

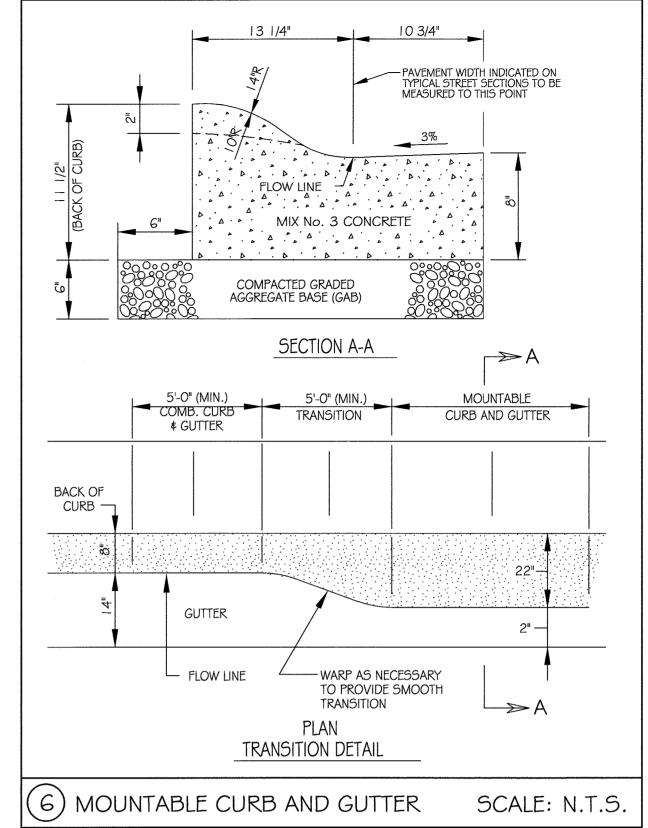
APPROVED: Howard County Department of Planning & Zoning

Chil Edul

Chief, Development Engineering Division

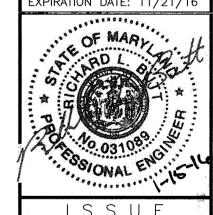
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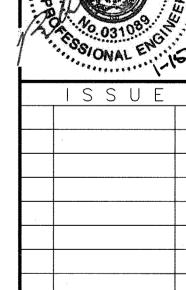
2.16.16



Construction Manager BUILDI PARKWAY OFFICE MD LITLLE PATUXENT
REALTY INC.
COLUMBIA, I
PARCEL: 275, TAX MAP: 35,
PLAT: PLAT BOOK 26 / FO
TOWN CENTER 6/2, LOT
ELECTION DISTRICT: 5 ZO

PROFESSIONAL CERTIFICATION I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED B ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND LICENSE NO. 31089 EXPIRATION DATE: 11/21/16





NO. DESCRIPTION [DRAWING TITLE:

SITE DETAILS

DRAWING NO.

R.L.B.

SHEET: 6 OF 27 N.T.S DATE: JANUARY 15, 2010

PROJECT NO: 2714655

DES. | DRWN. | CK'D.

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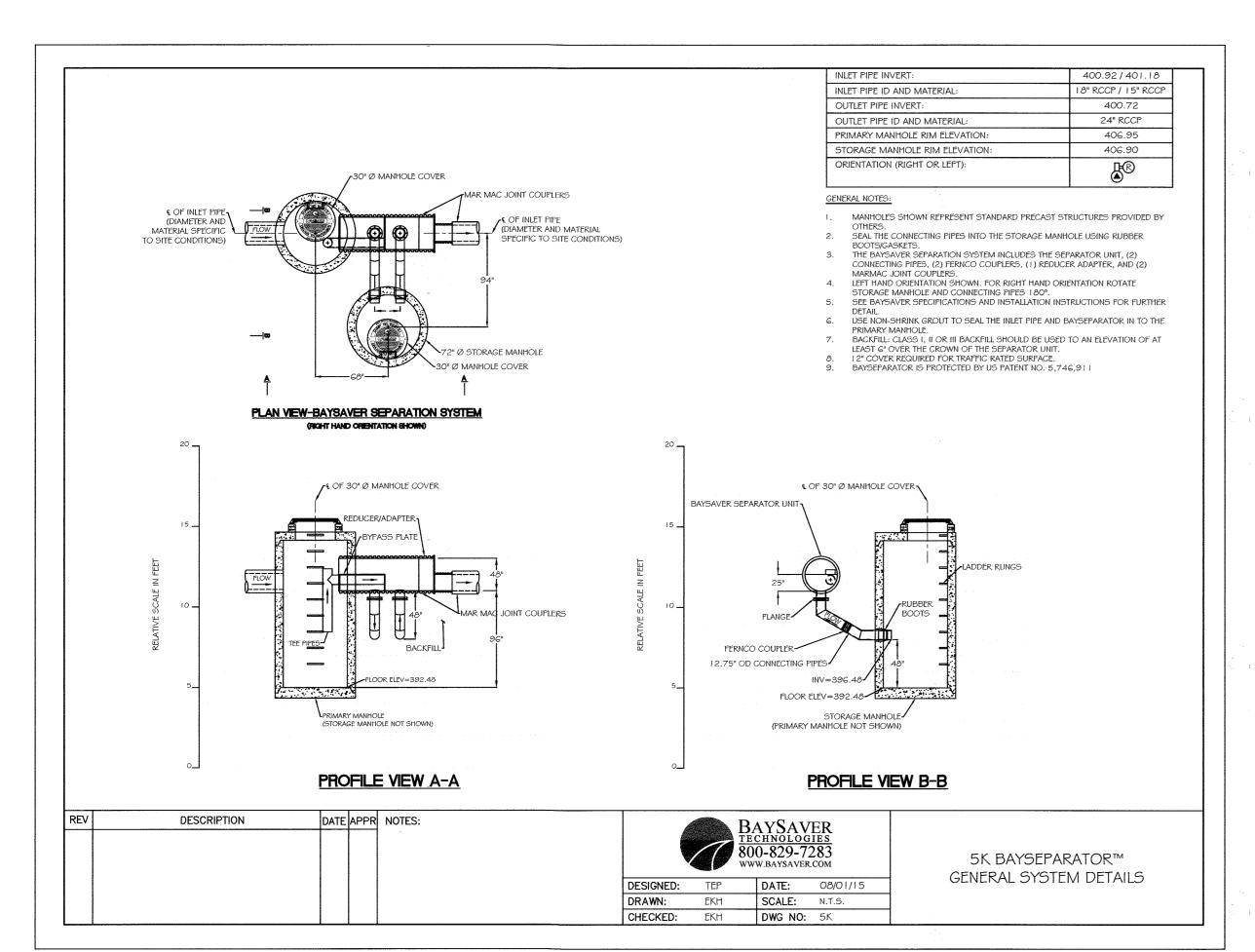
Prepared For and Owner: **Howard County Maryland**

3430 Court House Drive

410-313-4401

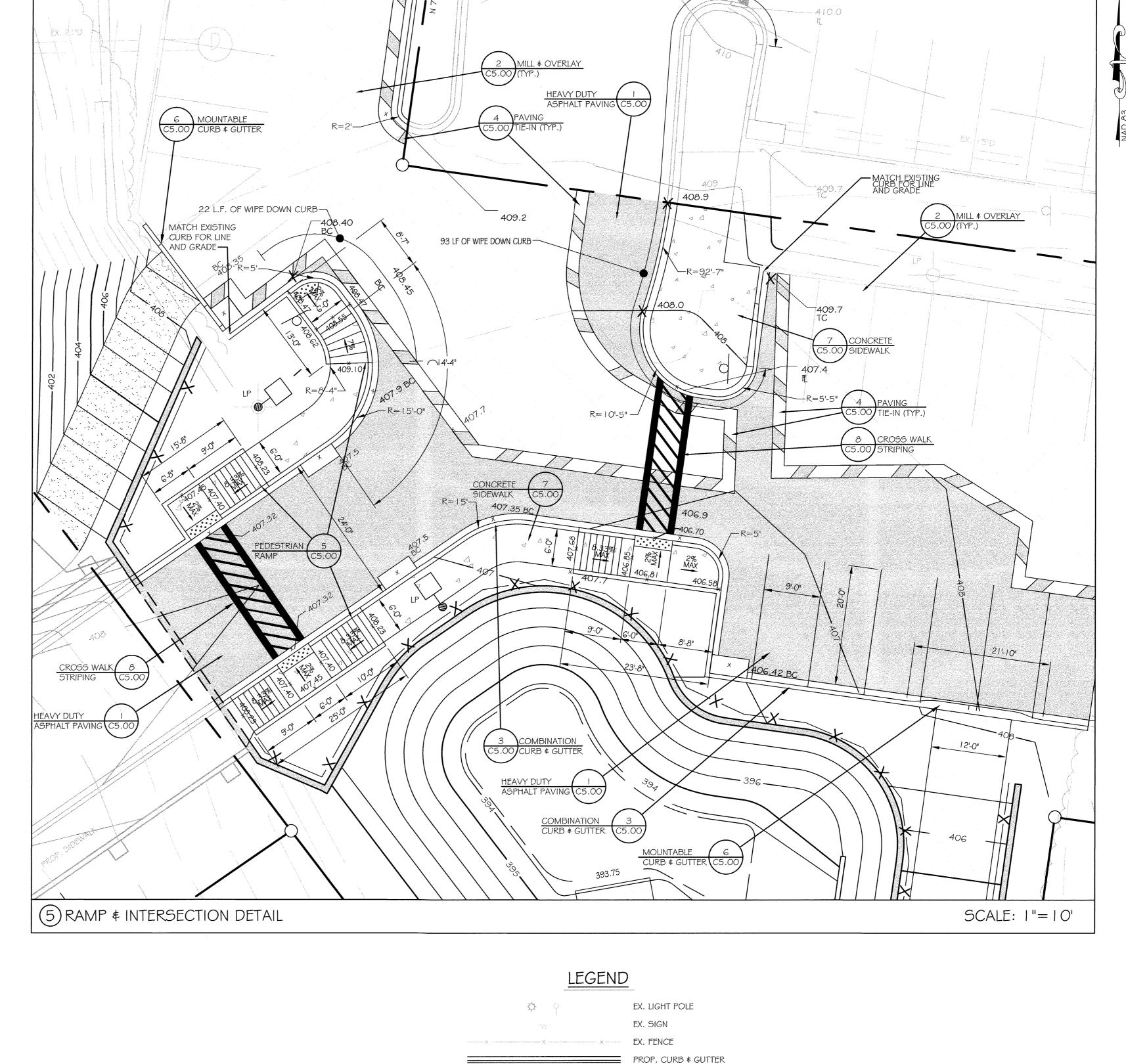
Ellicott City, Maryland 21043 ATTN: Mr. James J. Irvin

> C.T.B. R.L.B. SDP 78-83



OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED BAYSAVER WATER QUALITY DEVICE

- A. THE BAYSAVER WATER QUALITY STRUCTURE SHALL BE PERIODICALLY INSPECTED AND CLEANED TO MAINTAIN OPERATION AND FUNCTION. THE OWNER SHALL INSPECT THE BAYSAVER UNIT YEARLY AT A MINIMUM, UTILIZING THE BAYSAVER INSPECTION/MONITORING FORM. INSPECTIONS SHALL BE DONE BY USING A GRADE STICK OR SIMILAR DEVICE. WHEN THE SEDIMENT DEPTHS EXCEED 2 FEET, THE UNIT MUST BE CLEANED.
- B. THE BAYSAVER WATER QUALITY STRUCTURE SHALL BE CHECKED AND CLEANED IMMEDIATELY AFTER PETROLEUM SPILLS. THE OWNER SHALL CONTACT THE APPROPRIATE REGULATORY AGENCIES.
- C. THE MAINTENANCE OF THE BAYSAVER UNIT SHALL BE DONE USING A VACUUM TRUCK WHICH WILL REMOVE THE WATER, SEDIMENT, DEBRIS, FLOATING HYDROCARBONS AND OTHER MATERIAL IN THE UNIT. PROPER CLEANING AND DISPOSAL OF THE REMOVED MATERIALS AND LIQUID MUST BE FOLLOWED BY THE OWNER.
- D. THE INLET AND OUTLET PIPES SHALL BE CHECKED FOR ANY OBSTRUCTIONS AT LEAST ONCE EVERY SIX MONTHS. IF OBSTRUCTIONS ARE FOUND THE OWNER SHALL HAVE THEM REMOVED. STRUCTURAL PARTS OF THE BAYSAVER UNIT SHALL BE REPAIRED AS NEEDED.
- E. THE OWNER SHALL RETAIN AND MAKE THE BAYSAVER INSPECTION/MONITORING FORMS AVAILABLE THE HOWARD COUNTY OFFICIALS UPON THEIR REQUEST.



EX. LIGHT POLE

EX. SIGN

EX. FENCE

PROP. CURB & GUTTER

PROP. FENCE

PROP. SIGN

PROP. LIGHT POLE

APPROXIMATE LIMITS OF HEAVY DUTY PAVING

APPROXIMATE LIMITS OF CONCRETE

APPROXIMATE LIMITS OF GRASS ACCESS ROADS

APPROXIMATE LIMITS OF 2" MILL AND OVERLAY

SAW CUT EX. PAVEMENT AND TIE IN TO PAVEMENT

GRAPHIC SCALE

O 5' 10' 20'

(IN FEET)

SCALE: 1"= 10'

Prepared For and Owner:
Howard County Maryland
3430 Court House Drive
Ellicott City, Maryland 21043
ATTN: Mr. James J. Irvin
410-313-4401

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DRAWING NO.

C5.01
SHEET: 7 OF 27
SCALE: AS SHOWN
DATE: JANUARY 15, 2016

PROJECT NO: 27146550

DES. | DRWN. | CK'D.

R.L.B. C.T.B. R.L.B.

NO. DESCRIPTION

DRAWING TITLE:

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. 31089
EXPIRATION DATE: 11/21/16

Z

APPROVED: Howard County Department of Planning & Zoning

3-14-16

Date

Chief, Division of Land Development State

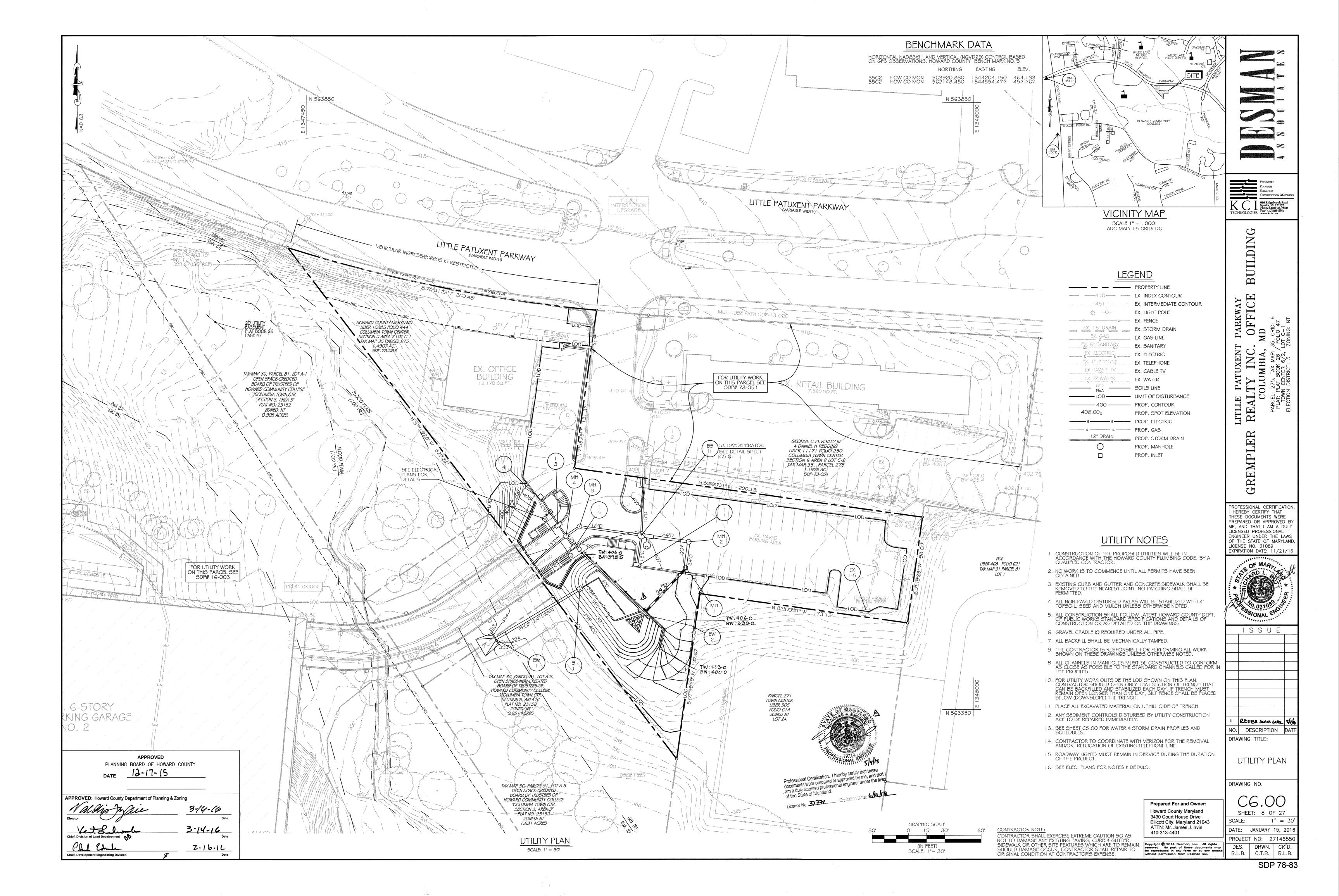
Chief Division State

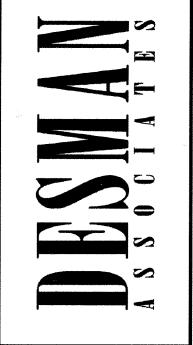
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Chief, Development Engineering Division

APPROVED

PLANNING BOARD OF HOWARD COUNTY



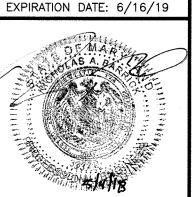


BUILDING

PARKWAY OFFICE MD LITLLE PATUXENT REALTY INC. COLUMBIA, N

GREM PROFESSIONAL CERTIFICATION.
I HEREBY CERTIFY THAT
THESE DOCUMENTS WERE PREPARED OR APPROVED B' ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33772 EXPIRATION DATE: 6/16/19

APLER



IO. DESCRIPTION DRAWING TITLE:

> UTILITY PROFILES

/ING NO.

