DEVLIN PROPERTY

STORMWATER MANAGEMENT CONCEPT

Submitted for:

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Joint Hearing - MCC & PC
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Exhibit 10

Joint Hearing - MCC & PC
SDP-4560-2014
Exhibit 21

DEVLIN PROPERTY – STORMWATER CONCEPT

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SECTION 1.1– EXECUTIVE SUMMARY/ SITE OVERVIEW

EXECUTIVE SUMMARY

The applicant for the project is Classic Community Corporation. The Devlin property is a 3.23 acre site located off of Game Preserve Road, located between the Watkins Mill development and CSX railroad tracks and property in the City of Gaithersburg. The site is zoned as MXD, and is proposed to be developed into four townhouse buildings. In order to build these townhouses, only 2.74 acres of the property will be disturbed. The site is within the Great Seneca Creek watershed.

The project will consist of four townhouse buildings, associated driveways, roadway and parallel parking.

This storm water management Plan has been prepared to comply with the requirements of the 2007 MDE SWM manual and the Environmental Site Design (ESD) Process and Computations supplement dated July 2010. This document introduces the proposed development and its intended implementation of the concepts and goals outlined for the project. A storm water management concept Plan has not previously been approved for this project.

The plan proposes the use of permeable pavements, bioswales, landscape infiltration, and micro-bioretention to treat the runoff from the site.

SLOPES

The Natural Resource Inventory Map delineates slope ranges for 15-25% and 25% and greater (see Natural Resource Inventory Map). These are confined to small areas near the CSX railroad.

SOILS

The soils found on site are as follows: Brinklow-Blocktown channery silt loams, 8-15% slopes (16C) and Glenelg silt loam, 3-8% slopes (2B). The site is HSG type ‘B’.

STREAMS/ WATERSHED

There are no streams at the site.

WETLANDS

There are no wetlands at the site.

FLOODPLAIN

There is no area of FEMA-mapped floodplain on or within 200’ of the site.

FOREST

The entire site is forested and consists of predominately upland hardwood species. The site was surveyed by Rodgers Consulting, Inc. staff on August 30, 2013.

SEDIMENT CONTROL PRACTICES

Sediment control will be provided through a combination of perimeter controls, and the use of sediment traps.

SECTION 1.2 - PURPOSE AND SCOPE

The purpose of this stormwater concept design study is to identify acceptable stormwater management Best Management Practices (BMP's) and to ensure sufficient space is allocated for construction and maintenance of the facilities. This study presents the preliminary design calculations. The report and plan illustrate the sites use of ESD to the maximum extent practicable (MEP) per the requirements of the MDE SWM Manual, and the Best Management Practices (BMPs) to be utilized with supporting calculations and plans.

SECTION 1.3 - ON-SITE ESD PRACTICES

On-site ESD practices are to be used to the maximum extent practicable. An evaluation of the existing site conditions in conjunction with the design of the development plan was performed to determine the maximum extent of treatment using ESD. Through the integration of ESD into the site design, the Pe requirement of 1.80" will be met. As explained below, there are site constraints that have constrained or reduced the effectiveness of certain ESD practices. Therefore, this swm plan provides "ESD to the MEP".

Alternative Surfaces – The following practices have been considered and analyzed as alternative methods to reduce the RCN (runoff curve number) for impervious surfaces on the site.

a. Green Roofs – Alternative surfaces that replace conventional construction materials and include a protective covering of planting media and vegetation. These systems reduce impervious cover and more closely mimic the natural hydrology of the site. *Green roofs are not proposed as the building roof will be sloped.*

b. Permeable Pavements – Pavement alternatives that replace conventional concrete or asphalt and provide a porous surface course and open graded stone and sand sub-base system to provide water quality and groundwater recharge benefits. These include porous bituminous asphalt, pervious concrete, and permeable interlocking concrete pavements. *Permeable pavements are proposed for the driveways on the site.*

c. Reinforced Turf – Alternative surface system made of interlocking structural units with open areas for placing gravel or growing grass. These systems are utilized in light traffic areas such as emergency access roads, plazas, or occasionally used parking areas. The open load-bearing matrix system allows for runoff characteristics to be similar to open space or gravel. *Reinforced turf is not proposed as a standalone practice currently.*

Nonstructural Practices – Practice that utilizes grading and landscaping techniques to divert runoff into vegetated areas for filtration and away from conventional storm drain systems.

a. Disconnection of Rooftop Runoff – Practice that involves direction of flow from downspouts onto vegetated areas where it can be filtered over the ground, thereby reducing runoff volume to storm drain systems and decreasing the amount of pollutants delivered to receiving waters. *This practice is not utilized on this site.*

b. Disconnection of Non-Rooftop Runoff - Practice that involves direction of flow from impervious surfaces onto vegetated areas where it can filter over the ground, thereby reducing runoff volume to storm drain systems and decreasing the amount of pollutants delivered to receiving waters. *This practice is not practical for use on this site.*

c. Sheetflow to Conservation Areas – Practice that diverts flow from impervious areas to adjacent natural areas to filter over the ground. The natural areas must be protected areas that will not be developed in the future, such as stream buffers or forest conservation areas. *This practice is not practical for this site.*

Micro-Scale Practices – Small water quality treatment devices used to capture and treat runoff from discrete impervious areas (less than 1 acre) by means of natural filtration using vegetation and pervious soils.

a. Rainwater Harvesting (Cisterns and Rain Barrels) – Practice that intercepts and stores rainfall for future reuse for non-potable water supplies. This practice reduces runoff volumes and discharge of pollutants downstream. *This practice is not proposed for the site.*

b. Submerged Gravel Wetlands – Small scale filter practice utilizing wetland plants in a rock media to provide water quality treatment. The runoff is treated by means of pollutant removal through biological uptake from the algae and bacteria growing in the filter media, as well as nutrient uptake and physical and chemical treatment processes by the wetland plants. *This practice is not proposed for the site.*

c. Landscape Infiltration – Practice using on-site vegetative planting areas to capture, store and treat runoff by means of filtration through planting soils and media followed by infiltration of the water into the native soils. *This practice is proposed in a few locations in the open space parcels to be provided between the townhouses buildings and at each open parcel at the end of the site.*

d. Infiltration Berms – Practice that uses an earthen mound composed of soil and stone placed along the contour of a gentle slope. Runoff flows down slope to the berm, and slowly filters through the soil and stone providing quality treatment prior to continuing to sheet flow to receiving waters. *This practice is not practical for use on this site.*

e. Dry Wells – An excavated pit or structural chamber filled with gravel or stone which provides temporary storage of rooftop runoff. The runoff is stored in the well and allowed to slowly filter into the surrounding soils, thereby mimicking the natural treatment and filtration process prior to development. *This practice is not proposed for the site.*

f. Micro-Bioretention – Practice to treat runoff from discrete impervious areas by passing it through a filter bed mixture of sand, soil, and organic matter. Once filtered and treated, the runoff is returned to a conveyance system or infiltrated back into the native soils.
This practice is proposed near the western end of the site in the open space areas.

g. Rain Gardens – A shallow, excavated landscape feature that temporarily holds runoff in an absorbent planted soil bed, mulch layer, and plantings such as shrubs, grasses and flowers. Runoff is directed to the rain gardens, where it ponds and slowly filters into the soils for treatment. *This practice is not proposed for the site.*

h. Swales – Graded channels that provide conveyance of runoff while profile water quality treatment and flow attenuation. Pollutant removal is provided through vegetative filtration, sedimentation, biological uptake, and infiltration into the underlying soils. Swales can consist of grass swales, wet swales, and bio-swales. *Bioretention swales are proposed along the roadways and parallel parking areas and in the rear of one of the townhouse buildings.*

i. Enhanced Filters – A modification applied to a specific practice outlined above by adding a stone reservoir underneath the conventional filtering media to provide more effective water quality treatment and groundwater recharge for a single facility. *This practice is not proposed at the site.*

SECTION 1.4 - REPORT

CRITERIA

- The 2000 Maryland Stormwater Management Design Manual, Maryland Department of the Environment.
- MDE 2007 Maryland Storm Water Design manual
- Environmental Site Design(ESD) Process and Computations supplement dated July 2010
- Montgomery County Ordinance

STORMWATER MANAGEMENT DESIGN

Environmental site design is provided by several treatment methods for the Devlin Property site. Micro-Bioretention and Landscape facilities will be provided in open spaces of the site collecting runoff from the rooftop and paved areas. In addition, bioswales are proposed along the roadway and in the rear of the townhouse buildings. Using these multiple methods environmental site design has been used to the maximum extent practicable.

Runoff Control:

ESD Facility Descriptions

Micro-bioretention- The facilities proposed will be Sump facilities- The sump facility encompasses landscaped garden bioretention facilities. Runoff is directed to the facility by downspouts or overland flow or by curb cuts. At the surface these facilities appear to be a landscaped sump area with plantings, and have inlets to act as an overflow for larger storm events. The 1 yr storm is held and treated in the facility while the larger storm events bypass the facility via the overflow inlets.

Landscape Infiltration- Similar to the micro-bioretention areas, the facilities proposed will be sump facilities as landscaped garden facilities. Runoff is directed to the facility by downspouts or overland flow or by curb cuts. At the surface these facilities appear to be a landscaped sump area with plantings, and have inlets to act as an overflow for larger storm events. The 1 yr storm is held and treated in the facility while the larger storm events bypass the facility via the overflow inlets.

Bio-swales- These areas will collect runoff linear to the townhouse buildings and roadways and direct runoff towards the lower areas of the site. These areas will be planted and include overflow for larger storm events.

Alternative stormwater management measures

Permeable pavers/pavement is proposed for the driveways outside of the public right of way.

ON-SITE ESD PLANNING TECHNIQUES

On-site ESD Planning techniques are to be used to the Maximum Extent Practicable without conflicting with the existing state law or local ordinances, regulations, or policies.

a. Preserving and Protecting Natural Resources – There are no stream valleys or buffers on the site. There were no rare, threatened, or endangered (RTE) species observed on the property
b. Conserving Natural Drainage Patterns- Proposed grading and drainage divides will maintain the existing divides to the extent practicable.
c. Minimizing Impervious Area- Efforts were made to minimize impervious over the entire site, with a portion of the site to remain forested.
d. Reducing Runoff Volume- Runoff Volume is reduced through the use of micro-scale practices.
e. Using ESD Practices to maintain 100 percent of the annual predevelopment groundwater recharge volume- With the bio-swales and landscape infiltration areas planned, the recharge from the site should be maintained.
f. Using green roofs, permeable pavement, reinforced turf, and other alternative surfaces- Alternative surfaces are proposed for the townhouse driveways.
g. Limiting soil disturbance, mass grading, and compaction- The development is 3 acres, and will be subject to sediment control measures to minimize soil disturbance.
h. Clustering Development- The proposed development program includes 4 townhouse buildings clustered along one side of the roadway.

SECTION 1.5 - CONCLUSION

The stormwater management design presented in this report provides ESD to the MEP through the implementation of alternative surfaces and micro-scale practices.

For the entire site, the required ESDv is 9,461 cubic feet. With the proposed facilities, the volume treated is 9,653 cubic feet.

COMPUTATIONS

Concept computations were done in accordance with the MDE 2007 Maryland Storm Water Design manual, Environmental Site Design(ESD) Process and Computations supplement dated July 2010, and Montgomery County Water Resources Technical Policy- 5.

Determining Target ESDv

The property was assessed as one overall area draining to the south towards the CSX railroad. This overall area is 3.43 acres (including the offsite roadway additions), with an impervious percentage of 43%. This was used to determine a Pe of 1.80" for the site using the soils at the site.

Determining ESDv Provided

For concept computations ESDv was determined for each facility type and not for each individual facility.

- Micro-Bioretention ESDv is determined by the storage volume provided within the facility and filter media. A media depth of 3' was assumed as well as a ponding depth of 12".
- Landscape Infiltration ESDv is determined by the storage volume provided within the facility and filter media. A media depth of 3' was assumed as well as a ponding depth of 6".
- Bio-swale ESDv is determined by the storage volume provided within the facility and filter media. The width of the swales vary, a media depth of 2.5' was assumed as well as a ponding depth of 6".
- Permeable paver ESDv is calculated based on B soils and a 12" subbase.

Stormwater Computations

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SUBJECT:	Devlin Property		
BY:	TJS	DATE:	1/31/2014 14:44
CHKD:		DATE:	

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Rainfall Target, Pe

Site Area (Acres)	3.43	(includes roadway areas offsite)	Building:	24782
LOD Area (acres)	2.68	116771	Road:	26472
Site Impervious Area (acres)	1.46	63,591	Sidewalk:	3260
Impervious %	43	for Site	Driveway:	9077
RCN*	75	for Site		63591
Pe (in.)	1.80			
Target ESDv for full Pe (CF)	9460.57			
Target ESDv for 1" Pe (CF)	5255.87			
LOD Impervious Area (acres)	1.46			
Rv	0.54	for LOD		

Site Soil Conditions			
HSG	RCN	Area (acres)	Percent
A	38.00	0.00	0.0
B	55.00	3.43	100.0
C	70.00	0.00	0.0
D	77.00	0.00	0.0

Weighted Target RCN (woods) 55

Soil Group HSG	RCN Pe (in)	Imp Pe (in)
A	0.00	0.00
B	1.80	1.80
C	0.00	0.00
D	0.00	0.00

Weighted Target Pe (woods) 1.80 1.80

*From TR-55

Formulas

I (%) = ((Impervious Area)/(Drainage Area))*100

$R_v = 0.05 + 0.009*I$

ESDv=(Pe)(Rv)(A)/12

Project: Devlin Property | Proj#: 1137b | 1/31/2014 14:44
Engineer: TJS

ESD Design Spreadsheet

DA: Area 1

Area(SF)= 10024 | Area Impervious (SF)= 8821.12 | Imp%= 88 | Rv = .05 + 0.009 x Imp%
Area(AC)= 0.23 | Area Impervious (AC)= 0.20 | Rv= 0.84

Area of Pervious pavement: 0

Micro- Bioretention

For Micro-Bioretention a ESDv is determined by the storage provided in the facility and in the filter media.

Drainage area excluding Micro-bio= 10024 OK

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, D is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 188 | d(FT)= 3 | Af % of DA = 1.9 increase area

V1= 225.6

V2= Storage above Media Max depth 1 FT | d(FT)= 0.5

Bottom Contour Elevation = 419.5 | Area (SF)= 188

Top Contour Elevation = 420 | Area (SF)= 327 | V2 = 128.75

ESDv = V1 + V2 = 354 CF

Treatment Summary

ESDv Total (CF) = 354 OK | Max ESDv (CF) = 1895 | using Pe = 2.7

Pe Provided = 0.51 | Target ESDv (CF) = 1263 | using Pe = 1.80

Area 1	1263	354

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ESD Design Spreadsheet

DA: Area 2

Area(SF)= 14562 | Area Impervious (SF)= 12232.08 | Imp%= 84 | Rv = .05 + 0.009 x Imp%

Area(AC)= 0.33 | Area Impervious (AC)= 0.28 | Rv= 0.81

Area of Pervious Pavement: 0

Permeable Pavement

For Permeable Pavement an ESDv is determined by the storage provided in the subbase.
A is the area of permeable pavement, d is the depth of the subbase

A (SF)= 3295 | d(IN)= 12

Soil Type= B | ESDv/FT^2= 0.196

ESDv=Af*ESDv/FT^2= 645.82

Bio Swale

For Bio-Swale an ESDv is determined by the storage provided in the facility and in the filter media.

