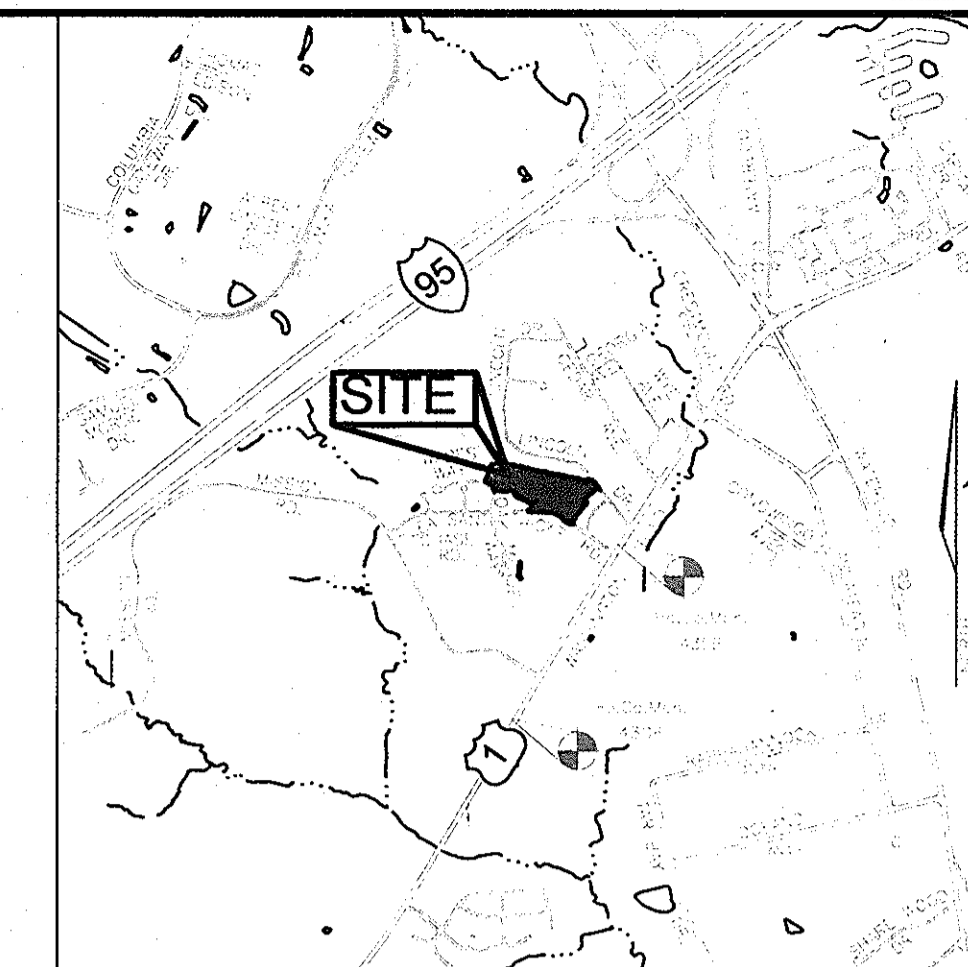


GENERAL NOTES

- 1. THE SUBJECT PROPERTY ZONED "R-SC" PER 02/02/04 COMPREHENSIVE ZONING PLAN AND PER THE "COMP LITE" ZONING REGULATION AMENDMENTS EFFECTIVE 7/28/06.
2. THIS SITE IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
3. PUBLIC WATER AND SEWER TO BE UTILIZED. (CONTRACT #24-4625-D, AND 676-S)
4. HOWARD COUNTY SOILS MAP NO. 30.
5. GROSS AREA OF SITE: 5.894 AC±
6. NUMBER OF PROPOSED BUILDABLE LOTS: 33
AREA OF PROPOSED BUILDABLE LOTS: 5.885 AC±
7. IN ACCORDANCE WITH SECTION 128 OF THE HOWARD COUNTY ZONING REGULATIONS, BAY WINDOWS, CHIMNEYS OR EXTERIOR STAIRWAYS NOT MORE THAN 16 FEET IN WIDTH MAY PROJECT NOT MORE THAN 4 FEET INTO ANY SETBACKS, PORCHES OR DECKS, OPEN OR ENCLOSED MAY PROJECT NOT MORE THAN 10 FEET INTO THE FRONT OR REAR YARD SETBACK.
8. DRIVEWAY(S) SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT TO ENSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING REQUIREMENTS:
A) WIDTH - 12 FEET (16 FEET SERVING MORE THAN ONE RESIDENCE);
B) SURFACE - SIX (6") INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-1/2" MINIMUM);
C) GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND 45-FOOT TURNING RADIUS;
D) STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25-LOADING);
E) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER SURFACE;
F) MAINTENANCE - SUFFICIENT TO ENSURE ALL WEATHER USE
9. ORIGINAL TOPOGRAPHY IS BASED ON A FIELD RUN SURVEY PREPARED BY WALKER LAND SURVEYS, LLC IN FEBRUARY 2007, MASS GRADED UNDER F-10-037, AND SHOWN HERE AS EXISTING.
10. THE TRAFFIC STUDY FOR THIS PROJECT WAS APPROVED UNDER S-08-03, BASED ON AN INVESTIGATION PREPARED BY STREET TRAFFIC STUDIES LTD., IN NOVEMBER 2006. IT WAS DETERMINED THAT THE PROJECT WAS EXEMPT FROM AN APPO TRAFFIC STUDY BECAUSE THE NEAREST REQUIRED INVESTIGATION INTERSECTIONS US 1 & MD 175 (P-152) AND US 1 & PATUXENT RANGE ROAD (P-105) WERE BEYOND THE 1.5 MILE STUDY LIMIT.
11. STORMWATER MANAGEMENT PROVIDED UNDER F-10-037.
A SUMMARY FOR THE STORMWATER MANAGEMENT PRACTICES PROVIDED AS FOLLOWS:
CPV BY A MICRO-POOL EXTENDED DETENTION FACILITY
WOV BY A SURFACE SAND FILTER AND MICRO-POOL EXTENDED DETENTION FACILITY
REV BY ADDITIONAL STONE STORAGE BENEATH THE SURFACE SAND FILTER.
THE MICRO-POOL SWM FACILITY ON OPEN SPACE LOT 142 (PLAT 11758) SHALL BE PRIVATELY OWNED AND JOINTLY MAINTAINED WITH HOWARD COUNTY. THE SURFACE SAND FILTER SWM FACILITY ON OPEN SPACE LOT 178 SHALL BE PRIVATELY OWNED AND MAINTAINED.
12. THE WETLAND LETTER AND REPORT AND THE FOREST STAND DELINEATION AND REPORT WERE PREPARED BY EXPLORATION RESEARCH INC. APPROVED UNDER SKETCH PLAN S-08-03.
13. THERE ARE NO HISTORIC STRUCTURES, FLOODPLAINS, STREAMS OR CEMETERIES ON-SITE.
14. THE FOLLOWING DPZ FILE REFERENCES APPLY TO THIS PLAN, S-91-04, PB-272, WP-91-55, WP-92-185, WP-93-03, WP-00-74, F-92-146, F-94-93, F-95-05, F-95-32, F-95-158, F-03-10, F-04-09, SDP-03-03, SDP-04-06, SDP-05-50, SDP-05-110, SDP-06-59, SDP-00-117, SDP-02-29, SDP-03-16, SDP-03-145, WP-09-70, S-08-03, P-09-005, F-10-037, CONTRACT #676-S, AND CONTRACT #24-4625-D.
15. THIS PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS OR CONSTRUCTION ON THESE LOTS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION, OR BUILDING AND GRADING PERMITS.
16. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100-YEAR FLOODPLAIN.
17. LANDSCAPING FOR THIS SUBDIVISION IS PROVIDED IN ACCORDANCE WITH A LANDSCAPE PLAN INCLUDED WITH THE ROAD CONSTRUCTION DRAWINGS UNDER HOWARD COUNTY PLAN F-10-037.
18. LANDSCAPING ON F-10-037 HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
19. FOREST CONSERVATION REQUIREMENTS AND SURETY HAVE BEEN PROVIDED UNDER F-10-037.
20. ALL EXISTING WELLS AND SEPTIC SYSTEMS HAVE BEEN ABANDONED UNDER F-10-037.
21. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED ON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NUMBERS 43EB AND 4366 WERE USED FOR THIS PROJECT. (SEE VICINITY MAP)
22. THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
23. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE(5) WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:
STATE HIGHWAY ADMINISTRATION 410.531.5533
BGE(CONTRACTOR SERVICES) 410.850.4620
BGE(UNDERGROUND DAMAGE CONTROL) 410.787.9068
MISS UTILITY 1.800.257.7777
COLONIAL PIPELINE COMPANY 410.795.1390
HOWARD COUNTY, DEPT. OF PUBLIC WORKS, BUREAU OF UTILITIES 410.313.4800
HOWARD COUNTY HEALTH DEPARTMENT 410.313.2640
24. THE CONTRACTOR SHALL NOTIFY MISS UTILITY AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
25. 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. ALL FILLS FOR PUBLIC ROAD SURFACES REQUIRE 95% COMPACTION (ASH70-T-180).
26. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
27. ALL WATER HOUSE CONNECTIONS SHALL BE FOR OUTSIDE METERING SETTINGS.
28. CONTRACTOR TO VERIFY ALL DIMENSIONS IN THE FIELD AND IN CASE OF DISCREPANCY CONTACT THE ENGINEER.
29. ALL LANDSCAPING FOR THIS SITE DEVELOPMENT PLAN HAS BEEN PROVIDED UNDER F-10-037.
30. ANY DAMAGE TO THE COUNTY'S RIGHT-OF-WAY SHALL BE CORRECTED AT THE DEVELOPER'S EXPENSE.
31. SHC (SEWER HOUSE CONNECTION) ELEVATIONS SHOWN ARE LOCATED AT THE PROPERTY LINE.
32. FOR DRIVEWAY ENTRANCE DETAILS REFER TO THE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD DETAIL R-6.03.
33. EXISTING UTILITIES LOCATED FROM ROAD CONSTRUCTION PLANS AND AVAILABLE RECORD DRAWINGS. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE.
34. BA CAGE NO. 18-022V TO REDUCE THE SIDE SETBACK FROM 7.5 FEET TO ONE (1) FOOT FOR A RETAINING WALL IN A R-SC (RESIDENTIAL SINGLE CLUSTER) ZONING DISTRICT, GRANTED OCTOBER 7, 2013.

SITE DEVELOPMENT PLAN
PLEASANT CHASE PHASE IV
LOTS 144 THROUGH 176
HOWARD COUNTY, MARYLAND



VICINITY MAP
SCALE: 1" = 2000'
ADC MAP 5054, C-4

Table with 4 columns: NO., NORTHING, EASTING, ELEVATION. Contains benchmark data for points 43EB and 4366.

SHEET INDEX

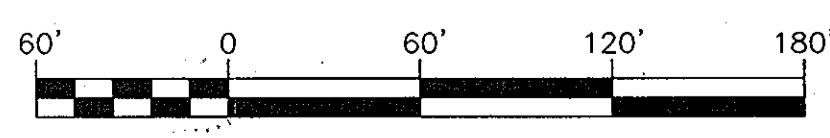
Table with 2 columns: DESCRIPTION, SHEET NO. Lists various sheets including cover sheet, site development and grading plan, sediment & erosion control, soils plan, and house templates.



SITE DATA

LOCATION: TAX MAP 43, GRID 8, PARCELS 211, 492, 493, 494, 622
6TH ELECTION DISTRICT
EXISTING ZONING: R-SC
TOTAL AREA OF PROJECT: 5.893 AC
TOTAL AREA OF PLAN SUBMISSION: AREA OF BUILDABLE LOTS: 5.893 AC
LIMIT OF DISTURBED AREA: 5.592 AC±
TOTAL NUMBER OF UNITS/ LOTS PROPOSED FOR THIS SUBDIVISION: 33 UNITS/ LOTS
PROPOSED USES FOR SITE & STRUCTURES: SINGLE FAMILY DETACHED DWELLINGS
OPEN SPACE ON SITE: ADEQUATELY PROVIDED UNDER F-10-037
BUILDING COVERAGE OF SITE: 1.492 ACRES± OR 25.31% OF GROSS AREA.
PREVIOUS DPZ FILE REFERENCE NO.: S-91-04, PB-272, WP-91-55, WP-92-185, WP-93-03, WP-00-74, F-92-146, F-94-93, F-95-05, F-95-32, F-95-158, F-03-10, F-04-09, SDP-93-103, SDP-94-06, SDP-95-50, SDP-95-110, SDP-96-59, SDP-00-117, SDP-02-29, SDP-03-16, SDP-03-145, WP-09-70, S-08-03, P-09-005, F-10-037, 676-S, 24-4625-D.

LOCATION MAP
SCALE: 1" = 60'



ADDRESS CHART

Table with 2 columns: LOT NO, STREET ADDRESS. Lists addresses for lots 144 through 176.

PERMIT INFORMATION CHART with columns for SUBDIVISION NAME, SECTION/ AREA, LOT/ PARCELS, PLAT REF #, BLOCK NO, ZONE, TAX MAP, ELECT DIST, CENSUS TR.

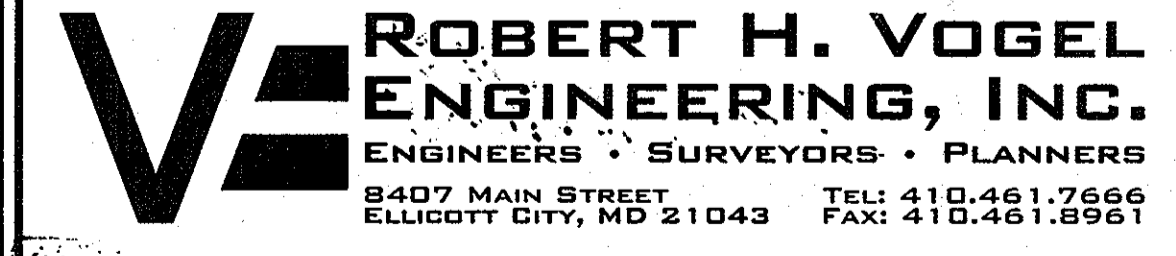
BUILDER

RYAN HOMES
6031 UNIVERSITY BLVD.
SUITE 250
ELLCOTT CITY, MARYLAND 21043
(410) 796-0980

Revision table with columns: NO., REVISION, DATE. Shows two revisions to the plan.

SITE DEVELOPMENT PLAN
COVER SHEET
PLEASANT CHASE - PHASE IV
LOTS 144 THROUGH 176
SINGLE-FAMILY DETACHED

TAX MAP 43 GRID 8
6TH ELECTION DISTRICT
PARCELS 211, 492, 493, 494, 622
HOWARD COUNTY, MARYLAND



Professional Certificate section including design by, drawn by, checked by, date, scale, and sheet number information.

Approval section with signatures and dates for the Chief, Development Engineering Division and the Director of the Howard County Department of Planning and Zoning.



**LEGEND**

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING SPOT ELEVATION
- EXISTING SPOT ELEVATION
- DIRECTION OF FLOW
- EXISTING TREES (PER F-10-037)
- EXISTING TREES TO REMAIN
- EXISTING SIGN
- STREET LIGHT
- FIRE HYDRANT
- LOT LINES
- BOUNDARY LINE
- EXISTING WATER MAIN
- EXISTING SEWER MAIN
- EXISTING STORMDRAIN
- CENTERLINE OF ROAD
- EXISTING RIP-RAP
- EXISTING SAND FILTER
- EXISTING USE-IN-COMMON ACCESS EASEMENT
- EXISTING STORMDRAIN, DRAINAGE & UTILITY EASEMENT
- EXISTING SURFACE DRAINAGE EASEMENT
- EXISTING STREET TREE EASEMENT
- EXISTING SEWER EASEMENT
- EXISTING HOUSE/ BUILDING
- GENERIC BOX
- EXISTING UTILITY POLE TO REMAIN

NOTE:  
EASEMENTS SHOWN ON-SITE HAVE BEEN ESTABLISHED AND RECORDED ON PLAT #21460

**BUILDER**  
RYAN HOMES  
6031 UNIVERSITY BLVD.  
SUITE 250  
ELLCOTT CITY, MARYLAND 21043  
(410) 796-0980

NO.	REVISION	DATE
1	REVISE GENERIC BOX TYPES & ASSOCIATED GRADING	08/11/11

REVISED SITE DEVELOPMENT PLAN  
**SITE DEVELOPMENT AND GRADING PLAN**  
**PLEASANT CHASE - PHASE IV**  
LOTS 144 THROUGH 176  
SINGLE-FAMILY DETACHED  
TAX MAP 43 GRID 8  
6TH ELECTION DISTRICT  
PARCELS 211, 492, 493, 494, 622  
HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
8407 MAIN STREET  
ELLCOTT CITY, MD 21043  
TEL: 410.461.7866  
FAX: 410.461.2961

PROFESSIONAL CERTIFICATE  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE 09-27-2015.

