

GRADES SHOWN ON THIS PLAN REPRESENT ULTIMATE GRADING.

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 9-7-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/5/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/12/07

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

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. 21419, Expiration Date: 12-21-2007.
Commissioned 2014
STATE OF MARYLAND — DONALD ALAN MASON — No. 21419 — PROFESSIONAL ENGINEER
8/21/07

OWNER/DEVELOPER:
FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 2 OF FRIENDLY FARMS (PLAT NO. 9220-9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORM DRAIN DRAINAGE AREA MAP

DESIGN: DBT | DRAFT: DBT | CHECK: DAM
DATE: AUGUST, 2007 | PROJECT NO. 1585
SCALE: AS SHOWN | SHEET 7 OF 22

AS-BUILT

F-07-051

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LEGEND

- EXISTING CONTOURS
- EXISTING FOREST
- EXISTING HEDGEROW, SCATTERED TREES & BRUSH
- EXISTING 100-YR FLOODPLAIN
- EXISTING STREAM
- EXISTING STREAM BANK (TOP OF BANK / BOTTOM OF BANK)
- EXISTING WETLANDS
- PROPOSED UTILITY AND ACCESS EASEMENTS
- EXISTING UTILITY AND ACCESS EASEMENTS
- PROPOSED TREE MAINTENANCE EASEMENTS
- FOREST CONSERVATION EASEMENT
- SOILS DELINEATION LINE
- GnB2 C — SOILS TYPE
- DRAINAGE AREA DIVIDE
- I-4 — DRAINAGE AREA DESIGNATION

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER
12-31-13

GRADES SHOWN ON THIS PLAN REPRESENT ULTIMATE GRADING.

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
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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. 21443, Expiration Date: ~~12-21-2008~~ 2014
STATE OF MARYLAND DONALD ALAN MASON REGISTERED 21443 PROFESSIONAL ENGINEER
8/21/07

OWNER/DEVELOPER:
FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
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(PLAT NO. 9220-9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORM DRAIN DRAINAGE AREA MAP

DATE: AUGUST, 2007	PROJECT NO. 1585
SCALE: AS SHOWN	SHEET 8 OF 22

DESIGN: DBT DRAFT: DBT CHECK: DAM

AS-BUILT

F-07-051

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — 9-7-07 DATE
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — 9/18/07 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION — 9/12/07 DATE

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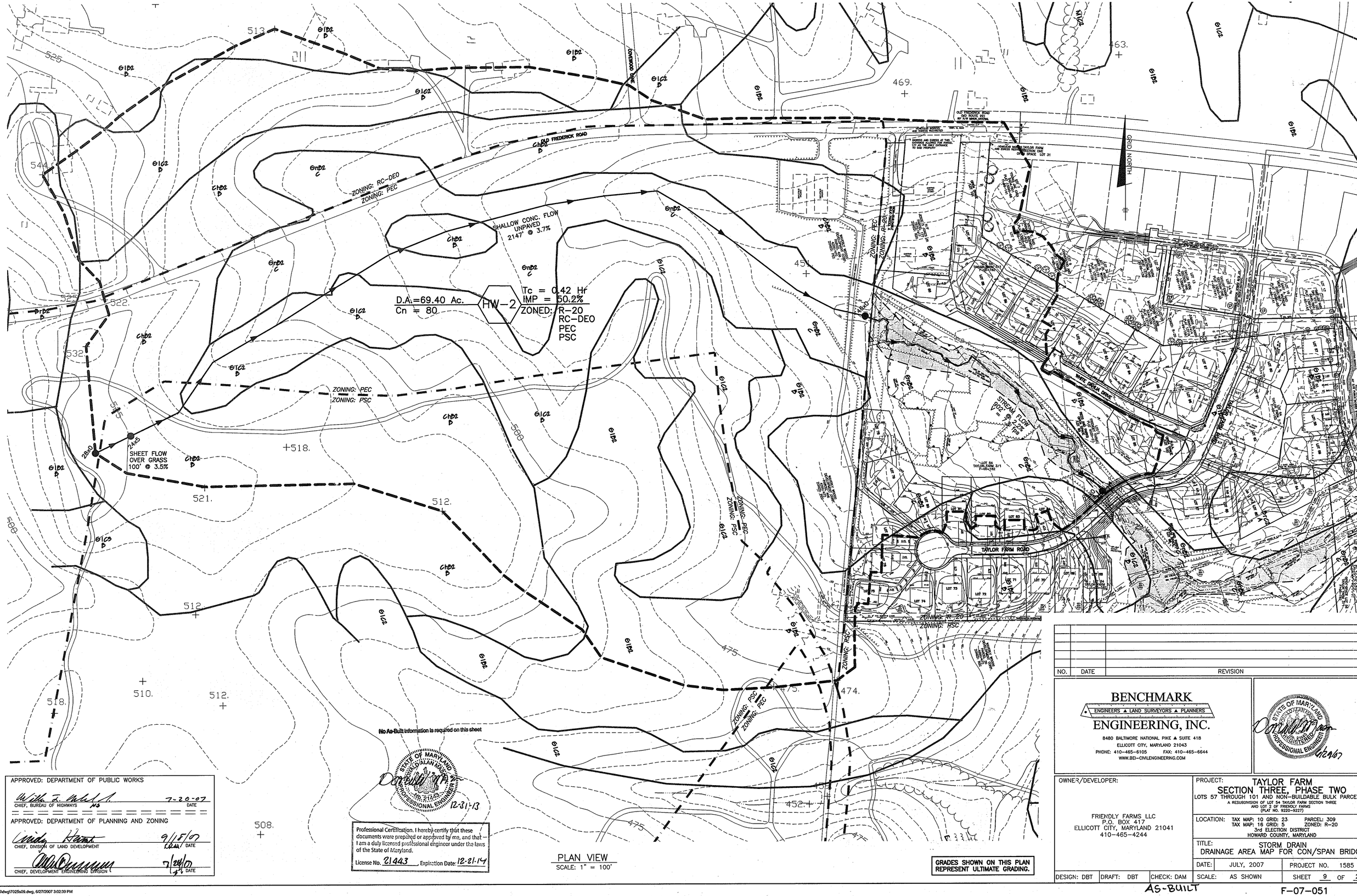

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-20-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/15/07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/24/07

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER — 12-31-13

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. 21443 Expiration Date: 12-21-14

NO.	DATE	REVISION

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STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER — 12/24/07

OWNER/DEVELOPER:

FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 2 OF FRIENDLY FARMS (PLAT NO. 9220-9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORM DRAIN
DRAINAGE AREA MAP FOR CON/SPAN BRIDGE

DESIGN: DBT | DRAFT: DBT | CHECK: DAM

DATE: JULY, 2007 | PROJECT NO. 1585

SCALE: AS SHOWN | SHEET 9 OF 22

AS-BUILT

F-07-051

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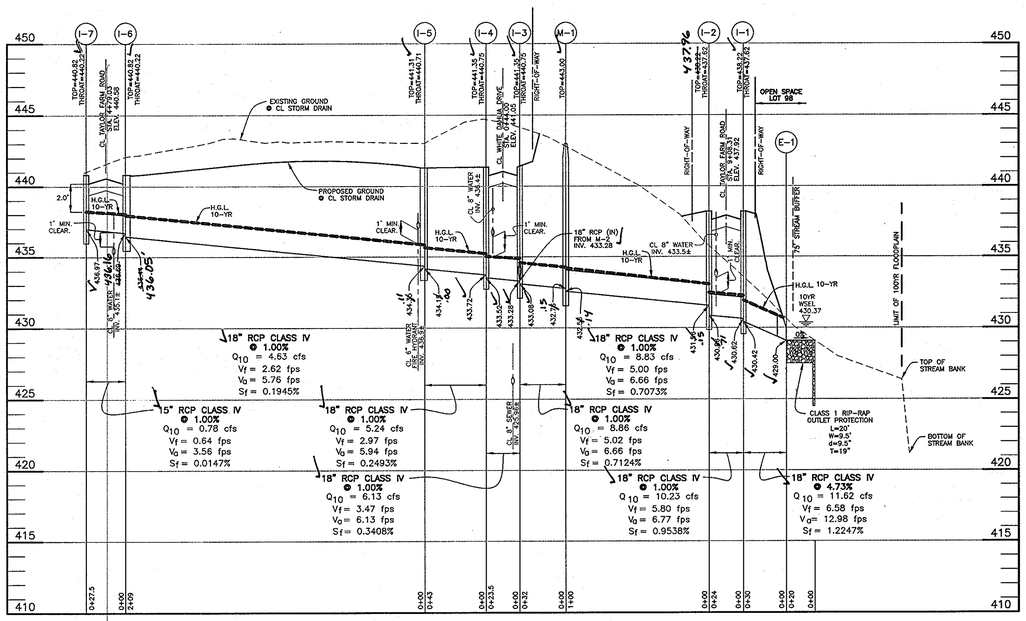


CONSTRUCTION SPECIFICATIONS

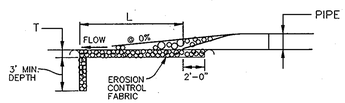
1. THE SUBGRADE FOR THE FILTER, RIP-RAP, OR GABION SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES. ANY FILL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.

2. THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS WHEN INSTALLED RESPECTIVELY IN THE RIP-RAP OR FILTER.

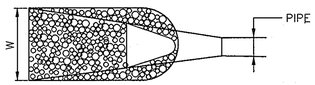
3. GEOTEXTILE CLASS C28 OR BETTER SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE PREPARED BY PLACING ANOTHER PIECE OF GEOTEXTILE FABRIC OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE FABRIC. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE FABRIC SHALL BE A MINIMUM OF ONE FOOT.

4. STONE FOR THE RIP-RAP OR GABION OUTLETS MAY BE PLACED BY EQUIPMENT. THEY SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. THE STONE FOR HE RIP-RAP OR GABION OUTLETS SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. RIP-RAP SHALL BE PLACED IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE FABRIC. HAND PLACEMENT WILL BE REQUIRED TO THE EXTENT NECESSARY TO PREVENT DAMAGE TO THE PERMANENT WORKS.

5. THE STONE SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND. IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.



SECTION



PLAN

STRUCTURE	D-50	LENGTH (L)	WIDTH (W)	THICKNESS (T)	SHA CLASS
E-1	9.5"	20'	9.5'	19"	I
E-2	9.5"	20'	9.5'	19"	I

OUTLET PROTECTION DETAIL
NOT TO SCALE

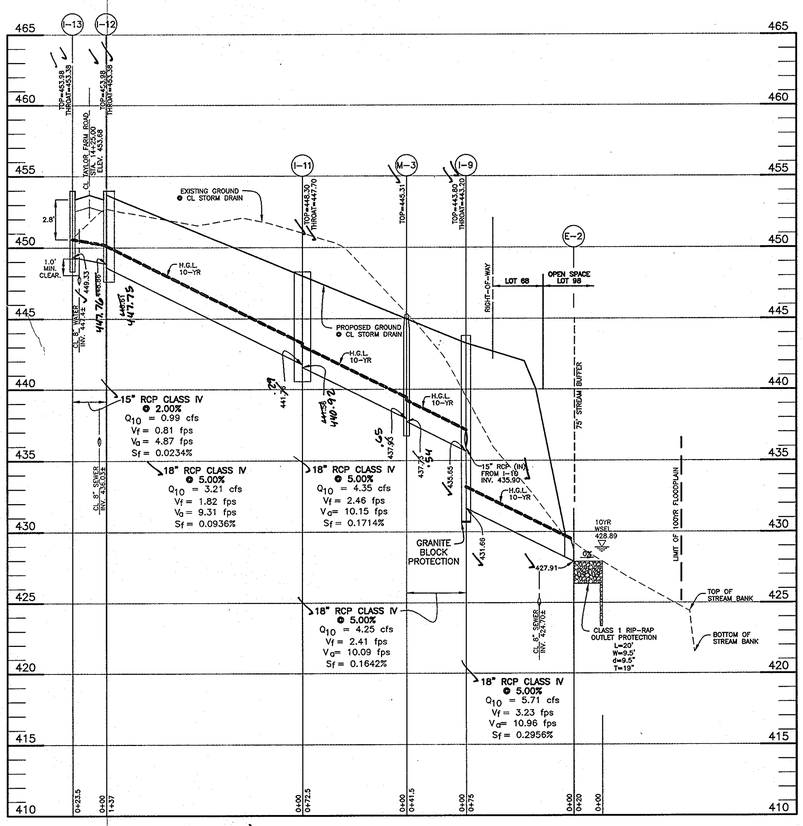
STRUCTURE SCHEDULE

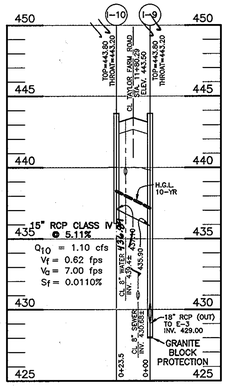
NO.	TYPE	LOCATION	PIPE INV. IN	PIPE INV. OUT	TOP ELEV.	HO. CO. STD.
E-1	18" CONC. END SECT.	N 600463.6275 E 1344201.6810	NA	429.00 ✓	NA	SD - 5.51
E-2	18" CONC. END SECT.	N 600360.2715 E 1344063.7619	NA	427.91 ✓	NA	SD - 5.51
I-1	A-5	CL STA. 9+08.31 OFFSET 10.43' LEFT TAYLOR FARM ROAD	430.62 ✓	430.42 ✓	438.22 ✓	SD - 4.01
I-2	A-5	CL STA. 9+08.31 OFFSET 10.43' RIGHT TAYLOR FARM ROAD	431.36 .15	430.86 .71	438.22 7.96	SD - 4.01
I-3	A-5	CL STA. 0+44.00 OFFSET 10.43' LEFT WHITE DAHLIA DRIVE	433.28 ✓ 433.28 ✓	433.08 ✓	441.35 ✓	SD - 4.01
I-4	A-5	CL STA. 0+44.00 OFFSET 10.43' RIGHT WHITE DAHLIA DRIVE	433.72 ✓	433.52 ✓	441.35 ✓	SD - 4.01
I-5	A-5	CL STA. 6+88.00 OFFSET 12.43' RIGHT TAYLOR FARM ROAD	434.25 .11	434.16 .00	441.31 ✓	SD - 4.01
I-6	A-5	CL STA. 4+79.03 OFFSET 12.47' RIGHT TAYLOR FARM ROAD	436.79 .16	436.74 .35	440.82 ✓	SD - 4.01
I-7	A-5	CL STA. 4+79.03 OFFSET 12.40' LEFT TAYLOR FARM ROAD	NA	436.97 ✓	440.82 ✓	SD - 4.01
I-8	A-5	CL STA. 4+49.17 OFFSET 26.83' LEFT WHITE DAHLIA DRIVE	NA	438.86 2.76	441.85 .85	SD - 4.01
I-9	A-5	CL STA. 11+80.29 OFFSET 10.41' LEFT TAYLOR FARM ROAD	435.90 (15") ✓ 435.65 (18") ✓	431.66 ✓	443.80 ✓	SD - 4.01
I-10	A-5	CL STA. 11+80.29 OFFSET 10.45' RIGHT TAYLOR FARM ROAD	NA	437.16 6.89	443.80 ✓	SD - 4.01
I-11	A-10	CL STA. 12+88.49 OFFSET 10.37' LEFT TAYLOR FARM ROAD	441.76 .29	441.66 0.42	448.30 ✓	SD - 4.02
I-12	A-10	CL STA. 14+25.00 OFFSET 10.43' LEFT TAYLOR FARM ROAD	448.86 7.76	448.81 7.75	453.98 ✓	SD - 4.02
I-13	A-5	CL STA. 14+25.00 OFFSET 10.43' RIGHT TAYLOR FARM ROAD	NA	449.33	453.98	SD - 4.01
M-1	4'-0" MANHOLE	CL STA. 0+44.00 OFFSET 43.75' LEFT WHITE DAHLIA DRIVE	432.76 .15	432.56 .14	443.00 ✓	G - 5.12
M-2	4'-0" MANHOLE	CL STA. 1+99.46 OFFSET 15.00' LEFT WHITE DAHLIA DRIVE	435.52 .27	435.32 .16	445.23 ✓	G - 5.12
M-3	4'-0" MANHOLE	CL STA. 12+19.58 OFFSET 15.00' LEFT TAYLOR FARM ROAD	437.33 .65	437.13 .54	445.31 ✓	G - 5.12
HW-1	SEE SHEETS 14-20	CL STA. 10+29.25 OFFSET 30.00' LEFT TAYLOR FARM ROAD	NA	NA	432.25 6.30	NA
HW-2	SEE SHEETS 14-20	CL STA. 10+29.25 OFFSET 30.00' RIGHT TAYLOR FARM ROAD	NA	NA	432.25 6.32	NA