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, d is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 300 | d(FT)= 2.5 | w1(FT)= 2

V1= 300 | L(FT)= 150

V2= Storage above Media Max depth 0.75 FT

Bottom w2 (FT) = 2 | Storage Depth, D (FT)= 0.5

Length = 150 | Side Slopes Z:1= 3 | V2 = 262.5

V3 = Storage in Media Side Slope = Lx(w1 - w2)/2 x D x 2 | V3 = 0

ESDv = V1 + V2 = 563

Micro- Bioretention

For Micro-Bioretention a ESDv is determined by the storage provided in the facility and in the filter media.

Drainage area excluding Micro-bio= 14562 OK

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, D is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 683 | d(FT)= 2 | Af % of DA = 4.7 OK

V1= 546.4

V2= Storage above Media Max depth 1 FT | d(FT)= 1

Bottom Contour Elevation = 526 | Area (SF)= 683

Top Contour Elevation = 527 | Area (SF)= 1053 | V2 = 868

ESDv = V1 + V2 = 1414 CF

Treatment Summary

ESDv Total (CF) = 2623 OK | Max ESDv (CF) = 2654 | using Pe = 2.7

Pe Provided = 2.67 | Target ESDv (CF) = 1769 | using Pe = 1.80

Area 2 1769 2623

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ESD Design Spreadsheet

DA: Area 3

Area(SF)= 9388
Area(AC)= 0.22

Area Impervious (SF)= 6102.2
Area Impervious (AC)= 0.14

Imp%= 65
Rv= 0.64

Rv = .05 + 0.009 x Imp%

Area treated in Drywells: 0
Area of Pervious pavement: 0

Bio Swale

For Bio-Swale an ESDv is determined by the storage provided in the facility and in the filter media.

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, d is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 625 d(FT)= 3 w1(FT)= 5
V1= 750 L(FT)= 125

V2= Storage above Media Max depth 0.75 FT

Bottom w2 (FT) = 5 Storage Depth, D (FT)= 0.5
Length = 125 Side Slopes Z:1= 3 V2 = 406.25

V3 = Storage in Media Side Slope = Lx(w1 - w2)/2 x D x 2 V3 = 0

ESDv = V1 + V2 = 1156

Treatment Summary

ESDv Total (CF) = 1156 OK
Pe Provided = 2.31

Max ESDv (CF) = 1352 using Pe = 2.7
Target ESDv (CF) = 901 using Pe = 1.80

Area 3	901	1156

Project: Devlin Property
Engineer: TJS

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ESD Design Spreadsheet

DA: Area 4

Area(SF)= 8235 | Area Impervious (SF)= 6093.9 | Imp%= 74 | Rv = .05 + 0.009 x Imp%

Area(AC)= 0.19 | Area Impervious (AC)= 0.14 | Rv= 0.72

Area treated in Drywells: 0
Area of Pervious pavement: 0
Area treated in Rain Garden: 0

Landscape Infiltration

For Landscape Infiltration a ESDv is determined by the storage provided in the facility and in the filter media.

Drainage area excluding Landscape Infiltration= 8235 OK

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, D is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 607 | d(FT)= 3 | Af % of DA = 7.4 OK

V1= 728.4

V2= Storage above Media Max depth 1 FT | d(FT)= 0.5

Bottom Contour Elevation = 436.5 | Area (SF)= 607

Top Contour Elevation = 437 | Area (SF)= 786 | V2 = 348.25

ESDv = V1 + V2 = 1077 CF

Treatment Summary

ESDv Total (CF) = 1077 OK | Max ESDv (CF) = 1334 | using Pe = 2.7

Pe Provided = 2.18 | Target ESDv (CF) = 889 | using Pe = 1.80

Area 4	889	1077

Project: Devlin Property
Engineer: TJS

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ESD Design Spreadsheet

DA: Area 5

Area(SF)= 14487
Area(AC)= 0.33

Area Impervious (SF)= 11589.6
Area Impervious (AC)= 0.27

Imp%= 80
Rv= 0.77

Rv = .05 + 0.009 x Imp%

Area treated in Drywells: 0
Area of Pervious pavement: 0
Area treated in Rain Garden: 0

Permeable Pavement

For Permeable Pavement an ESDv is determined by the storage provided in the subbase.
A is the area of permeable pavement, d is the depth of the subbase

A (SF)= 2922
Soil Type= B

d(IN)= 12
ESDv/FT^2= 0.196

ESDv=Af*ESDv/FT^2= 572.712

Landscape Infiltration

For Landscape Infiltration a ESDv is determined by the storage provided in the facility and in the filter media.

Drainage area excluding Landscape Infiltration= 11565 OK

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, D is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 951
V1= 1141.2

d(FT)= 3

Af % of DA = 8.2 OK

V2= Storage above Media Max depth 1 FT

d(FT)= 0.5

Bottom Contour Elevation = 431 Area (SF)= 951
Top Contour Elevation = 431.5 Area (SF)= 1153

V2 = 526

ESDv = V1 + V2 = 1667 CF

Treatment Summary

ESDv Total (CF) = 2240 OK
Pe Provided = 2.41

Max ESDv (CF) = 2510 using Pe = 2.7
Target ESDv (CF) = 1673 using Pe = 1.80

Area 5	1673	2240

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ESD Design Spreadsheet

DA: Area 6

Area(SF)= 3800 | Area Impervious (SF)= 3420 | Imp%= 90 | Rv = .05 + 0.009 x Imp%
Area(AC)= 0.09 | Area Impervious (AC)= 0.08 | Rv= 0.86

Bio Swale

For Bio-Swale an ESDv is determined by the storage provided in the facility and in the filter media.

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, d is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 418 | d(FT)= 2.5 | w1(FT)= 2.2
V1= 418 | L(FT)= 190

V2= Storage above Media Max depth 0.75 FT

Bottom w2 (FT) = 2 | Storage Depth, D (FT)= 0.5
Length = 190 | Side Slopes Z:1= 2 | V2 = 285

V3 = Storage in Media Side Slope = Lx(w1 - w2)/2 x D x 2 | V3 = 19

ESDv = V1 + V2 = 722

Treatment Summary

ESDv Total (CF) =	722	OK	Max ESDv (CF) = 735	using Pe = 2.7
Pe Provided =	2.65		Target ESDv (CF) = 490	using Pe = 1.80

Area 6	490	722

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ESD Design Spreadsheet

DA: Area 7

Area(SF)= 8404 | Area Impervious (SF)= 6050.88 | Imp%= 72 | Rv = .05 + 0.009 x Imp%
Area(AC)= 0.19 | Area Impervious (AC)= 0.14 | Rv= 0.70

Area treated in Drywells: 0
Area of Pervious pavement: 0
Area treated in Rain Garden: 0

Landscape Infiltration

For Landscape Infiltration a ESDv is determined by the storage provided in the facility and in the filter media.

Drainage area excluding Landscape Infiltration= 8404 OK

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, D is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 622 | d(FT)= 3 | Af % of DA = 7.4 OK

V1= 746.4

V2= Storage above Media Max depth 1 FT | d(FT)= 0.5

Bottom Contour Elevation = 436.5 | Area (SF)= 622

Top Contour Elevation = 437 | Area (SF)= 789 | V2 = 352.75

ESDv = V1 + V2 = 1099 CF

Treatment Summary

ESDv Total (CF) = 1099 OK | Max ESDv (CF) = 1324 | using Pe = 2.7

Pe Provided = 2.24 | Target ESDv (CF) = 882 | using Pe = 1.80

Area 7	882	1099

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ESD Design Spreadsheet

DA: Area 8

Area(SF)= 5204 | Area Impervious (SF)= 4423.4 | Imp%= 85 | Rv = .05 + 0.009 x Imp%
Area(AC)= 0.12 | Area Impervious (AC)= 0.10 | Rv= 0.82

Area treated in Drywells: 0
Area of Pervious pavement: 0
Area treated in Rain Garden: 0

Landscape Infiltration

For Landscape Infiltration a ESDv is determined by the storage provided in the facility and in the filter media.

Drainage area excluding Landscape Infiltration= 5204 OK

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, D is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 173 | d(FT)= 3 | Af % of DA = 3.3 OK

V1= 207.6

V2= Storage above Media Max depth 1 FT | d(FT)= 1

Bottom Contour Elevation = 429 | Area (SF)= 173

Top Contour Elevation = 430 | Area (SF)= 173 | V2 = 173

ESDv = V1 + V2 = 381 CF

Treatment Summary

ESDv Total (CF) = 381 OK | Max ESDv (CF) = 960 | using Pe = 2.7

Pe Provided = 1.07 | Target ESDv (CF) = 640 | using Pe = 1.80

Area 8	640	381

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ESDv Summary

Drainage Area	Target ESDv	ESDv Provided	Pe
Area 1	1263	354	0.51
Area 2	1769	2623	2.67
Area 3	901	1156	2.31
Area 4	889	1077	2.18
Area 5	1673	2240	2.41
Area 6	490	722	2.65
Area 7	882	1099	2.24
Area 8	640	381	1.07

Total ESDv Provided = 9653 **ESDv Target Met**
Total ESDv Required = 9461

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Stream Channel Protection, C_{pv}

Site Area (Acres)	3.43
Disturbed Area (acres)	2.68
Impervious Area (acres)	1.46
Impervious %	43.00
RCN*	75.00
Target ESDv for full Pe (CF)	9460.57
Rv	0.54
ESDv Provided (CF)	9652.70
Pe Provided	1.84
Se (in.)	8.18
S 1(in.)	8.18
P (in)	1.80
Qe (in)	0.10
Q1 (in)	0.10

Reduced RCN Calculations			
HSG	RCN	Area (acres)	Percent
A	0.00	0.00	0.00
B	55.00	3.43	100.00
C	70.00	0.00	0.00
D	0.00	0.00	0.00

P1 (County specific) = 2.60 Montgomery county

Revised Composite RCNe =	55.00
Required RCN 1=	55.00
Ve(runoff volume RCN 55) =	988.04
V1(runoff volume RCN 55) =	988.04
Cpv Required (CF)	0.00

Formulas

Se (in.) = 1000/RCNe - 10 Ve=(Qe*DA sf)/12

S1 (in.) = 1000/RCN1 - 10 V1=(Q1*DA sf)/12

Cpv= Ve-V1

Q1=(P1-0.2S1)^2/(P1+0.8S1)

R_v = 0.05 + 0.009*I

Qe=(P1-0.2Se)^2/(P1+0.8Se)

JOB NUMBER:	1137B	SHEET:	OF
SUBJECT:	Devlin Property		
	0		
BY: TJS		DATE:	1/31/2014 14:44
CHKD:		DATE:	

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Hydrology Summary Table DA "A"

Drainage Area (acres)	2.68
RCN	75
Target RCN	55
Post Treatment RCN	55

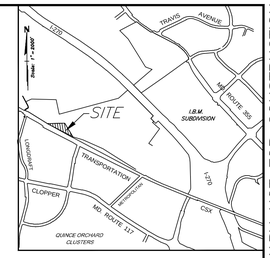
Summary of General Treatment Requirements

Requirements	Volume Required	Notes
Pe Requirement (in)	1.80	
Pe Provided (in)	1.84	
Pe Remaining for Treatment (in)	0.00	
Channel Protection Volume (CF)	0.00	

*Input from TR-55

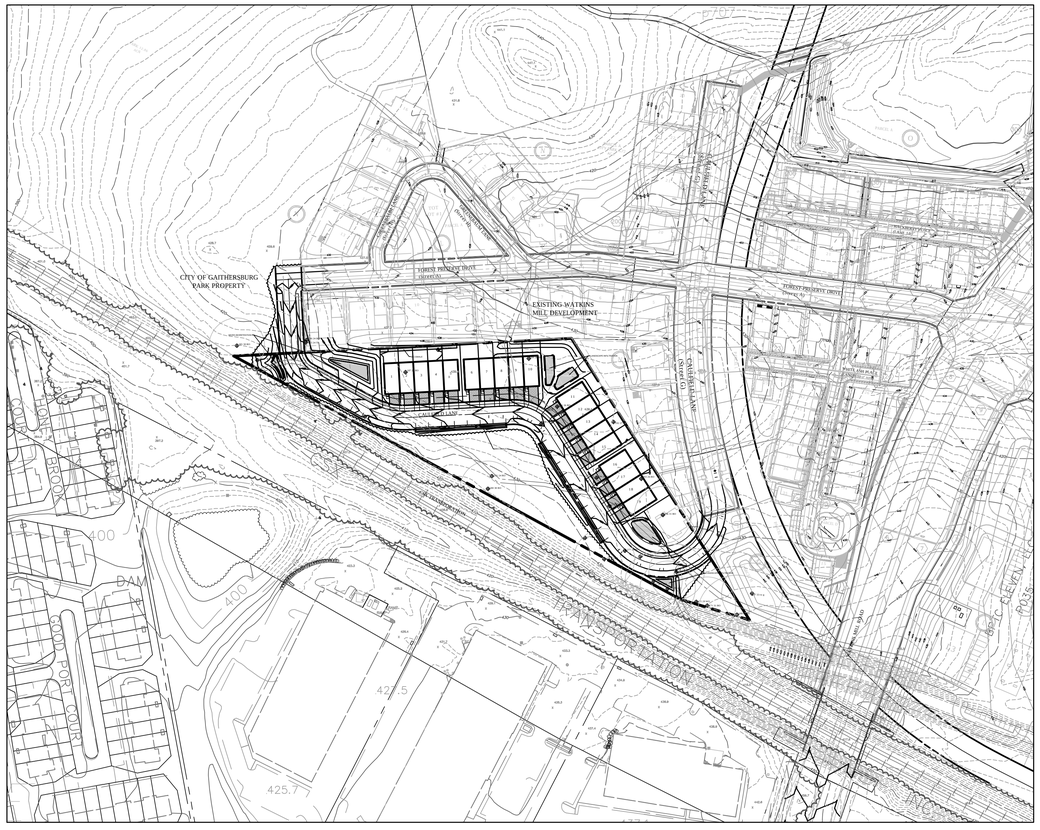
DEVLIN PROPERTY

STORMWATER MANAGEMENT PRELIIMINARY PLAN
CITY OF GAITHERSBURG, MARYLAND



VICINITY MAP - 1" = 2000'

PRELIMINARY NOT FOR CONSTRUCTION



SHEET INDEX

Title	Sheet No.
Stormwater Preliminary - Cover Sheet	1
Stormwater Preliminary Plan	2

GRAPHIC SCALE

100' 0 50' 100' 200' 400'

1 INCH = 100 FT

CITY OF GAITHERSBURG
DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT

APPLICATION NO. SWM-XXXX-2012

CONCEPT PLAN ☒ PRELIMINARY PLAN ☒

APPROVAL DATE -

BY

CALL "MISS UTILITY" AT 1-800-257-7777
48 Hours Before Start Of Construction

The excavator must notify all public utility companies with underground facilities in the area of proposed excavation and have those facilities located by the utility companies prior to commencing excavation. The excavator is responsible for compliance with requirements of Chapter 36A of the Montgomery County Code.

A MARYLAND REGISTERED PROFESSIONAL ENGINEER OR ARCHITECT SEAL AND SIGNATURE ON PLANS WILL BE ACCEPTED AS PRIMA FACIE EVIDENCE THAT PLANS ARE IN COMPLIANCE WITH APPLICABLE CODES AND REGULATIONS.

