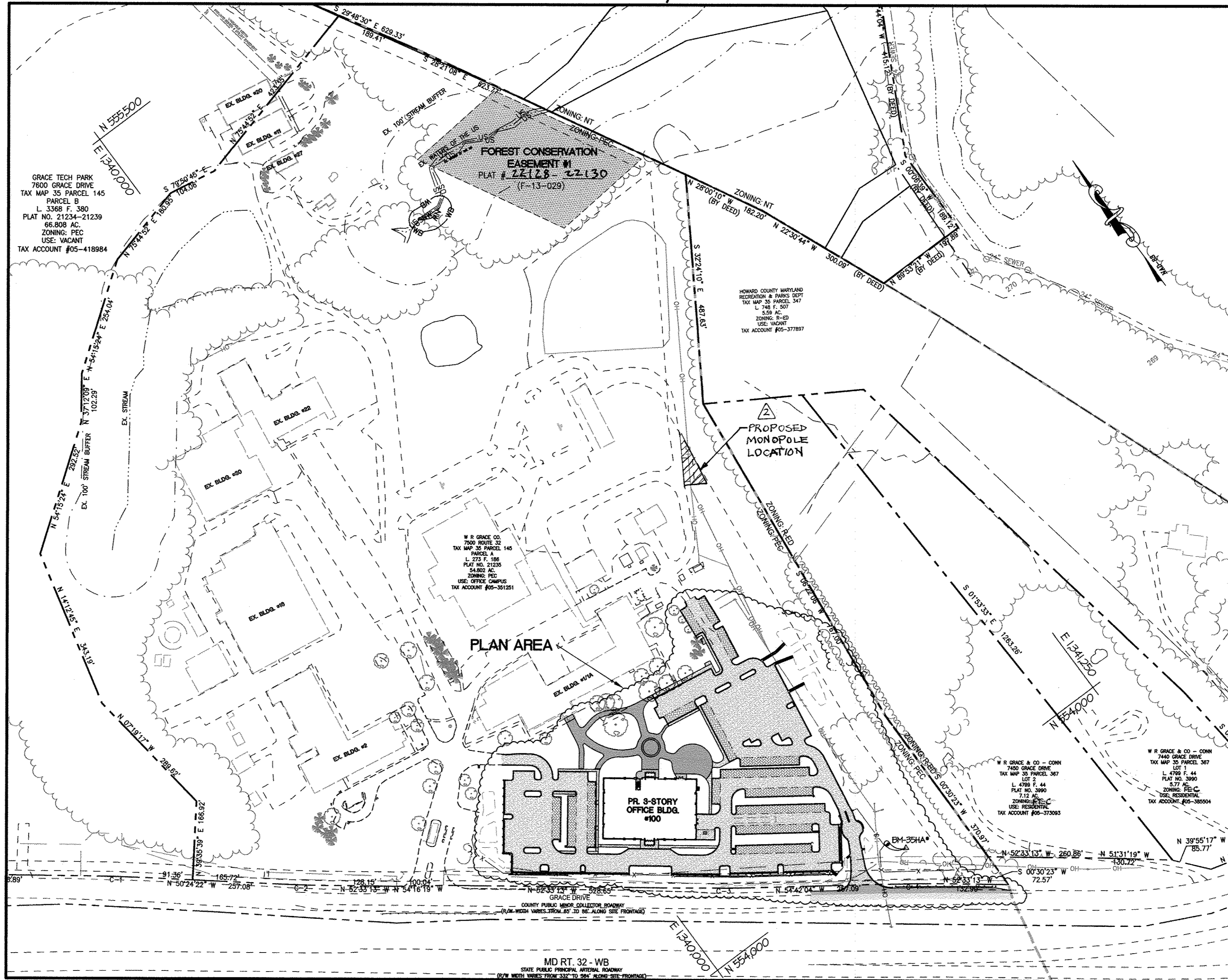


GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY AND MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410.313.1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1.800.257.7777 AT LEAST FOURTY-EIGHT (48) HOURS PRIOR TO ANY WORK BEING DONE.
- LABELLED DIMENSIONS GOVERN OVER SCALED DIMENSIONS.
- TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT. ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS SHALL BE MOUNTED ON A 2" GALVANIZED STEEL PERFORATED ("QUICK PUNCH"), SQUARE TUBE POST (1 1/2" GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL PERFORATED, SQUARE TUBE SLEEVE (1 1/2" GAUGE) LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO ("QUICK PUNCH") HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
- THE EXISTING TOPOGRAPHY IS A COMBINATION OF AERIAL GIS SURVEY AND FIELD RUN SURVEY WITH 2' CONTOUR INTERVALS PREPARED BY MORRIS & RITCHIE ASSOCIATES, INC. DATED JULY 3, 2008.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM (NAD 83/07, NAVD 88). HOWARD COUNTY MONUMENT NUMBERS 35HA AND 35HB WERE USED FOR THIS PROJECT.
- ALL PROPOSED WATER IS PRIVATE, CONNECTING TO EXISTING ON-SITE PRIVATE WATER. EXISTING ON-SITE PRIVATE WATER IS SERVICED THROUGH AN EXISTING PUBLIC METER OFF OF PUBLIC 12" WATER MAIN (44-3283-D) LOCATED ON GRACE DRIVE.
- ALL PROPOSED SEWER IS PRIVATE, CONNECTING TO EXISTING ON-SITE PRIVATE SEWER. EXISTING ON-SITE PRIVATE SEWER IS SERVICED BY EXISTING PUBLIC 24" SEWER MAIN, CONT. 30-1002.
- THIS PROJECT UTILIZES ENVIRONMENTAL SITE DESIGN FOR ALL STORM WATER MANAGEMENT PRACTICES, INCLUDING BIO-SWALES (M-8), PERMEABLE PAVEMENTS (A-2), RAINWATER HARVESTING (M-1), AND MICRO BIORETENTION FACILITIES (M-6). ALL SWM DEVICES WILL BE PRIVATELY OWNED AND MAINTAINED.
- EXISTING UTILITIES ARE BASED ON FIELD RUN SURVEYS BY A/DATA, DATED 9/23/11, AND MORRIS & RITCHIE ASSOCIATES, INC. DATED JULY 3, 2008.
- THERE IS NO FLOODPLAIN ON THIS PROJECT SITE AREA PER FEMA FIRM MAP 240044 0033 B.
- THERE ARE NO WETLANDS OR STEEP SLOPES BEING IMPACTED ON THIS PROJECT.
- THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY THE TRAFFIC GROUP, DATED JULY 15, 2011.
- NO NOISE STUDY IS REQUIRED FOR THIS PROJECT.
- THE GEOTECHNICAL REPORT FOR THIS PROJECT WAS PREPARED BY GEO-TECHNOLOGY ASSOCIATES, INC., DATED SEPTEMBER 24, 2008.
- A GEO-TECHNICAL STUDY WAS CONDUCTED FOR THIS PROJECT BY GEO-TECHNOLOGY ASSOCIATES, INC. DATED DECEMBER 27, 2011.
- CONTRACTOR IS RESPONSIBLE FOR ALL SITE CONDITIONS, CONSTRUCTION REQUIREMENTS, AND SHALL CONFORM TO ALL STATE, FEDERAL, AND COUNTY CONSTRUCTION REGULATIONS. THE CONTRACTOR IS NOT RELIEVED OF RESPONSIBILITY SHOULD ANY REQUIRED ITEMS PERTAINING TO SITE CONSTRUCTION NOT BE INCLUDED ON THESE PLANS. CONTRACTOR IS RESPONSIBLE FOR ALL ITEMS NECESSARY TO COMPLETE THE SITE IMPROVEMENTS AS SHOWN ON THESE PLANS.
- ANY DAMAGE TO EXISTING UTILITIES, PAVEMENT, OR CURB AND GUTTER DUE TO CONSTRUCTION ACTIVITY OUTSIDE THE LIMITS OF DISTURBANCE IS TO BE REPLACED BY THE CONTRACTOR AT HIS OWN EXPENSE.
- WHERE NECESSARY, THE CONTRACTOR SHALL TEST PIT ALL EXISTING UTILITIES AT LEAST FIVE (5) DAYS PRIOR TO STARTING ANY WORK SHOWN ON THESE DRAWINGS.
- CONTRACTOR IS RESPONSIBLE FOR REPLACING ANY PROPERTY MONUMENTS, MARKERS, SIGNS, LIGHTS, OR ANY OTHER EXISTING SITE FEATURES DISTURBED DURING CONSTRUCTION.
- ALL WORK SHALL COMPLY WITH ALL APPLICABLE PROVISIONS OF THE 1994 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, PUBLISHED JOINTLY BY THE WATER RESOURCES ADMINISTRATION, SOIL CONSERVATION SERVICE, AND STATE SOIL CONSERVATION COMMITTEE.
- TRENCH COMPACTION FOR STORM DRAINS WITHIN ROADWAYS AND PARKING AREAS SHALL BE IN ACCORDANCE WITH HOWARD COUNTY DESIGN MANUAL, VOL. IV, STANDARD NO. G-201.
- ALL COMPACTED FILL SHALL BE IN ACCORDANCE WITH ASHTO T-180 REQUIREMENTS.
- EXISTING ON-SITE FOREST AREAS ARE BASED UPON A FOREST STAND DELINEATION (FSD) PLAN PREPARED BY GEO-TECHNOLOGY ASSOCIATES DATED AUGUST 2012.
- SOILS SHOWN ON THIS PLAN ARE MAPPED AND LABELED IN ACCORDANCE WITH THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE'S WEB SOIL SURVEY.
- THERE ARE NO SPECIES LISTED UNDER THE JURISDICTION OF NOAA'S NATIONAL MARINE FISHERIES SERVICES KNOWN TO OCCUR WITHIN THE VICINITY OF THIS PROJECT.
- PER MERLIN ON-LINE, THERE ARE NO HISTORIC OR CULTURAL RESOURCES ON-SITE.
- THERE ARE NO OUTCROPPINGS ON THIS PROPERTY.
- THERE ARE 17 SPECIMEN TREES WITHIN THE PROJECT AREA. THERE ARE 21 SPECIMEN TREES WITHIN THE PROPOSED ON-SITE FOREST RETENTION AREA.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100 YEAR FLOODPLAIN.
- BOUNDARY INFORMATION IS BASED ON A FIELD RUN BOUNDARY SURVEY PERFORMED BY MORRIS & RITCHIE ASSOCIATES, INC. IN NOVEMBER, 2008, AND MDR PLAT NO. 21234, RECORDED AUGUST 12, 2010.
- THE PROPOSED ENTRANCE ONTO GRACE DRIVE REPLACES AN EXISTING GATED ENTRANCE.
- THE SUBJECT PROPERTY IS ZONED PEC PER THE JULY 28, 2006 COMPREHENSIVE ZONING PLAN.
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL.
- THIS BUILDING WILL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
- THE 1.6 ACRES OF REQUIREMENT FOREST CONSERVATION WILL BE PROVIDED ON SITE. THIS PROJECT COMPLETES WITH SECTION 16.120 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION BY PROVIDING FOREST CONSERVATION.
- THE FOREST CONSERVATION EASEMENT IS RECORDED AS PLAT #22128-22130 (F-13-029) AND IS PROVIDED IN ACCORDANCE WITH WAIVER PETITION WP-13-031.
- WAIVER PETITION WP-09-227, APPROVED JULY 15, 2009, INCLUDED WAIVERS TO THE FOLLOWING SECTIONS: 1) SEC. 16.144(B) - REQUIREMENT TO SUBMIT A SKETCH PLAN OR PRELIMINARY EQUIVALENT SKETCH PLAN FOR THE PROPOSED NON-RESIDENTIAL SUBDIVISION; 2) SEC. 16.115(D) - REQUIREMENT TO DELINEATE FLOODPLAIN LIMITS OR A 100 YEAR FLOODPLAIN, DRAINAGE AND UTILITY EASEMENT ON A FINAL PLAN; 3) SEC. 16.147(C) - REQUIREMENT TO SHOW THE LOCATIONS OF FLOODPLAINS, WETLANDS, WETLAND BUFFERS, STREAMS AND STREAM BUFFERS ON A FINAL PLAN; 4) SEC. 16.147(D) - REQUIREMENT TO SUBMIT CONSTRUCTION DRAWINGS AND DOCUMENTS CONCERNING THE DELINEATION OF FLOODPLAINS, WETLANDS, WETLAND BUFFERS, STREAMS AND STREAM BUFFERS ON A FINAL PLAN OR SITE DEVELOPMENT PLAN. THE CONDITIONS OF THIS APPROVAL ARE AS FOLLOWS: 1) A COMPLETED FOREST CONSERVATION "DECLARATION OF INTENT FOR SUBDIVISION FOR REAL ESTATE TRANSACTION" HAS BEEN SUBMITTED WITH THE FINAL SUBDIVISION PLAN; 2) ANY RESUBDIVISION PLAN SUBMISSION OR SITE DEVELOPMENT PLAN SUBMISSION FOR PARCEL A OR PARCEL B SHALL BE TESTED FOR ADEQUATE ROAD FACILITIES AS A CONDITION OF SUBDIVISION APPROVAL. THE CONDITIONS OF THIS APPROVAL ARE AS FOLLOWS: 1) A COMPLETED FOREST CONSERVATION "DECLARATION OF INTENT FOR SUBDIVISION FOR REAL ESTATE TRANSACTION" HAS BEEN SUBMITTED WITH THE FINAL SUBDIVISION PLAN OR SITE DEVELOPMENT PLAN; 2) ANY RESUBDIVISION PLAN SUBMISSION OR SITE DEVELOPMENT PLAN SUBMISSION FOR PARCEL A OR PARCEL B SHALL INDICATE/DELINEATE ANY FLOODPLAIN, 100 YEAR FLOODPLAIN, DRAINAGE AND UTILITY EASEMENTS, WETLANDS, WETLAND BUFFERS, STREAMS, STREAM BUFFERS PER THE REQUIREMENTS OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE FINAL PLAN OR SITE DEVELOPMENT PLAN APPLICATION AND CHECKLIST; AND 4) COMPLIANCE WITH THE ENCLOSED COMMENT OF 06/24/09, WHICH STATES THAT ALL REGULATIONS AS REQUIRED BY SECTIONS 16.144(B), 16.144(D) AND 16.1101(A) SHALL BE COMPLIED WITH UPON RESUBDIVISION AND/OR ADDITIONAL DEVELOPMENT OF THE SUBJECT PROPERTY.
- A DESIGN MANUAL WAIVER TO VOLUME II, CHAPTER 2.9C - OFF-STREET PARKING LOTS TO REDUCE THE MINIMUM STANDARD PARKING SPACE DEPTH FROM 16" TO 15" AND TO REDUCE THE MINIMUM DRIVE AND TURN FROM 24" TO 22" WAS DENIED ON 09/11/12.
- A DESIGN MANUAL WAIVER TO VOLUME II, CHAPTER 1.4A - PUBLIC WATER TO ALLOW A LOT OR PARCEL CREATED THROUGH THE SUBDIVISION PROCESS TO NOT BE DIRECTLY CONNECTED TO THE PUBLIC WATER SYSTEM AND CHAPTER 3.4 - FIRE HYDRANTS TO ALLOW THE PROPERTY TO CONTINUE TO OPERATE WITH PRIVATE FIRE HYDRANTS WAS APPROVED ON 09/15/12.
- ALL REFUSE AND RECYCLING COLLECTION WILL BE PRIVATE. NO COUNTY COLLECTION WILL BE PROVIDED.
- FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DPW DEVELOPERS AGREEMENT IN THE AMOUNT OF \$21,420.00 (49 SHADE TREES @ \$300.00 EA., 13 ORNAMENTAL/EVERGREEN TREES @ \$150.00 EA., AND 149 SHRUBS @ \$30.00 EA.).
- LIGHT TRESPASS ONTO A PROPERTY IN THE R-ED ZONING DISTRICT SHALL BE LIMITED TO 0.1 FOOT CANDLES. LIGHT TRESPASS ONTO ANY PROPERTY ZONED OR USED FOR RESIDENTIAL PURPOSES SHALL BE LIMITED TO 0.5 FOOT CANDLES.
- PER WAIVER PETITION WP-13-031, DATED 09/12/12, THIS REVISION PLAN IS EXEMPT FROM THE FOLLOWING SUBDIVISION AND LAND DEVELOPMENT REGULATIONS SECTIONS: A) 16.115(D) - requires DELINEATION OF FLOODPLAIN ON FINAL PLANS AND SITE DEVELOPMENT PLAN; B) 16.157(B) - requires DELINEATION OF POND, WETLANDS, WETLAND BUFFERS, STREAMS AND STREAM BUFFERS ON THE SITE DEVELOPMENT PLAN; C) 16.1204(C) - requires A FOREST STAND DELINEATION TO BE CONDUCTED ON THE ENTIRE PROPERTY TO BE DEVELOPED; D) 16.1201(N) - DEFINITIONS "NET TRACT AREA" AND 16.1202(B)(1)(L) APPLICABILITY; EXEMPTION: DECLARATION OF INTENT TO ALLOW THE DISTURBANCE TO SERVE AS THE NET TRACT AREA WHEN DETERMINING THE FOREST CONSERVATION EASEMENT OBLIGATION; AND E) 16.1205(A)(7) AND 16.1205(A)(10) - TO ALLOW THE REMOVAL OF SPECIMEN TREES. THE CONDITIONS OF APPROVAL FOR WAIVER PETITION WP-13-031, ARE: 1) THE AREA OF PLAN SUBMISSION SHALL NOT EXCEED 8.40 ACRES AS SHOWN ON SDP-12-077 (CONCEAL PARK PHASE 2); 2) A FOREST STAND DELINEATION, FOREST CONSERVATION PLAN AND WETLAND DELINEATION REPORT SHALL BE CONDUCTED FOR THE PROJECT AREA OF 8.40 ACRES AND SHALL BE SUBMITTED AND APPROVED UNDER SDP-12-077 (GRACE TECH PARK); 3) FOREST CONSERVATION SHALL BE ADDRESSED FOR THE 8.40 ACRES OF PLAN SUBMISSION ASSOCIATED WITH SDP-12-077; A FOREST CONSERVATION RETENTION EASEMENT SHALL BE PROVIDED ON-SITE (ON PARCEL A) WITH THE PEC ZONING DISTRICT; AND 4) REMOVAL OF SPECIMEN TREES SHALL BE LIMITED TO ONLY SPECIMEN TREE NUMBERS #1-4, #12 AND #17, AS SHOWN ON THE FOREST CONSERVATION PLAN SUBMITTED WITH THE WAIVER PETITION AND WITH SDP-12-077.
- A WETLAND REPORT WAS PREPARED BY GEO-TECHNOLOGY ASSOCIATES IN AUGUST 2012. THE REPORT COVERS 15.3 ACRES OF PARCEL A, INCLUDING THE 8.40 ACRES OF PLAN SUBMISSION COVERED BY THIS SDP AS WELL AS THE 1.6 ACRES OF PROPOSED FOREST CONSERVATION DELINEATION ON THE FOREST CONSERVATION PLAN.

GRACE TECH PARK, PARCEL A OFFICE BUILDING SITE DEVELOPMENT PLAN HOWARD COUNTY, MARYLAND



LOCATION PLAN
SCALE: 1" = 150'

SHEET INDEX

AS-BUILT PLAN

LEGEND

- EX. PROPERTY LINE
- EX. ADJACENT PROPERTY LINE
- EX. RIGHT OF WAY
- EX. EASEMENT
- EX. ZONING LINE
- EX. BUILDING FOOTPRINT
- EX. CONCRETE
- EX. PAVEMENT
- EX. SEWER LINE
- EX. STREAM
- EX. STREAM BUFFER
- EX. TREE LINE
- EX. GUARD RAIL
- EX. LIGHT POLES
- EX. GAS LINE
- PR. BUILDING FOOTPRINT
- PR. BUILDING OVERHANG
- PR. BUILDING SETBACK
- PR. EDGE OF CONCRETE
- PR. CURB
- PR. SIDEWALK
- PR. RETAINING WALL
- PR. POROUS PAVEMENT
- PR. MEDIUM DUTY PAVEMENT
- PR. CONCRETE PAVEMENT
- PR. PAVEMENT MILL AND OVERLAY
- PR. TREELINE
- PR. HEDGEROW
- PR. SWM FACILITY
- PR. BRICK PAVERS OVER CONCRETE
- PR. PERMEABLE PAVERS

CURVE	RADIUS	DELTA	ARC	TANGENT	CHORD BEARING	CHORD
C-1	3849.00'	2'08'51"	144.27'	72.14'	S51°28'48"E	144.26'
C-2	3791.00'	2'08'51"	142.10'	71.06'	S51°28'48"E	142.09'
C-3	3788.00'	2'08'51"	141.98'	71.00'	S53°37'39"E	141.97'
C-4	3852.00'	2'08'51"	144.37'	72.20'	S53°37'39"E	144.37'

ADDRESS CHART

PARCEL	STREET ADDRESS
P-A / P-145	7500 GRACE DRIVE

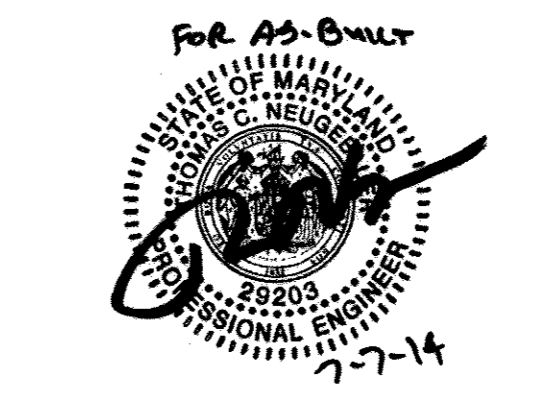
PERMIT INFORMATION CHART

SUBDIVISION NAME	PARCEL NO.
W R GRACE & CO.	PARCEL 145

PLAT NO. OR L/F	GRID #	ZONING	TAX MAP NO.	ELECT. DIST.	CENSUS TRACT
PLAT NO. 21235 & 21236	21 & 22	PEC	35	5	6055.11

WATER CODE: 6580000 SEWER CODE: E-24

- COVER SHEET
- EXISTING FEATURES, SOILS & RESOURCES MAP
- DEMOLITION PLAN
- EROSION & SEDIMENT CONTROL PLAN, PHASE 1
- EROSION & SEDIMENT CONTROL PLAN, PHASE 2
- EROSION & SEDIMENT CONTROL PLAN, PHASE 3
- EROSION & SEDIMENT CONTROL NOTES & DETAILS
- SITE LAYOUT PLAN
- SITE GRADING & STORM DRAIN PLAN
- SITE UTILITY PLAN
- ESD FACILITIES
- BIO SWALE & MICRO BIO DETAILS
- PERMEABLE PAVING NOTES & DETAILS
- CONCRETE PAVEMENT PLAN & DETAILS
- GRACE DRIVE PLAN & PROFILE
- STORM DRAIN PROFILES
- SEWER PROFILES
- WATER PROFILES
- BORING LOGS
- SITE DETAILS
- EXISTING SITE OUTFALLS
- PROPOSED SITE OUTFALLS
- ESD DRAINAGE AREA MAP
- STORM DRAIN DRAINAGE AREA MAP
- LANDSCAPE PLAN & DETAILS
- LANDSCAPE DETAILS
- FOREST CONSERVATION PLAN
- RETAINING WALLS PLAN, NOTES, SECTIONS, PROFILES & DETAILS
- BUILDING ELEVATIONS
- PHOTOMETRIC PLAN
- OPEN SPACE PLAN

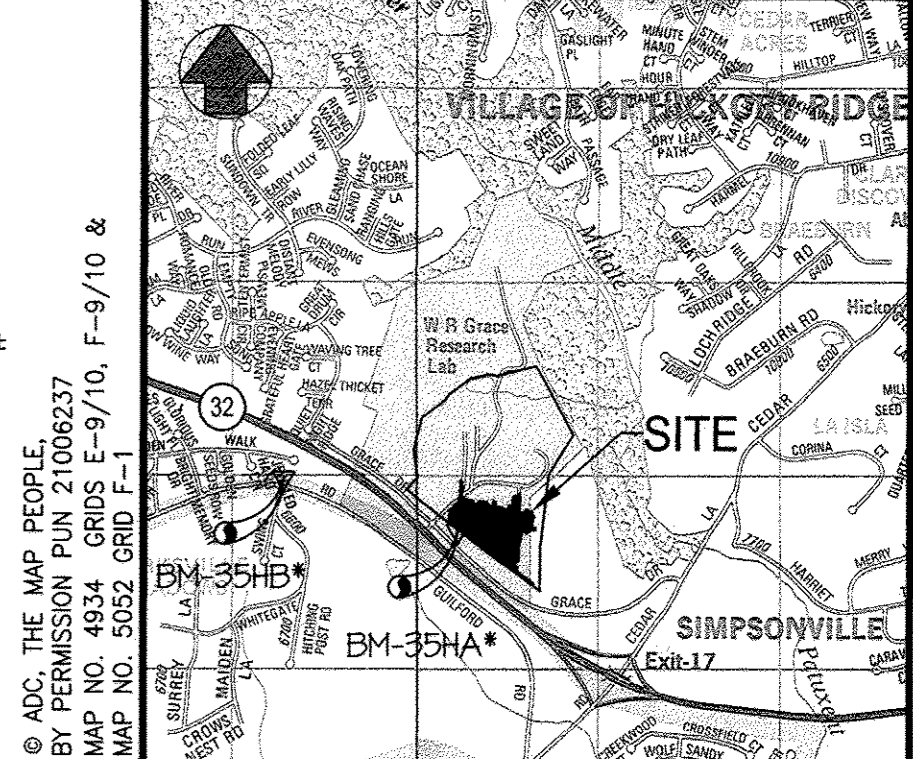


OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145

BENCH MARKS

BM 35HA*
N 563,966.7457 E 1,340,476.9524
NAD 83 (Adj 07)
NAVD 88
ELEV. 404.584

BM 35HR*
N 554,836.4156 E 1,337,888.3861
NAD 83 (Adj 07)
NAVD 88
ELEV. 449.699



SITE ANALYSIS DATA CHART

- TOTAL PROJECT AREA: 54.80 ACRES
- AREA OF PLAN SUBMISSION: 8.40 ACRES, 0.08 AC. REV. 2
- LIMIT OF DISTURBANCE: 8.40 ACRES, 0.08 AC. REV. 2
- PRESENT ZONING: PEC
- PROPOSED USE: OFFICE CAMPUS
- PROPOSED FLOOR SPACE:

FLOOR	BASEMENT	ASSEMBLY	OFFICE
1st FLOOR	9,199 s.f.	26,559 s.f. (NOT AVAILABLE TO THE PUBLIC)	26,015 s.f.
2nd FLOOR		BUSINESS	25,898 s.f.
3rd FLOOR		BUSINESS	25,898 s.f.
TOTAL			97,471 s.f.
- BULK REGULATIONS:

REGULATION	REQUIRED	PROVIDED
A. OPEN SPACE (BASED ON TOTAL PROJECT AREA)	25% (13.7 AC)	34% (18.5 AC)
B. MAX. BUILDING HEIGHT	50'	64'
C. MIN. DISTRICT SIZE	50 AC	121.6 AC (PARCELS A & B)
D. STRUCTURES AND USE SETBACKS		
1. FROM RESIDENTIAL DISTRICTS	103'	103'
2. FROM ALL OTHER DISTRICTS	30'	N/A
3. FROM PUBLIC STREET (EXCLUDING PARKING)	30'	30'
4. FROM PUBLIC STREET (PARKING)	10'	10'

*BUILDING HEIGHT MAY BE INCREASED UP TO 80' SO LONG AS THE BUILDING SETBACK FROM A RESIDENTIAL DISTRICT IS INCREASED 2' FOR EACH ADDITIONAL 1' OF BUILDING HEIGHT OVER 50'. A 64' HIGH BUILDING WOULD REQUIRE A 103' BUILDING SETBACK FROM THE RESIDENTIAL DISTRICT.
- TOTAL NUMBER OF PARKING SPACES REQUIRED: 408
(149 SPACES FOR EX. BUILDING TO BE REMOVED AND REPLACED) (259 SPACES REQUIRED FOR BLDG. ADDITION FOR OFFICE (78,272 SF) @ 3.3 SPACES/1,000 SF)
- TOTAL NUMBER OF HANDICAP ACCESSIBLE SPACES REQUIRED PER COMAR 05.02.02.06 TABLE 1:
(149 SPACES FOR BLDG. ADDITION; 201 TO 300 = 7 SPACES)
TOTAL 12 HANDICAP ACCESSIBLE SPACES REQUIRED
- PARKING SPACES PROVIDED: 408 (INCL. 12 HC SPACES AND 75 COMPACT PARKING SPACES)
- DPZ FILE REFERENCES:

SDP	SDP	SDP	SDP	SDP
SDP-84-255	SDP-84-256	SDP-85-206	SDP-87-032	SDP-87-042
SDP-87-237	SDP-88-42	SDP-88-193	ADP-90-037	SDP-90-116
SDP-91-090	SDP-91-090	SDP-93-024	SDP-93-025	SDP-94-029
SDP-95-014	SDP-95-017	PB-168	PB-212	PB-212
BA-83-54E	BA-85-30E	VP-82-92	VP-84-70	VP-84-70
WP-87-36	WP-85-26	WP-00-52	WP-09-227	ECF-12-014
F-10-023	FDP-1	FDP-PEC-1-A		
- SANITARY SEWER/WATER SERVICE: PRIVATE/PRIVATE

NOTE:
THE LOWER LEVEL OF THE BUILDING (BASEMENT) IS TO BE UTILIZED FOR STORAGE AND MECHANICAL EQUIPMENT ONLY. THIS AREA DOES NOT COUNT TOWARDS FLOOR AREA RATIO (F.A.R.) CALCULATIONS AND DOES NOT REQUIRE PARKING. HOWEVER, IF ANY PORTION OF THE LOWER LEVEL IS CONVERTED TO OFFICE USE IN THE FUTURE, THEN A RED-LINE REVISION TO THE APPROVED SDP MUST BE SUBMITTED FOR PROCESSING THAT RE-COMPUTES THE F.A.R. AND THE PARKING CALCULATIONS FOR THE PORTION CONVERTED TO EMPLOYMENT USES.

PLAN NUMBER	REV. NO.	GROSS AREA (AC.)	FLOODPLAIN AREA FOR DEDUCTIONS (AC.)	NET TRACT AREA (AC.)	EXIST. FOREST AREA (AC.)	FOREST CLEARED (AC.)	FOREST RETAINED (AC.)	REFORESTATION REQUIRED (AC.)
SDP-12-077		9.40	0.00	9.40	0.30	0.00	0.00	1.60
SDP-17-006		2.19	0.88	1.31	0.00	0.00	0.00	0.20
SDP-12-077	#2	0.08	0.00	0.08	0.00	0.00	0.00	0.01

NOTE:
THIS SITE COMPLIES WITH THE HOWARD COUNTY GREEN BUILDING LAW SET FORTH UNDER TITLE 3, SUBTITLE 10 OF THE HOWARD COUNTY CODE AND SECTION 3.1005(a) OF THE CODE. REGISTRATION WITH THE GREEN BUILDING COUNCIL AND THE APPLICABLE LEED REGISTRATION FEE WAS PAID ON JANUARY 13, 2012. THE LEED NEW CONSTRUCTION CHECKLIST WAS PREPARED, SIGNED AND DATED BY THE PROJECT LEAD ACCREDITED PROFESSIONAL AND WAS RECEIVED BY DPZ ON JULY 18, 2012. THE PROPOSED BUILDING IS TENTATIVELY CERTIFIED BY LEED WITH A SILVER RATING.

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

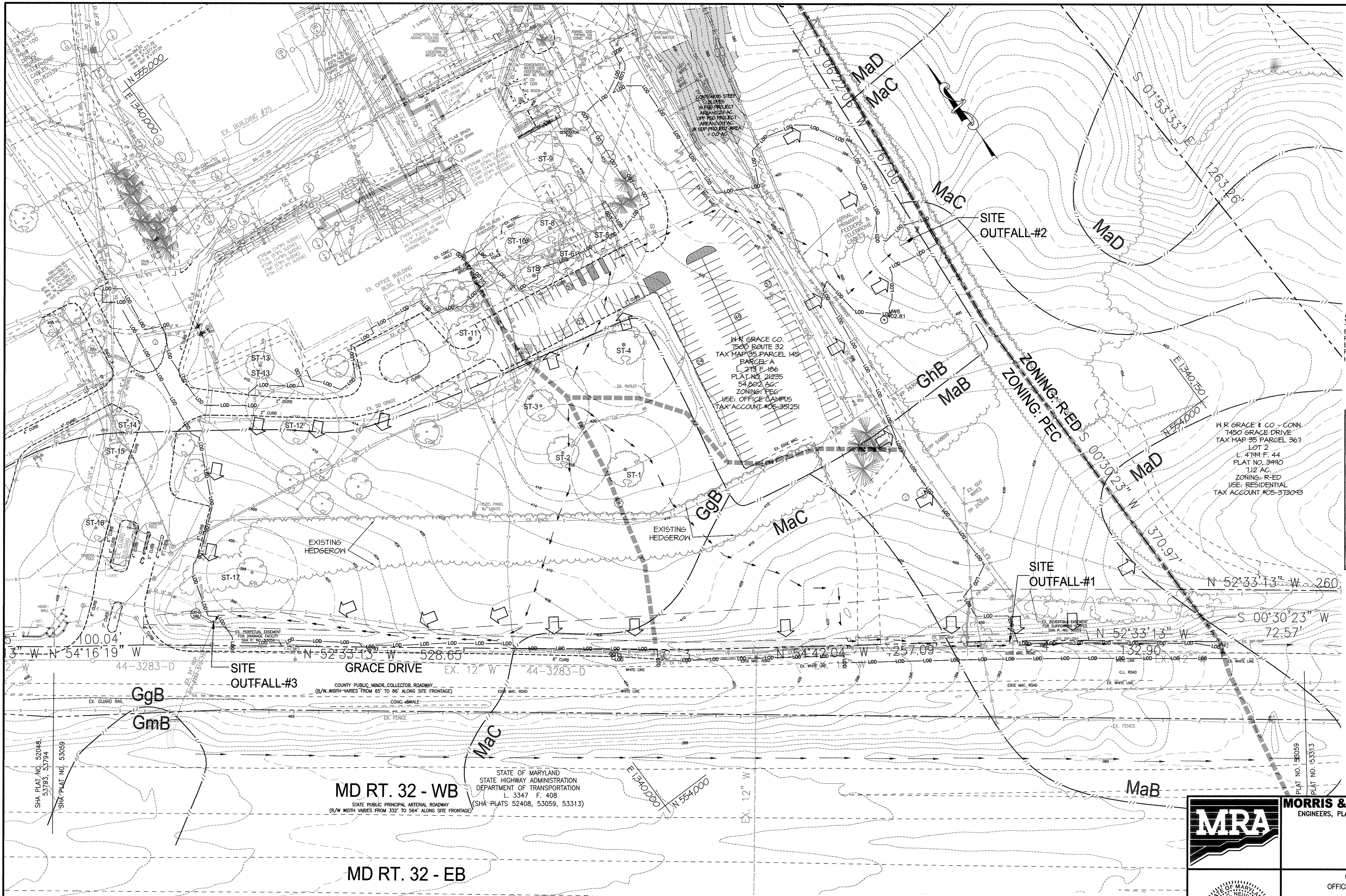


14200 PARK CENTER DRIVE
LAUREL, MD 20707
(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395
MRAGTA.COM

**GRACE TECH PARK, PARCEL A
OFFICE BUILDING - (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN**

COVER SHEET

DATE	REVISIONS	JOB NO.:
01/01/14	AS-BUILT INFORMATION ADDED TO PLAN	12039
08/07/17	ADDED 2 SHEETS FOR CELL TOWER	SCALE: AS SHOWN
	MONOPOLE CONST. AND DETAILS.	DATE: 10/16/2012
		DRAWN BY: MK
		DESIGN BY: MK
		REVIEW BY: TCN
		SHEET: 1 OF 46

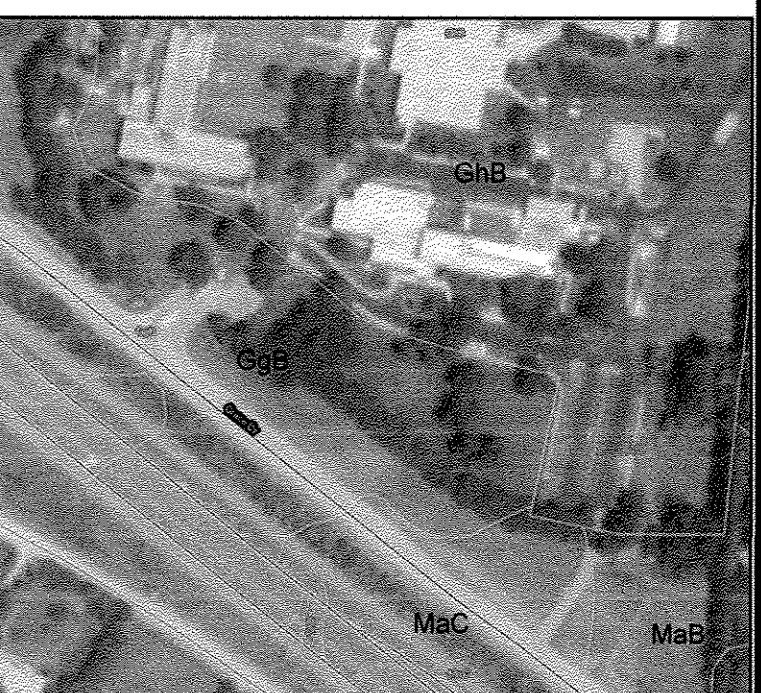


LEGEND

---	EX. 10' CONTOUR
---	EX. 2' CONTOUR
---	EX. PROPERTY LINE
---	EX. ADJACENT PROPERTY LINE
---	EX. RIGHT OF WAY
---	EX. EASEMENT
---	EX. ZONING LINE
---	EX. BUILDING
---	EX. CONCRETE
---	EX. PAVEMENT
---	EX. FENCE
---	EX. OVERHEAD LINE
---	EX. WATER LINE
---	EX. SEWER LINE
---	EX. STREAM
---	EX. STREAM BUFFER
---	EX. RIP-RAP CHANNEL
---	EX. TREE LINE
---	EX. GUARD RAIL
---	EX. ELECTRIC CONDUIT
---	EX. LIGHT POLES
---	EX. GAS LINE
---	EX. STORM DRAIN
---	EX. CONDUIT
---	EX. FIBER OPTIC
---	EX. TV LINE
---	EX. ELECTRIC MANHOLE
---	EX. TELEPHONE MANHOLE
---	EX. UNKNOWN UTILITY
---	DRAINAGE PATTERN-CONCENTRATED FLOW
---	DRAINAGE PATTERN-SHEET FLOW
---	LIMIT OF DISTURBANCE-PROJECT AREA
---	EX. SOILS LINE
---	EX. SOIL DESCRIPTION

SITE DATA

EXISTING SITE AREA:	54.802 AC.
PROPOSED DISTURBED AREA:	8.40 AC.
EXISTING IMPERVIOUS AREA:	1.75 AC.
PROPOSED IMPERVIOUS AREA:	3.90 AC.
HYDROLOGICAL SOIL GROUP:	B (100%)



SOILS MAP

EX FEATURES & NATURAL RESOURCES MAP
SCALE: 1"=50'

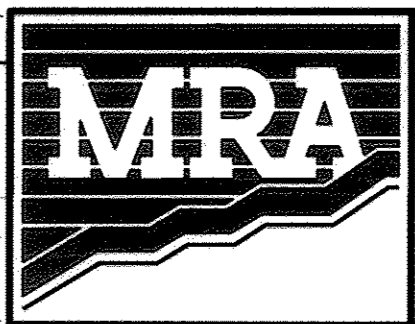
SOILS CHART

SYMBOL	NAME/DESCRIPTION ¹	SOIL TYPE	HYDRIC ² SOIL	K ¹ FACTOR
GgB	GLENGLOAM 8 TO 15 PERCENT SLOPES	B	NO	0.20
GhB	GLENGLOAM 8 TO 15 PERCENT SLOPES	B	NO	NONE LISTED
MaB	MANORLOAM 3 TO 8 PERCENT SLOPES	B	NO	0.24
Mac	MANORLOAM 8 TO 15 PERCENT SLOPES	B	NO	0.24
MdD	MANORLOAM 15 TO 25 PERCENT SLOPES	B	NO	0.24

1. SOURCE: K FACTOR VALUES FOR WHOLE SOIL FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICES WEB SOIL SURVEY, CONSULTED ON MAY 30, 2011. AVAILABLE ONLINE AT <HTTP://WEB.SOILSURVEY.NRCS.USDA.GOV>
2. HYDRIC SOILS INFORMATION ADAPTED FROM THE NATURAL RESOURCE CONSERVATION SERVICES NATIONAL HYDRIC SOILS LIST, CONSULTED ON MAY 3, 2011. AVAILABLE ONLINE AT <HTTP://SOILS.USDA.GOV/SEMYDRIC>

APPROVED: DEPARTMENT OF PLANNING AND ZONING
David A. Gough 11/29/12
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE
William J. ... 11/16/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Victor ... 11/19/12
CHIEF, DIVISION & LAND DEVELOPMENT DATE

OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145



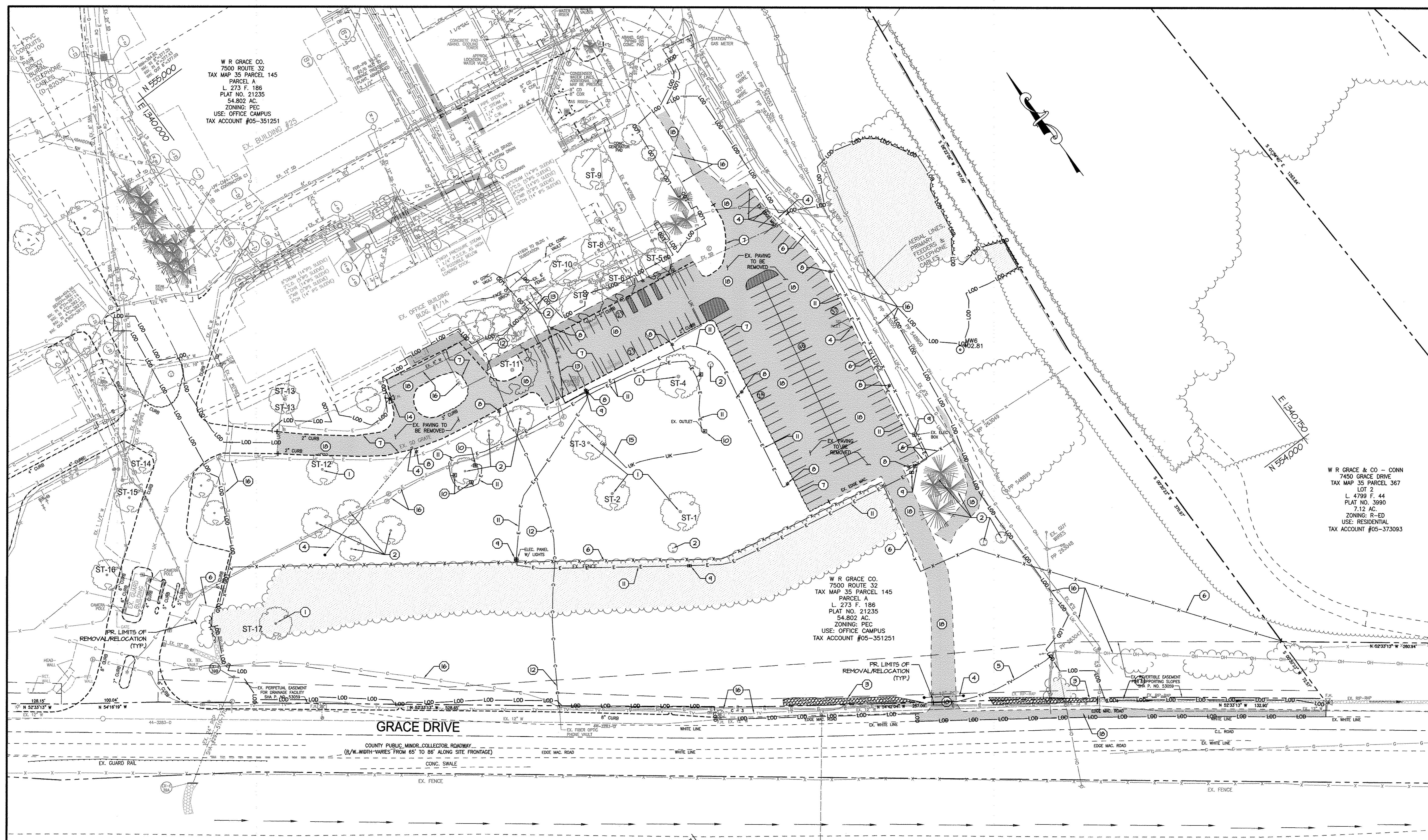
MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
14280 PARK CENTER DRIVE
LAUREL, MD 20707
(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395
MRAGTA.COM

GRACE TECH PARK, PARCEL A
OFFICE BUILDING - (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
EX. FEATURES, SOILS & RESOURCES MAP

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT NO. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: 1" = 50'
		DATE: 10/16/2012
		DRAWN BY: MK
		DESIGN BY: MK
		REVIEW BY: TCN
		SHEET: 2 OF 45

SHEET: SDP-02



W R GRACE CO.
7500 ROUTE 32
TAX MAP 35 PARCEL 145
PARCEL A
L. 273 F. 186
PLAT NO. 21235
54.802 AC.
ZONING: PEC
USE: OFFICE CAMPUS
TAX ACCOUNT #05-351251

W R GRACE CO.
7500 ROUTE 32
TAX MAP 35 PARCEL 145
PARCEL A
L. 273 F. 186
PLAT NO. 21235
54.802 AC.
ZONING: PEC
USE: OFFICE CAMPUS
TAX ACCOUNT #05-351251

W R GRACE & CO - CONN
7450 GRACE DRIVE
TAX MAP 35 PARCEL 387
LOT 2
L. 4799 F. 44
PLAT NO. 3990
7.12 AC.
ZONING: R-ED
USE: RESIDENTIAL
TAX ACCOUNT #05-373093

LEGEND

- EX. PROPERTY LINE
- EX. ADJACENT PROPERTY LINE
- EX. RIGHT OF WAY
- EX. EASEMENT
- EX. BUILDING
- EX. CONCRETE
- EX. PAVEMENT
- EX. FENCE
- EX. OVERHEAD LINE
- EX. WATER LINE
- EX. SEWER LINE
- EX. STREAM
- EX. STREAM BUFFER
- EX. RIP-RAP CHANNEL
- EX. TREE LINE
- EX. GUARD RAIL
- EX. ELECTRIC CONDUIT
- EX. LIGHT POLES
- EX. GAS LINE
- EX. STORM DRAIN
- EX. CONDUIT
- EX. FIBER OPTIC
- EX. TV LINE
- EX. ELECTRIC MANHOLE
- EX. TELEPHONE MANHOLE
- EX. UNKNOWN UTILITY
- EX. CONCRETE TO BE REMOVED
- EX. PAVING TO BE REMOVED
- EX. WOODS TO BE REMOVED
- PR. LIMIT OF DISTURBANCE
- PR. TREELINE
- PR. HEDGEROW

DEMOLITION NOTES

- 1 EXISTING SPECIMEN TREE TO BE REMOVED.
- 2 EXISTING TREE OR SHRUB TO BE REMOVED.
- 3 EXISTING RIP-RAP TO BE REMOVED.
- 4 EXISTING STORM DRAIN TO BE REMOVED.
- 5 EXISTING CATV LINE TO BE RELOCATED.
- 6 EXISTING FENCE TO BE REMOVED.
- 7 EXISTING CURB TO BE REMOVED.
- 8 EXISTING LIGHT POLE AND BASE TO BE REMOVED.
- 9 EXISTING ELECTRIC BOX TO BE REMOVED.
- 10 EXISTING ELECTRIC OUTLET TO BE REMOVED.
- 11 EXISTING ELECTRIC LINE TO BE REMOVED.
- 12 EXISTING FIBER OPTIC TO BE REMOVED. COORDINATE WITH VERIZON ON RELOCATION.
- 13 EXISTING WATER TO BE REMOVED.
- 14 EXISTING FIRE HYDRANT TO BE REMOVED & CAPPED.
- 15 EXISTING UNKNOWN UTILITY TO BE REMOVED.
- 16 EXISTING UTILITY TO REMAIN.
- 17 EXISTING RIP-RAP TO REMAIN.
- 18 EXISTING PAVING TO BE REMOVED.

GRACE DRIVE

MD RT. 32 - WB

STATE PUBLIC PRINCIPAL ARTERIAL ROADWAY
(R/W WIDTH VARIES FROM 65' TO 86' ALONG SITE FRONTAGE)

MD RT. 32 - EB

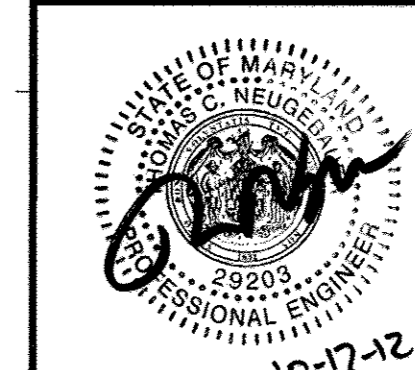
DEMOLITION PLAN

SCALE: 1"=50'

SHEET: **SDP-03**



MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
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LAUREL, MD 20707
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FAX: (410) 792-7395
MRAGTA.COM



GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
DEMOLITION PLAN

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: 1" = 50'
		DATE: 10/16/2012
		DRAWN BY: MK/RAH
		DESIGN BY: MK
		REVIEW BY: TCN
		SHEET: 3 OF 48

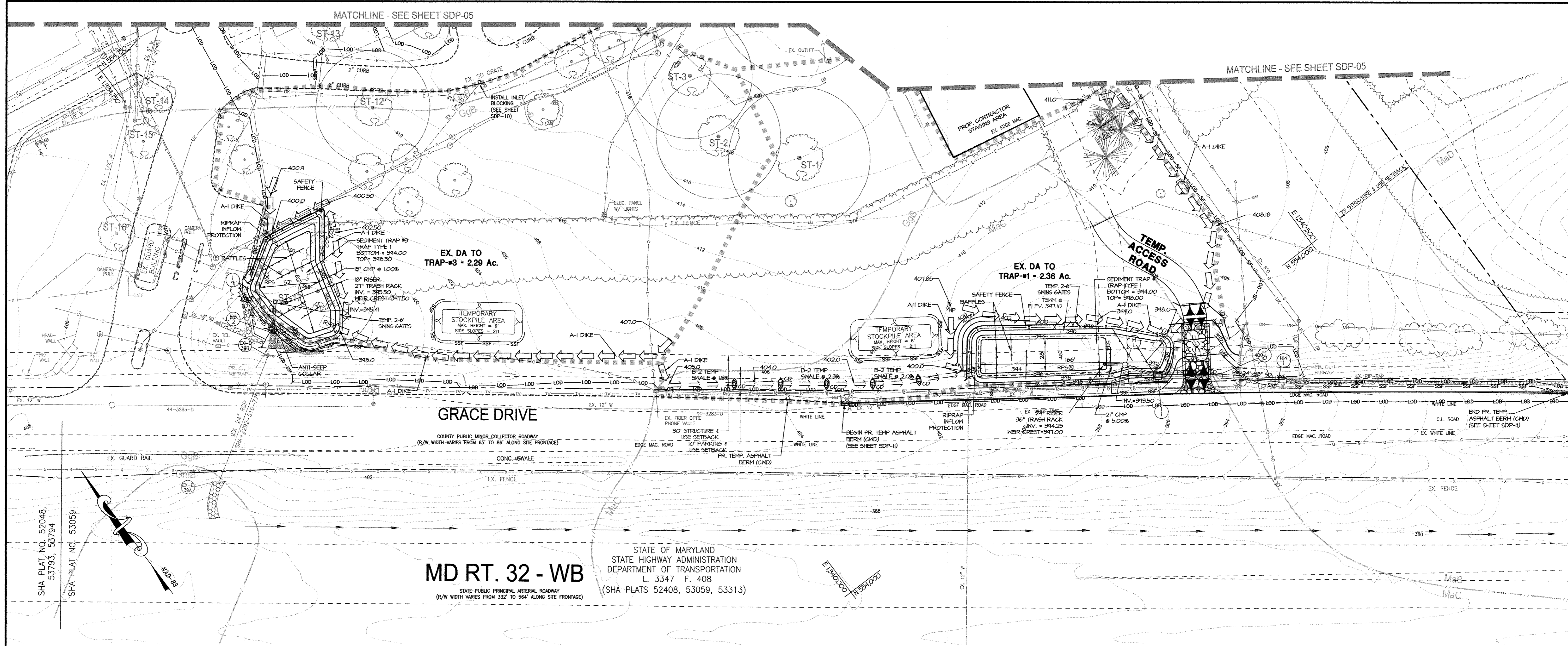
OWNER / APPLICANT / DEVELOPER:

ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 11/29/12
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE
[Signature] 11/14/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
[Signature] 11/19/12
CHIEF, DIVISION & LAND DEVELOPMENT DATE

P:\PROJ\2039 GRACE\PLANS\UDE_SDP_PLOT\Plan Sets\12039-SDP-03-DEMO-PLAN.dwg, 10/17/2012 9:27:05 AM, R:Rhl,
1:1, Copyright 2012 Morris & Ritchie Associates, Inc.



MD RT. 32 - WB
STATE PUBLIC PRINCIPAL ARTERIAL ROADWAY
(R/W WIDTH VARIES FROM 332' TO 564' ALONG SITE FRONTAGE)

STATE OF MARYLAND
STATE HIGHWAY ADMINISTRATION
DEPARTMENT OF TRANSPORTATION
L. 3347 F. 408
(SHA PLATS 52408, 53059, 53313)

PHASE-I EROSION & SEDIMENT CONTROL PLAN

SCALE: 1"=40'

NOTE:
ALL SEDIMENT CONTROLS THAT MAY BE DAMAGED DURING CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

SEQUENCE OF CONSTRUCTION

- PHASE-I**
- OBTAIN GRADING PERMIT. 1 DAY
 - CLEAR FOR AND INSTALL STABILIZED CONSTRUCTION ENTRANCE, TEMPORARY ACCESS ROAD, PERIMETER SEDIMENT CONTROLS, SUPER SILT FENCE, MOUNTABLE BERM, CONTRACTOR STAGING AREA, STOCKPILE AREA, AND SEDIMENT TRAPS #1, 2 & 3. 3 WEEKS
 - CONSTRUCT PROPOSED STORM DRAIN SYSTEM, M-1 TO HW-1, I-26 TO ES-13, & I-9 TO ES-2. INSTALL INLET BLOCKING. 1 WEEK
 - INSTALL EARTH DIKES AND TEMPORARY SWALES. INSTALL ASPHALT BERM FOR CLEAR WATER DIVERSION. 1 WEEK
 - WITH HOWARD COUNTY SEDIMENT CONTROL INSPECTOR'S PERMISSION, PROCEED WITH PHASE-II. 1 DAY
- PHASE-II**
- CLEAR & GRUB, BEGIN ROUGH GRADING OF SITE. REMOVE EX. PAVEMENT AND REMOVE EX. UTILITIES. SEE DEMOLITION PLAN. EXCAVATE & BEGIN CONSTRUCTION OF BUILDING FOUNDATION. 4 WEEKS
 - CONVERT SEDIMENT TRAP #3 TO #3B. 3 DAYS
 - CONSTRUCT RETAINING WALLS #1 - 3. 1 WEEK
 - BEGIN UTILITY CONSTRUCTION AND COMPLETE STORM DRAIN SYSTEM, INSTALL INLET PROTECTION AS STORM DRAIN INSTALLATION PROCEEDS. INLETS I-5 & I-11 SHALL ALSO BE WRAPPED IN SUPER SILT FENCE. INSTALL RAINWATER HARVESTING CISTERNS. 6 WEEKS
 - FINE GRADE AND INSTALL CURB AND GUTTER, AND BASE PAVING AT ENTRANCE. 1 MONTH
- PHASE-III**
- BEGIN BUILDING CONSTRUCTION. INSTALL SEDIMENT CONTROLS FOR THE BUILDING CONSTRUCTION AS SHOWN ON SHEET SDP-08. 3 MONTHS
 - INSTALL PLAZA AREA, POROUS PAVEMENT AND CONCRETE PAVEMENT SECTIONS. 2 WEEKS
 - CONSTRUCT ROAD IMPROVEMENT ON GRACE DRIVE. 1 WEEK
 - WHEN RECEIVING AREA IS STABILIZED, REMOVE INLET PROTECTION AND FLUSH STORM DRAINAGE SYSTEM. 1 WEEK
 - WITH HOWARD COUNTY SEDIMENT CONTROL INSPECTOR'S PERMISSION, REMOVE SEDIMENT TRAPS, EARTH DIKES, TEMPORARY SWALES & SUPER SILT FENCE. 2 WEEKS
 - CONSTRUCT RETAINING WALL #4. 2 DAYS
 - INSTALL MICRO BIORETENTION FACILITIES AND BIO-SWALES. 3 WEEKS
 - STABILIZE REMAINING AREAS AND BEGIN LANDSCAPING. 5 DAYS

SUMMARY TABLE PIPE OUTLET SEDIMENT TRAP ST-1		SUMMARY TABLE PIPE OUTLET SEDIMENT TRAP ST-2	
SEDIMENT TRAP NO.	1	SEDIMENT TRAP NO.	2
DRAINAGE AREA (PHASE I)	2.36 ACRES	DRAINAGE AREA (PHASE I)	2.29 ACRES
DRAINAGE AREA (PHASE II)	3.81 ACRES	DRAINAGE AREA (PHASE II)	1.97 ACRES
TOTAL STORAGE REQUIRED	13,716 C.F.	TOTAL STORAGE REQUIRED	8,244 C.F.
TOTAL STORAGE PROVIDED	13,750 C.F.	TOTAL STORAGE PROVIDED	14,572 C.F.
WET STORAGE REQUIRED	6,858 C.F.	WET STORAGE REQUIRED	4,122 C.F.
WET STORAGE PROVIDED	6,858 C.F.	WET STORAGE PROVIDED	5,461 C.F.
DRY STORAGE REQUIRED	6,858 C.F.	DRY STORAGE REQUIRED	4,122 C.F.
DRY STORAGE PROVIDED	6,892 C.F.	DRY STORAGE PROVIDED	9,111 C.F.
TRAP BOTTOM ELEVATION	394.0'	TRAP BOTTOM ELEVATION	394.0'
TRAP BOTTOM DIMENSION	116'x28'	TRAP BOTTOM DIMENSION	82'x46'
RISER CREST (DRY STORAGE) ELEVATION	397.0'	RISER CREST (DRY STORAGE) ELEVATION	397.50'
OUTLET (WET STORAGE) ELEVATION	395.69'	OUTLET (WET STORAGE) ELEVATION	395.50'
CLEANOUT ELEVATION	394.85'	CLEANOUT ELEVATION	394.66'
TOP OF EMBANKMENT ELEVATION	398.0'	TOP OF EMBANKMENT ELEVATION	398.50'
SIDE SLOPE	2:1	SIDE SLOPE	2:1
EMBANKMENT WIDTH	4.0'	EMBANKMENT WIDTH	4.0'
RISER DIAMETER	24"	RISER DIAMETER	18"
BARREL DIAMETER	21" CMP	BARREL DIAMETER	15" CMP
TRASH RACK DIAMETER	36"	TRASH RACK DIAMETER	27"
TRASH RACK HEIGHT	21"	TRASH RACK HEIGHT	16"
OUTLET PROTECTION-LENGTH	10'	OUTLET PROTECTION-LENGTH	10'
OUTLET PROTECTION-WIDTH	5'	OUTLET PROTECTION-WIDTH	5'
OUTLET PROTECTION-DEPTH	18"	OUTLET PROTECTION-DEPTH	19"

SUMMARY TABLE TEMPORARY SWM FOR TRAP-#1	
DRAINAGE AREA (ULTIMATE)	3.81 ACRES
RAINFALL FREQUENCY	1 YEAR
24 HOUR RAINFALL	2.6"
RUNOFF CURVE NUMBER	60
Q1 PEAK INFLOW	5.60 cfs
Q1 PEAK OUTFLOW	0.50 cfs
Q1 REQUIRED STORAGE VOLUME	0.1728 ac-ft
CLEANOUT VOLUME & ELEV. PROVIDED	0.0798 ac-ft @ 394.85'
WET STORAGE & ELEV. PROVIDED	0.1574 ac-ft @ 395.69'
DRY STORAGE & ELEV. PROVIDED	0.1582 ac-ft @ 397.00'
TOTAL SWM STORAGE & ELEV. PROVIDED	0.1728 ac-ft @ 397.10'

SOILS LEGEND		
SYMBOL	NAME/DESCRIPTION	SOIL TYPE
Ba	BAILE SILT LOAM, 0-3% SLOPES	C
Co	CODORUS & HATBORO SILT LOAM, 0-3% SLOPES	B
GqB	GLENELG LOAM, 3-8% SLOPES	B
GqH	GLENELG-URBAN LAND COMPLEX, 0-8% SLOPES	B
GmB	GLENVILLE SILT LOAM, 3-8% SLOPES	C
GmC	GLENVILLE SILT LOAM, 8-15% SLOPES	B
GqB	GLENVILLE-URBAN LAND-UDORHTHENS COMPLEX, 0-8% SLOPES	C
MaB	MANOR LOAM, 3-8% SLOPES	B
MaC	MANOR LOAM, 8-15% SLOPES	B
MaD	MANOR LOAM, 15-25% SLOPES	B
MkF	MANOR-BRINKLOW COMPLEX, 25-65% SLOPES, VERY ROCKY	B

LEGEND

- 10 --- EX. 10' CONTOUR
- 2 --- EX. 2' CONTOUR
- --- EX. PROPERTY LINE
- --- EX. ADJACENT PROPERTY LINE
- --- EX. RIGHT OF WAY
- --- EX. BUILDING
- --- EX. CONCRETE
- --- EX. PAVEMENT
- --- EX. FENCE
- --- EX. OVERHEAD LINE
- --- EX. WATER LINE
- --- EX. SEWER LINE
- --- EX. STREAM
- --- EX. STREAM BUFFER
- --- EX. RIP-RAP CHANNEL
- --- EX. TREE LINE
- --- EX. GUARD RAIL
- --- EX. ELECTRIC CONDUIT
- --- EX. LIGHT POLES
- --- EX. GAS LINE
- --- EX. STORM DRAIN
- --- EX. CONDUIT
- --- EX. FIBER OPTIC
- --- EX. TV LINE
- --- EX. ELECTRIC MANHOLE
- --- EX. TELEPHONE MANHOLE
- --- EX. UNKNOWN UTILITY
- --- EX. SOILS LINE
- --- EX. SOIL DESCRIPTION
- --- PR. 1' CONTOUR (ESC)
- --- PR. 2' CONTOUR (ESC)
- --- PR. 10' CONTOUR (ESC)
- --- PR. EARTH DIKE
- --- PR. TEMPORARY SWALE
- --- PR. LIMITS OF DISTURBANCE
- --- PR. SUPER SILT FENCE
- --- PR. SILT FENCE ON PAVEMENT
- --- PR. TREE PROTECTION FENCE
- --- PR. REMOVAL PUMPING STATION
- --- PR. STONE CHECK DAM
- --- PR. STABILIZED CONSTRUCTION ENTRANCE
- --- PR. SEDIMENT TRAP
- --- PR. DRAINAGE AREA
- --- PR. TREELINE
- --- PR. HEDGEROW

BY THE DEVELOPER

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY 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 ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

Nizam Usta 10/16/12
SIGNATURE OF DEVELOPER DATE
Nizam Usta
GRACE

BY THE ENGINEER

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

Thomas C. Neugebauer 10/17/12
SIGNATURE OF ENGINEER DATE
THOMAS C. NEUGEBAUER, P.E. MD LICENSE #29203

John K. Roberts 10/23/12
SIGNATURE OF ENGINEER DATE
HOWARD S.C.D.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

David P. Lovell 10/19/12
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE

Michael J. ... 10/19/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Kate ... 10/19/12
CHIEF, DIVISION & LAND DEVELOPMENT DATE



MORRIS & RITCHIE ASSOCIATES, INC.
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(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395

MRAGTA.COM

GRACE TECH PARK, PARCEL A
OFFICE BUILDING - (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN

PHASE-I EROSION & SEDIMENT CONTROL PLAN

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT NO. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

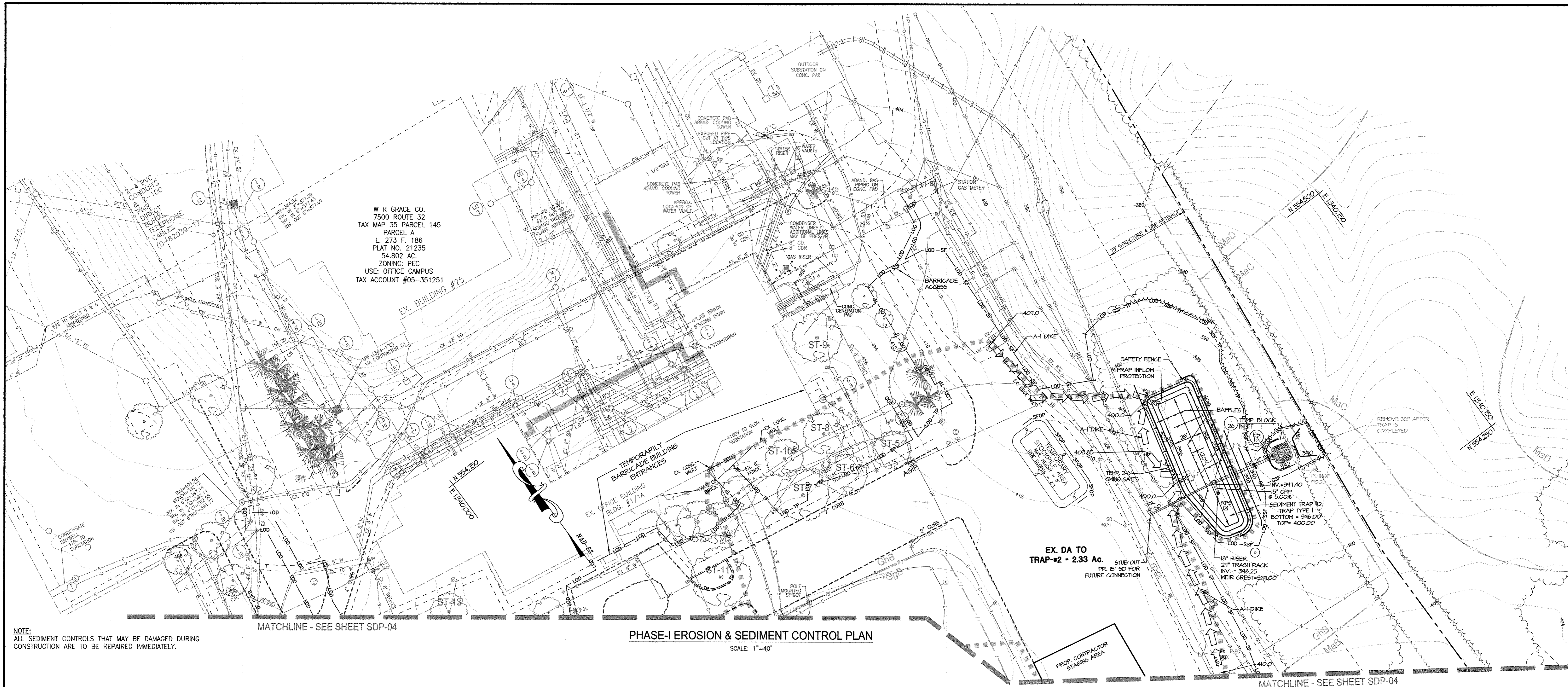
DATE	REVISIONS	JOB NO.:
		12039

SCALE: 1" = 40'
DATE: 10/16/2012
DRAWN BY: MK
DESIGN BY: MK
REVIEW BY: TCN
SHEET: 4 OF 48

OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145

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. 29203. EXPIRATION DATE: 06/16/2013.

SHEET: SDP-04



W R GRACE CO.
7500 ROUTE 32
TAX MAP 35 PARCEL 145
PARCEL A
L 273 F. 186
PLAT NO. 21235
54.802 AC.
ZONING: PEC
USE: OFFICE CAMPUS
TAX ACCOUNT #05-351251

PHASE-I EROSION & SEDIMENT CONTROL PLAN
SCALE: 1"=40'

NOTE:
ALL SEDIMENT CONTROLS THAT MAY BE DAMAGED DURING CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

MATCHLINE - SEE SHEET SDP-04

MATCHLINE - SEE SHEET SDP-04

BY THE DEVELOPER
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY 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 ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
Nizam Usta 10/16/12
SIGNATURE OF DEVELOPER DATE
Nizam Usta
GRACE

BY THE ENGINEER
I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
Thomas C. Neugebauer 10/17/2012
SIGNATURE OF ENGINEER DATE
THOMAS C. NEUGEBAUER, P.E. MD LICENSE #29203

APPROVED: DEPARTMENT OF PLANNING AND ZONING
David M. Long 1/13/12
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE
John P. ... 1/14/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
... 1/19/12
CHIEF, DIVISION & LAND DEVELOPMENT DATE

SUMMARY TABLE

PIPE OUTLET SEDIMENT TRAP ST-1	
SEDIMENT TRAP NO.	2
DRAINAGE AREA (PHASE I)	2.33 ACRES
DRAINAGE AREA (PHASE II)	1.90 ACRES
TOTAL STORAGE REQUIRED	8,388 C.F.
TOTAL STORAGE PROVIDED	11,393 C.F.
WET STORAGE REQUIRED	4,194 C.F.
WET STORAGE PROVIDED	6,228 C.F.
DRY STORAGE REQUIRED	4,194 C.F.
DRY STORAGE PROVIDED	5,165 C.F.
TRAP BOTTOM ELEVATION	396.0'
TRAP BOTTOM DIMENSION	120'x26'
RISER CREST (DRY STORAGE) ELEVATION	399.0'
TOTAL STORAGE REQUIRED	8,388 C.F.
CLEANOUT ELEVATION	396.80'
TOP OF EMBANKMENT ELEVATION	400.0'
SIDE SLOPE	2:1
EMBANKMENT WIDTH	4.0'
RISER DIAMETER	18"
BARREL DIAMETER	15" CMP
TRASH RACK DIAMETER	27"
TRASH RACK HEIGHT	18"
OUTLET PROTECTION-LENGTH	PLUNGE POOL
OUTLET PROTECTION-WIDTH	PLUNGE POOL
OUTLET PROTECTION-DEPTH	PLUNGE POOL

SOILS LEGEND

SYMBOL	NAME/DESCRIPTION	SOIL TYPE
BaA	BAILE SILT LOAM, 0-3% SLOPES	C
Co	CODORUS & HATBORO SILT LOAM, 0-3% SLOPES	B
GgB	GLENELG LOAM, 3-8% SLOPES	B
GhB	GLENELG-URBAN LAND COMPLEX, 0-8% SLOPES	B
GmB	GLENVILLE SILT LOAM, 3-8% SLOPES	C
GmC	GLENVILLE SILT LOAM, 8-15% SLOPES	B
GuB	GLENVILLE-URBAN LAND-UDORHTHENS COMPLEX, 0-8% SLOPES	C
MaB	MANOR LOAM, 3-8% SLOPES	B
MaC	MANOR LOAM, 8-15% SLOPES	B
MaD	MANOR LOAM, 15-25% SLOPES	B
MkF	MANOR-BRINKLOW COMPLEX, 25-65% SLOPES, VERY ROCKY	B

LEGEND

- 10 --- EX. 10' CONTOUR
- 2 --- EX. 2' CONTOUR
- --- EX. PROPERTY LINE
- --- EX. ADJACENT PROPERTY LINE
- --- EX. RIGHT OF WAY
- --- EX. BUILDING
- --- EX. CONCRETE
- --- EX. PAVEMENT
- --- EX. FENCE
- --- EX. OVERHEAD LINE
- --- EX. WATER LINE
- --- EX. SEWER LINE
- --- EX. STREAM
- --- EX. STREAM BUFFER
- --- EX. RIP-RAP CHANNEL
- --- EX. TREE LINE
- --- EX. GUARD RAIL
- --- EX. ELECTRIC CONDUIT
- --- EX. LIGHT POLES
- --- EX. GAS LINE
- --- EX. STORM DRAIN
- --- EX. CONDUIT
- --- EX. FIBER OPTIC
- --- EX. TV LINE
- --- EX. ELECTRIC MANHOLE
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- --- PR. TEMPORARY SWALE
- --- PR. LIMITS OF DISTURBANCE
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- --- PR. SEDIMENT TRAP DRAINAGE AREA
- --- PR. TREELINE
- --- PR. HEDGEROW

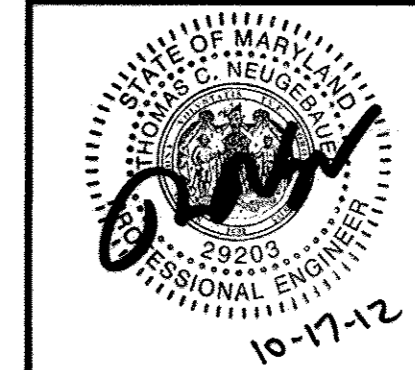
EX. DA TO TRAP #2 - 2.33 AC.
PR. 15' SD FOR FUTURE CONNECTION

PROP. CONTRACTOR STAGING AREA

SHEET: SDP-05



MORRIS & RITCHIE ASSOCIATES, INC.
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MRAGTA.COM



GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN

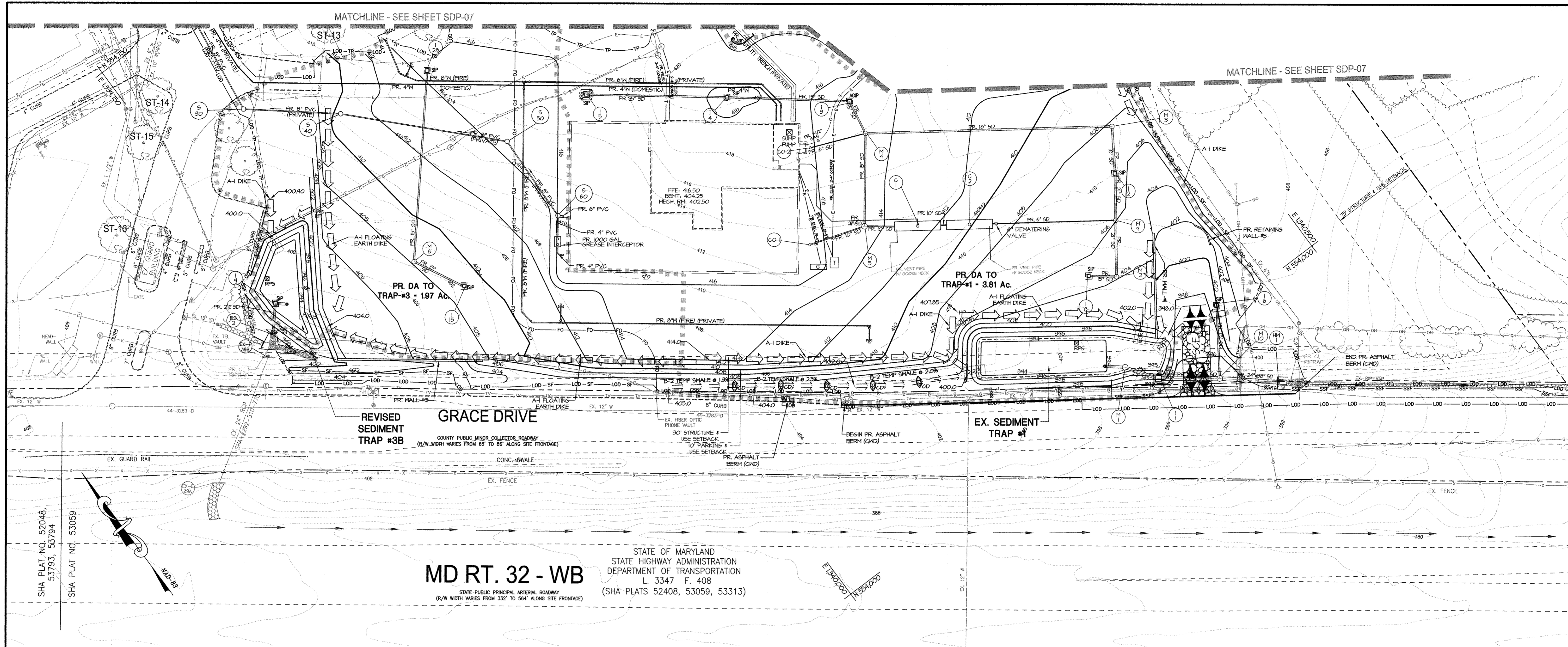
PHASE-I EROSION & SEDIMENT CONTROL PLAN

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: 1" = 40'
		DATE: 10/16/2012
		DRAWN BY: MK
		DESIGN BY: MK
		REVIEW BY: TGN
		SHEET: 5 OF 48

OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145

MD 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. 29203, EXPIRATION DATE: 06/16/2013.



MD RT. 32 - WB
STATE PUBLIC PRINCIPAL ARTERIAL ROADWAY
(R/W WIDTH VARIES FROM 332' TO 564' ALONG SITE FRONTAGE)

STATE OF MARYLAND
STATE HIGHWAY ADMINISTRATION
DEPARTMENT OF TRANSPORTATION
L. 3347 F. 408
(SHA PLATS 52408, 53059, 53313)

PHASE-II EROSION & SEDIMENT CONTROL PLAN

SCALE: 1"=40'

NOTE:
ALL SEDIMENT CONTROLS THAT MAY BE DAMAGED DURING CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

BY THE DEVELOPER
I, WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY 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 ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
Nizam Usta 10/16/2012
SIGNATURE OF DEVELOPER DATE
GRACE

BY THE ENGINEER
I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
Thomas C. Neugebauer, P.E. 10/17/2012
SIGNATURE OF ENGINEER DATE
THOMAS C. NEUGEBAUER, P.E. MD LICENSE #29203

APPROVED: DEPARTMENT OF PLANNING AND ZONING
David A. Long, Jr. 11/19/12
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE
John M. Roberts 11/19/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
CHIEF, DIVISION & LAND DEVELOPMENT DATE

SUMMARY TABLE	
PIPE OUTLET SEDIMENT TRAP ST-1	
SEDIMENT TRAP NO.	3B (REVISED)
DRAINAGE AREA (PHASE I)	2.29 ACRES
DRAINAGE AREA (PHASE II)	1.97 ACRES
TOTAL STORAGE REQUIRED	7,092 C.F.
TOTAL STORAGE PROVIDED	7,108 C.F.
WET STORAGE REQUIRED	3,546 C.F.
WET STORAGE PROVIDED	3,540 C.F.
DRY STORAGE REQUIRED	3,546 C.F.
DRY STORAGE PROVIDED	3,548 C.F.
TRAP BOTTOM ELEVATION	394.0'
TRAP BOTTOM DIMENSION	94'x30'
RISER CREST (DRY STORAGE) ELEVATION	397.0'
OUTLET (WET STORAGE) ELEVATION	395.70'
CLEANOUT ELEVATION	394.95'
TOP OF EMBANKMENT ELEVATION	398.0'
SIDE SLOPE	2:1
EMBANKMENT WIDTH	4.0'
RISER DIAMETER	18"
BARREL DIAMETER	15" CMP
TRASH RACK DIAMETER	27"
TRASH RACK HEIGHT	16"
OUTLET PROTECTION-LENGTH	10'
OUTLET PROTECTION-WIDTH	5'
OUTLET PROTECTION-DEPTH	19"

ESD CONVERSION INSTALLATION SEQUENCE

- PUMP-OUT ANY REMAINING WATER. IF NECESSARY USE A FLOCCULENT TO CLEAR WATER PRIOR TO PUMPING. FILTER PUMP EFFLUENT THROUGH SILT SACKS. DRY-OUT POND BOTTOM AND REMOVE ANY UNSUITABLE SOILS.
- REMOVE DEWATERING DEVICES AND INSTALL POND DRAIN SYSTEM. INSTALL TRASH RACKS AND UNBLOCK ORIFICES. REMOVE ANY REMAINING RISER BLOCKING.
- INSTALL FOREBAYS, GABION WALLS, BERMS, GABION MATTRESSES, AND STABILIZE BERMS IMMEDIATELY USING SOD. DISC BOTTOM OF INFILTRATION BASIN AREA. INSTALL ACCESS ROADS, FENCES AND GATES.
- STABILIZE ALL SLOPES AND POND BOTTOMS AND FOREBAY AREAS WITH SEED AND MULCH. SLOPES 3:1 WILL REQUIRE SOD STABILIZATION. CLOSE POND DRAIN VALVES.
- REQUEST ENGINEER TO PERFORM FINAL SWM SURVEY AND INSPECTION.

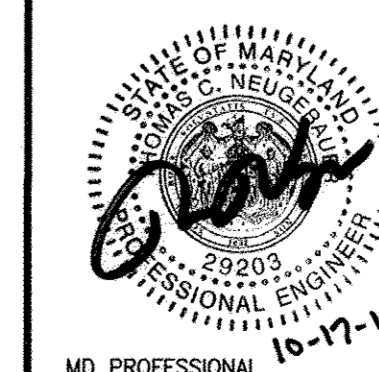
LEGEND

- 10' --- EX. 10' CONTOUR
- 2' --- EX. 2' CONTOUR
- --- EX. PROPERTY LINE
- --- EX. ADJACENT PROPERTY LINE
- --- EX. RIGHT OF WAY
- --- EX. BUILDING
- --- EX. CONCRETE
- --- EX. PAVEMENT
- --- EX. FENCE
- --- EX. OVERHEAD LINE
- --- EX. WATER LINE
- --- EX. SEWER LINE
- --- EX. STREAM
- --- EX. STREAM BUFFER
- --- EX. RIP-RAP CHANNEL
- --- EX. TREE LINE
- --- EX. GUARD RAIL
- --- EX. ELECTRIC CONDUIT
- --- EX. LIGHT POLES
- --- EX. GAS LINE
- --- EX. STORM DRAIN
- --- EX. CONDUIT
- --- EX. FIBER OPTIC
- --- EX. TV LINE
- --- EX. ELECTRIC MANHOLE
- --- EX. TELEPHONE MANHOLE
- --- EX. UNKNOWN UTILITY
- --- PR. 1' CONTOUR (ESC)
- --- PR. 2' CONTOUR (ESC)
- --- PR. 10' CONTOUR (ESC)
- --- PR. EARTH DIKE
- --- PR. TEMPORARY SWALE
- --- PR. LIMITS OF DISTURBANCE
- --- PR. SUPER SILT FENCE
- --- PR. TREE PROTECTION FENCE
- --- PR. REMOVAL PUMPING STATION
- --- PR. STONE CHECK DAM
- --- PR. STABILIZED CONSTRUCTION ENTRANCE
- --- PR. SEDIMENT TRAP DRAINAGE AREA
- --- PR. TREELINE
- --- PR. HEDGEROW
- --- PR. ELECTRIC CONDUIT
- --- PR. TELEPHONE CONDUIT
- --- PR. FIBER OPTIC
- --- PR. GAS
- --- PR. SANITARY SEWER
- --- PR. STORM DRAIN
- --- PR. WATER LINE

OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145



MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
14280 PARK CENTER DRIVE
LAUREL, MD 20707
(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395
MRAGTA.COM



GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN

PHASE-II EROSION & SEDIMENT CONTROL PLAN

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: 1" = 40'
		DATE: 10/16/2012
		DRAWN BY: MK
		DESIGN BY: MK
		REVIEW BY: TON
		SHEET: 6 OF 48



NOTE:
ALL SEDIMENT CONTROLS THAT MAY BE DAMAGED DURING CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

MATCHLINE - SEE SHEET SDP-06

PHASE-II EROSION & SEDIMENT CONTROL PLAN

SCALE: 1"=40'

MATCHLINE - SEE SHEET SDP-06

BY THE DEVELOPER
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY 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 ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

Nizam Usta 10/16/2012
SIGNATURE OF DEVELOPER DATE
GRACE

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

Thomas C. Neugebauer, P.E. 10/17/2012
SIGNATURE OF ENGINEER DATE
THOMAS C. NEUGEBAUER, P.E. MD LICENSE #29203

John F. Roberts 10/17/12
SIGNATURE OF ENGINEER DATE
HOWARD S.C.D.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

David L. Wright 11/29/12
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE

John P. ... 11/14/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Kurt ... 11/14/12
CHIEF, DIVISION & LAND DEVELOPMENT DATE

ESD CONVERSION INSTALLATION SEQUENCE

1. PUMP-OUT ANY REMAINING WATER. IF NECESSARY USE A FLOCCULENT TO CLEAR WATER PRIOR TO PUMPING. FILTER PUMP EFFLUENT THROUGH SIFT BAGS. DRY-OUT POND BOTTOM AND REMOVE ANY UNSUITABLE SOILS TO FINAL GRADES.
2. REMOVE DEWATERING DEVICES AND INSTALL POND DRAIN SYSTEM. INSTALL TRASH RACKS AND UNBLOCK ORIFICES. REMOVE ANY REMAINING RISER BLOCKING.
3. INSTALL FOREBAYS, GABION WALLS, BERMS, GABION MATTRESSES, AND STABILIZE BERMS IMMEDIATELY USING SOD. DISC BOTTOM OF INFILTRATION BASIN AREA. INSTALL ACCESS ROADS, FENCES AND GATES.
4. STABILIZE ALL SLOPES AND POND BOTTOMS AND FOREBAY AREAS WITH SEED AND MULCH. SLOPES 3:1 WILL REQUIRE SOD STABILIZATION. CLOSE POND DRAIN VALVES.
5. REQUEST ENGINEER TO PERFORM FINAL SWM SURVEY AND INSPECTION.

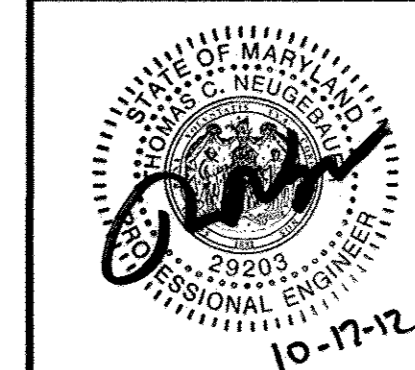
LEGEND

- 10' EX. 10' CONTOUR
- 2' EX. 2' CONTOUR
- EX. PROPERTY LINE
- EX. ADJACENT PROPERTY LINE
- EX. RIGHT OF WAY
- EX. BUILDING
- EX. CONCRETE
- EX. PAVEMENT
- EX. FENCE
- EX. OVERHEAD LINE
- EX. WATER LINE
- EX. SEWER LINE
- EX. STREAM
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- EX. RIP-RAP CHANNEL
- EX. TREE LINE
- EX. GUARD RAIL
- EX. ELECTRIC CONDUIT
- EX. LIGHT POLES
- EX. GAS LINE
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- EX. FIBER OPTIC
- EX. TV LINE
- EX. ELECTRIC MANHOLE
- EX. TELEPHONE MANHOLE
- EX. UNKNOWN UTILITY
- PR. 1' CONTOUR (ESC)
- PR. 2' CONTOUR (ESC)
- PR. 10' CONTOUR (ESC)
- PR. EARTH DIKE
- PR. TEMPORARY SWALE
- LOD-LOD PR. LIMITS OF DISTURBANCE
- SSF-SSF PR. SUPER SILT FENCE
- TP-TP PR. TREE PROTECTION FENCE
- RPS PR. REMOVAL PUMPING STATION
- PR. STABILIZED CONSTRUCTION ENTRANCE
- PR. SEDIMENT TRAP DRAINAGE AREA
- PR. TREELINE
- PR. HEDGEROW
- PR. ELECTRIC CONDUIT
- PR. TELEPHONE CONDUIT
- PR. FIBER OPTIC
- PR. GAS
- PR. SANITARY SEWER
- PR. STORM DRAIN
- PR. WATER LINE

SHEET: SDP-07



MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
14280 PARK CENTER DRIVE
LAUREL, MD 20707
(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395
MRAGTA.COM



GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN

PHASE-II EROSION & SEDIMENT CONTROL PLAN

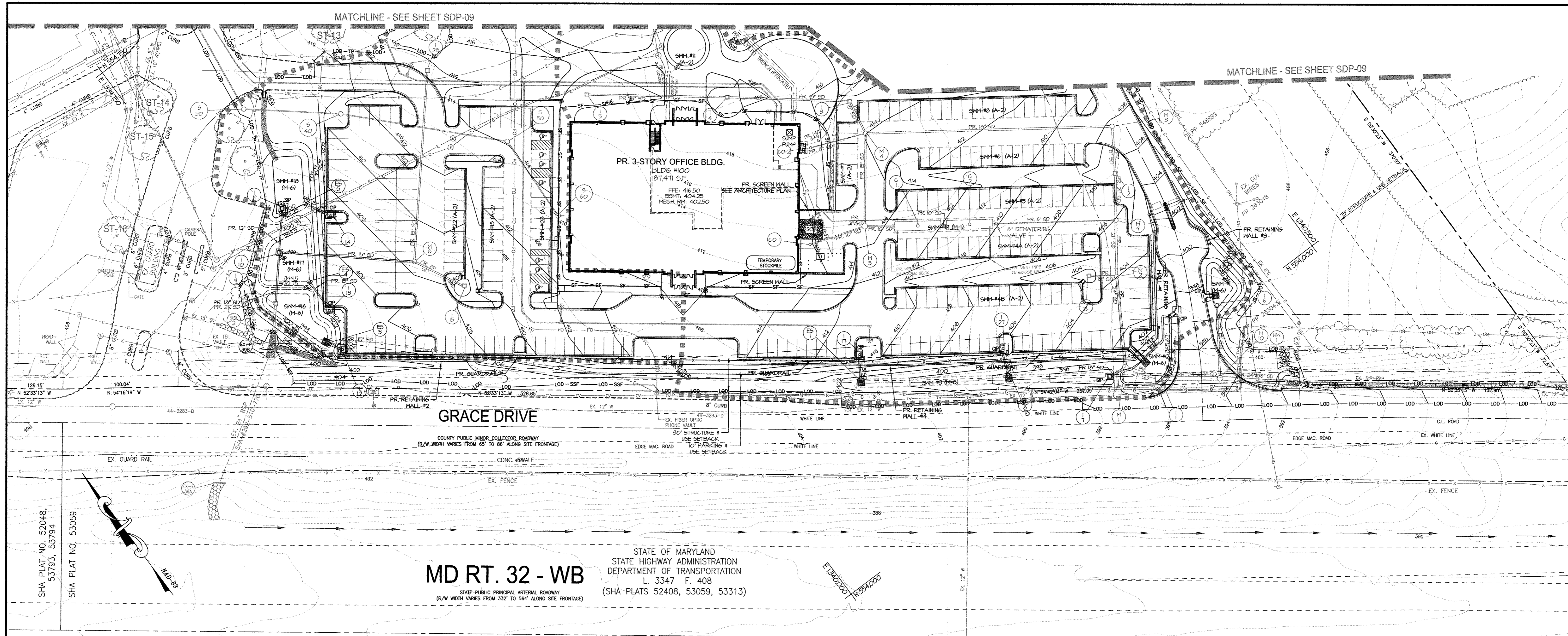
TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: 1" = 40'
		DATE: 10/16/2012
		DRAWN BY: MK
		DESIGN BY: MK
		REVIEW BY: TCN
		EXPIRATION DATE: 06/16/2013.
		SHEET: 7 OF 48

OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145

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. 29203, EXPIRATION DATE: 06/16/2013.

P:\PROJ\2009 GRACE PLANS\DCS\SDP\07\Plan_Sws_V2012-SDP-07-Phase-II-ESC PLAN.dwg, 10/16/2012 2:27:53 PM, Rholi, 1:1, Copyright 2012 Morris & Ritchie Associates, Inc.



MATCHLINE - SEE SHEET SDP-09

MATCHLINE - SEE SHEET SDP-09

GRACE DRIVE

MD RT. 32 - WB

STATE OF MARYLAND
STATE HIGHWAY ADMINISTRATION
DEPARTMENT OF TRANSPORTATION
L. 3347 F. 408
(SHA PLATS 52408, 53059, 53313)

PHASE-III EROSION & SEDIMENT CONTROL PLAN

SCALE: 1"=40'

NOTE:
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BY THE DEVELOPER
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY 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 SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

Nizam Usta 10/16/2012
SIGNATURE OF DEVELOPER DATE
Nizam Usta
GRACE

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

Thomas C. Neugebauer, P.E. 10/17/2012
SIGNATURE OF ENGINEER DATE
THOMAS C. NEUGEBAUER, P.E. MD LICENSE #29203

John L. Roberts 10/23/12
SIGNATURE OF ENGINEER DATE
HOWARD S.C.D.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

David A. Gault 10/23/12
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE

Michael J. ... 10/16/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Walter ... 10/16/12
CHIEF, DIVISION & LAND DEVELOPMENT DATE

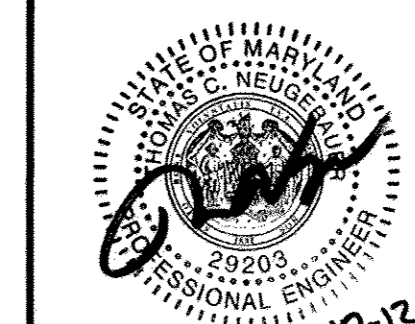
LEGEND

- | | | | |
|------------|----------------------------|-----|------------------------|
| --- 10 --- | EX. 10' CONTOUR | --- | PR. BUILDING FOOTPRINT |
| --- 2 --- | EX. 2' CONTOUR | --- | PR. BUILDING OVERHANG |
| --- | EX. PROPERTY LINE | --- | PR. BUILDING SETBACK |
| --- | EX. ADJACENT PROPERTY LINE | --- | PR. EDGE OF CONCRETE |
| --- | EX. RIGHT OF WAY | --- | PR. CURB |
| --- | EX. EASEMENT | --- | PR. SIDEWALK |
| --- | EX. BUILDING | --- | PR. RETAINING WALL |
| --- | EX. CONCRETE | --- | PR. TREELINE |
| --- | EX. PAVEMENT | --- | PR. HEDGEROW |
| --- | EX. FENCE | --- | PR. SWM FACILITY |
| --- | EX. OVERHEAD LINE | --- | PR. FIBER OPTIC |
| --- | EX. WATER LINE | --- | PR. GAS |
| --- | EX. SEWER LINE | --- | PR. SANITARY SEWER |
| --- | EX. STREAM | --- | PR. STORM DRAIN |
| --- | EX. STREAM BUFFER | --- | PR. WATER LINE |
| --- | EX. RIP-RAP CHANNEL | --- | |
| --- | EX. TREE LINE | --- | |
| --- | EX. GUARD RAIL | --- | |
| --- | EX. ELECTRIC CONDUIT | --- | |
| --- | EX. LIGHT POLES | --- | |
| --- | EX. GAS LINE | --- | |
| --- | EX. STORM DRAIN | --- | |
| --- | EX. CONDUIT | --- | |
| --- | EX. FIBER OPTIC | --- | |
| --- | EX. TV LINE | --- | |
| --- | EX. ELECTRIC MANHOLE | --- | |
| --- | EX. TELEPHONE MANHOLE | --- | |
| --- | EX. UNKNOWN UTILITY | --- | |
| --- | | --- | |
| --- | PR. 2' CONTOUR | --- | |
| --- | PR. 10' CONTOUR | --- | |
| --- | PR. 1' CONTOUR | --- | |
| --- | PR. LIMIT OF DISTURBANCE | --- | |
| --- | PR. SUPER SILT FENCE | --- | |
| --- | PR. TREE PROTECTION | --- | |

ESD CONVERSION INSTALLATION SEQUENCE

- PUMP-OUT ANY REMAINING WATER. IF NECESSARY USE A FLOCCULENT TO CLEAR WATER PRIOR TO PUMPING. FILTER PUMP EFFLUENT THROUGH SILT BAGS. DRY-OUT POND BOTTOM AND REMOVE ANY UNSUITABLE SOILS TO FINAL GRADES.
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- REQUEST ENGINEER TO PERFORM FINAL SWM SURVEY AND INSPECTION.

OWNER / APPLICANT / DEVELOPER:
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CONTACT: MR. NIZAM USTA
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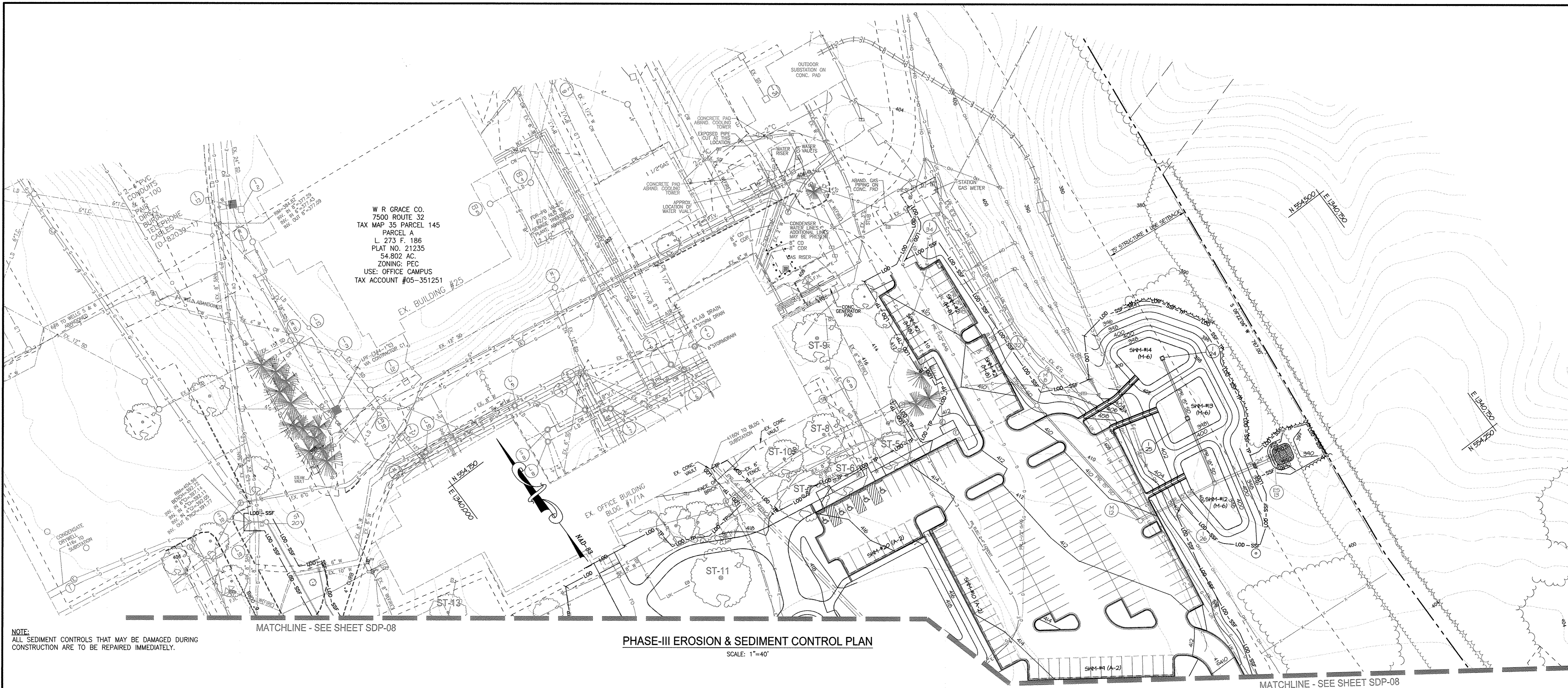
GRACE TECH PARK, PARCEL A
OFFICE BUILDING - (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN

PHASE-III EROSION & SEDIMENT CONTROL PLAN

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:	SCALE:
		12039	1" = 40'
			DATE: 10/16/2012
			DRAWN BY: MK
			DESIGN BY: MK
			REVIEW BY: TCN
			EXPIRATION DATE: 06/16/2013
			SHEET: 8 OF 48

P:\PROJ\2039 GRACE\PLANS\UDA_SDP_PLOT\Plan_Sets\12039-SDP-08-PH3-ESC PLAN.dwg, 10/16/2012 2:26:22 PM, R:Rhl, 1:1, Copyright 2012 Morris & Ritchie Associates, Inc.



W R GRACE CO.
7500 ROUTE 32
TAX MAP 35 PARCEL 145
PARCEL A
L. 273 F. 186
PLAT NO. 21235
54.802 AC.
ZONING: PEC
USE: OFFICE CAMPUS
TAX ACCOUNT #05-351251

PHASE-III EROSION & SEDIMENT CONTROL PLAN

SCALE: 1"=40'

NOTE:
ALL SEDIMENT CONTROLS THAT MAY BE DAMAGED DURING CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

MATCHLINE - SEE SHEET SDP-08

MATCHLINE - SEE SHEET SDP-08

BY THE DEVELOPER
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN AND THAT ANY 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 SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
Nizam Usta 10/16/2012
SIGNATURE OF DEVELOPER DATE
Nizam Usta
GRACE

BY THE ENGINEER
I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
Thomas C. Neugebauer 10/17/2012
SIGNATURE OF ENGINEER DATE
THOMAS C. NEUGEBAUER, P.E. MD LICENSE #29203

APPROVED: DEPARTMENT OF PLANNING AND ZONING
David A. Wright 11/25/12
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE
John R. Johnston 11/14/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Vetera Deane 11/19/12
CHIEF, DIVISION & LAND DEVELOPMENT DATE

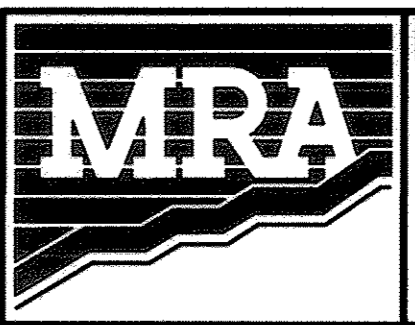
LEGEND

- | | | | |
|------------|----------------------------|-----|------------------------|
| --- 10 --- | EX. 10' CONTOUR | --- | PR. BUILDING FOOTPRINT |
| --- 2 --- | EX. 2' CONTOUR | --- | PR. BUILDING OVERHANG |
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| --- | EX. WATER LINE | --- | PR. GAS |
| --- | EX. SEWER LINE | --- | PR. SANITARY SEWER |
| --- | EX. STREAM | --- | PR. STORM DRAIN |
| --- | EX. STREAM BUFFER | --- | PR. WATER LINE |
| --- | EX. RIP-RAP CHANNEL | --- | |
| --- | EX. TREE LINE | --- | |
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| --- | EX. UNKNOWN UTILITY | --- | |
| --- | PR. 2' CONTOUR | --- | |
| --- | PR. 10' CONTOUR | --- | |
| --- | PR. 1' CONTOUR | --- | |
| --- | PR. LIMIT OF DISTURBANCE | --- | |
| --- | PR. SUPER SILT FENCE | --- | |
| --- | PR. TREE PROTECTION | --- | |

ESD CONVERSION INSTALLATION SEQUENCE

- PUMP-OUT ANY REMAINING WATER. IF NECESSARY USE A FLOCCULANT TO CLEAR WATER PRIOR TO PUMPING. FILTER PUMP EFFLUENT THROUGH SILT BAGS. DRY-OUT POND BOTTOM AND REMOVE ANY UNSUITABLE SOILS TO FINAL GRADES.
- REMOVE DEWATERING DEVICES AND INSTALL POND DRAIN SYSTEM. INSTALL TRASH RACKS AND UNBLOCK ORIFICES. REMOVE ANY REMAINING RISER BLOCKING.
- INSTALL FOREBAYS, CABON WALLS, BERMS, CABON MATTRESSES, AND STABILIZE BERMS IMMEDIATELY USING SOB. DISC BOTTOM OF INFILTRATION BASIN AREA. INSTALL ACCESS ROADS, FENCES AND GATES.
- STABILIZE ALL SLOPES AND POND BOTTOMS AND FOREBAY AREAS WITH SEED AND MULCH. SLOPES 3:1 WILL REQUIRE SOB STABILIZATION. CLOSE POND DRAIN VALVES.
- REQUEST ENGINEER TO PERFORM FINAL SWM SURVEY AND INSPECTION.

OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145



MORRIS & RITCHIE ASSOCIATES, INC.
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MRAGTA.COM



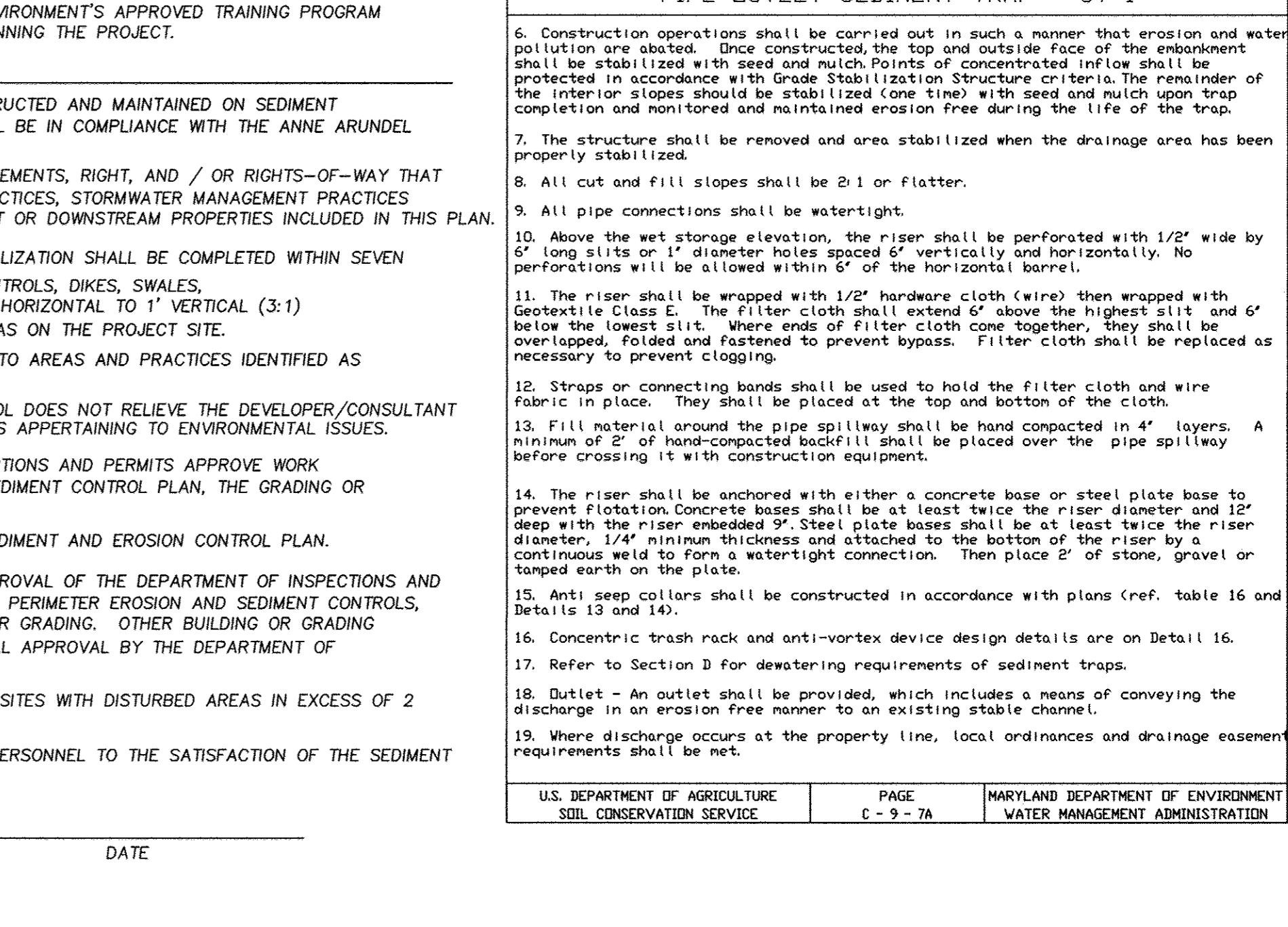
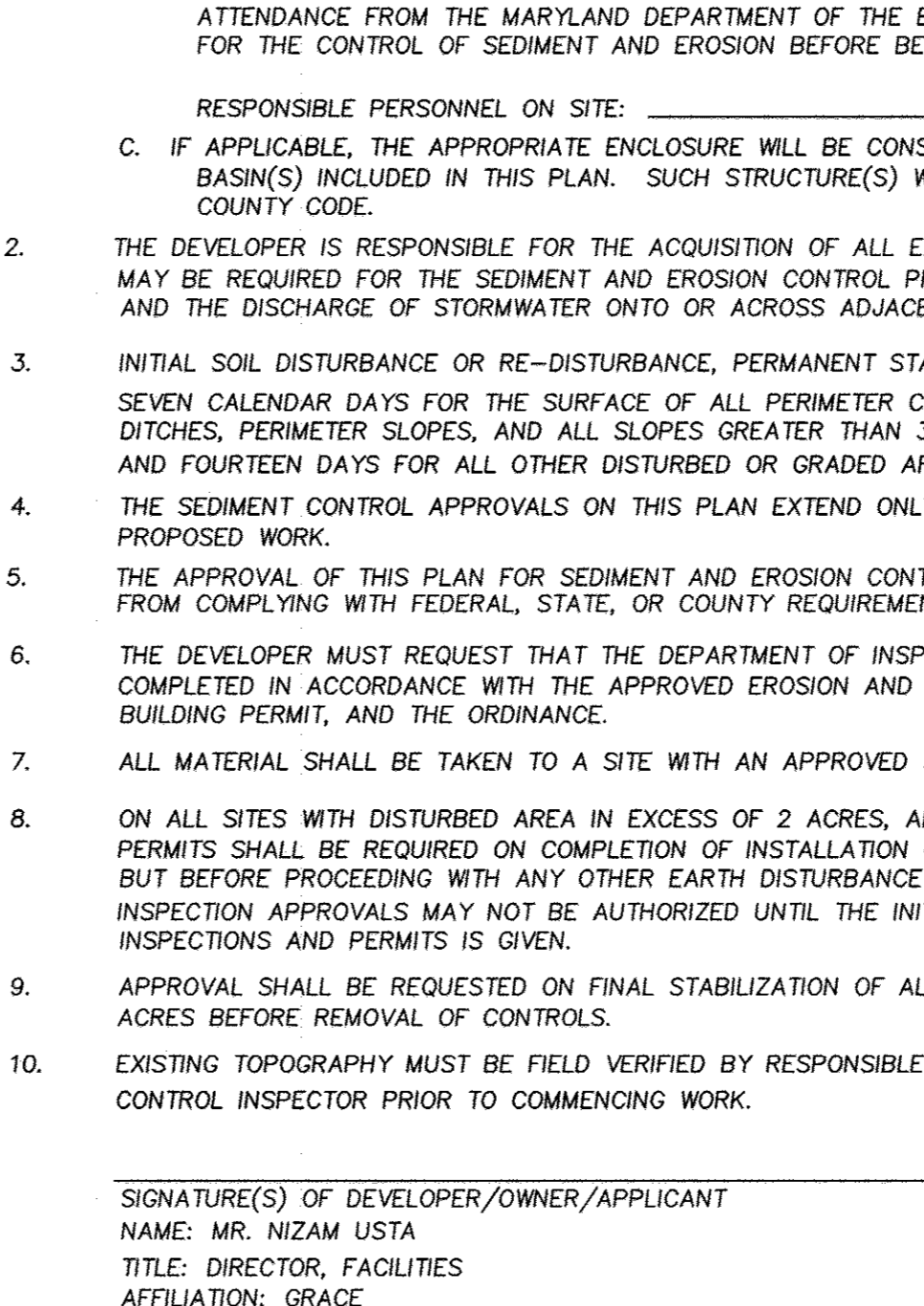
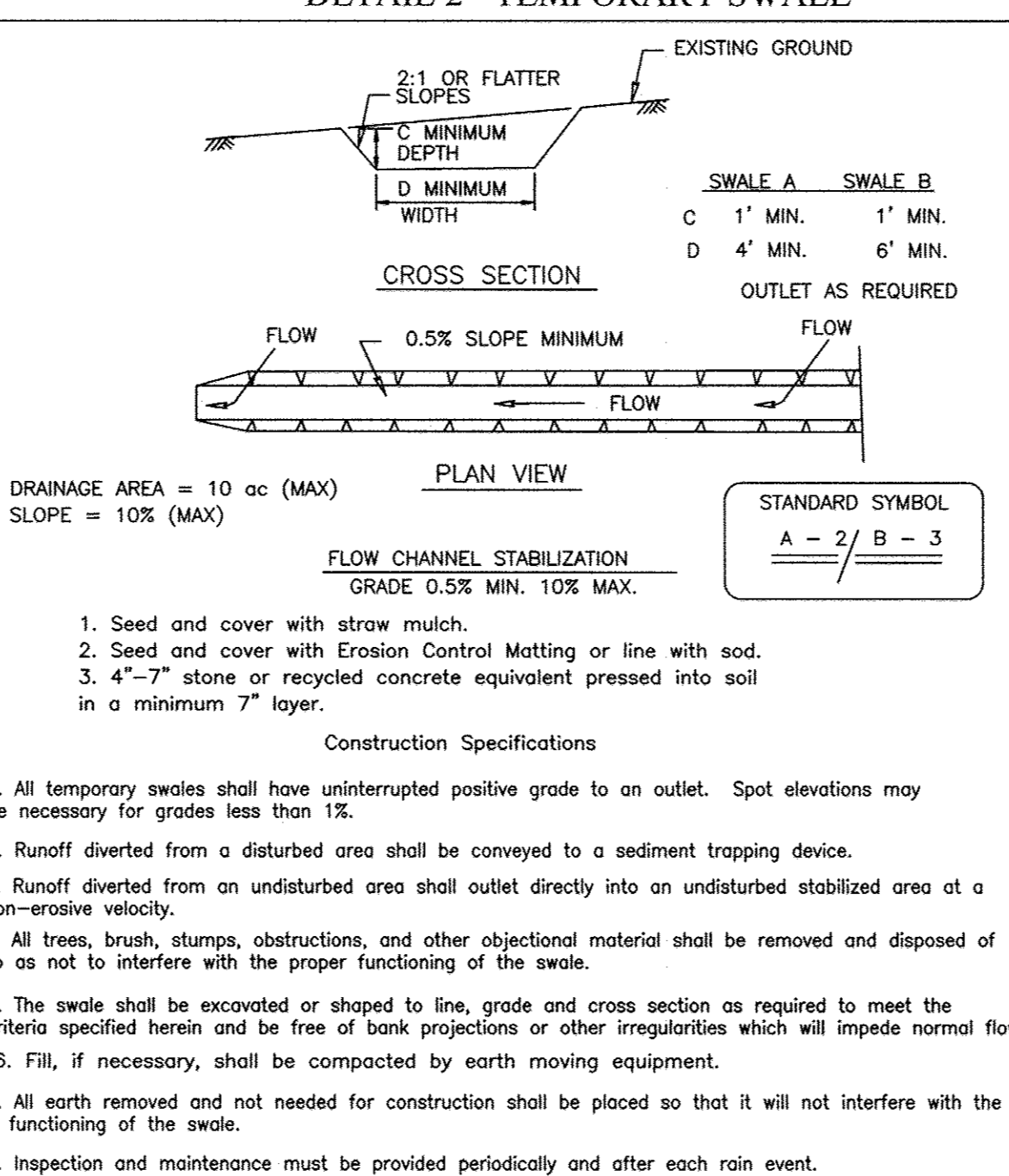
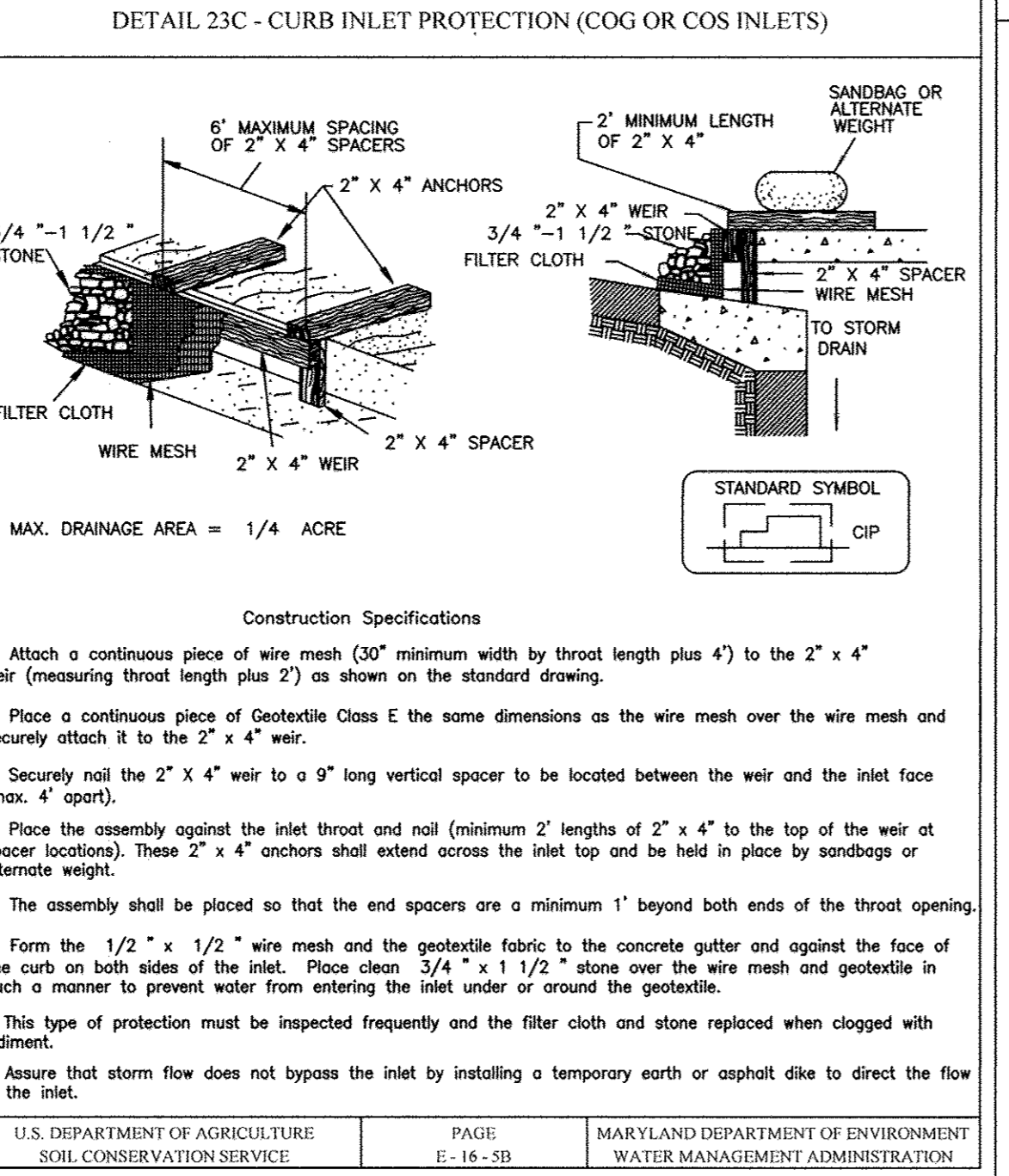
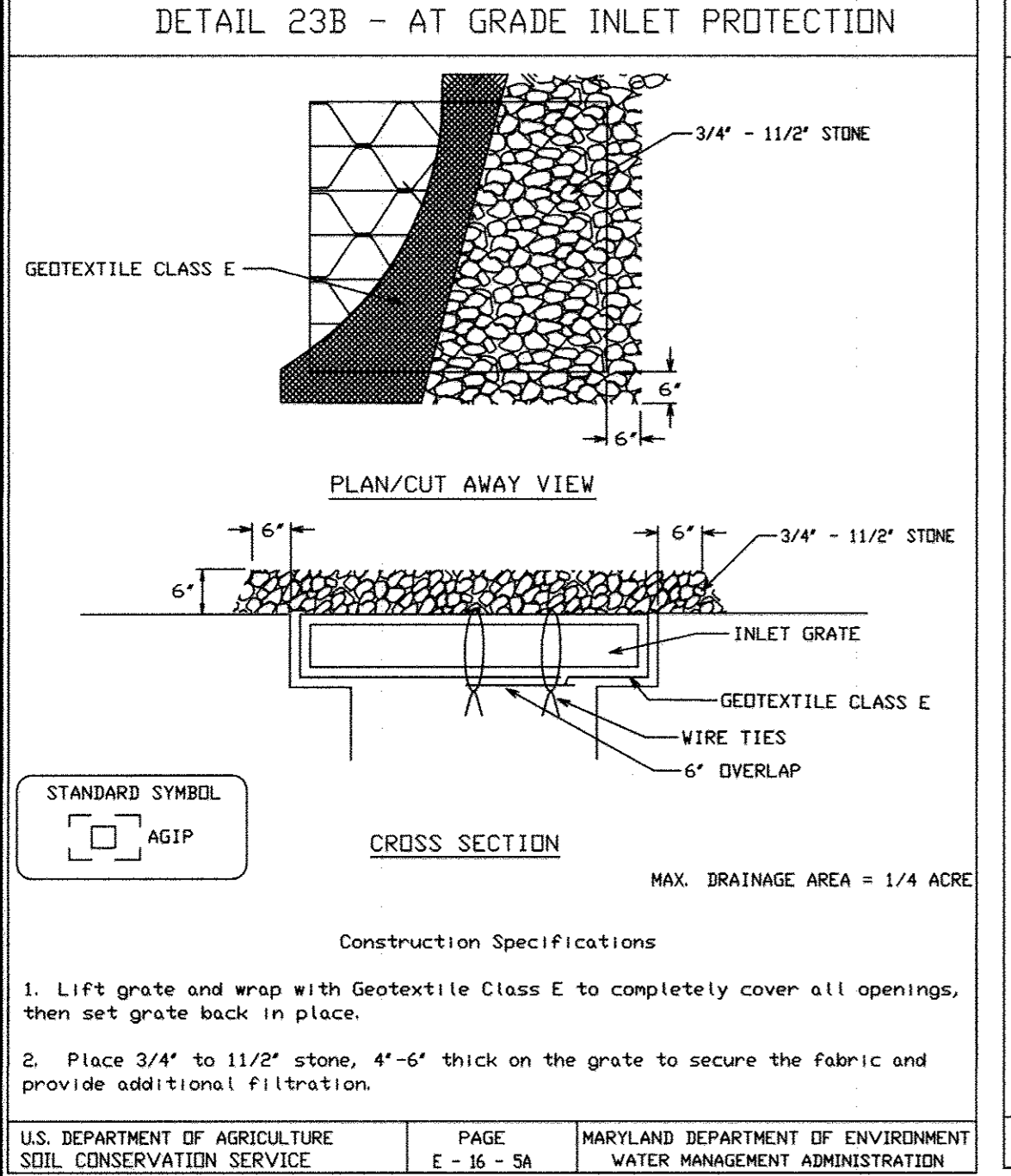
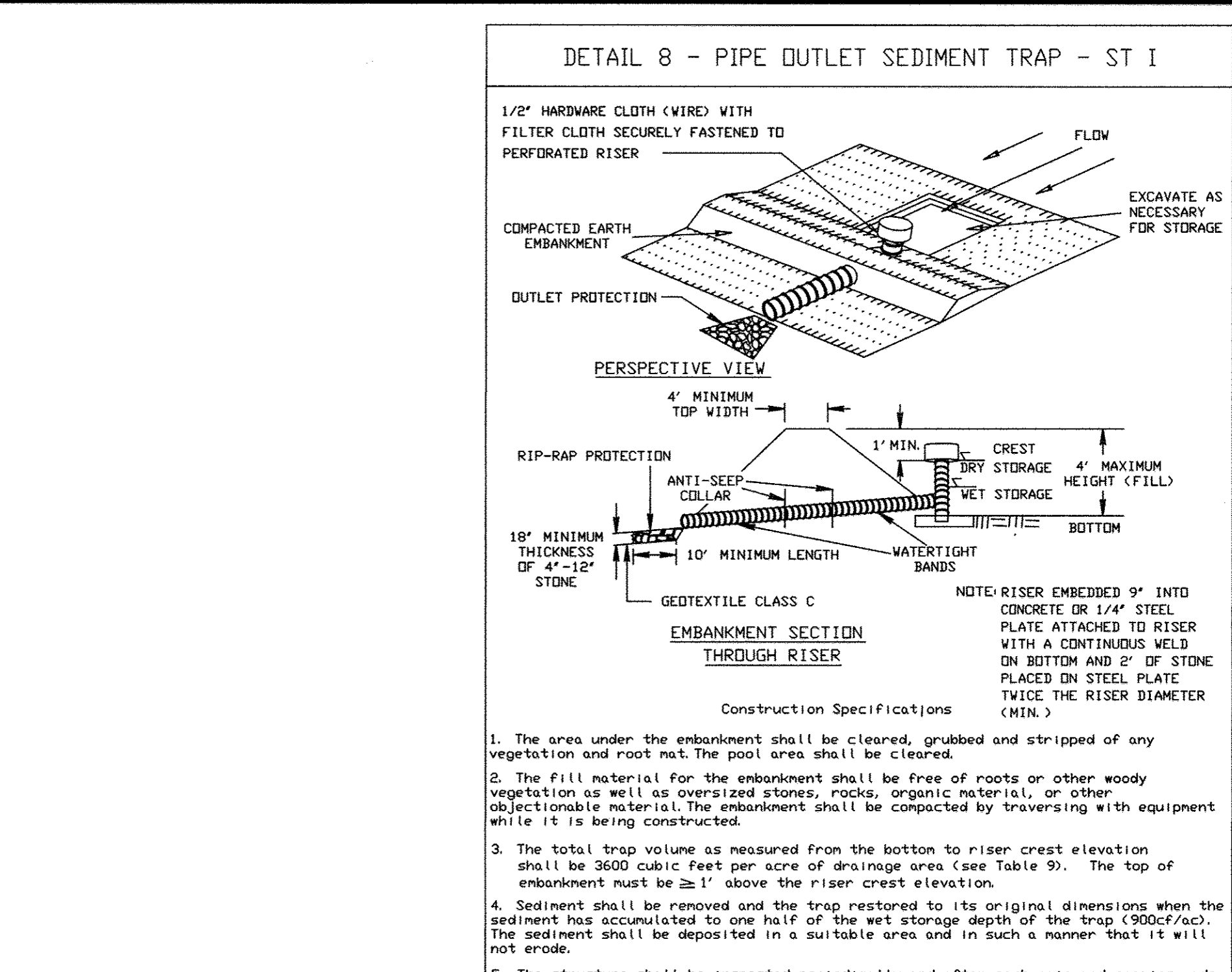
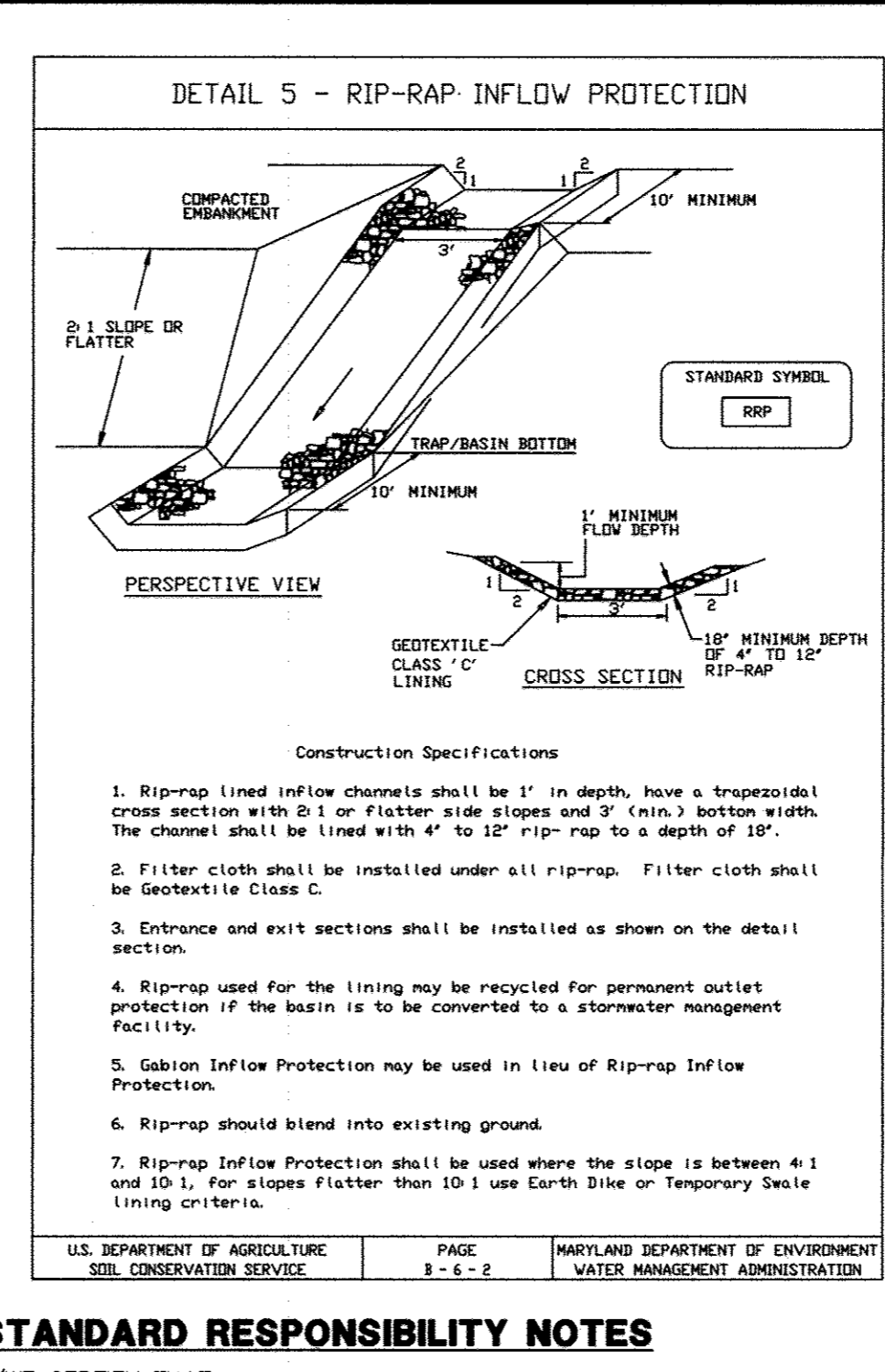
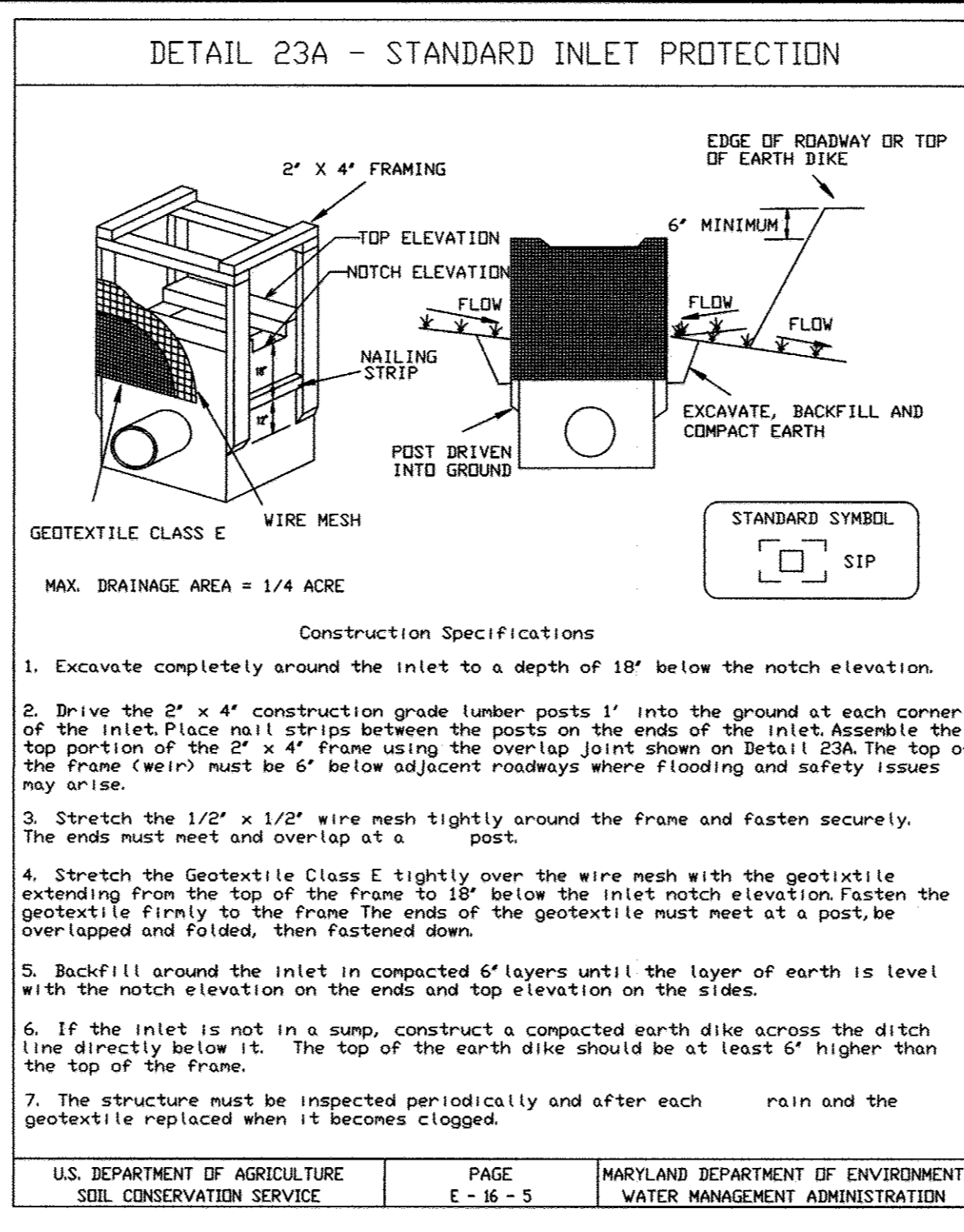
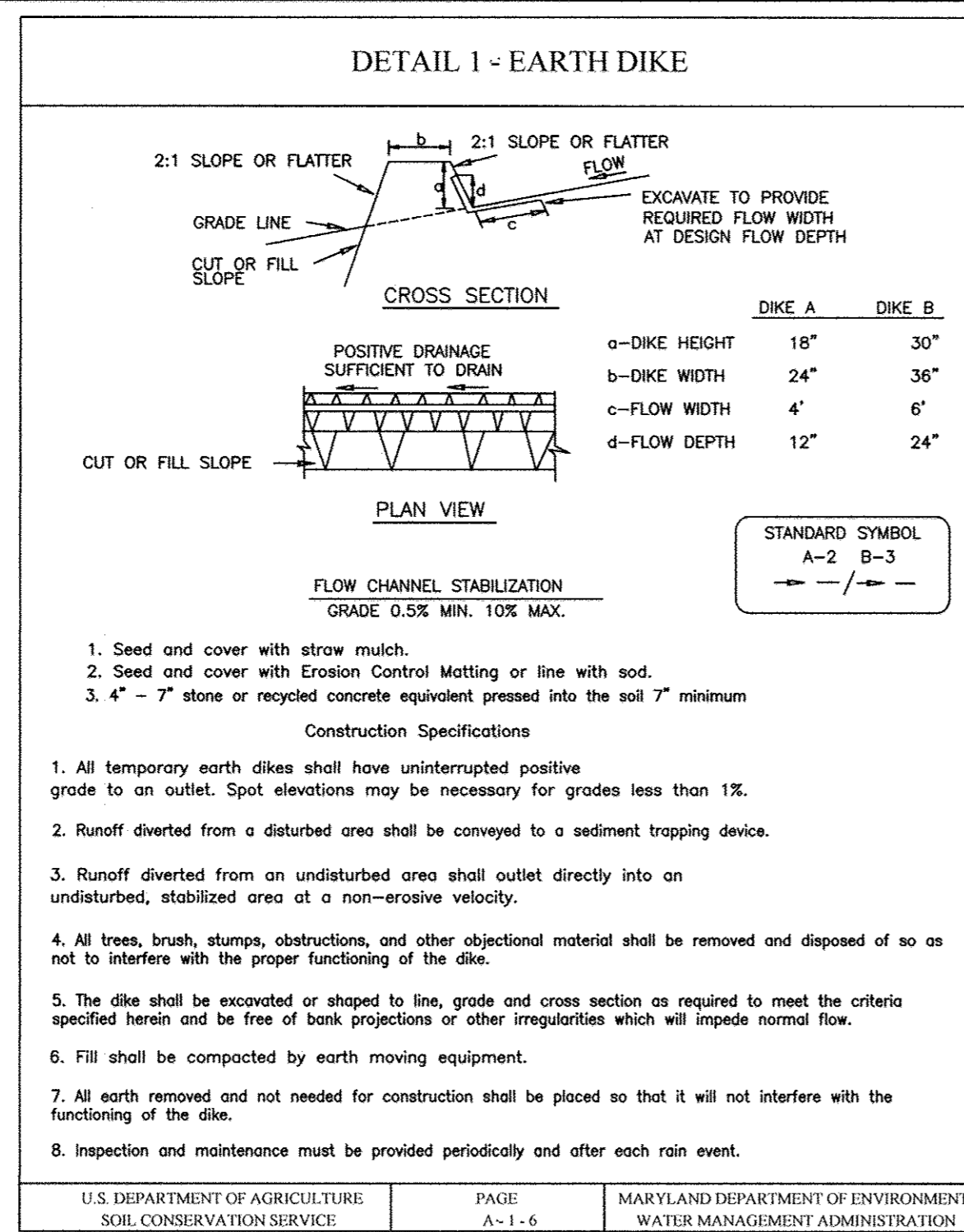
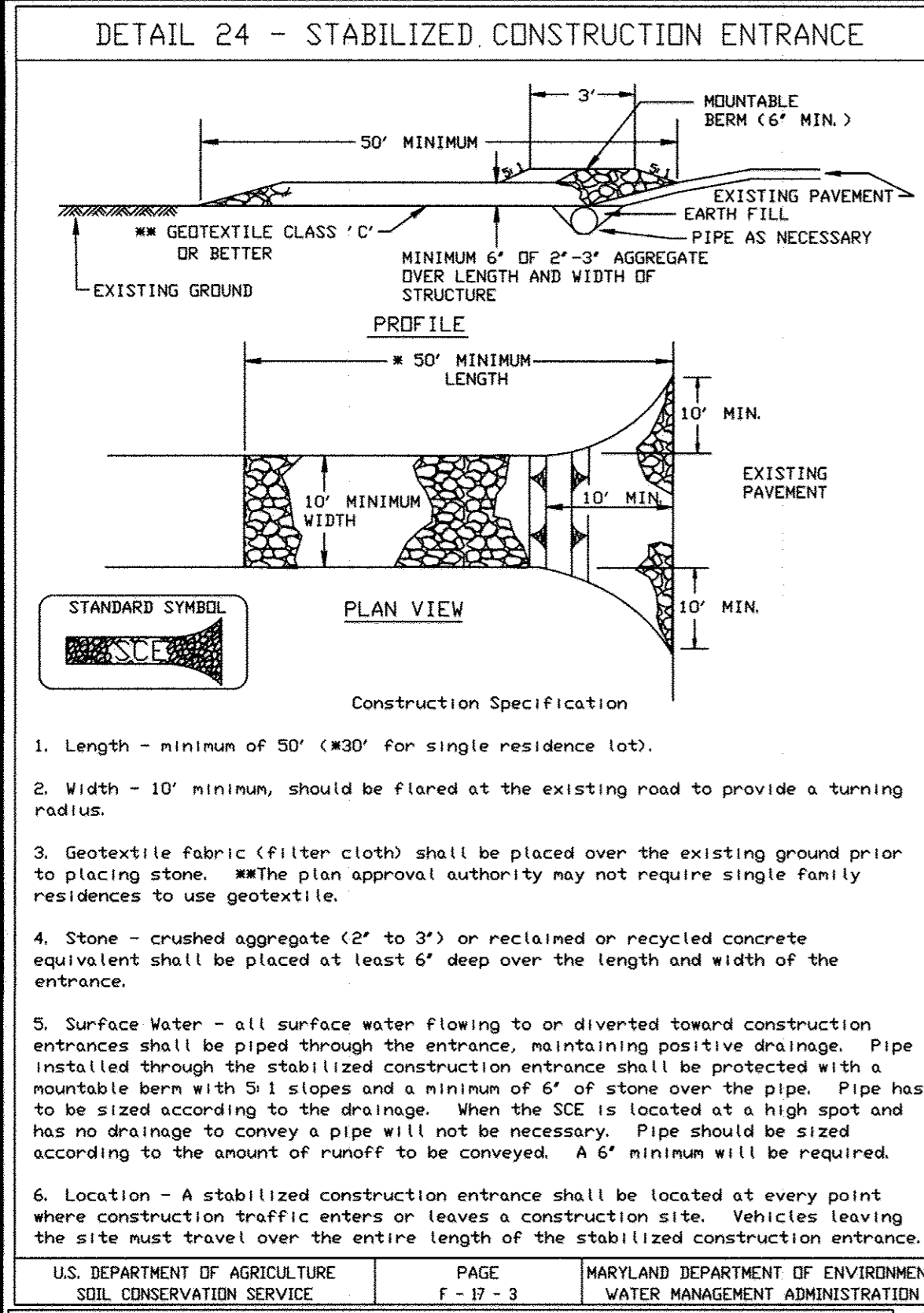
GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN

PHASE-III EROSION & SEDIMENT CONTROL PLAN

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: 1" = 40'
		DATE: 10/16/2012
		DRAWN BY: MK
		DESIGN BY: MK
		REVIEW BY: TCN
		SHEET: 9 OF 48

F:\PROJ\2039 GRACE\PLANS\ESD\SDP\LOT\Plan Sets\12039-SDP-09-PH3-ESC PLAN.dwg, 10/16/2012 2:28:50 PM, Rholi, 1:1, Copyright 2012, Morris & Ritchie Associates, Inc.



BY THE DEVELOPER

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

Signature of Developer: *Nizam Usta* Date: 10/16/2012

Signature of Engineer: *Thomas C. Neugebauer* Date: 10/17/2012

BY THE ENGINEER

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

Signature of Engineer: *Thomas C. Neugebauer* Date: 10/17/2012

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

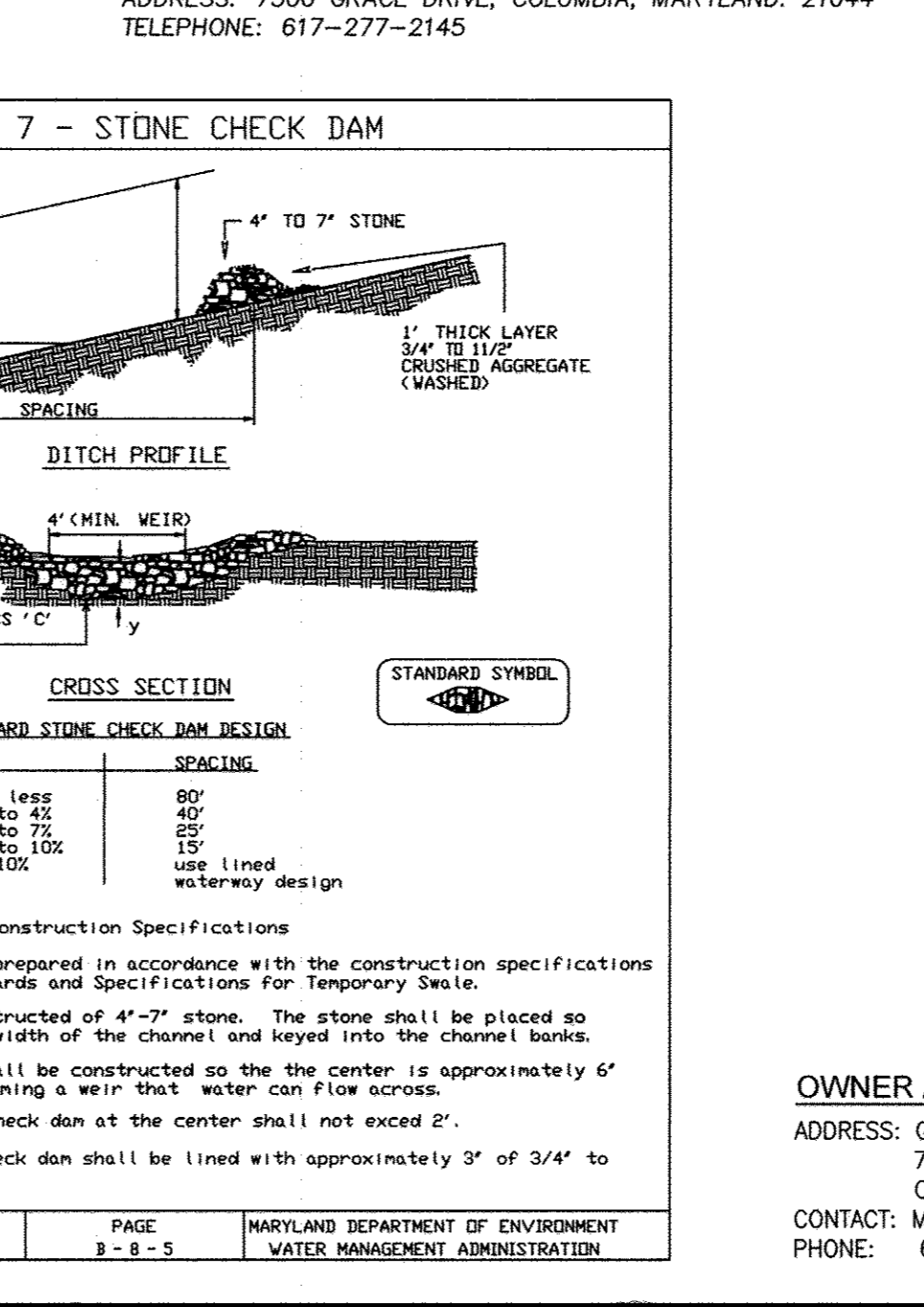
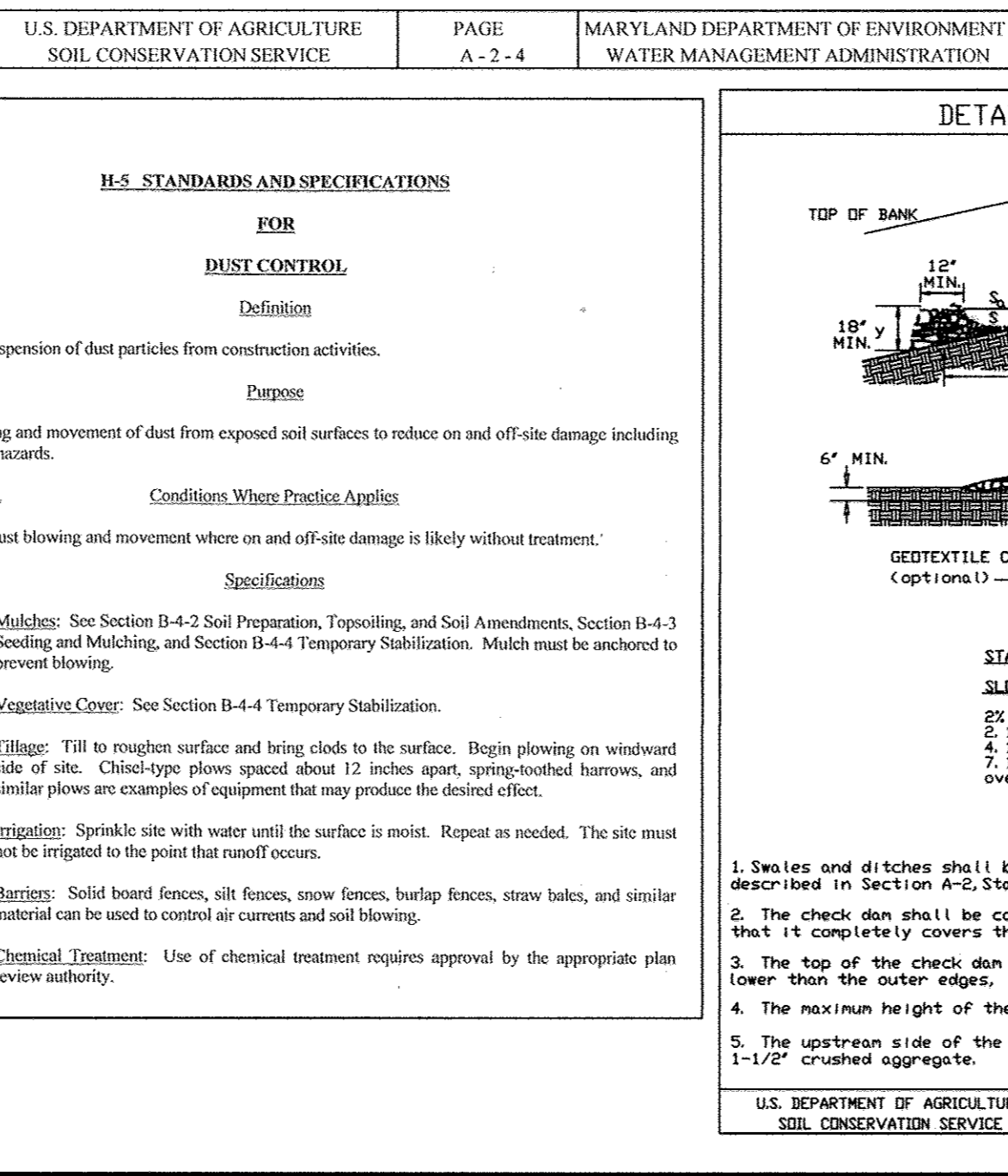
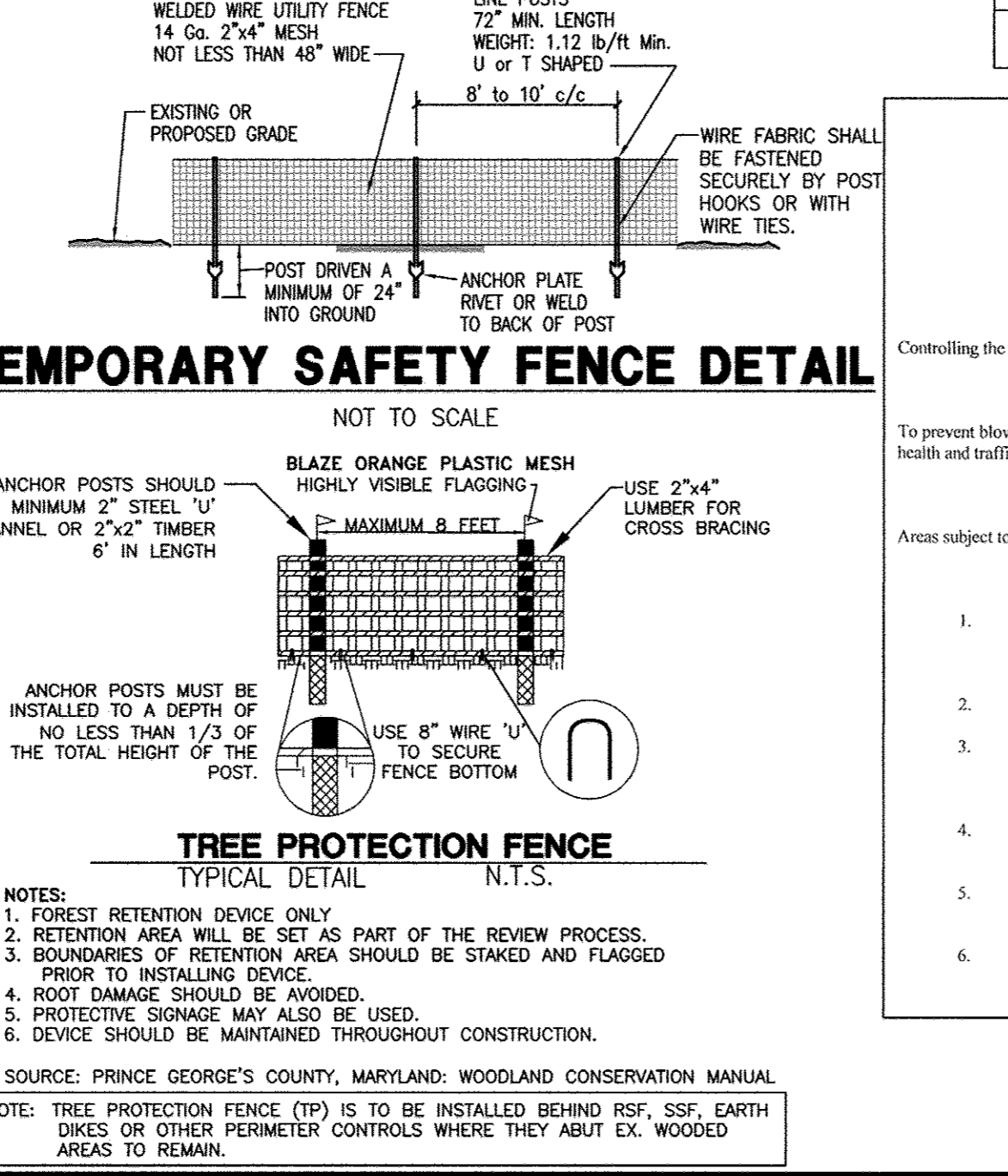
Signature of Engineer: *Thomas C. Neugebauer* Date: 10/17/2012

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Signature: *David A. Gault* Date: 10/16/12

Signature: *John R. Roberts* Date: 10/19/12

Signature: *John R. Roberts* Date: 10/19/12



SHEET: **SDP-10**

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GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN

EROSION & SEDIMENT CONTROL NOTES & DETAILS

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT NO. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039

DATE	SCALE
10/16/2012	AS SHOWN

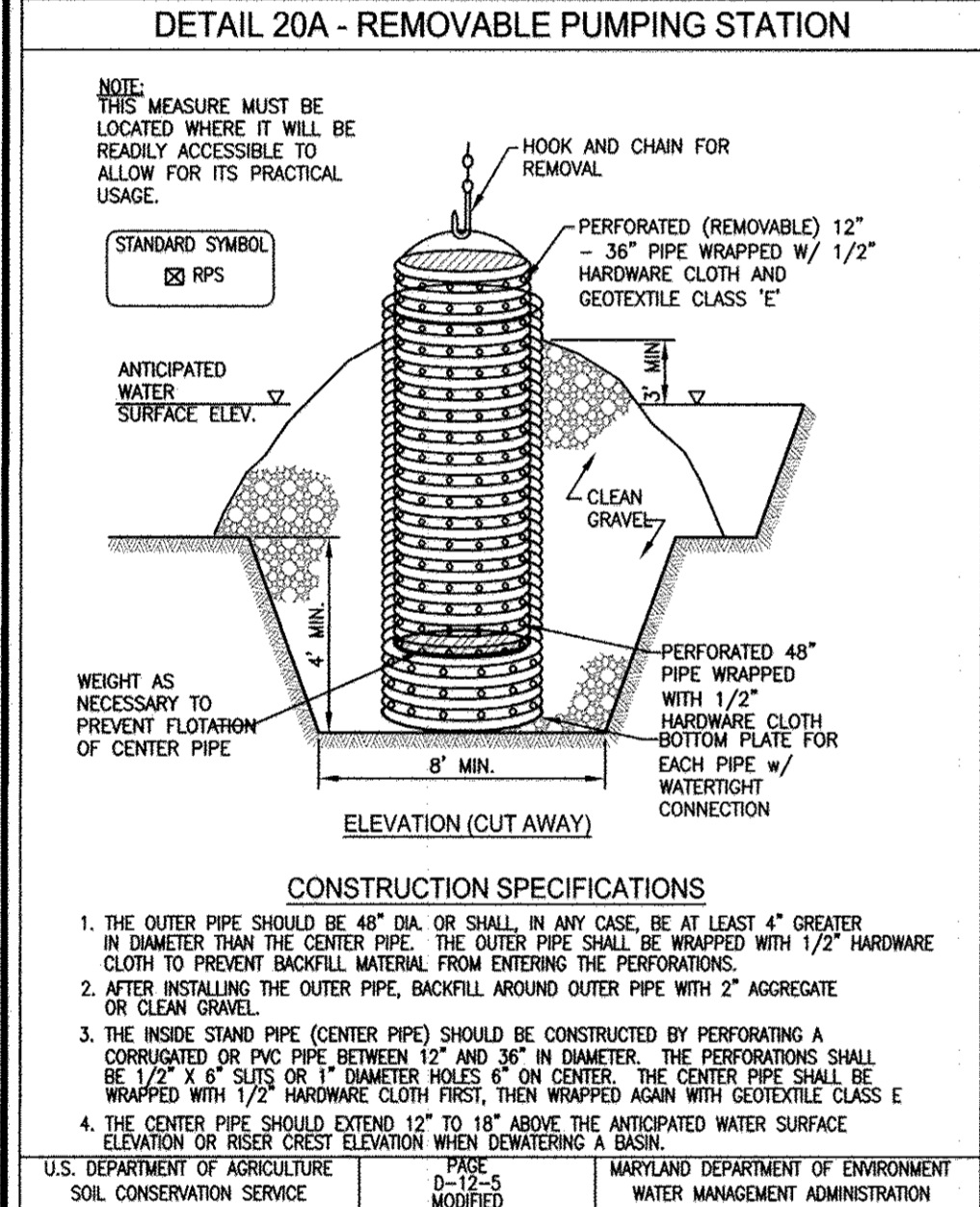
DESIGN BY:	REVIEW BY:
MK	TON

SHEET: 10 OF 48

**HOWARD SOIL CONSERVATION DISTRICTS
STANDARD SEDIMENT CONTROL NOTES**

- A MIN. OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD CO. DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855)
- ALL VEGETATION AND STRUCTURAL 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.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN A 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THE PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12 OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. 51), SOO (SEC. 54), TEMPORARY SEEDING (SEC. 50) AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMITS FOR THEIR REMOVAL HAS BEEN OBTAINED FROM HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:**
 - AREA DISTURBED: 8.40 AC.
 - AREA TO BE ROOFED OR PAVED: 5.48 AC.
 - AREA TO BE VEGETATIVELY STABILIZED: 2.92 AC.
 - TOTAL CUT: 13,068 CU. YDS.*
 - TOTAL FILL: 12,470 CU. YDS.*
 - TOTAL TOPSOIL: 4,048 CU. YDS.*
 - OFF SITE WASTE/BORROW AREA LOCATION TO BE A SITE WITH AN APPROVED SEDIMENT CONTROL PERMIT.
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTRIBUTED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS IN ACCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
- TRENCHES FOR THE UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORK DAY, WHICHEVER IS SHORTER.

* THE EARTHWORK QUANTITIES SHOWN HEREON ARE FOR INFORMATION PURPOSES ONLY. MRA MAKES NO GUARANTEE OF ACCURACY OF QUANTITIES OR BALANCE OF SITE. THE DEVELOPER AND CONTRACTOR SHALL TAKE FULL RESPONSIBILITY OF ACTUAL EARTHWORK QUANTITIES ENCOUNTERED DURING CONSTRUCTION.



CONSTRUCTION SPECIFICATIONS

- THE OUTER PIPE SHOULD BE 48" DIA. OR SMALLER IN ANY CASE, BE AT LEAST 4" GREATER IN DIAMETER THAN THE CENTER PIPE. THE OUTER PIPE SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH TO PREVENT BACKFILL MATERIAL FROM ENTERING THE PERFORATIONS.
- AFTER INSTALLING THE OUTER PIPE, BACKFILL AROUND OUTER PIPE WITH 2" AGGREGATE OR CLEAN GRAVEL.
- THE INSIDE STAND PIPE (CENTER PIPE) SHOULD BE CONSTRUCTED BY PERFORATING A CORRUGATED OR PVC PIPE BETWEEN 12" AND 36" IN DIAMETER. THE PERFORATIONS SHALL BE 1/2" X 6" SLOTS OR 1" DIAMETER HOLES 6" ON CENTER. THE CENTER PIPE SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH FIRST, THEN WRAPPED AGAIN WITH GEOTEXTILE CLASS E.
- THE CENTER PIPE SHOULD EXTEND 12" TO 18" ABOVE THE ANTICIPATED WATER SURFACE ELEVATION OR RISER CREST ELEVATION WHEN DETERMINING A BASIN.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE D-15-3A MODIFIED MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

BY THE DEVELOPER

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

[Signature] 10/16/2012 DATE

SIGNATURE OF DEVELOPER Nizam Usta

BY THE ENGINEER

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

[Signature] 10/17/2012 DATE

SIGNATURE OF ENGINEER THOMAS C. NEUGEBAUER, P.E. MD LICENSE #29203

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 10/19/12 DATE

DIRECTOR, DEPARTMENT OF PLANNING AND ZONING

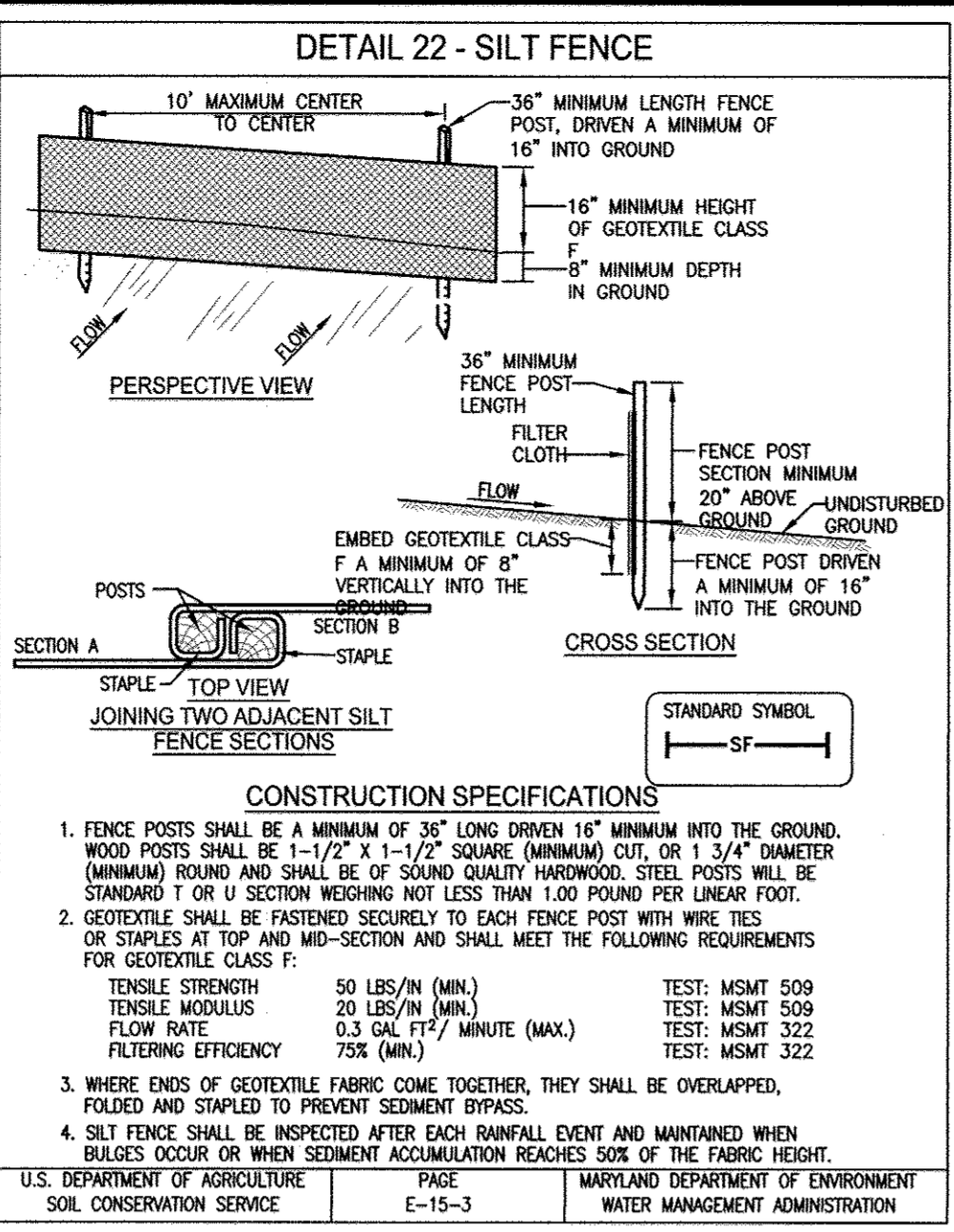
[Signature] DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] DATE

CHIEF, DIVISION & LAND DEVELOPMENT

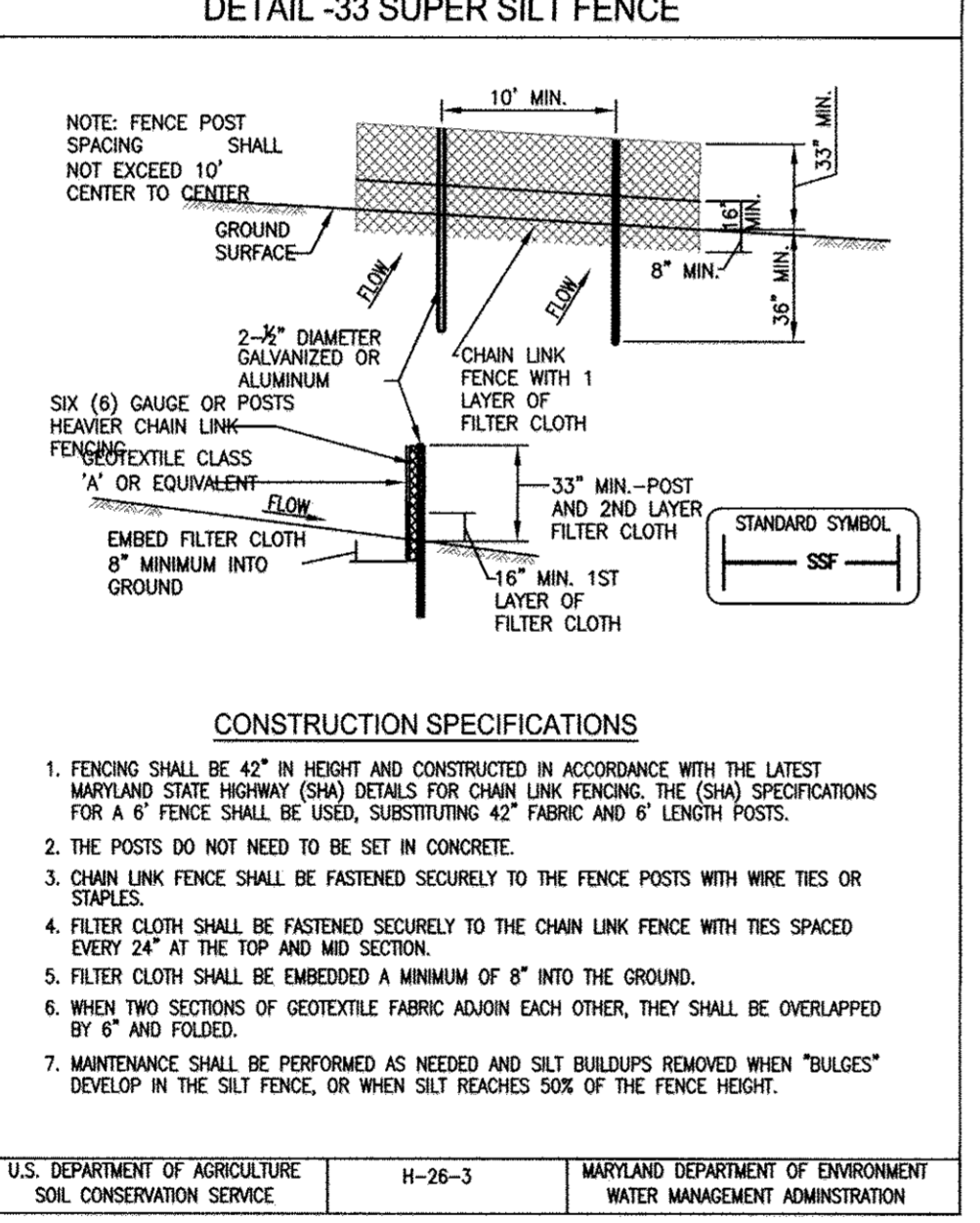
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CONSTRUCTION SPECIFICATIONS

- FENCING SHALL BE 42" IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST MARYLAND STATE HIGHWAY (SHA) DETAILS FOR CHAIN LINK FENCING. THE (SHA) SPECIFICATIONS FOR A 6" FENCE SHALL BE USED, SUBSTITUTING 42" FABRIC AND 6" LENGTH POSTS.
- THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
- CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES.
- FILTER CLOTH SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID SECTION.
- FILTER CLOTH SHALL BE EMBEDDED A MINIMUM OF 8" INTO THE GROUND.
- WHEN TWO SECTIONS OF GEOTEXTILE FABRIC ADJACENT EACH OTHER, THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.
- MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SILT BUILDUPS REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE, OR WHEN SILT REACHES SOX OF THE FENCE HEIGHT.

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



CONSTRUCTION SPECIFICATIONS

- CONSTRUCT BERM ON AN UNINTERRUPTED, CONTINUOUS GRADE.
- INSTALL BERM TO CONFORM TO CROSS SECTION DIMENSIONS OF A UNIFORM HEIGHT OF 8 INCHES MINIMUM AND APPROXIMATE BIRTH OF 3/8 FEET.
- PROVIDE OUTLET PROTECTION AS REQUIRED ON PLAN.
- COMPACT ASPHALT BERM.
- REPAIR DAMAGED ASPHALT. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.
- UPON REMOVAL OF ASPHALT BERM, RETURN TO ORIGINAL CONDITIONS OR AS SPECIFIED ON APPROVED PLAN.

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



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

B-3 STANDARDS AND SPECIFICATIONS

FOR LAND GRADING

Definition
Reshaping the existing land surface to provide suitable topography for building facilities and other site improvements.

Purpose
To provide erosion control and vegetative establishment for extreme changes in grade.

Conditions Where Practice Applies
Earth disturbances or extreme grade modifications on steep or long slopes.

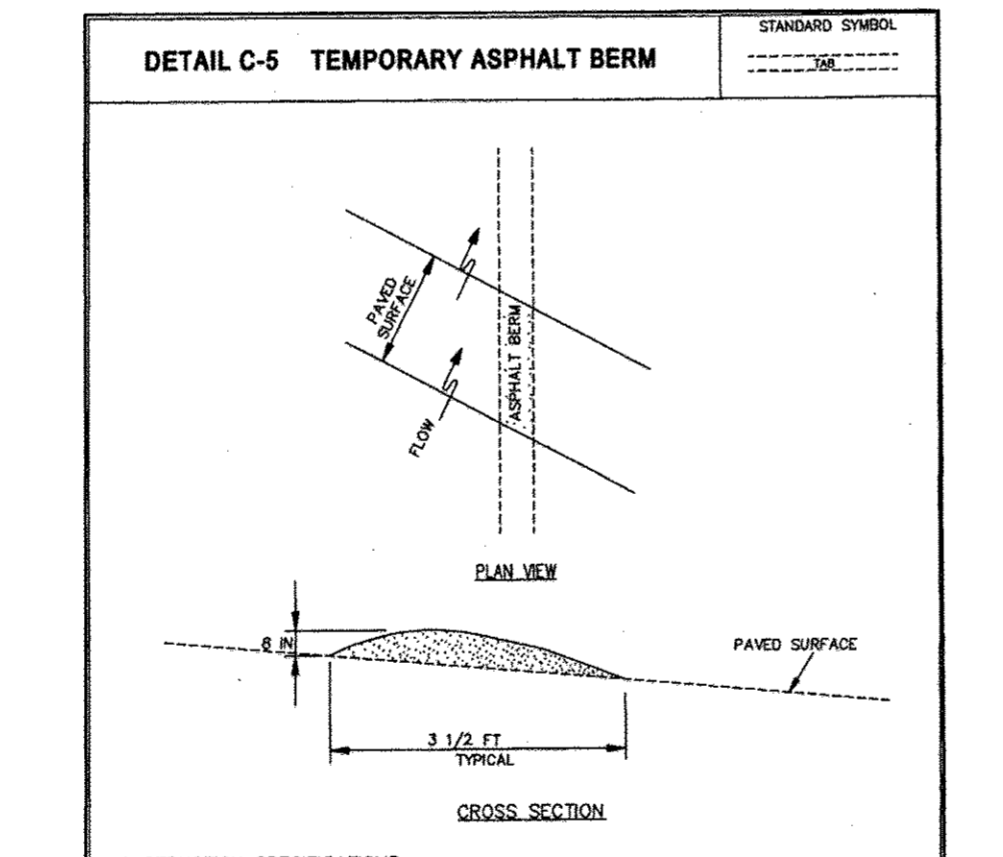
Design Criteria
The grading plan should be based on the incorporation of building designs and street layouts that fit and utilize existing topography and desirable natural surroundings to avoid extreme grade modifications. Information submitted must provide sufficient topographic surveys and soil investigations to determine limitations that must be imposed on the grading operation related to slope stability, adjacent properties, drainage patterns, measures for water removal, and vegetative treatment, etc.

Many jurisdictions have regulations and design procedures already established for land grading that must be followed. The plan must show existing and proposed contours for the area(s) to be graded including practices for erosion control, slope stabilization, and safe conveyance of runoff (e.g., waterways, lined channels, reverse benches, grade stabilization structures). The grading/construction plans are to include the phasing of these practices and consideration of the following:

- Provisions to safely convey surface runoff to storm drains, protected outlets or stable water courses to ensure that surface runoff will not damage slopes or other graded areas.
- Cut and fill slopes, stabilized with grasses, no steeper than 2:1. (Where the slope is to be moved, the slope should be no steeper than 3:1, but 4:1 is preferred because of safety factors related to mowing steep slopes.) Slopes steeper than 2:1 require special design and stabilization considerations to be shown on the plan.
- Benching per Detail B-3-1 whenever the vertical interval (height) of any 2:1 slope exceeds 20 feet, for 3:1 slopes, when it exceeds 30 feet; and for 4:1 slopes, when it exceeds 40 feet. Locate benches to divide the slope face as equally as possible and to convey the water to a stable outlet. Soils, seeps, rock outcrops, etc. are to be taken into consideration when designing benches.
- Provide benches with a minimum width of six feet for ease of maintenance.
- Design benches with a reverse slope of 6:1 or flatter to the toe of the upper slope and with a minimum of one foot in length. Grade the longitudinal slope of the bench between 2 percent and 3 percent, unless accompanied by appropriate design and computations.
- The maximum allowable flow length within a bench is 800 feet unless accompanied by appropriate design and computations.
- Diversion of surface water from the face of all cut and fill slopes using earth dikes or swales. Convey surface water down slope using a designed structure, and:
 - Protect the face of all graded slopes from surface runoff until they are stabilized.
 - Do not subject the slope's face to any concentrated flow of surface water such as from natural drainage ways, graded swales, downspouts, etc.
 - Protect the face of the slope by special erosion control materials to include, but not be limited to, approved vegetative stabilization practices, strip or other approved stabilization methods.
- Serrated slope as shown in Detail B-3-2. The steepest allowable slope for riprap rock is 1.5:1. For non rock surfaces, the slope are to be 2:1 or flatter. These steps will weather and act to hold moisture, lime, fertilizer and seed thus producing a much quicker and longer lived vegetative cover and better slope stabilization.
- Subsurface drainage provisions. Provide subsurface drainage where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions.
- Proximity to adjacent property. Slopes must not be created close to property lines without adequate protection against sedimentation, erosion, slips, settlements, subsidence, or other related damages.
- Quality of fill material. Fill material must be free of brush, rubbish, logs, stumps, building debris, and other objectionable material. Do not place frozen materials in the fill near pile material on a frozen foundation.
- Stabilization. Stabilize all disturbed areas structurally or vegetatively in compliance with Section B-4 Standards and Specifications for Stabilization Practices.

Maintenance

The line, grade, and cross section of benching and serrated slopes must be maintained. Benches and serrated slopes must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization.



CONSTRUCTION SPECIFICATIONS

- CONSTRUCT BERM ON AN UNINTERRUPTED, CONTINUOUS GRADE.
- INSTALL BERM TO CONFORM TO CROSS SECTION DIMENSIONS OF A UNIFORM HEIGHT OF 8 INCHES MINIMUM AND APPROXIMATE BIRTH OF 3/8 FEET.
- PROVIDE OUTLET PROTECTION AS REQUIRED ON PLAN.
- COMPACT ASPHALT BERM.
- REPAIR DAMAGED ASPHALT. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.
- UPON REMOVAL OF ASPHALT BERM, RETURN TO ORIGINAL CONDITIONS OR AS SPECIFIED ON APPROVED PLAN.

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

B-4-1 STANDARDS AND SPECIFICATIONS

FOR SEEDING AND MULCHING

Definition
The application of seed and mulch to establish vegetative cover.

Purpose
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.

Criteria

- Seeding
 - Specifications
 - 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.
 - Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
 - Inoculants: The inoculant for treating legume seed in the soil 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 inoculants as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
 - Seed 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 phytotoxic materials.
 - Application
 - Dry Seeding: This includes use of conventional drop or broadcast spreaders.
 - Soil contains sufficient pore space to permit adequate root penetration.
 - Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
 - 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.
 - Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
 - Cultipacker seeding: Mechanized seeders that apply and cover seed with soil.
 - Cultipacker 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 seeding.
 - Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
 - Hydroseeding: Apply seed uniformly with hydroseeder (shury includes seed and fertilizer).
 - If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P₂O₅ (phosphorus), 200 pounds per acre; K₂O (potassium), 200 pounds per acre.
 - 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.
 - Mix seed and fertilizer on site and seed immediately and without interruption.
 - When hydroseeding do not incorporate seed into the soil.
- Mulching
 - Mulch Materials (in order of preference)
 - Straw consisting of thoroughly threshed wheat, rice, 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, clumpy, decayed, or excessively dirty. Note: Use only straw straw mulch in areas where one species of grass is desired.
 - Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
 - 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.
 - WCFM, including dye, must contain no germination or growth inhibiting factors.
 - 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 blotted-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 seedlings.
 - WCFM material must not contain elements or compounds at concentrations levels that will be phytotoxic.
 - WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.
 - Application
 - 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.
 - Wood cellulose fiber mulch 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.
 - 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.
 - Anchoring
 - 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:
 - 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.
 - 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.
 - Synthetic binders such as Acrylic D.R. (Agro-Tack), DCA-70, Petrosert, Terra-Tax II, Terra-Tack Air 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 much, such as in valleys and on crests of banks. Use of asphalt binders is strictly prohibited.
 - 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 500 to 3,000 foot long.

B-4-2 STANDARDS AND SPECIFICATIONS

FOR SOIL PREPARATION, TOPSOILING AND SOIL AMENDMENTS

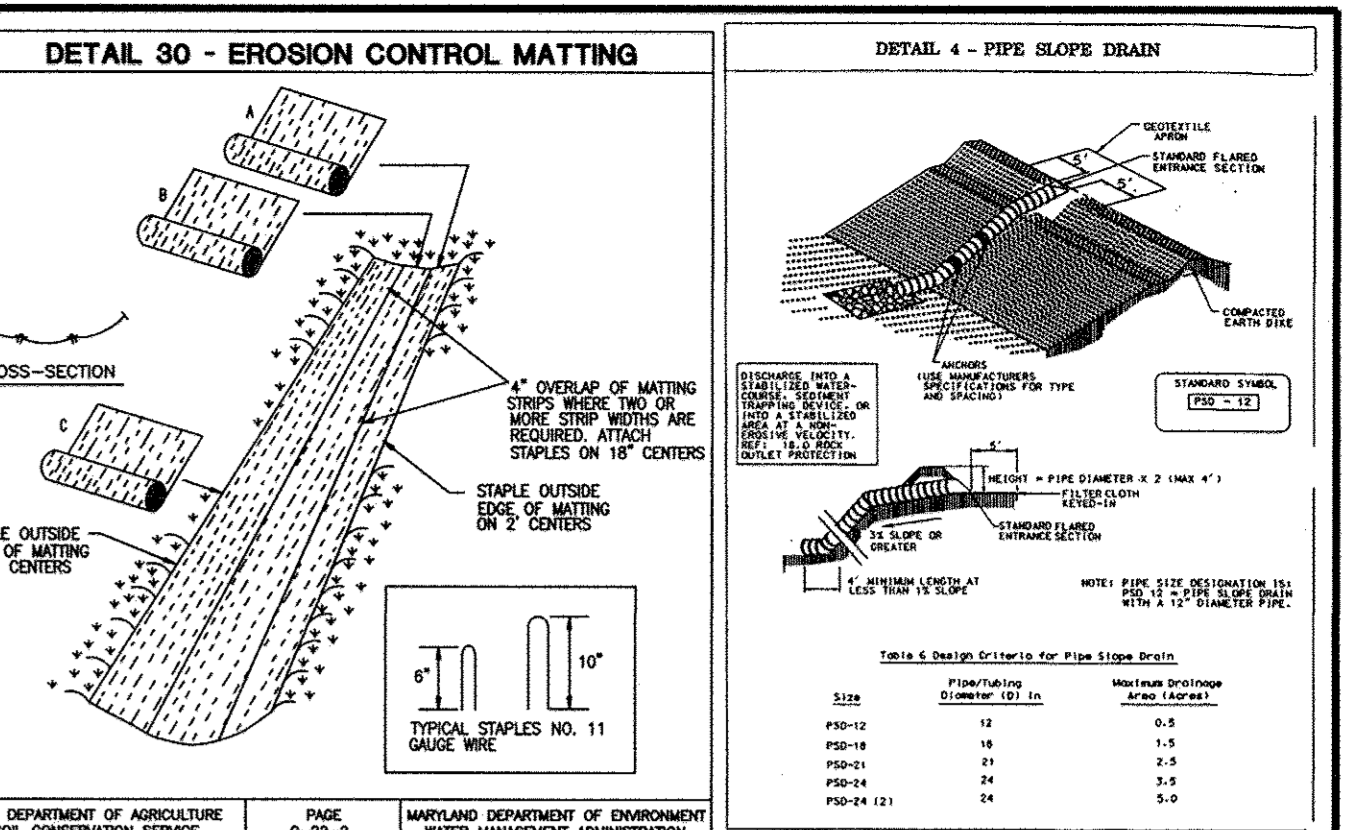
Definition
The process of preparing the soils to sustain adequate vegetative stabilization.

Purpose
To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies
Where vegetative stabilization is to be established.

Criteria

- Soil Preparation
 - Temporary Stabilization
 - 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 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
 - Apply fertilizer and lime as prescribed on the plans.
 - Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
 - Permanent Stabilization
 - A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
 - Soil pH between 6.0 and 7.0.
 - Soluble salts less than 500 parts per million (ppm).
 - 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 loessless soil will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
 - Soil contains 1.5 percent minimum organic matter by weight.
 - Soil contains sufficient pore space to permit adequate root penetration.
 - Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
 - 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.
 - Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
 - 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 seedling 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. Seeded loosening may be unnecessary on newly stabilized areas.
- Topsoiling
 - 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 unacceptable soil gradation.
 - 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 as a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
 - 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.
 - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish sufficient supplies of moisture and plant nutrients.
 - The original soil that was treated contains material toxic to plant growth.
 - The soil is so acidic that vegetation with limestone is not feasible.
 - Areas having slopes steeper than 2:1 require special consideration and design.
 - Topsoil Specifications: Topsoil to be used as topsoil must meet the following criteria:
 - 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 1/2 inches in diameter.
 - Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, distale, or others as specified.
 - Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
 - Topsoil Application
 - Erosion and sediment control practices must be maintained when applying topsoil.
 - 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.
 - 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.

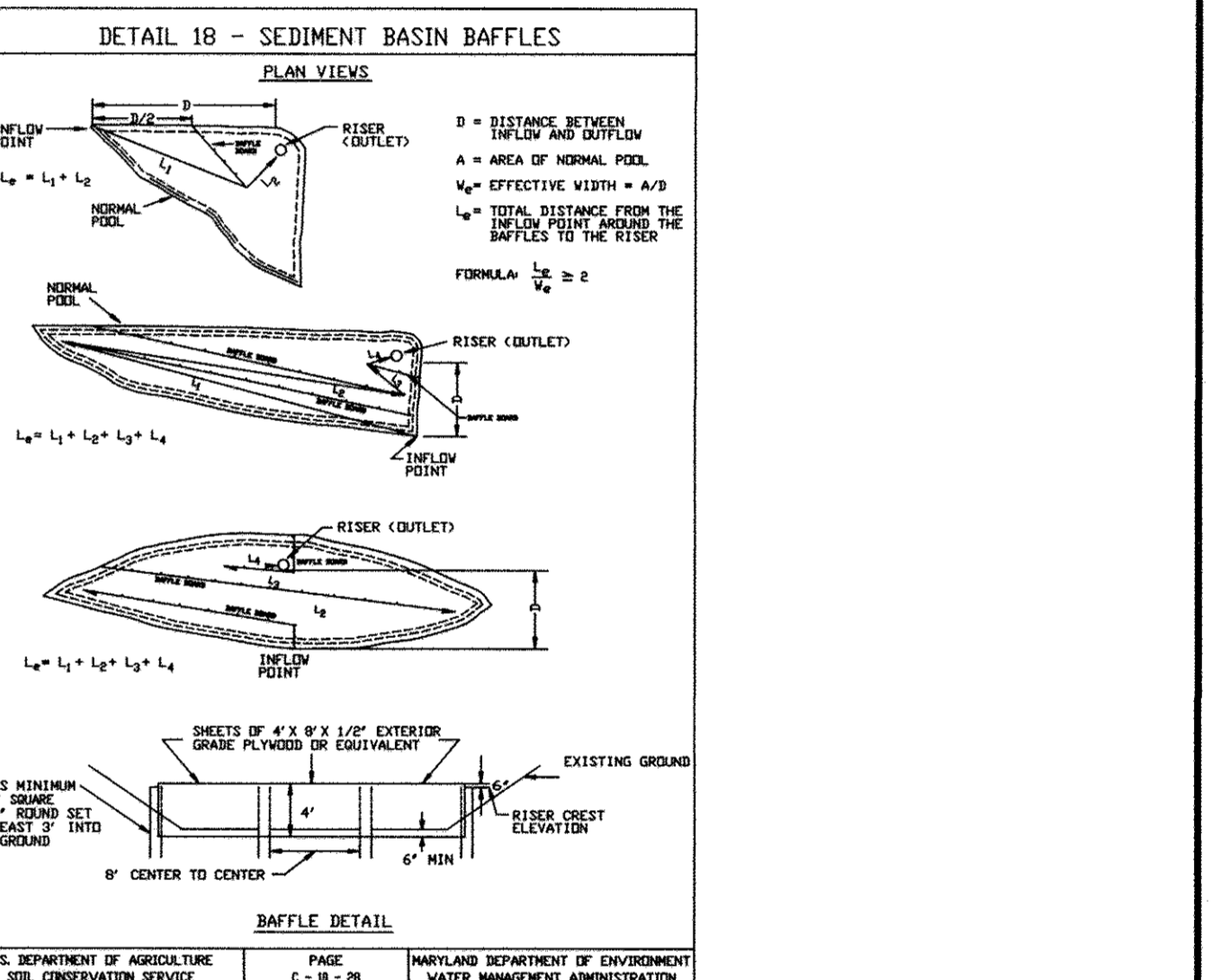
- Soil Amendments (Fertilizer and Lime Specifications)
- Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analysis.
- 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 warranty of the producer.
- 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.
- 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.
- 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.


CONSTRUCTION SPECIFICATIONS

- KEY-IN THE MATTING BY PLACING THE TOP ENDS OF THE MATTING IN A NARROW TRENCH, 6" IN DEPTH. BACKFILL THE TRENCH AND TAMP FIRMLY TO CONFORM TO THE CHANNEL CROSS-SECTION. SECURE WITH A ROW OF STAPLES ABOUT 4" DOWN SLOPE FROM THE TRENCH, SPACING BETWEEN STAPLES 6".
- STAPLES SHALL BE PLACED 2" APART WITH 4 ROWS FOR EACH STRIP, 2 OUTER ROWS, AND 2 ALTERNATING ROWS DOWN THE CENTER.
- WHERE ONE ROLL OF MATTING ENDS AND ANOTHER BEGINS, THE END OF THE TOP STRIP SHALL OVERLAP THE UPPER END OF THE LOWER STRIP BY 4". SHIPWAY FASHION. REINFORCE THE OVERLAP WITH A DOUBLE ROW OF STAPLES SPACED 6" APART IN A STAGGERED PATTERN ON EITHER SIDE.
- THE DISCHARGE END OF THE MATTING LINER SHOULD BE SIMILARLY SECURED WITH 2 DOUBLE ROWS OF STAPLES.

NOTE: IF FLOW WILL ENTER FROM THE EDGE OF THE MATTING THEN THE AREA EFFECTED BY THE FLOW MUST BE KEYED-IN.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE G-2-2-2A MODIFIED MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



CONSTRUCTION SPECIFICATIONS

- Erosion and sediment control practices must be maintained when applying topsoil.
- 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.
- 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.
- Soil Amendments (Fertilizer and Lime Specifications)
 - 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 analysis.
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U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE G-2-2-2B MODIFIED MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

FOR UTILITY WORK ONLY OR FOR OFF-SITE UTILITY WORK

- PLACE ALL EXCAVATED MATERIAL ON HIGH SIDE OF TRENCH.
- ONLY DO AS MUCH WORK AS CAN BE DONE IN ONE DAY SO BACKFILLING FINAL GRADING, AND SEEDING AND MULCHING CAN OCCUR.
- ANY SEDIMENT CONTROL MEASURES DISTURBED BY CONSTRUCTION WILL BE REPAIRED THE SAME DAY.

STOCKPILE NOTES

- NO STOCKPILING ALLOWED ON ASPHALT.
- ALL STOCKPILES LEFT AT THE END OF THE DAY NEED TO BE STABILIZED UNTIL THE NEXT RESTURBANCE.

OWNER / APPLICANT / DEVELOPER:

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7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145

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MRAGTA.COM

GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN

EROSION & SEDIMENT CONTROL NOTES & DETAILS

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT NO. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

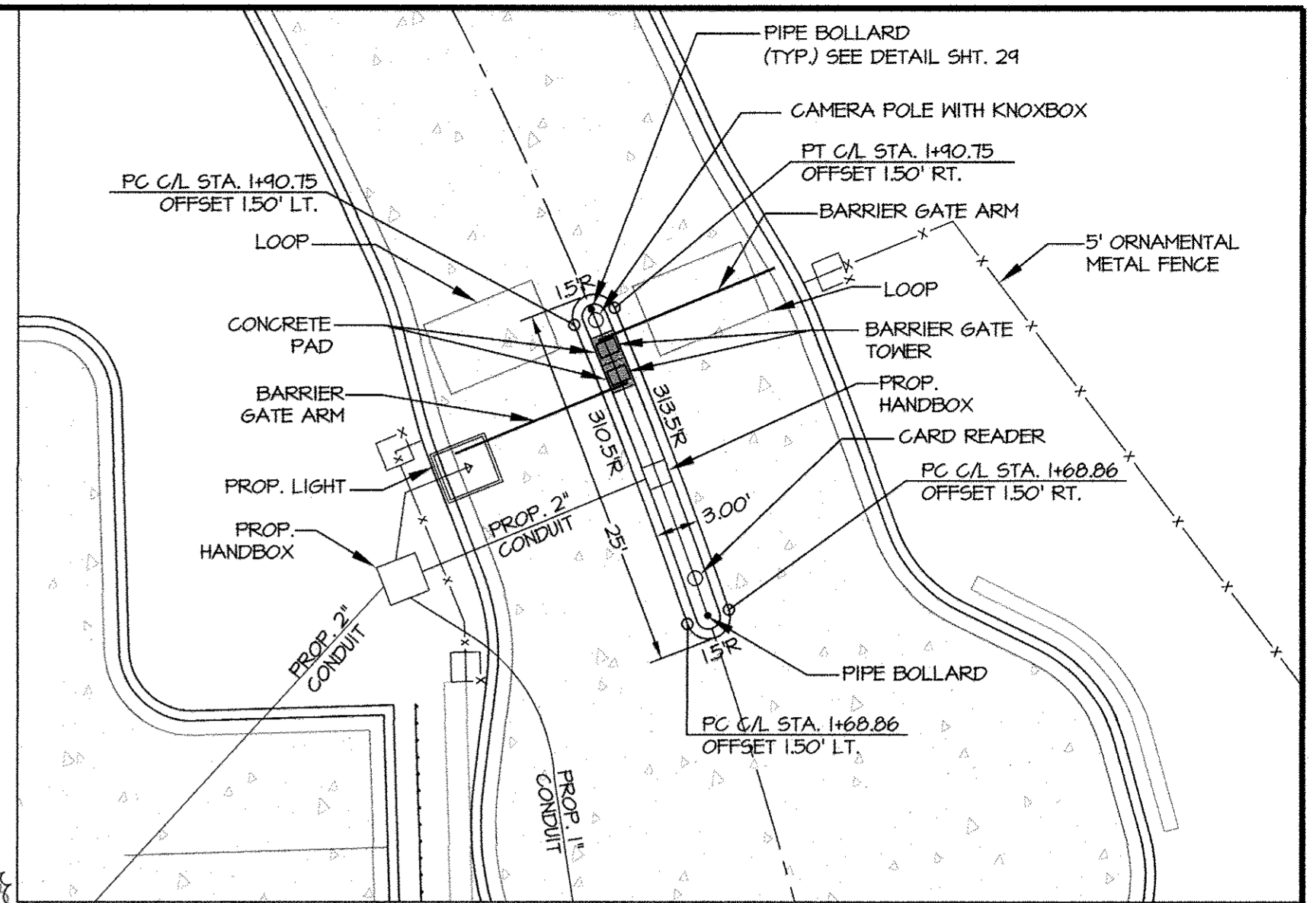
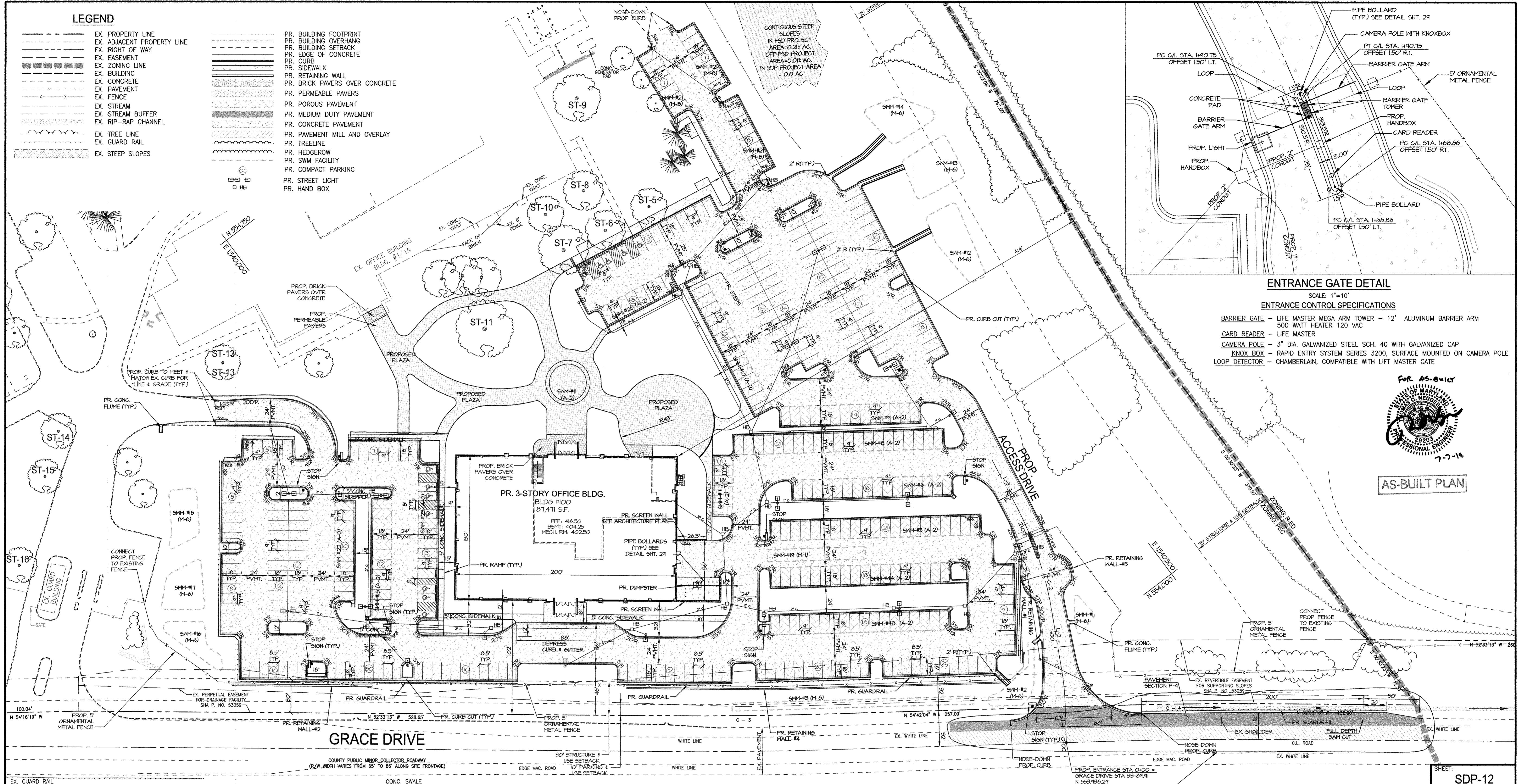
DATE	REVISIONS	JOB NO.:
		12039

SCALE: AS SHOWN
DATE: 10/16/2012
DRAWN BY: MK
DESIGN BY: MK
REVIEW BY: TCN
SHEET: 11 OF 48

MD 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. 29203, EXPIRATION DATE: 06/16/2013.

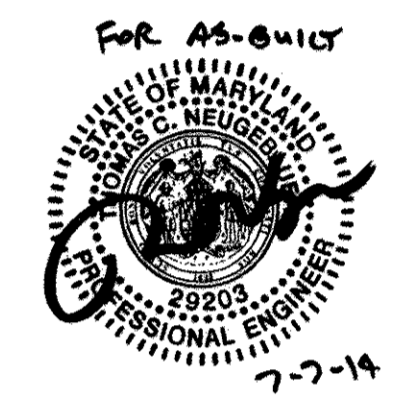
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---	EX. PROPERTY LINE	---	PR. BUILDING FOOTPRINT
---	EX. ADJACENT PROPERTY LINE	---	PR. BUILDING OVERHANG
---	EX. RIGHT OF WAY	---	PR. BUILDING SETBACK
---	EX. EASEMENT	---	PR. EDGE OF CONCRETE
---	EX. ZONING LINE	---	PR. CURB
---	EX. BUILDING	---	PR. SIDEWALK
---	EX. CONCRETE	---	PR. RETAINING WALL
---	EX. PAVEMENT	---	PR. BRICK PAVERS OVER CONCRETE
---	EX. FENCE	---	PR. PERMEABLE PAVERS
---	EX. STREAM	---	PR. POROUS PAVEMENT
---	EX. STREAM BUFFER	---	PR. MEDIUM DUTY PAVEMENT
---	EX. RIP-RAP CHANNEL	---	PR. CONCRETE PAVEMENT
---	EX. TREE LINE	---	PR. PAVEMENT MILL AND OVERLAY
---	EX. GUARD RAIL	---	PR. TREELINE
---	EX. STEEP SLOPES	---	PR. HEDGEROW
---		---	PR. SWM FACILITY
---		---	PR. COMPACT PARKING
---		---	PR. STREET LIGHT
---		---	PR. HAND BOX



ENTRANCE GATE DETAIL
SCALE: 1"=10'
ENTRANCE CONTROL SPECIFICATIONS

- BARRIER GATE** - LIFE MASTER MEGA ARM TOWER - 12' ALUMINUM BARRIER ARM 500 WATT HEATER 120 VAC
- CARD READER** - LIFE MASTER
- CAMERA POLE** - 3" DIA. GALVANIZED STEEL SCH. 40 WITH GALVANIZED CAP
- KNOX BOX** - RAPID ENTRY SYSTEM SERIES 3200, SURFACE MOUNTED ON CAMERA POLE
- LOOP DETECTOR** - CHAMBERLAIN, COMPATIBLE WITH LIFT MASTER GATE



AS-BUILT PLAN

GRACE DRIVE

MD RT. 32 - WB

STATE OF MARYLAND
STATE HIGHWAY ADMINISTRATION
DEPARTMENT OF TRANSPORTATION
L. 3347 F. 408
(SHA PLATS 52408, 53059, 53313)

SITE LAYOUT PLAN

LINE TABLE

LINE	LENGTH	BEARING
L-1	35.06	N35°17'56"E
L-2	55.48	N27°23'57"E
L-3	47.92	N09°13'32"E

CURVE TABLE

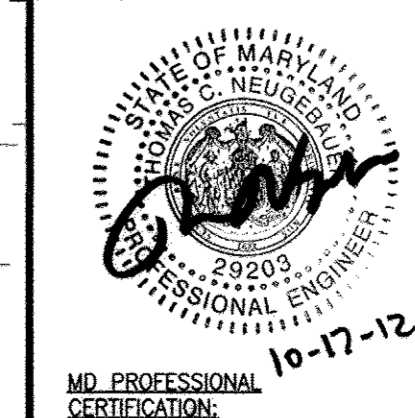
NAME	DELTA	RADIUS	LENGTH	BEARING	CHORD	TANGENT
C-1	7°53'59"	200.00'	27.58'	N 31°20'57" E	27.55'	13.81'
C-2	18°10'25"	312.00'	98.96'	N 18°18'45" E	98.55'	49.90'

SHEET NOTES:

- FOR CONCRETE PAVEMENT AND CURB DETAILS SEE PLAN SHEET SDP-18.
- FOR PROPOSED PLAZA LAYOUT SEE PENNONI PLAN SET.
- FOR NEW ENTRANCE AND GRACE DRIVE WIDENING SEE PLAN SHEET SDP-19.
- PROPOSED GUARDRAIL, SEE MD. SHA DETAIL MD-605.27.
- LIGHT TRESPASS ONTO A PROPERTY IN THE R-ED ZONING DISTRICT SHALL BE LIMITED TO 0.1 FOOTCANDLES. LIGHT TRESPASS ONTO ANY PROPERTY ZONED OR USED FOR RESIDENTIAL PURPOSES SHALL BE LIMITED TO 0.5 FOOTCANDLES.
- FOR PROPOSED FENCE DETAIL SEE SDP-23
- FOR SITE LIGHTS SEE ARCH. / MEP PLANS.

OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 11/19/12
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING
DATE
[Signature] 11/19/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE
[Signature] 11/19/12
CHIEF, DIVISION & LAND DEVELOPMENT
DATE



MORRIS & RITCHIE ASSOCIATES, INC.
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LAUREL, MD 20707
(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395
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GRACE TECH PARK, PARCEL A
OFFICE BUILDING - (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
SITE LAYOUT PLAN

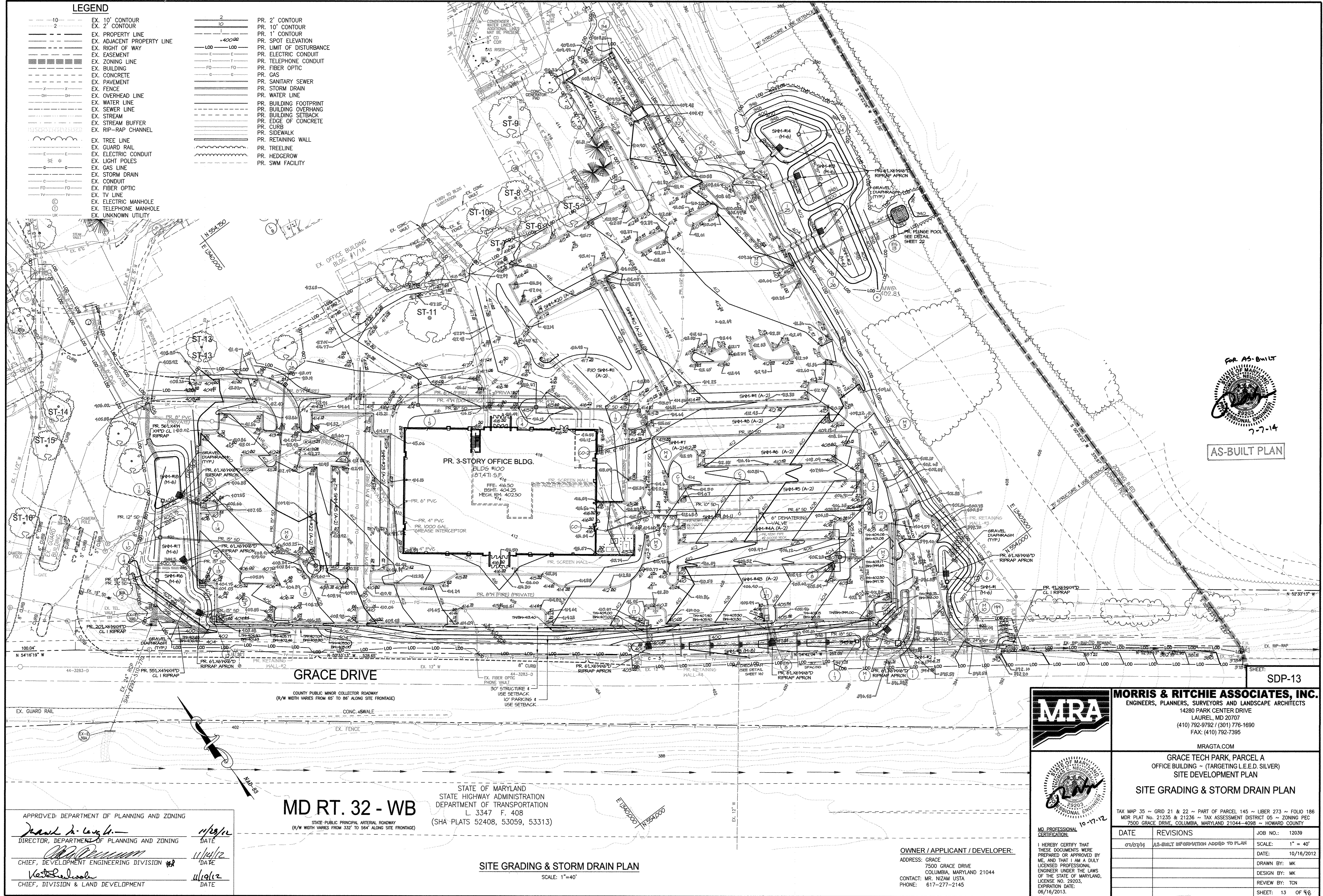
TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
07/07/14	AS-BUILT INFORMATION ADDED TO PLAN	12039
		SCALE: 1" = 40'
		DATE: 10/16/2012
		DRAWN BY: MK
		DESIGN BY: MK
		REVIEW BY: TCN
		SHEET: 12 OF 48

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 1:1, Copyright 2012 Morris & Ritchie Associates, Inc.