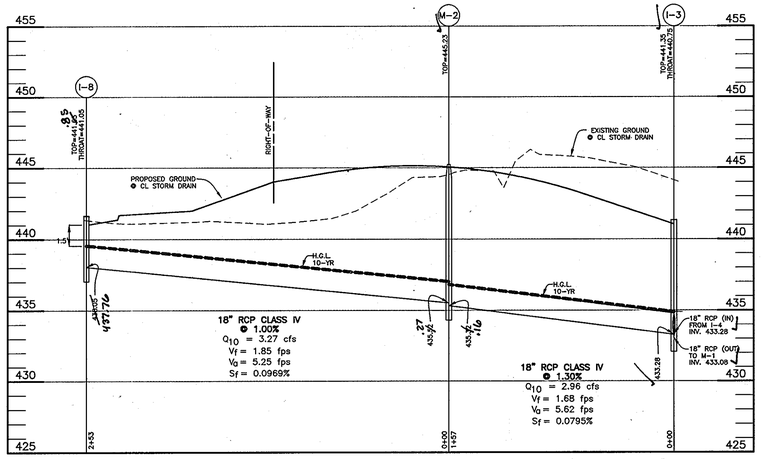
1) STRUCTURE ELEVATION AND LOCATION FOR MANHOLES IS AT THE TOP / CENTER OF RIM.
2) STRUCTURE ELEVATION AND LOCATION FOR INLETS IS AT THE FRONT MIDPOINT OF THE INLET.
3) STRUCTURE ELEVATION AND LOCATION FOR HEADWALLS IS AT THE MIDPOINT OF THE FRONT OF STRUCTURE.
4) STRUCTURE ELEVATION AND LOCATION FOR ENDSECTIONS IS AT THE MIDPOINT OF THE END OF STRUCTURE.
5) PRECAST STRUCTURES MEETING HS-20 LOADING MAY BE USED.

PIPE SCHEDULE

PIPE SIZE	LENGTH	TYPE
15"	74.5'	RCCP CLASS IV
18"	1197.5'	RCCP CLASS IV
42" span x 10' height	60'	ASTM C150 TYPE 1, 2 OR 3







AS-BUILT CERTIFICATION
I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.
Donald Mason, P.E. No. 21443 Date 12-31-13

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER

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. 21443 Expiration Date: 12-21-14

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 7-20-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/18/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/24/07

NO.	DATE	REVISION

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STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER 12/9/07

OWNER/DEVELOPER:
FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 2 OF FRIENDLY FARMS (PLAT NO. 9220-9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORM DRAIN PROFILES

DESIGN: DBT | DRAFT: DBT | CHECK: DAM
DATE: JULY, 2007 | PROJECT NO. 1585
SCALE: AS SHOWN | SHEET 10 OF 22

AS-BUILT

F-07-051

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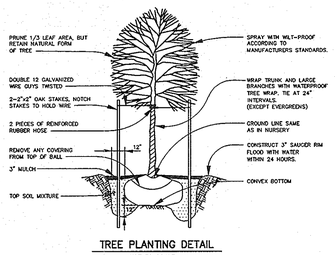
PLAN VIEW
SCALE: 1" = 50'

LANDSCAPE NOTES:

1. TREES SHOULD BE PLANTED A MINIMUM OF 6 FEET FROM THE EDGE OF PAVING AND MUST BE A MINIMUM OF 5 FEET FROM ANY STORM DRAIN.
2. TREES MUST BE PLANTED A MINIMUM OF 5 FEET FROM AN OPEN SPACE ACCESS STRIP AND 10 FEET FROM A DRIVEWAY.
3. SEE TREE PLANTING DETAIL – THIS SHEET.
4. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL.
5. AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWITH LISTED AND APPROVED FOR THIS SITE, SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATIONS.
6. THE OWNER, TENANTS AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
7. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF $20,850.00. ($19,200.00 FOR 64 SHADE TREES, $1,650.00 FOR 11 EVERGREENS)
8. TREE HEIGHTS AT MATURITY SHALL BE 25 FEET MAXIMUM WITHIN THE "GREEN ZONE". TREE HEIGHTS AT MATURITY SHALL BE 40 FEET MAXIMUM WITHIN THE "YELLOW ZONE". IF TREES ARE TO BE PLANTED ON BERMS THE TREE HEIGHTS SHALL BE REDUCED BY THE HEIGHT OF THE BERM AS MEASURED ABOVE MEAN GROUND ELEVATION OF THE UTILITY POLE LINE.

PUBLIC STREET TREE PLANTING LIST				
SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
	56	ACER RUBRUM 'OCTOBER GLORY' (October Glory Red Maple)	2 1/2" –3" cal.	STREET TREES TO BE PROVIDED BY THE DEVELOPER
	19	TILIA CORDATA 'GREENSPIRE' (Greenspire Littleleaf Linden)	2 1/2" –3" cal.	

LANDSCAPE PLANTING LIST				
SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
	49	ACER SACCHARUM 'GREEN MOUNTAIN' (Green Mountain Sugar Maple)	2–1/2" – 3"cal.	SHADE TREES ALONG PERIMETER TO BE PROVIDED BY THE DEVELOPER
	35	PINUS STROBUS (Eastern White Pine)	6' – 8' ht.	EVERGREEN TREES ALONG PERIMETER TO BE PROVIDED BY THE DEVELOPER
	6	ILEX OPACA (American Holly)	5' – 6' ht.	



TREE PLANTING DETAIL
NOT TO SCALE

STREET TREE SCHEDULE			
ROAD NAME	PERIMETER	TREES REQ.	TREES PROV.
TAYLOR FARM ROAD	2235'	56	56
WHITE DAHLIA DRIVE	744'	19	19
TOTAL		75	75

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	ADJ. TO PERIMETER PROPERTY ⟨1⟩	ADJ. TO PERIMETER PROPERTY ⟨2⟩	ADJ. TO PERIMETER PROPERTY ⟨3⟩	ADJ. TO ROADS ⟨4⟩	ADJ. TO PERIMETER PROPERTY ⟨5⟩	ADJ. TO ROADS ⟨6⟩	ADJ. TO ROADS ⟨7⟩	TOTALS
LANDSCAPE TYPE	A 1:60 (SHADE)	A 1:60 (SHADE)	A 1:60 (SHADE)	B 1:50 (SHADE) 1:40 (EVERGREEN)	A 1:60 (SHADE)	B 1:50 (SHADE) 1:40 (EVERGREEN)	B 1:50 (SHADE) 1:40 (EVERGREEN)	
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	211'	2577'	532'	75'	970'	193'	128'	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	YES* 1098'	NO	NO	NO	NO	NO	
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	NO	NO	NO	
NUMBER OF PLANTS REQUIRED	211'	1479'	532'	75'	970'	193'	128'	
SHADE TREES	4	25	9	2	17	4	3	64
EVERGREEN TREES	–	–	–	2	–	5	4	11
OTHER TREES (2:1 SUBSTITUTE)	–	–	–	–	–	–	–	–
SHRUBS	–	–	–	–	–	–	–	–
NUMBER OF PLANTS PROVIDED								
SHADE TREES	0	25	0	0	17	4	3	49
EVERGREEN TREES	8**	–	18**	6**	–	5	4	41
OTHER TREES (2:1 SUBSTITUTE)	–	–	–	–	–	–	–	–
SHRUBS	–	–	–	–	–	–	–	–

*EXISTING WOODS 20' OR GREATER IN WIDTH.
**EVERGREEN TREES SUBSTITUTED AT A 2:1 RATIO

LEGEND

- EXISTING FOREST
- EXISTING HEDGEROW, SCATTERED TREES & BRUSH
- EXISTING 100-YR FLOODPLAIN
- EXISTING STREAM
- EXISTING STREAM BANK (TOP OF BANK / BOTTOM OF BANK)
- EXISTING WETLANDS
- FOREST CONSERVATION EASEMENT
- PROPOSED UTILITY AND ACCESS EASEMENTS
- EXISTING UTILITY AND ACCESS EASEMENTS
- PROPOSED TREE MAINTENANCE EASEMENTS
- ⟨5⟩ PERIMETER LANDSCAPE EDGE
- 358' CREDIT LENGTH OF CREDIT FOR EXISTING WOODS 20' OR GREATER

No As-Built information is required on this sheet

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER
12-31-13

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

STEVEN K. BREEDEN — 8/21/07 DATE
JAMES R. SCHULTE — 8/21/07 DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 9-7-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/5/07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/12/07

NO.	DATE	REVISION

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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 un for the laws of the State of Maryland, License No. 21443, Expiration Date: 12-21-2014

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER
8/21/07

OWNER/DEVELOPER:
FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 2 OF FRIENDLY FARMS (PLAT NO. 9220-9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: PERIMETER LANDSCAPE AND STREET TREE PLAN

DATE: AUGUST, 2007 PROJECT NO. 1585

DESIGN: DBT DRAFT: DBT CHECK: DAM SCALE: AS SHOWN SHEET 11 OF 22

AS-BUILT

F-07-051

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LEGEND

	EXISTING FOREST
	EXISTING HEDGEROW, SCATTERED TREES & BRUSH
	EXISTING 100-YR FLOODPLAIN
	EXISTING STREAM
TOP OF BANK / BOTTOM OF BANK	EXISTING STREAM BANK
	EXISTING WETLANDS
	FORSET CONSERVATION EASEMENT
	PROPOSED UTILITY AND ACCESS EASEMENTS
	EXISTING UTILITY AND ACCESS EASEMENTS
	PROPOSED TREE MAINTENANCE EASEMENTS
(5)	PERIMETER LANDSCAPE EDGE
358' CREDIT	LENGTH OF CREDIT FOR EXISTING WOODS 20' OR GREATER

PLAN VIEW

SCALE: 1" = 50'

No As-Built information is required on this sheet

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER

12-31-13

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

STEVEN K. BREEDEN 8/21/07 DATE — JAMES R. SCHULTE 8/21/07 DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — 9-7-07 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — 9/18/07 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 9/12/07 DATE

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.

ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS

8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

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. 21443, Expiration Date: 12-21-~~2008~~ 2014

8/21/07

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DESIGN: DBT DRAFT: DBT CHECK: DAM

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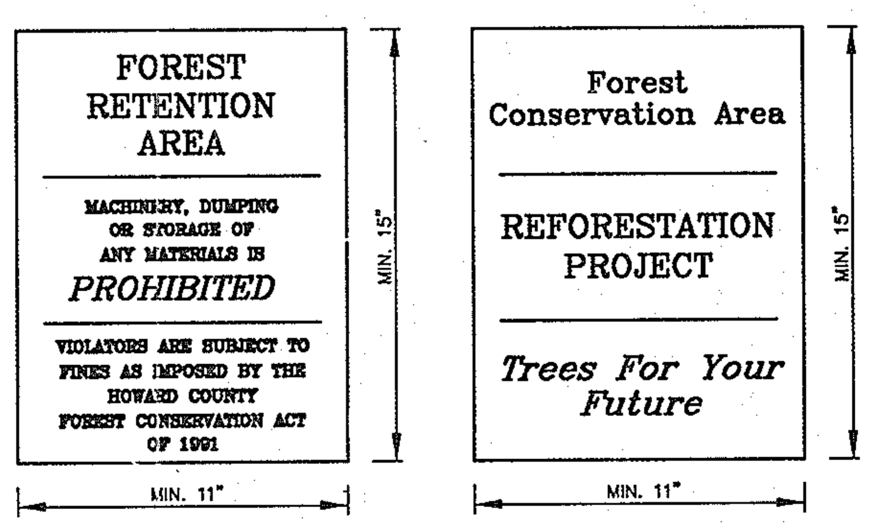
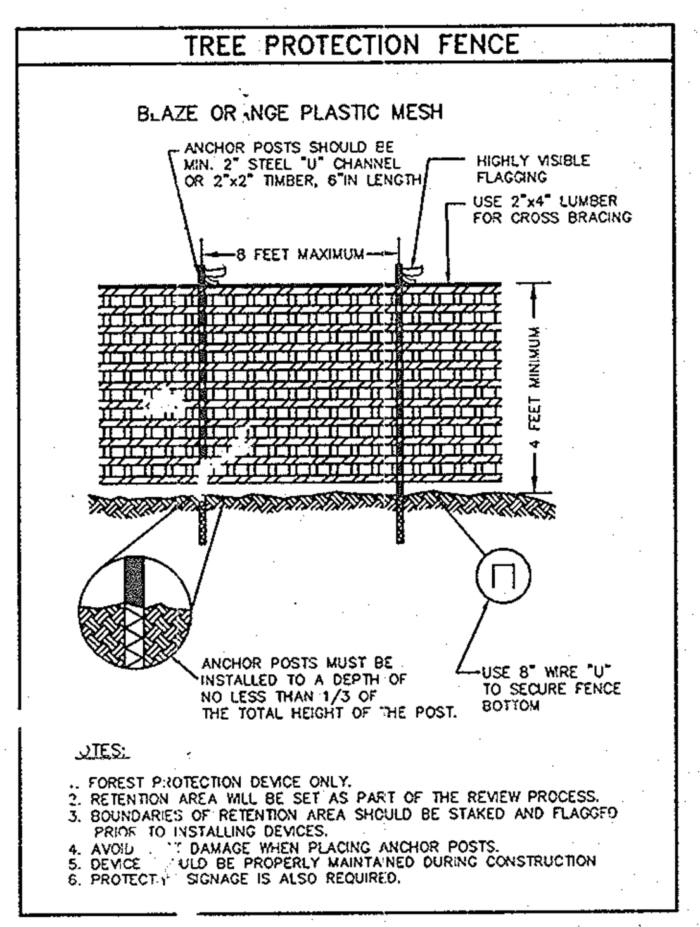
AS-BUILT

