OC 257-05   The Avalon
       Site PLan

MSA-S-1829-5037

Hurley, Roby

From:	Hurley, Roby
Sent:	Monday, September 29, 2008 1:46 PM
To:	R. Blaine Smith (bsmith@ococean.com); 'GBlazer@ococean.com'
Subject:	Avalon Hotel; OC 257-05

Gail and Blaine, Thank you for your September 23, 2008 letter regarding the subject hotel. Your letter provides clarification on the subjects in my letter and I thank you for taking the time to provide the details. This concludes our review on the subject site. Thank you for the opportunity to review.

Roby Hurley
Natural Resources Planner
410/260-3468

TOWN OF

OCEAN CITY

The White Marlin Capital of the World

Planning and Community Development
P O Box 158
Ocean City MD 21843

September 23, 2008

Mr. Roby Hurley
Natural Resources Planner
State of Maryland Critical Area Commission
Chesapeake and Atlantic Coastal Bays
1804 West Street, Suite 100
Annapolis MD 21401

Dear Mr. Hurley:

Re: Avalon Hotel, Site I and II

This is to confirm that Gail and I have received your staff comments for the above-referenced project. The information below is in response to your comment as follows:

1. The NE Basin is located behind the back of the walk and in front of the porch. It is 1.65' deep, 2.5' wide, and 48.8' long. The volume capacity = 80.52 cf. The drainage area to the 1,017 square foot N Basin is shallow but this is what the Engineer designed. They have water table issues as well as pile caps and grade beams for the foundation. They provide storage necessary for the water quality volume thus we have no leverage to make them change it. They understand that they will owe a mitigation fee for not meeting the 10%, which they are paying $2,196.
2. The swale/raingardens are not part of the pollutant removal. They are conveyance only. They are used to capture the water and direct it to the infiltration trenches. The volume in the infiltration trenches under the parking lot is sized for the water quality volume. They do not have the 2' clearance to the water table so they still owe a mitigation fee of $5,795. Previous stormwater renditions were pavers but apparently they changed their mind. They have the same removal efficiency.
3. Fees are collected prior to issuing the building permits.
4. The plantable area on-site is only 11% of the total site versus the 15% required. Woody vegetation comprises 36% of the site area.
5. The site is not subject to the Habitat Protection Area requirement due to the fact that total site area is 31,325 square feet.

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CRITICAL AREA COMMISSION

Mr. Roby Hurley
Natural Resources Planner
State of Maryland Critical Area Commission
Chesapeake and Atlantic Coastal Bays
1804 West Street, Suite 100
Annapolis MD 21401
Page Two

Once you've had the opportunity to review our comments please advise of any further concerns regarding this project. We appreciate your assistance in this manner.

Sincerely:

Gail P. Blazer
Environmental Engineer

R. Blaine Smith
Zoning Administrator

Martin O'Malley
Governor

Anthony G. Brown
Lt. Governor

Margaret G. McHale
Chair

Ren Serey
Executive Director

STATE OF MARYLAND
CRITICAL AREA COMMISSION
CHESAPEAKE AND ATLANTIC COASTAL BAYS

September 17, 2008

1804 West Street, Suite 100, Annapolis, Maryland 21401
(410) 260-3460 Fax: (410) 974-5338
www.dnr.state.md.us/criticalarea/

Mr. Blaine Smith, Zoning Administrator
Planning and Community Development
P.O. Box 158
Ocean City, MD 21843

RE: Avalon Hotel, Site I and II

Dear Mr. Smith:

Thank you for the submission of site plans related to the above referenced project. The applicant intends to redevelop parcels 4026-27,-10 on map 110, and develop parcels 4011-13 on map 110 creating a hotel and parking respectively. The project is located in the IDA, and is non waterfront. There are no Buffer issues. Commission staff offers the following comments:

1. Regarding the 10% Stormwater Management on Site I, I could not locate the NE Basin on page SP4.1. Also the North Basin appears to be designed very shallow. There may be groundwater or other considerations for this design but consideration should be given to widening the BMP to handle the volume.

2. On Site II, it is difficult to determine which BMP is being used to meet the 10% Rule. SP 4.2 indicates many BMPs including pocket ponds, bioretention, typical basin and swale. However the 10% worksheet shows the BMP as Pavers, which I could not locate on the plans.

3. For both sites, generally it appears that partial nutrient reduction takes place on site and the balance of the phosphorous load is mitigated through fee in lieu.

4. The afforestation requirement appears to be met on-site.

5. To meet the Habitat Protection Area requirement and the submittal requirements of your ordinance, the applicant is required to obtain an evaluation of the property by the Department of Natural Resources' Wildlife and Heritage Service (WHS) for the presence of rare, threatened, or endangered species. If present, the applicant will be required to address recommendations for protection of the species within the context of a habitat protection plan. We would appreciate a copy of the WHS letter once received. This may have been provided under a different development scheme for this site but I was unable to locate it.
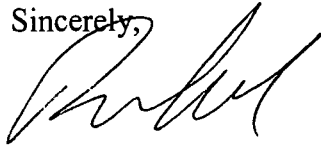
Thank you for the opportunity to provide review and comment. Please provide the above requested information when it becomes available. If you have any further questions regarding this project, please call me directly at 410-260-3468.

Sincerely,

Roby Hurley
Natural Resources Planner

cc: OC257-05

**STATE OF MARYLAND
CRITICAL AREA COMMISSION
CHESAPEAKE AND ATLANTIC COASTAL BAYS**
1804 West Street, Suite 100, Annapolis, Maryland 21401
(410) 260-3460 Fax: (410) 974-5338
www.dnr.state.md.us/criticalarea/

April 28, 2005

Mr. Blaine Smith, Zoning Administrator   **VIA FACSIMILE**
Town of Ocean City
PO Box 158
Ocean City, MD 21843

RE: The Avelon at Ocean City, 11 Baltimore Avenue

Dear Mr. Smith:

Thank you for providing information on the above referenced site plan. The applicant proposes to tear down several commercial buildings and redevelop the site with two condominium buildings containing 45 units. The site is 0.72 acres in size and is not waterfront. Critical Area requirements for this project include the 10% pollutant reduction and the 15% afforestation requirement. Commission staff has reviewed the information provided and we have the following comments:

1.   While the planting area appears to be available, the proposed landscaping does not meet the 15% afforestation requirement. A fee-in-lieu at $2.40 per square foot will be required for the deficit in planting.

2.   According to the calculations, the proposed bioretention areas will remove approximately half of the required pollutant load. The deficit is proposed to be met through a fee-in-lieu. It is not apparent why additional on-site treatment (such as infiltration areas beneath pervious pavers in the parking lot) cannot be provided. If possible, we recommend that the requirement be met on site.

Thank you for the opportunity to comment. If you have any questions or concerns regarding these comments, please contact me.

Sincerely,

LeeAnne Chandler
Natural Resources Planner

cc: OC257-05

TOWN OF
OCEAN CITY

The White Marlin Capital of the World
MEMORANDUM

MAYOR & CITY COUNCIL
P.O. BOX 158
OCEAN CITY,
MARYLAND 21843-0158

www.town.ocean-city.md.us

MAYOR
JAMES N. MATHIAS, JR.

CITY COUNCIL MEMBERS
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President
JAMES S. HALL
Secretary
JOSEPH T. HALL, II
JAMES W. HANCOCK, III
NANCY L. HOWARD
LLOYD MARTIN
JOSEPH M. MITRECIC

DENNIS W. DARE
City Manager

CAROL L. JACOBS
City Clerk

TO: Departmental Representatives and Other Public Agencies

FROM: Planning and Community Development

DATE: April 14, 2005

SUBJECT: **The Avelon At Ocean City** – Consisting of 49 Units located on
           Parcels 4010-4013&4026-4027, Blk 14 and known locally as
           101 – 1st Street, Ocean City, Md. File #05-18100015
           Applicant: AGL Ventures, LLC

****

An application has been made for the above referenced project requiring your review.

The staff review meeting for this project is scheduled for **Thursday, May 19, 2005**, at 10:30 a.m. in the downstairs conference room of City Hall. The applicant and all agencies are encouraged to attend. Your input is vital to the overall approval process.

Should you have any questions, please call Blaine Smith at 410-289-8855.

Applicant: AGL Ventures LLC
             2 Dinghy Court
             Berlin, Md. 21811
             302-841-5177

cc: M.B. Richardson, Chief Building Official
     Terry McGean, Engineering
     Sam Villani, Fire Marshal
     Woodrow Shockley, Solid Waste
     Norman Arnold, Verizon
     Paul Skorobatsch, Conectiv
     Perry Linz, Water Department
     Charles Felin, Wastewater Department
     Bob Small, State HIghway Administration
     Dean Dashiell, Public Works
     Jimmy Jarman, Comcast, 8301 Coastal Hwy, Ocean City, Md.
     Jesse C. Houston, Director of P & D
     LeeAnne Chandler, Critical Area Commission
     File #05-18100015
     Correspondence '05

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CONDITIONS OF ENGINEERING and STORMWATER APPROVAL
MULTI-FAMILY/COMMERCIAL CONDITIONS

1. This review/approval does not relieve the developer's Liability for conformance to the City's Ordinance and subdivision regulations requirements.

2. Call Engineering for grading, Stormwater Management, sidewalk/driveways and final engineering/drainage inspections 24 hours in advance at 410-289-8845. Do not landscape until inspections are complete.