STATE OF MARYLAND — PHILIP C. BOSSONG — No. 23975 — REGISTERED PROFESSIONAL ENGINEER

REVISION	DATE	REVISION	DATE	REVISION	DATE

OWNER/CONTRACT PURCHASER:
CLASSIC COMMUNITY CORPORATION
8120 WOODMONT AVENUE, SUITE 300
BETHESDA, MD 20814

CONTACT: STEVE ECKERT
PHONE: (301)913-0404
FAX: (301) 913-5482

STORMWATER MANAGEMENT
PRELIMINARY PLAN - COVER
SHEET

RODGERS CONSULTING
Knowledge • Creativity • Enduring Values

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Suite 200
Germantown, Maryland 20874
Ph: 301.948.4700 (Main)
Ph: 301.253.6609 (Frederick)
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	BY	DATE
BASE DATA	RCI	11/05
DESIGNED	TJS	1/14
DRAWN	TJS/JK	1/14
REVIEWED	GU	1/14
RODGERS CONTACT:		

RELEASE FOR
BY_____ DATE ____

DEVLIN PROPERTY

CITY OF GAITHERSBURG
9TH ELECTION DISTRICT
MONTGOMERY COUNTY, MARYLAND

Joint Hearing - MCC & PC
SDP-4560-2014
Exhibit 22A

SCALE: 1" = 100'
JOB No. 1137B
DATE: FEB 2014
SHEET No. 1 OF 2

N:\MD-Montgomery-City of Gaithersburg\Parklands\DWG\Devlin\SWM\SWM_Concept.dwg SWM-1P Feb 04, 2014, 9:54am

PRELIMINARY NOT FOR CONSTRUCTION

CITY OF GAITHERSBURG PARK PROPERTY

FOREST PRESERVE DRIVE (Street A)

EXISTING WATKINS MILL DEVELOPMENT

FOREST PRESERVE DRIVE (Street A)

CAULFIELD LANE (Street G)

WHITE ASH PLACE (LANE 11)

WATKINS MILL ROAD

CSX TRANSPORATION

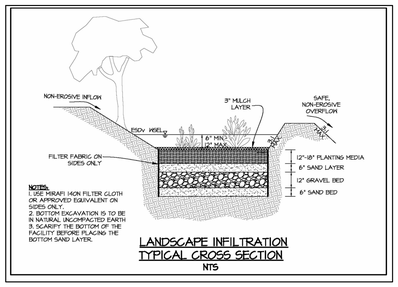
DA 1 · DA 2 · DA 2a · DA 3 · DA 4 · DA 5 · DA 6 · DA 7 · DA 8

CAULFIELD LANE

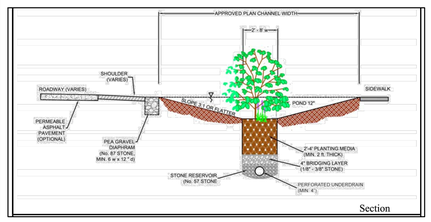
MICRO-BIORETENTION · BIO-SWALE · LANDSCAPE INFILTRATION

SWM PLAN LEGEND

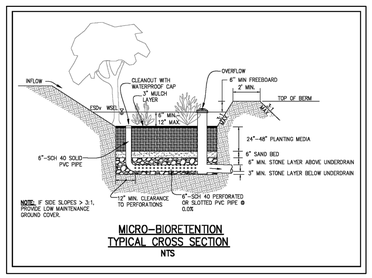
- SITE BOUNDARY
- PUBLIC RIGHT OF WAY
- LOT LINES
- STREET CENTER LINE
- EXISTING WATER
- PROPOSED WATER
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EXISTING SEWER
- PROPOSED SEWER
- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- PUE
- EXISTING CONTOURS
- PROPOSED CONTOURS
- STORMWATER DRAINAGE AREA DIVIDE
- EXISTING TREES/HEDGEROW
- PROPOSED TREE LINE
- SWM FACILITY (BIO-SWALE, LANDSCAPE INFILTRATION, MICROBIORETENTION)
- PERMEABLE PAVER/PAVEMENT



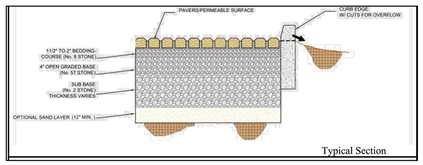
LANDSCAPE INFILTRATION TYPICAL CROSS SECTION
NTS



TYPICAL BIO-SWALE DETAIL



MICRO-BIORETENTION TYPICAL CROSS SECTION
NTS



PERMEABLE PAVER DETAIL

GRAPHIC SCALE

30' 0 15' 30' 60' 120'

1 INCH = 30 FT

CITY OF GAITHERSBURG
DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT

APPLICATION NO. SWM-XXXX-2012
CONCEPT PLAN ☒ PRELIMINARY PLAN ☒
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STATE OF MARYLAND · PHONG K. BOUSOUNG · No. 23973 · REGISTERED PROFESSIONAL ENGINEER

REVISION	DATE	REVISION	DATE	REVISION	DATE

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STORMWATER MANAGEMENT PRELIMINARY PLAN

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RELEASE FOR
BY_____ DATE ____

DEVLIN PROPERTY

CITY OF GAITHERSBURG
9TH ELECTION DISTRICT
MONTGOMERY COUNTY, MARYLAND

Joint Hearing - MCC & PC
SDP-4560-2014
Exhibit 22B

SCALE: 1" = 30'
JOB No. 1137B
DATE: FEB 2014
SWM-2
SHEET No. 2 OF 2

N:\MD-Montgomery-City of Gaithersburg\Parklands\DWG\Devlin\SWM\SWM_Concept.dwg SWM-2P Feb 04, 2014, 9:55am

DEVLIN PROPERTY

STORMWATER MANAGEMENT PRELIMINARY

Submitted for:

Classic Community Corporation
8120 Woodmont Avenue, Suite 300
Bethesda, MD 20814

Prepared by:

RODGERS CONSULTING
Knowledge • Creativity • Enduring Values

Rodgers Consulting, Inc.
19847 Century Blvd., Suite 200
Germantown, MD 20874

January 2014

Joint Hearing - MCC & PC
SDP-4560-2014
Exhibit 23

DEVLIN PROPERTY – STORMWATER CONCEPT

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SECTION 1.1– EXECUTIVE SUMMARY/ SITE OVERVIEW

EXECUTIVE SUMMARY

The applicant for the project is Classic Community Corporation. The Devlin property is a 3.23 acre site located off of Game Preserve Road, located between the Watkins Mill development and CSX railroad tracks and property in the City of Gaithersburg. The site is zoned as MXD, and is proposed to be developed into four townhouse buildings. In order to build these townhouses, only 2.74 acres of the property will be disturbed. The site is within the Great Seneca Creek watershed.

The project will consist of four townhouse buildings, associated driveways, roadway and parallel parking.

This storm water management Plan has been prepared to comply with the requirements of the 2007 MDE SWM manual and the Environmental Site Design (ESD) Process and Computations supplement dated July 2010. This document introduces the proposed development and its intended implementation of the concepts and goals outlined for the project. A storm water management concept Plan has not previously been approved for this project.

The plan proposes the use of permeable pavements, bioswales, landscape infiltration, and micro-bioretention to treat the runoff from the site.

SLOPES

The Natural Resource Inventory Map delineates slope ranges for 15-25% and 25% and greater (see Natural Resource Inventory Map). These are confined to small areas near the CSX railroad.

SOILS

The soils found on site are as follows: Brinklow-Blocktown channery silt loams, 8-15% slopes (16C) and Glenelg silt loam, 3-8% slopes (2B). The site is HSG type ‘B’.

STREAMS/ WATERSHED

There are no streams at the site.

WETLANDS

There are no wetlands at the site.

FLOODPLAIN

There is no area of FEMA-mapped floodplain on or within 200’ of the site.

FOREST

The entire site is forested and consists of predominately upland hardwood species. The site was surveyed by Rodgers Consulting, Inc. staff on August 30, 2013.

SEDIMENT CONTROL PRACTICES

Sediment control will be provided through a combination of perimeter controls, and the use of sediment traps.

SECTION 1.2 - PURPOSE AND SCOPE

The purpose of this stormwater concept design study is to identify acceptable stormwater management Best Management Practices (BMP's) and to ensure sufficient space is allocated for construction and maintenance of the facilities. This study presents the preliminary design calculations. The report and plan illustrate the sites use of ESD to the maximum extent practicable (MEP) per the requirements of the MDE SWM Manual, and the Best Management Practices (BMPs) to be utilized with supporting calculations and plans.

SECTION 1.3 - ON-SITE ESD PRACTICES

On-site ESD practices are to be used to the maximum extent practicable. An evaluation of the existing site conditions in conjunction with the design of the development plan was performed to determine the maximum extent of treatment using ESD. Through the integration of ESD into the site design, the Pe requirement of 1.80" will be met. As explained below, there are site constraints that have constrained or reduced the effectiveness of certain ESD practices. Therefore, this swm plan provides "ESD to the MEP".

Alternative Surfaces – The following practices have been considered and analyzed as alternative methods to reduce the RCN (runoff curve number) for impervious surfaces on the site.

a. Green Roofs – Alternative surfaces that replace conventional construction materials and include a protective covering of planting media and vegetation. These systems reduce impervious cover and more closely mimic the natural hydrology of the site. *Green roofs are not proposed as the building roof will be sloped.*

b. Permeable Pavements – Pavement alternatives that replace conventional concrete or asphalt and provide a porous surface course and open graded stone and sand sub-base system to provide water quality and groundwater recharge benefits. These include porous bituminous asphalt, pervious concrete, and permeable interlocking concrete pavements. *Permeable pavements are proposed for the driveways on the site.*

c. Reinforced Turf – Alternative surface system made of interlocking structural units with open areas for placing gravel or growing grass. These systems are utilized in light traffic areas such as emergency access roads, plazas, or occasionally used parking areas. The open load-bearing matrix system allows for runoff characteristics to be similar to open space or gravel. *Reinforced turf is not proposed as a standalone practice currently.*

Nonstructural Practices – Practice that utilizes grading and landscaping techniques to divert runoff into vegetated areas for filtration and away from conventional storm drain systems.

a. Disconnection of Rooftop Runoff – Practice that involves direction of flow from downspouts onto vegetated areas where it can be filtered over the ground, thereby reducing runoff volume to storm drain systems and decreasing the amount of pollutants delivered to receiving waters. *This practice is not utilized on this site.*

b. Disconnection of Non-Rooftop Runoff - Practice that involves direction of flow from impervious surfaces onto vegetated areas where it can filter over the ground, thereby reducing runoff volume to storm drain systems and decreasing the amount of pollutants delivered to receiving waters. *This practice is not practical for use on this site.*

c. Sheetflow to Conservation Areas – Practice that diverts flow from impervious areas to adjacent natural areas to filter over the ground. The natural areas must be protected areas that will not be developed in the future, such as stream buffers or forest conservation areas. *This practice is not practical for this site.*

Micro-Scale Practices – Small water quality treatment devices used to capture and treat runoff from discrete impervious areas (less than 1 acre) by means of natural filtration using vegetation and pervious soils.

a. Rainwater Harvesting (Cisterns and Rain Barrels) – Practice that intercepts and stores rainfall for future reuse for non-potable water supplies. This practice reduces runoff volumes and discharge of pollutants downstream. *This practice is not proposed for the site.*

b. Submerged Gravel Wetlands – Small scale filter practice utilizing wetland plants in a rock media to provide water quality treatment. The runoff is treated by means of pollutant removal through biological uptake from the algae and bacteria growing in the filter media, as well as nutrient uptake and physical and chemical treatment processes by the wetland plants. *This practice is not proposed for the site.*

c. Landscape Infiltration – Practice using on-site vegetative planting areas to capture, store and treat runoff by means of filtration through planting soils and media followed by infiltration of the water into the native soils. *This practice is proposed in a few locations in the open space parcels to be provided between the townhouses buildings and at each open parcel at the end of the site.*

d. Infiltration Berms – Practice that uses an earthen mound composed of soil and stone placed along the contour of a gentle slope. Runoff flows down slope to the berm, and slowly filters through the soil and stone providing quality treatment prior to continuing to sheet flow to receiving waters. *This practice is not practical for use on this site.*

e. Dry Wells – An excavated pit or structural chamber filled with gravel or stone which provides temporary storage of rooftop runoff. The runoff is stored in the well and allowed to slowly filter into the surrounding soils, thereby mimicking the natural treatment and filtration process prior to development. *This practice is not proposed for the site.*

f. Micro-Bioretention – Practice to treat runoff from discrete impervious areas by passing it through a filter bed mixture of sand, soil, and organic matter. Once filtered and treated, the runoff is returned to a conveyance system or infiltrated back into the native soils.
This practice is proposed near the western end of the site in the open space areas.

g. Rain Gardens – A shallow, excavated landscape feature that temporarily holds runoff in an absorbent planted soil bed, mulch layer, and plantings such as shrubs, grasses and flowers. Runoff is directed to the rain gardens, where it ponds and slowly filters into the soils for treatment. *This practice is not proposed for the site.*

h. Swales – Graded channels that provide conveyance of runoff while profile water quality treatment and flow attenuation. Pollutant removal is provided through vegetative filtration, sedimentation, biological uptake, and infiltration into the underlying soils. Swales can consist of grass swales, wet swales, and bio-swales. *Bioretention swales are proposed along the roadways and parallel parking areas and in the rear of one of the townhouse buildings.*

i. Enhanced Filters – A modification applied to a specific practice outlined above by adding a stone reservoir underneath the conventional filtering media to provide more effective water quality treatment and groundwater recharge for a single facility. *This practice is not proposed at the site.*

SECTION 1.4 - REPORT

CRITERIA

- The 2000 Maryland Stormwater Management Design Manual, Maryland Department of the Environment.
- MDE 2007 Maryland Storm Water Design manual
- Environmental Site Design(ESD) Process and Computations supplement dated July 2010
- Montgomery County Ordinance

STORMWATER MANAGEMENT DESIGN

Environmental site design is provided by several treatment methods for the Devlin Property site. Micro-Bioretention and Landscape facilities will be provided in open spaces of the site collecting runoff from the rooftop and paved areas. In addition, bioswales are proposed along the roadway and in the rear of the townhouse buildings. Using these multiple methods environmental site design has been used to the maximum extent practicable.

Runoff Control:

ESD Facility Descriptions

Micro-bioretention- The facilities proposed will be Sump facilities- The sump facility encompasses landscaped garden bioretention facilities. Runoff is directed to the facility by downspouts or overland flow or by curb cuts. At the surface these facilities appear to be a landscaped sump area with plantings, and have inlets to act as an overflow for larger storm events. The 1 yr storm is held and treated in the facility while the larger storm events bypass the facility via the overflow inlets.

Landscape Infiltration- Similar to the micro-bioretention areas, the facilities proposed will be sump facilities as landscaped garden facilities. Runoff is directed to the facility by downspouts or overland flow or by curb cuts. At the surface these facilities appear to be a landscaped sump area with plantings, and have inlets to act as an overflow for larger storm events. The 1 yr storm is held and treated in the facility while the larger storm events bypass the facility via the overflow inlets.

Bio-swales- These areas will collect runoff linear to the townhouse buildings and roadways and direct runoff towards the lower areas of the site. These areas will be planted and include overflow for larger storm events.

Alternative stormwater management measures

Permeable pavers/pavement is proposed for the driveways outside of the public right of way.