F-07-051



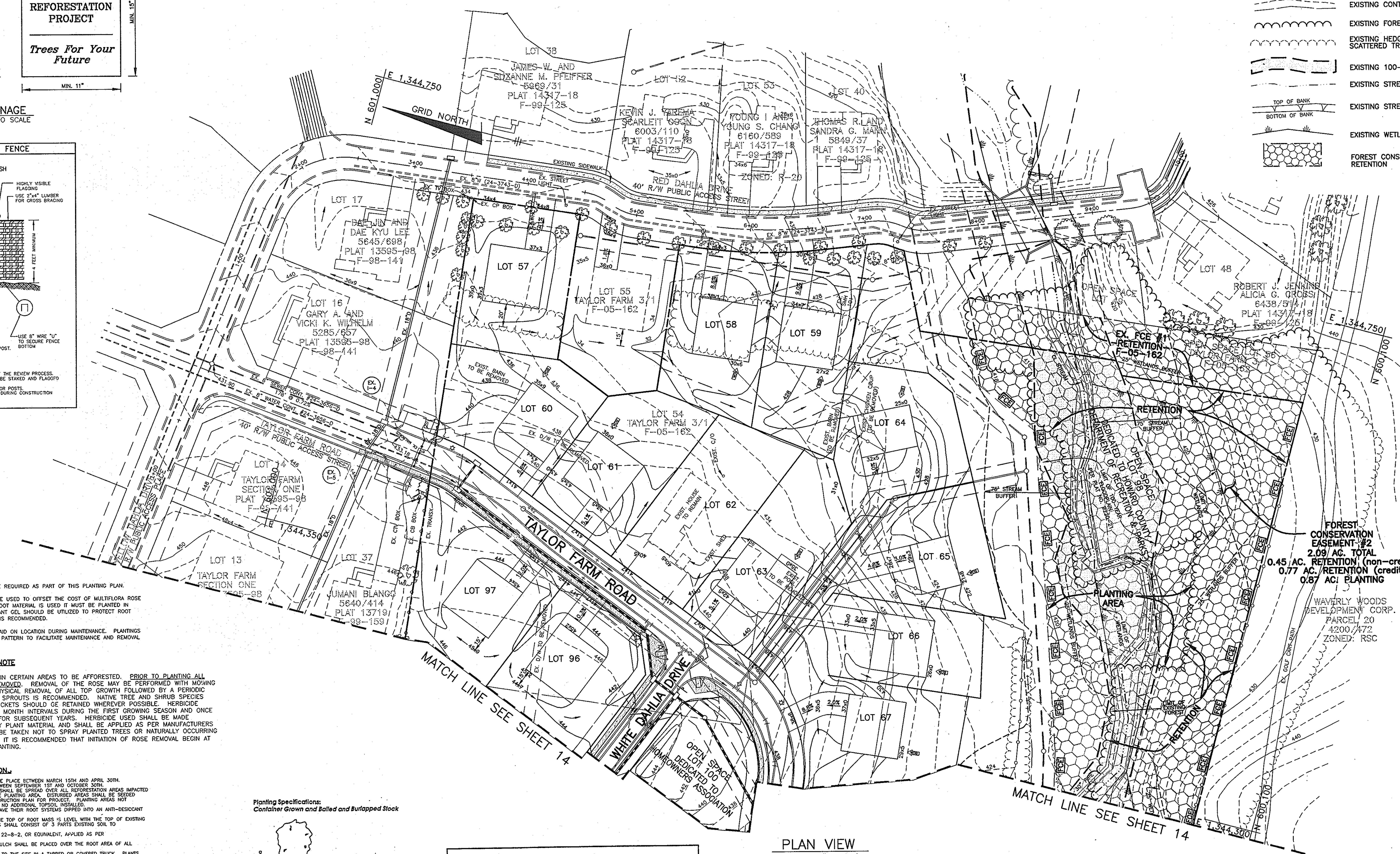
SIGNAGE
NOT TO SCALE

TREE PROTECTION FENCE



LEGEND

- EXISTING CONTOURS
- EXISTING FOREST
- EXISTING HEDGEROW, SCATTERED TREES & BRUSH
- EXISTING 100-YR FLOODPLAIN
- EXISTING STREAM
- EXISTING STREAM BANK (TOP OF BANK / BOTTOM OF BANK)
- EXISTING WETLANDS
- FOREST CONSERVATION EASEMENT RETENTION



PLAN VIEW
SCALE: 1" = 50'

FOREST CONSERVATION WORKSHEET
VERSION 1.0

NET TRACT AREA:								
A.	Total tract area							23.30
B.	Area within 100 year floodplain							2.37
C.	Area to remain in agriculatual production							0.00
D.	Net tract area							20.93
LAND USE CATEGORY: (from table 3.2.1, page 40, Manual)								
	Input the number "1" under the appropriate land use zonin and limit to only one entry.							
	ARA	MDR	IDA	HDR	MPD	CIA		
	0	0	0	1	0	0		
E.	Afforestation Threshold			15	%	x D	=	3.14
F.	Conservation Threshold			20	%	x D	=	4.19
EXISTING FOREST COVER:								
G.	Existing forest cover (excluding floodplain)							1.87 *
H.	Area of forest above afforestation threshold							0.00
I.	Area of forest above conservation threshold							0.00
BREAK EVEN POINT:								
J.	Forest retention above threshold with no mitigation							0.00
K.	Clearing permitted without mitigation							0.00
PROPOSED FOREST CLEARING:								
L.	Total area of forest to be cleared							0.00
M.	Total area of forest to be retained							1.87
PLANTING REQUIREMENTS:								
N.	Reforestation for clearing above conservation threshold							0.00
P.	Reforestation for clearing below conservati n threshold							0.00
Q.	Credit for retention above conservation threshold							0.00
R.	Total reforestation required							0.00
S.	Total afforestation required							1.27
T.	Total reforestation and afforestation required							1.27

* 1.76 AC. ON SITE AND 0.11 AC. CREDITED IN FCE #1 IN TAYLOR FARM SECT. 3 PHASE 1 (F-05-162).

PLANTING NOTES:

1. MULTIF... R. ROSE CONTROL MAY BE REQUIRED AS PART OF THIS PLANTING PLAN.

2. BAREROOT PLANT MATERIAL MAY BE USED TO OFFSET THE COST OF MULTIFLORA ROSE REMOVAL AND MAINTENANCE. IF BAREROOT MATERIAL IS USED IT MUST BE PLANTED IN MARCH – APRIL AND AN ANTI-DESICCANT GEL SHOULD BE UTILIZED TO PROTECT ROOT SYSTEMS. CONTAINER GROWN STOCK IS RECOMMENDED.

3. PLANTS SHOULD BE FLAGGED TO AID ON LOCATION DURING MAINTENANCE. PLANTINGS SHOULD ALSO BE PLANTED IN A GRID PATTERN TO FACILITATE MAINTENANCE AND REMOVAL OF INVASIVE AND EXOTIC SPECIES.

MULTIFLORA ROSE CONTROL NOTE

MULTIFLORA ROSE IS PREVALENT IN CERTAIN AREAS TO BE AFFORESTED. PRIOR TO PLANTING ALL MULTIFLORA ROSE SHOULD BE REMOVED. REMOVAL OF THE ROSE MAY BE PERFORMED WITH MOWING AND HERBICIDE TREATMENTS. PHYSICAL REMOVAL OF ALL TOP GROWTH FOLLOWED BY A PERIODIC HERBICIDE TREATMENT OF STUMP SPROUTS IS RECOMMENDED. NATIVE TREE AND SHRUB SPECIES OCCURRING WITHIN THE ROSE THICKETS SHOULD BE RETAINED WHEREVER POSSIBLE. HERBICIDE TREATMENTS SHALL OCCUR ON 2 MONTH INTERVALS DURING THE FIRST GROWING SEASON AND ONCE EACH IN THE SPRING AND FALL FOR SUBSEQUENT YEARS. HERBICIDE USED SHALL BE MADE SPECIFICALLY TO ADDRESS WOODY PLANT MATERIAL AND SHALL BE APPLIED AS PER MANUFACTURERS SPECIFICATIONS. CARE SHOULD BE TAKEN NOT TO SPRAY PLANTED TREES OR NATURALLY OCCURRING NATIVE TREE/SHRUB SEEDLINGS. IT IS RECOMMENDED THAT INITIATION OF ROSE REMOVAL BEGIN AT LEAST SIX MONTHS PRIOR TO PLANTING.

PLANTING/SOIL SPECIFICATION

1. PLANTING OF NURSERY STOCK SHALL TAKE PLACE BETWEEN MARCH 15TH AND APRIL 30TH. CONTAINER STOCK MAY BE PLANTED BETWEEN SEPTEMBER 1ST AND OCTOBER 30TH.
2. A TWELVE (12) INCH LAYER OF TOPSOIL SHALL BE SPREAD OVER ALL REFORESTATION AREAS IMPACTED BY SITE GRADING TO ASSURE A SUITABLE PLANTING AREA. DISTURBED AREAS SHALL BE SEEDED AND STABILIZED AS PER GENERAL CONSTRUCTION PLAN FOR PROJECT. PLANTING AREAS NOT IMPACTED BY SITE GRADING SHALL HAVE NO ADDITIONAL TOPSOIL INSTALLED.
3. ALL BAREROOT PLANTING STOCK SHALL HAVE THEIR ROOT SYSTEMS DIPPED INTO AN ANTI-DESICCANT GEL PRIOR TO PLANTING.
4. PLANTS SHALL BE INSTALLED SO THAT THE TOP OF ROOT MASS IS LEVEL WITH THE TOP OF EXISTING GRADE. BACKFILL IN THE PLANTING PITS SHALL CONSIST OF 3 PARTS EXISTING SOIL TO 1 PART PINE FINES OR EQUIVALENT.
5. FERTILIZER SHALL CONSIST OF AGRIFORM 22-8-2, OR EQUIVALENT, APPLIED AS PER MANUFACTURER'S SPECIFICATIONS.
6. A TWO (2) INCH LAYER OF HARDWOOD MULCH SHALL BE PLACED OVER THE ROOT AREA OF ALL PLANTINGS.
7. PLANT MATERIAL SHALL BE TRANSPORTED TO THE SITE IN A TARPED OR COVERED TRUCK. PLANTS SHALL BE KEPT MOIST PRIOR TO PLANTING.
8. ALL NON-ORGANIC DEBRIS ASSOCIATED WITH THE PLANTING OPERATION SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.

SEQUENCE OF CONSTRUCTION

1. PLANTS SHALL BE INSTALLED AS PER PLANT SCHEDULE AND PLANTING/SOIL SPECIFICATIONS FOR THE PROJECT.
2. UPON COMPLETION OF THE PLANTING, SIGNAGE SHALL BE INSTALLED AS PER THE FOREST RETENTION AREA PROTECTION DEVICES SHOWN ON THE FOREST CONSERVATION PLAN.
3. PLANTINGS SHALL BE MAINTAINED AND GUARANTEED IN ACCORDANCE WITH THE MAINTENANCE AND GUARANTEE REQUIREMENTS FOR PROJECT.

MAINTENANCE OF PLANTINGS

1. MAINTENANCE OF ALL PLANTINGS SHALL LAST FOR A PERIOD OF 24 MONTHS.
2. ALL PLANT MATERIAL SHALL BE WATERED TWICE A MONTH DURING THE 1ST GROWING SEASON. WATERING MAY BE MORE OR LESS FREQUENT DEPENDING ON WEATHER CONDITIONS. DURING SECOND GROWING SEASON, ONCE A MONTH DURING MAY-SEPTEMBER, IF NEEDED.
3. INVASIVE EXOTICS AND NOXIOUS WEEDS WILL BE REMOVED FROM REFORESTATION AREAS. OLD FIELD SUCCESSIONAL SPECIES WILL BE RETAINED.
4. PLANTS WILL BE EXAMINED A MINIMUM OF TWO TIMES DURING THE GROWING SEASON FOR SERIOUS PLANT PESTS AND DISEASES. SERIOUS PROBLEMS WILL BE TREATED WITH THE APPROPRIATE AGENT.
5. DEAD BRANCHES WILL BE PRUNED FROM PLANTINGS.

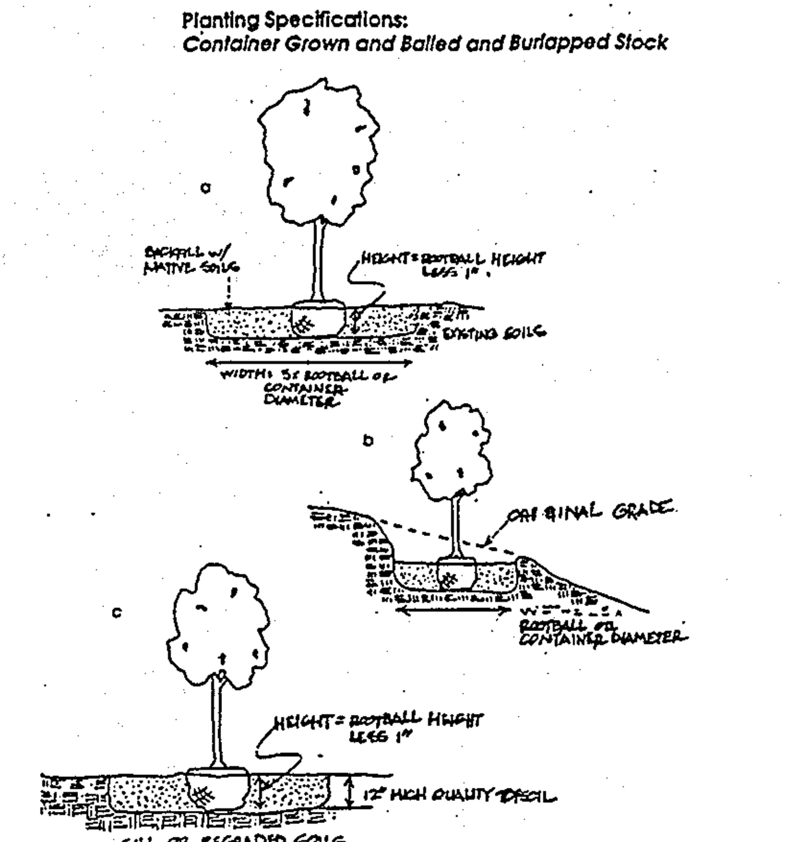
GUARANTEE REQUIREMENTS

1. AFTER ONE GROWING SEASON, PLANT MATERIAL SHALL BE MAINTAINED AT 90% SURVIVAL THRESHOLD. A 75% SURVIVAL RATE OF FORESTATION PLANTINGS WILL BE REQUIRED AT THE END OF THE 24 MONTH MAINTENANCE PERIOD. ALL PLANT MATERIAL BELOW THE 75% THRESHOLD WILL BE REPLACED AT THE BEGINNING OF THE NEXT GROWING SEASON.
2. THE CONTRACTOR WILL NOT BE LIABLE FOR PLANT LOSS DUE TO THEFT OR VANDALISM. HOWEVER, DEVELOPER SHALL BE RESPONSIBLE UNTIL RELEASE FROM THE FOREST SURETY OBLIGATION.

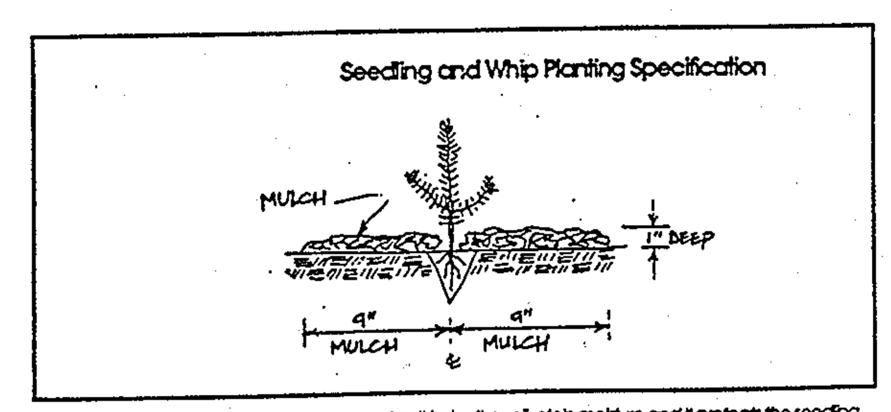
SURETY FOR REFORESTATION

1. THE DEVELOPER SHALL POST A SURETY (BOND, LETTER OF CREDIT) TO ENSURE THAT REFORESTATION PLANTINGS ARE COMPLETED. UPON ACCEPTANCE OF THE PLANTINGS BY THE COUNTY, THE BOND SHALL BE RELEASED.

Planting Specifications:
Container Grown and Balled and Burlapped Stock



Seedling and Whip Planting Specification



Mulching newly planted seedlings is suggested as it helps the soil retain moisture and it protects the seedling from compaction and stem injury.

2" CALIPER TREES = 7 PLANTING UNITS
1" CALIPER TREES = 3.5 PLANTING UNITS
WHIPS W/SHELTERS = 2 PLANTING UNITS
SEEDLINGS = 1 PLANTING UNIT

PLANTING SHALL BE INSTALLED IN A CURVILINEAR FASHION ALONG A CONTOUR TO AVOID A GRID APPEARANCE BUT SHOULD BE SPACED TO FACILITATE MAINTENANCE. LARGER STOCK TREES (1" AND 2" CALIPER) SHOULD BE STAGGERED ALONG THE OUTER PERIMETER OF THE PLANTING AREAS TO SERVE AS A DEMARCATION OF THE FCE.