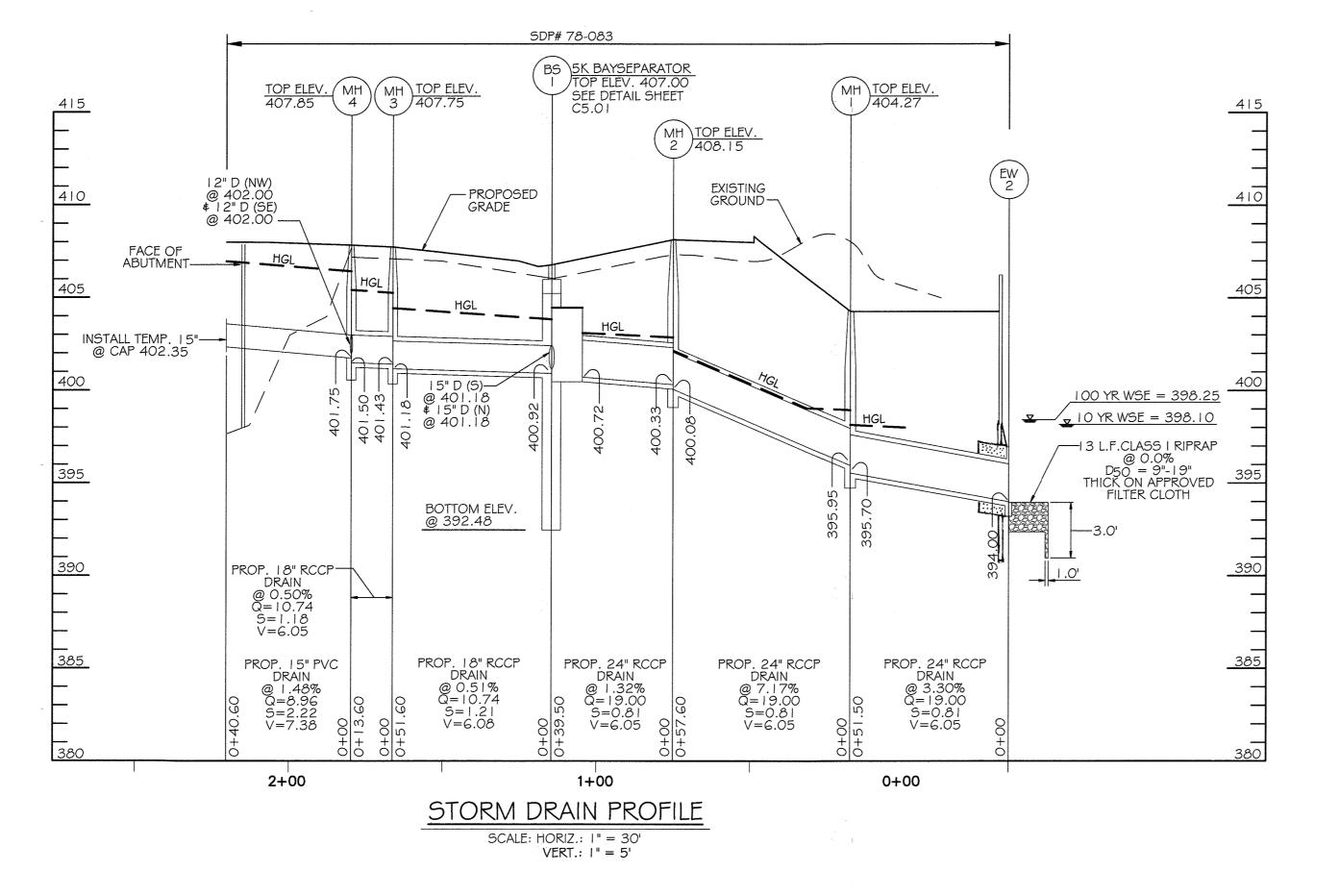
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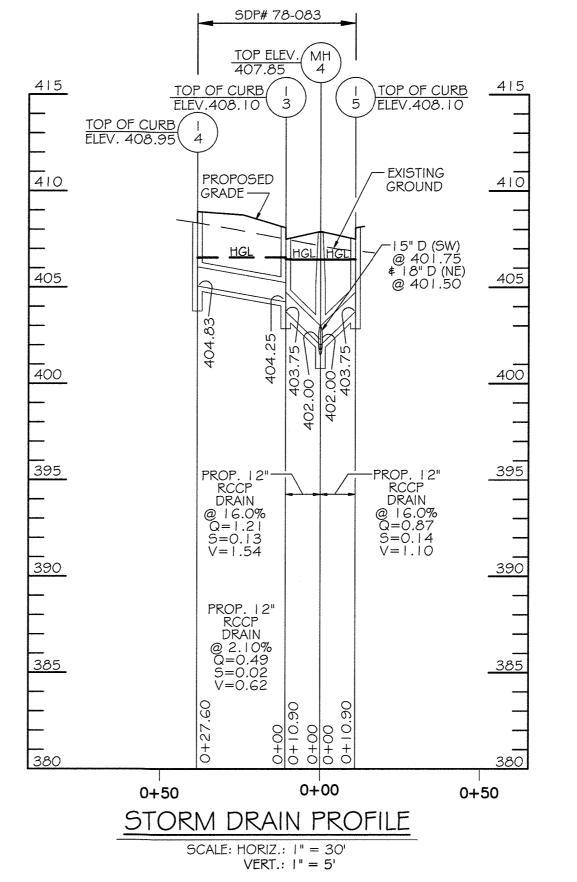
CONTRACTOR NOTE:

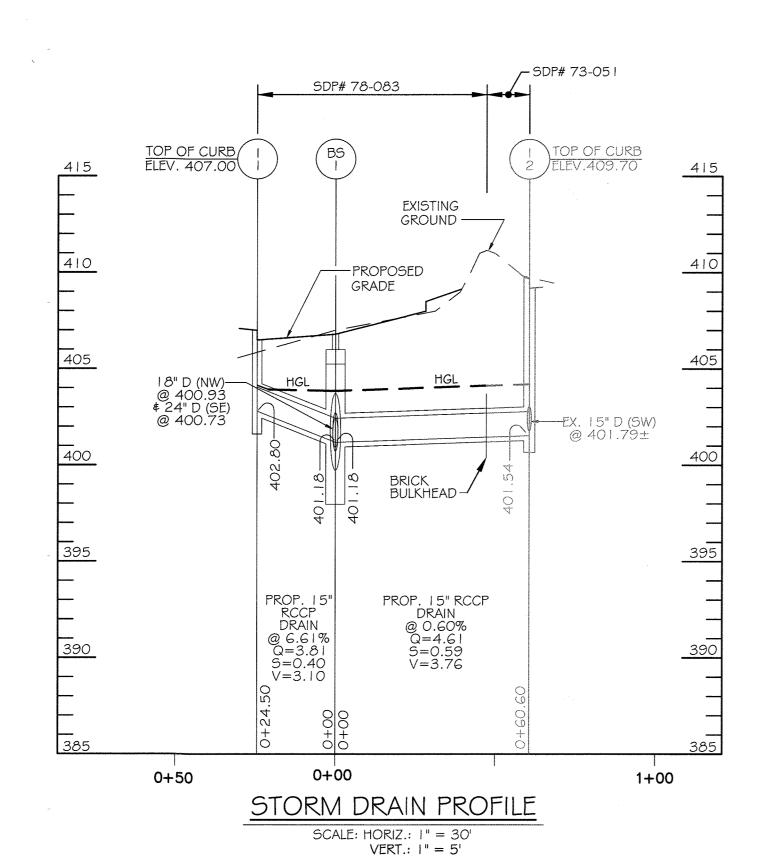
CONTRACTOR SHALL EXERCISE EXTREME CAUTION
SO AS NOT TO DAMAGE ANY EXISTING PAVING,
CURB & GUTTER, SIDEWALK OR OTHER SITE
FEATURES WHICH ARE TO REMAIN. SHOULD
DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO
ORIGINAL CONDITION AT CONTRACTOR'S EXPENSE.

Prepared Howard C 3430 Cour

	DRAWING NO.						
I For and Owner:	C	7.C	0				
County Maryland	SHEE	T: 9 OF	27				
urt House Drive ty, Maryland 21043	SCALE:		1" = 30'				
r. James J. Irvin 4401	DATE:	MAY	4, 2018				
	PROJECT	NO: 2	7146550				
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STO	DRMWATER FACILITY PIPE	SCHEDULE
SIZE	MATERIAL	LENGTH
6"	PVC	57 L.F.
24"	RCCP CL IV (ASTM C-631)	82 L.F.

	STORM DRAIN STRUCTURE SCHEDULE									
NO.	TYPE	SIZE IN.	ELEV. IN	SIZE OUT	ELEV. OUT	TOP ELEV.	REFERENCES / HOWARD COUNTY STD. DETAIL	NORTHING	EASTING	
MH-I	48" STD. PRECAST MANHOLE	24"	395.95	24"	395.70	404.27	G-5.12	N 563,431.11	E 1,347,757.40	
MH-2	48" STD. PRECAST MANHOLE	24"	400.33	24"	400.08	408.15	G-5.12	N 563,488.17	E 1,347,765.41	
МН-З	48" STD. PRECAST MANHOLE	18"	401.43	18"	401.18	407.75	G-5.12	N 563,500.83	E 1,347,675.19	
MH-4	48" STD. PRECAST MANHOLE	12"/12"/15"	402.0/402.0/401.75	18"	401.50	407.85	G-5.12	N 563,493.10	E 1,347,664.05	
1-1	DBL. WR PRECAST INLET	~	-	15"	402.80	406.92 TC	D-4.35	N 563,467.91	E 1,347,722.68	
1-3	DBL. WR PRECAST INLET	12"	404.25	12"	403.75	408.10 TC	D-4.35	N 563,503.00	E 1,347,657.18	
1-4	TYPE 'S' COMB. INLET	-	-	12"	404.83	408.95 TC	D-4.32	N 563,524.46	E 1,347,641.72	
1-5	DBL. WR PRECAST INLET	-	-	12"	403.75	408.10 TC	D-4.35	N 563,483.11	E 1,347,670.66	
EW-1	TYPE 'C' ENDWALL	24"	-		393.95	-	D-5.21	N 563,408.22	E 1,347,605.60	
EW-2	TYPE 'C' ENDWALL	24"	-		391.50	-	D-5.21	N 563,429.52	E 1,347,727.57	
BS-1	BAYSAVER SWM STRUCTURE	15"/15"/18"	401.18/401.18/400.92	24"	400.72	407.00	SEE DETAIL SHEET C-5.01	N 563,493.66	E 1,347,726.30	
5-1	CONCRETE RISER	6"	392.00	24"	392.00	397.50	SEE DETAIL SHEET C-10.05	N 563,449.38	E 1,347,675.37	

PLANNING BOARD OF HOWARD COUNTY APPROVED: Howard County Department of Planning & Zoning 7-11-18 Date

Chief, Development Engineering Division

APPROVED

PURPOSE NOTE:

REVISED RETAINING WALL

LOCATION TO AVOID BURIED

ELECTRICAL LINE.

STORM DRAIN PIPE SCHEDULE

MATERIAL

PVC (SDR-35)

RCCP CL IV

RCCP CL IV

RCCP CL IV

RCCP CL IV

SIZE

15"

12"

15"

18" 24" LENGTH

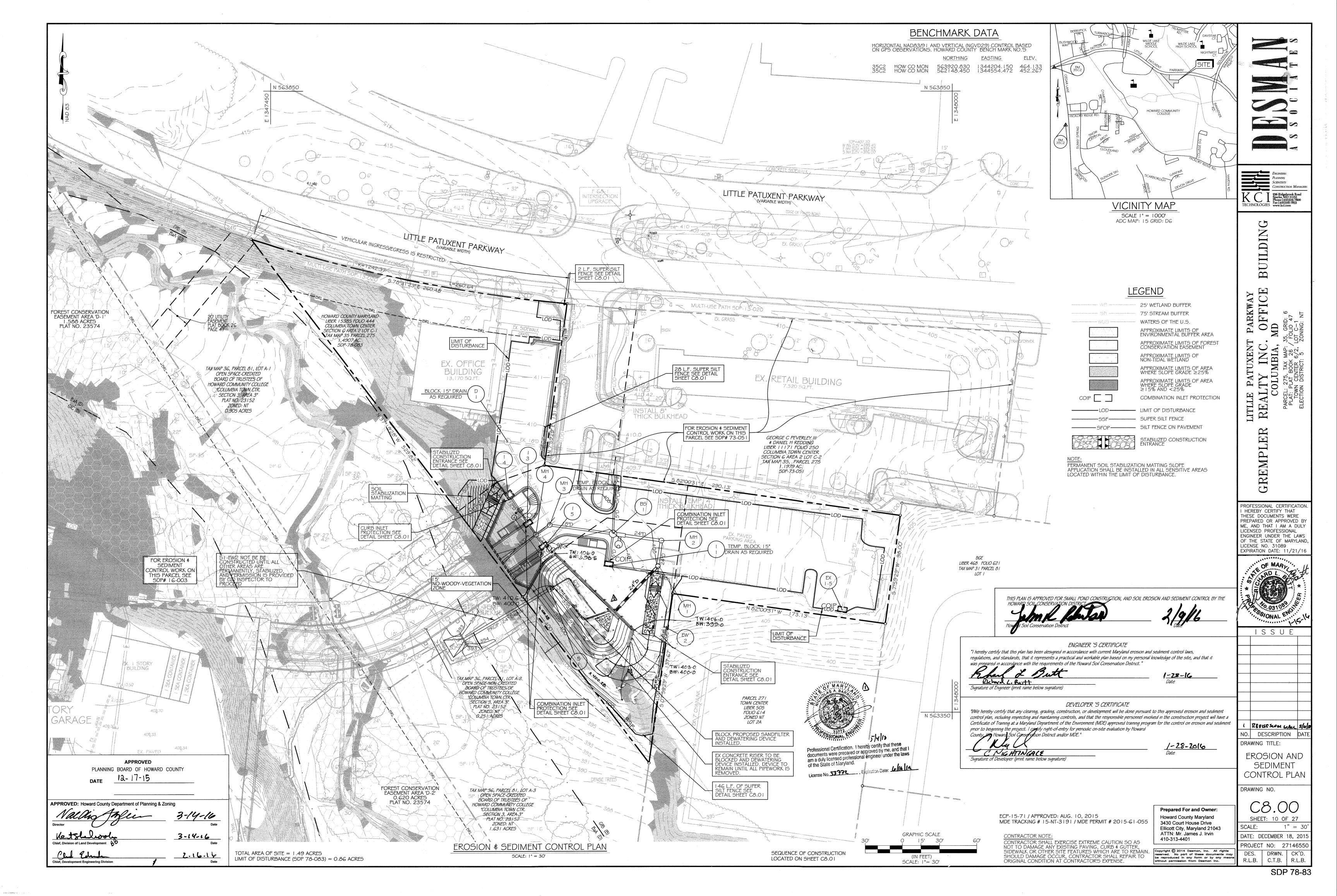
41 L.F.

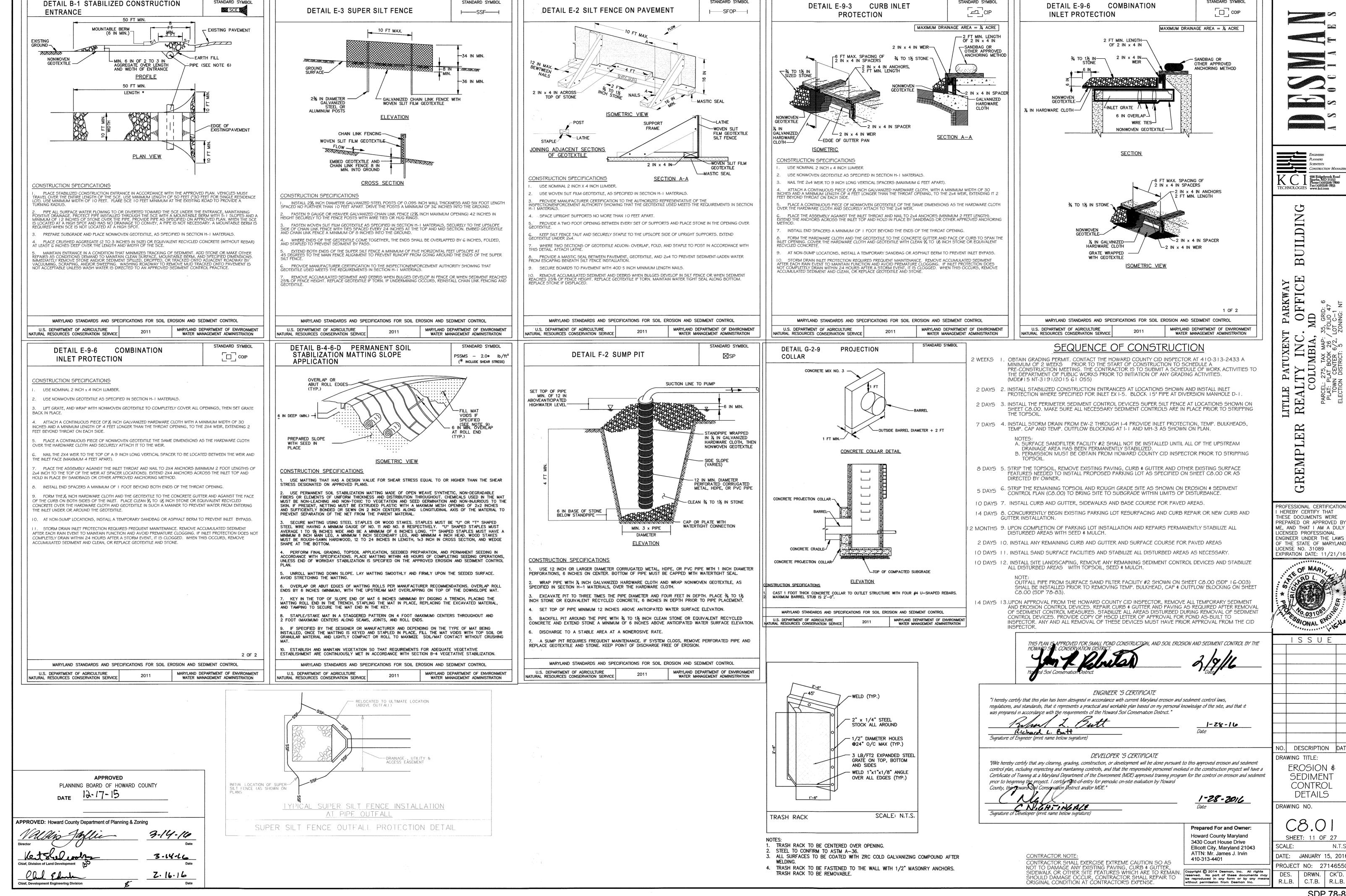
50 L.F.

75 L.F.

66 L.F.

149 L.F.





STANDARD SYMBOL

STANDARD SYMBOI

STANDARD SYMBO

STANDARD SYMBOL

STANDARD SYMBOL

SDP 78-83

STABILIZED CONSTRUCTION ENTRANCE

A LAYER OF AGGREGATE THAT IS UNDERLAIN WITH NONWOVEN GEOTEXTILE AT POINTS OF INGRESS AND EGRESS OF THE CONSTRUCTION SITE.

TO REDUCE TRACKING OF SEDIMENT ONTO ROADWAYS AND PROVIDE A STABLE AREA FOR ENTRANCE TO OR EXIT FROM THE CONSTRUCTION SITE.

STABILIZED CONSTRUCTION ENTRANCES MUST BE LOCATED AT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS.

- WHERE POSSIBLE, LOCATE THE STABILIZED CONSTRUCTION ENTRANCES AT THE HIGH SIDE OF THE PROJECT AREA.
- 2. FOR SINGLE FAMILY RESIDENTIAL LOTS, LOCATE THE ENTRANCE AT THE PERMANENT DRIVEWAY
- 3. STABILIZED CONSTRUCTION ENTRANCES CANNOT BE INSTALLED OVER PAVEMEN
- 4. MINIMUM LENGTH IS 50 FEET (30 FEET FOR SINGLE FAMILY RESIDENTIAL LOTS).
- 5. MINIMUM WIDTH IS 10 FEET. FLARE ENTRANCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A
- THE ORIENTATION OF THE STABILIZED CONSTRUCTION ENTRANCE MAY VARY FROM A STRAIGHT LINE TO A CURVE OR "T" SHAPE DEPENDING ON THE TOPOGRAPHY AND RIGHT-OF-WAY. ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE STABILIZED CONSTRUCTION ENTRANCE (SCE) MUST BE PIPED UNDER THE ENTRANCE. SIZE THE PIPE TO CONVEY THE RUNOFF GENERATED BY THE 2-YEAR, 24-HOUR FREQUENCY STORM AT MINIMUM. THE MINIMUM PERMISSIBLE PIPE SIZE IS 6 INCHES.