3. Final Grades should have positive drainage and runoff drain toward street/bay over grass. Drainage arrows are shown in red. An adjustment of the grade to the site is the responsibility of the contactor – minimum slope is 1" in 10'. Ponding water is unacceptable unless part of a designed Stormwater Management System. Site grading requirements are as followed:
   - Fill material is required clean and be free of debris, organic material and < 10% clay
   - Fill material should be consistent with infiltration rates required for stormwater management
   - Stockpiles of dirt should be stabilized with vegetation or protected with silt fence, hay bales, straw or other appropriate protection.
   - Compaction of fill is required
   - Slope and height of fill should not exceed requirements for retaining wall. Building permit required for retaining wall.
   - Disturbance to adjoining property will require their approval of condition of disturbed property.

4. Use wall/berm/swale at property line to prevent drainage and sediment on to adjacent lots. Keep streets clean of dirt and debris and site free of litter and debris. Remove all construction materials, dumpsters, port-a-pots, etc. from City property and rights-of-way at completion of project. Sidewalk must be repaired of any damage made during placement of structure. Any disturbance to neighboring property will require their permission and must be replaced to their satisfaction. Including the City street, sidewalk and alleys.

5. Install and maintain silt fence, if needed, until property is stabilized - bare soil will need to be stabilized with vegetation, straw, or other appropriate measure prior to Certificate of Occupancy. All disturbed property will be permanently and adequately stabilized including under deck to prevent soil runoff and erosion within 14 days. All stormwater Management structural devices will be protected from siltation until site is stabilized. If silt fence is not maintained a super silt fence will be required.

6. All Stormwater Management will be built according to the approved stamped plans. If approved Stormwater Management measures are not functioning as designed a revision to the Stormwater Management Plan will need to be submitted to Engineering for review. All measures approved on this plan will be inspected and maintained according to the recorded agreement. Structural Stormwater Management measures are covered under the architect affidavit and are ultimately the responsibility of the Architect that the construction meets the City Code and State guidelines. As-built survey may be requested should site conditions merit such a request. Infiltration BMP's may not be constructed until the last stage of construction and all contributing drainage area is stabilized.

7. All City sidewalks and driveway curb-cuts will be inspected to determine if they need to be replaced. They will be replaced at owner's expense should conditions merit replacement.

8. Water Quality Management Plan must be adequately addressed. See site plan and Landscaping plan for compliance.

9. Note all changes to site plan attached.
   a. Containment on property line of Site 1
   b. Water Meter must be at property line
   c. Sign on Philadelphia Ave NOT approved in SWM pocket pond

Critical Area Project Application
Town of Ocean City

Date: __June 17, 2008__   File# __15757__

Project Name: __Avalon Hotel - Site 1__

Project Address __Baltimore Ave & N. 1st St.__

Tax Map: __110__ Parcel: __4026 4027 4010__ Block: _____ Lot# _____   Zoning __DMX__

Property Owner __Tekmen Group, Inc__   Phone __302-430-4500__

Property Owner Address _____

Parcel size (SF): __18,325__   or Site Area (SF) _____ (If < 50% of parcel)

Site size (SF) = area of disturbance
plus 5 feet perimeter of actual construction

I. PROJECT DESCRIPTION

Parcels 40,000 SF or more: Critical Area setback is 25 feet. No impervious surface or cantilevering permitted within 25 feet of the shoreline/wetlands. ("Pervious" decks are permitted 10' into setback, per construction standards.)

Parcels less than 40,000 SF: Critical Area set back is equal to the zoning setback (_____ feet). No impervious surface or cantilevering permitted within the setback. ("Pervious" decks at ground level are permitted in the setback, per construction standards.)

Existing Conditions

Impervious surface (SF) __14,189 SF__ % of site impervious: __77%__

Impervious surface within the 100-foot buffer (SF): __0 SF__

Proposed Conditions

Impervious surface (SF): __16,872 SF__ % of site impervious: __92%__

Total SF of disturbed area: __18,325 SF__

Impervious surface within the 100-foot buffer (SF): __0 SF__

Is project in the 100 foot buffer? Yes _____ No __✓__ (If yes, continue with Sec. II)

(If no, skip to Sec. III)

Form Revised 8/2/2007(S:Critical Area Project Application.doc)

II. MITIGATION WORKSHEET IN THE 100-FOOT BUFFER

1. **Detached Single Family Dwellings** (*Need Landscaping Plan with schedule/legend per conversion chart below*)

   Value of Construction: $_____

   a. Landscape required in the amount of 2% of the cost of construction (Value of construction x .02 = $_____)
   b. Total landscape provided. Attach landscape plan with schedule of native plant material and cost values. $_____
   c. Mitigation requirement (if a – b > 0) = Fee in Lieu of landscape.
      $_____(To be paid prior to issuance of Certificate of Occupancy.)
   d. Setback from water/wetlands _____SF x .25 = _____SF
      (*Landscape SF to be provided in setback area to be shown on Landscaping Plan*)

2. **Multi-Family and Commercial**
   All SF values determined from "Landscape Conversion Chart" below.

   Activity Description (Complete all that apply):
   a. Trees or shrubs removed from outside of setback:
      #_____ x _____SF x 1= _____SF
   b. Trees or shrubs removed from setback #___ x _____SF x 2=_____SF
   c. Pervious to impervious _____SF x 2 = _____SF
   d. Improved pervious to improved pervious _____SF x 1 = _____SF
   e. Undisturbed surface disturbed but remaining pervious
      _____SF x 1 = _____SF
   f. Impervious to impervious _____SF x 1 = _____SF
   g. Impervious to pervious _____SF x 0 = 0 SF
   h. Construction of decks in setback _____SF x 2 = _____SF
   i. TOTAL MITIGATION REQUIRED (sum of a through h) = _____SF
   j. TOTAL LANDSCAPE PROVIDED (Refer to "Landscape Conversion Chart" below)

	Number	Value		Total
Large trees	#_____	x 200 SF	=	_____SF
Small trees	#_____	x 100 SF	=	_____SF
Large shrubs	#_____	x 75 SF	=	_____SF
Small shrubs	#_____	x 50 SF	=	_____SF
Herbaceous Plants	#_____	x 2 SF	=	_____SF

   TOTAL VALUE OF LANDSCAPE PROVIDED _____SF
   k. FEE-IN-LIEU OF LANDSCAPE = i – j x $1.20 $_____
      (*To be paid prior to issuance of Certificate of Occupancy*)
   l. Setback from water/wetlands _____SF x .25 = _____SF
      (*Landscape SF to be provided in setback area to be shown on Landscaping Plan*)

> **LANDSCAPE CONVERSION CHART**
> MITIGATION
> Large tree = 200 square feet   = 2" to 2 ½" caliber - $200.00 credit
> Small tree = 100 square feet   = 1" to 1 ½" caliber - $100.00 credit
> Large shrub = 75 square feet = 36" height or spread or 3+ gallon container - $75 credit
> Small shrub = 50 square feet = 24" height or spread or 1-2 gallon container - $50 credit
> Herbaceous plants =   2 square feet per plant = 1 quart container - $2 credit

III. AFFORESTATION (LANDSCAPE) REQUIREMENT OUTSIDE THE 100-FOOT BUFFER

All development or redevelopment within the 1000-foot Critical Area boundary (but outside the 100-foot buffer) must be vegetated with native plant material in an amount of 15% of the site area.

Site 2
Site 1   12.72.4 − 170
due 11024
× 2.40

a. Total landscape required: Parcel size 18325 SF x .15 = 2749 SF
   (This SF area must be plantable and vegetated with the required number of plants)
b. Landscape provided (Refer to Landscape Conversion Chart)

			Existing		Proposed	
Large trees	# ____	x 200 SF =	____	SF	____	SF
Small trees	# 16	x 100 SF =	____	SF	1600	SF
Large shrubs	# ____	x 75 SF =	____	SF	____	SF
Small shrubs	# 83 .	x 50 SF =	____	SF	4150	SF
Herbaceous Plants #	____	x 2 SF=	____	SF	____	SF

2641.76
$2641.76

TOTAL VALUE OF LANDSCAPE PROVIDED: 5750   SF

IV. STORMWATER MANAGEMENT AND THE 10% RULE

Pollutant reduction requirement for all disturbances over 250 SF in the 1000-foot Critical Area.

1. Single family development subject to stormwater management requirements that use the "Standard Stormwater Management Plan" automatically meet the 10% Rule.

2. Single family development not subject to stormwater management regulations can meet the intent of the 10% Rule by submitting a Water Quality Management Plan.

3. Multi-family and commercial development must submit the 10% Rule Worksheet.

V. HABITAT PROTECTION (skip if it is less than 40,000 SF)

For lots of 40,000 square feet or greater, the applicant must consult with the Maryland Department of Natural Resources to determine the existence of any Habitat Protection Areas that may be affected by the proposed development.

VI. LANDSCAPE PLAN

Proposed landscape/mitigation plan (including location, botanical name, common name and installation site and should show all required vegetation according to the Mitigation or Afforestation requirements as well as all vegetation required in accordance with CHAPTER 98, ARTICLE II, LANDSCAPING, OF THE CODE.