ON-SITE ESD PLANNING TECHNIQUES

On-site ESD Planning techniques are to be used to the Maximum Extent Practicable without conflicting with the existing state law or local ordinances, regulations, or policies.

a. Preserving and Protecting Natural Resources – There are no stream valleys or buffers on the site. There were no rare, threatened, or endangered (RTE) species observed on the property
b. Conserving Natural Drainage Patterns- Proposed grading and drainage divides will maintain the existing divides to the extent practicable.
c. Minimizing Impervious Area- Efforts were made to minimize impervious over the entire site, with a portion of the site to remain forested.
d. Reducing Runoff Volume- Runoff Volume is reduced through the use of micro-scale practices.
e. Using ESD Practices to maintain 100 percent of the annual predevelopment groundwater recharge volume- With the bio-swales and landscape infiltration areas planned, the recharge from the site should be maintained.
f. Using green roofs, permeable pavement, reinforced turf, and other alternative surfaces- Alternative surfaces are proposed for the townhouse driveways.
g. Limiting soil disturbance, mass grading, and compaction- The development is 3 acres, and will be subject to sediment control measures to minimize soil disturbance.
h. Clustering Development- The proposed development program includes 4 townhouse buildings clustered along one side of the roadway.

SECTION 1.5 - CONCLUSION

The stormwater management design presented in this report provides ESD to the MEP through the implementation of alternative surfaces and micro-scale practices.

For the entire site, the required ESDv is 9,461 cubic feet. With the proposed facilities, the volume treated is 9,653 cubic feet.

COMPUTATIONS

Concept computations were done in accordance with the MDE 2007 Maryland Storm Water Design manual, Environmental Site Design(ESD) Process and Computations supplement dated July 2010, and Montgomery County Water Resources Technical Policy- 5.

Determining Target ESDv

The property was assessed as one overall area draining to the south towards the CSX railroad. This overall area is 3.43 acres (including the offsite roadway additions), with an impervious percentage of 43%. This was used to determine a Pe of 1.80" for the site using the soils at the site.

Determining ESDv Provided

For concept computations ESDv was determined for each facility type and not for each individual facility.

- Micro-Bioretention ESDv is determined by the storage volume provided within the facility and filter media. A media depth of 3' was assumed as well as a ponding depth of 12".
- Landscape Infiltration ESDv is determined by the storage volume provided within the facility and filter media. A media depth of 3' was assumed as well as a ponding depth of 6".
- Bio-swale ESDv is determined by the storage volume provided within the facility and filter media. The width of the swales vary, a media depth of 2.5' was assumed as well as a ponding depth of 6".
- Permeable paver ESDv is calculated based on B soils and a 12" subbase.

Stormwater Computations

JOB NUMBER:	1137B		
SUBJECT:	Devlin Property		
BY:	TJS	DATE:	1/31/2014 14:44
CHKD:		DATE:	

19847 Century Blvd.,Suite 200 - Germantown, MD 20874
Germantown 301.948.4700
Frederick 301.253.6609
Fax 301.948.6256 - www.rodgers.com

Rainfall Target, Pe

Site Area (Acres)	3.43	(includes roadway areas offsite)	Building:	24782
LOD Area (acres)	2.68	116771	Road:	26472
Site Impervious Area (acres)	1.46	63,591	Sidewalk:	3260
Impervious %	43	for Site	Driveway:	9077
RCN*	75	for Site		63591
Pe (in.)	1.80			
Target ESDv for full Pe (CF)	9460.57			
Target ESDv for 1" Pe (CF)	5255.87			
LOD Impervious Area (acres)	1.46			
Rv	0.54	for LOD		

Site Soil Conditions			
HSG	RCN	Area (acres)	Percent
A	38.00	0.00	0.0
B	55.00	3.43	100.0
C	70.00	0.00	0.0
D	77.00	0.00	0.0

Weighted Target RCN (woods) 55

Soil Group HSG	RCN Pe (in)	Imp Pe (in)
A	0.00	0.00
B	1.80	1.80
C	0.00	0.00
D	0.00	0.00

Weighted Target Pe (woods) 1.80 1.80

*From TR-55

Formulas

I (%) = ((Impervious Area)/(Drainage Area))*100

$R_v = 0.05 + 0.009*I$

ESDv=(Pe)(Rv)(A)/12

Project: Devlin Property | Proj#: 1137b | 1/31/2014 14:44
Engineer: TJS

ESD Design Spreadsheet

DA: Area 1

Area(SF)= 10024 | Area Impervious (SF)= 8821.12 | Imp%= 88 | Rv = .05 + 0.009 x Imp%
Area(AC)= 0.23 | Area Impervious (AC)= 0.20 | Rv= 0.84

Area of Pervious pavement: 0

Micro- Bioretention

For Micro-Bioretention a ESDv is determined by the storage provided in the facility and in the filter media.

Drainage area excluding Micro-bio= 10024 OK

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, D is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 188 | d(FT)= 3 | Af % of DA = 1.9 increase area

V1= 225.6

V2= Storage above Media Max depth 1 FT | d(FT)= 0.5

Bottom Contour Elevation = 419.5 | Area (SF)= 188

Top Contour Elevation = 420 | Area (SF)= 327 | V2 = 128.75

ESDv = V1 + V2 = 354 CF

Treatment Summary

ESDv Total (CF) = 354 OK | Max ESDv (CF) = 1895 | using Pe = 2.7

Pe Provided = 0.51 | Target ESDv (CF) = 1263 | using Pe = 1.80

Area 1	1263	354

Project: Devlin Property
Engineer: TJS

Proj#: 1137b

1/31/2014 14:44

ESD Design Spreadsheet

DA: Area 2

Area(SF)= 14562 | Area Impervious (SF)= 12232.08 | Imp%= 84 | Rv = .05 + 0.009 x Imp%

Area(AC)= 0.33 | Area Impervious (AC)= 0.28 | Rv= 0.81

Area of Pervious Pavement: 0

Permeable Pavement

For Permeable Pavement an ESDv is determined by the storage provided in the subbase.
A is the area of permeable pavement, d is the depth of the subbase

A (SF)= 3295 | d(IN)= 12

Soil Type= B | ESDv/FT^2= 0.196

ESDv=Af*ESDv/FT^2= 645.82

Bio Swale

For Bio-Swale an ESDv is determined by the storage provided in the facility and in the filter media.

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, d is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 300 | d(FT)= 2.5 | w1(FT)= 2

V1= 300 | L(FT)= 150

V2= Storage above Media Max depth 0.75 FT

Bottom w2 (FT) = 2 | Storage Depth, D (FT)= 0.5

Length = 150 | Side Slopes Z:1= 3 | V2 = 262.5

V3 = Storage in Media Side Slope = Lx(w1 - w2)/2 x D x 2 | V3 = 0

ESDv = V1 + V2 = 563

Micro- Bioretention

For Micro-Bioretention a ESDv is determined by the storage provided in the facility and in the filter media.

Drainage area excluding Micro-bio= 14562 OK

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, D is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 683 | d(FT)= 2 | Af % of DA = 4.7 OK

V1= 546.4

V2= Storage above Media Max depth 1 FT | d(FT)= 1

Bottom Contour Elevation = 526 | Area (SF)= 683

Top Contour Elevation = 527 | Area (SF)= 1053 | V2 = 868

ESDv = V1 + V2 = 1414 CF

Treatment Summary

ESDv Total (CF) = 2623 OK | Max ESDv (CF) = 2654 | using Pe = 2.7

Pe Provided = 2.67 | Target ESDv (CF) = 1769 | using Pe = 1.80

Area 2 1769 2623

Project: Devlin Property
Engineer: TJS

Proj#: 1137b

1/31/2014 14:44

ESD Design Spreadsheet

DA: Area 3

Area(SF)= 9388
Area(AC)= 0.22

Area Impervious (SF)= 6102.2
Area Impervious (AC)= 0.14

Imp%= 65
Rv= 0.64

Rv = .05 + 0.009 x Imp%

Area treated in Drywells: 0
Area of Pervious pavement: 0

Bio Swale

For Bio-Swale an ESDv is determined by the storage provided in the facility and in the filter media.

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, d is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 625 d(FT)= 3 w1(FT)= 5
V1= 750 L(FT)= 125

V2= Storage above Media Max depth 0.75 FT

Bottom w2 (FT) = 5 Storage Depth, D (FT)= 0.5
Length = 125 Side Slopes Z:1= 3 V2 = 406.25

V3 = Storage in Media Side Slope = Lx(w1 - w2)/2 x D x 2 V3 = 0

ESDv = V1 + V2 = 1156

Treatment Summary

ESDv Total (CF) = 1156 OK
Pe Provided = 2.31

Max ESDv (CF) = 1352 using Pe = 2.7
Target ESDv (CF) = 901 using Pe = 1.80

Area 3	901	1156

Project: Devlin Property
Engineer: TJS

Proj#: 1137b

1/31/2014 14:44

ESD Design Spreadsheet

DA: Area 4

Area(SF)= 8235 | Area Impervious (SF)= 6093.9 | Imp%= 74 | Rv = .05 + 0.009 x Imp%

Area(AC)= 0.19 | Area Impervious (AC)= 0.14 | Rv= 0.72

Area treated in Drywells: 0
Area of Pervious pavement: 0
Area treated in Rain Garden: 0

Landscape Infiltration

For Landscape Infiltration a ESDv is determined by the storage provided in the facility and in the filter media.

Drainage area excluding Landscape Infiltration= 8235 OK

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, D is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 607 | d(FT)= 3 | Af % of DA = 7.4 OK

V1= 728.4

V2= Storage above Media Max depth 1 FT | d(FT)= 0.5

Bottom Contour Elevation = 436.5 | Area (SF)= 607

Top Contour Elevation = 437 | Area (SF)= 786 | V2 = 348.25

ESDv = V1 + V2 = 1077 CF

Treatment Summary

ESDv Total (CF) = 1077 OK | Max ESDv (CF) = 1334 | using Pe = 2.7

Pe Provided = 2.18 | Target ESDv (CF) = 889 | using Pe = 1.80

Area 4	889	1077

Project: Devlin Property
Engineer: TJS

Proj#: 1137b

1/31/2014 14:44

ESD Design Spreadsheet

DA: Area 5

Area(SF)= 14487
Area(AC)= 0.33

Area Impervious (SF)= 11589.6
Area Impervious (AC)= 0.27

Imp%= 80
Rv= 0.77

Rv = .05 + 0.009 x Imp%

Area treated in Drywells: 0
Area of Pervious pavement: 0
Area treated in Rain Garden: 0

Permeable Pavement

For Permeable Pavement an ESDv is determined by the storage provided in the subbase.
A is the area of permeable pavement, d is the depth of the subbase

A (SF)= 2922
Soil Type= B

d(IN)= 12
ESDv/FT^2= 0.196

ESDv=Af*ESDv/FT^2= 572.712

Landscape Infiltration

For Landscape Infiltration a ESDv is determined by the storage provided in the facility and in the filter media.

Drainage area excluding Landscape Infiltration= 11565 OK

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, D is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 951
V1= 1141.2

d(FT)= 3

Af % of DA = 8.2 OK

V2= Storage above Media Max depth 1 FT

d(FT)= 0.5

Bottom Contour Elevation = 431 Area (SF)= 951
Top Contour Elevation = 431.5 Area (SF)= 1153

V2 = 526

ESDv = V1 + V2 = 1667 CF

Treatment Summary

ESDv Total (CF) = 2240 OK
Pe Provided = 2.41

Max ESDv (CF) = 2510 using Pe = 2.7
Target ESDv (CF) = 1673 using Pe = 1.80

Area 5	1673	2240

Project: Devlin Property | Proj#: 1137b | 1/31/2014 14:44
Engineer: TJS

ESD Design Spreadsheet

DA: Area 6

Area(SF)= 3800 | Area Impervious (SF)= 3420 | Imp%= 90 | Rv = .05 + 0.009 x Imp%
Area(AC)= 0.09 | Area Impervious (AC)= 0.08 | Rv= 0.86

Bio Swale

For Bio-Swale an ESDv is determined by the storage provided in the facility and in the filter media.

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, d is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 418 | d(FT)= 2.5 | w1(FT)= 2.2
V1= 418 | L(FT)= 190

V2= Storage above Media Max depth 0.75 FT

Bottom w2 (FT) = 2 | Storage Depth, D (FT)= 0.5
Length = 190 | Side Slopes Z:1= 2 | V2 = 285

V3 = Storage in Media Side Slope = Lx(w1 - w2)/2 x D x 2 | V3 = 19

ESDv = V1 + V2 = 722

Treatment Summary

ESDv Total (CF) =	722	OK	Max ESDv (CF) = 735	using Pe = 2.7
Pe Provided =	2.65		Target ESDv (CF) = 490	using Pe = 1.80

Area 6	490	722

Project: Devlin Property | Proj#: 1137b | 1/31/2014 14:44
Engineer: TJS

ESD Design Spreadsheet

DA: Area 7

Area(SF)= 8404 | Area Impervious (SF)= 6050.88 | Imp%= 72 | Rv = .05 + 0.009 x Imp%
Area(AC)= 0.19 | Area Impervious (AC)= 0.14 | Rv= 0.70

Area treated in Drywells: 0
Area of Pervious pavement: 0
Area treated in Rain Garden: 0

Landscape Infiltration

For Landscape Infiltration a ESDv is determined by the storage provided in the facility and in the filter media.

Drainage area excluding Landscape Infiltration= 8404 OK

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, D is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 622 | d(FT)= 3 | Af % of DA = 7.4 OK

V1= 746.4

V2= Storage above Media Max depth 1 FT | d(FT)= 0.5

Bottom Contour Elevation = 436.5 | Area (SF)= 622

Top Contour Elevation = 437 | Area (SF)= 789 | V2 = 352.75

ESDv = V1 + V2 = 1099 CF

Treatment Summary

ESDv Total (CF) = 1099 OK | Max ESDv (CF) = 1324 | using Pe = 2.7

Pe Provided = 2.24 | Target ESDv (CF) = 882 | using Pe = 1.80

Area 7	882	1099

Project: Devlin Property | Proj#: 1137b | 1/31/2014 14:44
Engineer: TJS

ESD Design Spreadsheet

DA: Area 8

Area(SF)= 5204 | Area Impervious (SF)= 4423.4 | Imp%= 85 | Rv = .05 + 0.009 x Imp%
Area(AC)= 0.12 | Area Impervious (AC)= 0.10 | Rv= 0.82

Area treated in Drywells: 0
Area of Pervious pavement: 0
Area treated in Rain Garden: 0

Landscape Infiltration

For Landscape Infiltration a ESDv is determined by the storage provided in the facility and in the filter media.

Drainage area excluding Landscape Infiltration= 5204 OK

V1 = Storage in Filter Media = Af (SF) x d (FT) x 0.4 , Where Af is the filter area, D is the filter media depth, and 0.4 is the void ratio.