WHEN THE ENTRANCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT

THE SCE MUST BE MAINTAINED IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. THIS MAY REQUIRE ADDING STONE OR MAKING OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN A CLEAN SURFACE, THE MOUNTABLE BERM, AND THE SPECIFIED DIMENSIONS. ALL STONE OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO THE ADJACENT ROADWAY MUST BE REMOVED IMMEDIATELY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING THE ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS THE WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE

B-4-2 STANDARDS AND SPECIFICATIONS

SOIL PREPERATION, TOPSOILING, AND SOIL AMENDMENTS

THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH

WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED

A. SOIL PREPARATION

I. TEMPORARY STABILIZATION E. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES

b. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.

c. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. 2. PERMANENT STABILIZATION

OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE

a. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:

- I. SOIL PH BETWEEN 6.0 AND 7.0. II. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
- III. SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION: IF LOVEGRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.
- V. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.

IV. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.

- b. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.
- c. GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES.
- d. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.

e. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRIABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR

. TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY

3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE: . THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.

b. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.

c. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.

d. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE

4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN. 5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:

A. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 ½ INCHES IN DIAMETER.

b. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.

c. TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF

APPROVED PLANNING BOARD OF HOWARD COUNTY APPROVED: Howard County Department of Planning & Zoning Veitslenling 3-14-16 hief, Division of Land Development Chil Edul 2.16.16

Chief, Development Engineering Division

B-4-2 STANDARDS AND SPECIFICATIONS

SOIL PREPERATION, TOPSOILING, AND SOIL AMENDMENTS (CONTINUED)

6. TOPSOIL APPLICATION

a. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL b. UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.

c. TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS) I. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.

2. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARPANTY OF THE PRODUCER. RADEMARK AND WARRANTY OF THE PRODUCER.

3. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE. 4. LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

5. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

B-4-3 STANDARDS AND SPECIFICATIONS

SEEDING AND MULCHING

THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION. CONDITIONS WHERE PRACTICE APPLIES

TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

A. SEEDING

I. SPECIFICATIONS a. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.

c. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS

d. SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS I. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.

II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.

b. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL. I. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.

II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. c. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND

I. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, I OO POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P2O5 (PHOSPHOROUS), 200 POUNDS PER ACRE; K2O (POTASSIUM), 200 POUNDS PER ACRE. II. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.

III. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION. IV. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL

B. MULCHING

1. MULCH MATERIALS (IN ORDER OF PREFERENCE)

a. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.

b. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.

I. WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY. II. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.

III. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEED INGS.

IV. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.

V. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY I O MILLIMETERS, DIAMETER APPROXIMATELY I MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF I.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90

2. APPLICATION a. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.

b. When Straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE

c. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:

I. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR. II. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

III. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70; PETROSET, TERRA TAX II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS.

IV. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

B-4-4 STANDARDS AND SPECIFICATIONS

TEMPORARY STABILIZATION

TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS

TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS. CONDITIONS WHERE PRACTICE APPLIES

EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B. I FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3), AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONG WITH APPLICATION RATES, SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLAN AND COMPLETED, THEN TABLE B. I PLUS FERTILIZER AND LIME RATES MUST BE PUT ON THE

FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING. 3. WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3.A. I .B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON B. I TEMPORARY SEEDING RATES, DEPTHS, AND DATES

PLANT	SEE	SEEDING RATE SEEDING DEPTH		SEEDING RATE
SPECIES	LB/AC	LB/100 FT ²	(INCHES)	6B
COOL-SEASON GRASSES				
ANNUAL RYEGRASS (LOLIUM PERENNE SSP. MULTIFORM)	40	1.0	0.5	MAR I TO MAY 15; AUG I TO OCT 15
BARLEY (HORDEUM VULGARE)	96	2.2	1.0	MAR I TO MAY 15; AUG I TO OCT 15
OATS (AVENA SATIVA)	72	1.7	1.0	MAR I TO MAY 15; AUG I TO OCT 15
WHEAT (TRITICUM AESTIVUM)	120	2.8	1.0	MAR I TO MAY 15; AUG I TO OCT 15
CEREAL RYE (SECALE CEREALE)	112	2.8	1.0	MAR I TO MAY 15; AUG I TO OCT 15
WARM-SEASON GRASSES				
FOXTAIL MILLET (SETARIA ITALICA)	30	0.7	0.5	MAY 16 TO JUL 31
PEARL MILLET (<i>PENNISETUM</i> GLAUCUM)	20	0.5	0.5	MAY 16 TO JUL 31

OATS ARE THE RECOMMENDED NURSE CROP FOR WARM-SEASON GRASSES

2/ FOR SANDY SOILS, PLANT SEEDS AT TWICE THE DEPTH LISTED ABOVE. THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE AND MAY REQUIRE ADJUSTMENTS TO REFLECT LOCAL CONDITIONS. ESPECIALLY NEAR THE BOUNDARIES OF THE ZONE.

B-4-5 STANDARDS AND SPECIFICATIONS

PERMANENT STABILIZATION

TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE

A. SEED MIXTURES 1. GENERAL USE

d. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3 ½ POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY. 2. TURFGRASS MIXTURES

a. AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.

b. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.

SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS

IOOSE CERTIFIED MATERIAL. CERTIFIED MATERIAL IS THE BEST GUARANTEE OF ULTIVAR PURITY. THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF RICULTURE: TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER OTECTION AND ASSURES A PURE GENETIC LINE c. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES

WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDINESS ZONES: 5B, GA) CENTRAL MD: MARCH | TO MAY | 5, AUGUST | 5 TO OCTOBER | 5 (HARDINESS ZONE: 6B)

SOUTHERN MD, EASTERN SHORE: MARCH ! TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7A, 7B)

	HARDINESS ZONE (from SEED MIXTURE (from tabl		6ь		F	LIME		
NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS	N	P ₂ 0	K ₂ O	RATE
	KENTUCKY BLUEGRASS 10% TURF-TYPE TALL FESCUE 40% GRADE TALL FESCUE 30% PERENNIAL RYEGRASS 20%	250	3/15 - 5/15 OR 8/15 - 11/15	1/4 - 1/2 m.	45 POUNDS PER ACRE	90 lb/ac (2 lb/	90 lb/ac (2 lb/	2 tons/ac
	KENTUCKY BLUEGRASS 10% TURF-TYPE TALL FESCUE 40% GRADE TALL FESCUE 30% PERENNIAL RYEGRASS 20%	350	3/15 - 5/15 OR 8/15 - 11/15	1/4 - 1/2 m.	(1.0 lb/ (fe 000 l	1000 sf)	1 000 sf)	(90 lb/1000 sf)

B. SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).

a. CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR. b. SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4 INCH, PLUS OR MINUS 1/4 INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS AND TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE.

c. STANDARD SIZE SECTIONS OF SOD MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.

d. SOD MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.

e. SOD MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPLANTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.

B-4-4 STANDARDS AND SPECIFICATIONS

TEMPORARY STABILIZATION (CONTINUED) 2. SOD INSTALLATION

a. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.

b. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT. DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN OF THE GRASS LEAF MUST BY REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNITED.

B-4-6 STANDARDS AND SPECIFICATIONS

SOIL STABILIZATION MATTING

MATERIAL USED TO TEMPORARILY OR PERMANENTLY STABILIZE CHANNELS OR STEEP SLOPES UNTIL GROUNDCOVER IS ESTABLISHED.

TO PROTECT THE SOILS UNTIL VEGETATION IS ESTABLISHED.

CONDITIONS WHERE PRACTICE APPLIES

5. CALCULATE CHANNEL VELOCITY AND SHEAR STRESS USING THE FOLLOWING PROCEDURE: SHEAR STRESS (T) IS A MEASURE OF THE FORCE OF MOVING WATER AGAINST THE SUBSTRATE AND IS CALCULATED AS: T=(y)(R)(Sw) WHERE

VELOCITY (v) MEASURES THE RATE OF FLOW THROUGH A DEFINED AREA AND IS CALCULATED AS:

STILAR STRESS (1871) WEIGHT DENSITY OF WATER (G2.4 16/112) AVERAGE WATER DEPTH (HYDRAULIC RADIUS)(11) =WATER SURFACE SLOPE (11/11)

ROUGHNESS COFFFICIENT

6. USE TABLE B.7 TO ASSIST IN SELECTING THE APPROPRIATE SOIL STABILIZATION MATTING FOR SLOPE APPLICATIONS BASED ON THE SLOPE, THE SLOPE LENGTH, AND THE SOIL-ERODIBILITY K FACTOR.

			TABLE	В.7:	50IL 5	STABILIZ	ZATIO	N ON S	BLOPES	ò					
SLOPE	20:1	OR FL (<5%	ATTER)		20:1 TC (>5-25			4:1 TO >25-33			:1 TO 2 >33-40			5:1 TO >40-5(
SLOPE LENGTH (FEET*)	0-30	30-60	60-120	0-30	30-60	60-120	0-30	30-60	60-120	0-30	30-60	60-120	0-30	30-60	60-120
STRAW MULCHWOOD CELLULOSE FIBER					FOR	K <u><</u> 0.8	35***								
TEMPORARY MATTING WITH DESIGN SHEAR STRESS > 1.5 lb/sf															
TEMPORARY MATTING WITH DESIGN SHEAR STRESS > 1.75 lb/sf											:==##				
TEMPORARY MATTING WITH DESIGN SHEAR STRESS > 2.0 lb/sf								180 an							
TEMPORARY MATTING WITH DESIGN SHEAR															

STRESS > 2.25 lb/sf EFFECTIVE RANGE FOR ALL K VALUES UNLESS OTHERWISE SPECIFIED

Richard L. Butt

Signature of Engineer (print name below signature)

Signature of Developer (print name below signature)

* SLOPE LENGTH INCLUDES CONTRIBUTING FLOW LENGTH.

* SLOPES STEEPER THAN 2:1 MUST BE ENGINEERED.

* SOIL HAVING A K VALUE LESS THAN OR EQUAL TO 0.35 CAN BE STABILIZED EFFECTIVELY WITH STRAW MULCH OR WOOD CELLULOSE FIBER WHEN LOCATED ON SLOPES STEEPER THAN 5%. SOIL STABILIZATION MATTING IS REQUIRED ON ALL SLOPES STEEPER THAN 5% THAT HAVE SOIL WITH A K FACTOR GREATER THAN 0.35. K FACTOR RATINGS ARE PUBLISHED IN THE NRCS SOIL SURVEY HTTP:// WEBSOILSURVEY NRCS USDA GOV/APP. DURING CONSTRUCTION OR RECLAMATION, THE SOIL-ERODIBILITY K VALUE SHOULD REPRESENT THE UPPER 6 INCHES OF THE FINAL FILL MATERIAL RE-SPREAD AS THE LAST LIFT. ONLY THE EFFECTS OF ROCK FRAGMENTS WITHIN THE SOIL PROFILE ARE CONSIDERED IN THE ESTIMATION OF THE K VALUE. DO NOT ADJUST K VALUES TO ACCOUNT FOR ROCKS ON THE SOIL SURFACE OR INCREASES IN SOIL ORGANIC MATTER RELATED TO MANAGEMENT ACTIVITIES.

VEGETATION MUST BE ESTABLISHED AND MAINTAINED SO THAT THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERTATION ASTRICT

ENGINEER 'S CERTIFICATE ll 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."

DEVELOPER 'S CERTIFICATE "IWe certify that all development and construction will be done according to these plans 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 or site inspection by the Howard Soil Conservation District." 1-28.2016 - NICHTINGAE

CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB & GUTTER,

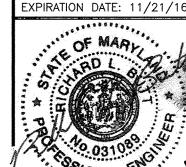
ORIGINAL CONDITION AT CONTRACTOR'S EXPENSE.

Prepared For and Owner: Howard County Maryland 3430 Court House Drive Ellicott City, Maryland 21043 ATTN: Mr. James J. Irvin 410-313-4401 SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO

Engineers
Planners
Scientists
Construction Manage 936 Ridgebrook Road Sparks, MD 21152 Phone (410)316-7800 Fax (410)316-7833

PARKWA OFFI LTY INC.
COLUMBIA, INC.
II. 275, TAX MAP. 35,
II. 275, TAX MAP. 35,
III. 275, TAX MAP. 35, LITLLE REAL

PROFESSIONAL CERTIFICATION HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED I ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND LICENSE NO. 31089



SONAL EN ISSUE

> DESCRIPTION DAT DRAWING TITLE: **EROSION** \$

SEDIMENT CONTROL NOTES

DRAWING NO.

SHEET: 12 OF 27 SCALE: DATE: JANUARY 15, 2016

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SDP 78-83

C.T.B. R.L.B.

B-4-8 STANDARDS AND SPECIFICATIONS

STOCKPILE AREA

A MOUND OR PILE OF SOIL PROTECTED BY APPROPRIATELY DESIGNED EROSION AND SEDIMENT CONTROL MEASURES.

TO PROVIDE A DESIGNATED LOCATION FOR THE TEMPORARY STORAGE OF SOIL THAT CONTROLS THE POTENTIAL FOR EROSION, SEDIMENTATION, AND CHANGES TO DRAINAGE PATTERNS.

CONDITIONS WHERE PRACTICE APPLIES

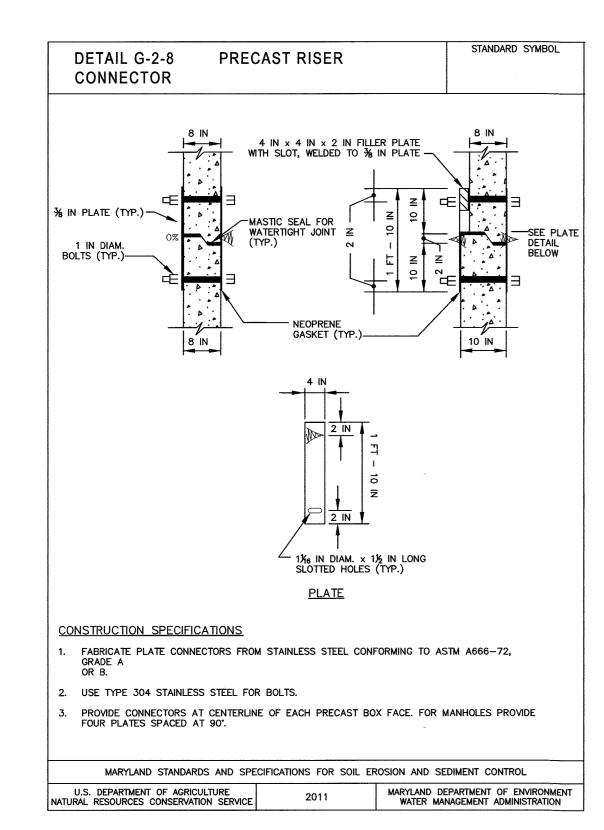
STOCKPILE AREAS ARE UTILIZED WHEN IT IS NECESSARY TO SALVAGE AND STORE SOIL FOR LATER USE. DESIGN CRITERIA

I . THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.

- 2. THE FOOTPRINT OF THE STOCKPILE MUST BE SIZED TO ACCOMMODATE THE ANTICIPATED VOLUME OF MATERIAL AND BASED ON A SIDE SLOPE RATIO NO STEEPER THAN 2:1. BENCHING MUST BE PROVIDED IN
- 3. RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE. 4. ACCESS THE STOCKPILE AREA FROM THE UPGRADE SIDE.
- 5. CLEAR WATER RUNOFF INTO THE STOCKPILE AREA MUST BE MINIMIZED BY USE OF A DIVERSION DEVICE SUCH AS AN EARTH DIKE, TEMPORARY SWALE OR DIVERSION FENCE. PROVISIONS MUST BE MADE FOR DISCHARGING CONCENTRATED FLOW IN A NON-EROSIVE MANNER.
- 6. WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL, AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
- 7. STOCKPILES MUST BE STABILIZED IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION REQUIREMENT AS WELL AS STANDARD B-4-1 INCREMENTAL STABILIZATION AND STANDARD B-4-4 TEMPORARY STABILIZATION.
- 8. IF THE STOCKPILE IS LOCATED ON AN IMPERVIOUS SURFACE, A LINER SHOULD BE PROVIDED BELOW THE STOCKPILE TO FACILITATE CLEANUP. STOCKPILES CONTAINING CONTAMINATED MATERIAL MUST BE COVERED WITH IMPERMEABLE SHEETING.

MAINTENANCE

THE STOCKPILE AREA MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. SIDE SLOPES MUST BE MAINTAINED AT NO STEEPER THAN A 2:1 RATIO. THE STOCKPILE AREA MUST BE KEPT FREE OF EROSION. IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 20 FEET FOR 2:1 SLOPES, 30 FEET FOR 3:1 SLOPES, OR 40 FEET FOR 4:1 SLOPES, BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.



PLANNING BOARD OF HOWARD COUNTY

APPROVED: Howard County Department of Planning & Zoning 3-14-16 2.16.16 Chief, Development Engineering Divisior

H-4 STANDARDS AND SPECIFICATIONS

TEMPORARY ACCESS WATERWAY CROSSINGS

A STRUCTURE PLACED ACROSS A WATERWAY TO PROVIDE ACCESS FOR CONSTRUCTION PURPOSES FOR A PERIOD OF LESS THAN ONE YEAR. TEMPORARY ACCESS CROSSINGS ARE NOT TO BE UTILIZED TO MAINTAIN TRAFFIC FOR THE GENERAL PUBLIC.

TO PROVIDE SAFE, POLITION FREE ACCESS ACROSS A WATERWAY FOR CONSTRUCTION FQUIPMENT BY TO PROVIDE SAPE, POLLUTION FREE ACCESS ACROSS A WATERWAY FOR CONSTRUCTION EQUIPMENT BY ESTABLISHING MINIMUM STANDARDS AND SPECIFICATIONS FOR THE DESIGN, CONSTRUCTION, MAINTENANCE, AND REMOVAL OF THE STRUCTURE. A TEMPORARY ACCESS WATERWAY CROSSING IS NECESSARY TO PREVENT CONS TRUCTION EQUIPMENT FROM DAMAGING THE WATERWAY, BLOCKING FISH MIGRATION, AND TRACKING SEDIMENT AND OTHER POLLUTANTS INTO THE WATERWAY. A WATERWAY CROSSING MAY CREATE A CHANNEL CONSTRICTION, THUS THE TEMPORARY NATURE OF WATERWAY ACCESS CROSSINGS MUST BE STRESSED. THE CROSSING SHOULD BE IN PLACE FOR THE SHORTEST PRACTICAL PERIOD OF TIME AND REMOVED AS SOON AS ITS FUNCTION IS COMPLETED.

CONDITIONS WHERE PRACTICE APPLIES

TEMPORARY WATERWAY CROSSINGS MUST CONFORM TO THE TECHNICAL REQUIREMENTS OF THESE STANDARDS AND SPECIFICATIONS AS WELL AS ANY SPECIFIC REQUIREMENTS IMPOSED BY THE MDE WETLANDS AND WATERWAYS PROGRAM. THE DESIGNS ARE BASED ON WATERWAY GEOMETRY RATHER THAN THE DRAINAGE AREA CONTRIBUTING TO THE POINT OF CROSSING. THE PRINCIPAL CONSIDERATION OF THESE STANDARDS AND SPECIFICATIONS IS EROSION AND SEDIMENT CONTROL. STRUCTURAL INTEGRITY AND SAFETY FOR EXPECTED LOADING MUST ALSO BE CONSIDERED WHEN DESIGNING TEMPORARY ACCESS WATERWAY CROSSINGS. THE TWO TYPES OF STANDARD TEMPORARY WATERWAY CROSSINGS ARE BRIDGES AND CULVERTS. BRIDGES ARE PREFERABLE.