VII. SITE PLAN REQUIREMENTS

Critical Area site plan must be drawn to scale and shall include the following information:

1. A title block, including the name of the project or development and the names of the property owner, project data including street name, tax map -parcel and lot,
2. Property lines and approximate location of adjoining property structures
3. North arrow, scale, and legend,
4. All improvements and impervious surfaces (including all structures, sidewalks, sheds, decks, driveways, pools, utilities, etc.) labeled as existing or proposed show dimensions and tabulate
5. Existing and proposed grades and elevation (Topography)
6. Limit of all proposed clearing, grading and disturbance.
7. Existing Vegetation, size and type with legend, and
8. Proposed landscape/mitigation plan (including location, botanical name, common name and installation site)
9. Mean high water line or Delineation of private and State tidal wetlands and Delineation of non-tidal wetlands (If applicable)
10. 100-foot Buffer and setback delineated (If applicable)
11. Habitat protection areas (if applicable)

Reviewed by: _M. E. Fussell_ Zoning Administrator Date _9/5/08_

_____ Environmental Engineer Date _9-5-08_

Avalon Hotel   Site I

Main Roof Layout / Drainage Areas

N.E. Corner Basin

o #3
1218 SF

o #4
3304 SF

3169 SF
o #5

North Side Basin

o #2
1462 SF

1484 SF o #6

1396 SF

879 SF
o #7

o #1

south side Basin

Center Basin

Rain Leaders #1 & #2 → North side Basin

Roof Area - (1462 + 1396) = 2858 SF

$$Q = \frac{(\text{Roof Area})(1^{in} \text{ rain})(95\%)}{(12^{in}/\text{ft})}$$

$$Q = \frac{(2858)(1)(.95)}{12} = 226 \text{ CF}$$

NORTH SIDE BASIN VOLUME

Xsect Area

$$= (4)(.64) + \frac{(.06)(2.5)}{2} + (.31)(1.5)$$

$$= 3.1^{SF} \quad \& \quad \text{Bed length} = 70'$$

$$\underset{Net}{V} = (3.1)(70)(40\%) = 86.8 \text{ CF}$$

EL 4.75
EL. 4.50
EL 4.
0.64'
EL 3

18"
.31
0.95'
0.06'
4'
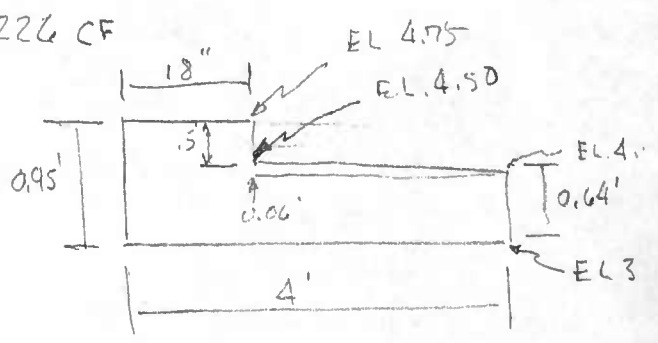
∴ Roof Area included in drainage area %

$$\Rightarrow \frac{(V_{Net})(12"/ft)}{(1")(.95)} = \frac{(86.8\ CF)(12)}{(.95)} = 1096\ SF < 2858\ SF\ (full\ A$$

∴ Use $\boxed{1096\ SF}$

N.E. CORNER BASIN

Rain Leader #3 $\Rightarrow \frac{(1218)(.95)}{12} = 96.4\ CF$ runoff

EL. 5.45
1.65'
EL. 3.80
2.5'

N.E Corner Basin Volume:

$X_{sect}\ Area = (1.65)(2.5)$

$= 4.125\ SF$
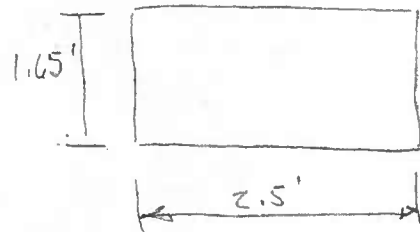
Bed Length = 48.8'

$V_{Net} = (4.125)(48.8)(.40) = 80.52\ CF$

∴ Roof Area included in drainage area %

$$= \frac{(80.52)(12)}{(.95)} = 1,017.1\ SF < 1218\ SF\ (Full\ Area)$$

∴ Use $\boxed{1017\ SF}$

CENTER BASIN

Rain leaders #6 & #7 $\Rightarrow$ Roof Area $= 1484 + 879 = 2363\ SF$

$Runoff = \frac{(2,363)(.95)}{12} = 187.1\ CF$

EL 5.50
1.7'
EL 3.80
4.0'

$X_{sect} = (1.7')(4.0') = 6.8\ SF$

Bed length = 50'

$V_{Net} = (6.8)(50)(.40) = 136\ CF$
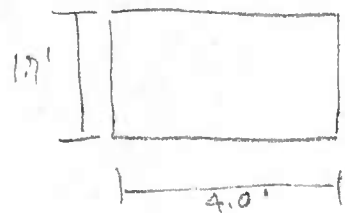
∴ Roof Area included in drainage Area %

$$= \frac{(136)(12)}{.95} = 1,717.9\ SF < 2,363\ SF\ (Full\ Area)$$

∴ Use $\boxed{1,718\ SF}$

South Side Basin

Rain leaders #4 & #5 ⇒ Roof Area = 3304 + 3169 = 6473 SF

South Side Basin Volume:

$X_{sect} A = (1.7')(8')$

$= 13.6 SF$
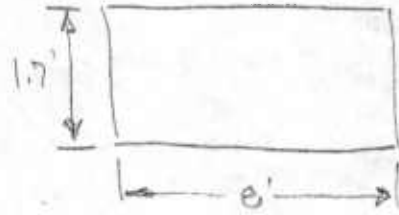
Bed length = 39.3'

$V_{net} = (13.6)(39.3)(.40)$

$= 213.8 CF$

∴ Roof Area included in drainage Area %:

$= \dfrac{(213.8)(12)}{.95} = 2,700.6 \ SF < 6,473 \ SF \ (Full \ Area)$

∴ USE $\boxed{2,701 \ SF}$

Total Site I drainage Area to infiltration basins

$= 1,096 + 1,017 + 1,718 + 2,701 = 6,532 \ SF$

Total Site Area = 18,325 SF

% Area to Infiltration Basins $= \dfrac{6,532}{18,325} \times 100 = 34.66\%$

Avalon Hotel - Site I   25-Jun-08

	Pre-Development	Post-Development
	Area 1	Area 1
Total Impervious	14189	16872
Grass/Deck/Sand	4136	1453
Pervious Paver	0	0
Total Area (sq ft)	18325	18325
Percent Impervious	77.4%	92.1%
Rv	0.74687	0.87864
WQv	1140.5	1341.8
Required Storage	224.7	+ 212.4

Total Required Storage (cu. ft)   **437.1**

Volume Provided:

North-east Corner Basin	80.5
North Side Basin (CF)	86.8
Center Basin (CF)	136.0
South Side Basin (CF)	214.0
Total Volume Provided (CF)	517.3

Project: Avalon Hotel, Site I
Ocean City, Maryland

25-Jun-08

Worksheet A: Standard Application Process

Calculate Pollutant Removal Requirements

Step 1: Calculate Existing and Proposed Site Imperviousness

1) Site Area within the Critical Area IDA, A=   18325 sf   0.421 Ac

2) Site Impervious Surface Area, Existing and Proposed, (See table 4.1 for details)

	(a) Existing		(b) Proposed	
	sf	acres	sf	acres
Roads	0	0.0000	0	0.0000
Parking Lots	3895	0.0894	1693	0.0389
Driveways	0	0.0000	0	0.0000
Sidewalks/Paths	3203	0.0735	323	0.0074
Rooftops	7091	0.1628	14332	0.3290
Trash / Transformer Pad	0	0.0000	444	0.0102
Water Meter Vault	0	0.0000	9	0.0002
Grease Trap top	0	0.0000	48	0.0011
Impervious Surface Area	14189	0.3257	16849	0.3868

3) Non-Structural BMP's Applied to the Site

Non-Structural BMP	Disconnected Impervious Area	
	sf	acres
		0.0000
	0	0.0000
	0	0.0000
	0	0.0000
	0	0.0000
	0	0.0000
Disconnected Rooftop Impervious Area	0	0.0000

4) Adjusted Proposed Impervious Surface Area
   = Proposed Impervious Surface Area - Disconnected Impervious Area
   = Step 2b   -   Step 3
   =   0.3868   -   0.0000
   =   0.3868 acres

Note: All acreage used in this worksheet refers to areas within the Ida Critical Area Only

5) Imperviousness (I)

Existing Imperviousness, Ipre	=	Impervious Surface Area/Site Area			
	=	Step 2a	/	Step 1	
·	=	0.3257	/	0.4207	
	=	77.430 %			

Proposed Imperviousness, Ipost	=	Impervious Surface Area/Site Area			
	=	Step 2a	/	Step 1	
	=	0.3868	/	0.4207	
	=	91.945 %			

C. Define Development Category

1) Redevelopment: Existing Imperviousness greater than 15% (Go to Step 2A)
2) New Development: Existing Imperviousness Less than 15% (Go to Step 2B)
3) Single Lot Residential Single Lot being developed or improved; single family residential; and more than 250 sf existing disturbed (Go to Section 5, Residential approach, for detailed criteria and requirements.)