DESIGN BY: JCO  
DRAWN BY: HS  
CHECKED BY: RHV  
DATE: FEBRUARY, 2011  
SCALE: 1" = 30'  
W.O. NO.: 10-32

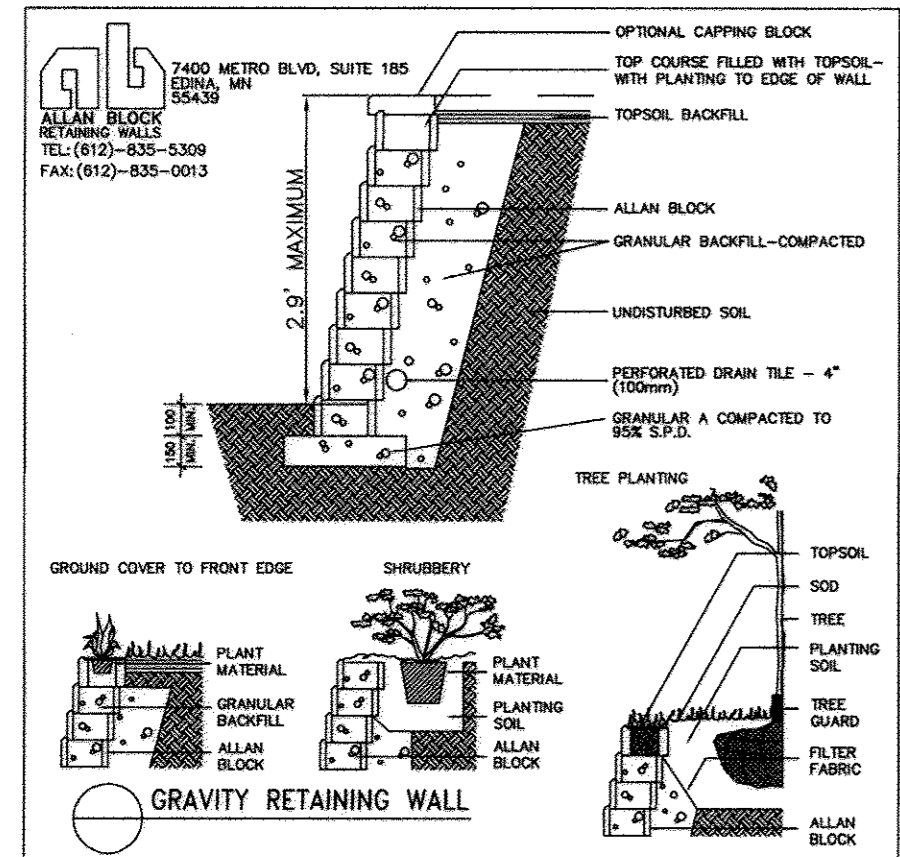
2 SHEET OF 8

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Chad P. ...* 4/24/12  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
*Mark ...* 5/1/12  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
*Mark ...* 5/1/12  
 DIRECTOR DATE

BY THE DEVELOPER:  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR EROSION AND SEDIMENT 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.  
*[Signature]* 2/12/12  
 SIGNATURE OF DEVELOPER DATE

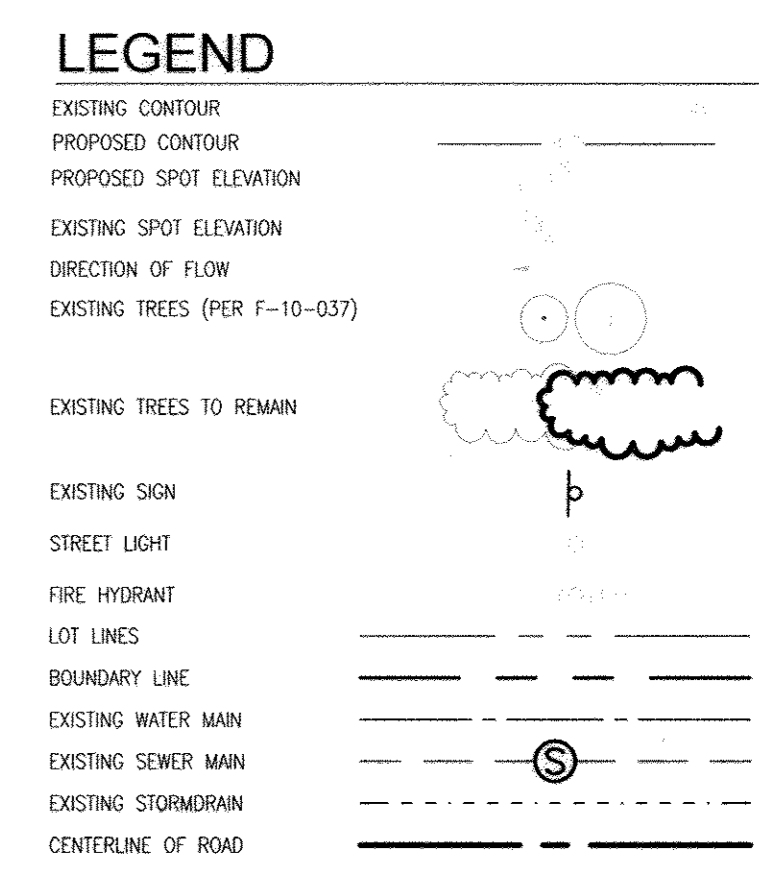
BY THE ENGINEER:  
 I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
*[Signature]* 2/12/12  
 SIGNATURE OF ENGINEER DATE

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



- SPECIFICATIONS**
- EXCAVATE AREA TO LINE AND GRADES AS SHOWN ON CONSTRUCTION DRAWINGS.
  - BASE MATERIAL SHALL BE GRANULAR & COMPACTED TO 95% S&P AND GRADED TO PROVIDE LEVEL HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF UNITS, MIN. THICKNESS - 6" (150mm).
  - PLACE FIRST COURSE A MINIMUM OF 4" (100mm) BELOW FINISH GRADE WITH THE BACKED UP SIDING OUT AND THE FRONT EDGES TIGHT TOGETHER. FILL GAPS WITH SAND OR CLEAR CRUSHED STONE AND COMPACT. SHEEP CLEAN AND CHECK THE UNITS FOR LEVEL AND ALIGNMENT. BACKFILL FRONT AND BACK OF ENTIRE BASE ROW TO FINISH LOOK IN PLACE.
  - INSTALL SUBSEQUENT COURSES IN SIMILAR FASHION PROVIDING A MIN. 3" (76mm) OVERLAP OF SEAMS AND A MIN. OF 1/2" (12mm) GRANULAR BACKFILL.
  - ALLAN BLOCKS COME IN 3 STYLES - STANDARD BLOCK, ANGLE BLOCK, AND CORNER BLOCK AS WELL AS A STANDARD CAPPING STONE. THE BLOCKS HAVE A COMPRESSIVE STRENGTH OF OVER 4000 PSI (COMPO).
  - A WIDE VARIETY OF FINISHES CAN BE ACHIEVED INCLUDING ROUGH AND QUARTZ CORNERS, CURVES AND STRIPS. BLOCKS COME IN 3 STANDARD COLORS: NATURAL, BUFF, BROWN. EARTH TONE, SHALE BLEND, AND WALKER. HIGHER THAN 4" REQUIRE GEOTEXTILE REINFORCEMENT AND MASONRY CONSTRUCTION CODES MUST BE FOLLOWED.

TYP. GRAVITY WALL OR EQUAL



NOTE: EASEMENTS SHOWN ON-SITE HAVE BEEN ESTABLISHED AND RECORDED ON PLAT #21461



**BUILDER**  
 RYAN HOMES  
 6031 UNIVERSITY BLVD.  
 SUITE 250  
 ELLICOTT CITY, MARYLAND 21043  
 (410) 796-0980

NO.	REVISION	DATE
6	REVISE TO CHANGE THE HOUSE TYPE & GRADES ON LOT 161	12/23/13
5	REVISE TO CHANGE THE HOUSE TYPE & GRADES ON LOT 169	12/02/13
4	REVISE TO CHANGE THE PLAN TO ADD RETAINING WALL TO LOT 170	07/30/13
3	REVISE TO CHANGE THE HOUSE TYPE ON LOT 169; REVISE GRADING TO	03/11/13
2	REVISE TO CHANGE THE HOUSE TYPE ON LOT 169; REVISE GRADING AND RETAINING WALL	02/15/13
1	REVISE GENERIC BOX TYPES & ASSOCIATED GRADING	05/11/11

REVISED SITE DEVELOPMENT PLAN  
**SITE DEVELOPMENT AND GRADING PLAN**  
**PLEASANT CHASE - PHASE IV**  
 LOTS 144 THROUGH 178  
 SINGLE-FAMILY DETACHED  
 TAX MAP 43 GRID 8 PARCELS 211, 492, 493, 494, 622  
 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET TEL: 410.461.7666  
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE

DESIGN BY: JCO  
 DRAWN BY: HS  
 CHECKED BY: RRV  
 DATE: FEBRUARY, 2011  
 SCALE: 1" = 30'  
 W.O. NO.: 10-32

STATE OF MARYLAND  
 PROFESSIONAL ENGINEER  
 No. 18193  
 EXPIRES 08-27-2014

3 SHEET OF 8

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division  
 Chief, Division of Land Development  
 Director

4/24/12  
 5/01/12  
 5/1/12

BY THE DEVELOPER:

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN 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."

SIGNATURE OF DEVELOPER  
 DATE: 2/22/12

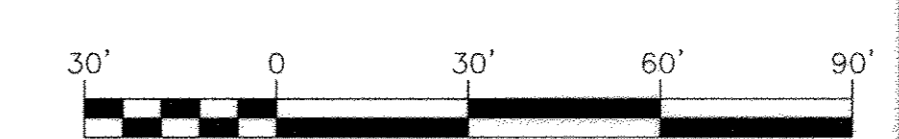
BY THE ENGINEER:

"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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."

SIGNATURE OF ENGINEER  
 DATE: 2/21/12

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

HOWARD S.C.D. DATE





- LEGEND**
- EXISTING CONTOUR
  - PROPOSED CONTOUR
  - PROPOSED SPOT ELEVATION
  - EXISTING SPOT ELEVATION
  - DIRECTION OF FLOW
  - EXISTING TREES (PER F-10-037)
  - EXISTING TREES TO REMAIN
  - EXISTING SIGN
  - STREET LIGHT
  - FIRE HYDRANT
  - LOT LINES
  - BOUNDARY LINE
  - EXISTING WATER MAIN
  - EXISTING SEWER MAIN
  - EXISTING STORMDRAIN
  - CENTERLINE OF ROAD
  - EXISTING RIP-RAP
  - EXISTING SAND FILTER
  - EXISTING USE-IN-COMMON ACCESS EASEMENT
  - EXISTING STORMDRAIN, DRAINAGE & UTILITY EASEMENT
  - EXISTING SURFACE DRAINAGE EASEMENT
  - EXISTING STREET TREE EASEMENT
  - EXISTING SEWER EASEMENT
  - EXISTING HOUSE/ BUILDING
  - GENERIC BOX
  - STABILIZED CONSTRUCTION ENTRANCE
  - SUPER SILT FENCE
  - SILT FENCE
  - LIMIT OF DISTURBANCE
  - NOISE PROTECTION
  - SOIL DUNE
  - EXISTING UTILITY POLE TO REMAIN

**SOILS LEGEND**

SYMBOL	NAME / DESCRIPTION	GROUP
KHC2	KEYPORT SILT LOAM, 3 TO 10 PERCENT SLOPES, MODERATELY ERODED	C
luB	IUKA LOAM, LOCAL ALLUVIUM, 1 TO 5 PERCENT SLOPES	C
ScB	SANDY AND CLAYEY LOAM, GENTLY SLOPING	B
ScC2	SASSAFRAS GRAVELLY SANDY LOAM, 5 TO 10 PERCENT SLOPES, MODERATELY ERODED	C
SIB2	SASSAFRAS LOAM, 1 TO 5 PERCENT SLOPES, MODERATELY ERODED	B
SsE	SASSAFRAS LOAM, 15 TO 40 PERCENT SLOPES	B

**BUILDER**  
 RYAN HOMES  
 6031 UNIVERSITY BLVD.  
 SUITE 250  
 ELLICOTT CITY, MARYLAND 21043  
 (410) 796-0980

NO.	REVISION	DATE
1	REVISE GENERIC BOX TYPES & ASSOCIATED GRADING	08/11/11

**REVISED SITE DEVELOPMENT PLAN**  
**SEDIMENT & EROSION CONTROL AND SOILS PLAN**  
**PLEASANT CHASE - PHASE IV**  
 LOTS 144 THROUGH 176  
 SINGLE-FAMILY DETACHED  
 PARCELS 211, 492, 493, 494, 622  
 HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET ELLICOTT CITY, MD 21043  
 TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: JCO  
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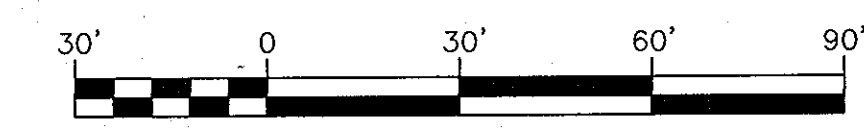
PROFESSIONAL CERTIFICATE  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRES 09-21-2012

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 4/24/12  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 5/1/12  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 [Signature] 5/1/12  
 DIRECTOR

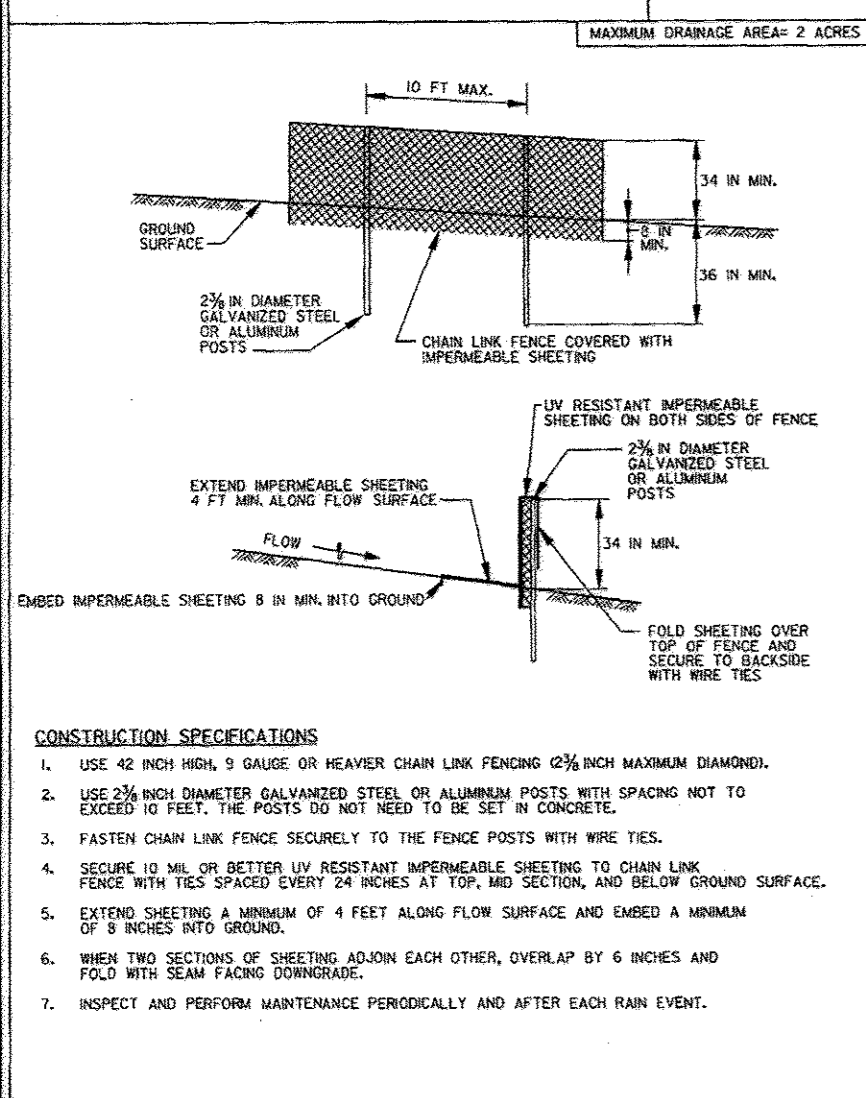
BY THE DEVELOPER:  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING 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.  
 [Signature] 2/20/12  
 SIGNATURE OF DEVELOPER

BY THE ENGINEER:  
 I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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.  
 [Signature] 4/16/12  
 SIGNATURE OF ENGINEER

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 [Signature] 4/16/12  
 HOWARD S.C.D.