FOREST CONSERVATION NOTES:

1. ANY FOREST CONSERVATION EASEMENT (FCE) AREA SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF HOWARD COUNTY WHICH RESTRICT THE DISTURBANCE AND USE OF THESE AREAS.

2. THE FOREST CONSERVATION EASEMENTS HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE, FOREST CONSERVATION ACT. NO CLEARING, GRADING, OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENTS; HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED

3. LIMITS OF DISTURBANCE SHALL BE RESTRICTED TO AREAS OUTSIDE THE LIMIT OF TEMPORARY FENCING OR THE FCE BOUNDARY, WHICHEVER IS GREATER.

4. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST CONSERVATION EASEMENT, EXCEPT AS PERMITTED BY HOWARD COUNTY DPZ.

5. NO STOCKPILES, PARKING AREAS, EQUIPMENT CLEANING AREAS, ETC. SHALL OCCUR WITHIN AREAS DESIGNATED AS FOREST CONSERVATION EASEMENTS.

6. TEMPORARY FENCING SHALL BE USED TO PROTECT FOREST RESOURCES DURING CONSTRUCTION. THE FENCING SHALL BE PLACED ALONG ALL FCE BOUNDARIES WHICH OCCUR WITHIN 15 FEET OF THE PROPOSED LIMITS OF DISTURBANCE.

7. PERMANENT SIGNAGE SHALL BE PLACED 50-100' APART ALONG THE BOUNDARIES OF ALL AREAS INCLUDED IN FOREST CONSERVATION EASEMENTS.

8. PORTIONS OF THE SITE OCCURRING WITHIN THE 100-YEAR FLOODPLAIN ARE NOT INCLUDED AS PART OF THE NET TRACT AREA OF THE SITE. AREAS OF FLOODPLAIN FOREST OCCURRING WITHIN THE LIMITS OF A FOREST CONSERVATION EASEMENT WILL BE PROTECTED BY THE EASEMENT RESTRICTIONS BUT HAVE NOT BEEN CREDITED TOWARD THE PROJECTS FCA OBLIGATIONS.

9. THE TOTAL FOREST CONSERVATION OBLIGATION AMOUNT OF 3.14 ACRES SHALL BE MET BY THE RETENTION OF 1.87 AC. OF NET TRACT AREA FOREST WITHIN A FOREST CONSERVATION EASEMENT (1.76 AC. ONSITE AND 0.11 AC. CREDITED FROM FCE #1 IN TAYLOR FARM SECT. 3 PHASE 1, F-05-162) AND THE ON-SITE AFFORESTATION OF 1.27 AC. WITHIN A FOREST CONSERVATION EASEMENT. FINANCIAL SURETY FOR THE REQUIRED FOREST CONSERVATION HAS BEEN POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF $42,993.72 ($15,333.12 FOR RETENTION OF 76,665.6 S.F. OF FOREST AND $27,660.6 FOR THE PLANTING OF 55,321.2 S.F. OF FOREST). SURETY FOR THE 0.11 AC. OF RETENTION IN FCE #1 HAS BEEN POSTED AS PART OF THE DEVELOPERS AGREEMENT FOR F-05-162.

10. THE FOREST CONSERVATION WATERSHED FOR THIS PROJECT IS THE PATAPSCO RIVER LOWER BRANCH #2130906.

11. THERE ARE NO RARE, THREATENED OR ENDANGERED SPECIES LOCATED ON THIS SITE. THERE ARE NO SPECIMEN OR CHAMPION TREES LOCATED ON THIS SITE. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO HISTORIC STRUCTURES LOCATED ON THIS SITE.

12. THE PROTECTIVE SIGNAGE SHALL STAY ON-SITE IN PERPETUITY.

FOR BEARINGS AND DISTANCES OF THE FOREST CONSERVATION EASEMENTS SEE RECORDED PLAT.

FCE ACREAGE CHART

EASEMENT	AREA IN HIGH PRIORITY BUFFERS	RETENTION CREDITED	RETENTION NON-CREDITED (IN FLOODPLAIN)	PLANTING	TOTAL EASEMENT AREA
2	1.95 AC.	0.77 AC.	0.45 AC.	0.87 AC.	2.09 AC.
3	2.11 AC.	0.99 AC.	0.73 AC.	0.40 AC.	2.12 AC.
TOTALS	4.06 AC.	1.76 AC.	1.18 AC.	1.27 AC.	4.21 AC.

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER — 12-31-13

No As-Built information is required on this sheet

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 9-7-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/18/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/12/07

Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS
P.O. Box 5006 Glen Arm, MD 21057 (410) 592-6752
8/21/07

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

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. 21443, Expiration Date: 12-21-2008. 2014
STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — REGISTERED PROFESSIONAL ENGINEER — 8/21/07

OWNER/DEVELOPER:
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P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
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TAX MAP: 16 GRID: 5 ZONED: R-20
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HOWARD COUNTY, MARYLAND

TITLE: FOREST CONSERVATION PLAN

DATE:	AUGUST, 2007	PROJECT NO.	1585
SCALE:	AS SHOWN	SHEET 13 OF 22	

DESIGN: DBT | DRAFT: DBT | CHECK: DAM

AS-BUILT

F-07-051

No As-Built information is required on this sheet

STATE OF MARYLAND
DONALD ALAN MANN
No. 21443
PROFESSIONAL ENGINEER
12-31-13

LEGEND

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- EXISTING HEDGEROW, SCATTERED TREES & BRUSH
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- EXISTING STREAM
- EXISTING STREAM BANK (TOP OF BANK / BOTTOM OF BANK)
- EXISTING WETLANDS
- FOREST CONSERVATION EASEMENT RETENTION

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 9-7-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/18/07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/6/07

FOR BEARINGS AND DISTANCES OF THE FOREST CONSERVATION EASEMENTS SEE RECORDED PLAT.

Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS
P.O. Box 5006 Glen Arm, MD 21057 (410) 592-6752

MD DNR Qualified Professional
USACE Wetland Delineator
Certification # PWS-MD0616040423
8/21/07

PLAN VIEW
SCALE: 1" = 50'

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

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. 21443, Expiration Date: 12-31-2014

STATE OF MARYLAND
DONALD ALAN MANN
No. 21443
PROFESSIONAL ENGINEER
8/21/07

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			SCALE: AS SHOWN	SHEET 14 OF 22

AS-BUILT

F-07-051

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Installation Drawings Sheet Index	
CT1	TITLE SHEET & GENERAL NOTES
CT2	BRIDGE PLAN & DETAIL
CT3	FOUNDATION PLAN
CT4	FOOTING SECTION & DETAILS
CT5	ELEVATIONS
CT6	SECTION & DETAILS
CT7	SPECIFICATIONS
CT8	SPECIFICATIONS

TAYLOR FARM
SECTION THREE, PHASE TWO

NOTES

GENERAL NOTES:

1. This bridge has been designed for general site conditions. The project engineer shall be responsible for the structure's suitability to the existing site conditions and for the hydraulic evaluation -- including scour and confirmation of soil conditions.

2. Prior to construction, contractor must verify all elevations shown through the engineer.

3. Only CONTECH Bridge Solutions Inc. the CON/SPAN® approved precaster in Maryland may provide the structure designed in accordance with these plans.

4. The use of another precast structure with the design assumptions used for the CON/SPAN® structure may lead to serious design errors. Use of any other precast structure with this design and drawings voids any certification of this design and warranty. CONTECH Bridge Solutions Inc. assumes no liability for design of any alternate or similar type structures.

5. Alternate structures may be considered, provided that signed and sealed design drawings (and calculations) are submitted to the engineer 2 weeks prior to the bid date for review and approval.

6. Proposed alternates to a CON/SPAN® Bridge System must submit at least two (2) independently verified full scale load tests that confirm the proposed design methodology of the three sided/arch structure(s). The proposed alternate, upon satisfactory confirmation of design methodology, may be considered an acceptable alternate.

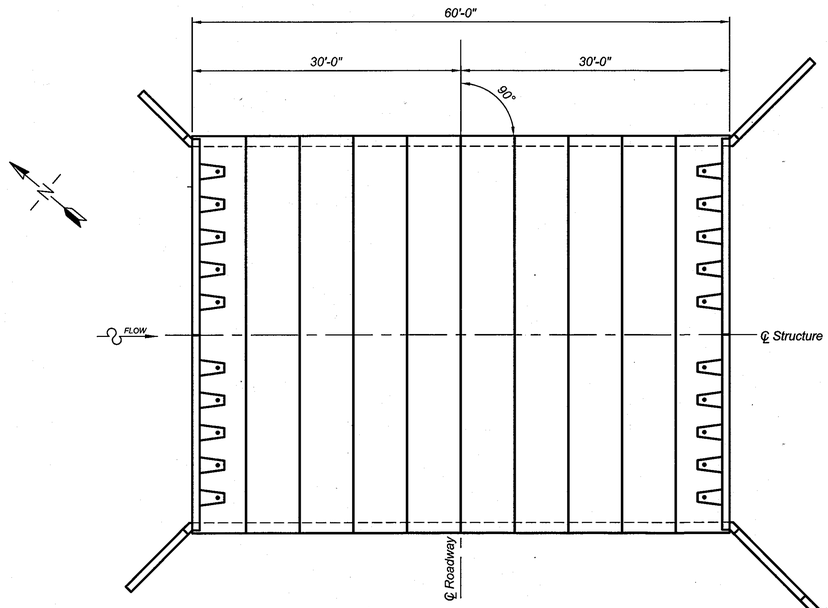
DESIGN DATA

Design Loading:
Bridge Units: HS25-44 + Maryland Legal Loads
Headwalls: Earth Pressure Only
Wingwalls: Earth Pressure Only
Design Fill Height: 2'-0" min. to 6'-0" max.
from top of crown to top of pavement.
Design Method: Load factor per AASHTO Specification
Net allowable soil bearing pressure: 6000 PSF *
Gross allowable soil bearing pressure: 6000 PSF *

*Foundation excavation and subgrade preparation shall be in accordance with the geotechnical report for this project prepared by Hills-Carnes Engineering Associates, Inc. dated 9/28/06.

MATERIALS

Precast units shall be constructed and installed in accordance with CON/SPAN® Specifications. Concrete for Footings shall have a minimum compressive strength of 4000 psi. Reinforcing steel for footings shall conform to ASTM A615 or A996-Grade 60.



LOCATION PLAN
not to scale

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER
04-05-07

Engineer's Seal

No As-Built information is required on this sheet

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER
12-31-13

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. 21443 Expiration Date: 12-21-14

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 7-20-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/18/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/24/07

NO.	DATE	REVISION

CONTECH Bridge Solutions Inc. - System:
CON/SPAN® BRIDGE SYSTEMS

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

Company:
CONTECH® BRIDGE SOLUTIONS INC.
8430 University Executive Park Drive
Suite 695
Charlotte, North Carolina 28262
704-548-8420
704-548-8586 fax
800-526-3999

Sheet Title: TITLE SHEET & GENERAL NOTES
HOWARD COUNTY MARYLAND
TAYLOR FARM
SECTION THREE, PHASE TWO

Project Status: APPROVED: FOR CONSTRUCTION

Designed	Project No.
MRP	15086
Drawn: RPU	
Checked: LNM	Sheet No. CT1
Date: 4/12/07	

OWNER/DEVELOPER:
FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 3 OF FRIENDLY FARMS (PLAT NO. 9220-9227)

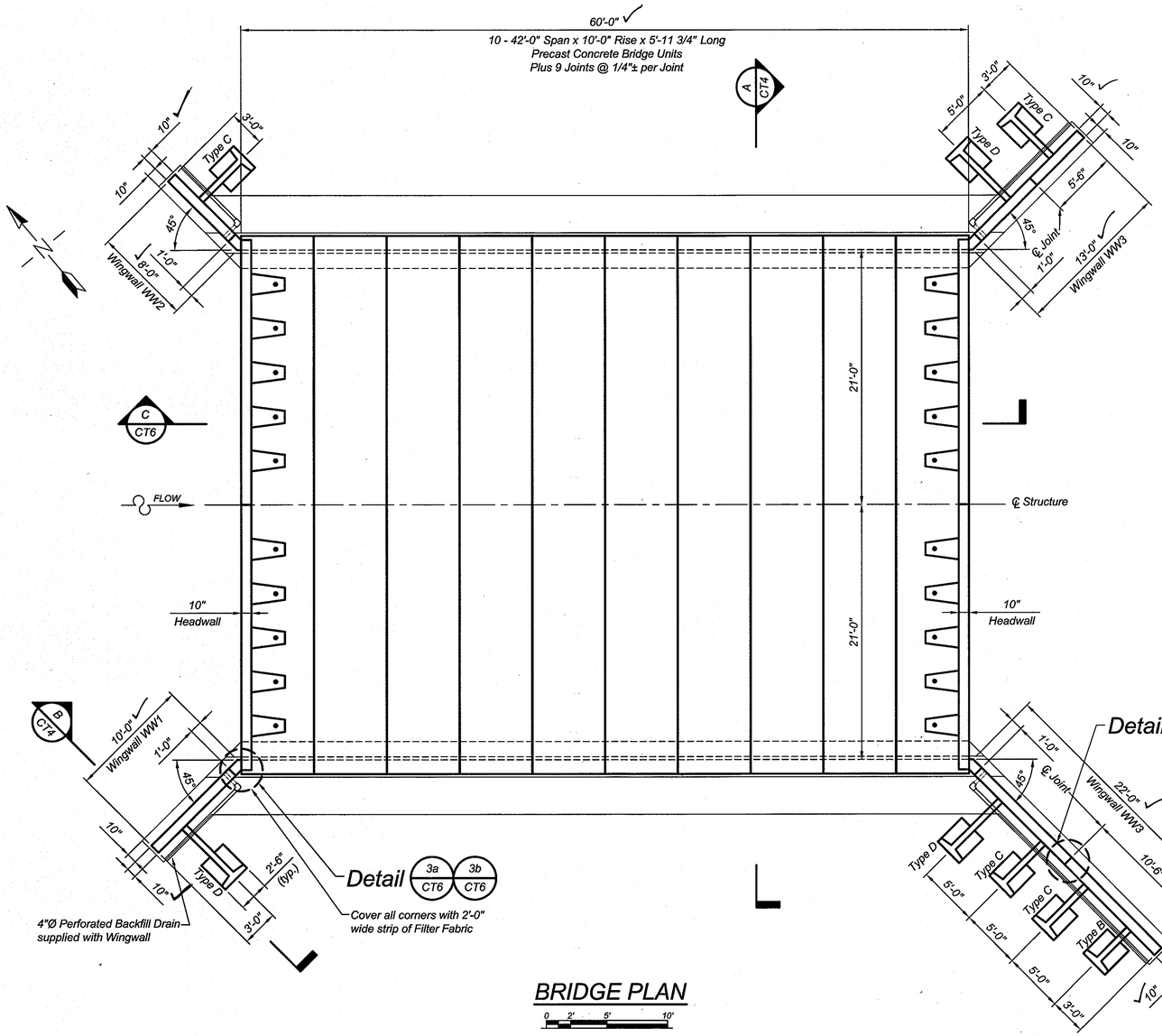
LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: CON/SPAN BRIDGE
TITLE SHEET & GENERAL NOTES

DESIGN:	DRAFT:	CHECK:	DATE: JULY, 2007	PROJECT NO. 1585
			SCALE: AS SHOWN	SHEET 15 OF 22

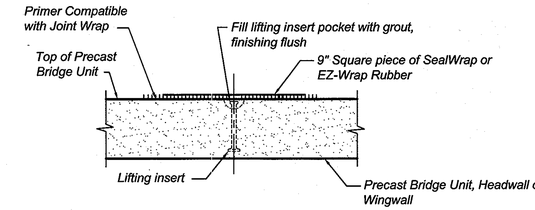
AS-BUILT

F-07-051



BRIDGE PLAN

0 2' 5' 10'



LIFTING INSERTS

TYPICAL LIFT POINT SEALING DETAIL

not to scale

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.
Donald Mason, P.E. No. 21443 Date 12-31-13

STATE OF MARYLAND · DONALD ALAN MASON · No. 21443 · PROFESSIONAL ENGINEER

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. 21443 Expiration Date: 12-21-14

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 7-20-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/18/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/24/07

STATE OF MARYLAND · DONALD ALAN MASON · No. 22101 · PROFESSIONAL ENGINEER
08-05-07
Engineer's Seal

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
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CONTECH Bridge Solutions Inc. - System:
CONSPAN® BRIDGE SYSTEMS

Company: CONTECH® BRIDGE SOLUTIONS INC.