LEGEND

- 10 --- EX. 10' CONTOUR
- 2 --- EX. 2' CONTOUR
- EX. PROPERTY LINE
- EX. ADJACENT PROPERTY LINE
- EX. RIGHT OF WAY
- EX. EASEMENT
- EX. ZONING LINE
- EX. BUILDING
- EX. CONCRETE
- EX. PAVEMENT
- EX. FENCE
- EX. OVERHEAD LINE
- EX. WATER LINE
- EX. SEWER LINE
- EX. STREAM
- EX. STREAM BUFFER
- EX. RIP-RAP CHANNEL
- EX. TREE LINE
- EX. GUARD RAIL
- EX. ELECTRIC CONDUIT
- EX. LIGHT POLES
- EX. GAS LINE
- EX. STORM DRAIN
- EX. CONDUIT
- EX. FIBER OPTIC
- EX. TV LINE
- EX. ELECTRIC MANHOLE
- EX. TELEPHONE MANHOLE
- EX. UNKNOWN UTILITY
- 2 --- PR. 2' CONTOUR
- 10 --- PR. 10' CONTOUR
- 1 --- PR. 1' CONTOUR
- PR. SPOT ELEVATION
- PR. LIMIT OF DISTURBANCE
- PR. ELECTRIC CONDUIT
- PR. TELEPHONE CONDUIT
- PR. FIBER OPTIC
- PR. GAS
- PR. SANITARY SEWER
- PR. STORM DRAIN
- PR. WATER LINE
- PR. BUILDING FOOTPRINT
- PR. BUILDING OVERHANG
- PR. BUILDING SETBACK
- PR. EDGE OF CONCRETE CURB
- PR. SIDEWALK
- PR. RETAINING WALL
- PR. TREELINE
- PR. HEDGEROW
- PR. SWM FACILITY



AS-BUILT PLAN

GRACE DRIVE
COUNTY PUBLIC MINOR COLLECTOR ROADWAY
(R/W WIDTH VARIES FROM 65' TO 86' ALONG SITE FRONTAGE)

MD RT. 32 - WB
STATE PUBLIC PRINCIPAL ARTERIAL ROADWAY
(R/W WIDTH VARIES FROM 332' TO 564' ALONG SITE FRONTAGE)

STATE OF MARYLAND
STATE HIGHWAY ADMINISTRATION
DEPARTMENT OF TRANSPORTATION
L. 3347 F. 408
(SHA PLATS 52408, 53059, 53313)

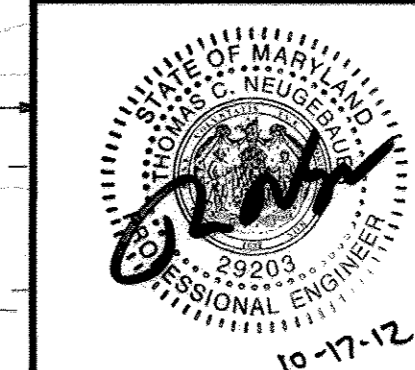
SITE GRADING & STORM DRAIN PLAN
SCALE: 1"=40'

APPROVED: DEPARTMENT OF PLANNING AND ZONING
David A. Lewis 1/12/12
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING
Michael J. ... 1/12/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION
Victor ... 1/12/12
CHIEF, DIVISION & LAND DEVELOPMENT

OWNER / APPLICANT / DEVELOPER:
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CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145



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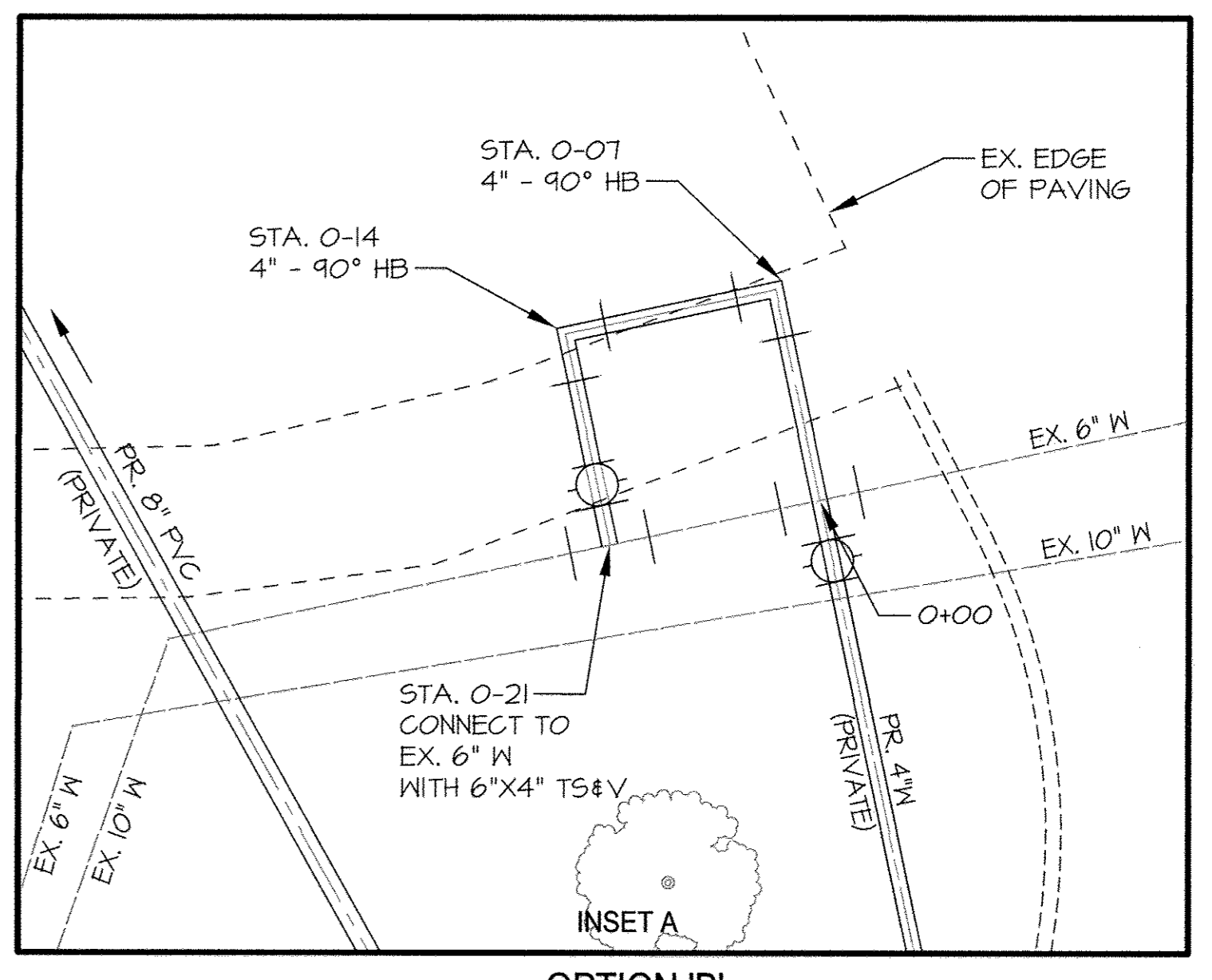
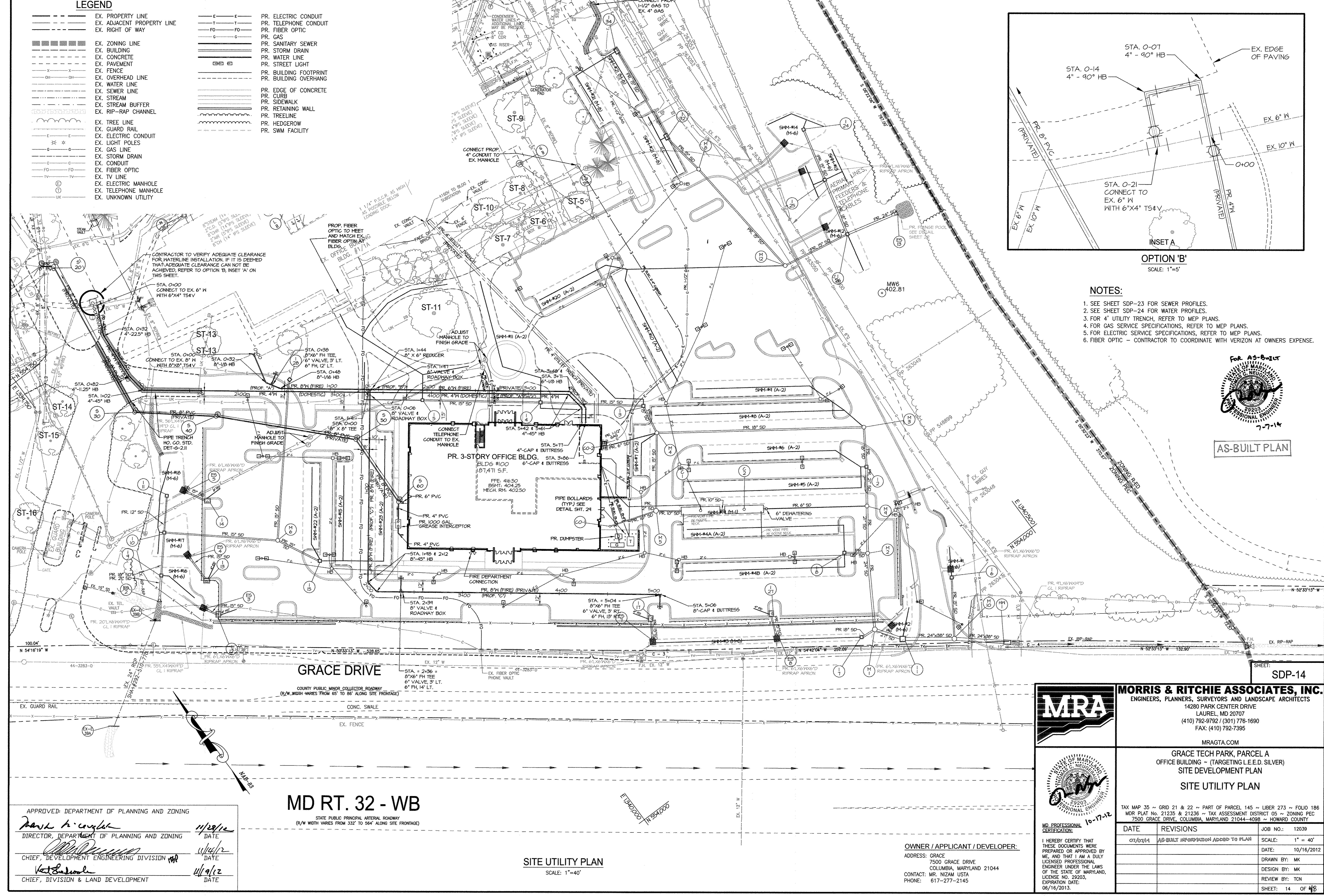
GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
SITE GRADING & STORM DRAIN PLAN
TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

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07/07/14	AS-BUILT INFORMATION ADDED TO PLAN	12039
		SCALE: 1" = 40'
		DATE: 10/16/2012
		DRAWN BY: MK
		DESIGN BY: MK
		REVIEW BY: TON
		SHEET: 13 OF 48

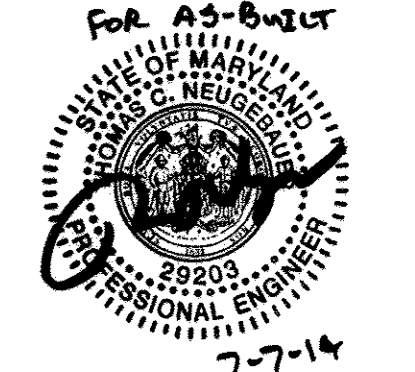
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LEGEND

- | | | | |
|-----|----------------------------|-----|------------------------|
| --- | EX. PROPERTY LINE | --- | PR. ELECTRIC CONDUIT |
| --- | EX. ADJACENT PROPERTY LINE | --- | PR. TELEPHONE CONDUIT |
| --- | EX. RIGHT OF WAY | --- | PR. FIBER OPTIC |
| --- | | --- | PR. GAS |
| --- | EX. ZONING LINE | --- | PR. SANITARY SEWER |
| --- | EX. BUILDING | --- | PR. STORM DRAIN |
| --- | EX. CONCRETE | --- | PR. WATER LINE |
| --- | EX. PAVEMENT | --- | PR. STREET LIGHT |
| --- | EX. FENCE | --- | PR. BUILDING FOOTPRINT |
| --- | EX. OVERHEAD LINE | --- | PR. BUILDING OVERHANG |
| --- | EX. WATER LINE | --- | PR. EDGE OF CONCRETE |
| --- | EX. SEWER LINE | --- | PR. CURB |
| --- | EX. STREAM | --- | PR. SIDEWALK |
| --- | EX. STREAM BUFFER | --- | PR. RETAINING WALL |
| --- | EX. RIP-RAP CHANNEL | --- | PR. TREETLINE |
| --- | EX. TREE LINE | --- | PR. HEDGEROW |
| --- | EX. GUARD RAIL | --- | PR. SWM FACILITY |
| --- | EX. ELECTRIC CONDUIT | --- | |
| --- | EX. LIGHT POLES | --- | |
| --- | EX. GAS LINE | --- | |
| --- | EX. STORM DRAIN | --- | |
| --- | EX. CONDUIT | --- | |
| --- | EX. FIBER OPTIC | --- | |
| --- | EX. TV LINE | --- | |
| --- | EX. ELECTRIC MANHOLE | --- | |
| --- | EX. TELEPHONE MANHOLE | --- | |
| --- | EX. UNKNOWN UTILITY | --- | |



- NOTES:**
- SEE SHEET SDP-23 FOR SEWER PROFILES.
 - SEE SHEET SDP-24 FOR WATER PROFILES.
 - FOR 4" UTILITY TRENCH, REFER TO MEP PLANS.
 - FOR GAS SERVICE SPECIFICATIONS, REFER TO MEP PLANS.
 - FOR ELECTRIC SERVICE SPECIFICATIONS, REFER TO MEP PLANS.
 - FIBER OPTIC - CONTRACTOR TO COORDINATE WITH VERIZON AT OWNERS EXPENSE.



AS-BUILT PLAN

APPROVED: DEPARTMENT OF PLANNING AND ZONING

David A. Cuyler 11/29/12
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE

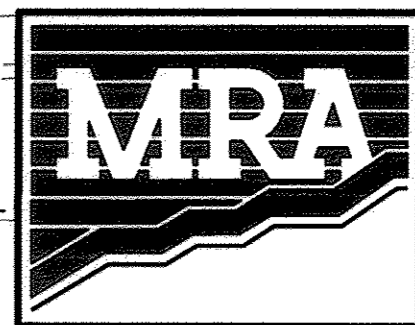
Michael J. ... 11/29/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Kate ... 11/9/12
 CHIEF, DIVISION & LAND DEVELOPMENT DATE

MD RT. 32 - WB
 STATE PUBLIC PRINCIPAL ARTERIAL ROADWAY
 (R/W WIDTH VARIES FROM 332' TO 564' ALONG SITE FRONTAGE)

SITE UTILITY PLAN
 SCALE: 1"=40'

OWNER / APPLICANT / DEVELOPER:
 ADDRESS: GRACE
 7500 GRACE DRIVE
 COLUMBIA, MARYLAND 21044
 CONTACT: MR. NIZAM USTA
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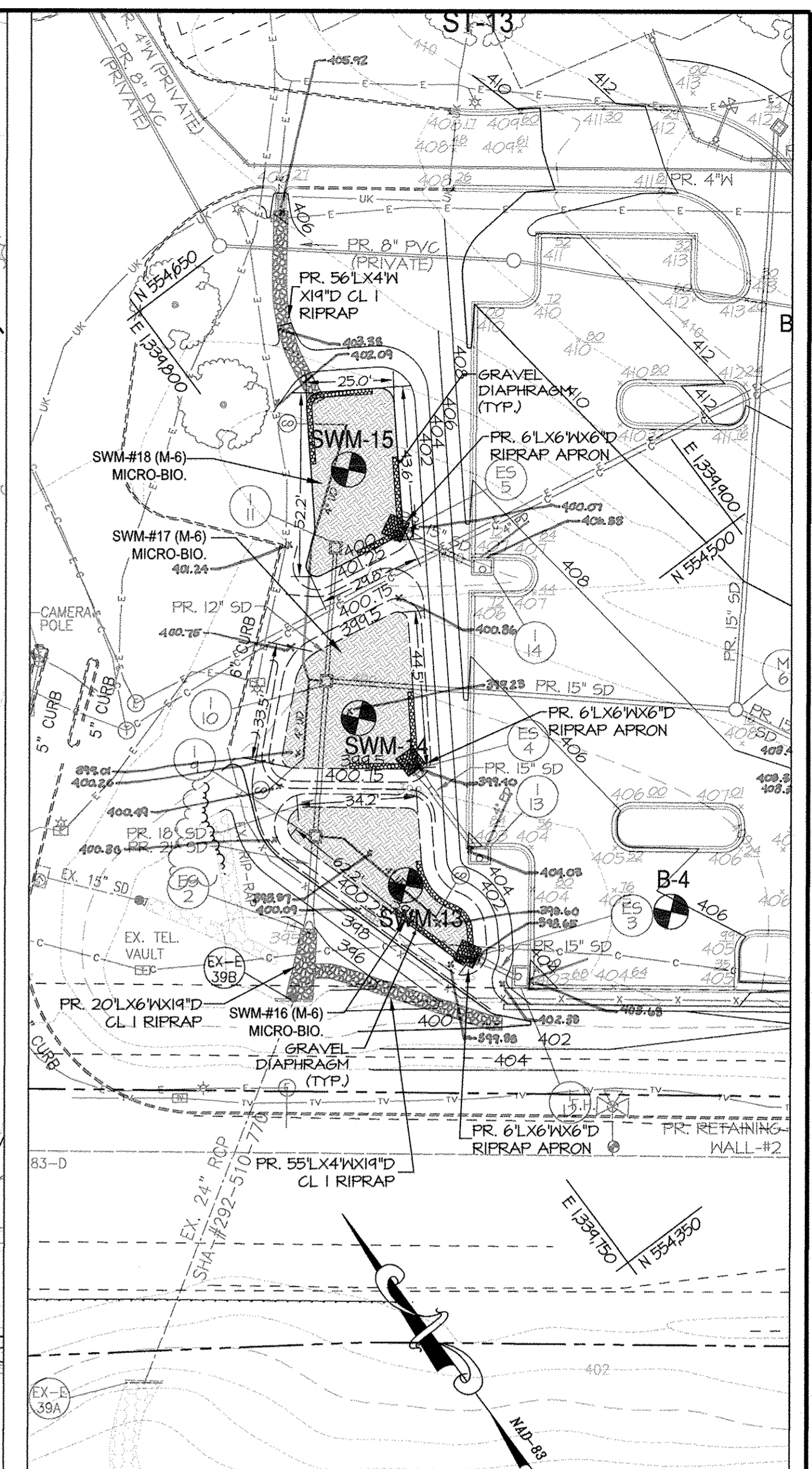
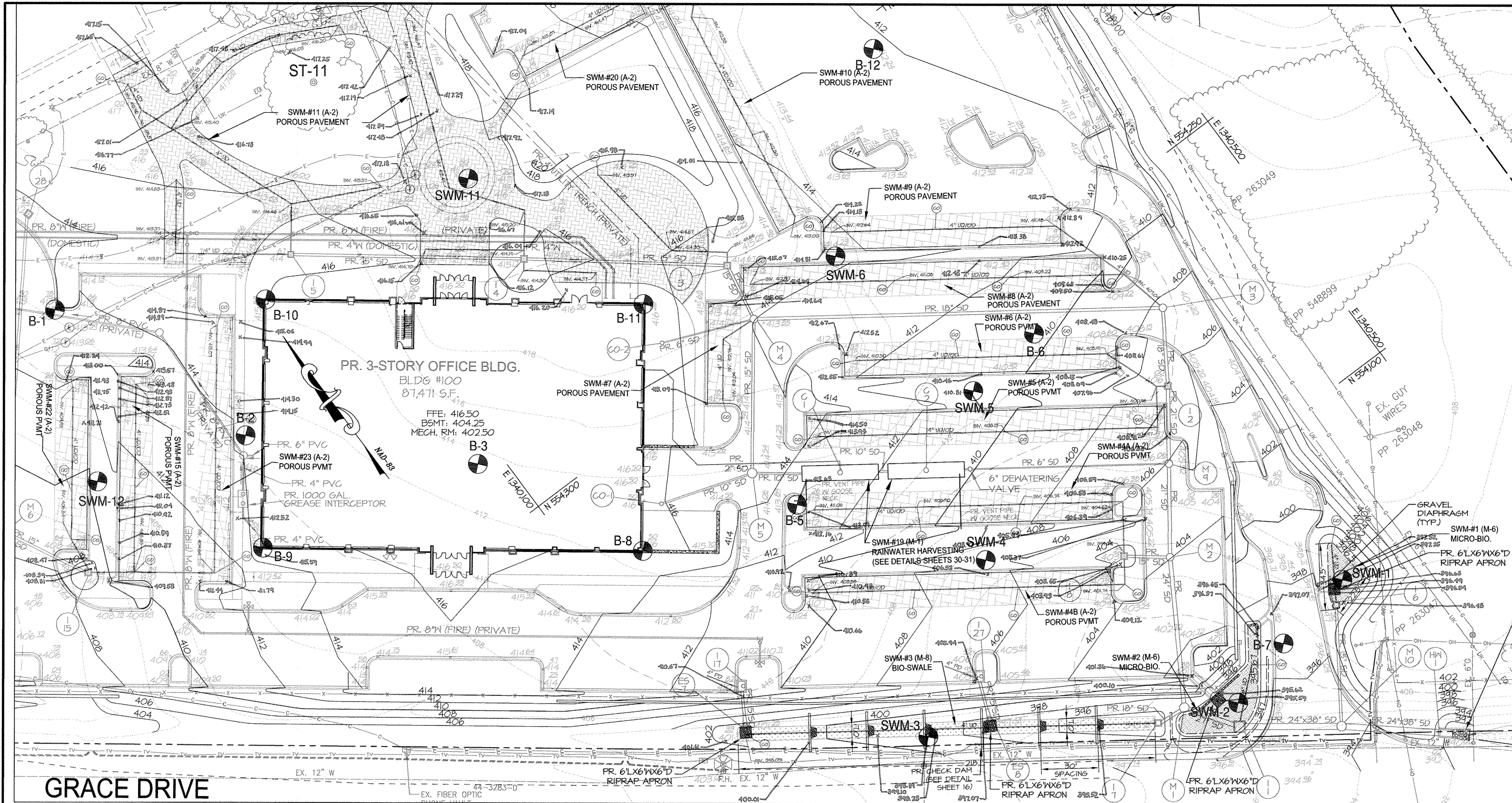
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GRACE TECH PARK, PARCEL A
 OFFICE BUILDING - (TARGETING L.E.E.D. SILVER)
 SITE DEVELOPMENT PLAN
 SITE UTILITY PLAN

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
 MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
 7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
07/07/14	AS-BUILT INFORMATION ADDED TO PLAN	12039
		SCALE: 1" = 40'
		DATE: 10/16/2012
		DRAWN BY: MK
		DESIGN BY: MK
		REVIEW BY: TCN
		SHEET: 14 OF 48



GRACE DRIVE

SWM # 1 & 2: MICRO-BIORETENTION (M-6), SWM # 3 BIO-SWALE (M-8), SWM # 4A, 4B, 5, 6, 7, 8, 9, 10, 11, 15, 22, 23, & 20 POROUS PAVEMENT (A-2), SWM # 19: RAINWATER HARVESTING (M-1)

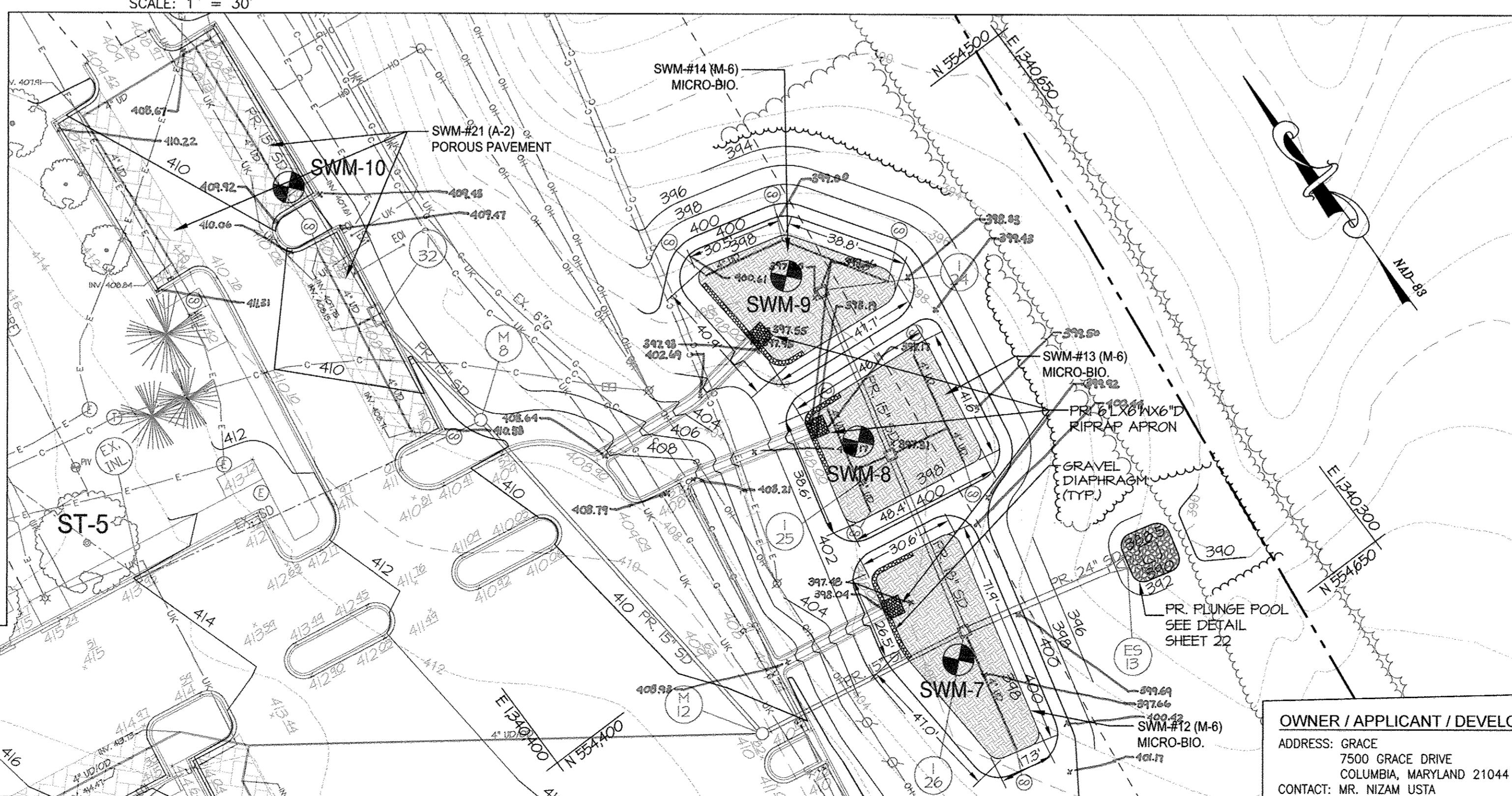
SWM # 16, 17, & 18: MICRO-BIORETENTION (M-6)

SCALE: 1" = 30'

SCALE: 1" = 30'

LEGEND

---+---	EX. 10' CONTOUR	---	PR. 2" CONTOUR
---	EX. 2' CONTOUR	---	PR. 10' CONTOUR
---	EX. PROPERTY LINE	---	PR. 1' CONTOUR
---	EX. ADJACENT PROPERTY LINE	---	PR. SPOT ELEVATION
---	EX. RIGHT OF WAY	---	PR. BUILDING FOOTPRINT
---	EX. BUILDING	---	PR. BUILDING OVERHANG
---	EX. CONCRETE	---	PR. BUILDING SETBACK
---	EX. PAVEMENT	---	PR. EDGE OF CONCRETE
---	EX. OVERHEAD LINE	---	PR. CURB
---	EX. WATER LINE	---	PR. SIDEWALK
---	EX. SEWER LINE	---	PR. RETAINING WALL
---	EX. STREAM	---	PR. TREELINE
---	EX. STREAM BUFFER	---	PR. HEDGEROW
---	EX. RIP-RAP CHANNEL	---	PR. SANITARY SEWER
---	EX. TREE LINE	---	PR. STORM DRAIN
---	EX. GUARD RAIL	---	PR. WATER LINE
---	EX. ELECTRIC CONDUIT	---	PR. MICRO BIORETENTION FACILITY
---	EX. LIGHT POLES	---	PR. BIO-SWALE FACILITY
---	EX. GAS LINE	---	PR. POROUS PAVEMENT
---	EX. STORM DRAIN	---	PR. PERMEABLE PAVERS
---	EX. CONDUIT	---	
---	EX. FIBER OPTIC	---	
---	EX. TV LINE	---	
---	EX. ELECTRIC MANHOLE	---	
---	EX. TELEPHONE MANHOLE	---	
---	EX. UNKNOWN UTILITY	---	

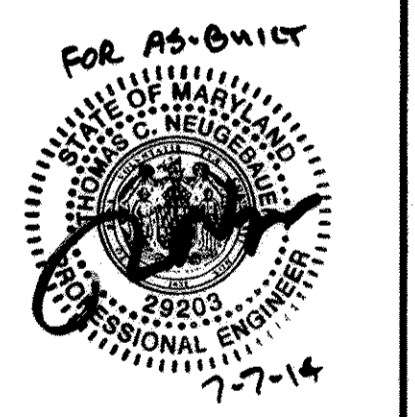


SWM # 12, 13, & 14: MICRO-BIORETENTION (M-6), SWM # 21: POROUS PAVEMENT (A-2)

SCALE: 1" = 30'

- NOTES:**
- THE CONCRETE FLUME OUTFALLS TO SWM # 1, 2, 12, 13 AND 14 HAVE GRAVEL DIAPHRAGM. SEE SDP-16 FOR DETAILS.
 - SEE STORM DRAIN PROFILES ON SDP-03 THRU SDP-22 FOR RIP-RAP SIZING AT PIPE OUTFALLS TO STORM WATER MANAGEMENT FACILITIES.
 - SEE SDP-22 FOR PLUNGE POOL DETAIL.

AS-BUILT PLAN



APPROVED: DEPARTMENT OF PLANNING AND ZONING

Paul L. Cagle 11/29/12
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE

W. J. [Signature] 11/16/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

W. J. [Signature] 11/19/12
 CHIEF, DIVISION & LAND DEVELOPMENT DATE

OWNER / APPLICANT / DEVELOPER:

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 7500 GRACE DRIVE
 COLUMBIA, MARYLAND 21044
 CONTACT: MR. NIZAM USTA
 PHONE: 617-277-2145

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GRACE TECH PARK, PARCEL A
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 SITE DEVELOPMENT PLAN

ESD FACILITIES

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
 MDR PLAT NO. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
 7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
07/07/14	AS-BUILT INFORMATION ADDED	12039
		SCALE: 1" = 30'
		DATE: 10/16/2012
		DRAWN BY: RAH
		DESIGN BY: MK
		REVIEW BY: TON
		SHEET: 15 OF 48

CONSTRUCTION SPECIFICATIONS FOR MICRO-BIORETENTION AND BIOSWALE FACILITIES

1. MATERIAL SPECIFICATIONS

THE ALLOWABLE MATERIALS TO BE USED IN MICRO-BIORETENTION AND BIOSWALE AREAS ARE DETAILED IN TABLE B.4.1. (SEE THIS SHEET)

2. FILTER MEDIA OR PLANTING SOIL

THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION AND BIOSWALE PRACTICES THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERNIADA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05.

THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:

- SOIL CONTENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION)
- ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35%-40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
- CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
- pH RANGE - SHOULD BE BETWEEN 5.5-7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED INTO THE SOIL TO INCREASE OR DECREASE pH.

THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR pH, AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

3. COMPACTION

IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF MICRO-BIORETENTION AND BIOSWALE PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

COMPACTION CAN BE ALLEVATED AT THE BASE OF THE MICRO-BIORETENTION AND BIOSWALE FACILITIES BY USING A PRIMARY TILLING OPERATION SUCH AS A CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACATURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

WHEN BACKFILLING THE MICRO-BIORETENTION AND BIOSWALE FACILITIES, PLACE SOIL IN LIFTS OF 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE MICRO-BIORETENTION OR BIOSWALE BASINS. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS. GRADE MICRO-BIORETENTION AND BIOSWALE MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

4. PLANT MATERIAL

RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION AND BIOSWALE AREAS CAN BE FOUND ON THE LANDSCAPE PLANS FOUND HEREIN.

5. PLANT INSTALLATION

COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING AREAS TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE MICRO-BIORETENTION AND BIOSWALE AREAS DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.

ROOT STOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8th OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION.

TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.

GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.

THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE MICRO-BIORETENTION AND BIOSWALE STRUCTURES IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFATS, OR AT A MINIMUM, IMPEDS THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

6. UNDERDRAINS

UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:

- PIPE - SHOULD BE 4"-6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM 758, TYPE PS 28, OR AASHTO-M-79) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OR HDPE).
- PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW.
- PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4X4) GALVANIZED HARDWARE CLOTH.
- GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
- A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
- AN 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".

7. MISCELLANEOUS

THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

TABLE B.4.1 MATERIAL SPECIFICATIONS FOR MICRO-BIORETENTION AND BIOSWALE FACILITIES

MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SEE APPENDIX A, TABLE A.4	N/A	PLANTINGS ARE SITE-SPECIFIC
PLANTING SOIL [2' TO 4' DEEP]	LOAMY SAND (60-65%) & COMPOST (35-40%) OR SANDY LOAM (30%), COARSE SAND (30%) & COMPOST (40%)	N/A	USDA SOILS TYPES LOAMY SAND OR SANDY LOAM; CLAY CONTENT < 5%
ORGANIC CONTENT	MIN. 10% BY DRY WEIGHT (ASTM D 2974)		
MULCH	SHREDDED HARDWOOD	N/A	AGED 6 MONTHS, MINIMUM; NO PINE OR WOOD CHIPS
PEA GRAVEL DIAPHRAGM / BRIDGING LAYER	PEA GRAVEL: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
RIPRAP APRON/RIVER ROCK CHANNEL	ORNAMENTAL STONE: WASHED COBBLES	STONE: 1.5" TO 6"	RIVER ROCK CHANNEL AND NON-CLASS I RIPRAP OUTFALLS
GEOTEXTILE		N/A	PE TYPE 1 NONWOVEN
GRAVEL (UNDERDRAINS AND INFILTRATION BERMS)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" TO 3/4")	
UNDERDRAIN PIPING & OBSERVATION WELL	F 758, TYPE PS 28 OR AASHTO M-278	4" TO 6" RIGID SCHEDULE 40 PVC OR SDR35	SLOTTED OR PERFORATED PIPE, 3/8" PERF. @ 6" ON CENTER, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES.
POURED IN PLACE CONCRETE (IF REQUIRED)	MSHA MIX NO. 3; F'c = 3500 PSI @ 28 DAYS, NORMAL WEIGHT, AIR ENTRAINED; REINFORCING TO MEET ASTM-615-60	N/A	ON SITE TESTING OF POURED-IN-PLACE CONCRETE REQUIRED: 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST-IN-PLACE OR PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS. DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND. - DESIGN TO INCLUDE MEETING ACI CODE 350.8/89, VERTICAL; LOADING [H-10 OR H-20], ALLOWABLE HORIZONTAL LOADING (BASE AND SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING.
SAND	AASHTO-M-6 OR ASTM-C-33	0.02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DMBASE AND GRANITESTONE (AASHTO #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.

INSPECTION REQUIREMENTS FOR MICRO-BIORETENTION AND BIOSWALE FACILITIES

REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:

- DURING EXCAVATION TO SUBGRADE AND PLACEMENT AND BACKFILL OF UNDERDRAIN SYSTEMS.
- DURING PLACEMENT OF FILTER MEDIA.
- DURING CONSTRUCTION OF APPURTENANT CONVEYANCE.
- UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6) AND BIOSWALE FACILITIES (M-8)

THE FOLLOWING ITEMS SHOULD BE ADDRESSED TO ENSURE PROPER MAINTENANCE AND LONG-TERM PERFORMANCE OF MICRO-BIORETENTION AND BIOSWALE PRACTICES:

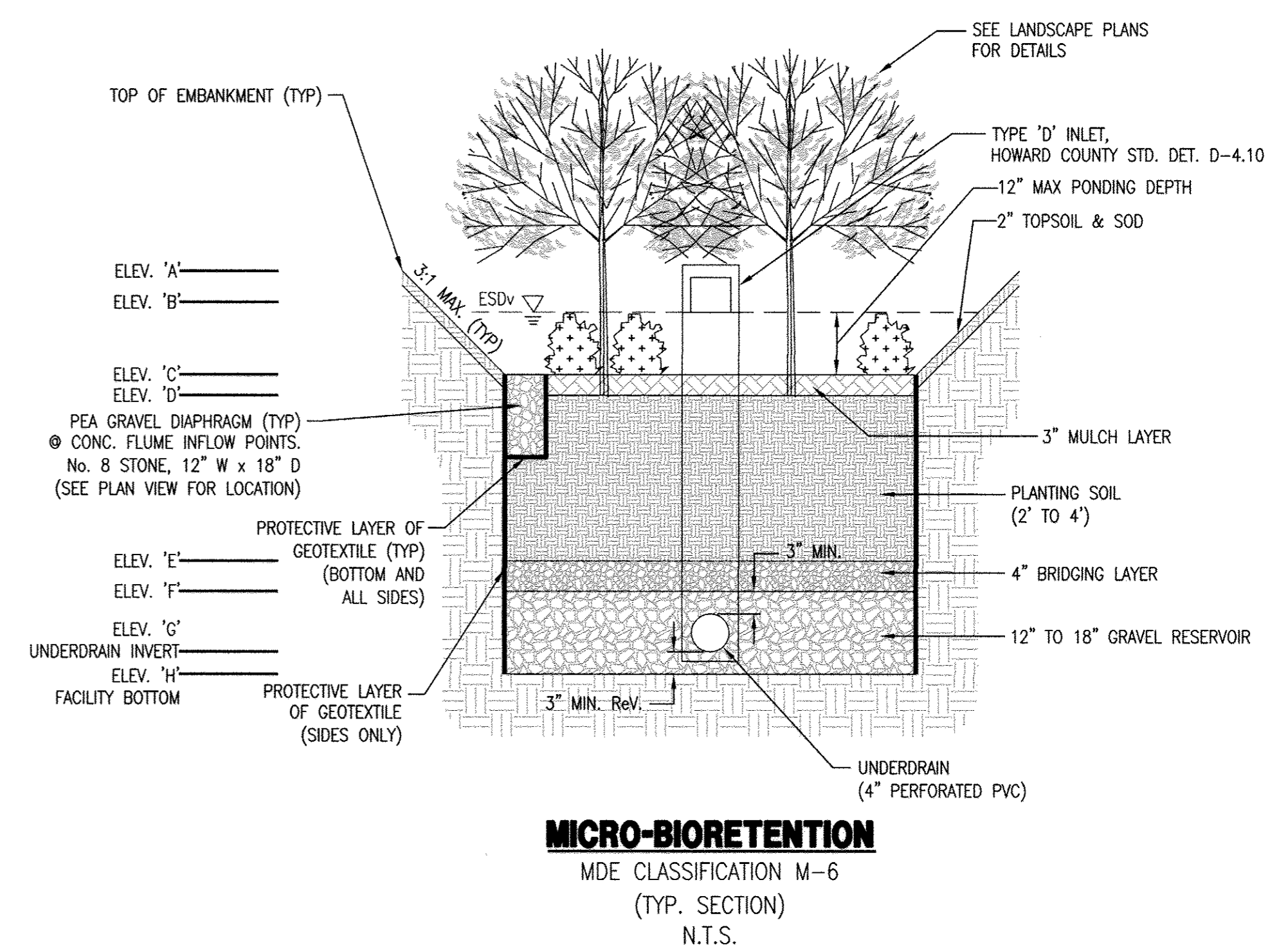
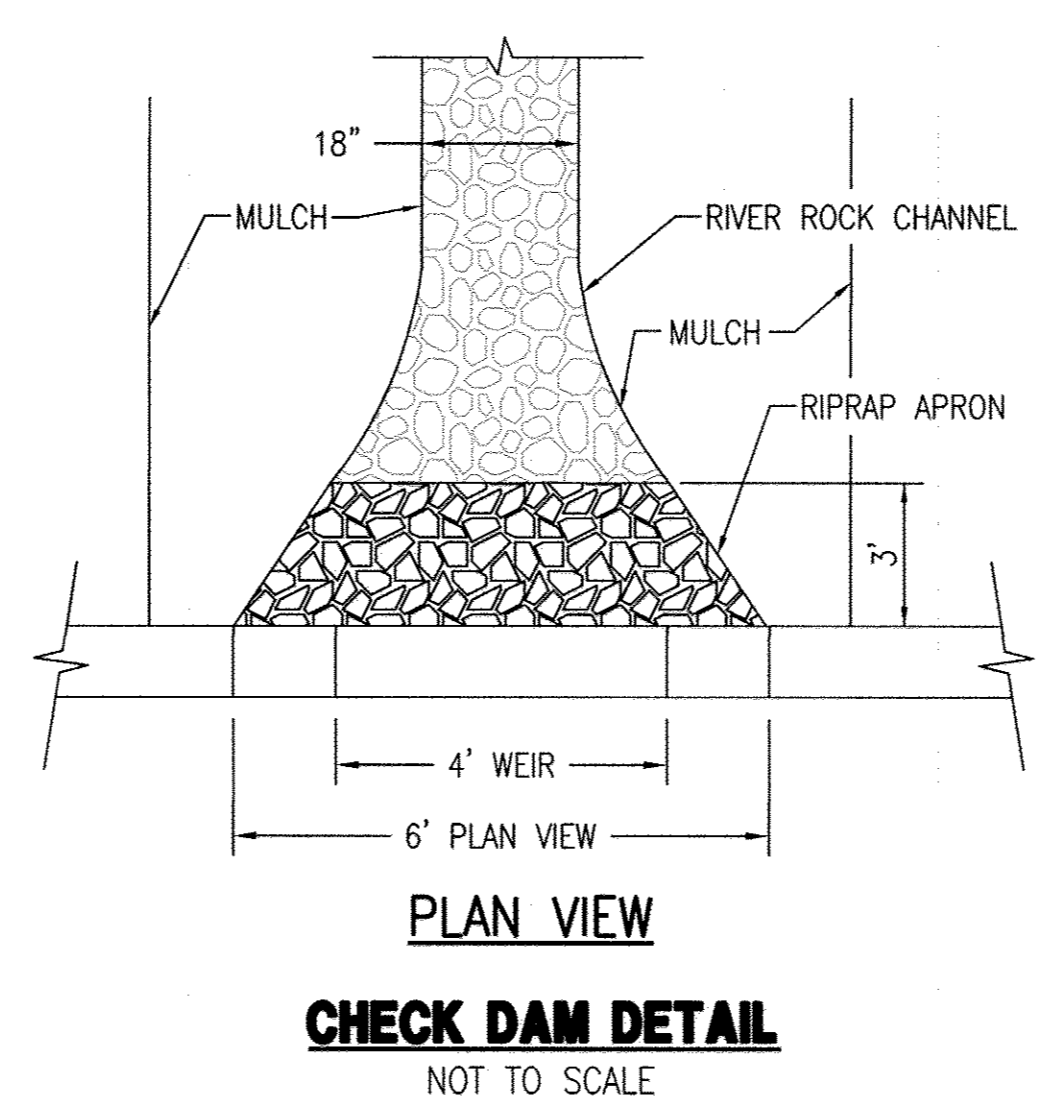
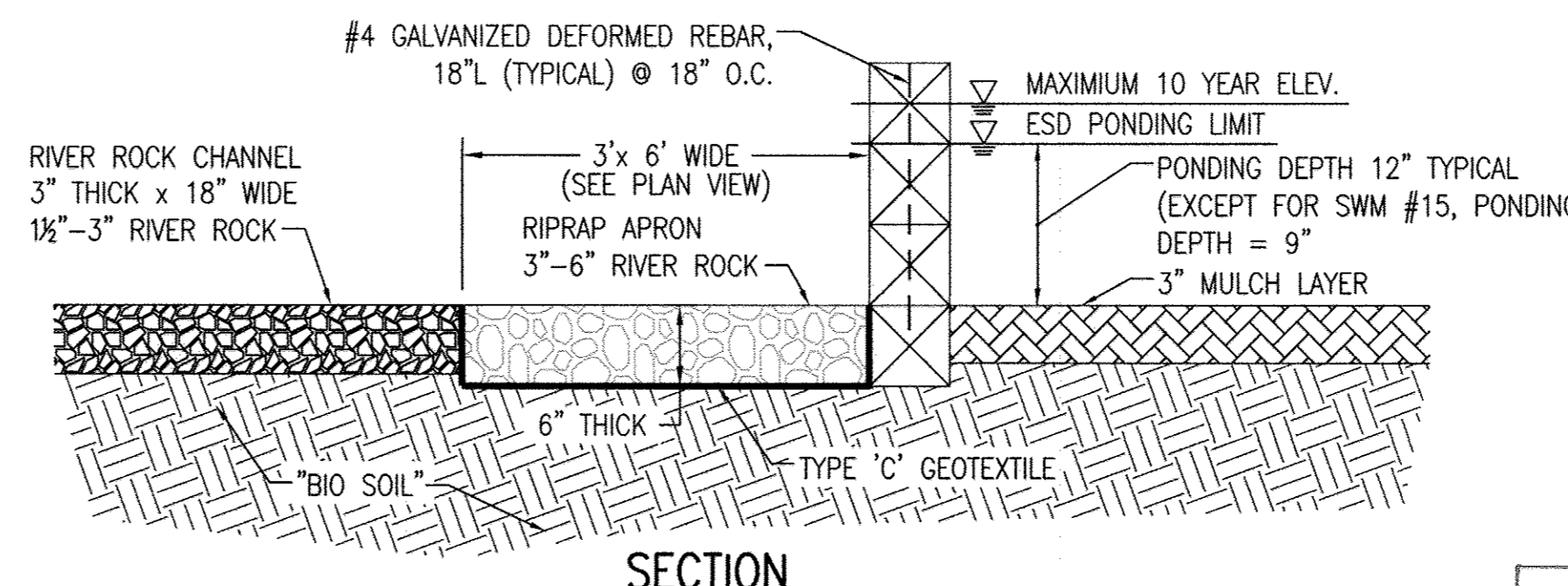
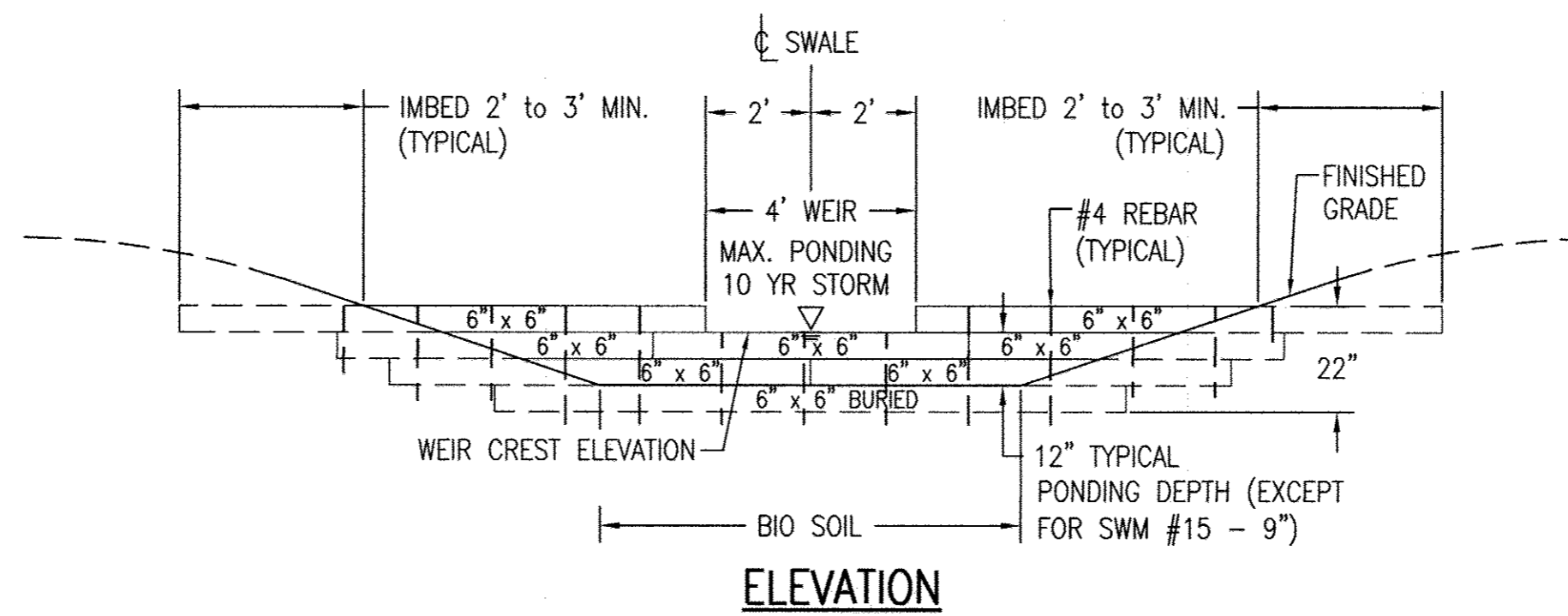
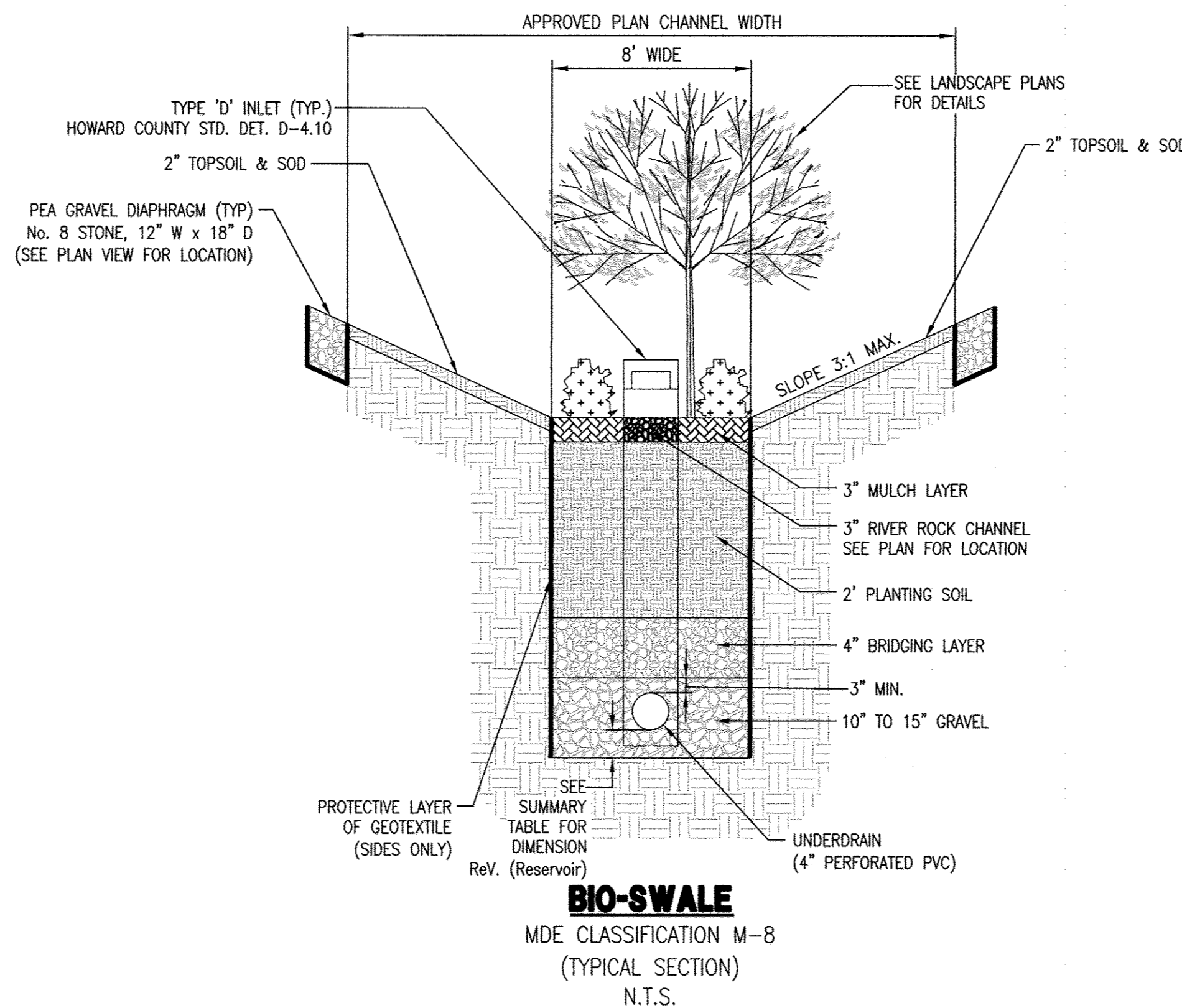
- THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.1 AND 4.2.
- THE OWNER SHALL PERFORM A PLANT IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
- THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Mark A. Ugle 1/12/12
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING
 DATE

John P. ... 1/14/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE

... 1/19/12
 CHIEF, DIVISION & LAND DEVELOPMENT
 DATE



MICRO-BIORETENTION SCHEDULE

MDE CLASSIFICATION M-6 (TYP. SECTION) N.T.S.

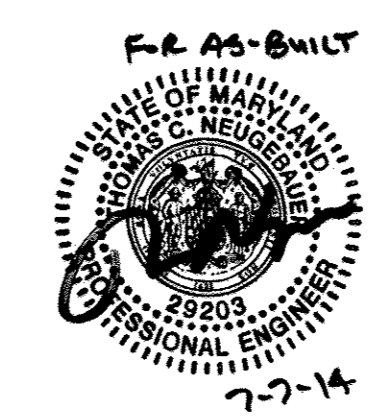
FACILITY NUMBER	TOP OF EMBANKMENT ELEV 'A'	ESDv PONDING ELEV 'B'	FACILITY SURFACE ELEV 'C'	PLANTING MEDIA TOP ELEV 'D'	PLANTING MEDIA BOTTOM ELEV 'E'	BRIDGING LAYER BOTTOM ELEV 'F'	UNDERDRAIN INVERT ELEV 'G'	STONE BOTTOM ELEV 'H'	FILTER BED AREA PROVIDED (SF)
SWM #1	397.41	397.25	396.50	396.25	393.25	392.92	392.33	391.67	372
SWM #2	396.90	396.42	395.67	395.42	392.42	392.09	391.50	390.84	924
SWM #12	400.00	398.50	398.00	397.75	393.75	393.42	392.83	392.33	1,855
SWM #13	400.00	398.50	398.00	397.75	394.75	394.42	393.83	393.33	1,877
SWM #14	400.00	398.75	398.00	397.75	395.75	395.42	394.83	394.33	1,552
SWM #16	400.25	400.00	399.00	398.75	396.75	396.42	395.83	395.08	1,036
*SWM #17	400.75	400.50	399.50	399.25	397.25	396.92	396.33	396.08	1,331
SWM #18	401.25	400.50	400.00	399.75	397.75	397.42	396.83	396.53	1,191

*DUE TO LOW INFILTRATION RATE AT SWM #17, THERE WILL BE NO RECHARGE BELOW THE UNDERDRAIN. +THE UNDERDRAIN FROM SWM#18 WILL TIE INTO THE UNDERDRAIN IN SWM#17 AND OUTFALL INTO I-10 AS SHOWN IN PLAN VIEW.

BIO-SWALE SUMMARY

FACILITY NUMBER	SWALE LENGTH (LF)	SWALE WIDTH (LF)	PLANTING SOIL DEPTH (FT)	GRAVEL BELOW UNDERDRAIN (INCH)	OVERFLOW INLET NO.	CHECK DAM SPACING (FT)	PONDING DEPTH (INCH)	UNDERDRAIN INVERT @	FACILITY SLOPE	FILTER BED AREA PROVIDED (SF)
SWM #3	218.0	7	2	6	1-7	30	12	392.72	3%	1,527

AS-BUILT PLAN



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 SITE DEVELOPMENT PLAN
BIO SWALE & MICRO BIO DETAILS

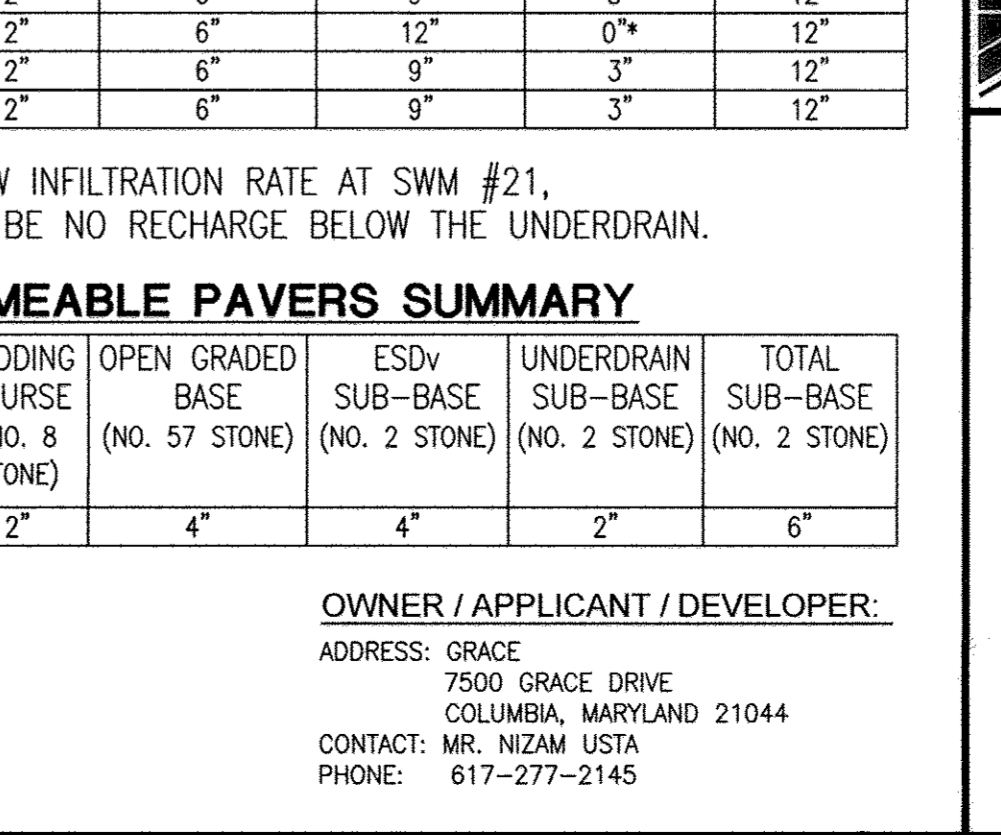
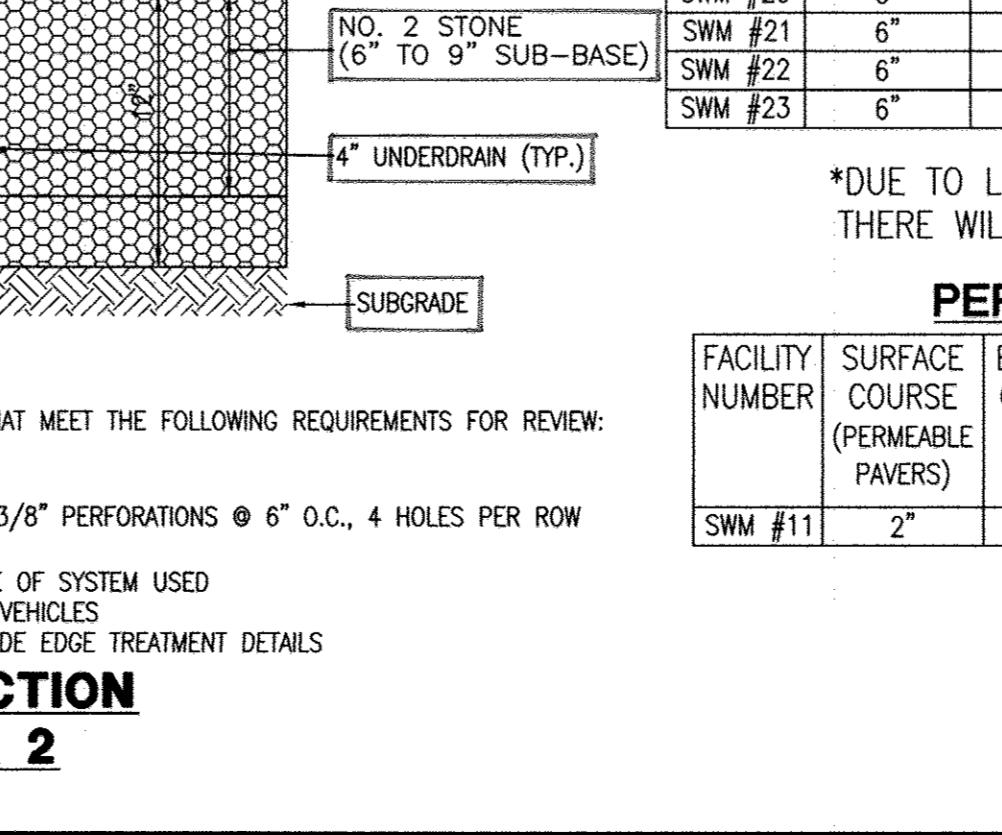
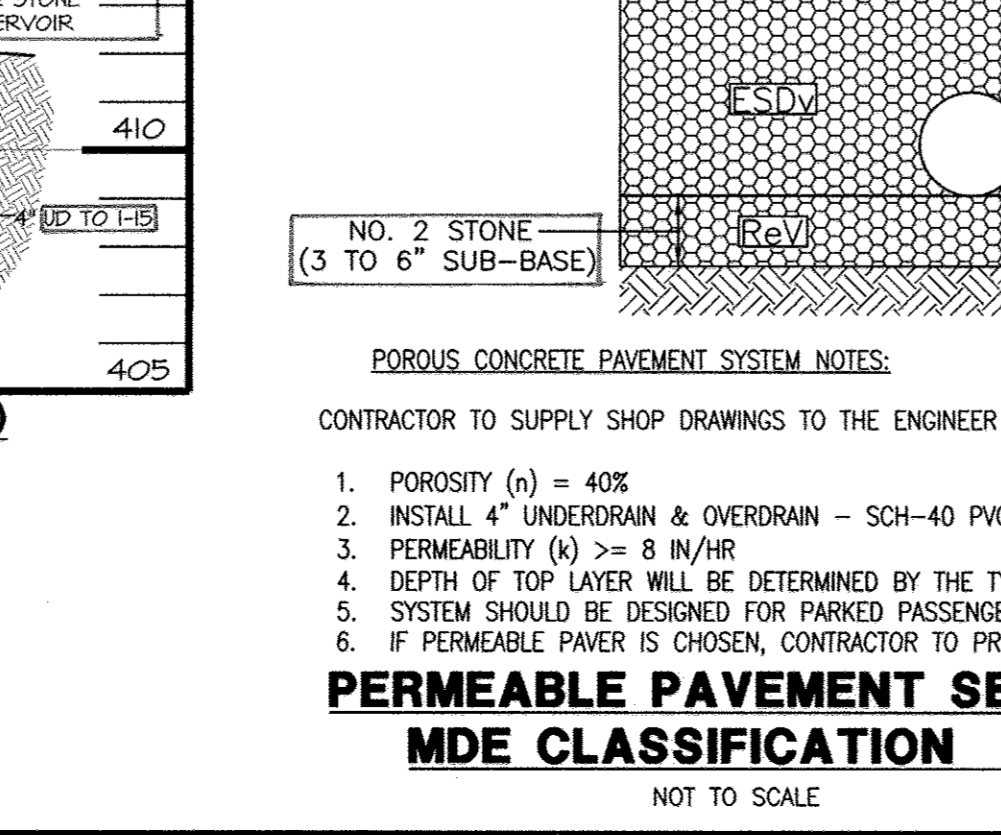
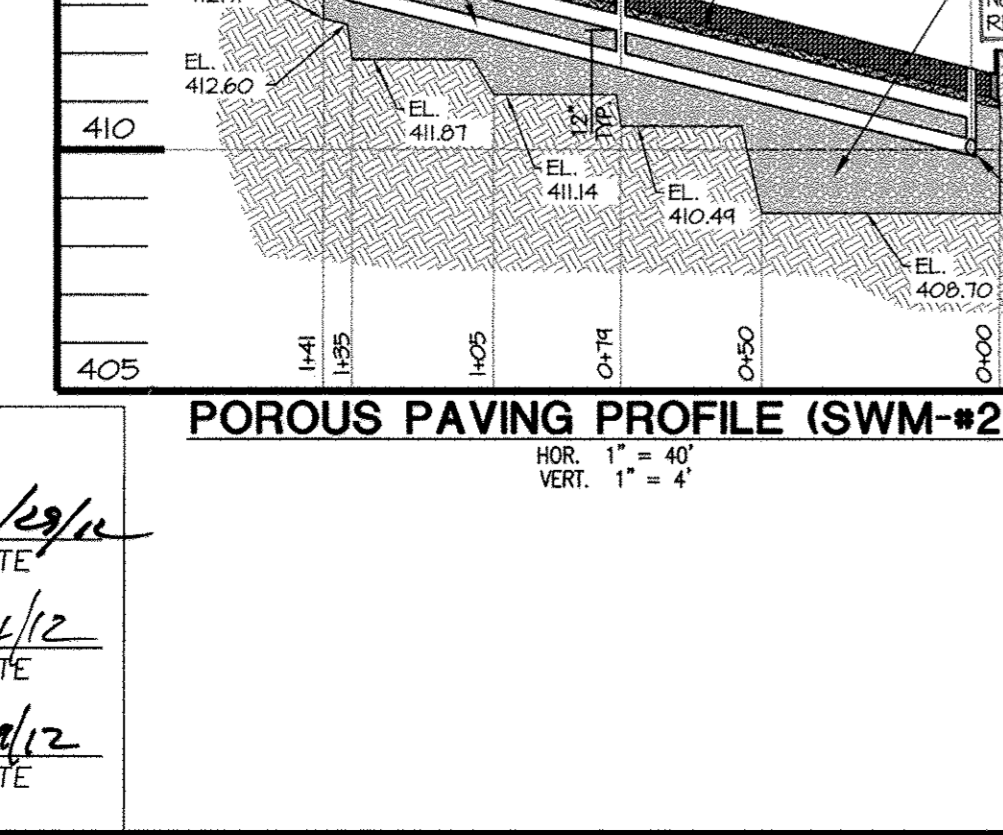
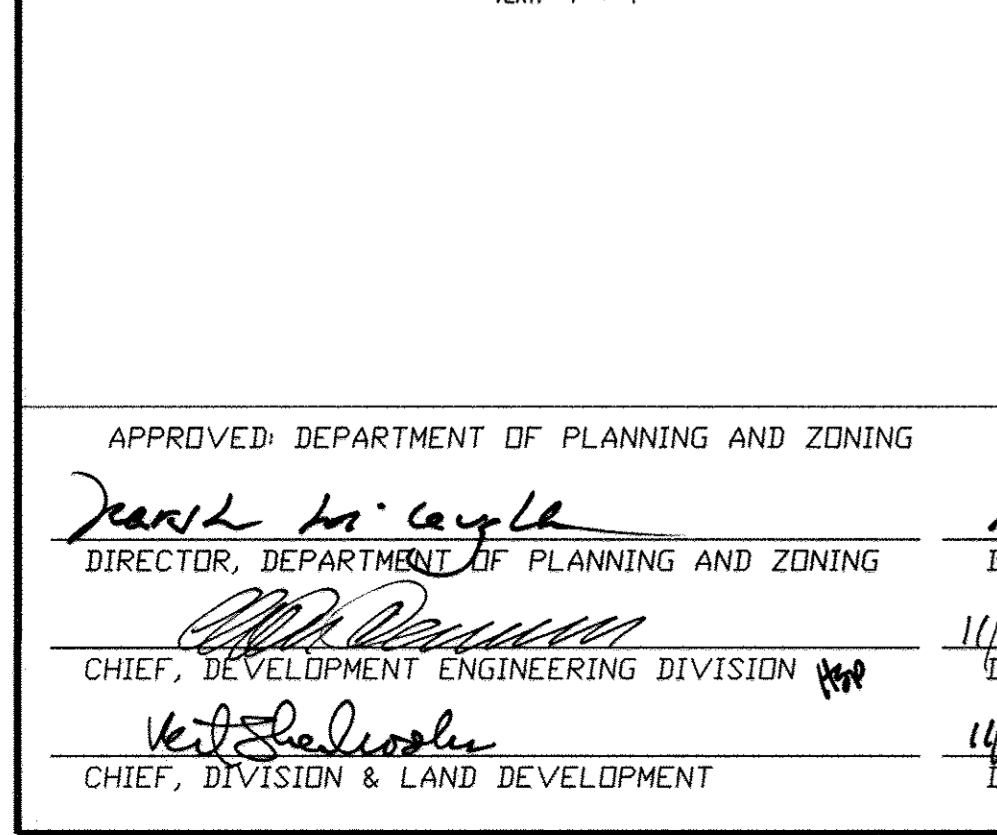
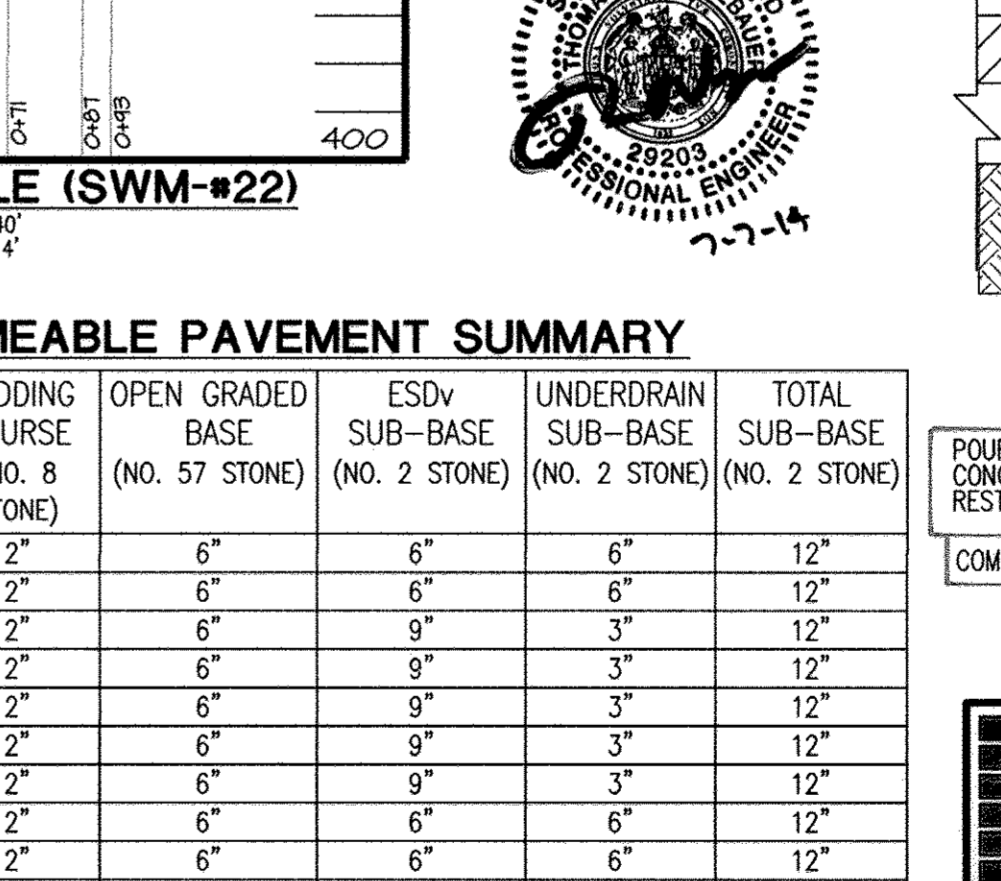
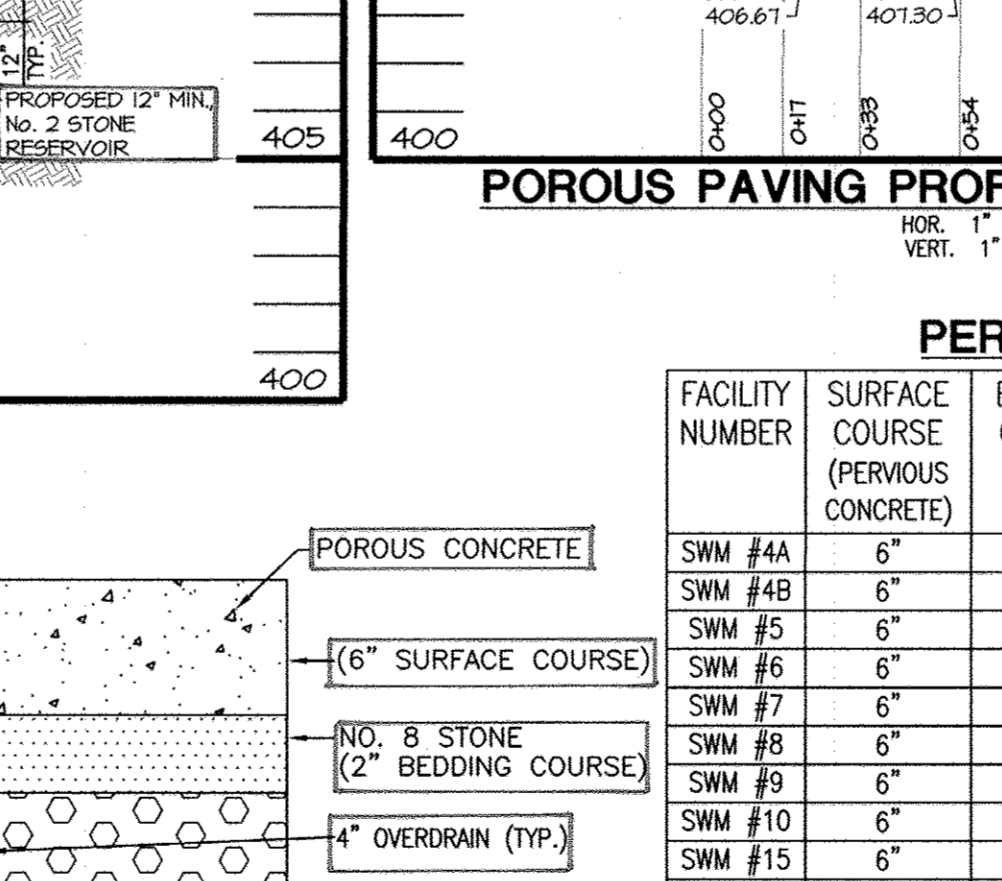
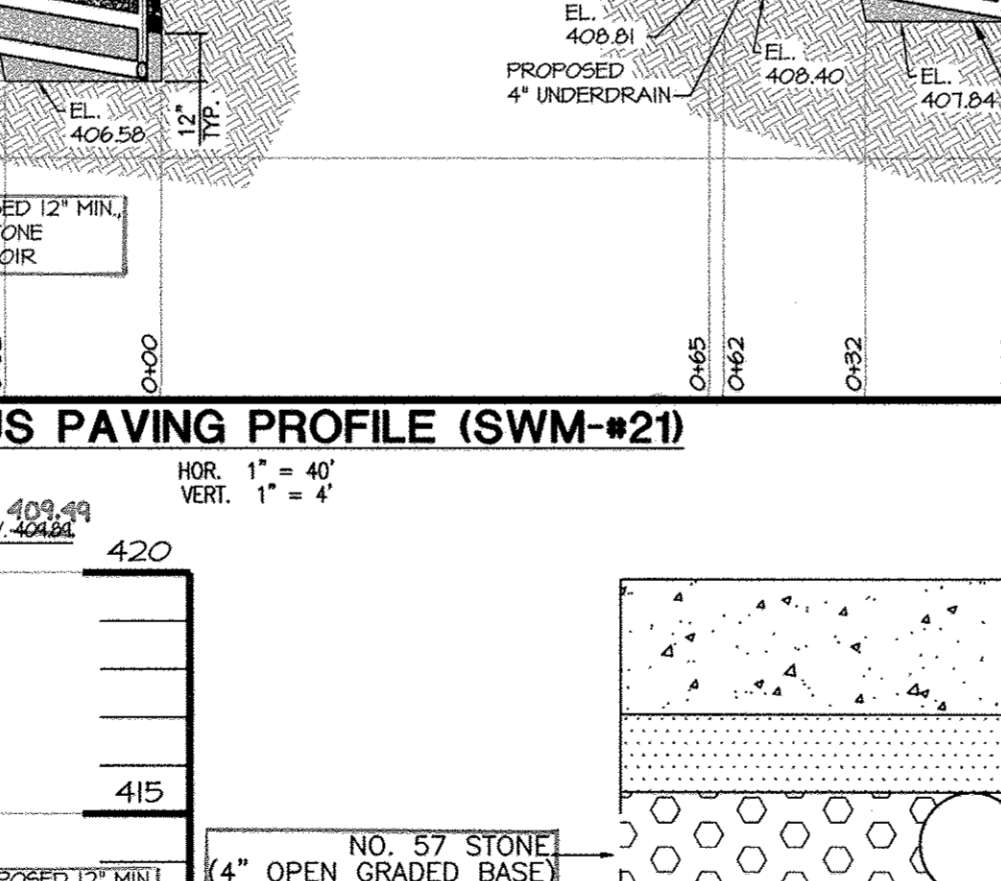
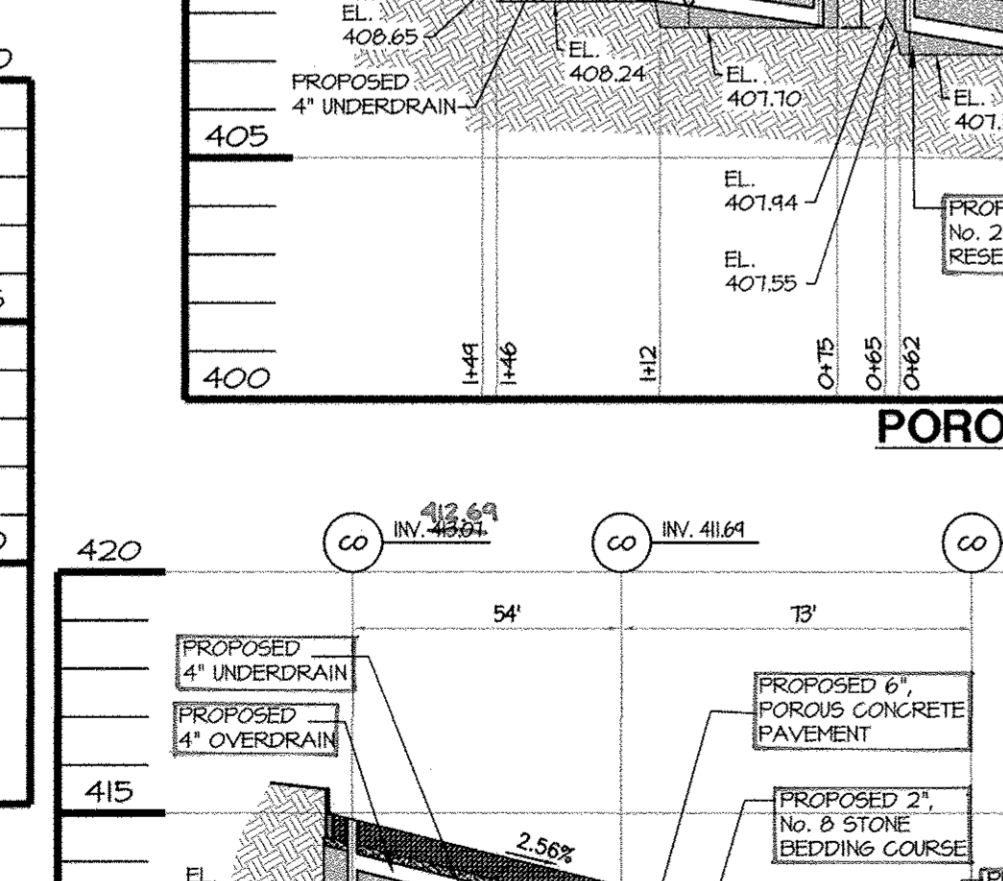
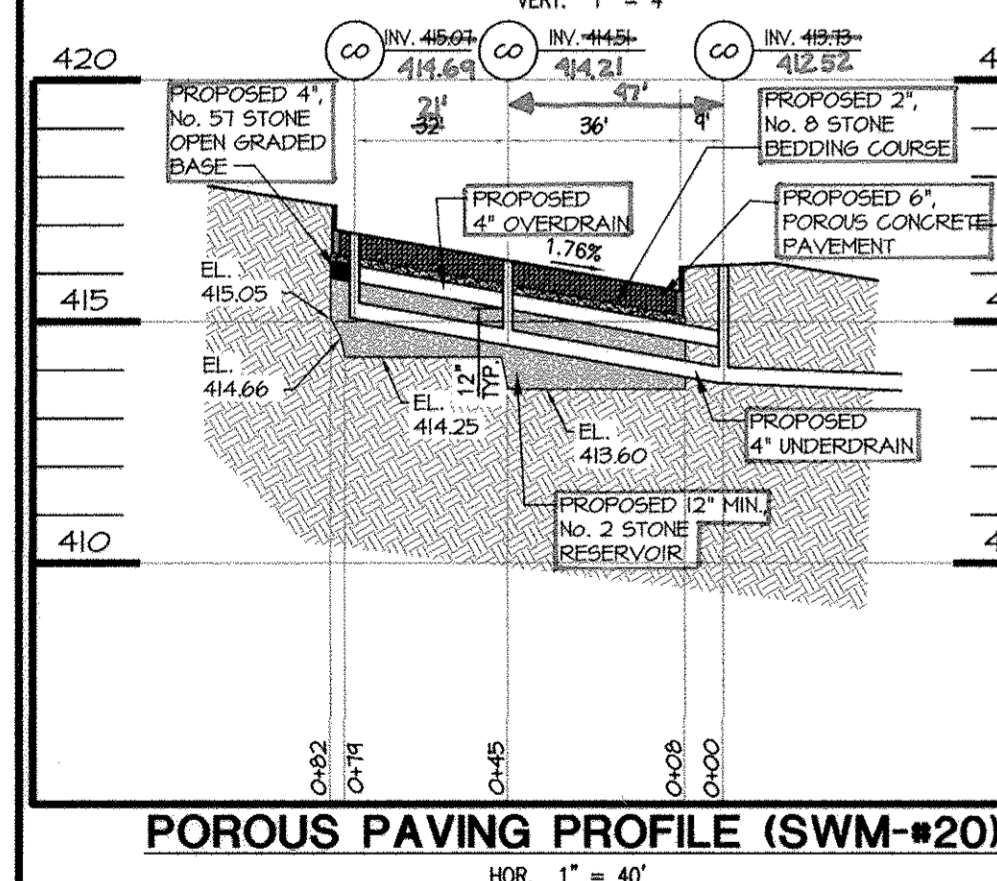
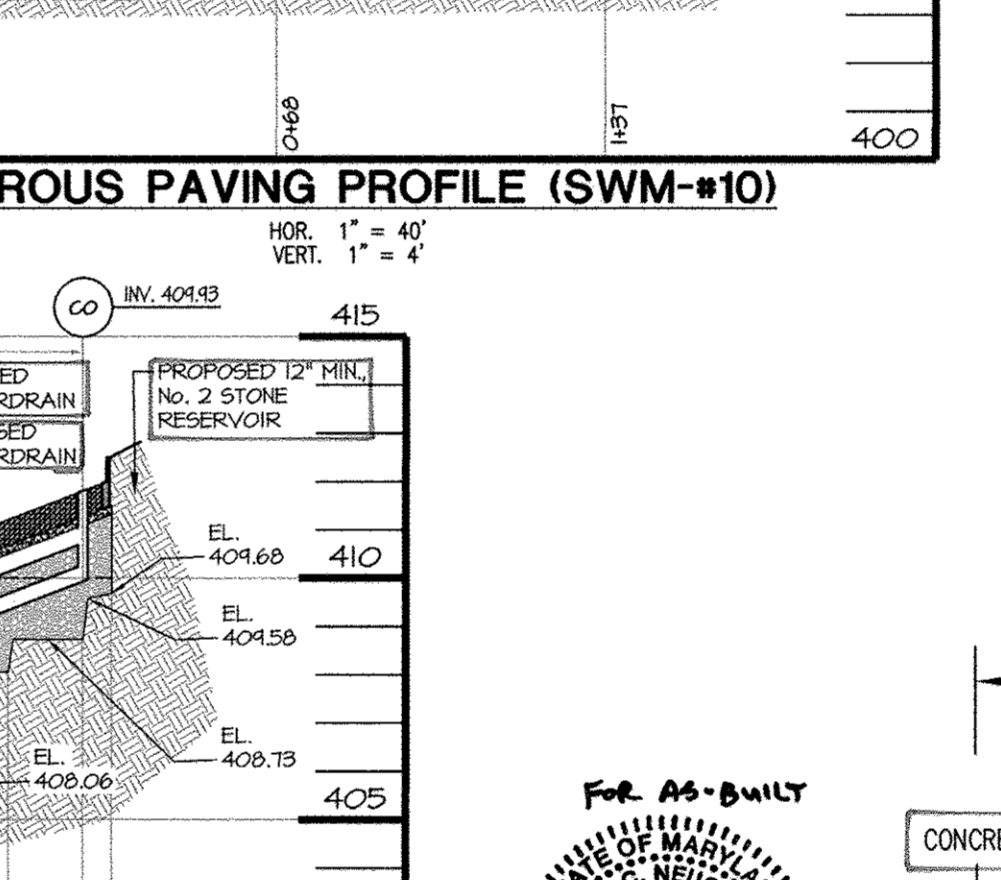
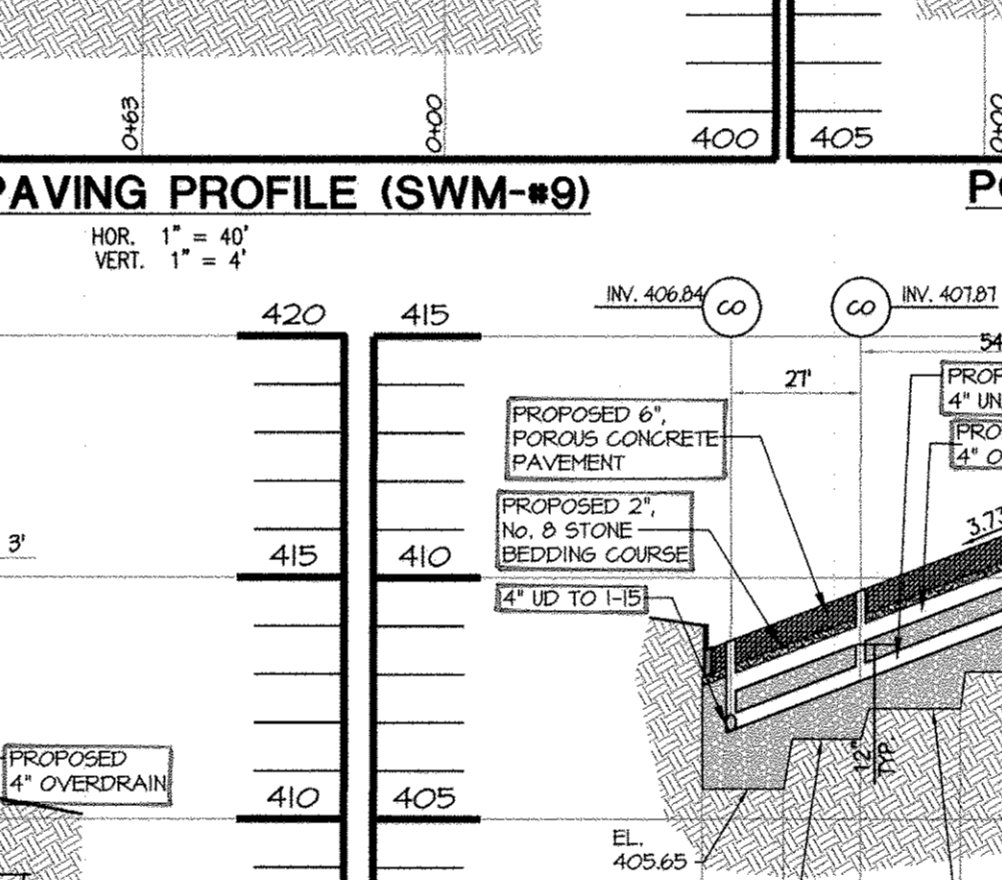
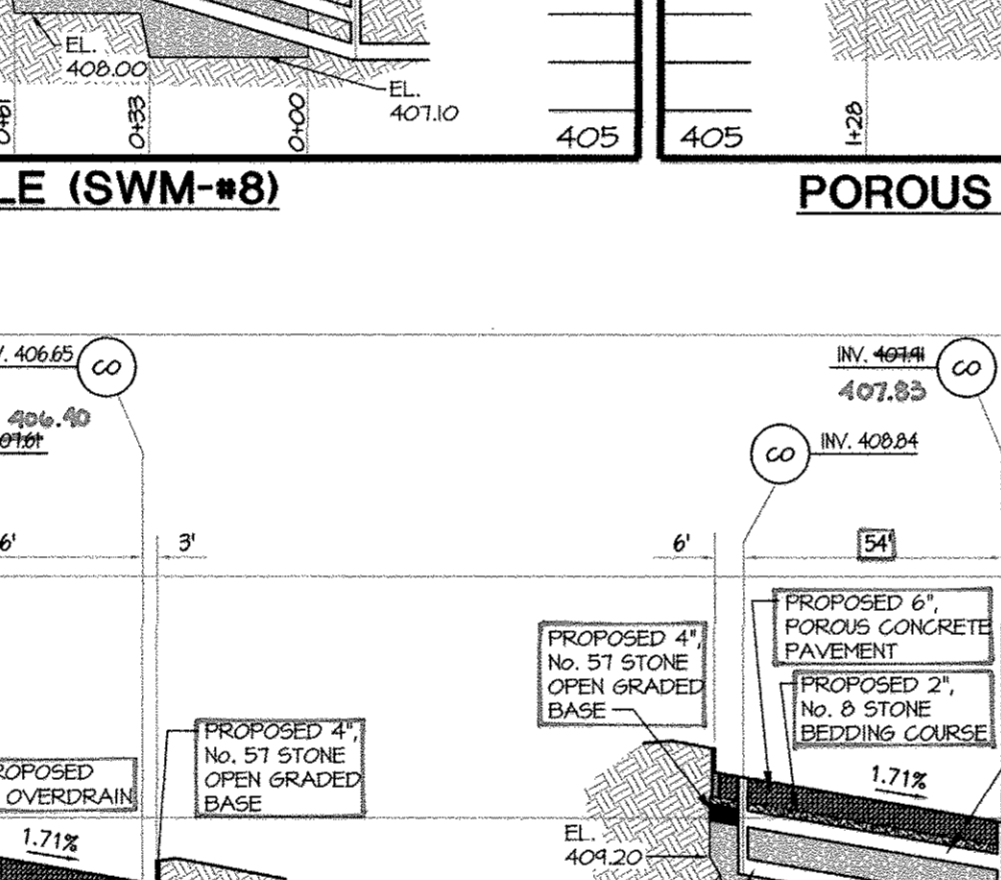
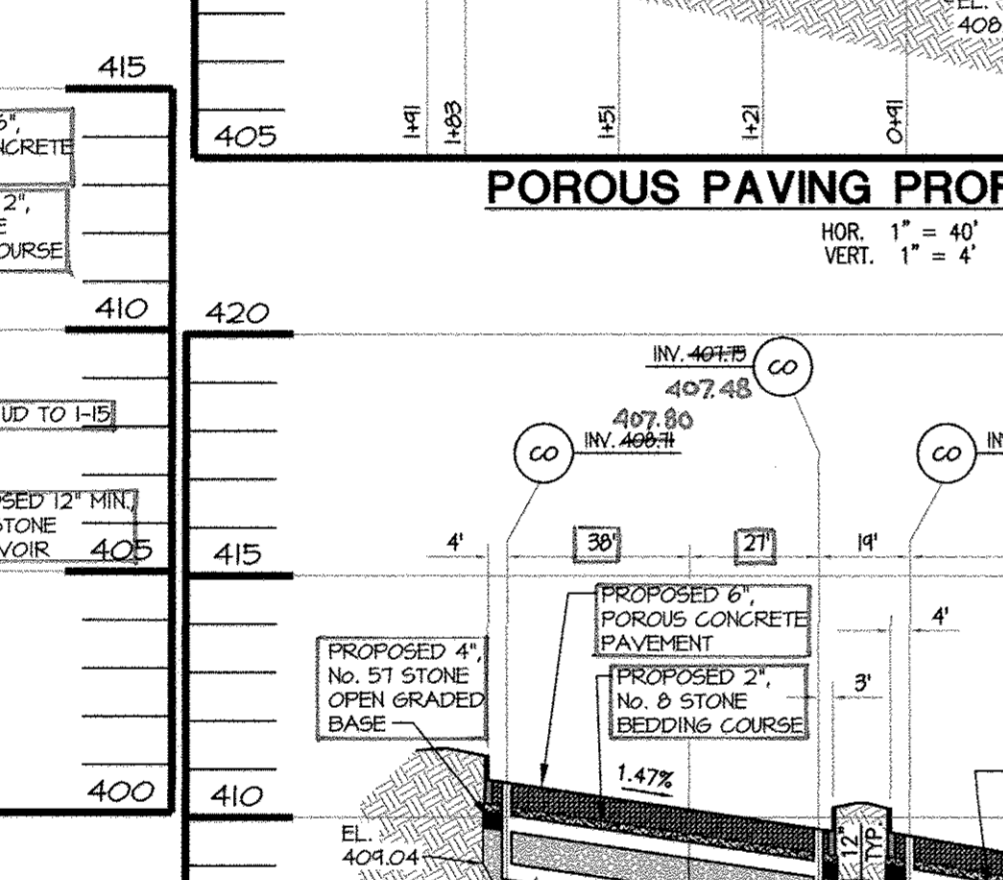
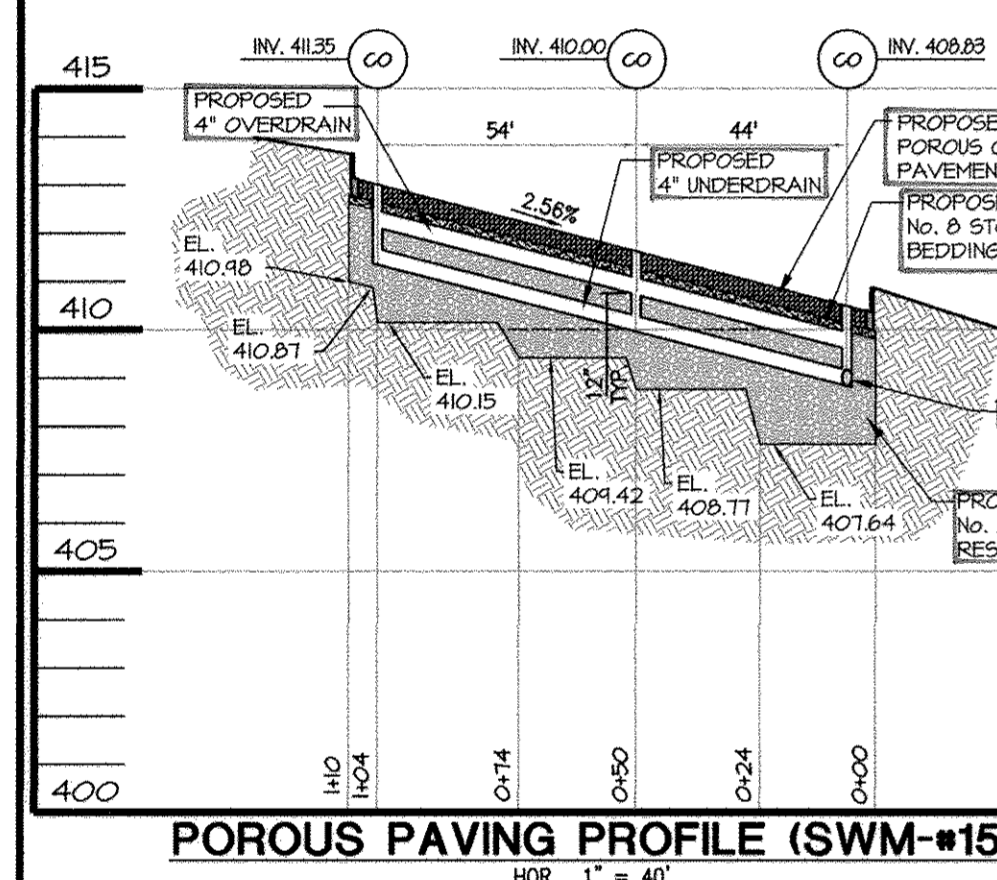
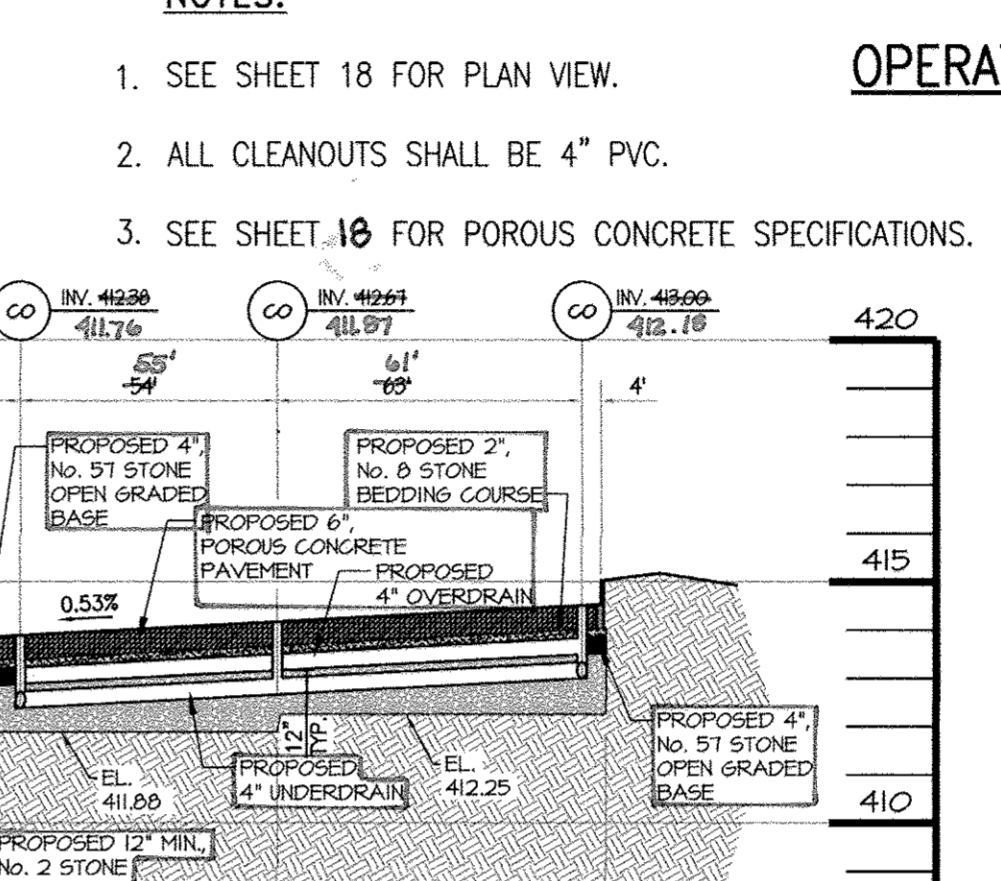
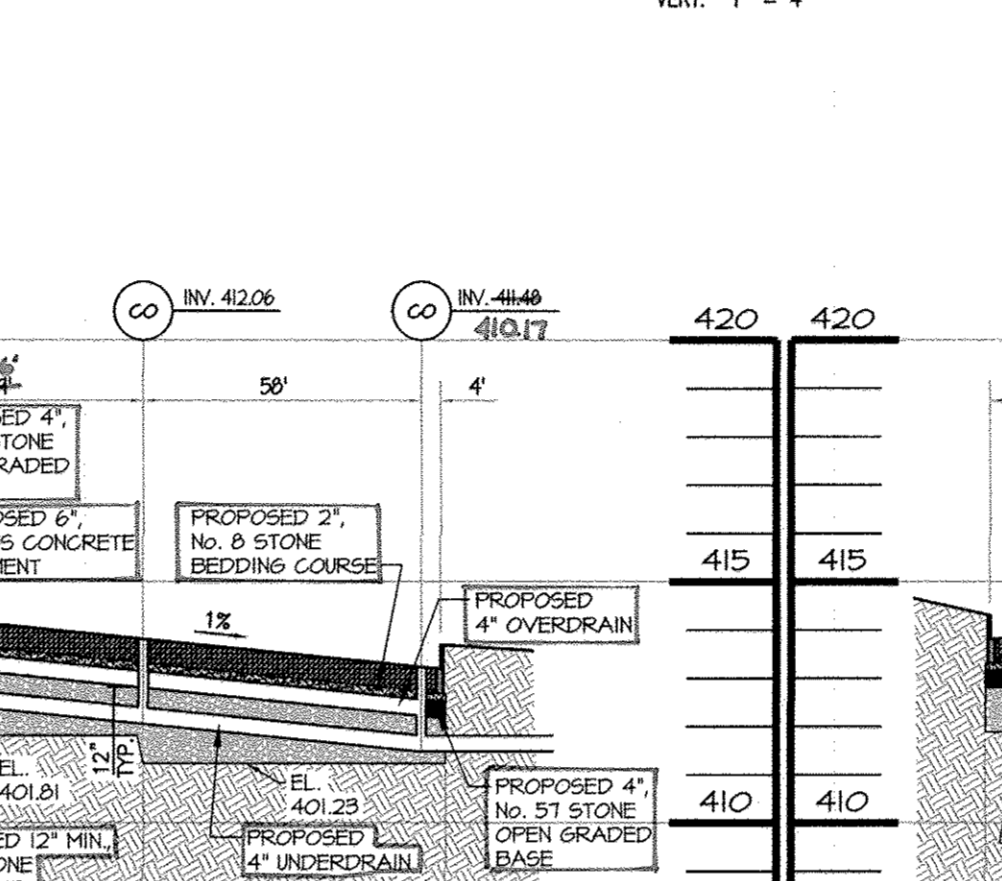
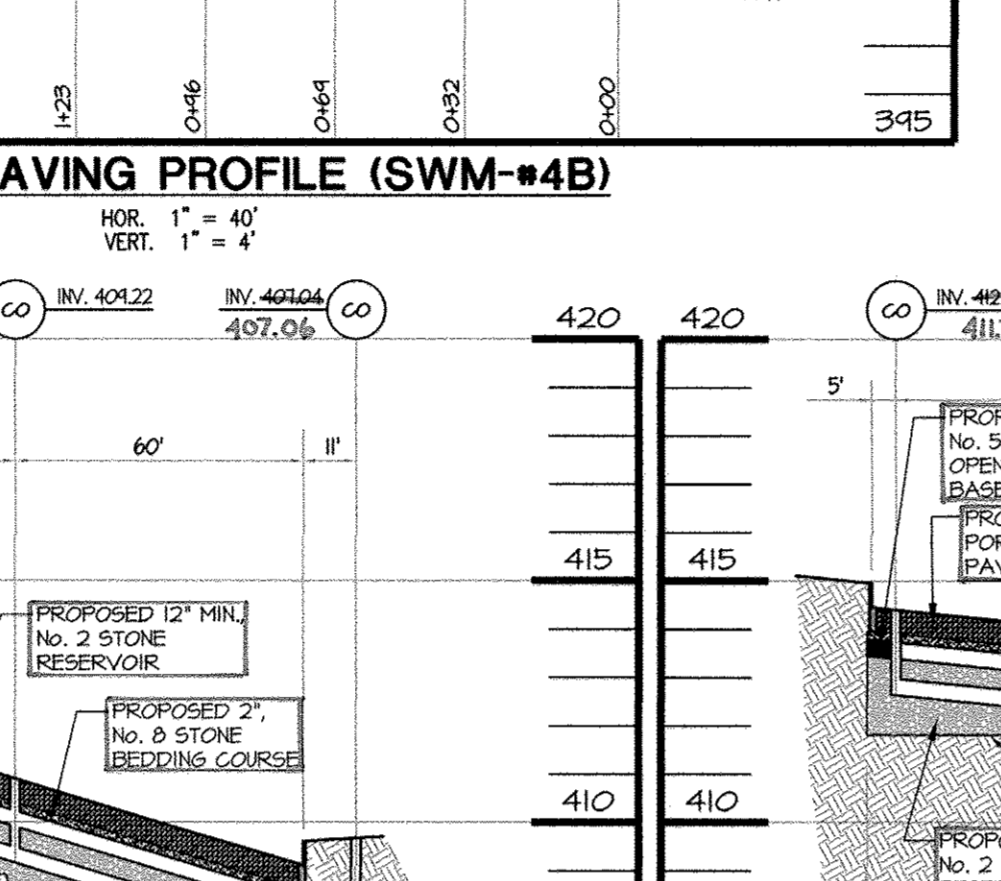
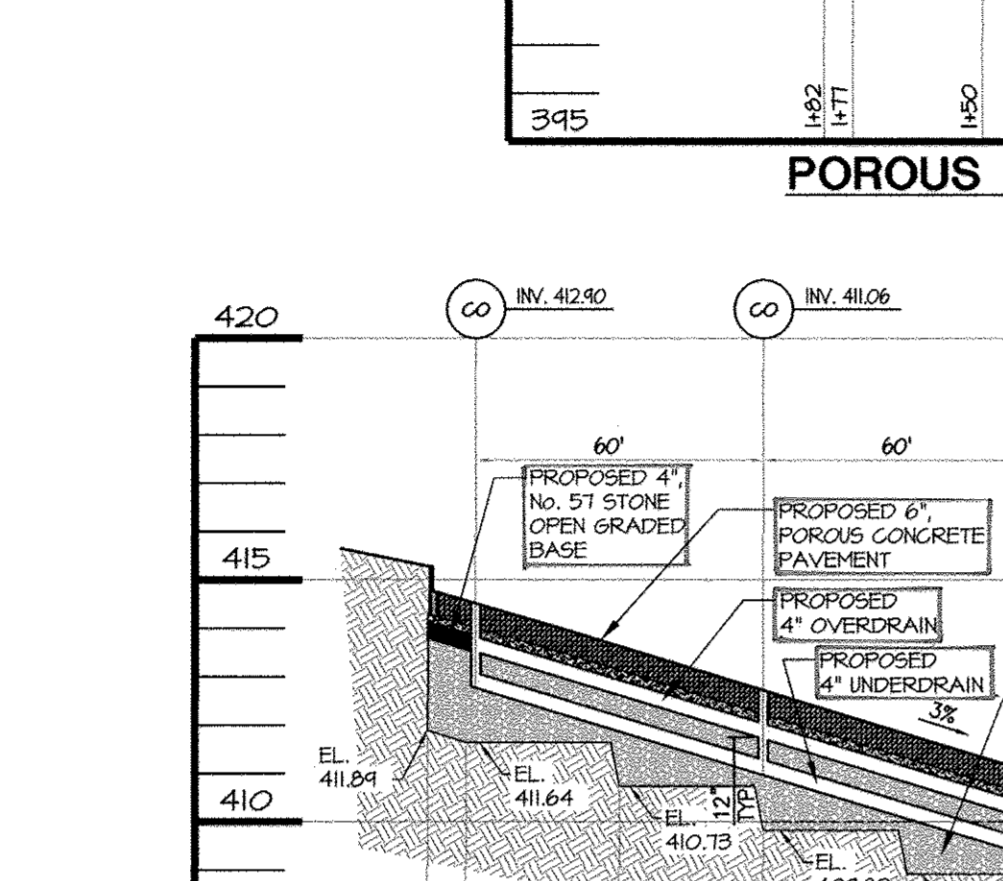
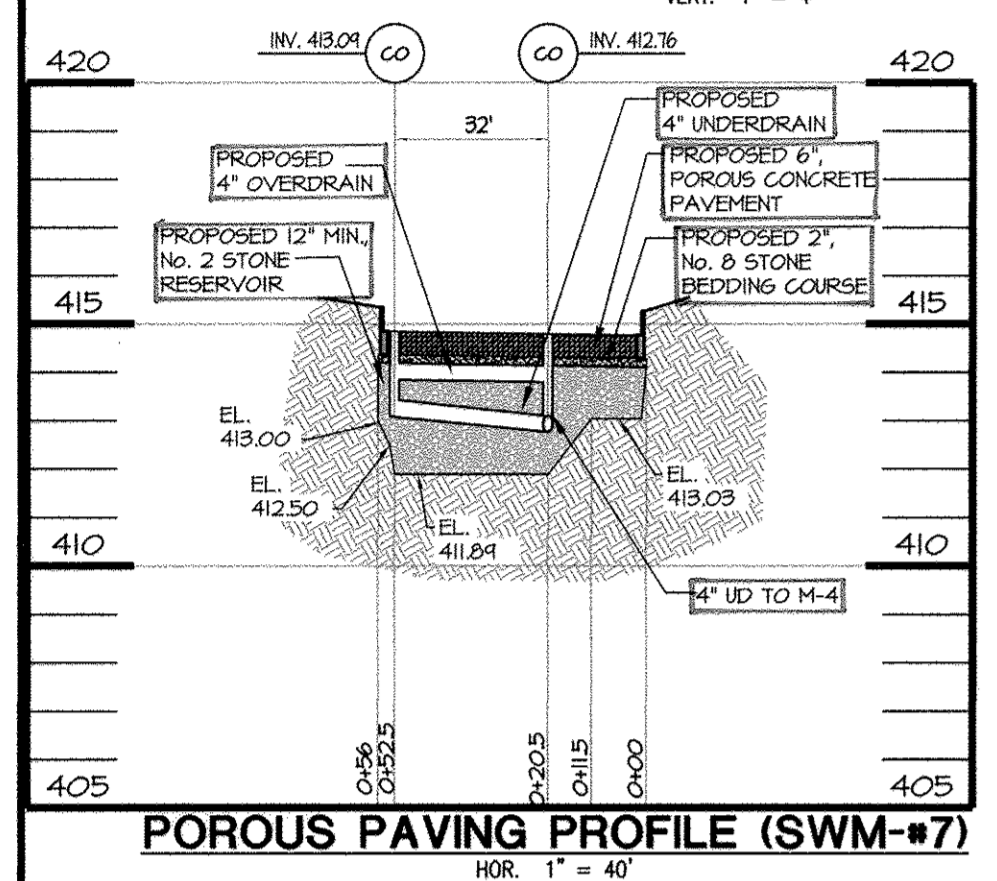
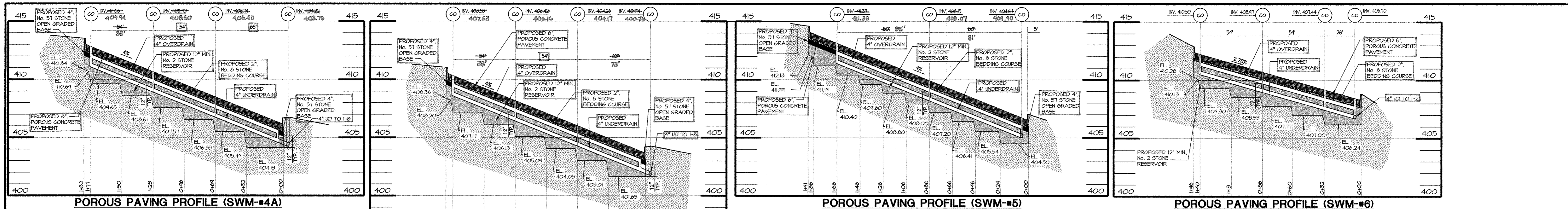
TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
 MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
 7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
07/01/14	AS-BUILT INFORMATION ADDED TO PLAN	12039

SCALE: AS SHOWN
 DATE: 10/16/2012
 DRAWN BY: MK
 DESIGN BY: MK
 REVIEW BY: TCN
 SHEET: 16 OF 48

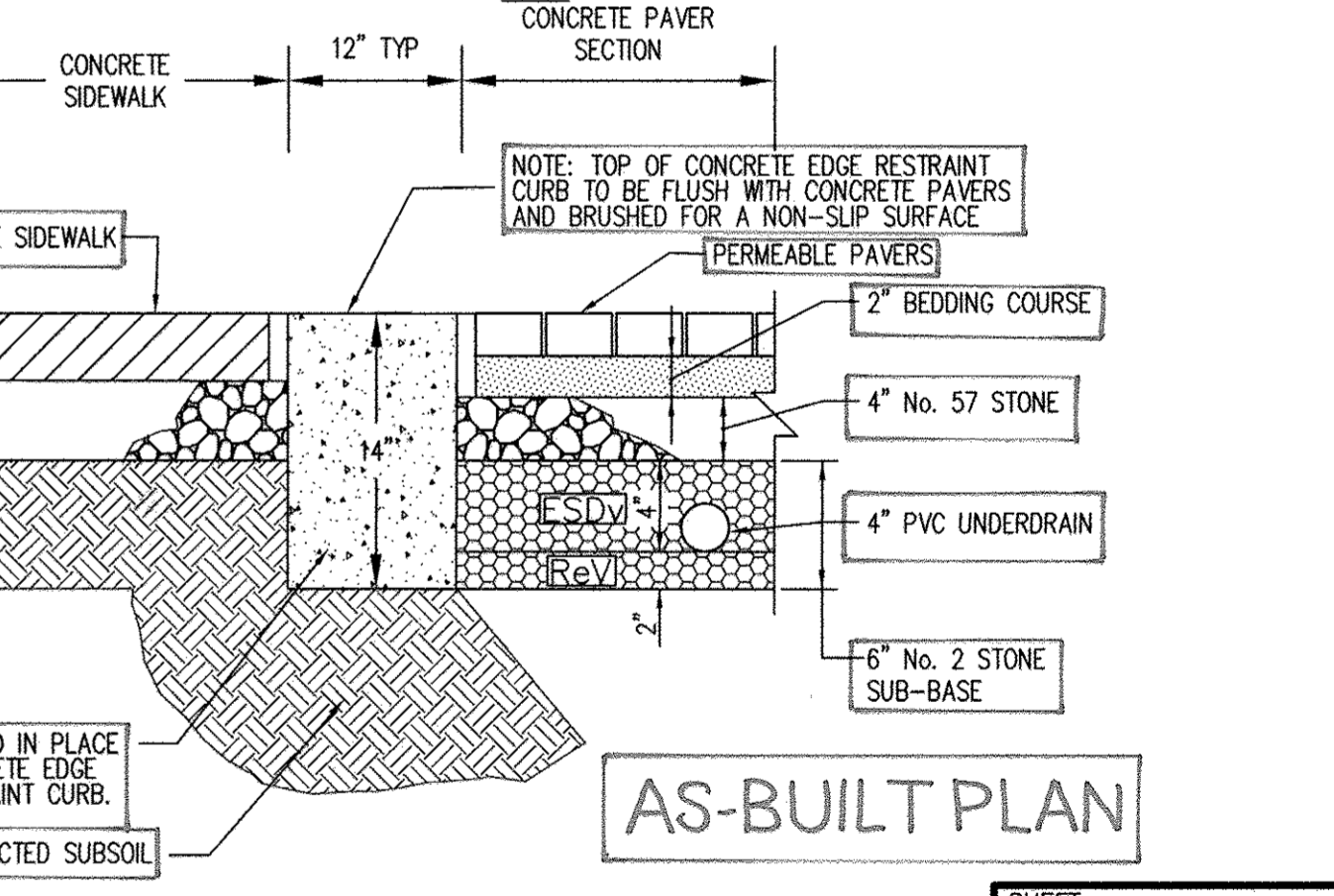
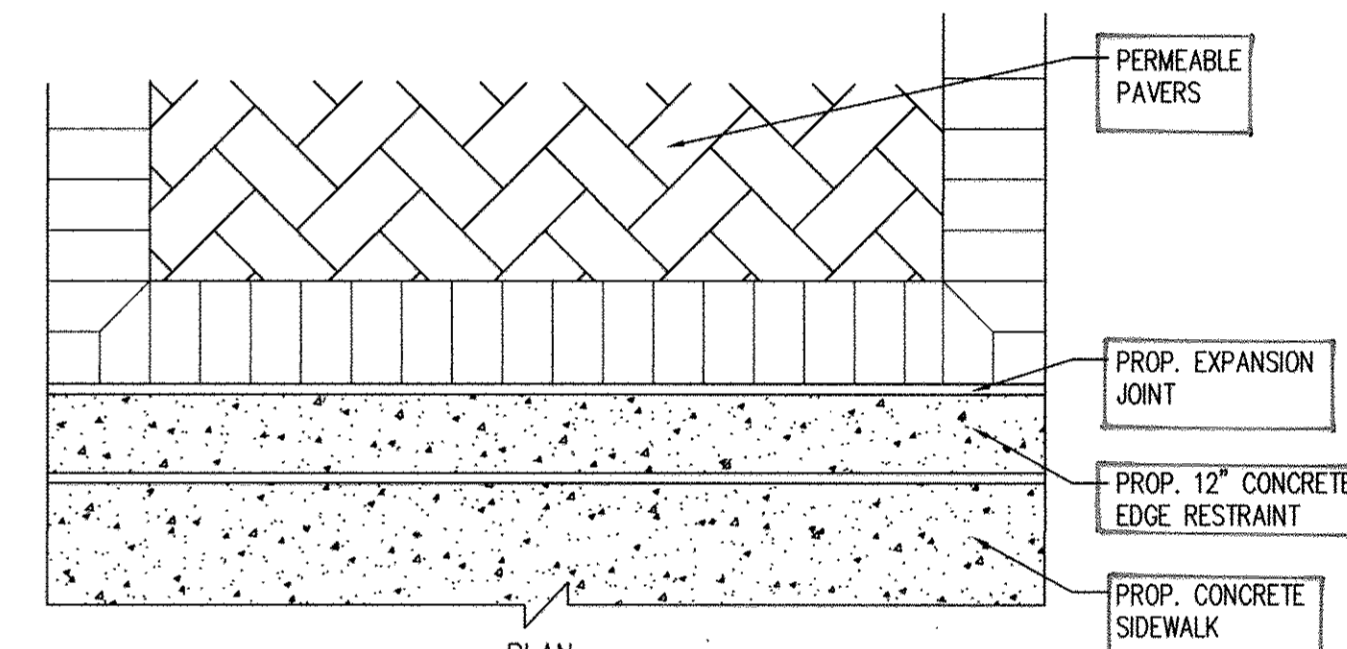
OWNER / APPLICANT / DEVELOPER:
 ADDRESS: GRACE
 7500 GRACE DRIVE
 COLUMBIA, MARYLAND 21044
 CONTACT: MR. NIZAM USTA
 PHONE: 617-277-2145

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. 29203. EXPIRATION DATE: 06/16/2013.



OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED PERMEABLE PAVEMENT (A-2)

- THE FOLLOWING ITEMS SHOULD BE ADDRESSED TO ENSURE PROPER MAINTENANCE AND LONG-TERM PERFORMANCE OF PERMEABLE PAVEMENT:
1. THE OWNER SHALL PERIODICALLY SWEEP (OR VACUUM POROUS CONCRETE PAVEMENT) THE PAVEMENT SURFACES TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING OR COMPRESSED AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
 2. THE OWNER SHALL PERIODICALLY CLEAN DRAINAGE PIPES, INLETS, STONE EDGE DRAINS AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE.
 3. THE OWNER SHALL USE DEICERS IN MODERATION. DEICERS SHOULD BE NON-TOXIC AND BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT.
 4. THE OWNER SHALL ENSURE SNOW PLOWING IS PERFORMED CAREFULLY WITH BLADES SET ONE-INCH ABOVE THE SURFACE. PLOWED SNOW PILES AND SNOWMELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.



PERMEABLE PAVEMENT SUMMARY

FACILITY NUMBER	SURFACE COURSE (PERVIOUS CONCRETE)	BEDDING COURSE (NO. 8 STONE)	OPEN GRADED BASE (NO. 57 STONE)	ESD SUB-BASE (NO. 2 STONE)	UNDERDRAIN SUB-BASE (NO. 2 STONE)	TOTAL SUB-BASE (NO. 2 STONE)
SWM #4A	6"	2"	6"	6"	6"	12"
SWM #4B	6"	2"	6"	6"	6"	12"
SWM #5	6"	2"	6"	9"	3"	12"
SWM #6	6"	2"	6"	9"	3"	12"
SWM #7	6"	2"	6"	9"	3"	12"
SWM #8	6"	2"	6"	9"	3"	12"
SWM #9	6"	2"	6"	9"	3"	12"
SWM #10	6"	2"	6"	6"	6"	12"
SWM #15	6"	2"	6"	6"	6"	12"
SWM #20	6"	2"	6"	9"	3"	12"
SWM #21	6"	2"	6"	12"	0"	12"
SWM #22	6"	2"	6"	9"	3"	12"
SWM #23	6"	2"	6"	9"	3"	12"

PERMEABLE PAVERS SUMMARY

FACILITY NUMBER	SURFACE COURSE (PERMEABLE PAVERS)	BEDDING COURSE (NO. 8 STONE)	OPEN GRADED BASE (NO. 57 STONE)	ESD SUB-BASE (NO. 2 STONE)	UNDERDRAIN SUB-BASE (NO. 2 STONE)	TOTAL SUB-BASE (NO. 2 STONE)
SWM #11	2"	2"	4"	4"	2"	6"

PERMEABLE PAVEMENT SECTION MDE CLASSIFICATION A 2
NOT TO SCALE

POROUS CONCRETE PAVEMENT SYSTEM NOTES:

CONTRACTOR TO SUPPLY SHOP DRAWINGS TO THE ENGINEER THAT MEET THE FOLLOWING REQUIREMENTS FOR REVIEW:

1. POROSITY (n) = 40%
2. INSTALL 4" UNDERDRAIN & OVERDRAIN - SCH-40 PVC, 3/8" PERFORATIONS @ 6" O.C., 4 HOLES PER ROW
3. PERMEABILITY (k) >= 8 IN/HR
4. DEPTH OF TOP LAYER WILL BE DETERMINED BY THE TYPE OF SYSTEM USED
5. SYSTEM SHOULD BE DESIGNED FOR PARKED PASSENGER VEHICLES
6. IF PERMEABLE PAVER IS CHOSEN, CONTRACTOR TO PROVIDE EDGE TREATMENT DETAILS



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MARYLAND PROFESSIONAL ENGINEER
29203
10-17-12

GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN

PERMEABLE PAVEMENT NOTES & DETAILS

DATE	REVISIONS	JOB NO.:
07/07/14	AS-BUILT INFORMATION ADDED TO PLAN	12039

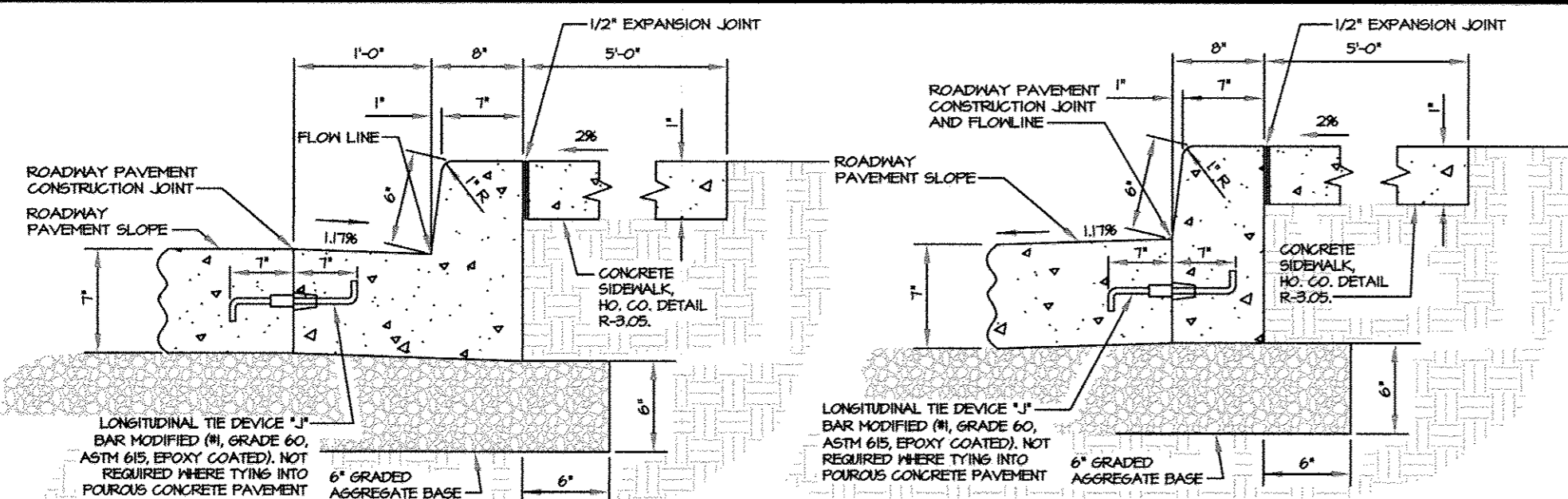
TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

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. 29203, EXPIRATION DATE: 06/16/2013.

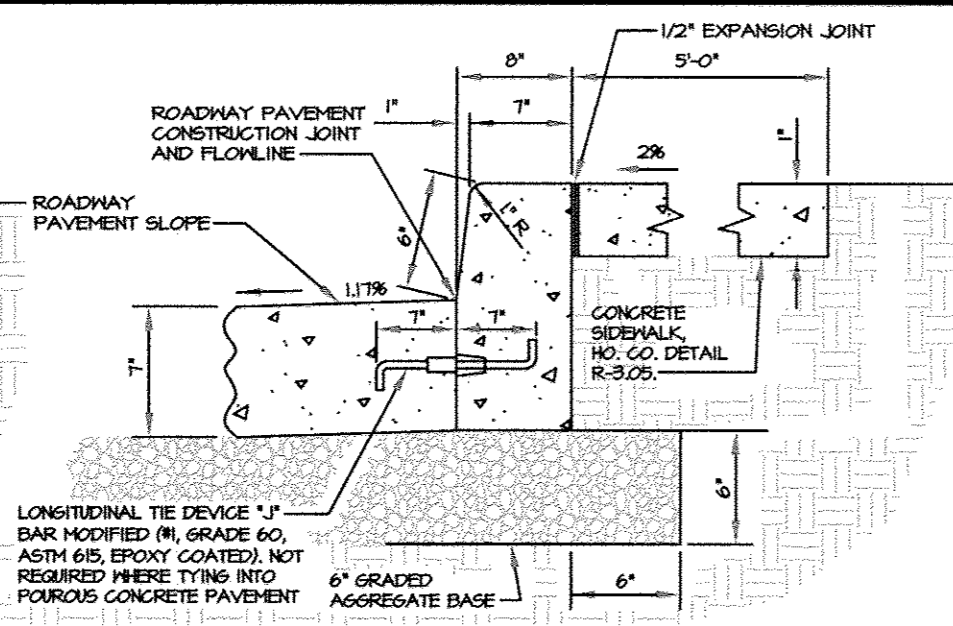
OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145

DATE: 10/16/2012
DRAWN BY: PES
DESIGN BY: PES
REVIEW BY: TCN
SHEET: 17 OF 48

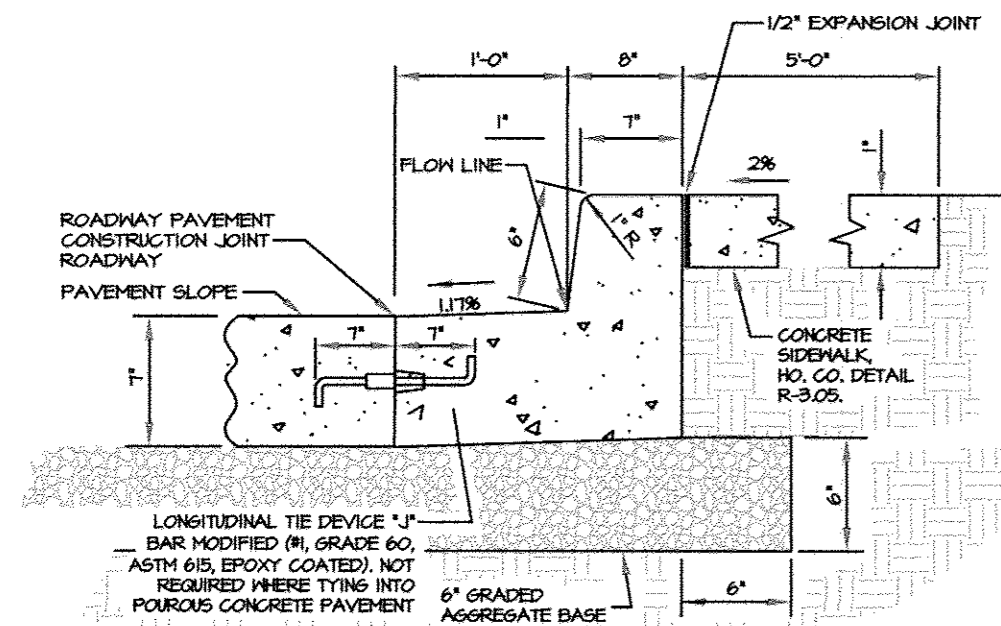
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1:1, Copyright 2012, Morris & Ritchie Associates, Inc.



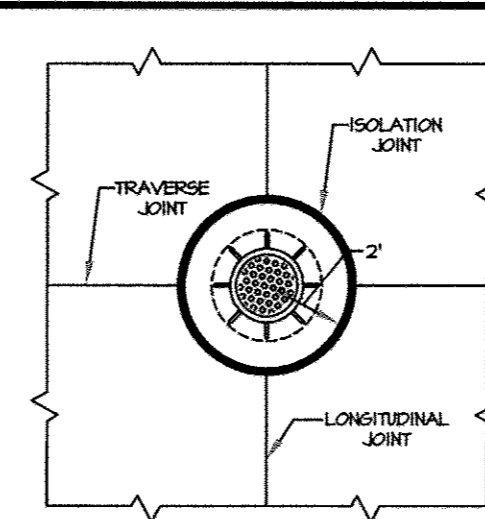
1 COMBINATION CURB AND GUTTER
NOT TO SCALE



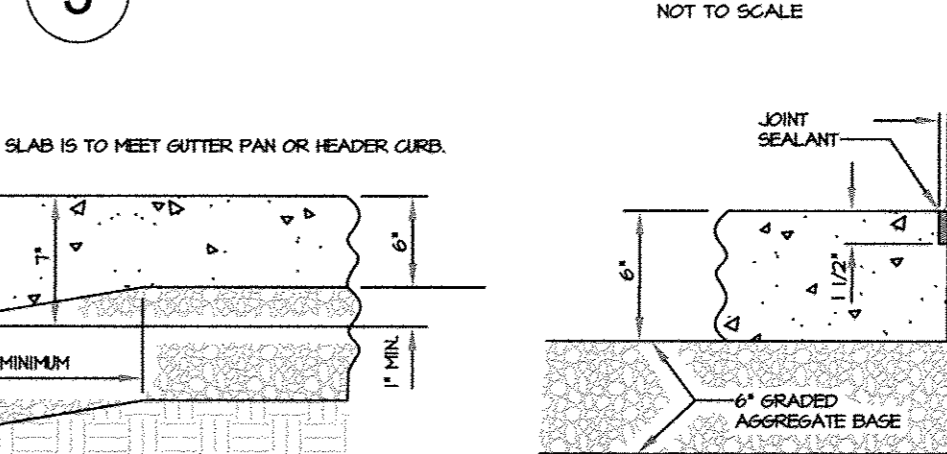
2 HEADER CURB
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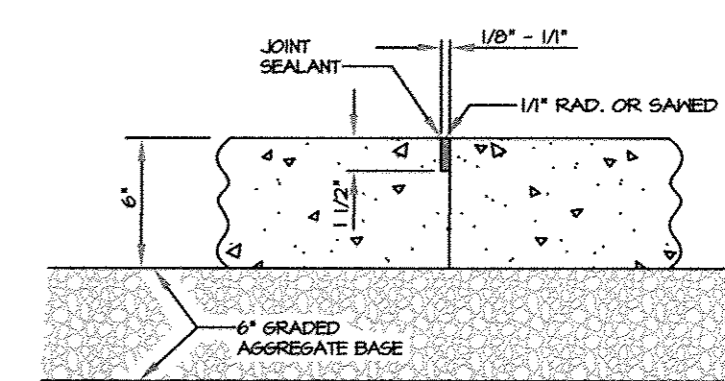
3 REVERSE CURB AND GUTTER
NOT TO SCALE



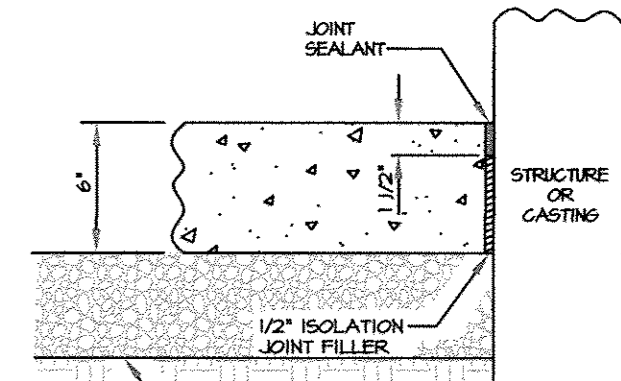
5 MANHOLE AND INLET BOXOUT DETAILS
NOT TO SCALE



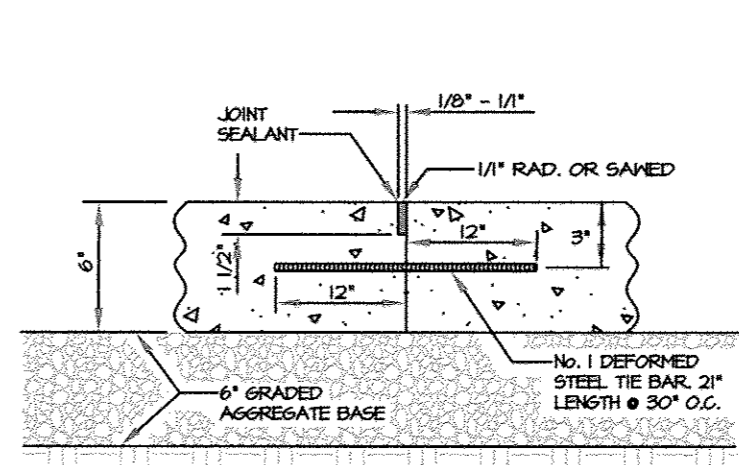
6 THICKENED SLAB
NOT TO SCALE



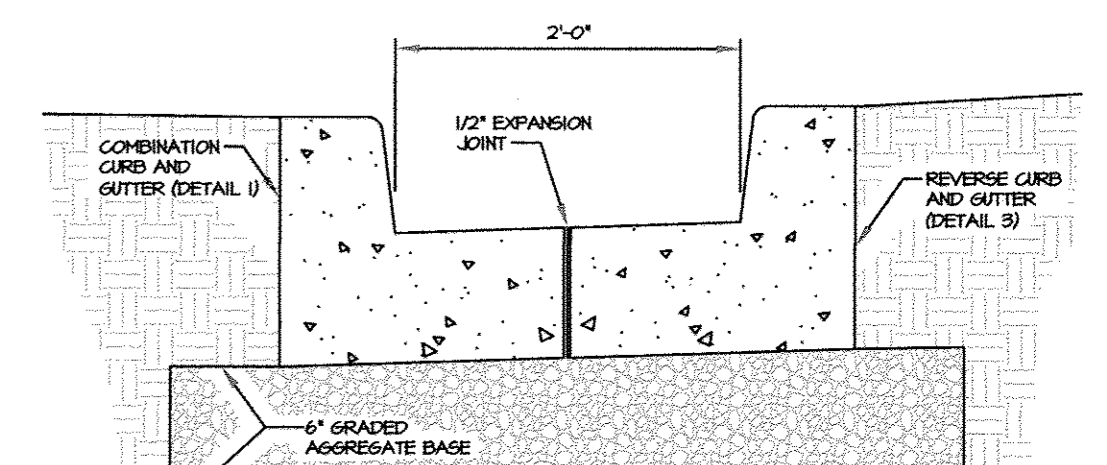
7 CONTRACTION JOINT
NOT TO SCALE



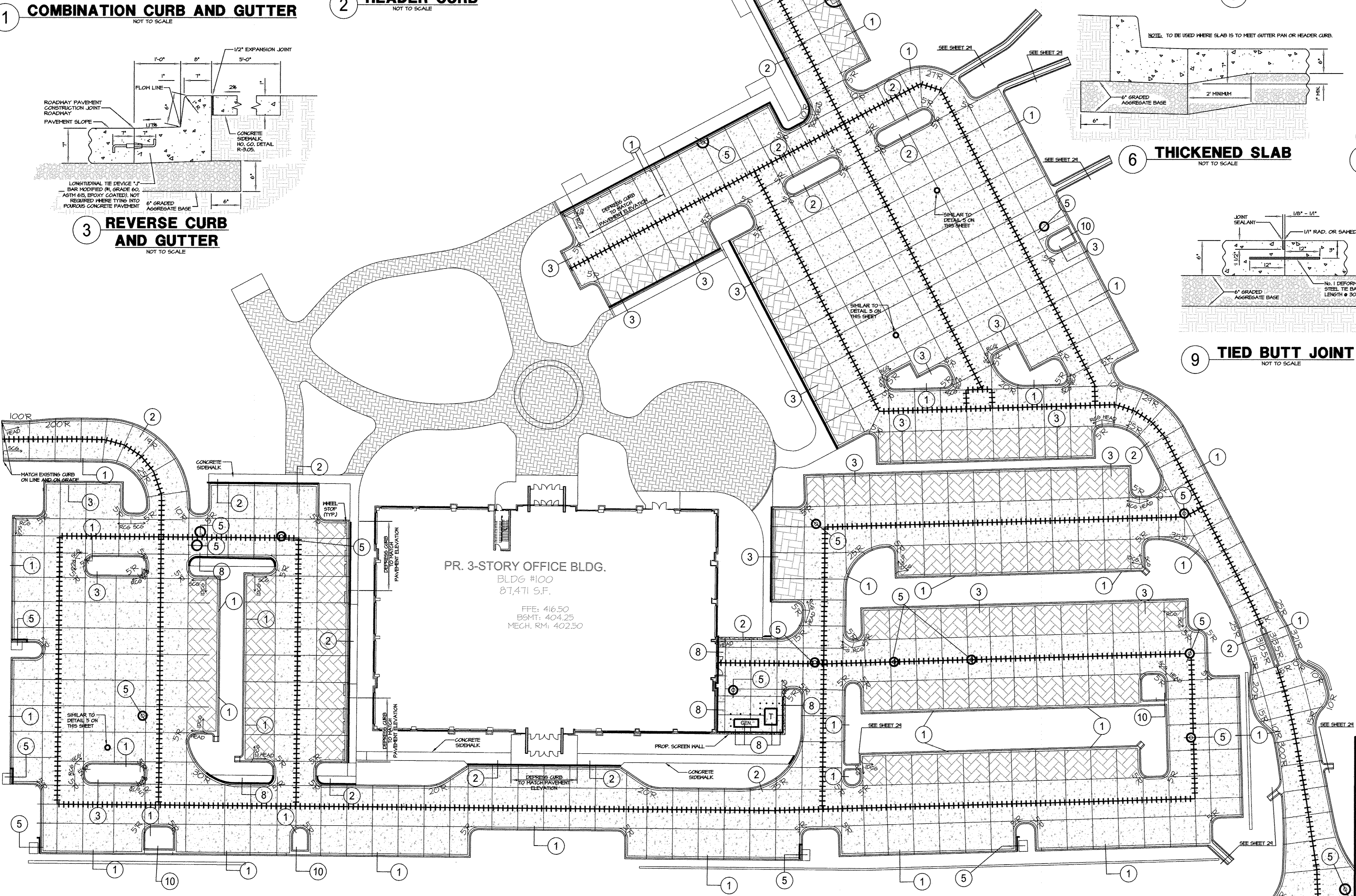
8 ISOLATION JOINT
NOT TO SCALE



9 TIED BUTT JOINT
NOT TO SCALE



10 CURB OPENING DETAIL
NOT TO SCALE



- GENERAL NOTES**
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS AND SPECIFICATIONS:
 - A) MARYLAND STATE HIGHWAY ADMINISTRATION (SHA), STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS.
 - B) HOWARD COUNTY VOLUME IV DESIGN MANUAL, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION.
 - C) AMERICAN CONCRETE INSTITUTE - ACI 308R-08 GUIDE FOR THE DESIGN AND CONSTRUCTION OF CONCRETE PARKING LOTS.
 - D) ACI-522.1-08 FOR PERVIOUS CONCRETE PAVEMENT SPECIFICATION.
 - JOINT SPACING FOR CONCRETE CURB AND COMBINATION CURB AND GUTTER SHALL MATCH PAVEMENT JOINTS.
 - LONGITUDINAL TIE BARS ARE NOT REQUIRED WHERE TYING INTO POROUS CONCRETE PAVEMENT.
 - LIQUID JOINT SEALANT SHALL BE SILICON.
 - ALL REINFORCING STEEL SHALL BE ASTM 615, GRADE 60 EPOXY COATED.
 - PLAIN PORTLAND CEMENT CONCRETE PAVEMENT SHALL BE MARYLAND STATE HIGHWAY ADMINISTRATION MIX NO. 8, 4000 PSI.
 - ALL POROUS CONCRETE PAVEMENT SHALL BE MARYLAND STATE HIGHWAY ADMINISTRATION MIX NO. 1, MFT AGGREGATE OR SAND MAXIMUM BY VOLUME 20% VOID TARGET AND WITH GRADE CONCRETE ADMIXTURE "V-HAR, VSC-500". MIX DESIGN SHALL BE SUBMITTED FOR REVIEW.

LEGEND

SCG	STANDARD CURB AND GUTTER, SEE DETAIL #1
RCG	REVERSE CURB AND GUTTER, SEE DETAIL #3
HEAD	HEADER CURB, SEE DETAIL #2
IDCG	INTERMITTENT DEPRESSED CURB AND GUTTER, SEE DETAIL #1
[Pattern]	PROPOSED CONCRETE PAVING (SEE DETAIL ON SHEET 29)
[Pattern]	PROPOSED POROUS CONCRETE PAVEMENT, SEE DETAILS SHEET 17.
[Pattern]	PROPOSED PERMEABLE PAVERS, SEE DETAILS SHEET 17.
[Pattern]	TIED BUTT JOINT, SEE DETAIL #9
[Pattern]	CONTRACTION JOINT, SEE DETAIL #7
[Pattern]	EXPANSION JOINT

APPROVED: DEPARTMENT OF PLANNING AND ZONING

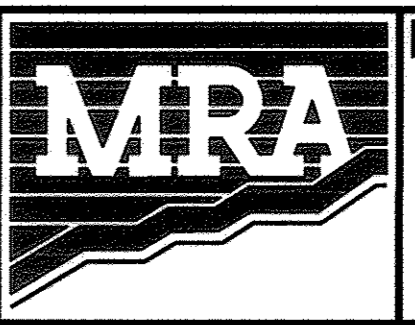
Mark A. Long Jr. 11/29/12
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE

John J. ... 11/14/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

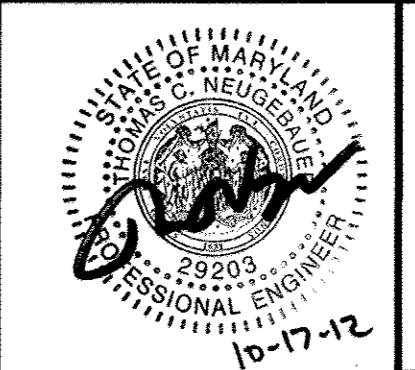
Keith ... 11/19/12
CHIEF, DIVISION & LAND DEVELOPMENT DATE

CONCRETE PAVEMENT PLAN
SCALE: 1"=30'

OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145



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GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
CONCRETE PAVEMENT PLAN & DETAILS

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PCY
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: 1" = 30'
		DATE: 10/16/2012
		DRAWN BY: RAH/PES
		DESIGN BY: MM
		REVIEW BY: TCN
		SHEET: 18 OF 48

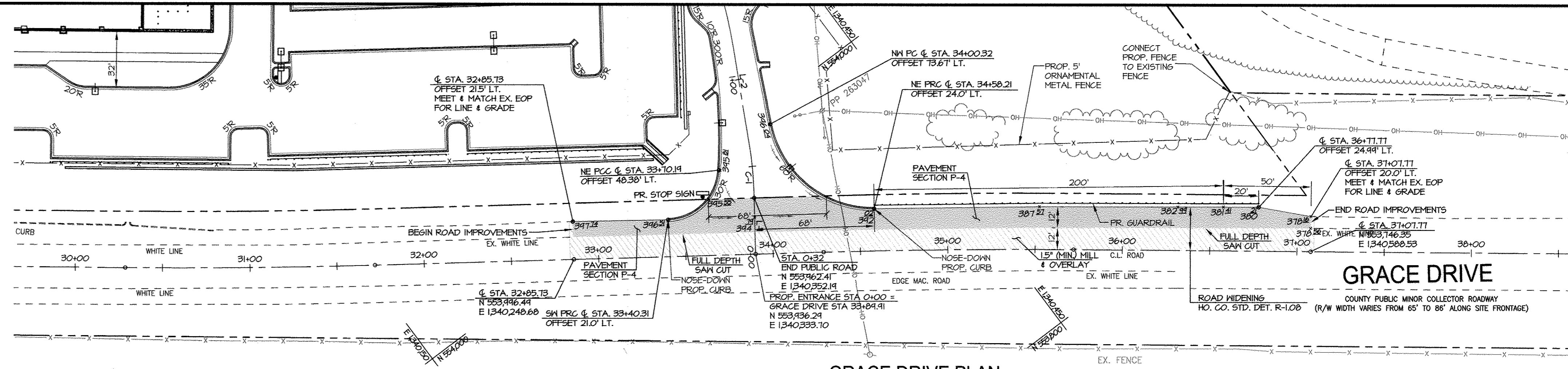
MD PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 29203, EXPIRATION DATE: 06/16/2015.

LEGEND

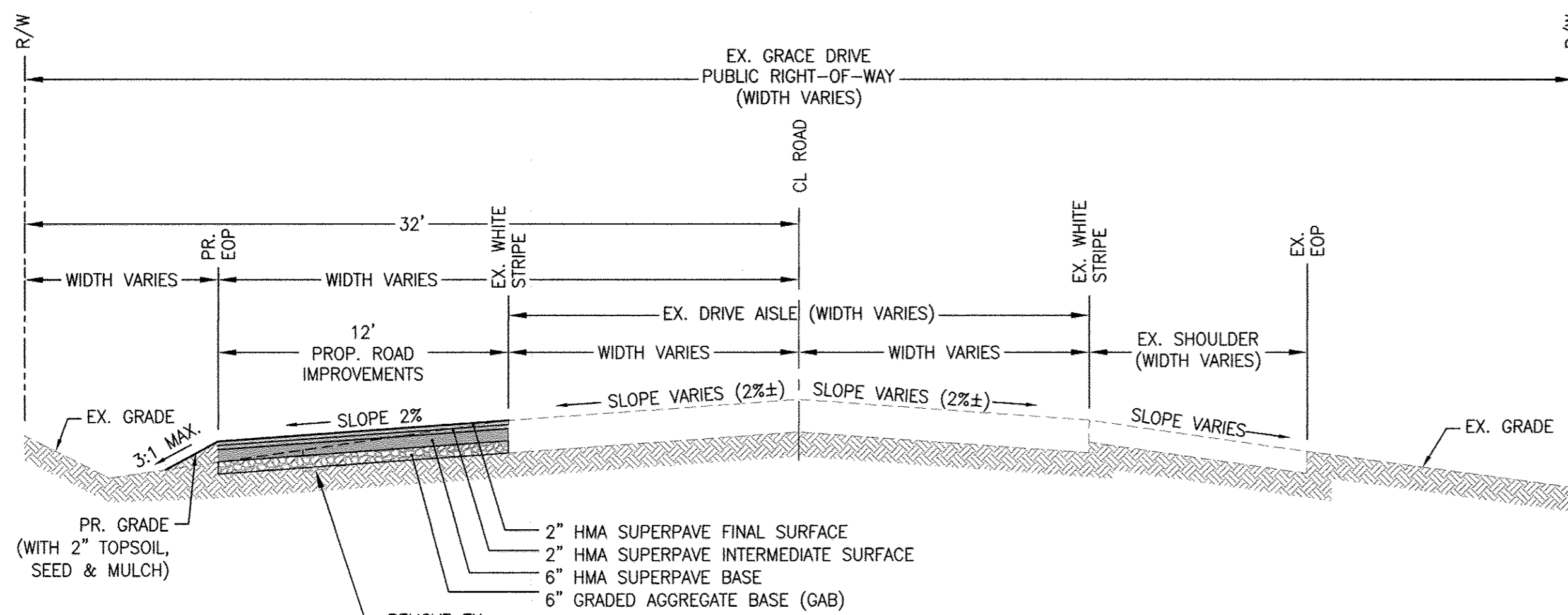
- EX. PROPERTY LINE
- EX. ADJACENT PROPERTY LINE
- EX. RIGHT OF WAY
- EX. BUILDING
- EX. CONCRETE
- EX. PAVEMENT
- EX. FENCE
- EX. OVERHEAD LINE
- EX. WATER LINE
- EX. SEWER LINE
- EX. STREAM
- EX. STREAM BUFFER
- EX. TREE LINE
- EX. GUARD RAIL
- EX. ELECTRIC CONDUIT
- EX. LIGHT POLES
- EX. GAS LINE
- EX. STORM DRAIN
- EX. CONDUIT
- EX. FIBER OPTIC
- EX. ELECTRIC MANHOLE
- EX. TELEPHONE MANHOLE
- PR. BUILDING FOOTPRINT
- PR. BUILDING OVERHANG
- PR. EDGE OF CONCRETE
- PR. CURB
- PR. SIDEWALK
- PR. RETAINING WALL
- PR. MEDIUM DUTY PAVEMENT
- PR. PAVEMENT MILL AND OVERLAY
- PR. TREELINE
- PR. HEDGEROW
- PR. STREET LIGHT

LINE TABLE		
LINE	LENGTH	BEARING
L-1	35.06	N35°17'56"E
L-2	55.48	N27°23'57"E

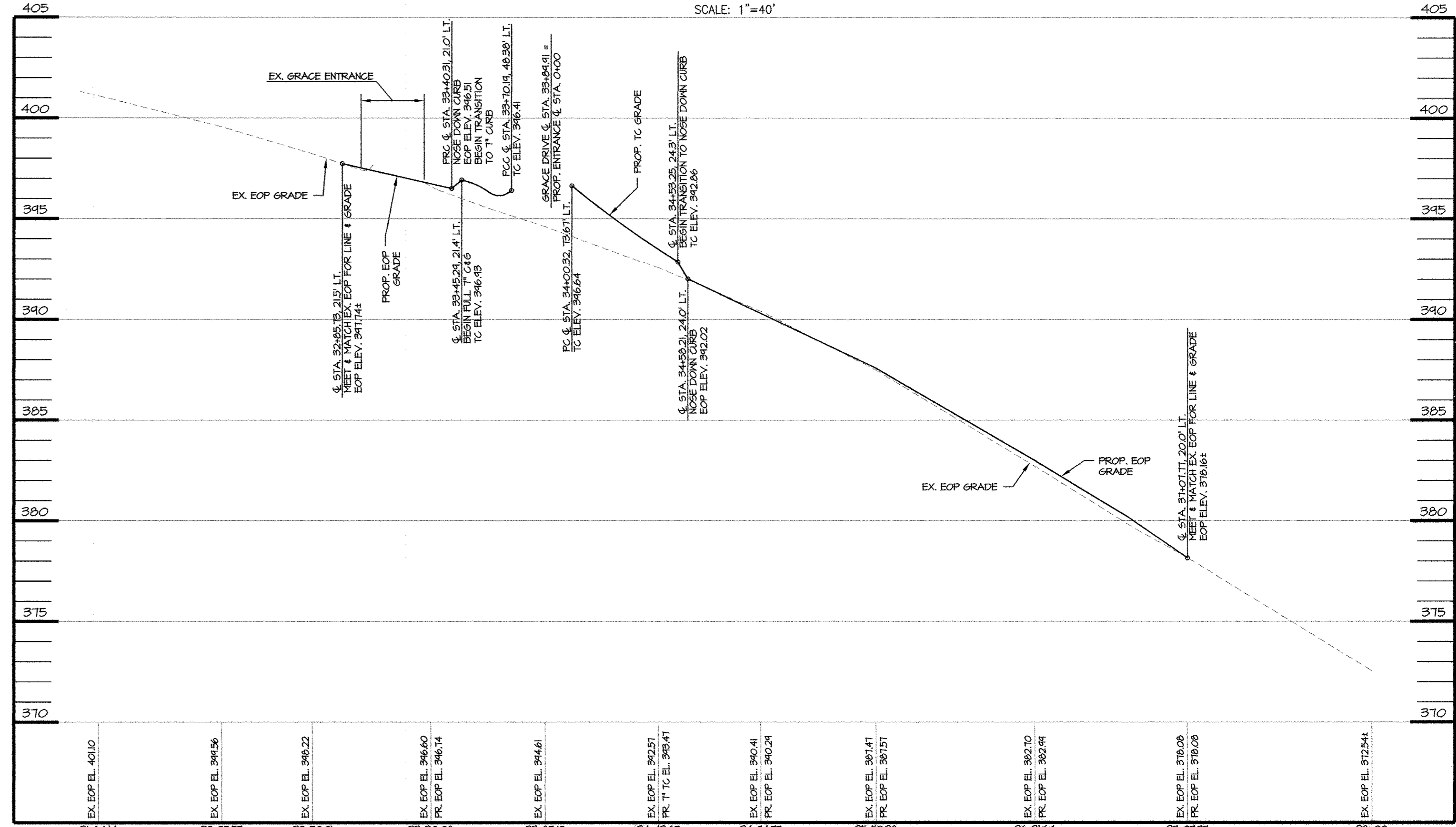
CURVE TABLE						
NAME	DELTA	RADIUS	LENGTH	BEARING	CHORD	TANGENT
C-1	7°53'59"	200.00'	27.58'	N 31°20'57" E	27.55'	13.81'



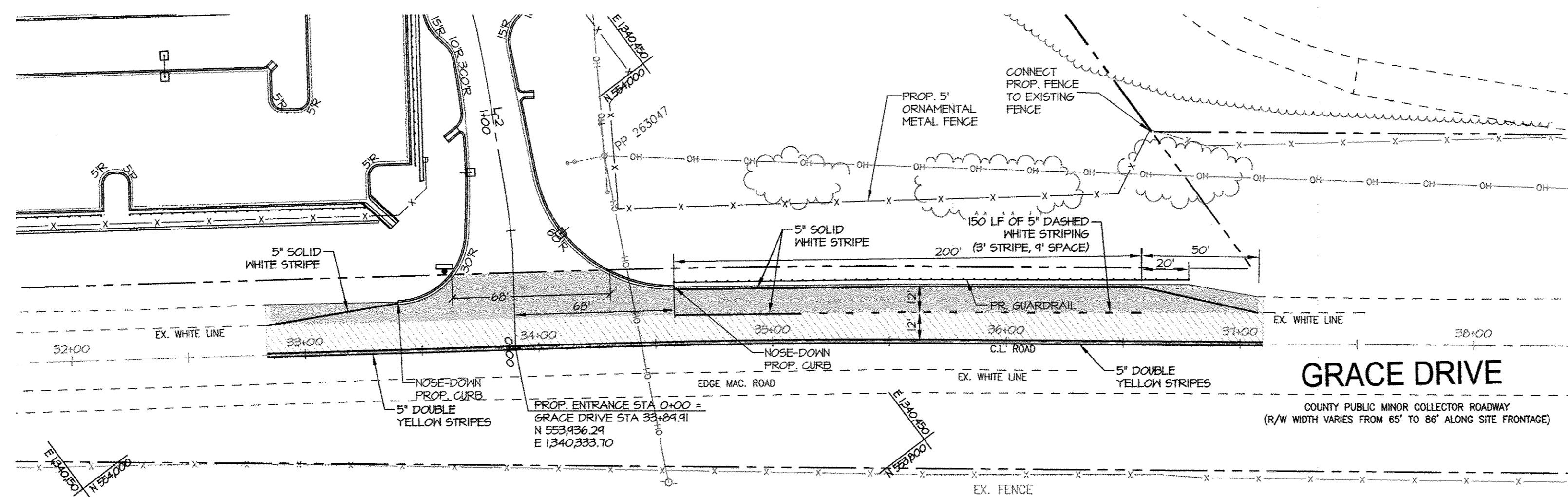
GRACE DRIVE PLAN
SCALE: 1"=40'



TYPICAL SECTION PROPOSED GRACE DRIVE ROAD IMPROVEMENTS
NOT TO SCALE



GRACE DRIVE TOP OF CURB PROFILE
HOR. 1"=40'
VERT. 1"=4'



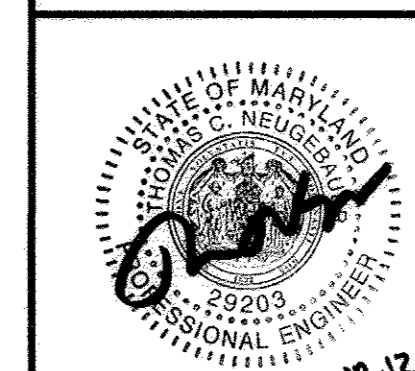
GRACE DRIVE PAVEMENT MARKING PLAN
SCALE: 1"=40'

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 11/16/11
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING
[Signature] 11/16/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
[Signature] 11/16/12
 CHIEF, DIVISION & LAND DEVELOPMENT

OWNER / APPLICANT / DEVELOPER:
 ADDRESS: GRACE
 7500 GRACE DRIVE
 COLUMBIA, MARYLAND 21044
 CONTACT: MR. NIZAM USTA
 PHONE: 617-277-2145



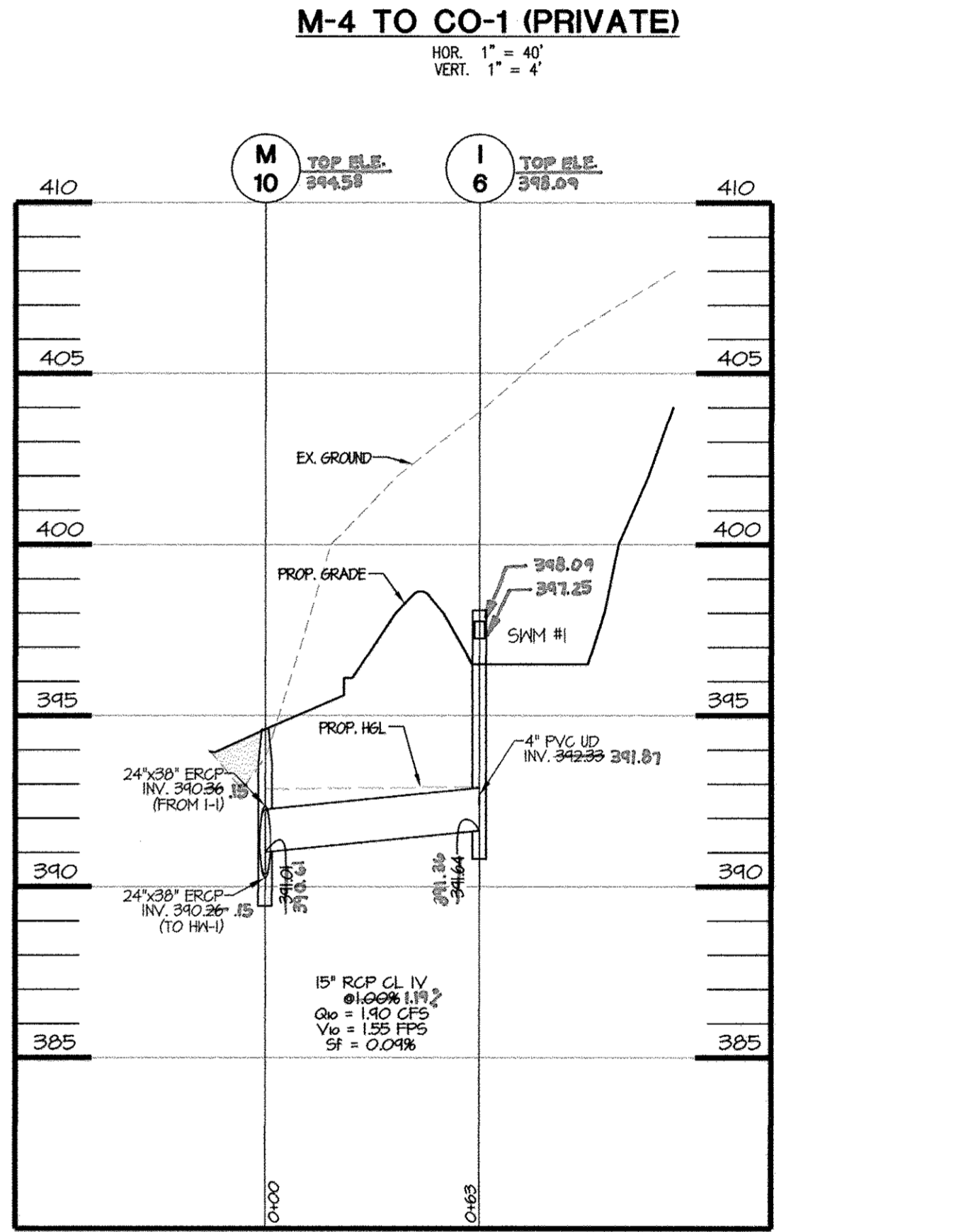
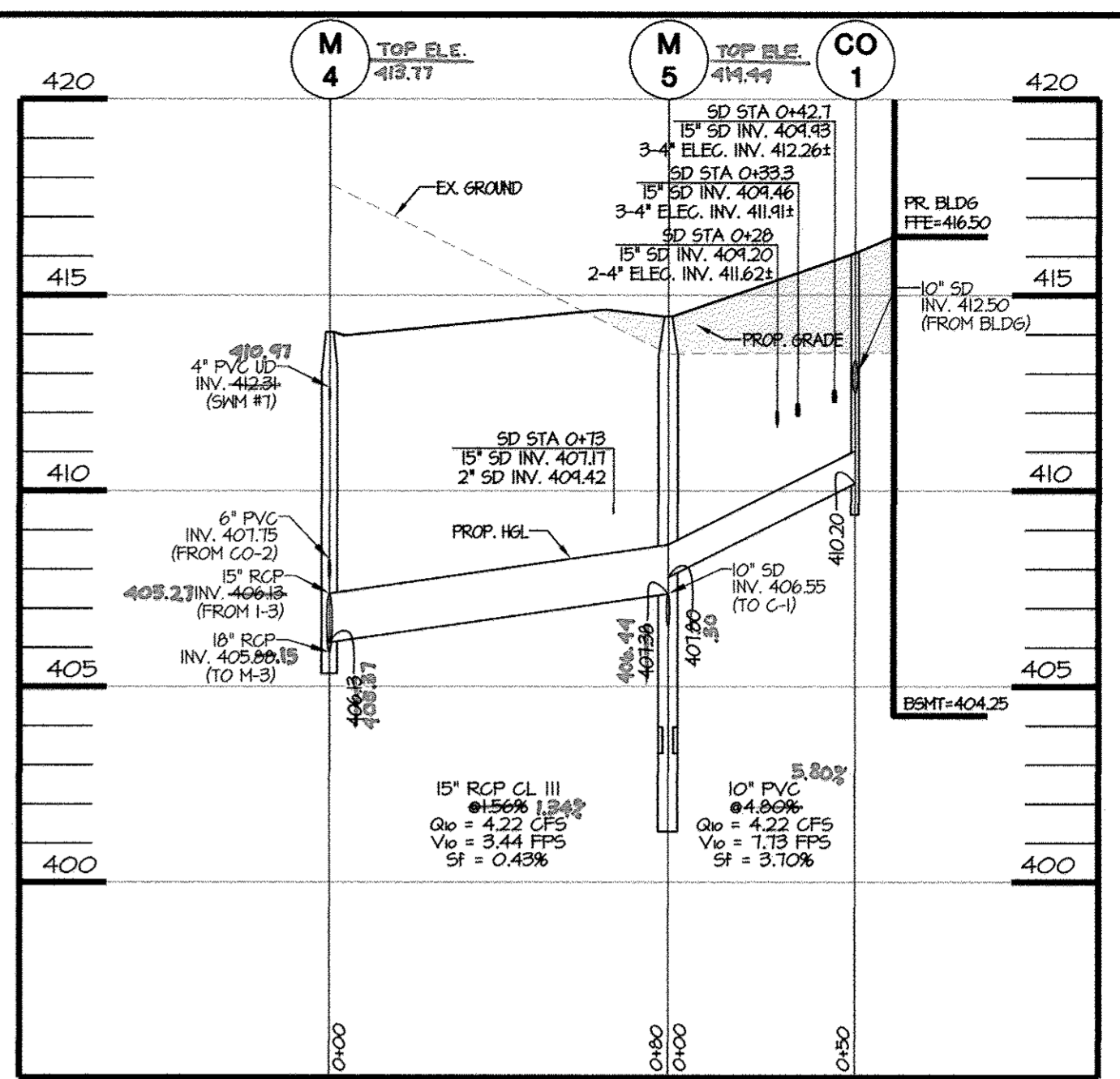
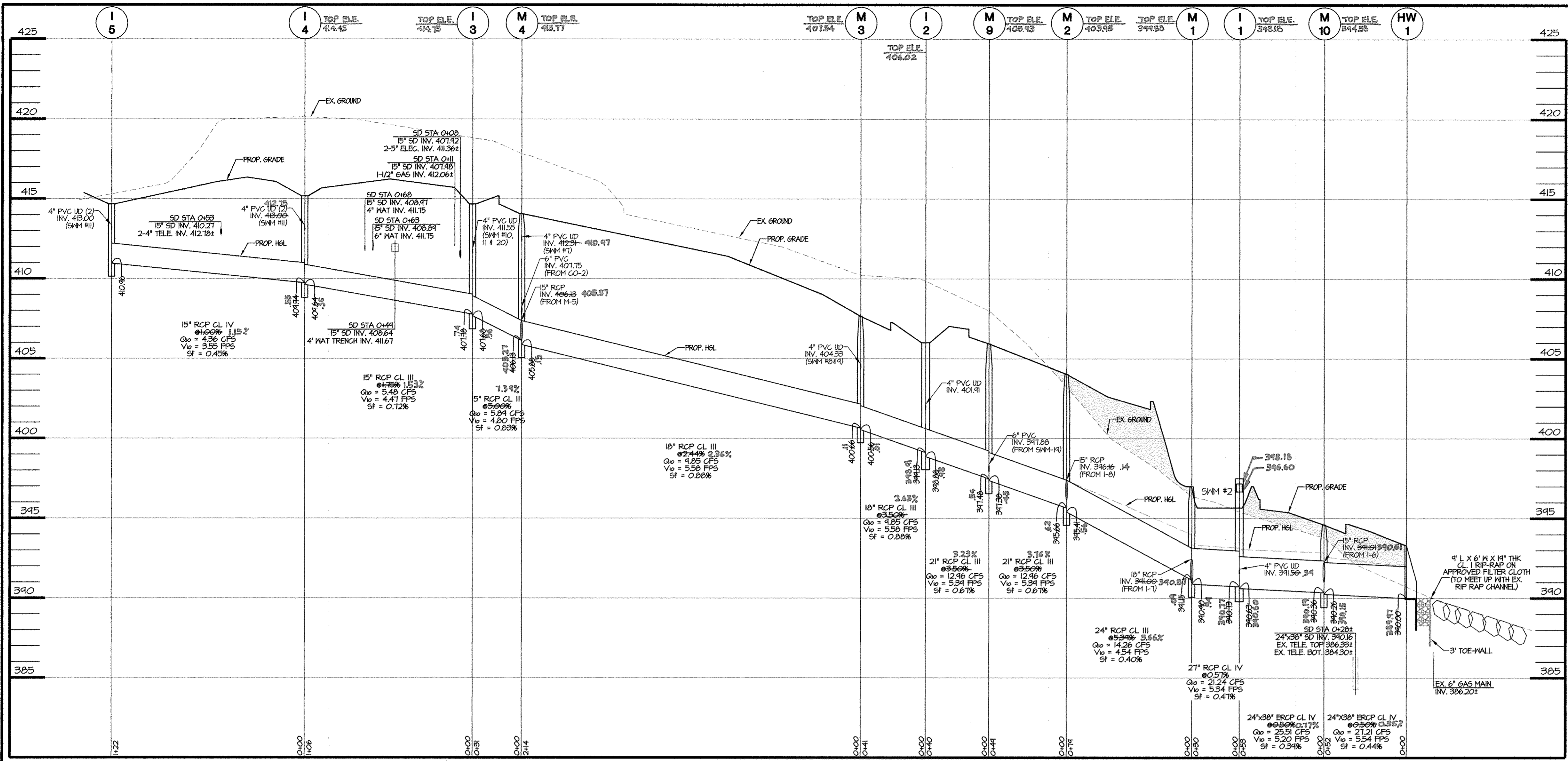
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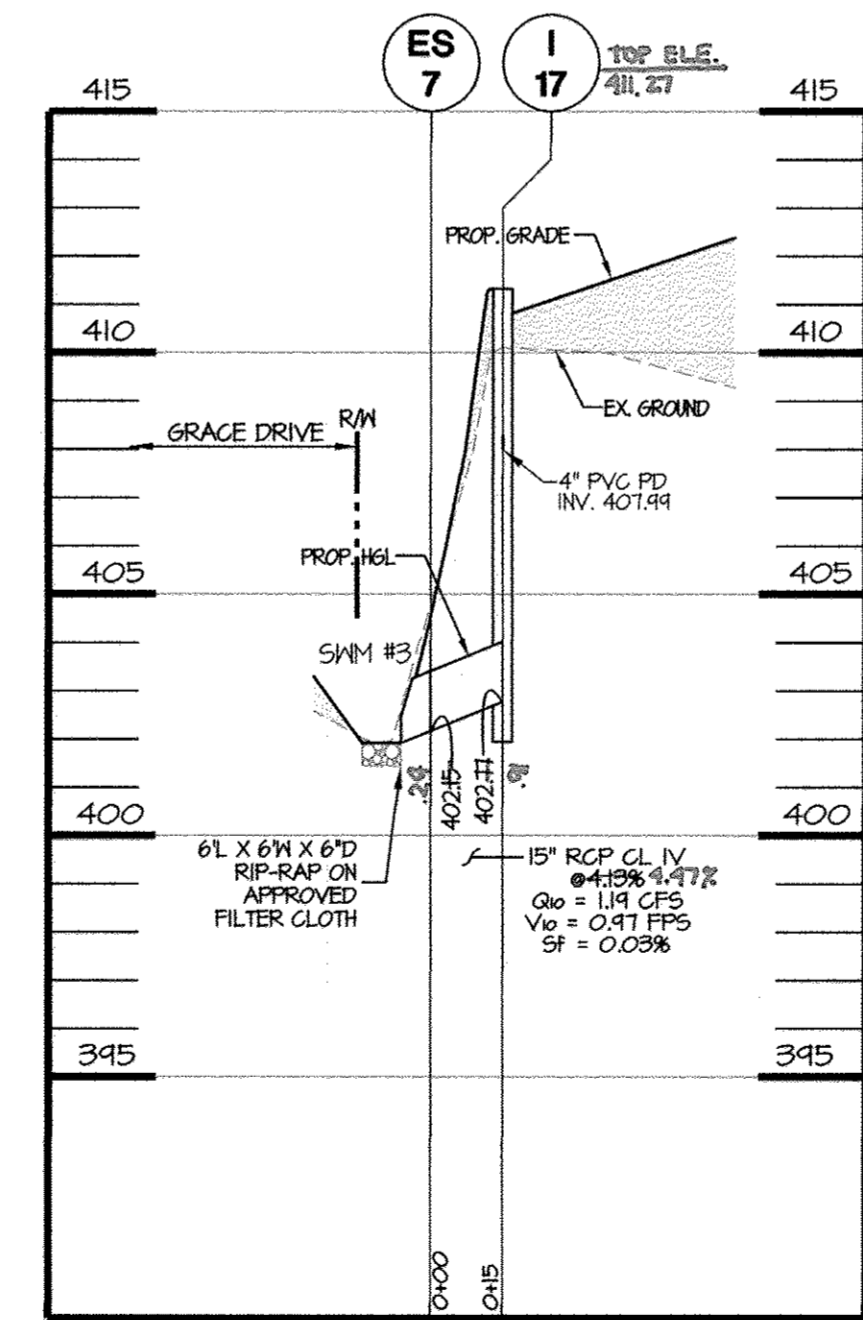
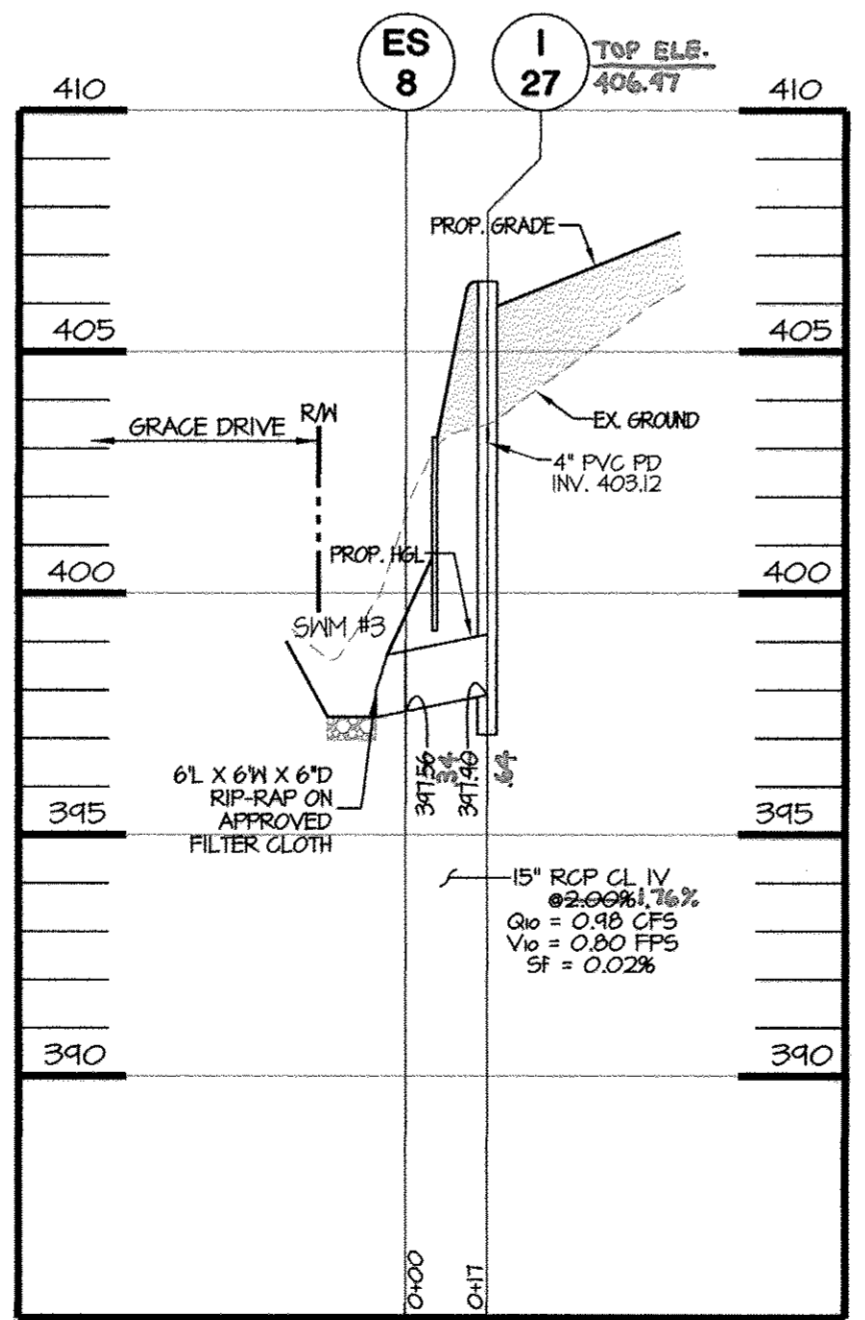
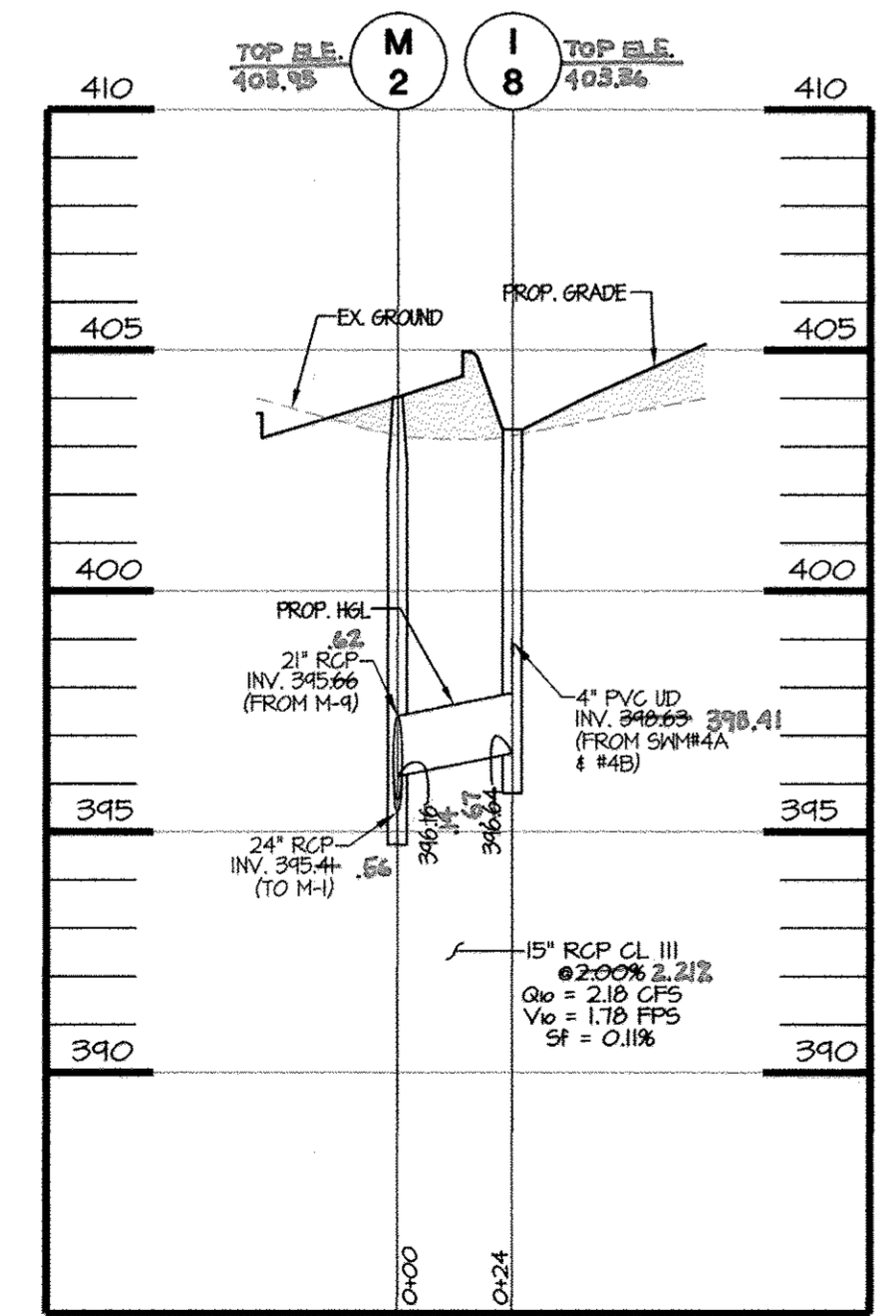
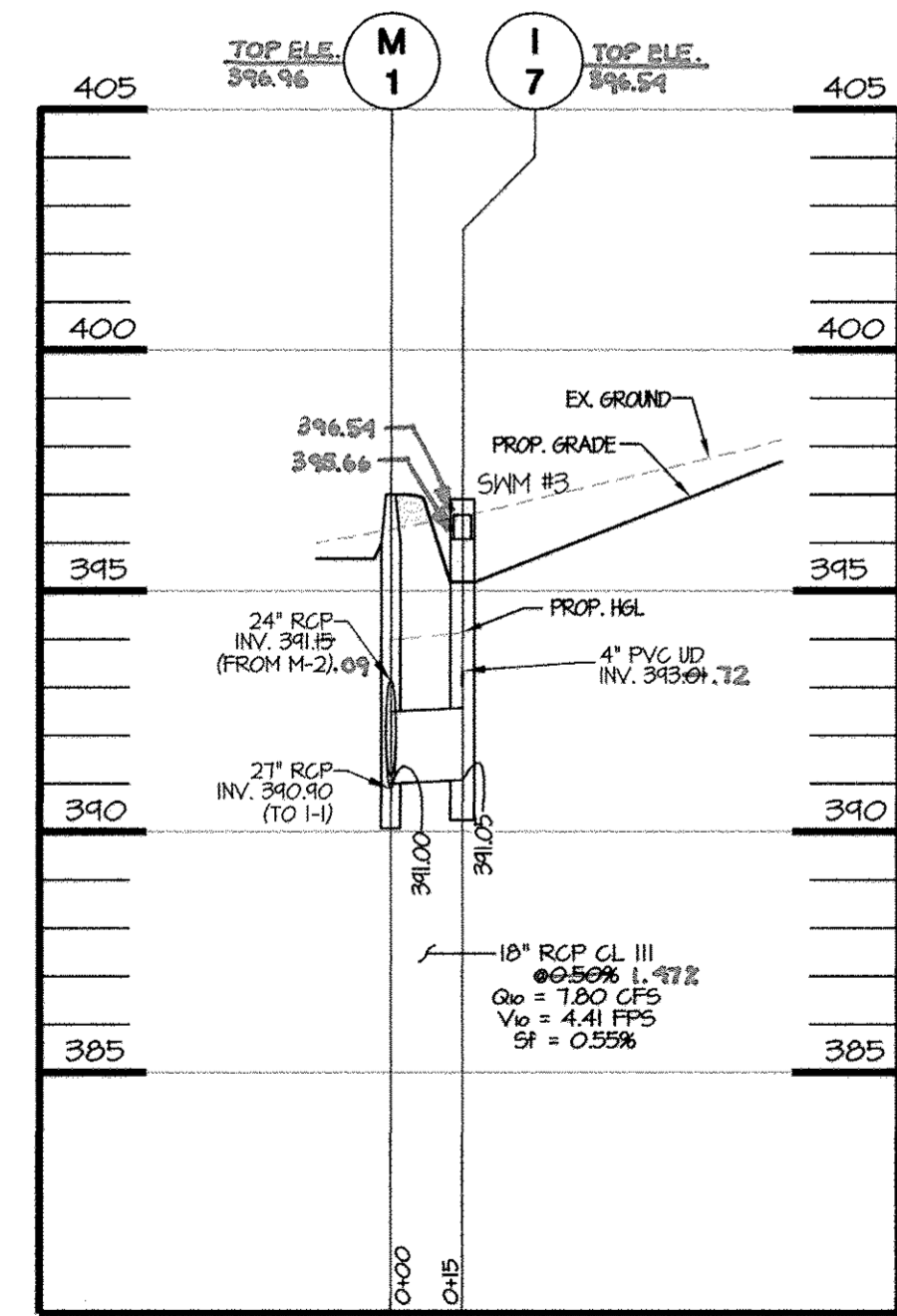
GRACE TECH PARK, PARCEL A
 OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
 SITE DEVELOPMENT PLAN
GRACE DRIVE PLAN & PROFILE
 TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
 MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
 7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: AS SHOWN
		DATE: 10/16/2012
		DRAWN BY: MK
		DESIGN BY: MK
		REVIEW BY: TCN
		SHEET: 19 OF 48

SHEET: SDP-19



I-5 TO HW-1 (PRIVATE)
HOR. 1" = 40'
VERT. 1" = 4'



M-1 TO I-7 (PRIVATE)
HOR. 1" = 40'
VERT. 1" = 4'

M-2 TO I-8 (PRIVATE)
HOR. 1" = 40'
VERT. 1" = 4'

ES-8 TO I-27 (PRIVATE)
HOR. 1" = 40'
VERT. 1" = 4'

ES-7 TO I-17 (PRIVATE)
HOR. 1" = 40'
VERT. 1" = 4'



AS-BUILT PLAN



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GRACE TECH PARK, PARCEL A
OFFICE BUILDING - (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
STORM DRAIN PROFILES

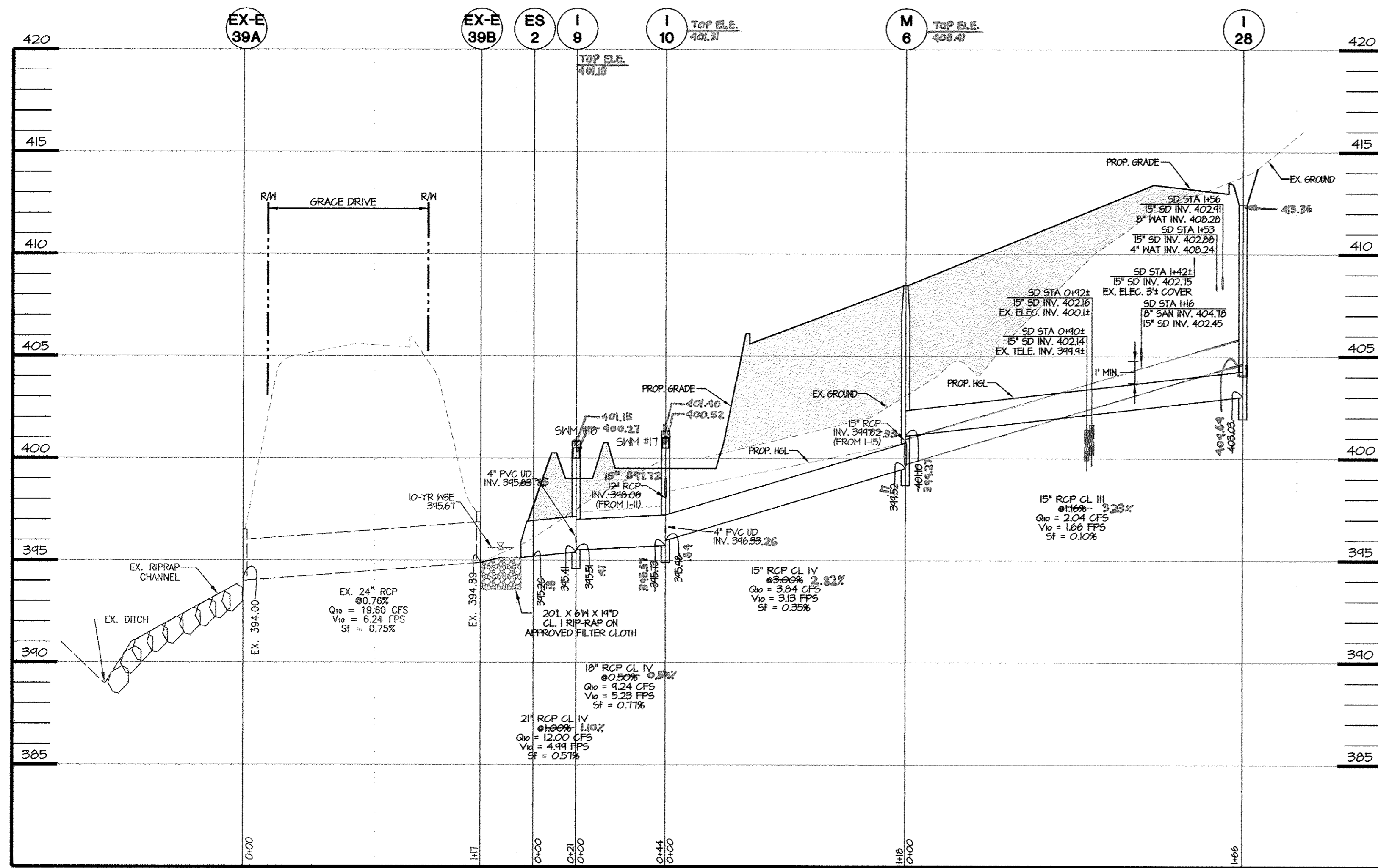
TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.
07/07/14	AS-BUILT INFORMATION ADDED TO PLAN	12039
		SCALE: AS SHOWN
		DATE: 10/16/2012
		DRAWN BY: MK/RAH
		DESIGN BY: MK
		REVIEW BY: TCN
		SHEET: 20 OF 48

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Mark A. Gayle
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING
DATE: 11/19/12
David L. ...
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 11/19/12
David L. ...
CHIEF, DIVISION & LAND DEVELOPMENT
DATE: 11/19/12

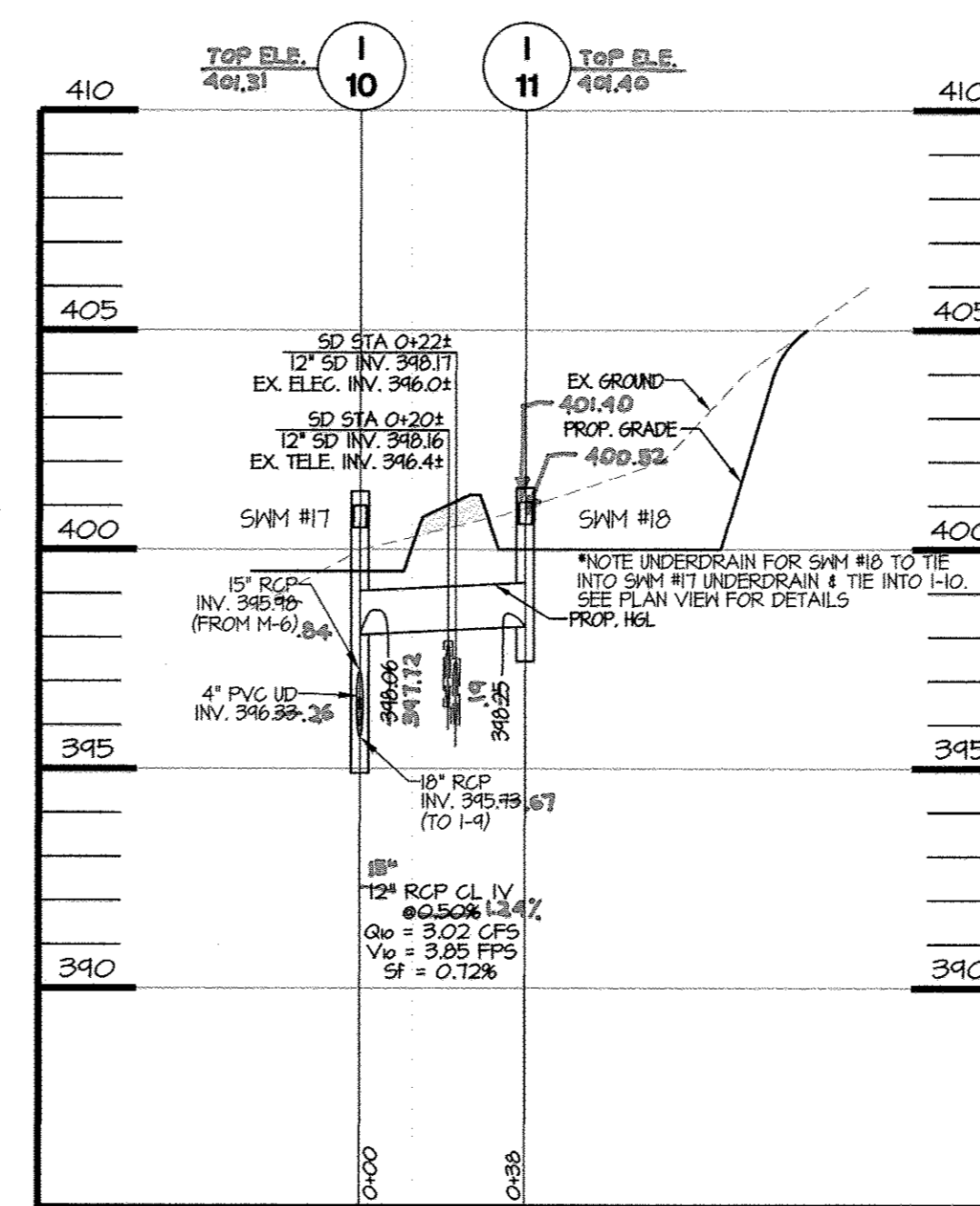
OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145

MD PROFESSIONAL ENGINEER
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. 29203, EXPIRATION DATE: 06/16/2013.



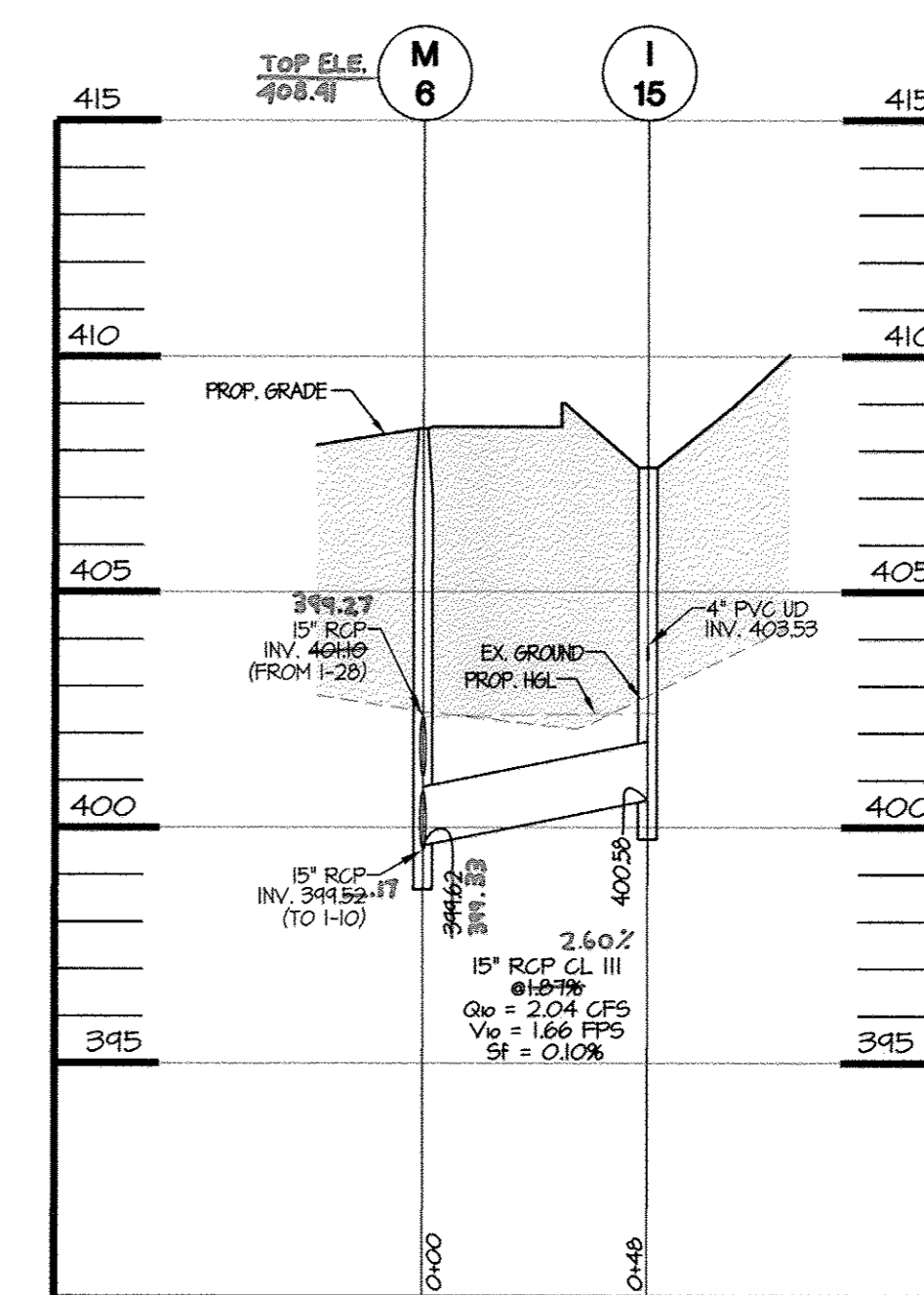
ES-2 TO I-28 (PRIVATE)

HOR. 1" = 40'
VERT. 1" = 4'



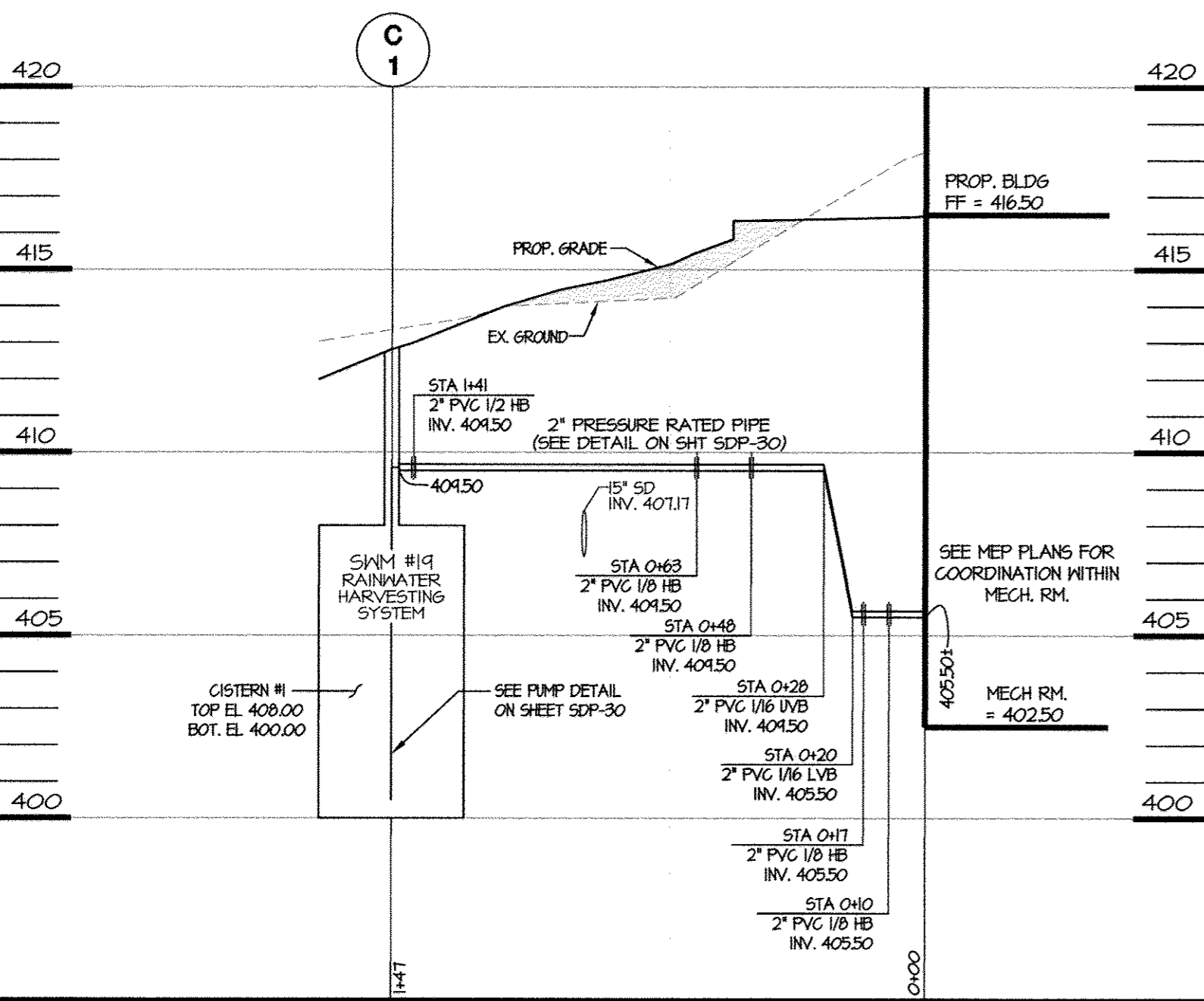
I-10 TO I-11 (PRIVATE)

HOR. 1" = 40'
VERT. 1" = 4'



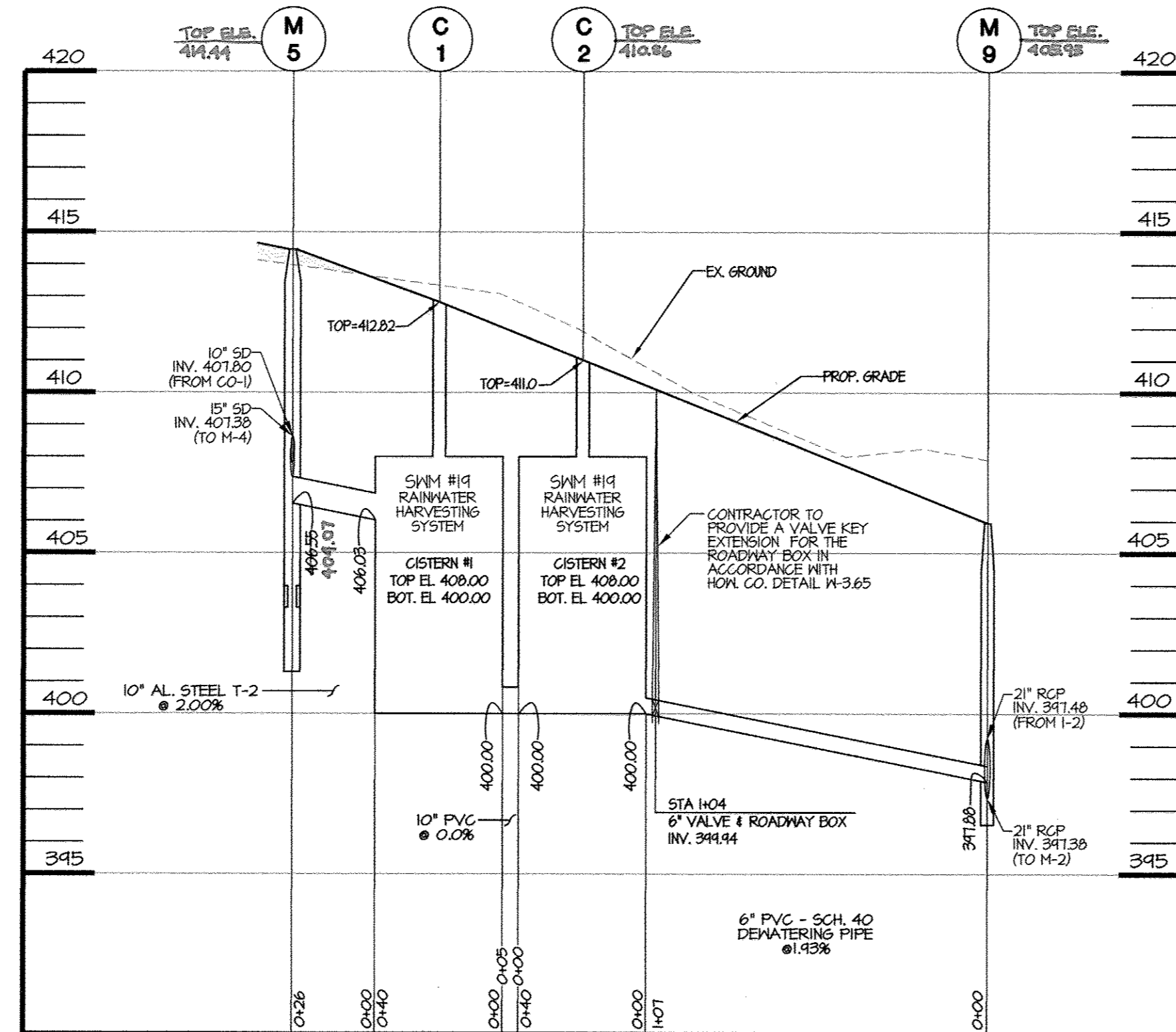
M-6 TO I-15 (PRIVATE)

HOR. 1" = 40'
VERT. 1" = 4'



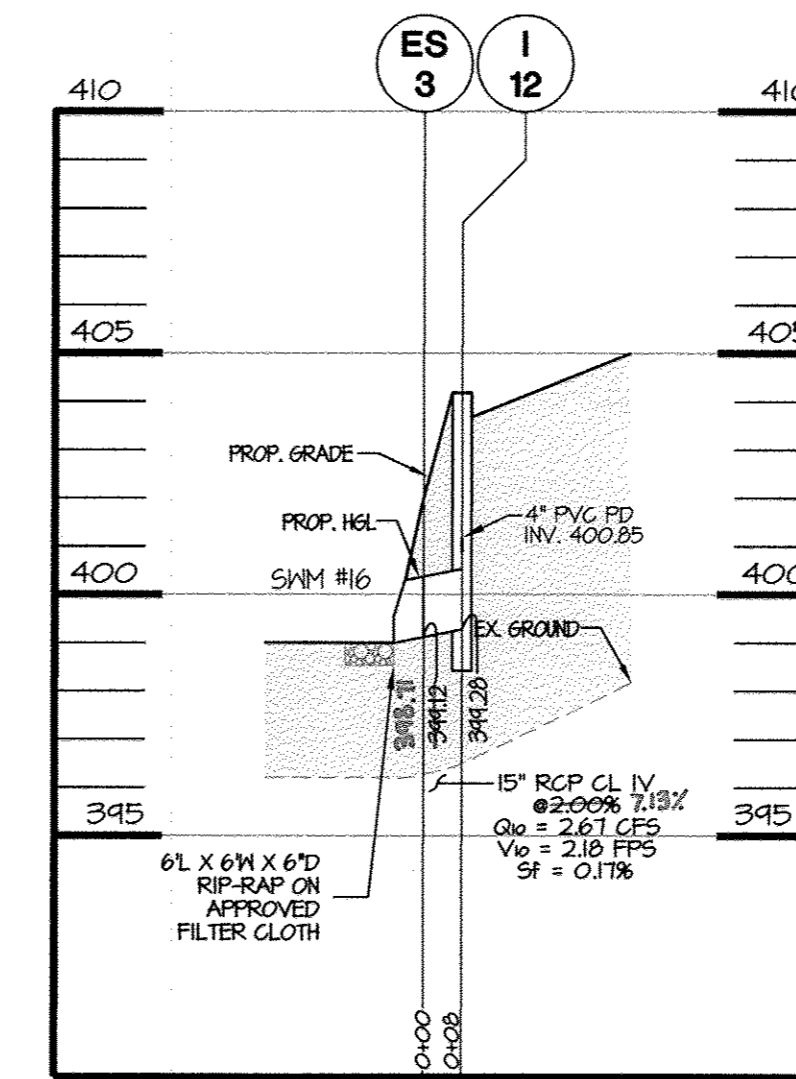
M-5 TO BLDG (PRIVATE)

HOR. 1" = 40'
VERT. 1" = 4'



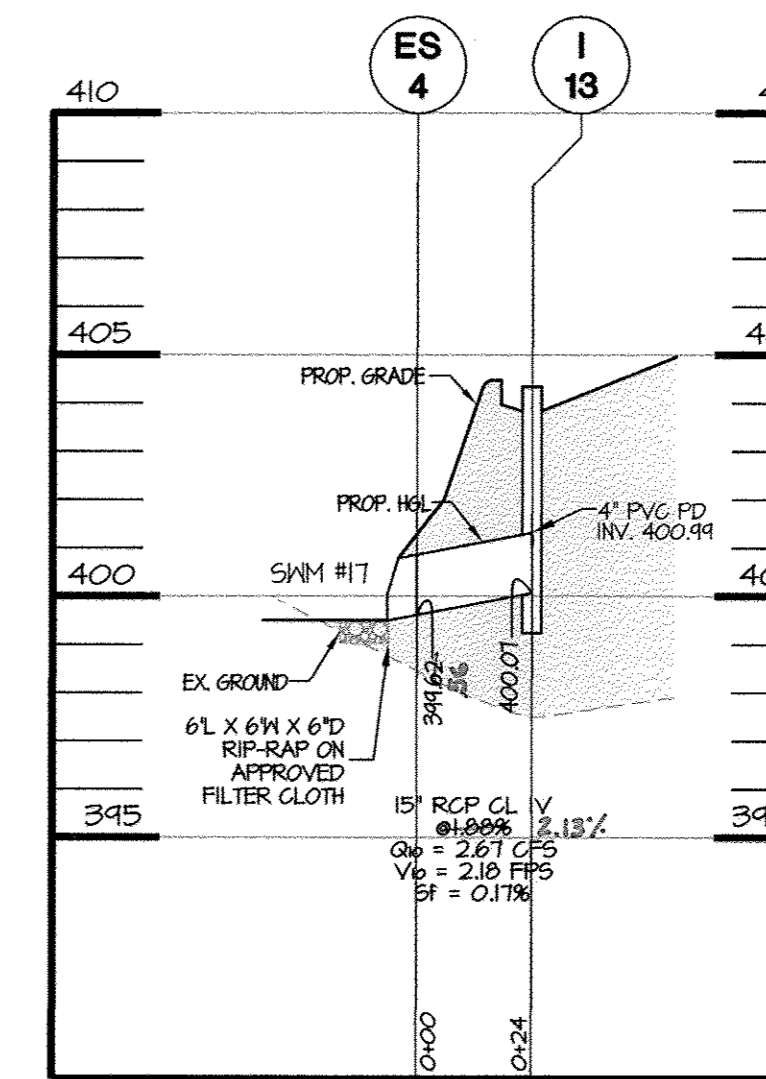
M-5 TO M-9 (PRIVATE)

HOR. 1" = 40'
VERT. 1" = 4'



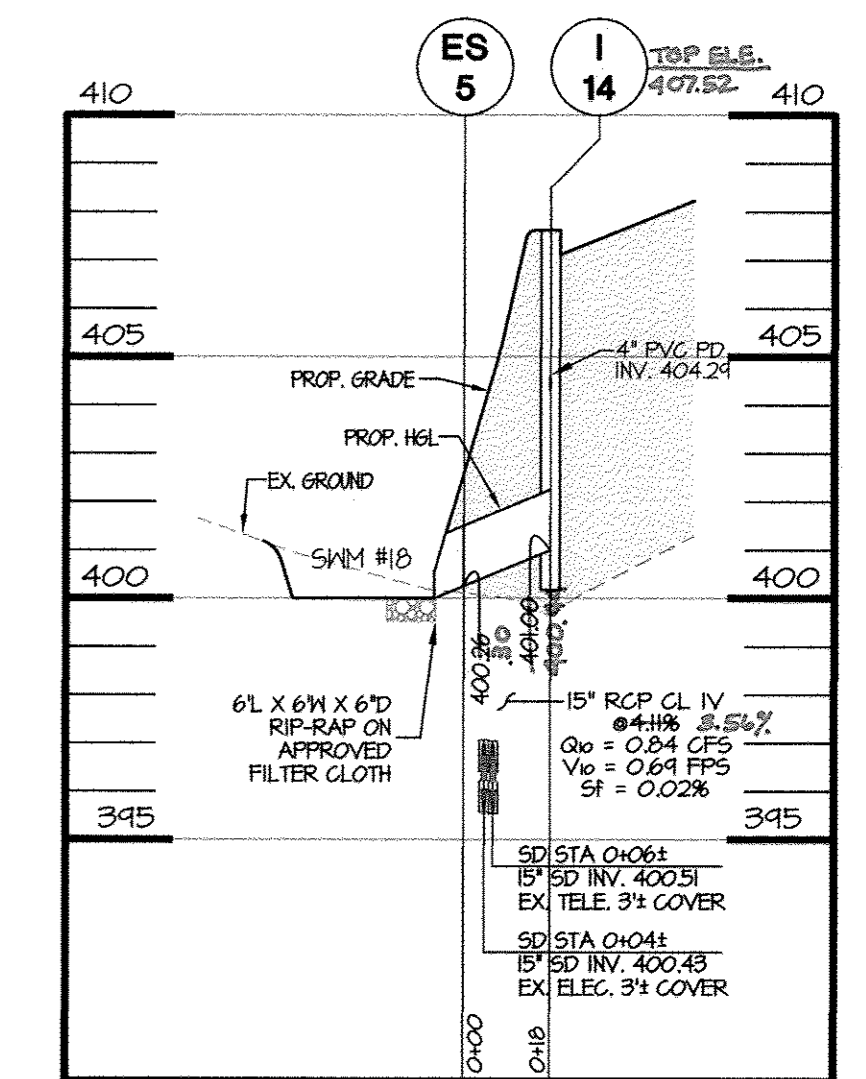
ES-3 TO I-12 (PRIVATE)

HOR. 1" = 40'
VERT. 1" = 4'



ES-4 TO I-13 (PRIVATE)

HOR. 1" = 40'
VERT. 1" = 4'



ES-5 TO I-14 (PRIVATE)

HOR. 1" = 40'
VERT. 1" = 4'



AS-BUILT PLAN

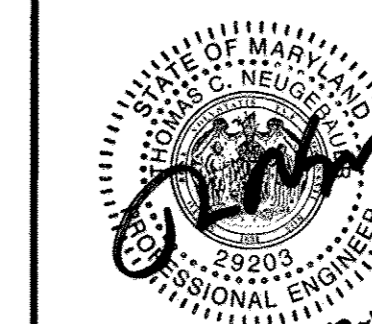
SHEET: SDP-21

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Nizam Usta
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING
DATE: 11/14/12

Kathleen Doolan
CHIEF, DIVISION & LAND DEVELOPMENT
DATE: 11/14/12

OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145



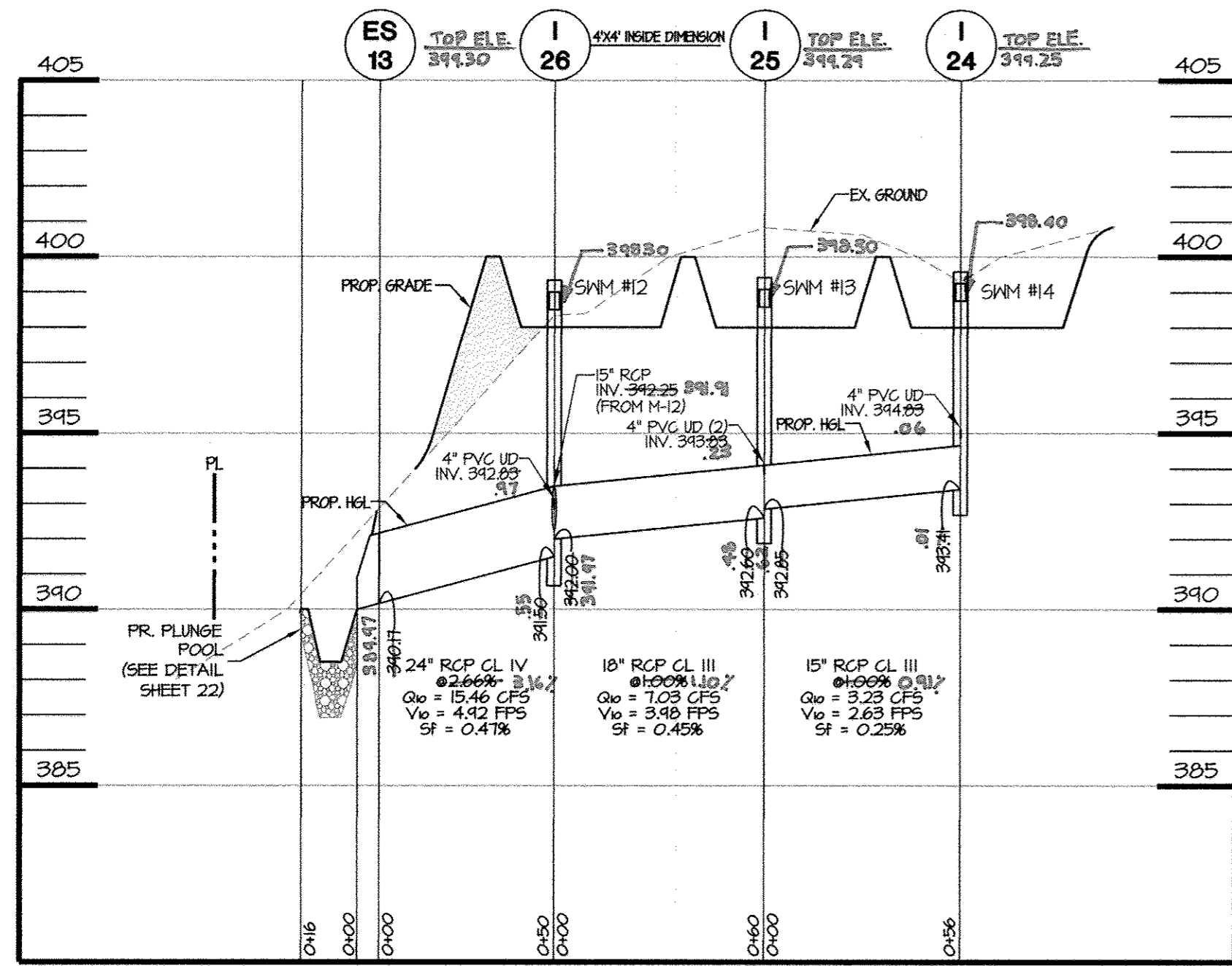
MD PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
EXPIRATION DATE: 06/16/2013.