Step 2: Calculate the Predevelopment Load (Lpre)

A. Redevelopment

Lpre	=	Rv C A 8.16		
Rv	=	0.05	+	0.009 (Ipre)
	=	0.7469		
Lpre	=	0.769 lbs/year of total phosphorus		

Where:

Lpre	=	Average annual load of total phosphorous exported from the site prior to development (lbs/year)
Rv	=	Runoff coefficient, which expresses the fraction of rainfall which is converted to runoff
Ipre	=	Predevelopment (existing) site imperviousness (i.e. I=75 if site is 75% impervious)
C	=	Flow weighted mean concentration of pollutant (total phosphorous) in urban runoff (mg/l)
	=	0.3 mg/l
A	=	Area if site within the Critical Area IDA (acres)
8.16	=	includes regional constants and conversion factors

B. New Development

Lpre	=	0.5 A
Lpre	=	0.000 lbs/year of total phosphorus

Where:

Lpre	=	Average annual load of total phosphorous exported from the site prior to development (lbs/year)
0.5	=	Annual total phosphorous load from undeveloped Lands
A	=	Area if site within the Critical Area IDA (acres)

Step 3: Calculate the Post-development Load (Lpost)

A. Redevelopment

Lpost	=	Rv C A 8.16
Rv	=	0.05 + 0.009 (Ipost)
	=	0.8775
Lpre	=	0.904 lbs/year of total phosphorus

Where:

Lpost	=	Average annual load of total phosphorous exported from the post development site (lbs/year)
Rv	=	Runoff coefficient, which expresses the fraction of rainfall which is converted to runoff
Ipost	=	Post-development (proposed) site imperviousness (i.e. I=75 if site is 75% impervious)
C	=	Flow weighted mean concentration of pollutant (total phosphorous) in urban runoff (mg/l)
	=	0.3 mg/l
A	=	Area if site within the Critical Area IDA (acres)
8.16	=	includes regional constants and conversion factors

Step 4: Calculate Pollutant Removal Requirement

RR	=	Lpost	-	0.9	Lpre
	=	0.904	-	0.9	0.769
	=	0.2115			

Where:

RR	=	pollutant removal requirement (lbs/yr)
Lpost	=	Average annual load of total phosphorous exported from the post development site (lbs/year)
Lpre	=	Average annual load of total phosphorous exported from the site prior to development (lbs/year)

Select BMP options using the screening matrices provided in the chapter 4 of the 2000 Maryland Storm water Design Manual. Calculate the load removed for each Option

BMP	Lpost	BMPre	%DA	Efficiency		LR	
infiltraltion	0.904	65%	34.6%	50%	=	0.1016	lbs/yr
	0.904				=	0.0000	lbs/yr
	0.904				=	0.0000	lbs/yr
	0.904				=	0.0000	lbs/yr
	0.904				=	0.0000	lbs/yr
	0.904				=	0.0000	lbs/yr
	0.904				=	0.0000	lbs/yr
			Load Removed (total)		=	0.1016	
		Pollutant removal Requirement (from Step 4)			=	0.2115	

Rooftop to infiltration basins = 13,881 SF = 75.7% of total area

Where:

Load Removed	=	Annual total phosphorous load removed by the proposed BMP (lbs/year)
Lpost	=	Average annual load of total phosphorous exported from the post development site (lbs/year)
BMPre =		BMP removal Efficiency for total phosphorus, Table 4.8 (%)
RR	=	pollutant removal requirement (lbs/yr)

Has the RR (pollutant removal requirement) been met?   No

Pollutant removal requirement not served   0.1098 lbs

Fee in Lieu $2,196.68

SITE 1
1" = 20'

ROOF DRAINAGE
AREA #3 = 1,218 SF

BUILDING RAIN LEADER

ROOF DRAINAGE
AREA #4 = 3,304 SF

BUILDING RAIN LEADER

HORZ. ROOF DRAIN
UNDER 1ST FLOOR SLAB

ROOF DRAINAGE
AREA #2 = 1,462 SF

VERT. ROOF DRAIN
TO INFILTRATION
BASIN

ROOF DRAINAGE
AREA #5 = 3,169 SF

BUILDING RAIN LEADER

HORZ. ROOF DRAIN
UNDER PAVEMENT

ROOF DRAINAGE
AREA #6 = 1,484 SF

PROPOSED 4"
DOMESTIC

VERT. ROOF DRAIN
TO INFILTRATION
BASIN

ROOF DRAINAGE
AREA #1 = 1,396 SF

HORZ. ROOF DRAIN
UNDER 1ST FLOOR SLAB

ROOF DRAINAGE
AREA #7 = 879 SF

VERT. ROOF DRAIN
TO INFILTRATION
BASIN

6" GATE VALVE (TYP.)

WATER METER VAULT

BUILDING RAIN LEADER

Critical Area Project Application
Town of Ocean City

Date: _June 17, 2008_   File# _15157_

Project Name: _Avalon Hotel - Site 11 (Parking lot)_

Project Address _Philadelphia Ave and N. 1st st._

Tax Map: _110_ Parcel: _4011 4012 4013_ Block: _____ Lot# _____   Zoning _DMX_

Property Owner _Tekmen Group, Inc_   Phone _302-430-4500_

Property Owner Address _____

Parcel size (SF): _13,000._ or Site Area (SF) _____ (If < 50% of parcel)

Site size (SF) = area of disturbance
plus 5 feet perimeter of actual construction

I. PROJECT DESCRIPTION

Parcels 40,000 SF or more: Critical Area setback is 25 feet. No impervious surface or cantilevering permitted within 25 feet of the shoreline/wetlands. ("Pervious" decks are permitted 10' into setback, per construction standards.)

Parcels less than 40,000 SF: Critical Area set back is equal to the zoning setback (_____ feet). No impervious surface or cantilevering permitted within the setback. ("Pervious" decks at ground level are permitted in the setback, per construction standards.)

Existing Conditions

Impervious surface (SF) _13,000 SF_ % of site impervious: _100%_

Impervious surface within the 100-foot buffer (SF): _0 SF_

Proposed Conditions

Impervious surface (SF): _11,037 SF_ % of site impervious: _84.9%_

Total SF of disturbed area: _13,000 SF_

Impervious surface within the 100-foot buffer (SF): _0 SF_

Is project in the 100 foot buffer? Yes _____ No _✓___ (If yes, continue with Sec. II)

(If no, skip to Sec. III)

Form Revised 8/2/2007(S:Critical Area Project Application.doc)

II. MITIGATION WORKSHEET IN THE 100-FOOT BUFFER

1. **Detached Single Family Dwellings** *(Need Landscaping Plan with schedule/legend per conversion chart below)*

   Value of Construction: $_____

   a. Landscape required in the amount of 2% of the cost of construction   (Value of construction x .02 = $_____)

   b. Total landscape provided. Attach landscape plan with schedule of native plant material and cost values. $_____

   c. Mitigation requirement (if a – b > 0) = Fee in Lieu of landscape.
   $_____ (To be paid prior to issuance of Certificate of Occupancy.)

   d. Setback from water/wetlands _____ SF x .25 = _____ SF
   (Landscape SF to be provided in setback area to be shown on Landscaping Plan)

2. **Multi-Family and Commercial**
   All SF values determined from "Landscape Conversion Chart" below.

   Activity Description (Complete all that apply):
   a. Trees or shrubs removed from outside of setback:
   #_____ x _____ SF x 1= _____ SF
   b. Trees or shrubs removed from setback #___ x _____ SF x 2= _____ SF
   c. Pervious to impervious _____ SF x 2 = _____ SF
   d. Improved pervious to improved pervious _____ SF x 1 = _____ SF
   e. Undisturbed surface disturbed but remaining pervious
   _____ SF x 1 = _____ SF
   _____ SF
   f. Impervious to impervious _____ SF x 1 = _____
   g. Impervious to pervious _____ SF x 0 = 0 SF
   h. Construction of decks in setback _____ SF x 2 = _____ SF
   i. TOTAL MITIGATION REQUIRED (sum of a through h) = _____ SF
   j. TOTAL LANDSCAPE PROVIDED (Refer to "Landscape Conversion Chart" below)

	Number	Value	Total	
Large trees	#_____	x 200 SF	=	_____ SF
Small trees	#_____	x 100 SF	=	_____ SF
Large shrubs	#_____	x 75 SF	=	_____ SF
Small shrubs	#_____	x 50 SF	=	_____ SF
Herbaceous Plants	#_____	x 2 SF	=	_____ SF

   TOTAL VALUE OF LANDSCAPE PROVIDED _____ SF

   k. FEE-IN-LIEU OF LANDSCAPE = i – j x $1.20 $_____
   (To be paid prior to issuance of Certificate of Occupancy)
   l. Setback from water/wetlands _____ SF x .25 = _____ SF
   (Landscape SF to be provided in setback area to be shown on Landscaping Plan)

> **LANDSCAPE CONVERSION CHART**
> MITIGATION
> Large tree = 200 square feet = 2" to 2 ½" caliber - $200.00 credit
> Small tree = 100 square feet = 1" to 1 ½" caliber - $100.00 credit
> Large shrub = 75 square feet = 36" height or spread or 3+ gallon container - $75 credit
> Small shrub = 50 square feet = 24" height or spread or 1-2 gallon container - $50 credit
> Herbaceous plants = 2 square feet per plant = 1 quart container - $2 credit

III. **AFFORESTATION (LANDSCAPE) REQUIREMENT OUTSIDE THE 100-FOOT BUFFER**

All development or redevelopment within the 1000-foot Critical Area boundary (but outside the 100-foot buffer) must be vegetated with native plant material in an amount of 15% of the site area.

a. Total landscape required: Parcel size 13000 SF x .15 = 1950 SF
(This SF area must be plantable and vegetated with the required number of plants)
b. Landscape provided (Refer to Landscape Conversion Chart)

				Existing		Proposed	
Large trees	#	x	200 SF =		SF		SF
Small trees	# 8	x	100 SF =		SF	800	SF
Large shrubs	#	x	75 SF =		SF		SF
Small shrubs	# 106	x	50 SF =		SF	4,850	SF
Herbaceous Plants	#	x	2 SF=		SF		SF

TOTAL VALUE OF LANDSCAPE PROVIDED: 5650 SF

IV. **STORMWATER MANAGEMENT AND THE 10% RULE**

Pollutant reduction requirement for all disturbances over 250 SF in the 1000-foot Critical Area.