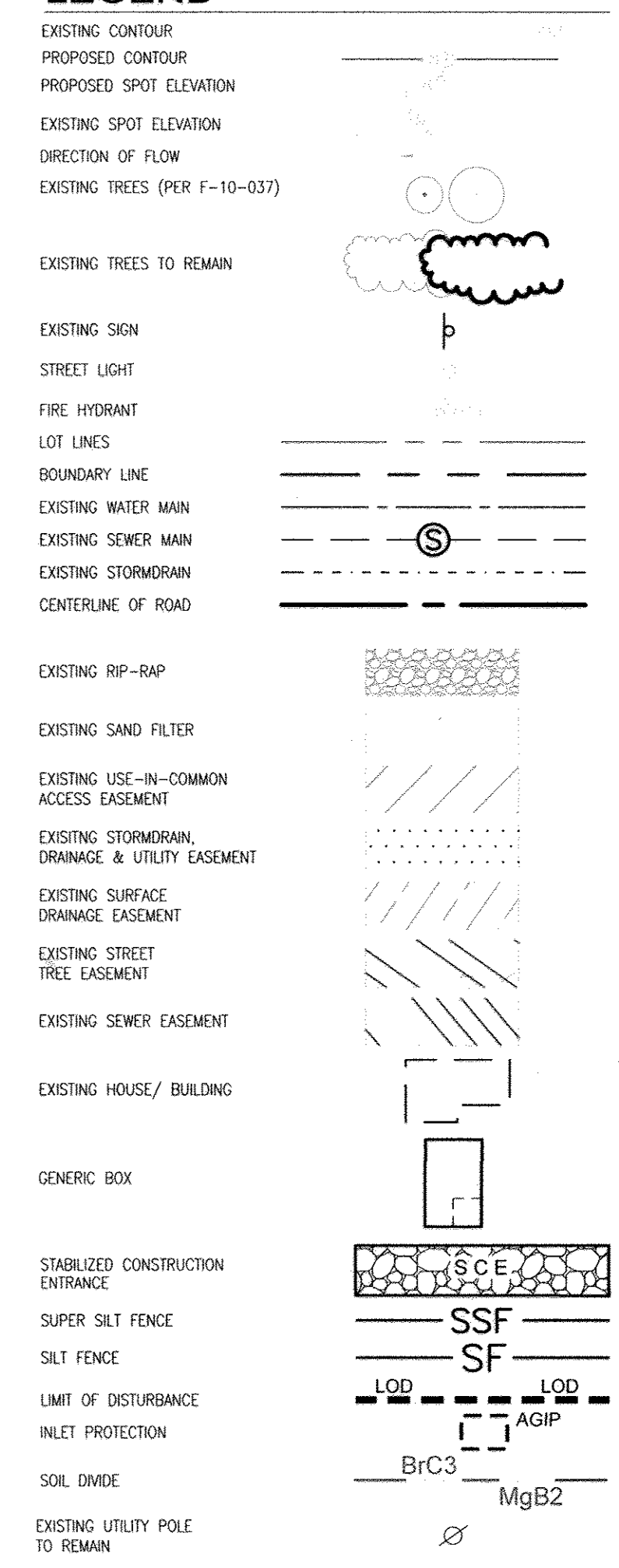
DETAIL C-9 DIVERSION FENCE



CONSTRUCTION SPECIFICATIONS  
 1. USE 42 RICH HIGH 9 GAUGE OR HEAVIER CHAIN LINK FENCING (2 1/2" MAXIMUM DIAMETER).  
 2. USE 2 1/2" DIAMETER GALVANIZED STEEL OR ALUMINUM POSTS WITH SPACING NOT TO EXCEED 10 FEET. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.  
 3. FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.  
 4. SECURE 1/2" OR BETTER UV RESISTANT IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIE SPACERS EVERY 18 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.  
 5. EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED A MINIMUM OF 3 INCHES INTO BANKS.  
 6. WELD TWO SECTIONS OF SHEETING AGAIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNSTREAM.  
 7. INSPECT AND PERFORM MAINTENANCE PERIODICALLY AND AFTER EACH RAIN EVENT.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL  
 U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE  
 MARYLAND DEPARTMENT OF ENVIRONMENT AND GENERAL SERVICES WATER MANAGEMENT ADMINISTRATION  
 C-9

LEGEND



NOTE: EASEMENTS SHOWN ON-SITE HAVE BEEN ESTABLISHED AND RECORDED ON PLAT #21461

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP
KHC2	KEYPORT SILT LOAM, 3 TO 10 PERCENT SLOPES, MODERATELY ERODED	C
lUB	IUKA LOAM, LOCAL ALLUVIUM, 1 TO 5 PERCENT SLOPES	C
ScB	SANDY AND CLAYEY LAND, GENTLY SLOPING	C
SIC2	SASSAFRAS GRAVELLY SANDY LOAM, 5 TO 10 PERCENT SLOPES, MODERATELY ERODED	B
SIB2	SASSAFRAS LOAM, 1 TO 5 PERCENT SLOPES, MODERATELY ERODED	B
SsE	SASSAFRAS LOAM, 15 TO 40 PERCENT SLOPES	B

BUILDER

RYAN HOMES  
 6031 UNIVERSITY BLVD.  
 SUITE 250  
 ELLICOTT CITY, MARYLAND 21043  
 (410) 798-0980

NO.	REVISION	DATE
5	REVISE TO CHANGE THE HOUSETYPE & GRADES FOR LOT 161	12/23/13
4	REVISE TO CHANGE THE HOUSETYPE & GRADES FOR LOT 109	12/02/13
3	REVISE TO CHANGE THE HOUSETYPE ON LOT 158, REVISE GRADING TOO	02/11/13
2	REVISE TO CHANGE THE HOUSETYPE ON LOT 173, REVISE GRADES & ADD RIP-RAP	02/05/13
1	REVISE GENERIC BOX TYPES & ASSOCIATED GRADING	08/11/11

REVISED SITE DEVELOPMENT PLAN  
 SEDIMENT & EROSION CONTROL  
 AND SOILS PLAN  
 PLEASANT CHASE - PHASE IV

LOTS 144 THROUGH 176  
 SINGLE-FAMILY DETACHED  
 TAX MAP 43 GRID B  
 6TH ELECTION DISTRICT  
 PARCELS 211, 492, 493, 494, 622  
 HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET  
 ELLICOTT CITY, MD 21043  
 TEL: 410.461.7666  
 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE  
 DESIGN BY: JCO  
 DRAWN BY: HS  
 CHECKED BY: RHW  
 DATE: FEBRUARY, 2011  
 SCALE: 1" = 30'  
 W.O. NO.: 10-32

STATE OF MARYLAND  
 PROFESSIONAL ENGINEER  
 ROBERT H. VOGEL, PE No. 16193

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 15143, EXPIRATION DATE 09-27-2014

5 SHEET OF 8

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 4/24/12

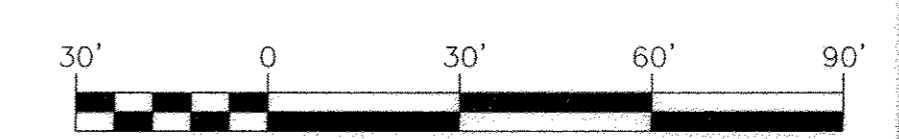
CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 5/10/12