. STREAM CLOSURES: THE STREAM CHANNEL MUST NOT BE DISTURBED DURING RESTRICTED TIME PERIODS. STREAM CLOSURE DATES FOR FISH SPAWNING OR MIGRATION WITHIN WATERWAYS ARE AS FOLLOWS: JUNE 1 - SEPTEMBER 30 AND DECEMBER 16 - MARCH 14
OCTOBER 1 - APRIL 30
MARCH 1 - MAY 31

*SUBMERGED AQUATIC VEGETATION (SAV)

USE II USE III AND IIIP USE IV

FOR MORE INFORMATION ABOUT THE CLOSURES BASED ON STREAM USES AND SAVS CONTACT MDE WETLANDS AND WATERWAYS PROGRAM.

APRIL I - OCTOBER 15

- 2. AQUATIC MIGRATION: FISH PASSAGE MUST NOT BE OBSTRUCTED BY THE INSTALLATION OF A WATERWAY CROSSING. BRIDGES POSE THE LEAST POTENTIAL FOR CREATING BARRIERS TO AQUATIC MIGRATION. THE CONSTRUCTION OF A WATERWAY CROSSING MUST NOT CAUSE A SIGNIFICANT WATER LEVEL DIFFERENCE BETWEEN THE UPSTREAM AND DOWNSTREAM WATER SURFACE ELEVATIONS.
- 3. SITE LOCATION: LOCATE THE TEMPORARY CROSSING WHERE THERE WILL BE THE LEAST DISTURBANCE TO THE EXISTING WATERWAY BANKS AND APPROACHES. WHEN POSSIBLE, LOCATE THE CROSSING AT A POINT RECEIVING MINIMAL SURFACE RUNOFF. CONSIDER THE EFFORT THAT WILL BE REQUIRED TO RESTORE THE AREA AFTER THE TEMPORARY CROSSING IS REMOVED.
- 4. CROSSING ALIGNMENT: THE TEMPORARY WATERWAY CROSSING SHOULD BE AT RIGHT ANGLES TO THE STREAM, UNLESS THE APPROACH CONDITIONS DICTATE OTHERWISE.
- 5. APPROACHES: THE CENTERLINE OF BOTH APPROACHES NEEDS TO COINCIDE WITH THE CENTERLINE OF THE CROSSING FOR A MINIMUM DISTANCE OF 50 FEET FROM THE TOP OF EACH STREAM BANK, UNLESS PRECLUDED BY PHYSICAL OR RIGHT-OF-WAY CONSTRAINTS. THE APPROACHES SHOULD BE KEPT AS CLOSE TO THE EXISTING GRADE AS POSSIBLE. APPROACHES SHOULD HAVE A MINIMUM WIDTH OF 12 FEET AND A MAXIMUM WIDTH OF 20 FEET DEPENDING ON THE SIZE OF THE VEHICLES THAT WILL USE THE CROSSING.
- 6. SURFACE RUNOFF: RUNOFF ON THE APPROACHES MUST BE AT A NON-EROSIVE VELOCITY. THIS CAN BE ATTAINED THROUGH SURFACE STABILIZATION OR SURFACE RUNOFF DIVERSION. SURFACE RUNOFF FROM UNSTABILIZED APPROACHES MUST DISCHARGE TO AN APPROVED SEDIMENT CONTROL DEVICE.
- 7. REMOVAL: AFTER THE TEMPORARY CROSSING IS NO LONGER NEEDED, REMOVE IT WITHIN 14 CALENDAR DAYS UNLESS WITHIN THE USE DESIGNATION STREAM CLOSURE PERIÓD.

THE STONE CHECK DAM IS NOT A SEDIMENT TRAPPING PRACTICE; HOWEVER, SOME SEDIMENT MAY ACCUMULATE BEHIND THE CHECK DAM. ACCUMULATED SEDIMENT MUST BE REMOVED WHEN IT REACHES ONE-HALF OF THE HEIGHT OF THE WEIR CREST. LINE, GRADE, AND CROSS SECTION MUST BE MAINTAINED.

CHECK DAM REMOVAL

IN TEMPORARY SWALES AND CHANNELS, REMOVE CHECK DAM(S) WHEN NO LONGER NEEDED. IN PERMANENT CHANNELS, CHECK DAMS MAY BE REMOVED WHEN PERMANENT LINING IS INSTALLED. IN THE CASE OF GRASS-LINED CHANNELS, CHECK DAM MAY BE REMOVED WHEN THE GRASS HAS MATURED SUFFICIENTLY TO PROTECT THE SWALE OR CHANNEL SEED AND INSTALL SOIL STABILIZATION MATTING OR SOD IN THE AREAS DISTURBED BY THE REMOVAL

H-4-I STANDARDS AND SPECIFICATIONS

TEMPORARY ACCESS BRIDGE

A TEMPORARY WATERWAY CROSSING THAT SPANS THE STREAM CHANNEL

GENERALLY, A TEMPORARY ACCESS BRIDGE CAUSES LESS DISTURBANCE TO THE WATERWAY BED AND BANKS AND POSES LESS INTERFERENCE WITH FISH MIGRATION THAN A CULVERT ACCESS CROSSING.TIME-OF-YEAR RESTRICTIONS DO NOT APPLY TO THE CONSTRUCTION OR REMOVAL OF A TEMPORARY ACCESS BRIDGE UNLESS THERE IS DISTURBANCE TO THE STREAM CHANNEL.

DESIGN CONSIDERATION

THE APPROACH TO THE BRIDGE MUST BE STABILIZED AND KEPT FREE OF EROSION. THE DECKING AND CURBS MUST BE CLEANED OF SEDIMENT DAILY BY SCRAPING, SWEEPING, AND/OR VACUUMING. THE DECKING AND CURBS MUST REMAIN TIGHTLY BUTTED WITHOUT GAPS. DEBRIS TRAPPED BY THE BRIDGE MUST BE REMOVED. THE AREAS ADJACENT TO THE CROSSING MUST BE MAINTAINED TO CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND DEPARTMENT OF THE ENVIRONMENT BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, THE NONTIDAL WETLAND BUFFER, WATERS OF THE STATE

AND THE 100-YEAR FLOODPLAIN I. NO EXCESS FILL CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN. A LOCATION AND MANNER THAT DOES NOT ADVERSELY IMPACT SURFACE OR FLOW INTO OR AULT OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS

G.RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.

8.AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST-CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS. 9.TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM

USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH I THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.

10. STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT WASHING OF DEBRIS INTO THE WATERWAY. I I . CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER. HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING

A. PRIOR TO THE START OF EARTH DISTURBANCE,
B. UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING,
C. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT,
D. PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.
OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN.
ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR PLAN AND ARE TO BE IN CONFORMANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR OIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERETO. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS

NDER ACTIVE GRADING ILL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 20 I I MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-2). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES IF THE GROUND IS FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-I) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH > 15' OF CUT AND/OR FILL. STOCKPILES (SEC. B-4-8) IN EXCESS OF 20 FT. MUST BE BENCHED WITH STABLE OUTLET. ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-6).
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 CID.

0.86 ACRES 0.58 ACRES

.28ACRES

OTAL AREA OF SITE: AREA DISTURBED: AREA TO BE ROOFED OR PAVED: AREA TO BE VEGETATIVELY STABILIZED:

SHOULD INCLUDE

OFFSITE WASTE/BORROW AREA LOCATION: SITE WITH APPROVED SED. CONTROL PLAN ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE CID. THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY; AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST, IS PART OF EVERY INSPECTION AND

 INSPECTION DATE INSPECTION TYPE (ROUTINE, PRE-STORM EVENT, DURING RAIN EVENT)
 NAME AND TITLE OF INSPECTOR

• WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED • BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES EVIDENCE OF SEDIMENT DISCHARGES
IDENTIFICATION OF PLAN DEFICIENCIES

 IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS

 PHOTOGRAPHS MONITORING/SAMPLING MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED

TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN AND SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.

ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.

DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.O.D. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE CID, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.

TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.

ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-CONTOUR, AND BE IMBRICATED AT 25' MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPHILL BY 2' IN ELEVATION.

STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE):

STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE): USE I AND IP MARCH I - JUNE 15 • USE III AND IIIP OCTOBER 1 - APRIL 30 USF IV MARCH 1 - MAY 3 A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN

1. DEVELOPER'S CERTIFICATION:

I (WE) CERTIFY THAT:

BEFORE BEGINNING THE PROJECT.

A) ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE IN ACCORDANCE WITH THIS SEDIMENT AND EROSION CONTROL PLAN, AND FURTHER, AUTHORIZE THE RIGHT OF ENTRY FOR PERIODIC ON-SITE EVALUATION BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT BOARD OF SUPERVISORS OR THEIR AUTHORIZED AGENTS. B) ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE FROM THE MARYLAND DEPARTMENT OF THE ENVIRONMENTS APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION

RESPONSIBLE PERSON ON THE SITE: 2. THE DEVELOPER IS RESPONSIBLE FOR THE ACQUISITION OF ALL EASEMENTS, RIGHTS, AND/OR RIGHTS OF WAY THAT MAY BE REQUIRED FOR THE SEDIMENT AND EROSION CONTROL PRACTICES. STORMWATER MANAGEMENT PRACTICES AND THE DISCHARGE OF STORMWATER ONTO OR ACROSS ADJACENT OR DOWNSTREAM PROPERTIES INCLUDED IN THIS PLAN. HE IS ALSO RESPONSIBLE FOR THE ACQUISITION OF ALL EASEMENTS. RIGHTS AND/OR RIGHTS OF WAY THAT MAY BE REQUIRED FOR GRADING AND/OR WORK

ON ADJACENT PROPERTIES INCLUDED IN THIS PLAN. 3. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN SEVEN CALENDAR DAYS FOR THE SURFACE OF PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAT 3 HORIZONTAL TO 1 VERTICAL (3:1) AND FOURTEEN DAYS FOR ALL OTHER DISTURBED

OR GRADED AREAS ON THE PROJECT SITE 4. THE SEDIMENT CONTROL APPROVALS ON THE PLAN EXTEND ONLY TO AREAS AND PRACTICES IDENTIFIED AS PROPOSED WORK. 5. THE APPROVAL OF THIS PLAN FOR SEDIMENT AND EROSION CONTROL DOES NOT RELIEVE THE DEVELOPER/CONSULTANT FROM

COMPLYING WITH ANY FEDERAL/STATE/COUNTY REQUIREMENTS APPERTAINING TO ENVIRONMENTAL ISSUES. THE DEVELOPER MUST REQUEST THAT THE DEPARTMENT OF INSPECTIONS AND PERMITS APPROVE WORK COMPLETED IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. THE GRADING OR BUILDING PERMIT AND THE ORDINANCE. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE DEPARTMENT OF INSPECTIONS AND PERMITS SHALL BE REQUIRED ON 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 THE INITIAL APPROVAL BY THE DEPARTMENT OF INSPECTIONS AND PERMITS IS GIVEN. 8. APPROVAL SHALL BE REQUESTED ON FINAL STABILIZATION OF ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES BEFORE

REMOVAL OF CONTROLS MIL SIGNATURE OF DEVELOPER / APPLICANT

TELEPHONE:

THE DEVELOPER'S PLAN TO CONTROL SILT AND EROSION IS ADEQUATE TO CONTAIN THE SILT AND EROSION PROPERTY COVERED BY THE PLAN. I CERTIFY THAT THIS PLAN OF EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THIS SITE, AND WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT PLAN SUBMITTAL GUIDELINES AND THE CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SEDIMENT AND EROSION CONTROL. I HAVE REVIEWED THIS EROSION AND SEDIMENT CONTROL PLAN WITH THE OWNER/DEVELOPER.

1-28-16 31089 SIGNATURE: MD. LICENSE NO. RICHARD L. BUTT KCI TECHNOLOGIES INC. PRINT NAME FIRM NAME: 936 RIDGEBROOK ROAD SPARKS, MD 21152 ADDRESS: TELEPHONE: (410) 316-7931

ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERETO

THIS PLAN IS APPROVED FOR SMALL POND CONSTRUCTION, AND SOIL EROSION AND SEDIMENT CONTROL BY THE

DEVELOPER 'S CERTIFICATE

prior to beginning the project. I certify right of-entry for periodic on-site evaluation by Howard County, the Howard Soil Conservation District and/or MDE."

CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS

SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN

SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO

NOT TO DAMAGE ANY EXISTING PAVING, CURB & GUTTER

ORIGINAL CONDITION AT CONTRACTOR'S EXPENSE.

Signature of Developer (print name below signature)

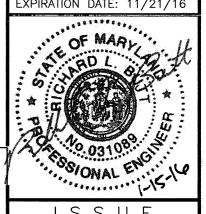
Engineers
Planners
Scientists
Construction Managers

ILD M

为 田 PARKWAOFFI(LE AI C

HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED I ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND LICENSE NO. 31089 EXPIRATION DATE: 11/21/10

LE



	<u> </u>
2/m/ Kebrulan 2/9//	ISSUE
Howard Soil Conservation District	
ENGINEER 'S CERTIFICATE	
"I hereby certify that this plan has been designed in accordance with current Maryland erosion and sediment control laws,	
regulations, and standards, that it represents a practical and workable plan based on my personal knowledge of the site, and that it	
was prepared in accordance with the requirements of the Howard Soil Conservation District."	
19u1ul R 12wtt 1-28-16	
Richard L Buff Date	
Signature of Engineer (print name below signature)	
DEVELOPER 'S CERTIFICATE	

"IWe hereby certify that any clearing, grading, construction, or development will be done pursuant to this approved erosion and sediment NO. DESCRIPTION DATE control plan, including inspecting and maintaining controls, and that the responsible personnel involved in the construction project will have a Certificate of Training at a Maryland Department of the Environment (MDE) approved training program for the control on erosion and sediment DRAWING TITLE:

EROSION \$ SEDIMENT CONTROL NOTES

PRAWING NO.

SHEET: 13 OF 27 DATE: DECEMBER 18, 2015 ROJECT NO: 27146550

DES.

Prepared For and Owner:

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1-28-2016

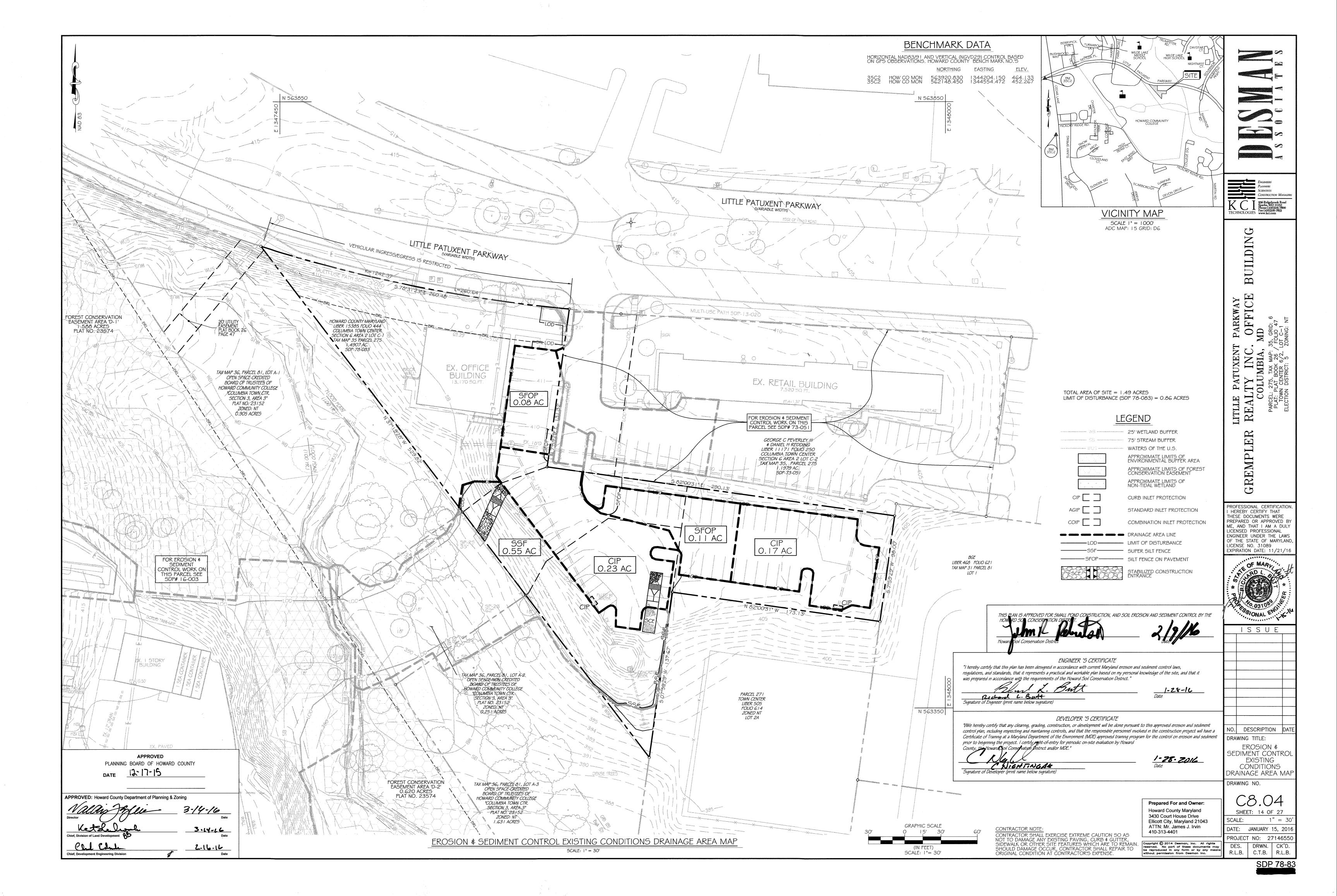
Howard County Maryland 3430 Court House Drive Ellicott City, Maryland 21043 ATTN: Mr. James J. Irvin