1. Single family development subject to stormwater management requirements that use the "Standard Stormwater Management Plan" automatically meet the 10% Rule.

2. Single family development not subject to stormwater management regulations can meet the intent of the 10% Rule by submitting a Water Quality Management Plan.

3. Multi-family and commercial development must submit the 10% Rule Worksheet.

V. **HABITAT PROTECTION** (skip if it is less than 40,000 SF)

For lots of 40,000 square feet or greater, the applicant must consult with the Maryland Department of Natural Resources to determine the existence of any Habitat Protection Areas that may be affected by the proposed development.

Avalon Hotel - Site II

Net Volume Req'd from SWM Worksheet = 873.8 CF

Two Equal Basins are used with interconnecting Headers from 3 drainage Areas draining to 3 Pocket ponds via 3 East-West swales.
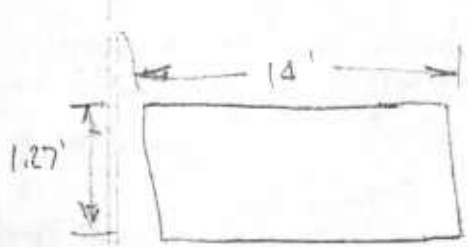
X_{sect} Area:

$$A = (14')(1.27')$$

$$= 17.78 \; SF \; /Each \; Basin$$
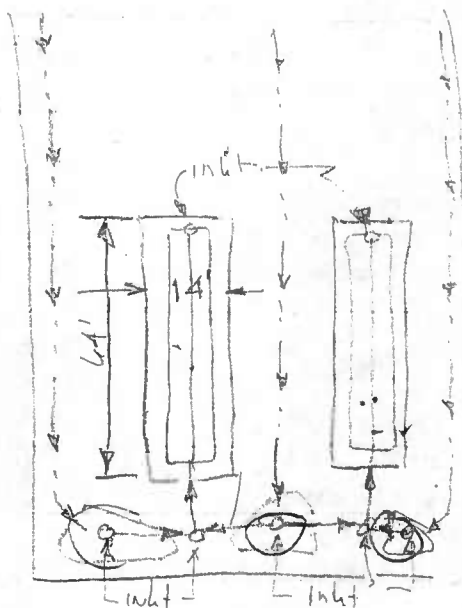
$$V_{net} = (17.78)(64)(.40)(2) = 910.3 \; CF > 873.CF \; Req'd \therefore ok$$

$$\% \, DA \Rightarrow \frac{(910.3 \, CF)(12)}{.95} = 11,499 \; SF$$

Actual Drainage Areas:

- North Side = 3,316 SF
- Central Area = 7,427 SF
- South Side = 1,875 SF

  12,615 SF

$$\therefore \; USE \; \frac{11,499 \; SF}{13,000 \; SF} \times 100 = 88A\%$$

VI.   LANDSCAPE PLAN

Proposed landscape/mitigation plan (including location, botanical name, common name and installation site and should show all required vegetation according to the Mitigation or Afforestation requirements as well as all vegetation required in accordance with CHAPTER 98, ARTICLE II, LANDSCAPING, OF THE CODE.

VII.   SITE PLAN REQUIREMENTS

Critical Area site plan must be drawn to scale and shall include the following information:

1. A title block, including the name of the project or development and the names of the property owner, project data including street name, tax map -parcel and lot,
2. Property lines and approximate location of adjoining property structures
3. North arrow, scale, and legend,
4. All improvements and impervious surfaces (including all structures, sidewalks, sheds, decks, driveways, pools, utilities, etc.) labeled as existing or proposed show dimensions and tabulate
5. Existing and proposed grades and elevation (Topography)
6. Limit of all proposed clearing, grading and disturbance.
7. Existing Vegetation, size and type with legend, and
8. Proposed landscape/mitigation plan (including location, botanical name, common name and installation site)
9. Mean high water line or Delineation of private and State tidal wetlands and Delineation of non-tidal wetlands (If applicable)
10. 100-foot Buffer and setback delineated (If applicable)
11. Habitat protection areas (if applicable)

/

Reviewed by: _M. E. Fussell_____ Zoning Administrator   Date__9/5/08__

_Dull Blay_____ Environmental Engineer Date _9-5-08__

Avelon Hotel - Site II

25-Jun-08

	Pre-Development Area 1		**Post-Development** Area 1
Total Impervious	0		11037
Grass/Deck/Sand/Gravel	13000		1963
Pervious Paver	0		0
Total Area (sq ft)	13000		13000
Percent Impervious	0.0%		84.9%
Rv	0.05000		0.81410
WQv	54.2		881.9
Required Storage	0.0	+	873.8
Total Required Storage (cu. ft)	**873.8**		
Required Area (sq. ft) for 1'-0" depth	2184.4		
Provided Area	3252.5		

Worksheet A: Standard Application Process

Calculate Pollutant Removal Requirements

Step 1: Calculate Existing and Proposed Site Imperviousness

1) Site Area within the Critical Area IDA, A=   13000 sf   0.298 Ac

2) Site Impervious Surface Area, Existing and Proposed, (See table 4.1 for details)

	(a) Existing		(b) Proposed	
	sf	acres	sf	acres
Roads	0	0.0000	0	0.0000
Parking Lots	0	0.0000	11037	0.2534
Driveways	0	0.0000	0	0.0000
Sidewalks/Paths	0	0.0000	0	0.0000
Rooftops	0	0.0000	0	0.0000
Decks	0	0.0000	0	0.0000
Swimming Pools/Ponds	0	0.0000	0	0.0000
Other	0	0.0000	0	0.0000
Impervious Surface Area	0	0.0000	11037	0.2534

3) Non-Structural BMP's Applied to the Site

Non-Structural BMP	Disconnected Impervious Area	
	sf	acres
	0	0.0000
	0	0.0000
	0	0.0000
	0	0.0000
	0	0.0000
	0	0.0000
Disconnected Rooftop Impervious Area	0	0.0000

4) Adjusted Proposed Impervious Surface Area
        = Proposed Impervious Surface Area - Disconnected Impervious Area
        = Step 2b   -   Step 3
        =   0.2534   -   0.0000
        =   0.2534 acres

Note: All acreage used in this worksheet refers to areas within the Ida Critical Area Only

5) Imperviousness (I)

Existing Imperviousness, Ipre   =   Impervious Surface Area/Site Area
                                          =   Step 2a   /   Step 1
                                          =   0.0000   /   0.2984
                                          =   0.000 %

Proposed Imperviousness, Ipost   =   Impervious Surface Area/Site Area
                                          =   Step 2a   /   Step 1
                                          =   0.2534   /   0.2984
                                          =   84.900 %

C. Define Development Category

1) Redevelopment: Existing Imperviousness greater than 15% (Go to Step 2A)
2) New Development: Existing Imperviousness Less than 15% (Go to Step 2B)
3) Single Lot Residential Single Lot being developed or improved; single family
residential; and more than 250 sf existing disturbed (Go to Section 5, Residential
approach, for detailed criteria and requirements.)

Step 2: Calculate the Predevelopment Load (Lpre)

A. Redevelopment
        Lpre   =   Rv C A 8.16
          Rv   =   0.05   +   0.009 (Ipre)
                  =   0.0500
        Lpre   =   0.037 lbs/year of total phosphorus

Where:
        Lpre   =   Average annual load of total phosphorous exported from
                                    the site prior to development (lbs/year)
          Rv   =   Runoff coefficient, which expresses the fraction of
                                    rainfall which is converted to runoff
         Ipre   =   Predevelopment (existing) site imperviousness (i.e. I=75
                                    if site is 75% impervious)
           C   =   Flow weighted mean concentration of pollutant (total
                                    phosphorous) in urban runoff (mg/l)
                  =   0.3 mg/l
       . A   =   Area if site within the Critical Area IDA (acres)
        8.16   =   includes regional constants and conversion factors

.298

= .149

B. New Development
    Lpre   =   0.5 A
    Lpre   =   0.000 lbs/year of total phosphorus

Where:
        Lpre   =   Average annual load of total phosphorous exported from
                        the site prior to development (lbs/year)
        0.5   =   Annual total phosphorous load from undeveloped Lands
        A   =   Area if site within the Critical Area IDA (acres)
        A   =   Area if site within the Critical Area IDA (acres)

Step 3: Calculate the Post-development Load (Lpost)

A. Redevelopment
    Lpost   =   Rv C A 8.16
    Rv   =   0.05   +   0.009 (Ipost)
             =   0.8141
    Lpre   =   0.595 lbs/year of total phosphorus

Where:
        Lpost   =   Average annual load of total phosphorous exported from
                        the post development site (lbs/year)
        Rv   =   Runoff coefficient, which expresses the fraction of
                        rainfall which is converted to runoff
        Ipost   =   Post-development (proposed) site imperviousness (i.e.
                        I=75 if site is 75% impervious)
        C   =   Flow weighted mean concentration of pollutant (total
                        phosphorous) in urban runoff (mg/l)
                  =   0.3 mg/l
        A   =   Area if site within the Critical Area IDA (acres)
        8.16   =   includes regional constants and conversion factors

---

Step 4: Calculate Pollutant Removal Requirement

        RR   =   Lpost   -   0.9   Lpre
                 =   0.595   -   0.9   0.149
                 =   0.4607