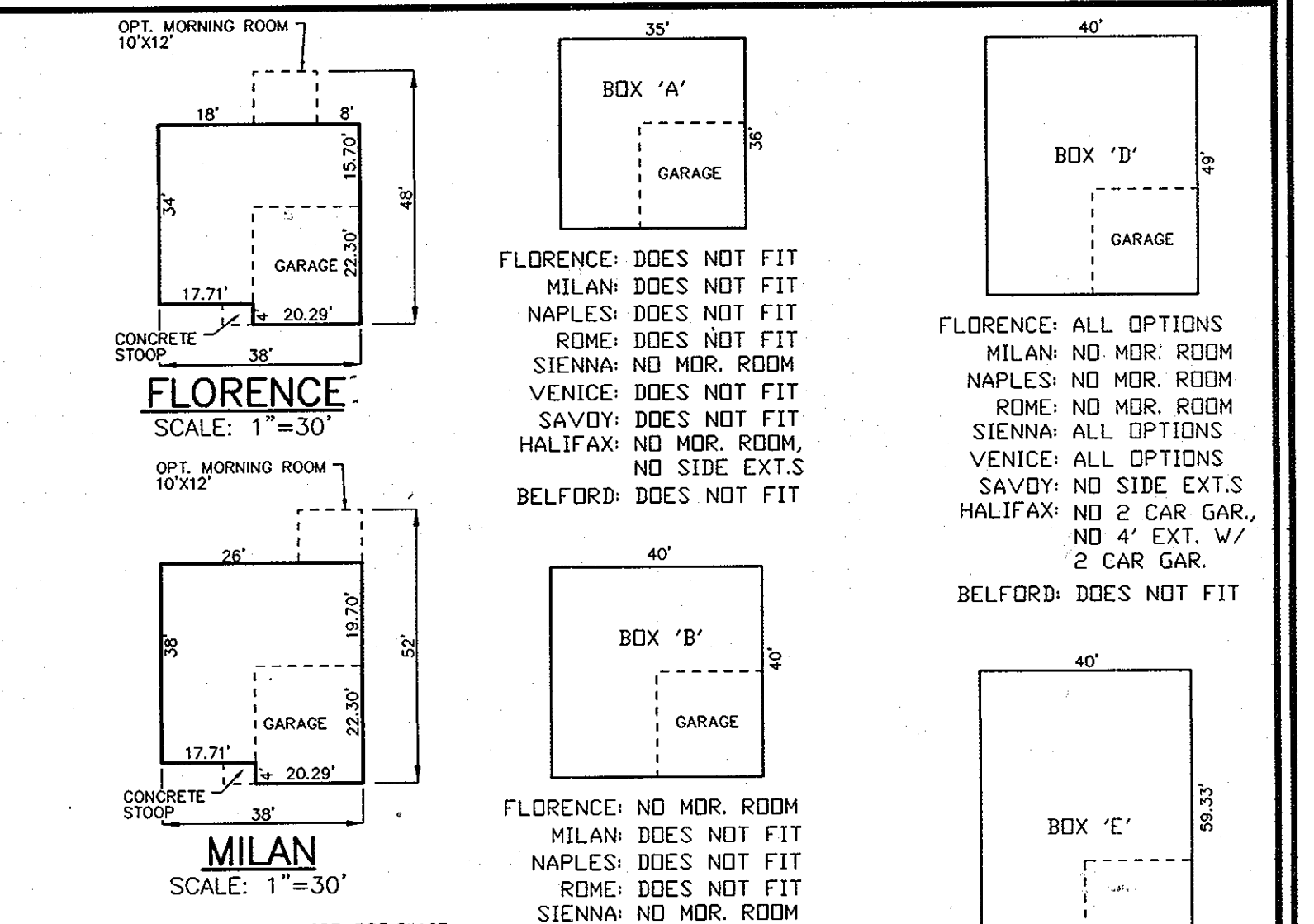
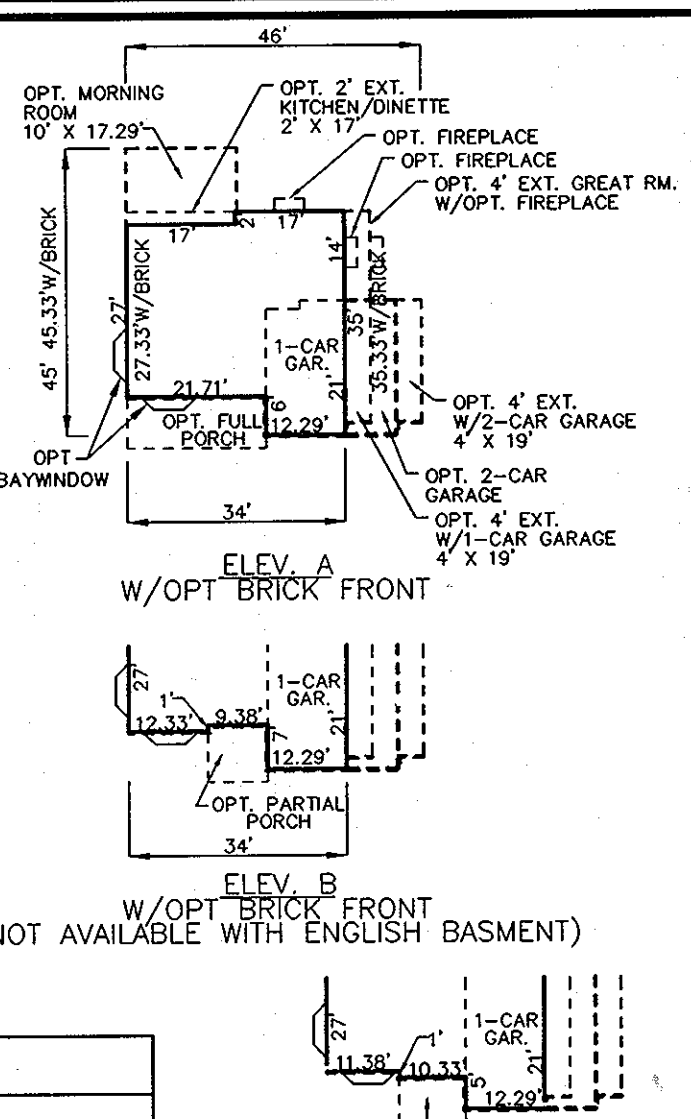
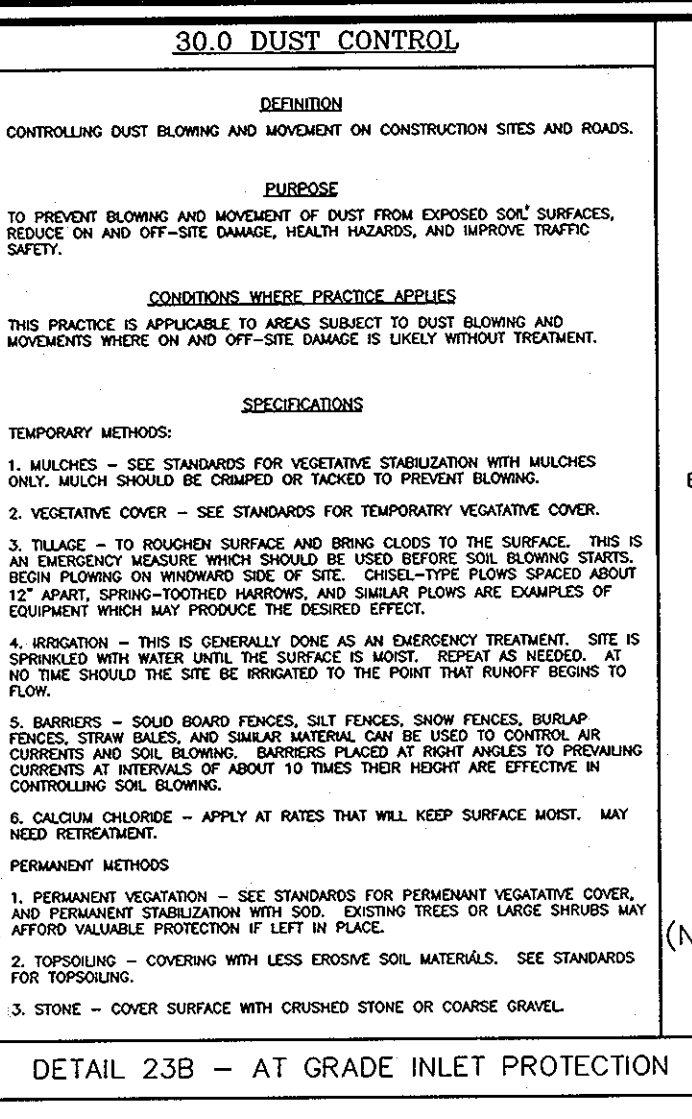
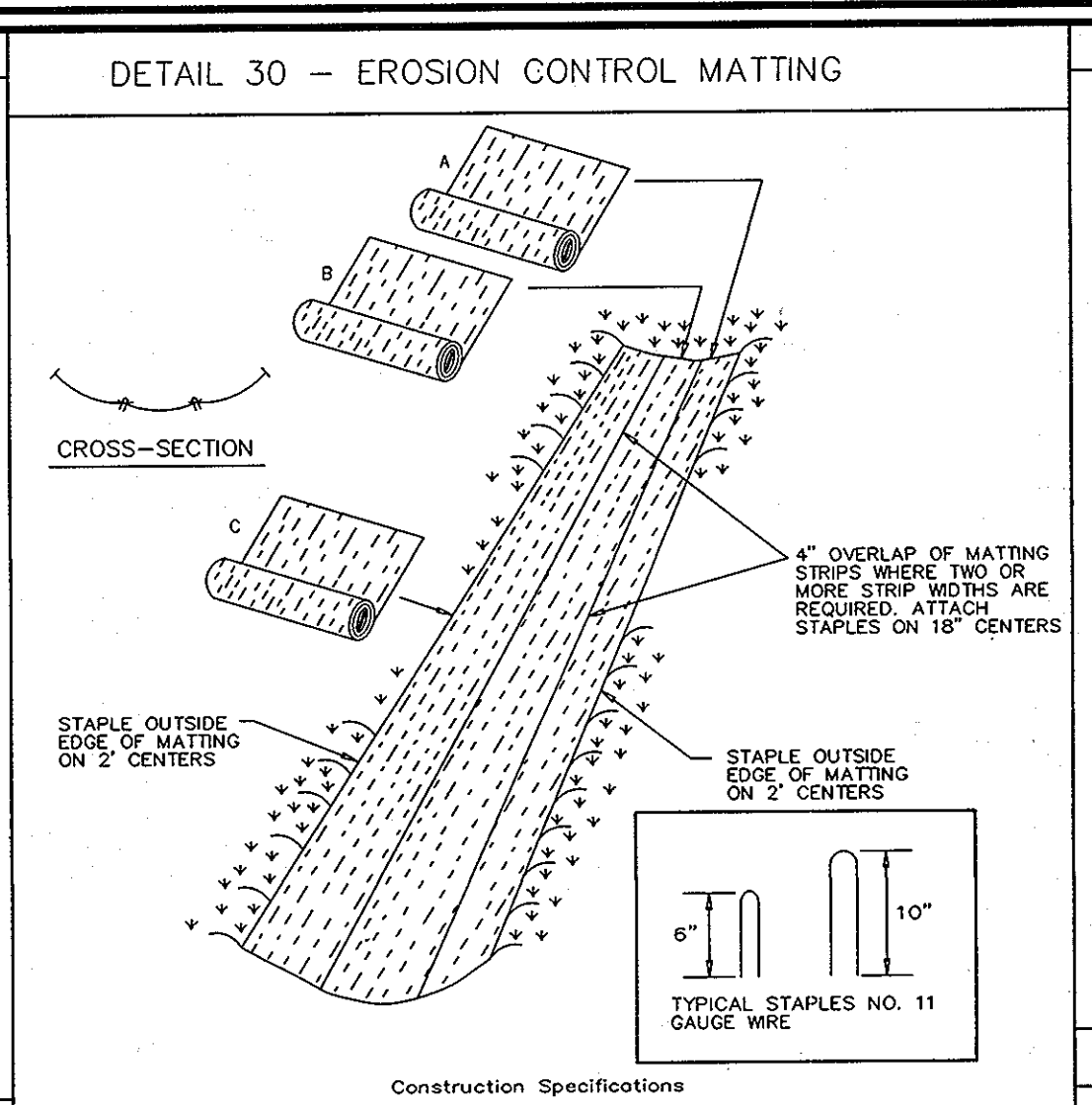
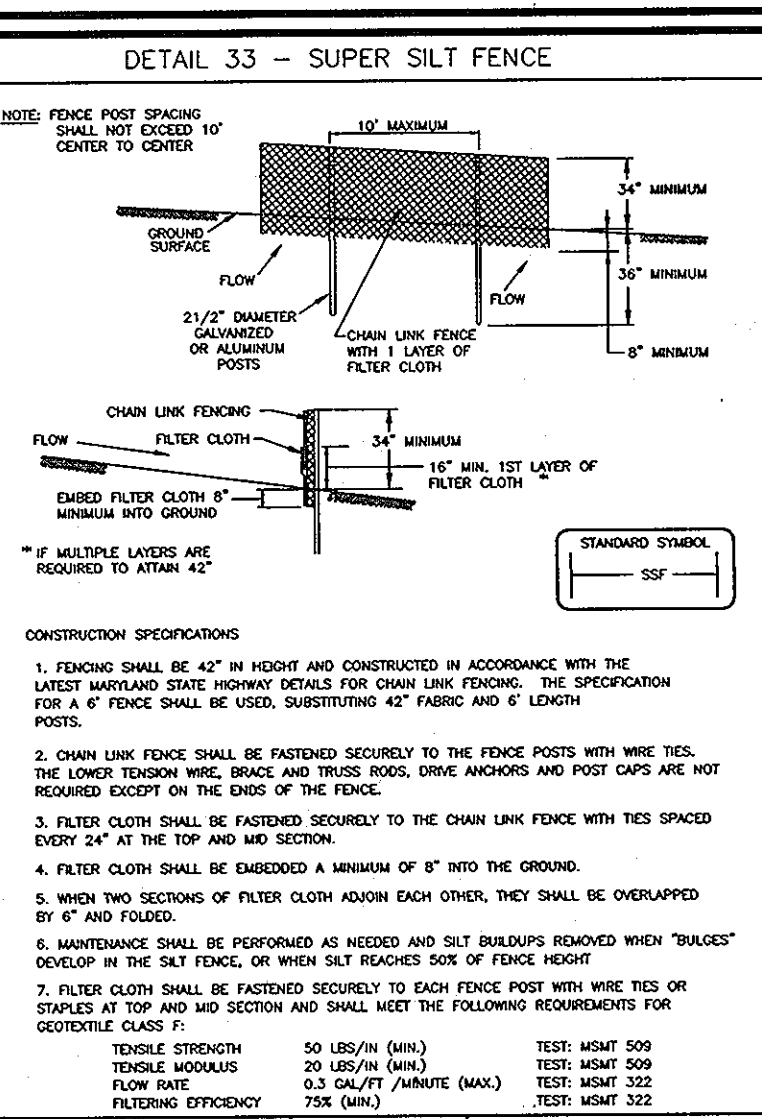
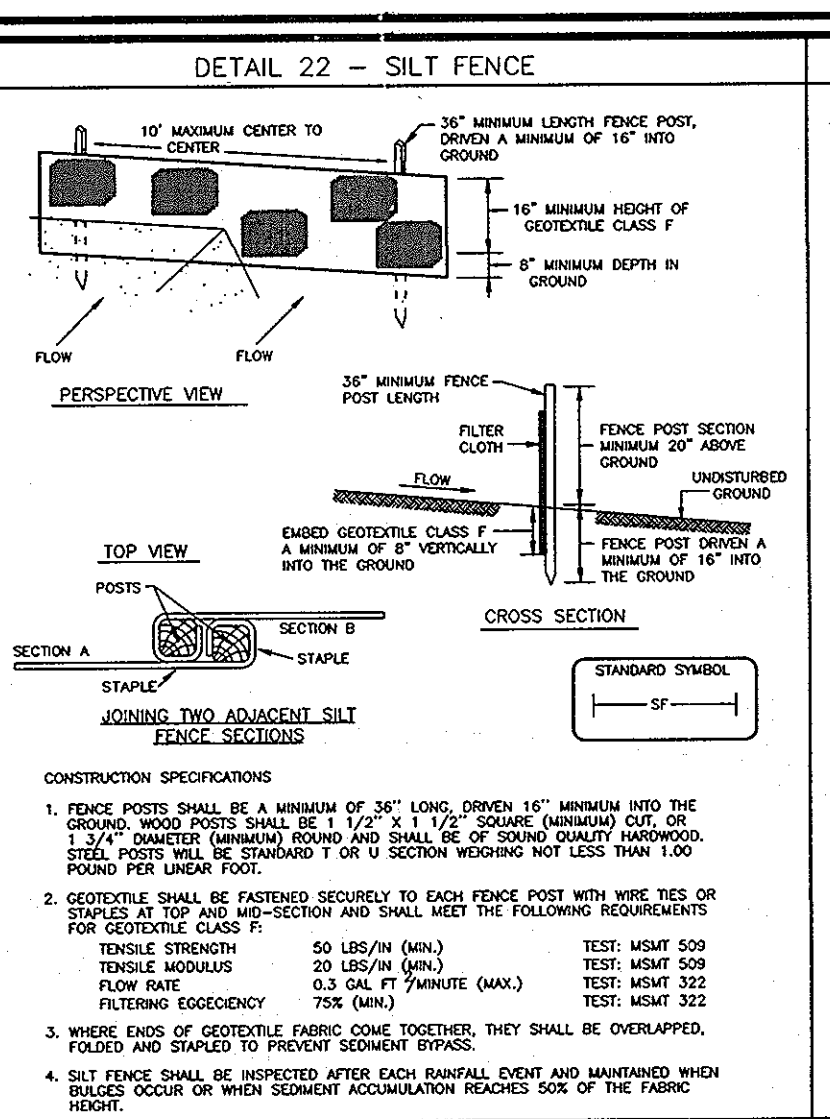
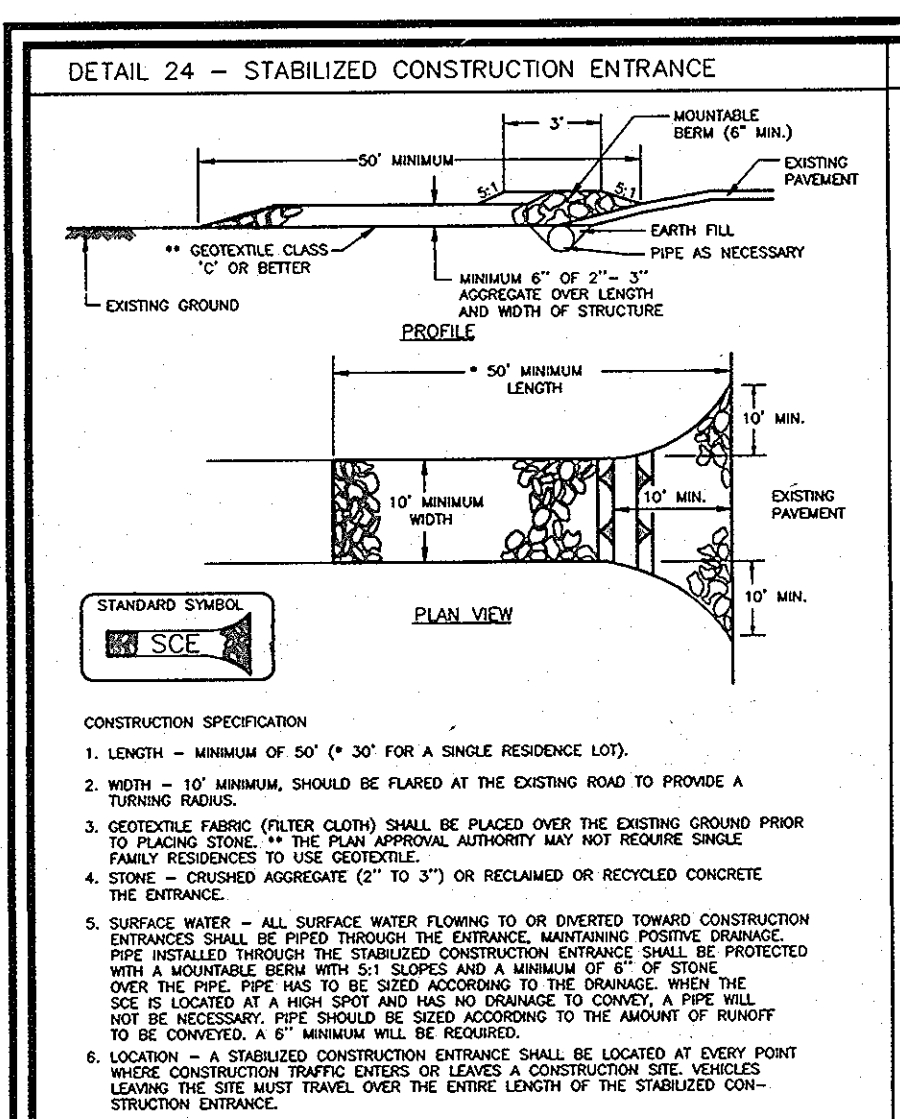
DIRECTOR  
 DATE: 5/11/12

BY THE DEVELOPER:  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN 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/WE AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.  
  
 SIGNATURE OF DEVELOPER  
 DATE: 2/28/12

BY THE ENGINEER:  
 I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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.  
  
 SIGNATURE OF ENGINEER  
 DATE: 2/10/12

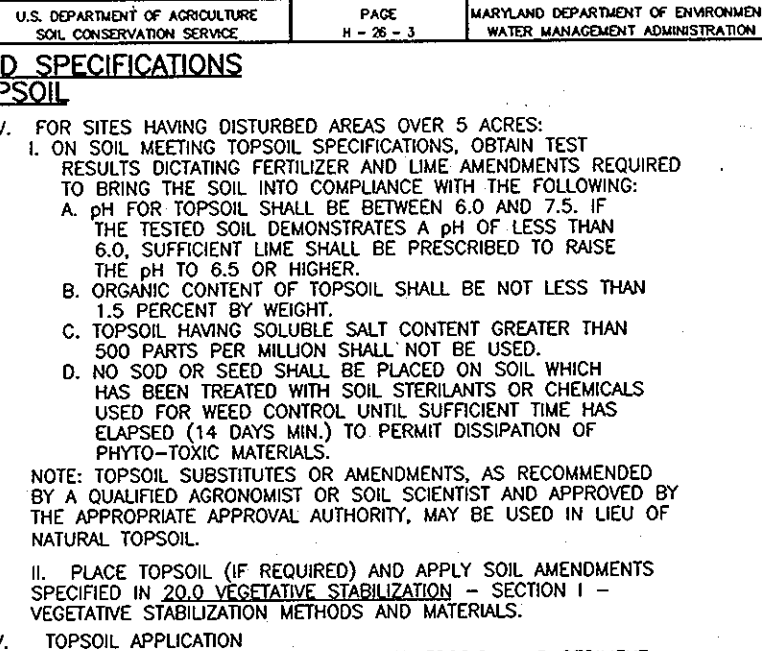
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
  