MORRIS & RITCHE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
14280 PARK CENTER DRIVE
LAUREL, MD 20707
(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395
MRAGTA.COM

GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.D. SILVER)
SITE DEVELOPMENT PLAN
STORM DRAIN PROFILES

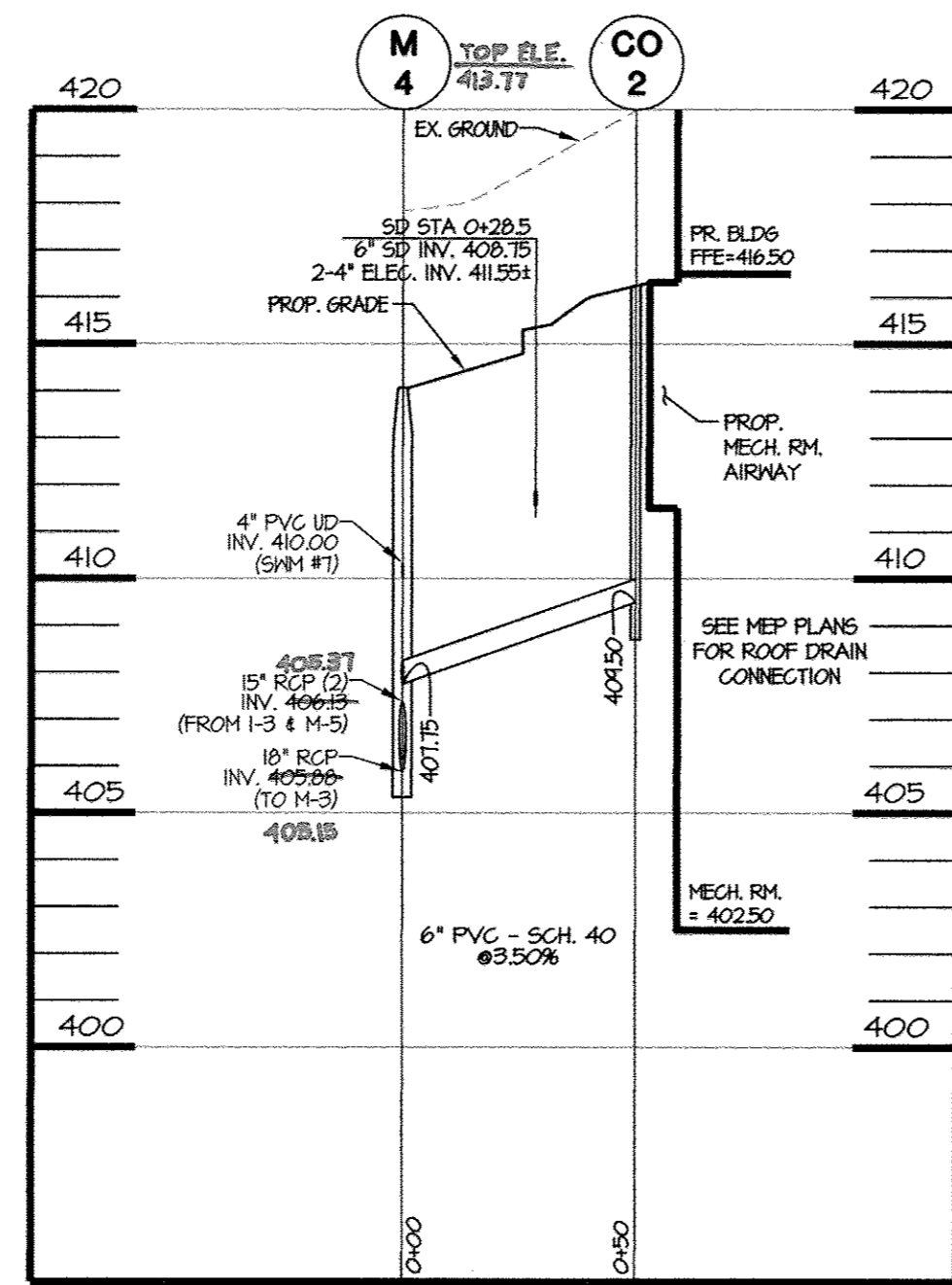
TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
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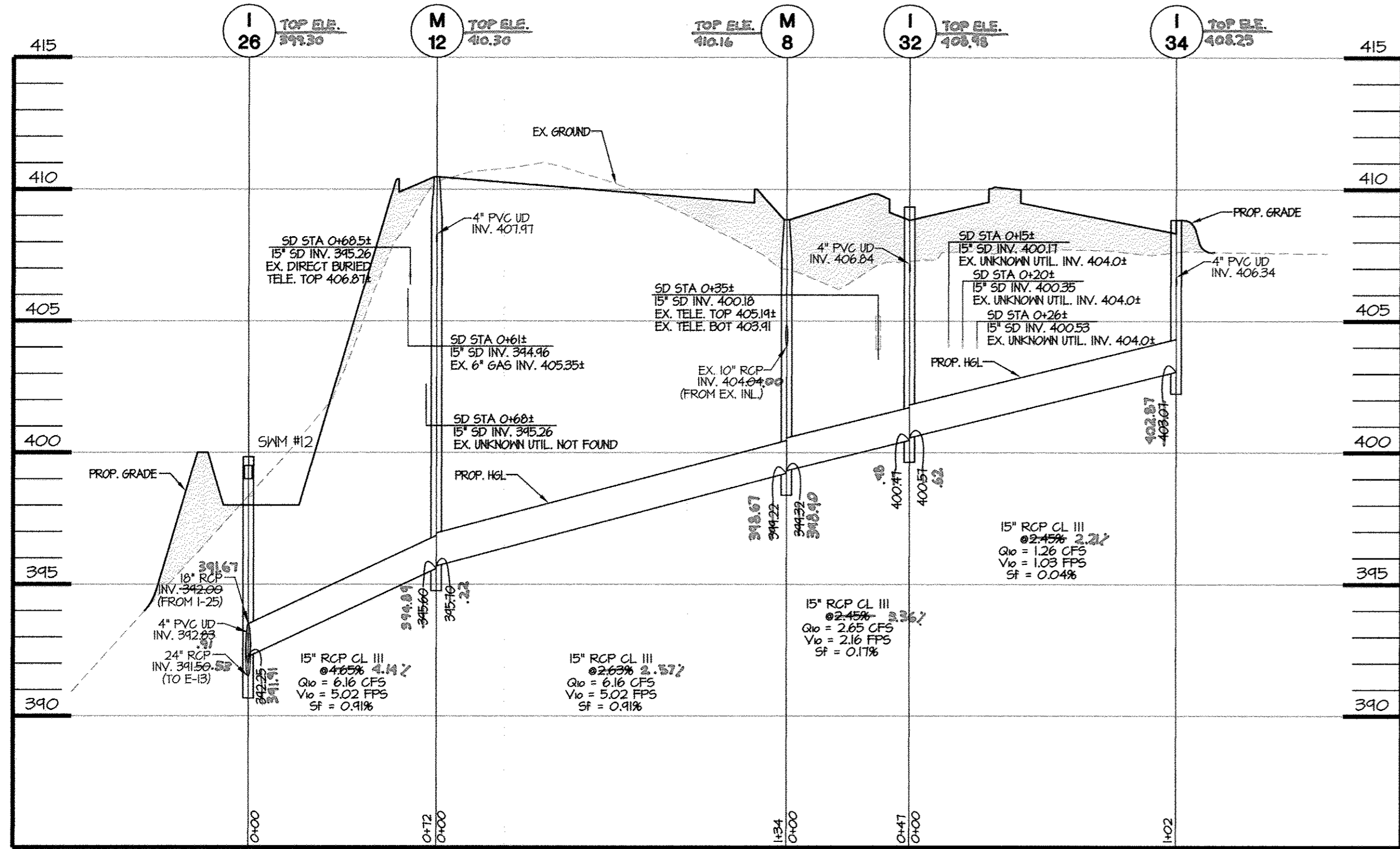
ES-13 TO I-24 (PRIVATE)

HOR. 1" = 40'
VERT. 1" = 4'



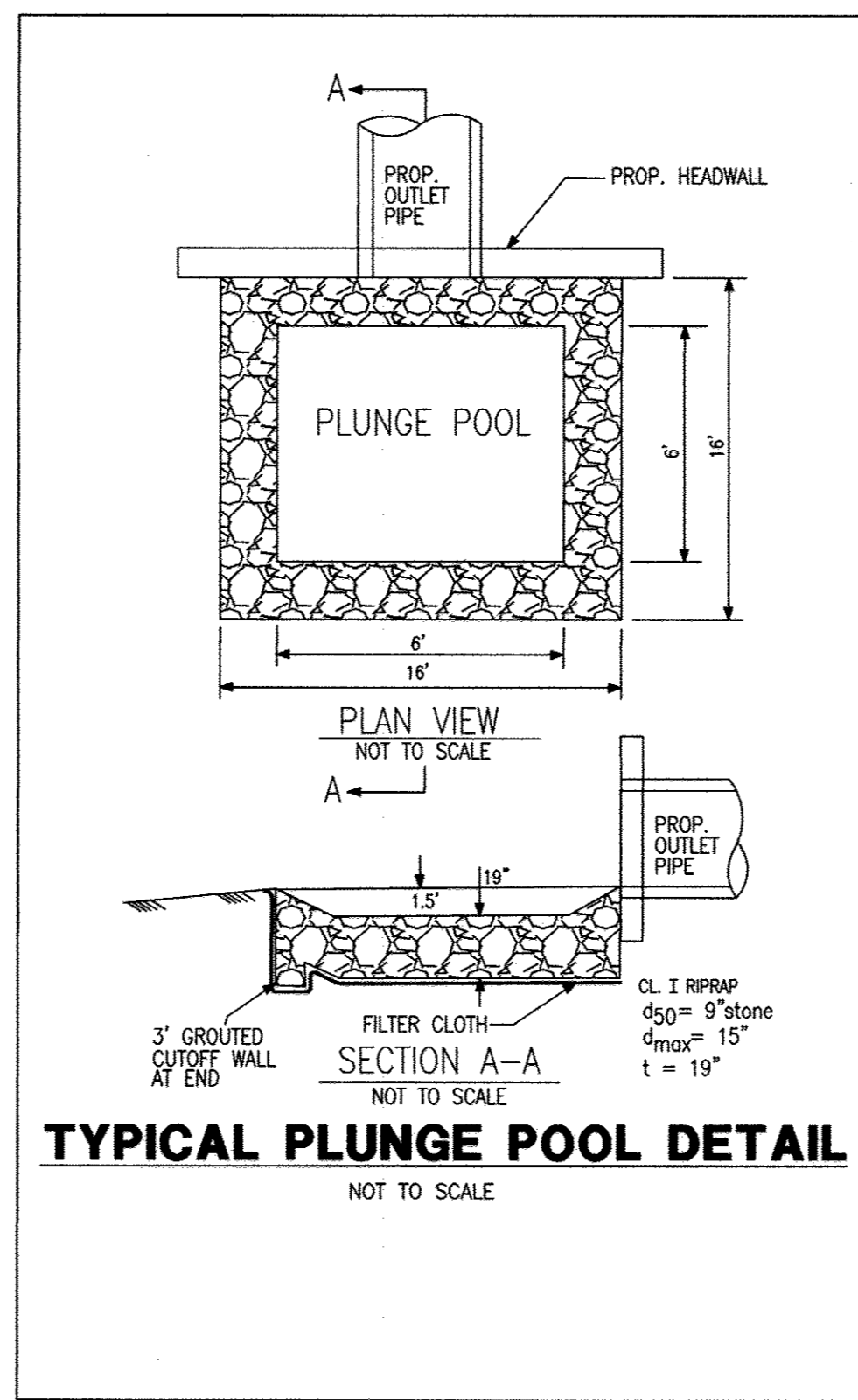
M-4 TO CO-2 (PRIVATE)

HOR. 1" = 40'



I-26 TO I-34 (PRIVATE)

HOR. 1" = 40'
VERT. 1" = 4'



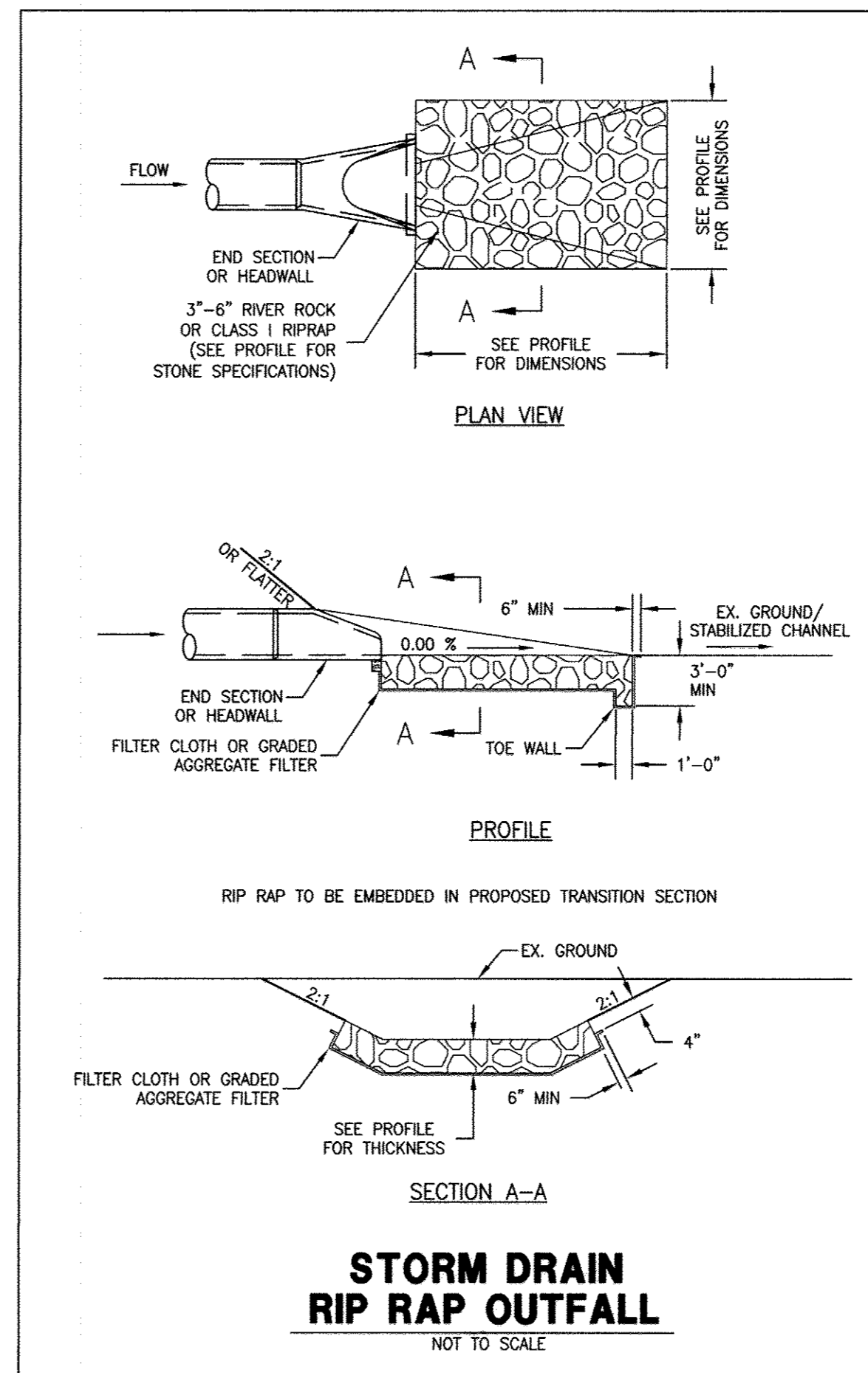
TYPICAL PLUNGE POOL DETAIL

NOT TO SCALE

- COORDINATES TO CENTER OF STRUCTURE FOR YARD INLETS, CLEANOUTS & CISTERNS.
 - COORDINATES AT CENTER AT FACE OF CURB FOR CURB INLETS.
 - COORDINATES AT CENTER OF END OF STRUCTURE FOR END SECTIONS & HEADWALLS.
- TOP ELEVATIONS FOR:
 'A-5' & 'M-1' = TOP OF CURB AT CENTER OF STRUCTURE AT FLOORLINE
 'I' INLETS = TOP OF SLAB
 'S' & YARD INLETS = TOP OF GRATE AT CENTER OF STRUCTURE
 MANHOLES = TOP OF RIM

STORM DRAIN STRUCTURE SCHEDULE (PRIVATE)												● LOCATION	
STR NO.	TOP ELEV.	INV. IN.	INV. IN.	INV. IN.	INV. IN.	INV. OUT.	INV. OUT.	TYPE	REMARKS	NORTHING	EASTING		
C-1					406.03		400.00	CONTECH 96" DIA. URBANGREEN UGM CISTERN, SEE DETAIL SHEET SDP-31		554,214.43	1,340,233.34		
C-2					400.00		400.00	CONTECH 96" DIA. URBANGREEN UGM CISTERN, SEE DETAIL SHEET SDP-31		554,224.22	1,340,240.28		
CO-1	416.00				412.50		410.20	STANDARD 10" PVC CLEANOUT WITH TRAFFIC BEARING FRAME & COVER		554,262.45	1,340,152.28		
CO-2	416.25						409.50	STANDARD 6" PVC CLEANOUT		554,324.00	1,340,202.75		
M-1	341.00			341.50	340.90		340.80	5' DIA. SHALLOW PRECAST MANHOLE, HOWARD COUNTY STANDARD DETAIL G-5-1B		554,019.61	1,340,207.60		
M-2	404.03			346.16	345.66		345.41	STANDARD PRECAST MANHOLE, HOWARD COUNTY STANDARD DETAIL G-5-12		554,080.64	1,340,348.51		
M-3	407.66			404.98	400.66		400.56	STANDARD PRECAST MANHOLE, HOWARD COUNTY STANDARD DETAIL G-5-12		554,186.63	1,340,423.12		
M-4	414.06	410.00	407.15	406.13	406.13		405.80	STANDARD PRECAST MANHOLE, HOWARD COUNTY STANDARD DETAIL G-5-12		554,316.71	1,340,234.50		
M-5	414.46				407.80	407.30	406.55	CONTECH DETAIL CDS2020-5-C, SEE DETAIL SHEET SDP-30		554,241.18	1,340,195.58		
M-6	408.41			404.10	344.62		344.62	STANDARD PRECAST MANHOLE, HOWARD COUNTY STANDARD DETAIL G-5-12		554,456.95	1,340,268.81		
M-8	408.85			404.04	344.32		344.22	STANDARD PRECAST MANHOLE, HOWARD COUNTY STANDARD DETAIL G-5-12		554,501.25	1,340,445.45		
M-4	409.94			341.80	341.40		341.30	STANDARD PRECAST MANHOLE, HOWARD COUNTY STANDARD DETAIL G-5-12		554,114.83	1,340,311.12		
M-10	344.60			340.44	340.34		340.24	5' DIA. SHALLOW PRECAST MANHOLE, HOWARD COUNTY STANDARD DETAIL G-5-1B		553,856.57	1,340,267.55		
M-12	410.41			407.11	345.10		345.60	STANDARD PRECAST MANHOLE, HOWARD COUNTY STANDARD DETAIL G-5-12		554,368.22	1,340,457.64		
I-1	341.50			341.50	340.74		340.64	MODIFIED TYPE 'D' INLET, SEE DETAIL SHEET SDP-24		553,988.46	1,340,324.74		
I-2	406.00			401.41	344.13		343.88	TYPE 'S' INLET, HOWARD COUNTY STANDARD DETAIL D-4-22		554,152.50	1,340,400.90		
I-3	414.67			411.70	407.10		407.60	TYPE 'S' INLET, HOWARD COUNTY STANDARD DETAIL D-4-22		554,340.73	1,340,254.05		
I-4	415.17			413.00	404.74		404.64	TYPE 'S' INLET, HOWARD COUNTY STANDARD DETAIL D-4-22		554,407.33	1,340,171.13		
I-5	414.67			413.00	413.00		410.46	STANDARD YARD INLET, HOWARD COUNTY STANDARD DETAIL D-4-14		554,482.44	1,340,074.41		
I-6	348.00			348.00	341.77		341.36	PRECAST TYPE 'D' INLET, HOWARD COUNTY STANDARD DETAIL D-4-10		554,008.61	1,340,403.04		
I-7	346.16			349.01	341.05		341.05	PRECAST TYPE 'D' INLET, HOWARD COUNTY STANDARD DETAIL D-4-10		554,015.44	1,340,241.83		
I-8	403.35			345.63	346.64		346.64	TYPE 'S' INLET, HOWARD COUNTY STANDARD DETAIL D-4-22		554,095.54	1,340,324.66		
I-4	400.83			345.89	345.94		345.41	PRECAST TYPE 'D' INLET, HOWARD COUNTY STANDARD DETAIL D-4-10		554,500.41	1,340,150.95		
I-10	401.33			346.88	345.48		345.79	PRECAST TYPE 'D' INLET, HOWARD COUNTY STANDARD DETAIL D-4-10		554,533.86	1,340,174.88		
I-11	401.41			348.25	348.25		348.25	PRECAST TYPE 'D' INLET, HOWARD COUNTY STANDARD DETAIL D-4-10		554,562.53	1,340,204.68		
I-12	404.14			400.85	344.28		344.28	PRECAST TYPE 'A-5' INLET, HOWARD COUNTY STANDARD DETAIL D-4-01		554,432.40	1,340,174.58		
I-13	404.34			400.94	400.07		400.07	PRECAST TYPE 'A-5' INLET, HOWARD COUNTY STANDARD DETAIL D-4-01		554,464.94	1,340,186.71		
I-14	407.62			404.24	404.00		404.00	PRECAST TYPE 'A-5' INLET, HOWARD COUNTY STANDARD DETAIL D-4-01		554,525.04	1,340,236.65		
I-15	407.64			403.53	403.53		400.58	TYPE 'S' INLET, HOWARD COUNTY STANDARD DETAIL D-4-22		554,419.94	1,340,241.10		
I-17	413.32			407.91	402.77		402.77	PRECAST TYPE 'A-5' INLET, HOWARD COUNTY STANDARD DETAIL D-4-01		554,162.94	1,340,171.08		
I-24	344.58			344.83	343.41		343.41	PRECAST TYPE 'D' INLET, HOWARD COUNTY STANDARD DETAIL D-4-10		554,468.67	1,340,556.64		
I-25	344.41			349.88	342.25		342.60	PRECAST TYPE 'D' INLET, HOWARD COUNTY STANDARD DETAIL D-4-10		554,414.30	1,340,543.07		
I-26	344.33			342.89	342.25		342.00	PRECAST TYPE 'D' INLET, HOWARD COUNTY STANDARD DETAIL D-4-10 (4' X 4' INSIDE DIMENSION)		554,355.62	1,340,528.43		
I-27	406.45			347.87	347.87		347.40	PRECAST TYPE 'A-5' INLET, HOWARD COUNTY STANDARD DETAIL D-4-01		554,090.55	1,340,230.84		
I-28	412.44			403.03	404.64		404.64	TYPE 'S' INLET, HOWARD COUNTY STANDARD DETAIL D-4-22		554,581.76	1,340,171.12		
I-32	404.34			406.84	400.57		400.47	PRECAST DOUBLE 'M-1' INLET, HOWARD COUNTY STANDARD DETAIL D-4-35		554,547.34	1,340,440.64		
I-34	408.84			406.34	403.07		402.87	PRECAST DOUBLE 'M-1' INLET, HOWARD COUNTY STANDARD DETAIL D-4-35		554,644.10	1,340,452.40		
HM-1	343.33			340.00	349.97		340.00	TYPE 'D' HEADWALL, HOWARD COUNTY STANDARD DETAIL D-5-43 & D-5-44		553,918.66	1,340,411.74		
ES-2					345.20		345.20	STANDARD CONCRETE END SECTION, HOWARD COUNTY STANDARD DETAIL D-5-51		554,474.86	1,340,133.18		
ES-3					344.12		344.12	STANDARD CONCRETE END SECTION, HOWARD COUNTY STANDARD DETAIL D-5-51		554,441.13	1,340,166.04		
ES-4					344.62		344.62	STANDARD CONCRETE END SECTION, HOWARD COUNTY STANDARD DETAIL D-5-51		554,448.12	1,340,185.42		
ES-5					400.26		400.26	STANDARD CONCRETE END SECTION, HOWARD COUNTY STANDARD DETAIL D-5-51		554,554.01	1,340,223.10		
ES-7					401.25		401.25	STANDARD CONCRETE END SECTION, HOWARD COUNTY STANDARD DETAIL D-5-51		554,143.42	1,340,171.88		
ES-8					347.56		347.56	STANDARD CONCRETE END SECTION, HOWARD COUNTY STANDARD DETAIL D-5-51		554,084.35	1,340,222.32		
ES-13					340.17		340.17	STANDARD CONCRETE END SECTION, HOWARD COUNTY STANDARD DETAIL D-5-51		554,342.04	1,340,582.88		

REMARKS:
 1. THROAT ON 2 SIDES THAT ARE OPEN TO SHM FACILITY.



STORM DRAIN RIP RAP OUTFALL

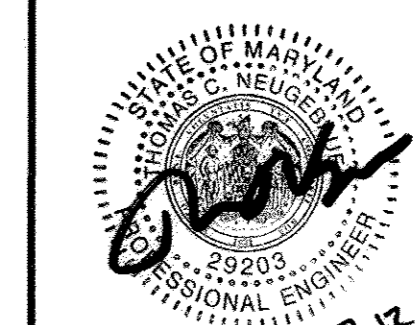
NOT TO SCALE

STORM DRAIN PIPE SUMMARY TABLE (PRIVATE)		
SIZE	TYPE	LENGTH
4"	PERFORATED PVC - SCH. 80	86 LF
4"	PERFORATED PVC - SCH. 40	4,436 LF
4"	SOLID PVC - SCH. 40	646 LF
6"	SOLID PVC - SCH. 40	157 LF
10"	SOLID PVC - SCH. 40	55 LF
10"	AL. STEEL T-2	26 LF
12"	RCP CL IV	38 LF
15"	RCP CL III	873 LF
15"	RCP CL IV	305 LF
18"	RCP CL III	330 LF
18"	RCP CL IV	44 LF
21"	RCP CL III	84 LF
21"	RCP CL IV	21 LF
24"	RCP CL III	74 LF
24"	RCP CL IV	50 LF
27"	RCP CL IV	30 LF
24"X36"	ERC CL IV	105 LF

AS-BUILT PLAN



MORRIS & RITCHIE ASSOCIATES, INC.
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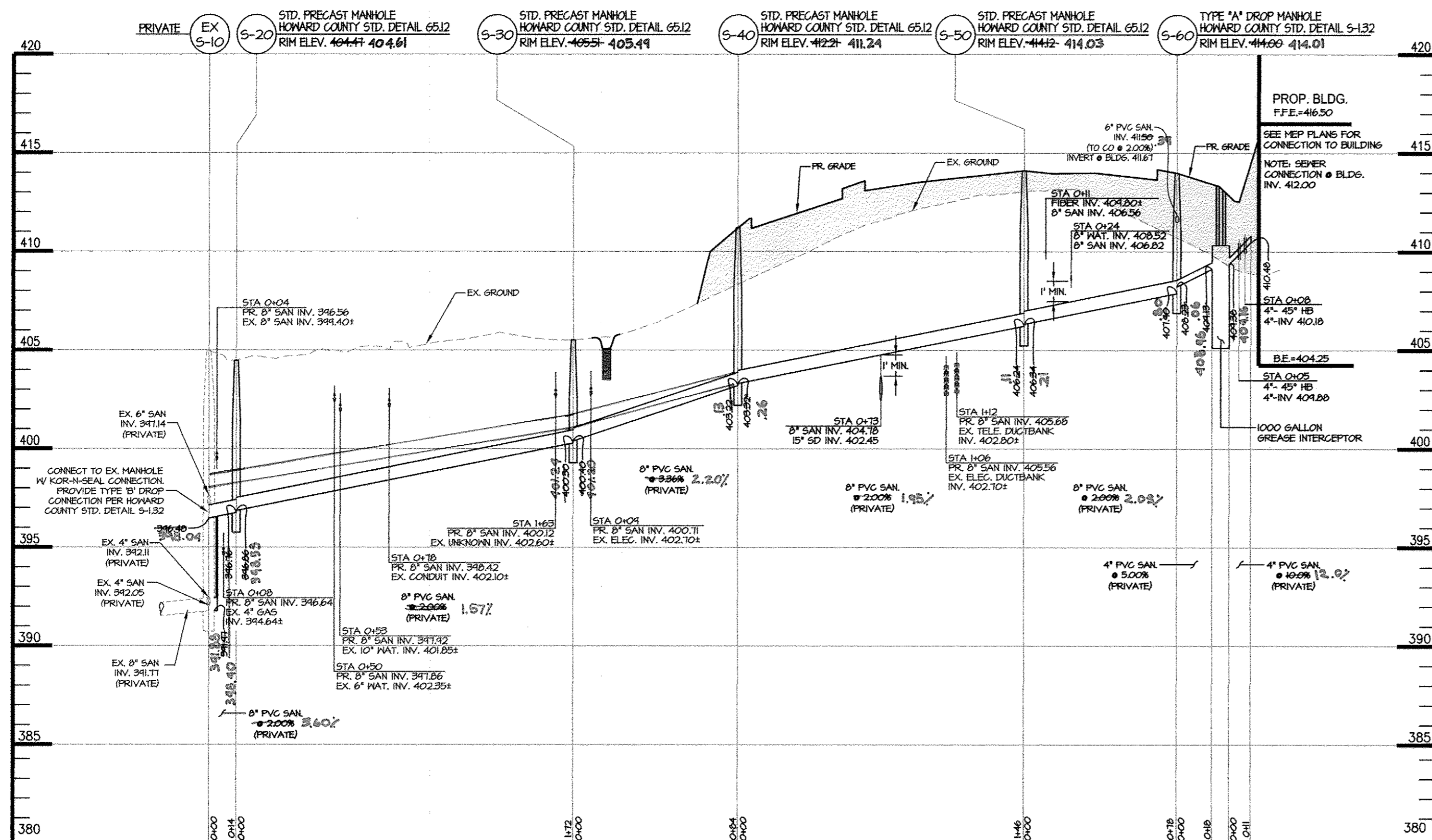
GRACE TECH PARK, PARCEL A
 OFFICE BUILDING - (TARGETING L.E.E.D. SILVER)
 SITE DEVELOPMENT PLAN
 STORM DRAIN PROFILES

DATE	REVISIONS	JOB NO.:
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		SHEET: 22 OF 48

APPROVED: DEPARTMENT OF PLANNING AND ZONING
David L. Long 11/19/12
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE
John J. Williams 11/14/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Victor DeLeon 11/14/12
 CHIEF, DIVISION & LAND DEVELOPMENT DATE

OWNER / APPLICANT / DEVELOPER:
 ADDRESS: GRACE
 7500 GRACE DRIVE
 COLUMBIA, MARYLAND 21044
 CONTACT: MR. NIZAM USTA
 PHONE: 617-277-2145

MD. PROFESSIONAL ENGINEER
 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. 29203, EXPIRATION DATE: 06/16/2013.



**SANITARY PROFILE (PRIVATE)
FROM EX. S-10 TO PROP. BLDG.**

SCALE: HOR. 1" = 50'
VERT. 1" = 5'

SANITARY SEWER PIPE SCHEDULE (PRIVATE)			
SIZE	TYPE	LENGTH	
4"	PVC (SDR-35)	29 FT	
8"	PVC (SDR-35)	494 FT	

SANITARY SEWER GREASE INTERCEPTOR SCHEDULE							LOCATION	
STR. NO.	TOP ELEV.	INV. IN.	INV. IN.	INV. OUT.	TYPE		NORTHING	EASTING
#1	413.80	---	409.38	409.13	1000 GALLON NON TRAFFIC BEARING TANK - MAYER BROS. INC.		554,395.84	1,339,978.81

1.) TOP ELEVATION OF GREASE INTERCEPTOR IS AT CENTER OF STRUCTURE. ● COORDINATES TO CENTERLINE OF STRUCTURE

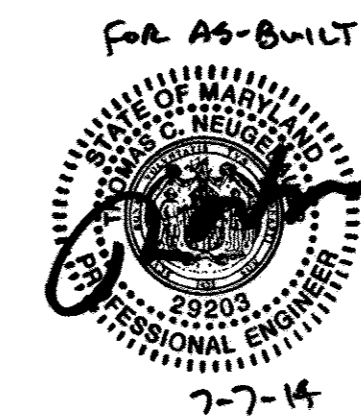
SANITARY SEWER STRUCTURE SCHEDULE (PRIVATE)							LOCATION	
STR. NO.	TOP ELEV.	INV. IN.	INV. IN.	INV. OUT.	TYPE	REMARKS	NORTHING	EASTING
S-20	404.49	404.55	396.86	396.76	H.C. STD. DETAIL GS.12	STANDARD PRECAST MH	554,821.31	1,339,852.37
S-30	405.61	401.28	400.40	400.30	H.C. STD. DETAIL GS.12	STANDARD PRECAST MH	554,651.09	1,339,829.46
S-40	411.24	---	403.22	403.22	H.C. STD. DETAIL GS.12	STANDARD PRECAST MH	554,597.16	1,339,894.42
S-50	414.42	---	406.24	406.24	H.C. STD. DETAIL GS.12	STANDARD PRECAST MH	554,491.33	1,339,995.62
S-60	414.00	411.60	408.25	407.80	H.C. STD. DETAIL S1.32	TYPE "A" DROP MH	554,413.71	1,339,992.50

1.) TOP ELEVATION IS RIM ELEVATION AT THE CENTER OF STRUCTURE. ● COORDINATES TO CENTERLINE OF STRUCTURE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

David L. Gault
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING
DATE: 11/29/12

Veronica R. Deane
CHIEF, DIVISION & LAND DEVELOPMENT
DATE: 11/19/12



AS-BUILT PLAN

CONTROLLED AND 95% COMPACTED FILL PER ASHSTO T-180, TO BE CERTIFIED BY AN APPROVED ON-SITE GEOTECHNICAL ENGINEER

COMPACTED SPECIFICATIONS FOR UTILITIES IN FILL

- WHERE UTILITY PIPES ARE TO BE PLACED ON COMPACTED FILL, THE FOLLOWING APPLIES:
- PRIOR TO PLACEMENT OF COMPACTED FILL, ANY SOFT OR OTHERWISE UNSUITABLE SOILS ENCOUNTERED AT THE EXISTING RAINE BOTTOM OR SLOPE, SHALL BE UNDERCUT AND REMOVED FROM THE CONSTRUCTION AREA.
 - ACCEPTABLE COMPACTED FILL SHALL BE PLACED IN SIX INCH THICK LOOSE LIFTS AND COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY A.A.S.H.T.O. METHOD T-180.
 - THE COMPACTED FILL SHALL BE BENCHED INTO THE EXISTING VIRGIN SLOPES WITH EACH LIFT PLACED TO A SMOOTH TRANSITION FROM VIRGIN TO FILL SOILS.

SHEET: SDP-23

MRA
MORRIS & RITCHIE ASSOCIATES, INC.
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14280 PARK CENTER DRIVE
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GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
SEWER PROFILES

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

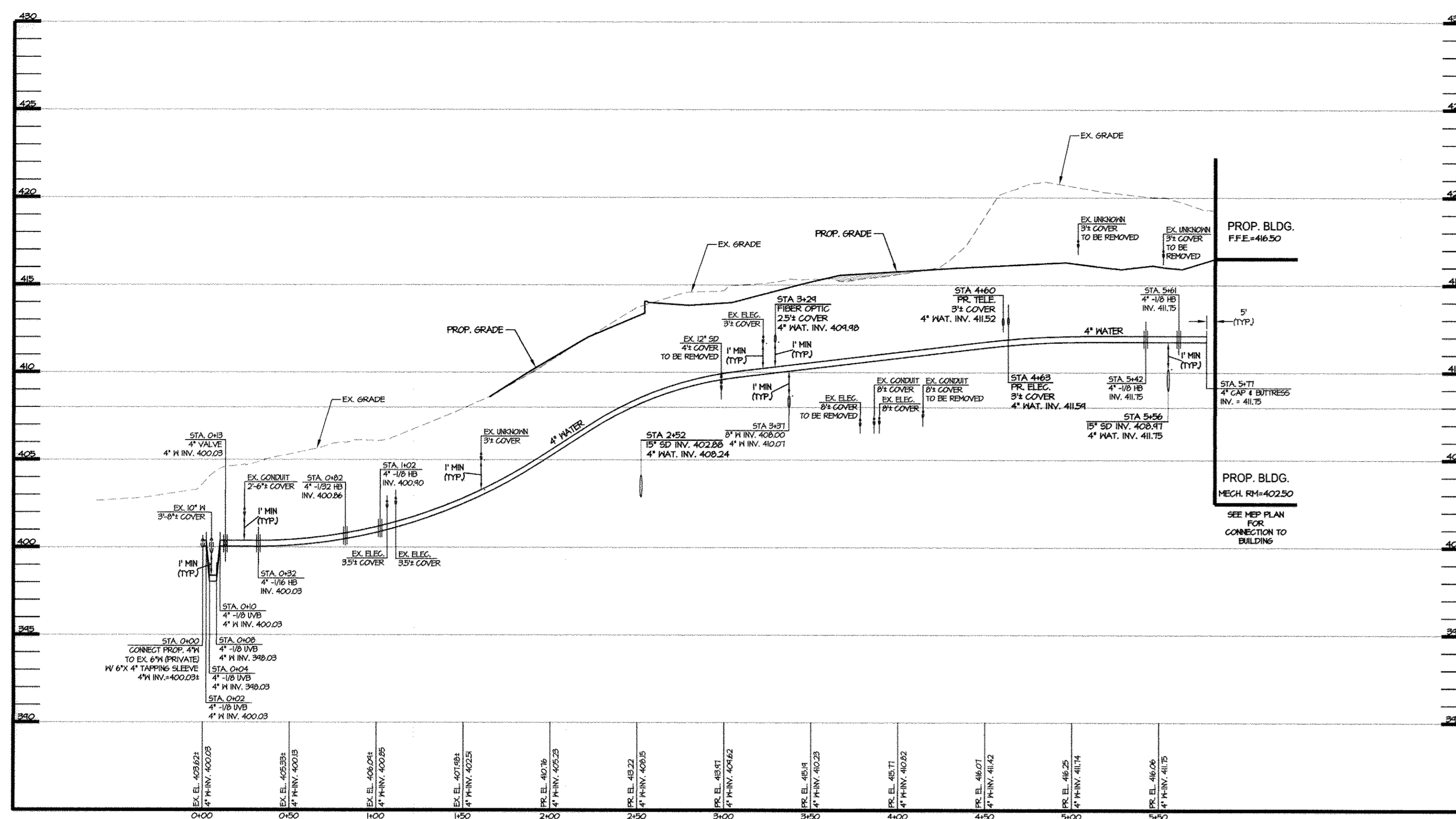
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REVIEW BY: TCN
SHEET: 23 OF 48

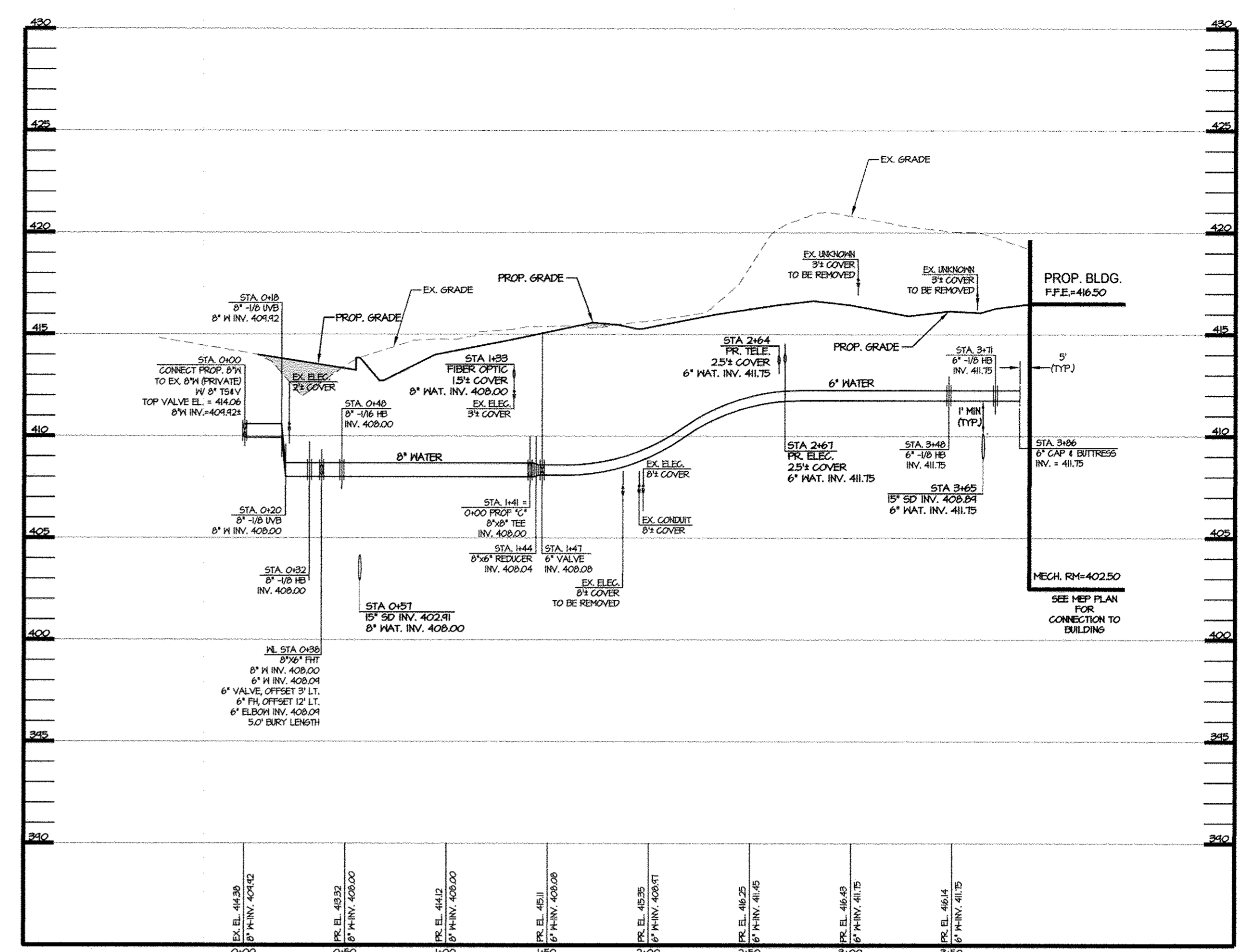
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CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145

MD 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. 29203, EXPIRATION DATE: 06/16/2013.

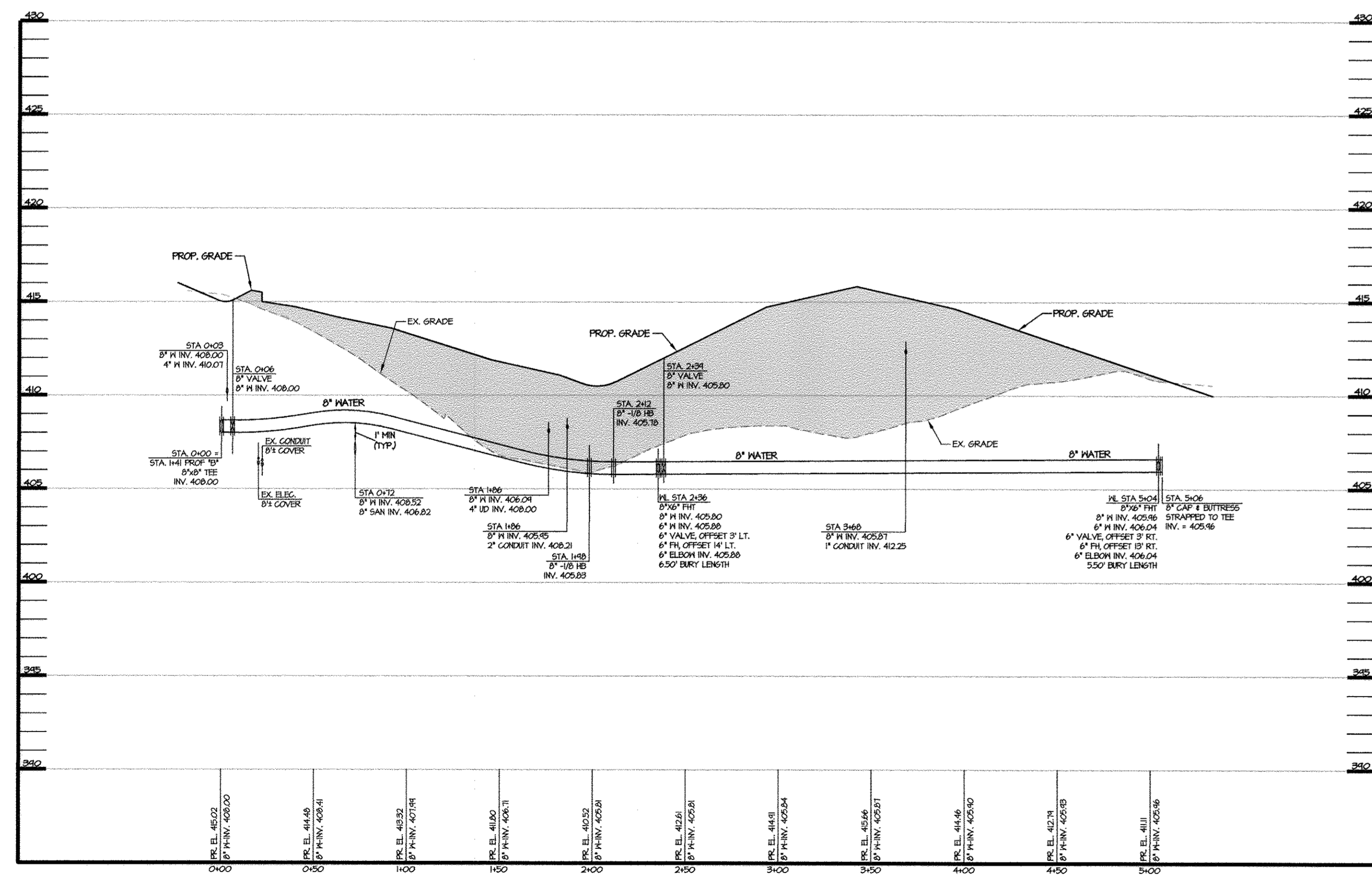
- GENERAL NOTES
- CONTRACTOR TO FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
 - CONTRACTOR TO TEST PIT TO DETERMINE EXACT DEPTH, LOCATION AND SIZE FOR ALL PROPOSED UTILITY CROSSINGS WITH EXISTING UTILITIES.
 - ALL EXISTING VALVES TO BE RAISED TO PROPOSED GRADE, BY CONTRACTOR, AS NEEDED.
 - THIS PLAN ASSUMES DEMOLITION/RELOCATION OF EXISTING UTILITIES, PAVING, STREET SIGNS, CULVERTS, ETC. WITHIN THE AREA OF R/W IMPROVEMENTS HAS ALREADY BEEN PERFORMED.
 - SEE PUBLIC ROAD & STORM DRAIN PLANS FOR R/W IMPROVEMENTS.
 - SEE CONTRACT NO. 24-4376-D FOR CONTINUATION OF PRIVATE WATER & SEWER.
 - ALL SEWER HOUSE CONNECTIONS SHALL BE IN ACCORDANCE WITH HOWARD COUNTY STANDARD DETAILS S2.11 & S2.22.
 - TRAFFIC BEARING CLEANOUT COVERS PER HOWARD COUNTY STANDARD DETAIL S3.21 ARE TO BE USED FOR CLEANOUTS LOCATED IN PAVED AREAS.



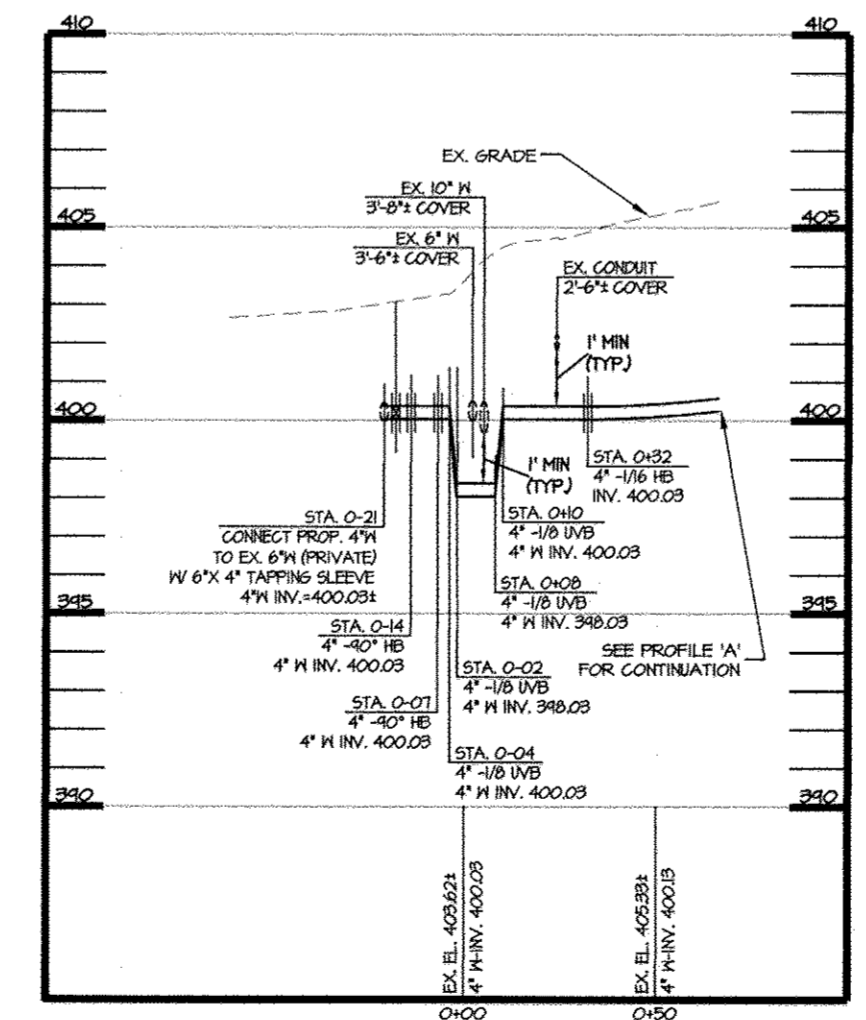
PROP. 4' WATER LINE (DOMESTIC)
PROFILE 'A'
 SCALE: HOR. 1" = 50'
 VERT. 1" = 5'



PROP. 8' & 6' WATER LINE (FIRE SERVICE)
PROFILE 'B'
 SCALE: HOR. 1" = 50'
 VERT. 1" = 5'



PROP. 8' WATER LINE (FIRE SERVICE)
PROFILE 'C'
 SCALE: HOR. 1" = 50'
 VERT. 1" = 5'



OPTION 'B'
PROFILE 'A'
 SCALE: HOR. 1" = 50'
 VERT. 1" = 5'

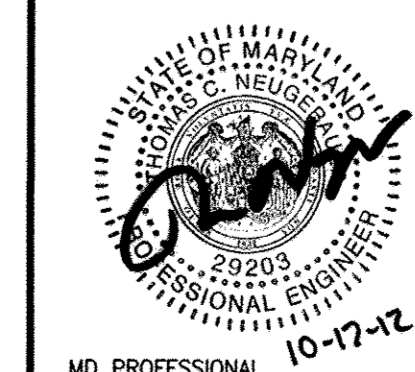
BILL OF MATERIALS PRIVATE WATER		
QUANTITY	SIZE	DESCRIPTION
576 LF	4"	WATER MAIN-D.I.P. CL. 50
283 LF	6"	WATER MAIN-D.I.P. CL. 50
650 LF	8"	WATER MAIN-D.I.P. CL. 50
1	6"x4"	TAPPING SLEEVE & VAULT
1	8"x6"	TAPPING SLEEVE & VAULT
3	6"	VALVE & ROADWAY BOX
2	8"	VALVE & ROADWAY BOX
1	8"x6"	REDUCER
3	8"	FIRE HYDRANT
3	4"	1/8 HORIZONTAL BEND
1	4"	1/16 HORIZONTAL BEND
1	4"	1/32 HORIZONTAL BEND
2	6"	1/8 HORIZONTAL BEND
4	8"	1/8 HORIZONTAL BEND
4	4"	1/8 VERTICAL BEND
2	8"	1/8 VERTICAL BEND
3	8"x6"	TEE
3	8"x6"	TEE
1	8"x6"	CAP & BUTTRESS
1	6"	CAP & BUTTRESS
1	8"	CAP & BUTTRESS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 11/10/12
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE
[Signature] 11/14/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
[Signature] 11/19/12
 CHIEF, DIVISION & LAND DEVELOPMENT DATE

OWNER / APPLICANT / DEVELOPER:
 ADDRESS: GRACE
 7500 GRACE DRIVE
 COLUMBIA, MARYLAND 21044
 CONTACT: MR. NIZAM USTA
 PHONE: 617-277-2145



MORRIS & RITCHIE ASSOCIATES, INC.
 ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
 14280 PARK CENTER DRIVE
 LAUREL, MD 20707
 (410) 792-9792 / (301) 776-1690
 FAX: (410) 792-7395
 MRAGTA.COM



GRACE TECH PARK, PARCEL A
 OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
 SITE DEVELOPMENT PLAN
WATER PROFILES
 TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
 MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
 7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: AS SHOWN
		DATE: 10/16/2012
		DRAWN BY: MK
		DESIGN BY: MK
		REVIEW BY: TGN
		SHEET: 24 OF 48

LOG OF BORING NO. B-1

Sheet 1 of 1

PROJECT: W.R. Grace Columbia Campus
PROJECT NO: 080972
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: August 28, 2008
DATE COMPLETED: August 28, 2008
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: P. Stephens
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

WATER LEVEL: Dry
GROUND SURFACE ELEVATION: 411.8
WATER ENCOUNTERED DURING DRILLING: N/E
DATUM: Survey
EQUIPMENT: CME 45
LOGGED BY: J. Cooper
CHECKED BY: R. Malviya

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY, SAMPLE BLOWERS INCHES, N (blow/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples 1 through 6 and notes on soil types like Silty SAND and Silty SILT.

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. B-2

Sheet 1 of 1

PROJECT: W.R. Grace Columbia Campus
PROJECT NO: 080972
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: August 28, 2008
DATE COMPLETED: August 28, 2008
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: P. Stephens
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

WATER LEVEL: Dry
GROUND SURFACE ELEVATION: 411.1
WATER ENCOUNTERED DURING DRILLING: N/E
DATUM: Survey
EQUIPMENT: CME 45
LOGGED BY: J. Cooper
CHECKED BY: R. Malviya

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY, SAMPLE BLOWERS INCHES, N (blow/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples 1 through 6 and notes on soil types like Silty SAND and Silty SILT.

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. B-3

Sheet 1 of 1

PROJECT: W.R. Grace Columbia Campus
PROJECT NO: 080972
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: August 29, 2008
DATE COMPLETED: August 29, 2008
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: P. Stephens
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

WATER LEVEL: Dry
GROUND SURFACE ELEVATION: 418.0
WATER ENCOUNTERED DURING DRILLING: N/E
DATUM: Survey
EQUIPMENT: CME 45
LOGGED BY: J. Cooper
CHECKED BY: R. Malviya

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY, SAMPLE BLOWERS INCHES, N (blow/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples 1 through 6 and notes on soil types like Silty SAND and Silty SILT.

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. B-4

Sheet 1 of 1

PROJECT: W.R. Grace Columbia Campus
PROJECT NO: 080972
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: August 29, 2008
DATE COMPLETED: August 29, 2008
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: P. Stephens
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

WATER LEVEL: Dry
GROUND SURFACE ELEVATION: 398.8
WATER ENCOUNTERED DURING DRILLING: N/E
DATUM: Survey
EQUIPMENT: CME 45
LOGGED BY: J. Cooper
CHECKED BY: R. Malviya

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY, SAMPLE BLOWERS INCHES, N (blow/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples 1 through 5 and notes on soil types like Silty SAND and Silty SILT.

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. B-5

Sheet 1 of 1

PROJECT: W.R. Grace Columbia Campus
PROJECT NO: 080972
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: August 29, 2008
DATE COMPLETED: August 29, 2008
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: P. Stephens
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

WATER LEVEL: Dry
GROUND SURFACE ELEVATION: 413.3
WATER ENCOUNTERED DURING DRILLING: N/E
DATUM: Survey
EQUIPMENT: CME 45
LOGGED BY: J. Cooper
CHECKED BY: R. Malviya

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY, SAMPLE BLOWERS INCHES, N (blow/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples 1 through 5 and notes on soil types like Silty SILT and Silty SAND.

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. B-6

Sheet 1 of 1

PROJECT: W.R. Grace Columbia Campus
PROJECT NO: 080972
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: August 29, 2008
DATE COMPLETED: August 29, 2008
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: P. Stephens
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

WATER LEVEL: Dry
GROUND SURFACE ELEVATION: 413.0
WATER ENCOUNTERED DURING DRILLING: N/E
DATUM: Survey
EQUIPMENT: CME 45
LOGGED BY: J. Cooper
CHECKED BY: R. Malviya

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY, SAMPLE BLOWERS INCHES, N (blow/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples 1 through 5 and notes on soil types like Silty SAND and Silty SILT.

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. B-7

Sheet 1 of 1

PROJECT: W.R. Grace Columbia Campus
PROJECT NO: 080972
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: August 29, 2008
DATE COMPLETED: August 29, 2008
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: P. Stephens
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

WATER LEVEL: Dry
GROUND SURFACE ELEVATION: 400.0
WATER ENCOUNTERED DURING DRILLING: N/E
DATUM: Survey
EQUIPMENT: CME 45
LOGGED BY: J. Cooper
CHECKED BY: R. Malviya

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY, SAMPLE BLOWERS INCHES, N (blow/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples 1 through 5 and notes on soil types like Silty SAND and Silty SILT.

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. B-8

Sheet 1 of 1

PROJECT: W.R. Grace Columbia Campus
PROJECT NO: 080972
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: August 29, 2008
DATE COMPLETED: August 29, 2008
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: P. Stephens
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

WATER LEVEL: Dry
GROUND SURFACE ELEVATION: 413.3
WATER ENCOUNTERED DURING DRILLING: N/E
DATUM: Survey
EQUIPMENT: CME 45
LOGGED BY: J. Cooper
CHECKED BY: R. Malviya

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY, SAMPLE BLOWERS INCHES, N (blow/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples 1 through 5 and notes on soil types like Silty SAND and Silty SILT.

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. B-9

Sheet 1 of 1

PROJECT: W.R. Grace Columbia Campus
PROJECT NO: 080972
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: August 29, 2008
DATE COMPLETED: August 29, 2008
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: P. Stephens
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

WATER LEVEL: Dry
GROUND SURFACE ELEVATION: 413.0
WATER ENCOUNTERED DURING DRILLING: N/E
DATUM: Survey
EQUIPMENT: CME 45
LOGGED BY: J. Cooper
CHECKED BY: R. Malviya

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY, SAMPLE BLOWERS INCHES, N (blow/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples 1 through 5 and notes on soil types like Silty SAND and Silty SILT.

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. B-10

Sheet 1 of 1

PROJECT: W.R. Grace Columbia Campus
PROJECT NO: 080972
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: August 29, 2008
DATE COMPLETED: August 29, 2008
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: P. Stephens
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

WATER LEVEL: Dry
GROUND SURFACE ELEVATION: 400.0
WATER ENCOUNTERED DURING DRILLING: N/E
DATUM: Survey
EQUIPMENT: CME 45
LOGGED BY: J. Cooper
CHECKED BY: R. Malviya

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY, SAMPLE BLOWERS INCHES, N (blow/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples 1 through 5 and notes on soil types like Silty SAND and Silty SILT.

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. B-11

Sheet 1 of 1

PROJECT: W.R. Grace Columbia Campus
PROJECT NO: 080972
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: August 29, 2008
DATE COMPLETED: August 29, 2008
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: P. Stephens
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

WATER LEVEL: Dry
GROUND SURFACE ELEVATION: 398.8
WATER ENCOUNTERED DURING DRILLING: N/E
DATUM: Survey
EQUIPMENT: CME 45
LOGGED BY: J. Cooper
CHECKED BY: R. Malviya

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY, SAMPLE BLOWERS INCHES, N (blow/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples 1 through 5 and notes on soil types like Silty SAND and Silty SILT.

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

FOR LOCATIONS OF SOIL BORINGS SEE SHEETS SDP-15.

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Director, Department of Planning and Zoning
Chief, Development Engineering Division
Chief, Division & Land Development

OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145

MORRIS & RITCHIE ASSOCIATES, INC.
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(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395
MRAGTA.COM
GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
GEOTECHNICAL BORING LOGS
TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

SHEET: SDP-25

LOG OF BORING NO. B-8

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: November 17, 2011
DATE COMPLETED: November 17, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: M. Fleming
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY (%), SAMPLE BLOWERS (ft/min), N (blows/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples S-1 through S-8.

NOTES:
GTA GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. B-9

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: November 17, 2011
DATE COMPLETED: November 17, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: M. Fleming
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY (%), SAMPLE BLOWERS (ft/min), N (blows/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples S-1 through S-7.

NOTES:
GTA GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. B-10

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: November 18, 2011
DATE COMPLETED: November 18, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: M. Fleming
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY (%), SAMPLE BLOWERS (ft/min), N (blows/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples S-1 through S-8.

NOTES:
GTA GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. B-11

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: November 18, 2011
DATE COMPLETED: November 18, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: M. Fleming
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY (%), SAMPLE BLOWERS (ft/min), N (blows/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples S-1 through S-9.

NOTES:
GTA GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. B-12

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: November 18, 2011
DATE COMPLETED: November 18, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: M. Fleming
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY (%), SAMPLE BLOWERS (ft/min), N (blows/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples S-1 through S-4.

NOTES:
GTA GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. SWM-1

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: November 16, 2011
DATE COMPLETED: November 16, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: M. Fleming
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY (%), SAMPLE BLOWERS (ft/min), N (blows/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples S-1 through S-6.

NOTES:
GTA GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. SWM-2

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: November 16, 2011
DATE COMPLETED: November 16, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: M. Fleming
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft), SAMPLE RECOVERY (%), SAMPLE BLOWERS (ft/min), N (blows/ft), ELEVATION (ft), DEPTH (ft), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples S-1 through S-5.

NOTES:
GTA GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

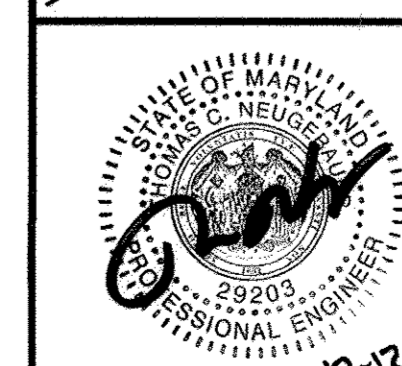
APPROVED: DEPARTMENT OF PLANNING AND ZONING
Director, Department of Planning and Zoning
Chief, Development Engineering Division
Chief, Division & Land Development

FOR LOCATIONS OF SOIL BORINGS SEE SHEETS SDP-15.

OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145



MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
14280 PARK CENTER DRIVE
LAUREL, MD 20707
(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395
MRAGTA.COM



GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
GEOTECHNICAL BORING LOGS

Table with columns: DATE, REVISIONS, JOB NO., SCALE, DATE, DRAWN BY, DESIGN BY, REVIEW BY, SHEET. Includes revision history and sheet information.

SHEET: SDP-26

LOG OF BORING NO. SWM-3

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: November 17, 2011
DATE COMPLETED: November 17, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: M. Fleming
EQUIPMENT: CME-550
LOGGED BY: J. Ermer
CHECKED BY: A. McKeen

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft.), SAMPLE RECOVERY (%), SAMPLE BLOWBES INCHES, N (blow/ft.), ELEVATION (ft.), DEPTH (ft.), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples S-1 to S-5 and notes on structure levels and infiltration tests.

NOTES: GEO-TECHNOLOGY ASSOCIATES, INC. LOG OF BORING NO. SWM-3
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. SWM-4

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: November 16, 2011
DATE COMPLETED: November 16, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: M. Fleming
EQUIPMENT: CME-550
LOGGED BY: J. Ermer
CHECKED BY: A. McKeen

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft.), SAMPLE RECOVERY (%), SAMPLE BLOWBES INCHES, N (blow/ft.), ELEVATION (ft.), DEPTH (ft.), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples S-1 to S-5 and notes on structure levels and infiltration tests.

NOTES: GEO-TECHNOLOGY ASSOCIATES, INC. LOG OF BORING NO. SWM-4
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. SWM-5

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: November 17, 2011
DATE COMPLETED: November 17, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: M. Fleming
EQUIPMENT: CME-550
LOGGED BY: J. Ermer
CHECKED BY: A. McKeen

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft.), SAMPLE RECOVERY (%), SAMPLE BLOWBES INCHES, N (blow/ft.), ELEVATION (ft.), DEPTH (ft.), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples S-1 to S-5 and notes on structure levels and infiltration tests.

NOTES: GEO-TECHNOLOGY ASSOCIATES, INC. LOG OF BORING NO. SWM-5
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. SWM-6

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: November 18, 2011
DATE COMPLETED: November 18, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: M. Fleming
EQUIPMENT: CME-550
LOGGED BY: J. Ermer
CHECKED BY: A. McKeen

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft.), SAMPLE RECOVERY (%), SAMPLE BLOWBES INCHES, N (blow/ft.), ELEVATION (ft.), DEPTH (ft.), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples S-1 to S-5 and notes on structure levels and infiltration tests.

NOTES: GEO-TECHNOLOGY ASSOCIATES, INC. LOG OF BORING NO. SWM-6
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. SWM-7

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: November 18, 2011
DATE COMPLETED: November 18, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: M. Fleming
EQUIPMENT: CME-550
LOGGED BY: J. Ermer
CHECKED BY: A. McKeen

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft.), SAMPLE RECOVERY (%), SAMPLE BLOWBES INCHES, N (blow/ft.), ELEVATION (ft.), DEPTH (ft.), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples S-1 to S-5 and notes on structure levels and infiltration tests.

NOTES: GEO-TECHNOLOGY ASSOCIATES, INC. LOG OF BORING NO. SWM-7
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. SWM-8

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: November 17, 2011
DATE COMPLETED: November 17, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: M. Fleming
EQUIPMENT: CME-550
LOGGED BY: J. Ermer
CHECKED BY: A. McKeen

Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft.), SAMPLE RECOVERY (%), SAMPLE BLOWBES INCHES, N (blow/ft.), ELEVATION (ft.), DEPTH (ft.), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples S-1 to S-5 and notes on structure levels and infiltration tests.

NOTES: GEO-TECHNOLOGY ASSOCIATES, INC. LOG OF BORING NO. SWM-8
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. SWM-9

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland
DATE STARTED: November 17, 2011
DATE COMPLETED: November 17, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: M. Fleming
EQUIPMENT: CME-550
LOGGED BY: J. Ermer
CHECKED BY: A. McKeen

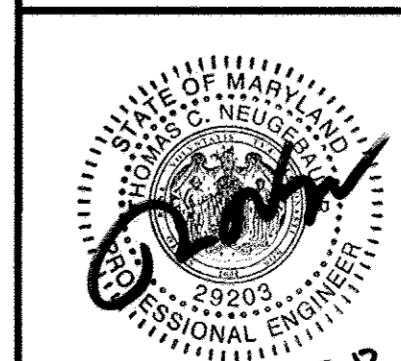
Table with columns: SAMPLE NUMBER, SAMPLE DEPTH (ft.), SAMPLE RECOVERY (%), SAMPLE BLOWBES INCHES, N (blow/ft.), ELEVATION (ft.), DEPTH (ft.), USCS GRAPHIC SYMBOL, DESCRIPTION, REMARKS. Includes data for samples S-1 to S-5 and notes on structure levels and infiltration tests.

NOTES: GEO-TECHNOLOGY ASSOCIATES, INC. LOG OF BORING NO. SWM-9
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

SHEET: SDP-27



MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
14280 PARK CENTER DRIVE
LAUREL, MD 20707
(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395
MRAGTA.COM



GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
GEOTECHNICAL BORING LOGS

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

Table with columns: DATE, REVISIONS, JOB NO., SCALE, DRAWN BY, DESIGN BY, REVIEW BY, SHEET. Includes revision history and drawing details.

OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145

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. 29203, EXPIRATION DATE: 06/16/2013.

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Director, Department of Planning and Zoning
Chief, Development Engineering Division
Chief, Division & Land Development

FOR LOCATIONS OF SOIL BORINGS SEE SHEETS SDP-15.

LOG OF BORING NO. SWM-10

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland

WATER LEVEL (ft): ∇ Dry ∇ Dry
DATE: 11/18/2011 11/19/2011
CAVED (ft): 10.0 6

DATE STARTED: November 18, 2011
DATE COMPLETED: November 18, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.

WATER ENCOUNTERED DURING DRILLING (ft): Dry
GROUND SURFACE ELEVATION: 407.6
DATUM: Survey

DRILLER: M. Fleming
EQUIPMENT: CME-550
LOGGED BY: J. Ermer
CHECKED BY: A. McKeen

DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

SAMPLE NUMBER	SAMPLE DEPTH (ft)	SAMPLE RECOVERY (ft)	SAMPLE BLOWERS (ft)	N (blows/ft)	ELEVATION (ft)	DEPTH (ft)	USCS	DESCRIPTION	REMARKS
					ELEV. 408.48	0		ELEV. 407.48	
						0		TOP OF STRUCTURE	
						0		BOTTOM OF STRUCTURE	
S-1	0.0	6	5-6.6	12	405.6	0	ML	Black, dry, medium dense, Silty GRAVEL (Fill)	Graded Aggregate. 24 in.
S-2	2.5	16	4-4.5	9	403.6	5	SM	Brown, moist, stiff, micaceous Silty SILT.	
S-3	5.0	14	4-4.6	10		5	SM	Reddish-Brown to Beige, dry, loose, micaceous Silty SAND with Weathered Rock Fragments.	
S-4	8.5	18	4-5.5	10	397.6	10		Boring terminated at 10 feet.	

NOTES:

GTA GEO-TECHNOLOGY ASSOCIATES, INC. LOG OF BORING NO. SWM-10
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. SWM-11

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland

WATER LEVEL (ft): ∇ Dry ∇ Dry
DATE: 11/18/2011 11/19/2011
CAVED (ft): 8.7 8.6

DATE STARTED: November 18, 2011
DATE COMPLETED: November 18, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.

WATER ENCOUNTERED DURING DRILLING (ft): Dry
GROUND SURFACE ELEVATION: 419.7
DATUM: Survey

DRILLER: M. Fleming
EQUIPMENT: CME-550
LOGGED BY: J. Ermer
CHECKED BY: A. McKeen

DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

SAMPLE NUMBER	SAMPLE DEPTH (ft)	SAMPLE RECOVERY (ft)	SAMPLE BLOWERS (ft)	N (blows/ft)	ELEVATION (ft)	DEPTH (ft)	USCS	DESCRIPTION	REMARKS
					ELEV. 417.38	0		ELEV. 417.38	
						0		TOP OF STRUCTURE	
S-1	0.0	16	1-2-2	4	417.7	0	ML	Red, moist, very loose, micaceous Silty SILT, trace Organics (Root Fibers).	Topsoil: 5 in.
S-2	2.5	18	3-3-4	7		5	SM	Red, moist, loose, micaceous Silty SAND.	
S-3	5.0	18	3-4-4	8		5	SM	ELEV. 416.21	
						5		BOTTOM OF STRUCTURE	
S-4	8.5	18	8-6-5	11	411.7	10	SM	Red with White and Tan, moist, medium dense, micaceous Silty SAND.	
S-5	13.5	18	9-10-10	20	404.7	15		Boring terminated at 15 feet.	

NOTES:

GTA GEO-TECHNOLOGY ASSOCIATES, INC. LOG OF BORING NO. SWM-11
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. SWM-12

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland

WATER LEVEL (ft): ∇ Dry ∇ Dry
DATE: 11/17/2011 11/18/2011
CAVED (ft): 5.4 5.3

DATE STARTED: November 17, 2011
DATE COMPLETED: November 17, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.

WATER ENCOUNTERED DURING DRILLING (ft): Dry
GROUND SURFACE ELEVATION: 405.8
DATUM: Survey

DRILLER: M. Fleming
EQUIPMENT: CME-550
LOGGED BY: J. Ermer
CHECKED BY: A. McKeen

DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

SAMPLE NUMBER	SAMPLE DEPTH (ft)	SAMPLE RECOVERY (ft)	SAMPLE BLOWERS (ft)	N (blows/ft)	ELEVATION (ft)	DEPTH (ft)	USCS	DESCRIPTION	REMARKS
					ELEV. 408.44	0		ELEV. 408.44	
						0		TOP OF STRUCTURE	
S-1	0.0	14	4-6-6	12	403.8	0	SM	Brown, moist, medium dense, micaceous Silty SAND, trace Organics (Root Fibers).	Topsoil: 4 in.
S-2	2.5	16	14-10-7	17	401.8	5	SM	Brown, moist, medium dense, micaceous Silty SAND with Weathered Rock Fragments.	
S-3	5.0	18	6-7-9	16	398.8	5	SM	Light Brown, moist, medium dense, micaceous Silty SAND.	
						5		BOTTOM OF STRUCTURE	
S-4	8.5	18	4-4-4	8	395.8	10	SM	Tan and Beige, dry, loose, micaceous Silty SAND, trace Weathered Rock Fragments.	

NOTES:

GTA GEO-TECHNOLOGY ASSOCIATES, INC. LOG OF BORING NO. SWM-12
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. SWM-13

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland

WATER LEVEL (ft): ∇ Dry ∇ Dry
DATE: 11/17/2011 11/18/2011
CAVED (ft): 5.5 5.5

DATE STARTED: November 17, 2011
DATE COMPLETED: November 17, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.

WATER ENCOUNTERED DURING DRILLING (ft): Dry
GROUND SURFACE ELEVATION: 396.5
DATUM: Survey

DRILLER: M. Fleming
EQUIPMENT: CME-550
LOGGED BY: J. Ermer
CHECKED BY: A. McKeen

DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

SAMPLE NUMBER	SAMPLE DEPTH (ft)	SAMPLE RECOVERY (ft)	SAMPLE BLOWERS (ft)	N (blows/ft)	ELEVATION (ft)	DEPTH (ft)	USCS	DESCRIPTION	REMARKS
					ELEV. 399.00	0		ELEV. 396.08	
						0		TOP OF STRUCTURE	
						0		BOTTOM OF STRUCTURE	
S-1	0.0	18	1-2-2	4	394.5	0	SM	Brown, moist, very loose, micaceous Silty SAND.	Topsoil: 4 in.
S-2	2.5	18	2-2-4	6	392.5	5	ML	Brown, moist, medium stiff, micaceous Silty SILT.	
S-3	5.0	18	6-6-8	14		5	SM	Light Brown to Tan, moist, loose to medium dense, micaceous Silty SAND with Weathered Rock Fragments.	
S-4	8.5	18	3-3-5	8	386.5	10		Boring terminated at 10 feet.	

NOTES:

GTA GEO-TECHNOLOGY ASSOCIATES, INC. LOG OF BORING NO. SWM-13
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. SWM-14

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland

WATER LEVEL (ft): ∇ Dry ∇ Dry
DATE: 11/18/2011 11/19/2011
CAVED (ft): 5.11 5.10

DATE STARTED: November 17, 2011
DATE COMPLETED: November 17, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.

WATER ENCOUNTERED DURING DRILLING (ft): Dry
GROUND SURFACE ELEVATION: 397.8
DATUM: Survey

DRILLER: M. Fleming
EQUIPMENT: CME-550
LOGGED BY: J. Ermer
CHECKED BY: A. McKeen

DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

SAMPLE NUMBER	SAMPLE DEPTH (ft)	SAMPLE RECOVERY (ft)	SAMPLE BLOWERS (ft)	N (blows/ft)	ELEVATION (ft)	DEPTH (ft)	USCS	DESCRIPTION	REMARKS
					ELEV. 399.50	0		ELEV. 396.33	
						0		TOP OF STRUCTURE	
						0		BOTTOM OF STRUCTURE	
S-1	0.0	18	1-1-2	18	392.8	0	ML	Brown, moist, very loose to medium dense, micaceous Silty SILT.	Topsoil: 5 in.
S-2	2.5	9	2-2-2	4		5	SM	Light Brown to Gray and Tan, moist, loose to medium dense, micaceous Silty SAND.	
S-3	5.0	12	3-6-7	13		5	SM		
S-4	8.5	18	4-5-5	10	387.8	10		Boring terminated at 10 feet.	

NOTES:

GTA GEO-TECHNOLOGY ASSOCIATES, INC. LOG OF BORING NO. SWM-14
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

LOG OF BORING NO. SWM-15

Sheet 1 of 1

PROJECT: Grace - Office Building
PROJECT NO: 080972.1
PROJECT LOCATION: Howard County, Maryland

WATER LEVEL (ft): ∇ Dry ∇ Dry
DATE: 11/18/2011 11/19/2011
CAVED (ft): 9.6 9.6

DATE STARTED: November 18, 2011
DATE COMPLETED: November 18, 2011
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.

WATER ENCOUNTERED DURING DRILLING (ft): Dry
GROUND SURFACE ELEVATION: 400.6
DATUM: Survey

DRILLER: M. Fleming
EQUIPMENT: CME-550
LOGGED BY: J. Ermer
CHECKED BY: A. McKeen

DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

SAMPLE NUMBER	SAMPLE DEPTH (ft)	SAMPLE RECOVERY (ft)	SAMPLE BLOWERS (ft)	N (blows/ft)	ELEVATION (ft)	DEPTH (ft)	USCS	DESCRIPTION	REMARKS
					ELEV. 400.00	0		ELEV. 400.00	
						0		TOP OF STRUCTURE	
S-1	0.0	18	WOH-1-1	2	395.6	0	ML	Reddish-Brown to Brown, moist, very loose, micaceous Silty SILT.	Topsoil: 6 in.
S-2	2.5	18	2-2-2	4		5	SM	ELEV. 396.50	
						5		BOTTOM OF STRUCTURE	
S-3	5.0	18	4-4-5	9		5	SM	Light Brown to Gray, moist, loose, micaceous Silty SAND.	
S-4	8.5	18	4-4-6	10		10			
S-5	13.5	18	4-4-5	9	385.6	15		Boring terminated at 15 feet.	

NOTES:

GTA GEO-TECHNOLOGY ASSOCIATES, INC. LOG OF BORING NO. SWM-15
14280 Park Center Drive, Suite A
Laurel, Maryland 20707

SHEET: SDP-28

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
14280 PARK CENTER DRIVE
LAUREL, MD 20707
(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395
MRAGTA.COM

MRA
MORRIS & RITCHIE ASSOCIATES, INC.
REGISTERED PROFESSIONAL ENGINEERS
10-17-12

GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
GEOTECHNICAL BORING LOGS

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: AS SHOWN
		DATE: 10/16/2012
		DRAWN BY: MK
		DESIGN BY: MK
		REVIEW BY: TCN
		SHEET: 28 OF 48

OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145

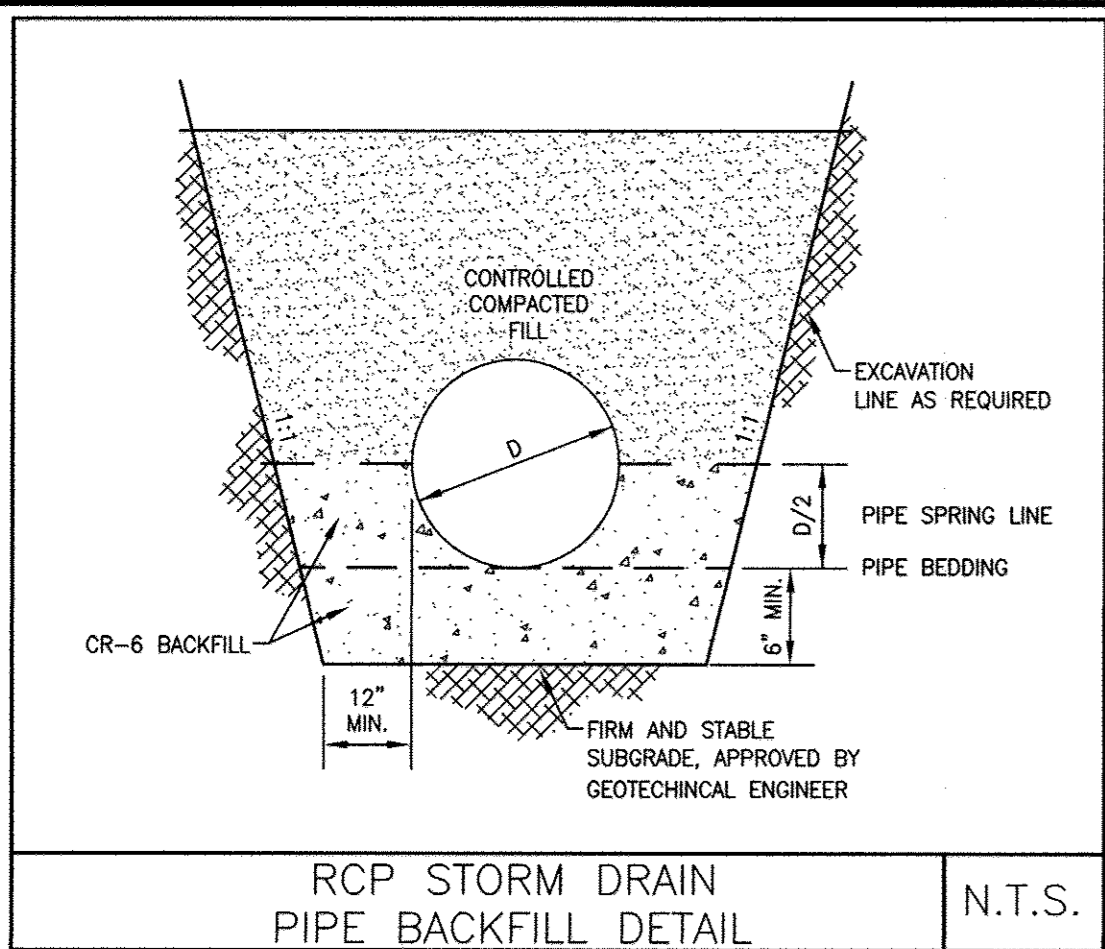
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 29203, EXPIRATION DATE: 06/16/2013.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Mark A. Coughlin
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING
DATE: 11/14/12

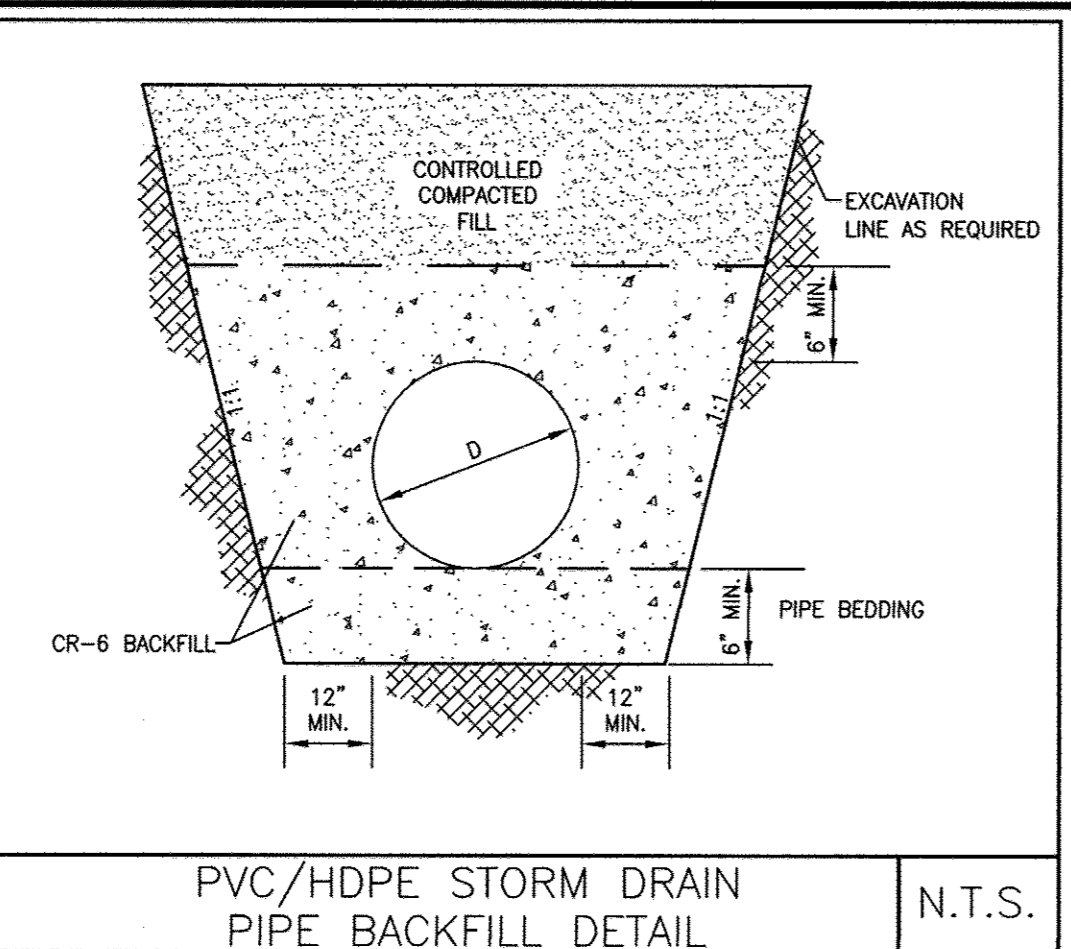
Keith D. ...
CHIEF, DIVISION & LAND DEVELOPMENT
DATE: 11/19/12

FOR LOCATIONS OF SOIL BORINGS SEE SHEETS SDP-15.



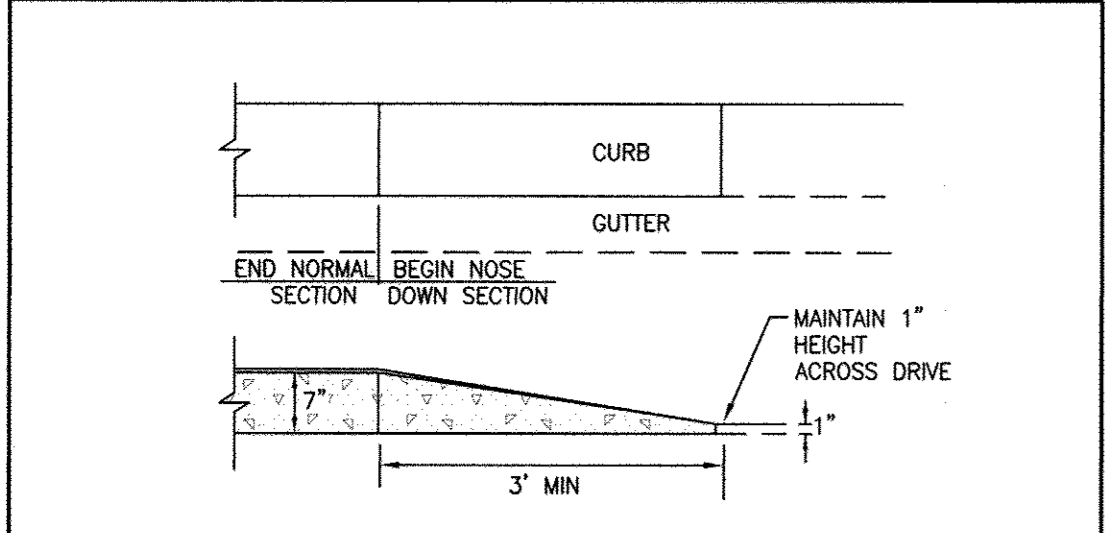
RCP STORM DRAIN PIPE BACKFILL DETAIL

N.T.S.



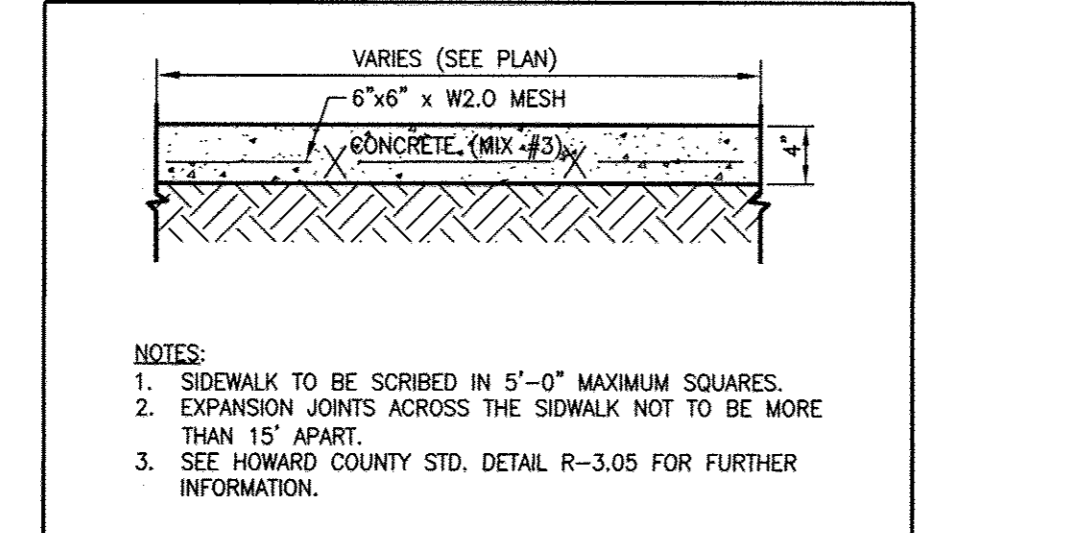
PVC/HDPE STORM DRAIN PIPE BACKFILL DETAIL

N.T.S.



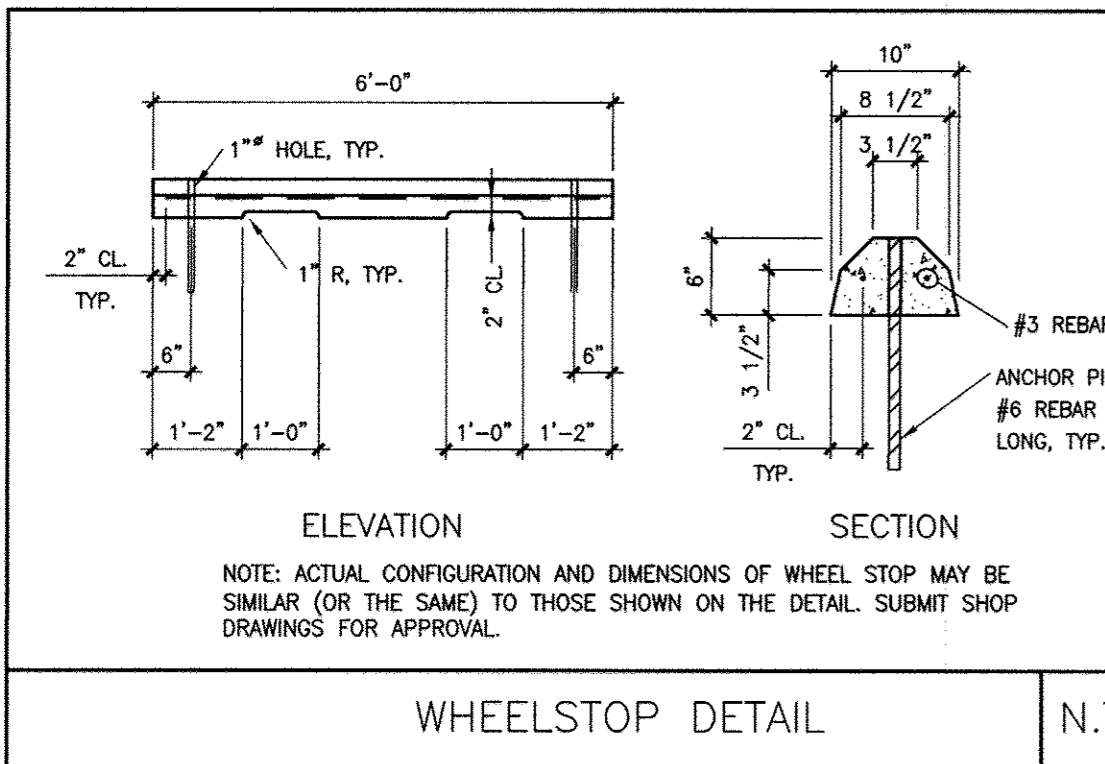
NOSE DOWN CURB

N.T.S.



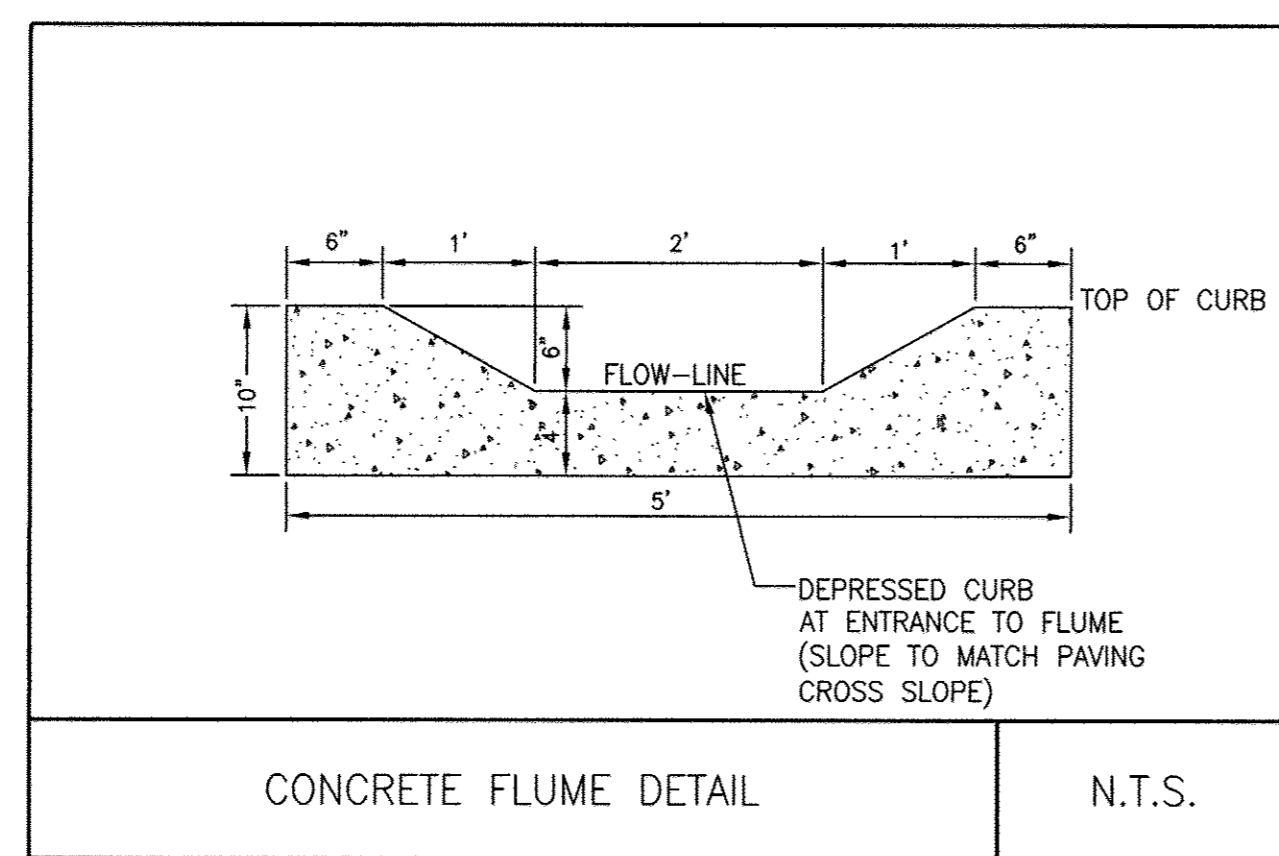
SIDEWALK SECTION

N.T.S.



WHEELSTOP DETAIL

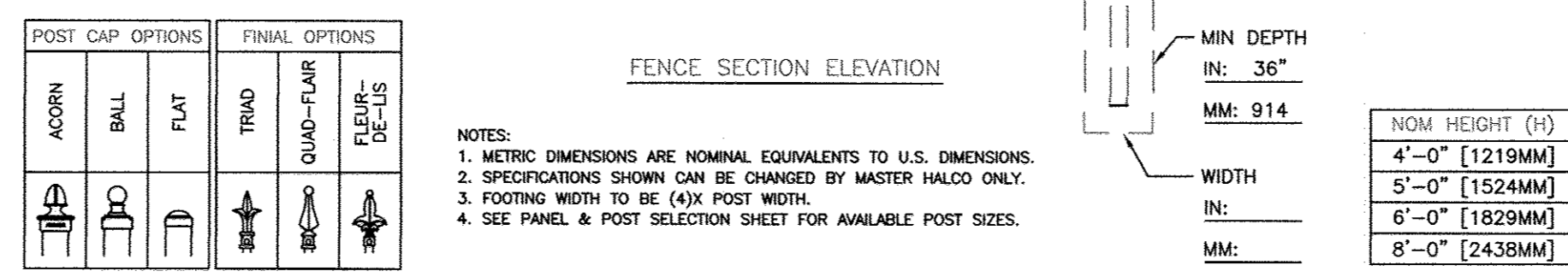
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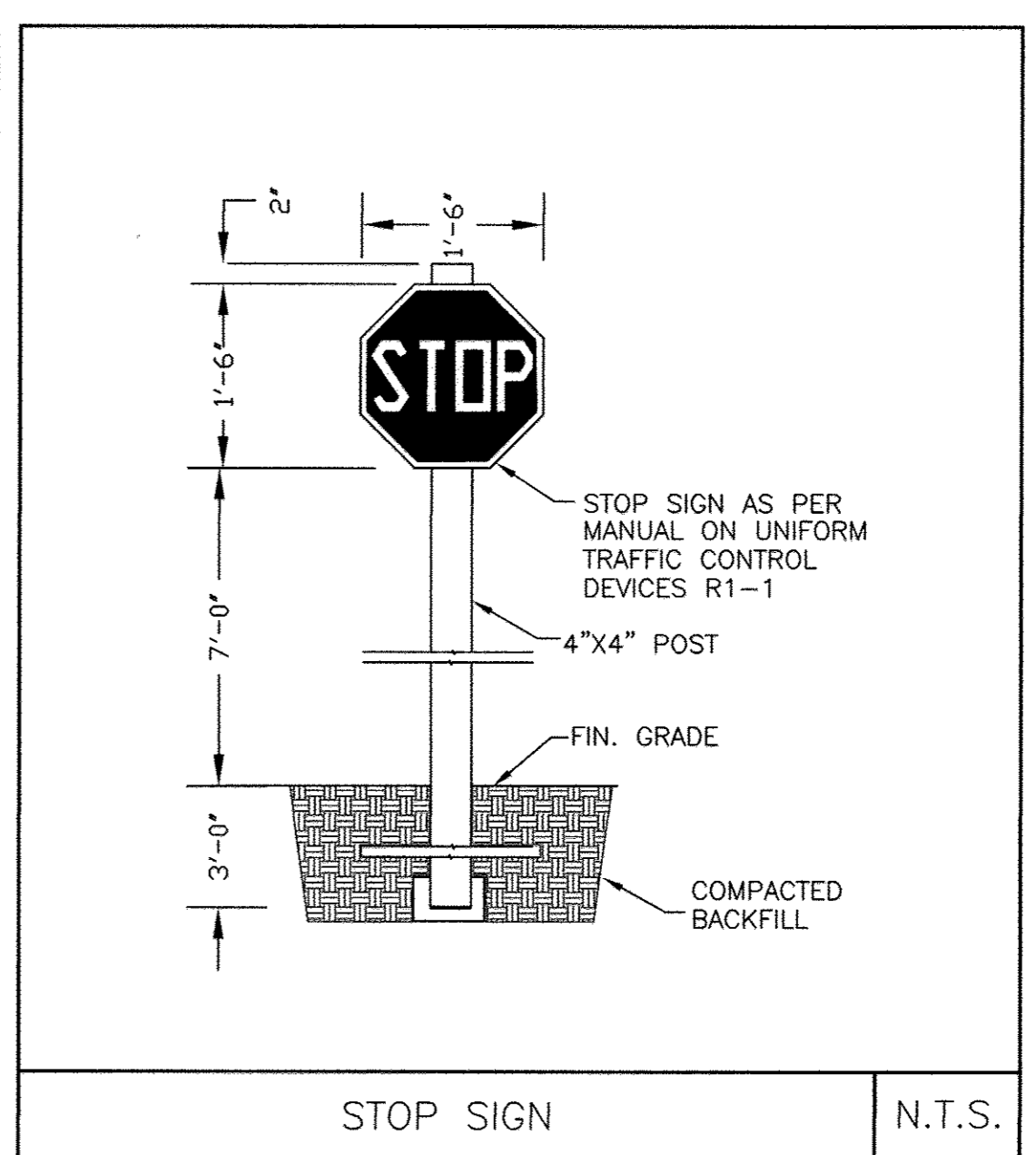
CONCRETE FLUME DETAIL

N.T.S.