8430 University Executive Park Drive
Suite 695
Charlotte, North Carolina 28262

704-548-8420
704-548-8586 fax
800-526-3999

Sheet Title: BRIDGE PLAN & DETAIL

HOWARD COUNTY MARYLAND

TAYLOR FARM SECTION THREE, PHASE TWO

Project Status: APPROVED: FOR CONSTRUCTION

Designed	Project No.
MRP	15086
Drawn	
RPU	
Checked	Sheet No.
LNM	CT2
Date	
4/12/07	

OWNER/DEVELOPER:
FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 3 OF FRIENDLY FARMS (PLAT NO. 9220-9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

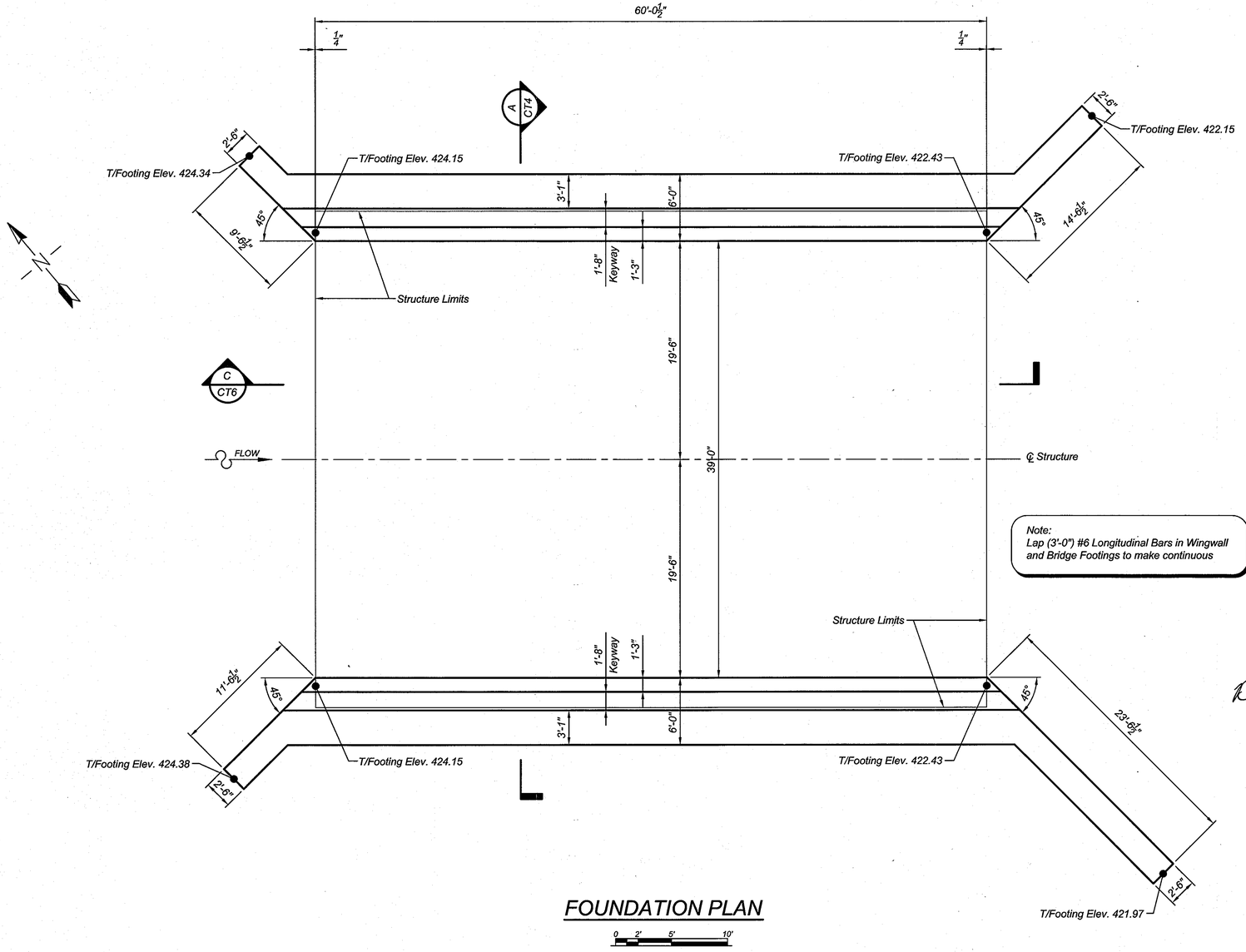
TITLE: CON/SPAN BRIDGE BRIDGE PLAN & DETAIL

DATE: JULY, 2007 PROJECT NO. 1585

DESIGN: DRAFT: CHECK: SCALE: AS SHOWN SHEET 16 OF 22

AS-BUILT

F-07-051



FOUNDATION PLAN

0 2' 5' 10'

Note:
Lap (3'-0") #6 Longitudinal Bars in Wingwall and Bridge Footings to make continuous

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Taylor Farm Culvert — Boring No.: B-1
Location: Howard County, Maryland — Job #: 06527A
Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 6" — Foreman: S. Wooden
Surf. Elev.: +229.0 Ft. — Hammer Drop: 30 in. — Rock Core Diameter: — Inspector:
Date Started: 9/26/06 — Pipe Size: 2 in. — Boring Method: HSA — Date Completed: 9/26/06

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	Mst	SPT Blows	SPT Blows/Foot 0-6"/6-12"/12-18"	N
	D	Brown, moist, loose to medium dense, sandy silt, trace mica and roots (ML)	Topsoil-3"	7"		2-3-5	8	
	D	Gray, moist, medium dense, micaceous silty sand (SM)	No groundwater encountered while drilling	11"		10-11-7	18	
	D	Light brown, damp, medium dense, micaceous sandy silt (ML)		16"		4-3-7	10	
	D	Brown, moist, dense, micaceous silty sand (SM)		20"		5-5-7	12	
		Auger refusal @ 12.3' Bottom of boring @ 12.9'		15"		12-17-24	41	

SAMPLER TYPE: SPLIT SPOON-UNLESS OTHERWISE — SAMPLE CONDITIONS: D - DISTURBED — AT COMPLETION: GROUND WATER ___ ft. — CAVE IN DEPTH ___ ft. — BORING METHOD: HSA - HOLLOW STEM AUGERS
PT - PRESSED SHELBY TUBE — I - INTACT — AFTER 24 HRS. ___ ft. ___ ft. — CFA - CONTINUOUS FLIGHT AUGERS
CA - CONTINUOUS FLIGHT AUGER — U - UNDISTURBED — AFTER ___ HRS. ___ ft. ___ ft. — DC - DRIVING CASING
RC - ROCK CORE — L - LOST — MD - MUD DRILLING
STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 3' WITH 140# HAMMER FALLING 30". COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Taylor Farm Culvert — Boring No.: B-2
Location: Howard County, Maryland — Job #: 06527A
Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 6" — Foreman: S. Wooden
Surf. Elev.: 429.6 Ft. — Hammer Drop: 30 in. — Rock Core Diameter: — Inspector:
Date Started: 9/19/06 — Pipe Size: 2 in. — Boring Method: HSA — Date Completed: 9/19/06

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	Mst	SPT Blows	SPT Blows/Foot 0-6"/6-12"/12-18"	N
	D	Brown, moist, very loose to medium dense, sandy silt, trace mica and roots (ML)	Topsoil-3"	3"		2-2-3	5	
	D	Dark gray, damp, soft, micaceous silt, trace roots (ML)	No groundwater encountered while drilling	12"		9-12-12	24	
	D	Light brown, moist to damp, medium dense, silty sand (SM)		19"		4-3-2	5	
	D	Brown and tan, moist, very dense, micaceous silty sand, trace rock fragments (SM Decomposed ROCK)		14"		13-16-13	29	
		Bottom of boring @ 17.0'		19"		9-9-13	22	
				12"		47-3/4"	100+	#VALUE!
				6"		5/4"	100+	#VALUE!

SAMPLER TYPE: SPLIT SPOON-UNLESS OTHERWISE — SAMPLE CONDITIONS: D - DISTURBED — AT COMPLETION: GROUND WATER 8.0 ft. — CAVE IN DEPTH 7.0 ft. — BORING METHOD: HSA - HOLLOW STEM AUGERS
PT - PRESSED SHELBY TUBE — I - INTACT — AFTER 24 HRS. 8.5 ft. 6 ft. — CFA - CONTINUOUS FLIGHT AUGERS
CA - CONTINUOUS FLIGHT AUGER — U - UNDISTURBED — AFTER ___ HRS. ___ ft. ___ ft. — DC - DRIVING CASING
RC - ROCK CORE — L - LOST — MD - MUD DRILLING
STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 3' WITH 140# HAMMER FALLING 30". COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Taylor Farm Culvert — Boring No.: B-3
Location: Howard County, Maryland — Job #: 06527A
Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 6" — Foreman: S. Wooden
Surf. Elev.: 427.5 Ft. — Hammer Drop: 30 in. — Rock Core Diameter: — Inspector:
Date Started: 9/19/06 — Pipe Size: 2 in. — Boring Method: HSA — Date Completed: 9/19/06

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	Mst	SPT Blows	SPT Blows/Foot 0-6"/6-12"/12-18"	N
	D	Brown, moist, loose, sandy silt, trace roots and mica (ML)	Topsoil-4"	5"		1-3-4	7	
	D	Dark gray, wet, medium dense, silty clayey medium to coarse sand, some rock fragments, trace organics (SM-SC)	No groundwater encountered while drilling	10"		5-7-18	25	
	D	Brown, wet, medium dense, micaceous sandy silt, trace organics (ML)		12"		4-7-10	17	
	D	Gray, wet, dense, silty sand and rock fragments (SM-SM Decomposed ROCK)		4"		5/5"	100+	#VALUE!
		Brown, moist, very dense, micaceous silty sand (SM Decomposed ROCK)		6"		5/4"	100+	#VALUE!
		Auger refusal @ 15.0' Bottom of boring @ 15.0'		0"		5/0"	100+	#VALUE!

SAMPLER TYPE: SPLIT SPOON-UNLESS OTHERWISE — SAMPLE CONDITIONS: D - DISTURBED — AT COMPLETION: GROUND WATER Dry ft. — CAVE IN DEPTH 6.5 ft. — BORING METHOD: HSA - HOLLOW STEM AUGERS
PT - PRESSED SHELBY TUBE — I - INTACT — AFTER 24 HRS. ___ ft. ___ ft. — CFA - CONTINUOUS FLIGHT AUGERS
CA - CONTINUOUS FLIGHT AUGER — U - UNDISTURBED — AFTER ___ HRS. ___ ft. ___ ft. — DC - DRIVING CASING
RC - ROCK CORE — L - LOST — MD - MUD DRILLING
STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 3' WITH 140# HAMMER FALLING 30". COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Taylor Farm Culvert — Boring No.: B-4
Location: Howard County, Maryland — Job #: 06527A
Datum: — Hammer Wt.: 140 lbs. — Hole Diameter: 6" — Foreman: S. Wooden
Surf. Elev.: 429.6 Ft. — Hammer Drop: 30 in. — Rock Core Diameter: — Inspector:
Date Started: 9/19/06 — Pipe Size: 2 in. — Boring Method: HSA — Date Completed: 9/19/06

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	Mst	SPT Blows	SPT Blows/Foot 0-6"/6-12"/12-18"	N
	D	Brown, moist, loose, sandy silt, trace rock and mica (ML)	Topsoil-5"	7"		1-3-3	6	
	D	Dark gray and black, wet, medium dense, silty clayey medium to coarse sand, some rock fragments, trace organics (SM-SC)	No groundwater encountered while drilling	12"		7-8-13	21	
	D	Gray and brown, damp, dense, micaceous silty sand, trace rock fragments (SM)		10"		10-15-18	33	
	D	Gray and brown, damp, dense, micaceous silty sand, trace rock fragments (SM Decomposed ROCK)		5"		5/5"	100+	#VALUE!
	D	Tan, moist, very dense, micaceous silty sand, trace rock fragments (SM Decomposed ROCK)		3"		5/2"	100+	#VALUE!
		Auger refusal @ 10.5' Bottom of boring @ 10.5'		0"				

SAMPLER TYPE: SPLIT SPOON-UNLESS OTHERWISE — SAMPLE CONDITIONS: D - DISTURBED — AT COMPLETION: GROUND WATER 8.0 ft. — CAVE IN DEPTH 7.0 ft. — BORING METHOD: HSA - HOLLOW STEM AUGERS
PT - PRESSED SHELBY TUBE — I - INTACT — AFTER 24 HRS. 8.5 ft. 6 ft. — CFA - CONTINUOUS FLIGHT AUGERS
CA - CONTINUOUS FLIGHT AUGER — U - UNDISTURBED — AFTER ___ HRS. ___ ft. ___ ft. — DC - DRIVING CASING
RC - ROCK CORE — L - LOST — MD - MUD DRILLING
STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 3' WITH 140# HAMMER FALLING 30". COUNT MADE AT 6" INTERVALS.

STATE OF MARYLAND — DONALD ALAN MARTIN — No. 21443 — PROFESSIONAL ENGINEER

No As-Built information is required on this sheet

12-31-13

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. 21443 Expiration Date: 12-21-14

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 7-20-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/5/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/24/07

STATE OF MARYLAND — KENNETH L. BENSON — No. 22381 — PROFESSIONAL ENGINEER

06-05-07
Engineer's Seal

NO.	DATE	REVISION

CONTECH Bridge Solutions Inc. - System:
CONSPAN® BRIDGE SYSTEMS

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
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Company:
CONTECH® BRIDGE SOLUTIONS INC.

