

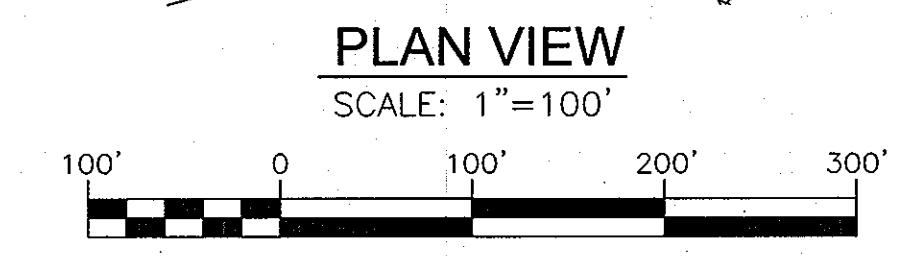
LEGEND:

	EXISTING CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING TREE LINE
	EXISTING FENCE
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	EXISTING STREAM
	EX. LIMIT OF WETLAND
	PROPOSED STORM DRAIN
	PROPOSED STORM DRAIN INLET
	PHASE 1 DEVELOPMENT LINE
	PROPOSED SIDEWALK
	PROPOSED CURB
	PROPOSED STREET LIGHT
	EX. 100 YEAR PUBLIC FLOODPLAIN, DRAINAGE AND UTILITY EASEMENT
	AMENITY AREA

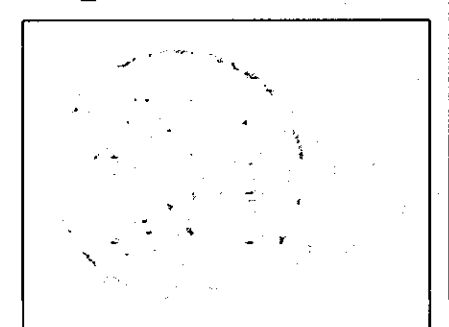
TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

Maxina M. Maura
PLANNING DIRECTOR

3-18-12
DATE



OWNER/DEVELOPER
THE STRONACH GROUP
455 MAGNA DRIVE
AURORA, ONTARIO
L4G 7A9
CANADA
(905) 726-0995



WALTER LYNCH PLLC
ARCHITECTURE • MASTER PLANNING • CONSERVATION

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WASHINGTON, DC 20037
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NO.	REVISION	DATE

**PRELIMINARY PLAN
OVERALL DEVELOPMENT LAYOUT PLAN
AND AMENITY AREA
LAUREL PARK STATION
PHASE I
PARCELS A, E, G, K, L, P/O H & F**

TAX MAP: 50 BLOCK: 10
3RD ELECTION DISTRICT
PARCEL: 384/264 ZONED: TOD/CAC

DIST. REFERENCES: PLAT #15007, SDP-01-32,
WP-01-24, WP-01-106, S-10-004, WP-10-171
AND WP-11-184.

**ROBERT H. VOGEL
ENGINEERS • SURVEYORS • PLANNERS**

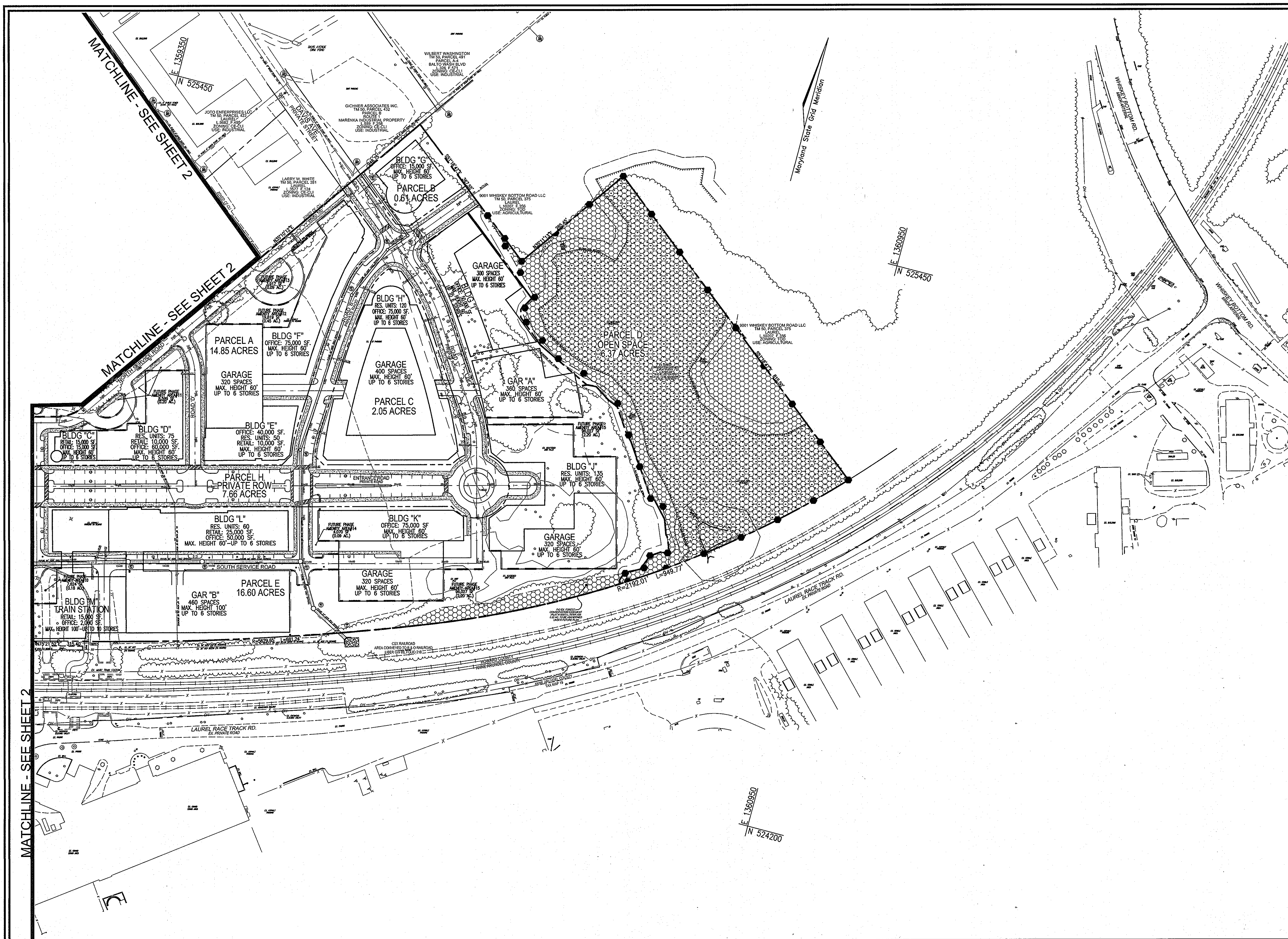
8407 MAIN STREET
ELLCOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8981

PROFESSIONAL CERTIFICATE

DESIGN BY: DZ/RHV
DRAWN BY: DZ/KG
CHECKED BY: RHV
DATE: JAN. 25, 2012
SCALE: AS SHOWN
W.O. NO.: 07-11

I HEREBY CERTIFY THAT THESE DOCUMENTS
WERE PREPARED OR APPROVED BY ME, AND
THAT I AM A FULLY LICENSED PROFESSIONAL
ENGINEER UNDER THE LAWS OF THE STATE
OF MARYLAND. LICENSE NO. 16193
EXPIRATION DATE 08-27-2012

2 SHEET OF 13

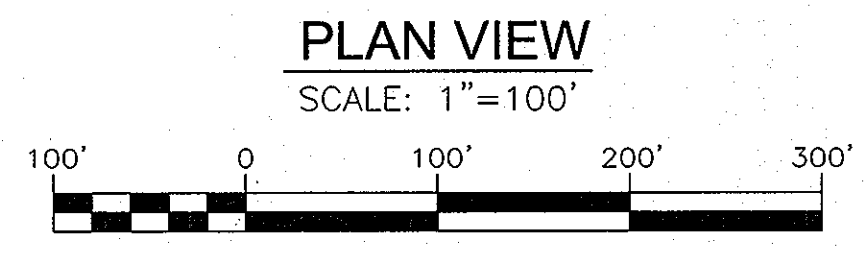


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	PROPOSED STREET LIGHT
	EX. 100 YEAR PUBLIC FLOODPLAIN, DRAINAGE AND UTILITY EASEMENT
	EX. FOREST CONSERVATION EASEMENT (PLAT #15007)
	AMENITY AREA

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

Maria M. McLaughlin
PLANNING DIRECTOR
DATE: 3-12-12



OWNER/DEVELOPER
THE STRONACH GROUP
455 MAGNA DRIVE
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NO.	REVISION	DATE

PRELIMINARY PLAN
OVERALL DEVELOPMENT LAYOUT PLAN
AND AMENITY AREA
LAUREL PARK STATION
PHASE I
PARCELS A, E, G, K, L, P/O H & F
L.10518 F.157
TAX MAP: 50 BLOCK: 10 HOWARD COUNTY, MARYLAND
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PARCEL-384/264 ZONED: TOD/CAC WP-01-24, WP-01-106, S-10-004, WP-10-171
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ROBERT H. VOGEL ENGINEERING, INC.
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ELLICOTT CITY, MD 21043 FAX: 410.461.8961

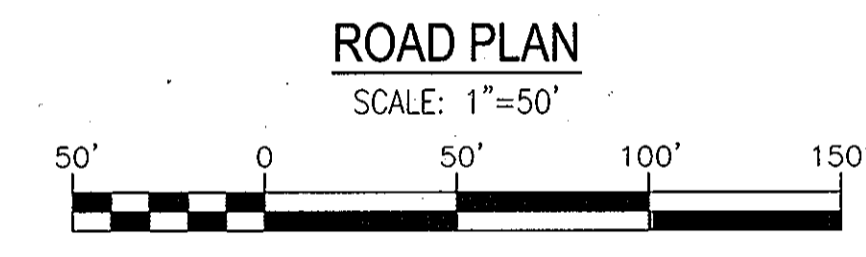
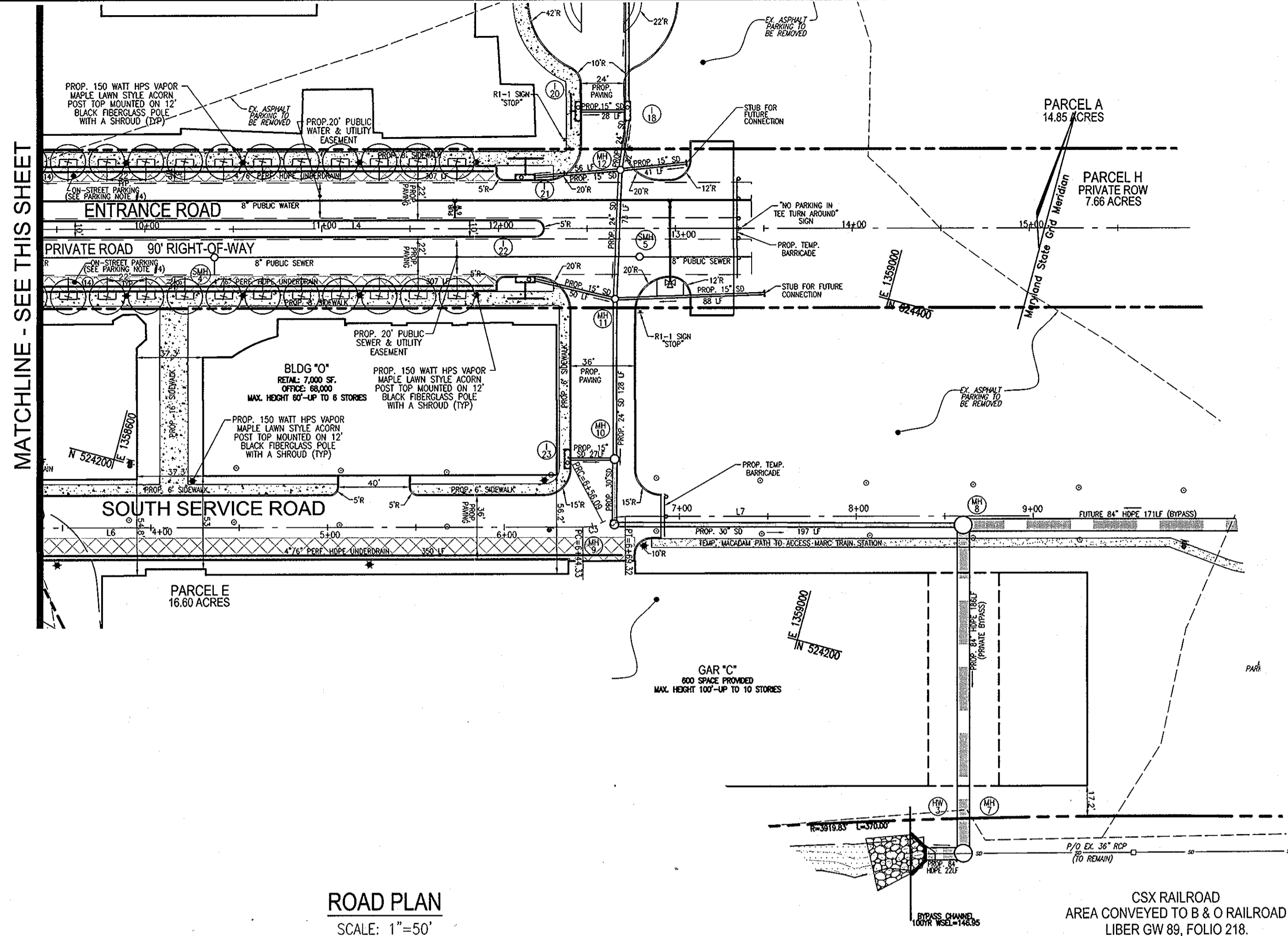
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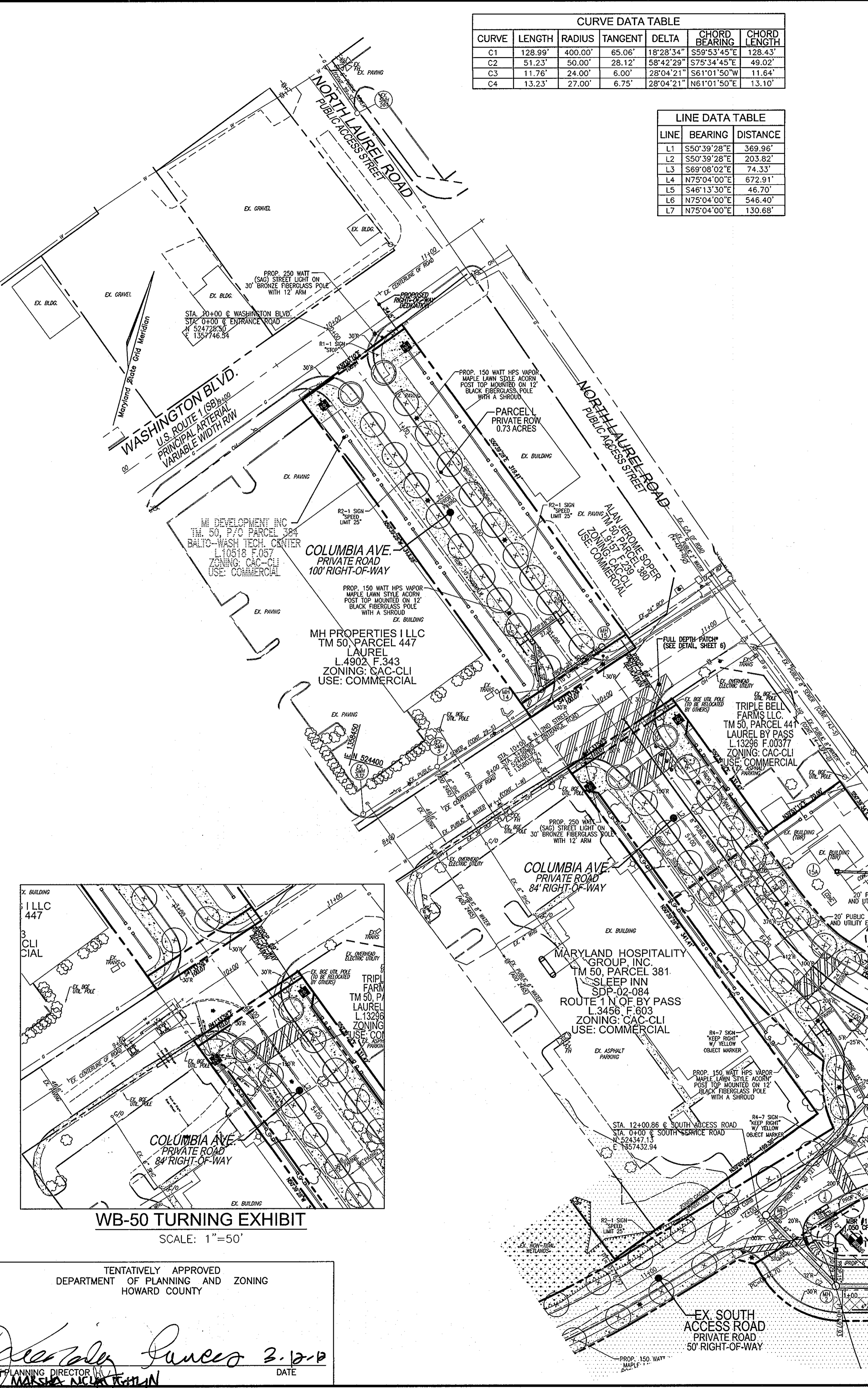
3 SHEET OF 13

CURVE DATA TABLE						
CURVE	LENGTH	RADIUS	TANGENT	DELTA	CHORD BEARING	CHORD LENGTH
C1	128.99'	400.00'	85.06'	18°28'34"	S59°53'45"E	128.43'
C2	51.23'	50.00'	28.12'	58°42'29"	S75°34'45"E	49.02'
C3	11.76'	24.00'	6.00'	28°04'21"	S61°01'50"W	11.64'
C4	13.23'	27.00'	6.75'	28°04'21"	N61°01'50"E	13.10'

LINE DATA TABLE		
LINE	BEARING	DISTANCE
L1	S50°39'28"E	369.96'
L2	S50°39'28"E	203.82'
L3	S89°08'02"E	74.33'
L4	N75°04'00"E	672.91'
L5	S46°13'30"E	46.70'
L6	N75°04'00"E	546.40'
L7	N75°04'00"E	130.68'



- LEGEND:**
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 - EXISTING UTILITY POLE
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 - PROPOSED CURB
 - PROPOSED STREET LIGHT
 - EX. 100 YEAR PUBLIC FLOODPLAIN, DRAINAGE AND UTILITY EASEMENT



WB-50 TURNING EXHIBIT
SCALE: 1"=50'

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

Marsha Nicola Kahan
PLANNING DIRECTOR
DATE: March 3, 2012

OWNER/DEVELOPER
THE STRACHAN GROUP
455 MAGNA DRIVE
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L4G 7A9
CANADA
(905) 720-0995

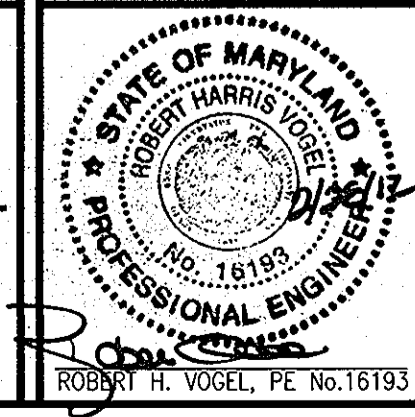
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NO.	REVISION	DATE

PRELIMINARY PLAN
ROAD PLAN
LAUREL PARK STATION
PHASE I
PARCELS A, E, G, K, L, P/O H & F
L.10518 F.157
TAX MAP: 50 BLOCK: 10
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PARCEL: 384/264 ZONED: TOD/CAC
HOWARD COUNTY, MARYLAND
DPZ REFERENCES: PLAT #15007, SDP-01-32, WP-01-24, WP-01-106, S-10-004, WP-10-171 AND WP-11-184.