MONUMENTAL IRON WORKS by Master Halco
 Estate Fence - Style G
 NOM 8' SECTION LENGTH - 3/4" PICKETS
 BY: JRR DATE: 04-28-95 DWG: 6-1510
 REV: D LAYER: 1
 REV DATE: 06-18-08 SCALE: 1/2" = 1'-0"

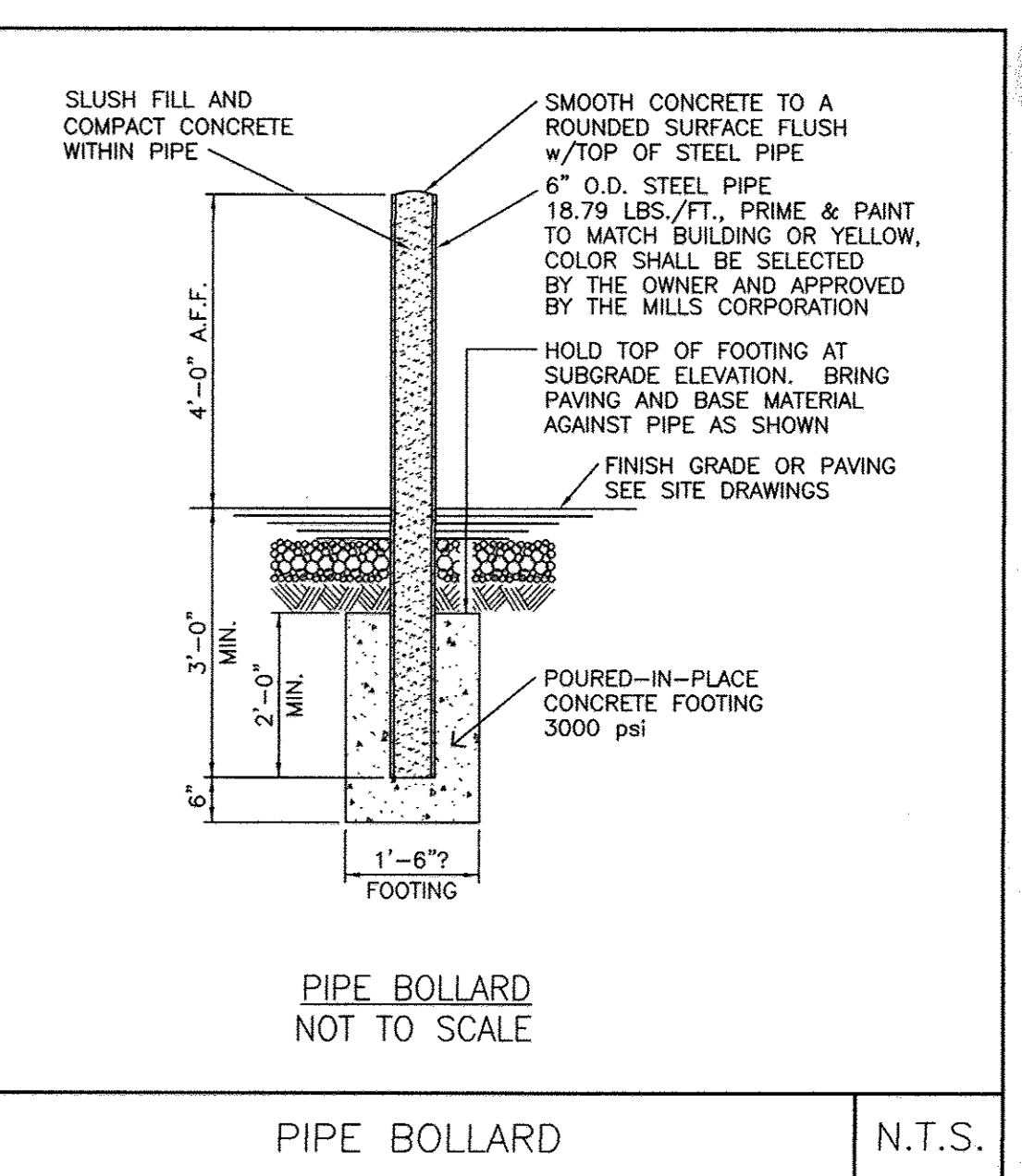


NOTES:
 1. METRIC DIMENSIONS ARE NOMINAL EQUIVALENTS TO U.S. DIMENSIONS.
 2. SPECIFICATIONS SHOWN CAN BE CHANGED BY MASTER HALCO ONLY.
 3. FOOTING WIDTH TO BE (4X) POST WIDTH.
 4. SEE PANEL & POST SELECTION SHEET FOR AVAILABLE POST SIZES.



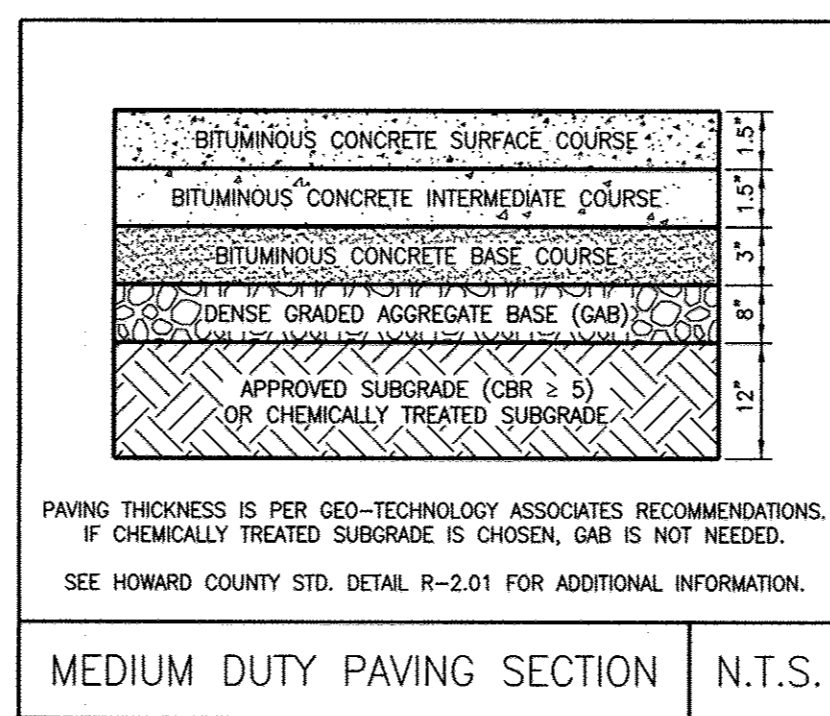
STOP SIGN

N.T.S.



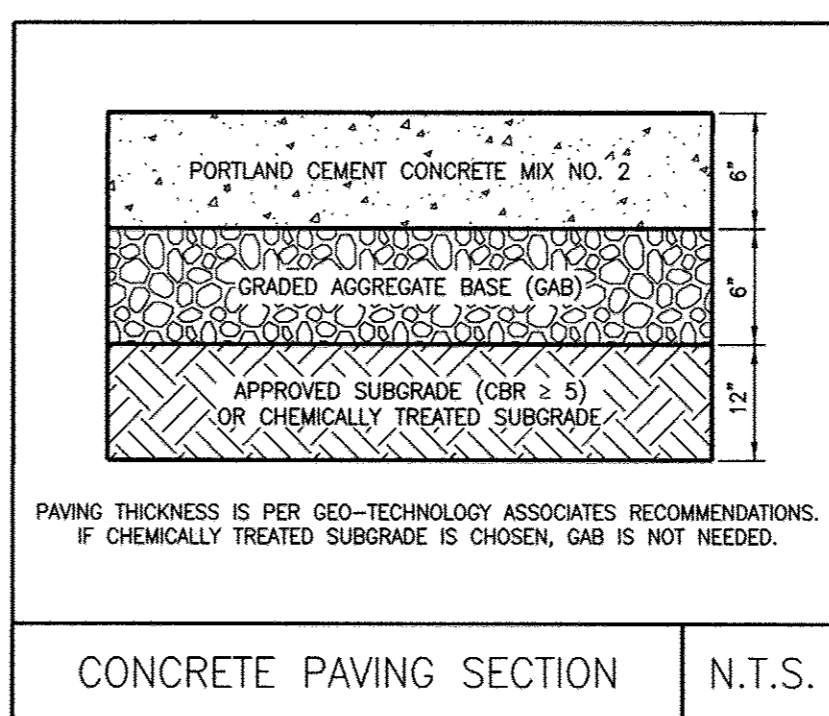
PIPE BOLLARD

N.T.S.



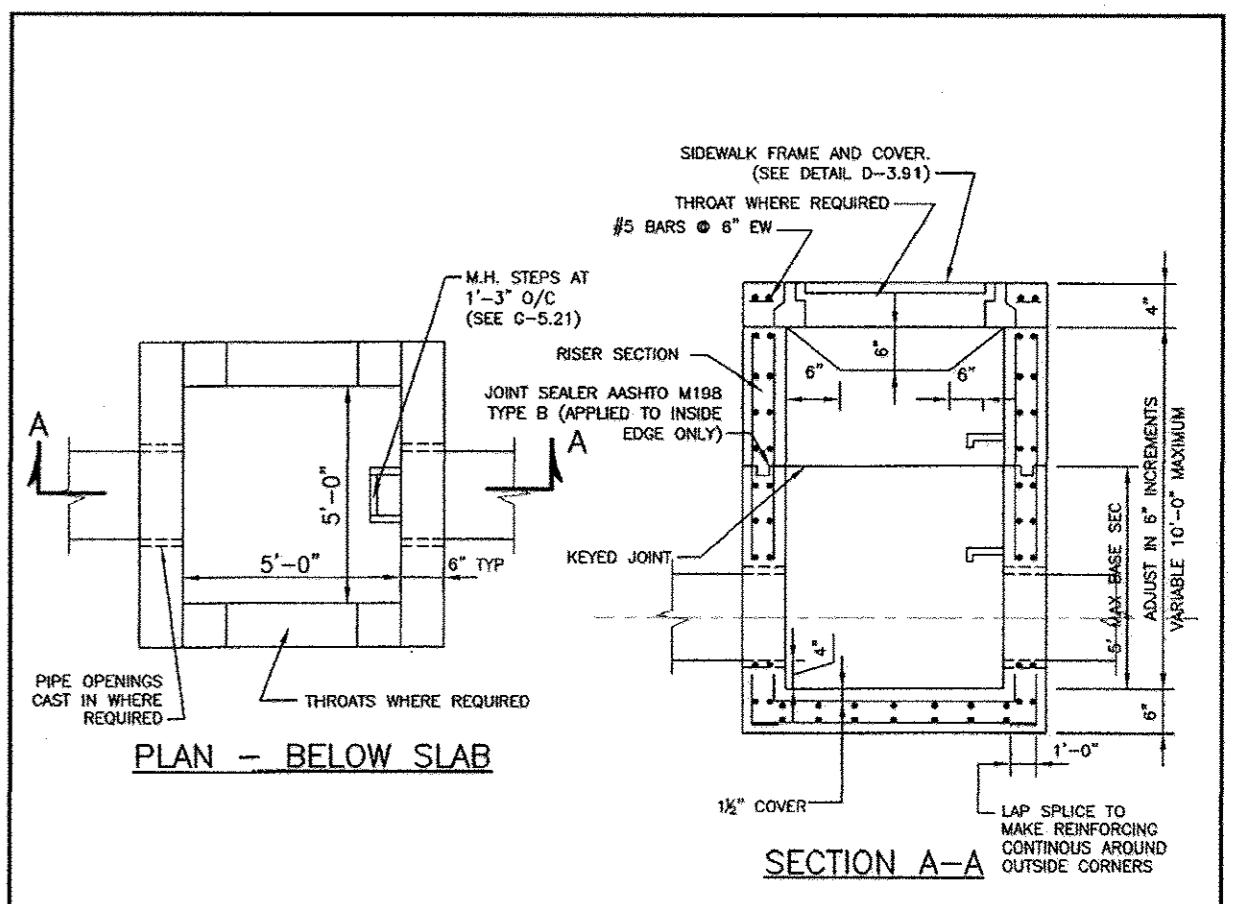
MEDIUM DUTY PAVING SECTION

N.T.S.



CONCRETE PAVING SECTION

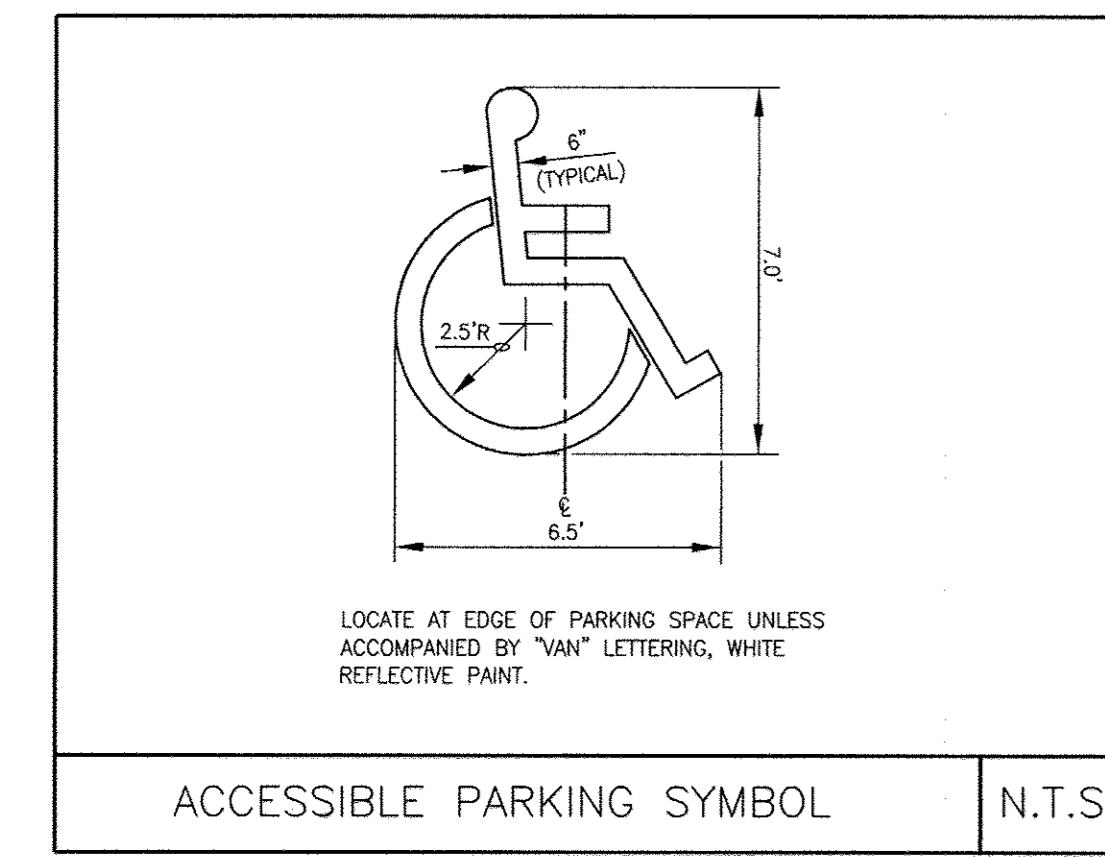
N.T.S.



MODIFIED TYPE 'D' INLET

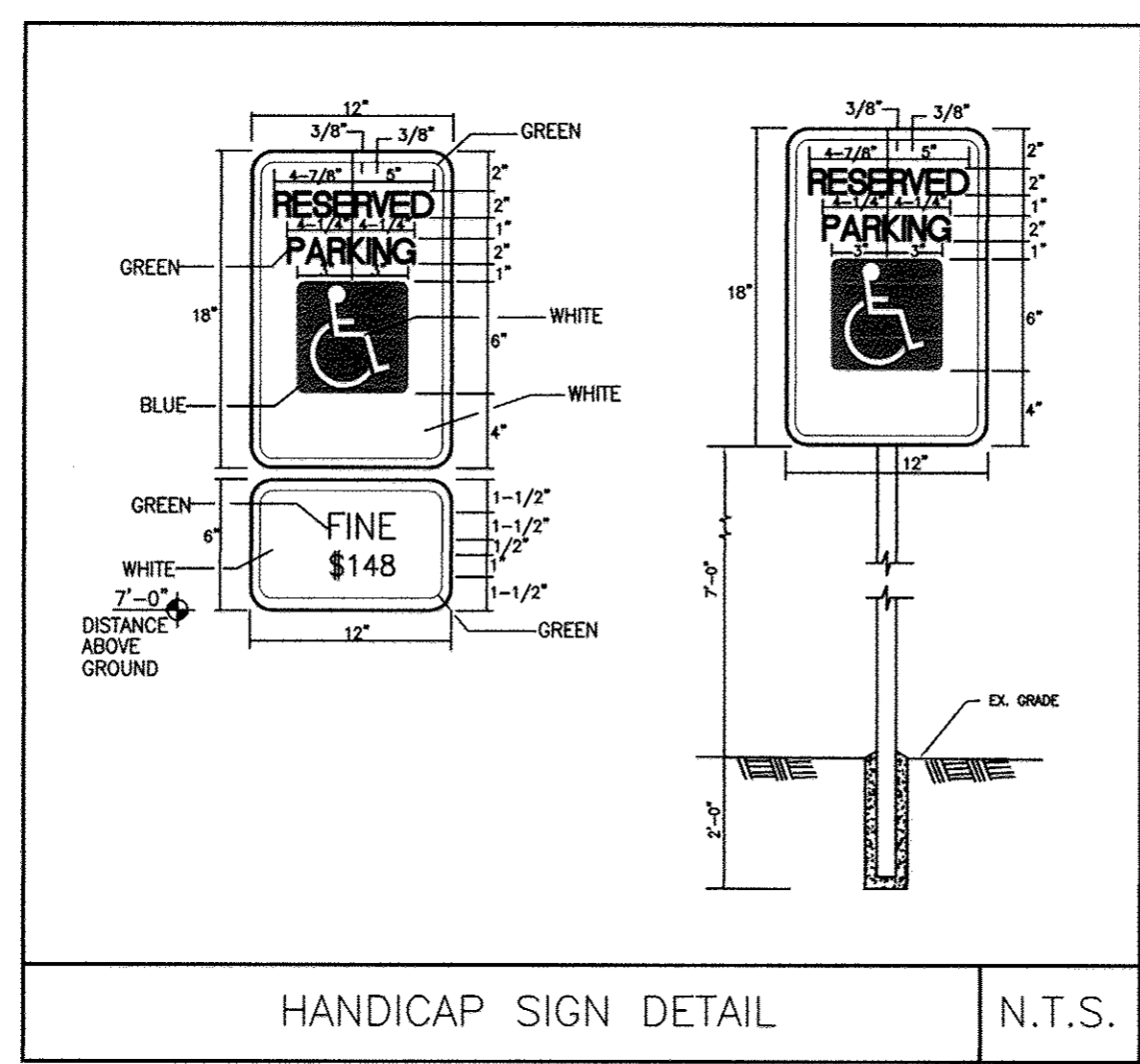
N.T.S.

- NOTES
- CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF LATEST EDITION OF ACI 301 AND ACI 318.
 - PRECAST STRUCTURES SHALL BE DESIGNED BY A PRECAST CONCRETE STRUCTURES MANUFACTURER IN ACCORDANCE TO LOADINGS SPECIFIED IN LATEST EDITIONS OF ASTM C857 AND C858.
 - PRECAST STRUCTURES SHALL CONFORM TO THE REQUIREMENTS OF LATEST EDITIONS OF ASTM C858.
 - RESILIENT CONNECTORS BETWEEN MANHOLE STRUCTURES, PIPES AND LATERALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF LATEST EDITIONS OF ASTM C923.
 - OVERALL HEIGHT OF PRECAST IS ADJUSTABLE IN 6" INCREMENTS. FINAL GRADE ADJUSTMENTS SHALL BE MADE BY THE CONTRACTOR WITH BRICK AND MORTAR.
 - INVERT SHALL BE APPROVED PRECAST, PLAN MIX NO.3 CONCRETE OR BRICK LAD ON EDGE. INVERT TO SLOPE DOWN TOWARD OUTLET AT THE RATE OF 2" PER FOOT, OR AS SHOWN ON PLAN OR AS DIRECTED. INVERT BRICK SHALL BE ASTM C32-91 GRADE SS.



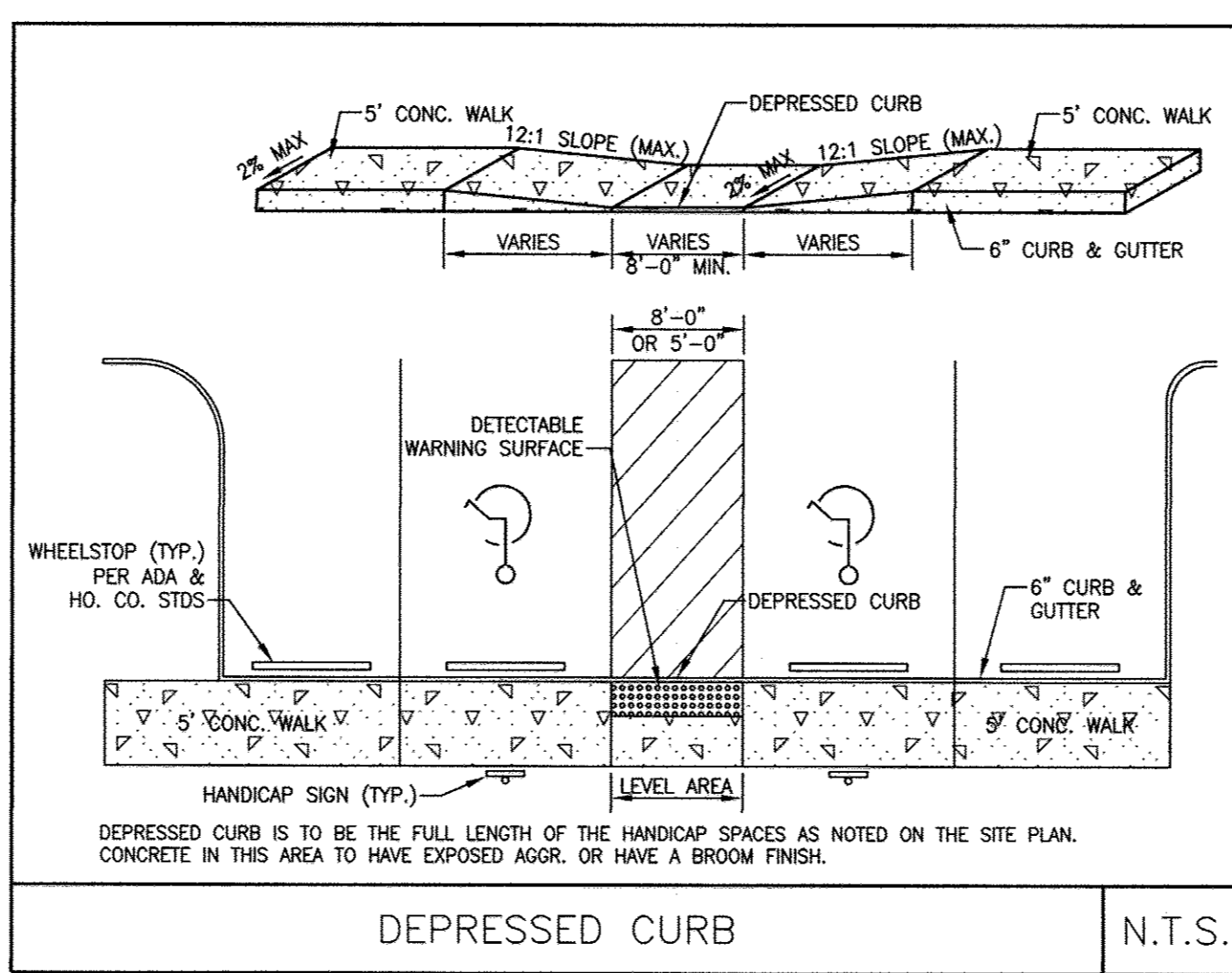
ACCESSIBLE PARKING SYMBOL

N.T.S.



HANDICAP SIGN DETAIL

N.T.S.



DEPRESSED CURB

N.T.S.

ADA NOTE:
 ALL SIDEWALKS AND WALKWAYS ACROSS DRIVEWAY AFRONS SHALL HAVE A MAXIMUM OF 2% CROSS SLOPE AND A MAXIMUM OF 5% LONGITUDINAL SLOPE.

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 4/19/12
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING
[Signature] 4/19/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
[Signature] 4/19/12
 CHIEF, DIVISION & LAND DEVELOPMENT

OWNER / APPLICANT / DEVELOPER:
 ADDRESS: GRACE
 7500 GRACE DRIVE
 COLUMBIA, MARYLAND 21044
 CONTACT: MR. NIZAM USTA
 PHONE: 617-277-2145

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 MORRIS & RITCHIE ASSOCIATES, INC.
 ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
 14280 PARK CENTER DRIVE
 LAUREL, MD 20707
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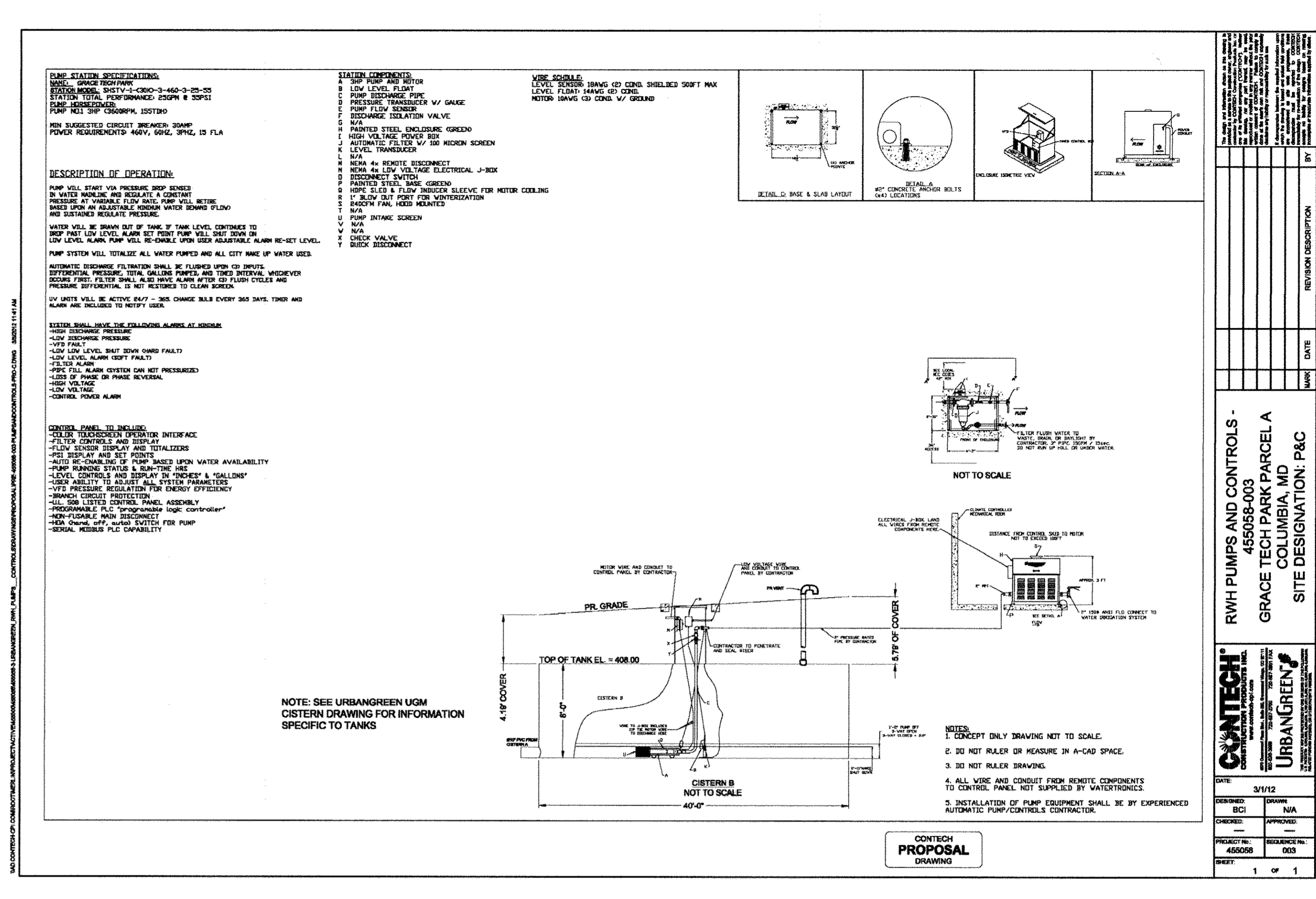
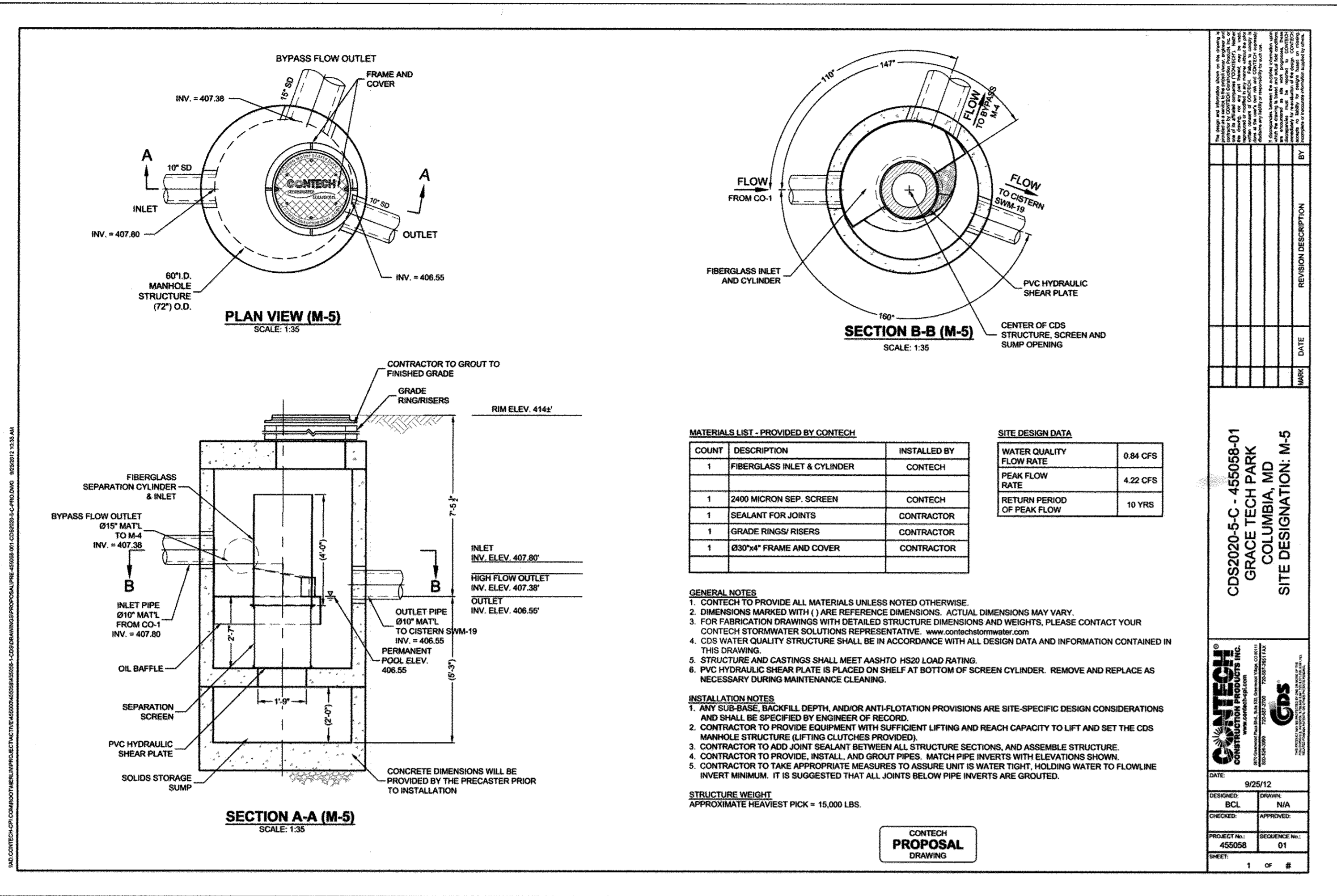
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GRACE TECH PARK, PARCEL A
 OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
 SITE DEVELOPMENT PLAN

SITE DETAILS

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
 MDR PLAT NO. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
 7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

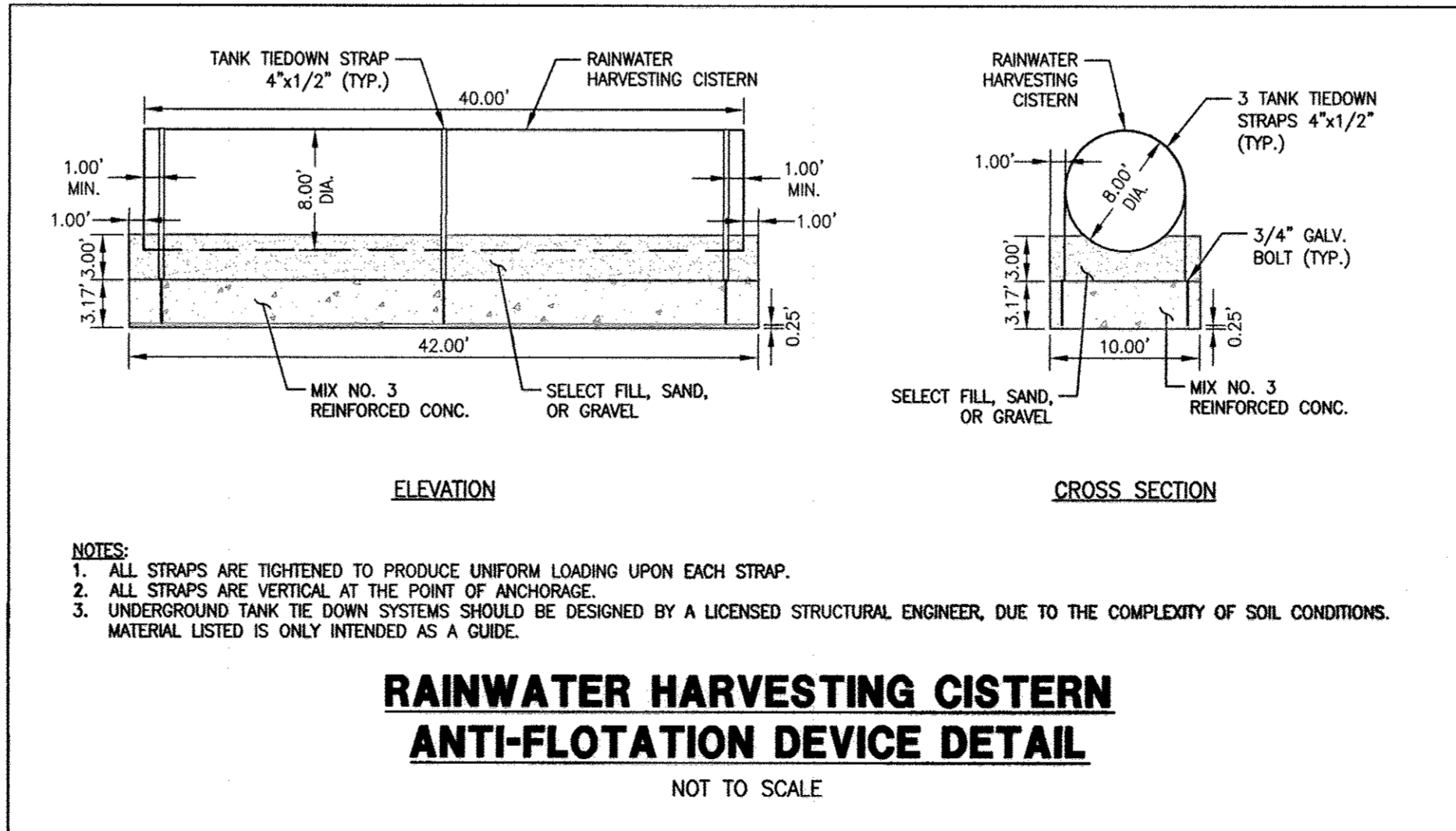
DATE	REVISIONS	JOB NO.:
		12039
		SCALE: AS SHOWN
		DATE: 10/16/2012
		DRAWN BY: RAH
		DESIGN BY: MK
		REVIEW BY: TCN
		SHEET: 29 OF 48



OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED RAINWATER HARVESTING FACILITY (M-1)

THE FOLLOWING ITEMS SHOULD BE ADDRESSED TO ENSURE PROPER OPERATION, MAINTENANCE AND LONG-TERM PERFORMANCE OF THE RAINWATER HARVESTING SYSTEM:

1. THE OWNER SHALL EMPTY TANKS ON A YEARLY BASIS FOR CLEANING AND INSPECTION. SET UP SAFETY AND WARNING EQUIPMENT AROUND ACCESS TO TANKS. OPEN GATE VALVE TO DRAIN TANKS. SHUT-OFF ELECTRIC FEED TO PUMP AT DISCONNECT SWITCH BEFORE ENTERING TANK.
2. THE OWNER SHALL VERIFY INTEGRITY OF THE TANK WALLS, PIPE CONNECTIONS, PUMP UNIT, DISCHARGE PIPE, WIRING, CALMING INLET, CLEAN AND REMOVE ANY DEBRIS AND SEDIMENT FROM TANKS AND COMPONENTS. REFER TO PUMP MANUAL FOR INSPECTION INSTRUCTIONS.
3. THE OWNER SHALL REPLACE DAMAGED COMPONENTS AND MAKE ANY NECESSARY REPAIRS AS NEEDED.
4. THE OWNER SHALL DISCONNECT THE ELECTRIC TO THE PUMP DURING WINTER OPERATION. ONCE TANK IS FULL, ALL STORMWATER WILL BYPASS THE TANKS INTO THE STORM DRAIN SYSTEM AT STRUCTURE M-5 (HYDRODYNAMIC SEPARATOR).
5. THE OWNER SHALL VACUUM AND REMOVE DEBRIS, SEDIMENT, TRASH, GREASE AND OILS COLLECTED IN STRUCTURE M-5 ONCE A YEAR. SET UP SAFETY AND WARNING EQUIPMENT AROUND ACCESS TO STRUCTURE M-5. THE OWNER SHALL VISUALLY INSPECT AND MAKE ANY NECESSARY REPAIRS AS NEEDED.



APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 11/19/12
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING
 [Signature] 11/14/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 [Signature] 11/19/12
 CHIEF, DIVISION & LAND DEVELOPMENT

OWNER / APPLICANT / DEVELOPER:
 ADDRESS: GRACE
 7500 GRACE DRIVE
 COLUMBIA, MARYLAND 21044
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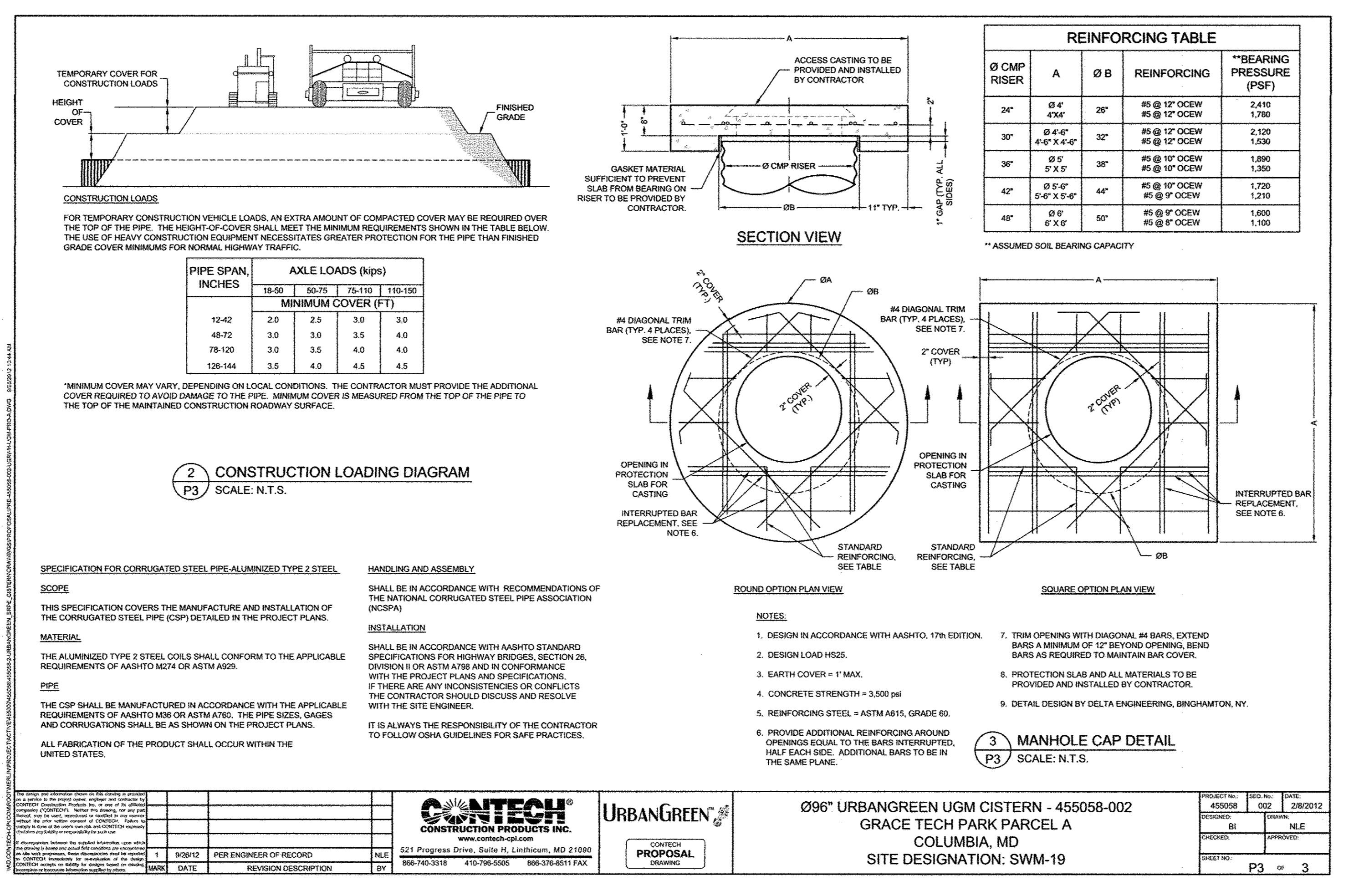
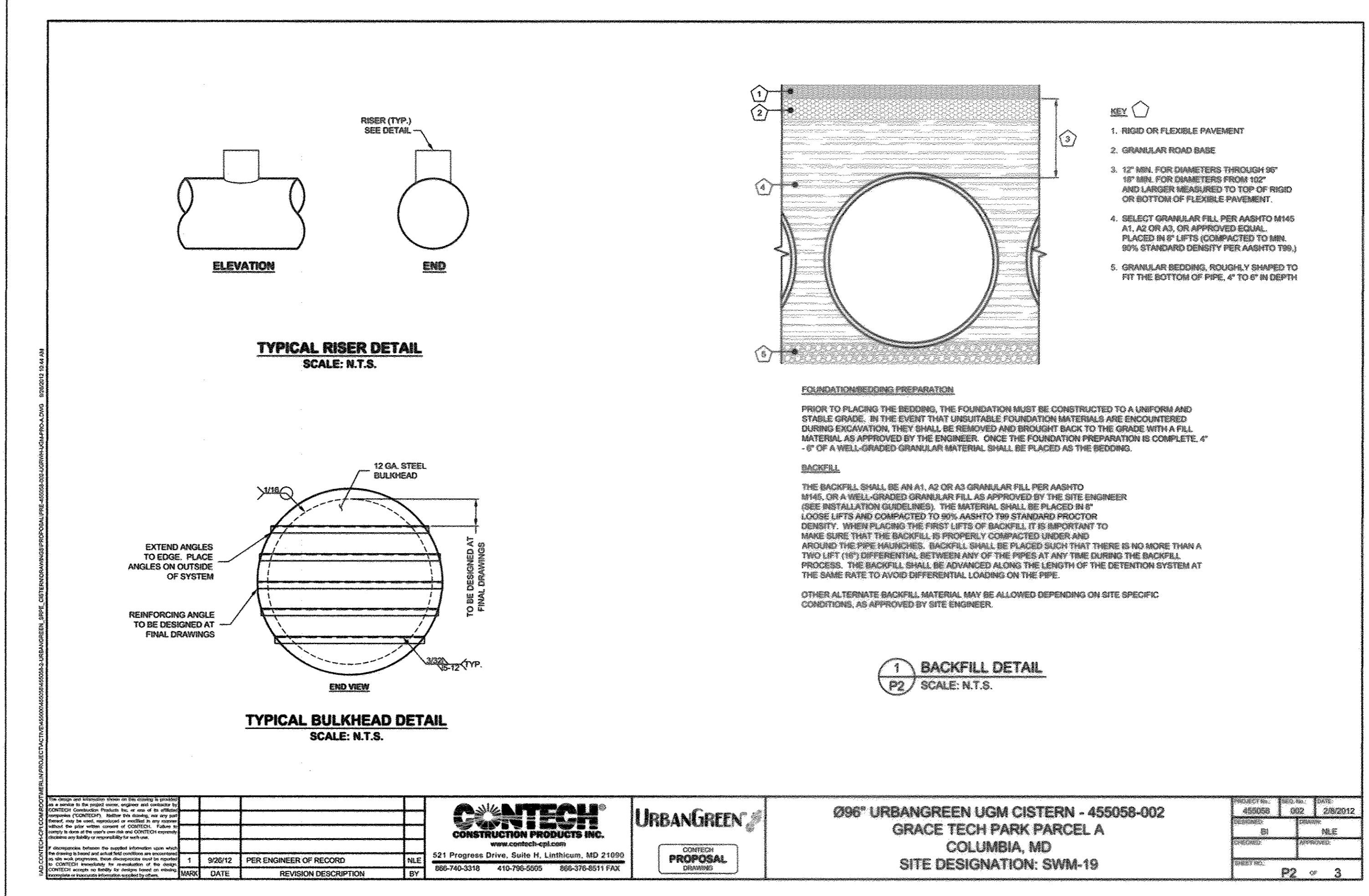
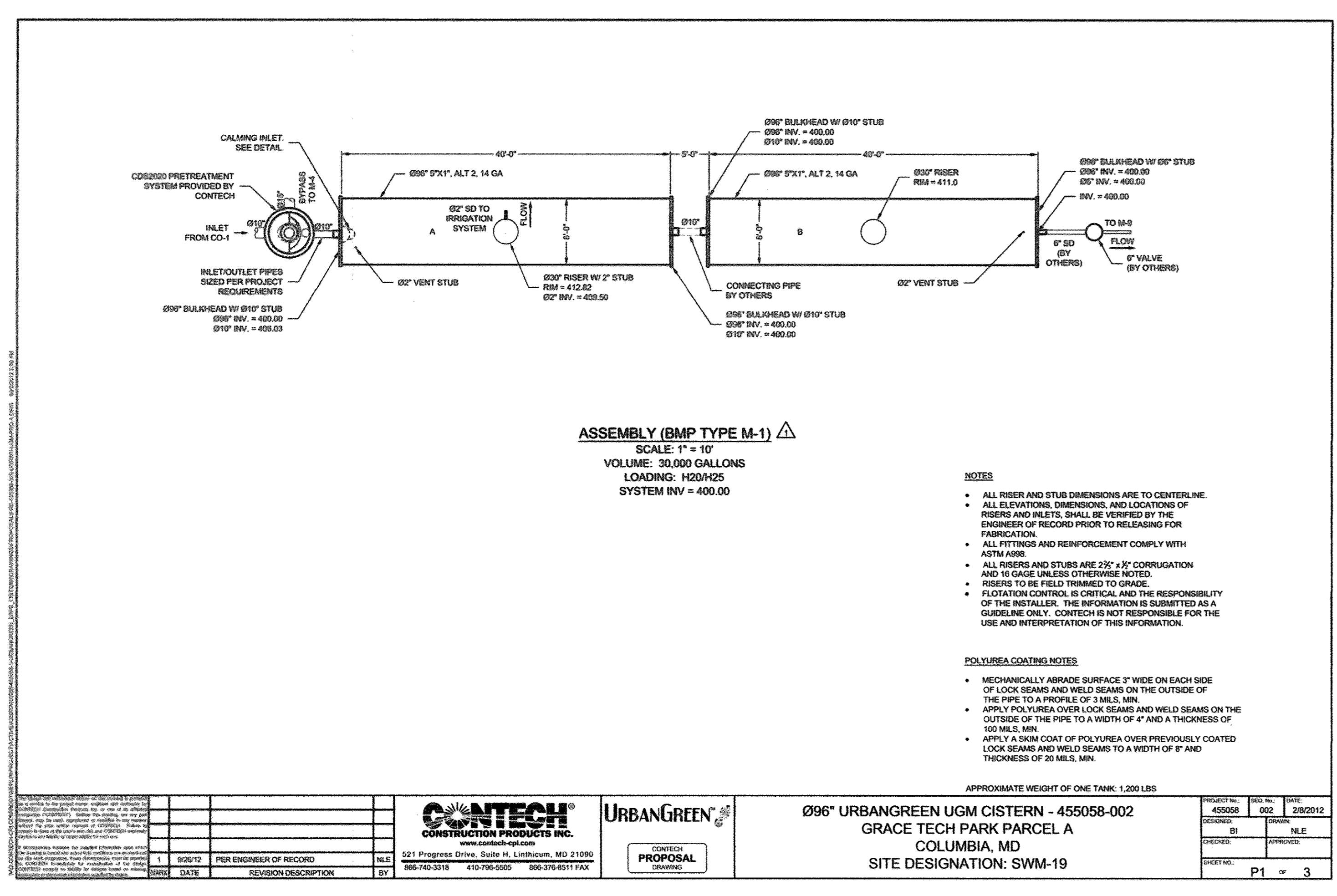
GRACE TECH PARK, PARCEL A
 OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
 SITE DEVELOPMENT PLAN
 SITE DETAILS

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
 MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
 7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: AS SHOWN
		DATE: 10/16/2012
		DRAWN BY: RAH
		DESIGN BY: MK
		REVIEW BY: TCN
		SHEET: 30 OF 42

MD 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. 29203, EXPIRATION DATE: 06/16/2013.

P:\PROJ\2009 GRACE PLANS\UDA_SDP_V\Plot\Plan_Sets\2039-SBP-31-SITE DETAILS.dwg, 10/17/2012, 10:01:11 AM, Rihou, 11, Copyright 2012 Morris & Ritchie Associates, Inc.



APPROVED: DEPARTMENT OF PLANNING AND ZONING

Mark A. Lytle 10/16/12
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING

Victor Deane 10/16/12
CHIEF, DIVISION & LAND DEVELOPMENT

CONTECH CONSTRUCTION PRODUCTS INC.
521 Progress Drive, Suite H, Luthicum, MD 21090
866-740-3318 410-796-5505 866-376-8511 FAX

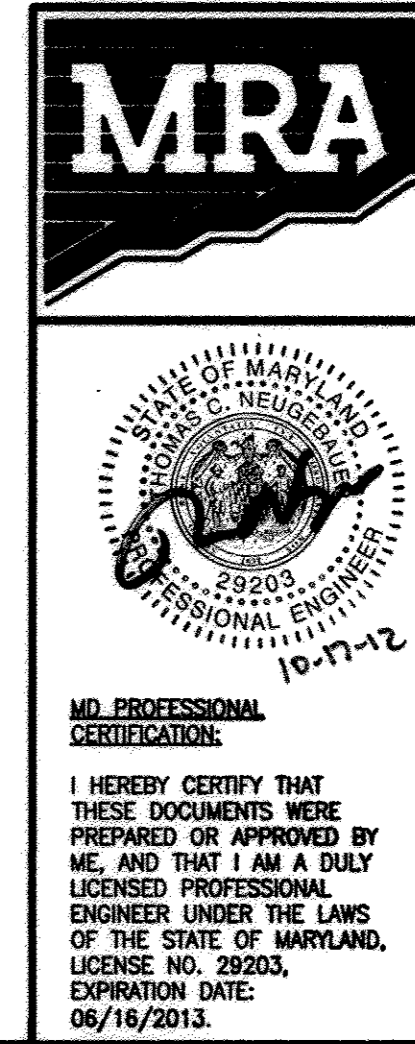
URBANGREEN
CORPORATION PROPOSAL DRAWING

096" URBANGREEN UGM CISTERN - 455058-002
GRACE TECH PARK PARCEL A
COLUMBIA, MD
SITE DESIGNATION: SWM-19

PROJECT NO.	DESIGN NO.	DATE
455058	002	2/8/2012
DESIGNED BY	DRAWN	NLE
CHECKED BY	APPROVED	
SHEET NO.	P3 OF 3	

OWNER / APPLICANT / DEVELOPER:

ADDRESS: GRACE
7500 GRACE DRIVE
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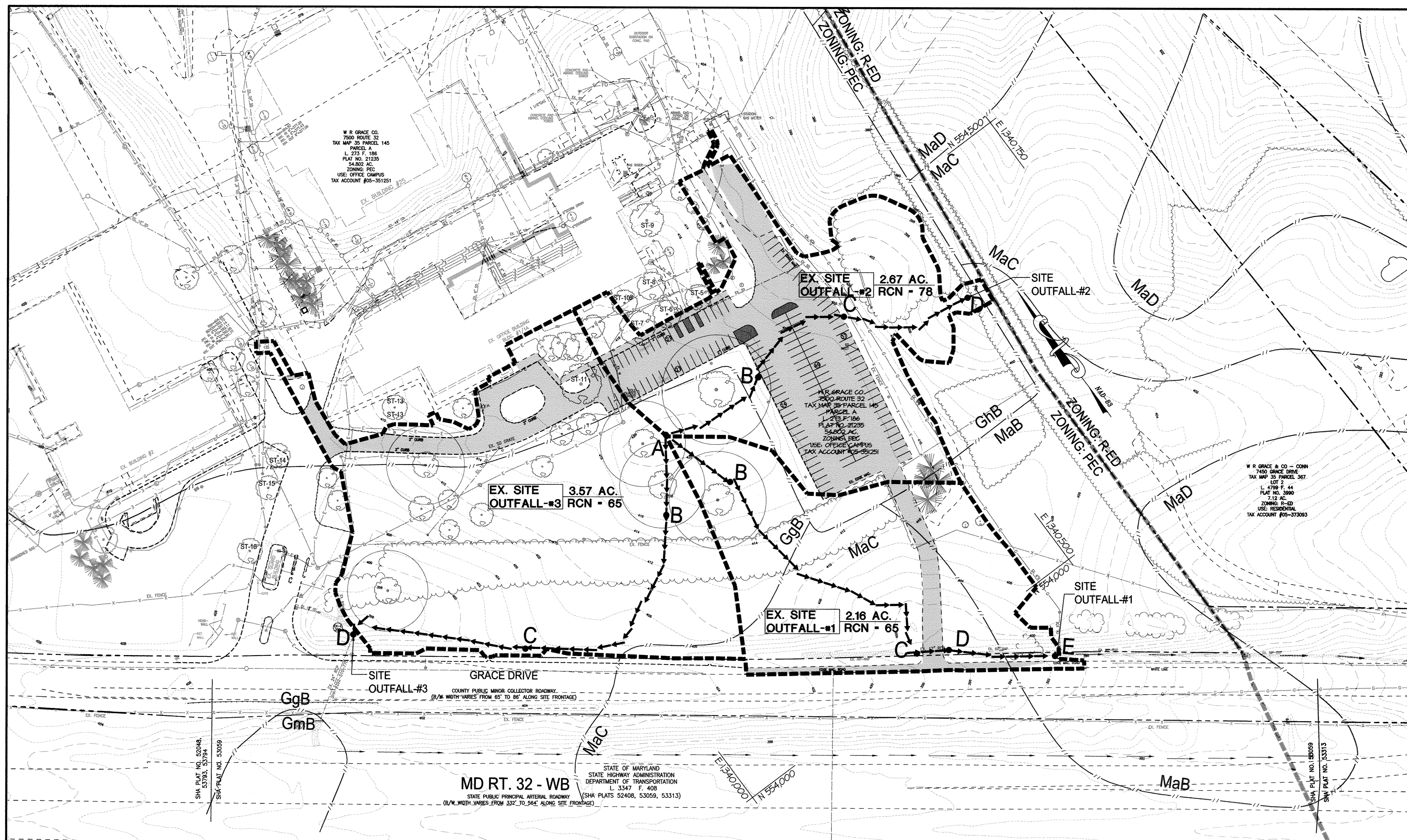
MORRIS & RITCHIE ASSOCIATES, INC.
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GRACE TECH PARK, PARCEL A
OFFICE BUILDING - (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
SITE DETAILS

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: AS SHOWN
		DATE: 10/16/2012
		DRAWN BY: RAH
		DESIGN BY: MK
		REVIEW BY: TCN
		SHEET: 31 OF 48



LEGEND

10	EX. 10' CONTOUR
2	EX. 2' CONTOUR
---	EX. PROPERTY LINE
---	EX. ADJACENT PROPERTY LINE
---	EX. RIGHT OF WAY
---	EX. EASEMENT
---	EX. ZONING LINE
---	EX. BUILDING
---	EX. CONCRETE
---	EX. PAVEMENT
---	EX. FENCE
---	EX. WATER LINE
---	EX. SEWER LINE
---	EX. STREAM
---	EX. STREAM BUFFER
---	EX. RIP-RAP CHANNEL
---	EX. TREE LINE
---	EX. GUARD RAIL
---	EX. ELECTRIC CONDUIT
---	EX. LIGHT POLES
---	EX. GAS LINE
---	EX. STORM DRAIN
---	EX. CONDUIT
---	EX. FIBER OPTIC
---	EX. ELECTRIC MANHOLE
---	EX. TELEPHONE MANHOLE
---	EX. SOILS LINE
---	EX. SOIL DESCRIPTION
---	EX. DRAINAGE AREA DIVIDE/LOD
---	EX. SUB DRAINAGE AREA DIVIDE
---	EX. TIME OF CONCENTRATION PATH
---	EX. IMPERVIOUS WITHIN SITE AREA

EXISTING SITE OUTFALL #1
(TR-55 HYDROLOGIC DATA)
DRAINAGE AREA: 2.16 AC
RCN: 65
SOIL TYPE: B
TIME OF CONCENTRATION: 0.12 HR

EXISTING SITE OUTFALL #1 RUNOFF (TR-20)
 $Q_1 = 0.79$ CFS
 $Q_{10} = 5.32$ CFS

EXISTING SITE OUTFALL #2
(TR-55 HYDROLOGIC DATA)
DRAINAGE AREA: 2.67 AC
RCN: 78
SOIL TYPE: B
TIME OF CONCENTRATION: 0.11 HR

EXISTING SITE OUTFALL #2 RUNOFF (TR-20)
 $Q_1 = 3.33$ CFS
 $Q_{10} = 10.85$ CFS

EXISTING SITE OUTFALL #3
(TR-55 HYDROLOGIC DATA)
DRAINAGE AREA: 3.57 AC
RCN: 65
SOIL TYPE: B
TIME OF CONCENTRATION: 0.12 HR

EXISTING SITE OUTFALL #3 RUNOFF (TR-20)
 $Q_1 = 1.31$ CFS
 $Q_{10} = 8.76$ CFS

SOILS LEGEND

SYMBOL	NAME/DESCRIPTION	SOIL TYPE
BaA	BAILE SILT LOAM, 0-3% SLOPES	C
Co	CODORUS & HATBORO SILT LOAM, 0-3% SLOPES	B
GgB	GLENELG LOAM, 3-8% SLOPES	B
GhB	GLENELG-URBAN LAND COMPLEX, 0-8% SLOPES	B
GmB	GLENVILLE SILT LOAM, 3-8% SLOPES	C
GmC	GLENVILLE SILT LOAM, 8-15% SLOPES	B
Gub	GLENVILLE-URBAN LAND-UDORIENTS COMPLEX, 0-8% SLOPES	C
MaB	MANOR LOAM, 3-8% SLOPES	B
MaC	MANOR LOAM, 8-15% SLOPES	B
MaD	MANOR LOAM, 15-25% SLOPES	B
MkF	MANOR-BRINKLOW COMPLEX, 25-65% SLOPES, VERY ROCKY	B

EXISTING SITE OUTFALLS # 1, 2, & 3
SCALE: 1" = 60'

SITE OUTFALL - #1, 2, & 3 SUMMARIES

SITE OUTFALL #1
THE EXISTING CONDITION AT SITE OUTFALL #1 HAS A DRAINAGE AREA OF 2.16 AC. WITH A PEAK DISCHARGE OF 5.32 CFS (10YR). THE PROPOSED DEVELOPMENT RESULTS IN A DRAINAGE AREA OF 4.00 AC. AND A PEAK PEAK DISCHARGE OF 14.08 CFS (10YR). THE APPLICATION OF VARIOUS MICRO-SCALE PRACTICES WILL DISCHARGE INTO A CLOSED STORM DRAIN SYSTEM AND OUTFALL INTO AN EXISTING OPEN CHANNEL ALONG THE NORTH SIDE OF GRACE DRIVE. THE EXISTING CHANNEL FOLLOWS ALONG GRACE DRIVE UNTIL DISCHARGING INTO THE MIDDLE PATUXENT RIVER. SITE OUTFALL #1 IS CURRENTLY STABLE WITH NO SIGN OF EROSION AND IS ALREADY LINED WITH RIP-RAP. THE CHANNEL SIZE AND EXISTING RIP-RAP WILL MAINTAIN THE STABILITY OF THE CHANNEL WITH THE INCREASED FLOWS ASSOCIATED WITH THE PROPOSED DEVELOPMENT.

SITE OUTFALL #2
THE EXISTING CONDITION AT SITE OUTFALL #2 HAS A DRAINAGE AREA OF 2.67 AC. WITH A PEAK DISCHARGE OF 10.85 CFS (10YR). THE PROPOSED DEVELOPMENT RESULTS IN A DRAINAGE AREA OF 2.15 AC. AND A PEAK DISCHARGE OF 6.36 CFS (10YR). THE APPLICATION OF VARIOUS MICRO-SCALE PRACTICES WILL DISCHARGE INTO A PROPOSED PLUNGE POOL TO REDUCE VELOCITY BEFORE JOINING AN EXISTING OPEN CHANNEL BEYOND THE PROPERTY LINE. THIS EXISTING CHANNEL CONTINUES APPROXIMATELY 1,000 FT BEYOND THE LIMIT OF DISTURBANCE BEFORE JOINING THE MIDDLE PATUXENT RIVER. SITE OUTFALL #2 IS IN STABLE CONDITION WITH NO SIGN OF EROSION, AND THE DECREASED PEAK FLOWS UNDER THE PROPOSED CONDITION WILL MAINTAIN THE STABILITY OF THE OUTFALL.

SITE OUTFALL #3
THE EXISTING CONDITION AT SITE OUTFALL #3 HAS A DRAINAGE AREA OF 3.57 AC. WITH A PEAK DISCHARGE OF 8.76 CFS (10YR). THE PROPOSED DEVELOPMENT RESULTS IN A DRAINAGE AREA OF 2.25 AC. AND A PEAK DISCHARGE OF 7.85 CFS (10YR). THE APPLICATION OF VARIOUS MICRO-SCALE PRACTICES WILL DISCHARGE INTO A CLOSED STORM DRAIN SYSTEM AND OUTFALL JUST UPSTREAM OF EXISTING CULVERT (SHA#292-510-770). THE CULVERT DISCHARGES INTO AN OPEN CHANNEL ALONG WESTBOUND MD RTE 32. SITE OUTFALL #3 IS CURRENTLY IN STABLE CONDITION WITH NO SIGN OF EROSION, AND THE DECREASED PEAK FLOWS UNDER THE PROPOSED CONDITION WILL MAINTAIN THE STABILITY OF THE OUTFALL.

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature]
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING

DATE: 11/14/12

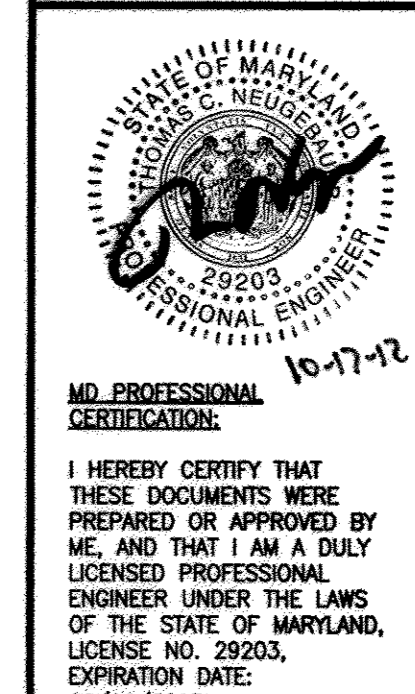
CHIEF, DEVELOPMENT ENGINEERING DIVISION
[Signature]
DATE: 11/14/12

CHIEF, DIVISION & LAND DEVELOPMENT
[Signature]
DATE: 11/14/12

OWNER / APPLICANT / DEVELOPER:
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7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
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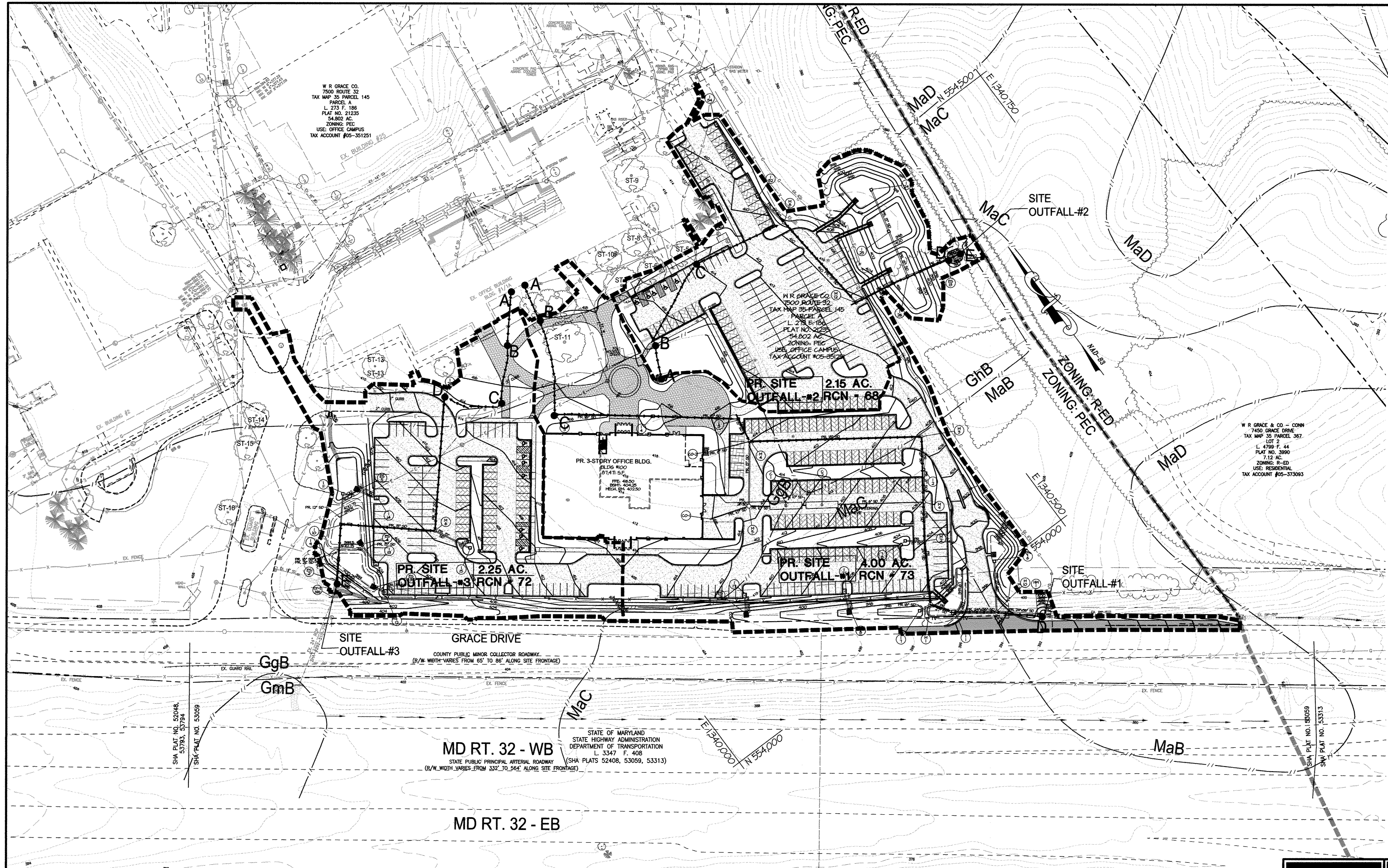
MORRIS & RITCHE ASSOCIATES, INC.
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GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
EXISTING SITE OUTFALLS

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.
		12039
		SCALE: 1" = 60'
		DATE: 10/16/2012
		DRAWN BY: MK
		DESIGN BY: MK
		REVIEW BY: TON
		SHEET: 32 OF 48



LEGEND

10	EX. 10' CONTOUR
2	EX. 2' CONTOUR
---	EX. PROPERTY LINE
---	EX. ADJACENT PROPERTY LINE
---	EX. RIGHT OF WAY
---	EX. EASEMENT
---	EX. ZONING LINE
---	EX. BUILDING
---	EX. CONCRETE
---	EX. PAVEMENT
---	EX. FENCE
---	EX. WATER LINE
---	EX. SEWER LINE
---	EX. STREAM
---	EX. STREAM BUFFER
---	EX. RIP-RAP CHANNEL
---	EX. TREE LINE
---	EX. GUARD RAIL
---	EX. ELECTRIC CONDUIT
---	EX. LIGHT POLES
---	EX. GAS LINE
---	EX. STORM DRAIN
---	EX. CONDUIT
---	EX. FIBER OPTIC
⊙	EX. ELECTRIC MANHOLE
⊙	EX. TELEPHONE MANHOLE
---	EX. SOILS LINE
---	EX. SOIL DESCRIPTION
GhB	PR. 2' CONTOUR
10	PR. 10' CONTOUR
1	PR. 1' CONTOUR
---	PR. BUILDING FOOTPRINT
---	PR. BUILDING OVERHANG
---	PR. BUILDING SETBACK
---	PR. EDGE OF CONCRETE
---	PR. CURB
---	PR. SIDEWALK
---	PR. RETAINING WALL
---	PR. POROUS PAVEMENT
---	PR. MEDIUM DUTY PAVEMENT
---	PR. CONCRETE PAVEMENT
---	PR. TREELINE
---	PR. HEDGEROW
---	PR. STORM DRAIN
---	PR. PROP. DRAINAGE DIVIDE
---	PR. SUB DRAINAGE DIVIDE
---	PR. TIME OF CONCENTRATION PATH

PROPOSED SITE OUTFALL-#1
(TR-55 HYDROLOGIC DATA)
DRAINAGE AREA: 4.00 AC
CN REDUCTION: 73
SOIL TYPE: B
TIME OF CONCENTRATION: 0.12 HR
PROPOSED SITE OUTFALL-#1 RUNOFF (TR-20)
Q₁ = 3.42 CFS
Q₁₀ = 13.60 CFS

PROPOSED SITE OUTFALL-#2
(TR-55 HYDROLOGIC DATA)
DRAINAGE AREA: 2.15 AC
CN REDUCTION: 68
SOIL TYPE: B
TIME OF CONCENTRATION: 0.10 HR
PROPOSED SITE OUTFALL-#2 RUNOFF (TR-20)
Q₁ = 1.25 CFS
Q₁₀ = 6.36 CFS

PROPOSED SITE OUTFALL-#3
(TR-55 HYDROLOGIC DATA)
DRAINAGE AREA: 2.25 AC
CN REDUCTION: 72
SOIL TYPE: B
TIME OF CONCENTRATION: 0.10 HR
PROPOSED SITE OUTFALL-#3 RUNOFF (TR-20)
Q₁ = 1.86 CFS
Q₁₀ = 7.61 CFS

W R GRACE CO.
7500 ROUTE 32
TAX MAP 35 PARCEL 145
PARCEL A
L 273 F 186
PLAT NO. 21235
54,802 AC.
ZONING: PEC
USE: OFFICE CAMPUS
TAX ACCOUNT #05-351251

W R GRACE CO.
7500 ROUTE 32
TAX MAP 35 PARCEL 145
PARCEL B
L 273 F 186
PLAT NO. 21235
54,802 AC.
ZONING: PEC
USE: OFFICE CAMPUS
TAX ACCOUNT #05-351251

W R GRACE & CO - CONN
7450 GRACE DRIVE
TAX MAP 35 PARCEL 357
LOT 2
L 4785 F 44
PLAT NO. 3890
7.12 AC.
ZONING: R-ED
USE: RESIDENTIAL
TAX ACCOUNT #05-373083

STATE OF MARYLAND
STATE HIGHWAY ADMINISTRATION
DEPARTMENT OF TRANSPORTATION
L 3347 F. 408
(SHA PLATS 52408, 53059, 53313)

PROPOSED SITE OUTFALLS-# 1, 2, & 3
SCALE: 1" = 60'
SITE OUTFALL - #1, 2, & 3 SUMMARIES

SITE OUTFALL #1
THE EXISTING CONDITION AT SITE OUTFALL #1 HAS A DRAINAGE AREA OF 2.16 AC. WITH A PEAK DISCHARGE OF 5.32 CFS (10YR). THE PROPOSED DEVELOPMENT RESULTS IN A DRAINAGE AREA OF 4.00 AC. AND A PEAK DISCHARGE OF 13.60 CFS (10YR). THE APPLICATION OF VARIOUS MICRO-SCALE PRACTICES WILL DISCHARGE INTO A CLOSED STORM DRAIN SYSTEM AND OUTFALL INTO AN EXISTING OPEN CHANNEL ALONG THE NORTH SIDE OF GRACE DRIVE. THE EXISTING CHANNEL FOLLOWS ALONG GRACE DRIVE UNTIL DISCHARGING INTO THE MIDDLE PATUXENT RIVER. SITE OUTFALL #1 IS CURRENTLY STABLE WITH NO SIGN OF EROSION AND IS ALREADY LINED WITH RIP-RAP. THE CHANNEL SIZE AND EXISTING RIP-RAP WILL MAINTAIN THE STABILITY OF THE CHANNEL WITH THE INCREASED FLOWS ASSOCIATED WITH THE PROPOSED DEVELOPMENT.

SITE OUTFALL #2
THE EXISTING CONDITION AT SITE OUTFALL #2 HAS A DRAINAGE AREA OF 2.67 AC. WITH A PEAK DISCHARGE OF 10.85 CFS (10YR). THE PROPOSED DEVELOPMENT RESULTS IN A DRAINAGE AREA OF 2.15 AC. AND A PEAK DISCHARGE OF 6.36 CFS (10YR). THE APPLICATION OF VARIOUS MICRO-SCALE PRACTICES WILL DISCHARGE INTO A CLOSED STORM DRAIN SYSTEM AND OUTFALL INTO A PROPOSED PLUNGE POOL TO REDUCE VELOCITY BEFORE JOINING AN EXISTING OPEN CHANNEL BEYOND THE PROPERTY LINE. THIS EXISTING CHANNEL CONTINUES APPROXIMATELY 1,000 FT BEYOND THE LIMIT OF DISTURBANCE BEFORE JOINING THE MIDDLE PATUXENT RIVER. SITE OUTFALL #2 IS IN STABLE CONDITION WITH NO SIGN OF EROSION, AND THE DECREASED PEAK FLOWS UNDER THE PROPOSED CONDITION WILL MAINTAIN THE STABILITY OF THE OUTFALL.

SITE OUTFALL #3
THE EXISTING CONDITION AT SITE OUTFALL #3 HAS A DRAINAGE AREA OF 3.57 AC. WITH A PEAK DISCHARGE OF 8.76 CFS (10YR). THE PROPOSED DEVELOPMENT RESULTS IN A DRAINAGE AREA OF 2.25 AC. AND A PEAK DISCHARGE OF 7.61 CFS (10YR). THE APPLICATION OF VARIOUS MICRO-SCALE PRACTICES WILL DISCHARGE INTO CLOSED STORM DRAIN SYSTEM AND OUTFALL JUST UPSTREAM OF EXISTING CULVERT (SHA#292-510-770). THE CULVERT DISCHARGES INTO AN OPEN CHANNEL ALONG WESTBOUND MD RTE 32. SITE OUTFALL #3 IS CURRENTLY IN STABLE CONDITION WITH NO SIGN OF EROSION, AND THE DECREASED PEAK FLOWS UNDER THE PROPOSED CONDITION WILL MAINTAIN THE STABILITY OF THE OUTFALL.

SOILS LEGEND

SYMBOL	NAME/DESCRIPTION	SOIL TYPE
BaA	BAILE SILT LOAM, 0-3% SLOPES	C
Co	CODORUS & HATBORO SILT LOAM, 0-3% SLOPES	B
GgB	GLENELG LOAM, 3-8% SLOPES	B
GhB	GLENELG-URBAN LAND COMPLEX, 0-8% SLOPES	B
GmB	GLENVILLE SILT LOAM, 3-8% SLOPES	C
GmC	GLENVILLE SILT LOAM, 8-15% SLOPES	B
GmB	GLENVILLE-URBAN LAND-UDORNTENTS COMPLEX, 0-8% SLOPES	C
MaB	MANOR LOAM, 3-8% SLOPES	B
McC	MANOR LOAM, 8-15% SLOPES	B
MoD	MANOR LOAM, 15-25% SLOPES	B
MkF	MANOR-BRINKLOW COMPLEX, 25-65% SLOPES, VERY ROCKY	B

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Mark L. King 4/29/12
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE

William J. ... 4/19/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Keith ... 4/19/12
CHIEF, DIVISION & LAND DEVELOPMENT DATE

MRA
MORRIS & RITCHIE ASSOCIATES, INC.
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GRACE TECH PARK, PARCEL A
OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
PROPOSED SITE OUTFALLS

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT NO. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: 1" = 60'
		DATE: 10/16/2012
		DRAWN BY: MK
		DESIGN BY: MK
		REVIEW BY: TCN
		SHEET: 33 OF 48

MD PROFESSIONAL CERTIFICATION: 10-17-12

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. 29203, EXPIRATION DATE: 06/16/2013.

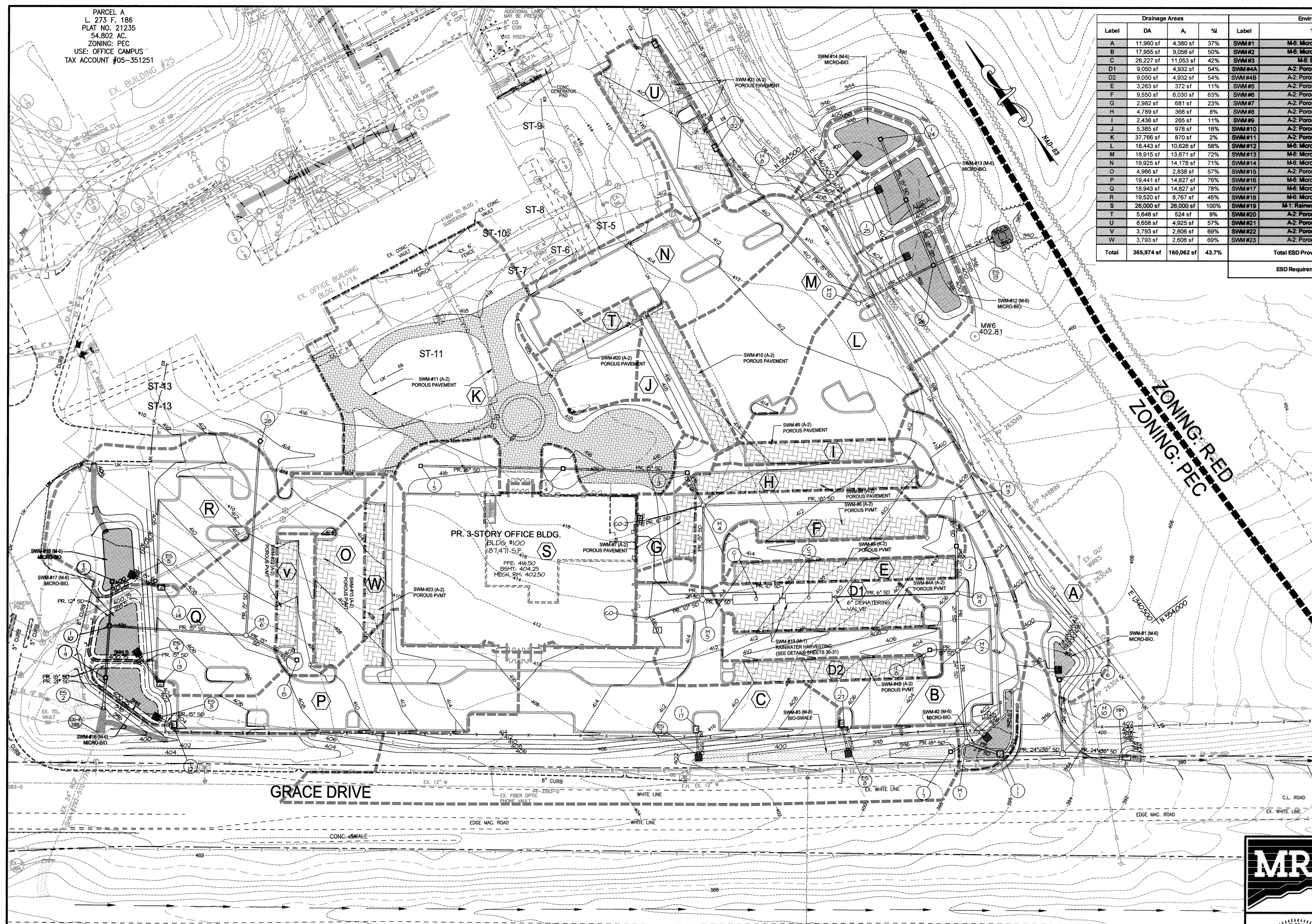
OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145

PARCEL A
L. 273 F. 186
PLAT NO. 21235
54.802 AC.
ZONING: PEC
USE: OFFICE CAMPUS
TAX ACCOUNT #05-351251

Drainage Areas			Environmental Site Design Practices										
Label	DA	A _i	%	Label	Type	A _e	ESD _i (Req.)	ReV (Req.)	ReV (Prov.)	75% ESD _v (Req.)	ESD _v (Prov.)	P _i (Prov.)	
A	11,980 sf	4,380 sf	37%	SWM#1	M-6: Micro-Bioretenion	372 sf	681 cf	98 cf	99 cf	511 cf	511 cf	1.35"	
B	17,955 sf	9,056 sf	50%	SWM#2	M-6: Micro-Bioretenion	924 sf	1,357 cf	196 cf	196 cf	1,018 cf	1,156 cf	1.53"	
C	26,227 sf	11,053 sf	42%	SWM#3	M-6: Bio-Swale	1,527 sf	1,699 cf	244 cf	305 cf	1,287 cf	1,284 cf	1.35"	
D1	9,050 sf	4,932 sf	54%	SWM#4A	A-2: Porous-Pavement	2,789 sf	591 cf	85 cf	282 cf	443 cf	828 cf	2.50"	
D2	9,050 sf	4,932 sf	54%	SWM#4B	A-2: Porous-Pavement	2,728 sf	734 cf	106 cf	276 cf	550 cf	810 cf	2.50"	
E	3,263 sf	372 sf	11%	SWM#5	A-2: Porous-Pavement	2,421 sf	886 cf	128 cf	245 cf	664 cf	786 cf	2.50"	
F	9,550 sf	6,030 sf	63%	SWM#6	A-2: Porous-Pavement	2,421 sf	886 cf	128 cf	245 cf	664 cf	719 cf	2.50"	
G	2,982 sf	681 sf	23%	SWM#7	A-2: Porous-Pavement	891 sf	88 cf	13 cf	45 cf	66 cf	220 cf	2.50"	
H	4,789 sf	368 sf	8%	SWM#8	A-2: Porous-Pavement	3,186 sf	682 cf	99 cf	161 cf	512 cf	785 cf	2.50"	
I	2,438 sf	265 sf	11%	SWM#9	A-2: Porous-Pavement	2,117 sf	59 cf	08 cf	107 cf	44 cf	522 cf	2.50"	
J	5,385 sf	978 sf	18%	SWM#10	A-2: Porous-Pavement	2,261 sf	163 cf	24 cf	228 cf	122 cf	672 cf	2.50"	
K	37,786 sf	870 sf	2%	SWM#11	A-2: Porous-Pavement	15,610 sf	401 cf	58 cf	531 cf	301 cf	1,577 cf	2.50"	
L	18,443 sf	10,626 sf	58%	SWM#12	M-6: Micro-Bioretenion	1,855 sf	1,573 cf	227 cf	371 cf	1,180 cf	1,445 cf	1.65"	
M	18,915 sf	13,671 sf	72%	SWM#13	M-6: Micro-Bioretenion	1,877 sf	1,667 cf	287 cf	375 cf	1,491 cf	1,628 cf	1.47"	
N	19,925 sf	14,178 sf	71%	SWM#14	M-6: Micro-Bioretenion	1,552 sf	2,063 cf	298 cf	310 cf	1,548 cf	1,661 cf	1.45"	
O	4,966 sf	2,838 sf	57%	SWM#15	A-2: Porous-Pavement	1,804 sf	420 cf	61 cf	182 cf	315 cf	536 cf	2.50"	
P	19,441 sf	14,827 sf	76%	SWM#16	M-6: Micro-Bioretenion	1,036 sf	1,953 cf	282 cf	311 cf	1,465 cf	1,585 cf	1.46"	
Q	18,943 sf	14,827 sf	78%	SWM#17	M-6: Micro-Bioretenion	1,331 sf	2,144 cf	310 cf	00 cf	1,808 cf	1,662 cf	1.40"	
R	19,520 sf	8,767 sf	45%	SWM#18	M-6: Micro-Bioretenion	1,191 sf	1,330 cf	192 cf	238 cf	997 cf	1,067 cf	1.44"	
S	26,000 sf	26,000 sf	100%	SWM#19	M-1: Rainwater-Harvesting	3,120 sf	3,705 cf	00 cf	00 cf	2,778 cf	4,021 cf	1.88"	
T	5,648 sf	524 sf	9%	SWM#20	A-2: Porous-Pavement	1,198 sf	129 cf	19 cf	25 cf	97 cf	235 cf	2.50"	
U	8,658 sf	4,925 sf	57%	SWM#21	A-2: Porous-Pavement	3,287 sf	730 cf	105 cf	00 cf	847 cf	575 cf	2.50"	
V	3,793 sf	2,806 sf	69%	SWM#22	A-2: Porous-Pavement	1,505 sf	62 cf	09 cf	78 cf	46 cf	371 cf	2.50"	
W	3,793 sf	2,806 sf	69%	SWM#23	A-2: Porous-Pavement	2,332 sf	380 cf	55 cf	118 cf	285 cf	575 cf	2.50"	
Total	365,974 sf	160,062 sf	43.7%			Total ESD Provisions	59,335 sf	24,355 cf	3,518 cf	5,041 cf	18,519 cf	25,207 cf	1.88"
						ESD Requirements	43,917 sf						1.88"

LEGEND

- 10' --- EX. 10' CONTOUR
- 2' --- EX. 2' CONTOUR
- --- EX. PROPERTY LINE
- --- EX. ADJACENT PROPERTY LINE
- --- EX. RIGHT OF WAY
- --- EX. EASEMENT
- --- EX. ZONING LINE
- --- EX. BUILDING
- --- EX. CONCRETE
- --- EX. PAVEMENT
- --- EX. FENCE
- --- EX. OVERHEAD LINE
- --- EX. WATER LINE
- --- EX. SEWER LINE
- --- EX. STREAM
- --- EX. STREAM BUFFER
- --- EX. RIP-RAP CHANNEL
- --- EX. TREE LINE
- --- EX. GUARD RAIL
- --- EX. ELECTRIC CONDUIT
- --- EX. LIGHT POLES
- --- EX. GAS LINE
- --- EX. STORM DRAIN
- --- EX. CONDUIT
- --- EX. FIBER OPTIC
- --- EX. TV LINE
- --- EX. ELECTRIC MANHOLE
- --- EX. TELEPHONE MANHOLE
- --- EX. UNKNOWN UTILITY
- --- PR. 2' CONTOUR
- --- PR. 10' CONTOUR
- --- PR. 1' CONTOUR
- --- PR. BUILDING FOOTPRINT
- --- PR. BUILDING OVERHANG
- --- PR. EDGE OF CONCRETE
- --- PR. CURB
- --- PR. SIDEWALK
- --- PR. RETAINING WALL
- --- PR. TREELINE
- --- PR. HEDGEROW
- --- PR. STORM DRAIN
- --- PR. MICRO BIORETENTION FACILITY
- --- PR. BIO-SWALE FACILITY
- --- PR. POROUS PAVEMENT
- --- PR. ESD DRAINAGE AREA DIVIDE
- --- PR. ESD DRAINAGE AREA NUMBER



MD RT. 32 - WB

STATE OF MARYLAND
STATE HIGHWAY ADMINISTRATION
DEPARTMENT OF TRANSPORTATION
L. 3347 F. 408
(SHA-PLATS 52408, 53059, 53313)

ESD DRAINAGE AREA MAP
SCALE: 1"=40'

APPROVED: DEPARTMENT OF PLANNING AND ZONING
David L. Coyle
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING
DATE: 11/16/12

Michael J. ...
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 11/16/12

Keith ...
CHIEF, DIVISION & LAND DEVELOPMENT
DATE: 11/16/12

OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145



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MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
14280 PARK CENTER DRIVE
LAUREL, MD 20707
(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395
MRAGTA.COM

GRACE TECH PARK, PARCEL A
OFFICE BUILDING - (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
ESD DRAINAGE AREA MAP

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT NO. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 06 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

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		12039
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		REVIEW BY: TON
		SHEET: 34 OF 18

SHEET: SDP-34

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LEGEND

- EX. 10' CONTOUR
- EX. 2' CONTOUR
- EX. PROPERTY LINE
- EX. ADJACENT PROPERTY LINE
- EX. RIGHT OF WAY
- EX. EASEMENT
- EX. ZONING LINE
- EX. BUILDING
- EX. CONCRETE
- EX. PAVEMENT
- EX. FENCE
- EX. OVERHEAD LINE
- EX. WATER LINE
- EX. SEWER LINE
- EX. STREAM
- EX. STREAM BUFFER
- EX. RIP-RAP CHANNEL
- EX. TREE LINE
- EX. GUARD RAIL
- EX. ELECTRIC CONDUIT
- EX. LIGHT POLES
- EX. GAS LINE
- EX. STORM DRAIN
- EX. CONDUIT
- EX. FIBER OPTIC
- EX. TV LINE
- EX. ELECTRIC MANHOLE
- EX. TELEPHONE MANHOLE
- EX. UNKNOWN UTILITY
- EX. SPECIMEN TREE & CRITICAL ROOT ZONE
- EX. DECIDUOUS TREE
- EX. EVERGREEN TREE
- PR. POROUS PAVEMENT
- PR. 2' CONTOUR
- PR. 10' CONTOUR
- PR. 1' CONTOUR
- PR. LIMIT OF DISTURBANCE
- PR. BUILDING FOOTPRINT
- PR. BUILDING OVERHANG
- PR. EDGE OF CONCRETE
- PR. CURB
- PR. SIDEWALK
- PR. RETAINING WALL
- PR. PAVEMENT MILL AND OVERLAY
- PR. TREELINE
- PR. HEDGEROW
- PR. ELECTRIC CONDUIT
- PR. TELEPHONE CONDUIT
- PR. FIBER OPTIC
- PR. GAS
- PR. SANITARY SEWER
- PR. STORM DRAIN
- PR. WATER LINE
- PR. STREET LIGHT

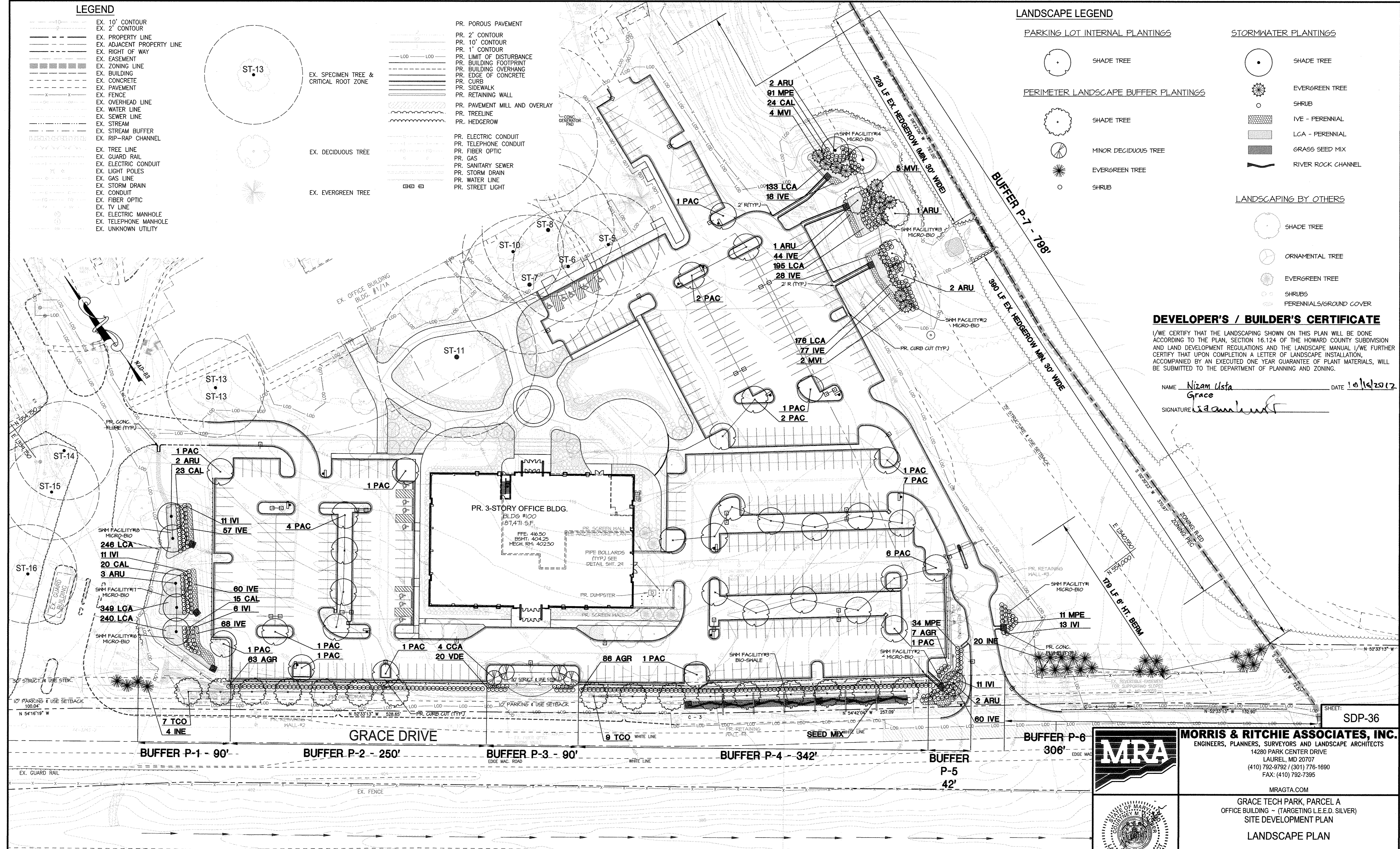
LANDSCAPE LEGEND

- PARKING LOT INTERNAL PLANTINGS**
- SHADE TREE
- MINOR DECIDUOUS TREE
- EVERGREEN TREE
- SHRUB
- PERIMETER LANDSCAPE BUFFER PLANTINGS**
- SHADE TREE
- MINOR DECIDUOUS TREE
- EVERGREEN TREE
- SHRUB
- STORMWATER PLANTINGS**
- SHADE TREE
- EVERGREEN TREE
- SHRUB
- IVE - PERENNIAL
- LCA - PERENNIAL
- GRASS SEED MIX
- RIVER ROCK CHANNEL
- LANDSCAPING BY OTHERS**
- SHADE TREE
- ORNAMENTAL TREE
- EVERGREEN TREE
- SHRUBS
- PERENNIALS/GROUND COVER

DEVELOPER'S / BUILDER'S CERTIFICATE

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

NAME Nizam Usta DATE 10/16/2012
 Grace
 SIGNATURE *[Signature]*



P:\PROJ\2013 GRACE\PLANS\LD\SDP\PLANS\12039-SDP-36-LP-PLAN.dwg, 10/16/2012, 2:35:42 PM, RHBIL
 1:1, Copyright 2012, Morris & Ritchie Associates, Inc.