 HOWARD S.C.D.  
 DATE: 4/16/12



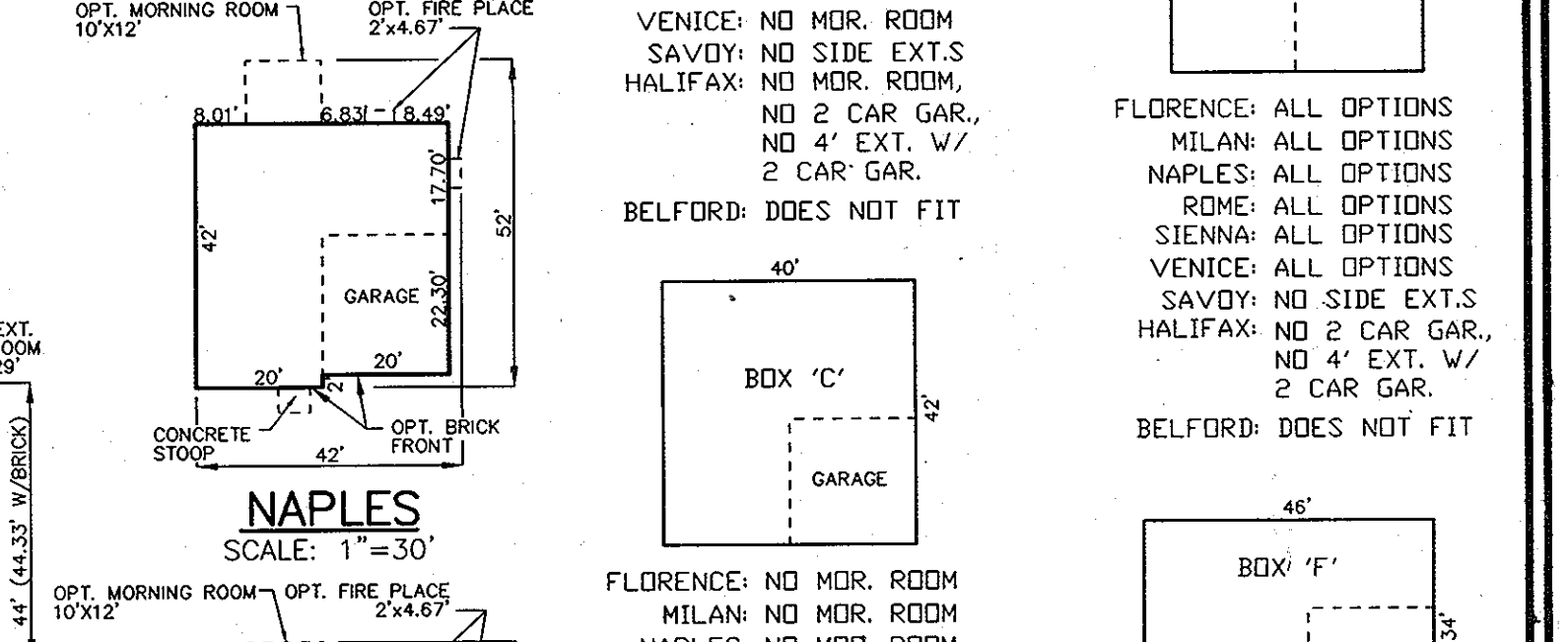
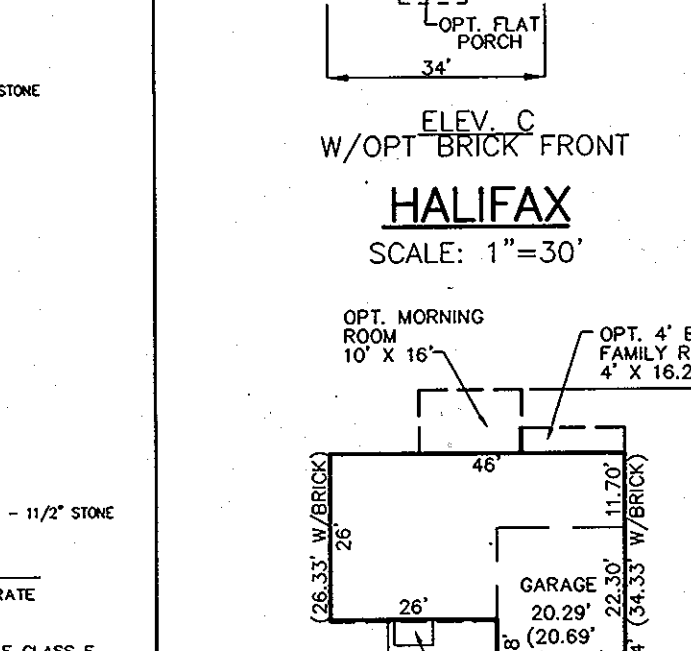
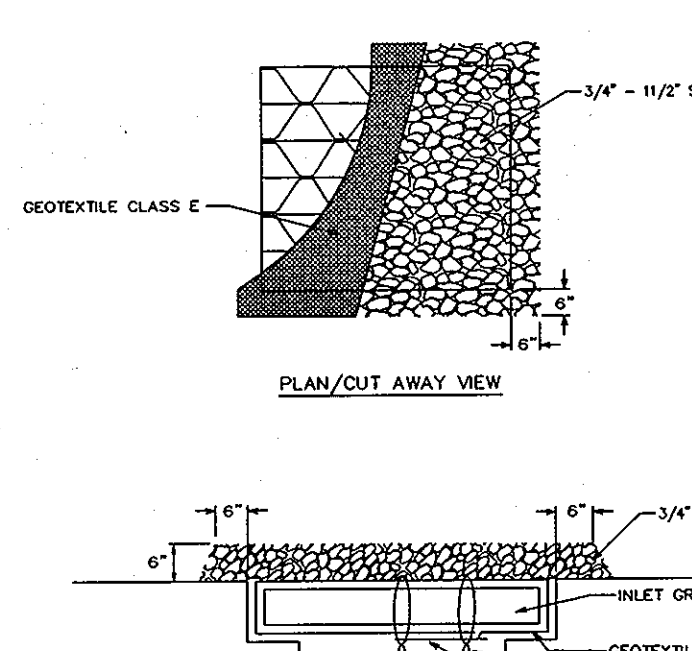


**PERMANENT SEEDING NOTES**  
 1. TO BE GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER...  
 2. SEEDING PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAINING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING...

**21.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL**  
 I. FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES:  
 A. ON-SITE TESTING...  
 B. LABORATORY TESTING...  
 C. TOPSOIL HAVING SOLUBLE SALT CONTENT GREATER THAN 1.5 PERCENT...  
 D. NO SOD OR SEED SHALL BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH PESTICIDES...



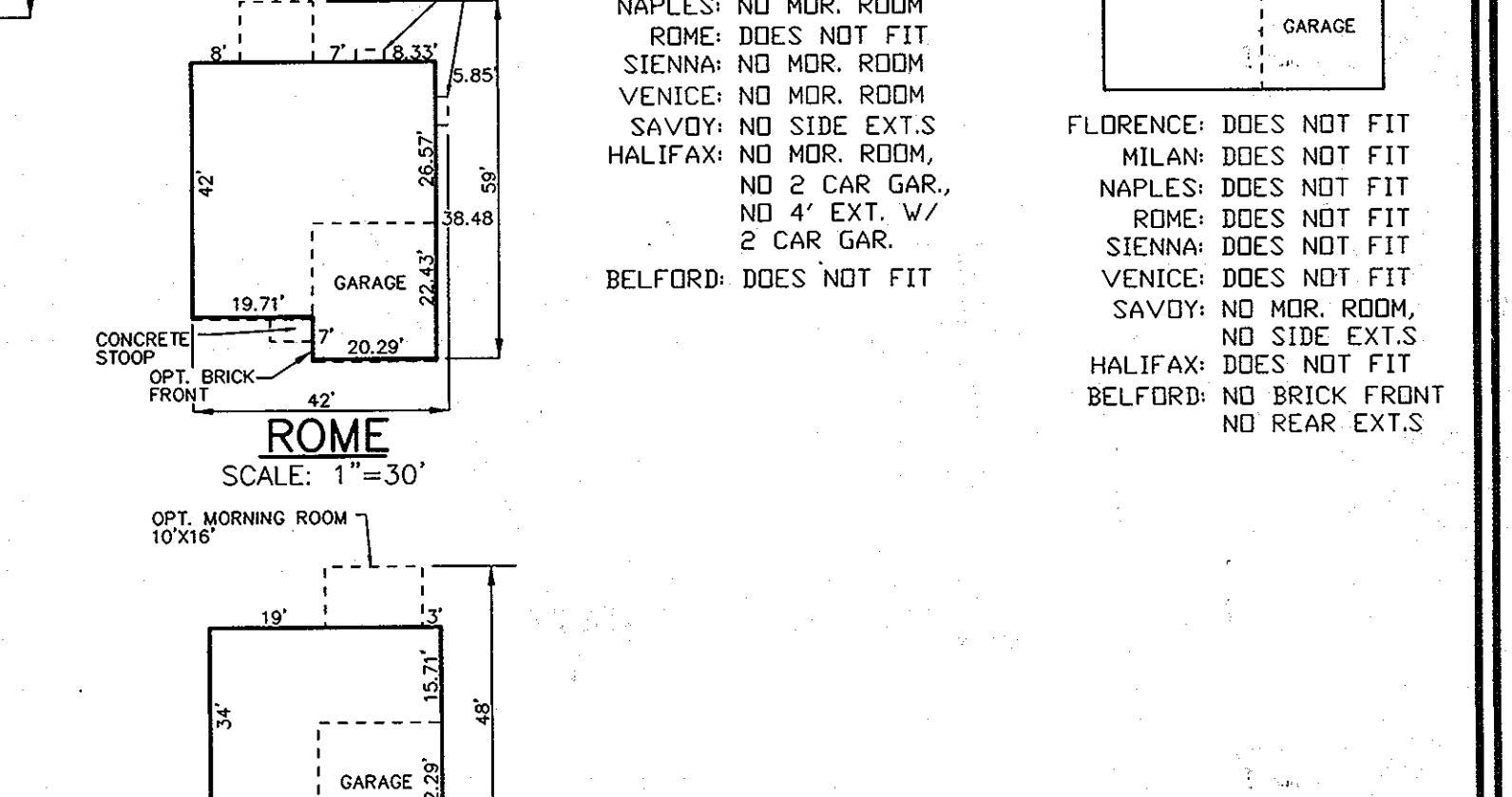
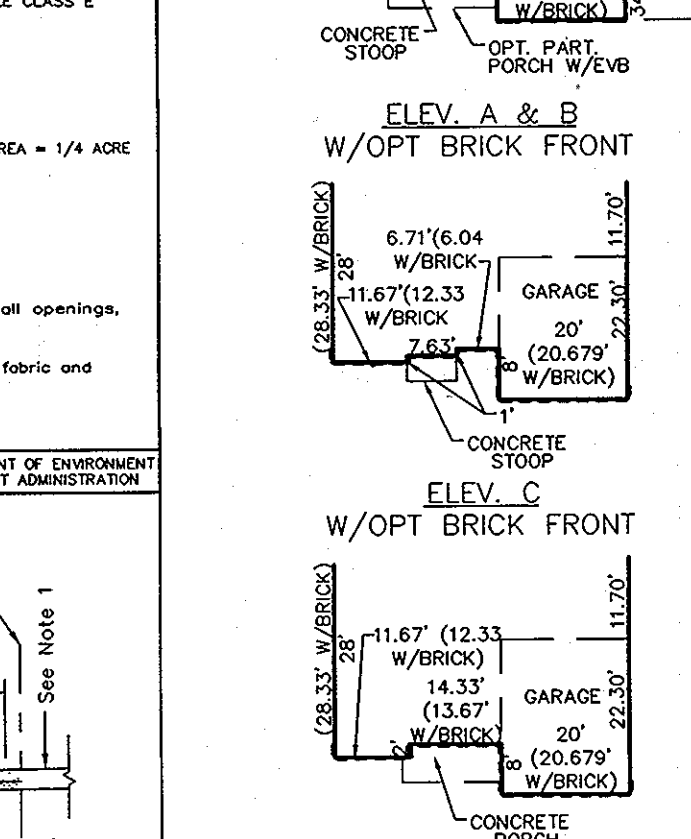
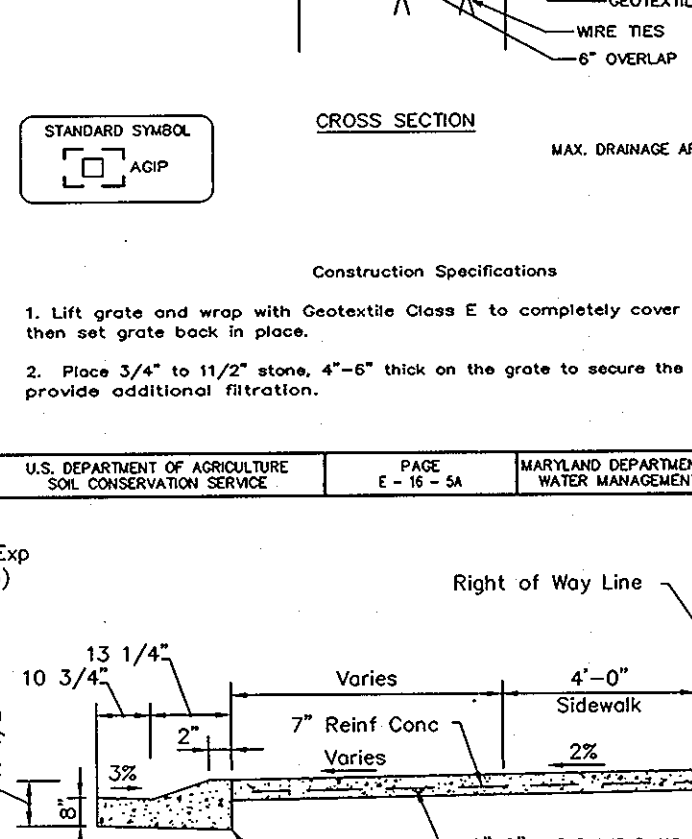
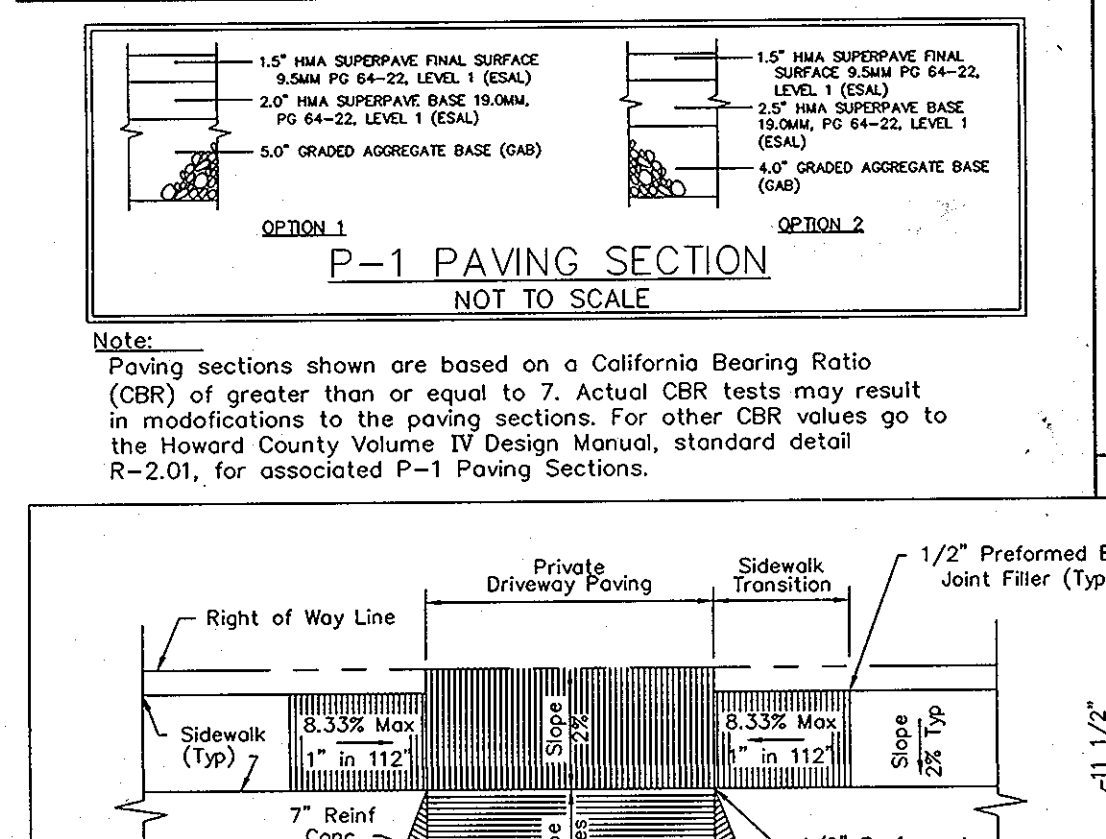
**CONSTRUCTION SPECIFICATIONS**  
 1. Lift grate and wrap with Geotextile Class E to completely cover all openings...  
 2. Place grate back in place, 4"-6" thick on the grate to secure the fabric and provide additional filtration.



**TEMPORARY SEEDING NOTES**  
 1. TO BE GRADED OR CLEARED AREAS LIKELY TO BE RE-DISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS REQUIRED...  
 2. SEEDING PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAINING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING...

**CONSTRUCTION AND MATERIAL SPECIFICATIONS**  
 I. TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS...  
 II. TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:

LOT NO.	8" SEWER MAIN INV. @ S.H.C.	HOUSE CONNECT TYPE	4" S.H.C. INV. @ RIGHT-OF-WAY	S.H.C. INV. @ RIGHT-OF-WAY	MINIMUM CELLAR ELEVATION	DESIGNED BASEMENT ELEVATION
144	272.28	DROP	277.85	278.54	283.04	284.41
145	271.51	DROP	277.84	278.61	283.04	283.30
146	270.74	STANDARD	270.91	271.69	277.94	280.24
147	270.48	STANDARD	270.65	271.41	277.33	280.24
148	269.84	DROP	275.44	276.13	280.04	281.44
149	268.81	DROP	272.97	273.69	278.03	280.03
150	266.70	DROP	270.48	270.48	275.07	277.36
151	265.13	STANDARD	265.30	266.01	270.54	273.79
152	263.41	STANDARD	263.27	263.27	268.70	270.56
153	260.00	STANDARD	260.17	260.81	265.23	266.73
154	255.14	STANDARD	255.31	255.95	260.34	262.75
155	250.28	STANDARD	250.45	251.09	255.48	258.47
156	246.35	STANDARD	246.62	247.16	251.54	254.43
157	240.52	DROP	243.30	243.94	248.34	250.24
158	235.43	DROP	238.96	240.11	244.04	247.35
159	233.17	DROP	233.91	237.33	241.44	244.57
160	228.48	SMH2	230.10	230.40	234.75	240.24
161	231.81	DROP	234.95	235.67	240.74	241.48
162	228.48	SMH2	228.81	229.17	235.04	235.78
** 163	235.82	STANDARD	235.45	236.37	240.50	241.11
** 164	236.71	STANDARD	236.54	237.47	241.51	242.27
165	234.62	DROP	238.45	239.38	243.44	244.15
166	239.13	DROP	241.36	241.72	246.24	247.21
167	243.93	STANDARD	244.10	244.46	249.07	251.29
** 168	237.48	STANDARD	237.31	237.17	242.09	248.95
169	237.48	STANDARD	237.31	237.17	242.09	248.95
** 170	238.76	STANDARD	238.59	239.39	243.20	256.81
171	251.09	STANDARD	251.09	251.62	256.05	257.25
172	255.95	STANDARD	256.12	256.48	260.94	261.25
173	260.81	STANDARD	260.98	261.34	266.34	266.65
174	263.70	STANDARD	263.87	264.20	269.10	270.80
175	255.42	STANDARD	255.42	255.86	270.34	273.91
176	265.99	DROP	270.85	271.09	275.74	277.94



**SEDIMENT CONTROL NOTES**  
 1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSE AND PERMITS CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410-313-1855).  
 2. ALL VEGETATION AND STRUCTURAL PROCESSES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL...  
 3. FOLLOWING INITIAL SOIL DISTURBANCE OR RESTORATION, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN 72 HOURS FOR ALL PERMITS...  
 4. 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...  
 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...  
 6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMITS FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

**SEDIMENT CONTROL NOTES**

7. SITE ANALYSIS:

TOTAL AREA	5,884 AC
AREA DISTURBED	4,100 AC
AREA TO BE ROOFED OR PAVED	1,482 AC
AREA TO BE VEGETATIVELY STABILIZED	4,100 AC
TOTAL CUT	7,220 CY
TOTAL FILL	1,220 CY

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 MEASURES 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 PERMITS AND SEDIMENT CONTROL MEASURES. BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING, OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THE INITIAL APPROVAL OF THE INSPECTION AGENCY IS MADE.