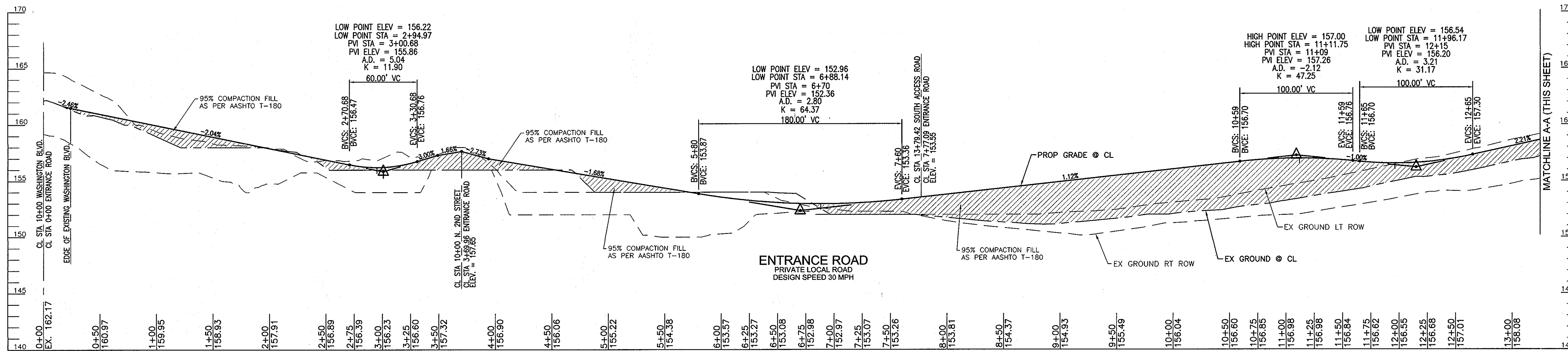
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ELLCOTT CITY, MD 21043
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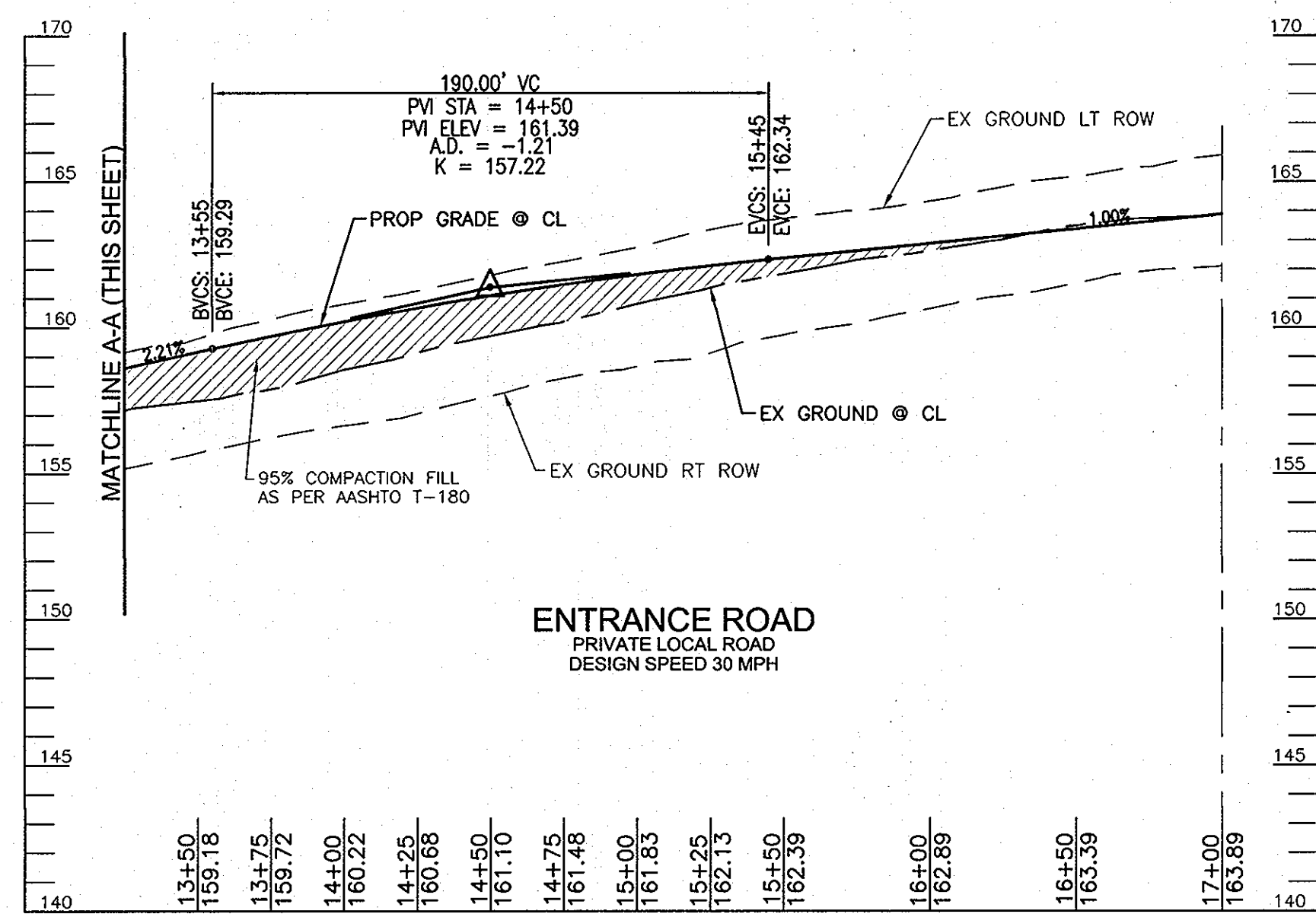
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CHECKED BY: RHV
DATE: JAN. 25, 2012
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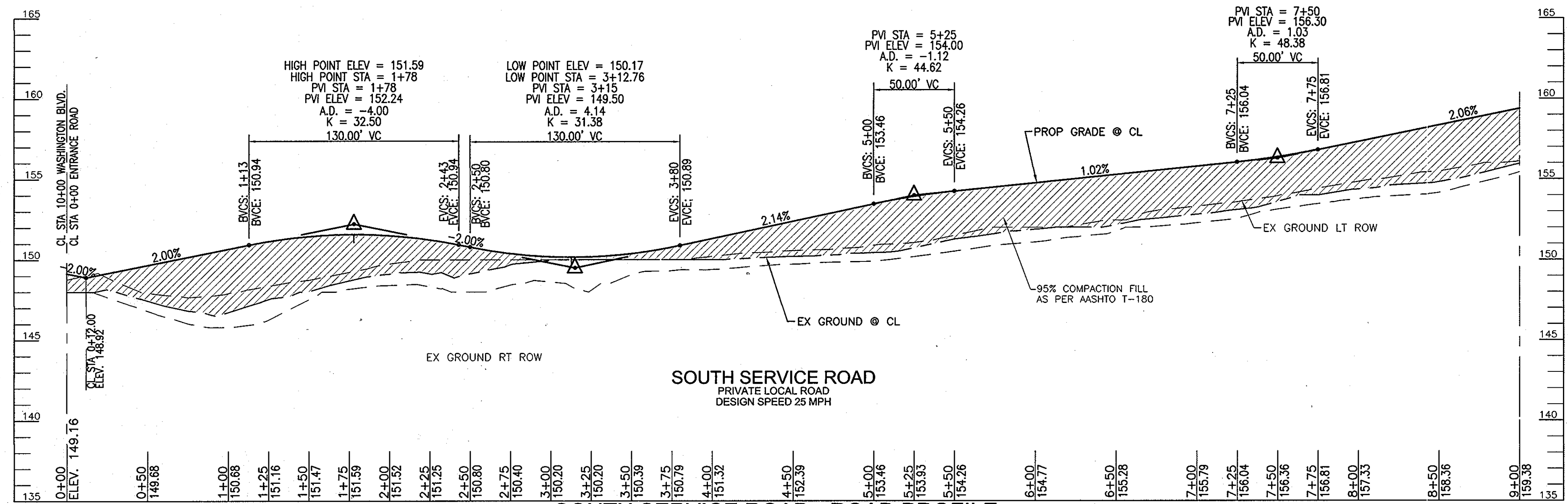
4 SHEET OF 13



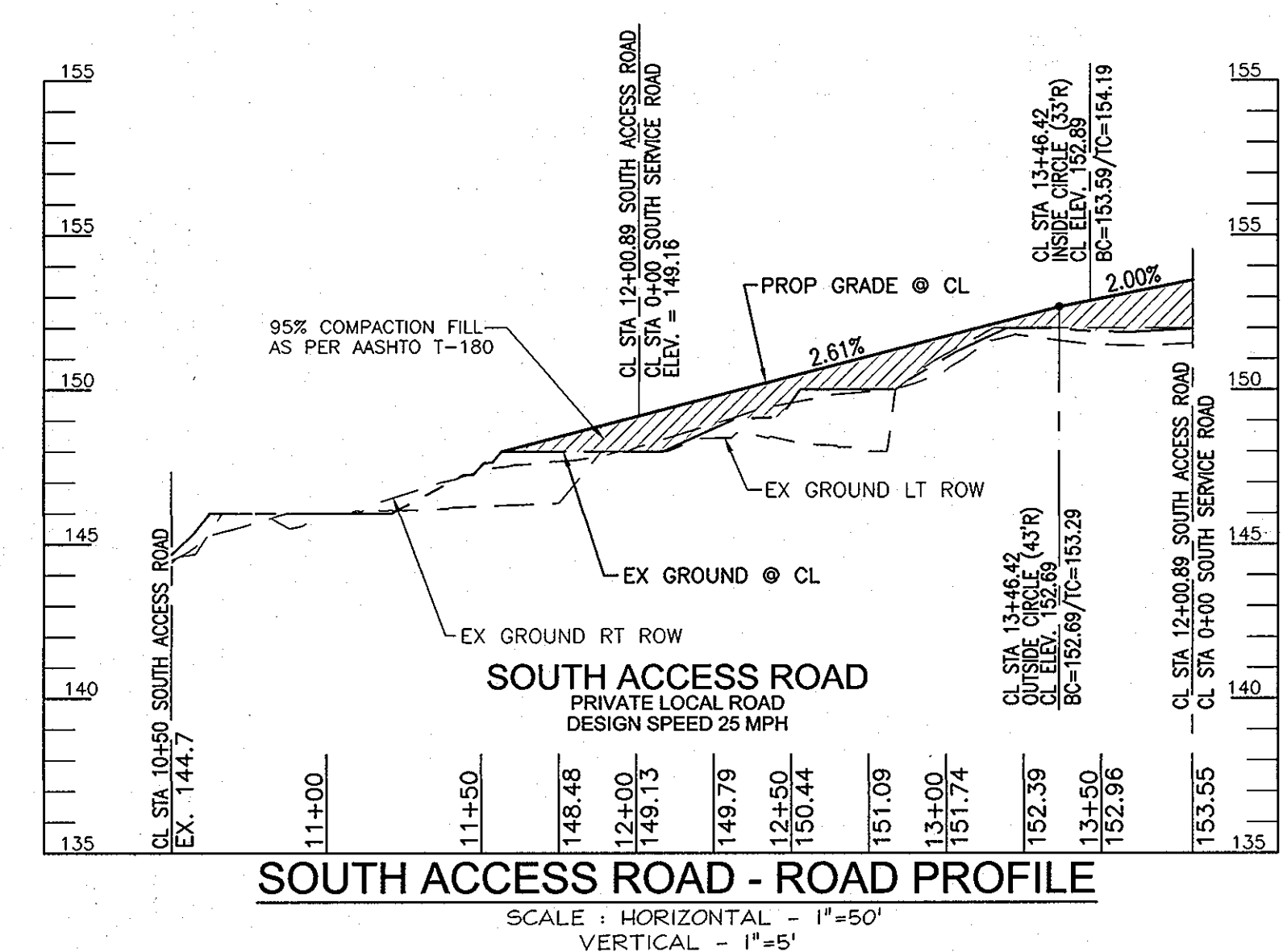
ENTRANCE ROAD - ROAD PROFILE
 SCALE: HORIZONTAL - 1"=50'
 VERTICAL - 1"=5'



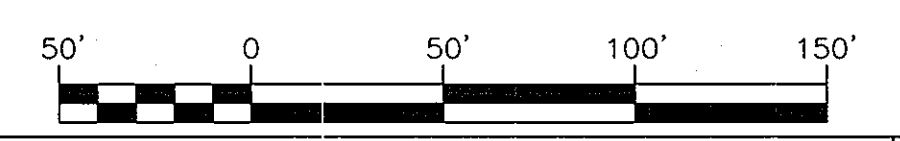
ENTRANCE ROAD - ROAD PROFILE
 SCALE: HORIZONTAL - 1"=50'
 VERTICAL - 1"=5'



SOUTH SERVICE ROAD - ROAD PROFILE
 SCALE: HORIZONTAL - 1"=50'
 VERTICAL - 1"=5'



SOUTH ACCESS ROAD - ROAD PROFILE
 SCALE: HORIZONTAL - 1"=50'
 VERTICAL - 1"=5'



NO.	REVISION	DATE

PRELIMINARY PLAN
ROAD PROFILES
LAUREL PARK STATION
 PHASE I
 PARCELS A, E, G, K, L, P/O/H & F
 L.10518 F.157
 TAX MAP: 50 BLOCK: 10 HOWARD COUNTY, MARYLAND
 3RD ELECTION DISTRICT DPZ REFERENCES: PLAT #15007, SDP-01-32
 PARCEL: 384/264 ZONED: TOD/CAC WP-01-24, WP-01-106, S-10-004, WP-10-171 AND WP-11-184

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 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