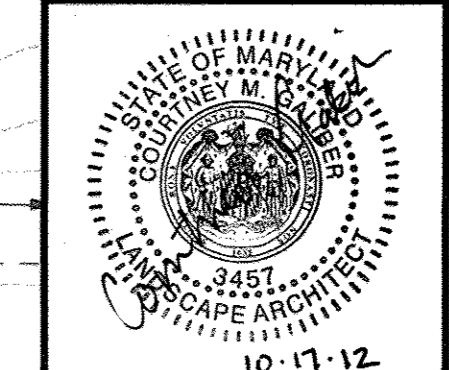
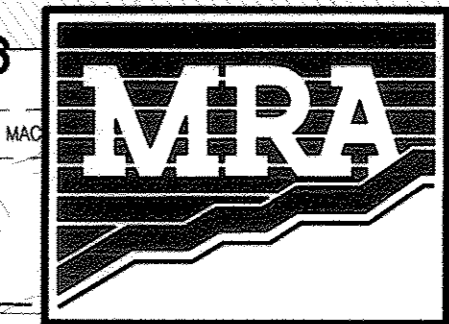
APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 10/16/12
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DEVELOPMENT ENGINEERING DIVISION *[Signature]* 11/16/12
 CHIEF, DIVISION & LAND DEVELOPMENT *[Signature]* 11/19/12

MD RT. 32 - WB

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 STATE HIGHWAY ADMINISTRATION
 DEPARTMENT OF TRANSPORTATION
 L. 3347 F. 408
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PLAN VIEW
 SCALE: 1"=40'

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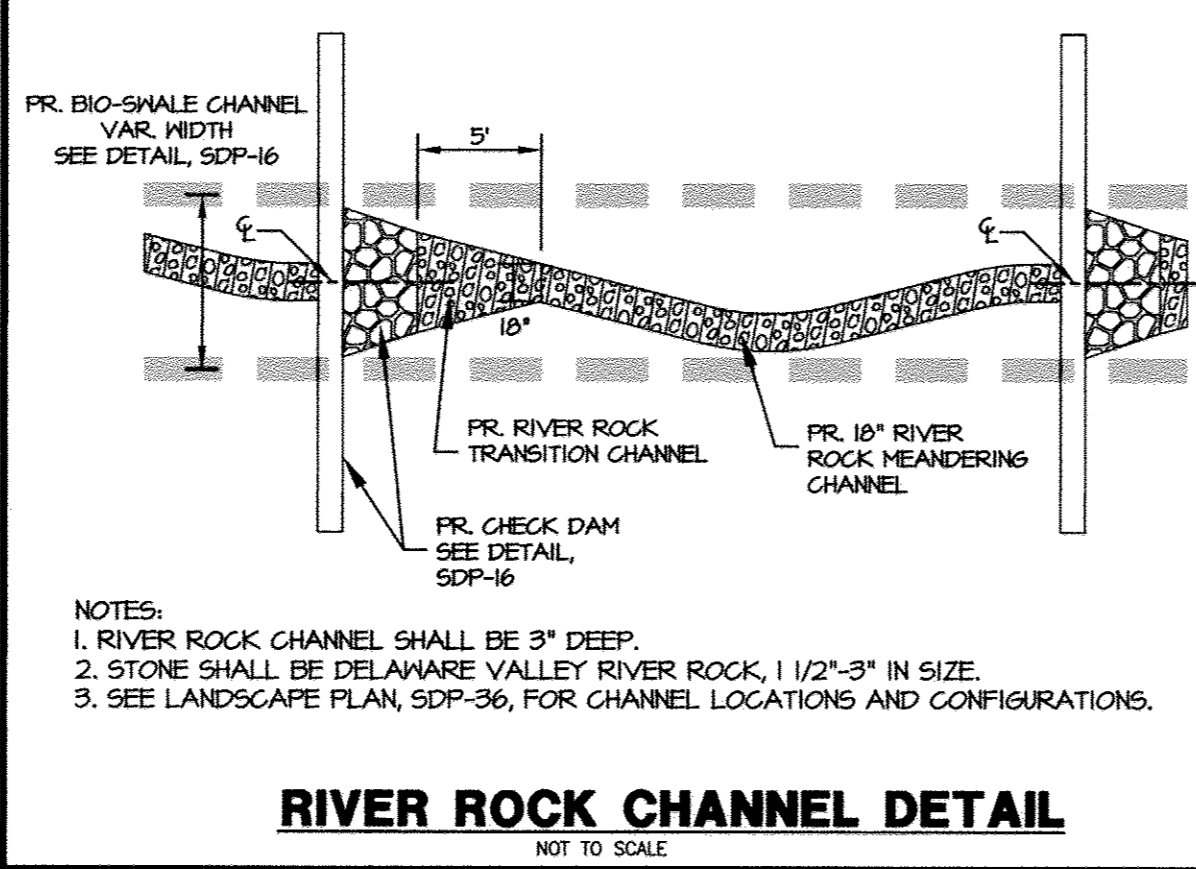
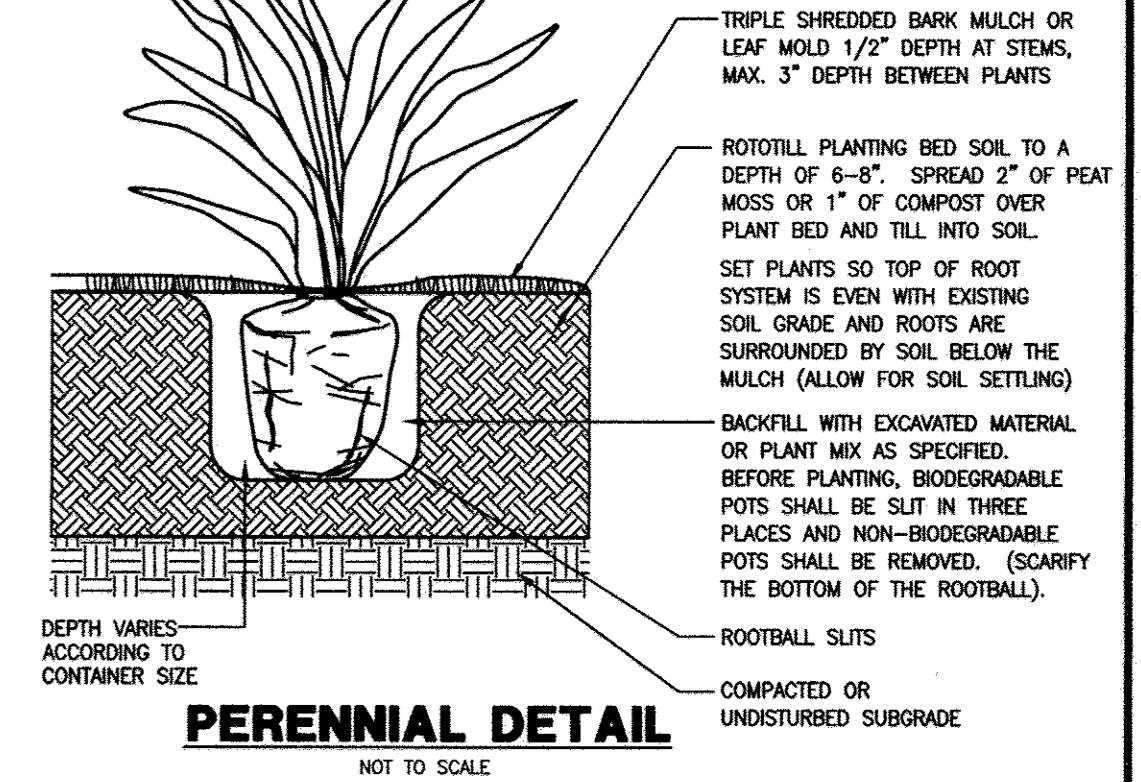
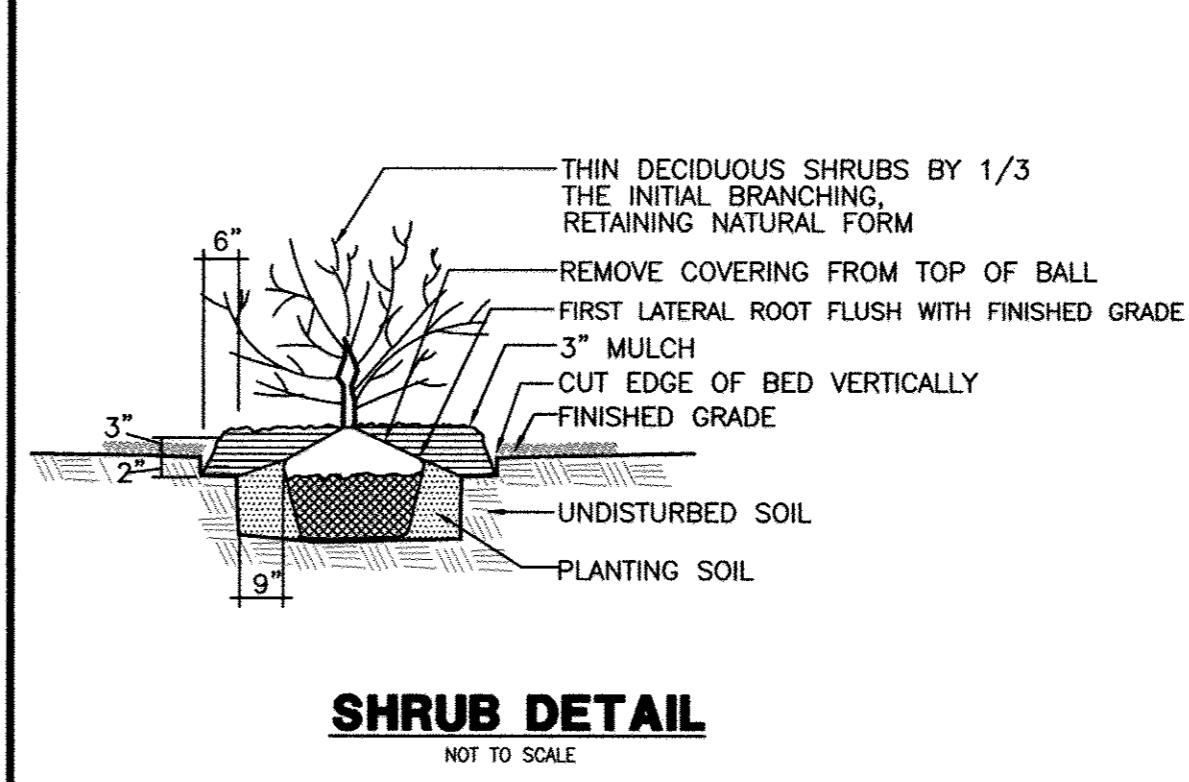
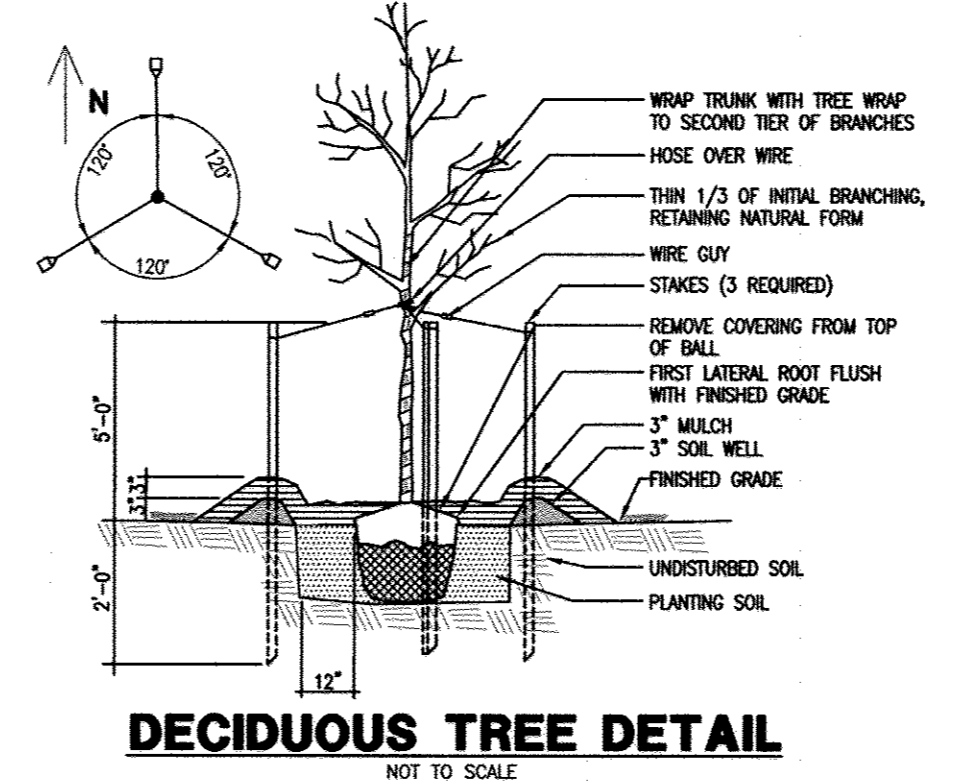
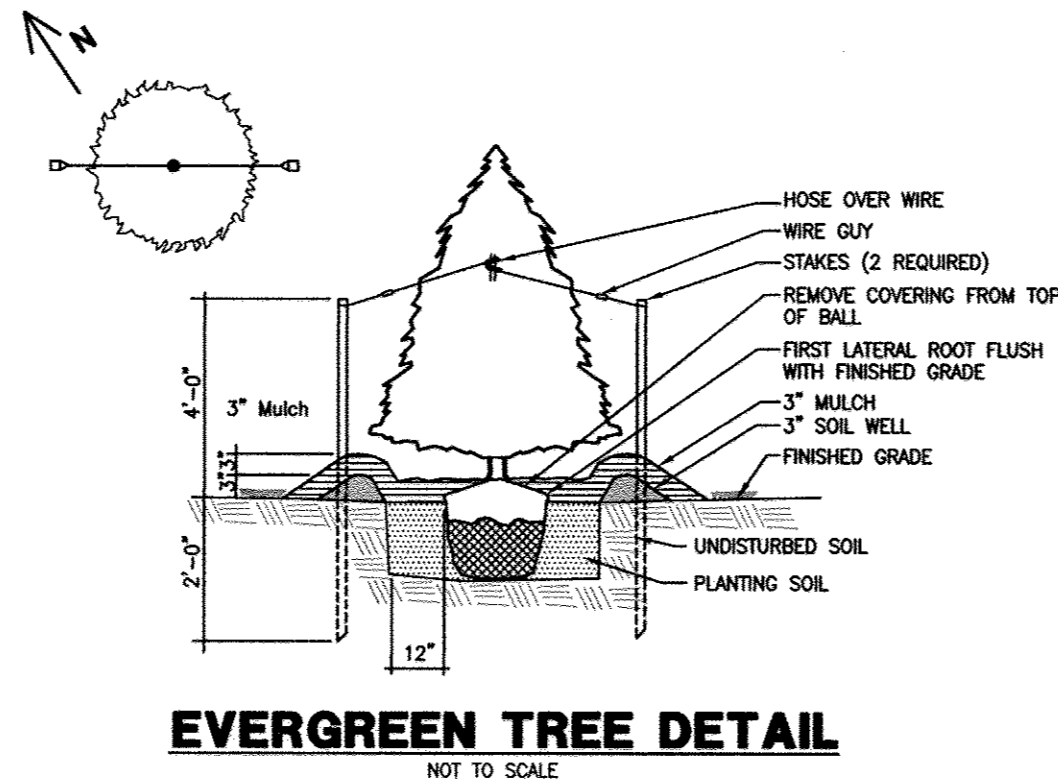
GRACE TECH PARK, PARCEL A
 OFFICE BUILDING - (TARGETING L.E.E.D. SILVER)
 SITE DEVELOPMENT PLAN
LANDSCAPE PLAN

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
 MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
 7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

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		SHEET: 36 OF 48

LANDSCAPE NOTES

- ALL PLANT MATERIAL SHALL BE NURSERY GROWN AND SHALL COMPLY WITH THE 'AMERICAN STANDARD FOR NURSERY STOCK' (ANSI Z60.1), LATEST EDITION, AND ALL ADENDDA PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
- TREES AND SHRUBS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY, HAVE NORMAL GROWTH HABITS, WELL DEVELOPED, DENSELY FOLIATED BRANCHES, AND VIGOROUS, FIBROUS ROOT SYSTEMS.
- TREES AND SHRUBS SHALL BE FRESHLY DUG AND NURSERY GROWN. THEY SHALL HAVE BEEN GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT OR PROPERLY ACCLIMATED TO CONDITIONS OF THE LOCALITY OF THE PROJECT.
- TREES AND SHRUBS SHALL BE FREE FROM DEFECTS AND INJURIES AND CERTIFIED BY APPROPRIATE FEDERAL AND STATE AUTHORITIES TO BE FREE OF DISEASES AND INSECT INFESTATIONS.
- THE LANDSCAPE CONTRACTOR SHALL WARRANTY ALL PLANT MATERIAL FOR A PERIOD OF ONE (1) FULL YEAR AFTER THE DATE OF SUBSTANTIAL COMPLETION AGAINST DEFECTS, UNSATISFACTORY GROWTH, DISEASE OR DEATH. UNSATISFACTORY, UNHEALTHY, DYING OR DEAD PLANT MATERIAL (IN THE OPINION OF THE LANDSCAPE ARCHITECT) SHALL BE REPLACED WITH THE SAME SIZE AND SPECIES.
- IT SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR TO ADEQUATELY AND PROPERLY MAINTAIN THE LANDSCAPED AREAS, WHICH SHALL INCLUDE WATERING, CLEANING OF WEEDS AND DEBRIS, PRUNING AND TRIMMING, REPLACEMENT OF DEAD OR DISEASED PLANTINGS, AND FERTILIZING TO MAINTAIN HEALTHY GROWTH FOR THE WARRANTY PERIOD.
- THE LANDSCAPE CONTRACTOR SHALL STAKEOUT PLANT LOCATIONS IN THE FIELD. THE LANDSCAPE ARCHITECT OR HIS REPRESENTATIVE SHALL OBSERVE THESE LOCATIONS PRIOR TO COMMENCING PLANT PIT EXCAVATION. THE LANDSCAPE CONTRACTOR SHALL MAKE ANY ADJUSTMENTS AS REQUESTED BY THE LANDSCAPE ARCHITECT.
- ALL PLANT SAUCERS AND PLANT BEDS SHALL BE MULCHED WITH DOUBLE SHREDDED HARDWOOD MULCH, A MINIMUM OF 3" IN DEPTH.
- NO SUBSTITUTIONS OF PLANT MATERIAL SHALL BE PERMITTED WITHOUT WRITTEN AUTHORIZATION OF THE LANDSCAPE ARCHITECT OR HIS REPRESENTATIVE. THIS SHALL APPLY TO SUBSTITUTIONS OF SPECIES, LOCATION, SIZE, AND QUANTITY.
- THE LANDSCAPE CONTRACTOR SHALL INSTALL SHREDDED HARDWOOD BARK MULCH TO A DEPTH OF 3" UNDER AND SURROUNDING ALL NEW LANDSCAPED MASS PLANTING AREAS TO PROVIDE A UNIFORM AND CONTINUOUS SURFACE AND APPEARANCE BETWEEN AND AROUND ALL PLANT MATERIAL, BUILDING LINES AND PAVED AREAS. IN GENERAL, THIS PERTAINS TO ALL PLANT MATERIAL THAT IS PLANTED CLOSER THAN SIX (6) FEET CENTER TO CENTER. IT IS THE INTENT OF THIS CONTRACT TO INSTALL LANDSCAPE MAT UNDER THE ENTIRE AREA OF SHREDDED BARK MULCH.
- TREES SHALL BE LOCATED A MINIMUM OF 3' FROM SEWER/WATER CONNECTIONS. CONTRACTOR SHALL BE LIABLE FOR DAMAGE TO ANY AND ALL PUBLIC AND PRIVATE UTILITIES, WATER AND SEWER LINES.
- ALL CONTAINER GROWN MATERIAL SHALL BE HEALTHY, VIGOROUS, WELL-ROOTED PLANTS AND ESTABLISHED IN THE CONTAINER IN WHICH THEY ARE SOLD. THE PLANTS SHALL HAVE TOPS WHICH ARE GOOD QUALITY AND ARE IN A HEALTHY GROWING CONDITION.
- CONTRACTOR SHALL SLIGHTLY ADJUST PLANT LOCATIONS IN THE FIELD AS NECESSARY TO BE CLEAR OF DRAINAGE SWALES AND UTILITIES. FINISHED PLANTING BEDS SHALL BE GRADED SO AS NOT TO IMPEDE DRAINAGE AWAY FROM BUILDINGS.
- TREE STAKING AND GUYING SHALL BE DONE PER DETAILS. CONTRACTOR SHALL ENSURE THAT TREES REMAIN PLUMB AND UPRIGHT FOR THE DURATION OF THE GUARANTEE PERIOD.
- ALL TREE PITS, SHRUB BEDS, AND PREPARED PLANTING BEDS ARE TO BE COMPLETELY EXCAVATED IN ACCORDANCE WITH THE PLANTING DETAILS.
- CROWN OF ROOT BALL SHALL BE HIGHER (AFTER SETTING) THAN ADJACENT SOIL.
- SHADE TREES: HEIGHT SHALL BE MEASURED FROM THE CROWN OF THE ROOT BALL TO THE TOP OF MATURE GROWTH. SPREAD SHALL BE MEASURED TO THE END OF BRANCHING EQUALLY AROUND THE CROWN FROM THE CENTER OF THE TRUNK. MEASUREMENTS ARE NOT TO INCLUDE ANY TERMINAL GROWTH. SINGLE TRUNK TREES SHALL BE FREE OF 'V' CROTCHES THAT COULD BE POINTS OF WEAK LIMB STRUCTURE OR DISEASE INFESTATION.
- CONTRACTOR MUST CONTACT THE OWNER AT LEAST TEN WORKING DAYS IN ADVANCE TO SCHEDULE ACCEPTANCE INSPECTION(S). CONTRACTOR MUST REPLACE ALL DEAD OR UNACCEPTABLE PLANTS DURING THE FOLLOWING RECOMMENDED PLANTING SEASON.
- TREES SHALL BE PLANTED DURING ACCEPTABLE PLANTING SEASONS: BETWEEN MARCH 15 AND MAY 15 AND BETWEEN AUGUST 15 AND NOVEMBER 15 OR AS APPROVED BY OWNERS REPRESENTATIVE.
- ALL TREE STAKING AND GUYING SHALL BE REMOVED BY THE CONTRACTOR AFTER THE TREES ARE ESTABLISHED.
- SEEDED AREAS THAT WASH OUT MUST BE FILLED AND GRADED AS NECESSARY AND THEN RESEED. SOME TYPE OF ANCHORING METHOD SHOULD THEN BE USED TO HOLD SEED AND MULCH IN PLACE; THIS IS ESPECIALLY IMPORTANT AROUND WATER COURSES, IN SWALES AND AREAS OF CONCENTRATED FLOWS, AND ON SLOPES.
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
- THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIAL SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION AND WHEN NECESSARY, REPAIRED OR REPLACED.
- AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWITH LISTED AND APPROVED FOR THIS SITE, SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPING MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATES.
- FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DPW DEVELOPERS AGREEMENT IN THE AMOUNT OF \$21,120.00 (49 SHADE TREES @ \$300.00 EA., 13 ORNAMENTAL/EVERGREEN TREES @ \$150.00 EA., AND 149 SHRUBS @ \$30.00 EA.).



PARKING LOT INTERNAL LANDSCAPE REQUIREMENTS

NUMBER OF PARKING SPACES	408
NUMBER OF TREES REQUIRED	20
NUMBER OF TREES PROVIDED	
SHADE TREES	32
OTHER TREES (2:1 SUBSTITUTION)	0

PERIMETER LANDSCAPE BUFFER REQUIREMENTS

CATEGORY	P-1 ADJACENT TO ROADWAYS	P-2 PARKING ADJACENT TO ROADWAYS	P-3 ADJACENT TO ROADWAYS	P-4 PARKING ADJACENT TO ROADWAYS	P-5 ADJACENT TO ROADWAYS	P-6 ADJACENT TO ROADWAYS	P-7 ADJACENT TO PERIMETER PROPERTIES
LANDSCAPE TYPE - NON-RESIDENTIAL	B	E	B	E	B	B	C
LINEAR FEET OF ROADWAY FRONTAGE/ PERIMETER	90'	250'	90'	342'	42'	306'	798'
CREDIT FOR EXISTING VEGETATION	NO	NO	NO	NO	NO	NO	YES - 619 LF
CREDIT FOR WALL, FENCE OR BERM	NO	NO	NO	NO	NO	NO	YES - 179 LF
NUMBER OF PLANTS REQUIRED							
SHADE TREES	2 SHADE TREES	6 SHADE TREES	2 SHADE TREES	8 SHADE TREES	1 SHADE TREE	6 SHADE TREE	4 SHADE TREES*
EVERGREEN TREES	2 EVERGREENS	0 EVERGREENS	2 EVERGREENS	0 EVERGREENS	1 EVERGREEN	8 EVERGREENS	0 EVERGREENS**
SHRUBS	0 SHRUBS	63 SHRUBS	0 SHRUBS	86 SHRUBS	0 SHRUBS	0 SHRUBS	0 SHRUBS
NUMBER OF PLANTS PROVIDED							
SHADE TREES	1 SHADE TREE	***6 SHADE TREES		8 SHADE TREES	1 SHADE TREE	0 SHADE TREES	4 SHADE TREES
EVERGREEN TREES (2:1 SUBSTITUTION)	4 EVERGREENS	0 EVERGREEN		0 EVERGREEN	0 EVERGREENS	20 EVERGREENS	0 EVERGREENS
SHRUBS (10:1 SUBSTITUTION)		63 SHRUBS	4 ORNAM. TREES	86 SHRUBS	10 SHRUBS		
(DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)							

* 798 LF OF PERIMETER MINUS 619 LF OF EXISTING HEDGEROW (MIN. 30' WIDE) LEAVES 179 LF OF BUFFER TO BE SCREENED @ 1 SHADE TREE/40 LF (BERM CANNOT BE USED TO MEET SHADE TREE PLANTING REQUIREMENTS)
 ** 798 LF OF PERIMETER MINUS 619 LF OF EXISTING HEDGEROW (MIN. 30' WIDE) MINUS 179 LF OF MIN. 6' HT. BERM LEAVES 0 LF OF BUFFER TO BE SCREENED @ 1 EVERGREEN/20 LF
 *** 1 SHADE TREE FROM BUFFER P-2 IS LOCATED IN BUFFER P-1

LANDSCAPE PLANT LIST

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING
SHADE TREES - 61 TOTAL						
ARU	13	<i>Acer rubrum</i> 'Red Sunset'	Red Sunset' Red Maple	2 1/2" cal.	B&B	As Shown
PAC	32	<i>Platanus x acerifolia</i> 'Bloodgood'	Bloodgood' London Planetree	2 1/2" cal.	B&B	As Shown
TCO	16	<i>Tilia cordata</i> 'Greenspire'	Greenspire' Littleleaf Linden	2 1/2" cal.	B&B	As Shown
ORNAMENTAL TREES - 4 TOTAL						
CCA	4	<i>Cercis canadensis</i>	Eastern Redbud	8-10' ht.	B&B	As Shown
EVERGREEN TREES - 35 TOTAL						
INE	24	<i>Ilex 'Nellie R. Stevens'</i>	Nellie R. Stevens' Holly	6-8' ht.	B&B	As Shown
MVI	11	<i>Magnolia virginiana</i>	Sweetbay Magnolia	6-8' ht.	B&B	As Shown
SHRUBS - 446 TOTAL						
AGR	156	<i>Abelia x grandiflora</i>	Glossy Abelia	24"-30" ht.	cont.	As Shown
CAL	82	<i>Clethra alnifolia</i> 'Hummingbird'	Sweet pepperbush	24"-30" ht.	cont.	As Shown
IVI	52	<i>Itea virginica</i> 'Henry's Garnet'	Henry's Garnet Sweetpire	24"-30" ht.	cont.	As Shown
MPE	136	<i>Myrica pensylvanica</i>	Northern Bayberry	24"-30" ht.	cont.	As Shown
VDE	20	<i>Viburnum dentatum</i>	Arrowwood Viburnum	24"-30" ht.	cont.	As Shown
PERENNIALS - 1,751 TOTAL						
IVE	412	<i>Iris versicolor</i>	Blue Flag Iris	1 quart	cont.	24" O.C.
LCA	1339	<i>Lobelia cardinalis</i>	Cardinal Flower	1 quart	cont.	18" O.C.
GRASS						
	0.52 lb.	Rain Garden Seed Mixture		1,037 sf	seed	1 lb/2,000 sf

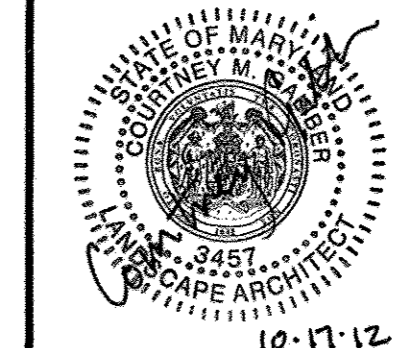
Rain Garden Seed Mixture (Ernst Conservation Seed Mix ERMNX-180 or approved equal)
 24% River Oats, PAVA Ecotype blend (Chasmanthium latifolium, PAVA Ecotype blend)
 20% Little Bluestem, 'Camper' (Schizachyrium scoparium, 'Camper')
 15% Virginia Wildrye, PA Ecotype (Elymus virginicus, PA Ecotype)
 5% Squarrose Sedge, VA Ecotype (Carex squarrosa, VA Ecotype)
 5% Fox Sedge, PA Ecotype (Carex vulpinoidea, PA Ecotype)
 4% Purple Coneflower (Echinacea purpurea)
 3% Ohio Spiderwort, PA Ecotype (Tradescantia ohioensis, PA Ecotype)
 3% Tall White Beardtongue, PA Ecotype (Penstemon digitalis, PA Ecotype)
 3% Blackeyed Susan, Coastal Plain NC Ecotype (Rudbeckia hirta, Coastal Plain NC Ecotype)
 3% Marsh (Dense) Blazing Star (Spiked Gayfeather), PA Ecotype (Liatris spicata, PA Ecotype)
 2% Mistflower, VA Ecotype (Eupatorium coelestinum (Conoclinium c.), VA Ecotype)
 2% Wild Senna, VA & WV Ecotype (Senna hebecarpa (Cassia h.), VA & WV Ecotype)
 2% Zigzag Aster, PA Ecotype (Aster prenanthoides (Symphyotrichum p.), PA Ecotype)
 2% Blue Vervain, PA Ecotype (Verbena hastata, PA Ecotype)
 2% Golden Alexanders (Zizia aurea)
 1% Blue O Indigo, Southern WV Ecotype (Baptisia australis, Southern WV Ecotype)
 1% Swamp Milkweed, PA Ecotype (Asclepias incarnata, PA Ecotype)
 1% Autumn Berggrass, PA Ecotype (Agrostis perennans, PA Ecotype)
 1% Early Goldenrod, PA Ecotype (Solidago juncea, PA Ecotype)
 1% Wild Bergamot (Monarda fistulosa)

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature]
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING
 [Signature]
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 [Signature]
 CHIEF, DIVISION & LAND DEVELOPMENT

OWNER / APPLICANT / DEVELOPER:
 ADDRESS: GRACE
 7500 GRACE DRIVE
 COLUMBIA, MARYLAND 21044
 CONTACT: MR. NIZAM USTA
 PHONE: 617-277-2145



MORRIS & RITCHIE ASSOCIATES, INC.
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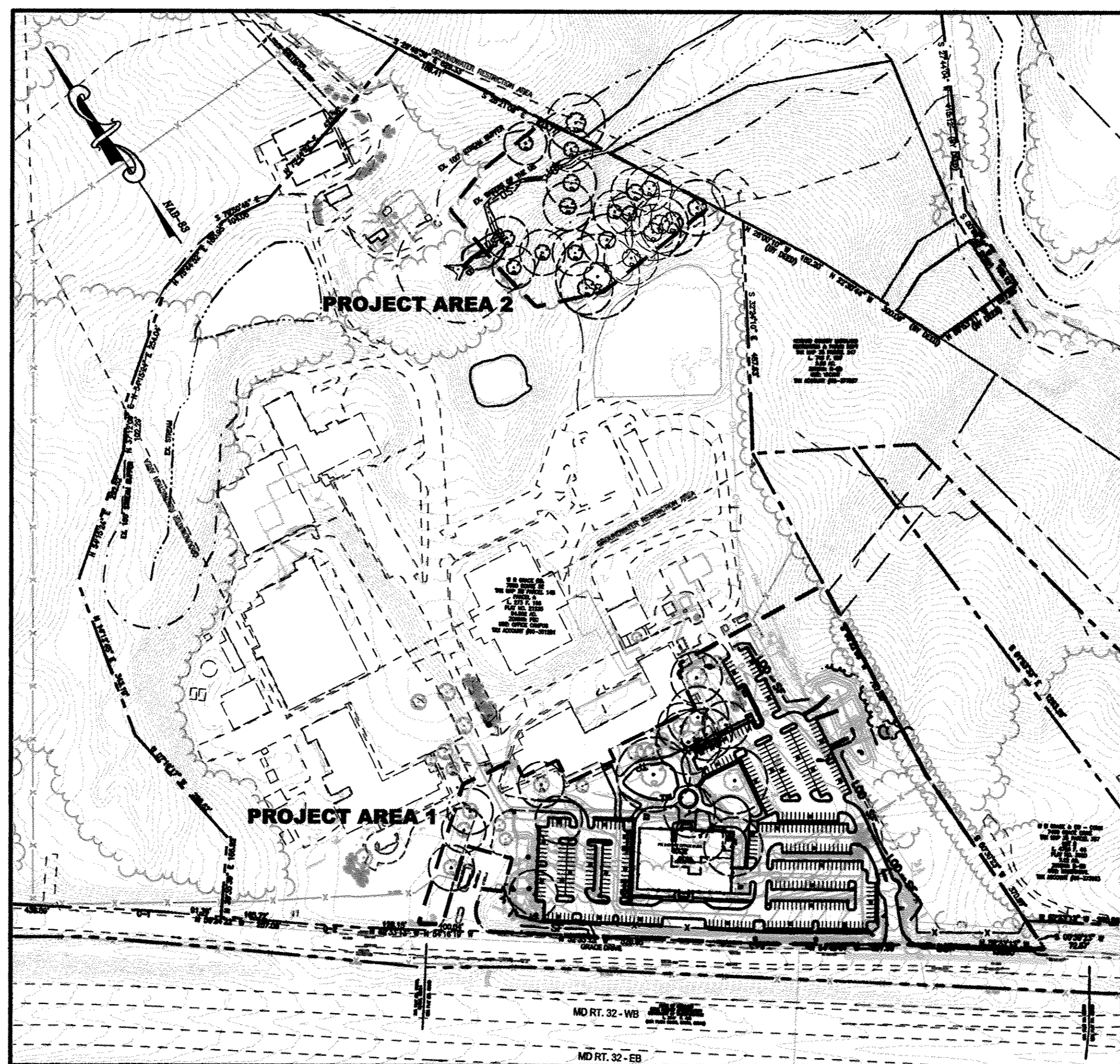
GRACE TECH PARK, PARCEL A
 OFFICE BUILDING - (TARGETING L.E.E.D. SILVER)
 SITE DEVELOPMENT PLAN
 LANDSCAPE DETAILS

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: N/A
		DATE: 10/16/2012
		DRAWN BY: CMG
		DESIGN BY: CMG
		REVIEW BY: CMG
		SHEET: 37 OF 48

P:\PROJ\2039 GRACE\PLANS\UDA\SDP\PILOT\Plan Sets\12039-SDP-37-LP-DETAILS.dwg, 10/17/2012 10:07:36 AM, Rhil, 1:1, Copyright 2012 Morris & Ritchie Associates, Inc.

GENERAL NOTES:

- 1. OWNER/APPLICANT: W.R. GRACE & CO. 7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044...



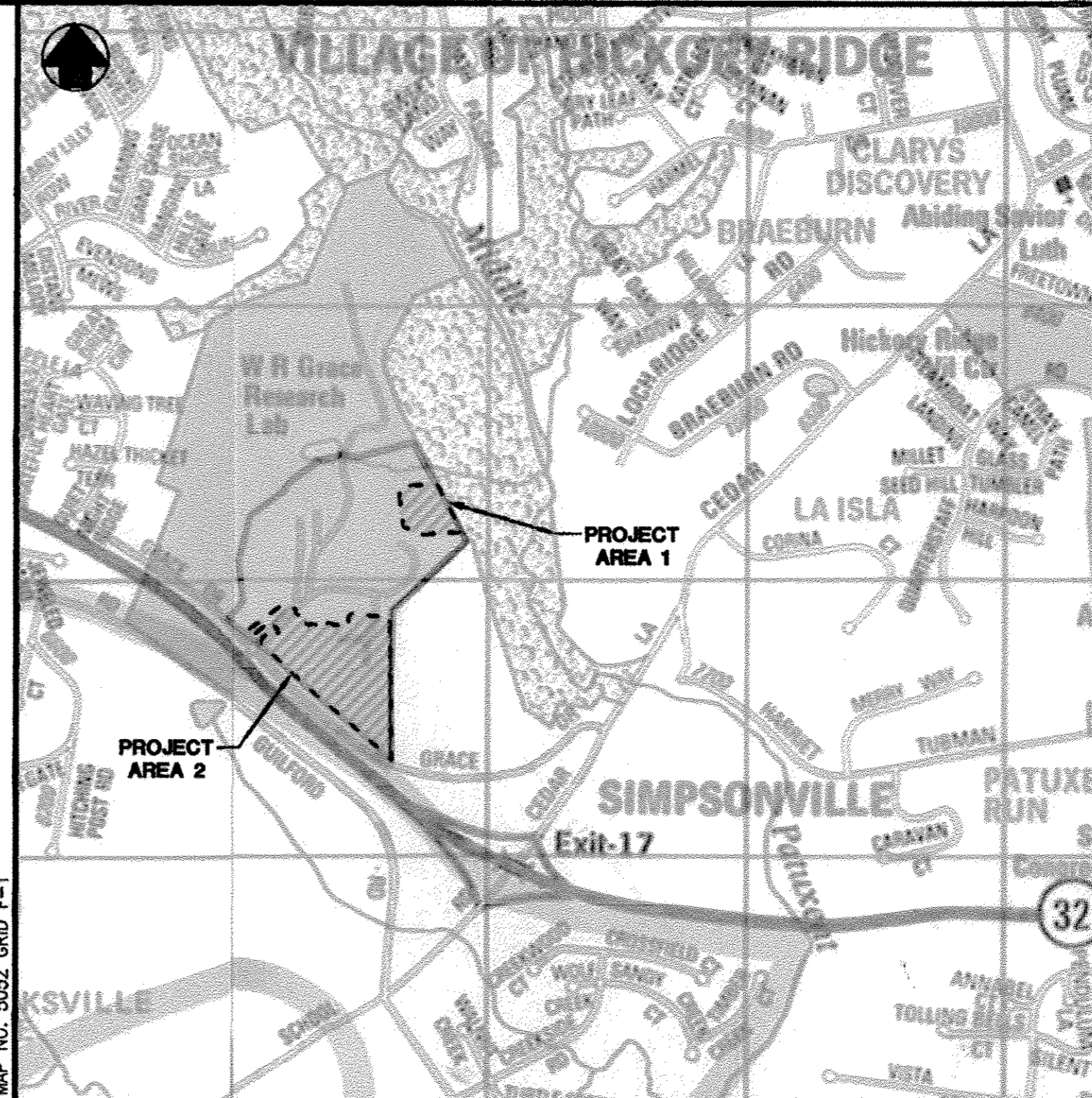
PROJECT AREA MAP SCALE: 1" = 200'

FOREST STAND SUMMARY NARRATIVE - STANDS & VEGETATION:

PROJECT AREA 1 ENCOMPASSES A PORTION OF THE SITE THAT HAS ALREADY BEEN DEVELOPED AS PART OF AN OFFICE CAMPUS. THE LAND COVER IS PREDOMINANTLY LAWN, PARKING, AND LANDSCAPE AREAS WITH TWO SMALL AREAS OF FOREST...

H-1 HEDGEROW H-1 ENCOMPASSES 0.9± ACRES AND GROWS WITHIN THE SOUTHERN PORTION OF PROJECT AREA 1, ROUGHLY PARALLEL WITH GRACE ROAD. THIS HEDGEROW IS COMPOSED OF MATURE WHITE PINES THAT WERE PLANTED TWO ROWS DEEP...

PROJECT AREA 2 IS LOCATED NEAR THE NORTHEAST BOUNDARY IN AN UNDEVELOPED PORTION OF THE OVERALL PROPERTY. THIS PROJECT AREA IS LOCATED IN THE STREAM VALLEY OF AN UNNAMED TRIBUTARY TO THE MIDDLE PATUXENT RIVER...



VICINITY MAP SCALE: 1" = 1,000'

Table with 2 main columns: OPTION 5: ON-SITE/OFF-SITE PLANTING AND REFORESTATION and FOREST CONSERVATION DATA SUMMARY. Includes sub-tables for Net Area, Retained Forest, and In-Lieu Fees.

CURVE TABLE

Table with 7 columns: CURVE, RADIUS, DELTA, ARC, TANGENT, CHORD BEARING, CHORD. Lists curve data for C-1 through C-4.

ADDRESS CHART table with columns: PARCEL #, STREET ADDRESS. Shows P-A / P-145 at 7500 GRACE DRIVE.

PERMIT INFORMATION CHART table with columns: SUBDIVISION NAME, PARCEL NO., PLANT NO., GRID #, ZONING, TAX MAP NO., ELECT. DIST., CENSUS TRACT, WATER CODE, SEWER CODE.

SHEET: SDP-38



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GRACE TECH PARK, PARCEL A OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER) SITE DEVELOPMENT PLAN FOREST CONSERVATION PLAN

Table with 3 columns: DATE, REVISIONS, JOB NO. Includes revision history and job details.

OWNER / APPLICANT / DEVELOPER: W.R. GRACE & CO. 7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044.

APPROVED: DEPARTMENT OF PLANNING AND ZONING. Signature of M. Nizam Usta, Director of Planning and Zoning.

LEGEND

- EX. 10' CONTOUR
- EX. 2' CONTOUR
- EX. SOILS LINE
- EX. PROPERTY LINE
- EX. ADJACENT PROPERTY LINE
- EX. RIGHT OF WAY
- EX. ZONING LINE
- EX. BUILDING
- EX. CONCRETE
- EX. PAVEMENT
- EX. FENCE
- EX. OVERHEAD LINE
- EX. WATER LINE
- EX. SEWER LINE
- EX. STREAM
- EX. STREAM BUFFER
- EX. RIP-RAP CHANNEL
- EX. TREE LINE
- EX. GUARD RAIL
- EX. ELECTRIC CONDUIT
- EX. LIGHT POLES
- EX. GAS LINE
- EX. STORM DRAIN
- EX. CONDUIT
- EX. FIBER OPTIC
- EX. TV LINE
- EX. ELECTRIC MANHOLE
- EX. TELEPHONE MANHOLE
- EX. UNKNOWN UTILITY
- EX. WETLAND
- EX. 25' WETLAND BUFFER
- PR. 2' CONTOUR
- PR. 10' CONTOUR
- PR. 1' CONTOUR
- PR. BUILDING FOOTPRINT
- PR. BUILDING OVERHANG
- PR. EDGE OF CONCRETE
- PR. CURB
- PR. SIDEWALK
- PR. RETAINING WALL
- PR. TREELINE
- PR. HEDGEROW
- PR. ELECTRIC CONDUIT
- PR. TELEPHONE CONDUIT
- PR. FIBER OPTIC
- PR. GAS
- PR. SANITARY SEWER
- PR. STORM DRAIN
- PR. WATER LINE
- PR. LIMITS OF DISTURBANCE
- PR. SUPER SILT FENCE
- PR. TREE PROTECTION FENCE
- REMOVAL PUMPING STATION
- SLOPES ≥ 15% & < 25%
- SLOPES ≥ 25%

FOREST CONSERVATION LEGEND

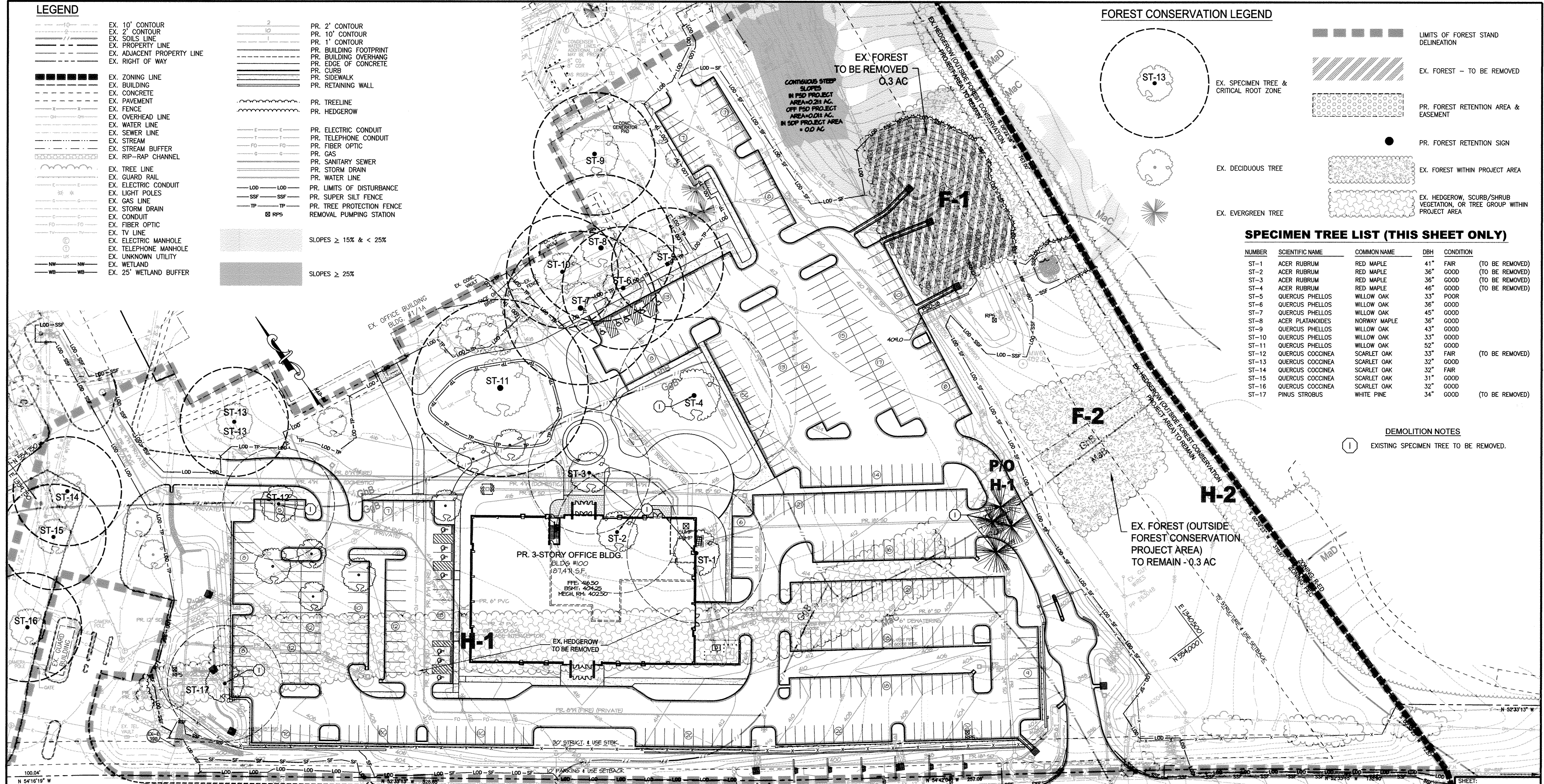
- LIMITS OF FOREST STAND DELINEATION
- EX. FOREST - TO BE REMOVED
- PR. FOREST RETENTION AREA & EASEMENT
- PR. FOREST RETENTION SIGN
- EX. DECIDUOUS TREE
- EX. EVERGREEN TREE
- EX. FOREST WITHIN PROJECT AREA
- EX. HEDGEROW, SCURB/SHRUB VEGETATION, OR TREE GROUP WITHIN PROJECT AREA

SPECIMEN TREE LIST (THIS SHEET ONLY)

NUMBER	SCIENTIFIC NAME	COMMON NAME	DBH	CONDITION	
ST-1	ACER RUBRUM	RED MAPLE	41"	FAIR	(TO BE REMOVED)
ST-2	ACER RUBRUM	RED MAPLE	36"	GOOD	(TO BE REMOVED)
ST-3	ACER RUBRUM	RED MAPLE	36"	GOOD	(TO BE REMOVED)
ST-4	ACER RUBRUM	RED MAPLE	46"	GOOD	(TO BE REMOVED)
ST-5	QUERCUS PHELLOS	WILLOW OAK	33"	POOR	
ST-6	QUERCUS PHELLOS	WILLOW OAK	36"	GOOD	
ST-7	QUERCUS PHELLOS	WILLOW OAK	45"	GOOD	
ST-8	ACER PLATANOIDES	NORWAY MAPLE	36"	GOOD	
ST-9	QUERCUS PHELLOS	WILLOW OAK	43"	GOOD	
ST-10	QUERCUS PHELLOS	WILLOW OAK	33"	GOOD	
ST-11	QUERCUS PHELLOS	WILLOW OAK	52"	GOOD	
ST-12	QUERCUS COCCINEA	SCARLET OAK	35"	FAIR	(TO BE REMOVED)
ST-13	QUERCUS COCCINEA	SCARLET OAK	32"	GOOD	
ST-14	QUERCUS COCCINEA	SCARLET OAK	32"	FAIR	
ST-15	QUERCUS COCCINEA	SCARLET OAK	31"	GOOD	
ST-16	QUERCUS COCCINEA	SCARLET OAK	32"	GOOD	
ST-17	PINUS STROBUS	WHITE PINE	34"	GOOD	(TO BE REMOVED)

DEMOLITION NOTES

- 1 EXISTING SPECIMEN TREE TO BE REMOVED.



SOILS CHART

SYMBOL	NAME/DESCRIPTION	HYDRIC SOIL	HYDRIC COMPONENT	PERCENTAGE OF MAPPING UNIT	POSITION IN LANDSCAPE	K FACTOR
Gsb	GLENELG LOAM, 8 TO 15 PERCENT SLOPES	NO	-	-	-	0.20
Gsb	GLENELG-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	NO	-	-	-	NONE LISTED
Msb	MANOR LOAM, 3 TO 8 PERCENT SLOPES	NO	-	-	-	0.24
Mac	MANOR LOAM, 8 TO 15 PERCENT SLOPES	NO	-	-	-	0.24
Msd	MANOR LOAM, 15 TO 25 PERCENT SLOPES	NO	-	-	-	0.24

1. SOURCE: K FACTOR VALUES FOR WHOLE SOIL FROM THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE'S WEB SOIL SURVEY, CONSULTED ON MAY 30, 2011, AVAILABLE ONLINE AT <HTTP://WEBSOILSURVEY.NRCS.USDA.GOV/>
 2. HYDRIC SOILS INFORMATION ADAPTED FROM THE NATURAL RESOURCE CONSERVATION SERVICE'S NATIONAL HYDRIC SOILS LIST, CONSULTED ON MAY 5, 2011, AVAILABLE ONLINE AT <HTTP://SOILS.USDA.GOV/SDRHYDRIC/>

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature]
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING
 [Signature]
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 [Signature]
 CHIEF, DIVISION & LAND DEVELOPMENT

MD RT. 32 - WB

STATE OF MARYLAND
 STATE HIGHWAY ADMINISTRATION
 DEPARTMENT OF TRANSPORTATION
 L. 3347 F. 408
 (SHA PLATS 52408, 53059, 53313)

FOREST CONSERVATION PLAN
 SCALE: 1"=40'

OWNER / APPLICANT / DEVELOPER:
 ADDRESS: GRACE
 7500 GRACE DRIVE
 COLUMBIA, MARYLAND 21044
 CONTACT: MR. NIZAM USTA
 PHONE: 617-277-2145



MORRIS & RITCHIE ASSOCIATES, INC.
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 LAUREL, MD 20707
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 FAX: (410) 792-7395



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 GRACE TECH PARK, PARCEL A
 OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
 SITE DEVELOPMENT PLAN
FOREST CONSERVATION PLAN

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
 MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
 7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: 1" = 40'
		DATE: 10/16/2012
		DRAWN BY: CMG
		DESIGN BY: CMG
		REVIEW BY: CMG
		SHEET: 39 OF 48

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 1:1, Copyright 2012, Morris & Ritchie Associates, Inc.

LEGEND

- EX. 10' CONTOUR
- EX. 2' CONTOUR
- EX. SOILS LINE
- EX. PROPERTY LINE
- EX. ADJACENT PROPERTY LINE
- EX. RIGHT OF WAY
- EX. EASEMENT
- EX. ZONING LINE
- EX. BUILDING
- EX. CONCRETE
- EX. PAVEMENT
- EX. FENCE
- EX. OVERHEAD LINE
- EX. WATER LINE
- EX. SEWER LINE
- EX. STREAM
- EX. STREAM BUFFER
- EX. RIP-RAP CHANNEL
- EX. TREE LINE
- EX. GUARD RAIL
- EX. ELECTRIC CONDUIT
- EX. LIGHT POLES
- EX. GAS LINE
- EX. STORM DRAIN
- EX. CONDUIT
- EX. FIBER OPTIC
- EX. TV LINE
- EX. ELECTRIC MANHOLE
- EX. TELEPHONE MANHOLE
- EX. UNKNOWN UTILITY
- EX. WETLAND
- EX. 25' WETLAND BUFFER
- PR. 2' CONTOUR
- PR. 10' CONTOUR
- PR. 1" CONTOUR
- PR. BUILDING FOOTPRINT
- PR. BUILDING OVERHANG
- PR. EDGE OF CONCRETE
- PR. CURB
- PR. SIDEWALK
- PR. RETAINING WALL
- PR. LIMITS OF DISTURBANCE
- PR. SUPER SILT FENCE
- PR. TREE PROTECTION FENCE
- REMOVAL PUMPING STATION
- PR. STONE CHECK DAM
- PR. PAVEMENT MILL AND OVERLAY
- PR. TREELINE
- PR. ELECTRIC CONDUIT
- PR. TELEPHONE CONDUIT
- PR. FIBER OPTIC
- PR. GAS
- PR. SANITARY SEWER
- PR. STORM DRAIN
- PR. WATER LINE
- PR. STREET LIGHT

FOREST CONSERVATION LEGEND

- EX. SPECIMEN TREE & CRITICAL ROOT ZONE
- EX. DECIDUOUS TREE
- EX. EVERGREEN TREE
- LIMITS OF FOREST STAND DELINEATION
- EX. FOREST - TO BE REMOVED
- PR. FOREST RETENTION AREA & EASEMENT
- PR. FOREST RETENTION SIGN
- SLOPES ≥ 15% & < 25%
- SLOPES ≥ 25%
- EX. FOREST WITHIN PROJECT AREA
- EX. HEDGEROW, SCURB/SHRUB VEGETATION, OR TREE GROUP WITHIN PROJECT AREA

FOREST CONSERVATION WORKSHEET

PROJECT NAME:	WR GRACE - PR. OFFICE BUILDING	DATE:	1/26/2012
LOCATION:	HOWARD COUNTY	REVISION:	
REVIEWED BY:		APPROVAL DATE:	
I. BASIC SITE DATA			
			ACRES (0.1 acre)
GROSS SITE AREA (development site only)			8.4
AREA WITHIN 100 YEAR FLOODPLAIN			0.0
AREA WITHIN AGRICULTURAL USE OR PRESERVATION PARCEL (if applicable)			0.0
AREA IN OVERHEAD TRANSMISSION LINE EASEMENTS (if applicable)			0.0
NET TRACT AREA			8.4
LAND USE CATEGORY			COMMERCIAL
II. INFORMATION FOR CALCULATIONS			
			ACRES (0.1 acre)
A. NET TRACT AREA			8.4
B. FOREST CONSERVATION THRESHOLD (15% X A)			1.3
C. AFFORESTATION THRESHOLD (15% X A)			1.3
D. EXISTING FOREST ON NET TRACT AREA			0.3
E. EXISTING FOREST ABOVE FOREST CONSERVATION THRESHOLD			0.0
F. BREAK-EVEN POINT (the amount of forest to be retained for no mitigation) ((E x 0.2) + B)			1.3
G. FOREST TO BE CLEARED			0.3
H. FOREST TO BE RETAINED			0.0
IV. AFFORESTATION CALCULATIONS			
			ACRES (0.1 acre)
A. NET TRACT AREA			8.4
C. AFFORESTATION THRESHOLD (15% X A)			1.3
D. EXISTING FOREST ON NET TRACT AREA			0.3
G. FOREST AREAS TO BE CLEARED			0.3
H. FOREST AREAS TO BE RETAINED			0.0
Select the alternative that applies:			
1. No clearing:			
If existing forest areas are below the Afforestation Threshold (if D is less than C) and no clearing is proposed, the following calculations apply:			
TOTAL AFFORESTATION REQUIRED C - D			N/A
Afforestation must make the forest area equal to the minimum required by the Afforestation Threshold.			
2. Clearing:			
If existing forest areas are below the Afforestation Threshold (if D is less than C) and clearing is proposed, the following calculations apply:			
AFFORESTATION FOR UNFORESTED AREAS BELOW AFFORESTATION THRESHOLD C - D			1.0
REFORESTATION FOR CLEARING BELOW AFFORESTATION THRESHOLD G x 2			0.6
TOTAL PLANTING REQUIRED (C - D) + (G X 2)			1.6
The afforestation planting brings the site up to the minimum forest required (the Afforestation Threshold). The reforestation component compensates for clearing.			
* WHILE THE FSD SHOWS 0.7 ACRES OF EXISTING FOREST WITHIN PROJECT AREA 1, ONLY 0.3 ACRES OF EXISTING FOREST ARE WITHIN THE PROJECT AREA COVERED BY THIS SDP.			

SPECIMEN TREE LIST - THIS SHEET ONLY

NUMBER	SCIENTIFIC NAME	COMMON NAME	DBH	CONDITION
ST-18	QUERCUS RUBRA	RED OAK	41"	GOOD
ST-19	QUERCUS VELUTINA	BLACK OAK	30"	GOOD
ST-20	LIRODENDRON TULIPIFERA	TULIPTREE	31"	GOOD
ST-21	QUERCUS ALBA	WHITE OAK	35"	GOOD
ST-22	QUERCUS RUBRA	RED OAK	34"	FAIR
ST-23	PINUS STROBUS	WHITE PINE	30"	GOOD
ST-24	PINUS STROBUS	WHITE PINE	30"	GOOD
ST-25	QUERCUS RUBRA	RED OAK	32"	FAIR
ST-26	QUERCUS ALBA	WHITE OAK	32"	GOOD
ST-27	LIRODENDRON TULIPIFERA	TULIPTREE	36"	GOOD
ST-28	LIRODENDRON TULIPIFERA	TULIPTREE	30"	GOOD
ST-29	LIRODENDRON TULIPIFERA	TULIPTREE	31"	GOOD
ST-30	LIRODENDRON TULIPIFERA	TULIPTREE	34"	GOOD
ST-31	LIRODENDRON TULIPIFERA	TULIPTREE	32"	GOOD
ST-32	QUERCUS VELUTINA	BLACK OAK	39"	GOOD
ST-33	LIRODENDRON TULIPIFERA	TULIPTREE	46"	GOOD
ST-34	QUERCUS ALBA	WHITE OAK	40"	POOR
ST-35	LIRODENDRON TULIPIFERA	TULIPTREE	39"	POOR
ST-36	QUERCUS VELUTINA	BLACK OAK	38"	GOOD
ST-37	QUERCUS VELUTINA	BLACK OAK	59"	FAIR
ST-38	QUERCUS VELUTINA	BLACK OAK	37"	GOOD

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 1/29/12

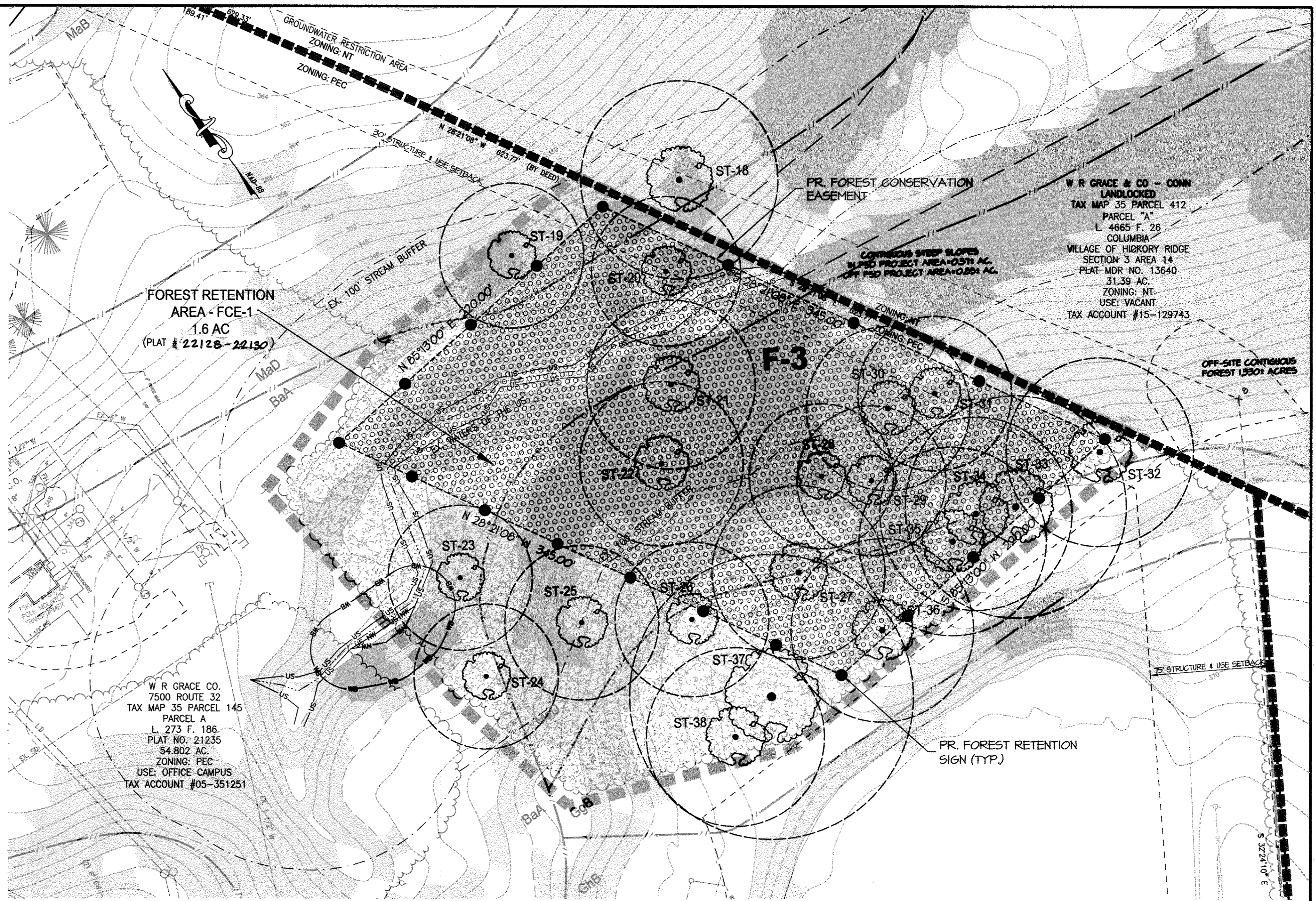
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING

[Signature] 1/16/12

CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] 1/19/12

CHIEF, DIVISION & LAND DEVELOPMENT



FOREST CONSERVATION PLAN

SCALE: 1"=40'


SOILS CHART

SYMBOL	NAME/DESCRIPTION	HYDRIC SOIL	HYDRIC COMPONENT	PERCENTAGE OF MAPPING UNIT	POSITION IN LANDSCAPE	K FACTOR
BaA	BAILE SILT LOAM, 3 TO 8 PERCENT SLOPES	YES	BAILE	85	DEPRESSIONS, DRAINAGEWAYS, & SWALES	0.32
GgB	GLENELG LOAM, 8 TO 15 PERCENT SLOPES	NO	-	-	-	0.20
MdD	MANOR LOAM, 15 TO 25 PERCENT SLOPES	NO	-	-	-	0.24

1. SOURCE: THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE'S WEB SOIL SURVEY, CONSULTED ON MAY 30, 2011. AVAILABLE ON-LINE AT [HTTP://WEBSOILSURVEY.NRCS.USDA.GOV](http://websoilsurvey.nrcs.usda.gov)


2. HYDRIC SOILS INFORMATION ADAPTED FROM THE NATURAL RESOURCE CONSERVATION SERVICE'S NATIONAL HYDRIC SOILS LIST, CONSULTED ON MAY 5, 2011. AVAILABLE ON-LINE AT [HTTP://SOILS.USDA.GOV/HYDRIC/](http://soils.usda.gov/hydric/)

SHEET: SDP-40



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14280 PARK CENTER DRIVE
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(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395

MRA@GTA.COM



GRACE TECH PARK, PARCEL A
OFFICE BUILDING - (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
FOREST CONSERVATION PLAN

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039

OWNER / APPLICANT / DEVELOPER:
ADDRESS: GRACE
7500 GRACE DRIVE
COLUMBIA, MARYLAND 21044
CONTACT: MR. NIZAM USTA
PHONE: 617-277-2145

MD PROFESSIONAL CERTIFICATION:

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 3457, EXPIRATION DATE: 03/18/2014.

DATE	REVISIONS	JOB NO.:
		12039

SCALE: AS SHOWN
DATE: 10/16/2012
DRAWN BY: CMG
DESIGN BY: CMG
REVIEW BY: CMG
SHEET: 40 OF 40

SEGMENTAL RETAINING WALL SPECIFICATIONS

PART 1 - GENERAL

1.1 WORK INCLUDES

FURNISHING AND INSTALLING SEGMENTAL RETAINING WALL UNITS, GEGRID REINFORCEMENT, WALL FILL, AND BACKFILL TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS AND AS SPECIFIED HEREIN. THE CONTRACT ALSO INCLUDES THE FURNISHING AND INSTALLING ALL APPURTENANT MATERIALS, EQUIPMENT, AND LABOR REQUIRED FOR CONSTRUCTION OF THE GEGRID REINFORCED, SEGMENTAL RETAINING WALL. ALL EXISTING AND PROPOSED CONSTRUCTION AND SITE GRADING INFORMATION WAS REFERENCED FROM THE ELECTRONIC COPIES OF THE SITE PLAN, PREPARED AND PROVIDED BY MORRIS & RITCHE ASSOCIATES, INC. (MRA), THE PROJECT CIVIL ENGINEER, ON DECEMBER 5, 2011.

1.2 REFERENCE STANDARDS

- A. ASTM C90-75 (1981 REV) - HOLLOW LOAD BEARING MASONRY UNITS.
- B. ASTM C140-75 (1981 REV) - SAMPLING AND TESTING CONCRETE MASONRY UNITS.
- C. ASTM C145-75 (1981 REV) - SOLID LOAD BEARING CONCRETE MASONRY UNITS.
- D. GEOSYNTHETIC RESEARCH INSTITUTE (GRI), GRI-604 - DETERMINATION OF LONG TERM DESIGN STRENGTH OF GEOTEXTILES.
- E. ASTM D 638 - TEST METHOD FOR TENSILE PROPERTIES OF PLASTIC.
- F. ASTM D 1248 - SPECIFICATION OF POLYETHYLENE PLASTICS MOLDING AND EXTRUSION MATERIALS.
- G. ASTM D 4218 - TEST METHOD FOR CARBON BLACK CONTENT IN POLYETHYLENE COMPOUNDS BY THE MUFFLE FURNACE TECHNIQUE.
- H. ASTM D 3034 - SPECIFICATION FOR POLYVINYL CHLORIDE (PVC) PIPE.
- I. ASTM C 1372 - SPECIFICATIONS FOR SEGMENTAL RETAINING WALL UNITS.

1.3 DELIVERY, STORAGE AND HANDLING

- A. CONTRACTOR SHOULD CHECK THE MATERIALS UPON DELIVERY TO ASSURE THAT PROPER MATERIAL HAS BEEN RECEIVED.
- B. CONTRACTOR SHOULD PREVENT EXCESSIVE MUD, WET CEMENT, EPOXY, AND LIKE MATERIALS WHICH MAY AFFIX THEMSELVES, FROM COMING IN CONTACT WITH THE MATERIALS.
- C. GEOTEXTILES SHOULD BE STORED ABOVE -20°.
- D. CONTRACTOR SHOULD PROTECT THE MATERIALS FROM DAMAGE. DAMAGED MATERIAL SHOULD NOT BE INCORPORATED INTO THE REINFORCED RETAINING WALL.

1.4 SUBMITTALS/CERTIFICATION

THE CONTRACTOR SHALL SUBMIT A MANUFACTURER'S CERTIFICATION, PRIOR TO THE START OF THE WORK, THAT THE RETAINING WALL SYSTEM COMPONENTS MEET THE REQUIREMENTS OF ASTM C 1372 AND OTHER REQUIREMENTS SPECIFIED HEREIN. THIS CERTIFICATION SHOULD BE PROVIDED TO THE GEOTECHNICAL ENGINEER FOR REVIEW AND APPROVAL PRIOR TO WALL CONSTRUCTION.

PART 2 - PRODUCTS

2.1 DEFINITIONS

- A. GEGRID IS A HIGH DENSITY POLYETHYLENE, POLYESTER, OR POLYPROPYLENE GRID, SPECIFICALLY FABRICATED FOR USE AS A SOIL REINFORCEMENT.
- B. CONCRETE RETAINING WALL UNITS ARE AS DETAILED ON THE DRAWINGS AND AS SPECIFIED HEREIN.
- C. GEOSYNTHETIC DRAINAGE COMPOSITES ARE POLYETHYLENE NET STRUCTURE WITH NON-WOVEN GEOTEXTILES BONDED TO BOTH SIDES.
- D. EROSION CONTROL BLANKETS CONSIST OF A WEB OF POLYOLEFIN FIBERS SECURELY BOUNDED BY POLYOLEFIN THREADS BETWEEN TWO HIGH STRENGTH POLYOLEFIN NETS.
- E. BACKFILL IS THE SOIL WHICH IS USED AS FILL FOR THE REINFORCED SOIL MASS.
- F. FOUNDATION SOIL IS THE IN-SITU SOIL OR CONTROLLED COMPACTED FILL PLACED BELOW THE BOTTOM OF THE RETAINING WALL AND GEGRID ZONE.

2.2 MATERIALS

THE CONTRACTOR SHOULD SUBMIT MANUFACTURER'S CATALOG AND SAMPLES OF THE PROPOSED MATERIALS FOR APPROVAL BY THE PROJECT GEOTECHNICAL ENGINEER A MINIMUM OF SEVEN DAYS BEFORE THE START OF CONSTRUCTION. MATERIALS SHOULD BE TRANSPORTED TO THE SITE ONLY AFTER APPROVAL OF THE PROPOSED MATERIALS BY THE PROJECT GEOTECHNICAL ENGINEER.

A. CONCRETE UNITS

- 1. MASONRY UNITS SHOULD BE KEYSTONE STANDARD II RETAINING WALL UNITS. SUBSTITUTION OF OTHER CONCRETE UNITS OF SIMILAR SIZE MAY BE ALLOWED WITH THE PRIOR APPROVAL OF THE GEOTECHNICAL ENGINEER.
- 2. CONCRETE WALL UNITS SHOULD HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI, IN ACCORDANCE WITH ASTM C-90. THE CONCRETE SHOULD HAVE ADEQUATE FREEZE/THAW PROTECTION WITH A MAXIMUM MOISTURE ABSORPTION OF 6 PERCENT.
- 3. MODULAR CONCRETE MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C 1372 - STANDARD SPECIFICATIONS FOR SEGMENTAL RETAINING WALL UNITS.
- 4. THE UNITS SHALL PASS 100 FREEZE/THAW CYCLES IN WATER WITH LESS THAN 1% WEIGHT LOSS IN ACCORDANCE WITH ASTM C 1372.
- 5. EXTERIOR DIMENSIONS MAY VARY. UNITS ARE REQUIRED TO HAVE A MINIMUM OF ONE SQUARE FOOT OF FACE AREA EACH.
- 6. UNITS SHOULD HAVE ANGLED SIDES AND BE CAPABLE OF ATTAINING CONCAVE AND CONVEX ALIGNMENT CURVES IN ACCORDANCE WITH UNITS SHOULD BE INTERLOCKED WITH NON-CORROSIVE REINFORCED FIBERGLASS PINS.
- 7. UNITS SHOULD BE INTERLOCKED AS TO PROVIDE A MAXIMUM OF 1 INCH OF SETBACK PER BLOCK, WHERE REQUIRED.

B. LEVELING PAD

MATERIAL FOR LEVELING PAD/FOOTING SHOULD CONSIST OF COMPACTED FREE-DRAINING COARSE AGGREGATES MEETING THE REQUIREMENTS OF ASTM #57 STONE OR GRADED AGGREGATE BASE (GAB) PER MARYLAND STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS. A MINIMUM OF 6 INCHES DEEP AND 30 INCHES WIDE COMPACTED LEVELING PAD IS REQUIRED.

C. FIBERGLASS CONNECTING PINS

- 1. THERMOSET ISOPHTHALIC POLYESTER RESIN PULTRUDED FIBERGLASS REINFORCEMENT RODS, A MINIMUM ONE-HALF INCH IN DIAMETER.
- 2. PINS SHOULD HAVE A MINIMUM FLEXURAL STRENGTH OF 128,000 PSI AND SHORT BEAM SHEAR OF 6400PSI.
- 3. FOR SUBSTITUTE CONCRETE UNITS, USE OF OTHER COMPATIBLE CONNECTOR SYSTEMS MAY BE ALLOWED WITH THE PRIOR APPROVAL OF THE GEOTECHNICAL ENGINEER.

D. GEGRID

GEGRID SHOULD BE MIRAGRID 03XT, OR EQUIVALENT AS APPROVED BY THE GEOTECHNICAL ENGINEER. THE GEGRID SHOULD HAVE AN ALLOWABLE STRENGTH OF 940 POUNDS PER FOOT. THE ALLOWABLE STRENGTH IS DEFINED AS THE ULTIMATE STRENGTH DIVIDED BY REDUCTION FACTORS FOR CREEP, DURABILITY, INSTALLATION DAMAGE AND AN OVERALL FACTOR OF SAFETY.

E. REINFORCED BACKFILL

REINFORCED BACKFILL SOILS SHOULD BE NON-PLASTIC, CONTROLLED FILL MEETING THE REQUIREMENTS OF AASHTO A-2-4, OR MORE GRANULAR, BASED ON THE AVAILABLE SUBSURFACE INFORMATION. SUITABLE MATERIALS MAY BE AVAILABLE FROM ON-SITE EXCAVATIONS. HOWEVER, SEGREGATION AND STOCKPILING OF SUITABLE MATERIALS WILL BE REQUIRED. IF ADEQUATE QUANTITIES OF THIS MATERIAL ARE NOT AVAILABLE ON-SITE, IMPORTED BACKFILL SHOULD MEET THE ABOVE REQUIREMENTS AND SHOULD BE APPROVED BY THE GEOTECHNICAL ENGINEER.

F. CONTROLLED FILL

CONTROLLED FILL SOILS TO BE PLACED OUTSIDE THE REINFORCED BACKFILL AREA AND WHERE SPECIFIED SHOULD CONSIST OF ON-SITE OR BORROW SOILS MEETING THE REQUIREMENTS OF AASHTO A-4 OR MORE GRANULAR. ALL FILL MATERIALS PROPOSED TO BE PLACED BEHIND THE REINFORCED BACKFILL SHOULD BE PLACED AS CONTROLLED FILL COMPACTED TO 95 PERCENT OF MAXIMUM DRY DENSITY IN ACCORDANCE WITH THE STANDARD PROCTOR, ASTM D-698.

G. LOW-PERMEABILITY SOIL

LOW-PERMEABILITY SOILS TO BE PLACED AT THE TOP OF THE WALL WHERE SPECIFIED SHOULD CONSIST OF SANDY, SILTY OR CLAYEY SOILS MEETING THE REQUIREMENTS OF ML, CL, SM, OR SC WITH A MINIMUM OF 25% PASSING THE #200 SIEVE.

H. DRAINAGE PIPE

THE DRAINAGE PIPES SHOULD BE PERFORATED OR SLOTTED PVC PIPE MANUFACTURED IN ACCORDANCE WITH ASTM D-3034.

I. FILTER FABRIC

FILTER FABRIC SHOULD BE NON-WOVEN, POLYPROPYLENE GEOTEXTILE, 140 N MANUFACTURED BY NICOLON MIRAFI GROUP OR APPROVED EQUIVALENT.

PART 3 - EXECUTION

A. EXCAVATION

- 1. THE CONTRACTOR SHOULD EXCAVATE TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. UNDER NO CIRCUMSTANCES SHOULD THE EXCAVATION LINES AND GRADES BE EXCEEDED, EXCEPT WITH OWNER'S APPROVAL. THE CONTRACTOR SHOULD PROTECT THE EXCAVATION FROM SLOUGHING BY PLACING A MEMBRANE OVER THE FACE OF THE EXCAVATION.
- 2. PRIOR TO RETAINING WALL CONSTRUCTION AND THE PLACEMENT OF FILL, ALL TOPSOIL SHOULD BE STRIPPED AND REMOVED FROM THE SITE.
- 3. EXCAVATIONS SHOULD BE SLOPED OR OTHERWISE SUPPORTED IN ACCORDANCE WITH OCCUPATION SAFETY AND HEALTH ADMINISTRATION (OSHA) AND OTHER LOCAL AND STATE REGULATIONS.

B. FOUNDATION SUBGRADE PREPARATION

- 1. FOUNDATION SOIL SHOULD BE EXCAVATED AS REQUIRED FOR INSTALLATION OF LEVELING PAD, GEGRID AND OTHER ELEMENTS AND AS SHOWN ON THE CONSTRUCTION DRAWINGS.
- 2. FOUNDATION SOIL SHOULD BE EXAMINED BY THE ENGINEER TO ASSURE THAT THE ACTUAL FOUNDATION SOIL STRENGTH MEETS OR EXCEEDS ASSUMED DESIGN STRENGTH. SOILS NOT MEETING REQUIRED STRENGTH SHOULD BE REMOVED AND REPLACED WITH CONTROLLED, COMPACTED MATERIAL.
- 3. OVER-EXCAVATED AREAS SHOULD BE FILLED WITH SELECT AND APPROVED MATERIAL AND COMPACTED TO 95 PERCENT OF MAXIMUM DRY DENSITY IN ACCORDANCE WITH THE STANDARD PROCTOR, ASTM D-698.
- 4. ALLOWABLE BEARING PRESSURE FOR NATURAL AND CONTROLLED, COMPACTED FILL SOILS SHOULD BE AS SPECIFIED IN PART 5.
- 5. THE EXPOSED FOUNDATION SUBGRADE SHOULD BE PROFFROLLED WITH A LOADED DUMP TRUCK. ANY SOFT OR UNSTABLE AREAS IDENTIFIED DURING PROFFROLLING SHOULD BE OVEREXCAVATED AND BACKFILLED WITH CONTROLLED FILL.
- 6. ANY FILLS REQUIRED TO ESTABLISH SLOPING SURFACES IN FRONT OF THE WALLS SHOULD CONSIST OF CONTROLLED FILL AND SHOULD BE PLACED, COMPACTED AND FIELD TESTED IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED HEREIN.

C. LEVELING PAD

- 1. THE LEVELING PAD SHOULD BE PLACED AS SHOWN ON THE CONSTRUCTION DRAWINGS WITH A MINIMUM THICKNESS OF 6 INCHES.
- 2. LEVELING PAD MATERIALS SHOULD BE INSTALLED UPON UNDISTURBED IN-SITU SOILS OR CONTROLLED, COMPACTED BACKFILL.
- 3. LEVELING PAD SHOULD BE PREPARED TO INSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH BASE. GAPS SHOULD NOT BE ALLOWED.

D. UNIT INSTALLATION

- 1. FIRST COURSE OF CONCRETE WALL UNITS SHOULD BE PLACED ON THE LEVELING PAD. THE UNITS SHOULD BE CHECKED FOR LEVEL AND ALIGNMENT. THE FIRST COURSE IS THE MOST IMPORTANT TO PROVIDE ACCURATE AND ACCEPTABLE RESULTS.
- 2. INSURE THAT UNITS ARE IN FULL CONTACT WITH BASE.
- 3. UNITS ARE PLACED SIDE BY SIDE FOR FULL LENGTH OF WALL ALIGNMENT. ALIGNMENT MAY BE DONE BY MEANS OF A STRING LINE OR OFFSET FROM BASE LINE.
- 4. INSTALL FIBERGLASS CONNECTING PIN.
- 5. LAY UP EACH COURSE INSURING THAT THE CONNECTING PINS ARE INSERTED THROUGH FRONT SLOT OF THE UNIT, AND INTO THE RECEIVING SLOT IN THE COURSE BENEATH. REPEAT PROCEDURE TO THE EXTENT OF WALL HEIGHT.
- 6. AT THE END OF EACH COURSE WHERE THE WALL CHANGES ELEVATION, UNITS SHOULD BE TURNED INTO THE BACKFILL. UNITS SHOULD BE LAID AS TO CREATE THE MINIMUM RADIUS POSSIBLE, UNLESS OTHERWISE SHOWN ON THE DRAWINGS, A MINIMUM OF ONE UNIT SHOULD BE INSTALLED INTO THE GRADE. ONLY THE FRONT FACE OF THE UNITS SHOULD BE VISIBLE FROM THE SIDE OF THE WALL.
- 7. CONVEX AND CONCAVE CURVES SHOULD BE MADE USING COMPAC UNITS OR BY TRIMMING THE STANDARD II UNITS AS REQUIRED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- 8. CAP UNITS SHOULD BE INSTALLED AND BONDED WITH CONSTRUCTION ADHESIVE OR EPOXY CEMENT AS REQUIRED BY MANUFACTURER.
- 9. CONTRACTOR SHOULD PROVIDE POSITIVE DRAINAGE FOR THE BACK OF THE RETAINING WALL DURING CONSTRUCTION.

E. GEGRID INSTALLATION

- 1. ALL UTILITIES IN THE VICINITY OF ANY RETAINING WALL OR GEGRID REINFORCEMENT MUST BE INSTALLED AND PROPERLY BACKFILLED PRIOR TO PLACING THE GEGRID SOIL REINFORCEMENT OR CONSTRUCTING THE WALL.
- 2. THE GEGRID SOIL REINFORCEMENT SHOULD BE LAID HORIZONTALLY ON COMPACTED BACKFILL, CONNECTED TO THE CONCRETE WALL UNITS. HOOK GRID OVER THE FIBERGLASS CONNECTING PIN, PULL TAUT, AND ANCHOR BEFORE BACKFILL IS PLACED ON THE GEGRID.
- 3. SLACK IN THE GEGRID AT THE WALL UNIT CONNECTIONS SHOULD BE REMOVED IN A MANNER, AND TO SUCH A DEGREE, AS APPROVED BY THE ENGINEER.
- 4. GEGRID SHOULD BE LAID AT THE PROPER ELEVATION AND ORIENTATION AS SHOWN ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE ENGINEER.
- 5. CORRECT ORIENTATION (ROLL DIRECTION) OF THE GEGRID SHOULD BE VERIFIED BY THE CONTRACTOR.
- 6. GEGRID SHOULD BE SECURED IN-PLACE WITH STAPLES, PINS, SAND BAGS, OR BACKFILL AS REQUIRED BY FILL PROPERTIES, FILL PLACEMENT PROCEDURES, OR WEATHER CONDITIONS, OR AS DIRECTED BY THE ENGINEER.
- 7. OVERLAPS
 - a. UNIAXIAL GEGRID DOES NOT NEED TO BE OVERLAPPED IN THE ACROSS THE ROLL DIRECTION, EXCEPT TO CONTAIN THE FILL AT THE SLOPE FACE WHEN WRAP-AROUND FACING IS USED. UNIAXIAL GRID SHOULD BE OVERLAPPED 48" IN THE ROLLED DIRECTION.
 - b. A LAYER OF SOIL A MINIMUM OF 4 INCHES IN THICKNESS SHOULD BE SPREAD BETWEEN UNIAXIAL GEGRID LAYERS IN THE AREA TO BE OVERLAPPED, OR AS DIRECTED.

F. FILL PLACEMENT

- 1. WALL BACKFILL MATERIAL SHOULD BE PLACED IN NO MORE THAN 8-INCH LIFTS AND COMPACTED TO 95 PERCENT OF THE STANDARD PROCTOR (ASTM D-698).
- 2. BACKFILL SHOULD BE PLACED, SPREAD, AND COMPACTED IN SUCH A MANNER THAT MINIMIZES THE DEVELOPMENT OF WRINKLES IN AND/OR MOVEMENT OF THE GEGRID.
- 3. ONLY HAND-OPERATED COMPACTION EQUIPMENT SHOULD BE ALLOWED WITHIN 4 FEET OF THE WALL FACE.
- 4. BACKFILL SHOULD BE PLACED FROM THE WALL OUTWARD TO INSURE THAT THE GEGRID REMAINS TAUT.
- 5. TRACKED CONSTRUCTION EQUIPMENT SHOULD NOT BE OPERATED BEHIND OR ABOVE THE WALL.
- 6. RUBBER-TIRED EQUIPMENT MAY PASS OVER THE GEGRID REINFORCEMENT AT SLOW SPEEDS, LESS THAN 10 MPH. SUDDEN BRAKING AND SHARP TURNING SHOULD BE AVOIDED.
- 7. PLACE FILTER FABRIC BETWEEN THE UNIT CORE FILL AND THE REINFORCED BACKFILL AS SHOWN ON PLANS. THE FILTER FABRIC SHOULD BE EMBEDDED A MINIMUM OF TWO FEET INTO THE REINFORCED FILL.
- 8. THE FINISHED SLOPING SURFACE ON THE TOE SIDE OF RETAINING WALLS SHOULD BE PROTECTED BY INSTALLING THE PERMANENT EROSION CONTROL BLANKET AND LOAMING AND SEEDING IN ACCORDANCE WITH PROJECT REQUIREMENTS.

G. DRAINAGE

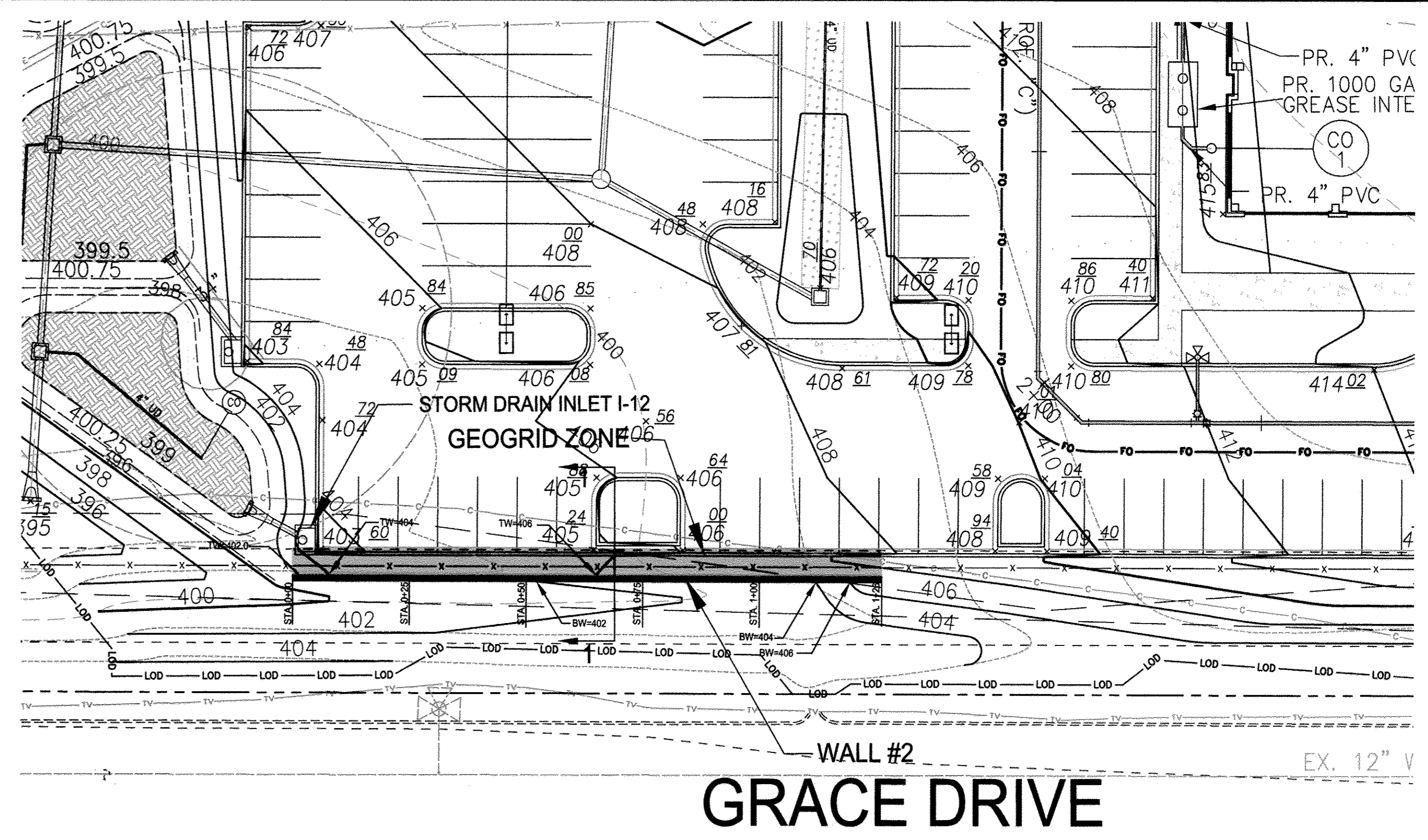
- 1. DRAINAGE FILL SHOULD BE PLACED BEHIND THE WALL TO THE LIMITS SHOWN. THE DRAINAGE FILL SHOULD BE A MINIMUM OF 12-INCHES THICK. THE DRAINAGE FILL SHOULD BE ASTM #57 STONE. THE DRAINAGE FILL SHOULD BE WRAPPED IN FILTER FABRIC (MIRAFI 140N OR EQUAL) AS SHOWN ON THE DRAWINGS.
- 2. POSITIVE DRAINAGE SHOULD BE MAINTAINED DURING AND AFTER CONSTRUCTION. SOILS WITHIN THE REINFORCED ZONE THAT BECOME WET DURING CONSTRUCTION SHOULD BE DRIED TO OPTIMUM MOISTURE OR REMOVED.
- 3. INSTALL THE PERFORATED DRAINAGE PIPES AND LATERAL DRAINAGE PIPES INCREMENTALLY ALONG WITH THE INSTALLATION OF CONCRETE UNITS AND PLACEMENT OF FILL.

PART 4 - CONSTRUCTION OBSERVATION AND TESTING

- A. RETAINING WALLS SHOULD ONLY BE CONSTRUCTED UNDER THE OBSERVATION OF A REGISTERED PROFESSIONAL ENGINEER AND A CERTIFIED (NICET, WACEL, OR EQUIVALENT) SOILS TECHNICIAN.
- B. THE REQUIRED BEARING PRESSURE BENEATH THE FOOTING OF THE WALL SHOULD BE VERIFIED IN THE FIELD BY A CERTIFIED SOILS TECHNICIAN. TESTING DOCUMENTATION MUST BE PROVIDED TO THE GEOTECHNICAL ENGINEER PRIOR TO THE START OF WALL CONSTRUCTION. THE REQUIRED TEST PROCEDURE SHALL BE THE DYNAMIC CONE PENETROMETER (DCP) TEST ASTM STP-399.
- C. THE SUITABILITY OF FILL MATERIAL SHOULD BE CONFIRMED BY THE ON-SITE SOILS TECHNICIAN.

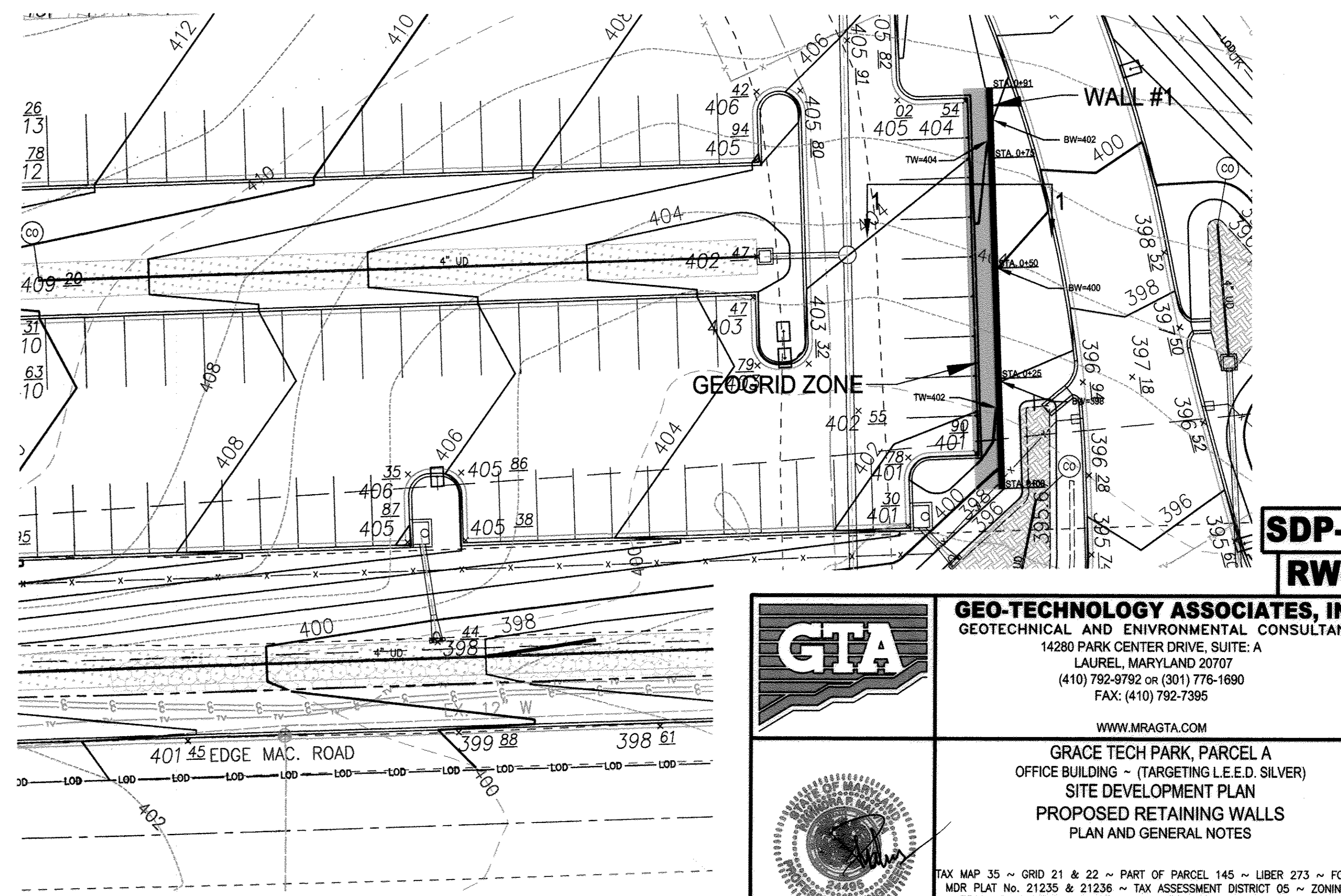
PART 5 - DESIGN CRITERIA

- 1. REQUIRED MINIMUM ALLOWABLE FOUNDATION BEARING PRESSURE IS 2,000 PSF.
- 2. DESIGN INTERNAL FRICTION ANGLE FOR REINFORCED SOIL = 30 DEGREES.
- 3. DESIGN MOST UNIT WEIGHT FOR REINFORCED SOIL = 120 PCF.
- 4. FOUNDATION AND RETAINED SOIL INTERNAL FRICTION ANGLE = 28 DEGREES AND COHESION = 0 PSF.
- 5. FOUNDATION AND RETAINED SOIL DESIGN MOST UNIT WEIGHT = 120 PCF.
- 6. RETAINING WALLS ARE NOT DESIGNED TO RESIST HYDROSTATIC PRESSURE.



RETAINING WALL #2 LOCATION PLAN

SCALE: 1" = 20'
LOCATION PLAN WAS ADAPTED FROM ELECTRONIC COPIES OF THE SITE PLAN, PROVIDED BY MORRIS & RITCHE ASSOCIATES, INC. ON DECEMBER 5, 2011.



RETAINING WALL #1 LOCATION PLAN

SCALE: 1" = 20'
LOCATION PLAN WAS ADAPTED FROM ELECTRONIC COPIES OF THE SITE PLAN, PROVIDED BY MORRIS & RITCHE ASSOCIATES, INC. ON DECEMBER 5, 2011.

SDP-41
RW-1

GTA
GEO-TECHNOLOGY ASSOCIATES, INC.
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GRACE TECH PARK, PARCEL A
OFFICE BUILDING - (TARGETING L.E.E.D. SILVER)
SITE DEVELOPMENT PLAN
PROPOSED RETAINING WALLS
PLAN AND GENERAL NOTES

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 198
MDR PLAN MAP 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		080972.1

MD 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. 24495, EXPIRATION DATE: 10/30/13.

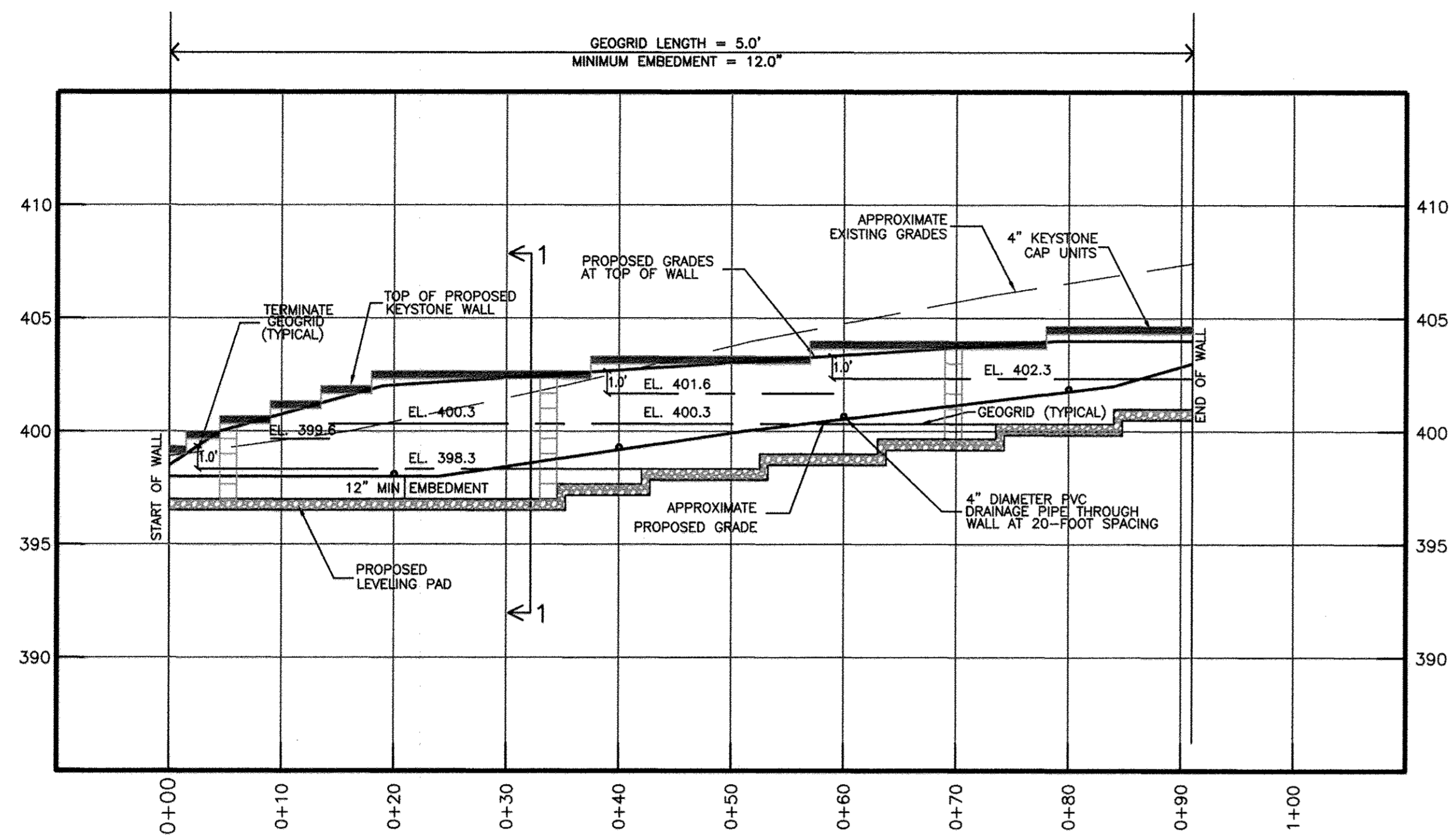
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DESIGN BY: ADM/BTD
REVIEW BY: RPM
SHEET: 41 OF 46

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Dante J. LaVigne 11/29/12
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE

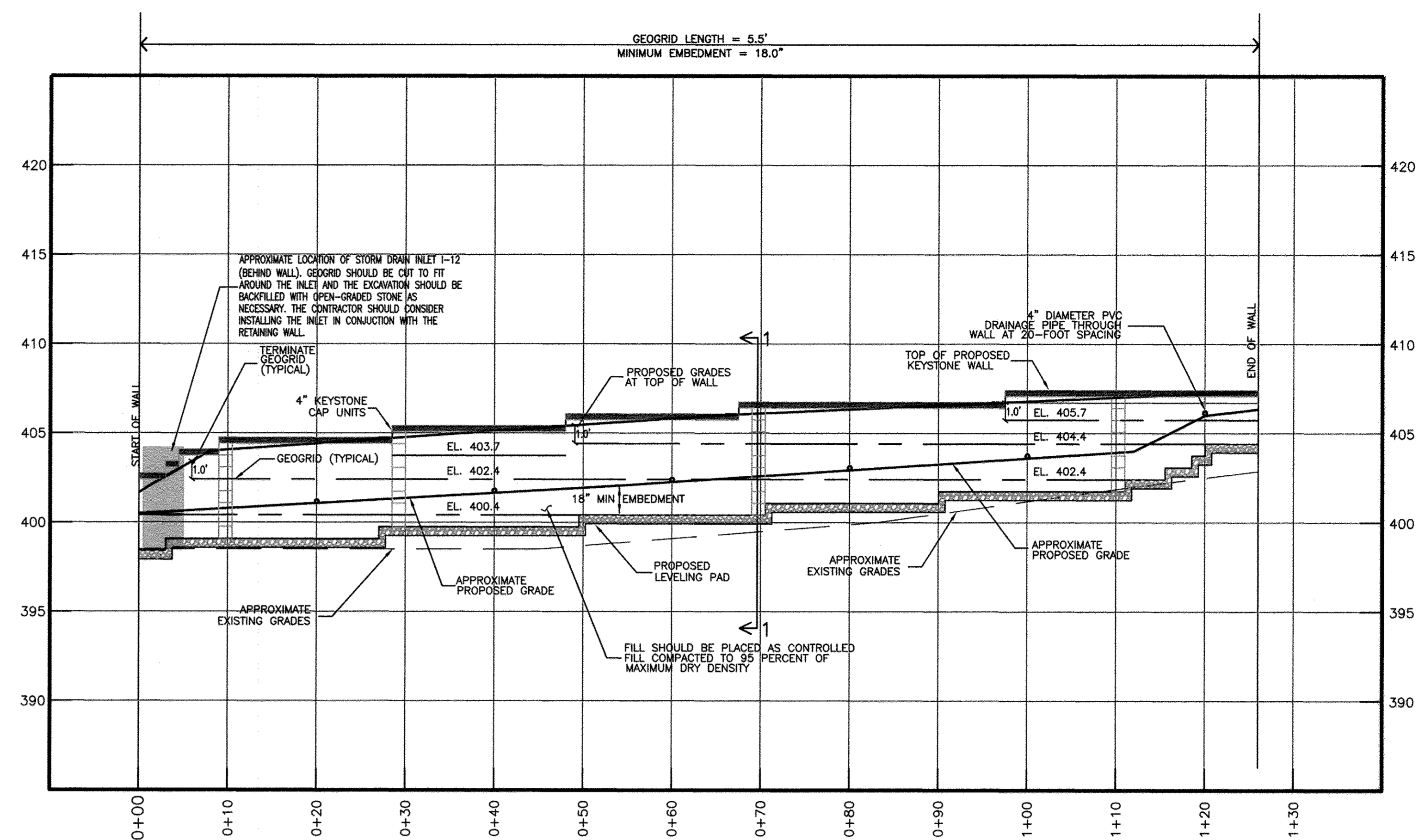
John J. Williams 11/16/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Vest S. Shadwick 11/19/12
CHIEF, DIVISION OF LAND DEVELOPMENT DATE



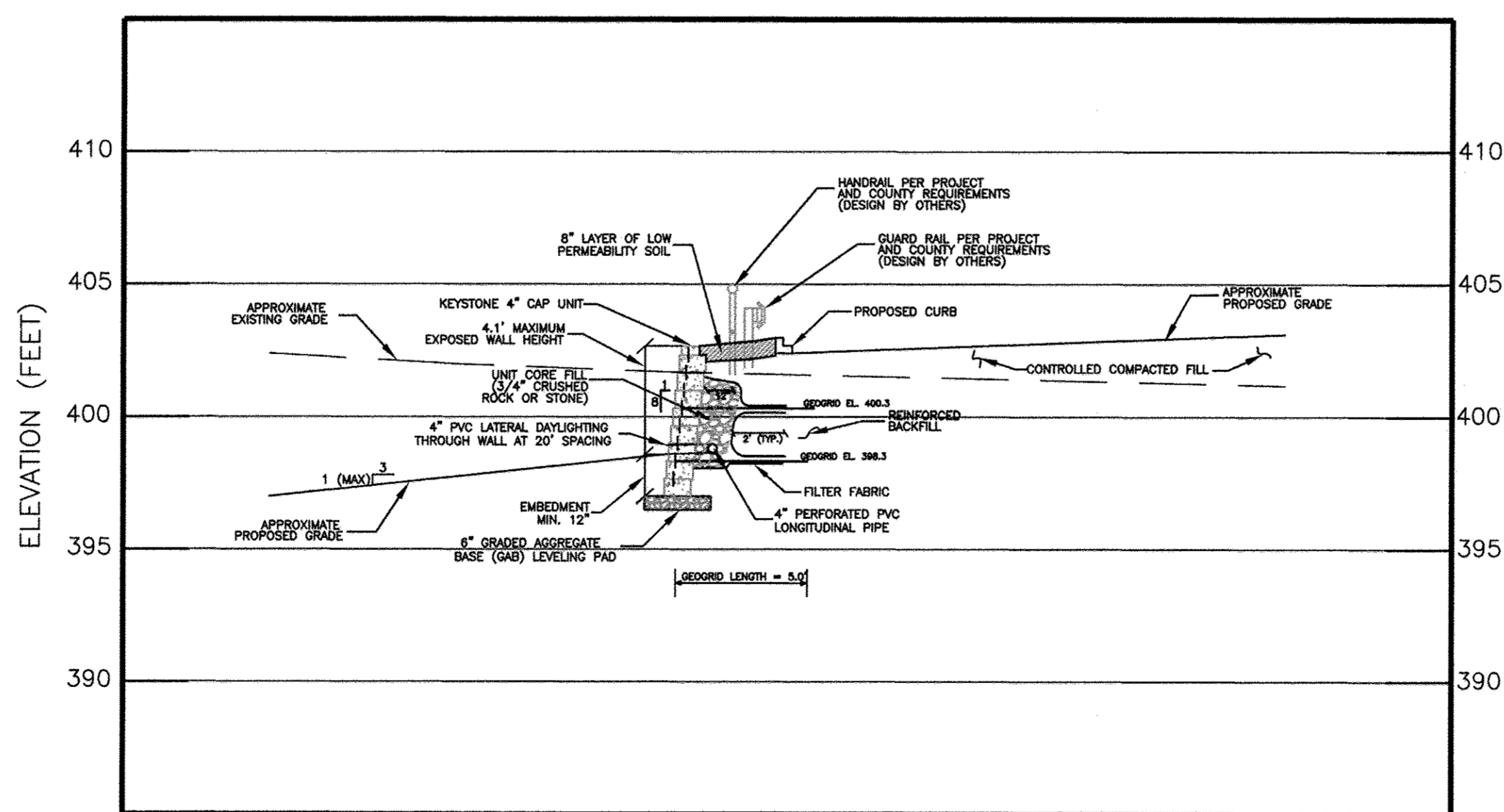
RETAINING WALL #1 PROFILE

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 5'



RETAINING WALL #2 PROFILE

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 5'



RETAINING WALL #1 - SECTION 1 (APPROXIMATE STATION 0+32)

HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE: 1" = 5'

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Mark D. Long 4/29/12
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE

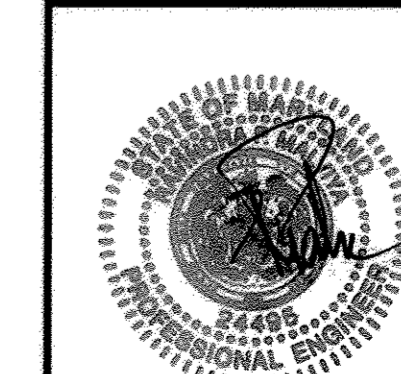
[Signature] 11/14/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Victor Shelebin 4/19/12
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

SDP-42
RW-2



GEO-TECHNOLOGY ASSOCIATES, INC.
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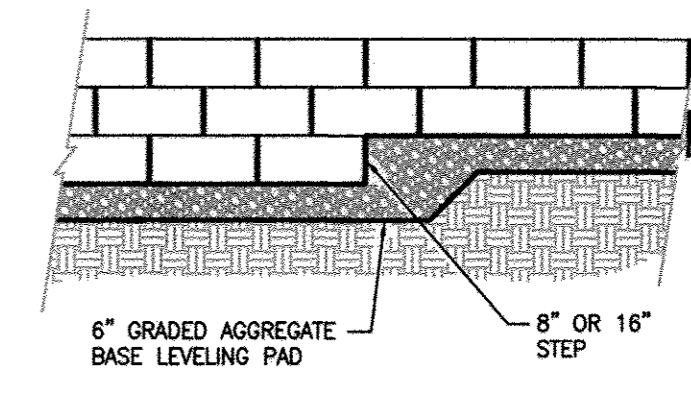
GRACE TECH PARK, PARCEL A
OFFICE BUILDING - (TARGETING L.E.D. SILVER)
SITE DEVELOPMENT PLAN
PROPOSED RETAINING WALLS
WALLS #1 AND #2
PROFILES AND WALL #1 TYPICAL SECTION

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING REC.
7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4088 ~ HOWARD COUNTY

MD PROFESSIONAL CERTIFICATION:

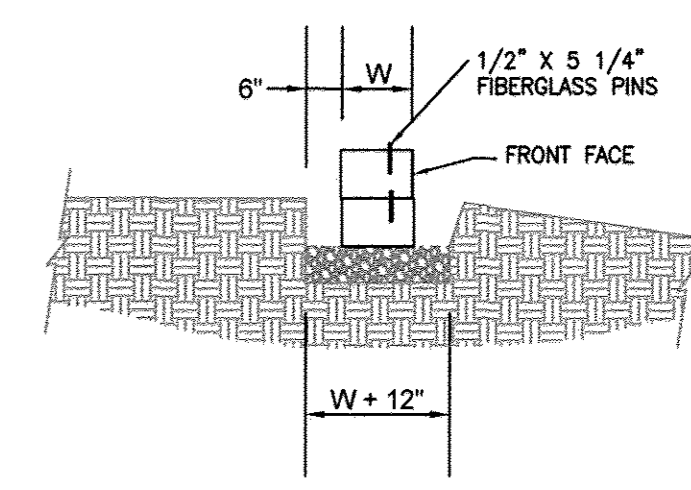
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		SCALE: AS SHOWN
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		DRAWN BY: JE
		DESIGN BY: ADM/BTD
		REVIEW BY: RFM
		SHEET: 42 OF 48

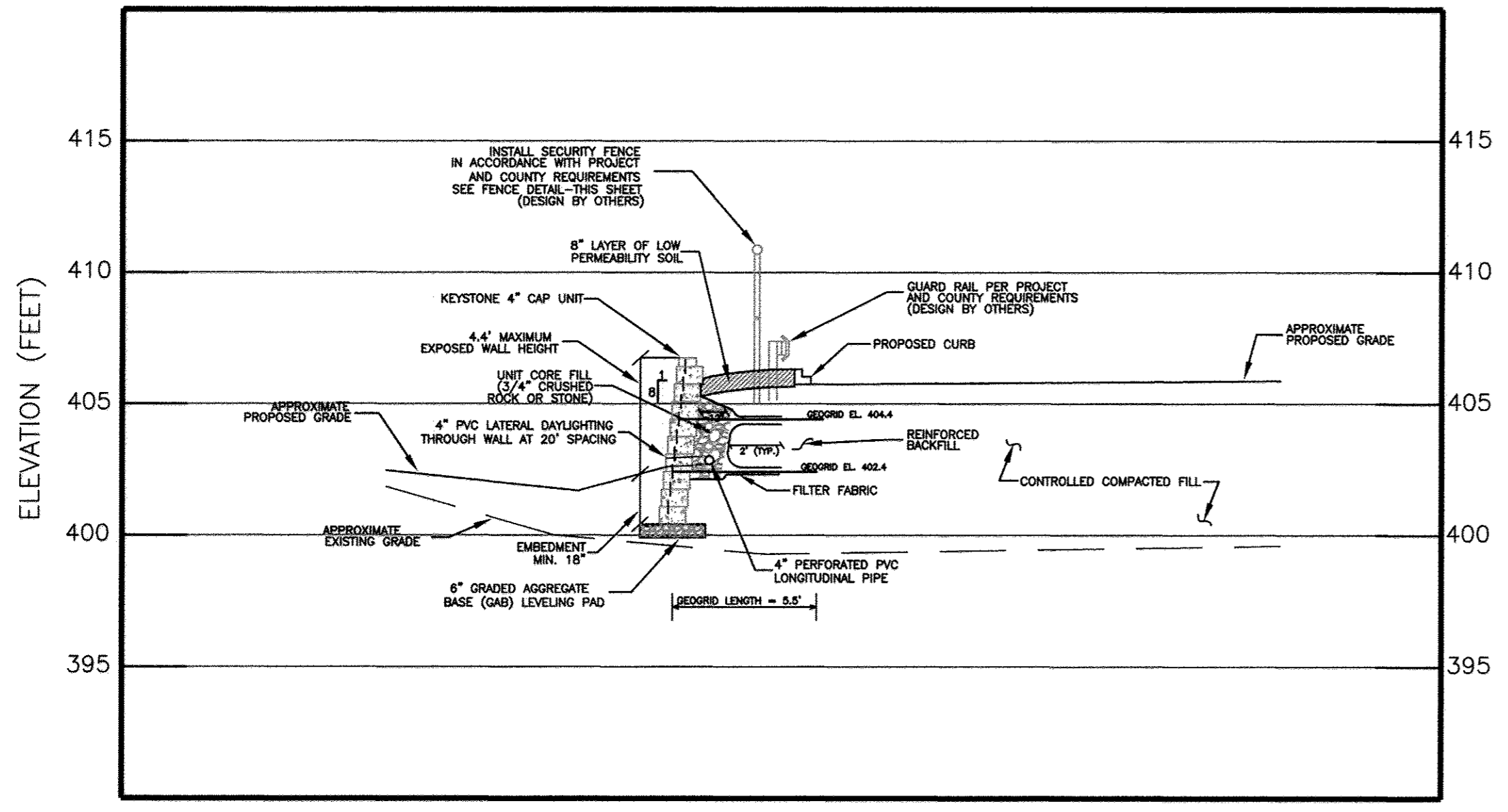


Elevation

Note:
1. The leveling pad is to be constructed of graded aggregate base.