11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

\* TO BE DETERMINED BY CONTRACTOR, WITH PRE-APPROVAL OF THE SEDIMENT CONTROL INSPECTOR WITH AN APPROVED AND ACTIVE GRADING PERMIT.

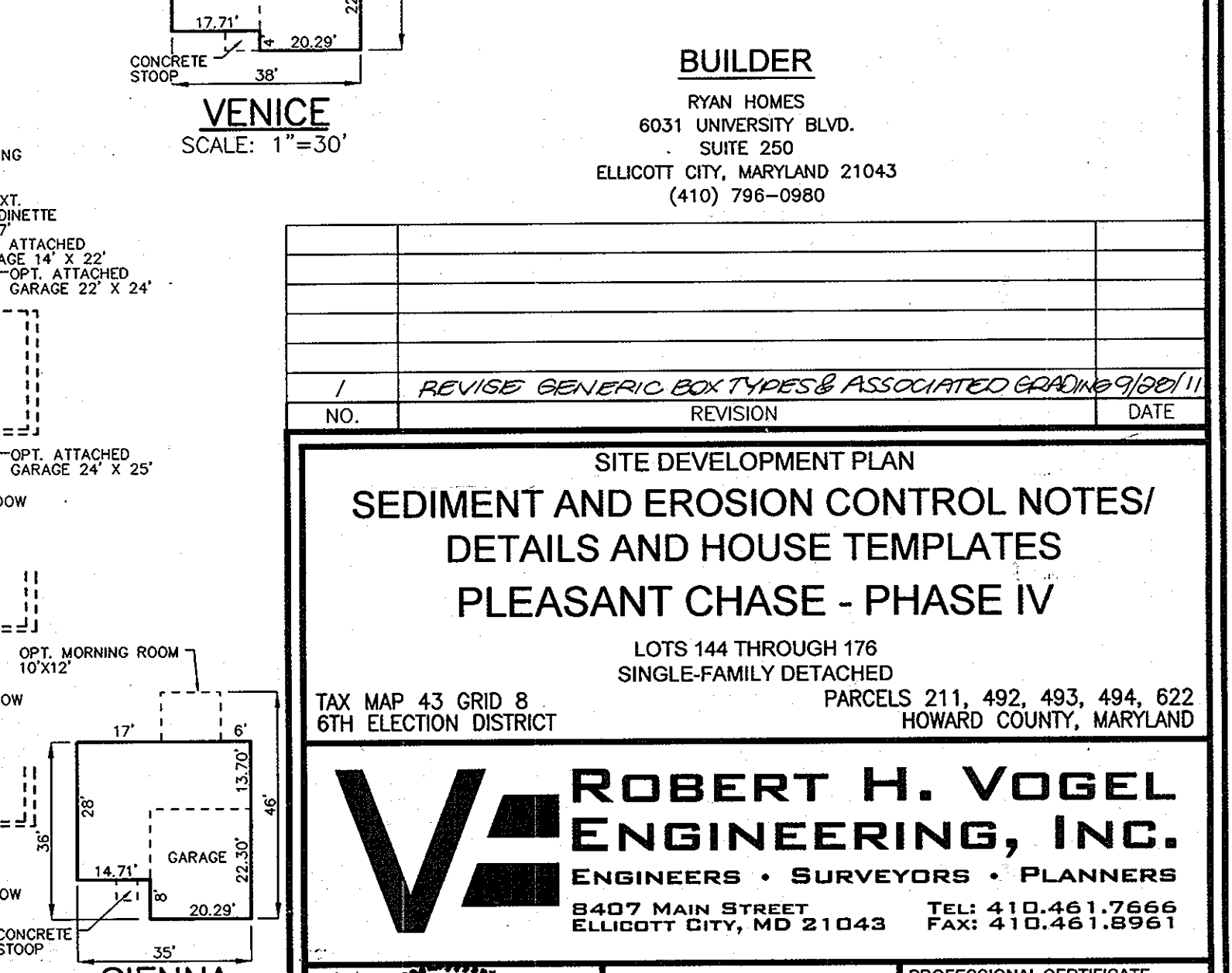
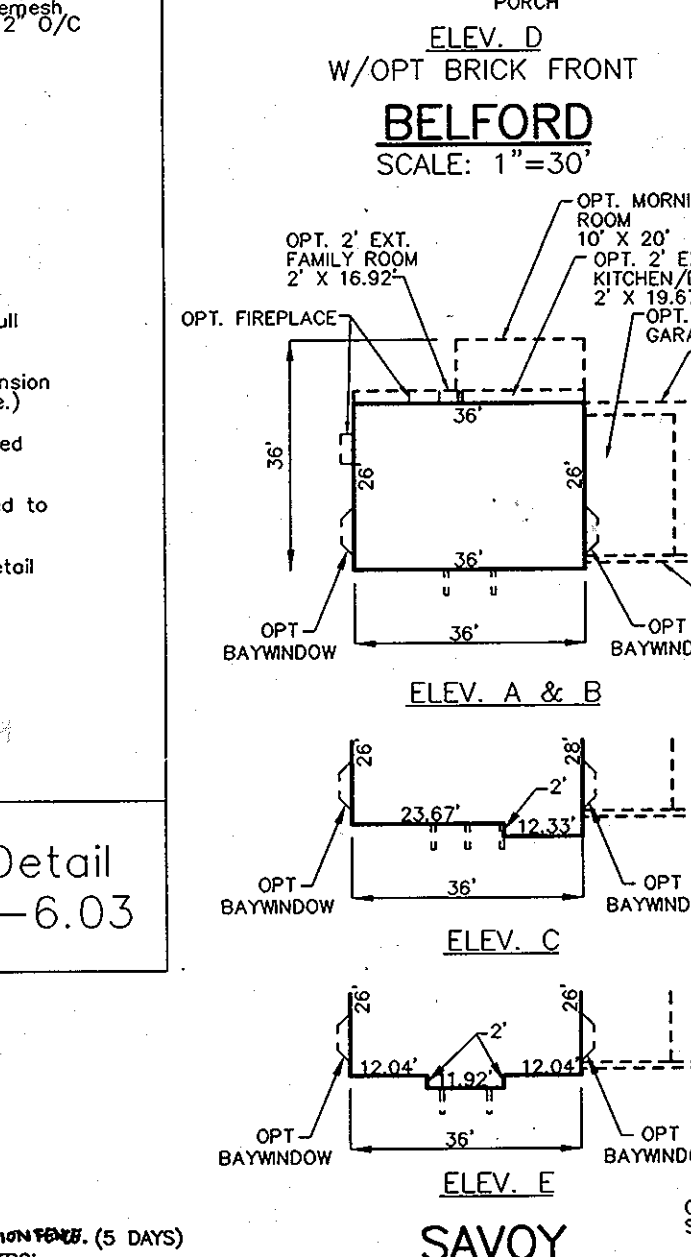
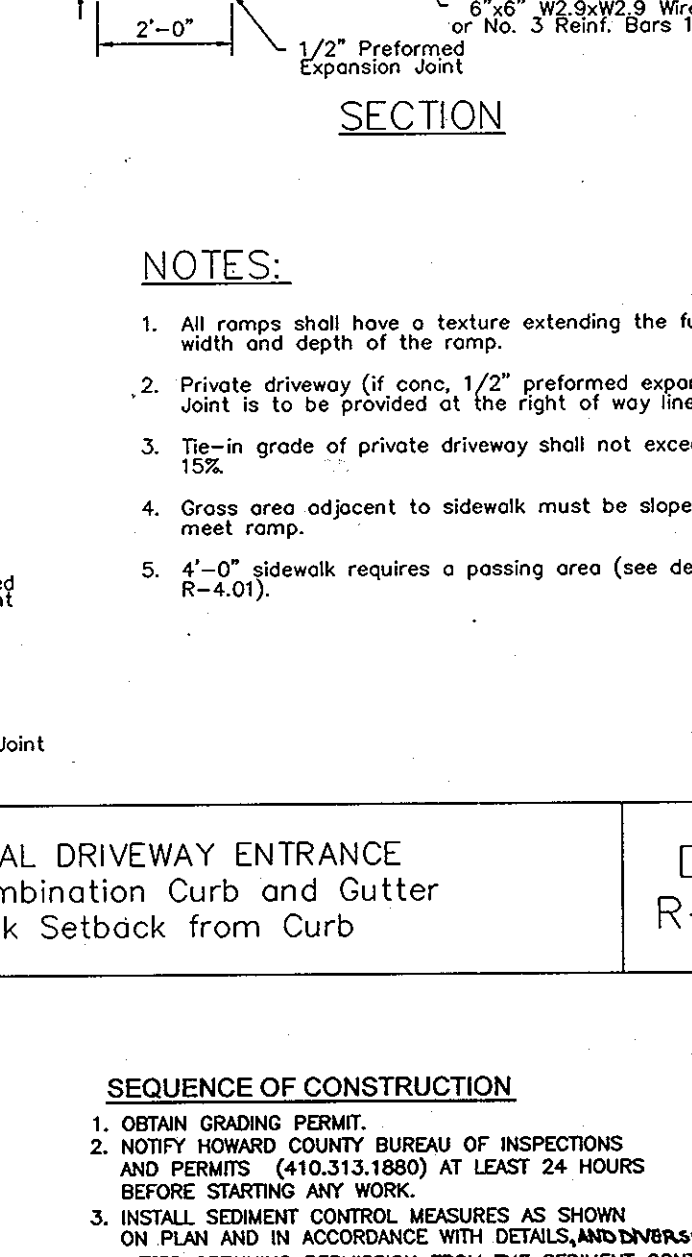
BY THE DEVELOPER:

BY THE ENGINEER:

**RESIDENTIAL DRIVEWAY ENTRANCE**  
 Modified Combination Curb and Gutter  
 Sidewalk Setback from Curb

**Detail R-6.03**

**SEQUENCE OF CONSTRUCTION**  
 1. OBTAIN GRADING PERMIT.  
 2. NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (410.313.1880) AT LEAST 24 HOURS BEFORE STARTING WORK.  
 3. INSTALL SEDIMENT CONTROL MEASURES AS SHOWN ON PLAN AND IN ACCORDANCE WITH DETAILS AND DIMENSIONS THEREON. (5 DAYS)  
 4. AFTER OBTAINING PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR TO PROCEED, ROUGH GRADE SITE.  
 5. CONSTRUCT HOUSES. THE FIRST FLOOR ELEVATIONS SHALL BE MORE THAN 1' HIGHER OR 0.2' LOWER THAN THE ELEVATIONS SHOWN ON THIS PLAN. (6 MONTHS)  
 6. UPON STABILIZATION OF ALL DISTURBED AREAS AND WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, REMOVE ALL SEDIMENT CONTROL DEVICES. (2 DAYS)  
 7. DURING GRADING AND AFTER EACH RAINFALL, CONTRACTOR WILL INSPECT AND PROVIDE NECESSARY MAINTENANCE TO THE SEDIMENT CONTROL MEASURES ON THIS PLAN.  
 8. FOLLOWING INITIAL SOIL DISTURBANCES OR RESTORATION PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN A 7 CALENDAR DAYS FOR ALL PERMITS SEDIMENT CONTROL AND A 14 CALENDAR DAYS FOR ALL OTHER DISTURBED AREAS.



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION

DATE: 3/22/11

CHIEF, DIVISION OF LAND DEVELOPMENT

DATE: 4/16/11

DIRECTOR

DATE: 4/14/11

"I CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN 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 TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD COUNTY CONSERVATION DISTRICT."

DATE: 3/14/11

SIGNATURE OF DEVELOPER

DATE: 4/16/11

SIGNATURE OF ENGINEER

"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL MEASURES IS A FINAL PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS, AND THAT I WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY CONSERVATION DISTRICT."

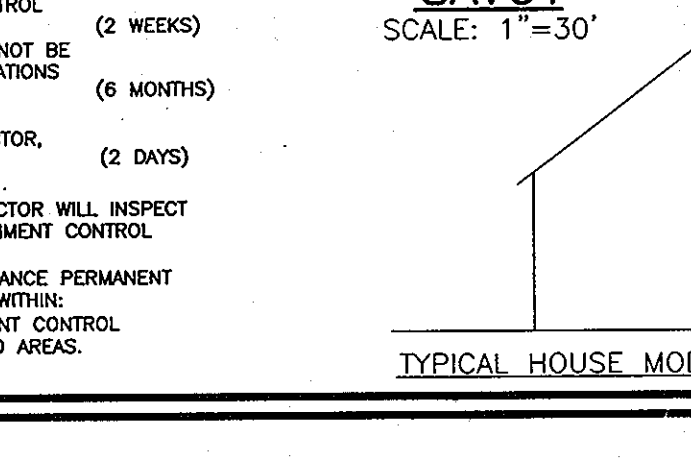
DATE: 3/14/11

SIGNATURE OF ENGINEER

HOWARD COUNTY, MARYLAND  
 DEPARTMENT OF PUBLIC WORKS

Approved: Chief, Bureau of Engineering

DATE: 4/16/11



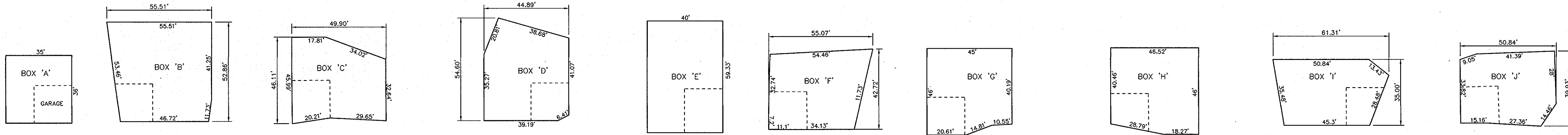
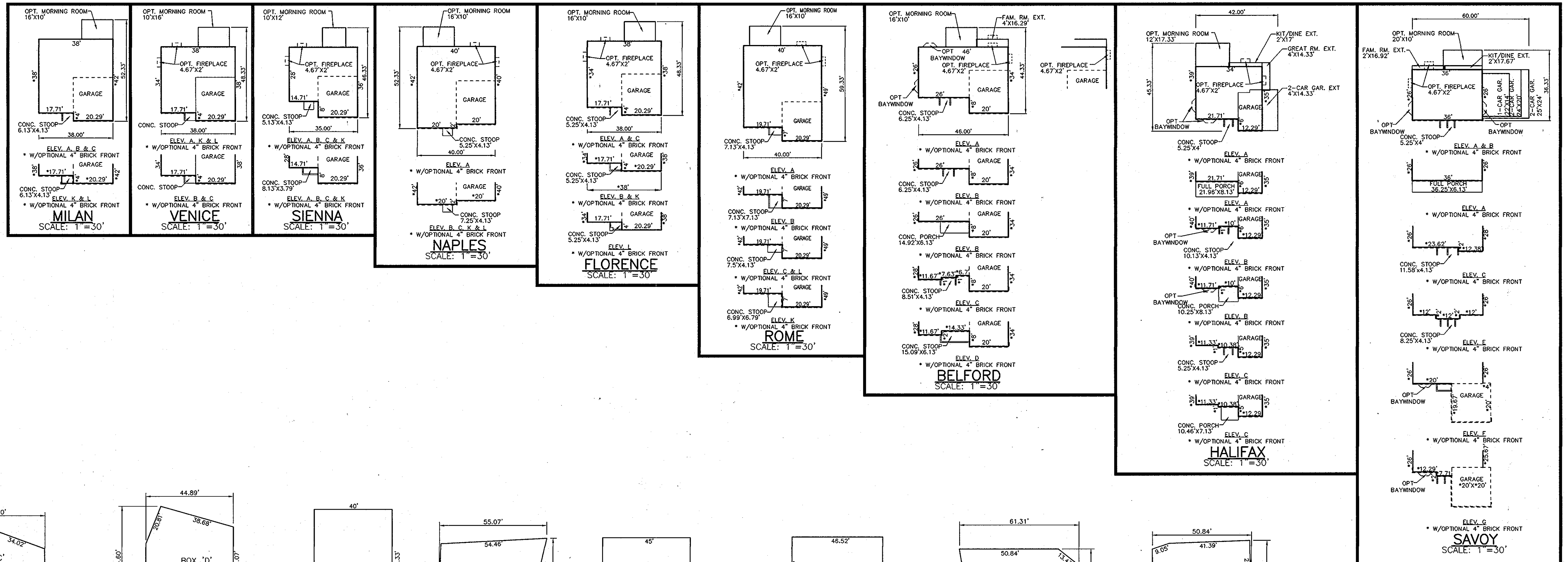
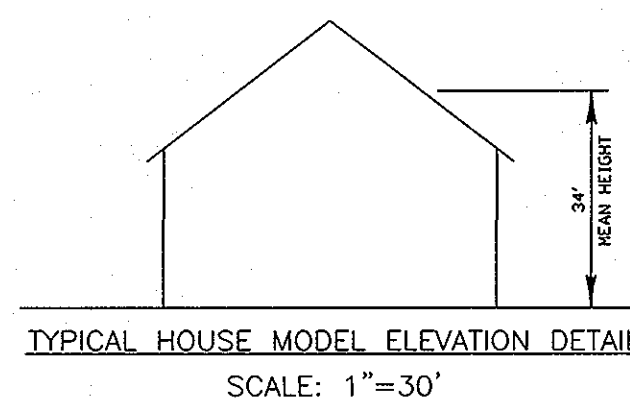
**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS

4807 MAIN STREET, ELLICOTT CITY, MD 21043  
 TEL: 410.461.7666  
 FAX: 410.461.8961

**PROFESSIONAL CERTIFICATE**  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME OR UNDER MY SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRES ON 09-30-2011.