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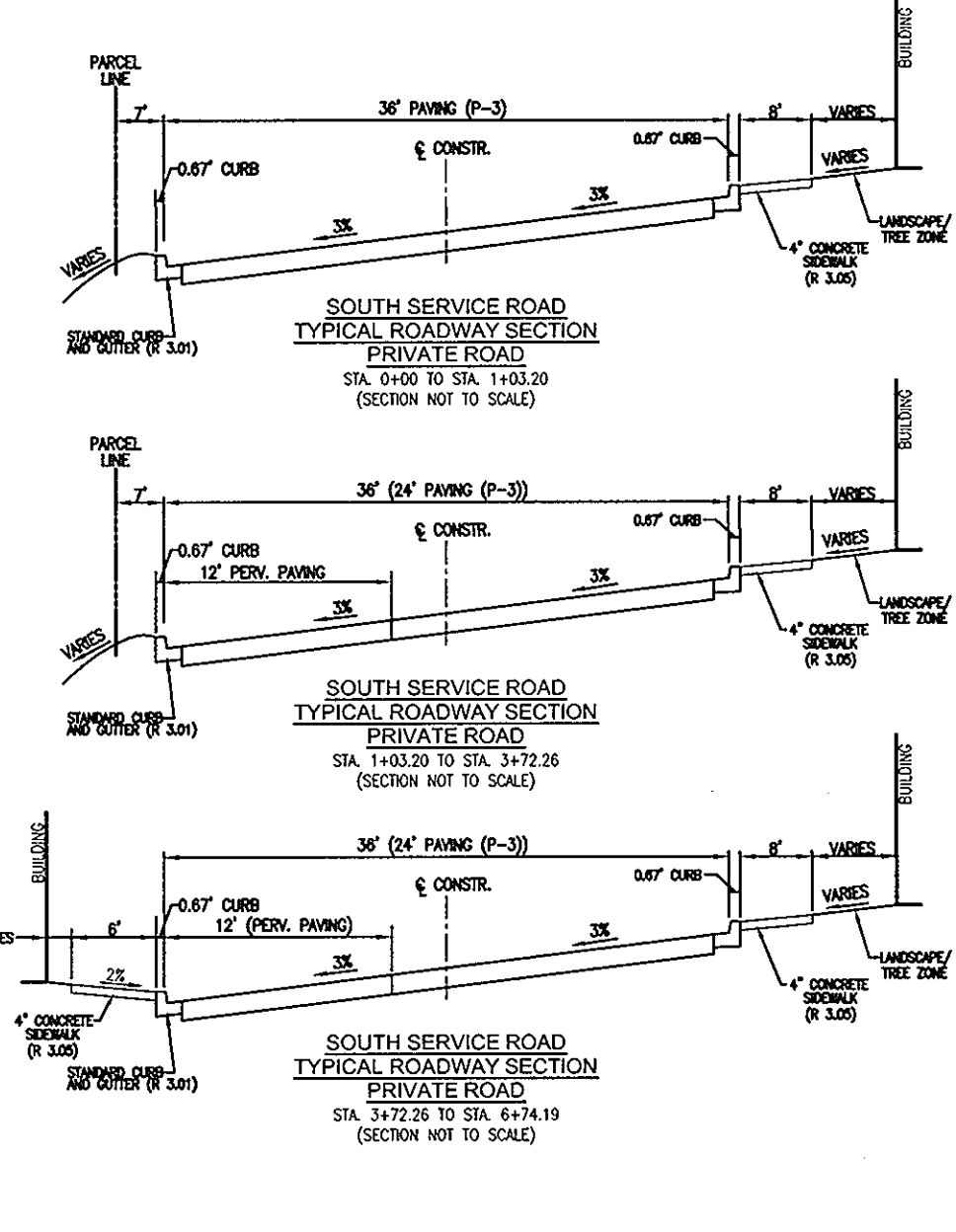
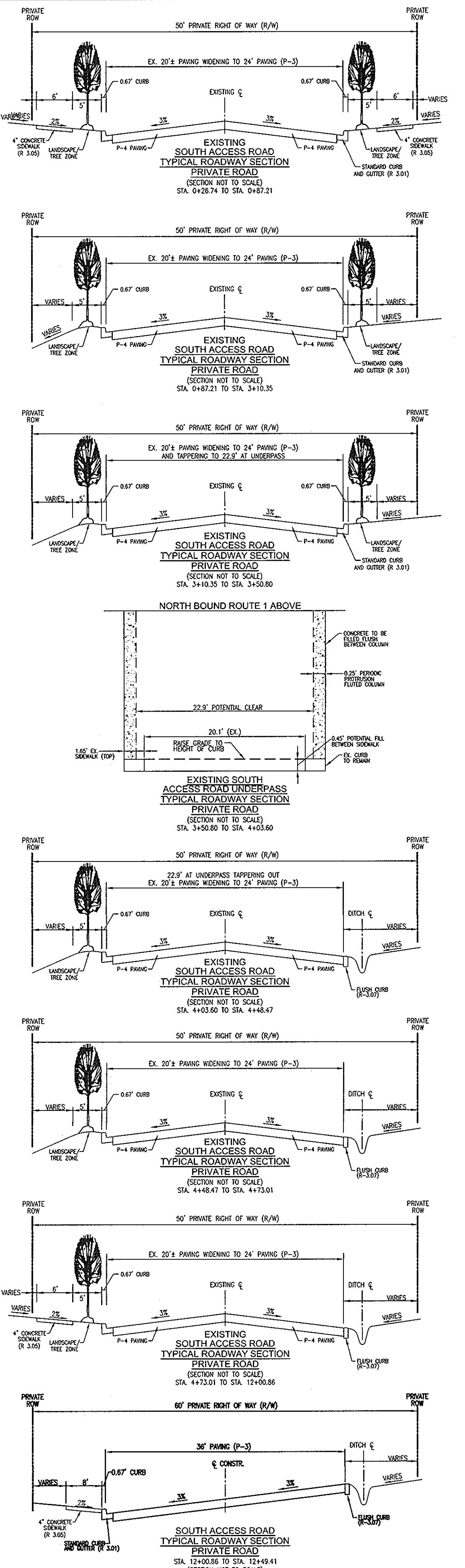
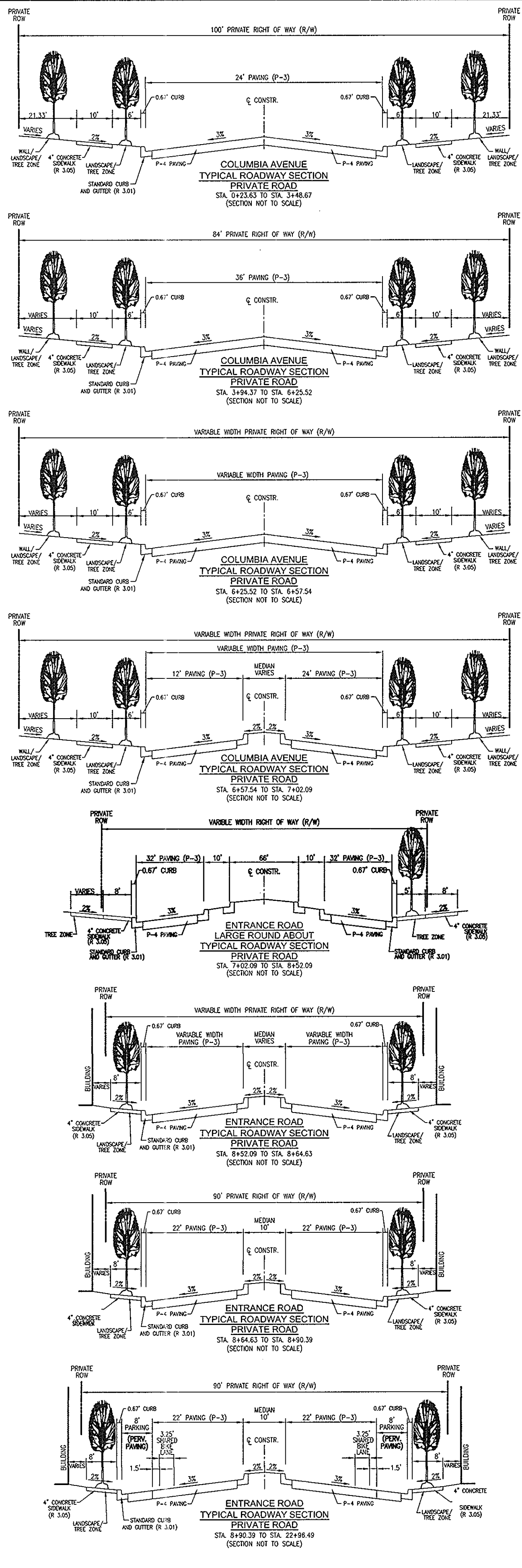
5 SHEET OF 13

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 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY

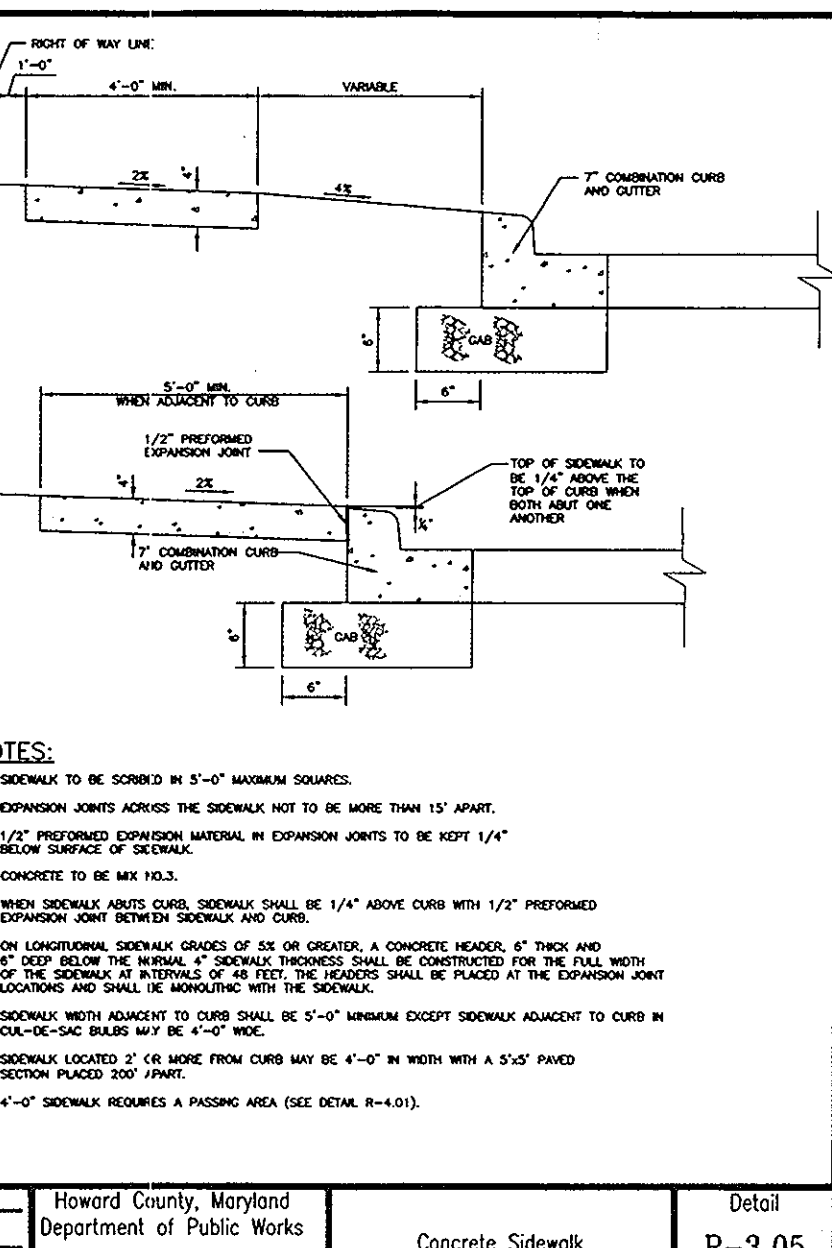
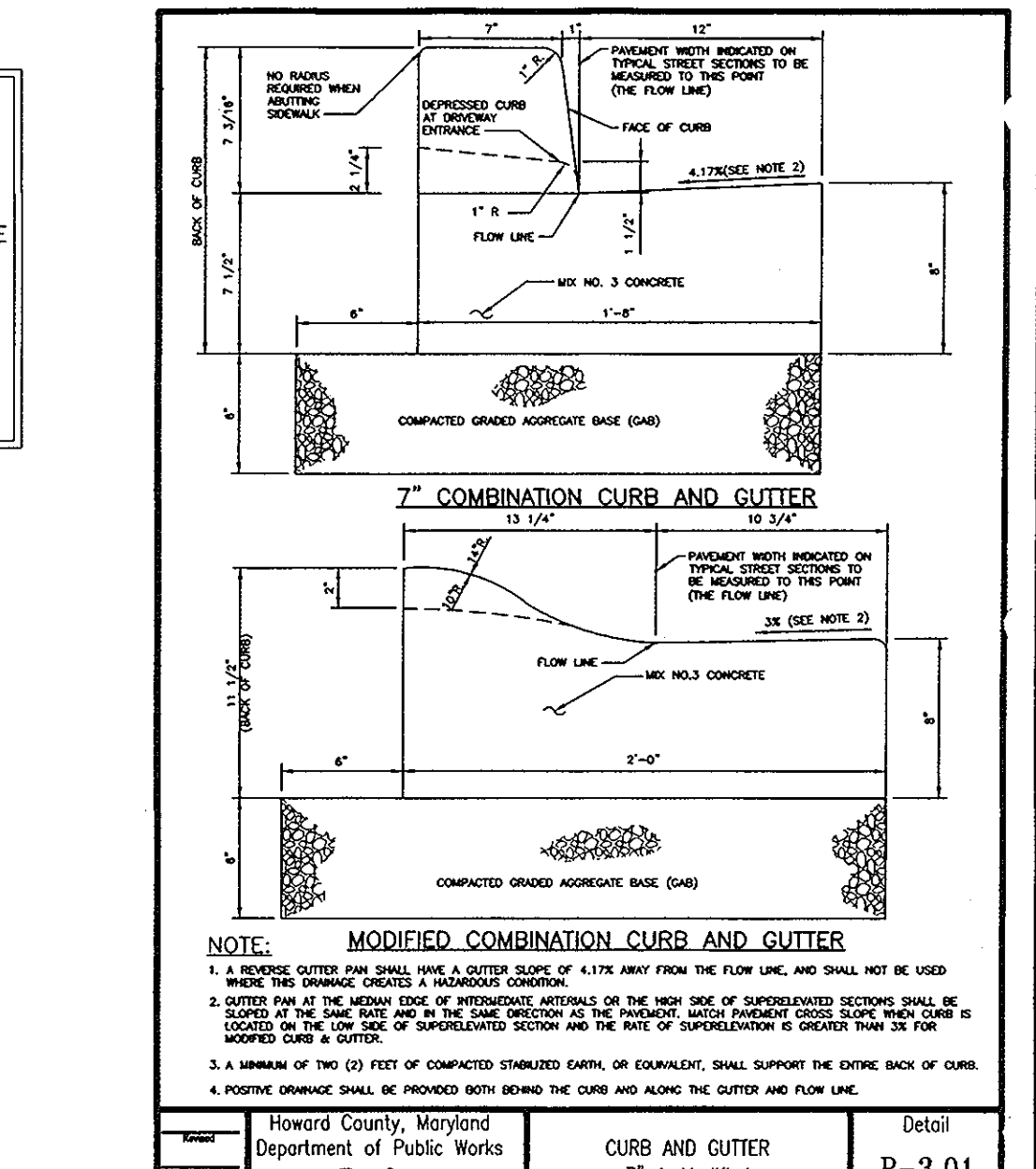
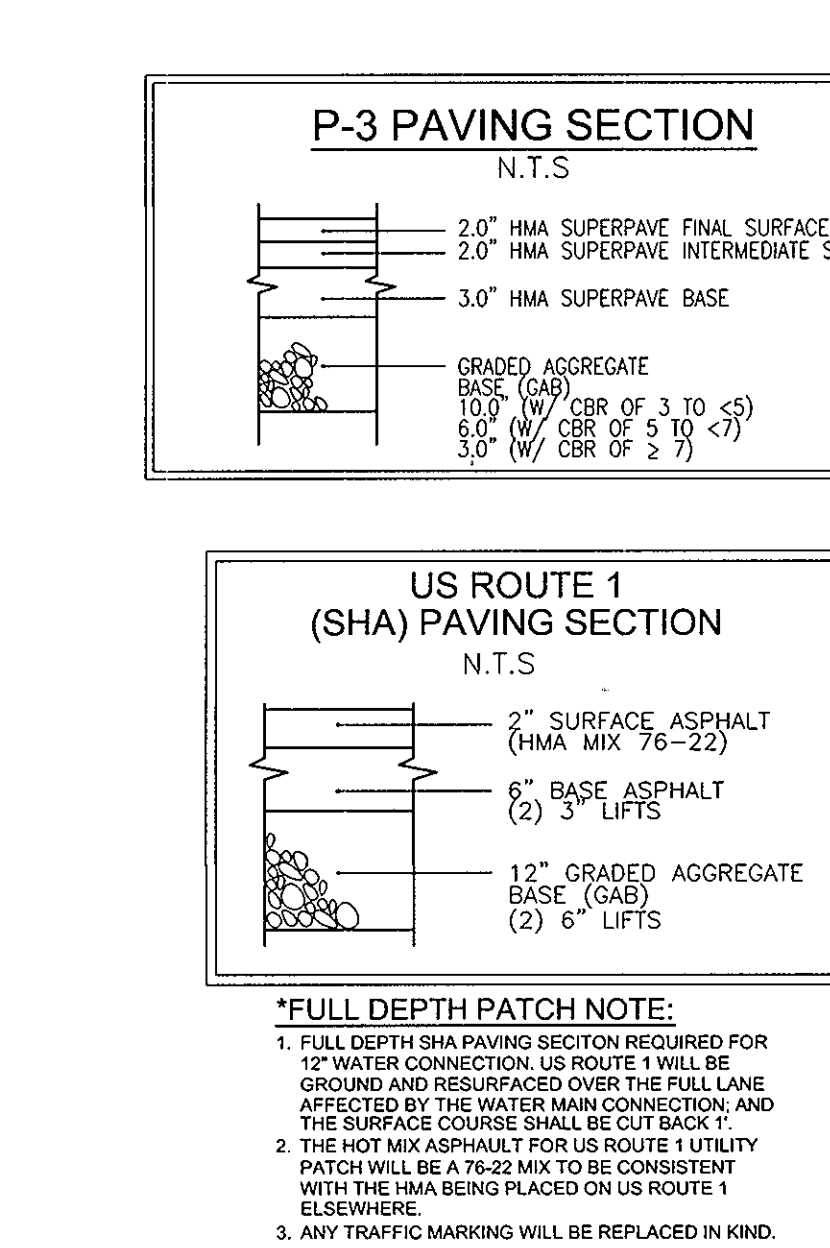
[Signature]
 PLANNING DIRECTOR
 DATE: 3-12-12

OWNER/DEVELOPER
 THE STRONACH GROUP
 455 MAGNA DRIVE
 AURORA, ONTARIO
 L4G 7A9
 CANADA
 (905) 726-0995

WALTER LYNCH PLLC
 ARCHITECTURE • MASTER PLANNING • CONSERVATION
 1058 TYMOTHY JEFFERSON STREET, NW
 WASHINGTON, DC 20007
 PHONE 202.965.2424 FAX 202.965.5544
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STREET LIGHT TABLE			
STREET NAME	STA.	OFFSET	FIXTURE TYPE
COLUMBIA AVENUE	0+30	31.36' L	150 WATT HPS VAPOR MAPLE LAWN STYLE ACORN POST TOP MOUNTED ON 12" BLACK FIBERGLASS POLE WITH A SHROUD
COLUMBIA AVENUE	0+99	15.67' L	
COLUMBIA AVENUE	1+58	15.67' R	
COLUMBIA AVENUE	2+19	15.67' L	
COLUMBIA AVENUE	2+69	15.67' R	
COLUMBIA AVENUE	3+41	25.16' L	250 WATT (SAG) ON 37' BRONZE FIBERGLASS POLE WITH 12" ARM
COLUMBIA AVENUE	4+02	36.31' R	250 WATT (SAG) ON 37' BRONZE FIBERGLASS POLE WITH 12" ARM
COLUMBIA AVENUE	4+67	37.67' R	
COLUMBIA AVENUE	5+31	15.67' R	
COLUMBIA AVENUE	6+59	37.67' L	
COLUMBIA AVENUE	6+74	19.46' R	
COLUMBIA AVENUE	7+18	51.89' R	
COLUMBIA AVENUE	7+19	55.43' L	
ENTRANCE ROAD	8+30	58.53' L	
ENTRANCE ROAD	9+23	37.67' R	
ENTRANCE ROAD	9+23	37.67' L	
ENTRANCE ROAD	9+89	37.67' R	
ENTRANCE ROAD	9+89	37.67' L	
ENTRANCE ROAD	10+55	37.67' R	
ENTRANCE ROAD	10+55	37.67' L	
ENTRANCE ROAD	11+21	37.67' R	
ENTRANCE ROAD	11+21	37.67' L	
ENTRANCE ROAD	11+87	37.67' R	
ENTRANCE ROAD	11+87	37.67' L	
EX. SOUTH ACCESS ROAD	0+32	30.77' L	
EX. SOUTH ACCESS ROAD	1+07	15.17' R	
EX. SOUTH ACCESS ROAD	1+67	15.17' R	
EX. SOUTH ACCESS ROAD	1+97	15.17' R	
EX. SOUTH ACCESS ROAD	2+57	15.17' L	
EX. SOUTH ACCESS ROAD	4+70	15.17' R	
EX. SOUTH ACCESS ROAD	5+45	15.17' R	
EX. SOUTH ACCESS ROAD	6+16	15.17' R	
EX. SOUTH ACCESS ROAD	6+90	15.17' R	
EX. SOUTH ACCESS ROAD	7+68	15.17' R	
EX. SOUTH ACCESS ROAD	7+98	15.17' R	
EX. SOUTH ACCESS ROAD	8+47	15.17' R	
EX. SOUTH ACCESS ROAD	9+25	15.17' R	
EX. SOUTH ACCESS ROAD	10+03	15.17' R	
EX. SOUTH ACCESS ROAD	10+81	19.20' R	
EX. SOUTH ACCESS ROAD	12+52	34.67' R	
EX. SOUTH ACCESS ROAD	13+08	45.25' R	
SOUTH SERVICE ROAD	0+30	24.26' R	
SOUTH SERVICE ROAD	1+25	26.67' L	
SOUTH SERVICE ROAD	1+62	21.17' R	
SOUTH SERVICE ROAD	3+47	21.17' R	
SOUTH SERVICE ROAD	4+24	26.67' L	
SOUTH SERVICE ROAD	5+24	21.17' R	
SOUTH SERVICE ROAD	6+23	26.67' L	
SOUTH SERVICE ROAD	6+80	16.57' R	