Af (SF)= 173 | d(FT)= 3 | Af % of DA = 3.3 OK

V1= 207.6

V2= Storage above Media Max depth 1 FT | d(FT)= 1

Bottom Contour Elevation = 429 | Area (SF)= 173

Top Contour Elevation = 430 | Area (SF)= 173 | V2 = 173

ESDv = V1 + V2 = 381 CF

Treatment Summary

ESDv Total (CF) = 381 OK | Max ESDv (CF) = 960 | using Pe = 2.7

Pe Provided = 1.07 | Target ESDv (CF) = 640 | using Pe = 1.80

Area 8	640	381

JOB NUMBER:	1137B	SHEET:	OF
SUBJECT:	Devlin Property		
	0		
BY:	TJS	DATE:	1/31/2014 14:44
CHKD:		DATE:	

19847 Century Blvd.,Suite 200 - Germantown, MD 20874
Germantown 301.948.4700
Frederick 301.253.6609
Fax 301.948.6256 - www.rodgers.com

ESDv Summary

Drainage Area	Target ESDv	ESDv Provided	Pe
Area 1	1263	354	0.51
Area 2	1769	2623	2.67
Area 3	901	1156	2.31
Area 4	889	1077	2.18
Area 5	1673	2240	2.41
Area 6	490	722	2.65
Area 7	882	1099	2.24
Area 8	640	381	1.07

Total ESDv Provided = 9653 **ESDv Target Met**
Total ESDv Required = 9461

JOB NUMBER:	1137B	SHEET:	OF
SUBJECT:	Devlin Property		
	0		
BY:	TJS	DATE:	1/31/2014 14:44
CHKD:		DATE:	

19847 Century Blvd.,Suite 200 - Germantown, MD 20874
Germantown 301.948.4700
Frederick 301.253.6609
Fax 301.948.6256 - www.rodgers.com

Stream Channel Protection, C_{pv}

Site Area (Acres)	3.43
Disturbed Area (acres)	2.68
Impervious Area (acres)	1.46
Impervious %	43.00
RCN*	75.00
Target ESDv for full Pe (CF)	9460.57
Rv	0.54
ESDv Provided (CF)	9652.70
Pe Provided	1.84
Se (in.)	8.18
S 1(in.)	8.18
P (in)	1.80
Qe (in)	0.10
Q1 (in)	0.10

Reduced RCN Calculations			
HSG	RCN	Area (acres)	Percent
A	0.00	0.00	0.00
B	55.00	3.43	100.00
C	70.00	0.00	0.00
D	0.00	0.00	0.00

P1 (County specific) = 2.60 Montgomery county

Revised Composite RCNe =	55.00
Required RCN 1=	55.00
Ve(runoff volume RCN 55) =	988.04
V1(runoff volume RCN 55) =	988.04
Cpv Required (CF)	0.00

Formulas

Se (in.) = 1000/RCNe - 10 Ve=(Qe*DA sf)/12

S1 (in.) = 1000/RCN1 - 10 V1=(Q1*DA sf)/12

Cpv= Ve-V1

Q1=(P1-0.2S1)^2/(P1+0.8S1)

R_v = 0.05 + 0.009*I

Qe=(P1-0.2Se)^2/(P1+0.8Se)

JOB NUMBER:	1137B	SHEET:	OF
SUBJECT:	Devlin Property		
	0		
BY: TJS		DATE:	1/31/2014 14:44
CHKD:		DATE:	

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Germantown 301.948.4700

Frederick 301.253.6609

Fax 301.948.6256 - www.rodgers.com

Hydrology Summary Table DA "A"

Drainage Area (acres)	2.68
RCN	75
Target RCN	55
Post Treatment RCN	55

Summary of General Treatment Requirements

Requirements	Volume Required	Notes
Pe Requirement (in)	1.80	
Pe Provided (in)	1.84	
Pe Remaining for Treatment (in)	0.00	
Channel Protection Volume (CF)	0.00	

*Input from TR-55

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CONSULTING
Knowledge • Creativity • Enduring Values

May 9, 2014

Planning and Code Administration
City of Gaithersburg
31 South Summit Avenue
Gaithersburg, MD 20877

Attn: Mr. Greg Mann, Planner

Re: Schematic Development Plan
Devlin Property- 11506 Game Preserve Road
RCI Job No. 1137B

Dear Mr. Mann,

Please find enclosed the Schematic Development Plan for the Devlin Property. The property is located at 11506 Game Preserve Road Gaithersburg, MD 20878.

Provided below are the responses to your comments, discussed with staff on April 9th. The aforementioned comments are attached with this letter.

Michele Potter (Parks and Rec.) Comments
In response to comments 1 through 4, the Developer will continue to work with Parks and Recreation in the exchange of said parkland.

PC Comments
In response to comments 1 through 7, these issues have been addressed and the changes are reflected on the updated plan.

8. A construction and grading easement is required for the proposed grades onto SP-05-0013. Show on Site Plan.
The grading onto SP-05-0013 has been reduced, and is now limited to lot 12 only. This grading will be addressed with a future Site Plan Amendment. As noted.

9. Change townhouse from fee simple lots to condo lots or make the lot the size of the townhouse. The bio swale and permeable pavers will be maintained better if controlled by HOA.
The lots adjacent to the bio swale have been reduced to accommodate space for a HOA controlled bio swale. All lots are fee simple.

10. Because of the shallow lots and proximity to the rear of the other properties, place note that no decks or structures will be constructed in back yards.
A 10'x15' deck or patio is shown on the Typical Lot Layout and is located within a 10' BRL.

11. For the Road Code Waiver, add to table what is required for road section design. Also, do a road profile for both sections with on-street parking and without on-street parking.
An additional column with the required road section design elements has been added. Also, a section without on-street parking is included.

12. Submit a letter for the Road Code Waiver with what is proposed and required.
The original Road Code Waiver letter has been updated with this submission detailing what is proposed vs. required.

In response to comments 13 through 15, these issues have been addressed and the changes are reflected on the updated plan.

16. Submit written response to how the proposed development complies with the 2003 Master Plan, including specific references to the Development Staging and Phasing, Transportation Improvements, Land Use Option C, and Special Conditions for the Casey-Metropolitan Grove Study Area.
A written response of compliance is attached along with this submittal.

17. Declared as Surplus Land prior to FSP. Land should be included in FSP. This will be a condition for approval.
The park property is included in the Forest Conservation Plan.

FCP – Rob Robinson
In response to comments 1 through 6, these issues have been addressed and the changes are reflected on the updated plan.

SG Comments
In response to comments 1 through 3, these issues have been addressed and the changes are reflected on the updated plan.

Joint Hearing - MCC & PC
SDP-4560-2014
Exhibit 24

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4. At the northwest connection of Caulfield Lane, there is a "noise wall" that was previously shown on SP-05-0013 along the side and rear of existing Lot 12 and the rear of existing Lot 11. Will the "noise wall" remain? This plan proposes grading (LOD) outside of the subject property along the north side and also within the area the wall is shown.
The "noise wall" will remain.

5. Some drainage from this site is being directed towards the back of SP-05-0013 existing Lots 2 through 8. T hese existing lots may need to be re-graded individually to ensure this drainage is conveyed properly.
The grading has been updated on the resites and is shown.

OKM comments
In response to comments 1a through 1b, these issues have been addressed and the changes are reflected on the updated plan.

1c. For the 50, 62.5 and 90 foot radii shown – is this centerline radius?
The radii are shown.

In response to comment 1i, all radii are comparable to streets approved in the Watkins Mill development (SP-05-0013). If needed, a sight distance study can be provided to further justify this.

2a. Has road code application been completed?
Yes.

2b. 50 foot centerline radius – see comment 1c
So noted.

2c. 7 foot green space required between curb and SW
A 6 foot green space was used to match conditions found within the Watkins Mill development, similar to what is found on Forest Preserve Drive.

In response to comments 3a through 3ii, these issues have been addressed and the changes are reflected on the updated plan.

4a. Signing and marking plan
Signing and marking is included in the SDP.

4b. Turning radius plans
See response to comment 1i.

4c. Sign-off on concept utility plan
The concept utility plan has been submitted to PEPCO, and we are awaiting approval.

4d. A "to scale" grade establishment plan
A "to scale" grade establishment plan is included in the SDP.

If you have any questions, comments or concerns, please feel free to contact me at 301-948-4700.

Sincerely,

Gary F. Unterberg, RLA, LEED-AP
Rodgers Consulting, Inc.

cc: Steve Eckert, Classic
Dover Hankins, Classic
File

N:\PROJDOCS\1137B\SDP\Word\0_2014-05-05 ResponseLetter.doc

CITY OF GAITHERSBURG
PLAN REVIEW COMMENTS
Plan Number : SDP-4560-2014

Plan Review Information

Type	Schematic Development Plan / Schematic Development Plan
Primary Reviewer	Greg Mann
Review Completion Date	03/28/2014
Review Status	Received

Plan Review Comments

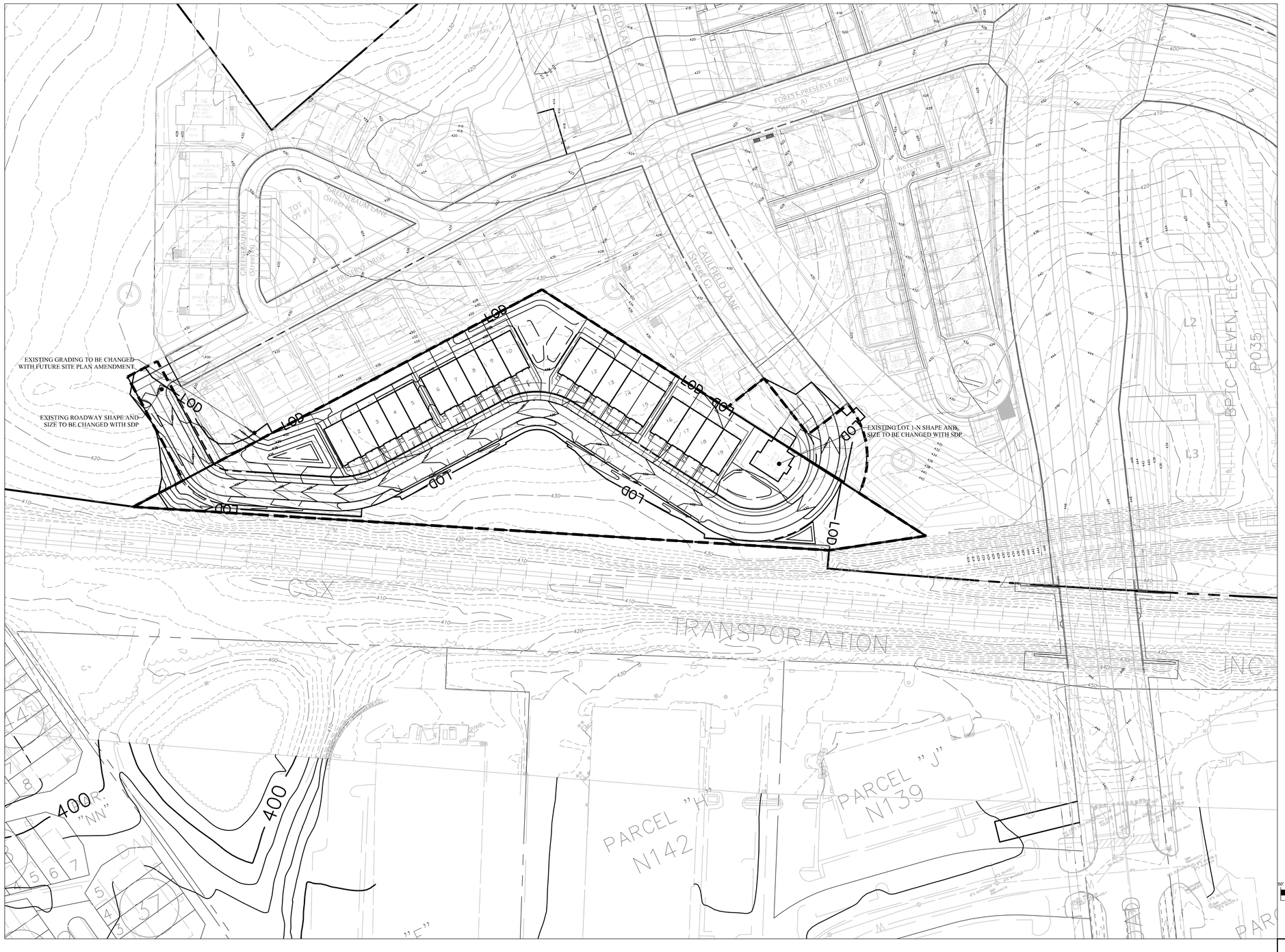
Initial Review - Lead Planner Lauren Pruss	Complete - Insufficient Resubmit
Building Code Greg Dennison	Complete - No Comments Received No Comments.
Fire Safety Ivan Humberson	Complete - Approved 1. Add hydrants

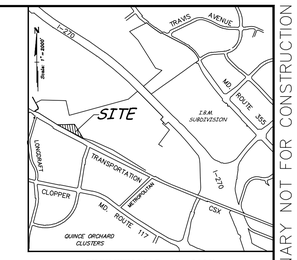
Planning - Peer Greg Mann	Complete - Insufficient Resubmit Michele Potter (Parks and Rec.) Comments - 1. The proposed development would consume approximately .13 acres of parkland based on the schematic development plan (140x41=5,740 sq. ft.) 2. Staff proposes that an independent appraisal be completed to determine the value of the said acreage 3. Staff proposes that the developer contribute cash that will be placed into an escrow account to be utilized for parks and recreational amenities and/or programming 4. A substitute of equal land in acreage and/or value is not acceptable PC Comments - 1. PUE on lot 12 of SP-05-0013 is shown going through house. Will need to be modified. Suggest increasing area taken for park to accommodate PUE off NV property. 2. Remove set of 5 on-street parking spaces. 3. Show proposed grades on site plan. 4. Reduce heavy property boundary line. 5. Show bio-swale size, length, and easement on site plan. 6. label 10' PUE on site. 7. Remove house on lot 1 of SP-05-0013 since it is being relocated. 8. A construction and grading easement is required for the proposed grades onto SP-05-0013. Show on site plan. 9. Change townhouses from fee simple lots to condo lots or make the lot the size of the townhouse. The bio swale and permeable pavers will be maintained better if controlled by HOA. 10. Because of the shallow lots and proximity to the rear of the other properties, place note that no decks or structures will be constructed in back yards. 11. For the Road Code Waiver, add to table what is required for road section design. Also, do a road profile for both sections with on-street parking and without on-street parking. 12. Submit a letter for the Road Code Waiver with what is proposed and required. 13. Draw Road Code Waiver profile to scale. 14. Show all dimensions on site plan. 15. Show noise level for ground level in front of units in middle section, not just on ends. Show with no wall and for 10' wall. Wall can not be in Forest Conservation Easement. We suggest walls on ether side of the Forest Conservation Easement. 16. Submit written response to how the proposed development complies with the 2003 Master Plan, including specific references to the Development Staging and Phasing, Transportation Improvements, Land Use Option C, and the Special Conditions for the Casey-Metropolitan Grove Study Area. 17. Declared as Surplus Land prior to FSP. Land should be included in FSP. This will be a condition for approval. FCP - Rob Robinson 1. Can subtract public ROW and PUE SF from gross tract area calculations. 2. Street trees cannot count towards FC. 3. Minimum dimensional requirements for reforestation - 2,500 SF with a minimum width of 35'. (Portions of the various triangles less then 35' in width cannot be counted towards forest unless adjoining existing protected forest.) CSX ROW is not protected. 4. Open to supplemental plantings in retained forest area to achieve quality 100/acre and providing credit. 5. need specific acreages/SFs shown for three on-site proposed tree save areas. 6. Bioretention facilities, SWM facilities, street lights, storm drain and easements are no longer included in FC easement areas.