DESIGN BY: JCO  
 DRAWN BY: HS  
 CHECKED BY: RHY  
 DATE: FEBRUARY, 2011  
 SCALE: AS SHOWN  
 W.O. NO.: 10-32

6 SHEET OF 8



FLORENCE: DOES NOT FIT  
MILAN: DOES NOT FIT  
NAPLES: DOES NOT FIT  
ROME: DOES NOT FIT  
SIENNA: NO MOR. ROOM  
VENICE: DOES NOT FIT  
SAVOY: DOES NOT FIT  
HALIFAX: NO MOR. ROOM,  
NO SIDE EXT.S  
BELFORD: DOES NOT FIT

FLORENCE: ALL OPTIONS  
MILAN: ALL OPTIONS  
NAPLES: ALL OPTIONS  
ROME: NO MOR. RM  
SIENNA: ALL OPTIONS  
VENICE: ALL OPTIONS  
SAVOY: NO 2-CAR GAR. 20'X24'  
NO 2-CAR GAR. 22'X24'  
NO 2-CAR GAR. 24'X25'  
NO ELV.F W/MOR. RM.  
NO ELV.G W/MOR. RM.  
HALIFAX: ALL OPTIONS  
BELFORD: ALL OPTIONS

FLORENCE: NO MOR. RM  
MILAN: NO BRICK FRONT  
NAPLES: DOES NOT FIT  
ROME: DOES NOT FIT  
SIENNA: DOES NOT FIT  
VENICE: NO MOR. RM  
SAVOY: NO MOR. RM  
NO BRICK FRONT  
HALIFAX: NO MOR. RM.  
NO BRICK FRONT  
BELFORD: DOES NOT FIT

FLORENCE: NO MOR. RM  
MILAN: NO MOR. RM  
NAPLES: NO MOR. RM  
ROME: DOES NOT FIT  
SIENNA: ALL OPTIONS  
VENICE: NO MOR. RM  
SAVOY: NO GARAGE  
HALIFAX: NO MOR. RM.  
BELFORD: DOES NOT FIT

FLORENCE: ALL OPTIONS  
MILAN: ALL OPTIONS  
NAPLES: NO MOR. RM  
ROME: ALL OPTIONS  
SIENNA: ALL OPTIONS  
VENICE: ALL OPTIONS  
SAVOY: NO SIDE EXT.S  
HALIFAX: NO 2 CAR GAR.  
BELFORD: DOES NOT FIT

FLORENCE: NO MOR. RM  
MILAN: DOES NOT FIT  
NAPLES: DOES NOT FIT  
ROME: DOES NOT FIT  
SIENNA: NO MOR. RM  
VENICE: NO MOR. RM  
SAVOY: NO GARAGE  
HALIFAX: NO MOR. RM.  
BELFORD: NO MOR. RM

FLORENCE: NO MOR. RM  
MILAN: NO MOR. RM  
NAPLES: DOES NOT FIT  
ROME: DOES NOT FIT  
SIENNA: MOR. RM OR BRICK  
VENICE: NO MOR. RM  
SAVOY: NO MOR. RM  
HALIFAX: ALL OPTIONS  
BELFORD: DOES NOT FIT

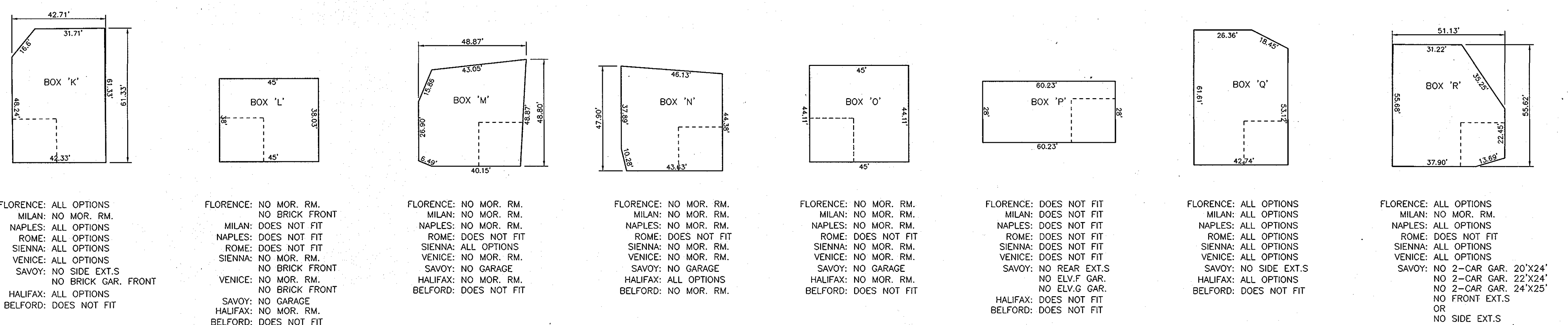
FLORENCE: NO MOR. RM  
MILAN: NO MOR. RM  
NAPLES: DOES NOT FIT  
ROME: DOES NOT FIT  
SIENNA: NO MOR. RM  
VENICE: NO MOR. RM  
SAVOY: NO GARAGE  
HALIFAX: NO MOR. RM  
BELFORD: NO MOR. RM

FLORENCE: DOES NOT FIT  
MILAN: DOES NOT FIT  
NAPLES: DOES NOT FIT  
ROME: DOES NOT FIT  
SIENNA: DOES NOT FIT  
VENICE: DOES NOT FIT  
SAVOY: NO 2-CAR GAR. 20'X24'  
NO 2-CAR GAR. 22'X24'  
NO 2-CAR GAR. 24'X25'  
NO MOR. RM.  
NO BRICK GAR. FRONT  
HALIFAX: NO MOR. RM.  
NO BRICK GAR. FRONT  
BELFORD: NO MOR. RM  
NO 4' FAMILY RM. EXT.

FLORENCE: DOES NOT FIT  
MILAN: DOES NOT FIT  
NAPLES: DOES NOT FIT  
ROME: DOES NOT FIT  
SIENNA: NO MOR. RM  
VENICE: DOES NOT FIT  
SAVOY: NO 2-CAR GAR. 20'X24'  
NO 2-CAR GAR. 22'X24'  
NO 2-CAR GAR. 24'X25'  
NO MOR. RM.  
NO BRICK GAR. FRONT  
HALIFAX: NO MOR. RM.  
NO BRICK GAR. FRONT  
BELFORD: NO MOR. RM  
NO 4' FAMILY RM. EXT.

**BUILDER**

RYAN HOMES  
6031 UNIVERSITY BLVD.  
SUITE 250  
ELLICOTT CITY, MARYLAND 21043  
(410) 796-0980



FLORENCE: ALL OPTIONS  
MILAN: NO MOR. RM.  
NAPLES: ALL OPTIONS  
ROME: ALL OPTIONS  
SIENNA: ALL OPTIONS  
VENICE: ALL OPTIONS  
SAVOY: NO SIDE EXT.S  
NO BRICK GAR. FRONT  
HALIFAX: ALL OPTIONS  
BELFORD: DOES NOT FIT

FLORENCE: NO MOR. RM.  
MILAN: NO BRICK FRONT  
NAPLES: DOES NOT FIT  
ROME: DOES NOT FIT  
SIENNA: NO MOR. RM  
VENICE: NO BRICK FRONT  
SAVOY: NO MOR. RM.  
NO BRICK FRONT  
HALIFAX: NO MOR. RM.  
NO BRICK FRONT  
BELFORD: DOES NOT FIT

FLORENCE: NO MOR. RM.  
MILAN: NO MOR. RM.  
NAPLES: NO MOR. RM.  
ROME: DOES NOT FIT  
SIENNA: ALL OPTIONS  
VENICE: NO MOR. RM.  
SAVOY: NO GARAGE  
HALIFAX: NO MOR. RM.  
BELFORD: DOES NOT FIT

FLORENCE: NO MOR. RM.  
MILAN: NO MOR. RM.  
NAPLES: NO MOR. RM.  
ROME: DOES NOT FIT  
SIENNA: NO MOR. RM.  
VENICE: NO MOR. RM.  
SAVOY: NO GARAGE  
HALIFAX: ALL OPTIONS  
BELFORD: NO MOR. RM.

FLORENCE: NO MOR. RM.  
MILAN: NO MOR. RM.  
NAPLES: NO MOR. RM.  
ROME: DOES NOT FIT  
SIENNA: NO MOR. RM.  
VENICE: NO MOR. RM.  
SAVOY: NO GARAGE  
HALIFAX: ALL OPTIONS  
BELFORD: DOES NOT FIT

FLORENCE: DOES NOT FIT  
MILAN: DOES NOT FIT  
NAPLES: DOES NOT FIT  
ROME: DOES NOT FIT  
SIENNA: DOES NOT FIT  
VENICE: DOES NOT FIT  
SAVOY: NO REAR EXT.S  
NO ELV.F GAR.  
NO ELV.G GAR.  
HALIFAX: DOES NOT FIT  
BELFORD: DOES NOT FIT

FLORENCE: ALL OPTIONS  
MILAN: ALL OPTIONS  
NAPLES: ALL OPTIONS  
ROME: ALL OPTIONS  
SIENNA: ALL OPTIONS  
VENICE: ALL OPTIONS  
SAVOY: NO SIDE EXT.S  
HALIFAX: ALL OPTIONS  
BELFORD: DOES NOT FIT

FLORENCE: ALL OPTIONS  
MILAN: NO MOR. RM.  
NAPLES: ALL OPTIONS  
ROME: DOES NOT FIT  
SIENNA: ALL OPTIONS  
VENICE: ALL OPTIONS  
SAVOY: NO 2-CAR GAR. 20'X24'  
NO 2-CAR GAR. 22'X24'  
NO 2-CAR GAR. 24'X25'  
NO FRONT EXT.S  
OR  
NO SIDE EXT.S  
NO MOR. RM. W/  
FRONT GAR.  
HALIFAX: ALL OPTIONS  
BELFORD: DOES NOT FIT

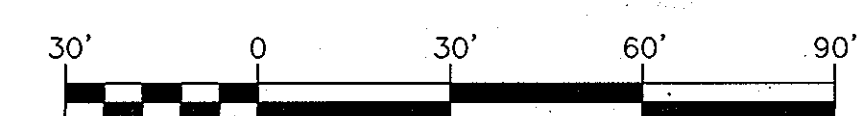
**GENERIC HOUSE BOXES**  
SCALE: 1"=30'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Chief*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 4/24/12

*Chief*  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE 5/1/12

*Director*  
DIRECTOR DATE 5/1/12

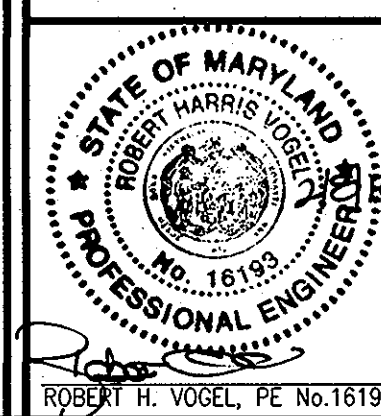


NO.	REVISION	DATE
1	REVISE GENERIC BOX TYPES & ASSOCIATED GRADING	08/11/11

**REVISED SITE DEVELOPMENT PLAN  
HOUSE TEMPLATES**

**PLEASANT CHASE - PHASE IV**  
LOTS 144 THROUGH 176  
SINGLE-FAMILY DETACHED  
TAX MAP 43 GRID 8 PARCELS 211, 492, 493, 622  
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

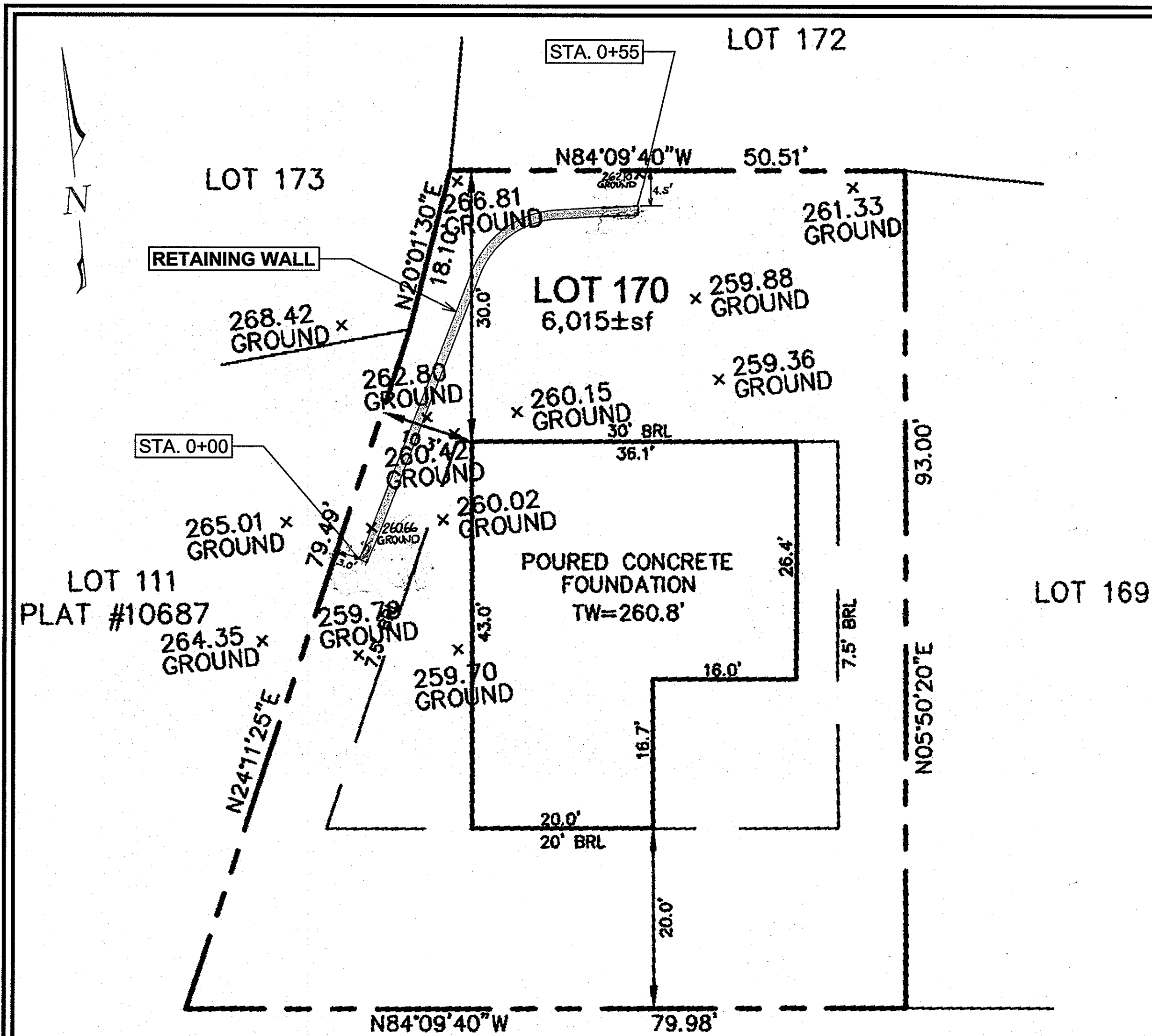
**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
8407 MAIN STREET ELLICOTT CITY, MD 21043  
TEL: 410.461.7666 FAX: 410.461.8961



DESIGN BY: JCO  
DRAWN BY: HS  
CHECKED BY: RHY  
DATE: FEBRUARY, 2011  
SCALE: AS SHOWN  
W.O. NO.: 10-32

PROFESSIONAL CERTIFICATE  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 15193, EXPIRATION DATE 08-27-2015.