8430 University Executive Park Drive
Suite 695
Charlotte, North Carolina 28262

704-548-8420
704-548-8586 fax
800-526-3999

Sheet Title: FOUNDATION PLAN

HOWARD COUNTY MARYLAND

TAYLOR FARM SECTION THREE, PHASE TWO

Project Status: APPROVED: FOR CONSTRUCTION

Designed	Project No.
MRP	15086
Drawn: RPU	
Checked: LNM	Sheet No. CT3
Date: 4/12/07	

OWNER/DEVELOPER:
FRIENDLY FARMS, LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 3 OF FRIENDLY FARMS (PLAT NO. 9230-9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: CON/SPAN BRIDGE FOUNDATION PLAN

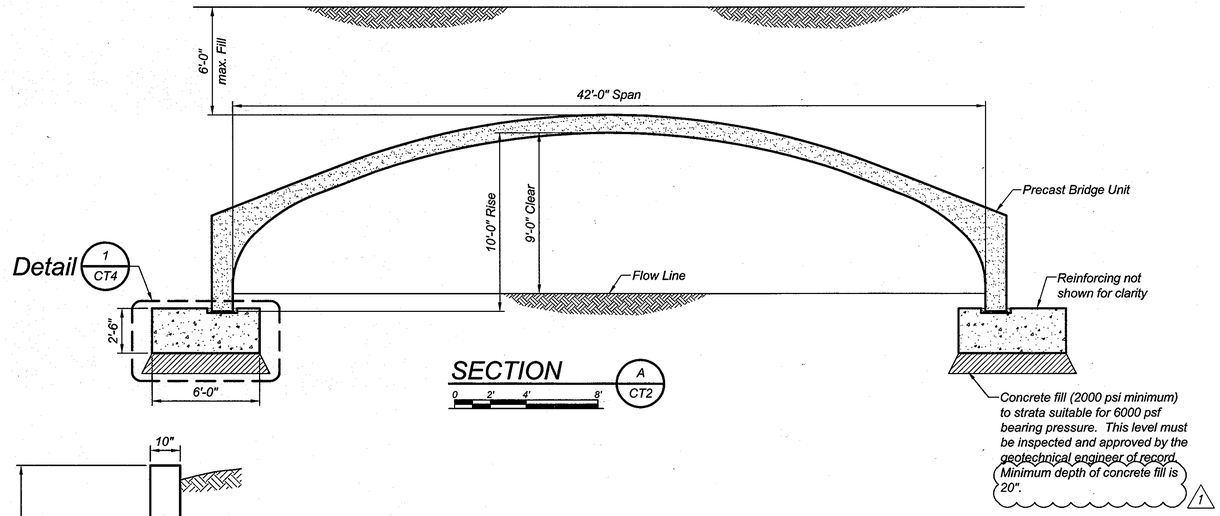
DATE: JULY, 2007 PROJECT NO. 1585

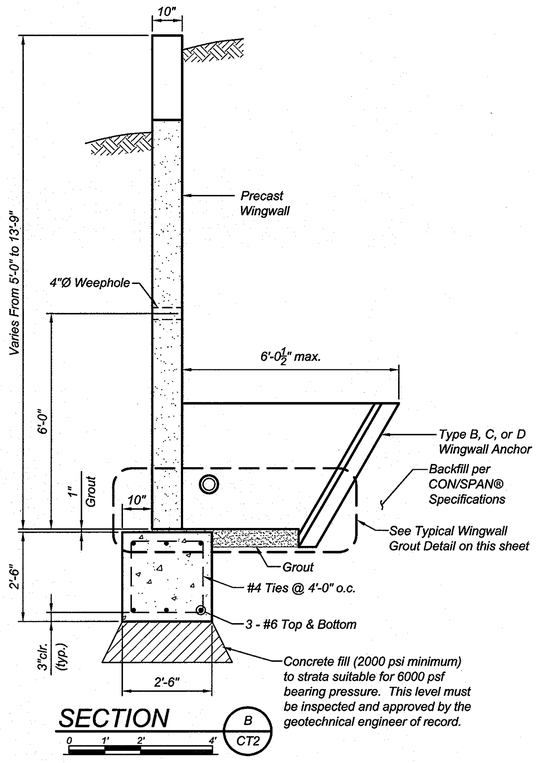
DESIGN: DRAFT: CHECK:

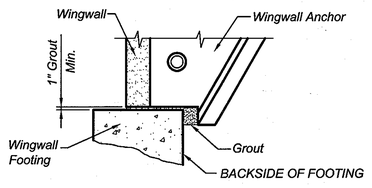
SCALE: AS SHOWN SHEET 17 OF 22

AS-BUILT

F-07-051



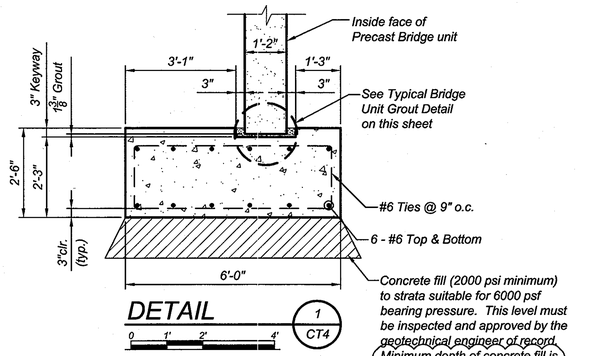


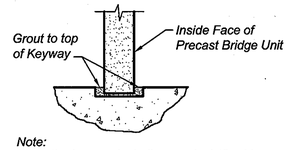


Notes:
- Minimum 1" Grout under wingwall leg & anchor stem.
- Area between wingwall footing and wingwall anchor shall be grouted solid before backfill.
- FORM BACKSIDE OF FOOTING TO DIMENSIONS SHOWN ON FOUNDATION PLAN.

TYPICAL WINGWALL GROUT DETAIL

not to scale





Note:
Fill entire keyway including nominal 1" void between bottom of keyway and bottom of precast bridge unit leg with grout.

TYPICAL BRIDGE UNIT GROUT DETAIL

not to scale

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.
Donald Mason, P.E. No. 21443 Date 12-31-13

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER

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. 21443 Expiration Date: 12-21-14

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 7-20-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/18/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/24/07

NO.	DATE	REVISION
1	5/14/07	Minimum depth of concrete fill specification per engineer's comments

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER
04-05-07
Engineer's Seal

CONTECH Bridge Solutions Inc. - System:
CON/SPAN® BRIDGE SYSTEMS

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
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Company:
CONTECH® BRIDGE SOLUTIONS INC.
8430 University Executive Park Drive
Suite 695
Charlotte, North Carolina 28262
704-548-8420
704-548-8586 fax
800-526-3999

Sheet Title:
FOOTING SECTION & DETAILS

HOWARD COUNTY MARYLAND

TAYLOR FARM
SECTION THREE, PHASE TWO

Project Status: APPROVED: FOR CONSTRUCTION

Designed	Project No.
MRP	15086
Drawn: RPU	
Checked: LNM	Sheet No. CT4
Date: 4/12/07	

OWNER/DEVELOPER:
FRIENDLY FARMS, LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 3 OF FRIENDLY FARMS (PLAT NO. 9220-9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

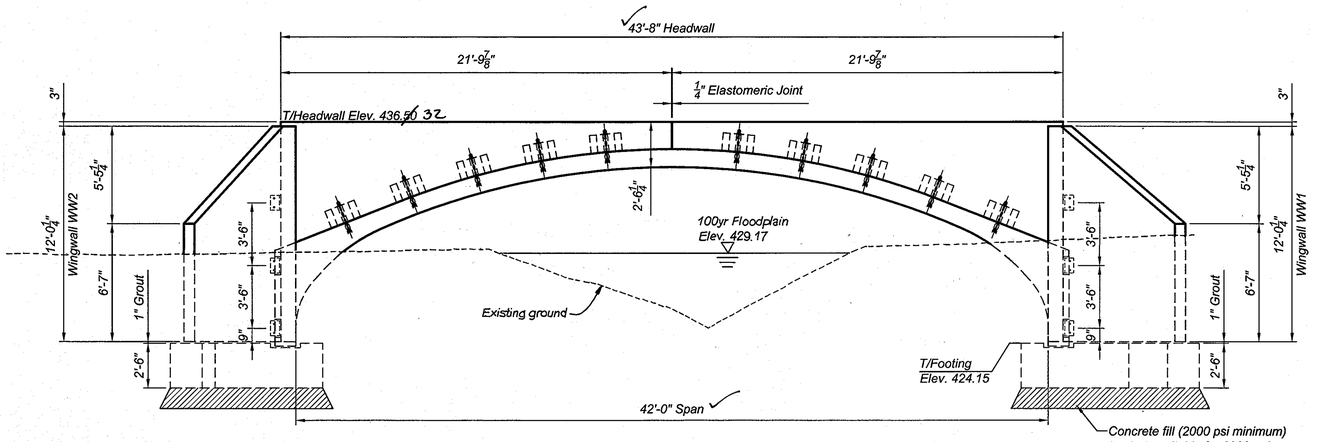
TITLE: CON/SPAN BRIDGE FOOTING SECTION & DETAILS

DATE: JULY, 2007 PROJECT NO. 1585

DESIGN: DRAFT: CHECK: SCALE: AS SHOWN SHEET 18 OF 22

AS-BUILT

F-07-051

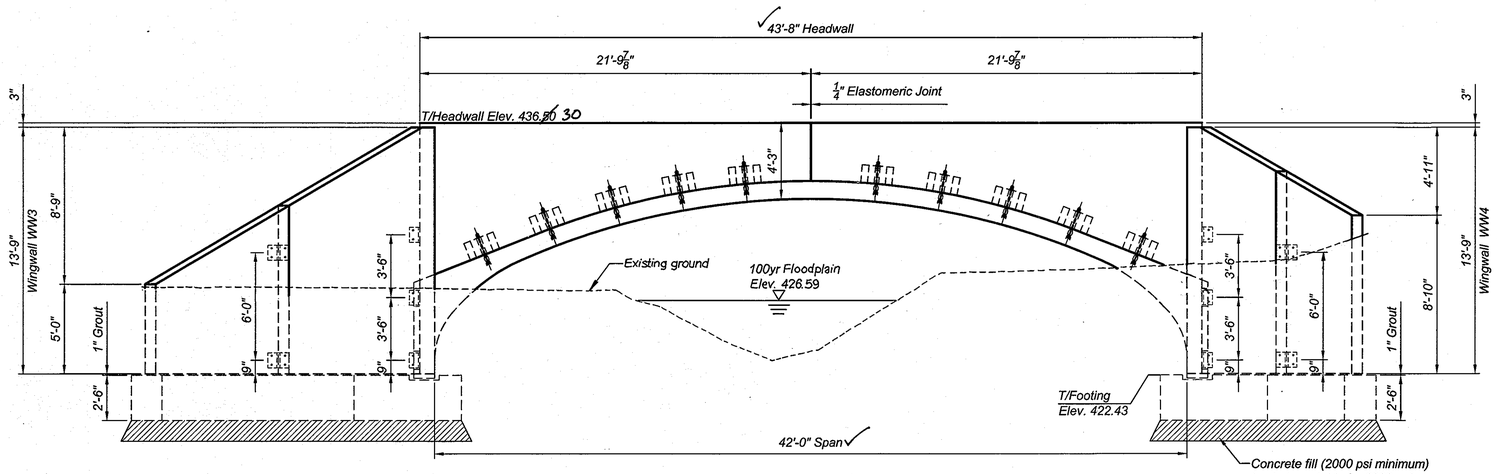


UPSTREAM ELEVATION

0 2' 4' 8'

Concrete fill (2000 psi minimum) to strata suitable for 6000 psf bearing pressure. This level must be inspected and approved by the geotechnical engineer of record. Minimum depth of concrete fill is 20".

1



DOWNSTREAM ELEVATION

0 2' 4' 8'

Concrete fill (2000 psi minimum) to strata suitable for 6000 psf bearing pressure. This level must be inspected and approved by the geotechnical engineer of record. Minimum depth of concrete fill is 20".

1

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.
Donald Mason, P.E. No. 21443 Date 12-31-13

STATE OF MARYLAND · DONALD ALAN MASON · No. 21443 · PROFESSIONAL ENGINEER

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. 21443 Expiration Date: 12.21.14

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 7-20-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/5/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/24/07

NO.	DATE	REVISION
1	5/14/07	Minimum depth of concrete fill specification per engineer's comments

STATE OF MARYLAND · DONALD ALAN MASON · No. 22301 · PROFESSIONAL ENGINEER
04-05-07
Engineer's Seal

CONTECH Bridge Solutions Inc. - System:
CONSPAN® BRIDGE SYSTEMS

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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8430 University Executive Park Drive
Suite 695
Charlotte, North Carolina 28262

704-548-8420
704-548-8586 fax
800-526-3999

Sheet Title: ELEVATIONS

HOWARD COUNTY MARYLAND

TAYLOR FARM
SECTION THREE, PHASE TWO

Project Status: APPROVED: FOR CONSTRUCTION

Designed	Project No.
MRP	15086
Drawn: RPU	
Checked: LNM	Sheet No. CT5
Date: 4/12/07	

OWNER/DEVELOPER:
FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 2 OF FRIENDLY FARMS (PLAT NO. 9220-9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

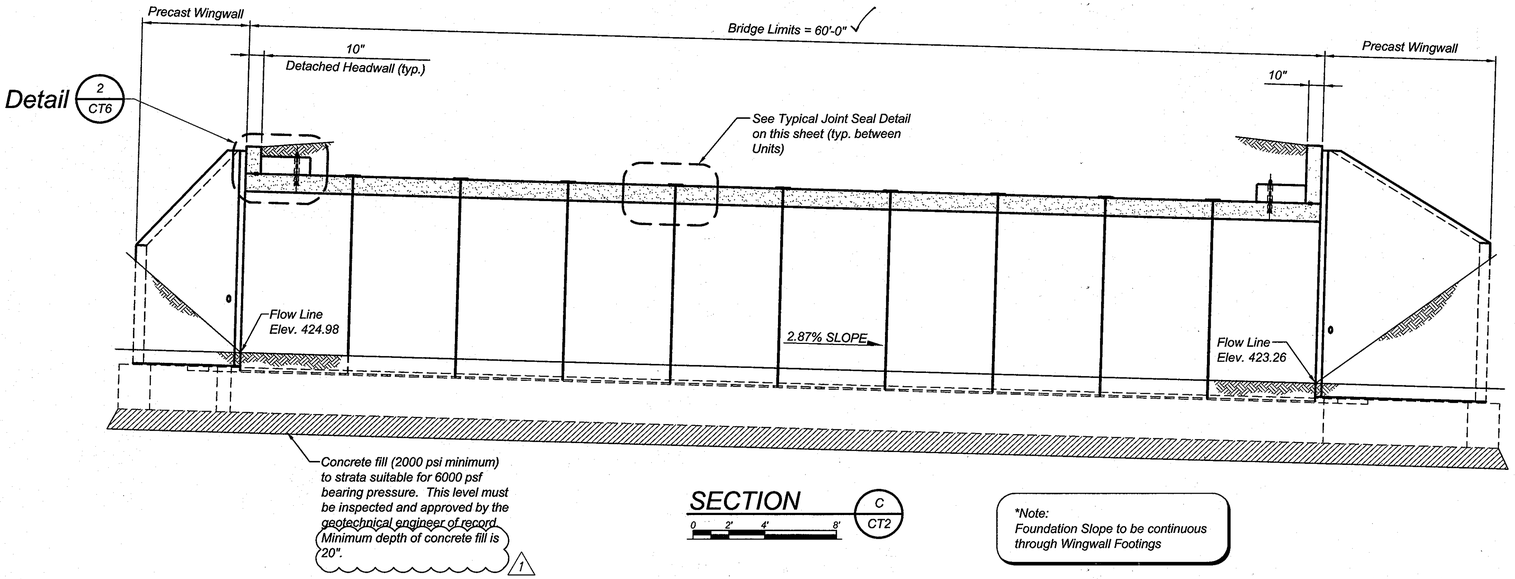
TITLE: CON/SPAN BRIDGE ELEVATIONS

DATE: JULY, 2007 PROJECT NO. 1585

DESIGN: DRAFT: CHECK: SCALE: AS SHOWN SHEET 19 OF 22

AS-BUILT

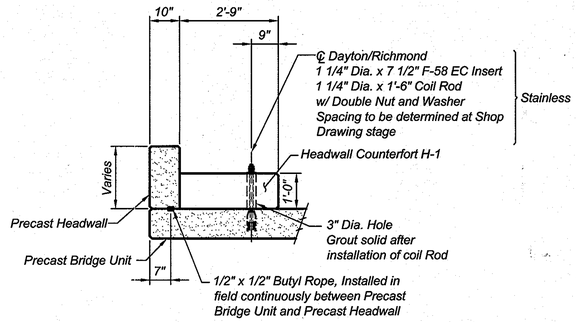
F-07-051



SECTION C CT2

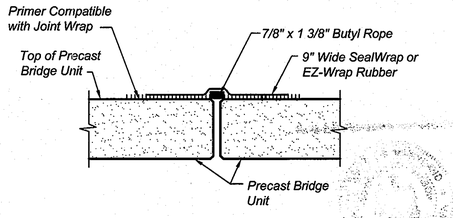
0 2' 4' 8'

*Note:
Foundation Slope to be continuous through Wingwall Footings



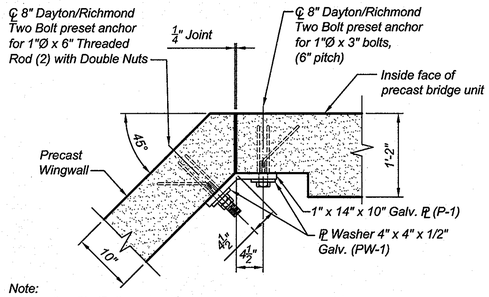
DETAIL 2 CT6

0 1" 2" 4"



TYPICAL JOINT SEAL DETAIL

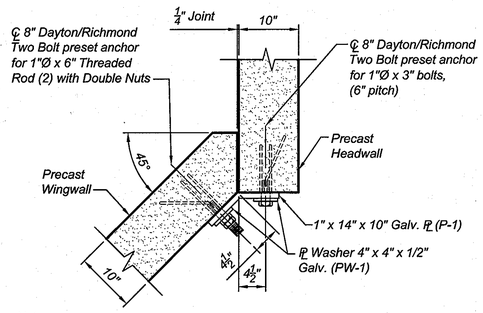
not to scale



Note:
Connection PL's (P-1) must be positioned with small Ø holes toward precast bridge unit

DETAIL @ Unit Leg 3a CT2

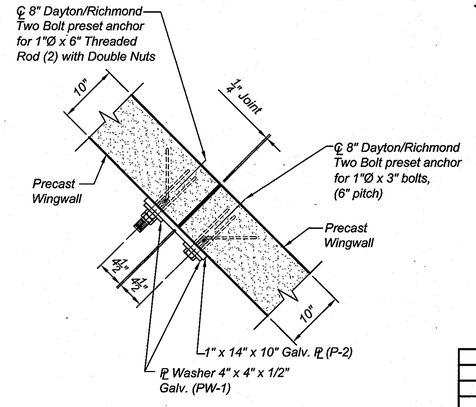
0 1' 2'



Note:
Connection PL's (P-1) must be positioned with small Ø holes toward precast headwall

DETAIL @ Headwall 3b CT2

0 1' 2'



DETAIL 4 CT2

0 1' 2'

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-20-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/15/07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/24/07

NO.	DATE	REVISION
1	5/14/07	Minimum depth of concrete fill specification per engineer's comments

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.
Donald Mason, P.E. No. 21443 Date 12-31-13

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER

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. 21443 Expiration Date: 12-21-14

STATE OF MARYLAND CHRISTOPHER MICHAEL PHILLIPS No. 22281 PROFESSIONAL ENGINEER
06-05-07

Engineer's Seal

CONTECH Bridge Solutions Inc. - System:

CONSPAN® BRIDGE SYSTEMS

BENCHMARK ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
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Company:
CONTECH® BRIDGE SOLUTIONS INC.