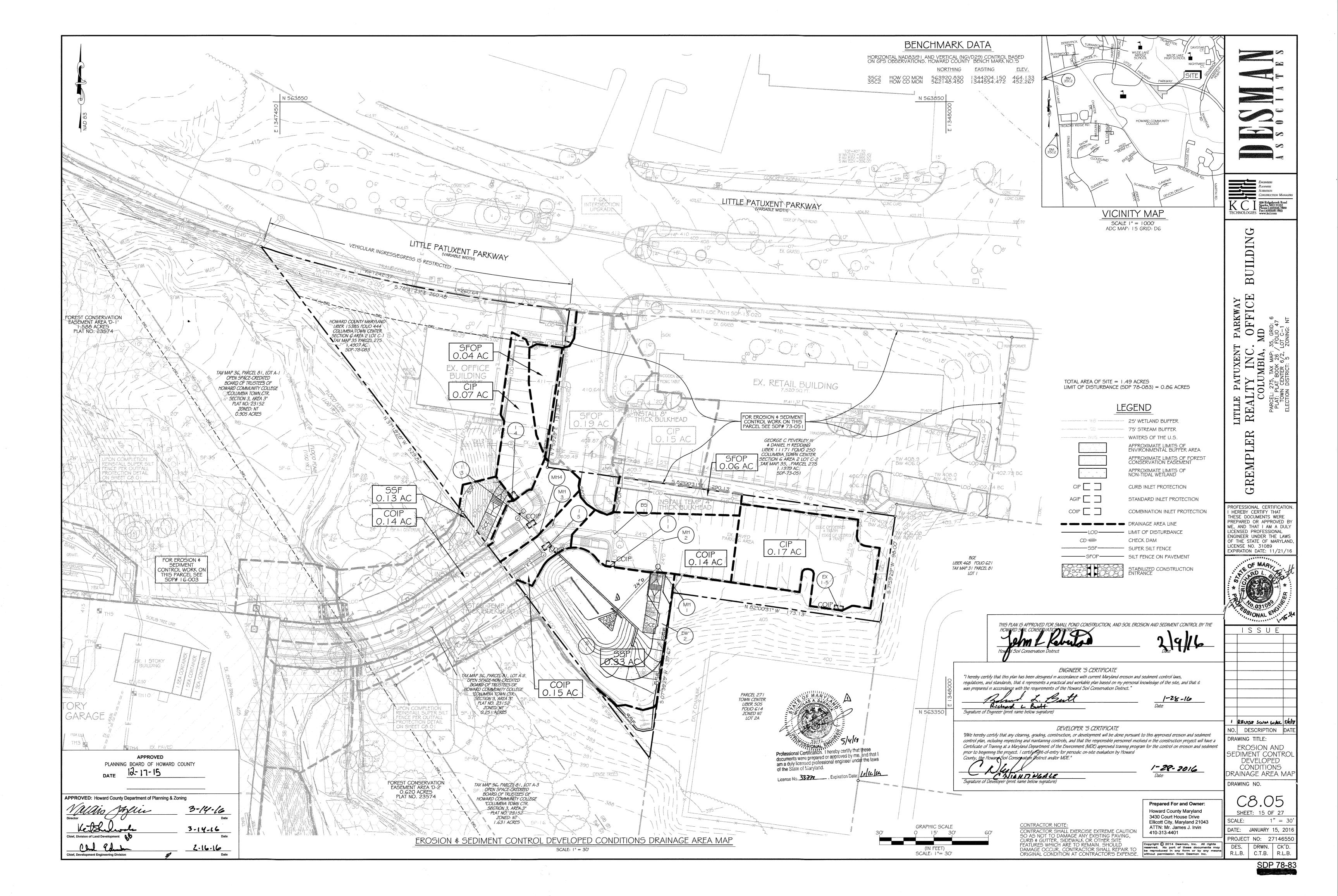
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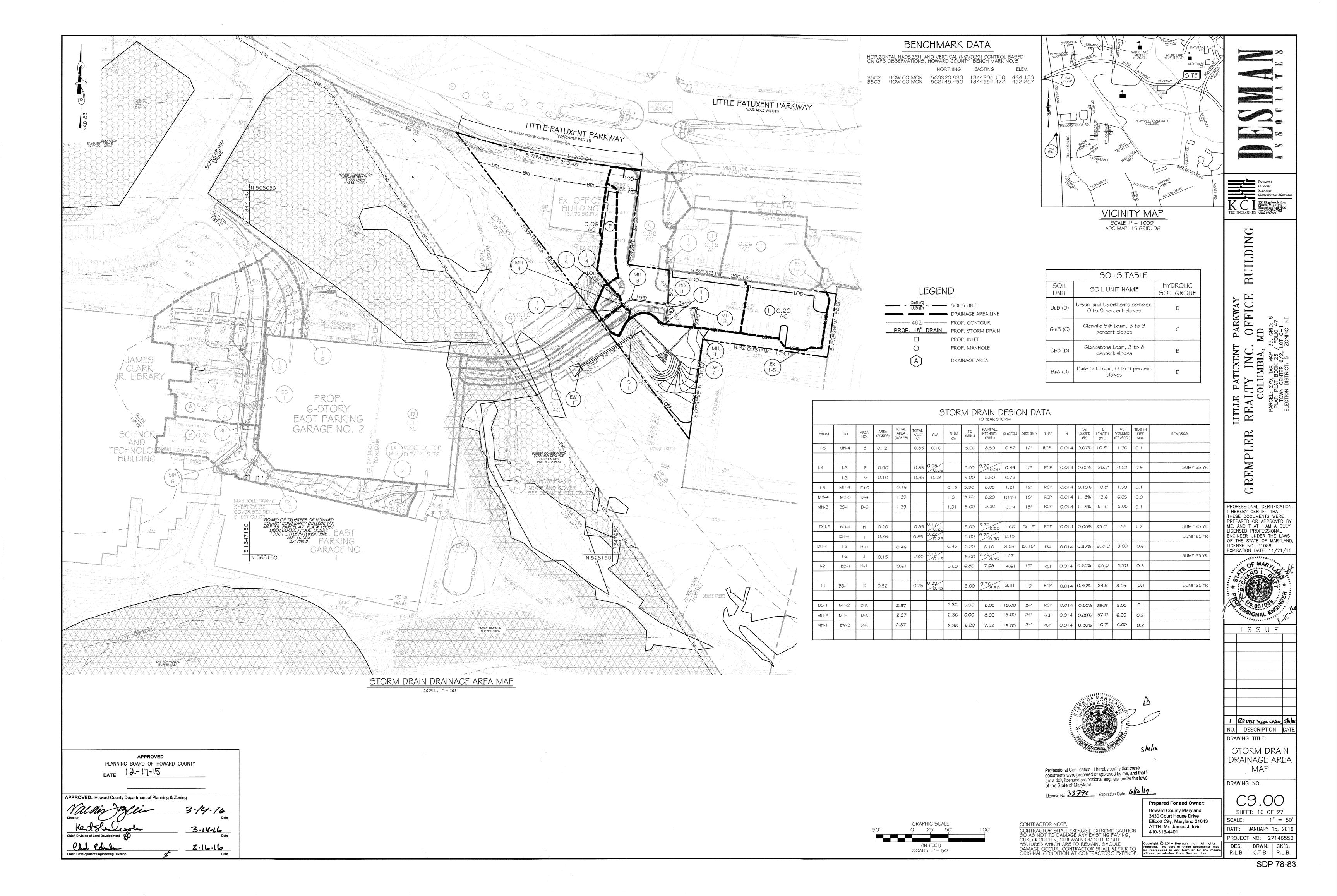
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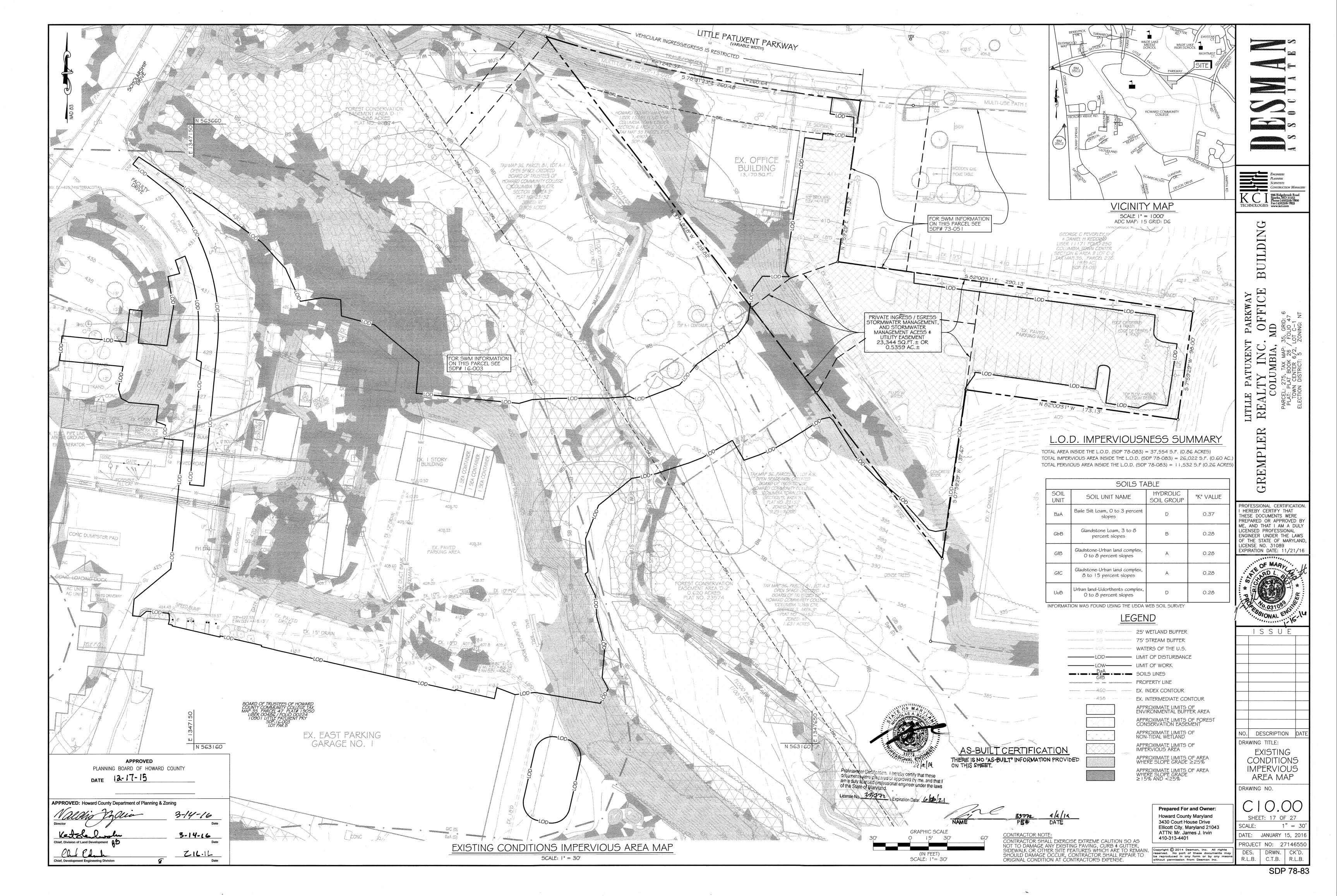
C.T.B. R.L.B.

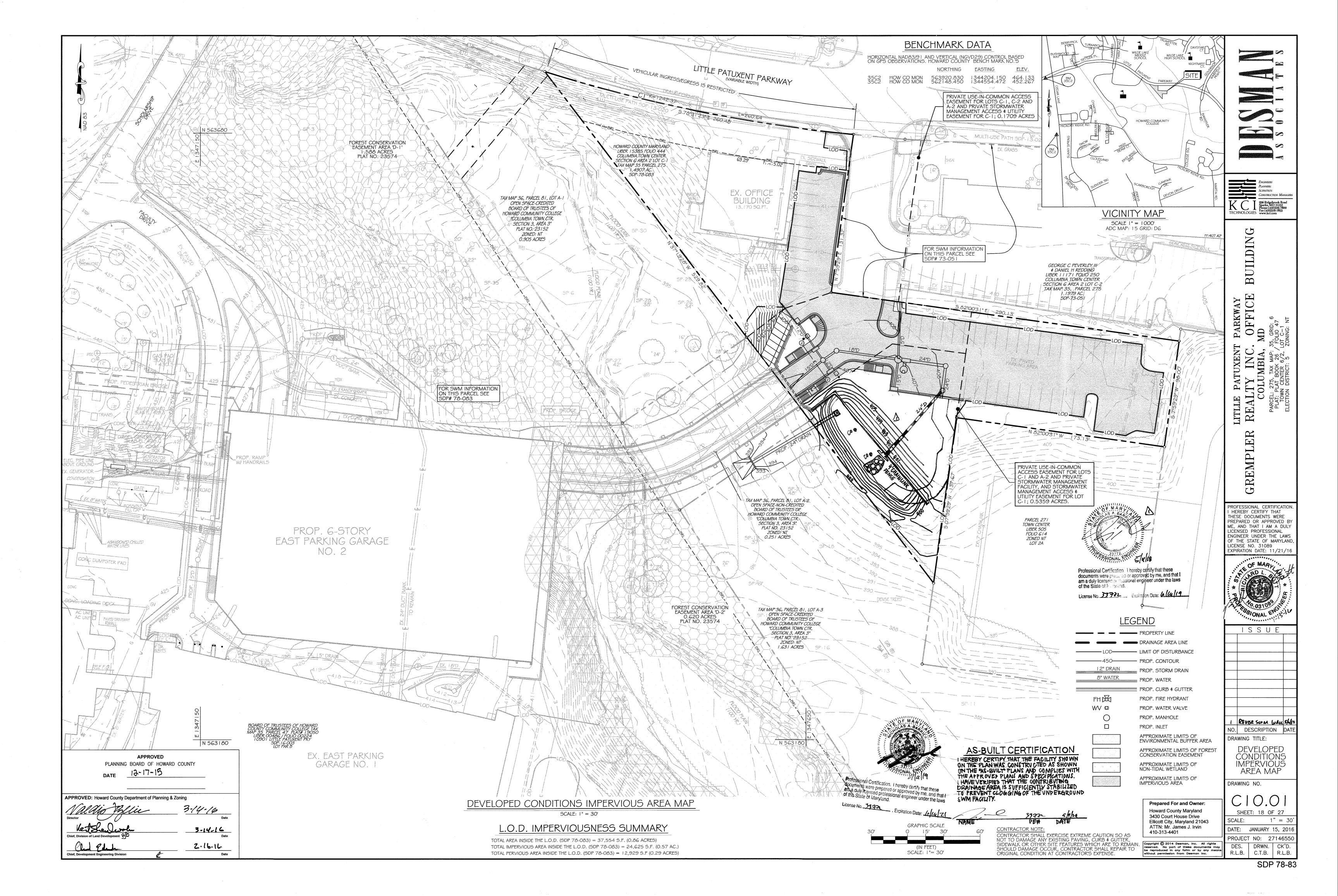
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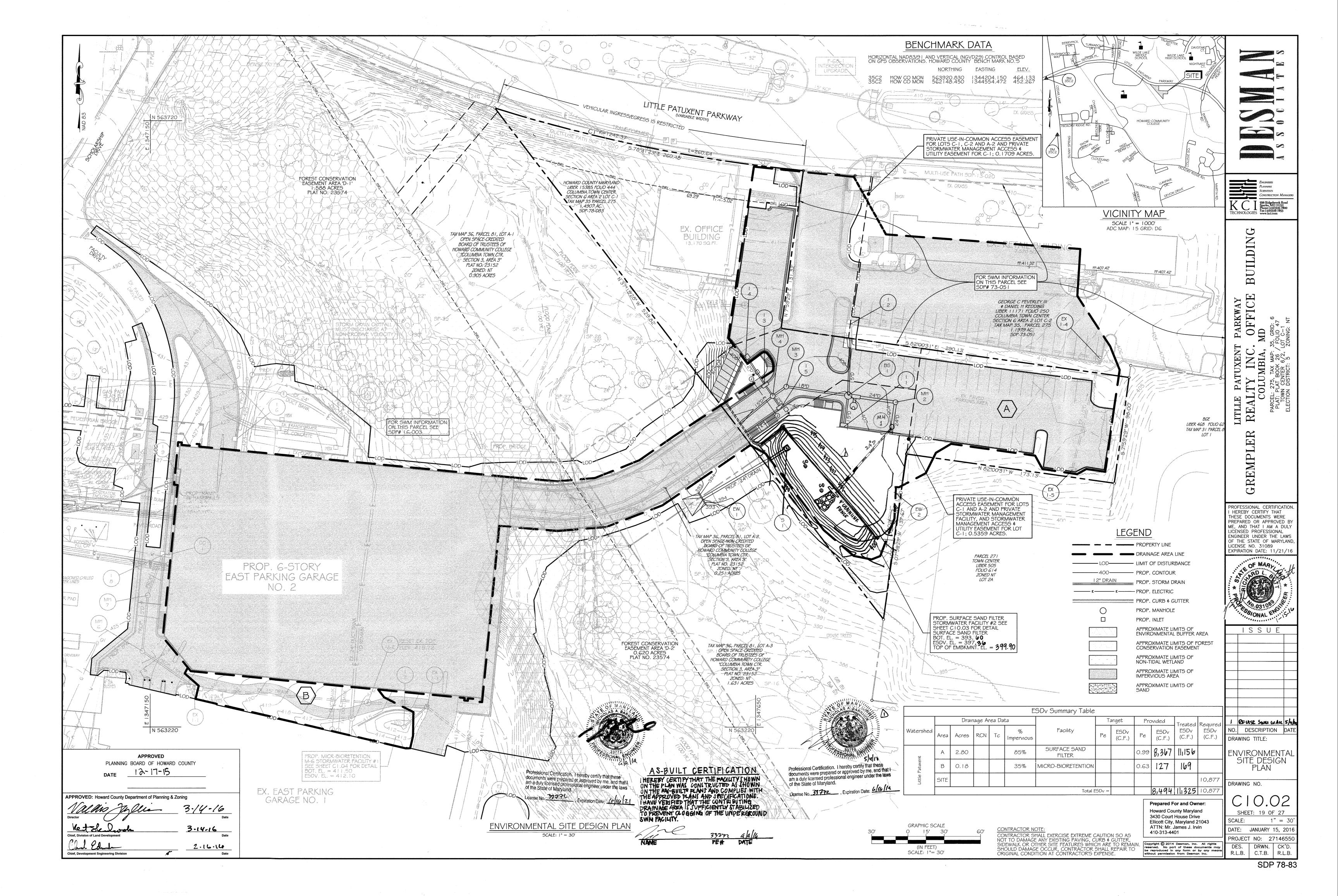


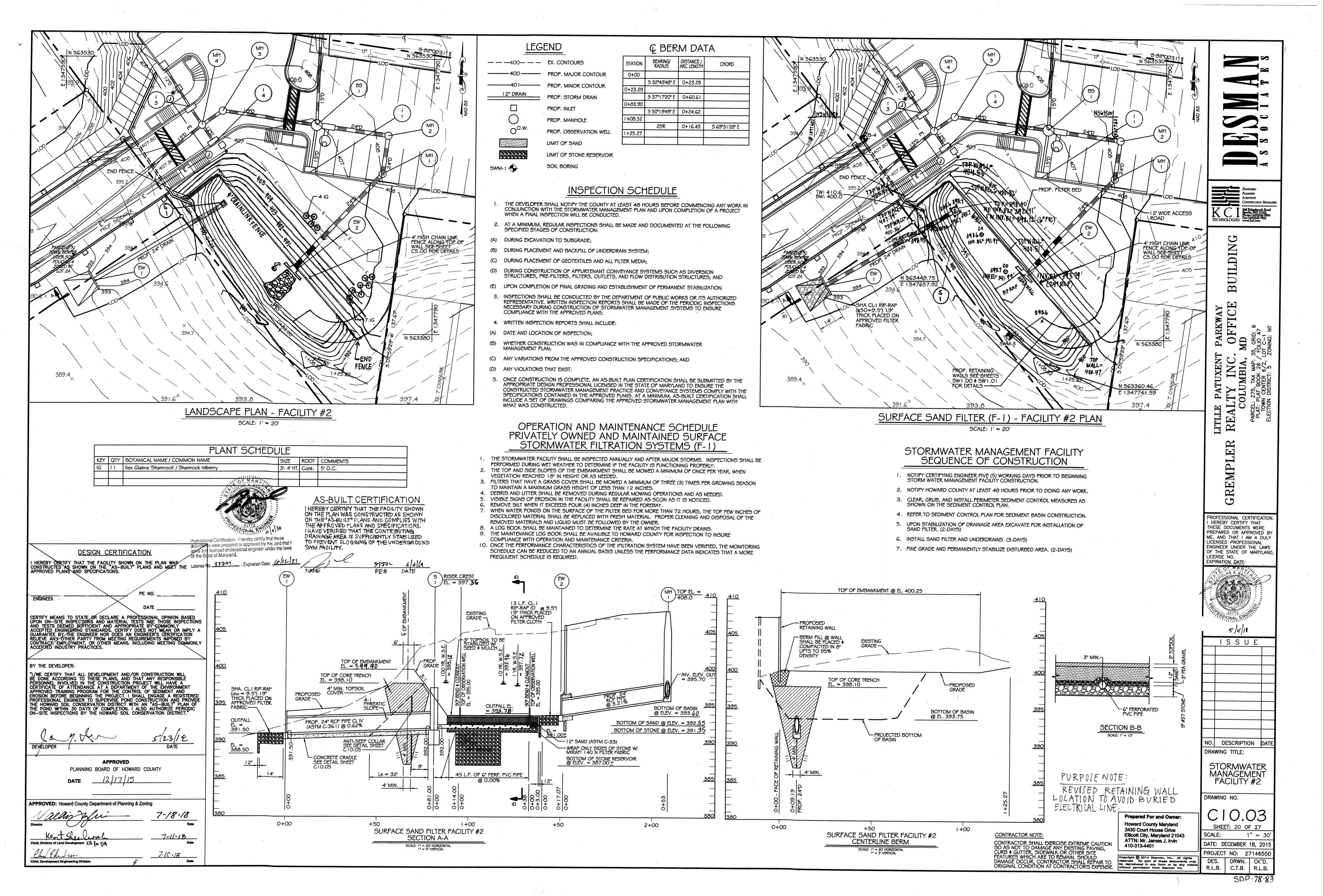












ALL STORMWATER MANAGEMENT FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOWARD COUNTY "STANDARD SPECIFICATIONS AND THE N.R.C.S. MARYLAND STANDARDS AND SPECIFICATIONS FOR PONDS" (MARYLAND CODE 378 POND - JANUARY

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS SHOWN ON THESE PLANS. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT

AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAT 1:1. ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE

AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. TRAES, BRUSH, AND STUMPS SHALL BE CENT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 25-FOOT RADIUS AROUND THE INLET STRUCTURE SHALL

ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

MATERIAL - THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT, AND CUTOFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER.
SUCH SPECIAL DESIGNS MUST HAVE CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER. MATERIALS USED IN THE OUTER SHELL OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT. IF REQUIRED, CUTOFF TRENCH WILL BE SHOWN ON PLANS.