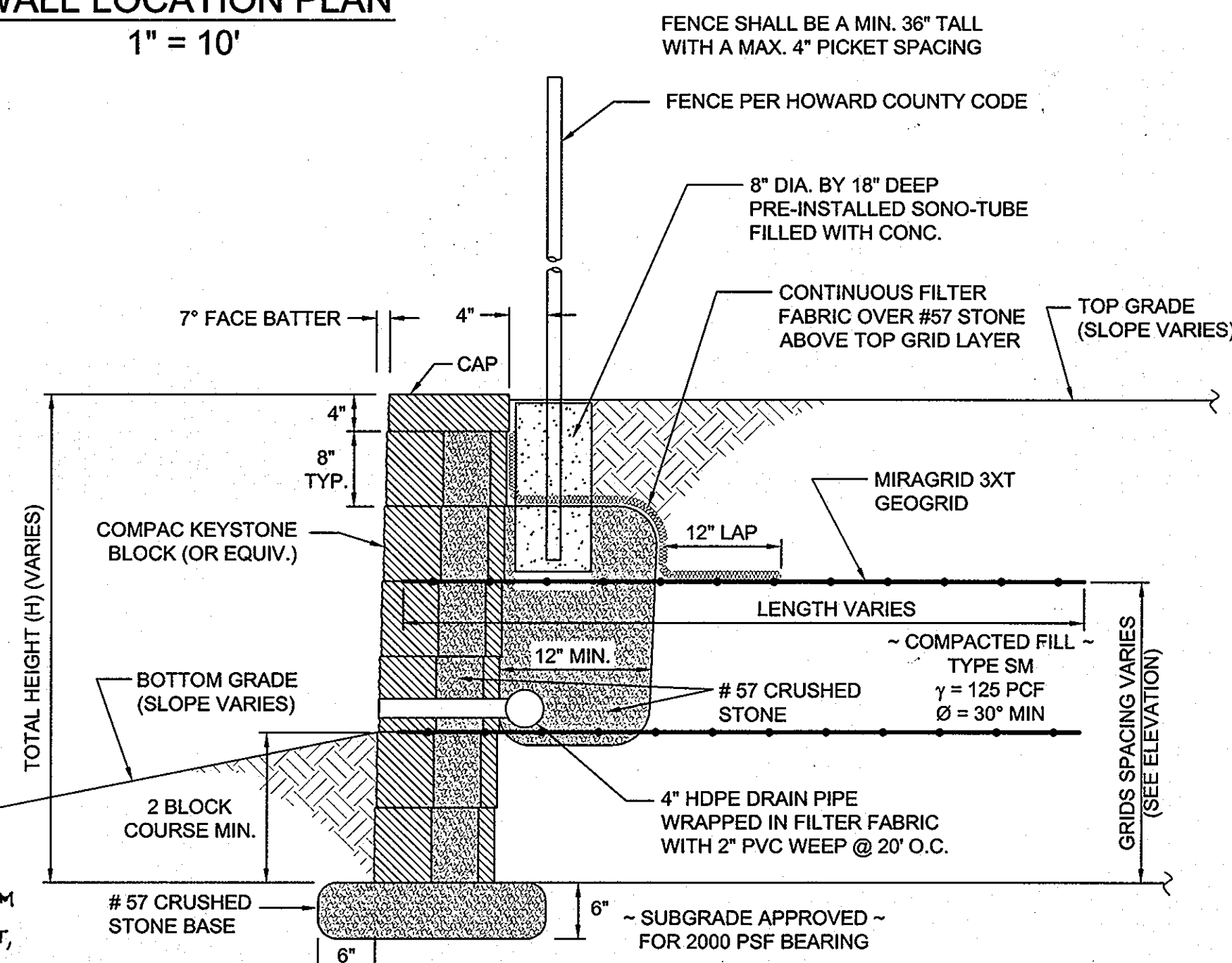
7 SHEET OF 8



**HICKS ROAD  
WALL LOCATION PLAN**  
1" = 10'

**GENERAL NOTES:**

- No trees shall be planted within 10 feet of the top of the retaining wall.
- Retaining walls shall only be constructed under the observation of a registered professional engineer and a (NICET, WACEL, or equiv.) certified soils technician.
- The required bearing pressure beneath the wall system shall be verified in the field by a certified soils technician. Testing documentation must be provided to the Howard County Inspector prior to start of construction. The required bearing test shall be the Dynamic Cone Penetrometer test ASTM STP-399.
- The suitability of fill material shall be confirmed by the on-site soils technician. Each 8" lift must be compacted to a minimum 95% standard proctor density and the testing report shall be made available to the Howard County Inspector upon completion of construction.
- Walls shall not be constructed on uncertified fill materials.
- Walls shall not be constructed within a Howard Co. right-of-way or easement.
- BA CASE NO. 13-022V TO REDUCE THE SIDE SETBACK FROM 7.5 FEET TO ONE (1) FOOT FOR A RETAINING WALL IN A RESIDENTIAL SINGLE CLUSTER ZONING DISTRICT, GRANTED OCTOBER 7, 2012.



**TYPICAL WALL SECTION**  
N.T.S.

**SPECIFICATIONS  
MODULAR CONCRETE BLOCK RETAINING WALL**

**PART 1: GENERAL**

- 1.01 Description**
- Work shall consist of furnishing and construction of a Modular Retaining Wall System in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans.
  - Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill and backfill to the lines and grades shown on the construction drawings.
  - Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths designated on the construction drawings.

**1.02 Delivery, Storage and Handling**

- Contractor shall check all materials upon delivery to assure that the proper type, grade, color, and certification has been received.
- Contractor shall protect all materials from damage due to job site conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

**PART 2: PRODUCTS**

**2.01 Modular Concrete Retaining Wall Units**

- Modular concrete units shall conform to the following architectural requirements:
  - face color - concrete gray - standard manufacturers' color may be specified by the Owner.
  - face finish - sculptured rock face in angular tri-planer or flat configuration. Other face finishes will not be allowed without written approval of Owner.
  - bond configuration - running with bonds nominally located at midpoint vertically adjacent units, in both straight and curved alignments.
- Modular concrete materials shall conform to the requirements of ASTM C1372 - Standard Specifications for Segmental Retaining Wall Units.
- Modular concrete units shall conform to the following structural and geometric requirements measured in accordance with appropriate references:
  - compressive strength = 3000 psi minimum; absorption = 8% maximum (8% in northern states) for standard weight aggregates;
  - dimensional tolerances = ±1/8" from nominal unit dimensions not including rough split face, ±1/16"

unit height - top and bottom planes; unit size - 8" (H) x 18" (W) x 12" (D) minimum;

unit weight - 75 lbs/unit minimum for standard weight aggregates;

inter-unit shear strength - 1000 plf minimum at 2 psi normal pressure; at 2 psi normal force.

geogrid/unit peak connection strength - 1000 plf minimum

vertical setback = 1/8"± per course (near vertical) or 1"± per course per the design;

alignment and grid positioning mechanism - fiberglass pins, two per unit minimum;

maximum horizontal gap between erected units shall be - 1/2 inch.

**2.02 Shear Connectors (if applicable)**

A. Shear connectors shall be 1/2 inch diameter thermoset isophthalic polyester resin-protuded fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units. Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to + 100 degrees F. B. Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning and backfilling.

**2.03 Base Leveling Pad Material**

A. Material shall consist of a compacted #57 crushed stone base as shown on the construction drawings.

**2.04 Unit Drainage Fill**

A. Unit drainage fill shall consist of #57 crushed stone

**2.05 Reinforced Backfill**

A. Reinforced backfill shall type SM, be free of debris and meet the following gradation tested in accordance with ASTM D-422 and meet other properties shown on the plan:

Sieve Size	Percent Passing
2 inch	100-75
3/4 inch	100-75
No. 40	0-60
No. 200	0-40

Plasticity Index (PI) <10 and Liquid Limit <40 per ASTM D-4318.

B. Material can be site excavated soils where the above requirements can be met. Unsuitable soils for backfill (high

plastic clays or organic soils) shall not be used in the reinforced soil mass.

**2.06 Geogrid Soil Reinforcement**

A. Geosynthetic reinforcement shall consist of geogrids manufactured specifically for soil reinforcement applications and shall be manufactured from high tenacity polyester yarn.

**2.07 Drainage Pipe**

A. The drainage pipe shall be perforated corrugated HDPE pipe manufactured in accordance with ASTM D-1248.

**PART 3 EXECUTION**

**3.01 Excavation**

A. Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall be responsible for inspecting and approving the excavation prior to placement of leveling material or fill soils.

**3.02 Base Leveling Pad**

A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6 inches and extend laterally a minimum of 6" in front and behind the modular wall unit.

B. Leveling pad shall be prepared to insure full contact to the base surface of the concrete units.

**3.03 Modular Unit Installation**

A. First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be checked in all directions and insure that all units are in full contact with the base and properly seated.

B. Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.

C. Install shear/connecting devices per manufacturer's recommendations.

D. Place and compact drainage fill within and behind wall units. Follow wall erection and drainage fill closely with structure backfill.

E. Maximum stacked vertical height of wall units, prior to unit drainage fill and backfill placement and compaction, shall not exceed three courses.

**3.04 Structural Geogrid Installation**

A. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.

B. Geogrid reinforcement shall be placed at the strengths, lengths, and elevations shown on the construction design drawings or as directed by the Engineer.

C. The geogrid shall be laid horizontally on compacted backfill and

attached to the modular wall units. Place the next course of modular concrete units over the geogrid. The geogrid shall be pulled taut, and anchored prior to backfill placement on the geogrid.

**3.05 Reinforced Backfill Placement**

A. Geogrid reinforcements shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.

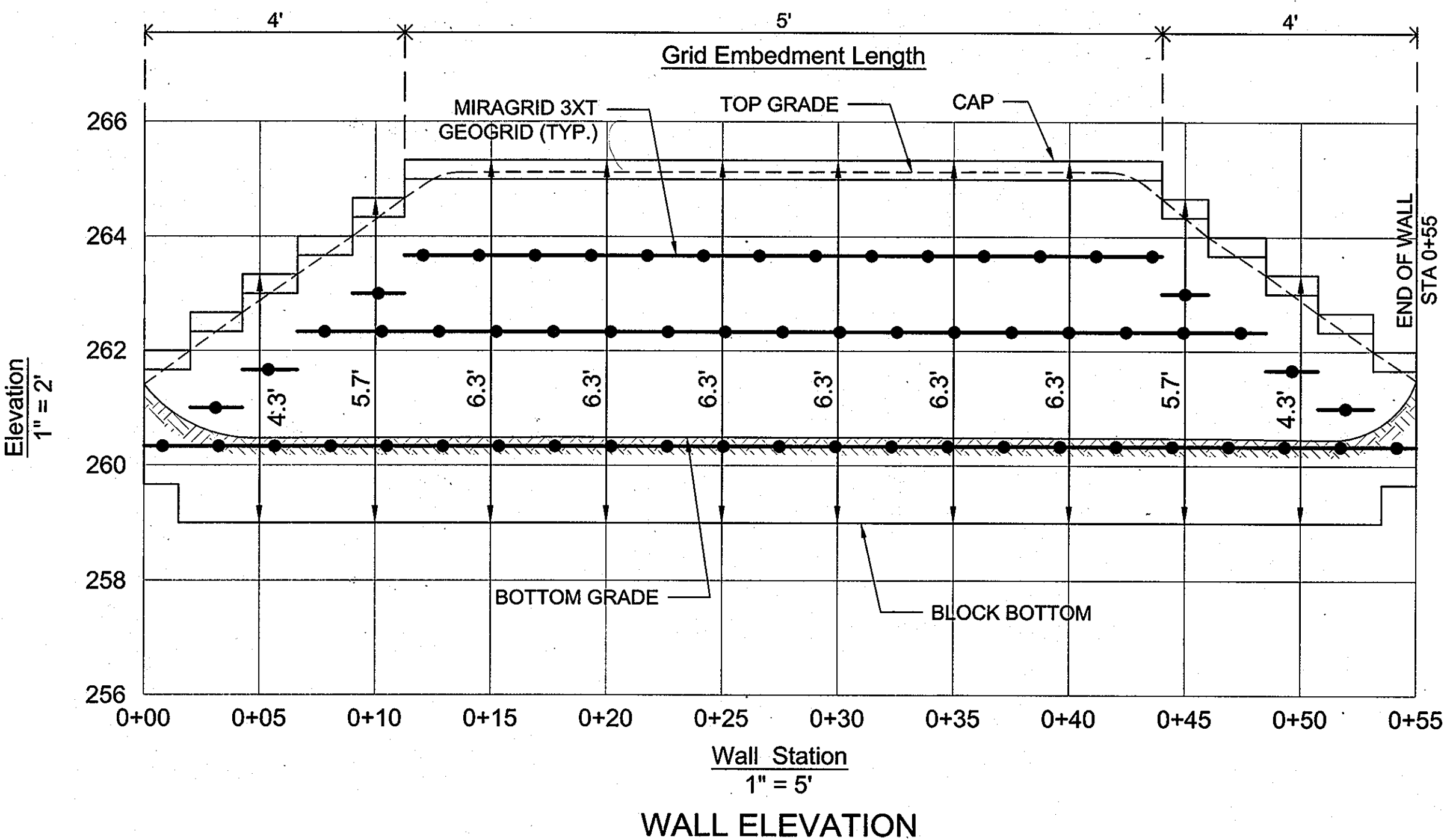
**3.06 Cap Installation**

A. Cap units shall be glued to underlying units with an all-weather adhesive recommended by the manufacturer.

**3.07 Field Quality Control**

A. The Owner shall engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction.

B. As a minimum, quality assurance testing should include foundation soil inspection, soil and backfill testing, verification of design parameters, and observation of construction for general compliance with design drawings and specifications.



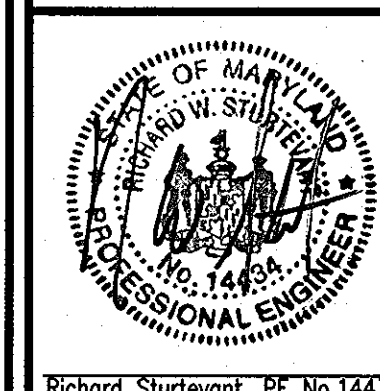
**BUILDER**

RYAN HOMES  
6031 UNIVERSITY BLVD.  
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ELICOTT CITY, MARYLAND 21043  
(410) 796-0980

NO.	REVISION	DATE

**LOT 170  
RETAINING WALL CONSTRUCTION DETAILS**  
**PLEASANT CHASE - PHASE IV**  
LOTS 144 THROUGH 176  
SINGLE-FAMILY DETACHED  
TAX MAP 43 GRID 8 PARCELS 211, 492, 493, 494, 622  
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**HILLIS-CARNES  
ENGINEERING ASSOCIATES**  
10975 Gullford Road, Suite A Annapolis Junction, Maryland  
(410) 880-4788 WWW.HCEA.COM Fax: (410) 880-4098



DESIGN BY: RWS  
DRAWN BY: AM  
CHECKED BY: RWS  
DATE: JULY 9, 2013  
SCALE: AS SHOWN  
HCEA NO.: 13232-A

PROFESSIONAL CERTIFICATE  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 14434.  
EXPIRATION DATE: 05/31/15

8 SHEET OF 8

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
9/20/13  
K. J. ...  
10/25/13  
10/25/13