    Where:
        RR   =   pollutant removal requirement (lbs/yr)
        Lpost   =   Average annual load of total phosphorous exported from
                        the post development site (lbs/year)
        Lpre   =   Average annual load of total phosphorous exported from
                        the site prior to development (lbs/year)

Select BMP options using the screening matrices provided in the chapter 4 of the 2000
Maryland Storm water Design Manual. Calculate the load removed for each Option

BMP	Lpost	BMPre	%DA	Efficiency		LR	
Pavers	0.595	65%	88.4%	50%	=	0.1709	lbs/yr
	0.595				=	0.0000	lbs/yr
	0.595				=	0.0000	lbs/yr
	0.595				=	0.0000	lbs/yr
	0.595				=	0.0000	lbs/yr
	0.595				=	0.0000	lbs/yr
	0.595				=	0.0000	lbs/yr

Load Removed (total)	=	0.1709
Pollutant removal Requirement (from Step 4)	=	0.4607

Where:

Load Removed	=	Annual total phosphorous load removed by the proposed BMP (lbs/year)
Lpost	=	Average annual load of total phosphorous exported from the post development site (lbs/year)
BMPre =		BMP removal Efficiency for total phosphorus, Table 4.8 (%)
RR	=	pollutant removal requirement (lbs/yr)

Has the RR (pollutant removal requirement) been met?   No
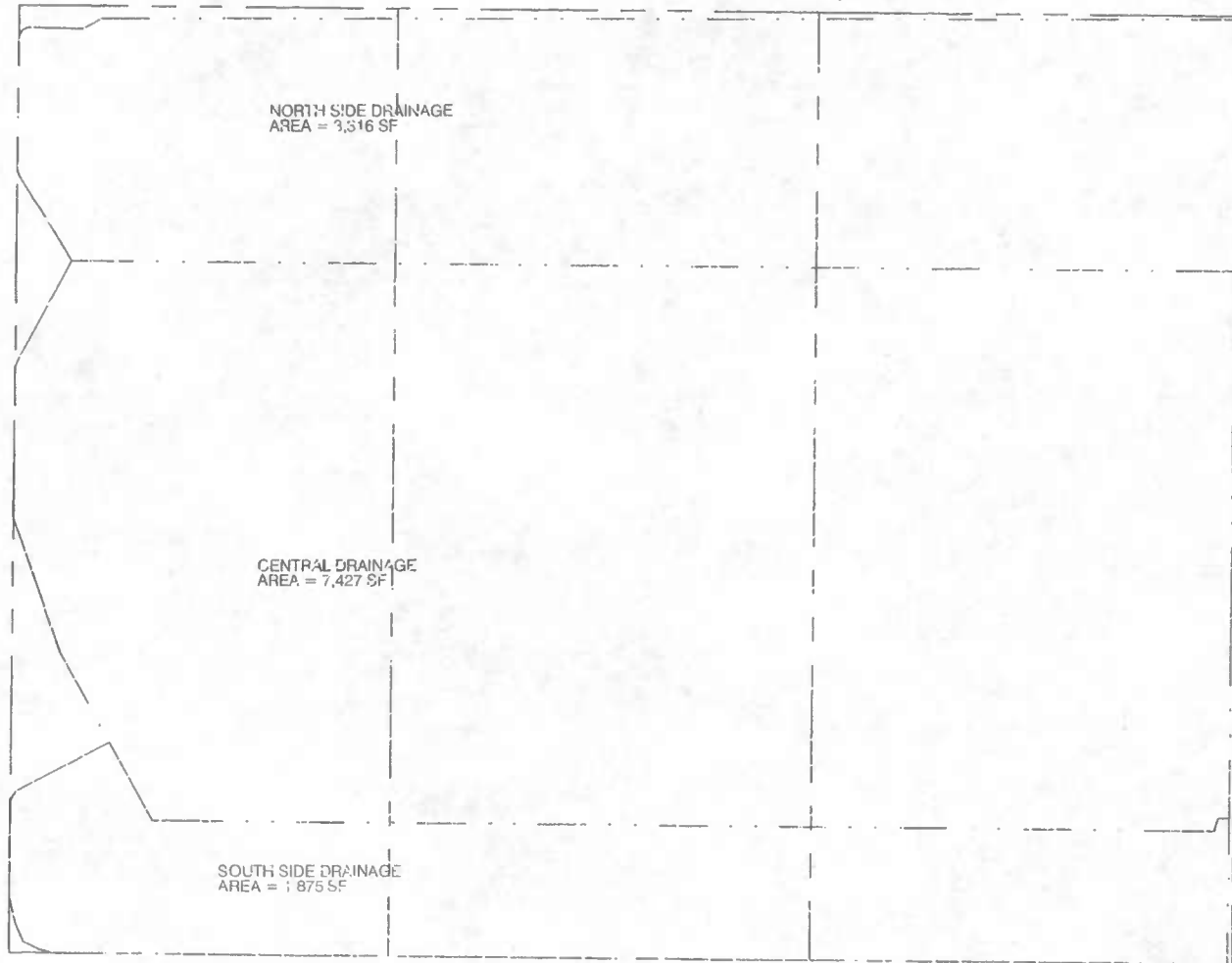
Pollutant removal requirement not served   0.2898 lbs

Fee in Lieu $5,795.77

20,000 /#
2 1

SITE 11

1" = 20'

NORTH SIDE DRAINAGE
AREA = 3,316 SF

CENTRAL DRAINAGE
AREA = 7,427 SF

SOUTH SIDE DRAINAGE
AREA = 1,875 SF

Critical Area Project Application
Town of Ocean City

Date: __April 12, 2005__   **File#**_____

Project Name:__The Avelon at Ocean City_____

Project Address____11 Baltimore Ave._____

Tax Map: __110__ **Parcel:**__4010, 4011, 4012, 4013, 4026, 4027__ **Block:**_____
Zoning____DMX_____

Property Owner_____AGL Ventures LLC (Sale Pending)_____ **Phone** _302.841.5177__

Property Owner Address____2 Dinghy Court Berlin, MD 21811_____

Parcel size (SF):___0.72 Acres (31,317 SF)_____

I. Project Description

In the 100 foot buffer? Yes _____ **No** __X_____ *(If yes, continue with Sec. I)*
(If no, skip to Sec. III)
Parcels 40,000 SF or more: Critical Area setback is 25 feet. No impervious surface or cantilevering permitted within 25 feet of the shoreline/wetlands. ("Pervious" decks are permitted 10' into setback, per construction standards.)

Parcels less than 40,000 SF: Critical Area set back is equal to the zoning setback (_____ feet). No impervious surfaces permitted within the setback. ("Pervious" decks at ground level are permitted in the setback, per construction standards.)

Existing Conditions

Impervious surface (SF): _10,433 SF_____ **% of site impervious:** _33%_____

Impervious surface within the 100-foot buffer (SF): __Not Applicable_____

Proposed Conditions

Impervious surface (SF):____24,829 SF_____ **% of site impervious:** _79%_____

Total SF of disturbed area:____31,363 SF_____

Impervious surface within the 100-foot buffer (SF): _Not Applicable_____

Form Revised 12/1/04

II. Mitigation Worksheet in the 100-foot Buffer

1. **Detached Single Family Dwellings**

    Value of Construction: $_____

    a. **Landscaping required in the amount of 2% of the cost of construction (Value of construction x .02 = $_____)**

    b. **Total landscaping provided. Attach cost values and plant schedule. (Must equal or exceed "Means" book value.)**
        $_____

    c. **Mitigation requirement (if a – b > 0) = Fee in Lieu of landscaping.**
        $_____(To be paid prior to issuance of Certificate of Occupancy.)

2. **Multi-Family and Commercial Mitigation worksheet (within the 100' buffer)**
    - If not in 100-foot buffer skip to Section III below.
    - All SF values determined from "Landscaping Conversion Table" below.

    Activity Description (Complete all that apply):
    a. **Trees or shrubs removed from buffer (outside of setback):**
                                            #_____ x_____SF x 1=_____SF

    b. **Trees or shrubs removed from setback #____ x SF= _____ x 2=_____SF**
    c. **Pervious to impervious** _____ SF x 2 = _____SF
    d. **Improved pervious to improved pervious** _____SF x 1 = _____SF
    e. **Undisturbed surface disturbed but remaining pervious**
                                        _____SF x 1 =_____SF
    f. **Impervious to impervious** _____SF x 1 =_____SF
    g. **Impervious to pervious** _____SF x 0 = 0 SF
    h. **Construction of decks in setback** _____SF x 2 = _____SF
    i. **TOTAL MITIGATION REQUIRED** (sum of a through h) = _____SF
    j. **TOTAL LANDSCAPING PROVIDED** (Refer to "Landscaping Conversion Chart" below)

	Number	Value	Total
Large trees	_____ x	200 SF	SF_____
Small trees	_____ x	100 SF	SF_____
Large shrubs	_____ x	75 SF	SF_____
Small shrubs	_____ x	50 SF	SF_____
Plants	_____ x	2 SF	SF_____

   TOTAL VALUE OF LANDSCAPING PROVIDED   SF_____
   (Must provide this SF of plantable area not only the plants listed above)
   FEE-IN-LIEU OF LANDSCAPING (OFFSET) = i – j x $1.20 $_____
   (To be paid prior to issuance of Certificate of Occupancy)

    k. **Setback from water/wetlands** _____SF x .25 = _____SF
    (Landscape to be provided in setback area)

```
┌─────────────────────────────────────────────────────────────┐
│              LANDSCAPING CONVERSION CHART                    │
│                                                              │
│          Large tree = 200 square feet of mitigation          │
│          Small tree = 100 square feet  "   "   "             │
│          Large shrub = 75 square feet  "   "   "             │
│          Small shrub = 50 square feet  "   "   "             │
│        Herbaceous plants = 2 square feet of mitigation per plant │
└─────────────────────────────────────────────────────────────┘
```