Site - Public Works Ollie Mumpower	Complete - Insufficient Resubmit SG comments 1. Add DPW Approval blocks to all sheets. 2. General note 18 (which should be 19) states the future intersection will change. Possible “hammerhead” design should be investigated. 3. Add Centerline road stations (as shown on the road profile) to the site plan. 4. At the northwest connection of Caulfield Lane, there is a “noise wall” that was previously shown on SP-05-0013 along the side and rear of existing Lot 12 and the rear of existing Lot 11. Will the “noise wall” remain? This plan proposes grading (LOD) outside of the subject property along the north side and also within the area the wall is shown. 5. Some drainage from this site is being directed towards the back of SP-05-0013 existing Lots 2 through 8. These existing lots may need to be re-graded individually to ensure this drainage is conveyed properly. OKM comments 1. Sheet 2 a. On street parking spaces width min. of 22 feet b. Show all driveway lengths and grades c. For the 50, 62.5 and 90 foot radii shown – is this centerline radius? i. Show turning radius for truck on inside of these radii. If it encroaches into opposite lane one of the following things need to be done: 1. A sight distance study needs to be provided that shows minimum sight distance is available for safe two way traffic around the curve. Associated with this would be a truncation of any lot around the curve to prohibit any reduction in the sight distance (this is especially critical for the house siting around the 90 foot radius), or 2. Widening the street around the curve to provide safe movement of two way traffic (this would be required for the 50 foot centerline radius to provide an outside radius of 66 feet would , or 3. A larger radius that would provide safe two way traffic d. Full width bulb-outs on new portion of Caulfield Lane should match partial width bulb-outs on approved section 2. Sheet 3 a. Has road code application been completed? b. 50 foot centerline radius - see comment 1c c. 7 foot green space required between curb and SW 3. Sheet 5 a. Street tree type needs to be called out b. Light details required to match rest of community – LED metered lighting i. Additional light needs to be provided at new intersection of Caulfield Lane and Forest Preserve Drive ii. Spacing for lights should be 80 to 120 apart (100 preferred) 4. Other comments- need a. Signing and marking plan b. Turning radius plans c. Sign-off on concept utility plan d. A “to scale” grade establishment plan
Site Review Greg Ryberg	Complete - Approved Declaration of covenants needed to be recorded for private storm drain and stormwater management facilities
Stormwater Mngmt - PW Don Boswell	Complete - Insufficient Resubmit See SWM and SEC plans

DEVLIN PROPERTY

SCHEMATIC DEVELOPMENT PLAN





VICINITY MAP - 1" = 2000'

PRELIMINARY NOT FOR CONSTRUCTION

General Notes

1. The boundary survey for the property was prepared by Rodgers Consulting, Inc.
2. Two foot interval contour information was flown by McKenzie Snyder in January 2007.
3. The site is zoned MXD.
4. The intended uses for the site is residential.
5. Water and sewer class: 1
6. Maximum building heights: 50 Ft. (4 Stories)
7. The site area is 3.23 Ac.±.
8. Proposed development:

lots:	1.68 Ac.±
open space:	0.78 Ac.±
right of way:	0.77 Ac.±

9. This development proposes 19 single family attached dwelling units.
10. Designation of units and total number of units subject to final site plan approval. All development to be in compliance with the master plan.
11. This development will be completed in 1 phase.
12. The plan meets or exceeds the MXD zone requirement for Open Space. The maximum building heights are as permitted under the restrictions of the Gaithersburg City Code.
13. All site development to meet ADA requirements.
14. Building footprints as shown on this plan are preliminary to be finalized at site plan.
15. Limits of clearing, grading and landscaped open spaces as represented hereon are preliminary and subject to modification at final site plan.
16. Upon completion, the development will be annexed into the Parklands at Watkins Mill Town Center H.O.A.
17. Conservation easements and buffers to be maintained by H.O.A.
18. The shape and size of existing lot 1 N to be changed with Schematic Development Plan.
19. The shape and size of the proposed intersection of Caulfield Lane and Forest Preserve Drive on city property (P 880) to be changed with future site plan amendment. Coordination with the city of Gaithersburg to be required at Schematic Development Plan.
20. All bioswales to be included in HOA parcels.
21. Grading outside of the site boundary to be changed with future site plan amendment.

SHEET INDEX

Title	Sheet No.
Cover Sheet	1
Schematic Development Plan	2
Road Detail & Road Code Waiver Exhibit	3
Boundary Survey	4
Landscape and Lighting Plan	5
Preliminary Forest Conservation Plan	6
NRI / FSD	7
Architecture	8

CITY OF GAITHERSBURG
DEPARTMENT OF PUBLIC WORKS
FINAL APPROVAL
APPLICATION NO. _____
DATE _____
BY _____

GRAPHIC SCALE
50' 0 25' 50' 100' 200'
1 INCH = 50 FT

CITY OF GAITHERSBURG MAYOR & COUNCIL
31 SOUTH SUMMIT AVENUE, GAITHERSBURG, MARYLAND 20877
SCHEMATIC DEVELOPMENT PLAN APPROVAL
AT THE REGULARLY SCHEDULED MEETING OF THE MAYOR AND CITY COUNCIL HELD ON _____
APPLICATION NO. _____ WAS GRANTED
SCHEMATIC DEVELOPMENT PLAN APPROVAL
BY RESOLUTION _____ WITH _____( ) CONDITIONS.
DATE _____ BY _____
NOTE: ANY REVISIONS TO SIGNED PLANS MUST BE REAPPROVED BY THE MAYOR & CITY COUNCIL

SCHEMATIC DEVELOPMENT PLAN

REVISION	DATE	REVISION	DATE	REVISION	DATE

OWNERS/CONTRACT PURCHASER:
CLASSIC COMMUNITY CORPORATION
8120 WOODMONT AVENUE, SUITE 300
BETHESDA, MD 20814
PHONE: (301) 913-0404
FAX: (301) 913-5482
CONTACT: STEVE ECKERT

SCHEMATIC DEVELOPMENT PLAN

RODGERS CONSULTING
Enhancing the value of land assets
Rodgers Consulting, Inc.
19847 Century Blvd., Suite 200
Germantown, MD 20874
301.948.4700
301.948.6256 (fax)
301.253.6609
www.rodgers.com

	BY	DATE
BASE DATA		
DESIGNED		
DRAWN		
REVIEWED		

RODGERS CONTACT:
RELEASE FOR
BY_____ DATE ____

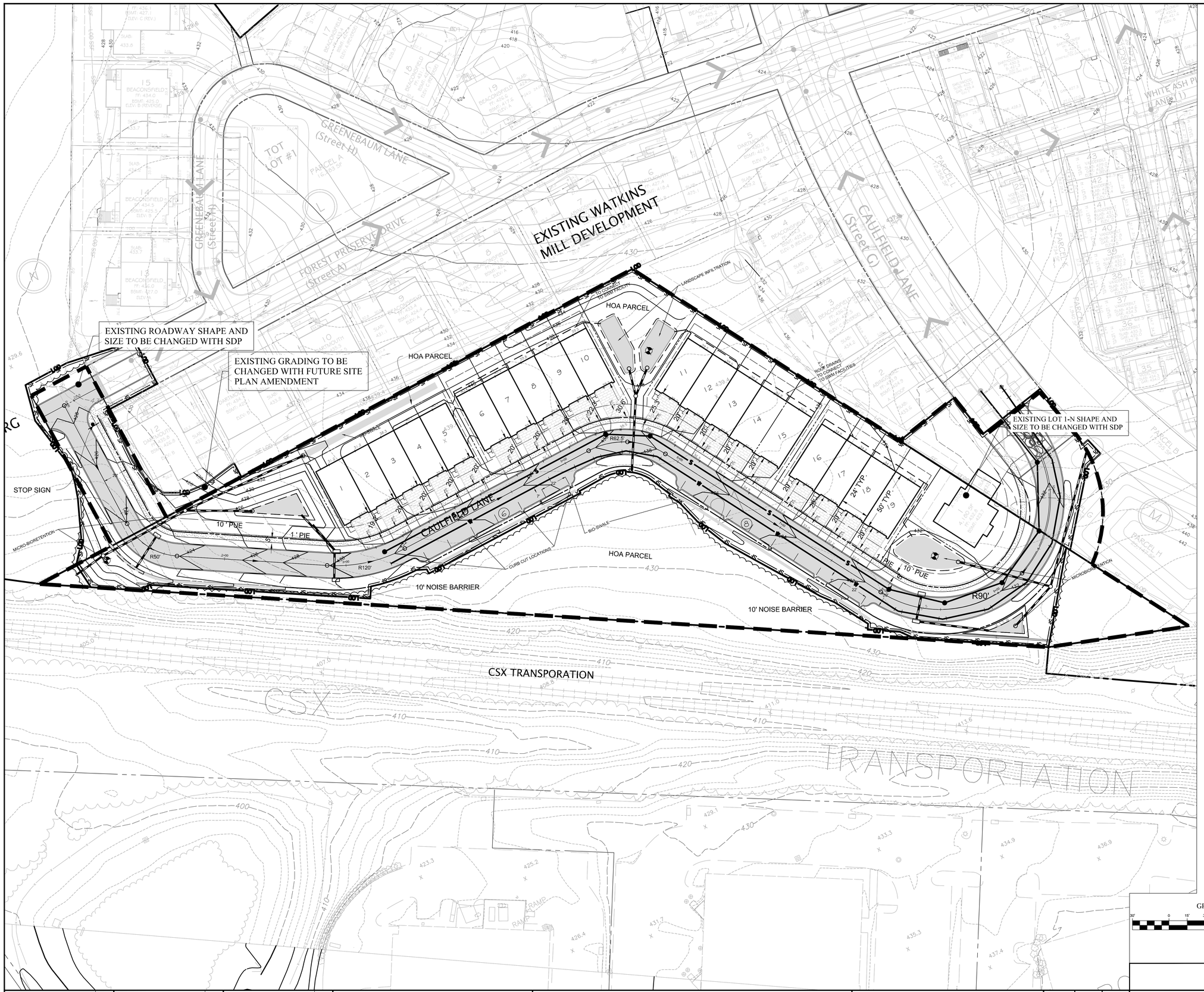
DEVLIN PROPERTY

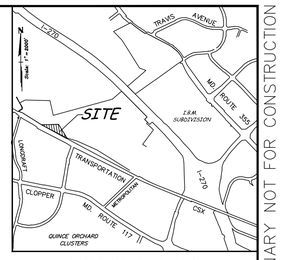
City of Gaithersburg
9th election district
Montgomery County, Maryland

Joint Hearing - MCC & PC
SDP-4560-2014
Exhibit 25A

SCALE: 1" = 50'
JOB No. 1137B
DATE: 1/2014
SHEET No. 1 OF 8

N:\MD-Montgomery-City of Gaithersburg\Parklands\DWG\Devlin\SDP\01_SDP COVER.dwg Sheet 05 May 09, 2014, 10:06am

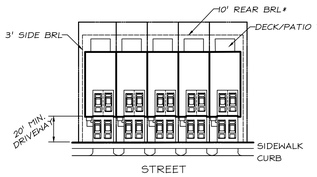




VICINITY MAP - 1" = 2000'

LEGEND

- EXISTING TOPOGRAPHY
- WETLANDS
- WETLANDS BUFFER
- 100 YEAR FLOODPLAIN
- FLOODPLAIN RESERVATION
- STREAM VALLEY BUFFER
- PROPOSED SIDEWALK
- RETAINING WALL
- LIMITS OF DISTURBANCE
- EXISTING TREE LINE
- PROPOSED TREE LINE
- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED STORM DRAIN
- # OF PARKING SPACES
- BLOCK LABEL



TYPICAL LOT LAYOUT
NTS

TOWNHOUSES
19 UNITS
PARKING REQUIRED: 2.5/UNIT = 48 REQ.
NET ON LOT PARKING PROVIDED: 3/UNIT
1 GARAGE PER UNIT: 19
2 DRIVEWAY PER UNIT: 38
ON STREET : 14
TOTAL PROVIDED: 71

GROSS PARKING PROVIDED: 3.7/UNIT

* 0' REAR BRL FOR LOTS 1-5

PRELIMINARY NOT FOR CONSTRUCTION

CITY OF GAITHERSBURG
DEPARTMENT OF PUBLIC WORKS
FINAL APPROVAL
APPLICATION NO. _____
DATE _____
BY _____

CITY OF GAITHERSBURG MAYOR & COUNCIL
31 SOUTH SUMMIT AVENUE, GAITHERSBURG, MARYLAND 20877
SCHEMATIC DEVELOPMENT PLAN APPROVAL
AT THE REGULARLY SCHEDULED MEETING OF THE MAYOR AND CITY COUNCIL HELD ON _____
APPLICATION NO. _____ WAS GRANTED
SCHEMATIC DEVELOPMENT PLAN APPROVAL
BY RESOLUTION _____ WITH _____ ( ) CONDITIONS.
DATE _____ BY _____
NOTE: ANY REVISIONS TO SIGNED PLANS MUST BE REAPPROVED BY THE MAYOR & CITY COUNCIL

GRAPHIC SCALE
30' 0 15' 30' 60' 120'
1 INCH = 30 FT

SCHEMATIC DEVELOPMENT PLAN

REVISION	DATE	REVISION	DATE	REVISION	DATE

OWNERS/CONTRACT PURCHASER:
CLASSIC COMMUNITY CORPORATION
8120 WOODMONT AVENUE, SUITE 300
BETHESDA, MD 20814
PHONE: (301) 913-0404
FAX: (301) 913-5482
CONTACT: STEVE ECKERT

SCHEMATIC DEVELOPMENT PLAN

RODGERS CONSULTING
Enhancing the value of land assets

Rodgers Consulting, Inc.
19847 Century Blvd., Suite 200
Germantown, MD 20874
301.948.4700
301.948.6256 (fax)
301.253.6609
www.rodgers.com

	BY	DATE
BASE DATA		
DESIGNED		
DRAWN		
REVIEWED		

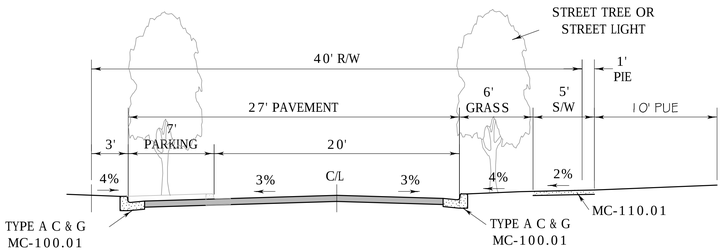
RODGERS CONTACT:
RELEASE FOR
BY_____ DATE _____

DEVLIN PROPERTY
City of Gaithersburg
9th election district
Montgomery County, Maryland

Joint Hearing - MCC & PC
SDP-4560-2014
Exhibit 25B

SCALE: 1" = 30'
JOB No. 1137B
DATE: 1/2014
SHEET No. 2 OF 8

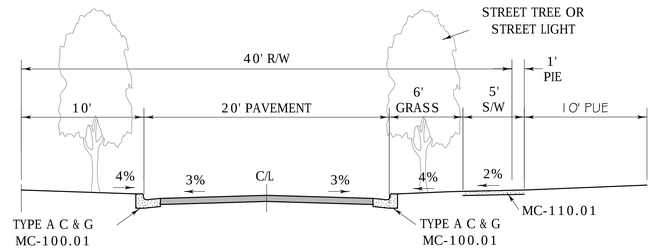
N:\MD-Montgomery-City of Gaithersburg\Parklands\DWG\Devlin\SDP\02_SDP.dwg Sheet 05 (2) May 08, 2014, 4:29pm