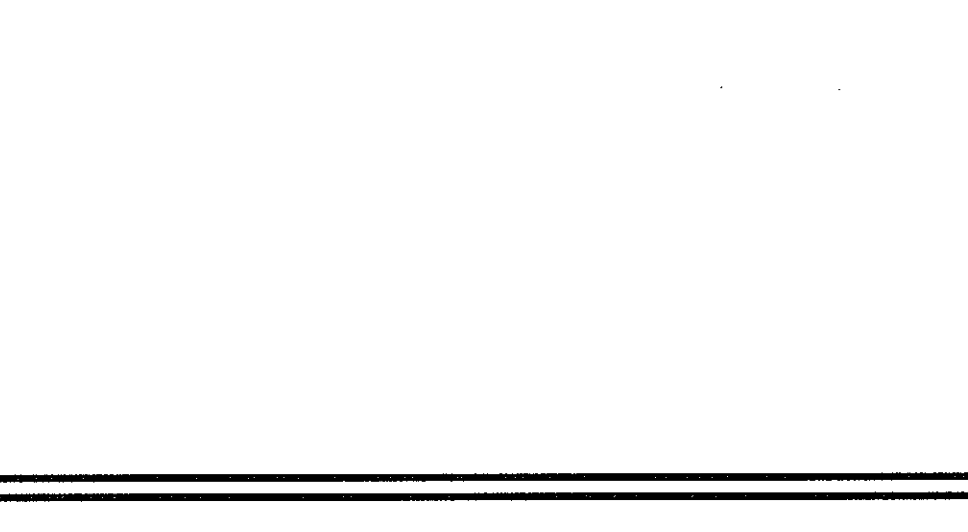
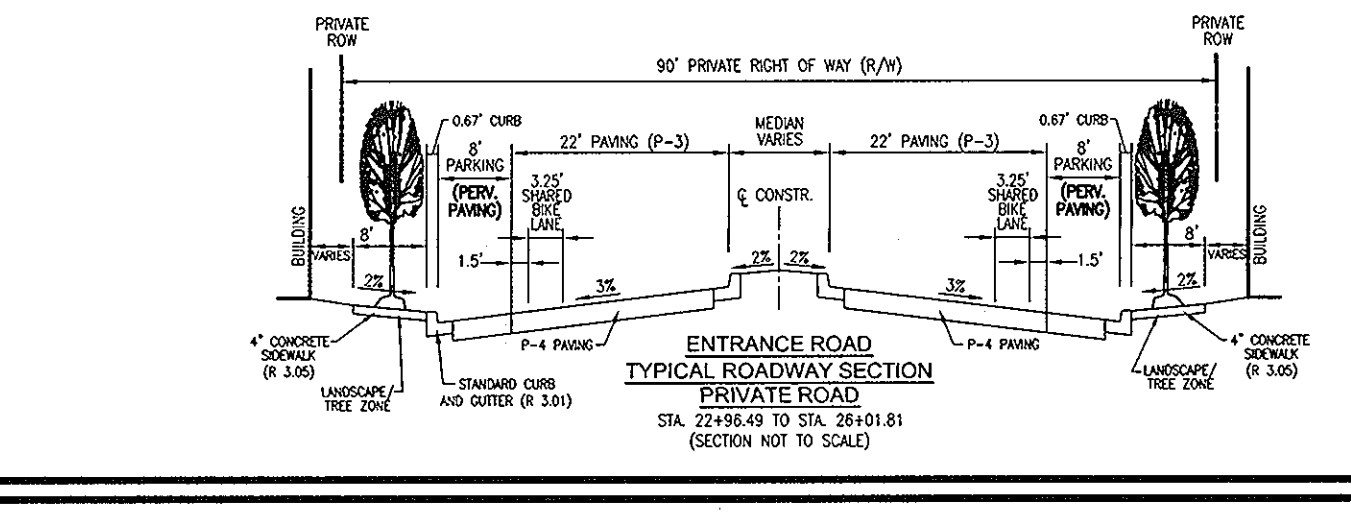


NOTE:
FOR STORMWATER MANAGEMENT DETAILS, SEE SHEET 11.

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

[Signature]
PLANNING DIRECTOR

3-10-12
DATE



OWNER/DEVELOPER
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AURORA, ONTARIO
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WASHINGTON, DC 20037
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WWW.WALTERLYNCH.COM

REVISION

PRELIMINARY PLAN
**ROAD PLAN NOTES AND DETAILS
LAUREL PARK STATION**
PHASE I
PARCELS A, E, G, K, L, P/O/H & F
L.10518
F.157

TAX MAP: 50 BLOCK: 10
3RD ELECTION DISTRICT
PARCEL:384/264 ZONED: TOD/CAC

HOWARD COUNTY, MARYLAND
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WP-10-171
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CHECKED BY: RHV
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W.O. NO.: 07-11

6 SHEET OF 13

Mayland SHA Bicycle and Pedestrian Design Guidelines

CHAPTER 4: OTHER ON-ROAD BICYCLE FACILITIES AND CONSIDERATIONS

4.1 Shared Roadways
In Maryland, shared roadways include all roadways EXCEPT the following:
• Roadways with posted speed limits greater than 50 mph and no available shoulder for bicycle use (bicycle access is prohibited by Maryland law).
• Controlled access freeway systems where specifically allowed such as sections of US 29 in Howard and Montgomery Counties.

Many local roadways in Maryland with low traffic volumes (<1,000 ADT) and/or low speeds (20mph) generally do not need special bicycle provisions (such as bicycle lanes) in order to be compatible for bicycle use. These roadways operate well in their current condition for shared use. However, well-maintained roadways in suburban and urban areas of Maryland typically carry higher volumes of motor vehicle traffic and are therefore less compatible for bicycles unless paved shoulders or bicycle lanes are provided.

4.2 Shared Road Warning Signs
SHARE THE ROAD warning signs can be used to alert motorists of the presence of bicycles in locations where conflicts between motorists and bicyclists are frequent, and where there are no immediate opportunities to provide additional space for bicyclists.

The following are examples of where SHARE THE ROAD signs may be used:
• where bicyclists position themselves in lanes too narrow for a motor vehicle and a bicycle to travel side-by-side within the same traffic lane;
• to encourage safe passing of bicyclists by motorists;
• to reduce the chance of a bicyclist's impeding the open door of a parked vehicle in a shared lane with on-street parking. An example of a developed bypass lane with a wide outside lane accommodation is shown on Figure 4.5.

The SHARE THE ROAD sign consists of the standard W11-1 bicycle warning sign with a SHARE THE ROAD (W16-1) plaque, per the Maryland MUTCD (see Figure 4.3).

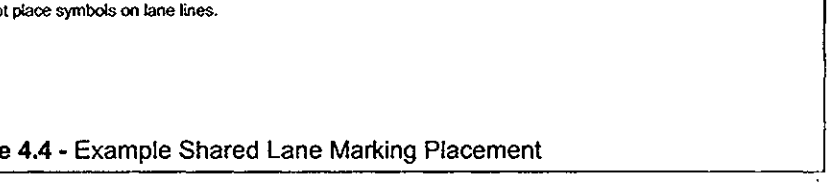
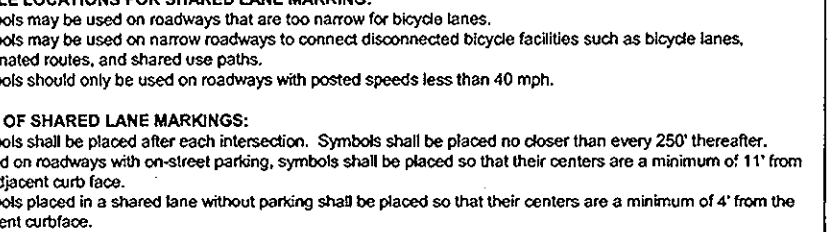
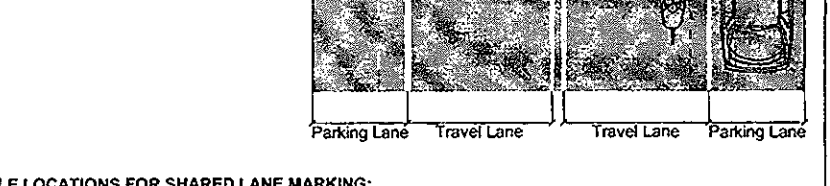
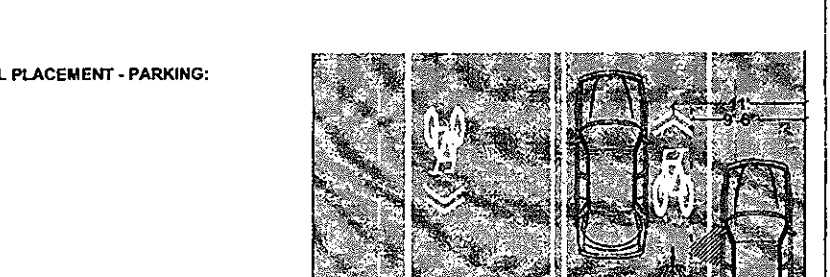
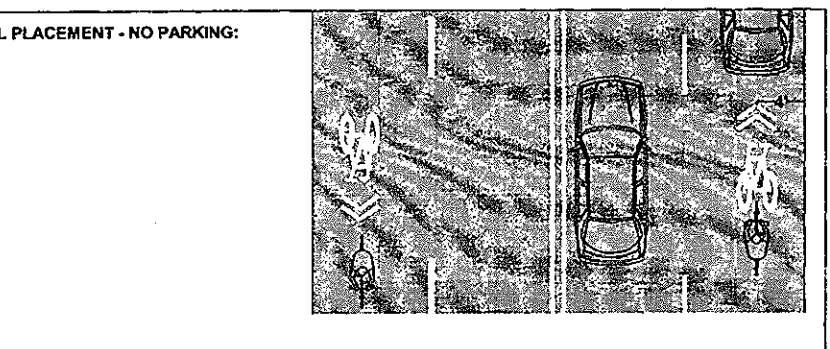
In general, SHARE THE ROAD signs should not be used in locations with good bicycling conditions, such as roadways with low traffic volumes or roadways with paved shoulders or bicycle lanes. SHARE THE ROAD signs are not intended to designate bicycle routes. Utilizing SHARE THE ROAD signs should only be considered after consultation with SHA's Bicycle and Pedestrian Coordinator and the Assistant District Engineer for Traffic.

4.3 Shared Roadway Pavement Markings
Along urban and suburban roadways where bicycling is frequent and where it is not possible to stripe a separate bicycle lane due to width constraints, consideration may be given to providing a shared lane pavement marking.

The shared lane pavement marking should be placed:
• A minimum of 11 feet from the face of the curb when used adjacent to a parking lane;
• A minimum of 4 feet from the face of curb or roadway edge when not used adjacent to a parking lane; and
• Immediately following intersections and spaced at intervals up to 250-foot thereafter.

The shared lane pavement marking shall not be placed in bicycle lanes. The shared lane pavement marking should not be placed on roadways with speed limits posted above 35 mph.

See Figures 4.3 and 4.4 for typical placement locations of the shared lane marking.



4.4 Wide Outside Lane
Wide curb lanes are useful in situations where existing road widths do not enable re-striping for bicycle lanes or shoulders. The additional width of a wide outside lane allows more separation between bicyclists and motor vehicles than more typical 10- to 12-foot wide travel lanes.

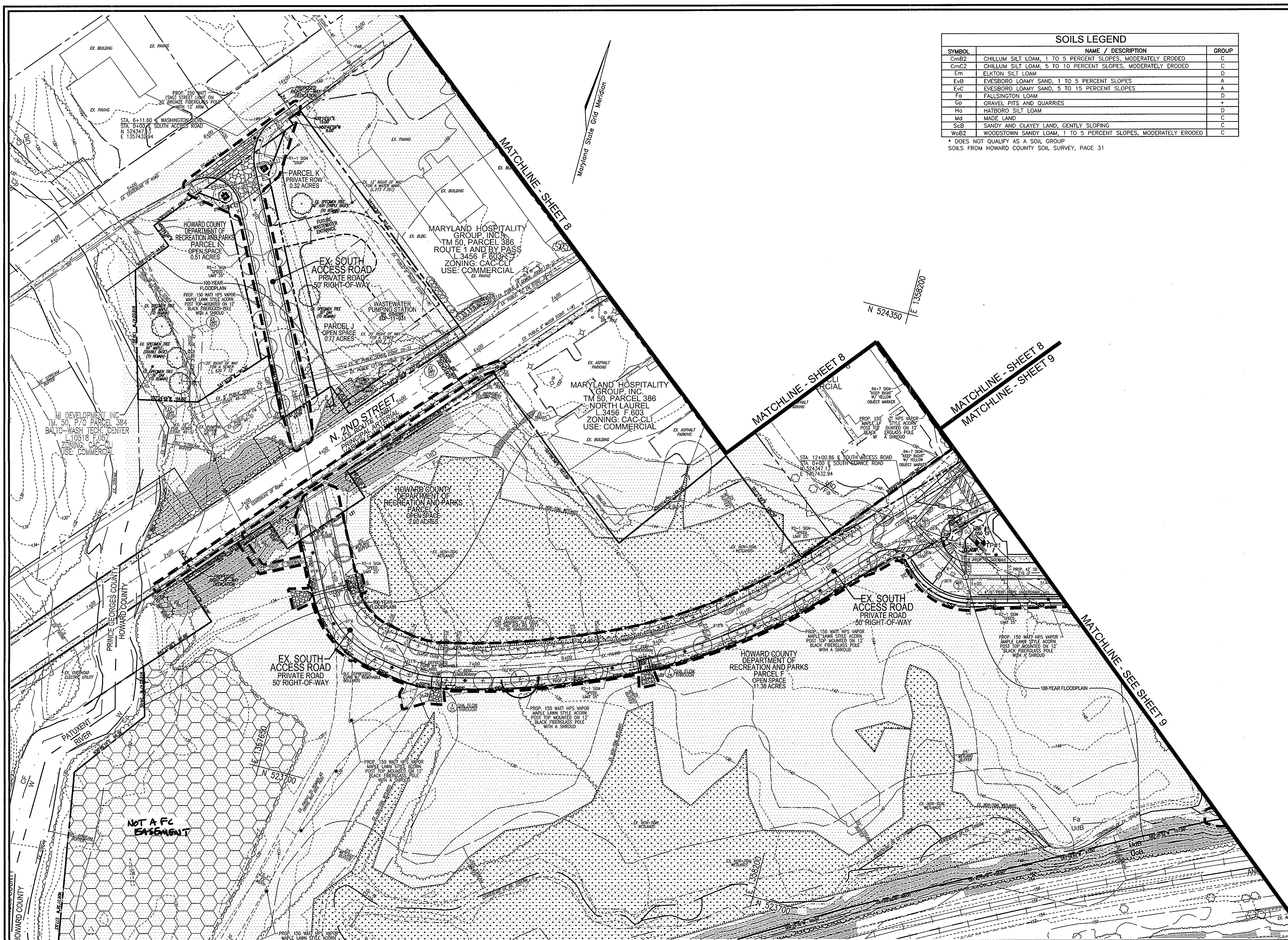
Wide outside lanes may also be utilized for short durations to provide additional room for safe passing of bicyclists in congested locations. An example situation of a developed bypass lane with a wide outside lane accommodation is shown on Figure 4.5.

In situations where additional space is available, however, it is often beneficial to stripe a separate shoulder or bicycle lane rather than providing a wide outside lane, for two reasons:
• motorists tend to drive faster in wide lanes, therefore reducing bicyclist's level of comfort;
• studies show that both motorists and bicyclists tend to use more predictable when bicycle lanes (or paved shoulders) are provided instead of a wide curb lane (Hamer et al., 1999).

4.5 Shared Road/Bicycle Lane
Shared Road/Bicycle lanes are typically wider than the standard 11-foot lane. Shared Road/Bicycle lanes have been used in Maryland (in Clarks City), the District of Columbia, and other parts of the country, however due to the confusion inherent in this type of facility, it shall only be considered in consultation with SHA's Bicycle and Pedestrian Coordinator.

4.6 Bicycle Climbing Lanes
Bicycle climbing lanes use a hybrid bicycle facility that includes a free-flow bicycle lane on one side of the roadway (in the uphill direction) and a shared lane pavement marking on the other side of the roadway. See Figure 4.6 for an example of a climbing lane facility.

Climbing lanes allow slower-moving, uphill bicyclists to have a designated bicycle lane space, therefore facilitating easier passing by motor vehicles. They also allow faster-moving bicyclists on the downhill slope to share the lane with motor vehicle traffic, which is appropriate because the speed differential between motorists and bicyclists is not as great. A shared lane marking is provided on the downhill slope, which helps make motorists be aware that the faster-moving bicyclists are more likely to merge into the travel lane. The bicycle lane and shared lane pavement markings also indicate the proper direction for bicyclists to travel on either side of the zone. This type of facility may be particularly useful on roadways where the existing lanes are not wide enough to accommodate two full-width bicycle lanes.

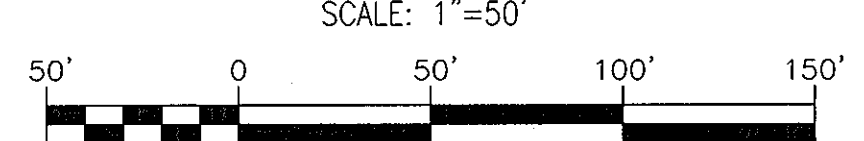


SOILS LEGEND		
SYMBOL	NAME / DESCRIPTION	GROUP
CmB2	CHILLUM SILT LOAM, 1 TO 5 PERCENT SLOPES, MODERATELY ERODED	C
CmC2	CHILLUM SILT LOAM, 5 TO 10 PERCENT SLOPES, MODERATELY ERODED	C
Em	ELKTON SILT LOAM	D
EvB	EVESBORO LOAMY SAND, 1 TO 5 PERCENT SLOPES	A
EvC	EVESBORO LOAMY SAND, 5 TO 15 PERCENT SLOPES	A
Fa	FALLSINGTON LOAM	D
Gp	GRAVEL PITS AND QUARRIES	*
Hs	HATBORO SILT LOAM	D
Md	MADE LAND	C
ScB	SANDY AND CLAYEY LAND, GENTLY SLOPING	C
WoB2	WOODSTOWN SANDY LOAM, 1 TO 5 PERCENT SLOPES, MODERATELY ERODED	C

* DOES NOT QUALIFY AS A SOIL GROUP
SOILS FROM HOWARD COUNTY SOIL SURVEY, PAGE 31

LEGEND:	
	EXISTING CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	SOILS
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING TREELINE
	EXISTING FENCE
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	EXISTING STREAM
	EX. LIMIT OF WETLAND
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	PROPOSED SPOT ELEVATION
	PROPOSED STORM DRAIN
	PROPOSED STORM DRAIN INLET
	PROPOSED SIDEWALK
	PROPOSED CURB
	PROPOSED STREET LIGHT
	PROPOSED STABILIZED CONSTRUCTION ENTRANCE
	PROPOSED SILT FENCE
	PROPOSED SUPER SILT FENCE
	PROPOSED LIMIT OF DISTURBANCE
	PROPOSED EROSION CONTROL MATTING
	PROPOSED EARTH DIKE
	PROPOSED MODERATE SLOPES
	PROPOSED STEEP SLOPES
	EX. 100 YEAR PUBLIC FLOODPLAIN, DRAINAGE AND UTILITY EASEMENT
	EX. FOREST CONSERVATION EASEMENT (PLAT #15007)

PHASE 1 DEVELOPMENT - GRADING PLAN



TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

Robert J. Gaudin
PLANNING DIRECTOR
DATE: 3-12-12

OWNER/DEVELOPER
THE STRONACH GROUP
455 MAGNA DRIVE
AURORA, ONTARIO
L4G 7A9
CANADA
(905) 720-0995

WALTER LYNCH PLLC
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WASHINGTON, DC 20037
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NO.	REVISION	DATE

PRELIMINARY PLAN
GRADING, SEDIMENT AND EROSION
CONTROL PLAN; SOIL MAP
LAUREL PARK STATION
PHASE 1
PARCELS A, E, G, K, L, P/O H & F
L.10518 F.157
TAX MAP: 50 BLOCK: 10
3RD ELECTION DISTRICT
PARCEL: 384/264 ZONED: TOD/CAC

HOWARD COUNTY, MARYLAND
DPZ REFERENCES: PLAT #15007, SDP-01-32,
WP-01-24, WP-01-106, S-10-004, WP-10-171
AND WP-11-184.