8430 University Executive Park Drive
Suite 695
Charlotte, North Carolina 28262

704-548-8420
704-548-8586 fax
800-526-3999

Sheet Title: SECTION & DETAILS

HOWARD COUNTY MARYLAND

TAYLOR FARM
SECTION THREE, PHASE TWO

Project Status: APPROVED: FOR CONSTRUCTION

Designed	Project No.
MRP	15086
Drawn: RPU	
Checked: LNM	Sheet No. CT6
Date: 4/12/07	

OWNER/DEVELOPER:
FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 3 OF FRIENDLY FARMS (PLAT NO. 9220-9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: CON/SPAN BRIDGE SECTION & DETAILS

DATE: JULY, 2007 PROJECT NO. 1585

DESIGN: DRAFT: CHECK: SCALE: AS SHOWN SHEET 20 OF 22

AS-BUILT

F-07-051

SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF CON/SPAN® BRIDGE SYSTEMS

1. DESCRIPTION

This work shall consist of constructing a CON/SPAN ® bridge in accordance with these specifications and in reasonably close conformity with the lines, grades, design and dimensions shown on the plans or as established by the Engineer. In situations where two or more specifications apply to this work, the most stringent requirements shall govern.

2. TYPES

Precast reinforced concrete CON/SPAN® bridge units manufactured in accordance with this specification shall be designated by span and rise. Precast reinforced concrete CON/SPAN® wingwalls and headwalls manufactured in accordance with this specification shall be designated by length, height, and deflection angle.

3. MATERIALS - CONCRETE

The concrete for the culverts shall be air-entrained when installed in areas subject to freeze-thaw conditions, composed of portland cement, fine and coarse aggregates, admixtures and water. Air-entrained concrete shall contain 6 ± 2 percent air. The air entraining admixture shall conform to AASHT0 M154.

3.1 Portland Cement - Shall conform to the requirements of ASTM Specifications C150-Type I, Type II, or Type III cement.

3.2 Coarse Aggregate - Shall consist of stone having a maximum size of 1 inch. Aggregate shall meet requirements for ASTM C33.

3.3 Water Reducing Admixture - The manufacturer may submit for approval by the Engineer, a water-reducing admixture for the purpose of increasing workability and reducing the water requirement for the concrete.

3.4 Calcium Chloride - The addition to the mix of calcium chloride or admixtures containing calcium chloride will not be permitted.

4. MATERIALS - STEEL REINFORCEMENT AND HARDWARE

All reinforcing steel for the culverts shall be fabricated and placed in accordance with the detailed shop drawings submitted by the manufacturer.

4.1 Steel Reinforcement - Reinforcement shall consist of welded wire fabric conforming to ASTM Specification A 185 or A 497, or deformed billet steel bars conforming to ASTM Specification A 615, Grade 60. Longitudinal distribution reinforcement may consists of welded wire fabric or deformed billet-steel bars.

4.2 Hardware:
Bolts and threaded rods for wingwall connections shall conform to ASTM A 307. Nuts shall conform to AASHTO M 292 (ASTM A 194) Grade 2H. All bolts, threaded rods and nuts used in wingwall connections shall be mechanically zinc coated in accordance with ASTM B 695 Class 50.

Structural Steel for wingwall connection plates and plate washers shall conform to AASHTO M 270 (ASTM A 709) Grade 36 and shall be hot dip galvanized as per AASHTO M 111 (ASTM A 123).

Inserts for wingwalls shall be 1" diameter Two-Bolt Preset Wingwall Anchors as manufactured by Dayton/Richmond Concrete Accessories, Miamisburg, Ohio, (800) 745-3700.

Ferrule Loop Inserts shall be F-64 Ferrule Loop Inserts as manufactured by Dayton/Richmond Concrete Accessories, Miamisburg, Ohio, (800) 745-3700.

Hook Bolts used in attached headwall connections shall be ASTM A 307.

Inserts for detached headwall connections shall be AISI Type 304 stainless steel, F-58 Expanded Coil inserts as manufactured by Dayton/Richmond Concrete Accessories, Miamisburg, Ohio, (800) 745-3700. Coil rods and nuts used in headwall connections shall be AISI Type 304 stainless steel. Washers used in headwall connections shall be either AISI Type 304 stainless steel plate washers or AASHTO M 270 (ASTM A 709) Grade 36 plate washers hot dip galvanized as per AASHTO M 111 (ASTM A 153).

Reinforcing bar splices shall be made using the Dowel Bar Splicer System as manufactured by Dayton/Richmond Concrete Accessories, Miamisburg, Ohio, (800) 745-3700, and shall consist of the Dowel Bar Splicer (DB-SAE) and Dowel-In (DI).

5. MANUFACTURE

5.1 Mixture - The aggregates, cement and water shall be proportioned and mixed in a batch mixer to produce a homogeneous concrete meeting the strength requirements of this specification. The proportion of portland cement in the mixture shall not be less than 564 pounds (6 sacks) per cubic yard of concrete.

5.2 Curing - The precast concrete culvert units shall be cured for a sufficient length of time so that the concrete will develop the specified compressive strength in 28 days or less. Any one of the following methods of curing or combinations thereof shall be used:

5.2.1 Steam Curing - The culverts may be low pressure, steam cured by a system that will maintain a moist atmosphere.

5.2.2 Water Curing - The culverts may be water cured by any method that will keep the sections moist.

5.2.3 Membrane Curing - A sealing membrane conforming to the requirements of ASTM Specification C 309 may be applied and shall be left intact until the required concrete compressive strength is attained. The concrete temperature at the time of application shall be within ± 10 degrees F of the atmospheric temperature. All surfaces shall be kept moist prior to the application of the compounds and shall be damp when the compound is applied.

5.3 Forms - the forms used in manufacture shall be sufficiently rigid and accurate to maintain the culvert dimensions within the permissible variations given in Section 7 of these specifications. All casting surfaces shall be of a smooth material.

5.4 Handling - Handling devices or holes shall be permitted in each culvert for the purpose of handling and setting.

5.5 Storage - The precast elements shall be stored in such a manner to prevent cracking or damage. The units shall not be moved until the concrete compressive strength has reached a minimum of 2500 psi, and they shall not be stored in an upright position until the concrete compressive strength is a minimum of 4,000 psi.

6. DESIGN

6.1 The precast element dimension and reinforcement details shall be as prescribed in the plan and the shop drawings provided by the manufacturer, subject to the provisions of Section 7, below. The minimum concrete compressive strength shall be as shown on the shop drawings. The minimum steel yield strength shall be 60,000 psi, unless otherwise noted on the shop drawings.

6.2 The precast elements are designed in accordance with the "Standard Specifications for Highway Bridges" 17th Edition, adopted by the American Association of State Highway and Transportation Officials, 2002. A minimum of one foot of cover above the crown of the bridge units is required in the installed condition. (Unless noted otherwise on the shop drawings and designed accordingly.)

6.3 Placement of Reinforcement in Precast Bridge Units - The cover of concrete over the outside circumferential reinforcement shall be 2 inches minimum. The cover of concrete over the inside circumferential reinforcement shall be 1 1/2 inches minimum, unless otherwise noted on the shop drawings. The clear distance of the end circumferential wires shall not be less than one inch nor more than two inches from the ends of each section. Reinforcement shall be assembled utilizing single or multiple layers of welded wire fabric (not to exceed 3 layers), supplemented with a single layer of deformed billet-steel bars, when necessary. Welded wire fabric shall be composed of circumferential and longitudinal wires meeting the spacing requirements of 6.6, below, and shall contain sufficient longitudinal wires extending through the bridge unit to maintain the shape and position of the reinforcement. Longitudinal distribution reinforcement may be welded wire fabric or deformed billet-steel bars and shall meet the spacing requirements of 6.6, below. The ends of the longitudinal distribution reinforcement shall be not more than 3 inches and not less than 1 1/2 inches from the ends of the bridge unit.

6.4 Placement of Reinforcement for Precast Wingwalls and Headwalls - The cover of concrete over the longitudinal and transverse reinforcement shall be 2 inches minimum. The clear distance from the end of each precast element to the end transverse reinforcing steel shall not be less than one inch nor more than two inches. Reinforcement shall be assembled utilizing a single layer of welded wire fabric, or a single layer of deformed billet-steel bars. Welded wire fabric shall be composed of transverse and longitudinal wires meeting the spacing requirements of 6.7, below, and shall contain sufficient longitudinal wires extending through the element to maintain the shape and position of the reinforcement. Longitudinal reinforcement may be welded wire fabric or deformed billet-steel bars and shall meet the spacing requirements of 6.7, below. The ends of the longitudinal reinforcement shall be not more than 3 inches and not less than 1 1/2 inches from the ends of the walls.

6.5 Bending of Reinforcement for Precast Bridge Units - The outside and inside circumferential reinforcing steel for the corners of the bridge shall be bent to such an angle that is approximately equal to the configuration of the bridge's outside corner.

6.6 Laps, Welds, and Spacing for Precast Bridge Units - Tension splices in the circumferential reinforcement shall be made by lapping. Laps may be tack welded together for assembly purposes. For smooth welded wire fabric, the overlap shall meet the requirements of AASHTO 8.30.2 and 8.32.6. For deformed welded wire fabric, the overlap shall meet the requirements of AASHTO 8.30.1 and 8.32.5. The overlap of welded wire fabric shall be measured between the outer most longitudinal wires of each fabric sheet. For deformed billet-steel bars, the overlap shall meet the requirements of AASHTO 8.25. For splices other than tension splices, the overlap shall be a minimum of 12" for welded wire fabric or deformed billet-steel bars. The spacing center to center of the circumferential wires in a wire fabric sheet shall be not less than 2 inches nor more than 4 inches. The spacing center to center of the longitudinal wires shall not be more than 8 inches. The spacing center to center of the longitudinal distribution steel for either line of reinforcing in the top slab shall be not more than 16 inches.

6.7 Laps, Welds, and Spacing for Precast Wingwalls and Headwalls - Splices in the reinforcement shall be made by lapping. Laps may be tack welded together for assembly purposes. For smooth welded wire fabric, the overlap shall meet the requirements of AASHTO 8.30.2 and 8.32.6. For deformed welded wire fabric, the overlap shall meet the requirements of AASHTO 8.30.1 and 8.32.5. For deformed billet-steel bars, the overlap shall meet the requirements of AASHTO 8.25. The spacing center-to-center of the wires in a wire fabric sheet shall be not less than 2 inches nor more than 8 inches.

7. PERMISSIBLE VARIATIONS

7.1 Bridge Units

7.1.1 Internal Dimensions - The internal dimension shall vary not more than 1% from the design dimensions nor more than 1-1/2 inches whichever is less. The haunch dimensions shall vary not more than 3/4 inch from the design dimension.

7.1.2 Slab and Wall Thickness - The slab and wall thickness shall not be less than that shown in the design by more than 1/4 inch. A thickness more than that required in the design shall not be cause for rejection.

7.1.3 Length of Opposite Surfaces - Variations in laying lengths of two opposite surfaces of the bridge unit shall not be more than 1/2 inch in any section, except where beveled ends for laying of curves are specified by the purchaser.

7.1.4 Length of Section - The underrun in length of a section shall not be more than 1/2 inch in any bridge unit.

7.1.5 Position of Reinforcement - The maximum variation in position of the reinforcement shall be ± 1/2 inch. In no case shall the cover over the reinforcement be less than 1 1/2 inches for the outside circumferential steel or be less than 1 inch for the inside circumferential steel as measured to the external or internal surface of the bridge. These tolerances or cover requirements do not apply to mating surfaces of the joints.

7.1.6 Area of Reinforcement - The areas of steel reinforcement shall be the design steel areas as shown in the manufacturer's shop drawings. Steel areas greater than those required shall not be cause for rejection. The permissible variation in diameter of any reinforcement shall conform to the tolerances prescribed in the ASTM Specification for that type of reinforcement.

7.2 Wingwalls and Headwalls

7.2.1 Wall Thickness - The wall thickness shall not vary from that shown in the design by more than 1/2 inch.

7.2.2 Length/ Height of Wall sections - The length and height of the wall shall not vary from that shown in the design by more than 1/2 inch.

7.2.3 Position of Reinforcement - The maximum variation in the position of the reinforcement shall be ± 1/2 inch. In no case shall the cover over the reinforcement be less than 1 1/2 inches.

7.2.4 Size of Reinforcement - The permissible variation in diameter of any reinforcing shall conform to the tolerances prescribed in the ASTM Specification for that type of reinforcing. Steel area greater than that required shall not be cause for rejection.

STATE OF MARYLAND — TIMOTHY M. KELLER — No. 22201 — PROFESSIONAL ENGINEER

06-05-07

8. TESTING AND INSPECTION

8.1 Type of Test Specimen - Concrete compressive strength shall be determined from compression tests made on cylinders or cores. For cylinder testing, a minimum of 4 cylinders shall be taken during each production run. For core testing, one core shall be cut from each of 3 precast elements selected at random from each production group. A production group shall be defined as 15 or fewer bridge units (of a particular size), wingwalls or headwalls in a continuous production run. For each continuous production run, each production group or fraction thereof shall be considered separately for the purpose of testing and acceptance. A production run shall be considered continuous if not interrupted for more than 3 consecutive days.

8.2 Compression Testing - Cylinders shall be made and tested as prescribed by the ASTM C 39 Specification. Cores shall be obtained and tested for compressive strength in accordance with the provisions of the ASTM C497 Specification.

8.3 Acceptability of Cylinder Tests - When the average compressive strength of all cylinders tested is equal to or greater than the design compressive strength, and not more than 10% of the cylinders tested have a compressive strength less than the design concrete strength, and no cylinder tested has a compressive strength less than 80% of the design compressive strength, then the lot shall be accepted. When the compressive strength of the cylinders tested does not conform to this acceptance criteria, the acceptability of the lot may be determined as described in section 8.4, below.