III.   <u>**Afforestation (Landscaping) Requirements Outside the 100-foot Buffer**</u>

1.   **All Development within the 1000' Critical Area (but outside the 100' buffer) every development or redevelopment must be planted in woody vegetation in an amount of 15% of the site area.**

    a. Total landscaping required: Parcel size x .15 = _____ 4,704 _____ SF.
    (This SF area must be plantable and planted with the following number of plants)
    b. Landscaping provided (use Landscaping Conversion Chart)

Large trees	# ___8___	x 200 SF =	___1,600___ SF
Small trees	#_____	x 100 SF =	_____ SF
Large shrubs	#_____	x 75 SF =	_____ SF
Small shrubs	#___45___	x 50 SF =	___2,250___ SF

    TOTAL VALUE OF LANDSCAPING PROVIDED: ___3,850___ SF
    NOTE: Additional landscaping must be added or fee-in-lieu of must be paid

IV.   <u>**Stormwater management and the 10% rule**</u> **- Pollutant reduction requirement for all disturbances over 250 SF in the 1000 foot Critical Area.**

    1. Single family development subject to stormwater management requirements that use the "Standard Stormwater Management Plan" automatically meet the 10% Rule.

    2. Single family development not subject to stormwater management regulations can meet the intent of the 10% Rule by submitting a Water Quality Management Plan.

    3. Commercial and multi-family development must submit the 10% Rule Worksheet.

V.   <u>**Habitat Protection**</u> (skip if it is less than 40,000 SF)
    For lots of 40,000 square feet or greater, the applicant must consult with the Maryland Department of Natural Resources to determine the existence of any Habitat Protection Areas that may be affected by the proposed development.

VI.   <u>Landscape Plan</u>
       ALL VEGETATION SHALL BE PROVIDED IN ACCORDANCE WITH
       CHAPTER 98, ARTICLE II, LANDSCAPING, OF THE CODE.

VII.   <u>Site plan requirements</u>

       Critical Area site plan is required and it must include the following information:

1.   **Topography**
2.   **Mean high water line**
3.   **Delineation of private and State tidal wetlands**
4.   **Delineation of non-tidal wetlands**
5.   **Soil Types**
6.   **Tree cover (show location of individual trees or a tree line defining wooded areas).**
7.   **Landscaping plan with required plants and plantable area**
8.   **100-foot Buffer and applicable setback**
9.   **Habitat protection areas (if applicable)**
10.   **All impervious surfaces labeled as existing or proposed.**
11.   **All proposed clearing, grading and disturbance.**
11.   **Computation of total existing and proposed impervious surfaces, existing forest cover and proposed clearing and total area of disturbance.**
12.   **Proposed landscaping/mitigation plan.**

Reviewed by: _____ Zoning Administrator   (Date_____)

            _____Environmental Engineer (Date _____)

Worksheet A: Standard Application Process
Calculating Pollutant Removal Requirements[1]

Step 1:	Calculate Existing and Proposed Site Imperviousness

A. Calculate Percent Imperviousness

1) Site Area within the IDA, A=   **0.72**   acres

2) Site Impervious Surface Area, Existing and Proposed, (See Table 4.1 for details)

	(a) Existing (acres)	(b) Proposed (acres)
Roads		
Parking Lots		
Driveways		
Sidewalks/paths		
Rooftops	0.24	0.57
Decks		
Swimming pools/ponds		
Other		0.01
Impervious Surface Area	0.24 acres	0.58 acres

3) Imperviousness (I)

Existing Imperviousness, I_{pre} =   Impervious Surface Area / Site Area

=   (Step 2a) / (Step1)

=   (0.24   ) / (0.72   )

=   33%

Proposed Imperviousness, I_{post} =   Impervious Surface Area / Site Area

=   (Step 2a) / (Step1)

=   (0.58   ) / (0.72   )

=   80%

B. Define Development Category

1) New Development: Existing Imperviousness less than 15% I *(Go to Step 2A)*

2) ✓ Redevelopment: Existing Imperviousness of 15% I or more *(Go to Step 2B)*

3) Single Lot Residential Development: Single lot being developed or improved; single family residential development; and more than 240 square feet of impervious area and associated disturbance (Go to Section 5, Residential Approach, for detailed criteria and requirements)

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[1]NOTE: All acreage used in this worksheet refers to areas with in the IDA of the critical area only.

Step 2: Calculate the Predevelopment Load (L_{pre})

A. New Development

$$L_{pre} = (0.5) \ (A)$$

$$= (0.5) \ (\underline{\quad 0.72 \quad})$$

$$= \underline{\quad 0.36 \quad} \text{ lbs/year of total phosphorus}$$

Where:

L_{pre} = Average annual load of total phosphorus exported from the site prior to development (lbs/year)

0.5 = Annual total phosphorus load from undeveloped lands (lbs/acre/year)

A = Area of the site within the Critical Area IDA (acres)

B. Redevelopment

$$L_{pre} = (R_v) \ (C) \ (A) \ (8.16)$$

$$R_v = 0.05 + 0.009 \ (I_{pre})$$

$$= 0.05 + 0.009 \ (\underline{\quad 33 \quad}) = \underline{\quad 0.35 \quad}$$

$$L_{pre} = (\underline{\quad 0.35 \quad})(\underline{\quad 0.30 \quad})(\underline{\quad 0.72 \quad}) \ (8.16)$$

$$= \underline{\quad 0.62 \quad} \text{ lbs/year of total phosphorus}$$

Where:

L_{pre} = Average annual load of total phosphorus exported from the site prior to development (lbs/year)

R_v = Runoff coefficient, which expresses the fraction of rainfall which is converted into runoff

I_{pre} = Predevelopment (existing) site imperviousness (i.e., I=75 if site is 75% impervious

C = Flow-weighted mean concentration of pollutant (total phosphorus) in urban runoff (mg/l) = 0.30 mg/l

A = Area of the site within the Critical Area IDA (acres)

8.16 = Includes regional constraints and unit conversion factors

Step 3: Calculate the Post-Development Load (L_{post})

A. New Development and Redevelopment

L_{post} = $(R_v) (C) (A) (8.16)$

R_v = $0.05 + 0.009 \ (I_{post})$

= $0.05 + 0.009 \ (\underline{\ 80.42\ }) = \underline{\ 0.77\ }$

L_{post} = $(\underline{\ 0.77\ }) (\underline{\ 0.30\ }) (\underline{\ 0.72\ }) (8.16)$

= $\underline{\ 1.36\ }$ lbs/year of total phosphorus

Where:

L_{post} = Average annual load of total phosphorus exported from the post-development site (lbs/year)

R_v = Runoff coefficient, which expresses the fraction of rainfall which is converted into runoff

I_{post} = Post-development (proposed) site imperviousness (i.e., I=75 if site is 75% impervious

C = Flow-weighted mean concentration of pollutant (total phosphorus) in urban runoff (mg/l) = 0.30 mg/l

A = Area of the site within the Critical Area IDA (acres)

8.16 = Includes regional constraints and unit conversion factors

Step 4: Calculate the Pollutant Removal Requirement (RR)

RR = $L_{post} - (0.9) (L_{pre})$

= $(\underline{\ 1.36\ }) - (0.9) (\underline{\ 0.62\ })$

= $\underline{\ 0.81\ }$ lbs/year of total phosphorus

Where:

RR = Polutant removal requirement (lbs/year)

L_{post} = Average annual load of total phosphorus exported from the post-development site (lbs/year)

L_{pre} = Average annual load of total phosphorus exported from the site prior to development (lbs/year)

Step 5: Identify Feasible BMP(s)

Select BMP Options using the screening matricies provided in the Chapter 4 of the 2000 Maryland Stormwater Design Manual. Calculate the load removed for each option.

BMP Type	(L_{post})	x	(BMP_{RE})	x	(% DA Served)	=	Load Removed	
Bioretention	**1.36**		**50%**		**21%**		**0.14**	lbs/year
Bioretention	**1.36**	x	**50%**	x	**20%**	=	**0.14**	lbs/year
		x		x		=		lbs/year
Bioretention	**1.36**	x	**50%**	x	**25%**	=	**0.17**	lbs/year

Load Removed, LR (total) = **0.45** lbs/year

Polutant Removal Requirement, RR (from Step 4) = **0.81** lbs/year

Where:

Load Removed = Annual total phosphorus load removed by the proposed BMP (lbs/year)

L_{post} = Average annual load of total phosphorus exported from the post-development site (lbs/year)

(BMP_{RE}) = BMP removal efficiency for total phosphorus, Table 4.8 (%)

(% DA Served) = Fraction of the site area within the critical area IDA served by the BMP (%)

RR = Polutant removal requirement (lbs/year)

If the Load Removed is equal or greater than the Pollutant Removal Requirement computed in Step 4, the the onsite BMP complies with the 10% Rule.