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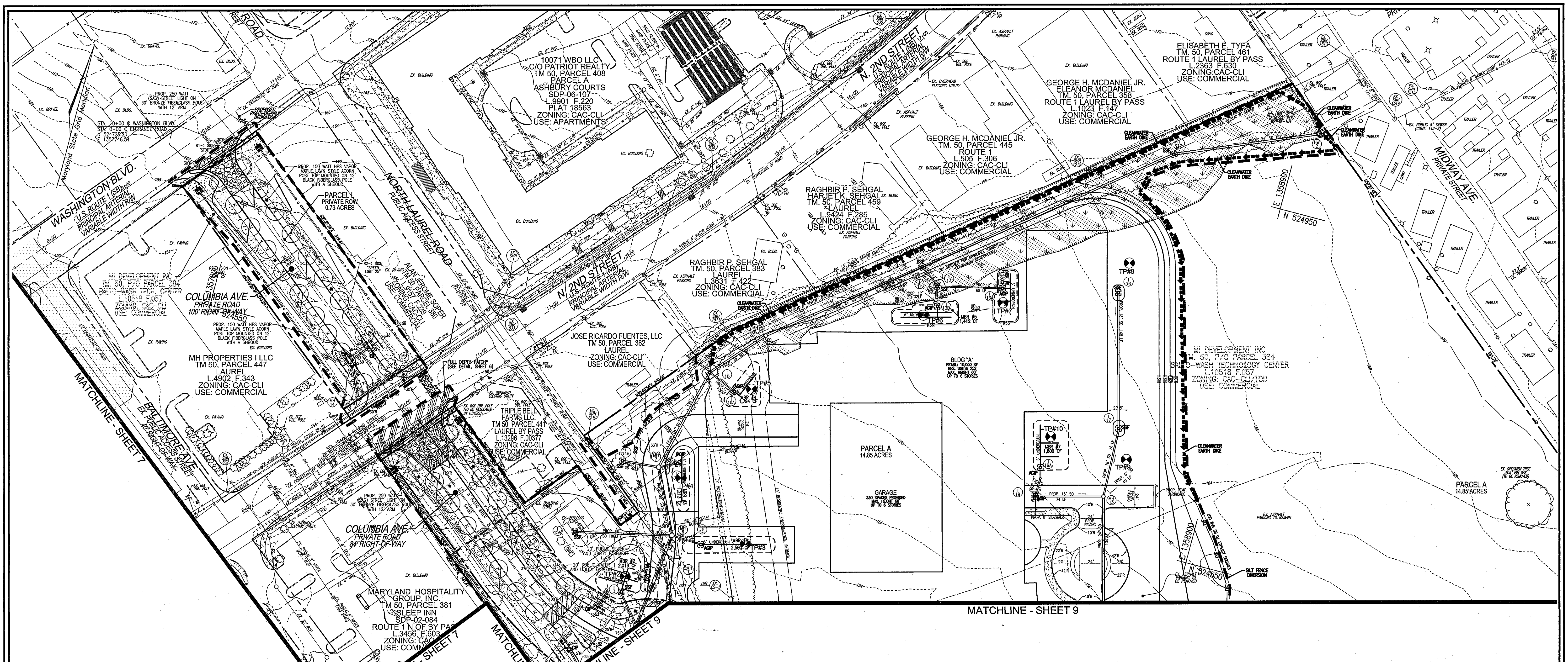
PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2012.

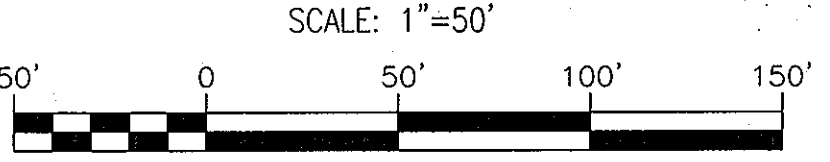
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DRAWN BY: DZ/KG
CHECKED BY: RHV
DATE: JAN. 25, 2012
SCALE: AS SHOWN
W.O. NO.: 07-11

7 SHEET OF 13

ROBERT H. VOGEL, PE No. 16193



PHASE 1 DEVELOPMENT - GRADING PLAN



LEGEND:

- EXISTING CURB AND GUTTER
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- PROPOSED EROSION CONTROL MATING
- PROPOSED EARTH DIKE
- PROPOSED MODERATE SLOPES
- PROPOSED STEEP SLOPES
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- EX. FOREST CONSERVATION EASEMENT (PLAT #15007)
- EARTH DIKES

SOILS LEGEND

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EvC	EVEBORO LOAMY SAND, 5 TO 15 PERCENT SLOPES	A
Fo	FALLSINGTON LOAM	D
Gp	GRAVEL PITS AND QUARRIES	-
Ho	HATBORO SILT LOAM	D
Md	MADE LAND	C
SsB	SANDY AND CLAYEY LAND, GENTLY SLOPING	C
WbB2	WOODSTOWN SANDY LOAM, 1 TO 5 PERCENT SLOPES, MODERATELY ERODED	C

* DOES NOT QUALIFY AS A SOIL GROUP
SOILS FROM HOWARD COUNTY SOIL SURVEY, PAGE 31

OWNER/DEVELOPER
THE STRONACH GROUP
455 MAGNA DRIVE
AURORA, ONTARIO
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(905) 726-0995

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WASHINGTON, DC 20007
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WALTERLYNCH.COM

NO.	REVISION	DATE

PRELIMINARY PLAN
GRADING, SEDIMENT AND EROSION
CONTROL PLAN; SOIL MAP
LAUREL PARK STATION
PHASE I
PARCELS A, E, G, K, L, P/O H & F
L.10518 F.157
TAX MAP: 50 BLOCK: 10
3RD ELECTION DISTRICT
PARCEL: 384/264 ZONED: TOD/CAC
HOWARD COUNTY, MARYLAND
DPZ REFERENCES: PLAT #15007, SDP-01-32,
WP-01-24, WP-01-106, S-10-004, WP-10-171
AND WP-11-184.

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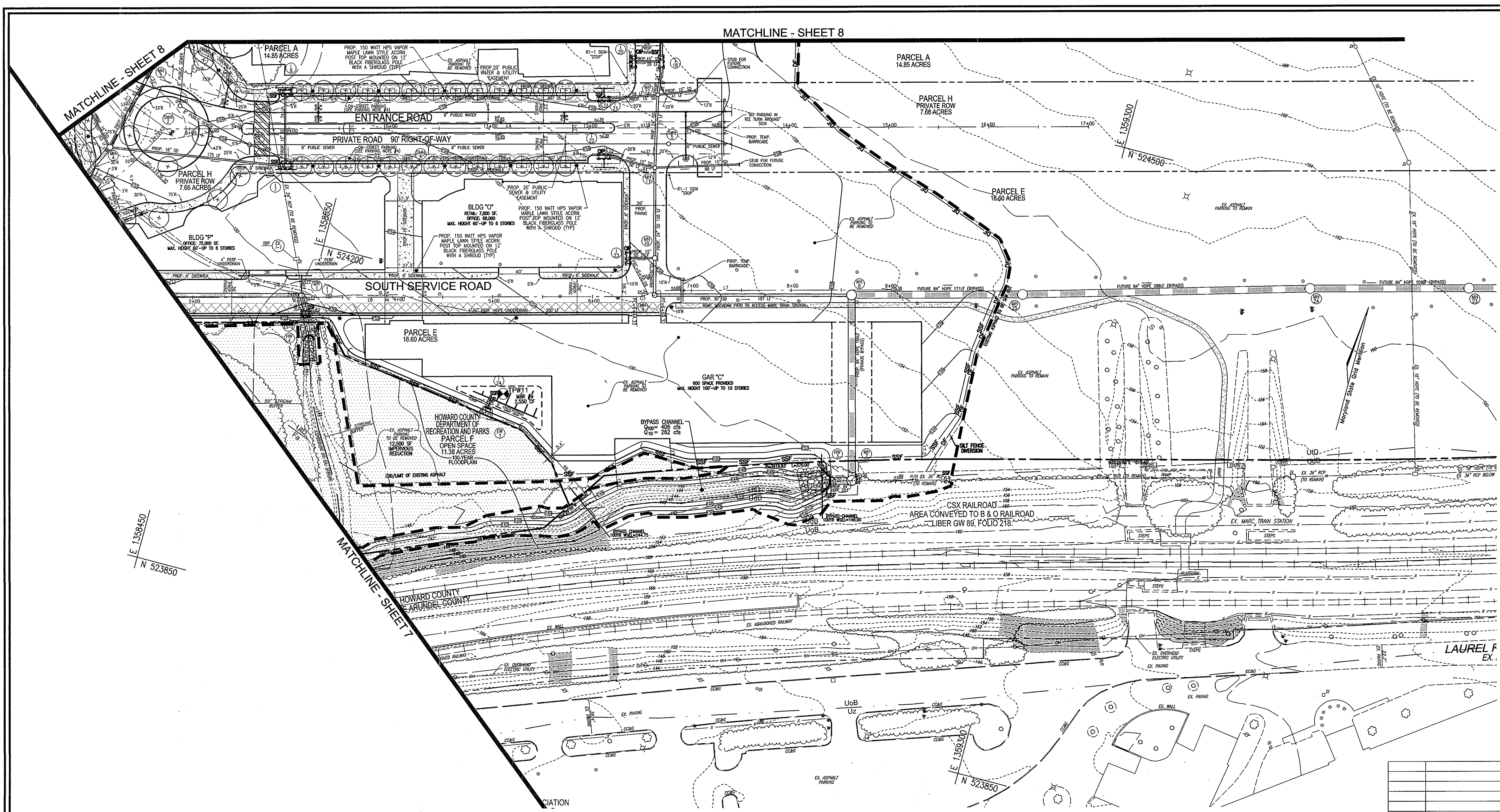
PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 06-27-2012

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DRAWN BY: DZ/KG
CHECKED BY: RHV
DATE: JAN. 25, 2012
SCALE: AS SHOWN
W.O. NO.: 07-11

8 SHEET OF 13

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

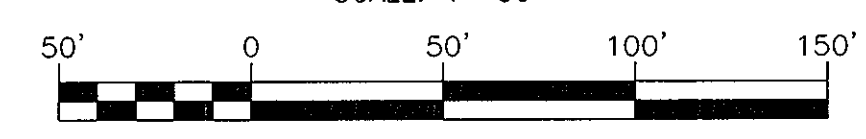
Robert H. Vogel
PLANNING DIRECTOR
DATE: 3-18-12



LEGEND:

	EXISTING CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
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	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING TREE LINE
	EXISTING FENCE
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	EXISTING STREAM
	EX. LIMIT OF WETLAND
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	PROPOSED SPOT ELEVATION
	PROPOSED STORM DRAIN
	PROPOSED STORM DRAIN INLET
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	PROPOSED MODERATE SLOPES
	PROPOSED STEEP SLOPES
	EX. 100 YEAR PUBLIC FLOODPLAIN, DRAINAGE AND UTILITY EASEMENT
	EX. FOREST CONSERVATION EASEMENT (PLAT #15007)
	EARTH DIKES

GRADING PLAN
SCALE: 1"=50'



SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP
CmB2	CHILLUM SILT LOAM, 1 TO 5 PERCENT SLOPES, MODERATELY ERODED	C
CmC2	CHILLUM SILT LOAM, 5 TO 10 PERCENT SLOPES, MODERATELY ERODED	C
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EvC	EVESBORO LOAMY SAND, 5 TO 15 PERCENT SLOPES	A
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Gp	GRAVEL PITTS AND QUARRIES	A
Ho	HATBORO SILT LOAM	D
Md	MADE LAND	C
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* DOES NOT QUALIFY AS A SOIL GROUP
SOILS FROM HOWARD COUNTY SOIL SURVEY, PAGE 31

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

Richard Russo 3-12-12
PLANNING DIRECTOR DATE

OWNER/DEVELOPER
THE STONACH GROUP
455 MAGNA DRIVE
AURORA, ONTARIO
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CANADA
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WALTER LYNCH PLLC
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WASHINGTON, DC 20007
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WALTERLYNCH.COM

NO.	REVISION	DATE

PRELIMINARY PLAN
GRADING, SEDIMENT AND EROSION CONTROL PLAN; SOIL MAP
LAUREL PARK STATION
PHASE I
PARCELS A, E, G, K, L, P/O H & F
L.10518 F.157 HOWARD COUNTY, MARYLAND
TAX MAP: 50 BLOCK: 10
3RD ELECTION DISTRICT
DPZ REFERENCES: PLAT #15007, SDP-01-32, WP-01-24, WP-01-106, S-10-004, WP-10-171 AND WP-11-184.
PARCEL 384/264 ZONED: TOD/CAC

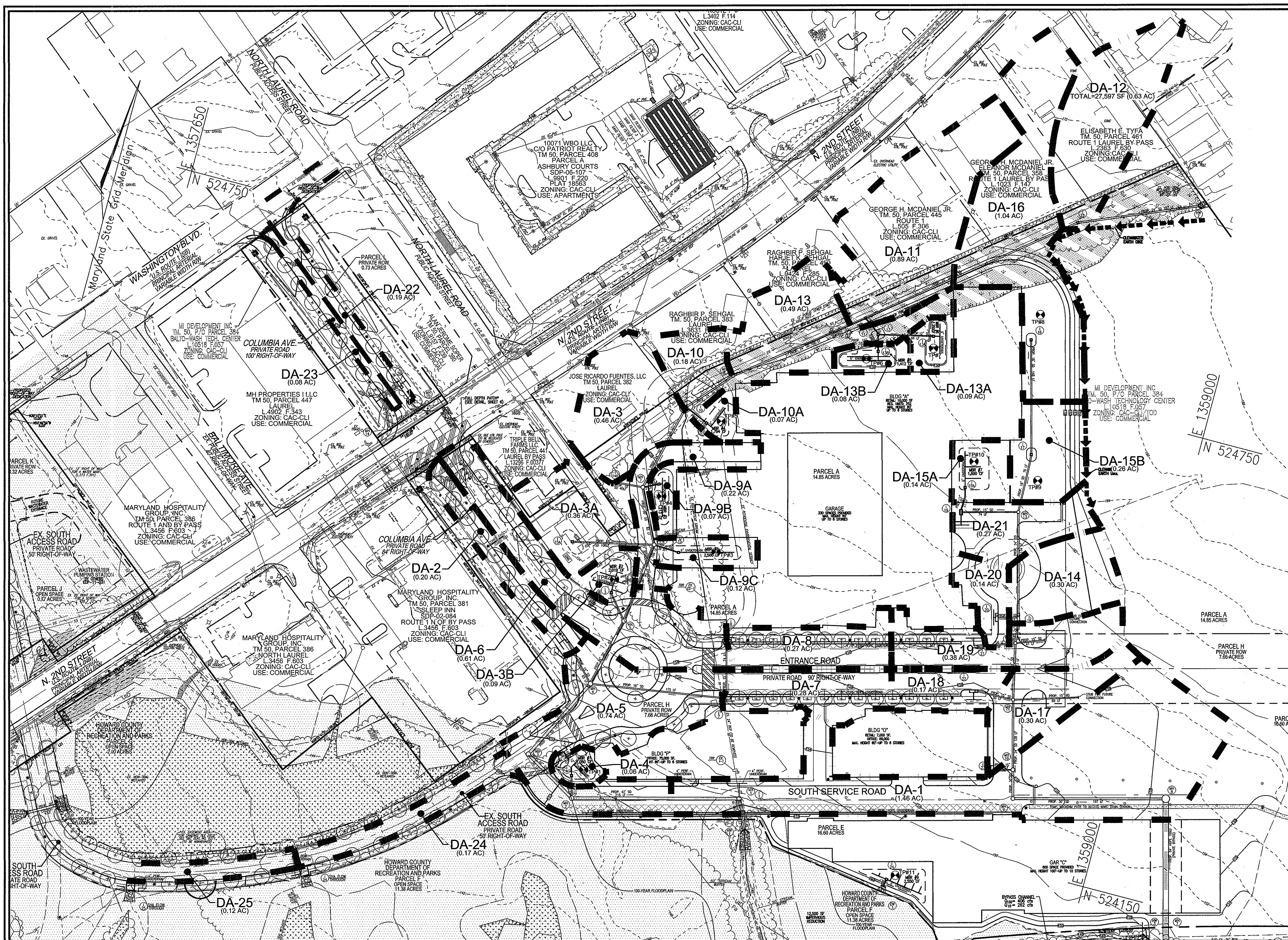
ROBERT H. VOGEL ENGINEERING, INC.
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8407 MAIN STREET
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PROFESSIONAL CERTIFICATE

DESIGN BY: DZ/RHV
DRAWN BY: DZ/KG
CHECKED BY: RHV
DATE: JAN. 25, 2012
SCALE: AS SHOWN
W.O. NO.: 07-11

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE 08-27-2012.