8.4 Acceptability of Core Tests - The compressive strength of the concrete in each production group as defined in 8.1 is acceptable when the average core test strength is equal to or greater than the design concrete strength. When the compressive strength of the core tested is less than the design concrete strength, the precast element from which that core was taken may be re-cored. When the compressive strength of the re-core is equal to or greater than the design concrete strength, the compressive strength of the concrete in that production group is acceptable.

8.4.1 When the compressive strength of any recore is less than the design concrete strength, the precast element from which that core was taken shall be rejected. Two precast elements from the remainder of the group shall be selected at random and one core shall be taken from each. If the compressive strength of both cores is equal to or greater than the design concrete strength, the compressive strength of the remainder of that group is acceptable. If the compressive strength of either of the two cores tested is less than the design concrete strength, the remainder of the group shall be rejected or, at the option of the manufacturer, each precast element of the remainder of the group shall be cored and accepted individually, and any of these elements that have cores with less than the design concrete strength shall be rejected.

8.4.2 Plugging Core Holes - The core holes shall be plugged and sealed by the manufacturer in a manner such that the elements will meet all of the test requirements of this specification. Precast elements so sealed shall be considered satisfactory for use.

8.4.3 Test Equipment - Every manufacturer furnishing culverts under this specification shall furnish all facilities and personnel necessary to carryout the test required.

9. JOINTS

The bridge units shall be produced with flat butt ends. The ends of the bridge units shall be such that when the sections are laid together they will make a continuous line of with a smooth interior free of appreciable irregularities, all compatible with the permissible variations in Section 7, above. The joint width shall not exceed 3/4 inches.

10. WORKMANSHIP AND FINISH

The bridge units, wingwalls, and headwalls shall be substantially free of fractures. The ends of the bridge units shall be normal to the walls and centerline of the bridge section, within the limits of the variations given in section 7, above, except where beveled ends are specified. The faces of the wingwalls and headwalls shall be parallel to each other, within the limits of variations given in section 7, above. The surface of the precast elements shall be a smooth steel form or troweled surface. Trapped air pockets causing surface defects shall be considered as part of a smooth, steel form finish.

Engineer's Seal

CONTECH Bridge Solutions Inc. - System:

CON/SPAN® BRIDGE SYSTEMS

11. REPAIRS

Precast elements may be repaired, if necessary, because of imperfections in manufacture or handling damage and will be acceptable if, in the opinion of the purchaser, the repairs are sound, properly finished and cured, and the repaired section conforms to the requirements of this specification.

12. INSPECTION

The quality of materials, the process of manufacture, and the finished culverts shall be subject to inspection by the purchaser.

13. REJECTION

The precast elements shall be subject to rejection on account of any of the specification requirements. Individual precast elements may be rejected because of any of the following:

13.1 Fractures or cracks passing through the wall, except for a single end crack that does not exceed one half the thickness of the wall.

13.2 Defects that indicate proportioning, mixing, and molding not in compliance with Section 5 of these specifications.

13.3 Honeycombed or open texture.

13.4 Damaged ends, where such damage would prevent making a satisfactory joint.

14. MARKING

Each bridge unit shall be clearly marked by waterproof paint. The following shall be shown on the inside of the vertical leg of the bridge section:
Bridge Span X Bridge Rise
Date of Manufacture
Name or trademark of the manufacturer

No As-Built information is required on this sheet

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER

12-21-13

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. 21443 Expiration Date: 12-21-14

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 7-20-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/17/07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/24/07

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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Company:
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704-548-8586 fax
800-526-3999

Sheet Title: SPECIFICATIONS

HOWARD COUNTY MARYLAND

TAYLOR FARM
SECTION THREE, PHASE TWO

Project Status: APPROVED: FOR CONSTRUCTION

Designed	Project No.
MRP	15086
Drawn: RPU	
Checked: LNM	Sheet No. CT7
Date: 4/12/07	

OWNER/DEVELOPER:
FRIENDLY FARMS LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21041
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 3 OF FRIENDLY FARMS (PLAT NO. 10330-10331)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: CON/SPAN BRIDGE SPECIFICATIONS

DATE: JULY, 2007 PROJECT NO. 1585

DESIGN: DRAFT: CHECK: SCALE: AS SHOWN SHEET 21 OF 22

AS-BUILT

F-07-051

SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF CON/SPAN® BRIDGE SYSTEMS (CONT'D)

15. CONSTRUCTION REQUIREMENTS

15.1 Footings - The bridge units and wingwalls shall be installed on either precast or cast-in-place concrete footings. The design size and elevation of the footings shall be as determined by the Engineer. A three inch deep keyway shall be formed in the top surface of the bridge footing three inches clear of the inside and outside faces of the bridge units, unless specified otherwise on the plans. No keyway is required in the wingwall footings, unless otherwise specified on the plans. The footings shall be given a smooth float finish and shall reach a compressive strength of 2,000 psi before placement of the bridge and wingwall elements. The completed footing surface shall be constructed in accordance with grades shown on the plans. When tested with a 10 foot straight edge, the surface shall not vary more than 1/4 inch in 10 feet. If a precast concrete footing is used, the contractor shall prepare a 4 inch thick base layer of compacted granular material the full width of the footing prior to placing the precast footing.

15.2 Placement of the Bridge Units, Wingwalls and Headwalls - The bridge units, wingwalls and headwalls shall be placed as shown on the Engineer's plan drawings. Special care shall be taken in setting the elements to the true line and grade. The bridge units and wingwalls shall be set on 6" x 6" masonite or steel shims. A minimum gap of 1/2 inch shall be provided between the footing and the bottom of the bridge's vertical legs or the wingwall. The gap shall be filled with cement grout (Portland cement and water or cement mortar composed of Portland cement, sand and water) with a minimum 28-day compressive strength of 3000 psi. If units have been set with temporary ties (cables, bars, etc.) grout must attain a minimum compressive strength of 1500 psi before ties may be removed.

15.3 External Protection of Joints - The butt joint made by two adjoining bridge units shall be covered with a 7/8" x 1 3/8" preformed bituminous joint sealant and a minimum of a 9 inch wide joint wrap. The surface shall be free of dirt before applying the joint material. A primer compatible with the joint wrap to be used shall be applied for a minimum width of nine inches on each side of the joint. The external wrap shall be either EZ-WRAP RUBBER by PRESS-SEAL GASKET CORPORATION, SEAL WRAP by MAR MAC MANUFACTURING CO. INC. or approved equal. The joint shall be covered continuously from the bottom of one bridge section leg, across the top of the arch and to the opposite bridge section leg. Any laps that result in the joint wrap shall be a minimum of six inches long with the overlap running downhill.

In addition to the joints between bridge units, the joint between the end bridge unit and the headwall shall also be sealed as described above. If precast wingwalls are used, the joint between the end bridge unit and the wingwall shall be sealed with a 2'-0" strip of filter fabric. Also, if lift holes are formed in the arch units, they shall be primed and covered with a 9" x 9" square of joint wrap.

During the backfilling operation, care shall be taken to keep the joint wrap in its proper location over the joint.

15.4 Backfill - Backfill shall be considered as all replaced excavation and new embankment adjacent to the CON/SPAN® bridge units, wingwalls, and headwalls. The project construction and material specifications which include the specifications for excavation for structures and roadway excavation and embankment construction, shall apply except as modified in this section.

No backfill shall be placed against any structural elements until they have been approved by the Engineer.

Backfill against a waterproofed surface shall be placed carefully to avoid damage to the waterproofing material.

Mechanical tampers or approved compacting equipment shall be used to compact all backfill and embankment immediately adjacent to each side and over the top of each bridge unit until it is covered to a minimum depth of one foot, unless the design fill height is less than 1'-0". The backfill within the Critical Backfill Zone (shown in the diagrams below) shall be placed in lifts of eight inches or less (loose depth). Heavy compaction equipment shall not be operated in this area or over the bridge until it is covered to a depth of one foot, unless the design fill height is less than 1'-0".

Lightweight dozers and graders may be operated over bridge units having one foot of compacted cover, but heavy earth moving equipment (larger than a D-4 Dozer weighing in excess of 12 tons and having track pressures of eight psi or greater) shall require two feet of cover unless the design cover is less than two feet. In no case shall equipment operating in excess of the design load (HS20 or HS25) be permitted over the bridge units unless approved by CON/SPAN®.

Any additional fill and subsequent excavation required to provide this minimum cover shall be made at no additional cost to the project.

As a precaution against introducing unbalanced stresses in the bridge, when placing backfill at no time shall the difference between the heights of fill on opposite sides of the bridge exceed 24".

Backfill in front of wingwalls shall be carried to ground lines shown in the plans.

For fill heights over 12 feet, no backfilling may begin until a backfill compaction testing plan has been coordinated with and approved by CON/SPAN® Bridge Systems. Cost of the backfill compaction testing shall be included in the cost of the precast units. This included cost applies only to projects with fill heights over 12 feet (as measured from top crown of arch to finished grade).

16. QUALITY ASSURANCE

The Precaster shall demonstrate adherence to the standards set forth in the NPCA Quality Control Manual. The Precaster shall meet either Section 16.1 or 16.2.

16.1 Certification: The Precaster shall be certified by the Precast/Prestressed Concrete Institute Plant Certification Program or the National Precast Concrete Association's Plant Certification Program prior to and during production of the products covered by this specification.

16.2 Qualifications, Testing and Inspection

16.2.1 The Precaster shall have been in the business of producing precast concrete products similar to those specified for a minimum of three years. He shall maintain a permanent quality control department or retain an independent testing agency on a continuing basis. The agency shall issue a report, certified by a licensed engineer, detailing the ability of the Precaster to produce quality products consistent with industry standards.

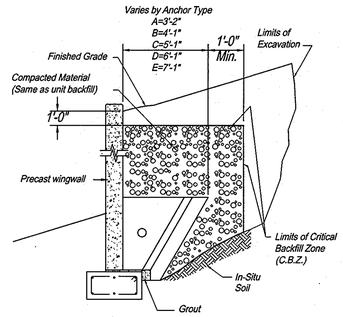
16.2.2 The Precaster shall show that the following tests are performed in accordance with the ASTM standards indicated. Tests shall be performed for each 150 cubic yards of concrete placed, but not less frequently than once per production run, as defined in §8 of these specifications.

16.2.2.1 Air Content: C231 or C173

16.2.2.2 Compressive Strength: C39, C497

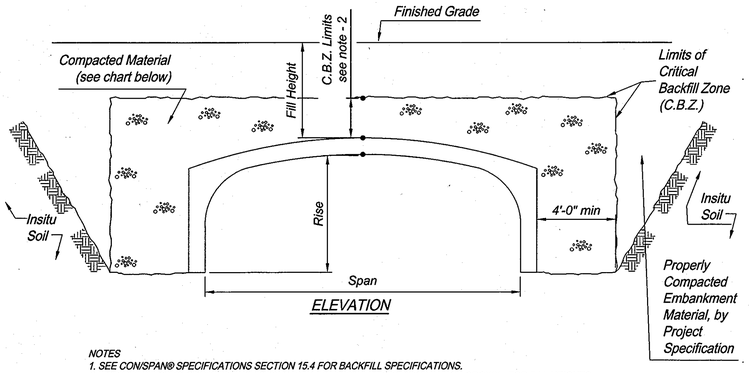
16.2.3 The Precaster shall provide documentation demonstrating compliance with this section to CON/SPAN® Bridge Systems at regular intervals or upon request.

16.2.4 The Owner may place an inspector in the plant when the products covered by this specification are being manufactured.



WINGWALL BACKFILL REQUIREMENTS

BACKFILL DESCRIPTION (AASHTO M 145-91)								
Group Classification	A-1		A-3	A-2				A-4
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7	
Sieve Analysis, Percent Passing (100% Passing 3" Sieve)								
No. 10	50 max.							
No. 40	30 max.	50 max.	51 min.					
No. 200	15 max.	25 max.	10 max.	35 max.	35 max.	35 max.	35 max.	36 min.
Characteristics of Fraction Passing No. 40								
Liquid Limit				40 max.	41 min.	40 max.	41 min.	40 max.
Plasticity Index	6 max.		N.P.	10 max.	10 max.	11 min.	11 min.	10 max.
Usual Types of Significant Constituent Materials	Stone Fragments, Gravel & Sand		Fine Sand	Silty or Clayey Gravel and Sand				Silty Soils
General Rating as Subgrade	Excellent to Good							Fair to Poor



ELEVATION

NOTES
1. SEE CON/SPAN® SPECIFICATIONS SECTION 15.4 FOR BACKFILL SPECIFICATIONS.
2. FOR FILL HEIGHTS GREATER THAN 2'-0", C.B.Z. LIMIT SHALL BE 2'-0" ABOVE ARCH CROWN. FOR FILL HEIGHTS LESS THAN 2'-0", THE FINISHED GRADE SHALL BE THE BOUNDARY LINE FOR THE C.B.Z.
3. BACKFILLING OPERATIONS WITHIN THE C.B.Z. SHALL BE PERFORMED IN LIFTS OF 8" OR LESS (LOOSE DEPTH).
4. MAXIMUM DRY DENSITY SHALL BE DETERMINED BY AASHTO T-99 OR OTHER APPROVED METHODS.
5. BACKFILL SHALL BE COMPACTED IN LAYERS UNTIL THE DENSITY IS NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY.

SPAN	FILL HEIGHT	ACCEPTABLE MATERIAL INSIDE C.B.Z.	ACCEPTABLE MATERIAL OUTSIDE C.B.Z.
≤ 24'-0"	≥ 12'-0"	A1, A3	**
≤ 24'-0"	< 12'-0"	A1, A2, A3, A4	**
> 24'-0"	ALL	A1, A3	**

** EMBANKMENT MATERIAL PER PROJECT SPECIFICATIONS

BACKFILL REQUIREMENTS

REVISED 9/3/03 SPEC4.DWG
REVISED 1/15/02 SPEC4.DWG
REVISED 6/12/01 SPEC3.DWG
REVISED 7/21/00 SPEC3.DWG
REVISED 7/14/97 SPEC1.DWG
REVISED 4/4/96 SPEC1.DWG
REVISED 3/5/96 SPEC1.DWG
REVISED 11/14/94 SPEC1.DWG
REVISED 5/25/94 SPEC1.DWG
REVISED 9/10/93 SPEC1.DWG

No As-Built information is required on this sheet

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER
12-31-13

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. 21443 Expiration Date 12-21-14

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 7-20-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/25/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/24/07

STATE OF MARYLAND — THOMAS EDWARD PULLEN — No. 22201 — PROFESSIONAL ENGINEER
06-05-07

Engineer's Seal

NO.	DATE	REVISION

CONTECH Bridge Solutions Inc. - System:
CON/SPAN® BRIDGE SYSTEMS

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

OWNER/DEVELOPER:
FRIENDLY FARMS, LLC
P.O. BOX 417
ELLICOTT CITY, MARYLAND 21043
410-465-4244

PROJECT: TAYLOR FARM
SECTION THREE, PHASE TWO
LOTS 57 THROUGH 101 AND NON-BUILDABLE BULK PARCEL 'A'
A RESUBDIVISION OF LOT 54 TAYLOR FARM SECTION THREE AND LOT 3 OF FRIENDLY FARMS (PLAT NO. 9220-9227)

LOCATION: TAX MAP: 10 GRID: 23 PARCEL: 309
TAX MAP: 16 GRID: 5 ZONED: R-20
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: CON/SPAN BRIDGE SPECIFICATIONS

DATE: JULY, 2007 PROJECT NO. 1585
SCALE: AS SHOWN SHEET 22 OF 22

DESIGN: DRAFT: CHECK:

Company:
CONTECH® BRIDGE SOLUTIONS INC.
8430 University Executive Park Drive
Suite 695
Charlotte, North Carolina 28262
704-548-8420
704-548-8586 fax
800-526-3999

Sheet Title: SPECIFICATIONS
HOWARD COUNTY MARYLAND
TAYLOR FARM
SECTION THREE, PHASE TWO

Project Status: APPROVED: FOR CONSTRUCTION

Designed	Project No.
MRP	15086
Drawn: RPU	
Checked: LNM	Sheet No. CT8
Date: 4/12/07	

As-Built

F-07-051