CAULFIELD LANE (W/ PARKING) - DEVLIN PROPERTY

-

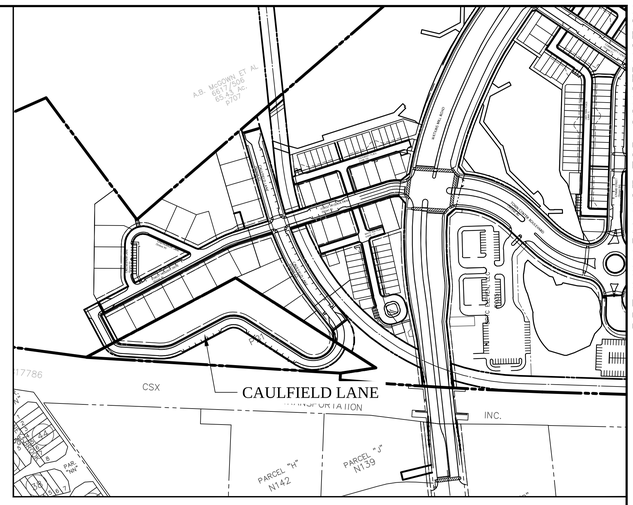
ROAD SECTION DESIGN REQUIREMENTS:	PROPOSED	REQUIRED (RESIDENTIAL TERTIARY)
MIN. R.O.W. WIDTH	40'	27.4'
MIN. PAVEMENT WIDTH	27'	26'
MIN. SIDE WIDTH	7'	N/A
MIN. MEDIAN WIDTH	N/A	N/A
MIN. C/L RADIUS	50'	100'
CURB AND GUTTER	YES	YES
SIDEWALK	YES (5')	YES
PARKING	YES	N/A



CAULFIELD LANE (W/0 PARKING) - DEVLIN PROPERTY

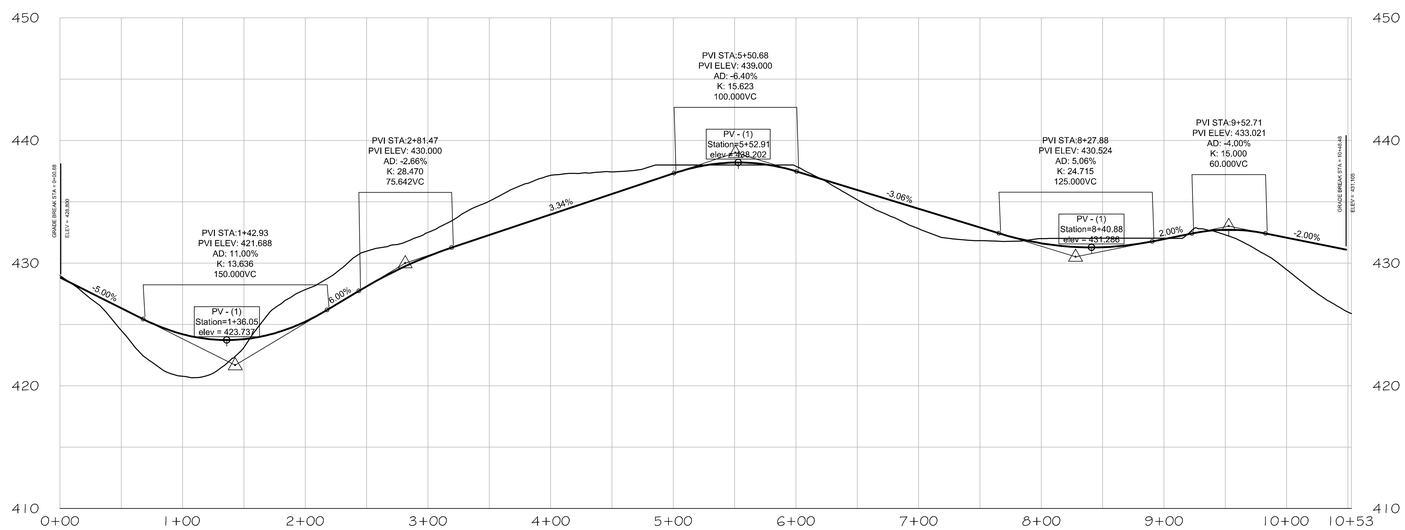
-

ROAD SECTION DESIGN REQUIREMENTS:	PROPOSED	REQUIRED (RESIDENTIAL TERTIARY)
MIN. R.O.W. WIDTH	40'	27.4
MIN. PAVEMENT WIDTH	20'	26'
MIN. SIDE WIDTH	7'	N/A
MIN. MEDIAN WIDTH	N/A	N/A
MIN. C/L RADIUS	50'	100'
CURB AND GUTTER	YES	YES
SIDEWALK	YES (5')	YES
PARKING	YES	N/A



AREA MAP - 1"=200'

PRELIMINARY NOT FOR CONSTRUCTION



CAULFIELD EXTENDED

CAULFIELD LANE PROFILE

VERTICAL SCALE: 1" = 5'-0"

HORIZONTAL SCALE: 1" = 50'-0"

CITY OF GAITHERSBURG
DEPARTMENT OF PUBLIC WORKS
FINAL APPROVAL
APPLICATION NO. _____
DATE _____
BY _____

CITY OF GAITHERSBURG MAYOR & COUNCIL
31 SOUTH SUMMIT AVENUE, GAITHERSBURG, MARYLAND 20877
SCHEMATIC DEVELOPMENT PLAN APPROVAL
AT THE REGULARLY SCHEDULED MEETING OF THE MAYOR AND CITY COUNCIL HELD ON _____
APPLICATION NO. _____ WAS GRANTED
SCHEMATIC DEVELOPMENT PLAN APPROVAL
BY RESOLUTION _____ WITH _____( ) CONDITIONS.
DATE _____ BY _____
NOTE: ANY REVISIONS TO SIGNED PLANS MUST BE REAPPROVED BY THE MAYOR & CITY COUNCIL.

ROAD DETAILS & ROAD CODE WAIVER EXHIBIT

REVISION	DATE	REVISION	DATE	REVISION	DATE

OWNERS/CONTRACT PURCHASER:
CLASSIC COMMUNITY CORPORATION
8120 WOODMONT AVENUE, SUITE 300
BETHESDA, MD 20814
PHONE: (301) 913-0404
FAX: (301) 913-5482
CONTACT: STEVE ECKERT

ROAD DETAILS
& ROAD CODE WAIVER EXHIBIT

RODGERS CONSULTING
Enhancing the value of land assets

Rodgers Consulting, Inc.
19847 Century Blvd., Suite 200
Germantown, MD 20874
301.948.4700
301.948.6256 (fax)
301.253.6609
www.rodgers.com

	BY	DATE
BASE DATA		
DESIGNED		
DRAWN		
REVIEWED		

RODGERS CONTACT:
RELEASE FOR
BY_____ DATE _____

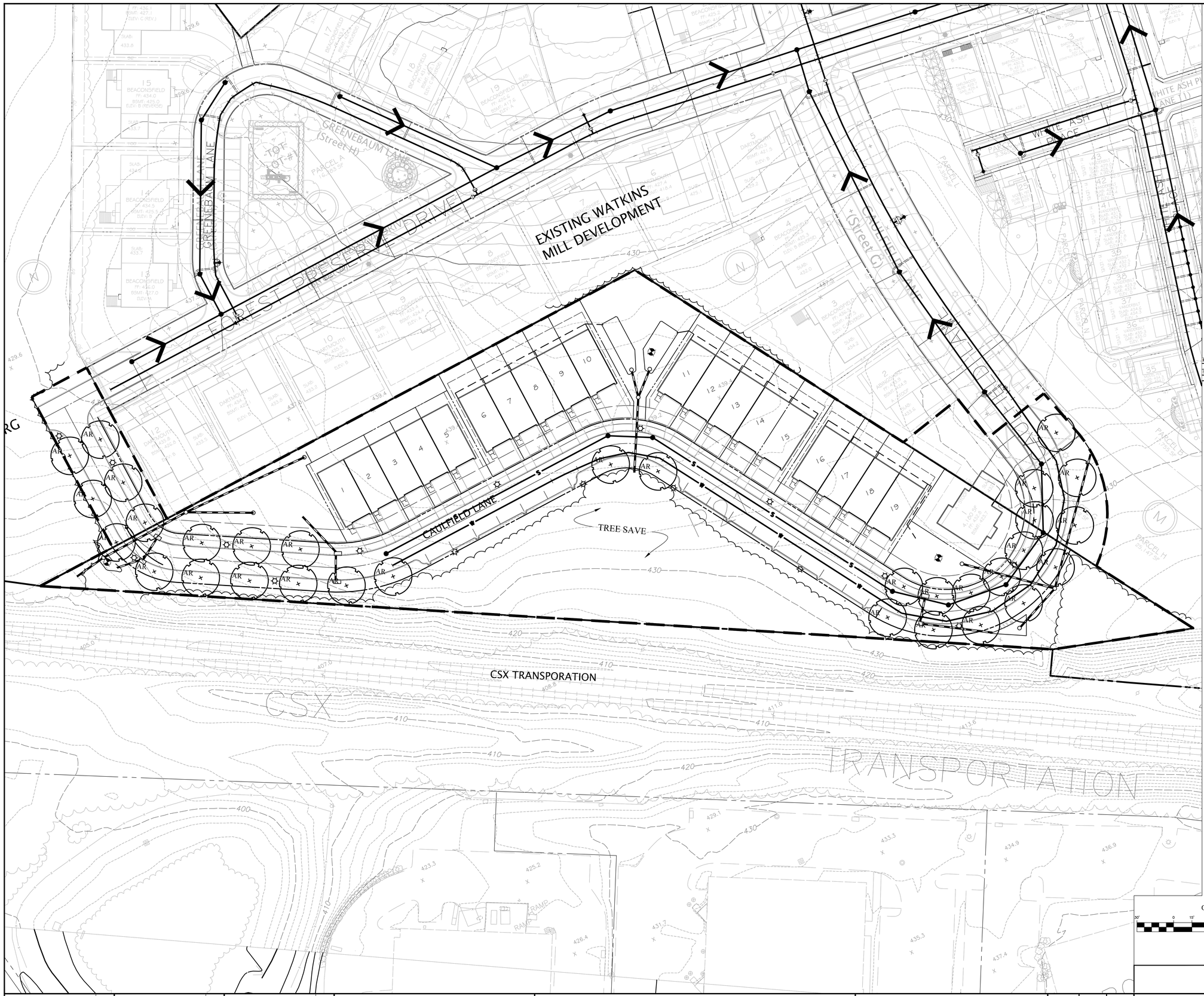
DEVLIN PROPERTY
City of Gaithersburg
9th election district
Montgomery County, Maryland

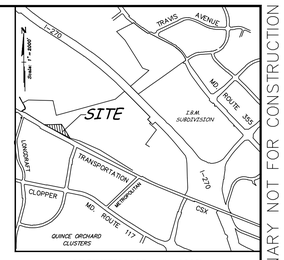
Joint Hearing - MCC & PC
SDP-4560-2014
Exhibit 26

SCALE: NTS
JOB No. 1137B
DATE: 1/2014
SHEET No. 3 OF 8

N:\MD-Montgomery-City of Gaithersburg\Parklands\DWG\Devlin\SDP\03_ROAD DETAILS.dwg Sheet 05 (2) May 07, 2014, 5:45pm

PRELIMINARY NOT FOR CONSTRUCTION





VICINITY MAP - 1" = 2000'

LEGEND

STREET TREE

LIGHT POST*

PLANT SCHEDULE					
QTY	KEY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
SHADE TREE					
32	AR	Acer rubrum 'Franksred'	Red Sunset Maple	2"-2 1/2" cal.	B&B

*LED metered and Light post to match those used in Watkins Mill (SP-05-0013)

CITY OF GAITHERSBURG
DEPARTMENT OF PUBLIC WORKS
FINAL APPROVAL
APPLICATION NO. _____
DATE _____
BY _____

CITY OF GAITHERSBURG MAYOR & COUNCIL
31 SOUTH SUMMIT AVENUE, GAITHERSBURG, MARYLAND 20877
SCHEMATIC DEVELOPMENT PLAN APPROVAL
AT THE REGULARLY SCHEDULED MEETING OF THE MAYOR AND CITY COUNCIL HELD ON _____
APPLICATION NO. _____ WAS GRANTED
SCHEMATIC DEVELOPMENT PLAN APPROVAL
BY RESOLUTION _____ WITH _____( ) CONDITIONS.
DATE _____ BY _____
NOTE: ANY REVISIONS TO SIGNED PLANS MUST BE REAPPROVED BY THE MAYOR & CITY COUNCIL

GRAPHIC SCALE
30' 0 15' 30' 60' 120'
1 INCH = 30 FT

LANDSCAPE AND LIGHTING PLAN

REVISION	DATE	REVISION	DATE	REVISION	DATE

OWNERS/CONTRACT PURCHASER:
CLASSIC COMMUNITY CORPORATION
8120 WOODMONT AVENUE, SUITE 300
BETHESDA, MD 20814
PHONE: (301) 913-0404
FAX: (301) 913-5482
CONTACT: STEVE ECKERT

LANDSCAPE AND LIGHTING PLAN

RODGERS CONSULTING
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301.253.6609
www.rodgers.com

	BY	DATE
BASE DATA		
DESIGNED		
DRAWN		
REVIEWED		

RODGERS CONTACT:
RELEASE FOR _____
BY_____ DATE _____

DEVLIN PROPERTY

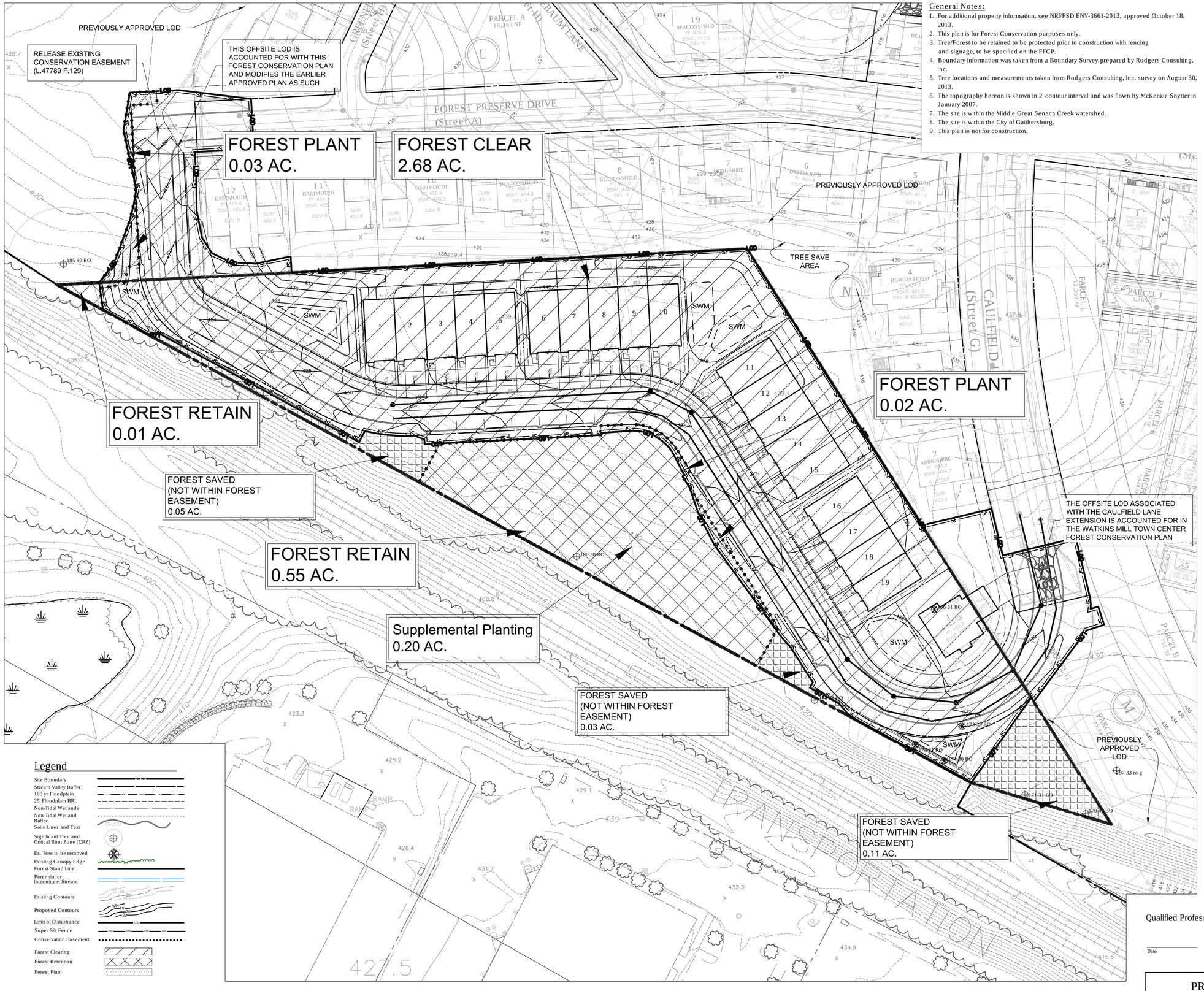
City of Gaithersburg
9th election district
Montgomery County, Maryland