9 SHEET OF 13



- LEGEND:**
- EXISTING CURB AND GUTTER
 - EXISTING UTILITY POLE
 - ☀ EXISTING LIGHT POLE
 - ☑ EXISTING MAILBOX
 - ⊙ EXISTING SIGN
 - ⊙ EXISTING SANITARY MANHOLE
 - EXISTING SANITARY LINE
 - EXISTING 10' CONTOUR
 - EXISTING 2' CONTOUR
 - SOILS
 - EXISTING CLEANOUT
 - EXISTING FIRE HYDRANT
 - EXISTING WATER LINE
 - EXISTING TREELINE
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 - EX. LIMIT OF WETLAND
 - PROPOSED 10' CONTOUR
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 - PROPOSED STORM DRAIN INLET
 - PROPOSED SIDEWALK
 - PROPOSED CURB
 - ☀ --- PROPOSED STREET LIGHT
 - PROPOSED MODERATE SLOPES
 - PROPOSED STEEP SLOPES
 - EX. 100 YEAR PUBLIC FLOODPLAIN, DRAINAGE AND UTILITY EASEMENT
 - GRASS SWALE
 - DRAINAGE AREA DIVIDE
 - RAIN BARREL
 - ROOFTOP DISCONNECT
 - EARTH DIKES
 - PROPOSED SILT FENCE
 - SF --- PROPOSED SUPER SILT FENCE

NO.	REVISION	DATE

**PRELIMINARY PLAN
ON-SITE STORM DRAIN
DRAINAGE AREA MAP
LAUREL PARK STATION**
PHASE I
PARCELS A, E, G, K, L, P/O H & F
L.10518 F.157
TAX MAP: 50 BLOCK: 10
3RD ELECTION DISTRICT
PARCEL: 384/264 ZONED: TOD/CAC
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PROFESSIONAL CERTIFICATE
DESIGN BY: DZ/RHV
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DATE: JAN. 25, 2012
SCALE: 1"=60'
W.O. NO.: 07-11

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10 SHEET OF 13

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

Katelyn Lawrence 3-12-12
PLANNING DIRECTOR
DATE

OWNER/DEVELOPER
THE STRONACH GROUP
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AURORA, ONTARIO
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(905) 726-0995

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APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIOTENTION, RAIN GARDEN, LANDSCAPE INFILTRATION & INFILTRATION BERMS

1. MATERIAL SPECIFICATIONS
 THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

2. FILTERING 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-BIOTENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH OR PROVIDE A NUISANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF HERBICIDE DRUGS, 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 COMPONENT - 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% TO 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 IN TO THE SOIL TO INCREASE OR DECREASE PH.

THESE SHALL BE AT LEAST ONE SOIL TEST PER PRACTICE. 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 STOCKPILE 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 BIOTENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION AIDS TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE 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 AVOIDED BY THE BIOTENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL FLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REPAIR 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.

ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIOTENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY POUNDED WATER BEFORE PREPARING (ROTOTILLING) BASE.

WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE.

WHEN BACKFILLING THE BIOTENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIOTENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER TO SUPPLY SOIL AND SAND. GRADE BIOTENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

4. PLANT MATERIAL
 RECOMMENDED PLANT MATERIAL FOR MICRO-BIOTENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.

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 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 BIOTENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.

ROOTSTOCK OF THE PLANT MATERIAL SHALL BE VERY MOST 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 FIT 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 BRANDED 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 GRILLED 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 GROWING MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIOTENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, 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" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OF 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 44) GALVANIZED HARDWARE CLOTH.
 • COVER - THE GRAVEL LAYER (NO. 57 STONE) PREFERRED SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
 • THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
 • A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCES OF THE FILTER.
 • A 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 IN TO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS SPECIFICATIONS ARE USED.

THIS MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).

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

B.4.B SPECIFICATIONS FOR PERMEABLE PAVEMENTS & REINFORCED TURF

THESE SPECIFICATIONS INCLUDE INFORMATION ON ACCEPTABLE MATERIALS FOR TYPICAL APPLICATIONS AND ARE NOT EXCLUSIVE OR LIMITING. THE DESIGNER IS RESPONSIBLE FOR DEVELOPING SPECIFICATIONS FOR INDIVIDUAL PROJECTS AND SPECIFIC CONDITIONS.

1. PERVIOUS CONCRETE SPECIFICATIONS

DESIGN THICKNESS - PERVIOUS CONCRETE APPLICATIONS SHALL BE DESIGNED SO THAT THE THICKNESS OF THE CONCRETE SLAB SHALL SUPPORT THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED. REFER TO OTHER STANDARD PAVEMENT PROCEDURES (E.G., AASHTO, ACP 325.9R, ACP 330.9R) OR USING STRUCTURAL VALUES DERIVED FROM FLEXIBLE PAVEMENT DESIGN PROCEDURES.

MIX & INSTALLATION - TRADITIONAL PORTLAND CEMENTS (ASTM C 150, C 1157) MAY BE USED IN PERVIOUS CONCRETE APPLICATIONS. PHOSPHOROUS ADMIXTURES MAY ALSO BE USED. MIXTURES SHOULD BE PROVED THROUGH PROPER TESTING PRIOR TO CONSTRUCTION SO THAT CRITICAL PROPERTIES (E.G., SETTING TIME, RATE OF STRENGTH DEVELOPMENT, POROSITY, PERMEABILITY) CAN BE DETERMINED.

AGGREGATE - PERVIOUS CONCRETE CONTAINS A LIMITED FINE AGGREGATE CONTENT. COMMONLY USED GRADATIONS INCLUDE ASTM C 33 NO. 67 (3/4 IN. TO NO. 4), NO. 8 (3/8 IN. TO NO. 10), NO. 10 (3/8 IN. TO NO. 20), NO. 20 (NO. 10 TO NO. 40), NO. 40 (NO. 20 TO NO. 60), NO. 60 (NO. 40 TO NO. 100), NO. 100 (NO. 60 TO NO. 200), NO. 200 (NO. 100 TO NO. 425), NO. 425 (NO. 200 TO NO. 850), NO. 850 (NO. 425 TO NO. 2000), NO. 2000 (NO. 850 TO NO. 4250), NO. 4250 (NO. 2000 TO NO. 8500), NO. 8500 (NO. 4250 TO NO. 8500+).

WATER CONTENT - WATER-TO-CEMENT RATIOS BETWEEN 0.27 AND 0.30 ARE USED ROUTINELY WITH PROPER INCLUSION OF CHEMICAL ADMIXTURES. WATER QUALITY SHOULD MEET AQA AS A GENERAL RULE. POTABLE WATER SHOULD BE USED ALTHOUGH RECYCLED CONCRETE PRODUCTION WATER MEETING ASTM C 94 OR AASHTO M 157 MAY ALSO BE USED.

ADMIXTURES - CHEMICAL ADMIXTURES (E.G., RETARDERS OR HYDRATION-STABILIZERS) ARE USED TO OBTAIN SPECIAL PROPERTIES IN PERVIOUS CONCRETE. USE OF ADMIXTURES SHOULD MEET ASTM C 494 (CHEMICAL ADMIXTURES) AND ASTM C 260 (AIR ENTRAINING ADMIXTURES) AND CLOSELY FOLLOW MANUFACTURER'S RECOMMENDATIONS.

BASE COURSE - THE BASE COURSE SHALL BE AASHTO NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (w=0.30).

2. PERMEABLE INTERLOCKING CONCRETE PAVEMENTS (PICP)

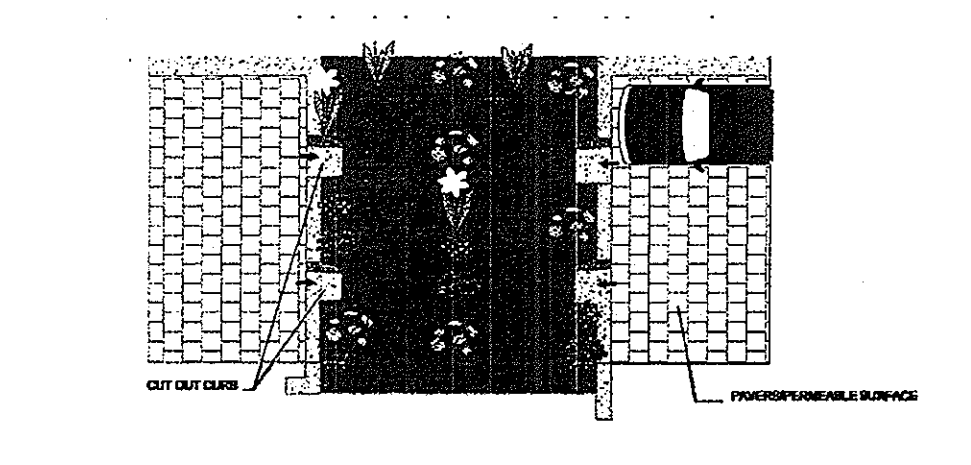
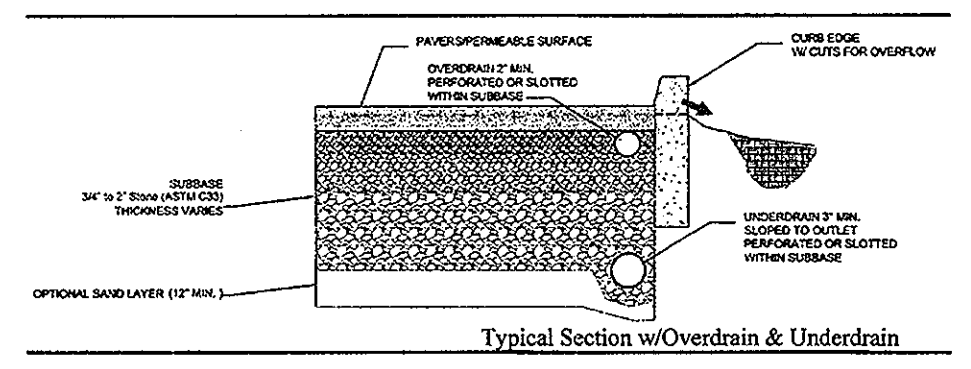
PAVER BLOCKS - BLOCKS SHOULD BE EITHER 3/4 IN. OR 4 IN. THICK, AND MEET ASTM C 936 OR CSA A231.2 REQUIREMENTS. APPLICATIONS SHOULD HAVE 200# OR MORE (AND PREFERRED) OF THE SURFACE AREA OPEN. INSTALLATION SHOULD FOLLOW MANUFACTURER'S INSTRUCTIONS, EXCEPT THAT INFILL AND BASE COURSE MATERIALS AND DIMENSIONS SPECIFIED IN THIS SPECIFICATION SHALL BE FOLLOWED.

INFILL MATERIALS AND LEVELING COURSE - OPENINGS SHALL BE FILLED WITH ASTM C-33 GRADED SAND OR SANDY LOAM. PICP BLOCKS SHALL BE PLACED ON A ONE-INCH THICK LEVELING COURSE OF ASTM C-33 SAND.

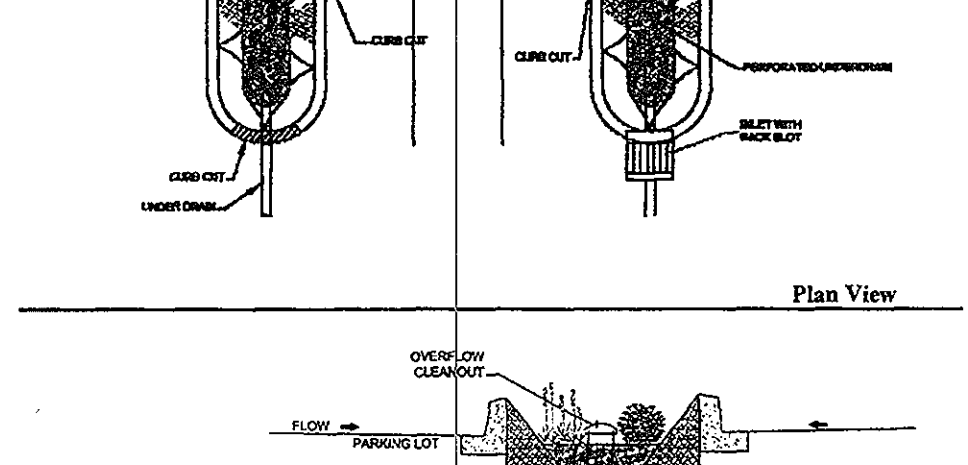
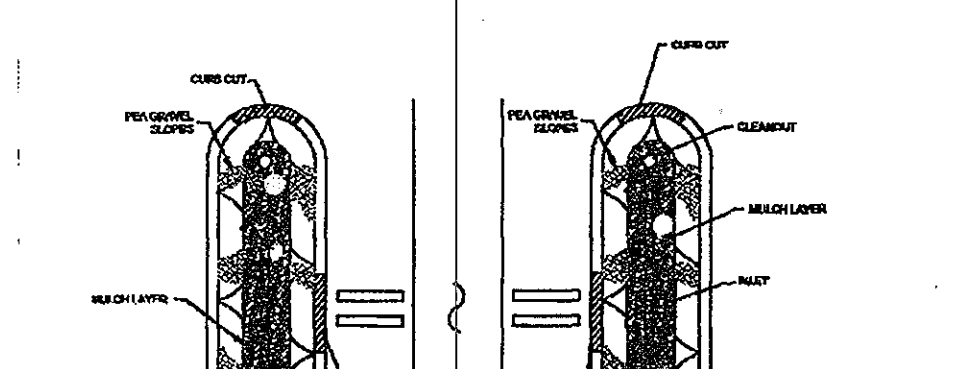
BASE COURSE - THE BASE COURSE SHALL BE AASHTO NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (w=0.30).

3. REINFORCED TURF

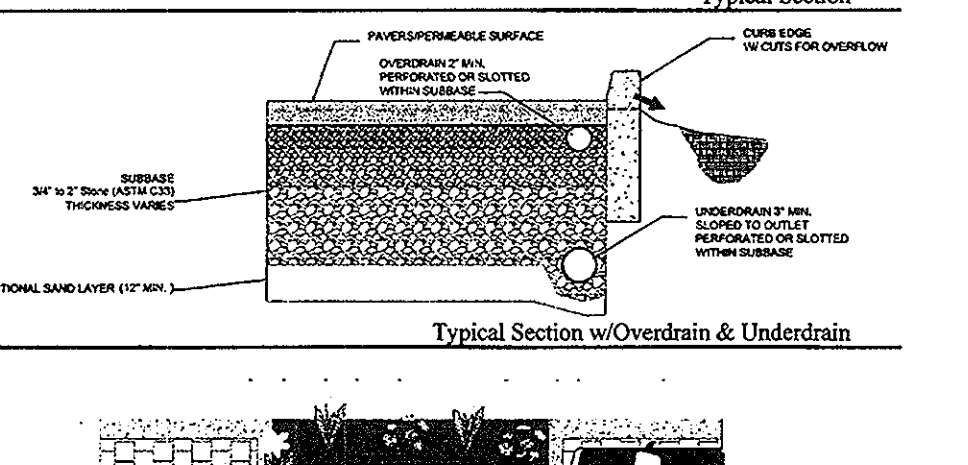
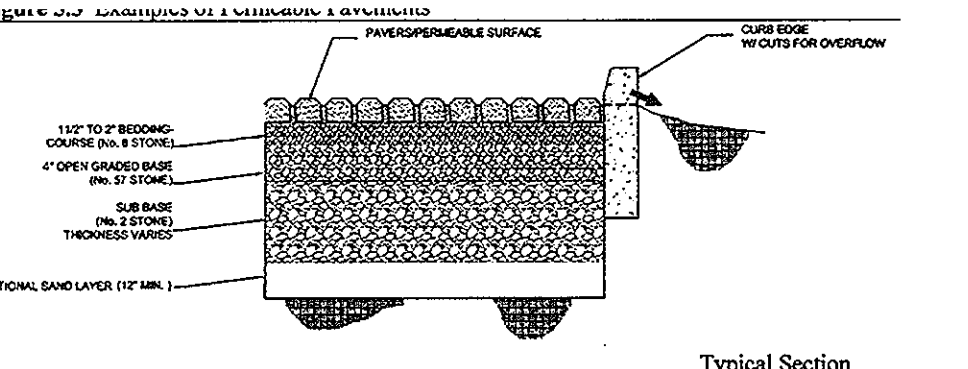
REINFORCED GRASS PAVEMENT (RGP) - WHETHER USED WITH GRASS OR GRAVEL, THE RGP THICKNESS SHALL BE AT LEAST 1-3/4" THICK WITH A LOAD CAPACITY CAPABLE OF SUPPORTING THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED.



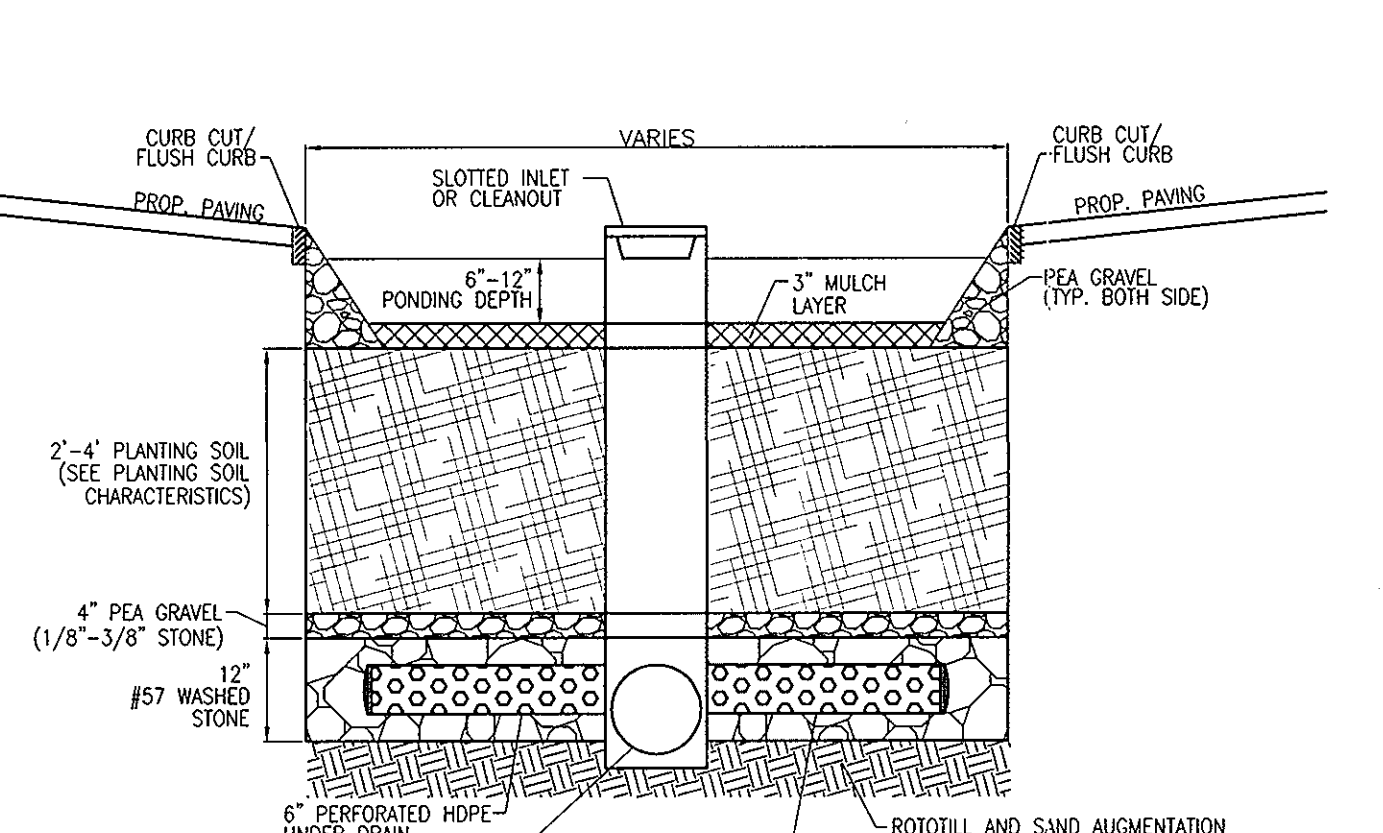
Permeable Pavement w/Micro-Biotention - Plan View
PERMEABLE PAVEMENT DETAIL
 NOT TO SCALE



MICRO-BIOTENTION DETAILS
 NOT TO SCALE



MICRO-BIOTENTION DETAILS
 NOT TO SCALE



MICRO-BIOTENTION
 NOT TO SCALE

Appendix B.4. Construction Specifications for Environmental Site Design Practices

Material	Specification	Size	Notes
Planting soil	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 soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)	n/a	aged 6 months, minimum; no pine or wood chips
Mulch	shredded hardwood	n/a	
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone; washed cobbles	stone: 2" to 5"	
Geotextile	AASHTO M-43	n/a	PE Type I nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (1/2" to 3/4")	
Underdrain piping	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 pipe; not necessary underneath pipe. Perforated pipe shall be wrapped with 1/4-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3, f' = 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 requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.8(R); vertical loading (H-10 or H-20); allowable horizontal loading (based on soil research); and analysis of potential cracking. Sand substitutions such as Diabase and Graystone (AASHTO) #10 are not acceptable. No calcium carbide or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.
Sand	AASHTO-M-6 or ASTM-C-33	0.075" to 0.04"	

OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-3), MICRO-BIOTENTION (M-6), RAIN GARDENS (M-7), BIOTENTION SWALE (M-8), AND ENHANCED FILTERS (M-9)

1. 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 PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUME II, TABLE A.4.1 AND 2.
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.
3. 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.
4. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

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

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.