PLACEMENT - AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8 INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH

THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTION - THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE $\,$ TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF HEAVY EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TIRED

VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED. THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL IT WILL NOT CRUMBLE, YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.

THE MINIMUM REQUIRED DENSITY SHALL NOT BE LESS THE 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN +/- 2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99

CUT-OFF TRENCH - THE CUTOFF TRENCH (NOT REQUIRED UNLESS SHOWN ON PLANS) SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE EQUIPMENT LISED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET. SHALL GOVERN THE BOTTOM WIDTH OF THE TRENCH. THE DEPTH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS. THE SIDE SLOPES OF THE TRENCH SHALL BE ! TO ! OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM

EMBANKMENT CORE - THE CORE (NOT REQUIRED UNLESS SHOWN ON PLANS) SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENTS SHOWN ON THE PLANS. THE TO WIDTH OF THE CORE SHALL BE A MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND UP TO AT LEAST THE 10 YEAR WATER ELEVATION SHOWN ON THE PLANS. THE SIDE SLOPES SHALL BE I TO I OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION, THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.

CORE DAM / TRENCH MATERIAL SHALL BE 'CL', 'SC', 'CH' OR 'GC' ONLY. CONTRACTOR SHALL ASSUME CORE DAM / TRENCH MATERIAL IS NOT AVAILABLE ON-SITE \$ MUST BE OBTAINED FROM AN OFF-SITE LOCATION.

STRUCTURE BACKFILL

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT THE MATERIAL NEEDS TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GRATER OVER THE STRUCTURE OR PIPE

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION MODIFIED. THE MIXTURE SHALL HAVE A 100-200 PSI: 28 DAY UNCONFINED COMPRESSIVE STRENGTH. THE FLOWABLE FILL SHALL HAVE A MINIMUM PH OF 4.0 AND A MINIMUM RESISTIVELY OF 2,000 OHM-CM. MATERIAL SHALL BE PLACED SUCH THAT A MINIMUM OF 6" (MEASURED PERPENDICULAR TO THE OUTSIDE OF THE PIPE) OF FLOWABLE FILL SHALL BE UNDER (BEDDING), OVER AND, ON THE SIDES OF THE PIPE. IT ONLY NEEDS TO EXTEND UP TO THE SPRING LÍNE FOR RIGIÓ CONDUITS. AVERAGE SLUMP OF THE FILL SHALL BE 7" TO ASSURE LOWABILITY OF THE MATERIAL. ADEQUATE MEASURES SHALL BE TAKEN (SAND BAGS, ETC.) TO PREVENT FLOATING THE PIPE WHEN USING FLOWABLE FILL, ALL METAL PIPE SHALL BE BITUMINOUS COATED. ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL SHALL COMPLETELY FILL ALL VOIDS ADJACENT TO THE FLOWABLE FILL ZONE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE STRUCTURAL BACKFILL (FLOWABLE FILL) ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

POND CONSTRUCTION SPECIFICATIONS

REMOVAL AND REPLACEMENT OF DEFECTIVE FILL

FILL PLACED AT DENSITIES LOWER THAN SPECIFIED MINIMUM DENSITY OR AT MOISTURE CONTENTS OUTSIDE THE SPECIFIED ACCEPTABLE RANGE OF MOISTURE CONTENT OR OTHERWISE NOT CONFORMING TO THE REQUIREMENTS OF THE SPECIFICATIONS SHALL BE REWORKED TO MEET THE REQUIREMENTS OR REMOVED AND REPLACED BY ACCEPTABLE FILL. THE BOTTOMS OF SUCH EXCAVATIONS SHALL BE FINISHED FLAT OR GENTLY CURVING AND AT THE SIDES OF SUCH EXCAVATIONSTHE ADJACENT SOUND FILL SHALL BE TRIMED TO A SLOPE NOT STEEPER THAN 3 FEET HORIZONTALLY TO 1 FOOT VERTICALLY EXTENDING FROM THE BOTTOM OF THE EXCAVATION TO THE FILL SURFACE.

PIPE CONDUITS ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

ALL PERFORATED PIPES SHALL HAVE A MINIMUM OF I SQUARE INCH OF OPENING PER LINEAR FOOT OF PIPE.

REINFORCED CONCRETE PIPE

ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR REINFORCED CONCRETE PIPE.

1. MATERIALS - REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM C-361 2. BEDDING - REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING/CRADLE IF NOTED ON PLANS. THIS BEDDING/CRADLE SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE A CONCRETE CRADLE IS NOT NEEDED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THE "STRUCTURE BACKFILL" SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.

3. LAYING PIPE - BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN A FEFT FROM THE RISER.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL"

5. CONNECTIONS - ALL CONNECTIONS (TO ANTI-SEEP COLLARS, RISER, ETC.) SHALL BE

6. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE

PLASTIC PIPE - THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE: I. MATERIAL - PVC PIPE SHALL BE PVC-1120 OR PVC-1220 CONFORMING TO ASTM D-1785 OR ASTM D-2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4"-10" INCH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE 5, AND 12" THROUGH 24" INCH SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE 5.

JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY

3. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSUITABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

CONCRETE SHALL MEET THE REQUIREMENTS OF THE MARYLAND STATE HIGHWAY ADMINISTRATION (SHA) "SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS", ARE THOSE DATED JANUARY, 2001; SECTION 420 AND 920, MIX NO. 3.

CAST IN PLACE CONCRETE STRUCTURES (ANTI-SEEP COLLAR)

SPECIFICATIONS: MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS,

AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, LATEST EDITION, FOR DESIGN. CONCRETE DESIGN BY THE "SERVICE LOAD DESIGN METHOD".

2. CONCRETE: SHALL MEET THE REQUIREMENTS OF THE MARYLAND DEPARTMENT OF RANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 420 AND 920, MIX NO. 3

3. CONTRACTOR MAY ADD COLOR MIX (IF SPECIFIED ON PLAN) AT PLANT IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATION "C-I 2 MESA BEIGÉ" AS MANUFACTURED BY L. M. SCOFIELD COMPANY 213) 723-5285.

CONTRACTOR SHALL SUPPLY MIX DESIGN FOR APPROVAL PRIOR TO APPLICATION. LOAD AND MIX TICKETS SHALL BE SUPPLIED FOR EACH TRUCK DELIVERY. NO PARTIAL FIELD MIXES SHALL BE ALLOWED.

ALL CONCRETE SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS. DESIGN FC = 1,200 PSI.

ALL CONSTRUCTION KEYS SHALL BE 3/4" UNLESS OTHERWISE NOTED.ALL CONSTRUCTION KEYS ARE SHOWN NOMINAL SIZE. 4. REINFORCING STEEL: REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60. WHERE NOT INDICATED, BAR LAP SPLICES SHALL BE IN ACCORDANCE WITH

AASHTO SPECIFICATIONS. THE MINIMUM CONCRETE COVER SHALL BE 2 INCHES UNLESS OTHERWISE NOTED. DESIGN FS = 24,000 PSI

5. FOUNDATION: PRESUMED SOIL BEARING CAPACITY = 2.500 PSF. THE ENGINEER MUST APPROVE ALL FOUNDATIONS PRIOR TO CONCRETE PLACEMENT. IF UNSUITABLE MATERIAL IS ENCOUNTERED, THE MATERIAL SHALL BE UNDERCUT AND BACKFILLED WITH

. STRUCTURAL BACKFILL: CAST-IN-PLACE CONCRETE STRUCTURES AND PIPE SHALL BE BACKFILLED WITH MATERIAL OF THE TYPE AND QUALITY CONFORMINGTO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. STRUCTURAL FILL SHALL BE PLACED IN LOOSE LIFTS OF APPROXIMATELY 6 INCHES, AND COMPACTED TO 95 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY IN ACCORDANCE WITH AASHTO T= 180. THE STATIC WEIGHT OF EQUIPMENT USED ADJACENT TO WALLS SHALL NOT EXCEED 3,000 POUNDS. NO BACKFILL SHALL BE PLACED AGAINST THE CAST-IN-PLACE WALLS UNTIL THE CONCRETE HAS ATTAINED THE SPECIFIED 28 DAY STRENGTH.

PRE-CAST CONCRETE STRUCTURES

SHOP DRAWINGS FOR PRE-CAST STRUCTURES MEETING ASTM REQUIREMENTS FOR PRE-CAST STRUCTURES WITH SUPPORTING STRUCTURAL COMPUTATIONS (SIGNED AND SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER) MUST BE SUBMITTED TO THE ENGINEER, AND THE APPROVING AGENCY (BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT) FOR APPROVAL PRIOR TO FABRICATION.

ALL GABIONS SHALL BE PVC COATED WOVEN WIRE BASKETS. STONE SIZE SHALL BE 4 INCHES TO 7 INCHES (CLASS IV GABIONS).

CARE OF WATER DURING CONSTRUCTION

ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT THE AREAS TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE, AND MAINTAIN ALL NECESSARY PUMPING AND OTHER BOUNDED FOR PERMANENT WORKS. EQUIPMENT REQUIRED FOR REMOVAL OR WATER FROM VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION, AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK. AFTER HAVING SERVED THEIR PURPOSE ALL TEMPORARY PROTECTIVE WORKS SHALL BE REMOVED OR LEVELED AND GRADED TO THE EXTENT REQUIRED TO PREVENT OBSTRUCTION IN ANY DEGREE WHATSOEVER OF THE FLOW OF WATER TO THE SPILLWAY OR OUTLET WORKS AND SO AS NOT TO INTERFERE IN ANY WAY WITH THE OPERATION OR MAINTENANCE OF THE STRUCTURE. STREAM DIVERSIONS SHALL BE MAINTAINED UNTIL THE FULL FLOW CAN BE PASSED THROUGH THE PERMANENT WORKS. THE REMOVAL OF WATER FROM THE REQUIRED EXCAVATION AND THE FOUNDATION SHALL BE ACCOMPLISHED IN A MANNER AND TO THE EXTENT THAT WILL MAINTAIN STABILITY OF THE EXCAVATED SLOPES AND BOTTOM REQUIRED EXCAVATIONS AND WILL ALLOW SATISFACTORY PERFORMANCE OF ALL CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTING OF MATERIAL IN REQUIRED EXCAVATIONS, THE WATER LEVEL AT THE LOCATIONS BEING REFILLED SHALL BE MAINTAINED BELOW THE BOTTOM OF THE EXCAVATION AT SUCH LOCATIONS WHICH MAY REQUIRE DRAINING THE WATER SUMPS

STABILIZATION

ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING. FERTILIZING AND MULCHING IN ACCORDANCE WITH THE NATURAL RESOURCES CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL AREA PLANTING (MD-342) OR AS SHOWN ON THE ACCOMPANING DRAWINGS

EROSION AND SEDIMENT CONTROL

FROM WHICH THE WATER SHALL BE PUMPED.

CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHAL DETAIL EROSION AND SEDIMENT CONTROL MEASURES. ALL DISTURBED AREAS SHALL BE CONTROLLED BY AN EROSION AND SEDIMENT CONTROL PLAN WHICH HAS BEEN APPROVED BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

ALL FILTER CLOTH SHALL CONFORM TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, OR THE LATEST EDITION.

CONSTRUCTION INSPECTION BY DESIGNATED ENGINEERS

THE CONSTRUCTION OF THE POND AND EMBANKMENT, AND CERTIFICATION THAT THE POND AND EMBANKMENT HAVE BEEN BUILT IN ACCORDANCE WITH THE PLANS SHALL BE UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER. THE ENGINEER SHALL BE NOTIFIED SUFFICIENTLY IN ADVANCE OF CONSTRUCTION IN ORDER THAT ARRANGEMENTS CAN BE MADE FOR (I) INSPECTION OF PIPE TRENCH AND BEDDING, (2) INSPECTION OF RISER AND ANTI-SEEP COLLARS AND (3) SUPERVISION OF EMBANKMENT CONSTRUCTION AND COMPACTION TESTING. THE ENGINEER SHALL DIRECT THE HANDLING OF WATER DURING CONSTRUCTION, MINOR CHANGES NOT AFFECTING THE INTEGRITY OF THE DAM IN ORDER TO COMPENSATE FOR UNUSUAL SOIL CONDITIONS, AND THE REMOVAL AND REPLACEMENT OF DEFECTIVE FILL.

PERFORATED PIPE SHALL COMPLY WITH AASHTO M278 OR ASTM F-758 HIGHWAY UNDERDRAIN SPECIFICATIONS.

WRAP PIPE WITH 1/4" MESH (OR SMALLER) GALVANIZED HARDWARE CLOTH.

4" \$ 6" PERFORATED PIPE SHALL HAVE 3 ROWS (@ | 20°) OF 0. | 2" x 0.875" SLOTS THAT PROVIDE A MINUMUM OPEN AREA OF 1 SQ.IN. PER LINEAR FOOT OF PIPE.

PIPE WITH SLOTTED PERFORATIONS IS NOT REQUIRED TO BE WRAPPED WITH HARDWARE CLOTH

PIPE SHALL BE PLACED WITH PERFORATIONS DOWN.

. INSTALLATION OF END WALL EW- I RIP-RAP, STRUCTURES BS-1 \$ S-1. PLACEMENT OF #57 STONE IN STONE RESERVOIR AND GEOTEXTILE FABRIC.

REMAINING FILTER MEDIA.

FILTER \$ STONE

RESERVOIR

4. INSTALLATION OF UNDERDRAIN SYSTEM WITH CLEANOUTS, OBSERVATION WELL

> G FINAL GRADING AND PERMANENT STABILIZATION. BY CERTIFY THAT I PERSONALLY REVIEWED OR A PERSON UNDER MY DIRECT SUPERVISION PROVIDED FORMATION REPORTED ON THIS CHECKLIST AND TO THE BEST OF MY KNOWLEDGE DO HEREBY INSURE HE SUBMITTAL IS COMPLETE AND ACCURATE.

> > CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB & GUTTER,

SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN

SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTOR'S EXPENSE.

AS-BUILT DATA FOR SURFACE SAND FILTER

MATERIALS SPECIFICATIONS FOR SAND FILTERS

0.04" TO 0.04"

0.375" TO 0.75

30 MIL THICKNES

SCHEDULE 40 PVC

SURFACE SAND FILTER

CONSTRUCTION INSPECTION CHECKLIST

11-14-16

19-22-16 NB

OR SDR35

0.08" THICK

NOTES

SEE ABOVE NOTE

DATE INITIALS REMARKS - DESCRIPTION OF ACTION TAKEN

SPECIFICATION/TEST METHOD SIZE

(PUNCTURE STRENGTH - 125 LB.) EQUIVALENT

(TENSILE STRENGTH - 300 LB.) OF #80 SIEVE

CLEAN AASHTO-M-6 OR

ASH CONTENT: <15%

0.15 G/CC

ASTM-D-4833

ASTM-D-4632

ASTM-D-412

ASTM-D-624

CONCRETE (PRE-CAST) | PER PRE-CAST MANUFACTURER

ASTM A-36

PH RANGE: 5.2 TO 4.9

ASTM-D-4833 (THICKNESS)

ELONGATION 200%)

MSHA STANDARDS AND SPECS.

AIR-ENTRAINED; REINFORCING TO MEET ASTM-615-60

F'c = 3500 PSI, NORMAL WEIGHT

SECTION 902, MIX NO. 3,

. EXCAVATION TO SUBGRADE OF SAND

+8 TO -2% MASS)

F 758, TYPE PS 28 OR

(TENSILE STRENGTH - 1,100 LB

(TEAR RESISTANCE - 150 LB./IN) ASTM-D-47 I (WATER ADSORPTION:

ASTM-C-33 CONCRETE SAND

LOOSE BULK DENSITY 0.12 TO

ITEM

RISER WEIR HEIGHT & LENGTH (ALL 4 SIDES)

RISER WEIR CREST ELEV

JNDERDRAIN DIA. \$ INV.

SAND FILTER AREA SAND FILTER DEPTH

SAND FILTER VOLUME

MATERIAL

PEAT

LEAF COMPOST

(IF REQUIRED)

IF REQUIRED)

GEOTEXTILE FABRIC

NPERMEABLE LINER

UNDERDRAIN PIPING

NON-REBAR STEEL

UNDERDRAIN GRAVEL | AASHTO-M-43

RECHARGE TRENCH DIMENSIONS

DESIGN

AS-BUILT

6500.F. Gione repervoir=480cf

397.36

650 S.F.

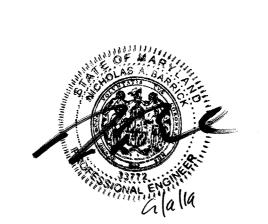
THE MATERIAL MUST BE REED-SEDGE HEMIC PEAT

SHREDDED, UNCOMPACTED, UNIFORM, AND CLEAN.

6"/392.40

12' × 20'×5'

ROFESSIONAL ENGINEER SIGNATURE AND DATE (As - BUILT)



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. 333772 , Expiration Date: 6/16/21

AS-BUILT CERTIFICATION HEREBY CERTIFY THAT THE FACILITY SHOWN ON THE PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIPUTING DRAINAGEAREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND

SWM FACILITY.

Howard County Maryland 3430 Court House Drive 410-313-4401

Prepared For and Owner: Ellicott City, Maryland 21043 ATTN: Mr. James J. Irvin Copyright © 2014 Desman, inc. All rights reserved. No part of these documents may be reproduced in any form or by any means without permission from Desman inc.