Joint Hearing - MCC & PC
SDP-4560-2014
Exhibit 27

SCALE: 1" = 30'
JOB No. 1137B
DATE: 1/2014
SHEET No. 5 of 8

N:\MD-Montgomery-City of Gaithersburg\Parklands\DWG\Devlin\SDP\05_LANDSCAPE.dwg Sheet 05 (2) May 07, 2014, 6:10pm

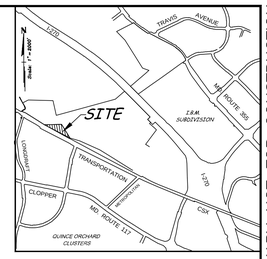
PRELIMINARY NOT FOR CONSTRUCTION



General Notes:

1. For additional property information, see NRI/FSD ENV-3661-2013, approved October 18, 2013.
2. This plan is for Forest Conservation purposes only.
3. Tree/Forest to be retained to be protected prior to construction with fencing and signage, to be specified on the FFCP.
4. Boundary information was taken from a Boundary Survey prepared by Rodgers Consulting, Inc.
5. Tree locations and measurements taken from Rodgers Consulting, Inc. survey on August 30, 2013.
6. The topography hereon is shown in 2' contour interval and was flown by McKenzie Snyder in January 2007.
7. The site is within the Middle Great Seneca Creek watershed.
8. The site is within the City of Gaithersburg.
9. This plan is not for construction.

N
Scale: 1" = 20'



VICINITY MAP - 1" = 2000'

CITY OF GAITHERSBURG
FOREST CLEARANCE AREA

TRACT AREA, FOREST COVER, AND CLEARANCE AREA

A:	**Tract Area**	2.12 *
B:	**Existing Forest Cover** B = Forest Cover within Tract Area A	2.12 **
C	**Cleared Forest Cover** C = Forest Cover to be cleared as result of development	1.56 ***
D	**Retained Forest Cover** D = B - C (Existing Forest Cover B - Cleared Forest Cover C)	0.56

AFFORESTATION
(Use zero (0) for all negative numbers resulting from calculations)

E	**Afforestation Threshold** E = Tract Area A x 15%	0.32
F	**Afforestation Required** F = E - B (Afforestation Threshold E - Existing Forest Cover B)	0.00

REFORESTATION
(Use zero (0) for all negative numbers resulting from calculations)

G	**Conservation Threshold** G = Tract Area A x 20%	0.42
H	**Existing Forest Cover greater than Conservation Threshold G** H = B - G (Existing Forest Cover B - Conservation Threshold G)	1.70
I	**Retained Forest Cover greater than Conservation Threshold** I = D - G (Retained Forest Cover D - Conservation Threshold G)	0.14
J	**Clearance greater than Conservation Threshold.** J = H - I	1.56
K	**Retention Credit for retained forest cover greater than conservation threshold** K = D - G (Retained Forest Cover D - Conservation Threshold G)	0.14
L	**Clearance less than Conservation Threshold** L = G - D (Conservation Threshold G - Retained Forest Cover D)	0.00
M	**Reforestation Requirement** M = 1/4J - K + 2L	0.25

BREAKEVEN POINT

N	**Breakeven Point** N = H x 20% + G (Retention Credit x 20% + without Threshold G)	0.76
O	**Clearance allowed without reforestation.** O = B - N (Existing Forest Cover - Breakeven Point N)	1.36

*Gross area 3.42 AC (Includes off-site LOD not previously accounted for) less 1.11 AC.(Public ROW and PUE) and 0.19 AC. (Saved forest not within easement), for a net of 2.12 AC.

**3.42 AC of existing forest cover, less 1.11 AC.(Public ROW and PUE) and 0.19 AC. (Saved forest not within easement), for a net of 2.12 AC.

***2.68 AC of forest cleared, less 1.11 AC.(Public ROW and PUE), for a net of 1.56 AC.

Forest Conservation Summary

Reforestation Requirement: 0.25 Ac.

Reforestation Proposed: 0.05 Ac.

Supplemental Planting: 0.20 Ac.*

*To be planted onsite within existing forest at 100 - 2" caliper trees per acre for a total of 20 trees.

Specimen Trees

Tag No.	DBH	Symbol	Common	Latin	Condition	Comments	Save / Remove
170	43	BO	Black Oak	Quercus velutina	Fair	triple, bad form	Save
171	31	BO	Black Oak	Quercus velutina	Poor	dieback	Save
173	30	BO	Black Oak	Quercus velutina	Fair	twin, included bark	Remove
174	30	BO	Black Oak	Quercus velutina	Poor	hollow spot	Remove
175	31	RO	Red Oak	Quercus rubra	Poor	twin, included bark	Remove
178 *	33	RO	Red Oak	Quercus rubra	Fair	dieback	Save
180	30	RO	Red Oak	Quercus rubra	Fair	twin, dieback	Save
185 *	30	RO	Red Oak	Quercus rubra	Fair	dieback	Save
196	31	BO	Black Oak	Quercus velutina	Fair		Remove
^ 197 *	33	RO	Red Oak	Quercus rubra	Good		Remove

* Tree location is outside of the property boundaries

^ Tree 197 was included and proposed / approved for removal with the Watkins Mill Town Center Forest Conservation Plan.

GRAPHIC SCALE

30' 0 15' 30' 60' 120'

1 INCH = 30 FT

Legend

- Site Boundary
- Stream Valley Buffer
- 100 yr Floodplain
- 25' Floodplain BRL
- Non-Tidal Wetlands
- Non-Tidal Wetland Buffer
- Soils Lines and Text
- Significant Tree and Critical Root Zone (CRZ)
- Ex. Tree to be removed
- Existing Canopy Edge
- Forest Stand Line
- Perennial or Intermittent Stream
- Existing Contours
- Proposed Contours
- Limit of Disturbance
- Super Silt Fence
- Conservation Easement
- Forest Clearing
- Forest Retention
- Forest Plant

Qualified Professional Certificate

Date

Dusty Rood
Qualified Professional
COMAR 08.19.06.01

PRELIMINARY FOREST CONSERVATION PLAN

REVISION	DATE	REVISION	DATE	REVISION	DATE

OWNERS/CONTRACT PURCHASER:
CLASSIC COMMUNITY CORPORATION
8120 WOODMONT AVENUE, SUITE 300
BETHESDA, MD 20814
PHONE: (301) 913-0404
FAX: (301) 913-5482
CONTACT: STEVE ECKERT

Preliminary Forest Conservation Plan

RODGERS CONSULTING
Knowledge • Creativity • Enduring Values

19847 Century Boulevard
Suite 200
Germantown, Maryland 20874
Ph: 301.948.4700 (Main)
Ph: 301.253.6609 (Frederick)
Fx: 301.948.6256
www.rodgers.com

	BY	DATE
BASE DATA		
DESIGNED		
DRAWN		
REVIEWED		

RODGERS CONTACT:
RELEASE FOR
BY_____ DATE_____

DEVLIN PROPERTY

City of Gaithersburg
9th election district
Montgomery County, Maryland

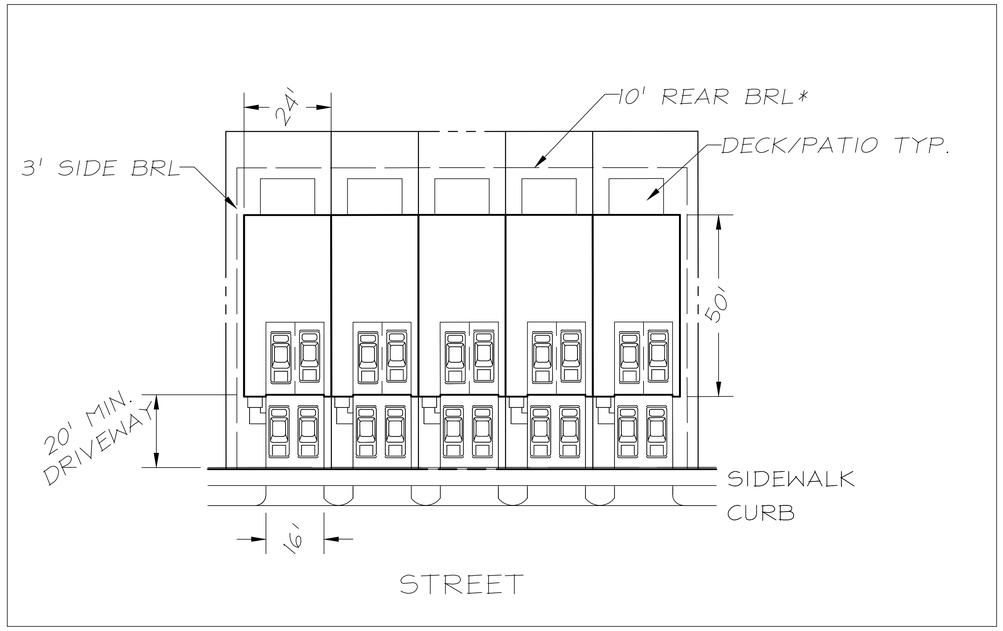
Joint Hearing - MCC & PC
Z-4520-2014
Exhibit 11

Joint Hearing - MCC & PC
SDP-4560-2014
Exhibit 28

SCALE: 1" = 30'
JOB No. 1137B
DATE: 1/2014
SHEET No. 4 OF 5

N:\MD-Montgomery-City of Gaithersburg\Parklands\DWG\Devlin\Environmental\PFCP_2014-01-21.dwg Layout1 May 09, 2014, 10:21am

24' TOWNHOME (FRONT LOAD GARAGE) - ELEVATION
NTS



24' TOWNHOME (FRONT LOAD GARAGE) - PLAN
NTS

*0' REAR BRL FOR LOTS 1-5

General Notes

1. Architectural elevations are shown for illustrative purpose only. Final architecture and building height shall be determined at building permit.
2. All architecture should follow the design guidelines set forth by the previously approved Watkins Mill Towncenter Site Plan.

CITY OF GAITHERSBURG
DEPARTMENT OF PUBLIC WORKS
FINAL APPROVAL
APPLICATION NO. _____
DATE _____
BY _____

CITY OF GAITHERSBURG MAYOR & COUNCIL
31 SOUTH SUMMIT AVENUE, GAITHERSBURG, MARYLAND 20877
SCHEMATIC DEVELOPMENT PLAN APPROVAL
AT THE REGULARLY SCHEDULED MEETING OF THE MAYOR AND CITY COUNCIL HELD ON _____
APPLICATION NO. _____ WAS GRANTED
SCHEMATIC DEVELOPMENT PLAN APPROVAL
BY RESOLUTION _____ WITH _____( ) CONDITIONS.
DATE _____ BY _____
NOTE: ANY REVISIONS TO SIGNED PLANS MUST BE REAPPROVED BY THE MAYOR & CITY COUNCIL

PRELIMINARY ARCHITECTURE PLAN

REVISION	DATE	REVISION	DATE	REVISION	DATE

OWNERS/CONTRACT PURCHASER:
CLASSIC COMMUNITY CORPORATION
8120 WOODMONT AVENUE, SUITE 300
BETHESDA, MD 20814
PHONE: (301) 913-0404
FAX: (301) 913-5482
CONTACT: STEVE ECKERT

PRELIMINARY ARCHITECTURE PLAN

RODGERS CONSULTING
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301.948.4700
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www.rodgers.com

	BY	DATE
BASE DATA		
DESIGNED		
DRAWN		
REVIEWED		

RODGERS CONTACT:
RELEASE FOR _____
BY_____ DATE ____

DEVLIN PROPERTY
City of Gaithersburg
9th election district
Montgomery County, Maryland

Joint Hearing - MCC & PC
Z-4520-2014
Exhibit 12

Joint Hearing - MCC & PC
SDP-4560-2014
Exhibit 29

SCALE: N/A
JOB No. 1137B
DATE: 1/2014
SHEET No. 8 OF 8

N:\MD-Montgomery-City of Gaithersburg\Parklands\DWG\Devlin\SDP\08_ARCHITECTURE.dwg Sheet 05 (2) May 08, 2014, 3:26pm

PRELIMINARY NOT FOR CONSTRUCTION

Gregory Mann

From: Jules Krinsky <jkrinsky@RODGERS.com>
Sent: Friday, May 09, 2014 11:17 AM
To: Gregory Mann
Cc: Lauren Pruss; Gary Unterberg
Subject: Devlin Property
Attachments: 0_2014-05-09 ResponseLetter.pdf; 01_SDP COVER-2014-05-07.pdf; 02 _SDP-2014-05-08.pdf; 03_ROAD DETAILS-2014-05-07.pdf; 05 _LANDSCAPE-2014-05-07.pdf; 06_PFCP_2014-05-07.pdf; 08 _ARCHITECTURE-2014-05-08.pdf; 0_2014-05-09 REV CoverLetter.pdf; 6_MP&Zone Statement(REV 2014-05-08).pdf

Greg-

Attached are the revised sheets from the Devlin Property SDP, based on the comments provided by the City of Gaithersburg.

Included in this attachment is:

- Response Letter
- Sheet 1 – SDP Cover
- Sheet 2 – SDP
- Sheet 3 – Road Details
- Sheet 5 – Landscape
- Sheet 6 – Preliminary Forest Conservation Plan
- Sheet 8 – Architecture
- Revised Road Code Waiver Letter
- Revised Master Plan Compliance Statement

Let me know if there is anything else we can provide for you.

Jules Ryan Krinsky ASLA, LEED-GA
Planner
Rodgers Consulting, Inc.
301-948-4700 office
240-912-2145 direct
404-275-0818 cell

Knowledge
Creativity
Enduring Values

www.rodgers.com

Unless expressly indicated, nothing contained in this e-mail is intended to be an offer to commit Rodgers Consulting, Inc., to any purchase, sale, contract, or other course of action.

Joint Hearing - MCC & PC
SDP-4560-2014
Exhibit 30