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY

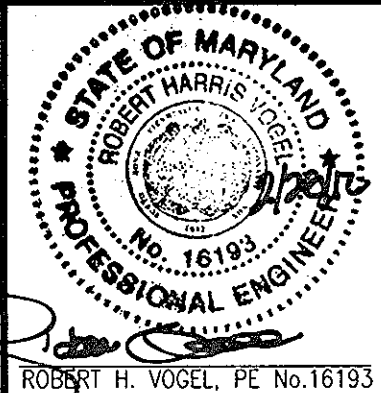
[Signature]
 PLANNING DIRECTOR
 DATE: 3-12-12

OWNER/DEVELOPER
 THE STRONACH GROUP
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 AURORA, ONTARIO
 L4G 7A9
 CANADA
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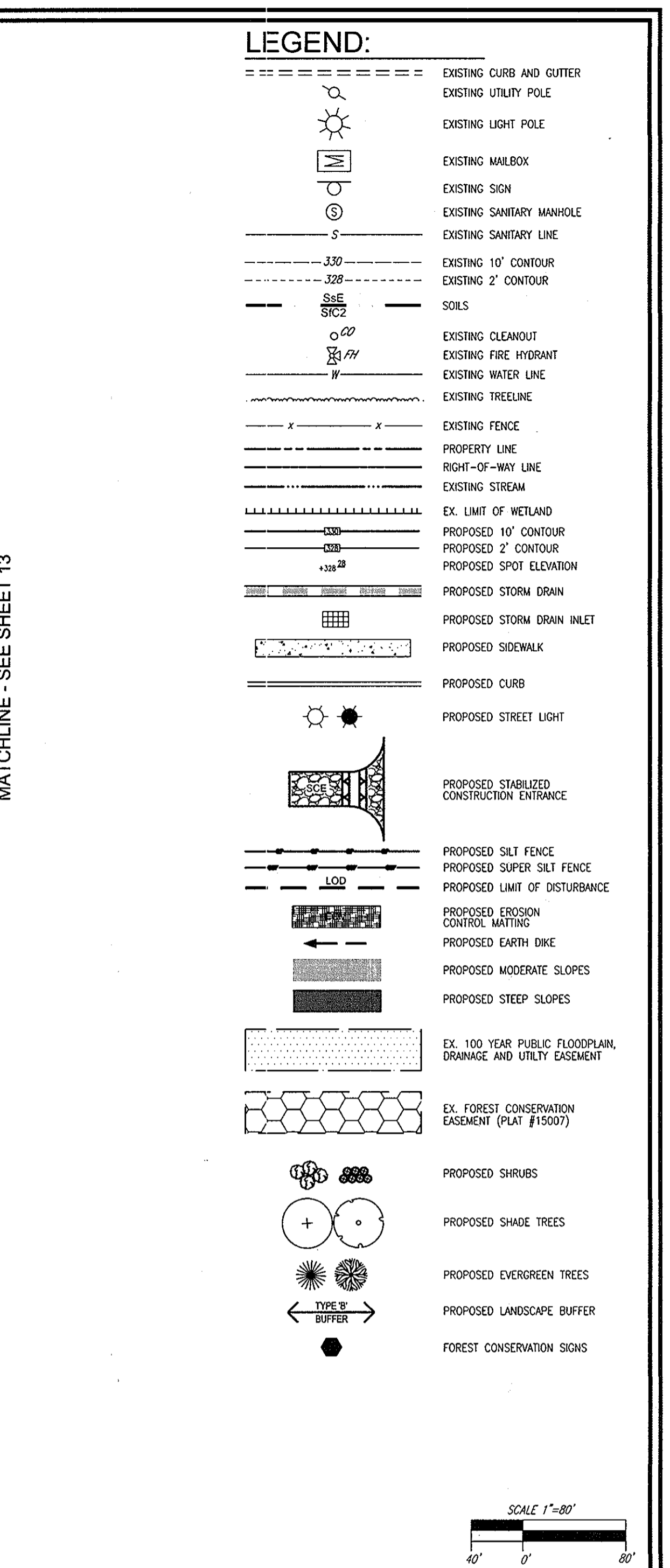
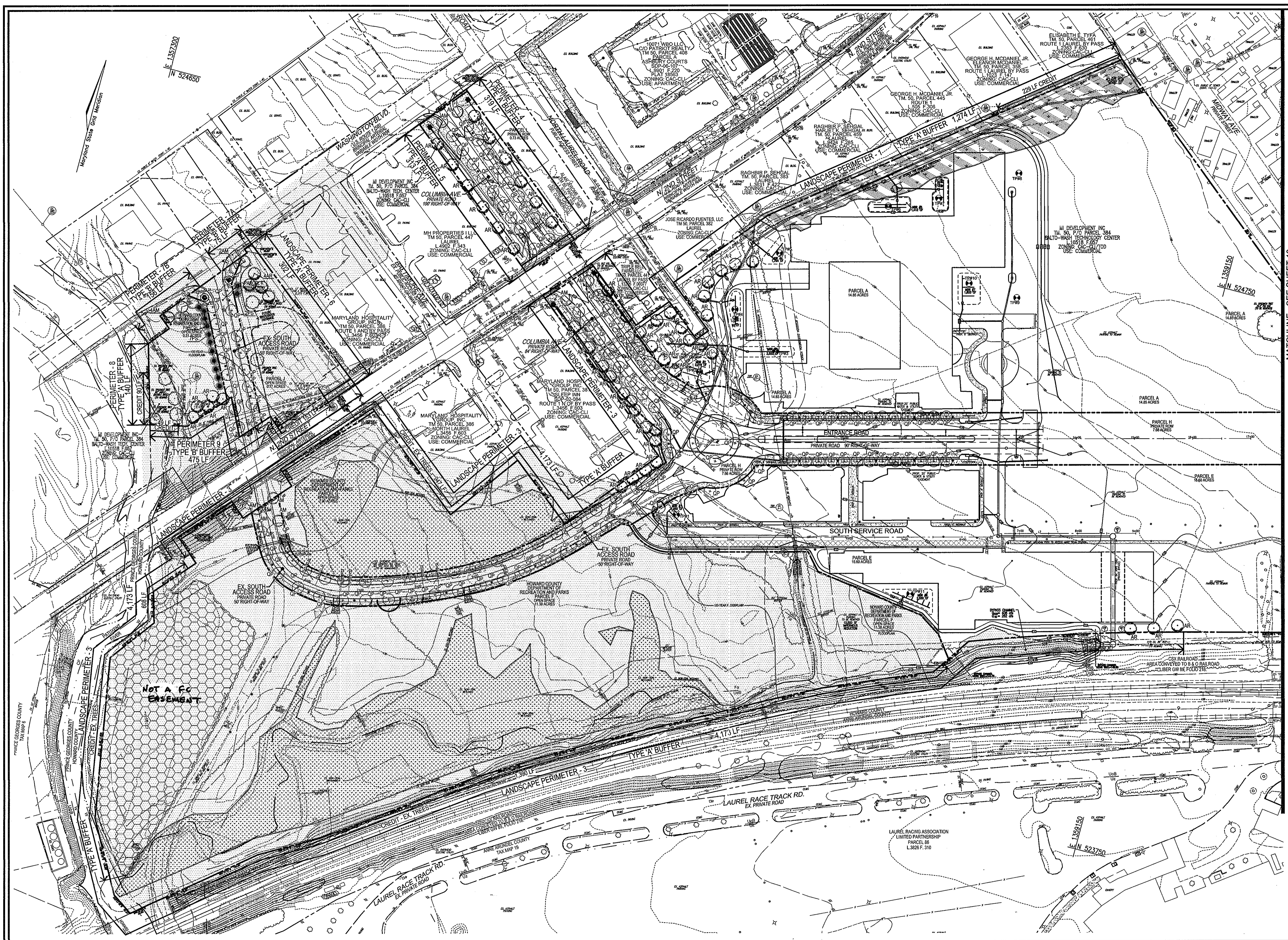


PROFESSIONAL CERTIFICATE

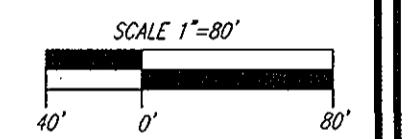
DESIGN BY: DZ/RHV
 DRAWN BY: DZ/KG
 CHECKED BY: RHV
 DATE: JAN. 25, 2012
 SCALE: 1"=100'
 W.O. NO.: 07-11

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A duly LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 16193 EXPIRATION DATE: 08-27-2012

11 SHEET OF 13



MATCHLINE - SEE SHEET 13



NO.	REVISION	DATE

**PRELIMINARY PLAN
LANDSCAPE AND FOREST
CONSERVATION PLAN
LAUREL PARK STATION**

PHASE I
PARCELS A, E, G, K, L, P/O H & F
L.10518 F.157

TAX MAP: 50 BLOCK: 10 HOWARD COUNTY, MARYLAND
3RD ELECTION DISTRICT
PARCEL: 384/264 ZONED: TOD/CAC

DPZ REFERENCES: PLAT #15007, SDP-01-32
WP-01-24, WP-01-106, S-10-004, WP-10-171
AND WP-11-184.

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TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

Maisha McArthur 3-17-12
PLANNING DIRECTOR DATE

Chris Ogle
DMR QUALIFIED FOREST PROFESSIONAL
J. CHRIS OGLE

OWNER/DEVELOPER
THE STRONACH GROUP
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AURORA, ONTARIO
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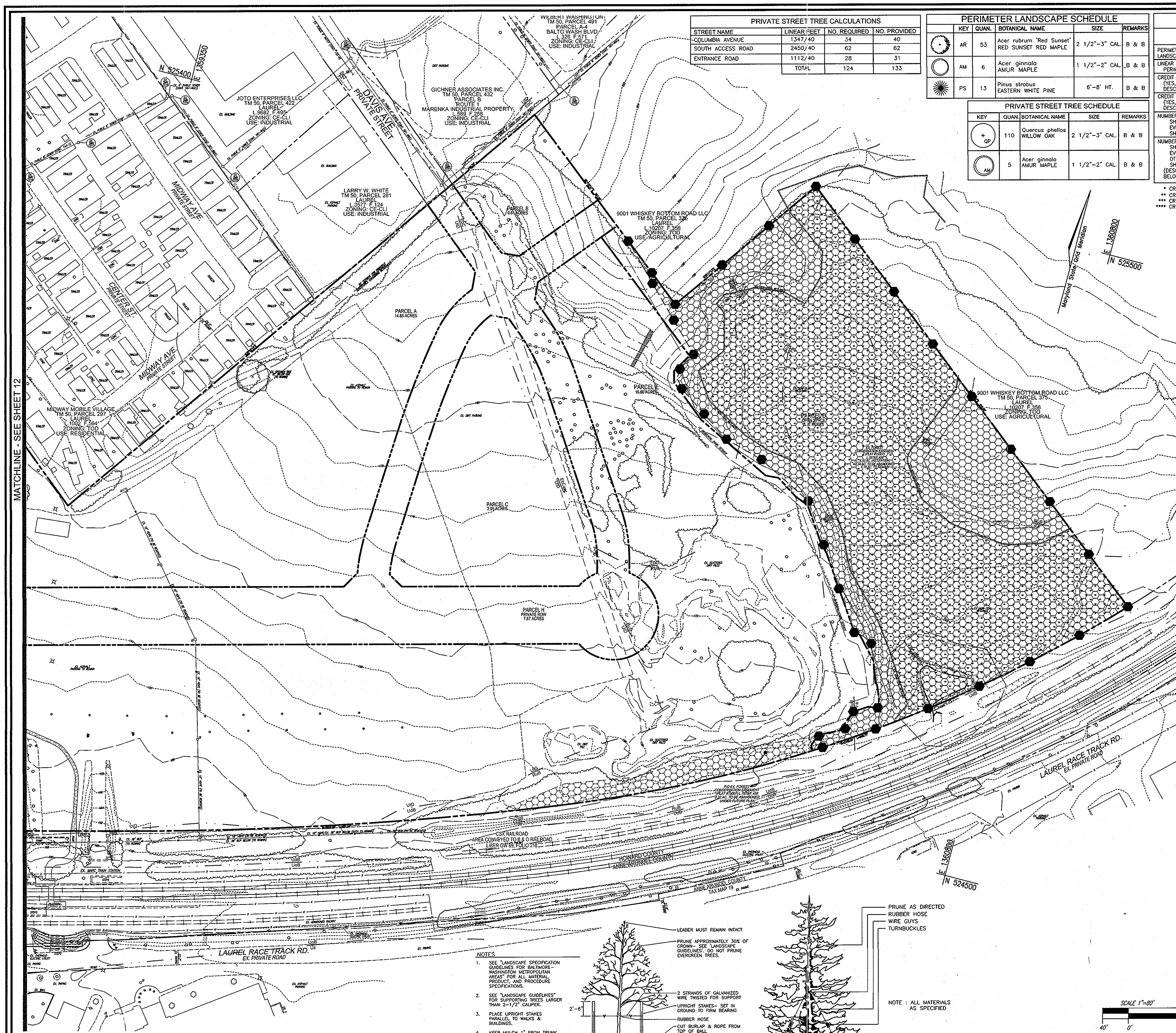
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STATE OF MARYLAND
ROBERT H. VOGEL
PROFESSIONAL ENGINEER
No. 16193

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS
WERE PREPARED OR APPROVED BY ME, AND
THAT I AM A DULY LICENSED PROFESSIONAL
ENGINEER UNDER THE LAWS OF THE STATE
OF MARYLAND, LICENSE NO. 16193
EXPIRATION DATE 09-27-2012

DESIGN BY: DZ/RHV
DRAWN BY: DZ/KG
CHECKED BY: RHV
DATE: JAN. 25, 2012
SCALE: AS SHOWN
W.O. NO.: 07-11

12 SHEET OF 13



PRIVATE STREET TREE CALCULATIONS

STREET NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED
COLUMBIA AVENUE	1347/40	34	40
SOUTH ACCESS ROAD	2450/40	62	62
ENTRANCE ROAD	1112/40	28	31
TOTAL		124	133

PERIMETER LANDSCAPE SCHEDULE

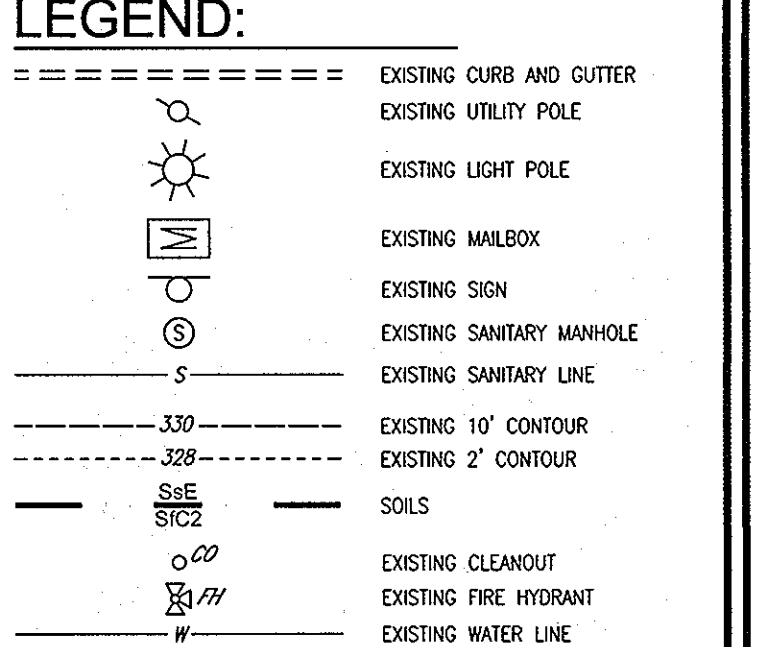
KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
AR	53	Acer rubrum 'Red Sunset' / Red Sunset Red Maple	2 1/2" - 3" CAL.	B & B
AM	6	Acer ginnala / Amur Maple	1 1/2" - 2" CAL.	B & B
PS	13	Pinus strobus / Eastern White Pine	6" - 8" HT.	B & B

PRIVATE STREET TREE SCHEDULE

KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
CP	110	Quercus phellos / Willow Oak	2 1/2" - 3" CAL.	B & B
AM	5	Acer ginnala / Amur Maple	1 1/2" - 2" CAL.	B & B