Has the RR (pollutant removal requirement) been met? ☐Yes ☑No
RR has not been met, therefore the a fee in-lieu-of is required = (0.36 lbs-P)X$20,000 = $7,200

LANDSCAPE SPECIFICATION

DEVELOPMENT SITE I (TOTAL AREA = 18,325 SF)

	NAME	SIZE	QUANTITY	MITIGATION (EACH)	TOTAL MITIGATION
A1	PINE OAK, Quercus palustris	1 1/2' Cal. B&B	7	100 SF EACH	700 SF
A2	RIVER BIRCH, Betula Nigra	clump 6'-8'tall B&B	9	100 SF EACH	900 SF
B1	WINTERBERRY, ilex verticillata	2 GALLON	2	50 SF EACH	100 SF
B2	BLUE FLAG	3 GALLON	8	50 SF EACH	400 SF
B3	LONG LEAF SPIKEGRASS	2 GALLON	7	50 SF EACH	350 SF
B4	IOWA JUNIPER	1 1/2' Cal. B&B	66	50 SF EACH	3300 SF

SUM 5750 SF

AREA REQUIRED (15% OF TOTAL): 2749 SF
MITIGATION SURPLUS: 3001 SF
ACTUAL PLANTABLE AREA PROVIDED: 1571 SF
PLANTABLE AREA SHORTFALL: 1178 SF

DEVELOPMENT SITE II (TOTAL AREA = 13,000 SF)

	NAME	SIZE	QUANTITY	MITIGATION (EACH)	TOTAL MITIGATION
A1	PINE OAK, Quercus palustris	1 1/2' Cal. B&B	0	100 SF EACH	0 SF
A2	RIVER BIRCH, Betula Nigra	clump 6'-8'tall B&B	8	100 SF EACH	800 SF
B1	WINTERBERRY, ilex verticillata	2 GALLON	15	50 SF EACH	750 SF
B2	BLUE FLAG	3 GALLON	16	50 SF EACH	800 SF
B3	LONG LEAF SPIKEGRASS	2 GALLON	10	50 SF EACH	50 SF
B4	IOWA JUNIPER	1 1/2' Cal. B&B	65	50 SF EACH	3250 SF

SUM 5650 SF

AREA REQUIRED (15% OF TOTAL): 1950 SF
MITIGATION SURPLUS: 3700 SF
ACTUAL PLANTABLE AREA PROVIDED: 1471 SF
PLANTABLE AREA SHORTFALL: 479 SF

NOTE— ALL LANDSCAPE MATERIALS AND PLAN LAYOUT INDICATED ON DOCUMENT
MAY BE REVISED AND SUBSTITUTED. THE PROPOSED PLAN AND/OR SUBSTITUTION
OF MATERIALS SHALL BE SUBJECT TO THE APPROVAL OF AUTHORITY HAVING
JURISDICTION. ALL TO BE PRIOR TO PLANTING.
COPY OF ALL REVISIONS TO BE SUPPLIED TO
ARCHITECT FOR THE RECORD.

LAWN AND SHRUB IRRIGATION SPRINKLER SYSTEM TO BE PROVIDED BY LANDSCAPE
CONTRACTOR.
SYSTEM TO HAVE ALL RELATED PIPING, HEADS, VALVES, AND AUTOMIC CONTROLS.
LANDSCAPE/ IRRIGATION SYSTEM CONTRACTOR IS RESPONSIBLE FOR INSTALLATION
FROM AUTOMATIC CONTROL VALVE TO THE SYSTEM.
THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR
THE WATER SUPPLY LINES TO THE CONTROL VALVE.
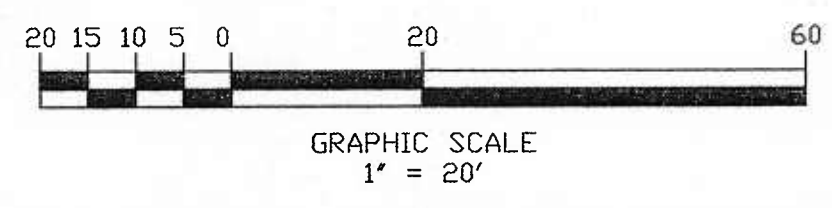ALL TO BE INSTALLED IN ACCORDANCE TO LOCAL
REGULATIONS AND CODES.

BALTIMORE AVE. 75' R/W

FIRST STREET

WILMINGTON AVE.

FIRST ST

PHILADELPHIA AVE.

SITE 1

SITE 2
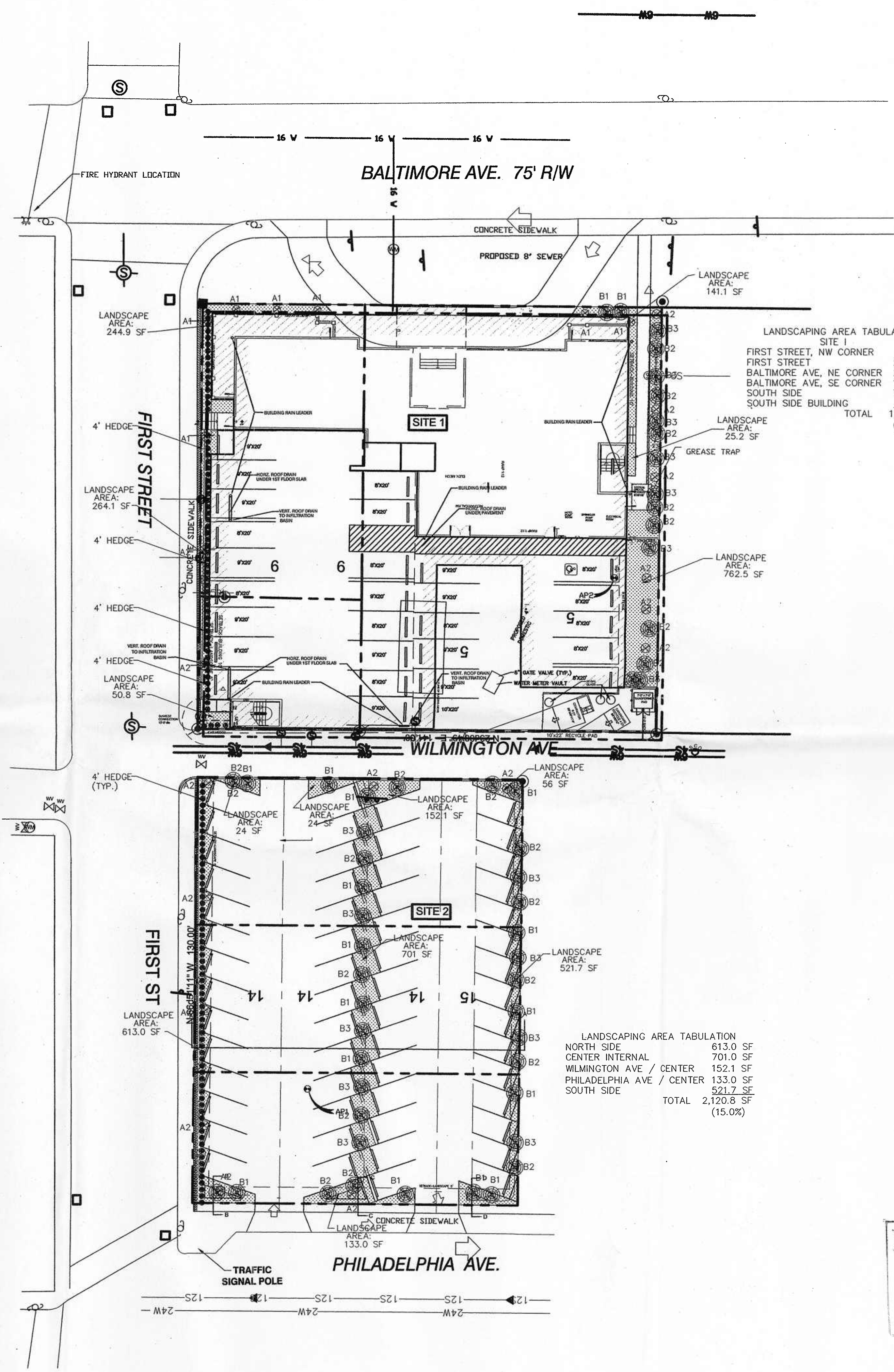
LANDSCAPING AREA TABULATION
SITE I
FIRST STREET, NW CORNER 50.8 SF
FIRST STREET 264.1 SF
BALTIMORE AVE, NE CORNER 232.9 SF
BALTIMORE AVE, SE CORNER 141.1 SF
SOUTH SIDE 762.5 SF
SOUTH SIDE BUILDING 25.2 SF
TOTAL 1,476.6 SF
(8.05%)

LANDSCAPING AREA TABULATION
NORTH SIDE 613.0 SF
CENTER INTERNAL 701.0 SF
WILMINGTON AVE / CENTER 152.1 SF
PHILADELPHIA AVE / CENTER 133.0 SF
SOUTH SIDE 521.7 SF
TOTAL 2,120.8 SF
(15.0%)

TRAFFIC SIGNAL POLE

FIRE HYDRANT LOCATION
CONCRETE SIDEWALK
PROPOSED 8" SEWER
GREASE TRAP

PROPOSED LANSCAPING PLAN
FOR
THE AVALON HOTEL
BALTIMORE AVE. AT 1ST ST
OCEAN CITY, MARYLAND

DATE: 5/22/08	DSGN. TDP
SCALE: 1"=20'	CHK.
DRAWN: TDP	
JOB: 1038908.000	APPRD.
	P. MGR. TDP

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SHEET: **SP6**

REVISIONS
1. ADDED LANDSCAPING HATCH & TABULATION 6/12/08 TDP
2. REVISED PARKING AND COLUMN LAYOUT 6/20/08 TDP

GRAPHIC SCALE
1' = 20'
20 15 10 5 0 20 60