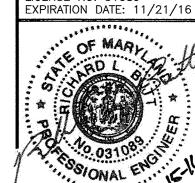
ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGEMENT | KC | | 936 Ridgebrook Road | Sparks, MD 21152 | Phone (410)316-7800 | Fax (410)316-7833 | Phone (410)316-783

B

PARKWA OFFI LTY INC.
COLUMBIA, I. 275, TAX MAP: 35, E. PLAT BOOK 26 / FI. WIN CENTER 6/2, LOT ION DISTRICT: 5 ZO \forall

PROFESSIONAL CERTIFICATION HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED E ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND

LICENSE NO. 31089



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NO.	L	DA.
DRA	WING TITLE:	
9	STORMWATE	R

MANAGEMENT NOTES PRAWING NO.

SCALE: N.T.S DATE: JANUARY 15, 2016 PROJECT NO: 27146550 DES. DRWN. | CK'D.

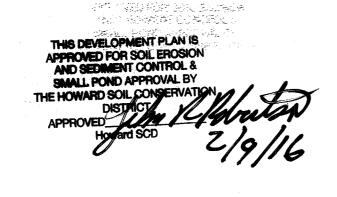
R.L.B.

APPROVED: Howard County Department of Planning & Zoning Chil Edul

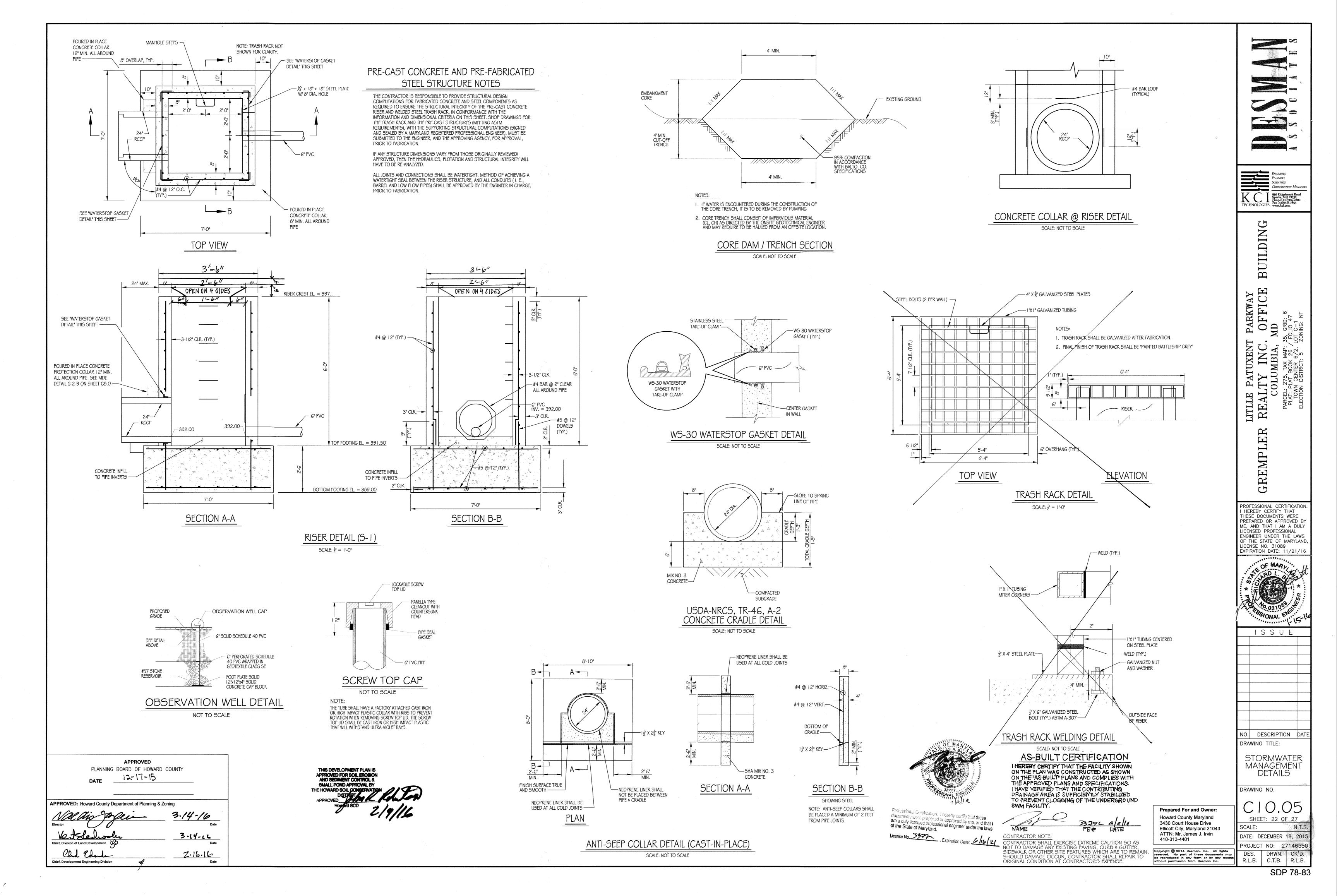
Chief, Development Engineering Division

APPROVED

PLANNING BOARD OF HOWARD COUNTY



C.T.B. R.L.B.



1881							
-	lo: 68\$-00		Elevation: 398 ±	a.			lling Method: 3.25" ID H
	esman Ass		Total Depth: 38.0) *			mmer Type: Automatic
-		arage Expansion ia, Maryland	Boring Location:	Soo Location Di	an		te Drilled: 5/1/15 ller: Rice
City/Stat	le. Columb			·			
Elevation	Depth		n of Materials ification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
397.8	0.3	3" of Surficial soil con	taining organics and clay		0.0		GROUNDWATER DATA
		\silt Residuum Brown, Mo	ist I sees to Madisus		1.5	4	
	¥ =	Dense, Silty Sand with	clay (SM-ML)	5-5-9	3.5		
	#			3-2-3	5.0 6.0	14	Water at 5 feet 24 hrs After Boring
	¥ =			323	7.5	5	Water encountered at
	E			2-1-2	8.5 10.0		feet upon completion Cave in at 9 feet
E						3	
384.5 -	13.5				13.5	es e	
301.3	🖺	Brown, Moist, Mediu	m Dense, Silty Sand (SM)	2-4-6	15.0	[
	:	Array and a second a second and	-			10	
				4-8-9	18.5	E-security or a security or a	
				4-0-3	20.0	17	
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	=			3-5-7	23.5	Account of the Control of the Contro	
		And the state of t			25.0	12	
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369.0 -	29.0	Mosthand Book M/hit	en Maist Vanu	9-50/3"	28.5	Applicate space and an artist space and	
			Fragments - Weathered			100+	
		Rock			22.5	With the second second	
				50/2"	33.5	100.	
		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				100+	
360.0 -	38.0	Poring Torminated at	38 feet on auger refusal.	50/1"	38.0		
	1 m	boining reminiated at	36 leet on auger Jeiusai.	00/1		100+	
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Project No: 68S-0077

Client: Desman Associates

BORING LOG Boring: SWM-1 (1 of 1)

Drilling Method: 3.25" ID HSA Elevation: 400 ± Total Depth: 20.0' Hammer Type: Automatic Date Drilled: 5/1/15

levation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
399.8	0.3	3" of Surficial soil containing organics and clayey	1-2-2	0.0	4	GROUNDWATER DATA
		ResiduumBrown, Moist, Loose, Silty Sand with clay (SM-ML)	2-4-5	3.5		
	¥ ∄		1-2-3	6.0	9	Water at 6.5 feet 24
	マ 引		2-2-2	7.5 8.5	- 5	Hours after boring completion
				10.0	4	Water encountered at feet upon completion
205.0			3-2-5	13.5		Cave in at 14 feet
385.0	15.0	Brown, Moist, Medium Dense, Silty Sand (SM)		15.0	7	
			17-12-38	18.5		
380.0	20.0	Boring Terminated at 20 feet		20.0	50	
				COANTS BY THE COAST ASSESSMENT OF THE COAST ASSESSMENT		
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*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.

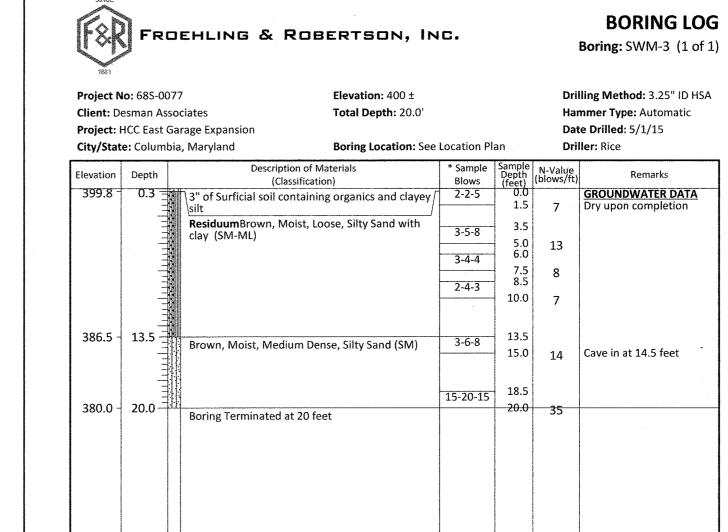


BORING LOG Boring: SWM-2 (1 of 1)

Project No: 68S-0077 Elevation: 403 ± Drilling Method: 3.25" ID HSA Total Depth: 20.0' Client: Desman Associates Hammer Type: Automatic Project: HCC East Garage Expansion Date Drilled: 5/1/15 City/State: Columbia, Maryland Boring Location: See Location Plan Driller: Rice

Elevation	Depth	Description of Materials	* Sample	Sample Depth (feet) 0.0	N-Value (blows/ft)	Remarks
402.8		(Classification)	Blows	(feet)	(DIOWS/ft)	
402.0	0.3 ₩	3" of Surficial soil containing organics and clayey	2-2-4	1.5	6	GROUNDWATER DATA
designation and	<u> </u>				0	Water at 2 feet 24 hours
400	#	ResiduumBrown, Moist, Loose, Silty Sand with clay (SM-ML)	4-5-6	3.5	American springs	after boring completion
		out (out me)	<u></u>	5.0	11	
A CONTRACTOR OF THE CONTRACTOR			6-6-4	6.0	1	
444			l	7.5	10	
1	\exists		2-2-3	8.5	1	
				10.0	5	
	-11				a manufacture of the state of t	
4	Σ Ξ		2.65	13.5		
388.0	15.0		3-6-5	15.0	11	Water encountered at
300.0	信	Brown, Moist, Medium Dense, Silty Sand (SM)		13.0	11	14.5 feet upon
	4			-	Company opposite	completion
a visit de la constant de la constan	7		5-9-11	18.5	***	Cave in at 16 feet
383.0	20.0	Boring Terminated at 20 feet		20.0	20	
		Doring Terminated at 20 feet			- Christian	
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*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments.



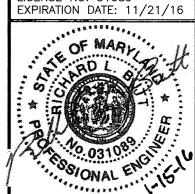
*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments.

BORING LOG

BUILDIN

LITLLE PATUXENT PARKWAY
REALTY INC. OFFICE
COLUMBIA, MD **APLER**

GREM 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. 31089
EXPIRATION DATE: 11/21/16



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	ISSUE	
NO.	DESCRIPTION	D,
DRA	WING TITLE:	

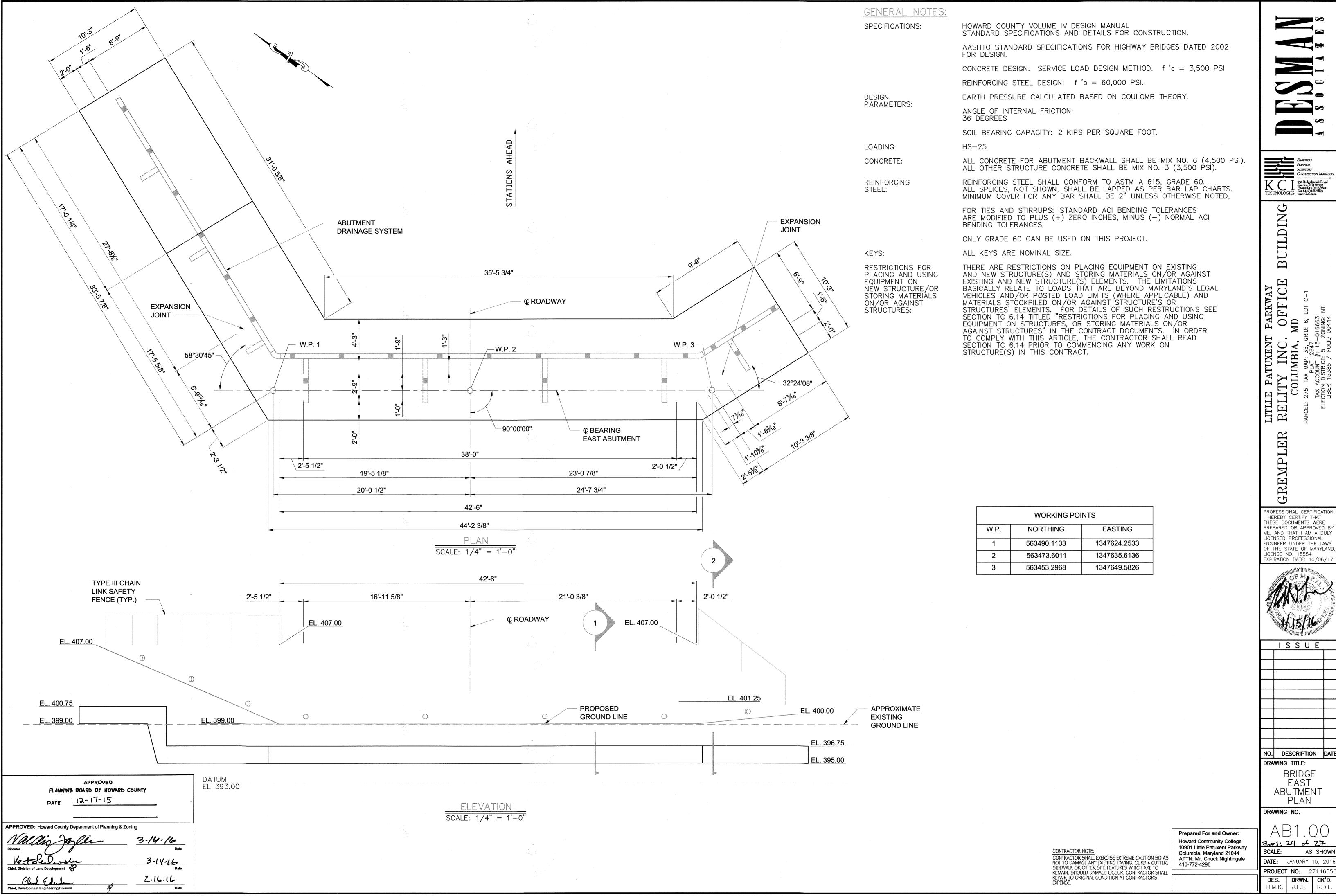
BORINGS PLAN

DRAWING NO.

SHEET: 23 OF 27 SCALE: DATE: JANUARY 15, 2016 PROJECT NO: 27146550 DES. DRWN. CK'D. R.L.B. C.T.B. R.L.B.

Prepared For and Owner: Howard County Maryland 3430 Court House Drive Ellicott City, Maryland 21043 ATTN: Mr. James J. Irvin 410-313-4401

APPROVED PLANNING BOARD OF HOWARD COUNTY



LITLLE PATUXENT IRELITY INC. PLER

GRE 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. 15554 EXPIRATION DATE: 10/06/17

ISSUE

NO. DESCRIPTION DRAWING TITLE: BRIDGE EAST ABUTMENT SECTION

DRAWING NO.

Prepared For and Owner: Howard Community College

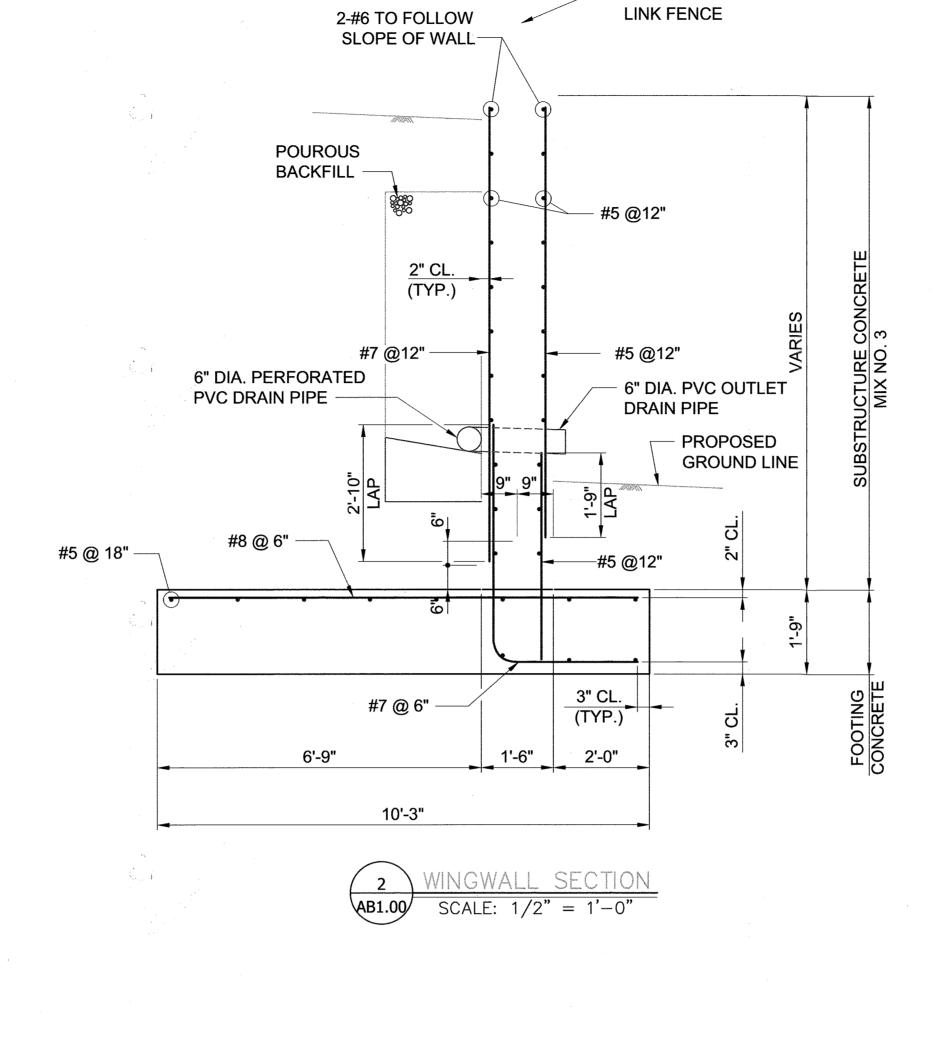
10901 Little Patuxent Parkway

Columbia, Maryland 21044 ATTN: Mr. Chuck Nightingale

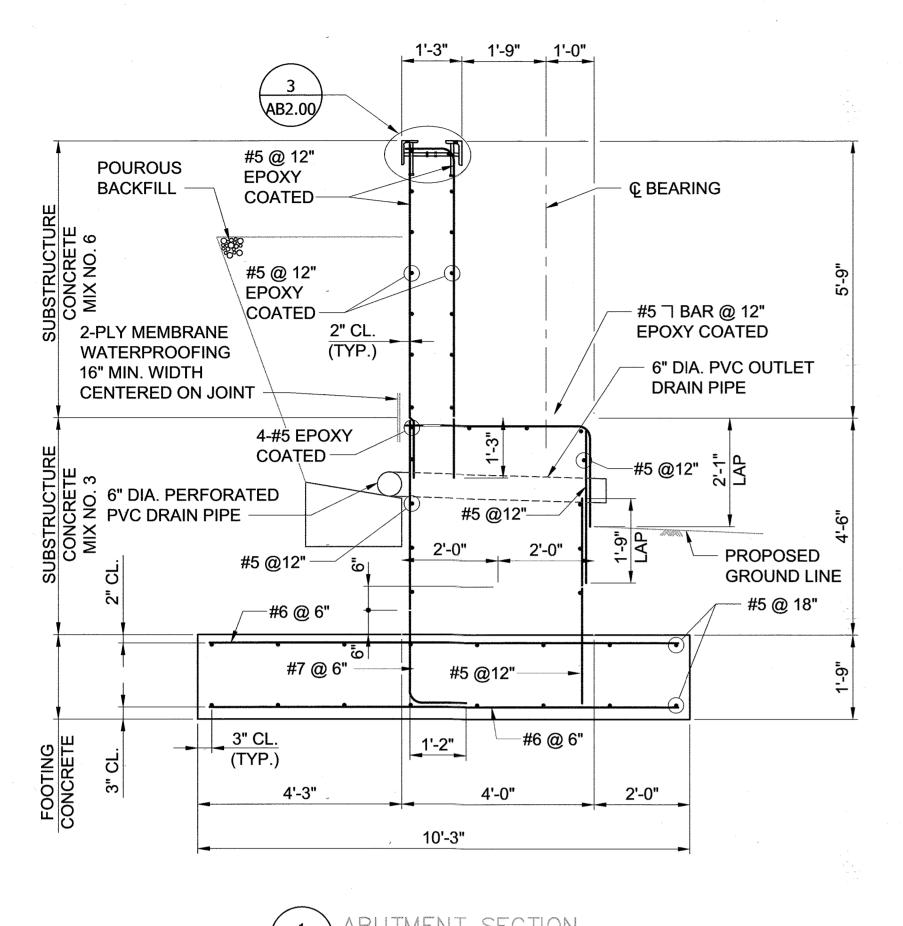
410-772-4296

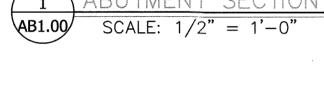
Sheet: 25 of 27 SCALE:

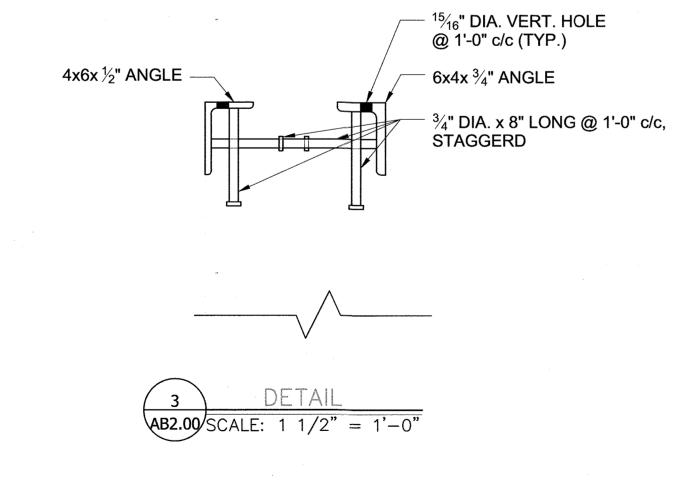
AS SHOWN DATE: JANUARY 15, 2016 **PROJECT NO:** 27146550 DES. DRWN. CK'D.



TYPE III CHAIN



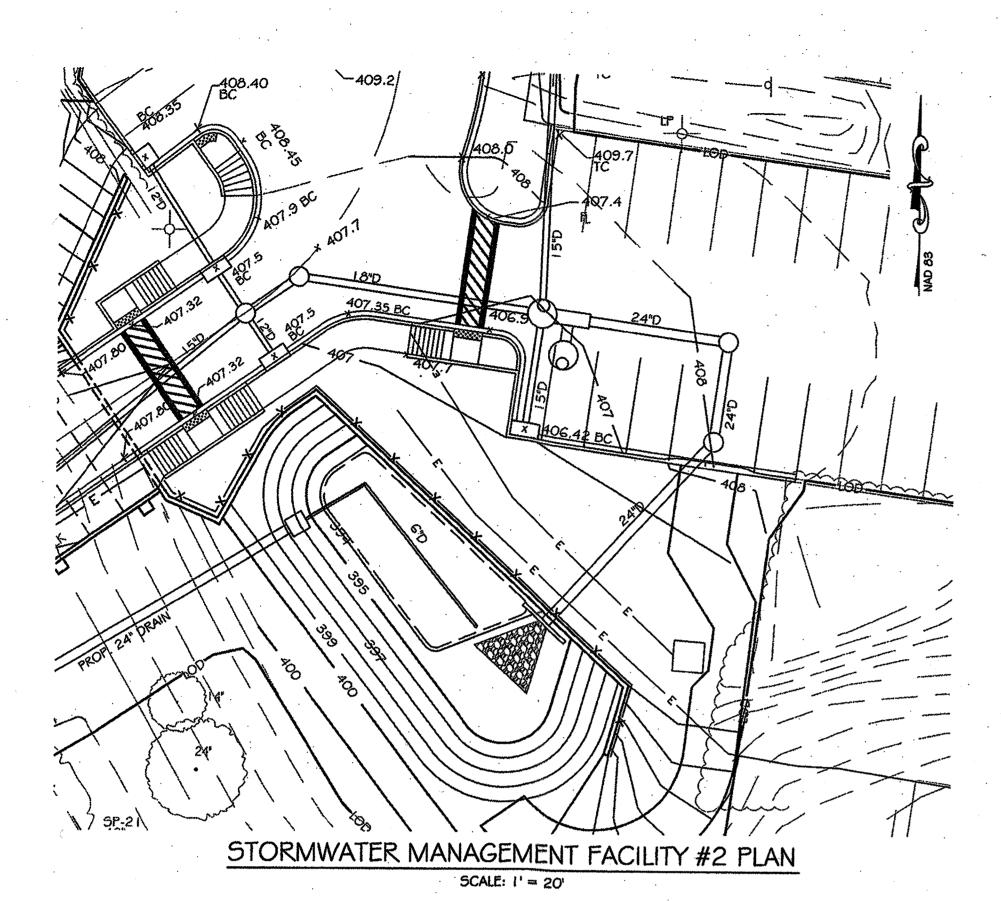




APPROVED PLANNING BOARD OF HOWARD COUNTY 3-14-16 Chil Edul 2.16.16 Chief, Development Engineering Division

J.L.S. R.D.L.

H.M.K.

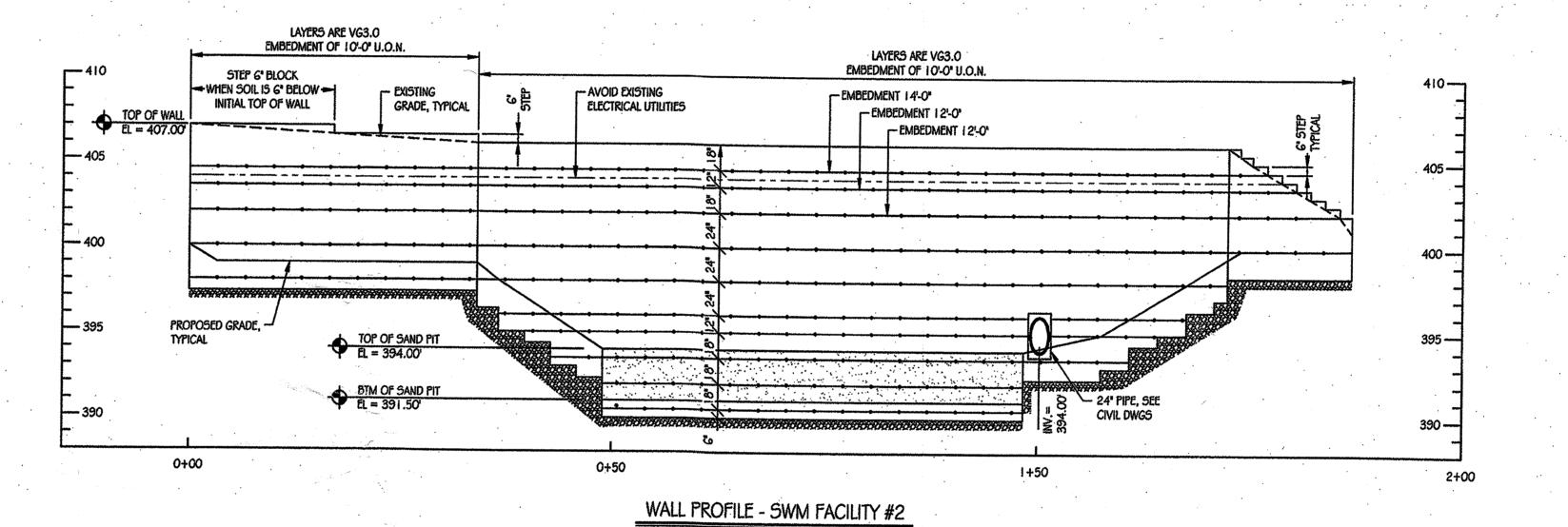


PLAN NOTES:

1. REFER TO CIVIL DRAWING C3.00 FOR FINAL GRADING AND LOCATION OF UTILITIES.

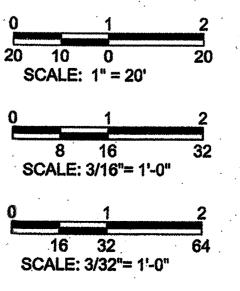
ACCESSORIES. SOIL SHALL BE REINFORCED USING "VERSAGRID 3.0" GEOSYNTHETIC PIBER OR APPROVED EQUAL. REFER TO PROFILE AND SECTIONS FOR GEO-SYNTHETIC FIBER LAYOUT.

3. REFER TO DETAILS AND NOTES, SHEET SWI.OI, FOR FURTHER INFORMATION.



1"=3/16" VERTICAL 1"=3/32" HORIZONTAL

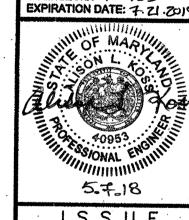
APPROVED: Howard County Department of Planning & Zoning



Howard County Maryland 3430 Court House Drive Ellicott City, Maryland 21043 ATTN: Mr. James J. Irvin 410-313-4401

BUILDING LITLLE REAL LER GREMF

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. 40953
EXPIRATION DATE: 421.2019

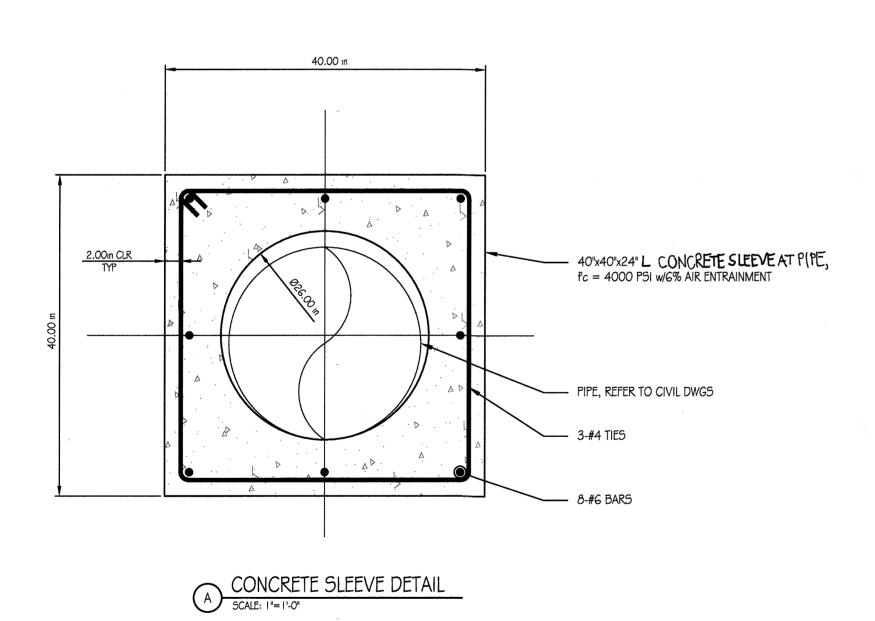


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	NO.	DESCRIPTION	DAT	
	DRA	DRAWING TITLE:		
	SEGMENTAL WALL PLANS # PROFILES			
	DRA	DRAWING NO.		

SHEET: 26 OF 27 SCALE: 1" = 20' DATE: DECEMBER 18, 2015 PROJECT NO: 27146550 DES. DRWN. CK'D. R.L.B. C.T.B. R.L.B.

SECTION AT PIPE SLEEVE

S-100 SCALE: 1/2"=1'-0"



APPROVED: Howard County Department of Planning & Zoning Chief, Division of Land Development 1/13 for Db hief, Development Engineering Division

BUILDING CODES

A. THE 2012 INTERNATIONAL BUILDING CODE (IBC) AND ALL SUBSEQUENT SUPPLEMENTS B. GOVERNING LOCAL BUILDING CODE

DESIGN LOADS

A. THE STRUCTURE IS DESIGNED FOR THE FOLLOWING SURCHARGE LOADS:

TRAFFIC LOADING 250 PSF

THE CONTRACTOR SHALL NOT STORE ANY CONSTRUCTION MATERIALS OR UNDERTAKE ANY CONSTRUCTION OPERATION WHICH WILL EXCEED THE DESIGN LIVE LOADINGS NOTED.

SEGMENTAL RETAINING WALLS

A. REFER TO "SEGMENTAL RETAINING WALL UNITS" SECTION FOR APPLICABLE CODES AND STANDARDS.

B. ASSUMED PARAMETERS FOR DESIGN ARE AS FOLLOWS:

1. ASSUMED NET ALLOWABLE BEARING CAPACITY = 2000 PSF 2. EQUIVALENT FLUID LATERAL EARTH PRESSURE = 45 PCF

CONTRACTOR TO SUPPLY OR VERIFY BACKFILL MATERIALS WITH THE FOLLOWING CHARACTERISTICS:

1. DRY SOIL DENSITY: 2. INTERNAL FRICTION ANGLE: 28 DEGREES

COHESION (C): 4. ACTIVE PRESSURE CONSTANT (Ka): 0.36

D. ALL RETAINING WALLS ARE DESIGNED USING THE FOLLOWING FACTORS OF SAFETY:

1. SLIDING = 1.5 2. OVERTURNING = 2.0

THE ALLOWABLE SOIL BEARING PRESSURE SHALL BE FIELD VERIFIED BY A REGISTERED GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACING FOUNDATIONS. SHOULD THE ACTUAL SOIL BEARING PRESSURE BE LESS THAN 2000 PSF, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.

4. SEGMENTAL RETAINING WALL (SRW) UNITS:

DRAWINGS.

A. CODES AND STANDARDS:

I. NCMA "SEGMENTED RETAINING WALL DESIGN MANUAL"

B. SUBMITTALS:

I. MATERIAL CERTIFICATES FOR SRW UNITS AND GEOSYNTHETIC REINFORCEMENT, UNLESS BASIS OF

DESIGN MANUFACTURER IS UTILIZED. 2. ADDITIONAL SAMPLE SUBMITTALS MAY BE REQUIRED BY ARCHITECT/OWNER. REFER TO ARCHITECTURAL

1. SRW UNITS SHALL BE VERSA-LOK STANDARD UNITS OR APPROVED EQUAL, CONSISTING OF

MACHINE-FORMED, PORTLAND CEMENT CONCRETE BLOCKS (ASTM C 1372). 2. NORMAL WEIGHT SRW UNITS: ASTM C 140 USING CONCRETE MEETING 28-DAY COMPRESSIVE

STRENGTH OF 3000 PSI.

3. GEOSYNTHETIC REINFORCEMENT SHALL BE VERSA-LOK VERSA-GRID VG3.0 4. LEVELING PAD: COMPACTED SAND, GRAVEL, OR COMBINATION THEREOF (USCS SOIL TYPES GP, GW, SP,

AND SW), OR CONCRETE.

1. FOLLOW APPLICABLE PROVISIONS OF MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WRITTEN

SPECIFICATIONS. EXCAVATION:

a. STRIP VEGETATION AND ORGANIC SOIL FROM WALL AND GEOSYNTHETIC ALIGNMENT.

b. CONTRACTOR SHALL TAKE PRECAUTIONS TO MINIMIZE OVER-EXCAVATION. OVER-EXCAVATION SHALL BE FILLED WITH COMPACTED BACKFILL MATERIAL AND CONTRACTOR'S EXPENSE.

3. LEVELING PAD SHALL BE COMPACTED TO FORM A SMOOTH, LEVEL BEARING SURFACE.

4. ALL SRW UNITS TO BE INSTALLED WITH A MINIMUM EMBEDMENT AS INDICATED. COMPACT FILL IN FRONT OF EMBEDDED UNITS AT THE SAME TIME AS FILL BEHIND UNITS.

5. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR UNIT INSTALLATION. 6. ALL GEOSYNTHETIC REINFORCEMENT SHALL BE PLACED WITH THE STRONGEST DIRECTION

PERPENDICULAR TO THE WALL. FOLLOW MANUFACTURER'S WRITTEN INSTRUCTIONS AND

SPECIFICATIONS.

7. SRW CAPS SHALL BE PROPERLY ALIGNED AND GLUED TO UNDERLYING UNITS WITH CONCRETE ADHESIVE OR APPROVED EQUAL. CAPS SHALL OVERHANG THE TOP COURSE BY 3/4 TO 1 INCH, MAX.

MISCELLANEOUS

A. THE CONTRACTOR SHALL LOCATE ALL UTILITIES IN THE AREA OF CONSTRUCTION AND PREVENT DAMAGE TO THEM. SHOULD DAMAGE OCCUR TO ANY UTILITIES, THE CONTRACTOR IS REQUIRED TO REPAIR THE DAMAGE TO THE SATISFACTION OF THE OWNER AT HIS OWN EXPENSE.

B. THE CONTRACTOR SHALL REVIEW THE ARCHITECTURAL, CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATION AND DIMENSION OF CHASES, INSERTS, OPENINGS, SLEEVES, DEPRESSIONS AND OTHER PROJECT REQUIREMENTS WHICH IMPACT THE STRUCTURAL COMPONENTS.

C. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS SHOWN ON THE CONTRACT DRAWINGS BEFORE PROCEEDING WITH CONSTRUCTION.

D. SCALES SHOWN ON THE STRUCTURAL CONTRACT DRAWINGS ARE FOR GENERAL INFORMATION ONLY.

DIMENSIONAL INFORMATION SHALL NOT BE OBTAINED BY SCALING THE DRAWINGS.

CONTRACTOR SHALL EXERCISE EXTREME CAUTION SO AS NOT TO DAMAGE ANY EXISTING PAVING, CURB & GUTTER, SIDEWALK OR OTHER SITE FEATURES WHICH ARE TO REMAIN. SHOULD DAMAGE OCCUR, CONTRACTOR SHALL REPAIR TO ORIGINAL CONDITION AT CONTRACTOR'S EXPENSE.

410-772-4296

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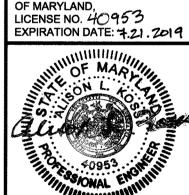
Prepared For and Owner: Howard Community College 10901 Little Patuxent Parkway Columbia, Maryland 21044 ATTN: Mr. Chuck Nightingale 410-772-4296

CONSTRUCTION MANAGER

0

COM

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE



5.7.18

ISSUE

NO. DESCRIPTION DATE

DRAWING TITLE:

SEGMENTAL WALL NOTES & DETAILS

DRAWING NO.

SHEET: Z7 OF 27 SCALE: AS SHOWN DATE: JUNE 26, 2015

PROJECT NO: 27146550

DES. DRWN. CK'D. R.L.B. | C.T.B. | R.L.B.

ELECTRICAL LINE