SCHEDULE A: PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO PERIMETER PROPERTIES / ROADWAYS										TOTAL
	1	2	3	4	5	6	7A	7B	8	9	
PERIMETER/FRONTAGE DESIGNATION	1.274'	4.103	319'	313'	302'	75'	156'	140'	475'		
LINEAR FEET OF ROADWAY, PERIMETER/FRONTAGE	1.274'	4.103	319'	313'	302'	75'	156'	140'	475'		
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET, DESCRIBE BELOW IF NEEDED)	YES 229 LF	YES 6 SHADE***	NO	NO	YES 2 SHADE*	NO	NO	YES 90 LF	YES 212 LF	YES 3 SHADE**	YES 1 SHADE***
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET, DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
NUMBER OF PLANTS REQUIRED (LF REMAINING)	1,045 LF	1,158 LF	1,600 LF	1,600 LF	1,600 LF	1,500 LF	1,500 LF	50 LF	363 LF	59 LF	59 LF
NUMBER OF PLANTS PROVIDED	18	14***	6	6	4*	2	4	0**	5	13	13
NUMBER OF PLANTS SHORT	1,027 LF	1,144 LF	1,594 LF	1,594 LF	1,596 LF	1,498 LF	1,496 LF	50 LF	358 LF	46 LF	46 LF
NUMBER OF PLANTS EXCESS	0	0	0	0	0	0	0	0	0	0	0
SHRUBS (10:1 SUBSTITUTION)	0	0	0	0	0	0	0	0	0	0	0
SHRUBS (10:1 SUBSTITUTION) CREDITS	0	0	0	0	0	0	0	0	0	0	0



NOTES:

- FOREST CONSERVATION OBLIGATION FOR THE 63.73 AC IS FULLY FILLED BY ON-SITE RETENTION OF 6.53 ACRES OF EXISTING FOREST (PLAT #15007) AND A FEE-IN-LIEU FOR 57 ACRES AS PART OF SDP-01-032. FEE-IN-LIEU OF THE REMAINING 0.19 ACRES OF REFORESTATION TO BE PAID IN THE AMOUNT OF \$6,207.30 CONJUNCTION WITH THE ON-SITE DEVELOPMENT PLAN PHASE. PROPOSED PARCELS 1, 2, AND THE R/W IN BETWEEN ARE COMPLETELY WITHIN THE 100 FT PLAZA ZONING DISTRICT AND NO FOREST CONSERVATION REQUIREMENTS, PROPOSED PARCELS 3, 4, AND THE R/W IN BETWEEN CONTAINS NO FORESTED RESOURCES. WE ARE PROPOSING 0.34 ACRES OF THE 6.53 ACRE EASEMENT TO BE ABANDONED, NETTING 6.19 ACRES OF RETENTION. THE REMOVE/ABANDONMENT OF 0.34 ACRES OF FOREST CONSERVATION EASEMENT WILL REQUIRE A PLAT OF REVISION AND ABANDONMENT TO THE DEED OF FOREST CONSERVATION EASEMENT. THE ABANDONMENT OBLIGATION WILL BE MET IN CONJUNCTION WITH THE FINAL OR SITE DEVELOPMENT BY A FEE-IN-LIEU PAYMENT OF \$18,513.00 AT A RATE OF \$1.25/SF.
- FOREST STAND DELINEATION FOR P/O PARCEL 284 WAS PREPARED BY EXPLORATION RESEARCH, INC., DATED AUGUST 2008 AND WAS RECORDED IN JUNE 2009. A SIMPLIFIED PSD WAS FOR PARCEL 384 WAS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED APRIL 2010.
- ALL LANDSCAPING REQUIREMENTS SHALL BE COMPLIED WITH AS SET FORTH IN THE LANDSCAPE MANUAL.
- LANDSCAPING NOT PERMITTED WITHIN 7'-1/2' OF EACH SIDE OF THE FIRE DEPARTMENT CONNECTION. PROVIDE A CLEAR UNOBSTRUCTED ACCESS PATH TO THE FIRE DEPARTMENT CONNECTION. NFPA-113.14
- A MINIMUM OF 20" SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAS SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LCAW PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM DRAINING SHALES.
- CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLANT DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
- THE PROPERTY OWNER WILL BE RESPONSIBLE FOR MAINTAINING STREET TREES WITHIN THE PUBLIC RIGHT-OF-WAY.

DEVELOPER'S AGREEMENT

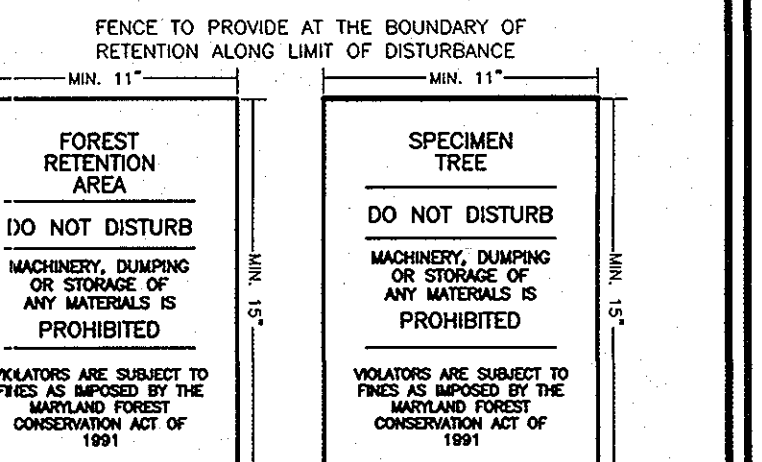
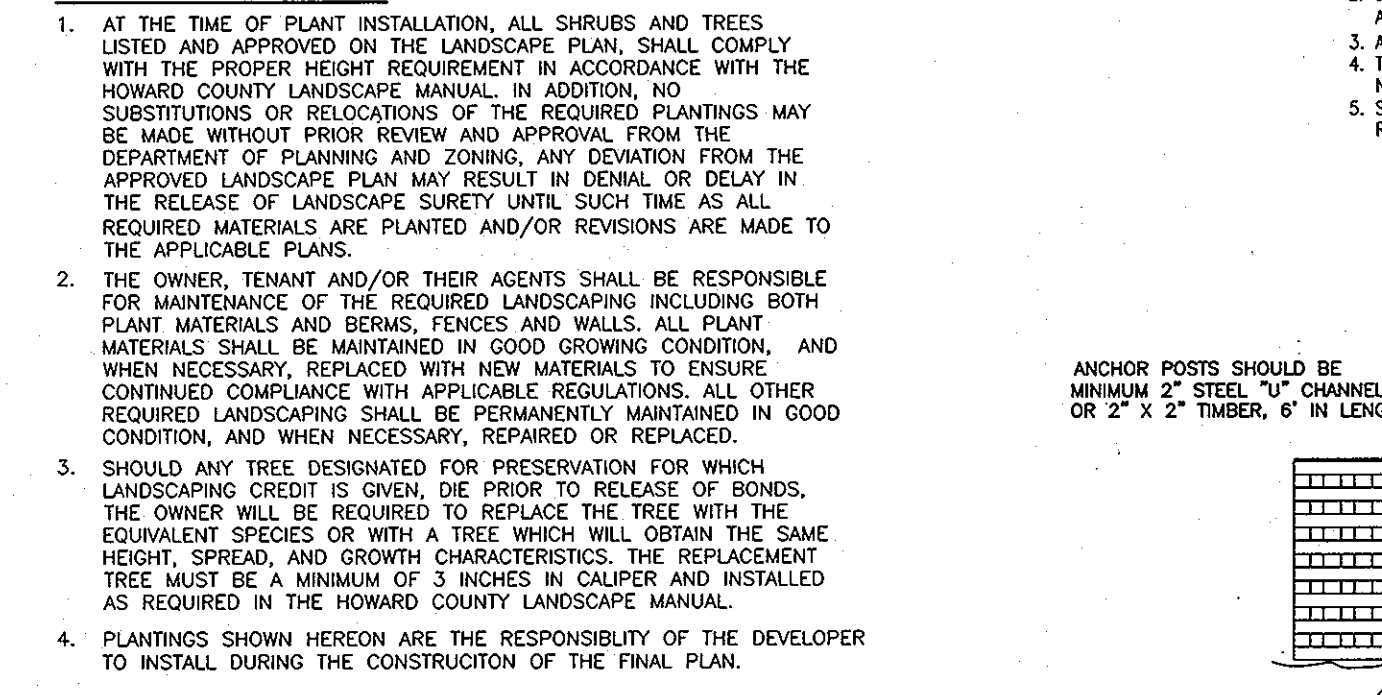
STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124 (e)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. A FINANCIAL SURETY IN THE AMOUNT OF \$40,000.00 TO BE POSTED AS SURETY IN THE AMOUNT OF \$40,000.00 TO BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT FOR THE REQUIRED 136 PUBLIC STREET TREES, FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING PROVIDED FOR THE LANDSCAPE MANUAL TO BE POSTED WITH THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$21,600.00 FOR THE REQUIRED 64 SHADE TREES AND THE REQUIRED 16 EVERGREEN TREES.

LANDSCAPE NOTES

- AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND TREES LISTED AND APPROVED ON THE LANDSCAPE PLAN, SHALL COMPLY WITH THE PROPER HEIGHT REQUIREMENT IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATIONS OF THE REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THE 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 THE APPLICABLE PLANS.
- 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. PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION AND WHEN NECESSARY, REPAIRED OR REPLACED.
- SHOULD ANY TREE DESIGNATED FOR PRESERVATION FOR WHICH LANDSCAPING CREDIT IS GIVEN, DIE PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD, AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INCHES IN CALIPER AND INSTALLED AS REQUIRED IN THE HOWARD COUNTY LANDSCAPE MANUAL.
- PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THE FINAL PLAN.

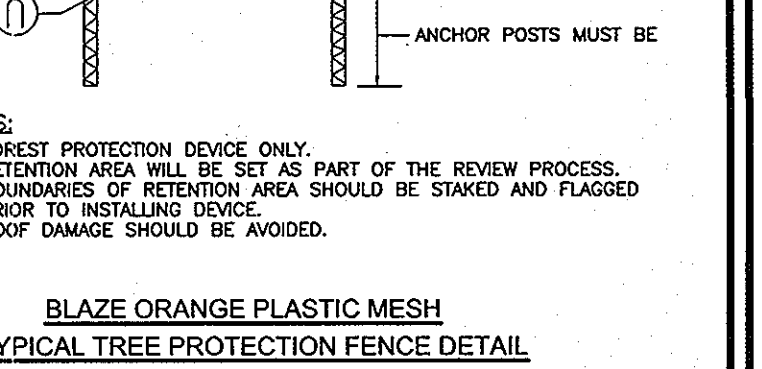
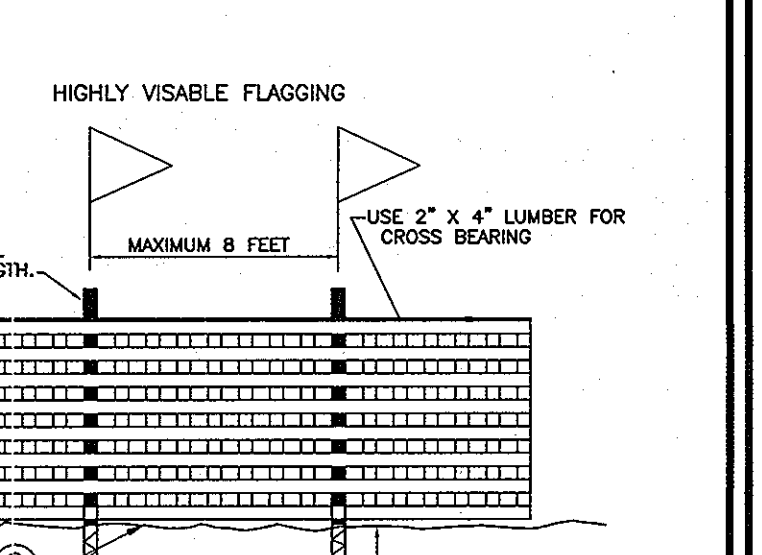
B & E NOTES:

- THE LANDSCAPING ON WIREZONE (40' FROM BOE POLES) IS IN ACCORDANCE WITH BOE LIST OF TREES AND PLANTS.
- BOE RESERVES THE RIGHT TO TRIM, TOP OR CUT DOWN ANY TREE IN PROXIMITY TO THE LINE THAT IN THE OPINION OF BOE SHALL BE DEEMED A HAZARD TO THE SAFE AND RELIABLE DELIVERY OF ELECTRICITY.
- THE DEPARTMENT OF PLANNING AND ZONING MAY AUTHORIZE THE TRIMMING OR REMOVAL OF TREES OR VEGETATION IMMEDIATELY ADJACENT TO THE BOE R/W OR EASEMENT, IF BOE DETERMINES THE TREES ARE COMPROMISING THE SAFETY OF A TRANSMISSION LINE LOCATED WITHIN THEIR UTILITY R/W OR EASEMENT. IF BOE INTERFERES WITH OR REMOVES TREES WITHIN A FOREST CONSERVATION EASEMENT, A LETTER SPECIFYING THE LOCATION AND SCOPE OF WORK NEEDS TO BE SENT TO DPZ AT LEAST 30 DAYS IN ADVANCE OF UNDERTAKING THE WORK. DPZ WILL UNDERSTANDS, CONSENTATION ENERGY'S NEED TO PROTECT ITS TRANSMISSION LINES AND WILL NOT UNREASONABLY WITHHOLD PERMISSION.



NOTES:

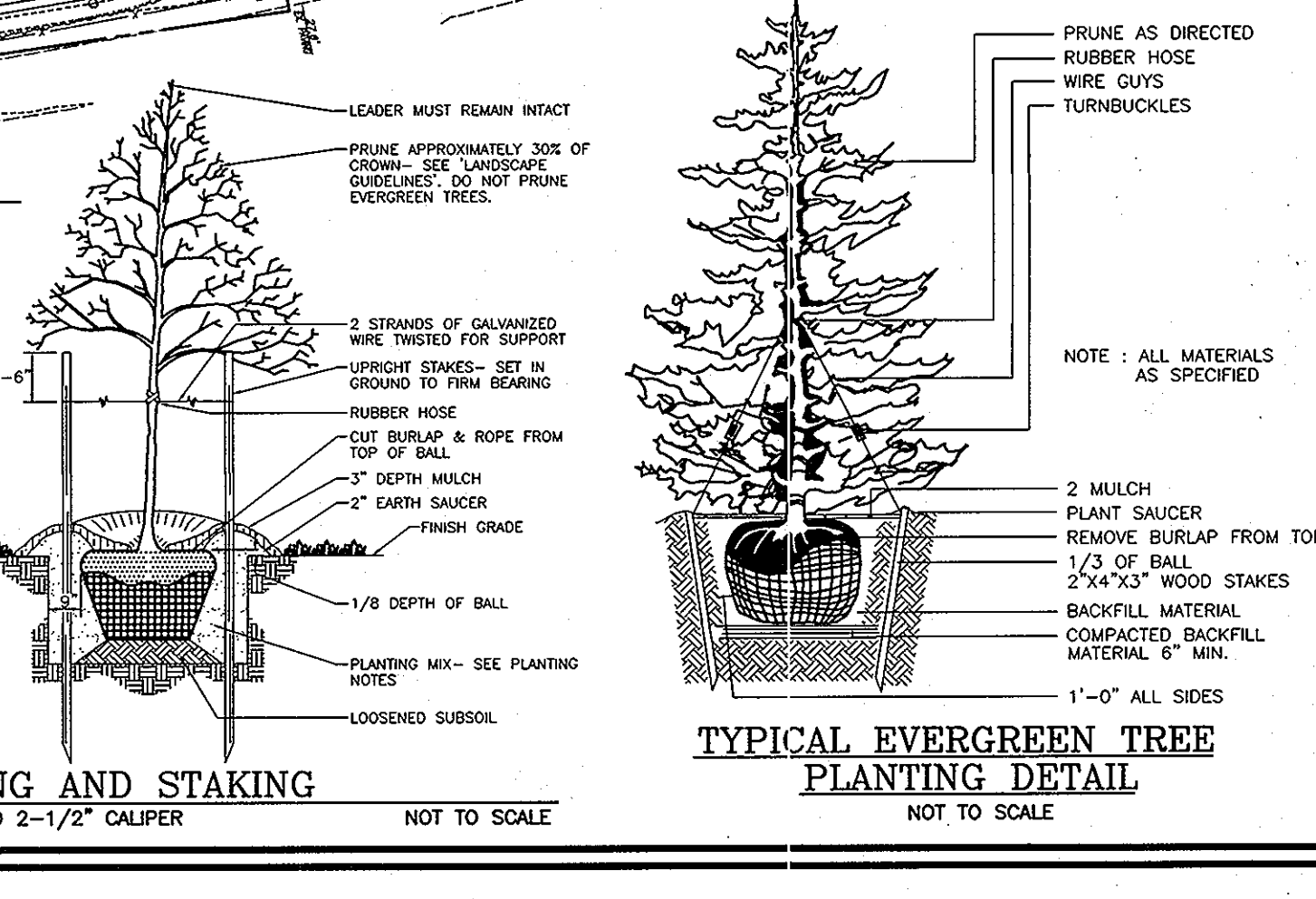
- BOTTOM OF SIGNS TO BE HIGHER THAN TOP OF TREE PROTECTION FENCE.
- SIGNS TO BE PLACED APPROXIMATELY 50-100 FEET APART, CONDITIONS ON SITE AFFECTING VISIBILITY BY WARRANT PLACING SIGNS CLOSER OR FARTHER APART.
- ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.
- THE SIGNS NOTIFY CONSTRUCTION WORKERS AND FUTURE RESIDENTS OF THE NEWLY PLANTED MATERIAL, IMPROVING THE TREES SURVIVAL RATES.
- SIGNS MAY BE ADAPTED BY RESIDENTS FOR IDENTIFICATION OF FOREST RETENTION AREAS IN LONG TERM.



TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

Maresha M. Alkhatib
PLANNING DIRECTOR
DATE: 3-12-12

DMR QUALIFIED FOREST PROFESSIONAL
J. CHRIS OGLE
DATE: 3-12-12



OWNER/DEVELOPER
THE STROMACH GROUP
455 MAGNA DRIVE
AURORA, ONTARIO
L4G 7A9
CANADA
(905) 726-0995

WALTER LYNCH PLLC
ARCHITECTURE • MASTER PLANNING • CONSERVATION

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WASHINGTON, DC 20007
PHONE 202.965.2424 FAX 202.965.5544
WALTERLYNCH.COM

**PRELIMINARY PLAN
LANDSCAPE AND FOREST
CONSERVATION PLAN
LAUREL PARK STATION
PHASE I**

PARCELS A, E, G, K, L, P/O H & F
L.10518 F.157 HOWARD COUNTY, MARYLAND
TAX MAP: 50 BLOCK: 10 DPZ REFERENCES: PLAT #15007, SDP-01-32,
3RD ELECTION DISTRICT WP-01-24, WP-01-106, S-10-004, WP-10-171
PARCEL:384/264 ZONED: TOD/CAC AND WP-11-184.

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

DESIGN BY: DZ/RHV
DRAWN BY: DZ/KG
CHECKED BY: RHV
DATE: JAN. 25, 2012
SCALE: AS SHOWN
W.O. NO.: 07-11

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. EXPIRATION DATE 08-27-2012

13 SHEET OF 13