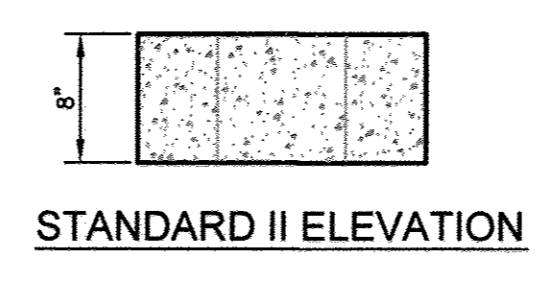


Section
Leveling Pad Detail

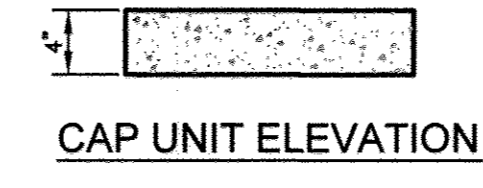


RETAINING WALL #2 - SECTION 1 (APPROXIMATE STATION 0+69)

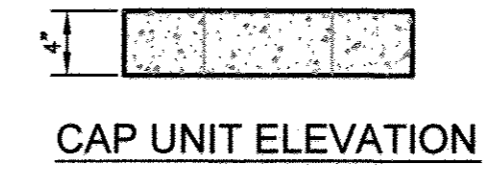
HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE: 1" = 5'



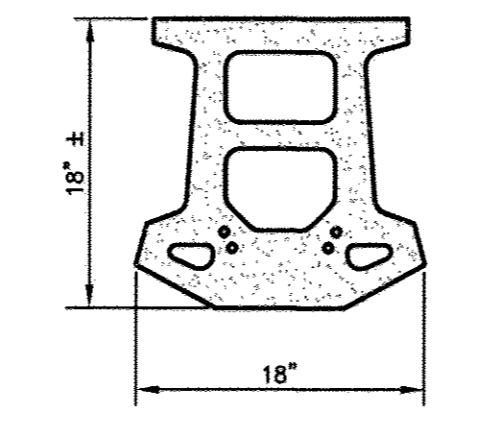
STANDARD II ELEVATION



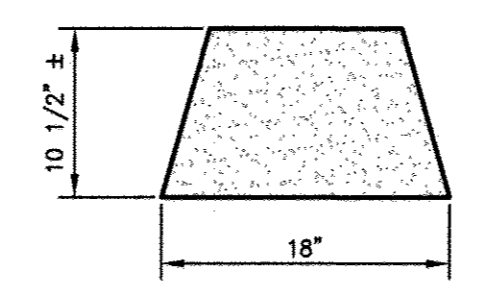
CAP UNIT ELEVATION



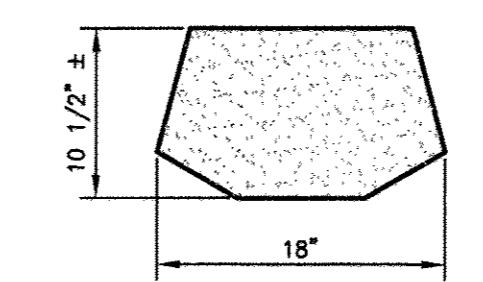
CAP UNIT ELEVATION



STANDARD II PLAN
STANDARD II UNIT



CAP UNIT PLAN
UNIVERSAL
CAP UNIT OPTION

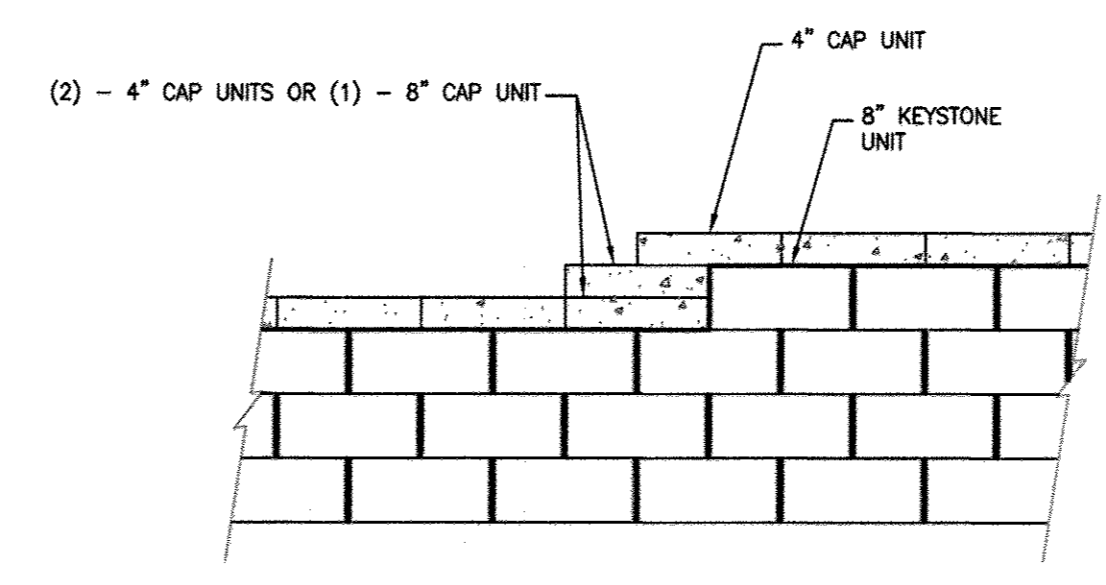


CAP UNIT PLAN
3-PLANE SPLIT
CAP UNIT OPTION

Base Leveling Pad Notes:

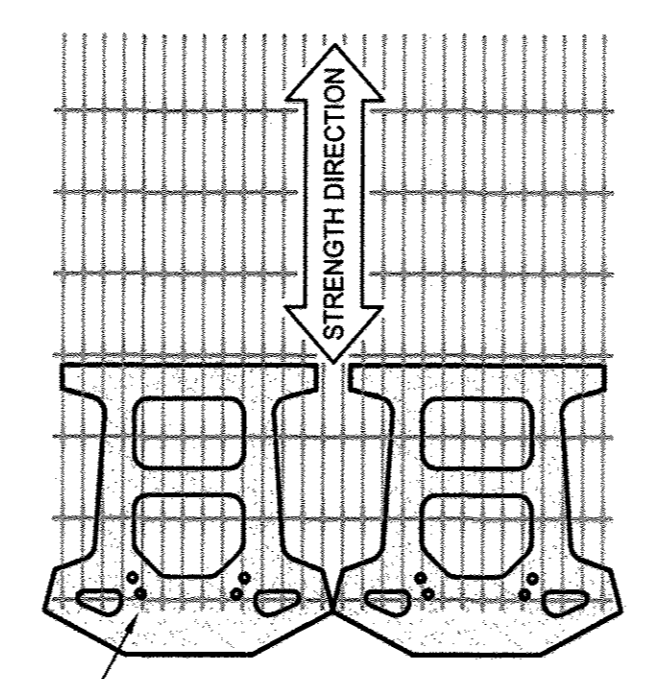
- The leveling pad is to be constructed of Graded Aggregate Base.
- The base foundation is to be approved by the site geotechnical engineer prior to placement of the leveling pad.

Standard Unit		Cap Unit	
Width:	18"	Width:	18"
Depth:	18"	Depth:	10 1/2"
Height:	8"	Height:	4"
Weight:	108 lbs	Weight:	50 lbs

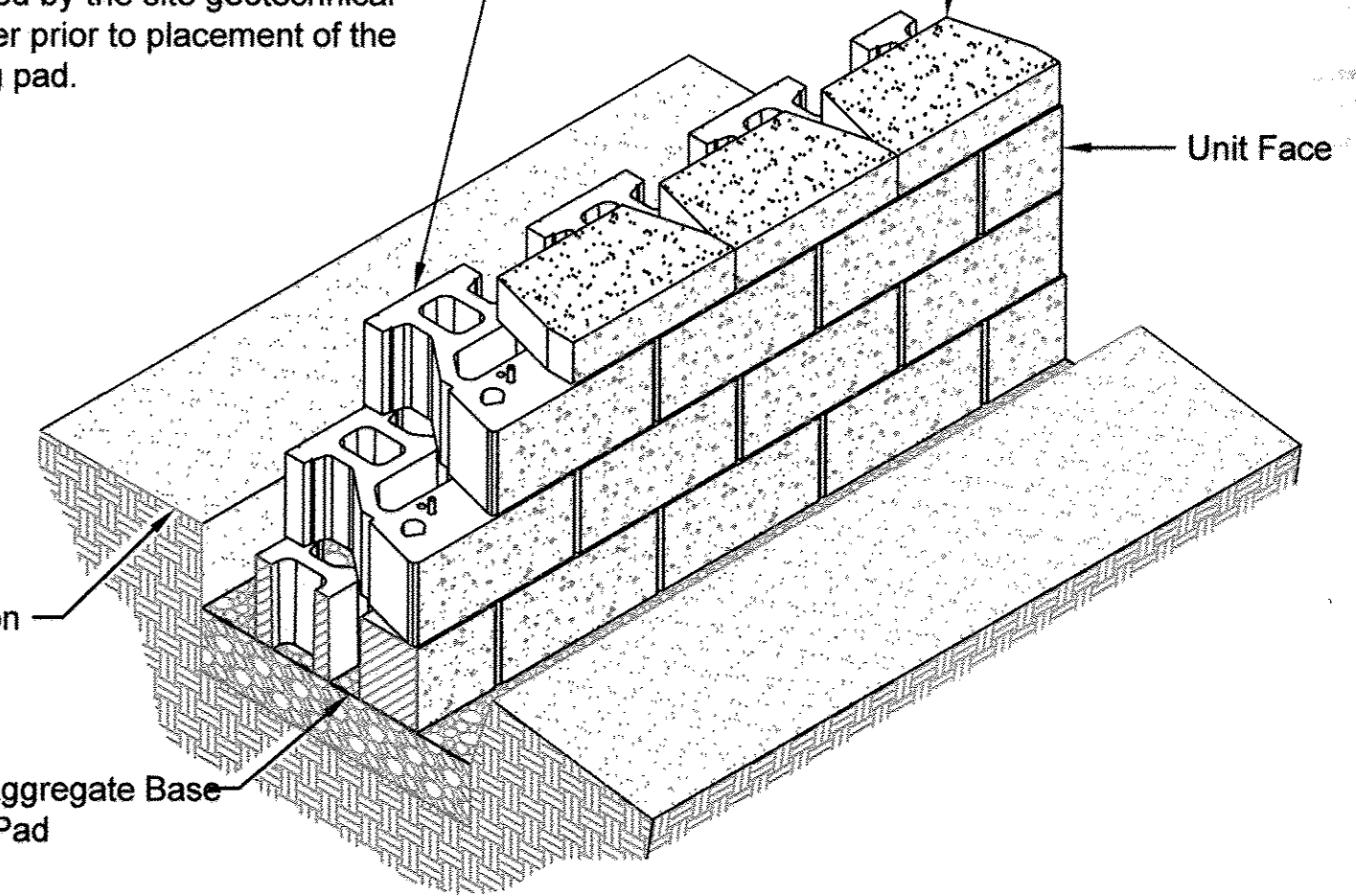


Top of Wall Steps

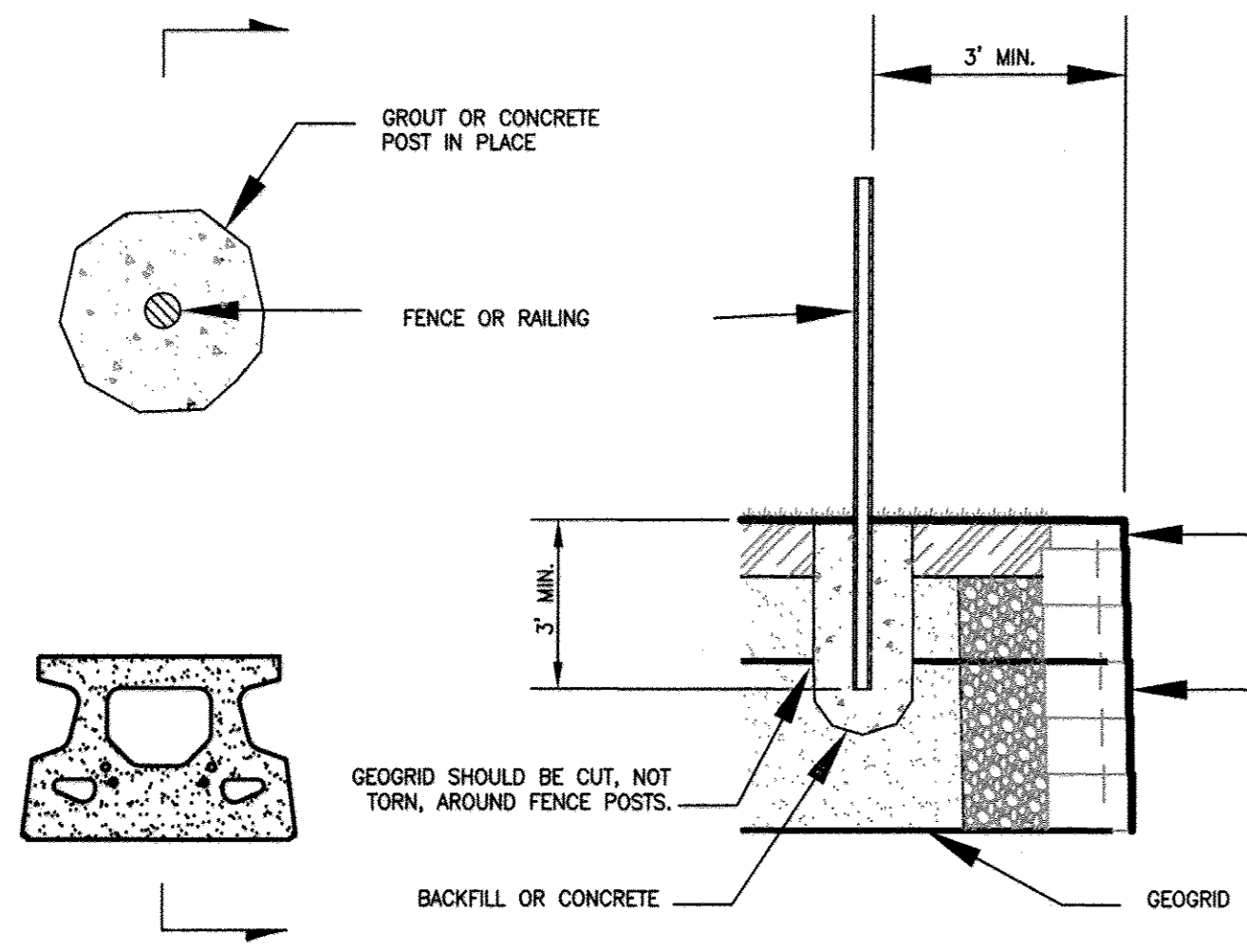
Note:
1. Secure all cap units with Keystone Kapseal or equal.



GRID & PIN CONNECTION
NOT TO SCALE



Standard Unit/Base Pad Isometric Section View
NOT TO SCALE

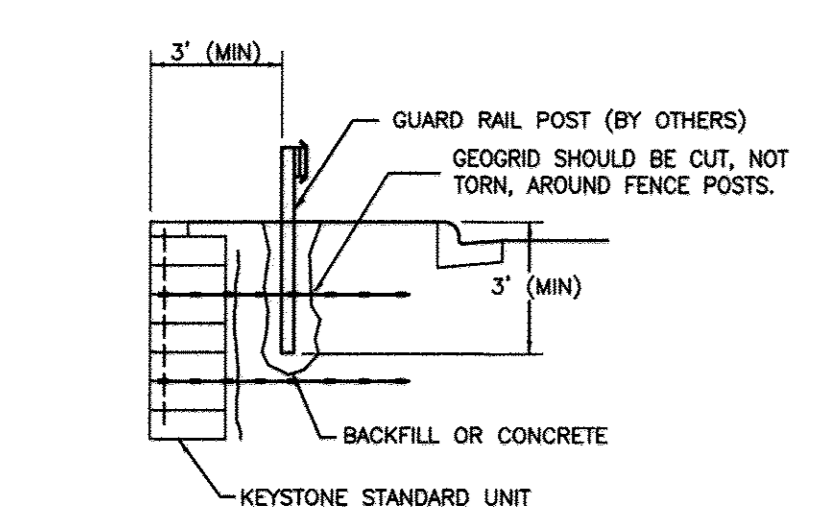


Fence Plan Detail

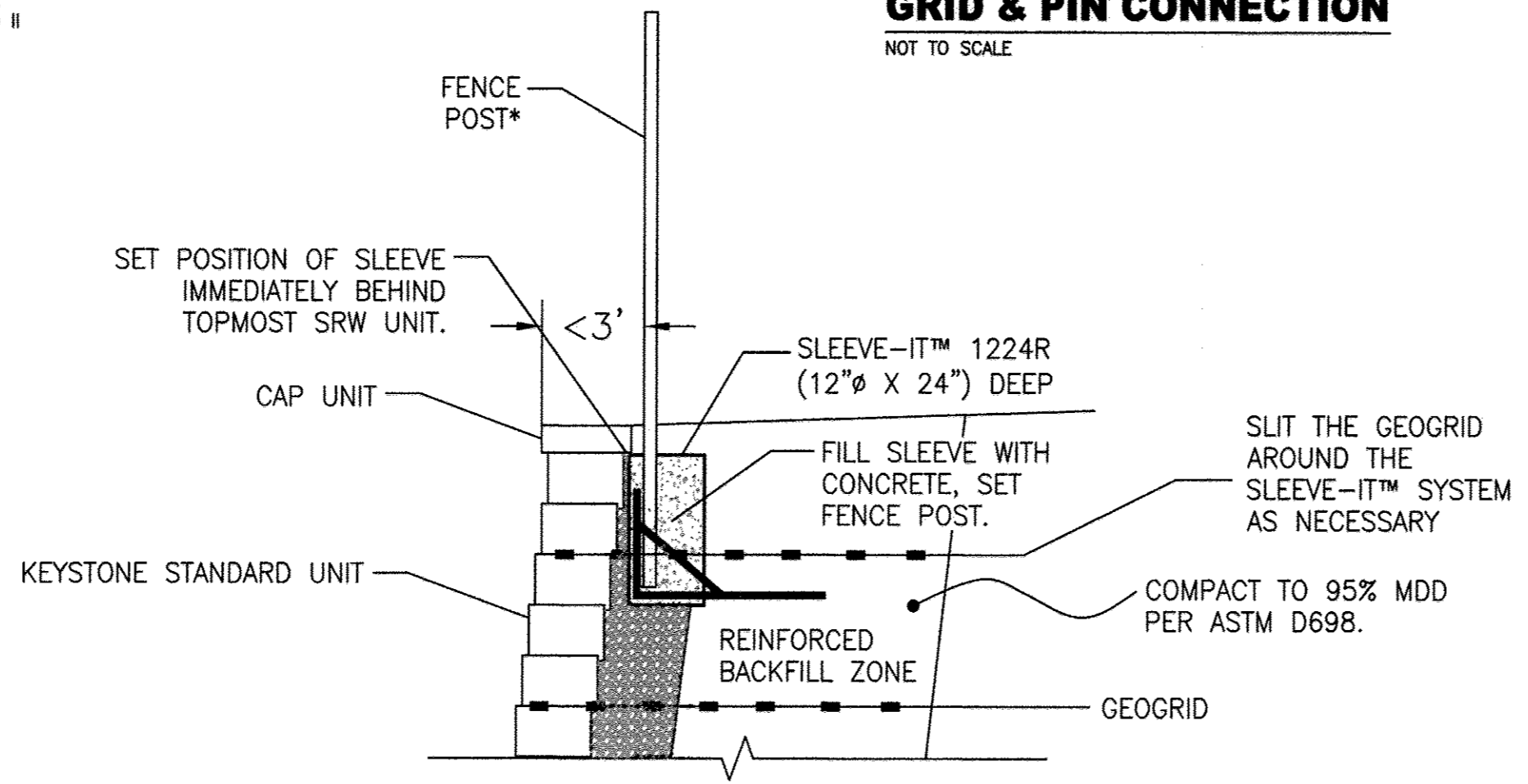
Rail/Fence Typical Detail

NOTE: Fence should be layed out to block entry to the top of the wall from both ends.

Fence Section Detail
Standard II Unit - 1" Setback

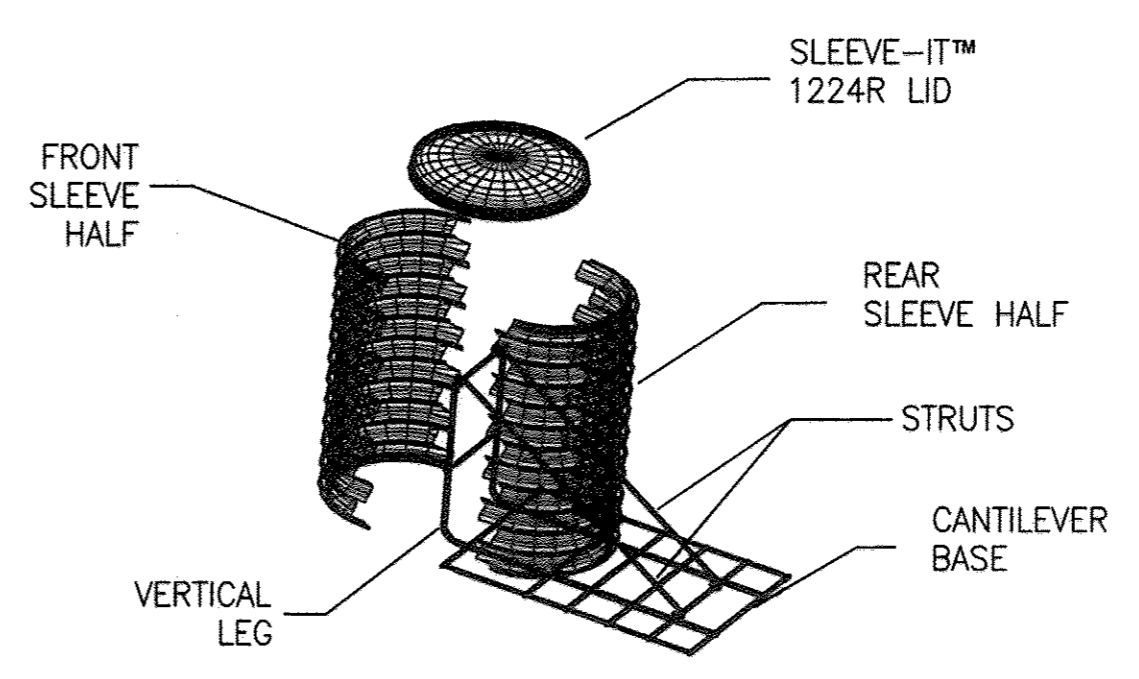


TYPICAL GUARD RAIL DETAIL



ALTERNATE FENCE DETAIL
NOT TO SCALE

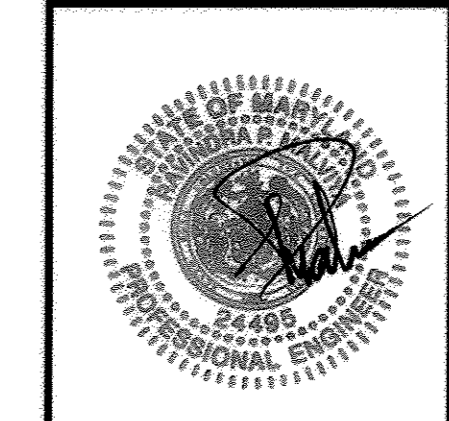
*FENCING SYSTEMS APPROVED FOR USE WITH THE SLEEVE-IT™ 1224R ARE LIMITED TO THE FOLLOWING HEIGHTS: CHAIN LINK - UP TO 8-FT, PRIVACY - UP TO 6-FT (WOODEN, PVC, METAL). POST SIZE 4"x4" MAX.



APPROVED: DEPARTMENT OF PLANNING AND ZONING
March J. Loyth
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING 4/29/12 DATE
[Signature]
 CHIEF, DEVELOPMENT ENGINEERING DIVISION 4/16/12 DATE
[Signature]
 CHIEF, DIVISION OF LAND DEVELOPMENT 4/19/12 DATE



GEO-TECHNOLOGY ASSOCIATES, INC.
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
 14280 PARK CENTER DRIVE, SUITE A
 LAUREL, MARYLAND 20707
 (410) 792-9792 or (301) 776-1690
 FAX: (410) 792-7395
 WWW.MRAGTA.COM

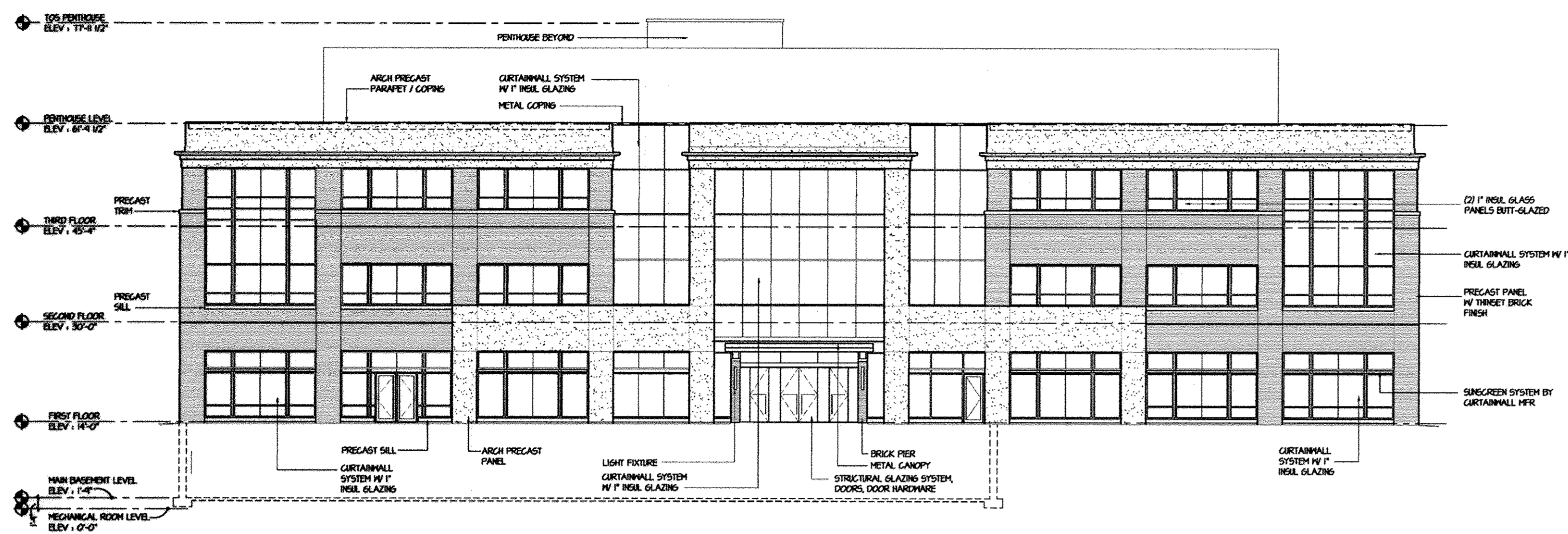


GRACE TECH PARK, PARCEL A
 OFFICE BUILDING - (TARGETING I.E.E.D. SILVER)
 SITE DEVELOPMENT PLAN
 PROPOSED RETAINING WALLS
 RETAINING WALL #2 TYPICAL SECTION
 AND TYPICAL DETAILS
 TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 188
 MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
 7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

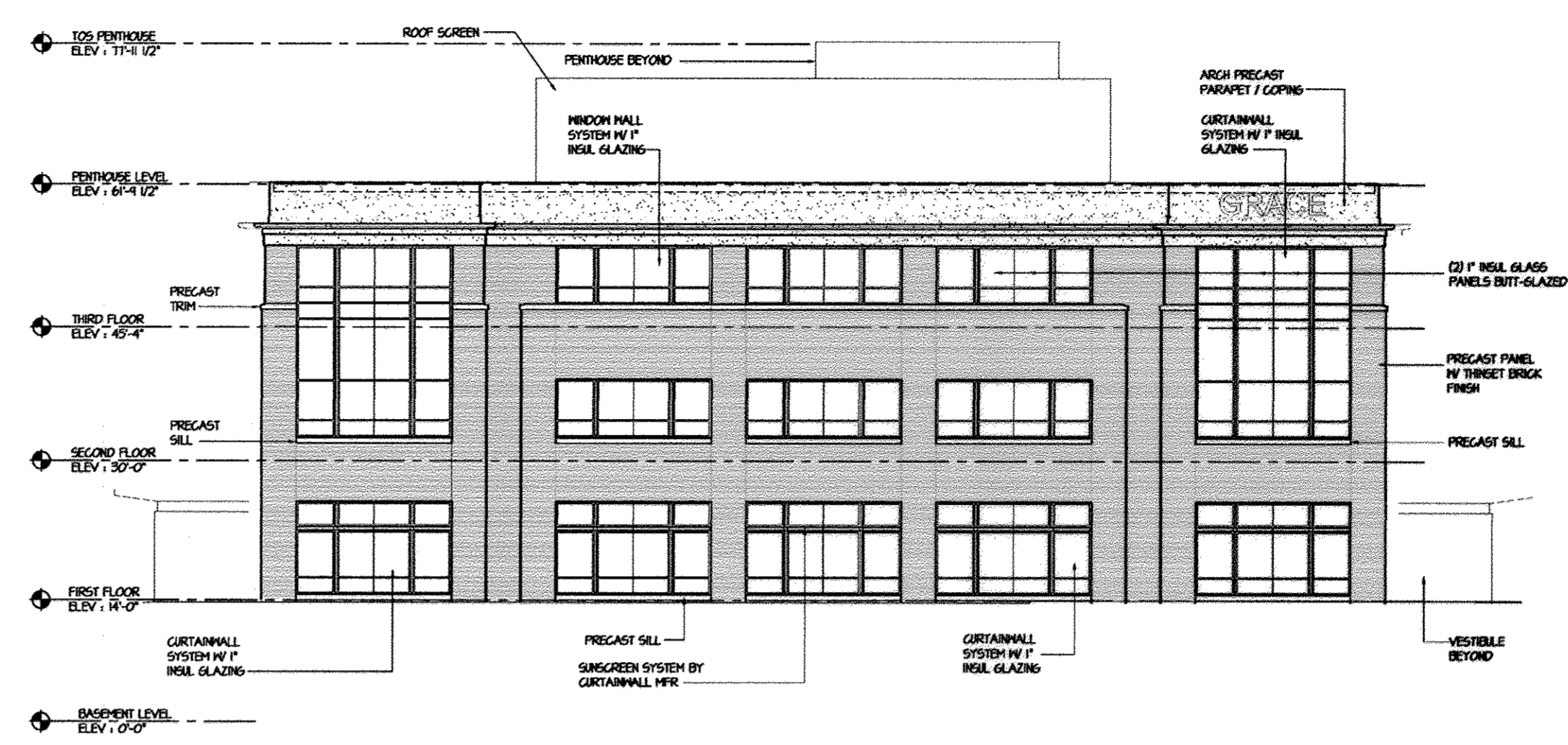
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		DATE: 12/7/11
		DRAWN BY: JE
		DESIGN BY: ADM/BTD
		REVIEW BY: RPM
		SHEET: 43 OF 48

MD 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. 24495, EXPIRATION DATE: 10/30/13.

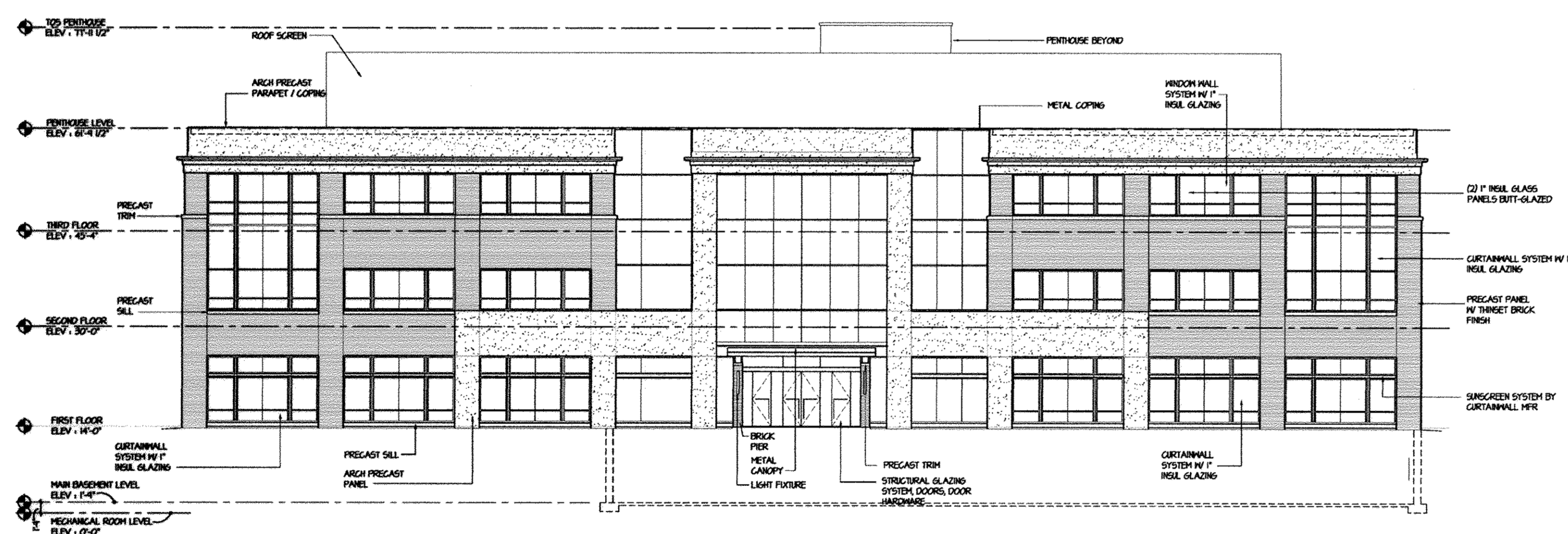
SDP-43
RW-3



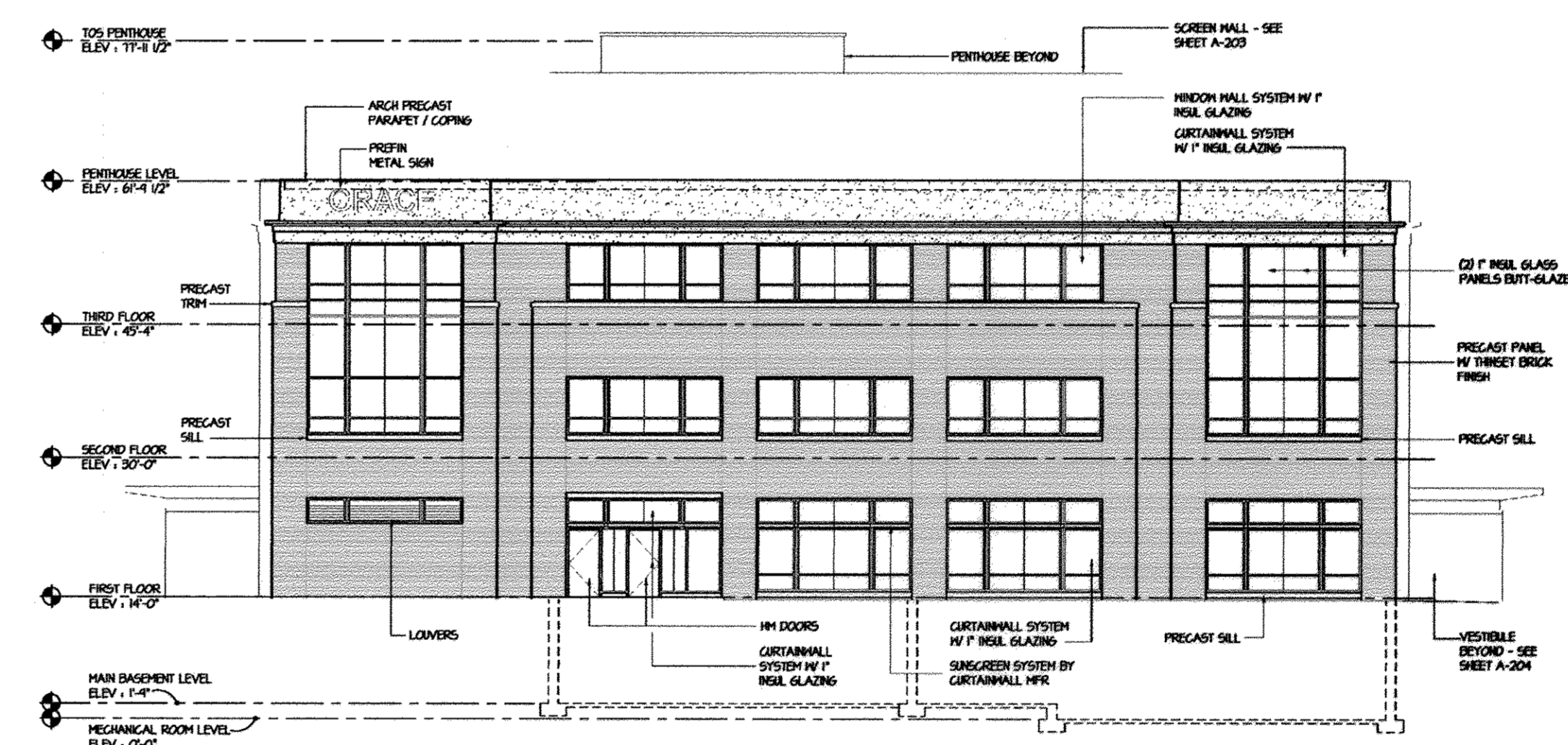
NORTHEAST BUILDING ELEVATION



NORTHWEST BUILDING ELEVATION



SOUTHWEST BUILDING ELEVATION



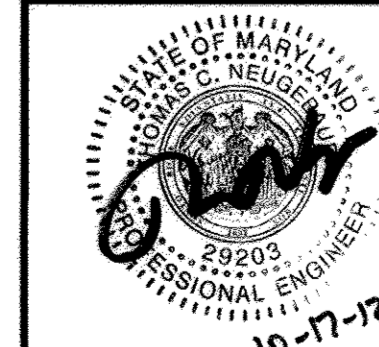
SOUTHEAST BUILDING ELEVATION

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Masha M. Coughlin 1/29/12
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE
Mark D. ... 1/14/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Scott ... 1/19/12
 CHIEF, DIVISION & LAND DEVELOPMENT DATE

OWNER / APPLICANT / DEVELOPER:

ADDRESS: GRACE
 7500 GRACE DRIVE
 COLUMBIA, MARYLAND 21044
 CONTACT: MR. NIZAM USTA
 PHONE: 617-277-2145



MD PROFESSIONAL ENGINEER 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. 29203, EXPIRATION DATE: 06/16/2015.

MORRIS & RITCHIE ASSOCIATES, INC.
 ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
 14280 PARK CENTER DRIVE
 LAUREL, MD 20707
 (410) 792-9792 / (301) 776-1690
 FAX: (410) 792-7395
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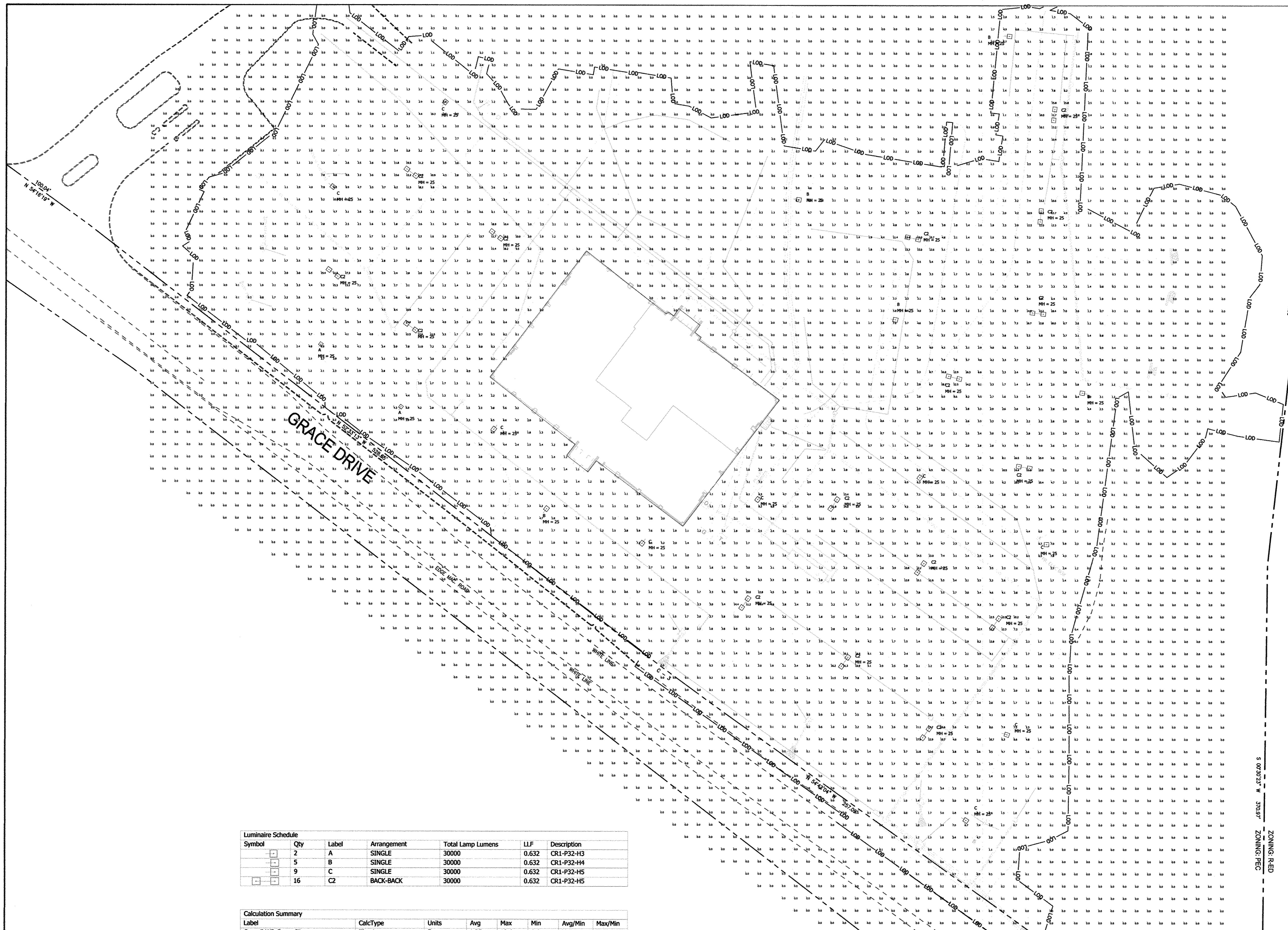
GRACE TECH PARK, PARCEL A
 OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
 SITE DEVELOPMENT PLAN
 BUILDING ELEVATIONS

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
 MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
 7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: 1/16"=1'-0"
		DATE: 10/16/2012
		DRAWN BY: RAH
		DESIGN BY: MK
		REVIEW BY: TON
		SHEET: 44 OF 48

SHEET: SDP-44

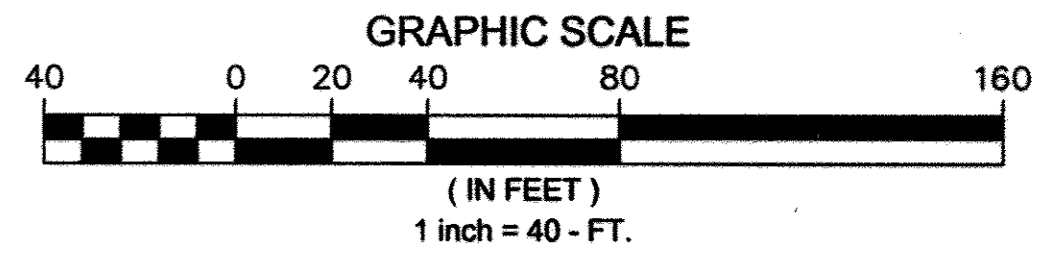
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 1:1 Copyright 2012 Morris & Ritchie Associates, Inc.



Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description
□	2	A	SINGLE	30000	0.632	CR1-P32-H3
□	5	B	SINGLE	30000	0.632	CR1-P32-H4
□	9	C	SINGLE	30000	0.632	CR1-P32-H5
□	16	C2	BACK-BACK	30000	0.632	CR1-P32-H5

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Overall WR Grace Site	Illuminance	Fc	1.25	19.6	0.0	N/A	N/A
WR Grace Site Paved Area	Illuminance	Fc	3.53	19.6	0.1	35.30	196.00

NOTE:
THIS PLAN IS AN EXHIBIT TO SHOW THE LUMENS THAT WILL RESULT FROM THE PROPOSED SITE LIGHTING. IT IS NOT TO BE USED FOR CONSTRUCTION & THEREFORE DOES NOT REQUIRE AN ENGINEER'S SEAL.

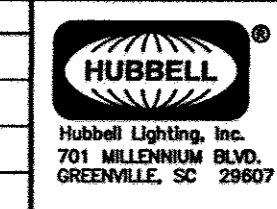


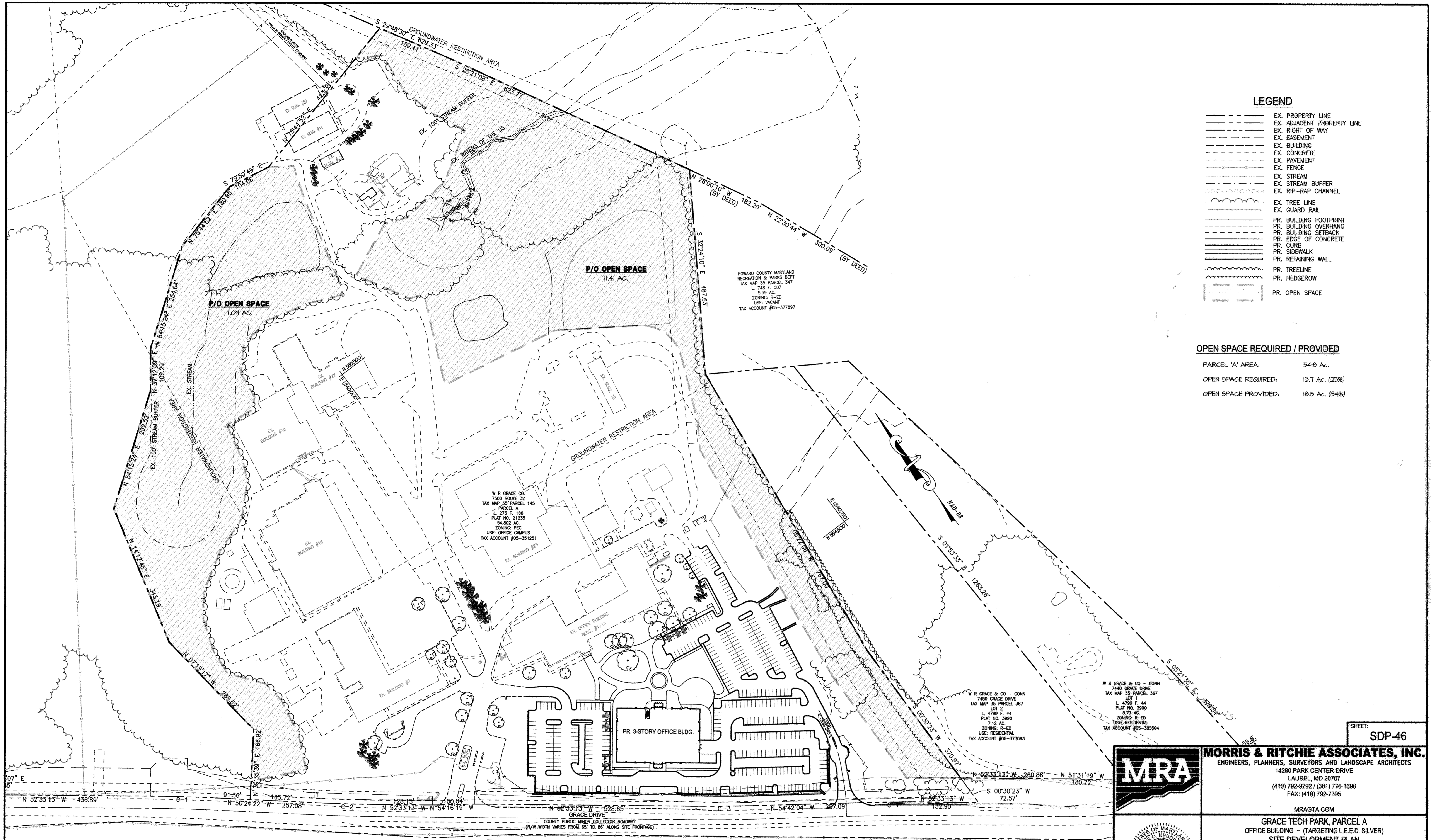
SDP-45

APPROVED: DEPARTMENT OF PLANNING AND ZONING
David M. Leight 11/29/12
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE
John P. ... 11/14/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Ken ... 11/19/12
 CHIEF, DIVISION & LAND DEVELOPMENT DATE

1. THIS LIGHTING DESIGN IS BASED ON LIMITED INFORMATION SUPPLIED BY OTHERS TO HUBBELL LIGHTING. SITE DETAILS PROVIDED HEREON ARE REPRODUCED ONLY AS A VISUALIZATION AND FIELD DEVIATIONS MAY SIGNIFICANTLY AFFECT PREDICTED PERFORMANCE. PRIOR TO INSTALLATION, CRITICAL SITE INFORMATION (POLE LOCATIONS, ORIENTATION, MOUNTING HEIGHT, ETC.) SHOULD BE COORDINATED WITH THE CONTRACTOR AND/OR SPECIFIC RESPONSIBLE FOR THE PROJECT.
 2. LUMINAIRE DATA IS TESTED TO INDUSTRY STANDARDS UNDER LABORATORY CONDITIONS. OPERATING VOLTAGE AND NORMAL MANUFACTURING TOLERANCES OF LAMP, BALLAST, AND LUMINAIRE MAY AFFECT FIELD RESULTS.
 3. CONFORMANCE TO FACILITY CODE AND OTHER LOCAL REQUIREMENTS IS THE RESPONSIBILITY OF THE OWNER AND/OR THE OWNER'S REPRESENTATIVE.

TITLE: WR GRACE HEADQUARTERS PARKING LOT LIGHTING LED OPTION		REVISED FROM DRAWING NUMBER(S):	DN BY: DHK	DATE: 02/01/12	CHK BY: N/A
			REV BY:	DATE:	SCALE: AS NOTED
			QUOTE: N/A	DRAWING / DESIGN NO.:	1257326C





LEGEND

- EX. PROPERTY LINE
- EX. ADJACENT PROPERTY LINE
- EX. RIGHT OF WAY
- EX. EASEMENT
- EX. BUILDING
- EX. CONCRETE
- EX. PAVEMENT
- EX. FENCE
- EX. STREAM
- EX. STREAM BUFFER
- EX. RIP-RAP CHANNEL
- EX. TREE LINE
- EX. GUARD RAIL
- PR. BUILDING FOOTPRINT
- PR. BUILDING OVERHANG
- PR. BUILDING SETBACK
- PR. EDGE OF CONCRETE
- PR. CURB
- PR. SIDEWALK
- PR. RETAINING WALL
- PR. TREELINE
- PR. HEDGEROW
- PR. OPEN SPACE

OPEN SPACE REQUIRED / PROVIDED

PARCEL 'A' AREA: 54.8 AC.
 OPEN SPACE REQUIRED: 13.7 AC. (25%)
 OPEN SPACE PROVIDED: 18.5 AC. (34%)

HOWARD COUNTY MARYLAND
 RECREATION & PARKS DEPT
 TAX MAP 35 PARCEL 347
 L. 748 F. 507
 5.59 AC.
 ZONING: R-ED
 USE: VACANT
 TAX ACCOUNT #05-377897

W R GRACE CO.
 7500 ROUTE 32
 TAX MAP 35 PARCEL 145
 PARCEL A
 L. 273 F. 186
 PLAT NO. 21235
 54.802 AC.
 ZONING: PE-ED
 USE: OFFICE CAMPUS
 TAX ACCOUNT #05-351251

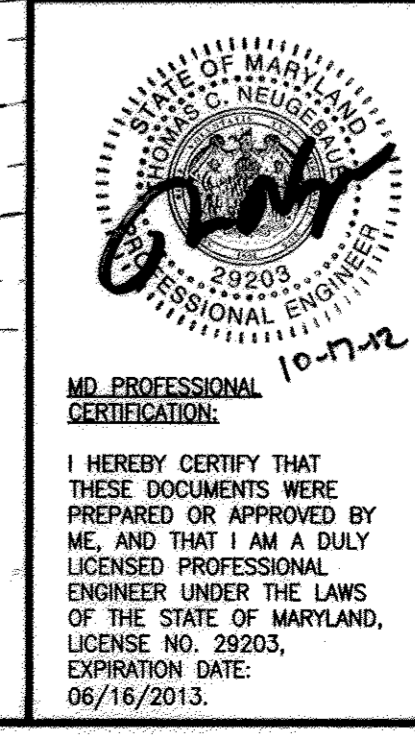
W R GRACE & CO - CONN
 7450 GRACE DRIVE
 TAX MAP 35 PARCEL 367
 LOT 1
 L. 4789 F. 44
 PLAT NO. 3990
 5.77 AC.
 ZONING: R-ED
 USE: RESIDENTIAL
 TAX ACCOUNT #05-385504

W R GRACE & CO - CONN
 7440 GRACE DRIVE
 TAX MAP 35 PARCEL 367
 LOT 1
 L. 4789 F. 44
 PLAT NO. 3990
 5.77 AC.
 ZONING: R-ED
 USE: RESIDENTIAL
 TAX ACCOUNT #05-385504

SHEET: SDP-46



MORRIS & RITCHIE ASSOCIATES, INC.
 ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
 14280 PARK CENTER DRIVE
 LAUREL, MD 20707
 (410) 792-9792 / (301) 776-1690
 FAX: (410) 792-7395
 MRAGTA.COM



GRACE TECH PARK, PARCEL A
 OFFICE BUILDING ~ (TARGETING L.E.E.D. SILVER)
 SITE DEVELOPMENT PLAN
 OPEN SPACE REQUIRED / PROVIDED

TAX MAP 35 ~ GRID 21 & 22 ~ PART OF PARCEL 145 ~ LIBER 273 ~ FOLIO 186
 MDR PLAT No. 21235 & 21236 ~ TAX ASSESSMENT DISTRICT 05 ~ ZONING PEC
 7500 GRACE DRIVE, COLUMBIA, MARYLAND 21044-4098 ~ HOWARD COUNTY

DATE	REVISIONS	JOB NO.:
		12039
		SCALE: 1" = 100'
		DATE: 10/16/2012
		DRAWN BY: RAH
		DESIGN BY: RAH
		REVIEW BY: CMG
		SHEET: 46 OF 48

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Frank A. Coughlin 11/29/12
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE
Michael Williams 11/14/12
 CHIEF, DEVELOPMENT ENGINEERING DIVISION W&R DATE
Kat Steinhilber 11/19/12
 CHIEF, DIVISION & LAND DEVELOPMENT DATE

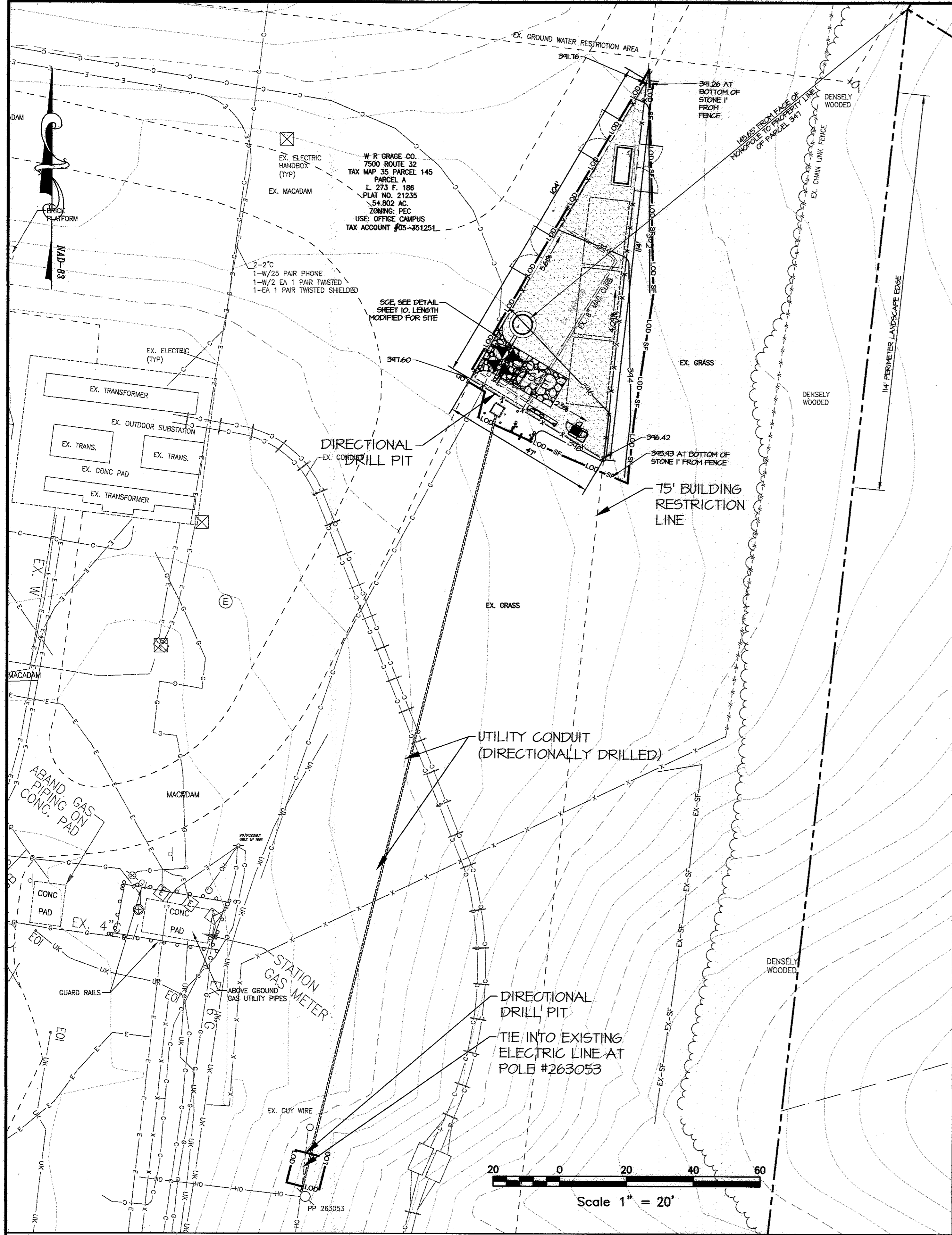
MD RT. 32 - WB
 STATE PUBLIC PRINCIPAL ARTERIAL ROADWAY
 (R/W WIDTH VARIES FROM 332' TO 584' ALONG SITE FRONTAGE)

MD RT. 32 - EB

PLAN VIEW
 SCALE: 1"=100'

OWNER / APPLICANT / DEVELOPER:
 ADDRESS: GRACE
 7500 GRACE DRIVE
 COLUMBIA, MARYLAND 21044
 CONTACT: MR. NIZAM USTA
 PHONE: 617-277-2145

P:\PROJ\12039 GRACE\PLANS\UDA_SDP_PLOT\Plan_Sets\12039-SDP-46-OPENSPACE.dwg, 10/17/2012 10:21:24 AM, Rihol,
 1:1, Copyright 2012, Morris & Ritchie Associates, Inc.



VERIZON CELL TOWER - LOCATION PLAN
SCALE: 1" = 20'

GENERAL NOTES

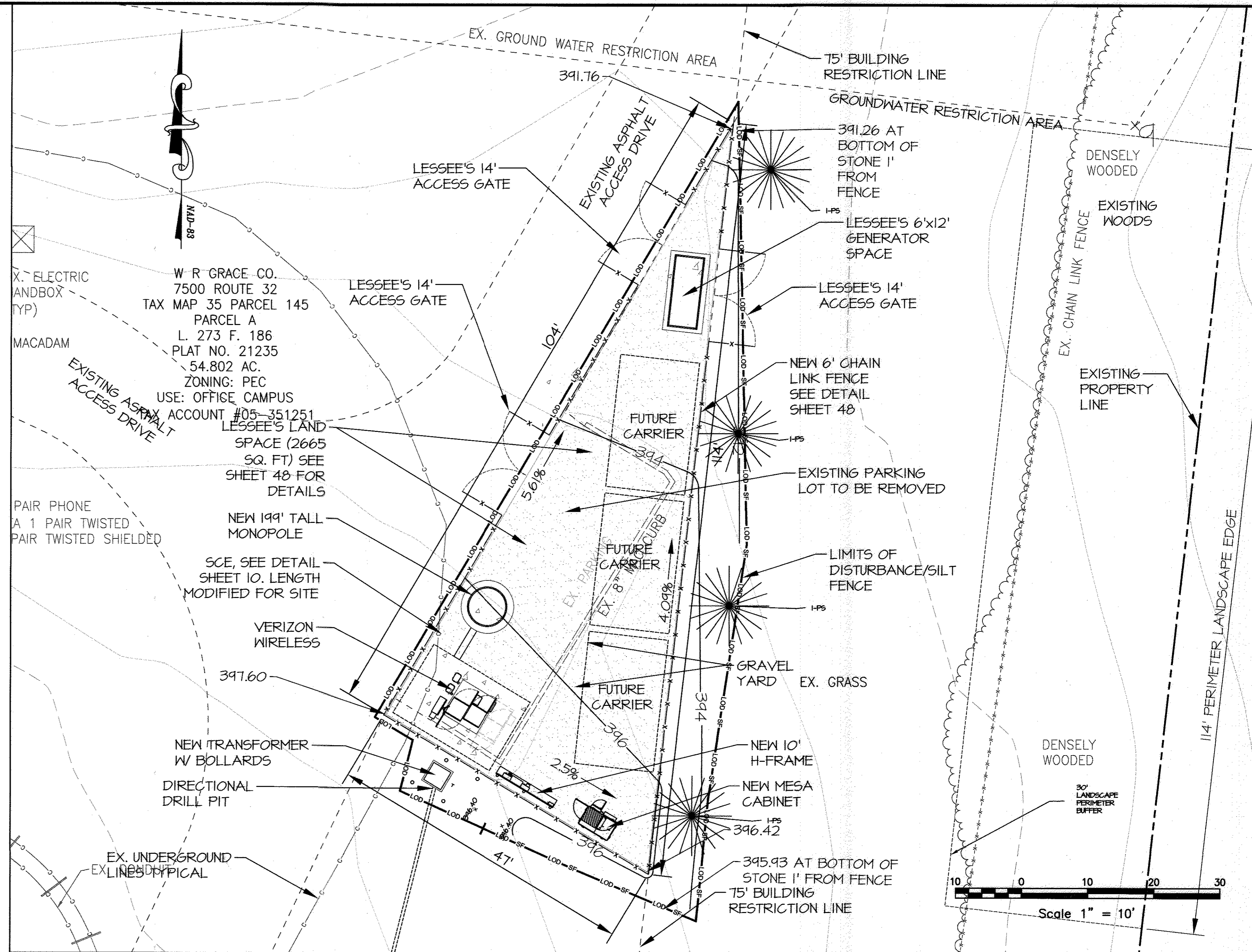
- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM A FIELD RUN SURVEY WITH 2 FOOT CONTOUR INTERVALS PREPARED BY MORRIS AND RITCHE ASSOCIATES, INC. IN JUNE 2017 AND SUPPLEMENTED WITH HOWARD COUNTY GIS TOPOGRAPHY.
- THE EXISTING BOUNDARY IS TAKEN FROM A FIELD RUN SURVEY PREPARED BY MORRIS AND RITCHE ASSOCIATES, INC. IN NOVEMBER 2009.
- THE EXISTING UTILITIES LOCATED ON THE PLAN WERE FIELD LOCATED BY A.I. DATA IN MAY 2013.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-256-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- A COMMUNICATION TOWER IS AN ALLOWED USE IN THE PEC ZONE. THIS PLAN COMPLIES WITH SECTION 128.0.E OF THE HOWARD COUNTY ZONING REGULATIONS.
- A MINIMUM DISTANCE FROM AN ADJACENT RESIDENTIAL DISTRICT MUST BE EQUAL TO HALF THE TOWER HEIGHT (INCLUDING ANTENNAS) MEASURED FROM GROUND LEVEL, WITH A SETBACK FROM RESIDENTIAL PROPERTY PARCEL 367 OF 145.65' AS SHOWN. WE SATISFY THIS REQUIREMENT FOR A 195' TALL TOWER.
- A MINIMUM DISTANCE FROM PUBLIC RIGHTS-OF-WAY EQUAL TO 50 FEET OR 1/3 OF THE HEIGHT, WHICHEVER IS GREATER. THIS REDLINE SDP REVISION PROVIDES A SETBACK OF 886' FROM THE NEAREST RIGHT-OF-WAY.
- COMMUNICATION TOWERS SHALL BE GRAY OR SIMILAR COLOR THAT MINIMIZES VISIBILITY.
- NO SIGNALS OR LIGHTS SHALL BE PERMITTED ON TOWERS UNLESS REQUIRED BY THE FEDERAL COMMUNICATIONS COMMISSION OR THE FEDERAL AVIATION ADMINISTRATION.
- SHOULD THIS PROPOSED COMMUNICATION TOWER NO LONGER BE USED IT SHALL BE REMOVED FROM THE SITE WITHIN ONE YEAR OF THE DATE THAT THE USE CEASES.
- IN CONJUNCTION WITH SDP 84-255 SITE ANALYSIS NOTE #8 FOR REVISION #3, PROPOSED 1,300 SF OF DISTURBANCE. PROPOSED LIMITS OF DISTURBANCE FOR THIS PROJECT IS 3,660 SF. TOTAL LIMITS OF DISTURBANCE FOR BOTH PROJECTS IS 4,960 SF.
- THIS PROPOSED REDLINE REVISION IS TO REPLACE THE PREVIOUS POLE LOCATION SHOWN ON SDP 84-255 AS REVISION #6.

SEQUENCE OF CONSTRUCTION

- PHASE 1**
- INSTALL SEDIMENT CONTROLS, INCLUDING SILT FENCE AND STABILIZED CONSTRUCTION ENTRANCE.
- PHASE 2**
- COMPLETE GRADING REQUIRED FOR THE GRAVEL YARD AND EQUIPMENT PADS.
- PHASE 3**
- CONSTRUCT EQUIPMENT PADS AND INSTALL EQUIPMENT.
 - CONCURRENTLY, THE UTILITIES CAN BE DIRECTIONALLY DRILLED FROM POLE #263053
 - AFTER THE GRAVEL YARD AREA IS STABILIZED THE SEDIMENT CONTROLS CAN BE REMOVED.

FOREST CONSERVATION FOR REVISION #2

- NET TRACT AREA FOR FOREST CONSERVATION CALCULATIONS IS 3,660 SF. THE LIMITS OF DISTURBANCE FOR REVISION #2 WHICH IS THE CONSTRUCTION OF A NEW CELL TOWER.
- BASED ON 3,660 SF OF DISTURBANCE, THE TOTAL AFFORESTATION OBLIGATION WILL BE 0.01 ACRES. WE WILL MEET THIS FOREST CONSERVATION OBLIGATION WITH A \$326.70 FEE-IN-LIEU WHICH WILL BE PAID TO DPZ AT TIME OF FINAL MTLAR SUBMISSION FOR REVISION #2.



VERIZON CELL TOWER - LAYOUT AND UTILITY PLAN
SCALE: 1" = 10'

LEGEND

---	EX. PROPERTY LINE	---	EX. SANITARY LINE
---	EX. RIGHT-OF-WAY	---	EX. WATERLINE
---	EX. ADJACENT PROPERTY LINE	---	EX. GAS LINE
---	EX. EASEMENT	---	EX. UNDERGROUND ELECTRIC
---	EX. FLOODPLAIN	---	EX. UNDERGROUND CONDUIT
---	EX. NON-TIDAL WETLAND	---	EX. UNDERGROUND UNKNOWN UTILTY
---	EX. WETLAND BUFFER	---	EX. OVERHEAD ELECTRIC
---	EX. WATERS-OF-THE-US	---	EX. OVERHEAD ELECTRIC
---	EX. STREAM BUFFER	---	EX. OVERHEAD TELEPHONE
---	EX. FOREST CONSERVATION EASEMENT	---	EX. FIRE HYDRANT
---	EX. BUILDING	---	EX. WATER VALVE
---	EX. BUILDING OVERHANG	---	EX. WATER METER
---	EX. CURB	---	EX. MONITORING WELL
---	EX. PAVEMENT/EDGE OF GUTTER	---	EX. POWER POLE
---	EX. WALK	---	EX. LIGHT POLE
---	EX. WALL	---	EX. ZONING DVIDE
---	EX. CONCRETE	---	EX. 1' CONTOUR
---	EX. METAL FENCE	---	EX. 2' CONTOUR
---	EX. WOOD FENCE	---	EX. 10' CONTOUR
---	EX. GUARDRAIL	---	PR. LIMITS OF DISTURBANCE
---	EX. RAILROAD TRACK	---	PR. LIMITS OF DISTURBANCE/ SILT FENCE
---	EX. TREELINE	---	
---	EX. SHRUBLINE	---	
---	EX. SPECIMEN TREE	---	
---	EX. TREE	---	
---	EX. SHRUB	---	
---	EX. STORM DRAIN	---	

OWNER
W.R. GRACE & CO.
C/O NIZAM USTA
7500 GRACE DR
COLUMBIA MD 21044
410-531-4118

DEVELOPER APPLICANT
CALVERT CROSSLAND, LLC
C/O BARB FINEC
904 S BROADWAY
BALTIMORE MD 21231
410-827-4132

DEVELOPER'S/OWNER'S LANDSCAPE CERTIFICATE

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

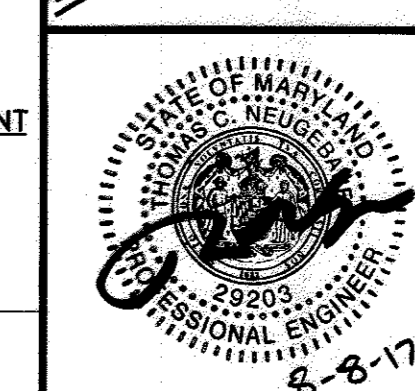
[Signature]
DEVELOPER'S/OWNER'S NAME

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 8-18-17
 CHIEF, DEVELOPMENT ENGINEERING DIVISION JF DATE
[Signature] 8-22-17
 CHIEF, DIVISION OF LAND DEVELOPMENT ES DATE
[Signature] 8-22-17
 DIRECTOR, DEPARTMENT OF PLANNING AND ZONING DATE

SHEET: **SD-47**



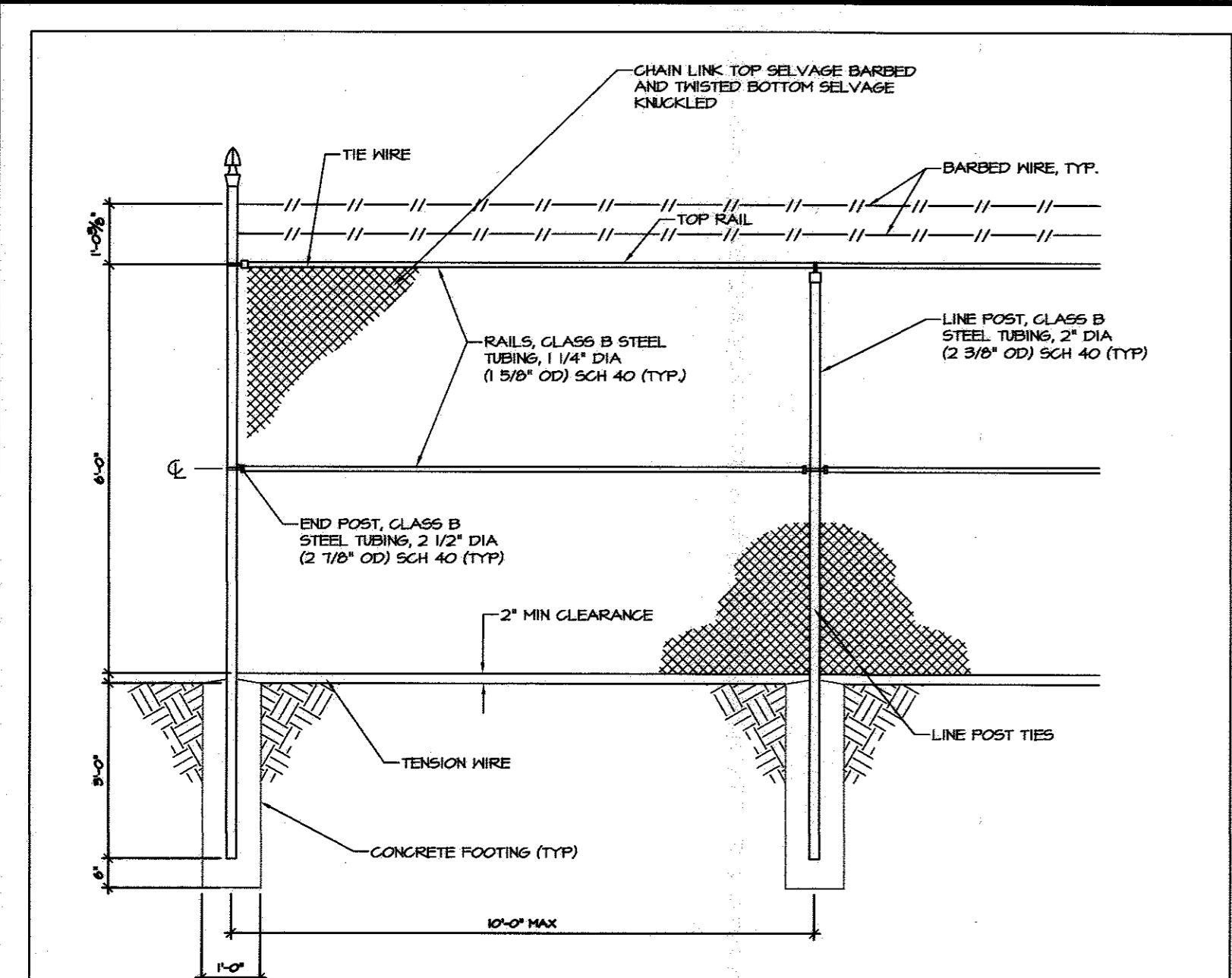
MORRIS & RITCHE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
14280 PARK CENTER DRIVE
LAUREL, MD 20707
(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395
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GRACE TECH PARK, PARCEL A
CELL TOWER SITE PLAN
CALVERT CROSSLAND MONOPOLE - W.R. GRACE
TAX MAP 35 - GRID 22 - PART OF PARCEL 145 - LIBER 273 - FOLIO 186
TAX ASSESSMENT DISTRICT 05 - ZONING PEC
HOWARD COUNTY, MARYLAND

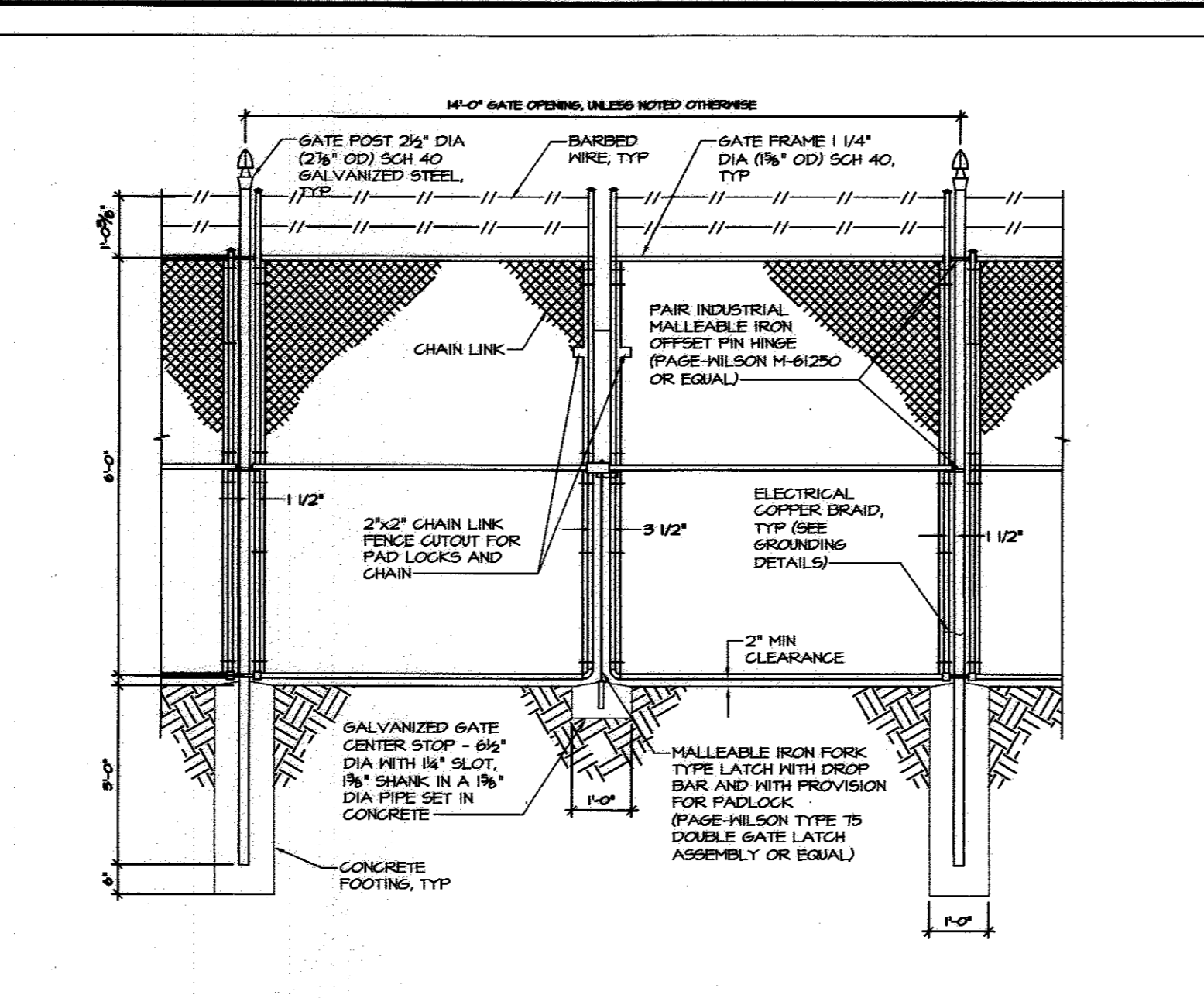
DATE	REVISIONS	JOB NO.:
08/07/17	ADDED SHEETS 47 AND 48 FOR MONOPOLE, CONCRETE PAD, CONNECTIONS, AND DETAILS	10427847
		SCALE: VARIES
		DATE: 8-7-17
		DRAWN BY: MAM
		DESIGN BY: MAM
		REVIEW BY: MM
		SHEET: 47 OF 48

MD 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. 23203, EXPIRATION DATE: 06/16/2019.



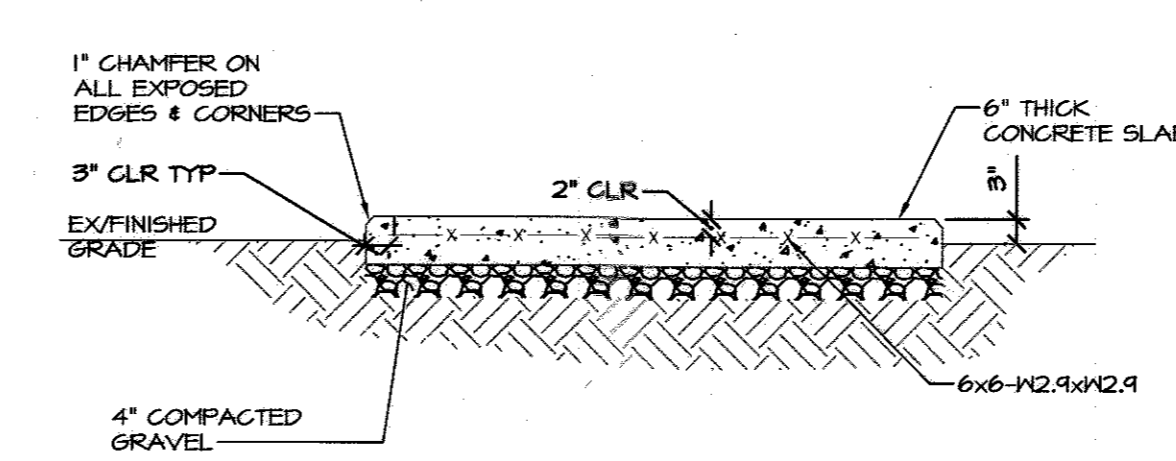
CHAIN LINK FENCE DETAIL
NOT TO SCALE

- TYPICAL NOVEN WIRE FENCE NOTES**
1. GATE POST, CORNER, TERMINAL OR FULL POST 2 1/2" DIA (2 7/8" OD) SCHEDULE 40 FOR GATE WIDTHS UP THRU 6 FEET OR 12 FEET FOR DOUBLE SWING GATE PER ASTM-F1003.
 2. LINE POST, 2" DIA (2 3/8" OD) SCHEDULE 40 PIPE PER ASTM-F1003.
 3. GATE FRAME, 1 1/4" DIA (1 5/8" OD) SCHEDULE 40 PIPE PER ASTM-F1003.
 4. TOP RAIL & BRACE RAIL, 1 1/4" DIA (1 5/8" OD) SCHEDULE 40 PIPE PER ASTM-F1003.
 5. FABRIC, 4 GA CORE WIRE SIZE, 2" MESH, CONFORMING TO ASTM-A912.
 6. TIE WIRE, MINIMUM 11 GA GALVANIZED STEEL AT POSTS AND RAILS, A SINGLE WRAP OF FABRIC TIE AND AT TENSION WIRE BY HOG RINGS SPACED MAX 24" INTERVALS.
 7. TENSION WIRE, 7 GA GALVANIZED STEEL.
 8. BARBED WIRE, DOUBLE STRAND 12-2 1/2" OD TWISTED WIRE TO MATCH WITH FABRIC, 14 GA, 4 PT BARBS SPACED ON APPROXIMATELY 4" CENTERS.
 9. GATE LATCH, 1-3/8" OD PLUNGER ROD WITH MUSHROOM TYPE CATCH AND LOCK, KEYED ALIKE FOR ALL SITES IN A GIVEN MTA.
 10. LOCAL ORDINANCE OF BARBED WIRE PERMIT REQUIREMENT SHALL BE COMPLIED WITH, IF REQUIRED.

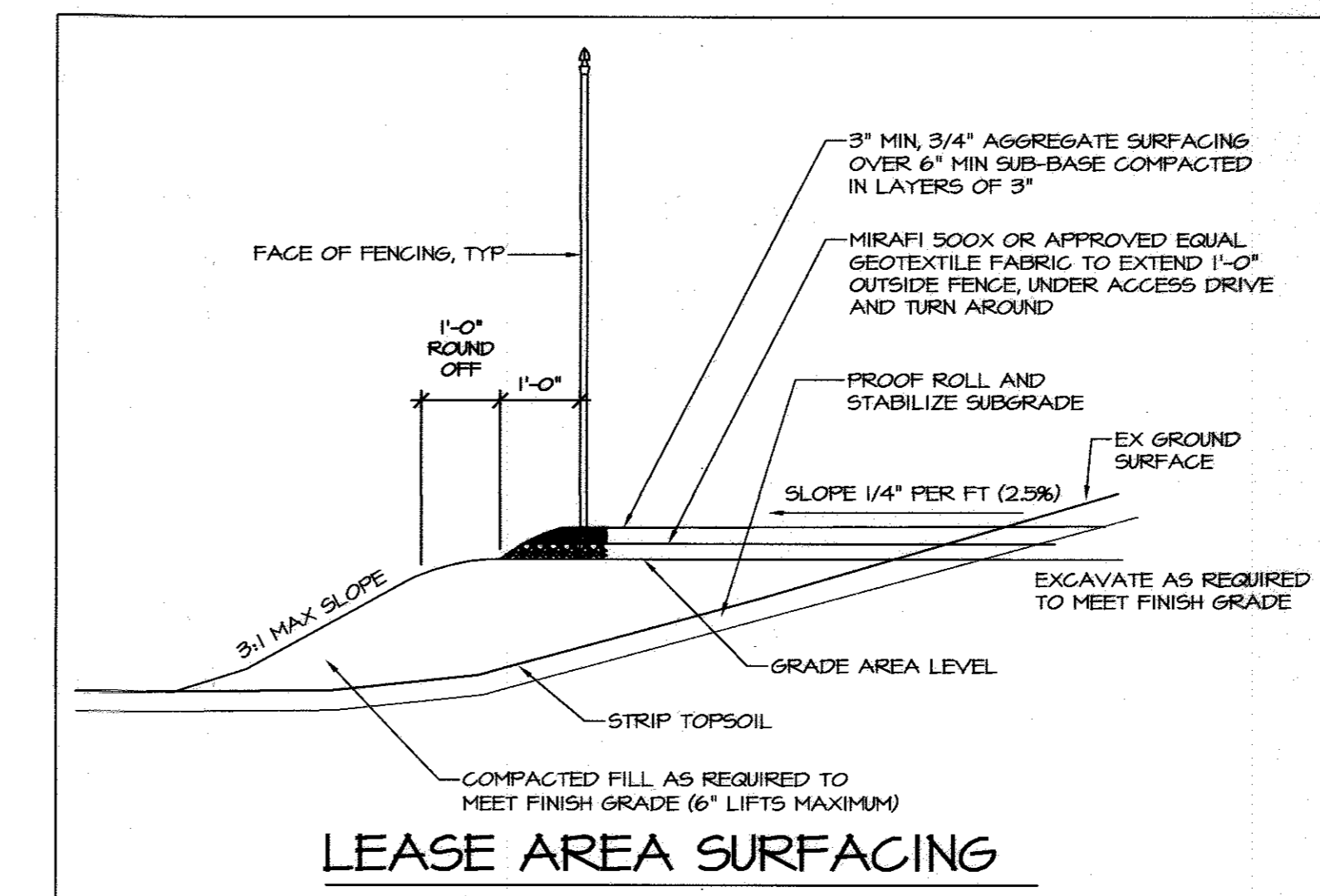


14' DOUBLE SWING GATE
NOT TO SCALE

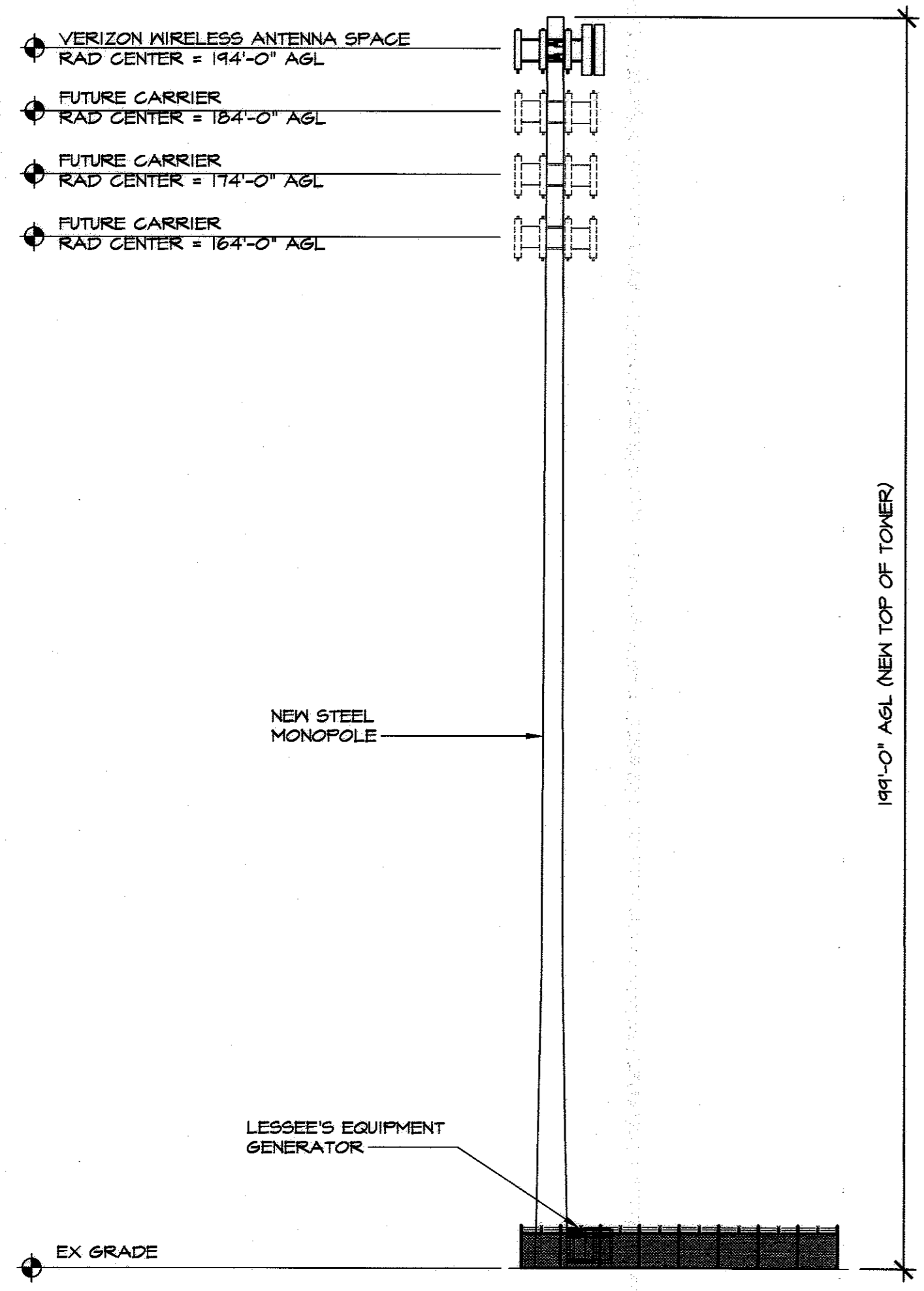
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 10. LOCAL ORDINANCE OF BARBED WIRE PERMIT REQUIREMENT SHALL BE COMPLIED WITH, IF REQUIRED.



CONCRETE EQUIPMENT PAD
SCALE: 1/2" = 1'-0"



- CONSTRUCTION NOTES:**
1. CLEAR AND GRUB THE LAND ALONG THE ACCESS DRIVE.
 2. REMOVE ALL EXISTING ORGANIC MATERIAL TO SUITABLE SUBGRADE.
 3. PLACE GEOTEXTILE FABRIC OVER SUBGRADE AND THEN PLACE AGGREGATE BASE.
 4. GRAVEL SUBBASE SPECIFICATION: MARYLAND DOT: SECTION 304 GRADED AGGREGATE BASE COURSE VIRGINIA DHT: SECTION 210 AGGREGATE BASE COURSE



TOWER ELEVATIONS
SCALE: 1" = 20'

LANDSCAPE PLANT LIST				
Evergreen Trees				
PS	4	<i>Pinus strobus</i> Eastern White Pine	6'-8' Tall	B & B As shown
See planting detail page 37 of plan set				

LANDSCAPE NOTES

- THESE NOTES IN ADDITION TO LANDSCAPE NOTES PREVIOUSLY PROVIDED ON SHEET 37 OF THIS PLAN SET
1. CONTRACTOR SHALL CONTACT "MISS UTILITY" & SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES WITHIN THE PROJECT PRIOR TO INSTALLATION.
 2. QUANTITIES SHOWN ON THE PLANT LIST ARE FOR THE CONTRACTOR'S CONVENIENCE ONLY AND ARE NOT GUARANTEED TO BE ACCURATE IN THE EVENT OF A DISCREPANCY BETWEEN QUANTITIES SHOWN ON THE PLAN AND QUANTITIES SHOWN IN THE PLANT LIST, THE QUANTITIES SHOWN ON THE PLAN SHALL APPLY.
- PLANT QUALITY ASSURANCE:**
1. ALL PLANT MATERIAL AND ROOT BALLS SHALL CONFORM TO THE STANDARDS OF NURSERY STOCK AND THE AMERICAN ASSOCIATION OF NURSERYMEN.
- TREE PLANTING SOIL:**
1. THE LANDSCAPE CONTRACTOR SHALL TEST THE SOIL FOR PH IN A MINIMUM OF THREE LOCATIONS FOR EACH SHRUB BED. A COPY OF THE TEST SHALL BE SUBMITTED TO THE LANDSCAPE ARCHITECT AND THE CLIENT PRIOR TO PLANTING.
- TREE PLANTING:**
1. BALLED AND BURLAPPED ROOTS - BURLAP TO BE LOOSENED AND SPREAD AWAY OR CUT FROM ENTIRE TOP OF PLANT BALL. FOLD DOWN WIRE BASKETS OR CUT TOP OF BASKET BELOW SOIL LEVEL. ROOTS OF BARE ROOT PLANTS SHALL BE SPREAD CAREFULLY IN NATURAL POSITION. AMENDED SOIL SHALL BE WORKED AROUND ROOTS.
 2. CONTAINER ROOTS - CONTAINERS SHALL BE REMOVED FROM ROOT MASS. LOOSEN THE FIBROUS ROOTS. AMENDED SOIL FOR ALL PLANTS SHALL BE LIGHTLY COMPRESSED TO ELIMINATE AIR POCKETS.
 3. FERTILIZER FOR TREES SHALL BE ADDED TO THE PLANTING SOIL PRIOR TO MIXING. FERTILIZER SHALL BE SLOW RELEASE PACKETS OR TABLETS TO BE ADDED DEPENDING ON PLANT SIZE AND GROWER'S RECOMMENDATIONS. THOROUGHLY MIX AMENDMENTS AND EXISTING SOIL PRIOR TO PLACEMENT.
 4. PACK SOIL MIX FIRMLY AROUND THE ROOTS TO ELIMINATE AIR POCKETS. WHEN HOLE IS 3/4 FULL WITH SOIL MIX, FLOOD THE HOLE WITH WATER. AFTER DRAINING, FILL HOLE TO THE SURFACE WITH SOIL.
- HOWARD COUNTY SPECIFIC LANDSCAPE NOTES**
1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.

SCHEDULE A PERIMETER LANDSCAPE EDGE PROPOSED MONOPOLE FACILITY NON-RESIDENTIAL USE TO NON-RESIDENTIAL USE	
CATEGORY	ADJACENT TO PERIMETER PROPERTIES
LANDSCAPE TYPE	A BUFFER
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	114 LF
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO
NUMBER OF PLANTS REQUIRED	2 (1:60)
SHADE TREE	0
EVERGREEN TREES	0
SHRUBS	0
NUMBER OF PLANTS PROVIDED	NONE
SHADE TREE	4
EVERGREEN TREES (2:1 SUBSTITUTION)	NONE
OTHER TREES (2:1 SUBSTITUTION)	NONE
SHRUBS (10:1 SUBSTITUTION)	NONE
(DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	

OWNER
W.R. GRACE & CO.
C/O MIZAM USTA
7500 GRACE DR
COLUMBIA MD 21044
410-531-4118

DEVELOPER APPLICANT
CALVERT CROSSLAND, LLC
C/O BARB PINEC
904 S BROADWAY
BALTIMORE MD 21231
410-827-4132

SEDIMENT CONTROL

Owners/Developer Certification:

"I/We hereby certify that any clearing, grading, construction, or development will be done pursuant to this approved erosion and sediment 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 prior to beginning the project. I/We certify right-of-entry for periodic on-site evaluation by Howard County, the Howard Soil Conservation District and/or MDE."

Barb Pinec
Owner's Signature
8-8-17
Date

Design Certification:

"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."

Thomas A. G. G. G.
Designer's Signature
8-8-17
Date
MD Registration No. 29203
P.E., R.L.S., or R.L.A. (circle one)
Printed Name

**FOR REVISION #1 ONLY
HOWARD SOIL CONSERVATION DISTRICT (HSCD)
STANDARD SEDIMENT CONTROL NOTES**

1. 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 stages:
 - 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.
2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and revisions thereto.
3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization is required within three (3) calendar days to the surface of all perimeter contours, 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 under active grading.
4. All disturbed areas must be stabilized within the time period specified above in accordance with the 2011 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-4-3). 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-4-1) 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 outer. All concentrated flow, steep slope, and highly erodible areas shall receive soil stabilization matting (Sec. B-4-6).
5. 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.
6. Site Analysis:

Total Area of Site:	0.14	Acres
Area Disturbed:	0.08	Acres
Area to be roofed or paved:	0.06	Acres
Area to be vegetatively stabilized:	0.02	Acres
Total Cut:	44	Cu. Yds.
Total Fill:	12	Cu. Yds.

 Offsite waste/borrow area location:
7. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
8. 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 should include:
 - Inspection date
 - Name and title of inspector
 - Weather information (current conditions as well as time and amount of last recorded precipitation)
 - 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
 - Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MDE).
9. 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.
10. 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 be allowed by the CID per the list of HSCD-approved field changes.
11. 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. Unless otherwise specified and approved by the HSCD, no more than 30 acres cumulatively may be disturbed at a given time.
12. Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structure.
13. Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.
14. 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.
15. Stream channels must not be disturbed during the following restricted time periods (inclusive):
 - Use I and II March 1 - June 15
 - Use III and IIII October 1 - April 30
 - Use IV March 1 - May 31
16. 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 the site is active.

FOR UTILITY WORK ONLY

1. PLACE ALL EXCAVATED MATERIAL ON HIGH SIDE OF TRENCH.
2. ONLY DO AS MUCH WORK AS CAN BE DONE IN ONE DAY SO BACKFILLING FINAL GRADING, AND SEEDING AND MULCHING CAN OCCUR.
3. ANY SEDIMENT CONTROL MEASURES DISTURBED BY CONSTRUCTION WILL BE REPAIRED THE SAME DAY.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

John P. ...
CHIEF, DEVELOPMENT ENGINEERING DIVISION
8-18-17
DATE

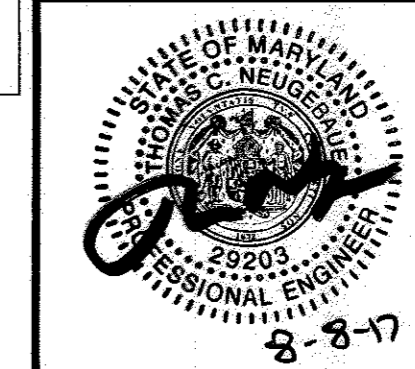
Walter ...
CHIEF, DIVISION OF LAND DEVELOPMENT
8-22-17
DATE

Walter ...
DIRECTOR, DEPARTMENT OF PLANNING AND ZONING
8-22-17
DATE

SHEET: **SD-48**



MORRIS & RITCHE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
14280 PARK CENTER DRIVE
LAUREL, MD 20707
(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395
MRA@GTA.COM
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**GRACE TECH PARK, PARCEL A
CELL TOWER DETAILS**
CALVERT CROSSLAND MONOPOLE - W.R. GRACE

TAX MAP 35 - GRID 22 - PART OF PARCEL 145 - LIBER 273 - FOLIO 186
TAX ASSESSMENT DISTRICT 05 - ZONING PEC
HOWARD COUNTY, MARYLAND

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